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.
NMNM132949

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.
STOVE PIPE FEDERAL COM
707H (315648)

2. Name of Operator
COG OPERATING LLC (229137)

9. API Well No.
30-025-46504

3a. Address
600 West Illinois Ave Midland TX 79701

3b. Phone No. *(include area code)*
(432)683-7443

10. Field and Pool, or Exploratory
~~MESA VERDE / BONE SPRING~~ 98098

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface LOT 4 / 270 FSL / 330 FWL / LAT 32.167468 / LONG -103.414028
At proposed prod. zone LOT 4 / 50 FNL / 330 FWL / LAT 32.137831 / LONG -103.414069

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 31 / T24S / R35E / NMP

14. Distance in miles and direction from nearest town or post office*
9 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)
50 feet

16. No of acres in lease
80.48

17. Spacing Unit dedicated to this well
640.54

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

19. Proposed Depth
12803 feet / 23405 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3348 feet

22. Approximate date work will start*
10/01/2019

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)748-6940	06/20/2019

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	11/08/2019

Title	Office
Assistant Field Manager Lands & Minerals	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.

SCP Rec 11/12/19

APPROVED WITH CONDITIONS

11/13/19

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 11/08/2019

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.

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Additional Operator Remarks

Location of Well

1. SHL: LOT 4 / 270 FSL / 330 FWL / TWSP: 24S / RANGE: 35E / SECTION: 31 / LAT: 32.167468 / LONG: -103.414028 (TVD: 0 feet, MD: 0 feet)
   PPP: LOT 4 / 100 FNL / 330 FWL / TWSP: 25S / RANGE: 35E / SECTION: 6 / LAT: 32.166451 / LONG: -103.414024 (TVD: 12610 feet, MD: 12650 feet)
   PPP: LOT 7 / 1321 FSL / 330 FWL / TWSP: 25S / RANGE: 35E / SECTION: 6 / LAT: 32.155832 / LONG: -103.414041 (TVD: 12787 feet, MD: 16500 feet)
   BHL: LOT 4 / 50 FNL / 330 FWL / TWSP: 25S / RANGE: 35E / SECTION: 7 / LAT: 32.137831 / LONG: -103.414069 (TVD: 12803 feet, MD: 23405 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 OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMNM132949**
WELL NAME & NO.:	**Stove Pipe Federal Com 707H**
SURFACE HOLE FOOTAGE:	**270' FSL & 330' FWL**
BOTTOM HOLE FOOTAGE	**50' FSL & 330' FWL**
LOCATION:	**Section 31, T 24S, R 35E, NMPM**
COUNTY:	**Lea County, New Mexico**

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

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

B. CASING

1. The **13-3/8"** surface casing shall be set at approximately **1200'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
   a. **If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
   b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
   c. If cement falls back, remedial cementing will be done prior to drilling out that string.
   d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The **9-5/8"** intermediate casing shall be cemented to surface.
   a. **If cement does not circulate to surface,** see B.1.a, c & d.
   b. 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.
      i. 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 the second stage.
      ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. The **5-1/2"** production casing shall be cemented with at least 200' tie-back into the previous casing.

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 **3000 (3M)** psi.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M)** psi. **Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).**

D. SPECIAL REQUIREMENTS

1. The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
2. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

DR 10/7/2019

GENERAL REQUIREMENTS

1. 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. BOP/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

2. 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:
      i. Notify the BLM when moving in and removing the Spudder Rig.
      ii. 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.
      iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

3. 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.

4. 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 available upon request. 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: The flex line must meet the requirements of API 16C. 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. 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.
   e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
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. The results of the test shall be reported to the appropriate BLM office.
   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. All tests are required to be recorded on a calibrated test chart and shall be made available upon request.

f. 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. This test shall be performed prior to the test at full stack pressure.

g. 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

1. 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

1. 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.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

AFMSS

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

APD Print Report

11/11/2019

APD ID: 10400042767
Submission Date: 06/20/2019
Operator Name: COG OPERATING LLC
Federal/Indian APD: FED
Well Name: STOVE PIPE FEDERAL COM
Well Number: 707H
Well Type: OIL WELL
Well Work Type: Drill

[redacted]

Show Final Text

Application

Section 1 - General

APD ID: 10400042767
Tie to previous NOS?
Submission Date: 06/20/2019
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: NMNM132949
Lease Acres: 80.48
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 OPERATING LLC
Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC
Operator Address: 600 West Illinois Ave
Zip: 79701
Operator PO Box:
Operator City: Midland
State: TX
Operator Phone: (432)683-7443
Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

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

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** MESA VERDE **Pool Name:** BONE SPRING

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

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:** STOVE PIPE FEDERAL COM **Number:** 603H, 706H, 707H

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 9 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 50 FT

Reservoir well spacing assigned acres Measurement: 640.54 Acres

Well plat: COG_Stove_Pipe_707H_C102_20190618091715.pdf

Well work start Date: 10/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:**

Wellbore	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	Will this well produce
SHL Leg #1	270	FSL	330	FWL	24S	35E	31	Lot 4	32.167468	-103.414028	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 132947	3348	0	0	
KOP Leg #1	270	FSL	330	FWL	24S	35E	31	Lot 4	32.167468	-103.414028	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 132947	3348	0	0	

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Wellbore	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	Will this well produce
PPP Leg #1	100	FNL	330	FWL	25S	35E	6	Lot 4	32.166451	-103.414024	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 132949	-9262	12650	12610	
PPP Leg #1	1321	FSL	330	FWL	25S	35E	6	Lot 7	32.155832	-103.414041	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 120913	-9439	16500	12787	
EXIT Leg #1	100	FSL	330	FWL	25S	35E	7	Lot 4	32.137969	-103.414068	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119760	-9407	23354	12755	
BHL Leg #1	50	FNL	330	FWL	25S	35E	7	Lot 4	32.137831	-103.414069	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119760	-9455	23405	12803	

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3348	0	0		NONE	N
2	RUSTLER	2450	898	898		NONE	N
3	TOP SALT	1949	1399	1399	SALT	NONE	N
4	BOTTOM SALT	-1886	5234	5234	ANHYDRITE	NONE	N
5	LAMAR	-2183	5531	5531	LIMESTONE	NATURAL GAS,OIL	N
6	BELL CANYON	-2224	5572	5572		NONE	N
7	CHERRY CANYON	-3145	6493	6493		NATURAL GAS,OIL	N
8	BRUSHY CANYON	-4789	8137	8137		NATURAL GAS,OIL	N
9	BONE SPRING LIME	-6059	9407	9407	SANDSTONE	NATURAL GAS,OIL	N
10	BONE SPRING 1ST	-7246	10594	10594	HALITE	NATURAL GAS,OIL	N

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
11	BONE SPRING 2ND	-7777	11125	11125		NATURAL GAS,OIL	N
12	BONE SPRING 3RD	-8876	12224	12224		NATURAL GAS,OIL	N
13	WOLFCAMP	-9336	12684	12684	SHALE	NATURAL GAS,OIL	N
14	WOLFCAMP	-9451	12799	12799		NATURAL GAS,OIL	Y
15	WOLFCAMP	-9679	13027	13027		NATURAL GAS,OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 12803

Equipment: Accessories to 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: Request a 5M annular variance on a 10M system. (5M variance attached in section 8). A variance is requested for the use of a flexible choke line from the BOP to the 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. 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.
Choke Diagram Attachment:

COG_Stove_Pipe_707H_10M_Choke_20190613160316.pdf

BOP Diagram Attachment:

COG_Stove_Pipe_707H_10M_BOP_20190613160325.pdf

COG_Stove_Pipe_707H_Flex_Hose_20190613160336.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 12075

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to 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 the 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. 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 dailv tour sheets.

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Choke Diagram Attachment:

COG_Stove_Pipe_707H_5M_Choke_20190613160412.pdf

BOP Diagram Attachment:

COG_Stove_Pipe_707H_5M_BOP_20190613160420.pdf

COG_Stove_Pipe_707H_Flex_Hose_20190613160447.pdf

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	
1	SURFACE	17.5	13.375	NEW	API	N	0	1200	0	1200	-9411	-10581	1200	J-55	54.5	ST&C	2.11	6.29	DRY	7.86	DRY	7.
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	12075	0	12075	-9411	-21491	12075	HCL-80	47	OTHER - BTC	1.54	1.03	DRY	1.98	DRY	1.
3	PRODUCTION	8.75	5.5	NEW	API	N	0	23405	0	12803	-9411	-29318	23405	P-110	23	OTHER - BTC	1.75	2.06	DRY	2.46	DRY	2.

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_707H_Casing_Prog_20190618094304.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_707H_Casing_Prog_20190618094356.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_707H_Casing_Prog_20190618094449.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	1200	530	1.75	13.5	927	50	Class C	4% Gel
SURFACE	Tail		0	1200	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead	5550	0	12075	980	2.8	11	1078	50	Stage 1: Lead NeoCem. Stage 2: Cementing attached in Section 8.	As needed

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	12078	300	1.1	16.4	330	50	Class H. Stage 2: (Cementing attached in Section 8)	As needed
PRODUCTION	Lead		11075	23405	400	2	12.7	800	35	Lead: 35:65:6 H BLEND	As needed
PRODUCTION	Tail		11075	23405	3120	1.24	14.4	3868	35	Tail: 50:50:2 Class H Blend.	As needed

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

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

Describe 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
12075	23405	OIL-BASED MUD	10.5	12.5							OBM
0	1200	OTHER : FW Gel	8.4	8.6							FW Gel
1200	12075	OTHER : Diesel Brine Emulsion	8.6	8.9							Diesel Brine Emulsion

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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:

CNL,GR

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8325 **Anticipated Surface Pressure:** 5508.34

Anticipated Bottom Hole Temperature(F): 185

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_Stove_Pipe_707H_H2S_SUP_20190618095356.pdf

COG_Stove_Pipe_707H_H2S_Schematic_20190618095411.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Stove_Pipe_707H_AC_RPT_20190618095435.pdf

COG_Stove_Pipe_707H_Directional_Plan_20190618095442.pdf

Other proposed operations facets description:

Drilling Program attached.
Cementing Plan attached.
Gas Capture Plan attached.

Other proposed operations facets attachment:

COG_Stove_Pipe_707H_Drilling_Prog_20190618095501.pdf

COG_Stove_Pipe_707H_Cementing_Prog_20190618095508.pdf

COG_Stove_Pipe_707H_GCP_20190618095514.pdf

Other Variance attachment:

COG_5M_Variance_Well_Plan_20190211080830.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Stove_Pipe_707H_Existing_Road_20190613154409.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** NO

ROW ID(s)

ID:

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_Stove_Pipe_707H_Road_Maps_Plats_20190613154505.pdf

New road type: TWO-TRACK

Length: 2484 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 good drainage, and to be consistent with local drainage patterns.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Turnout? N

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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: 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_Stove_Pipe_707H_1Mile_Map_Data_20190613154747.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The Stove Pipe 6 Central Tank Battery (CTB) is proposed in Section 6, Township 25S, Range 35E. Production from each of the 10 producing wells will be sent to the proposed CTB. We plan to install (1) buried 4" FP 601HT production flowline from each wellhead, parallel to the proposed road, to the inlet manifold of the proposed CTB; the route for these flowlines will follow the "Flowlines" route as shown in the attached layout. We will also install (1) buried 4" gas line for gas lift supply from the CTB to the well pad; the route for this gas lift line will follow the "Gas Line" route as shown in the attached layout.

Production Facilities map:

COG_Stove_Pipe_6_CTB_Prod_Facility_Layout_20190613142526.pdf

COG_Stove_Pipe_707H_CTB_Flowlines_20190613154814.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Brine water

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000 **Source volume (acre-feet):** 3.866793

Source volume (gal): 1260000

Water source type: OTHER

Describe type: Fresh Water

Water source use type: SURFACE CASING

STIMULATION

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000 **Source volume (acre-feet):** 58.001892

Source volume (gal): 18900000

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Water source and transportation map:

COG_Stove_Pipe_707H_Brine_H2O_20190613154838.pdf

COG_Stove_Pipe_707H_Fresh_H2O_20190613154847.pdf

Water source comments: Fresh water will be obtained from the Fez Frac Pond located in Section 8. T25S, R35E. Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E.

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:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from Quail Ranch LLC (CONCHO) caliche pit located in Section 6, T24S, R35 Phone # (432) 221-0342.

Construction Materials source location attachment:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

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

Amount of waste: 125 pounds

Waste disposal frequency : Weekly

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 **Disposal location ownership:** COMMERCIAL FACILITY

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 250 gallons

Waste disposal frequency : Weekly

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 **Disposal location ownership:** COMMERCIAL FACILITY

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water during 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:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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 cuttings 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:

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Stove_Pipe_707H_Layout_20190613154913.pdf

Comments:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** STOVE PIPE FEDERAL COM

Multiple Well Pad Number: 603H, 706H, 707H

Recontouring attachment:

COG_Stove_Pipe_707H_Reclamation_20190613154952.pdf

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

Drainage/Erosion control reclamation: West 50' and South 50'

Well pad proposed disturbance (acres): 3.67
Road proposed disturbance (acres): 0.8
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0.77
Other proposed disturbance (acres): 5.17
Total proposed disturbance: 10.41

Well pad interim reclamation (acres): 0.06
Road interim reclamation (acres): 0.8
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0.77
Other interim reclamation (acres): 5.17
Total interim reclamation: 6.8

Well pad long term disturbance (acres): 2.81
Road long term disturbance (acres): 0.8
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0.77
Other long term disturbance (acres): 5.17
Total long term disturbance: 9.55

Disturbance Comments:

Reconstruction method: New construction of pad.

Topsoil redistribution: North 40' and West 40'

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:

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

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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: Gerald **Last Name:** Herrera

Phone: (432)260-7399 **Email:** gherrera@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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_Stove_Pipe_707H_Closed_Loop_20190613155012.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

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 OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Fee Owner: Quail Ranch (CONCHO) **Fee Owner Address:**

Phone: (432)221-0342 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: Agreement signed on June 27th, 2016.

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

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 completed on 03/26/19 by Gerald Herrera (COG) and Jeff Robertson (BLM).

Other SUPO Attachment

COG_Stove_Pipe_6_CTB_Prod_Facility_Layout_20190613151257.pdf
COG_Stove_Pipe_707H_1Mile_Map_Data_20190613155128.pdf
COG_Stove_Pipe_707H_Brine_H2O_20190613155137.pdf
COG_Stove_Pipe_707H_Layout_20190613155145.pdf
COG_Stove_Pipe_707H_Fresh_H2O_20190613155153.pdf
COG_Stove_Pipe_707H_Closed_Loop_20190613155203.pdf
COG_Stove_Pipe_707H_CTB_Flowlines_20190613155232.pdf
COG_Stove_Pipe_707H_Layout_20190613155251.pdf
COG_Stove_Pipe_707H_Reclamation_20190613155258.pdf
COG_Stove_Pipe_707H_Road_Maps_Plats_20190613155313.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

COG_Stove_Pipe_707H_SUP_20190613155321.pdf

COG_Stove_Pipe_707H_C102_20190620082300.pdf

PWD

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:

Leak detection system attachment:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

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

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

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

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:

Operator Certification

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:** 06/13/2019

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM **Well Number:** 707H

Title: Regulatory Analyst

Street Address: 2208 West Main Street

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

Phone: (575)748-6940

Email address: gherrera@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

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26I972J7

NORTHERN DELAWARE BASIN

LEA COUNTY, NM
BULLDOG
STOVE PIPE FEDERAL COM #707H

OWB

Plan: PWP1

Standard Survey Report

11 June, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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 STOVE PIPE FEDERAL COM #707H

Well Position	**+N/-S**	0.0 usft	**Northing:**	425,816.30 usft	**Latitude:**	32° 10' 2.432 N
	+E/-W	0.0 usft	**Easting:**	784,611.50 usft	**Longitude:**	103° 24' 48.812 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,348.5 usft

Wellbore OWB

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	WMM2015	2/11/2019	6.73	59.99	47,735.18121499

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	179.58

Survey Tool Program **Date** 6/11/2019

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	12,225.3	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
12,225.3	23,404.6	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

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
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
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

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
5,569.7	1.39	287.88	5,569.7	0.3	-0.8	-0.3	2.00	2.00	0.00
Start 6655.5 hold at 5569.7 MD									
5,600.0	1.39	287.88	5,600.0	0.5	-1.5	-0.5	0.00	0.00	0.00
5,700.0	1.39	287.88	5,700.0	1.2	-3.8	-1.3	0.00	0.00	0.00
5,800.0	1.39	287.88	5,799.9	2.0	-6.1	-2.0	0.00	0.00	0.00
5,900.0	1.39	287.88	5,899.9	2.7	-8.5	-2.8	0.00	0.00	0.00
6,000.0	1.39	287.88	5,999.9	3.5	-10.8	-3.6	0.00	0.00	0.00
6,100.0	1.39	287.88	6,099.8	4.2	-13.1	-4.3	0.00	0.00	0.00
6,200.0	1.39	287.88	6,199.8	5.0	-15.4	-5.1	0.00	0.00	0.00
6,300.0	1.39	287.88	6,299.8	5.7	-17.7	-5.8	0.00	0.00	0.00
6,400.0	1.39	287.88	6,399.7	6.5	-20.0	-6.6	0.00	0.00	0.00
6,500.0	1.39	287.88	6,499.7	7.2	-22.4	-7.4	0.00	0.00	0.00
6,600.0	1.39	287.88	6,599.7	8.0	-24.7	-8.1	0.00	0.00	0.00
6,700.0	1.39	287.88	6,699.7	8.7	-27.0	-8.9	0.00	0.00	0.00
6,800.0	1.39	287.88	6,799.6	9.5	-29.3	-9.7	0.00	0.00	0.00
6,900.0	1.39	287.88	6,899.6	10.2	-31.6	-10.4	0.00	0.00	0.00
7,000.0	1.39	287.88	6,999.6	10.9	-33.9	-11.2	0.00	0.00	0.00
7,100.0	1.39	287.88	7,099.5	11.7	-36.3	-12.0	0.00	0.00	0.00
7,200.0	1.39	287.88	7,199.5	12.4	-38.6	-12.7	0.00	0.00	0.00
7,300.0	1.39	287.88	7,299.5	13.2	-40.9	-13.5	0.00	0.00	0.00
7,400.0	1.39	287.88	7,399.5	13.9	-43.2	-14.3	0.00	0.00	0.00
7,500.0	1.39	287.88	7,499.4	14.7	-45.5	-15.0	0.00	0.00	0.00
7,600.0	1.39	287.88	7,599.4	15.4	-47.8	-15.8	0.00	0.00	0.00
7,700.0	1.39	287.88	7,699.4	16.2	-50.2	-16.5	0.00	0.00	0.00
7,800.0	1.39	287.88	7,799.3	16.9	-52.5	-17.3	0.00	0.00	0.00
7,900.0	1.39	287.88	7,899.3	17.7	-54.8	-18.1	0.00	0.00	0.00
8,000.0	1.39	287.88	7,999.3	18.4	-57.1	-18.8	0.00	0.00	0.00
8,100.0	1.39	287.88	8,099.2	19.2	-59.4	-19.6	0.00	0.00	0.00
8,200.0	1.39	287.88	8,199.2	19.9	-61.7	-20.4	0.00	0.00	0.00
8,300.0	1.39	287.88	8,299.2	20.7	-64.1	-21.1	0.00	0.00	0.00
8,400.0	1.39	287.88	8,399.2	21.4	-66.4	-21.9	0.00	0.00	0.00
8,500.0	1.39	287.88	8,499.1	22.2	-68.7	-22.7	0.00	0.00	0.00
8,600.0	1.39	287.88	8,599.1	22.9	-71.0	-23.4	0.00	0.00	0.00
8,700.0	1.39	287.88	8,699.1	23.7	-73.3	-24.2	0.00	0.00	0.00
8,800.0	1.39	287.88	8,799.0	24.4	-75.6	-25.0	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
8,900.0	1.39	287.88	8,899.0	25.1	-78.0	-25.7	0.00	0.00	0.00
9,000.0	1.39	287.88	8,999.0	25.9	-80.3	-26.5	0.00	0.00	0.00
9,100.0	1.39	287.88	9,098.9	26.6	-82.6	-27.2	0.00	0.00	0.00
9,200.0	1.39	287.88	9,198.9	27.4	-84.9	-28.0	0.00	0.00	0.00
9,300.0	1.39	287.88	9,298.9	28.1	-87.2	-28.8	0.00	0.00	0.00
9,400.0	1.39	287.88	9,398.9	28.9	-89.5	-29.5	0.00	0.00	0.00
9,500.0	1.39	287.88	9,498.8	29.6	-91.9	-30.3	0.00	0.00	0.00
9,600.0	1.39	287.88	9,598.8	30.4	-94.2	-31.1	0.00	0.00	0.00
9,700.0	1.39	287.88	9,698.8	31.1	-96.5	-31.8	0.00	0.00	0.00
9,800.0	1.39	287.88	9,798.7	31.9	-98.8	-32.6	0.00	0.00	0.00
9,900.0	1.39	287.88	9,898.7	32.6	-101.1	-33.4	0.00	0.00	0.00
10,000.0	1.39	287.88	9,998.7	33.4	-103.4	-34.1	0.00	0.00	0.00
10,100.0	1.39	287.88	10,098.7	34.1	-105.8	-34.9	0.00	0.00	0.00
10,200.0	1.39	287.88	10,198.6	34.9	-108.1	-35.7	0.00	0.00	0.00
10,300.0	1.39	287.88	10,298.6	35.6	-110.4	-36.4	0.00	0.00	0.00
10,400.0	1.39	287.88	10,398.6	36.4	-112.7	-37.2	0.00	0.00	0.00
10,500.0	1.39	287.88	10,498.5	37.1	-115.0	-37.9	0.00	0.00	0.00
10,600.0	1.39	287.88	10,598.5	37.9	-117.3	-38.7	0.00	0.00	0.00
10,700.0	1.39	287.88	10,698.5	38.6	-119.7	-39.5	0.00	0.00	0.00
10,800.0	1.39	287.88	10,798.4	39.3	-122.0	-40.2	0.00	0.00	0.00
10,900.0	1.39	287.88	10,898.4	40.1	-124.3	-41.0	0.00	0.00	0.00
11,000.0	1.39	287.88	10,998.4	40.8	-126.6	-41.8	0.00	0.00	0.00
11,100.0	1.39	287.88	11,098.4	41.6	-128.9	-42.5	0.00	0.00	0.00
11,200.0	1.39	287.88	11,198.3	42.3	-131.2	-43.3	0.00	0.00	0.00
11,300.0	1.39	287.88	11,298.3	43.1	-133.6	-44.1	0.00	0.00	0.00
11,400.0	1.39	287.88	11,398.3	43.8	-135.9	-44.8	0.00	0.00	0.00
11,500.0	1.39	287.88	11,498.2	44.6	-138.2	-45.6	0.00	0.00	0.00
11,600.0	1.39	287.88	11,598.2	45.3	-140.5	-46.4	0.00	0.00	0.00
11,700.0	1.39	287.88	11,698.2	46.1	-142.8	-47.1	0.00	0.00	0.00
11,800.0	1.39	287.88	11,798.1	46.8	-145.1	-47.9	0.00	0.00	0.00
11,900.0	1.39	287.88	11,898.1	47.6	-147.5	-48.6	0.00	0.00	0.00
12,000.0	1.39	287.88	11,998.1	48.3	-149.8	-49.4	0.00	0.00	0.00
12,100.0	1.39	287.88	12,098.1	49.1	-152.1	-50.2	0.00	0.00	0.00
12,200.0	1.39	287.88	12,198.0	49.8	-154.4	-50.9	0.00	0.00	0.00
12,225.3	1.39	287.88	12,223.3	50.0	-155.0	-51.1	0.00	0.00	0.00
Start DLS 10.00 TFO -119.57									
12,300.0	6.89	178.40	12,297.8	45.8	-155.7	-46.9	10.00	7.36	-146.52
12,400.0	16.83	172.32	12,395.6	25.4	-153.6	-26.5	10.00	9.94	-6.08
12,500.0	26.81	170.71	12,488.3	-11.3	-148.0	10.2	10.00	9.98	-1.61
12,600.0	36.80	169.93	12,573.2	-63.2	-139.1	62.1	10.00	9.99	-0.78
12,700.0	46.80	169.45	12,647.6	-128.7	-127.2	127.7	10.00	9.99	-0.48
12,800.0	56.79	169.10	12,709.4	-205.8	-112.6	204.9	10.00	10.00	-0.35

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
12,900.0	66.79	168.83	12,756.6	-292.1	-95.7	291.4	10.00	10.00	-0.27
13,000.0	76.79	168.59	12,787.8	-385.2	-77.1	384.6	10.00	10.00	-0.24
13,100.0	86.78	168.37	12,802.1	-482.0	-57.4	481.6	10.00	10.00	-0.22
13,135.0	90.28	168.30	12,803.0	-516.3	-50.3	515.9	10.00	10.00	-0.21
Start DLS 2.00 TFO 90.04									
13,200.0	90.28	169.60	12,802.7	-580.1	-37.9	579.8	2.00	0.00	2.00
13,300.0	90.28	171.60	12,802.2	-678.7	-21.5	678.6	2.00	0.00	2.00
13,400.0	90.28	173.60	12,801.7	-777.9	-8.7	777.8	2.00	0.00	2.00
13,500.0	90.27	175.60	12,801.2	-877.4	0.7	877.4	2.00	0.00	2.00
13,600.0	90.27	177.60	12,800.8	-977.3	6.7	977.3	2.00	0.00	2.00
13,699.4	90.27	179.59	12,800.3	-1,076.6	9.1	1,076.6	2.00	0.00	2.00
Start 9705.3 hold at 13699.4 MD									
13,700.0	90.27	179.59	12,800.3	-1,077.2	9.1	1,077.3	0.00	0.00	0.00
13,800.0	90.27	179.59	12,799.8	-1,177.2	9.8	1,177.3	0.00	0.00	0.00
13,900.0	90.27	179.59	12,799.4	-1,277.2	10.6	1,277.3	0.00	0.00	0.00
14,000.0	90.27	179.59	12,798.9	-1,377.2	11.3	1,377.3	0.00	0.00	0.00
14,100.0	90.27	179.59	12,798.4	-1,477.2	12.0	1,477.3	0.00	0.00	0.00
14,200.0	90.27	179.59	12,798.0	-1,577.2	12.7	1,577.3	0.00	0.00	0.00
14,300.0	90.27	179.59	12,797.5	-1,677.2	13.4	1,677.3	0.00	0.00	0.00
14,400.0	90.27	179.59	12,797.0	-1,777.2	14.2	1,777.3	0.00	0.00	0.00
14,500.0	90.27	179.59	12,796.6	-1,877.2	14.9	1,877.3	0.00	0.00	0.00
14,600.0	90.27	179.59	12,796.1	-1,977.2	15.6	1,977.3	0.00	0.00	0.00
14,700.0	90.27	179.59	12,795.6	-2,077.2	16.3	2,077.3	0.00	0.00	0.00
14,800.0	90.27	179.59	12,795.2	-2,177.2	17.0	2,177.3	0.00	0.00	0.00
14,900.0	90.27	179.59	12,794.7	-2,277.2	17.7	2,277.3	0.00	0.00	0.00
15,000.0	90.27	179.59	12,794.2	-2,377.2	18.5	2,377.3	0.00	0.00	0.00
15,100.0	90.27	179.59	12,793.8	-2,477.2	19.2	2,477.3	0.00	0.00	0.00
15,200.0	90.27	179.59	12,793.3	-2,577.2	19.9	2,577.3	0.00	0.00	0.00
15,300.0	90.27	179.59	12,792.8	-2,677.2	20.6	2,677.2	0.00	0.00	0.00
15,400.0	90.27	179.59	12,792.4	-2,777.2	21.3	2,777.2	0.00	0.00	0.00
15,500.0	90.27	179.59	12,791.9	-2,877.2	22.1	2,877.2	0.00	0.00	0.00
15,600.0	90.27	179.59	12,791.4	-2,977.2	22.8	2,977.2	0.00	0.00	0.00
15,700.0	90.27	179.59	12,791.0	-3,077.2	23.5	3,077.2	0.00	0.00	0.00
15,800.0	90.27	179.59	12,790.5	-3,177.2	24.2	3,177.2	0.00	0.00	0.00
15,900.0	90.27	179.59	12,790.0	-3,277.1	24.9	3,277.2	0.00	0.00	0.00
16,000.0	90.27	179.59	12,789.6	-3,377.1	25.7	3,377.2	0.00	0.00	0.00
16,100.0	90.27	179.59	12,789.1	-3,477.1	26.4	3,477.2	0.00	0.00	0.00
16,200.0	90.27	179.59	12,788.6	-3,577.1	27.1	3,577.2	0.00	0.00	0.00
16,300.0	90.27	179.59	12,788.2	-3,677.1	27.8	3,677.2	0.00	0.00	0.00
16,400.0	90.27	179.59	12,787.7	-3,777.1	28.5	3,777.2	0.00	0.00	0.00
16,500.0	90.27	179.59	12,787.2	-3,877.1	29.3	3,877.2	0.00	0.00	0.00
16,600.0	90.27	179.59	12,786.8	-3,977.1	30.0	3,977.2	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
16,700.0	90.27	179.59	12,786.3	-4,077.1	30.7	4,077.2	0.00	0.00	0.00
16,800.0	90.27	179.59	12,785.8	-4,177.1	31.4	4,177.2	0.00	0.00	0.00
16,900.0	90.27	179.59	12,785.4	-4,277.1	32.1	4,277.2	0.00	0.00	0.00
17,000.0	90.27	179.59	12,784.9	-4,377.1	32.8	4,377.2	0.00	0.00	0.00
17,100.0	90.27	179.59	12,784.4	-4,477.1	33.6	4,477.2	0.00	0.00	0.00
17,200.0	90.27	179.59	12,784.0	-4,577.1	34.3	4,577.2	0.00	0.00	0.00
17,300.0	90.27	179.59	12,783.5	-4,677.1	35.0	4,677.2	0.00	0.00	0.00
17,400.0	90.27	179.59	12,783.0	-4,777.1	35.7	4,777.2	0.00	0.00	0.00
17,500.0	90.27	179.59	12,782.6	-4,877.1	36.4	4,877.2	0.00	0.00	0.00
17,600.0	90.27	179.59	12,782.1	-4,977.1	37.2	4,977.2	0.00	0.00	0.00
17,700.0	90.27	179.59	12,781.6	-5,077.1	37.9	5,077.2	0.00	0.00	0.00
17,800.0	90.27	179.59	12,781.2	-5,177.1	38.6	5,177.2	0.00	0.00	0.00
17,900.0	90.27	179.59	12,780.7	-5,277.1	39.3	5,277.2	0.00	0.00	0.00
18,000.0	90.27	179.59	12,780.2	-5,377.1	40.0	5,377.2	0.00	0.00	0.00
18,100.0	90.27	179.59	12,779.8	-5,477.1	40.8	5,477.2	0.00	0.00	0.00
18,200.0	90.27	179.59	12,779.3	-5,577.1	41.5	5,577.2	0.00	0.00	0.00
18,300.0	90.27	179.59	12,778.8	-5,677.1	42.2	5,677.2	0.00	0.00	0.00
18,400.0	90.27	179.59	12,778.4	-5,777.1	42.9	5,777.2	0.00	0.00	0.00
18,500.0	90.27	179.59	12,777.9	-5,877.1	43.6	5,877.2	0.00	0.00	0.00
18,600.0	90.27	179.59	12,777.4	-5,977.0	44.4	5,977.2	0.00	0.00	0.00
18,700.0	90.27	179.59	12,777.0	-6,077.0	45.1	6,077.2	0.00	0.00	0.00
18,800.0	90.27	179.59	12,776.5	-6,177.0	45.8	6,177.2	0.00	0.00	0.00
18,900.0	90.27	179.59	12,776.0	-6,277.0	46.5	6,277.2	0.00	0.00	0.00
19,000.0	90.27	179.59	12,775.6	-6,377.0	47.2	6,377.2	0.00	0.00	0.00
19,100.0	90.27	179.59	12,775.1	-6,477.0	47.9	6,477.2	0.00	0.00	0.00
19,200.0	90.27	179.59	12,774.6	-6,577.0	48.7	6,577.2	0.00	0.00	0.00
19,300.0	90.27	179.59	12,774.2	-6,677.0	49.4	6,677.2	0.00	0.00	0.00
19,400.0	90.27	179.59	12,773.7	-6,777.0	50.1	6,777.2	0.00	0.00	0.00
19,500.0	90.27	179.59	12,773.2	-6,877.0	50.8	6,877.2	0.00	0.00	0.00
19,600.0	90.27	179.59	12,772.8	-6,977.0	51.5	6,977.2	0.00	0.00	0.00
19,700.0	90.27	179.59	12,772.3	-7,077.0	52.3	7,077.2	0.00	0.00	0.00
19,800.0	90.27	179.59	12,771.8	-7,177.0	53.0	7,177.2	0.00	0.00	0.00
19,900.0	90.27	179.59	12,771.4	-7,277.0	53.7	7,277.2	0.00	0.00	0.00
20,000.0	90.27	179.59	12,770.9	-7,377.0	54.4	7,377.2	0.00	0.00	0.00
20,100.0	90.27	179.59	12,770.4	-7,477.0	55.1	7,477.2	0.00	0.00	0.00
20,200.0	90.27	179.59	12,770.0	-7,577.0	55.9	7,577.2	0.00	0.00	0.00
20,300.0	90.27	179.59	12,769.5	-7,677.0	56.6	7,677.2	0.00	0.00	0.00
20,400.0	90.27	179.59	12,769.0	-7,777.0	57.3	7,777.2	0.00	0.00	0.00
20,500.0	90.27	179.59	12,768.6	-7,877.0	58.0	7,877.2	0.00	0.00	0.00
20,600.0	90.27	179.59	12,768.1	-7,977.0	58.7	7,977.2	0.00	0.00	0.00
20,700.0	90.27	179.59	12,767.6	-8,077.0	59.5	8,077.2	0.00	0.00	0.00
20,800.0	90.27	179.59	12,767.2	-8,177.0	60.2	8,177.2	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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)
20,900.0	90.27	179.59	12,766.7	-8,277.0	60.9	8,277.2	0.00	0.00	0.00
21,000.0	90.27	179.59	12,766.2	-8,377.0	61.6	8,377.2	0.00	0.00	0.00
21,100.0	90.27	179.59	12,765.8	-8,477.0	62.3	8,477.2	0.00	0.00	0.00
21,200.0	90.27	179.59	12,765.3	-8,577.0	63.0	8,577.2	0.00	0.00	0.00
21,300.0	90.27	179.59	12,764.8	-8,676.9	63.8	8,677.2	0.00	0.00	0.00
21,400.0	90.27	179.59	12,764.4	-8,776.9	64.5	8,777.2	0.00	0.00	0.00
21,500.0	90.27	179.59	12,763.9	-8,876.9	65.2	8,877.2	0.00	0.00	0.00
21,600.0	90.27	179.59	12,763.4	-8,976.9	65.9	8,977.2	0.00	0.00	0.00
21,700.0	90.27	179.59	12,763.0	-9,076.9	66.6	9,077.2	0.00	0.00	0.00
21,800.0	90.27	179.59	12,762.5	-9,176.9	67.4	9,177.2	0.00	0.00	0.00
21,900.0	90.27	179.59	12,762.0	-9,276.9	68.1	9,277.2	0.00	0.00	0.00
22,000.0	90.27	179.59	12,761.6	-9,376.9	68.8	9,377.2	0.00	0.00	0.00
22,100.0	90.27	179.59	12,761.1	-9,476.9	69.5	9,477.2	0.00	0.00	0.00
22,200.0	90.27	179.59	12,760.6	-9,576.9	70.2	9,577.2	0.00	0.00	0.00
22,300.0	90.27	179.59	12,760.2	-9,676.9	71.0	9,677.2	0.00	0.00	0.00
22,400.0	90.27	179.59	12,759.7	-9,776.9	71.7	9,777.2	0.00	0.00	0.00
22,500.0	90.27	179.59	12,759.2	-9,876.9	72.4	9,877.2	0.00	0.00	0.00
22,600.0	90.27	179.59	12,758.8	-9,976.9	73.1	9,977.2	0.00	0.00	0.00
22,700.0	90.27	179.59	12,758.3	-10,076.9	73.8	10,077.2	0.00	0.00	0.00
22,800.0	90.27	179.59	12,757.8	-10,176.9	74.6	10,177.2	0.00	0.00	0.00
22,900.0	90.27	179.59	12,757.4	-10,276.9	75.3	10,277.2	0.00	0.00	0.00
23,000.0	90.27	179.59	12,756.9	-10,376.9	76.0	10,377.2	0.00	0.00	0.00
23,100.0	90.27	179.59	12,756.4	-10,476.9	76.7	10,477.2	0.00	0.00	0.00
23,200.0	90.27	179.59	12,756.0	-10,576.9	77.4	10,577.2	0.00	0.00	0.00
23,300.0	90.27	179.59	12,755.5	-10,676.9	78.1	10,677.2	0.00	0.00	0.00
23,400.0	90.27	179.59	12,755.0	-10,776.9	78.9	10,777.2	0.00	0.00	0.00
23,404.6	90.27	179.59	12,755.0	-10,781.5	78.9	10,781.8	0.00	0.00	0.00
TD at 23404.6									

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 (STOVE PIPE I - plan hits target center - Point	0.00	0.00	12,755.0	-10,781.5	78.9	415,034.80	784,690.40	32° 8' 15.741 N	103° 24' 48.965 W
LTP (STOVE PIPE FE - plan misses target center by 0.1usft at 23354.6usft MD (12755.2 TVD, -10731.5 N, 78.5 E) - Point	0.00	0.00	12,755.2	-10,731.5	78.6	415,084.80	784,690.10	32° 8' 16.235 N	103° 24' 48.964 W
FTP (STOVE PIPE FE - plan misses target center by 84.2usft at 13003.6usft MD (12788.6 TVD, -388.6 N, -76.4 E) - Circle (radius 50.0)	0.00	0.00	12,803.0	-370.0	4.4	425,446.30	784,615.90	32° 9' 58.771 N	103° 24' 48.797 W

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well STOVE PIPE FEDERAL COM #707H
Project:	LEA COUNTY, NM	**TVD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Site:	BULLDOG	**MD Reference:**	*RKB = 3350' + 25' @ 3375.0usft (Original Well Elev)
Well:	STOVE PIPE FEDERAL COM #707H	**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
5500	5500	0	0	Start Build 2.00
5570	5570	0	-1	Start 6655.5 hold at 5569.7 MD
12,225	12,223	50	-155	Start DLS 10.00 TFO -119.57
13,135	12,803	-516	-50	Start DLS 2.00 TFO 90.04
13,699	12,800	-1077	9	Start 9705.3 hold at 13699.4 MD
23,405	12,755	-10,782	79	TD at 23404.6

Checked By: _____ Approved By: _____ Date: _____

CONCHO

Project: LEA COUNTY, NM
Site: BULLDOG
Well: STOVE PIPE FEDERAL COM #707H
Wellbore: OWB
Design: PWP1
GL: 3348.5
"RKB = 3356' + 25' @ 3373.5usft (Original Well Elev)

WELL DETAILS: STOVE PIPE FEDERAL COM #707H

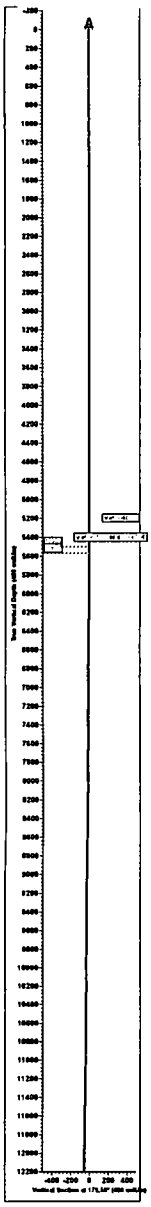
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	425816.30	784611.60	32° 10' 2.432 N	103° 34' 48.913 W

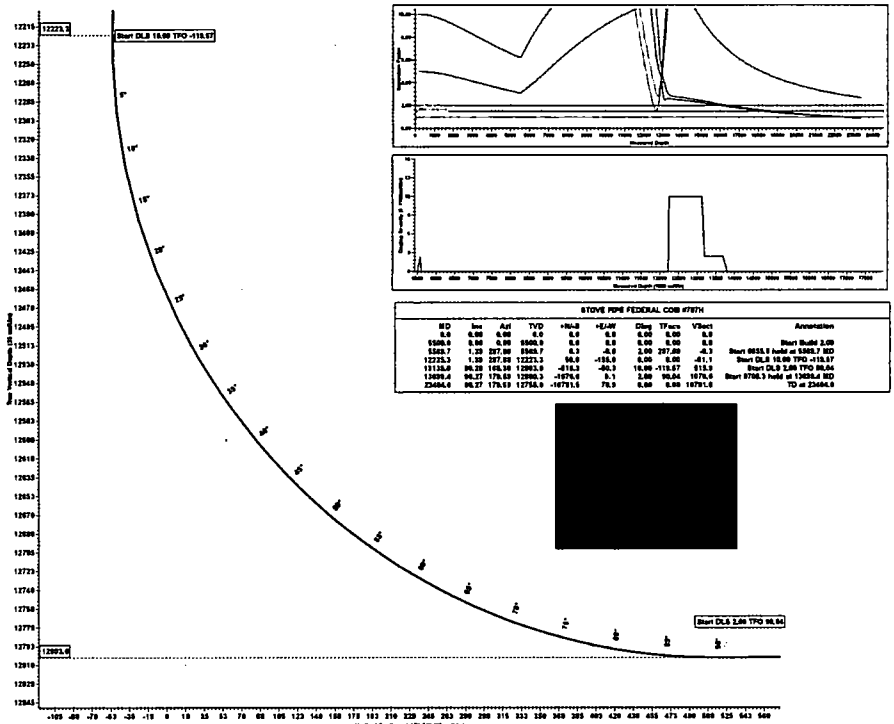
DESIGN TARGET DETAILS

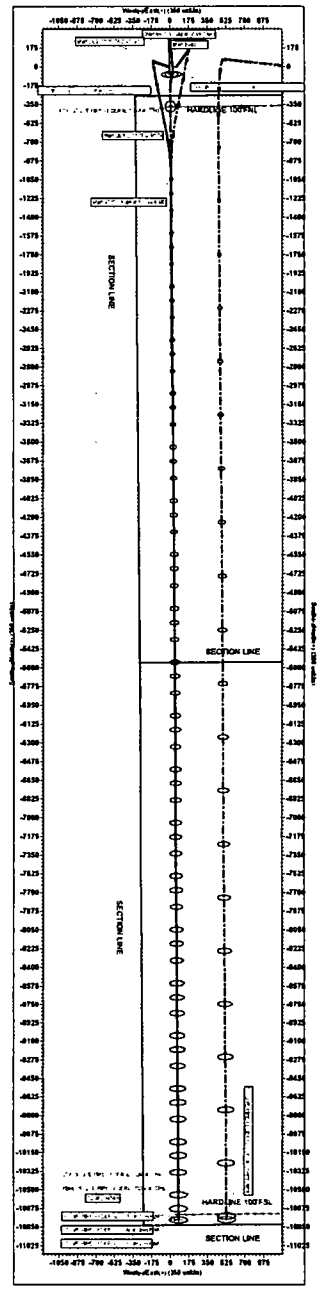
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
RBHL (STOVE PIPE FEDERAL COM #707H)	13758.0	-10791.5	79.9	415034.80	784696.40	32° 0' 15.741 N	103° 34' 48.585 W
LPP (STOVE PIPE FEDERAL COM #707H)	13753.2	-10731.5	79.6	415084.80	784696.10	32° 0' 16.235 N	103° 34' 48.564 W
FTP (STOVE PIPE FEDERAL COM #707H)	12993.0	-478.0	4.4	425446.30	784613.90	32° 10' 09.721 N	103° 34' 48.797 W

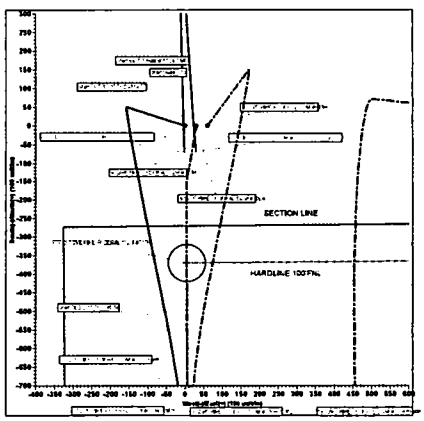
STOVE PIPE FEDERAL COM #707H

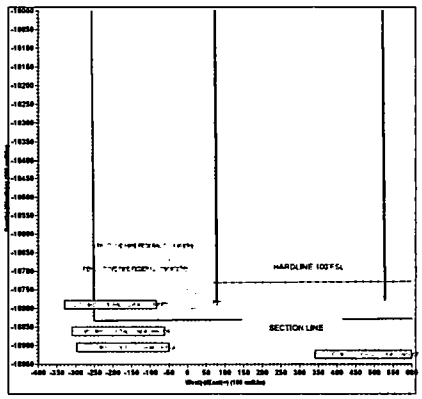
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
5500.0	0.00	0.00	5500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
5565.7	1.33	297.88	5565.7	0.3	-0.8	2.00	297.88	-0.1	Start 8655.1 hold at 5565.7 MD
12223.3	1.33	297.88	12223.3	96.0	-155.0	0.00	0.00	-61.1	Start DLS 10.00 TFO -119.57
13138.0	90.20	169.30	12993.0	-414.2	-90.3	10.00	-119.57	513.0	Start DLS 2.00 TFO 90.04
13699.4	90.27	179.53	12988.3	-1675.6	0.1	2.00	90.04	1676.0	Start 8706.3 hold at 13699.4 MD
23404.6	90.27	179.53	12758.0	-10791.5	79.9	0.00	0.00	10791.6	TD at 23404.6

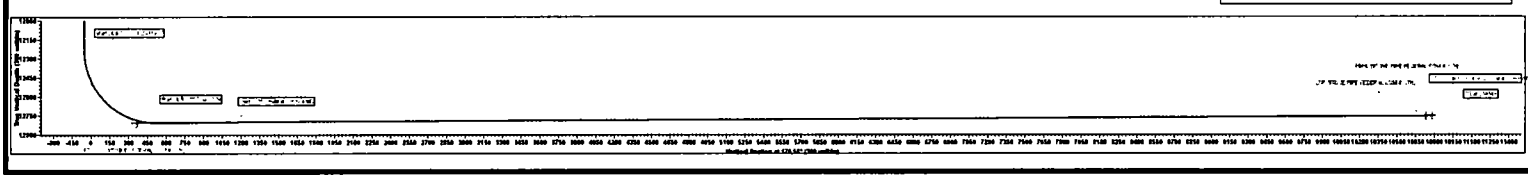












COG Operating LLC - Stove Pipe Federal Com #707H

1. Geologic Formations

TVD of target	12,803'	Pilot hole depth	NA
MD at TD:	23,405'	Deepest expected fresh water:	300'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	898	Water	
Top of Salt	1399	Salt	
Base of Salt	5234	Salt	
Lamar	5531	Salt Water	
Bell Canyon	5572	Salt Water	
Cherry Canyon	6493	Oil/Gas	
Brushy Canyon	8137	Oil/Gas	
Bone Spring Lime	9407	Oil/Gas	
1st Bone Spring Sand	10594	Oil/Gas	
2nd Bone Spring Sand	11125	Oil/Gas	
3rd Bone Spring Sand	12224	Oil/Gas	
Wolfcamp	12684	Oil/Gas	
Wolfcamp A Shale	12799	Target Oil/Gas	
Wolfcamp B	13027	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1200	13.375"	54.5	J55	STC	2.11	6.29	7.86
12.25"	0	12075	9.625"	47	HCL80	BTC	1.54	1.03	1.98
8.75"	0	23,405	5.5"	23	P110	BTC	1.75	2.06	2.46
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

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	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?	
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?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	530	13.5	1.75	9	12	Lead: Class C + 4% Gel
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter. Stage1	980	11	2.8	19	48	Lead: NeoCem
	300	16.4	1.1	5	8	Tail: Class H
DV Tool @ 5550'						
Inter. Stage2	770	11	2.8	19	48	Lead: NeoCem
	100	14.8	1.35	6.34	8	Tail: Class C + 2% Cacl
5.5 Prod	400	12.7	2	10.6	16	Lead: 35:65:6 H Blend
	3120	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	11,075'	35%

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4. Pressure Control Equipment

Y	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:
12-1/4"	13-5/8"	5M	Annular	x	2500 psi
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram		
			Other*		
8-3/4"	13-5/8"	10M	5M Annular	x	5000 psi
			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. 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	8.4 - 8.6	28-29	N/C
Surf csg	Int shoe	Diesel Brine Emul	8.6 - 8.9	30-40	N/C
Int shoe	Lateral TD	OBM	10.5 - 12.5	30-40	20

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.
N	Are 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	8325 psi at 12803' TVD
Abnormal Temperature	NO 185 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.

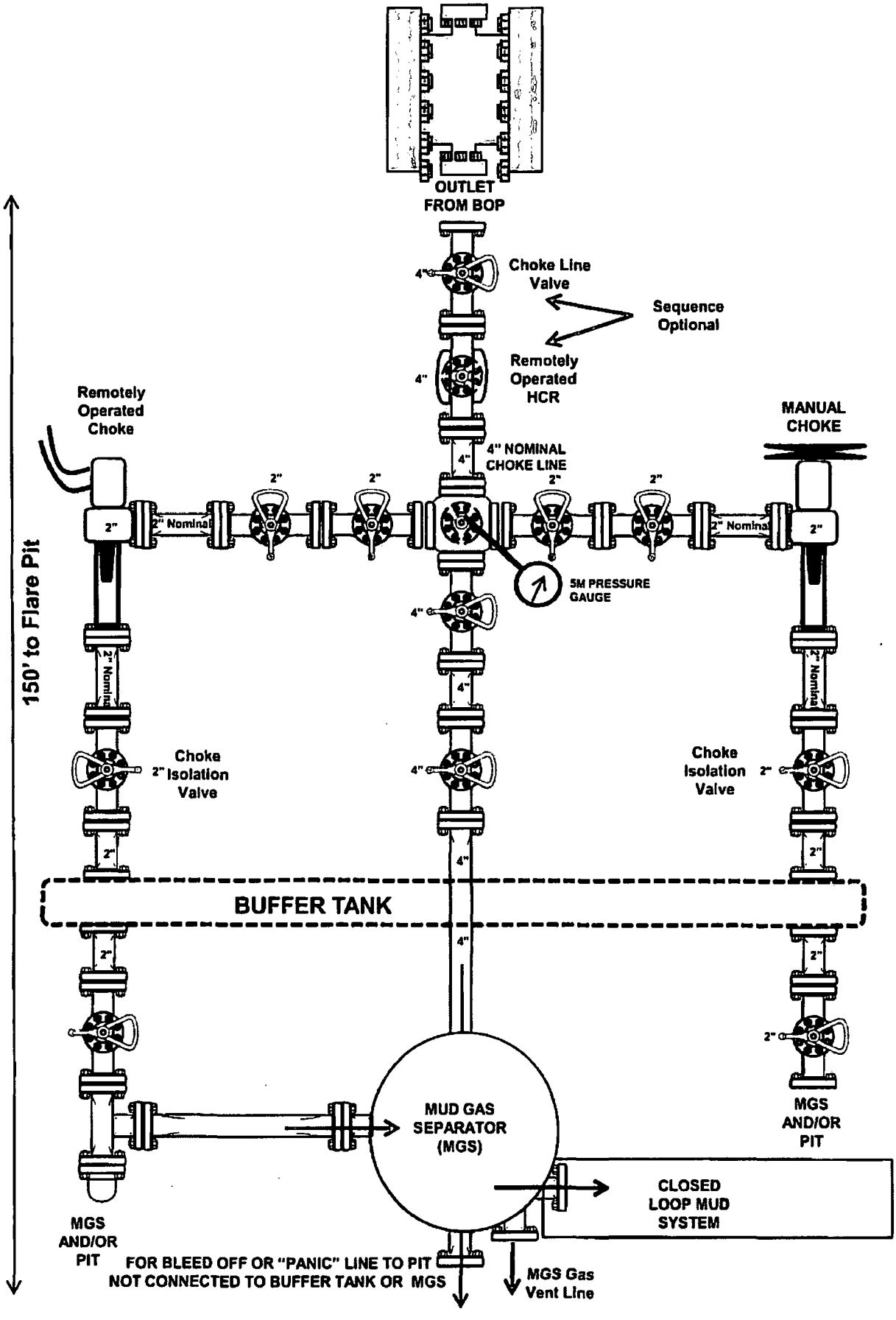
Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be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

8. Other Facets of Operation

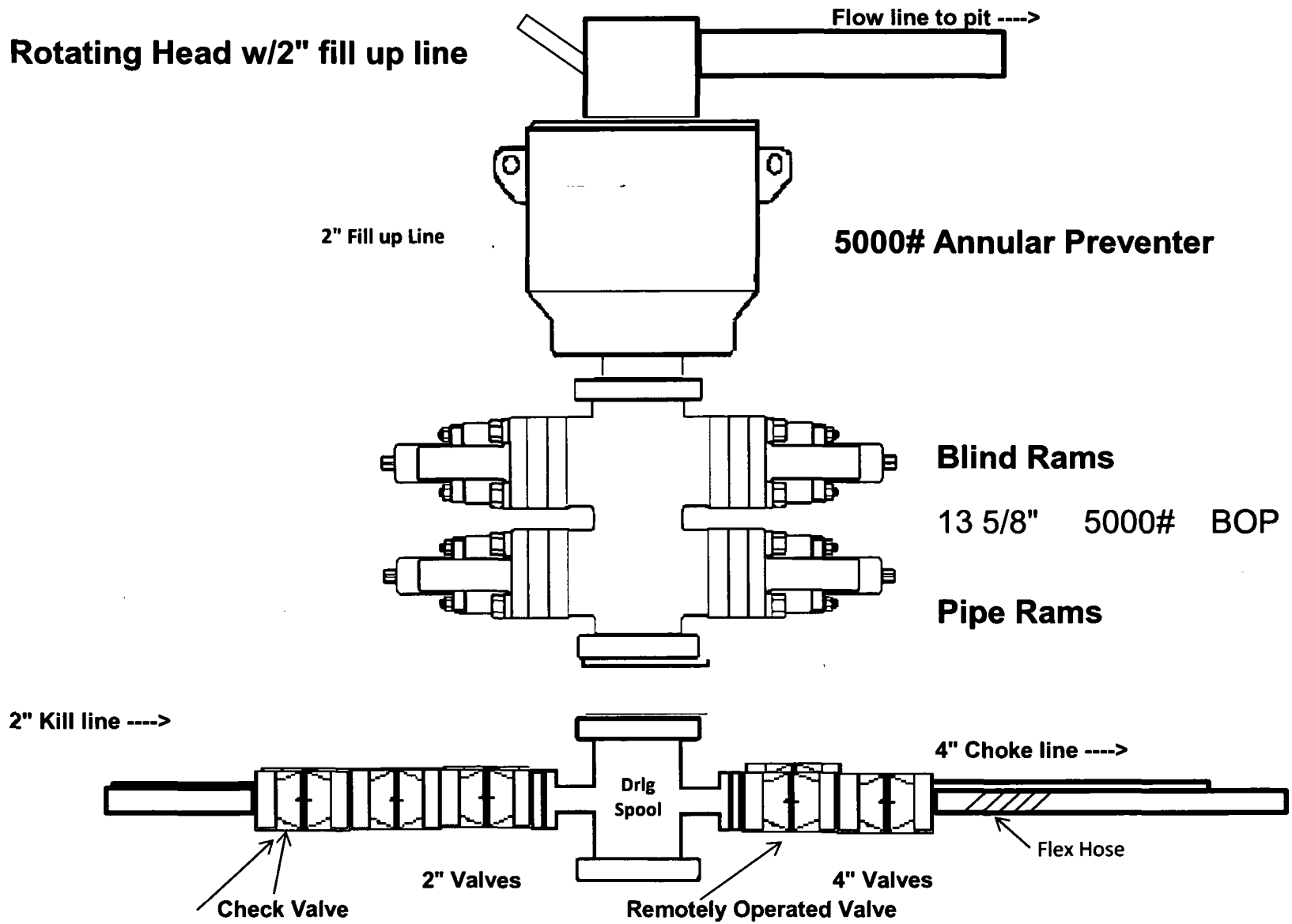
Y	Is it a walking operation?
N	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan
x	5M Annular Variance

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

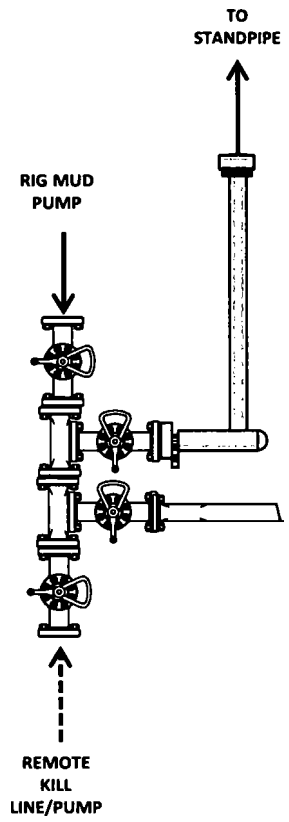


5,000 psi BOP Schematic

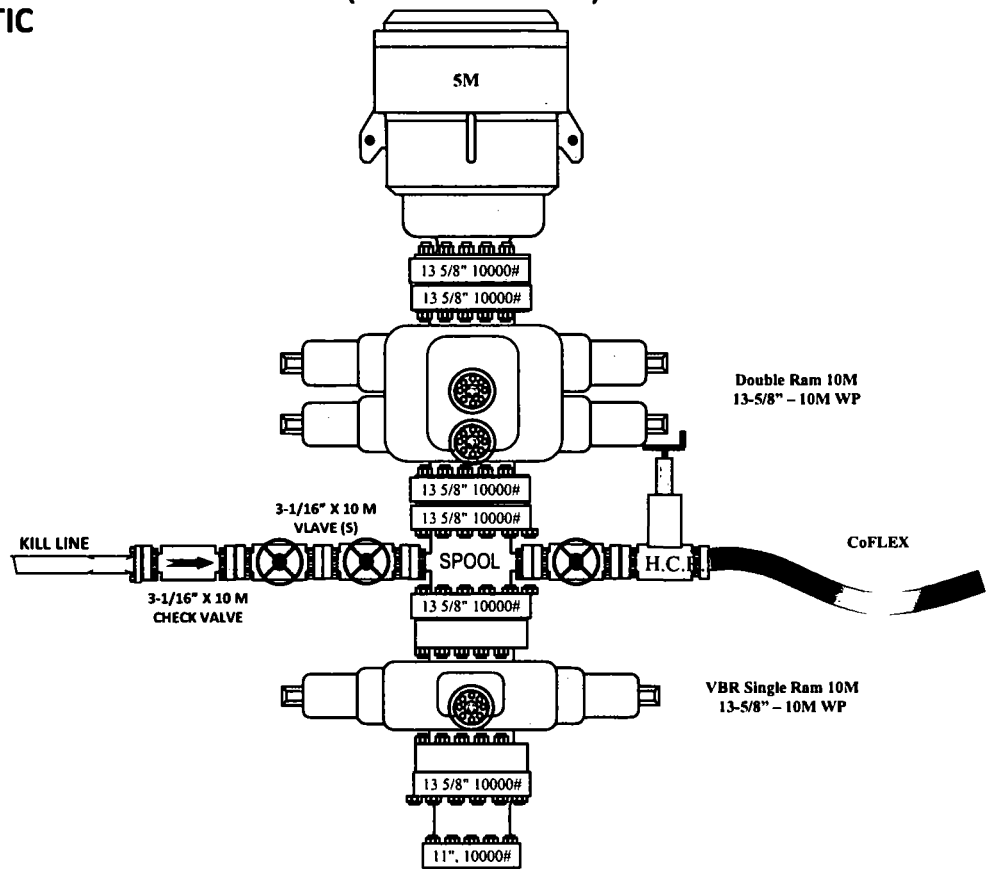


10M BOP Stack

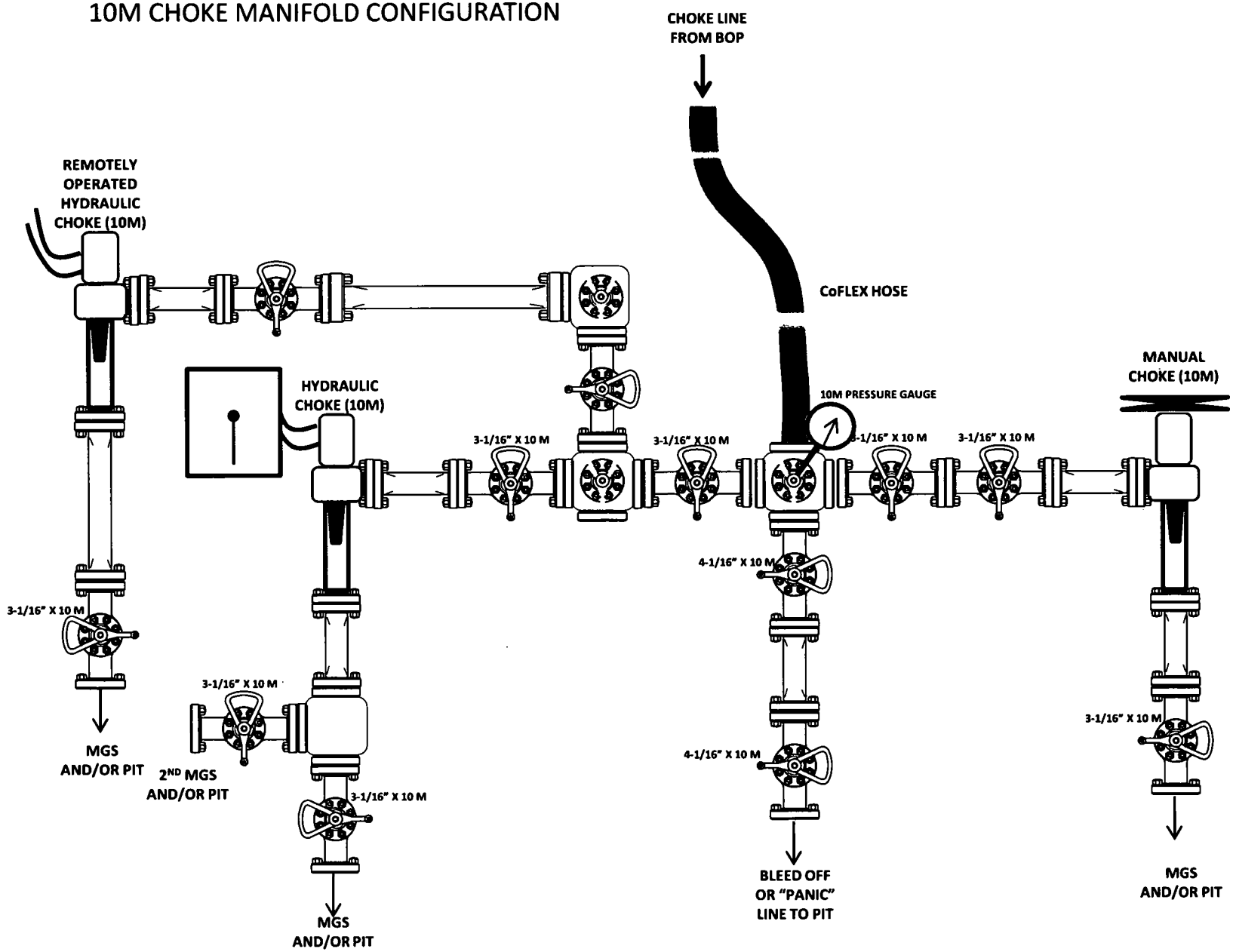
10M REMOTE KILL SCHEMATIC



10M BOP Stack
(5M Annular)



10M CHOKE MANIFOLD CONFIGURATION



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 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 • Lift Flow Sensor or Pit Float to indicate a kick • Immediately record start time	Company Representative / Rig Manager
Recognition • Driller and/or Crew recognizes indicator • Driller stop drilling, pick up off bottom and spaces out drill string, stop pumps and rotary • Conduct flow check	Driller
Initiate Action • Sound alarm, notify rig crew that the well is flowing	Company Representative / Rig Manager
Reaction • Driller moves BOP remote and stands by • Crew is at their assigned stations • Time is stopped • 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 • Lift Flow Sensor or Pit Float to indicate a kick • Immediately record start time	Company Representative / Rig Manager
Recognition • Driller recognizes indicator • Suspends tripping operations • Conduct Flow Check	Driller
Initiate Action • Sound alarm, notify rig crew that the well is flowing	Company Representative / Rig Manager
Reaction • Position tool joint above rotary and set slips • Stab FOSV and close valve • Driller moves to BOP remote and stands by • Crew is at their assigned stations • Time is stopped • 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 • Close annular preventer • Pressure annulus up 200-300 psi • Pump slowly to bump the float and obtain SIDPP • At choke operator instruction, slowly bring pumps online to slow pump rate while holding casing pressure constant at the SICP. • Allow time for the well to stabilize. Mark and record circulating drillpipe pressure. • Measure time lag on drillpipe gauge after choke adjustments. • Hold casing pressure constant as pumps are slowed down while choke is closed. • Record time and drill type in the Drilling Report	Company Man / Rig Manager & Rig Crew