Form 3160-3
(June 2015)

HOBBS OCD
SEP 19 2019
RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM120907

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
EIDER 23 FEDERAL
702H (326116)

2. Name of Operator
COG PRODUCTION LLC (217955)

9. API Well No.
30-025-46381

3a. Address
2208 West Main Street Artesia NM 88210

3b. Phone No. *(include area code)*
(575)748-6940

10. Field and Pool, or Exploratory
WILDCAT WOLFCAMP / WOLFCAMP (98309)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface NWNE / 435 FNL / 1965 FEL / LAT 32.209186 / LONG -103.643184

At proposed prod. zone SWNE / 2590 FNL / 1650 FEL / LAT 32.18875 / LONG -103.642221

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 23 / T24S / R32E / NMP

14. Distance in miles and direction from nearest town or post office*
24 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
435 feet

16. No of acres in lease
1840

17. Spacing Unit dedicated to this well
240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
30 feet

19. Proposed Depth
12453 feet / 19994 feet

20. BLM/BIA Bond No. in file
FED: NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3567 feet

22. Approximate date work will start*
07/01/2019

23. Estimated duration
30 days

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Mayte Reyes / Ph: (575)748-6945 | 05/22/2019 |

Title
Regulatory Analyst

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) Cody R. Layton | ~~Deborah Ham / Ph: (575)234-5965~~ Cody Layton | 09/16/2019 |

| Title | Office |
|---|---|
| Legal Landlaw Examiner | CARLSBAD |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 09/19/19

APPROVED WITH CONDITIONS

KZ 09/19/19

(Continued on page 2)

*(Instructions on page 2)

AFMSS

*Application for Permit to Drill*

U.S. Department of the Interi
Bureau of Land Manageme

## APD Package Report

Date Printed: 09/19/2019 08:59 AM

| | |
|---|---|
| APD ID: 10400042007 | Well Status: AAPD |
| APD Received Date: 05/22/2019 10:19 AM | Well Name: EIDER 23 FEDERAL |
| Operator: COG PRODUCTION LLC | Well Number: 702H |

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 2 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 4 file(s)
  -- Casing Taperd String Specs: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 3 file(s)
  -- Hydrogen sulfide drilling operations plan: 2 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 2 file(s)
  -- Other Facets: 3 file(s)
  -- Other Variances: 1 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 2 file(s)
  -- Water source and transportation map: 2 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Recontouring attachment: 1 file(s)
  -- Pit closure attachment: 1 file(s)
  -- Other SUPO Attachment: 12 file(s)

- PWD Report
- PWD Attachments

-- None

Bond Report
Bond Attachments
-- None

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM120907

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
EIDER 23 FEDERAL
702H

2. Name of Operator
COG PRODUCTION LLC

9. API Well No.

| 3a. Address | 3b. Phone No. *(include area code)* | 10. Field and Pool, or Exploratory |
|---|---|---|
| 2208 West Main Street Artesia NM 88210 | (575)748-6940 | WILDCAT WOLFCAMP / WOLFCAMP |

4. Location of Well *(Report location clearly and in accordance with any State requirements. *)*
At surface NWNE / 435 FNL / 1965 FEL / LAT 32.209186 / LONG -103.643184
At proposed prod. zone SWNE / 2590 FNL / 1650 FEL / LAT 32.18875 / LONG -103.642221

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 23 / T24S / R32E / NMP

| 14. Distance in miles and direction from nearest town or post office* | 12. County or Parish | 13. State |
|---|---|---|
| 24 miles | LEA | NM |

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| 435 feet | 1840 | 240 |

| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth | 20. BLM/BIA Bond No. in file |
|---|---|---|
| 30 feet | 12453 feet / 19994 feet | FED: NMB000215 |

| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23. Estimated duration |
|---|---|---|
| 3567 feet | 07/01/2019 | 30 days |

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Mayte Reyes / Ph: (575)748-6945 | 05/22/2019 |

Title
Regulatory Analyst

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Deborah Ham / Ph: (575)234-5965 | 09/16/2019 |

| Title | Office |
|---|---|
| Legal Landlaw Examiner | CARLSBAD |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

## INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48( d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## Additional Operator Remarks

### Location of Well

1. SHL: NWNE / 435 FNL / 1965 FEL / TWSP: 24S / RANGE: 32E / SECTION: 23 / LAT: 32.209186 / LONG: -103.643184 ( TVD: 0 feet, MD: 0 feet )
   PPP: NWNE / 100 FNL / 1650 FEL / TWSP: 24S / RANGE: 32E / SECTION: 23 / LAT: 32.210111 / LONG: -103.642173 ( TVD: 7096 feet, MD: 7100 feet )
   BHL: SWNE / 2590 FNL / 1650 FEL / TWSP: 24S / RANGE: 32E / SECTION: 26 / LAT: 32.18875 / LONG: -103.642221 ( TVD: 12453 feet, MD: 19994 feet )

## BLM Point of Contact

Name: Deborah Ham
Title: Legal Landlaw Examiner
Phone: 5752345965
Email: dham@blm.gov

## Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

# PECOS DISTRICT
# DRILLING CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **COG Production LLC** |
| **LEASE NO.:** | **NMNM120907** |
| **WELL NAME & NO.:** | Eider 23 Federal 702H |
| **SURFACE HOLE FOOTAGE:** | 435'/N & 1965'/E |
| **BOTTOM HOLE FOOTAGE** | 2590'/N & 1650'/E |
| **LOCATION:** | Section 23, T.24 S., R.32 E., NMP |
| **COUNTY:** | Lea County, New Mexico |

**COA**

| | | | |
|---|---|---|---|
| H2S | ◉ Yes | ○ No | |
| Potash | ◉ None | ○ Secretary | ○ R-111-P |
| Cave/Karst Potential | ◉ Low | ○ Medium | ○ High |
| Variance | ○ None | ◉ Flex Hose | ○ Other |
| Wellhead | ◉ Conventional | ○ Multibowl | ○ Both |
| Other | ☐ 4 String Area | ☐ Capitan Reef | ☐ WIPP |
| Other | ☑ Fluid Filled | ☐ Cement Squeeze | ☐ Pilot Hole |
| Special Requirements | ☐ Water Disposal | ☐ COM | ☐ Unit |

## A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware Mountain Group** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

## B. CASING

1. The **10-3/4** inch surface casing shall be set at approximately **1135 feet** (a minimum of **25 feet (Lea County)** 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.

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

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

**Option 1 (Single Stage):**

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

**Option 2:**

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.

3. The minimum required fill of cement behind the production casing is:

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

## C. PRESSURE CONTROL

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

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

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

# 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)

☒ 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

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

***Pad 1***

**Eider23 Federal 601H:**

**Surface Hole Location: 435' FNL & 675' FEL, Section 23, T. 24S., R. 32 E.**
**Bottom Hole Location: 2590' FNL & 990' FEL, Section 26, T. 24 S., R. 32 E.**

**Eider23 Federal 701H:**

**Surface Hole Location: 435' FNL & 645' FEL, Section 23, T. 24S., R. 32 E.**
**Bottom Hole Location: 2590' FNL & 330' FEL, Section 26, T. 24 S., R. 32 E.**

***Pad 2***

**Eider23 Federal 602H:**

**Surface Hole Location: 435' FNL & 1995' FEL, Section 23, T. 24S., R. 32 E.**
**Bottom Hole Location: 2590' FNL & 2310' FEL, Section 26, T. 24 S., R. 32 E.**

**Eider23 Federal 702H:**

**Surface Hole Location: 435' FNL & 1965' FEL, Section 23, T. 24S., R. 32 E.**
**Bottom Hole Location: 2590' FNL & 1650' FEL, Section 26, T. 24 S., R. 32 E.**

**CTB Pad: Center of pad - 890' FNL & 2400 FEL NMPM**

## TABLE OF CONTENTS

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

## 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.

**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.

**Hydrology:**
The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. 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. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

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.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline

crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

Temporary Fresh Water Frac Line: once the temporary use exceeds the timeline of 180 days and/or with a 90 day extension status; further analysis will be required if the applicant pursues to turn the temporary ROW into a permanent ROW.

## BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you 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. The 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. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards 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 especially, 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. The 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 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 agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil 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 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 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 the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **30** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. 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.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

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. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

| | |
|---|---|
| ( ) seed mixture 1 | ( ) seed mixture 3 |
| ( ) seed mixture 2 | ( ) seed mixture 4 |
| ( **X**) seed mixture 2/LPC | ( ) Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. 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. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. 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 before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (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 actions to prevent the loss of significant 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.

17. 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 associated roads, 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.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps,

ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you 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. The 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. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards 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 especially, 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. The 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 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 agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in

writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. 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 the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. 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 actions to prevent the loss of significant 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.

11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly.
    - Fill in any holes from the poles removed.

# VI. CONSTRUCTION

## A. NOTIFICATION

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

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

## B. TOPSOIL

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

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

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

## D. FEDERAL MINERAL MATERIALS PIT

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

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

## F. EXCLOSURE FENCING (CELLARS & PITS)

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

## G. ON LEASE ACCESS ROADS

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

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

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

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

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

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

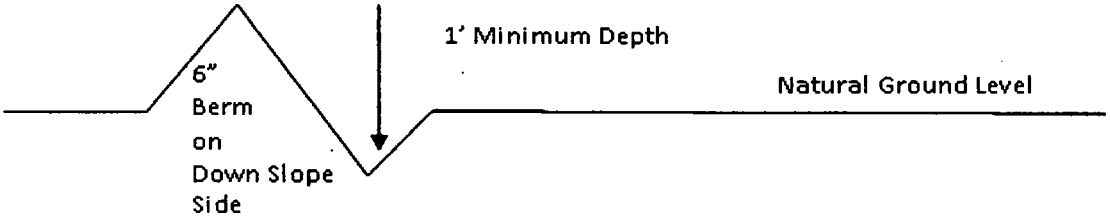
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

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

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

**Cross Section of a Typical Lead-off Ditch**




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

**Formula for Spacing Interval of Lead-off Ditches**

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

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

**Cattle guards**

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

**Fence Requirement**

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

**Public Access**

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

**Construction Steps**

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

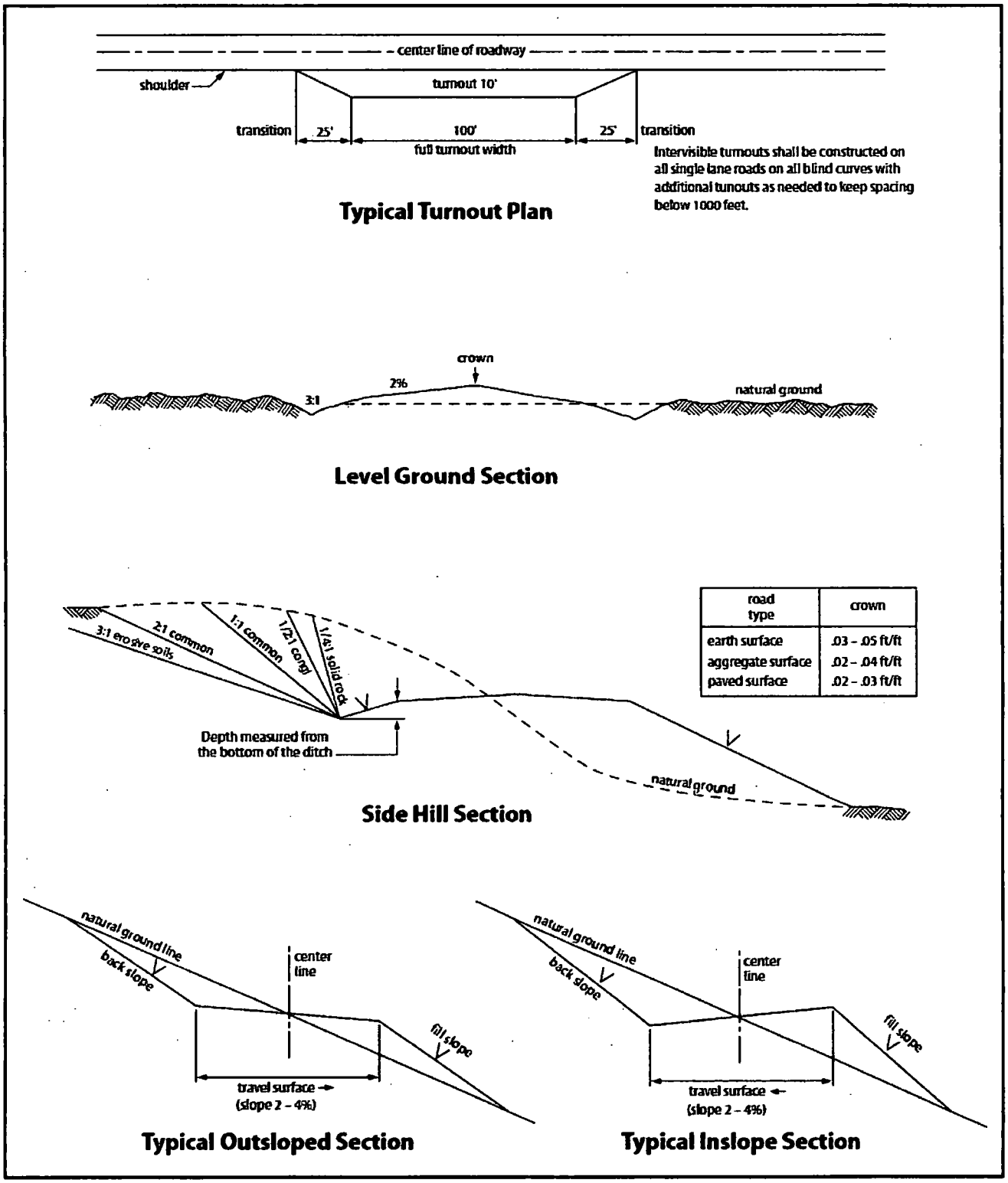



**Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.**

# VII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

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

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

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

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

**Containment Structures**

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

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

## 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).

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

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

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

*Pounds of pure live seed:

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

AFMSS

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

# Operator Certification Data Report

09/19/2019

## Operator Certification

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

**NAME:** Mayte Reyes **Signed on:** 05/13/2019

**Title:** Regulatory Analyst

**Street Address:** 2208 W Main Street

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

**Phone:** (575)748-6945

**Email address:** Mreyes1@concho.com

## Field Representative

**Representative Name:** Gerald Herrera

**Street Address:** 2208 West Main Street

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

**Phone:** (575)748-6940

**Email address:** gherrera@concho.com

AFMSS

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

# Application Data Report

09/19/2019

**APD ID:** 10400042007 **Submission Date:** 05/22/2019

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Well Type:** OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

## Section 1 - General

**APD ID:** 10400042007 **Tie to previous NOS?** **Submission Date:** 05/22/2019

**BLM Office:** CARLSBAD **User:** Mayte Reyes **Title:** Regulatory Analyst

**Federal/Indian APD:** FED **Is the first lease penetrated for production Federal or Indian?** FED

**Lease number:** NMNM120907 **Lease Acres:** 1840

**Surface access agreement in place?** **Allotted?** **Reservation:**

**Agreement in place?** NO **Federal or Indian agreement:**

**Agreement number:**

**Agreement name:**

**Keep application confidential?** YES

**Permitting Agent?** NO **APD Operator:** COG PRODUCTION LLC

**Operator letter of designation:**

## Operator Info

**Operator Organization Name:** COG PRODUCTION LLC

**Operator Address:** 2208 West Main Street

**Zip:** 88210

**Operator PO Box:**

**Operator City:** Artesia **State:** NM

**Operator Phone:** (575)748-6940

**Operator Internet Address:** mreyes1@concho.com

## Section 2 - Well Information

**Well in Master Development Plan?** NO **Master Development Plan name:**

**Well in Master SUPO?** NO **Master SUPO name:**

**Well in Master Drilling Plan?** NO **Master Drilling Plan name:**

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H **Well API Number:**

**Field/Pool or Exploratory?** Field and Pool **Field Name:** WILDCAT **Pool Name:** WOLFCAMP

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Is the proposed well in an area containing other mineral resources?** USEABLE WATER

**Is the proposed well in a Helium production area?** N **Use Existing Well Pad?** NO **New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL **Multiple Well Pad Name:** EIDER 23 FEDERAL **Number:** 602H AND 702H

**Well Class:** HORIZONTAL **Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:** 24 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 435 FT

**Reservoir well spacing assigned acres Measurement:** 240 Acres

**Well plat:** COG_Eider_23_702H_C102_20190521104345.pdf

**Well work start Date:** 07/01/2019 **Duration:** 30 DAYS

## Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83 **Vertical Datum:** NAVD88

**Survey number:** **Reference Datum:**

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL Leg #1 | 435 | FNL | 1965 | FEL | 24S | 32E | 23 | Aliquot NWNE | 32.209186 | -103.643184 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 120907 | 3567 | 0 | 0 |
| KOP Leg #1 | 435 | FNL | 1965 | FEL | 24S | 32E | 23 | Aliquot NWNE | 32.209186 | -103.643184 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 120907 | 3567 | 0 | 0 |
| PPP Leg | 100 | FNL | 1650 | FEL | 24S | 32E | 23 | Aliquot NWNE | 32.210111 | -103.6421 | LEA | NEW MEXI | NEW MEXI | F | NMNM 120907 | -352 | 7100 | 7096 |

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIT Leg #1 | 2540 | FNL | 1650 | FEL | 24S | 32E | 26 | Aliquot SWNE | 32.188887 | -103.64222 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 120907 | -8872 | 19900 | 12439 |
| BHL Leg #1 | 2590 | FNL | 1650 | FEL | 24S | 32E | 26 | Aliquot SWNE | 32.18875 | -103.64221 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 120907 | -8886 | 19994 | 12453 |

AFMSS

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

# Drilling Plan Data Report
09/19/2019

**APD ID:** 10400042007 **Submission Date:** 05/22/2019

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Well Type:** OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|---|---|---|---|---|---|---|---|
| 1 | QUATERNARY | 3567 | 0 | 0 | | NONE | N |
| 2 | RUSTLER | 2459 | 1108 | 1108 | | NONE | N |
| 3 | TOP SALT | 2140 | 1427 | 1427 | | NONE | N |
| 4 | BASE OF SALT | -1106 | 4673 | 4673 | | NONE | N |
| 5 | LAMAR | -1336 | 4903 | 4903 | | NONE | N |
| 6 | BELL CANYON | -1373 | 4940 | 4940 | | NONE | N |
| 7 | CHERRY CANYON | -2268 | 5835 | 5835 | | NATURAL GAS,OIL | N |
| 8 | BRUSHY CANYON | -3701 | 7268 | 7268 | SCHIST | NATURAL GAS,OIL | N |
| 9 | BONE SPRING LIME | -5262 | 8829 | 8829 | | NATURAL GAS,OIL | N |
| 10 | --- | -5632 | 9199 | 9199 | | NATURAL GAS,OIL | N |
| 11 | --- | -5793 | 9360 | 9360 | | NATURAL GAS,OIL | N |
| 12 | BONE SPRING 1ST | -6384 | 9951 | 9951 | | NATURAL GAS,OIL | N |
| 13 | BONE SPRING 2ND | -6986 | 10553 | 10553 | | NATURAL GAS,OIL | N |
| 14 | BONE SPRING 3RD | -8259 | 11826 | 11826 | | NATURAL GAS,OIL | N |
| 15 | WOLFCAMP | -8691 | 12258 | 12258 | | NATURAL GAS,OIL | N |
| 16 | WOLFCAMP | -8811 | 12378 | 12378 | | NATURAL GAS,OIL | Y |
| 17 | WOLFCAMP | -9192 | 12759 | 12759 | | NATURAL GAS,OIL | N |

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 10M **Rating Depth:** 12453

**Equipment:** Annular, Blind Ram, Pipe Ram. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
**Requesting Variance?** YES

**Variance request:** A 5M variance is requested on a 10M system. (A 5M variance is attached is sectin 8). A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold.
**Testing Procedure:** BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.
**Choke Diagram Attachment:**

COG_Eider_23_702H_10M_Choke_20190521105345.pdf

**BOP Diagram Attachment:**

COG_Eider_23_702H_10M_BOP_20190521105353.pdf

COG_Eider_23_702H_Flex_Hose_20190521105403.pdf

---

**Pressure Rating (PSI):** 5M **Rating Depth:** 11747

**Equipment:** Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
**Requesting Variance?** YES

**Variance request:** A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
**Testing Procedure:** BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.
**Choke Diagram Attachment:**

COG_Eider_23_702H_5M_Choke_20190521105305.pdf

**BOP Diagram Attachment:**

COG_Eider_23_702H_5M_BOP_20190521105313.pdf

COG_Eider_23_702H_Flex_Hose_20190521105322.pdf

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 3 - Casing

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SURFACE | 14.5 | 10.75 | NEW | API | N | 0 | 1135 | 0 | 1135 | | | 1135 | J-55 | 45.5 | OTHER - BTC | 5.9 | 8.82 | DRY | 13.85 | DRY | 13.85 |
| 2 | INTERMEDIATE | 9.875 | 7.625 | NEW | API | Y | 0 | 11747 | 0 | 11747 | | | 11747 | L-80 | 29.7 | OTHER - BTC | 1.19 | 1.06 | DRY | 1.96 | DRY | 1.96 |
| 3 | PRODUCTION | 6.75 | 5.0 | NEW | API | N | 0 | 19994 | 0 | 12453 | | | 19994 | P-110 | 18 | OTHER - BTC | 1.66 | 2.04 | DRY | 2.59 | DRY | 2.59 |

**Casing Attachments**

**Casing ID:** 1 **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

COG_Eider_23_702H_Casing_Prog_20190820090634.pdf

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Casing Attachments**

**Casing ID:** 2 **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

COG_Eider_23_702H_Casing_Prog_20190820090642.pdf

**Casing Design Assumptions and Worksheet(s):**

COG_Eider_23_702H_Casing_Prog_20190820090650.pdf

**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

COG_Eider_23_702H_Casing_Prog_20190820090658.pdf

## Section 4 - Cement

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SURFACE | Lead | | 0 | [illegible] | [illegible] | 1.75 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| SURFACE | Tail | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| INTERMEDIATE | Lead | [illegible] | [illegible] | [illegible] | [illegible] | 1.98 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| INTERMEDIATE | Tail | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ITERMEDIATE | Tail | | | | | | | | | | |
| RODUCTION | Lead | | | | | 2.5 | | | | | |
| RODUCTION | Tail | | | | | | | | | | |

## Section 5 - Circulating Medium

**ud System Type:** Closed

**ill an air or gas system be Used?** NO

**escription of the equipment for the circulating system in accordance with Onshore Order #2:**

**iagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**escribe what will be on location to control well or mitigate other conditions:** Sufficient mud materials to maintain mud operties and meet minimum lost circulation and weight increase requirement will be kept on location at all times.

**escribe the mud monitoring system utilized:** PVT/Pason/Visual Monitoring.

## Circulating Medium Table

| Top Depth | Bottom Depth | Mud Type | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1135 | 11747 | OTHER : Brine Diesel | 9 | 9.4 | | | | | | | Brine Diesel |
| 11747 | 19994 | OIL-BASED MUD | 11 | 12.5 | | | | | | | OBM |
| 0 | 1135 | OTHER : FW Gel | 8.6 | 8.8 | | | | | | | FW Gel |

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

None planned.

**List of open and cased hole logs run in the well:**

OTH

**Other log type(s):**

CNL/GR

**Coring operation description for the well:**

None planned.

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 8095 **Anticipated Surface Pressure:** 5355.34

**Anticipated Bottom Hole Temperature(F):** 180

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geoharzards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

COG_Eider_23_702H_H2S_Plan_20190521110359.pdf

COG_Eider_23_702H_H2S_Schematic_20190521110407.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

COG_Eider_23_702H_AC_Report_20190521110423.pdf

COG_Eider_23_702H_Direct_Plan_20190521110431.pdf

**Other proposed operations facets description:**

Drilling program attached.
GCP Attached.
5M Variance attached.
Cementing program attached.

**Other proposed operations facets attachment:**

COG_Eider_23_702H_GCP_20190521110452.pdf

COG_Eider_23_702H_Cementing_Prog_20190522101859.pdf

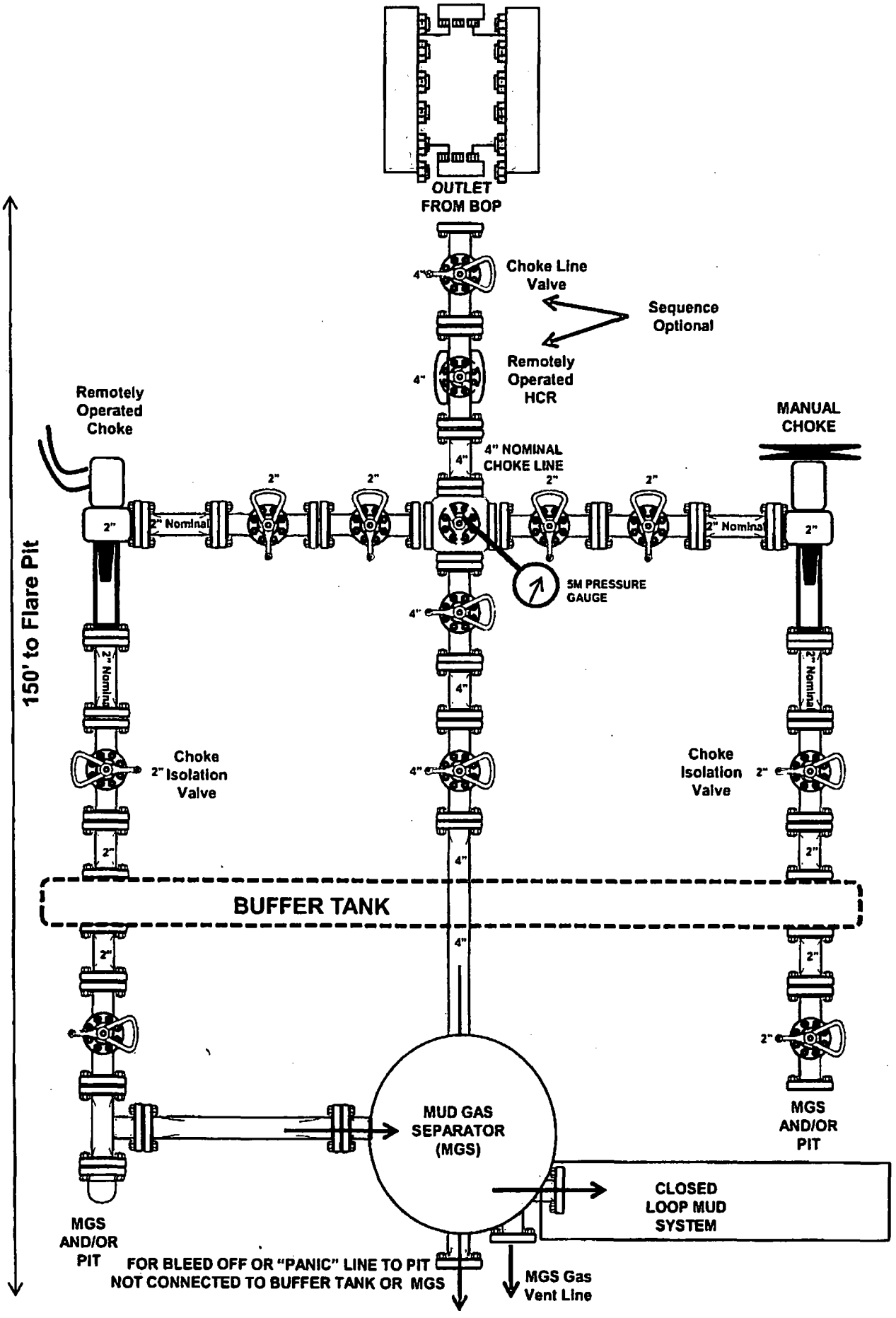
COG_Eider_23_702H_Drilling_Prog_20190820091020.pdf

**Operator Name:** COG PRODUCTION LLC

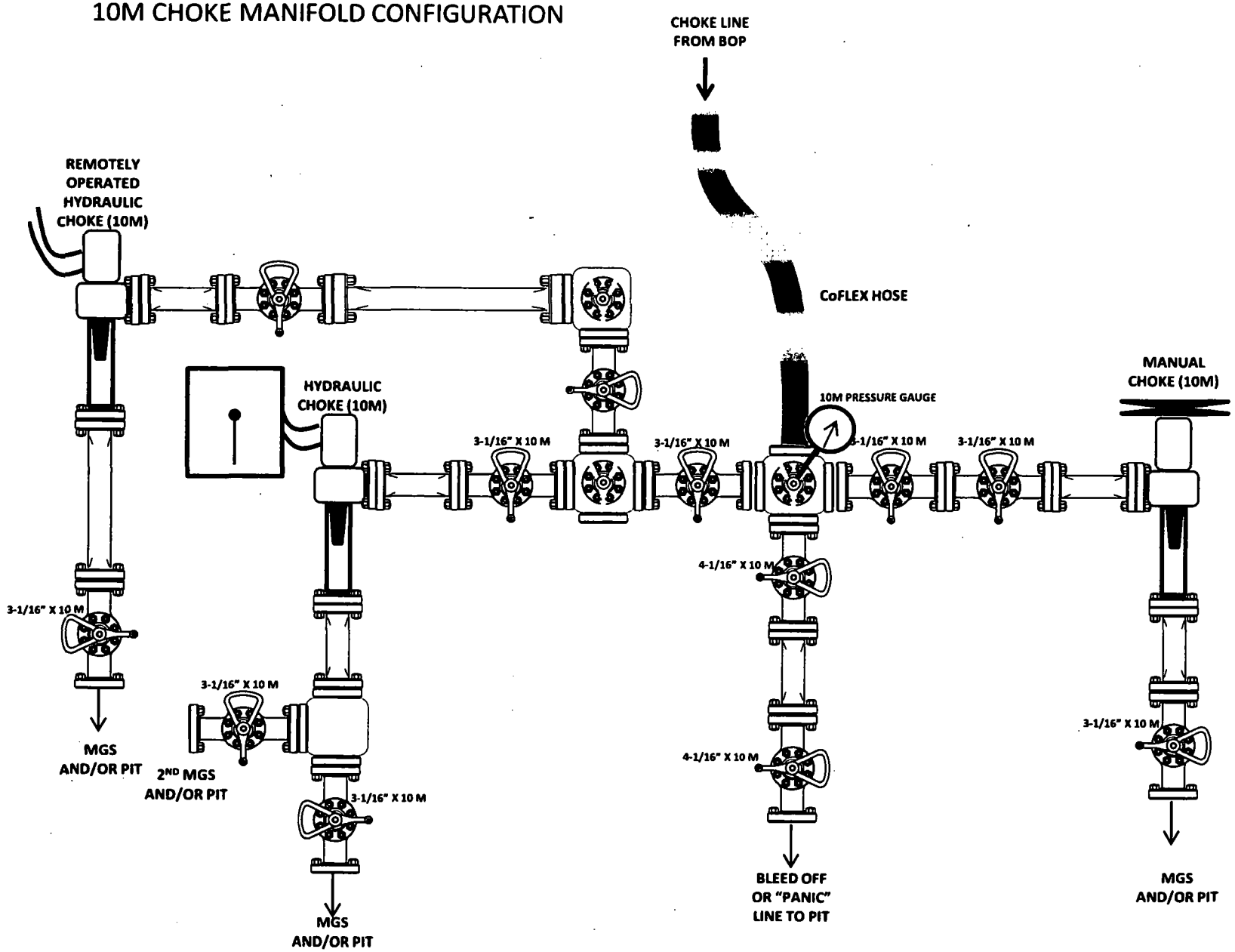
**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

COG_5M_Variance_Well_Plan_20190520145808.pdf

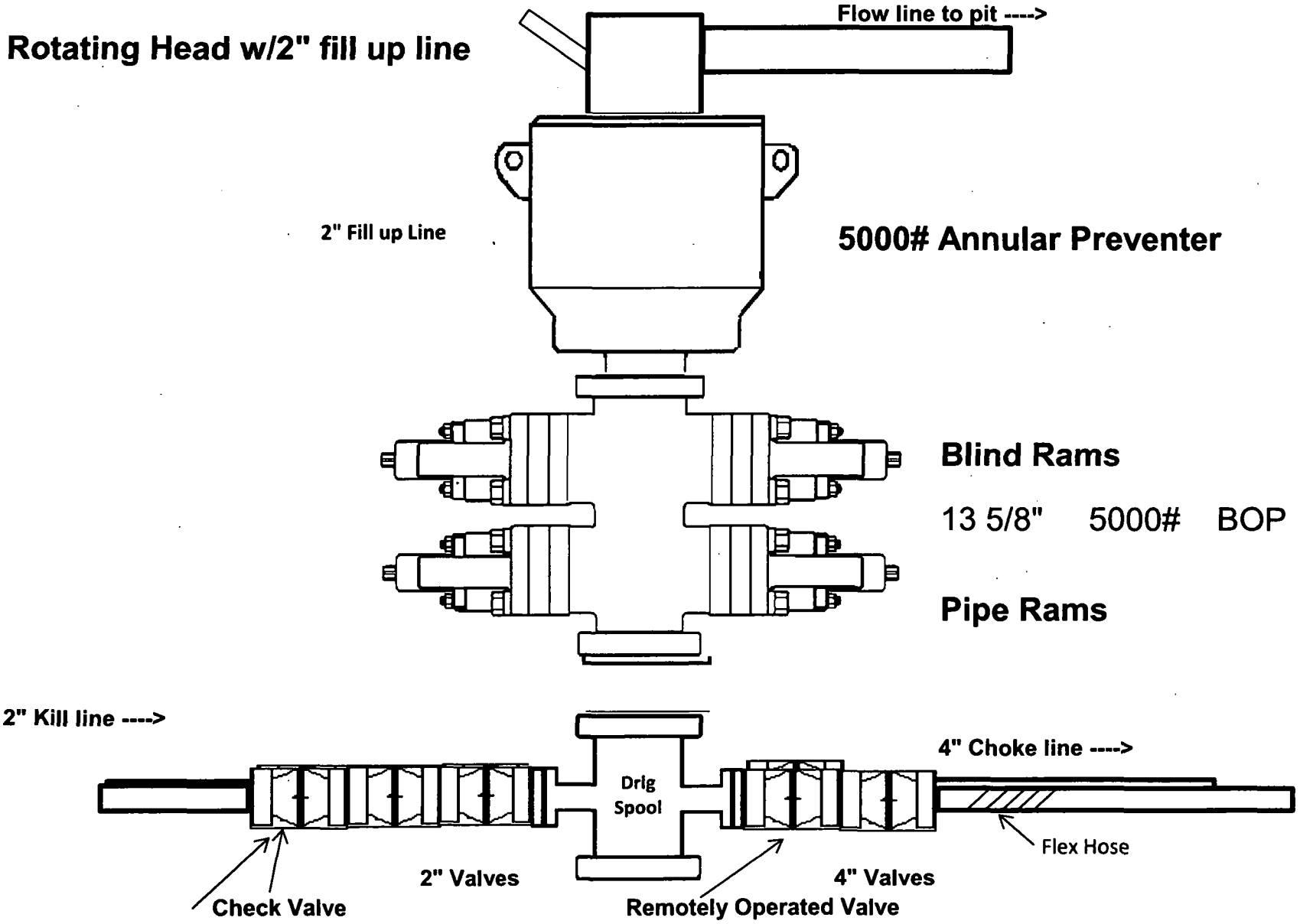
# 5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



# 10M CHOKE MANIFOLD CONFIGURATION



# 5,000 psi BOP Schematic



# QUALITY CONTROL INSPECTION AND TEST CERTIFICATE

CERT. N°: 814

PURCHASER: ContiTech Oil & Marine Corp.

P.O. N°: 4501005826

| | | |
|---|---|---|
| CONTITECH RUBBER order N°: 1001224 | HOSE TYPE: 3" ID | Choke and Kill Hose |
| HOSE SERIAL N°: 74077 | NOMINAL / ACTUAL LENGTH: | 12,19 m / 12,22 m |
| W.P. 69,0 MPa 10000 psi | T.P. 103,5 MPa 15000 psi | Duration: 60 min. |

Pressure test with water at ambient temperature

See attachment ( 1 page )

| COUPLINGS Type | Serial N° | Quality | Heat N° |
|---|---|---|---|
| 3" coupling with | 8183 | AISI 4130 | A0231W |
| 3 1/16" 10K API Swivel Flange end | | AISI 4130 | 85913 |
| Hub | | AISI 4130 | A0355Y |
| 3" coupling with | 8182 | AISI 4130 | A0231W |
| 3 1/16" 10K API b.w. Flange end | | AISI 4130 | 85913 |

**Not Designed For Well Testing**

**API Spec 16 C 2nd Edition– FSL2**

**Temperature rate: "B"**

All metal parts are flawless

**WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.**

STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

| Date: | Inspector | Quality Control |
|---|---|---|
| 17. November 2017. | | ContiTech Rubber Industrial Kft. Quality Control Dept. (1) |

CH042

*ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE*
*No: 814, 817*

| CONTITECH RUBBER Industrial Kft. | No: QC-DB- 335 / 2017 |
|---|---|
| | Page: 6 / 83 |

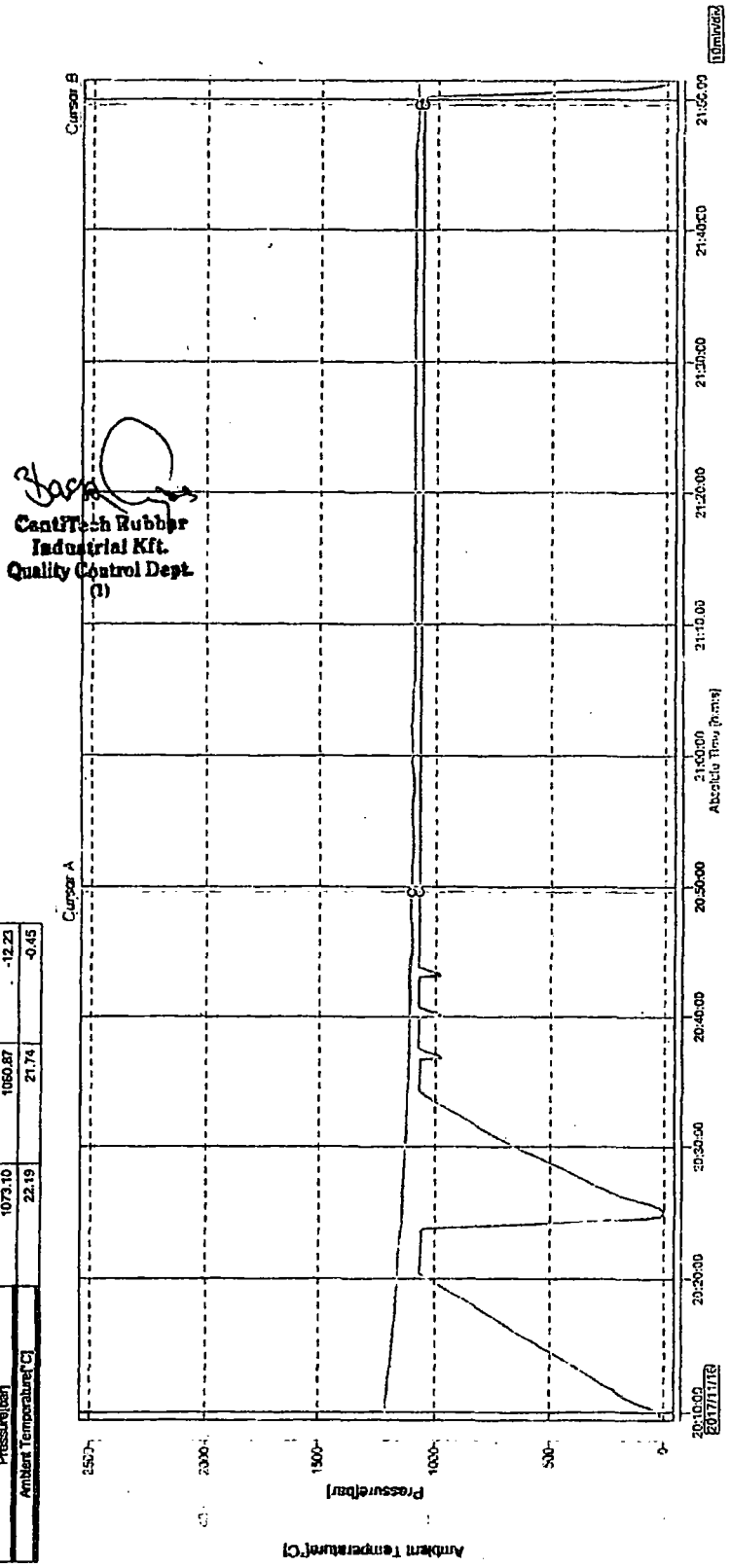
1/1

File Name : 021325_74077,74089.GEV,...,021335_74077,74089.GEV
File Message : 74077,74089
Device Type : GX10
Serial No. : S5P606399
Data Count : 1225

Print Group : Press-Temp
Print Range : 2017/11/16 20:09:25.000 - 2017/11/16 21:51:25.000
Comment : 142056635

Sampling Int. : 5.000 sec
Start Time : 2017/11/16 20:09:25.000
Stop Time : 2017/11/16 21:51:25.000

| Data No. | Cursor A | Cursor B | Difference |
|---|---|---|---|
| | 482 | 1202 | 720 |
| Absolute Time | 2017/11/16 20:49:35.000 | 2017/11/16 21:49:35.000 | 01:00:00.000 |
| Tag Comment | Value A | Value B | Value B-A |
| Pressure[bar] | 1073.10 | 1060.87 | -12.23 |
| Ambient Temperature[°C] | 22.19 | 21.74 | -0.45 |




ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

CH042

| CONTITECH RUBBER Industrial Kft. | No: QC-DB- 335 / 2017 |
|---|---|
| | Page: 7 / 83 |

Continental

ContiTech

## Hose Data Sheet

| | |
|---|---|
| CRI Order No. | 1001224 |
| Customer | ContiTech Oil & Marine Corp |
| Customer Order No | 4501005826 CO1000284 |
| Item No. | 10 |
| Hose Type | Flexible Hose |
| **Standard** | **API SPEC 16C 2ND EDITION FSL2** |
| Inside dia in inches | 3 |
| Length | 40 ft |
| Type of coupling one end | FLANGE 3.1/16" 10K FLANGE API SPEC 6A TYPE 6BX MONOGRAMMED B.W.BX154ST/ST LINED RING GROOVE SOUR |
| Type of coupling other end | FLANGE 3.1/16" 10K FLANGE API SPEC 17D SV SWIVEL FLANGE BX154 ST/ST LINED RING GROOVE SOUR |
| H2S service NACE MR0175 | Yes |
| Working Pressure | 10 000 psi |
| Design Pressure | 10 000 psi |
| Test Pressure | 15 000 psi |
| Safety Factor | 2,25 |
| Marking | CONTINENTAL CONTITECH |
| Cover | NOT FIRE RESISTANT |
| Outside protection | St.steel outer wrap |
| Internal stripwound tube | No |
| Lining | OIL + GAS RESISTANT SOUR |
| Safety clamp | Yes |
| Lifting collar | Yes |
| Element C | Yes |
| Safety chain | Yes |
| Safety wire rope | No |
| Max.design temperature [°C] | 100 |
| Min.design temperature [°C] | -20 |
| Min. Bend Radius operating [m] | 0,90 |
| Min. Bend Radius storage [m] | 0,90 |
| Calculated Gross / Net weight of hose assembly [kg] | |
| Electrical continuity | The Hose is electrically continuous |
| Type of packing | WOODEN CRATE ISPM-15 |

ContiTech Rubber
Industrial Kft.
QC 2

Continental

**ContiTech Fluid Technology**

ContiTech Oil & Marine Corp. # 11535 Brittmoore Park Dr., Houston, TX 77041-6916 USA

ScanDrill Inc.
9395 HWY 2767
TYLER TX 75708

Transport-Details - Shipping

Conditions

| | |
|---|---|
| Shipping Conditions | 0 days |
| Inco Terms | EXW Houston, TX<br>Ex Works |

**Delivery Note**

| | |
|---|---|
| Document No. | **85367700** |
| Document Date | **12/20/2017** |
| Customer Number | 15483 |
| Customer VAT No. | |
| Supplier Number | |
| N° EORI: | FR41027953300021 |
| Purchase Order No. | 149618 |
| Purchase Order Date | 09/26/2017 |
| Sales Order Number | 1000284 |
| Sales Order Date | 09/26/2017 |

Unloading Point



Weights (Gross / Net)

| | |
|---|---|
| Total Weight | 2,219.000 LB |
| Net Weight | 2,219.000 LB |

*Buyer: Joe Ward*
*E-mail: jward@scandrill.com*
*Tel: 903.597.5368*

| Item | Material/Description | Quantity | Weight |
|---|---|---|---|
| 10 | HCK3FA40IPSIVS | 1 PC | 2,219.000 LB |

3" 40ft API 16C C&K Hose WP 10K Temp B

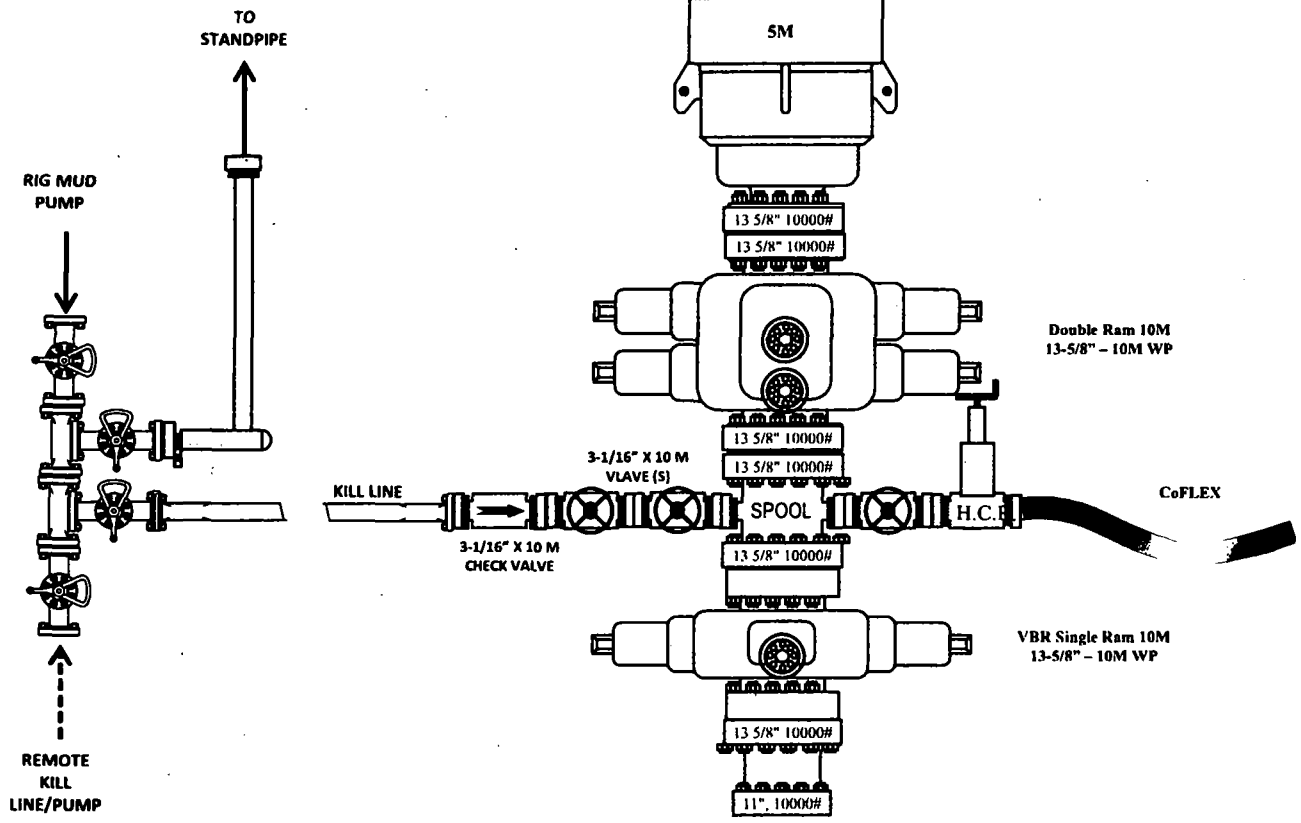
End A: 3.1/16" 10K Flange, API Spec. 6A Type 6BX, Butt Welded, BX154 Stainless Steel 316 Lined Ring Groove - Sour
End B: 3.1/16" 10K API Spec 17D SV Swivel Flange, BX154 Stainless Steel 316 Lined Ring Groove - Sour
Hose metallic parts NACE MR 0175 latest edition
Hose is suitable for H2S Service
Standard: API Spec 16C - 2nd Edition - FSL Level 2 - Monogrammed
Working Pressure: 10000 psi
Test Pressure: 15000 psi
Fire Rated: No
Armoured: Yes - Stainless Steel 316L Interlock
Design Temperature: -20 to 100°C
High Temperature Exposure / Survival @ 177 Deg C (internal in a kick situation)
Brand Name: Continental ContiTech

Supplied with:
2 x Safety Clamps
2 x Lifting Collars Double Eyed
2 x Safety Chains c/w Shackles Each End x 8ft

Packing to ISPM-15 Heat Treated

**10M BOP Stack**

## 10M REMOTE KILL SCHEMATIC




10M BOP Stack
(5M Annular)

| QUALITY CONTROL INSPECTION AND TEST CERTIFICATE | | | | CERT. N°: 814 |
|---|---|---|---|---|
| PURCHASER: ContiTech Oil & Marine Corp. | | | | P.O. N°: 4501005826 |
| CONTITECH RUBBER order N°: 1001224 | | HOSE TYPE: 3" ID | | Choke and Kill Hose |
| HOSE SERIAL N°: 74077 | | NOMINAL / ACTUAL LENGTH: | | 12,19 m / 12,22 m |
| W.P. 69,0 MPa 10000 psi | | T.P. 103,5 MPa 15000 psi | | Duration: 60 min. |

Pressure test with water at ambient temperature

See attachment ( 1 page )

| COUPLINGS Type | Serial N° | Quality | Heat N° |
|---|---|---|---|
| 3" coupling with | 8183 | AISI 4130 | A0231W |
| 3 1/16" 10K API Swivel Flange end | | AISI 4130 | 85913 |
| Hub | | AISI 4130 | A0355Y |
| 3" coupling with | 8182 | AISI 4130 | A0231W |
| 3 1/16" 10K API b.w. Flange end | | AISI 4130 | 85913 |

**Not Designed For Well Testing**

**API Spec 16 C 2nd Edition-- FSL2**

**Temperature rate: "B"**

All metal parts are flawless

**WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.**

STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

| Date: | Inspector | Quality Control |
|---|---|---|
| 17. November 2017. | | ContiTech Rubber Industrial Kft. Quality Control Dept. (1) |

CH042

*ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE*
*No: 814, 817*

| CONTITECH RUBBER Industrial Kft. | No: QC-DB- 335 / 2017 |
|---|---|
| | Page: 6 / 83 |

1/1

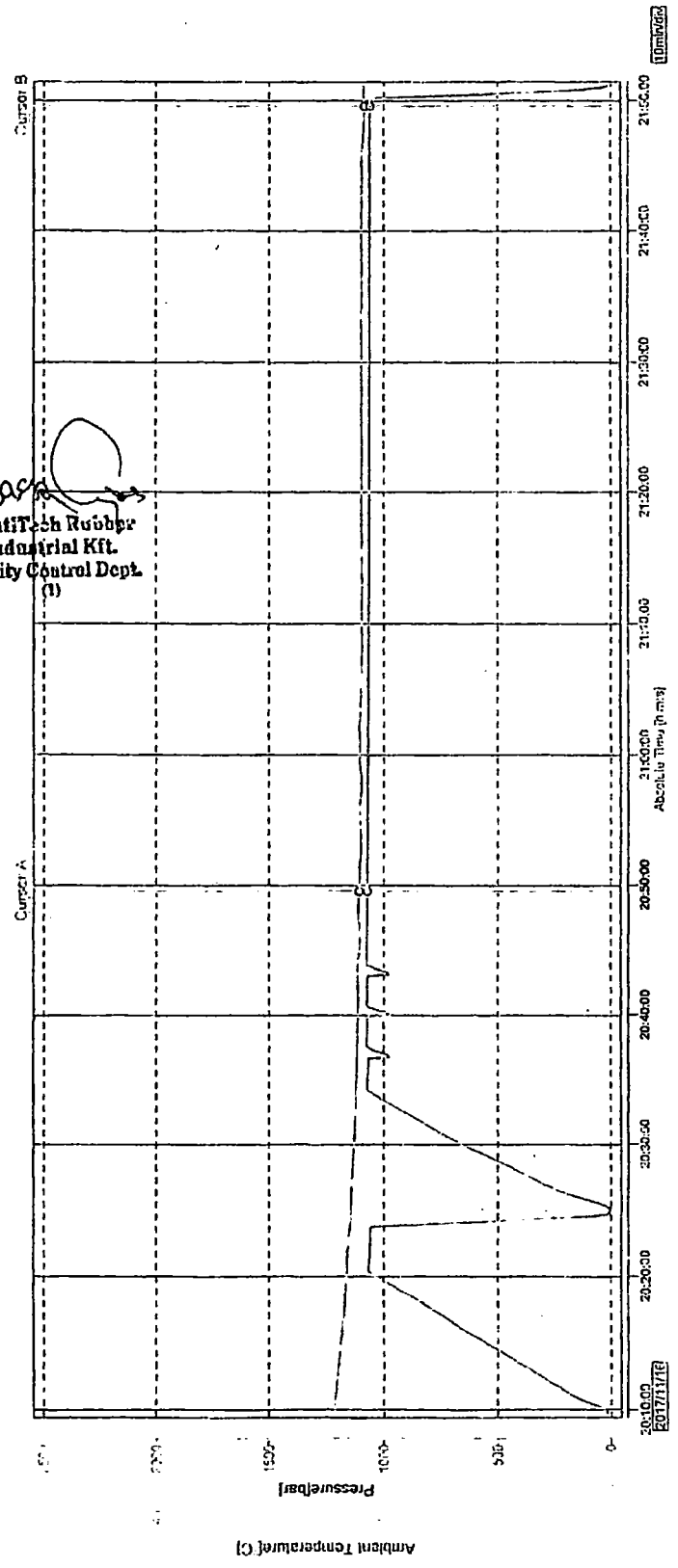
File Name : 021325_74077,74089.GEV....021335_74077,74089.GEV
File Message : 74077,74089
Device Type : GX10
Serial No. : SSP606399
Data Count : 1225

Print Group : Press-Temp
Print Range : 2017/11/16 20:09:25.000 - 2017/11/16 21:51:25.000
Comment : 142056635

Sampling Int. : 5.000 sec
Start Time : 2017/11/16 20:09:25.000
Stop Time : 2017/11/16 21:51:25.000

| | Cursor A | Cursor B | Difference |
|---|---|---|---|
| Data No. | 482 | 1202 | 720 |
| Absolute Time | 2017/11/16 20:49:35.000 | 2017/11/16 21:49:35.000 | 01:00:00.000 |
| Tag Comment | Value A | Value B | Value B-A |
| Pressure[bar] | 1073.10 | 1060.87 | -12.23 |
| Ambient Temperature[°C] | 22.19 | 21.74 | -0.45 |

ContiTech Rubber
Industrial Kft.
Quality Control Dept.
(1)



CH042

Continental

| CONTITECH RUBBER Industrial Kft. | No: QC-DB- 335 / 2017 |
|---|---|
| | Page: 7 / 83 |

ContiTech

## Hose Data Sheet

| | |
|---|---|
| CRI Order No. | 1001224 |
| Customer | ContiTech Oil & Marine Corp |
| Customer Order No | 4501005826 CO1000284 |
| Item No. | 10 |
| Hose Type | Flexible Hose |
| **Standard** | **API SPEC 16C 2ND EDITION FSL2** |
| Inside dia in inches | 3 |
| Length | 40 ft |
| Type of coupling one end | FLANGE 3.1/16" 10K FLANGE API SPEC 6A TYPE 6BX MONOGRAMMED B.W.BX154ST/ST LINED RING GROOVE SOUR |
| Type of coupling other end | FLANGE 3.1/16" 10K FLANGE API SPEC 17D SV SWIVEL FLANGE BX154 ST/ST LINED RING GROOVE SOUR |
| H2S service NACE MR0175 | Yes |
| Working Pressure | 10 000 psi |
| Design Pressure | 10 000 psi |
| Test Pressure | 15 000 psi |
| Safety Factor | 2,25 |
| Marking | CONTINENTAL CONTITECH |
| Cover | NOT FIRE RESISTANT |
| Outside protection | St.steel outer wrap |
| Internal stripwound tube | No |
| Lining | OIL + GAS RESISTANT SOUR |
| Safety clamp | Yes |
| Lifting collar | Yes |
| Element C | Yes |
| Safety chain | Yes |
| Safety wire rope | No |
| Max.design temperature [°C] | 100 |
| Min.design temperature [°C] | -20 |
| Min. Bend Radius operating [m] | 0,90 |
| Min. Bend Radius storage [m] | 0,90 |
| Calculated Gross / Net weight of hose assembly [kg] | |
| Electrical continuity | The Hose is electrically continuous |
| Type of packing | WOODEN CRATE ISPM-15 |

ContiTech Rubber
Industrial Kft.
QC 2

Continental

ContiTech Fluid Technology

ContiTech Oil & Marine Corp. # 11535 Brittmoore Park Dr., Houston, TX 77041-6916 USA

ScanDrill Inc.
9395 HWY 2767
TYLER TX 75708

**Delivery Note**

| | |
|---|---|
| Document No. | **85367700** |
| Document Date | **12/20/2017** |
| Customer Number | 15483 |
| Customer VAT No. | |
| Supplier Number | |
| N° EORI: | FR41027953300021 |
| Purchase Order No. | 149618 |
| Purchase Order Date | 09/26/2017 |
| Sales Order Number | 1000284 |
| Sales Order Date | 09/26/2017 |
| Unloading Point | |

**Page 1 of 2**

Transport-Details - Shipping

Conditions

| | |
|---|---|
| Shipping Conditions | 0 days |
| Inco Terms | EXW Houston, TX<br>Ex Works |

Weights (Gross / Net)

| | |
|---|---|
| Total Weight | 2,219.000 LB |
| Net Weight | 2,219.000 LB |

*Buyer: Joe Ward*
*E-mail: jward@scandrill.com*
*Tel: 903.597.5368*

| Item | Material/Description | Quantity | Weight |
|---|---|---|---|
| 10 | HCK3FA40IPSIVS | 1 PC | 2,219.000 LB |

3" 40ft API 16C C&K Hose WP 10K Temp B

End A: 3.1/16" 10K Flange, API Spec. 6A Type 6BX, Butt Welded, BX154 Stainless Steel 316 Lined Ring Groove - Sour
End B: 3.1/16" 10K API Spec 17D SV Swivel Flange, BX154 Stainless Steel 316 Lined Ring Groove - Sour
Hose metallic parts NACE MR 0175 latest edition
Hose is suitable for H2S Service
Standard: API Spec 16C - 2nd Edition - FSL Level 2 - Monogrammed
Working Pressure: 10000 psi
Test Pressure: 15000 psi
Fire Rated: No
Armoured: Yes - Stainless Steel 316L Interlock
Design Temperature: -20 to 100°C
High Temperature Exposure / Survival @ 177 Deg C (internal in a kick situation)
Brand Name: Continental ContiTech

Supplied with:
2 x Safety Clamps
2 x Lifting Collars Double Eyed
2 x Safety Chains c/w Shackles Each End x 8ft

Packing to ISPM-15 Heat Treated

**Casing Program**

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 14.5" | 0 | 1135 | 10.75" | 45.5 | J55 | BTC | 5.90 | 8.82 | 13.85 |
| 9.875" | 0 | 11747 | 7.625" | 29.7 | L80 | BTC | 1.19 | 1.06 | 1.96 |
| 6.75" | 0 | 11547 | 5.5" | 23 | P110 | BTC | 2.50 | 1.82 | 2.74 |
| | 11547 | 19,994 | 5" | 18 | P110 | BTC | 1.66 | 2.04 | 2.59 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

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

**Casing Program**

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 14.5" | 0 | 1135 | 10.75" | 45.5 | J55 | BTC | 5.90 | 8.82 | 13.85 |
| 9.875" | 0 | 11747 | 7.625" | 29.7 | L80 | BTC | 1.19 | 1.06 | 1.96 |
| 6.75" | 0 | 11547 | 5.5" | 23 | P110 | BTC | 2.50 | 1.82 | 2.74 |
| | 11547 | 19,994 | 5" | 18 | P110 | BTC | 1.66 | 2.04 | 2.59 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

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

**Casing Program**

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 14.5" | 0 | 1135 | 10.75" | 45.5 | J55 | BTC | 5.90 | 8.82 | 13.85 |
| 9.875" | 0 | 11747 | 7.625" | 29.7 | L80 | BTC | 1.19 | 1.06 | 1.96 |
| 6.75" | 0 | 11547 | 5.5" | 23 | P110 | BTC | 2.50 | 1.82 | 2.74 |
| | 11547 | 19,994 | 5" | 18 | P110 | BTC | 1.66 | 2.04 | 2.59 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

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

**Casing Program**

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 14.5" | 0 | 1135 | 10.75" | 45.5 | J55 | BTC | 5.90 | 8.82 | 13.85 |
| 9.875" | 0 | 11747 | 7.625" | 29.7 | L80 | BTC | 1.19 | 1.06 | 1.96 |
| 6.75" | 0 | 11547 | 5.5" | 23 | P110 | BTC | 2.50 | 1.82 | 2.74 |
| | 11547 | 19,994 | 5" | 18 | P110 | BTC | 1.66 | 2.04 | 2.59 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

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

**COG 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

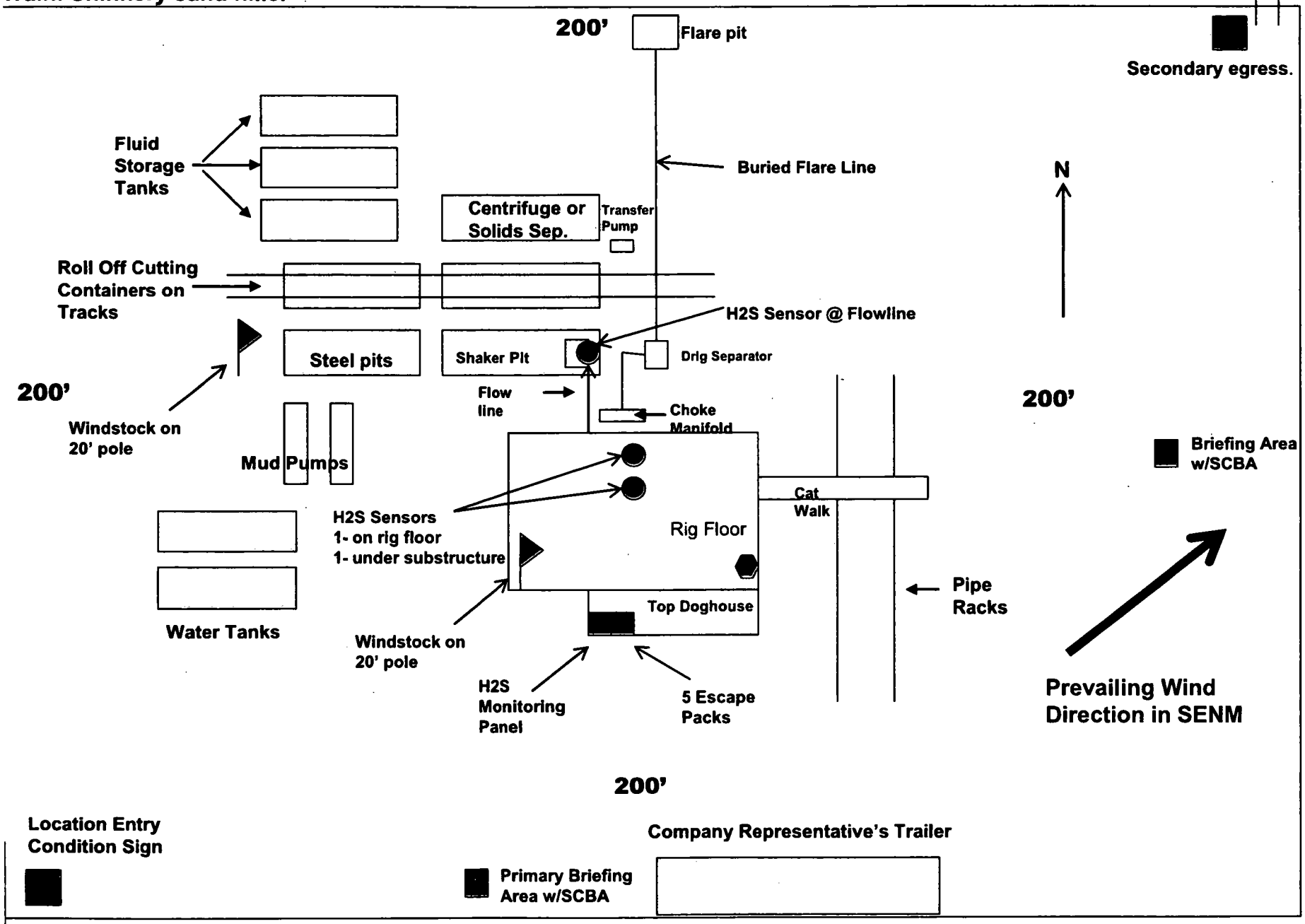
| | OFFICE | MOBILE |
|---|---|---|
| COG PRODUCTION LLC OFFICE | 575-748-6940 | |
| SETH WILD | 432-683-7443 | 432-528-3633 |
| WALTER ROYE | 575-748-6940 | 432-934-1886 |

# 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 |

S Equipment Schematic
rrain: Shinnery sand hills.

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



# NORTHERN DELAWARE BASIN

**LEA COUNTY, NM**
**BULLDOG**
**EIDER FEDERAL #702H**

**OWB**

**Plan: PWP1**

# Standard Survey Report

**09 May, 2019**

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

| | | | |
|---|---|---|---|
| **Project** | LEA COUNTY, NM | | |
| **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** | BULLDOG | | | | |
| **Site Position:** | | **Northing:** | 398,637.10 usft | **Latitude:** | 32° 5' 36.820 N |
| **From:** | Map | **Easting:** | 741,887.40 usft | **Longitude:** | 103° 33' 8.116 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.42 ° |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well** | EIDER FEDERAL #702H | | | | | |
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 440,462.50 usft | **Latitude:** | 32° 12' 32.624 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 713,606.20 usft | **Longitude:** | 103° 38' 33.738 W |
| **Position Uncertainty** | | 3.0 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,567.2 usft |

| | | | | | |
|---|---|---|---|---|---|
| **Wellbore** | OWB | | | | |
| **Magnetics** | **Model Name** | **Sample Date** | **Declination (°)** | **Dip Angle (°)** | **Field Strength (nT)** |
| | WMM2015 | 12/18/2018 | 6.85 | 60.00 | 47,750.29087406 |

| | | | | | |
|---|---|---|---|---|---|
| **Design** | PWP1 | | | | |
| **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 | 177.34 | |

**Survey Tool Program** **Date** 5/6/2019

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 11,866.5 | PWP1 (OWB) | Standard Keeper 104 | Standard Wireline Keeper ver 1.0.4 |
| 11,866.5 | 19,994.0 | PWP1 (OWB) | MWD+IFR1+MS | OWSG MWD + IFR1 + Multi-Station Correction |

**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 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 |
| 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 |
| 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 |
| **Start Build 2.00** | | | | | | | | | |
| 5,100.0 | 2.00 | 40.10 | 5,100.0 | 1.3 | 1.1 | -1.3 | 2.00 | 2.00 | 0.00 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,187.3 | 3.75 | 40.10 | 5,187.2 | 4.7 | 3.9 | -4.5 | 2.00 | 2.00 | 0.00 |
| **Start 6679.2 hold at 5187.3 MD** | | | | | | | | | |
| 5,200.0 | 3.75 | 40.10 | 5,199.8 | 5.3 | 4.5 | -5.1 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 3.75 | 40.10 | 5,299.6 | 10.3 | 8.7 | -9.9 | 0.00 | 0.00 | 0.00 |
| 5,400.0 | 3.75 | 40.10 | 5,399.4 | 15.3 | 12.9 | -14.7 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | 3.75 | 40.10 | 5,499.2 | 20.3 | 17.1 | -19.5 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | 3.75 | 40.10 | 5,599.0 | 25.3 | 21.3 | -24.3 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | 3.75 | 40.10 | 5,698.8 | 30.3 | 25.5 | -29.1 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 3.75 | 40.10 | 5,798.6 | 35.3 | 29.7 | -33.9 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 3.75 | 40.10 | 5,898.3 | 40.3 | 33.9 | -38.7 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 3.75 | 40.10 | 5,998.1 | 45.3 | 38.1 | -43.5 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 3.75 | 40.10 | 6,097.9 | 50.3 | 42.3 | -48.3 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 3.75 | 40.10 | 6,197.7 | 55.3 | 46.6 | -53.1 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | 3.75 | 40.10 | 6,297.5 | 60.3 | 50.8 | -57.9 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | 3.75 | 40.10 | 6,397.3 | 65.3 | 55.0 | -62.7 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | 3.75 | 40.10 | 6,497.1 | 70.3 | 59.2 | -67.5 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 3.75 | 40.10 | 6,596.8 | 75.3 | 63.4 | -72.3 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | 3.75 | 40.10 | 6,696.6 | 80.3 | 67.6 | -77.1 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 3.75 | 40.10 | 6,796.4 | 85.3 | 71.8 | -81.9 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 3.75 | 40.10 | 6,896.2 | 90.3 | 76.0 | -86.7 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 3.75 | 40.10 | 6,996.0 | 95.3 | 80.2 | -91.5 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 3.75 | 40.10 | 7,095.8 | 100.3 | 84.4 | -96.2 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 3.75 | 40.10 | 7,195.6 | 105.3 | 88.6 | -101.0 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 3.75 | 40.10 | 7,295.4 | 110.3 | 92.8 | -105.8 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 3.75 | 40.10 | 7,395.1 | 115.3 | 97.1 | -110.6 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 3.75 | 40.10 | 7,494.9 | 120.3 | 101.3 | -115.4 | 0.00 | 0.00 | 0.00 |
| 7,600.0 | 3.75 | 40.10 | 7,594.7 | 125.3 | 105.5 | -120.2 | 0.00 | 0.00 | 0.00 |
| 7,700.0 | 3.75 | 40.10 | 7,694.5 | 130.3 | 109.7 | -125.0 | 0.00 | 0.00 | 0.00 |
| 7,800.0 | 3.75 | 40.10 | 7,794.3 | 135.3 | 113.9 | -129.8 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | 3.75 | 40.10 | 7,894.1 | 140.3 | 118.1 | -134.6 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | 3.75 | 40.10 | 7,993.9 | 145.3 | 122.3 | -139.4 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | 3.75 | 40.10 | 8,093.6 | 150.3 | 126.5 | -144.2 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | 3.75 | 40.10 | 8,193.4 | 155.3 | 130.7 | -149.0 | 0.00 | 0.00 | 0.00 |
| 8,300.0 | 3.75 | 40.10 | 8,293.2 | 160.3 | 134.9 | -153.8 | 0.00 | 0.00 | 0.00 |
| 8,400.0 | 3.75 | 40.10 | 8,393.0 | 165.2 | 139.1 | -158.6 | 0.00 | 0.00 | 0.00 |
| 8,500.0 | 3.75 | 40.10 | 8,492.8 | 170.2 | 143.3 | -163.4 | 0.00 | 0.00 | 0.00 |
| 8,600.0 | 3.75 | 40.10 | 8,592.6 | 175.2 | 147.5 | -168.2 | 0.00 | 0.00 | 0.00 |
| 8,700.0 | 3.75 | 40.10 | 8,692.4 | 180.2 | 151.8 | -173.0 | 0.00 | 0.00 | 0.00 |
| 8,800.0 | 3.75 | 40.10 | 8,792.1 | 185.2 | 156.0 | -177.8 | 0.00 | 0.00 | 0.00 |
| 8,900.0 | 3.75 | 40.10 | 8,891.9 | 190.2 | 160.2 | -182.6 | 0.00 | 0.00 | 0.00 |
| 9,000.0 | 3.75 | 40.10 | 8,991.7 | 195.2 | 164.4 | -187.4 | 0.00 | 0.00 | 0.00 |
| 9,100.0 | 3.75 | 40.10 | 9,091.5 | 200.2 | 168.6 | -192.2 | 0.00 | 0.00 | 0.00 |
| 9,200.0 | 3.75 | 40.10 | 9,191.3 | 205.2 | 172.8 | -197.0 | 0.00 | 0.00 | 0.00 |
| 9,300.0 | 3.75 | 40.10 | 9,291.1 | 210.2 | 177.0 | -201.8 | 0.00 | 0.00 | 0.00 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 3.75 | 40.10 | 9,390.9 | 215.2 | 181.2 | -206.6 | 0.00 | 0.00 | 0.00 |
| 9,500.0 | 3.75 | 40.10 | 9,490.7 | 220.2 | 185.4 | -211.4 | 0.00 | 0.00 | 0.00 |
| 9,600.0 | 3.75 | 40.10 | 9,590.4 | 225.2 | 189.6 | -216.2 | 0.00 | 0.00 | 0.00 |
| 9,700.0 | 3.75 | 40.10 | 9,690.2 | 230.2 | 193.8 | -221.0 | 0.00 | 0.00 | 0.00 |
| 9,800.0 | 3.75 | 40.10 | 9,790.0 | 235.2 | 198.0 | -225.8 | 0.00 | 0.00 | 0.00 |
| 9,900.0 | 3.75 | 40.10 | 9,889.8 | 240.2 | 202.3 | -230.6 | 0.00 | 0.00 | 0.00 |
| 10,000.0 | 3.75 | 40.10 | 9,989.6 | 245.2 | 206.5 | -235.4 | 0.00 | 0.00 | 0.00 |
| 10,100.0 | 3.75 | 40.10 | 10,089.4 | 250.2 | 210.7 | -240.2 | 0.00 | 0.00 | 0.00 |
| 10,200.0 | 3.75 | 40.10 | 10,189.2 | 255.2 | 214.9 | -245.0 | 0.00 | 0.00 | 0.00 |
| 10,300.0 | 3.75 | 40.10 | 10,288.9 | 260.2 | 219.1 | -249.8 | 0.00 | 0.00 | 0.00 |
| 10,400.0 | 3.75 | 40.10 | 10,388.7 | 265.2 | 223.3 | -254.6 | 0.00 | 0.00 | 0.00 |
| 10,500.0 | 3.75 | 40.10 | 10,488.5 | 270.2 | 227.5 | -259.4 | 0.00 | 0.00 | 0.00 |
| 10,600.0 | 3.75 | 40.10 | 10,588.3 | 275.2 | 231.7 | -264.1 | 0.00 | 0.00 | 0.00 |
| 10,700.0 | 3.75 | 40.10 | 10,688.1 | 280.2 | 235.9 | -268.9 | 0.00 | 0.00 | 0.00 |
| 10,800.0 | 3.75 | 40.10 | 10,787.9 | 285.2 | 240.1 | -273.7 | 0.00 | 0.00 | 0.00 |
| 10,900.0 | 3.75 | 40.10 | 10,887.7 | 290.2 | 244.3 | -278.5 | 0.00 | 0.00 | 0.00 |
| 11,000.0 | 3.75 | 40.10 | 10,987.4 | 295.2 | 248.5 | -283.3 | 0.00 | 0.00 | 0.00 |
| 11,100.0 | 3.75 | 40.10 | 11,087.2 | 300.2 | 252.7 | -288.1 | 0.00 | 0.00 | 0.00 |
| 11,200.0 | 3.75 | 40.10 | 11,187.0 | 305.2 | 257.0 | -292.9 | 0.00 | 0.00 | 0.00 |
| 11,300.0 | 3.75 | 40.10 | 11,286.8 | 310.2 | 261.2 | -297.7 | 0.00 | 0.00 | 0.00 |
| 11,400.0 | 3.75 | 40.10 | 11,386.6 | 315.2 | 265.4 | -302.5 | 0.00 | 0.00 | 0.00 |
| 11,500.0 | 3.75 | 40.10 | 11,486.4 | 320.2 | 269.6 | -307.3 | 0.00 | 0.00 | 0.00 |
| 11,600.0 | 3.75 | 40.10 | 11,586.2 | 325.2 | 273.8 | -312.1 | 0.00 | 0.00 | 0.00 |
| 11,700.0 | 3.75 | 40.10 | 11,686.0 | 330.2 | 278.0 | -316.9 | 0.00 | 0.00 | 0.00 |
| 11,800.0 | 3.75 | 40.10 | 11,785.7 | 335.2 | 282.2 | -321.7 | 0.00 | 0.00 | 0.00 |
| 11,866.5 | 3.75 | 40.10 | 11,852.1 | 338.5 | 285.0 | -324.9 | 0.00 | 0.00 | 0.00 |
| **Start DLS 10.00 TFO 139.58** | | | | | | | | | |
| 11,900.0 | 2.48 | 101.29 | 11,885.6 | 339.2 | 286.4 | -325.5 | 10.00 | -3.79 | 182.68 |
| 12,000.0 | 10.77 | 166.86 | 11,984.9 | 329.6 | 290.7 | -315.8 | 10.00 | 8.29 | 65.57 |
| 12,100.0 | 20.63 | 173.27 | 12,081.0 | 303.0 | 294.9 | -289.0 | 10.00 | 9.86 | 6.41 |
| 12,200.0 | 30.58 | 175.62 | 12,171.1 | 260.0 | 298.9 | -245.9 | 10.00 | 9.95 | 2.35 |
| 12,300.0 | 40.56 | 176.90 | 12,252.3 | 202.0 | 302.6 | -187.8 | 10.00 | 9.97 | 1.27 |
| 12,400.0 | 50.54 | 177.74 | 12,322.3 | 130.8 | 305.9 | -116.5 | 10.00 | 9.98 | 0.84 |
| 12,500.0 | 60.53 | 178.37 | 12,378.8 | 48.5 | 308.7 | -34.2 | 10.00 | 9.99 | 0.63 |
| 12,600.0 | 70.51 | 178.88 | 12,420.2 | -42.3 | 310.8 | 56.7 | 10.00 | 9.99 | 0.51 |
| 12,700.0 | 80.50 | 179.33 | 12,445.2 | -139.0 | 312.3 | 153.4 | 10.00 | 9.99 | 0.45 |
| 12,796.2 | 90.11 | 179.74 | 12,453.0 | -234.7 | 313.1 | 249.0 | 10.00 | 9.99 | 0.43 |
| **Start 7197.8 hold at 12796.2 MD** | | | | | | | | | |
| 12,800.0 | 90.11 | 179.74 | 12,453.0 | -238.6 | 313.1 | 252.9 | 0.00 | 0.00 | 0.00 |
| 12,900.0 | 90.11 | 179.74 | 12,452.8 | -338.6 | 313.6 | 352.8 | 0.00 | 0.00 | 0.00 |
| 13,000.0 | 90.11 | 179.74 | 12,452.6 | -438.6 | 314.0 | 452.7 | 0.00 | 0.00 | 0.00 |
| 13,100.0 | 90.11 | 179.74 | 12,452.4 | -538.6 | 314.5 | 552.6 | 0.00 | 0.00 | 0.00 |
| 13,200.0 | 90.11 | 179.74 | 12,452.3 | -638.6 | 314.9 | 652.5 | 0.00 | 0.00 | 0.00 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 13,300.0 | 90.11 | 179.74 | 12,452.1 | -738.6 | 315.4 | 752.4 | 0.00 | 0.00 | 0.00 |
| 13,400.0 | 90.11 | 179.74 | 12,451.9 | -838.6 | 315.8 | 852.3 | 0.00 | 0.00 | 0.00 |
| 13,500.0 | 90.11 | 179.74 | 12,451.7 | -938.6 | 316.3 | 952.2 | 0.00 | 0.00 | 0.00 |
| 13,600.0 | 90.11 | 179.74 | 12,451.5 | -1,038.6 | 316.7 | 1,052.2 | 0.00 | 0.00 | 0.00 |
| 13,700.0 | 90.11 | 179.74 | 12,451.3 | -1,138.6 | 317.2 | 1,152.1 | 0.00 | 0.00 | 0.00 |
| 13,800.0 | 90.11 | 179.74 | 12,451.1 | -1,238.6 | 317.6 | 1,252.0 | 0.00 | 0.00 | 0.00 |
| 13,900.0 | 90.11 | 179.74 | 12,450.9 | -1,338.6 | 318.1 | 1,351.9 | 0.00 | 0.00 | 0.00 |
| 14,000.0 | 90.11 | 179.74 | 12,450.7 | -1,438.6 | 318.5 | 1,451.8 | 0.00 | 0.00 | 0.00 |
| 14,100.0 | 90.11 | 179.74 | 12,450.5 | -1,538.6 | 319.0 | 1,551.7 | 0.00 | 0.00 | 0.00 |
| 14,200.0 | 90.11 | 179.74 | 12,450.3 | -1,638.6 | 319.4 | 1,651.6 | 0.00 | 0.00 | 0.00 |
| 14,300.0 | 90.11 | 179.74 | 12,450.1 | -1,738.6 | 319.8 | 1,751.5 | 0.00 | 0.00 | 0.00 |
| 14,400.0 | 90.11 | 179.74 | 12,449.9 | -1,838.6 | 320.3 | 1,851.5 | 0.00 | 0.00 | 0.00 |
| 14,500.0 | 90.11 | 179.74 | 12,449.7 | -1,938.6 | 320.7 | 1,951.4 | 0.00 | 0.00 | 0.00 |
| 14,600.0 | 90.11 | 179.74 | 12,449.5 | -2,038.6 | 321.2 | 2,051.3 | 0.00 | 0.00 | 0.00 |
| 14,700.0 | 90.11 | 179.74 | 12,449.3 | -2,138.6 | 321.6 | 2,151.2 | 0.00 | 0.00 | 0.00 |
| 14,800.0 | 90.11 | 179.74 | 12,449.1 | -2,238.6 | 322.1 | 2,251.1 | 0.00 | 0.00 | 0.00 |
| 14,900.0 | 90.11 | 179.74 | 12,448.9 | -2,338.6 | 322.5 | 2,351.0 | 0.00 | 0.00 | 0.00 |
| 15,000.0 | 90.11 | 179.74 | 12,448.7 | -2,438.6 | 323.0 | 2,450.9 | 0.00 | 0.00 | 0.00 |
| 15,100.0 | 90.11 | 179.74 | 12,448.5 | -2,538.6 | 323.4 | 2,550.8 | 0.00 | 0.00 | 0.00 |
| 15,200.0 | 90.11 | 179.74 | 12,448.4 | -2,638.6 | 323.9 | 2,650.7 | 0.00 | 0.00 | 0.00 |
| 15,300.0 | 90.11 | 179.74 | 12,448.2 | -2,738.6 | 324.3 | 2,750.7 | 0.00 | 0.00 | 0.00 |
| 15,400.0 | 90.11 | 179.74 | 12,448.0 | -2,838.6 | 324.8 | 2,850.6 | 0.00 | 0.00 | 0.00 |
| 15,500.0 | 90.11 | 179.74 | 12,447.8 | -2,938.6 | 325.2 | 2,950.5 | 0.00 | 0.00 | 0.00 |
| 15,600.0 | 90.11 | 179.74 | 12,447.6 | -3,038.6 | 325.7 | 3,050.4 | 0.00 | 0.00 | 0.00 |
| 15,700.0 | 90.11 | 179.74 | 12,447.4 | -3,138.5 | 326.1 | 3,150.3 | 0.00 | 0.00 | 0.00 |
| 15,800.0 | 90.11 | 179.74 | 12,447.2 | -3,238.5 | 326.6 | 3,250.2 | 0.00 | 0.00 | 0.00 |
| 15,900.0 | 90.11 | 179.74 | 12,447.0 | -3,338.5 | 327.0 | 3,350.1 | 0.00 | 0.00 | 0.00 |
| 16,000.0 | 90.11 | 179.74 | 12,446.8 | -3,438.5 | 327.5 | 3,450.0 | 0.00 | 0.00 | 0.00 |
| 16,100.0 | 90.11 | 179.74 | 12,446.6 | -3,538.5 | 327.9 | 3,550.0 | 0.00 | 0.00 | 0.00 |
| 16,200.0 | 90.11 | 179.74 | 12,446.4 | -3,638.5 | 328.4 | 3,649.9 | 0.00 | 0.00 | 0.00 |
| 16,300.0 | 90.11 | 179.74 | 12,446.2 | -3,738.5 | 328.8 | 3,749.8 | 0.00 | 0.00 | 0.00 |
| 16,400.0 | 90.11 | 179.74 | 12,446.0 | -3,838.5 | 329.3 | 3,849.7 | 0.00 | 0.00 | 0.00 |
| 16,500.0 | 90.11 | 179.74 | 12,445.8 | -3,938.5 | 329.7 | 3,949.6 | 0.00 | 0.00 | 0.00 |
| 16,600.0 | 90.11 | 179.74 | 12,445.6 | -4,038.5 | 330.2 | 4,049.5 | 0.00 | 0.00 | 0.00 |
| 16,700.0 | 90.11 | 179.74 | 12,445.4 | -4,138.5 | 330.6 | 4,149.4 | 0.00 | 0.00 | 0.00 |
| 16,800.0 | 90.11 | 179.74 | 12,445.2 | -4,238.5 | 331.1 | 4,249.3 | 0.00 | 0.00 | 0.00 |
| 16,900.0 | 90.11 | 179.74 | 12,445.0 | -4,338.5 | 331.5 | 4,349.2 | 0.00 | 0.00 | 0.00 |
| 17,000.0 | 90.11 | 179.74 | 12,444.8 | -4,438.5 | 332.0 | 4,449.2 | 0.00 | 0.00 | 0.00 |
| 17,100.0 | 90.11 | 179.74 | 12,444.6 | -4,538.5 | 332.4 | 4,549.1 | 0.00 | 0.00 | 0.00 |
| 17,200.0 | 90.11 | 179.74 | 12,444.5 | -4,638.5 | 332.9 | 4,649.0 | 0.00 | 0.00 | 0.00 |
| 17,300.0 | 90.11 | 179.74 | 12,444.3 | -4,738.5 | 333.3 | 4,748.9 | 0.00 | 0.00 | 0.00 |
| 17,400.0 | 90.11 | 179.74 | 12,444.1 | -4,838.5 | 333.8 | 4,848.8 | 0.00 | 0.00 | 0.00 |
| 17,500.0 | 90.11 | 179.74 | 12,443.9 | -4,938.5 | 334.2 | 4,948.7 | 0.00 | 0.00 | 0.00 |
| 17,600.0 | 90.11 | 179.74 | 12,443.7 | -5,038.5 | 334.7 | 5,048.6 | 0.00 | 0.00 | 0.00 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 17,700.0 | 90.11 | 179.74 | 12,443.5 | -5,138.5 | 335.1 | 5,148.5 | 0.00 | 0.00 | 0.00 |
| 17,800.0 | 90.11 | 179.74 | 12,443.3 | -5,238.5 | 335.6 | 5,248.5 | 0.00 | 0.00 | 0.00 |
| 17,900.0 | 90.11 | 179.74 | 12,443.1 | -5,338.5 | 336.0 | 5,348.4 | 0.00 | 0.00 | 0.00 |
| 18,000.0 | 90.11 | 179.74 | 12,442.9 | -5,438.5 | 336.5 | 5,448.3 | 0.00 | 0.00 | 0.00 |
| 18,100.0 | 90.11 | 179.74 | 12,442.7 | -5,538.5 | 336.9 | 5,548.2 | 0.00 | 0.00 | 0.00 |
| 18,200.0 | 90.11 | 179.74 | 12,442.5 | -5,638.5 | 337.3 | 5,648.1 | 0.00 | 0.00 | 0.00 |
| 18,300.0 | 90.11 | 179.74 | 12,442.3 | -5,738.5 | 337.8 | 5,748.0 | 0.00 | 0.00 | 0.00 |
| 18,400.0 | 90.11 | 179.74 | 12,442.1 | -5,838.5 | 338.2 | 5,847.9 | 0.00 | 0.00 | 0.00 |
| 18,500.0 | 90.11 | 179.74 | 12,441.9 | -5,938.5 | 338.7 | 5,947.8 | 0.00 | 0.00 | 0.00 |
| 18,600.0 | 90.11 | 179.74 | 12,441.7 | -6,038.5 | 339.1 | 6,047.7 | 0.00 | 0.00 | 0.00 |
| 18,700.0 | 90.11 | 179.74 | 12,441.5 | -6,138.5 | 339.6 | 6,147.7 | 0.00 | 0.00 | 0.00 |
| 18,800.0 | 90.11 | 179.74 | 12,441.3 | -6,238.5 | 340.0 | 6,247.6 | 0.00 | 0.00 | 0.00 |
| 18,900.0 | 90.11 | 179.74 | 12,441.1 | -6,338.5 | 340.5 | 6,347.5 | 0.00 | 0.00 | 0.00 |
| 19,000.0 | 90.11 | 179.74 | 12,440.9 | -6,438.5 | 340.9 | 6,447.4 | 0.00 | 0.00 | 0.00 |
| 19,100.0 | 90.11 | 179.74 | 12,440.7 | -6,538.5 | 341.4 | 6,547.3 | 0.00 | 0.00 | 0.00 |
| 19,200.0 | 90.11 | 179.74 | 12,440.5 | -6,638.5 | 341.8 | 6,647.2 | 0.00 | 0.00 | 0.00 |
| 19,300.0 | 90.11 | 179.74 | 12,440.4 | -6,738.5 | 342.3 | 6,747.1 | 0.00 | 0.00 | 0.00 |
| 19,400.0 | 90.11 | 179.74 | 12,440.2 | -6,838.5 | 342.7 | 6,847.0 | 0.00 | 0.00 | 0.00 |
| 19,500.0 | 90.11 | 179.74 | 12,440.0 | -6,938.5 | 343.2 | 6,947.0 | 0.00 | 0.00 | 0.00 |
| 19,600.0 | 90.11 | 179.74 | 12,439.8 | -7,038.5 | 343.6 | 7,046.9 | 0.00 | 0.00 | 0.00 |
| 19,700.0 | 90.11 | 179.74 | 12,439.6 | -7,138.5 | 344.1 | 7,146.8 | 0.00 | 0.00 | 0.00 |
| 19,800.0 | 90.11 | 179.74 | 12,439.4 | -7,238.5 | 344.5 | 7,246.7 | 0.00 | 0.00 | 0.00 |
| 19,900.0 | 90.11 | 179.74 | 12,439.2 | -7,338.5 | 345.0 | 7,346.6 | 0.00 | 0.00 | 0.00 |
| 19,994.0 | 90.11 | 179.74 | 12,439.0 | -7,432.5 | 345.4 | 7,440.5 | 0.00 | 0.00 | 0.00 |
| **TD at 19994.0** | | | | | | | | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| PBHL EIDER FEDER<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 12,439.0 | -7,432.5 | 345.4 | 433,030.00 | 713,951.60 | 32° 11' 19.052 N | 103° 38' 30.274 W |
| LTP EIDER FEDERAl<br>- plan misses target center by 44.0usft at 19900.0usft MD (12439.2 TVD, -7338.5 N, 345.0 E)<br>- Point | 0.00 | 0.00 | 12,439.1 | -7,382.5 | 345.2 | 433,080.00 | 713,951.40 | 32° 11' 19.547 N | 103° 38' 30.273 W |
| FTP EIDER FEDERA<br>- plan misses target center by 233.8usft at 12340.8usft MD (12282.4 TVD, 174.5 N, 304.0 E)<br>- Circle (radius 50.0) | 0.00 | 0.00 | 12,449.0 | 338.4 | 310.6 | 440,800.90 | 713,916.80 | 32° 12' 35.953 N | 103° 38' 30.097 W |

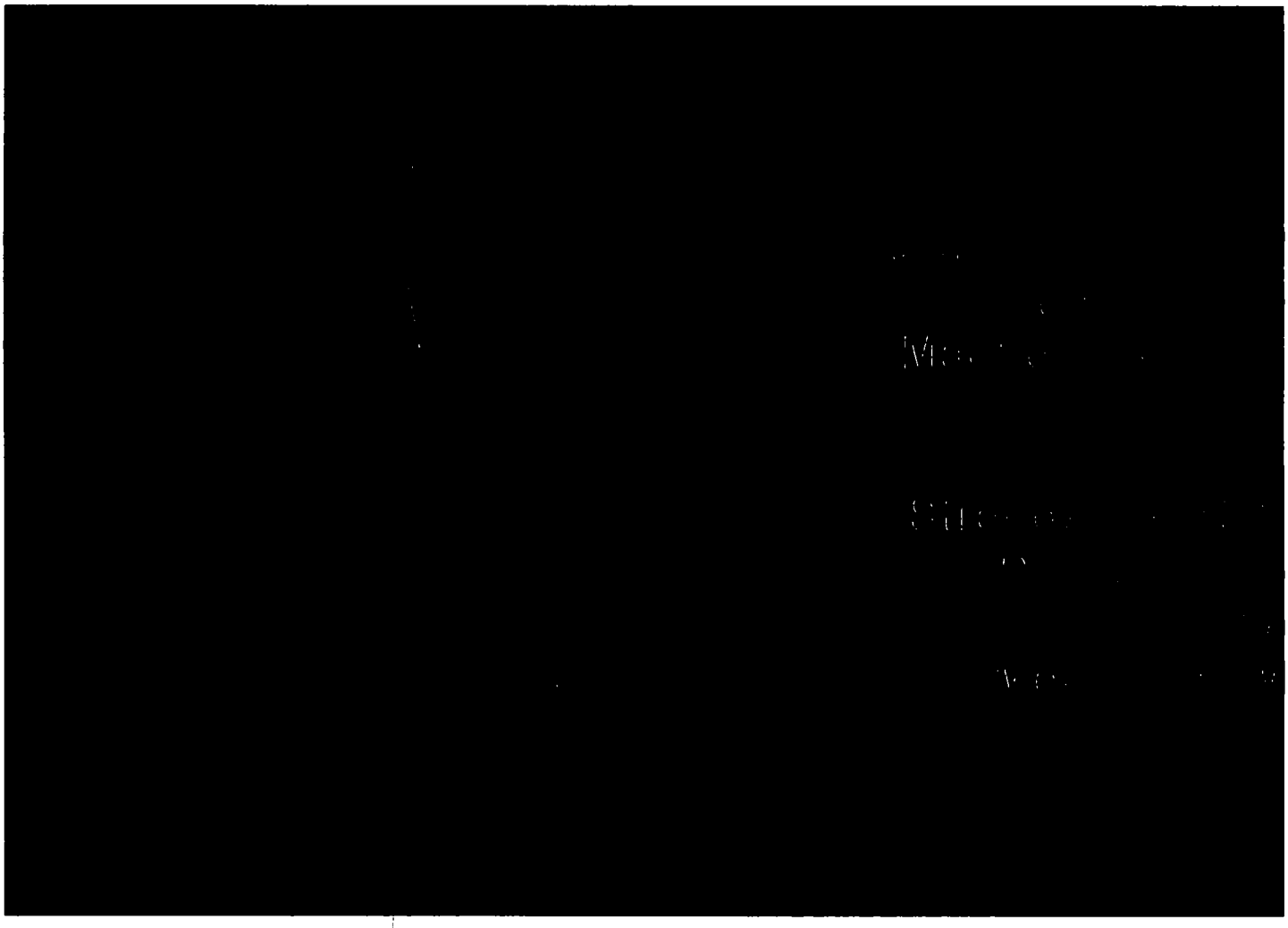
# Survey Report

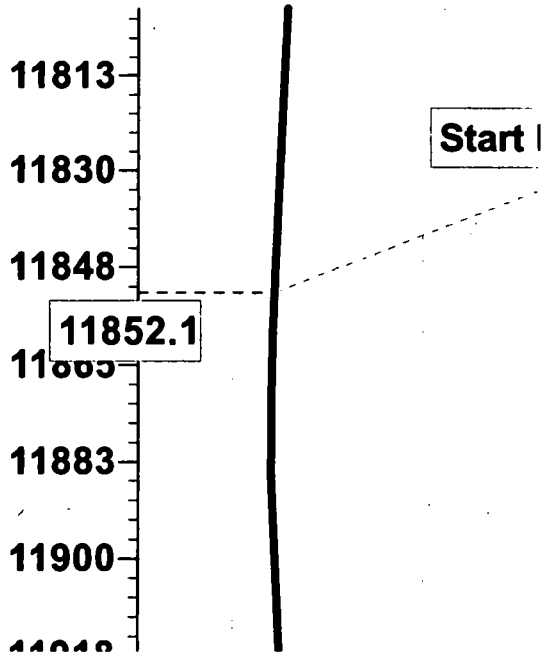
| | | | |
|---|---|---|---|
| **Company:** | NORTHERN DELAWARE BASIN | **Local Co-ordinate Reference:** | Well EIDER FEDERAL #702H |
| **Project:** | LEA COUNTY, NM | **TVD Reference:** | x @ 3596.0usft (x) |
| **Site:** | BULLDOG | **MD Reference:** | x @ 3596.0usft (x) |
| **Well:** | EIDER FEDERAL #702H | **North Reference:** | Grid |
| **Wellbore:** | OWB | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | PWP1 | **Database:** | EDM_Users |

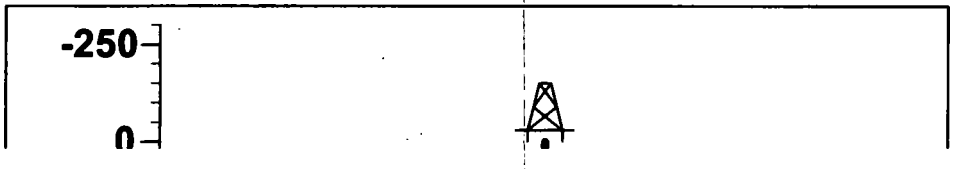
**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | +E/-W (usft) | Comment |
|---|---|---|---|---|
| 5000 | 5000 | 0 | 0 | Start Build 2.00 |
| 5187 | 5187 | 5 | 4 | Start 6679.2 hold at 5187.3 MD |
| 11,867 | 11,852 | 338 | 285 | Start DLS 10.00 TFO 139.58 |
| 12,796 | 12,453 | -235 | 313 | Start 7197.8 hold at 12796.2 MD |
| 19,994 | 12,439 | -7432 | 345 | TD at 19994.0 |

Checked By: _____ Approved By: _____ Date: _____




11813
11830
11848
11852.1
11883
11900
Start


-250
0

**Cementing Program**

| Casing | # Sks | Wt. lb/ gal | Yld ft3/ sack | $H_20$ gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surf. | 320 | 13.5 | 1.75 | 9 | 12 | Lead: Class C + 4% Gel + 1% CaCl2 |
| | 290 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class C + 2% CaCl2 |
| Inter.Stage 1 | 960 | 12.7 | 2.0 | 9.6 | 16 | Lead: 35:65:6 C Blend |
| | 250 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class H |
| DV/ECP @ 4860 | | | | | | |
| Inter, Stage 2 | 660 | 12.7 | 1.98 | 10.6 | 16 | Lead: 35:65:6 C Blend |
| | 130 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class C + 2% CaCl |
| 5.5 Prod | 440 | 11.9 | 2.5 | 19 | 72 | Lead: 50:50:10 H Blend |
| | 1010 | 14.4 | 1.24 | 5.7 | 19 | Tail: 50:50:2 Class H Blend |

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

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0' | 50% |
| 1st Intermediate | 0' | 50% |
| Production | 4,840' | 35% OH in Lateral (KOP to EOL) – 40% OH in Vertical |

# COG Operating, LLC - Eider 23 Federal 702H

## 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD of target | 12,453' EOC | Pilot hole depth | NA |
| MD at TD: | 19,994' | Deepest expected fresh water: | 380' |

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/ Target Zone? | Hazards* |
|---|---|---|---|
| Quaternary Fill | Surface | Water | |
| Rustler | 1108 | Water | |
| Top of Salt | 1427 | Salt | |
| Base of Salt | 4673 | Salt | |
| Lamar | 4903 | Salt Water | |
| Bell Canyon | 4940 | Water | |
| Cherry Canyon | 5835 | Oil/Gas | |
| Brushy Canyon | 7268 | Oil/Gas | |
| Bone Spring Lime | 8829 | Oil/Gas | |
| Middle Avalon Shale | 9199 | Oil/Gas | |
| L. Avalon Shale | 9360 | Oil/Gas | |
| 1st Bone Spring Sand | 9951 | Oil/Gas | |
| 2nd Bone Spring Sand | 10553 | Oil/Gas | |
| 3rd Bone Spring Sand | 11826 | Oil/Gas | |
| Wolfcamp | 12258 | Oil/Gas | |
| Wolfcamp A Shale | 12378 | Target Oil/Gas | |
| Wolfcamp B | 12759 | Not Penetrated | |

## 2. Casing Program

| Hole Size | Casing Interval | | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From | To | | | | | | | |
| 14.5" | 0 | 1135 | 10.75" | 45.5 | J55 | BTC | 5.90 | 8.82 | 13.85 |
| 9.875" | 0 | 11747 | 7.625" | 29.7 | L80 | BTC | 1.19 | 1.06 | 1.96 |
| 6.75" | 0 | 11547 | 5.5" | 23 | P110 | BTC | 2.50 | 1.82 | 2.74 |
| | 11547 | 19,994 | 5" | 18 | P110 | BTC | 1.66 | 2.04 | 2.59 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

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

## COG Operating, LLC - Eider 23 Federal 702H

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

# COG Operating, LLC - Eider 23 Federal 702H

## 3. Cementing Program

| Casing | # Sks | Wt. lb/ gal | Yld ft3/ sack | $H_20$ gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surf. | 320 | 13.5 | 1.75 | 9 | 12 | Lead: Class C + 4% Gel + 1% CaCl2 |
| | 290 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class C + 2% CaCl2 |
| Inter.Stage 1 | 960 | 12.7 | 2.0 | 9.6 | 16 | Lead: 35:65:6 C Blend |
| | 250 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class H |
| DV/ECP @ 4860 | | | | | | |
| Inter, Stage 2 | 660 | 12.7 | 1.98 | 10.6 | 16 | Lead: 35:65:6 C Blend |
| | 130 | 14.8 | 1.34 | 6.34 | 8 | Tail: Class C + 2% CaCl |
| 5.5 Prod | 440 | 11.9 | 2.5 | 19 | 72 | Lead: 50:50:10 H Blend |
| | 1010 | 14.4 | 1.24 | 5.7 | 19 | Tail: 50:50:2 Class H Blend |

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

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0' | 50% |
| 1st Intermediate | 0' | 50% |
| Production | 4,840' | 35% OH in Lateral (KOP to EOL) – 40% OH in Vertical |

**4. Pressure Control Equipment**

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

| BOP installed and tested before drilling which hole? | Size? | Min. Required WP | Type | x | Tested to: |
|---|---|---|---|---|---|
| 9.875 | 13-5/8" | 5M | Annular | x | 2500 |
| | | | Blind Ram | x | 5M |
| | | | Pipe Ram | x | |
| | | | Double Ram | | |
| | | | Other* | | |
| 6.75 | 13-5/8" | 10M | Annular | x | 5000 |
| | | | Blind Ram | x | 10M |
| | | | Pipe Ram | x | |
| | | | Double Ram | | |
| | | | Other* | | |

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

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

| | |
|---|---|
| Y | Formation integrity test will be performed per Onshore Order #2.<br>On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. |
| Y | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. |
| N | Are anchors required by manufacturer? |
| N | A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. |

## 5. Mud Program

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From | To | | | | |
| 0 | Surf. Shoe | FW Gel | 8.6 - 8.8 | 28-34 | N/C |
| Surf. Shoe | 7-5/8" Int shoe | Brine Diesel | 9 - 9.4 | 32-45 | N/C |
| 7-5/8" Int shoe | Lateral TD | OBM | 11 - 12.5 | 55-65 | N/C |

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

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

## 6. Logging and Testing Procedures

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

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

**7. Drilling Conditions**

| Condition | Specify what type and where? |
|---|---|
| BH Pressure at deepest TVD | 8095 psi at 12453' TVD |
| Abnormal Temperature | NO 180 Deg. F. |

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

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

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

**8. Other Facets of Operation**

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

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

## 1. Component and Preventer Compatibility Table

The table below covers drilling and casing of the 10M MASP portion of the well and outlines the tubular and the compatible preventers in use. Combined with the mud program, the below documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

| Component | OD | Preventer | RWP |
|---|---|---|---|
| Drill pipe | 5" | Upper 4.5-7" VBR<br>Lower 4.5-7" VBR | 10M |
| HWDP | 5" | | |
| Jars | 5" | | |
| Drill collars and MWD tools | 6.25-6.75" | | |
| Mud Motor | 6.75" | | |
| Production casing | 5.5" | | |
| ALL | 0-13-5/8" | Annular | 5M |
| Open-hole | - | Blind Rams | 10M |

VBR = Variable Bore Ram with compatible range listed in chart.

## 2. Well Control and Shut-In Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are minimum tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The maximum pressure at which well control is transferred from the annular to another compatible ram is 2500 psi.

Drilling:

1. Sound the alarm (alert rig crew)
2. Space out the drill string
3. Shut down pumps and stop the rotary
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm the well is shut-in
6. Notify contractor and company representatives
7. Read and record the following data
    - Time of shut-in
    - SIDPP and SICP
    - Pit gain
8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
9. Prepare for well kill operation.

Tripping:

1. Sound alarm (alert rig crew)
2. Stab full opening safety valve and close the valve
3. Space out the drill string
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm shut-in
6. Notify contractor and company representatives
7. Read and record the following data:

- Time of shut-in
- SIDPP and SICP
- Pit gain

8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
9. Prepare for well kill operation.

Running Casing

1. Sound alarm (alert rig crew)
2. Stab crossover and valve and close the valve
3. Shut-in the well with annular with HCR and choke in closed position
4. Confirm shut-in
5. Notify contractor and company representatives
6. Read and record the following data
   - Time of shut-in
   - SIDPP and SICP
   - Pit gain
7. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
8. Prepare for well kill operation

No Pipe in Hole (Open Hole)

1. At any point when pipe or BHA are not in BOP stack, well will be shut in with blind rams, HCR will be open and choke will be closed. If pressure increase is observed:
2. Sound alarm (alert crew)
3. Confirm shut-in
4. Notify contractor and company representatives
5. Read and record the following data
   - Time of shut-in
   - Time of pressure increase
   - SICP
6. Prepare for well kill operation

Pulling BHA through BOP Stack

1. Prior to pulling last joint/stand of drillpipe through the stack, perform a flow check. If well is flowing:
   a. Sound alarm (alert crew)
   b. Stab full opening safety valve and close the valve
   c. Space out drill string with tool joint just beneath the upper pipe ram.
   d. Shut-in the well with upper pipe ram with HCR and choke in closed position
   e. Confirm shut-in
   f. Notify contractor and company representatives
   g. Read and record the following data
      - Time of shut-in
      - SIDPP and SICP
      - Pit gain
   h. Prepare for well kill operation.

2. With BHA in the stack:
    a. If possible to pick up high enough, pull BHA clear of the stack
        i. Follow "Open Hole" procedure above
    b. If impossible to pick up high enough to pull BHA clear of the stack:
        i. Stab crossover, make up one joint/stand of drill pipe, and full opening safety valve and close
        ii. Space out drill string with tool joint just beneath the upper pipe ram.
        iii. Shut-in the well with upper pipe ram with HCR and choke in closed position
        iv. Confirm shut-in
        v. Notify contractor and company representatives
        vi. Read and record the following:
            - Time of shut-in
            - SIDPP and SICP
            - Pit gain
        vii. Prepare for well kill operation.

## 3. Well Control Drills

Well control drills are specific to the rig equipment, personnel and operation at the time a kick occurs. Each crew will execute one drill weekly relevant to ongoing operations, but will make a reasonable attempt to vary the type of drills. The drills will be recorded in the daily drilling log. Below are minimum tasks for respective well control drills.

Drilling/Pit:

| Action | Responsible Party |
|---|---|
| Initiate Drill<br>• Lift Flow Sensor or Pit Float to indicate a kick<br>• Immediately record start time | Company Representative / Rig Manager |
| Recognition<br>• Driller and/or Crew recognizes indicator<br>• Driller stop drilling, pick up off bottom and spaces out drill string, stop pumps and rotary<br>• Conduct flow check | Driller |
| Initiate Action<br>• Sound alarm, notify rig crew that the well is flowing | Company Representative / Rig Manager |
| Reaction<br>• Driller moves BOP remote and stands by<br>• Crew is at their assigned stations<br>• Time is stopped<br>• Record time and drill type in the Drilling Report | Driller / Crew |

Tripping Pit Drills (either in the hole or out of the hole)

| Action | Responsible Party |
|---|---|
| Initiate Drill<br>• Lift Flow Sensor or Pit Float to indicate a kick<br>• Immediately record start time | Company Representative / Rig Manager |
| Recognition<br>• Driller recognizes indicator<br>• Suspends tripping operations<br>• Conduct Flow Check | Driller |
| Initiate Action<br>• Sound alarm, notify rig crew that the well is flowing | Company Representative / Rig Manager |
| Reaction<br>• Position tool joint above rotary and set slips<br>• Stab FOSV and close valve<br>• Driller moves to BOP remote and stands by<br>• Crew is at their assigned stations<br>• Time is stopped<br>• Record time and drill type in the Drilling Report | Driller / Crew |

Choke

| Action | Responsible Party |
|---|---|
| • Have designated choke operator on station at the choke panel<br>• Close annular preventer<br>• Pressure annulus up 200-300 psi<br>• Pump slowly to bump the float and obtain SIDPP<br>• At choke operator instruction, slowly bring pumps online to slow pump rate while holding casing pressure constant at the SICP.<br>• Allow time for the well to stabilize. Mark and record circulating drillpipe pressure.<br>• Measure time lag on drillpipe gauge after choke adjustments.<br>• Hold casing pressure constant as pumps are slowed down while choke is closed.<br>• Record time and drill type in the Drilling Report | Company Man /<br>Rig Manager & Rig Crew |

AFMSS

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

# SUPO Data Report

09/19/2019

**APD ID:** 10400042007 **Submission Date:** 05/22/2019

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Well Type:** OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

## Section 1 - Existing Roads

**Will existing roads be used?** YES

**Existing Road Map:**

COG_Eider_23_702H_Existing_Road_20190521110523.pdf

**Existing Road Purpose:** ACCESS,FLUID TRANSPORT **Row(s) Exist?** YES

### ROW ID(s)

**ID:** NM132549

**Do the existing roads need to be improved?** NO

**Existing Road Improvement Description:**

**Existing Road Improvement Attachment:**

## Section 2 - New or Reconstructed Access Roads

**Will new roads be needed?** YES

**New Road Map:**

COG_Eider_23_702H_Rd_Maps_Plats_20190521110547.pdf

**New road type:** RESOURCE

**Length:** 49.2 Feet **Width (ft.):** 30

**Max slope (%):** 33 **Max grade (%):** 1

**Army Corp of Engineers (ACOE) permit required?** NO

**ACOE Permit Number(s):**

**New road travel width:** 14

**New road access erosion control:** Water will be diverted where necessary to avoid ponding, prevent erosion, maintain food drainage, and to be consistent with local drainage patterns.

**New road access plan or profile prepared?** NO

**New road access plan attachment:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Turnout?** N

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Caliche

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Blading

**Access other construction information:** No turnouts are planned. Re-routing access road around proposed well location.

**Access miscellaneous information:**

**Number of access turnouts:** **Access turnout map:**

## Drainage Control

**New road drainage crossing:** CULVERT,OTHER

**Drainage Control comments:** None necessary.

**Road Drainage Control Structures (DCS) description:** None needed.

**Road Drainage Control Structures (DCS) attachment:**

## Access Additional Attachments

## Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

COG_Eider_23_702H_1Mile_Data_20190521110612.pdf

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:** The Eider Federal 23 Central Tank Battery (CTB) is a satellite proposed in Section 23, T24S, R32E. Production from each of the 4 producing wells will be sent to the proposed Eider Federal 23 CTB. We plan to install (4) buried 4" FP 601HT production flowlines from each wellhead to the inlet manifold of the proposed CTB; the route for these flowlines will follow the flowline corridor route as shown in the exhibit drawing and represented by the "mainline" in the attached plats. We will also install (1) buried 6" poly line for gas lift supply from the CTB to each production well pad; the route for this gas lift line will follow the "Mainline" route as shown in the attached plat. In addition we will install (1) buried 12" poly line for produced water transfer for 13,500 ft going from the CTB to an existing SWD connection in Section 26; as well as (1) buried 8" steel oil line to going 22,000ft to the Eider 35 CTB and both line will follow the route as shown in the attached plat.

**Production Facilities map:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source type:** OTHER

**Describe type:** Fresh Water

**Water source use type:** SURFACE CASING
STIMULATION
ICE PAD CONSTRUCTION & MAINTENANCE
SURFACE CASING
STIMULATION
ICE PAD CONSTRUCTION & MAINTENANCE

**Source latitude:** **Source longitude:**

**Source datum:**

**Water source permit type:** PRIVATE CONTRACT
PRIVATE CONTRACT

**Water source transport method:** PIPELINE
PIPELINE

**Source land ownership:** PRIVATE

**Source transportation land ownership:** PRIVATE

**Water source volume (barrels):** 337500 **Source volume (acre-feet):** 43.50142

**Source volume (gal):** 14175000

---

**Water source type:** OTHER

**Describe type:** Brine Water

**Water source use type:** INTERMEDIATE/PRODUCTION CASING
INTERMEDIATE/PRODUCTION CASING

**Source latitude:** **Source longitude:**

**Source datum:**

**Water source permit type:** PRIVATE CONTRACT

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Water source transport method:** TRUCKING

TRUCKING

**Source land ownership:** COMMERCIAL

**Source transportation land ownership:** COMMERCIAL

**Water source volume (barrels):** 22500 **Source volume (acre-feet):** 2.9000947

**Source volume (gal):** 945000

---

**Water source and transportation map:**

COG_Eider_23_702H_Brine_H2O_20190521110807.pdf

COG_Eider_23_702H_Fresh_H2O_20190521110826.pdf

**Water source comments:** The fresh water will be obtained from Mark McCloy water well located in Section 33, T24S, R33E, or from Rock House Ranch (575) 885-4195, Brine water will be purchased from Mesquite Services (575) 887-4847. No water well will be drilled on the location.

**New water well?** NO

## New Water Well Info

**Well latitude:** **Well Longitude:** **Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):** **Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):** **Well casing type:**

**Well casing outside diameter (in.):** **Well casing inside diameter (in.):**

**New water well casing?** **Used casing source:**

**Drilling method:** **Drill material:**

**Grout material:** **Grout depth:**

**Casing length (ft.):** **Casing top depth (ft.):**

**Well Production type:** **Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 6 - Construction Materials

**Using any construction materials:** YES

**Construction Materials description:** Caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche will be hauled from Mack Chase caliche pit located in Section 20, T24S, R33E. (575) 748-1288.

**Construction Materials source location attachment:**

## Section 7 - Methods for Handling Waste

**Waste type:** SEWAGE

**Waste content description:** Human waste and gray water.

**Amount of waste:** 1000 gallons

**Waste disposal frequency :** One Time Only

**Safe containment description:** Waste will be properly contained and disposed of properly at a state approved disposal facility.

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

**Disposal type description:**

**Disposal location description:** Trucked to an approved disposal facility.

**Waste type:** GARBAGE

**Waste content description:** Garbage and trash produced during drilling and completion operations.

**Amount of waste:** 500 pounds

**Waste disposal frequency :** One Time Only

**Safe containment description:** Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility.

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Trucked to an approved disposal facility.

**Waste type:** DRILLING

**Waste content description:** Drilling fluids and produced oil land water while drilling and completion operations.

**Amount of waste:** 6000 barrels

**Waste disposal frequency :** One Time Only

**Safe containment description:** All drilling waste will be stored safely and disposed of properly.

**Safe containmant attachment:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Trucked to an approved disposal facility.

## Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)** **Reserve pit width (ft.)**

**Reserve pit depth (ft.)** **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

## Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** Roll off cutting containers on tracks.

**Cuttings area length (ft.)** **Cuttings area width (ft.)**

**Cuttings area depth (ft.)** **Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

COG_Eider_23_702H_Layout_20190521111049.pdf

**Comments:**

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance **Multiple Well Pad Name:** EIDER 23 FEDERAL

**Multiple Well Pad Number:** 602H AND 702H

**Recontouring attachment:**

COG_Eider_23_702H_Reclamation_20190521112041.pdf

**Drainage/Erosion control construction:** Immediately following pad construction, straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.
**Drainage/Erosion control reclamation:** N/A

**Well pad proposed disturbance (acres):** 3.67
**Road proposed disturbance (acres):** 0.02
**Powerline proposed disturbance (acres):** 0
**Pipeline proposed disturbance (acres):** 0.48
**Other proposed disturbance (acres):** 3.67
**Total proposed disturbance:** 7.84

**Well pad interim reclamation (acres):** 0.06
**Road interim reclamation (acres):** 0.02
**Powerline interim reclamation (acres):** 0
**Pipeline interim reclamation (acres):** 0.48
**Other interim reclamation (acres):** 3.67
**Total interim reclamation:** 4.23

**Well pad long term disturbance (acres):** 2.81
**Road long term disturbance (acres):** 0.02
**Powerline long term disturbance (acres):** 0
**Pipeline long term disturbance (acres):** 0.48
**Other long term disturbance (acres):** 3.67
**Total long term disturbance:** 6.98

**Disturbance Comments:**

**Reconstruction method:** Portions of the pad not needed for production operationswill be re-contoured to its original state as much as possible. The caliche that is removed will be reused. The stockpiled topsoil will be spread out over reclaimed area and reseeded with BLM approved seed mixture
**Topsoil redistribution:** North 50'. East 50'.

**Soil treatment:** None

**Existing Vegetation at the well pad:** Shinnery Oak/Mesquite grassland.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** Shinnery Oak/Mesquite grassland.

**Existing Vegetation Community at the road attachment:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Existing Vegetation Community at the pipeline:** Shinnery Oak/Mesquite grassland.

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** N/A

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## Seed Management

### Seed Table

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

### Seed Summary

**Total pounds/Acre:**

| Seed Type | Pounds/Acre |
|---|---|

**Seed reclamation attachment:**

## Operator Contact/Responsible Official Contact Info

**First Name:** Rand **Last Name:** French

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** N/A

**Weed treatment plan attachment:**

**Monitoring plan description:** N/A

**Monitoring plan attachment:**

**Success standards:** N/A

**Pit closure description:** N/A

**Pit closure attachment:**

COG_Eider_23_702H_Closed_Loop_20190521112058.pdf

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:** **USFS Ranger District:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

## Section 12 - Other Information

**Right of Way needed?** NO **Use APD as ROW?**

**ROW Type(s):**

## ROW Applications

**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

**Previous Onsite information:** Onsite conpleted on 3/26/2019 by Gerald Herrera (COG); and Jeff Robertson (BLM).

## Other SUPO Attachment

COG_Eider_23_702H_C102_20190521130408.pdf
COG_Eider_23_702H_SUP_20190521130416.pdf
COG_Eider_23_702H_1Mile_Data_20190521130424.pdf
COG_Eider_23_702H_Brine_H2O_20190521130434.pdf
COG_Eider_23_702H_Fresh_H2O_20190521130445.pdf
COG_Eider_23_702H_Closed_Loop_20190521130456.pdf
COG_Eider_23_702H_CTB_Flowlines_20190521130510.pdf
COG_Eider_23_702H_Existing_Road_20190521130520.pdf
COG_Eider_23_702H_Layout_20190521130532.pdf
COG_Eider_23_702H_Rd_Maps_Plats_20190521130550.pdf
COG_Eider_23_702H_Reclamation_20190521130558.pdf
COG_Eider_23_CTB_Layout_20190521130608.pdf

- CTB, Flowlines and CTB Layout
- Reclamation

## Notes

**Onsite**: On-site was done by Gerald Herrera (COG); Jeffery Robertson (BLM); on October 10th, 2018.

## SURFACE USE AND OPERATING PLAN

**1. Existing & Proposed Access Roads**

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the maps and road plats. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in well layout map. The road shown in the well layout will be used to access the well.

C. Directions to location: See 600 x 600 plat

D. Based on current road maintenance performed on other roads serving existing wells, we anticipate maintaining the lease roads leading to the proposed well pad at least once a year on dry conditions and twice a year in wetter conditions.

**2. Proposed Access Road:**

The Location Verification Map shows that 49.2' of new road will be required for this location. If any road is required it will be constructed as follows:

The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

A. The average grade will be less than 1%.

B. No turnouts are planned.

C. No cattleguard, culvert, gates, low water crossings or fence cuts are necessary.

D. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from Mack Chase caliche pit located in Section 20, T24S, R33E. Phone # (575) 748-1288.

**3. Location of Existing Well:**

The One-Mile Radius Map shows existing wells within a one-mile radius of the proposed wellbore.

**4. Location of Existing and/or Proposed Facilities:**

A. COG Operating LLC does not operate an oil production facility on this lease.

1) The Eider Federal 23 Central Tank Battery (CTB) is a satellite proposed in Section 23, T24S, R32E. Production from each of the 4 producing wells will be sent to the proposed Eider Federal 23 CTB. We plan to install (4) buried 4" FP 601HT production flowlines from each wellhead to the inlet manifold of the proposed CTB; the route for these flowlines will follow the flowline corridor route as shown in the exhibit drawing and represented by the "mainline" in the attached plats. We will also install (1) buried 6" poly line for gas lift supply from the CTB to each production well pad; the route for this gas lift line will follow the "Mainline" route as shown in the attached plat. In addition we will install (1) buried 12" poly line for produced water transfer for 13,500 ft going from the CTB to an existing SWD connection in Section 26; as well as (1) buried 8" steel oil line to going 22,000ft to the Eider 35 CTB and both line will follow the route as shown in the attached plat.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche will be hauled from Mack Chase caliche pit located in Section 20, T24S, R33E. Phone # (575) 748-1288. Any additional construction materials will be purchased from contractors.

4) It will be necessary to run electric power if this well is productive. Power will be provided by Xcel Energy and they will submit a separate plan and ROW for service to the well location.

5) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

**5. Location and Type of Water Supply:**

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The fresh water will be obtained from Mark McCloy water well located in Section 33, T24S, R33E, or from Rock House Ranch (575) 885-4195, Brine water will be purchased from Mesquite Services (575) 887-4847. No water well will be drilled on the location. If necessary commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in road maps. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

**6. Source of Construction Materials and Location "Turn-Over" Procedure:**

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and stockpiled within the surveyed well pad.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.

G. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

In the event that no caliche is found onsite, the caliche will be hauled from Mack Chase caliche pit located in Section 20, T24S, R33E. Phone # (575) 748-1288.

**7. Methods of Handling Water Disposal:**

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to R360's disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. It is anticipated that the disposal of produced water will be trucked to and possibly piped to a commercial SWD facility, likely the Gold Coast Federal SWD #1 facility located in Section 26. T24S. R32E.

E. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

F. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

G. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

**8. Ancillary Facilities:**

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

**9. Well Site Layout:**

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

**10. Plans for Restoration of the Surface:**

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

**11. Sedimentation and Erosion Control**

Immediately following construction straw waddles will be placed as necessary at the well site to reduce to reduce sediment impacts to fragile/sensitive soils.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades.

**12. Surface Ownership:**

A. The surface is owned U.S. Government and is administered by the Bureau of Land Management The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The proposed road routes and surface location will be restored as directed by the BLM.

**13. Other Information:**

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Archaeological Resource Consultants, LLC., 506 E. Chapman Road. Carlsbad, NM 88220., and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

**14. Bond Coverage:**

Bond Coverage is Statewide Bonds # NMB000740 and NMB000215

**14. Lessee's and Operator's Representative:**

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Seth Wild
Drilling Superintendent
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
(432) 221-0414 (office)
(432) 525-3633(cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

AFMSS

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

# PWD Data Report
09/19/2019

**APD ID:** 10400042007 **Submission Date:** 05/22/2019

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Well Type:** OIL WELL **Well Work Type:** Drill

## Section 1 - General

**Would you like to address long-term produced water disposal?** NO

## Section 2 - Lined Pits

**Would you like to utilize Lined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Lined pit PWD on or off channel:**

**Lined pit PWD discharge volume (bbl/day):**

**Lined pit specifications:**

**Pit liner description:**

**Pit liner manufacturers information:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Lined pit precipitated solids disposal schedule:**

**Lined pit precipitated solids disposal schedule attachment:**

**Lined pit reclamation description:**

**Lined pit reclamation attachment:**

**Leak detection system description:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Lined pit Monitor description:**

**Lined pit Monitor attachment:**

**Lined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Lined pit bond number:**

**Lined pit bond amount:**

**Additional bond information attachment:**

## Section 3 - Unlined Pits

**Would you like to utilize Unlined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD disturbance (acres):** **PWD surface owner:**

**Unlined pit PWD on or off channel:**

**Unlined pit PWD discharge volume (bbl/day):**

**Unlined pit specifications:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Unlined pit precipitated solids disposal schedule:**

**Unlined pit precipitated solids disposal schedule attachment:**

**Unlined pit reclamation description:**

**Unlined pit reclamation attachment:**

**Unlined pit Monitor description:**

**Unlined pit Monitor attachment:**

**Do you propose to put the produced water to beneficial use?**

**Beneficial use user confirmation:**

**Estimated depth of the shallowest aquifer (feet):**

**Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?**

**TDS lab results:**

**Geologic and hydrologic evidence:**

**State authorization:**

**Unlined Produced Water Pit Estimated percolation:**

**Unlined pit: do you have a reclamation bond for the pit?**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information attachment:**

## Section 4 - Injection

**Would you like to utilize Injection PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Injection PWD discharge volume (bbl/day):**

**Injection well mineral owner:**

**Injection well type:**

**Injection well number:** **Injection well name:**

**Assigned injection well API number?** **Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

## Section 5 - Surface Discharge

**Would you like to utilize Surface Discharge PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

## Section 6 - Other

**Would you like to utilize Other PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL **Well Number:** 702H

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**

AFMSS

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

# Bond Info Data Report

09/19/2019

**APD ID:** 10400042007

**Submission Date:** 05/22/2019

**Operator Name:** COG PRODUCTION LLC

**Well Name:** EIDER 23 FEDERAL

**Well Number:** 702H

**Well Type:** OIL WELL

**Well Work Type:** Drill

[redacted]

Show Final Text

## Bond Information

**Federal/Indian APD:** FED

**BLM Bond number:** NMB000215

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**