Form 3160-3
(March 2012)

HOBBS OCD
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FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMNM120907

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No. EIDER FEDERAL 304H (314193)

2. Name of Operator COG PRODUCTION LLC (217955)

9. API Well No. 30-025-44639

3a. Address 2208 West Main Street Artesia NM 88210

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

10. Field and Pool, or Exploratory WILDCAT / BONE SPRING 97984

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

At surface SESW / 210 FSL / 2030 FWL / LAT 32.16701 / LONG -103.647426

At proposed prod. zone NESW / 2410 FSL / 2310 FWL / LAT 32.18798 / LONG -103.646518

11. Sec., T. R. M. or Blk. and Survey or Area SEC 35 / T24S / R32E / NMP

14. Distance in miles and direction from nearest town or post office* 22 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) 240 feet

16. No. of acres in lease 1840

17. Spacing Unit dedicated to this well 240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1442 feet

19. Proposed Depth 9595 feet / 17048 feet

20. BLM/BIA Bond No. on file FED: NMB000860

21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3526 feet

22. Approximate date work will start* 02/01/2017

23. Estimated duration 30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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 required by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Mayte Reyes / Ph: (575)748-6945	10/10/2017
Title: Regulatory Analyst		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959	Date 03/22/2018
Title: Supervisor Multiple Resources	Office: 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.

(Continued on page 2)

*(Instructions on page 2)

GCP Rec 04/03/18
TOP 1ST PERF 9915 TVD
TD WELL 9595 TVD

APPROVED WITH CONDITIONS

Approval Date: 03/22/2018

KZ 04/04/18

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 1: 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 well, 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 directionally 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.

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 well 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 will 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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: SESW / 210 FSL / 2030 FWL / TWSP: 24S / RANGE: 32E / SECTION: 35 / LAT: 32.16701 / LONG: -103.647426 (TVD: 0 feet, MD: 0 feet)
   PPP: SESW / 330 FSL / 2310 FWL / TWSP: 24S / RANGE: 32E / SECTION: 35 / LAT: 32.167734 / LONG: -103.646521 (TVD: 4500 feet, MD: 4500 feet)
   BHL: NESW / 2410 FSL / 2310 FWL / TWSP: 24S / RANGE: 32E / SECTION: 26 / LAT: 32.18798 / LONG: -103.646518 (TVD: 9595 feet, MD: 17048 feet)

BLM Point of Contact

Name: Sipra Dahal
Title: Legal Instruments Examiner
Phone: 5752345983
Email: sdahal@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.

APD ID: 10400023176 **Submission Date:** 10/10/2017

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

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

Highlighted data reflects the most recent changes
Show Final Text

Section 1 - General

APD ID: 10400023176 **Tie to previous NOS?** **Submission Date:** 10/10/2017

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

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

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

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

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

Agreement number:

Agreement name:

Keep application confidential? YES

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

Operator letter of designation:

Operator Info

Operator Organization Name: COG PRODUCTION LLC

Operator Address: 2208 West Main Street **Zip:** 88210

Operator PO Box:

Operator City: Artesia **State:** NM

Operator Phone: (575)748-6940

Operator Internet Address: mreyes1@concho.com

Section 2 - Well Information

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

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

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

Well Name: EIDER FEDERAL **Well Number:** 304H **Well API Number:**

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

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

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

Describe other minerals:

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** EIDER FEDERAL **Number:** 103H, 203H, 104H, 303H, 304H, 204H

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 22 Miles **Distance to nearest well:** 1442 FT **Distance to lease line:** 240 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: COG_Eider_304H_C102_20171010082902.pdf

Well work start Date: 02/01/2017 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	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
	210	FSL	2030	FWL	24S	32E	35	SESW	32.16701	-103.647426	LEA	NEW MEXI	NEW MEXI	F	NMNM 120907	3526	0	0
	210	FSL	2030	FWL	24S	32E	35	SESW	32.16701	-103.647426	LEA	NEW MEXI	NEW MEXI	F	NMNM 120907	3526	0	0
	330	FSL	2310	FWL	24S	32E	35	SESW	32.167734	-103.646521	LEA	NEW MEXI	NEW MEXI	F	NMNM 120907	-974	4500	4500

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

	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
	2310	FSL	2310	FWL	24S	32E	26	NESW	32.187705	-103.646518	LEA	NEW MEXI	NEW MEXI	F	NMNM 120907	-6016	16800	9542
	2410	FSL	2310	FWL	24S	32E	26	NESW	32.18798	-103.646518	LEA	NEW MEXI	NEW MEXI	F	NMNM 120907	-6069	17048	9595

State of New Mexico
s & Natural Resources Department
SERVATION DIVISION
SOUTH ST. FRANCIS DR.
a Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

ON AND ACREAGE DEDICATION PLAT

Pool Name	
ng	
Property Name	**Well Number**
ELDER FEDERAL	304H
Operator Name	**Elevation**
COG PRODUCTION, LLC	3525.7'

Surface Location

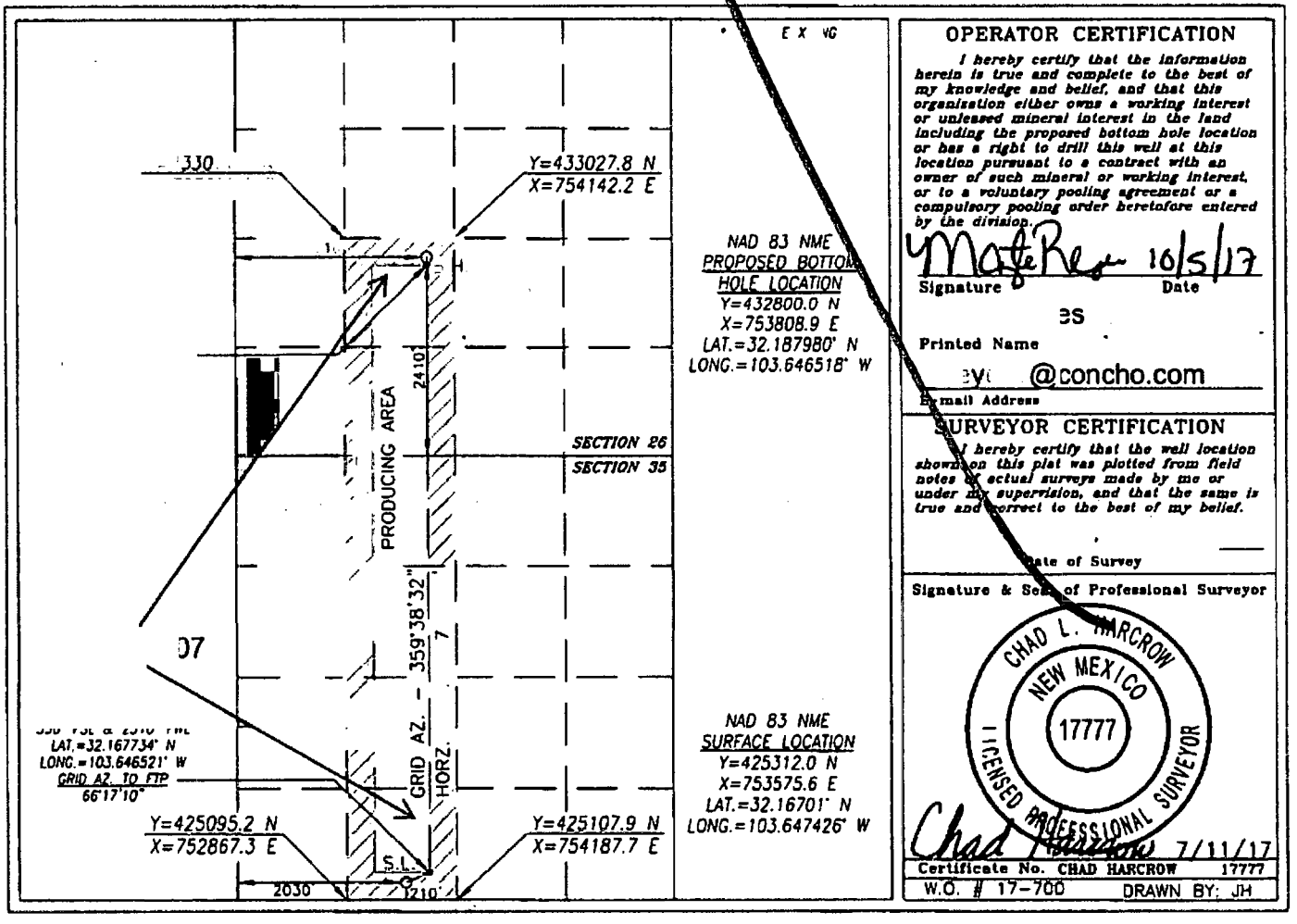
UL or	Feet from the	North/South line	Feet from the	East/West line	County
	0	SOUTH	2030	WEST	LEA

Location If Different From Surface

lot No.	Feet from the	North/South line	Feet from the	East/West line	County
K	0	SOUTH	2310	WEST	LEA

ated Acres	Order No
40	

ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date 10/5/17

Printed Name

@concho.com
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

7/11/17

Certificate No. CHAD HARCROW 17777

W.O. # 17-700 DRAWN BY: JH

APD ID: 10400023176
Submission Date: 10/10/2017
Operator Name: COG PRODUCTION LLC
Well Name: EIDER FEDERAL
Well Number: 304H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3526	0	0		NONE	No
2	RUSTLER	2578	948	948		NONE	No
3	TOP SALT	2245	1281	1281		NONE	No
4	BASE OF SALT	-1089	4615	4615		NONE	No
5	LAMAR	-1317	4843	4843		NONE	No
6	BELL CANYON	-1358	4884	4884		NONE	No
7	CHERRY CANYON	-2267	5793	5793		NATURAL GAS,OIL	No
8	BRUSHY CANYON	-3647	7173	7173	SCHIST	NATURAL GAS,OIL	No
9	BONE SPRING LIME	-5289	8815	8815		NATURAL GAS,OIL	No
10	UPPER AVALON SHALE	-5632	9158	9158		NATURAL GAS,OIL	No
11	---	-5819	9345	9345		NATURAL GAS,OIL	No
12	BONE SPRING 1ST	-6391	9917	9917		NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M
Rating Depth: 4870

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

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

working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

COG_Eider_304H_2M_Choke_20171010083831.pdf

BOP Diagram Attachment:

COG_Eider_304H_2M_BOP_20171010083843.pdf

COG_Eider_304H_Flex_Hose_20171010083856.pdf

Pressure Rating (PSI): 3M **Rating Depth:** 9595

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

Variance request: A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold.

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

Choke Diagram Attachment:

COG_Eider_304H_3M_Choke_20171010083924.pdf

BOP Diagram Attachment:

COG_Eider_304H_3M_BOP_20171010083930.pdf

COG_Eider_304H_Flex_Hose_20171010083938.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	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	975	0	975			975	J-55	54.5	STC	2.53	1.27	DRY	9.67	DRY	9.67
2	INTERMEDIATE	12.25	9.625	NEW	API	Y	0	4870	0	4870			4870	L-80	40	LTC	1.21	1.56	DRY	5.73	DRY	5.73
3	PRODUCTION	8.75	5.5	NEW	API	N	0	17048	0	17048			17048	P-110	17	LTC	1.61	2.89	DRY	2.73	DRY	2.73

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Eider_304H_Casing_Plan_20171010084031.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Eider_304H_Casing_Plan_20171010084019.pdf

Casing Design Assumptions and Worksheet(s):

COG_Eider_304H_Casing_Plan_20171010084012.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Eider_304H_Casing_Plan_20171010084004.pdf

Section 4 - Cement

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

String Type	Lead/Tail	Stage Tool	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	975	390	1.75	13.5	682	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail			975	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		975	4870	930	2	12.7	1860	50	Lead: 35:65:6 C Blend	As needed.
INTERMEDIATE	Tail			4870	250	1.34	14.8	335	50	Tail: Class C	2% CaC12
PRODUCTION	Lead		4870	17048	660	2.5	11.9	1650	25	Lead: 50:50:10 H Blend	As needed.
PRODUCTION	Tail			17048	2020	1.24	14.4	2504	25	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 requirement 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
975	4870	OTHER : Saturated Brine	10	10.1							Saturated Brine
4870	17048	OTHER : Cut Brine	8.6	9.3							Cut Brine

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

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
0	975	OTHER : FW Gel	8.6	8.8							FW Gel

Section 6 - Test, Logging, Coring

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

None planned.

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

OTH

Other log type(s):

CNL/GR

Coring operation description for the well:

None planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4645 **Anticipated Surface Pressure:** 2534.1

Anticipated Bottom Hole Temperature(F): 155

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Eider_304H_H2S_Plan_20171010084601.pdf

COG_Eider_304H_H2S_Schematic_20171010084609.pdf

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Eider_304H_AC_Report_20171010084645.pdf

COG_Eider_304H_Directional_Plan_20171010084656.pdf

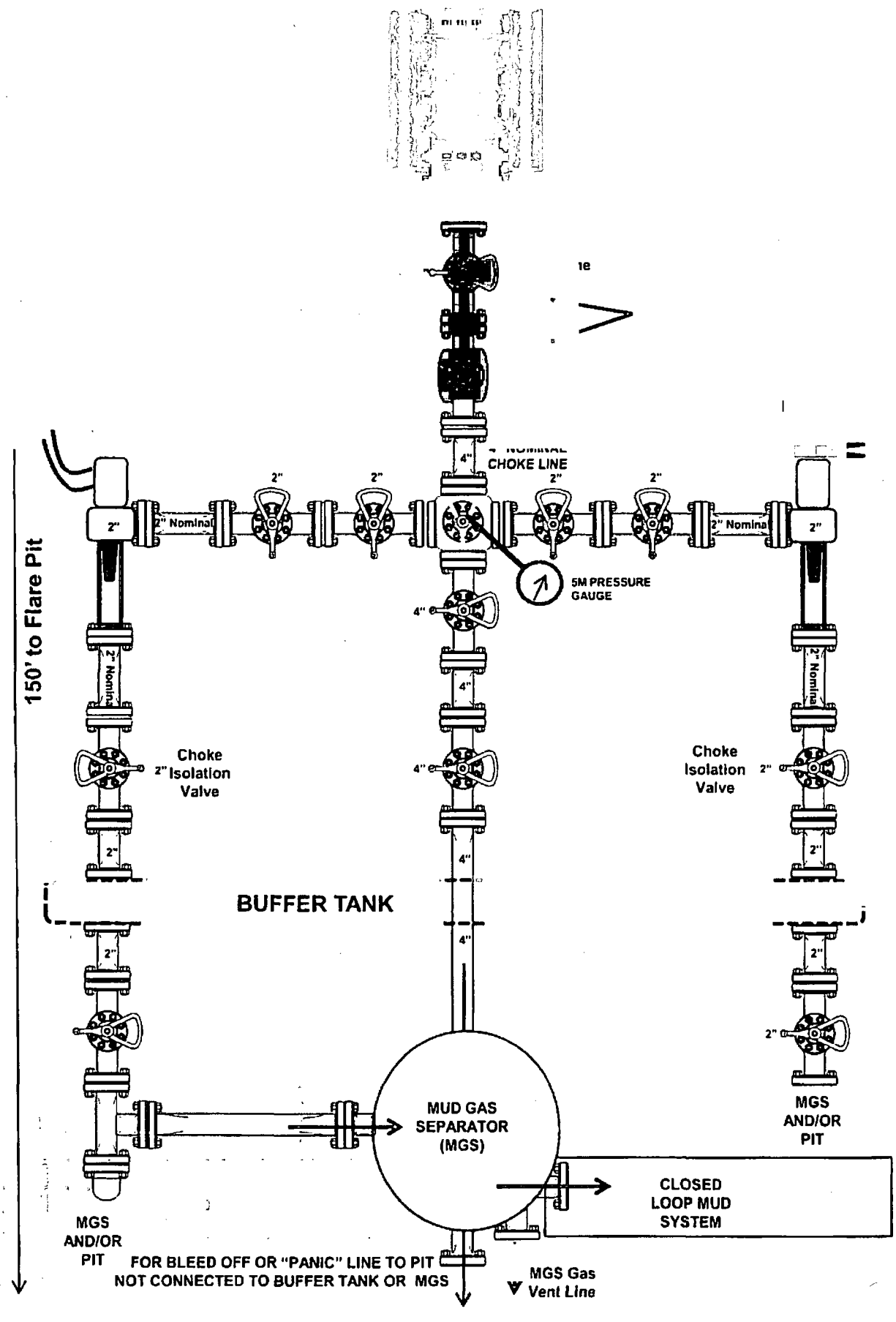
Other proposed operations facets description:

Other proposed operations facets attachment:

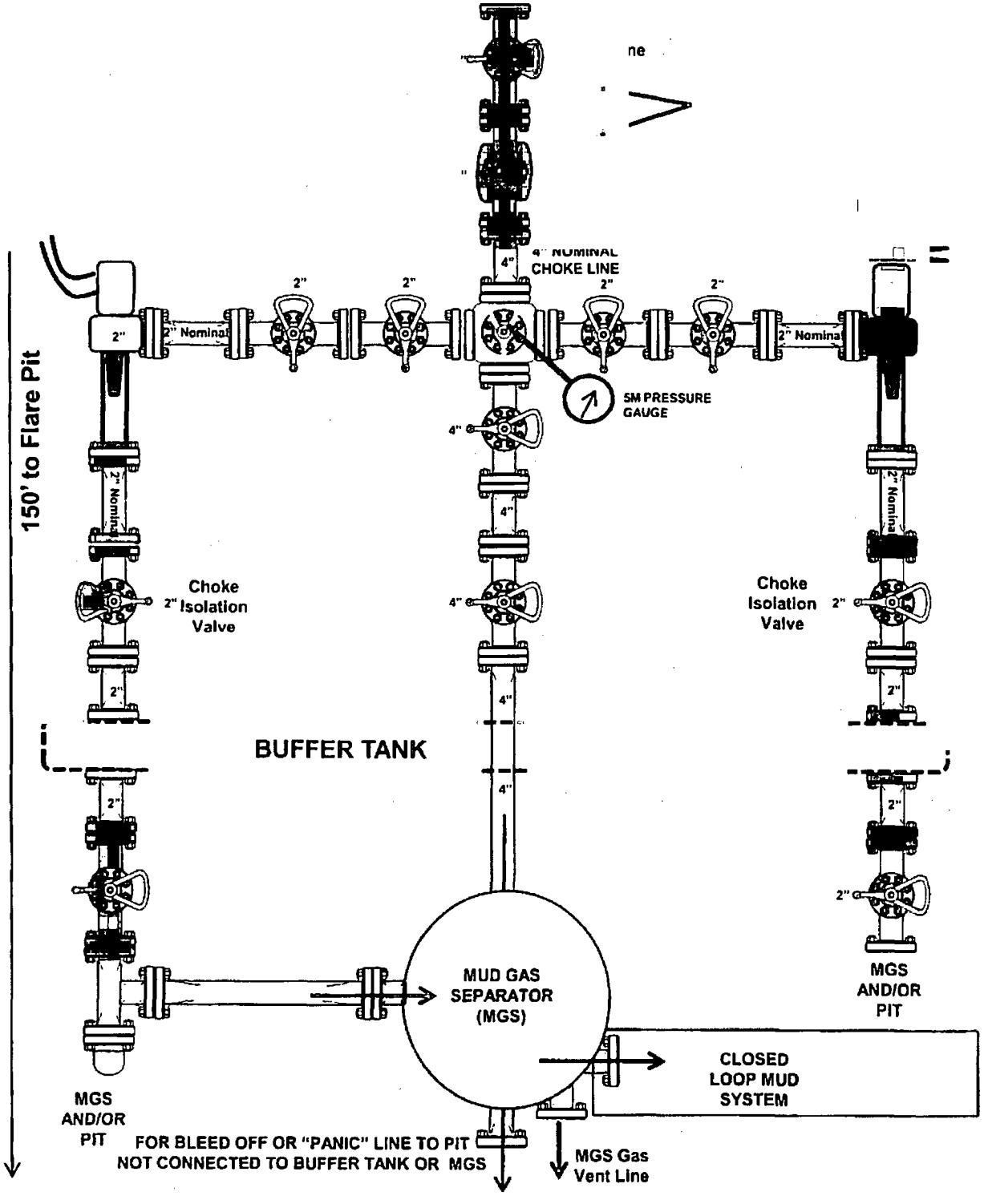
COG_Eider_304H_Drilling_Plan_20171010084636.pdf

Other Variance attachment:

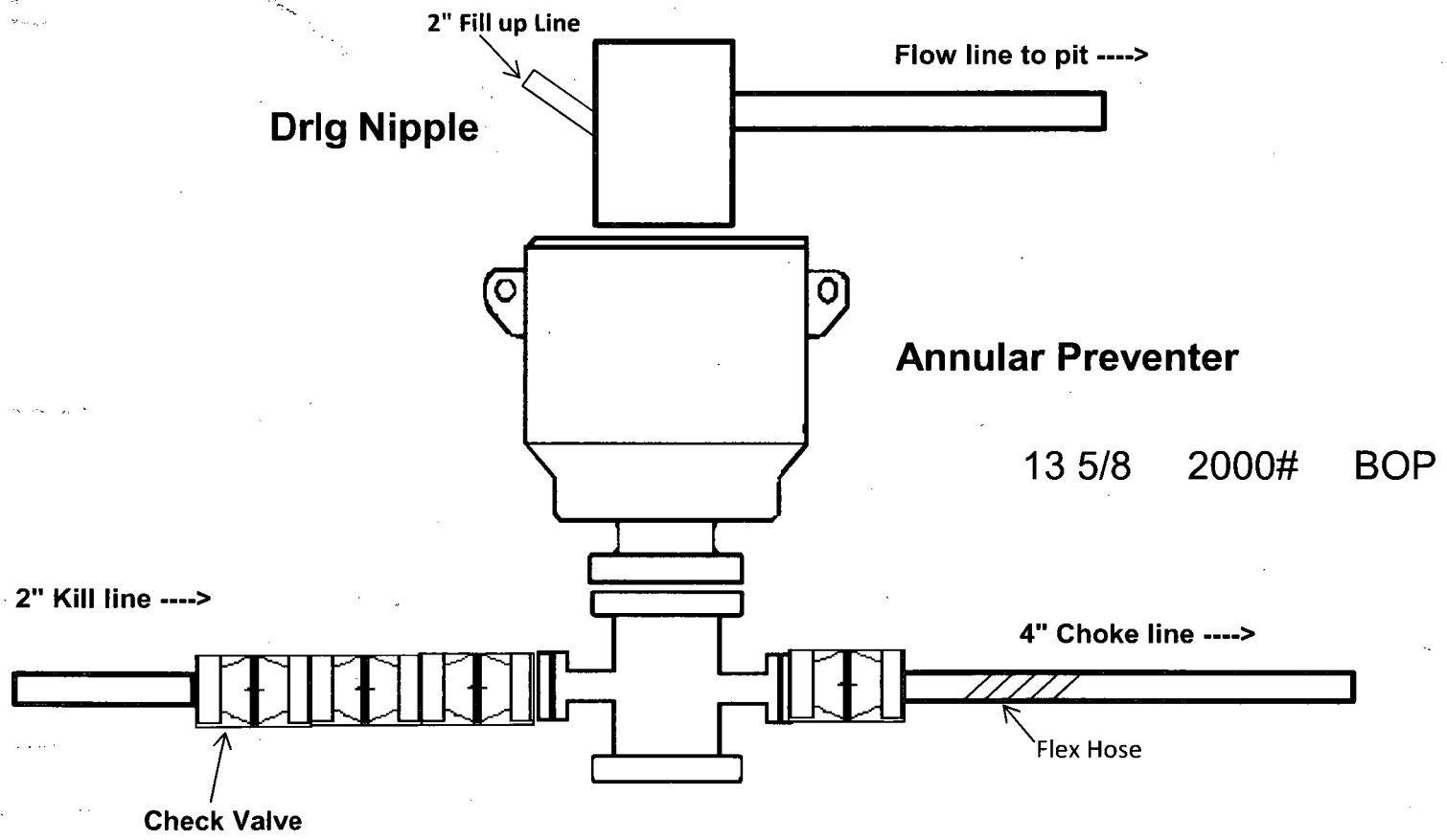
CLOSED LOOP)


150' to Flare Pit
4" CHOKE LINE
2" Nominal
5M PRESSURE GAUGE
Choke 2" Isolation Valve
Choke Isolation Valve
BUFFER TANK
MUD GAS SEPARATOR (MGS)
MGS AND/OR PIT
CLOSED LOOP MUD SYSTEM
MGS AND/OR PIT
FOR BLEED OFF OR "PANIC" LINE TO PIT NOT CONNECTED TO BUFFER TANK OR MGS
MGS Gas Vent Line

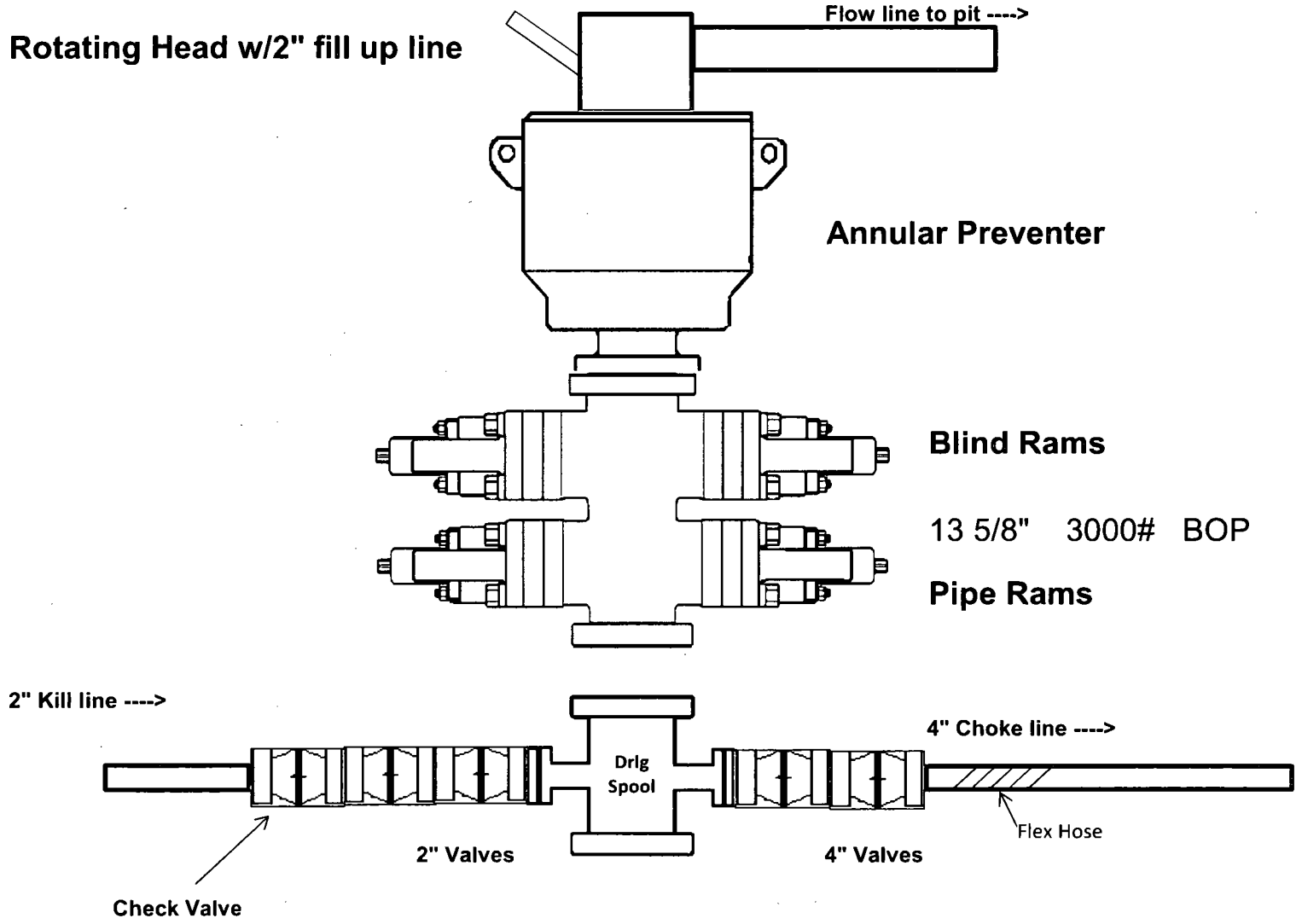
M W CLOSED LOOP)

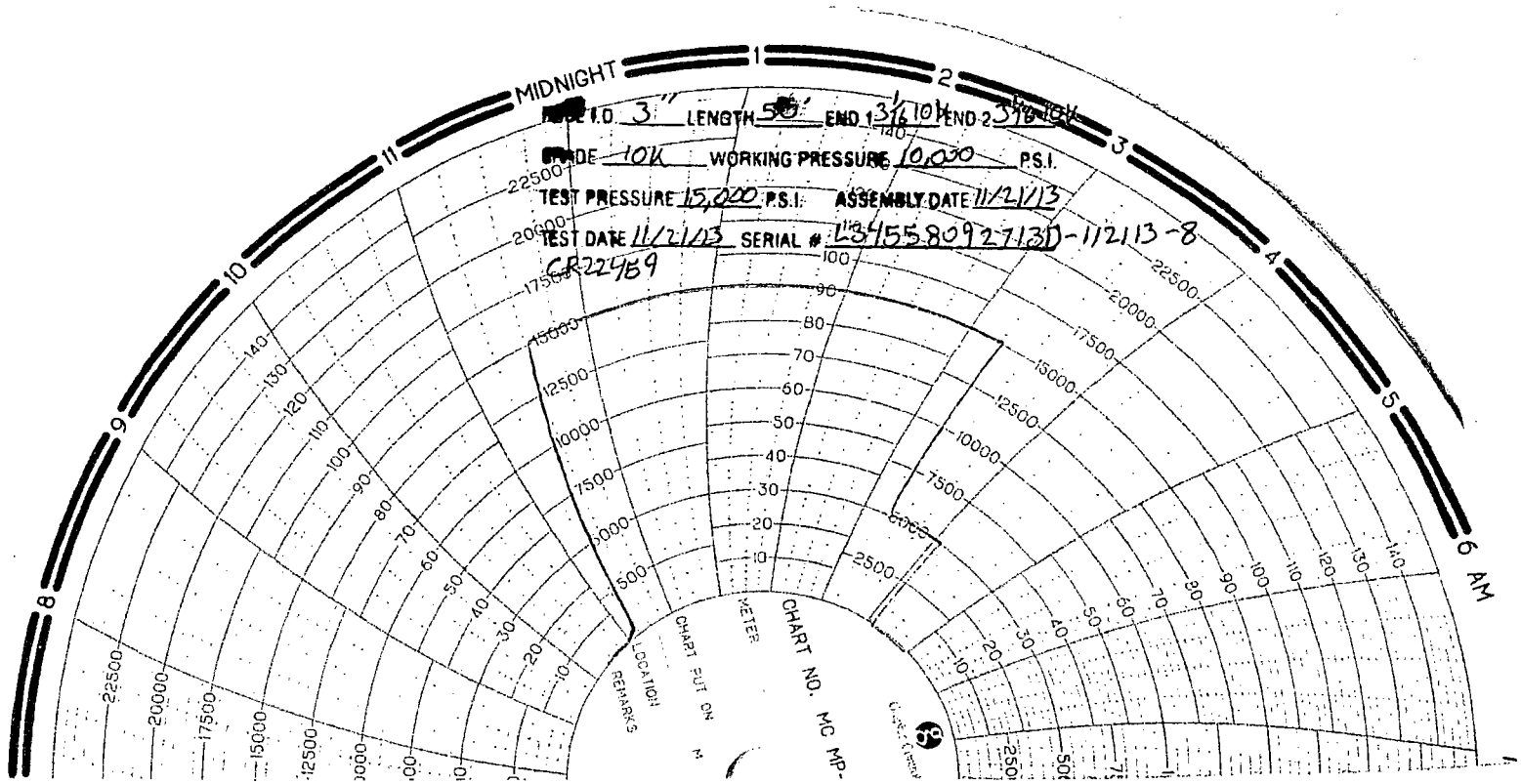


2,000 psi BOP Schematic



3,000 psi BOP Schematic




MIDNIGHT
1
2
3
4
5
6 AM
7
8
9
10
11
HOSE I.D. 3"
LENGTH 50'
END 1 3/16 10K
END 2 3/16 10K
GRADE 10K
WORKING PRESSURE 10,000 P.S.I.
TEST PRESSURE 15,000 P.S.I.
ASSEMBLY DATE 11/2/13
TEST DATE 11/2/13
SERIAL # L3455809271310-112113-8
CR22489
CHART NO. MC MP-
METER
CHART PUT ON
LOCATION
REMARKS

Casing Program

Hole Size	Casing		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	975	13.375"	54.5	J55	STC	2.53	1.27	9.67
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.07	3.25
12.25"	4000	4870	9.625"	40	L80	LTC	1.21	1.56	5.73
8.75"	0	17,048	5.5"	17	P110	LTC	1.61	2.89	2.73
			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

Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	975	13.375"	54.5	J55	STC	2.53	1.27	9.67
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.07	3.25
12.25"	4000	4870	9.625"	40	L80	LTC	1.21	1.56	5.73
8.75"	0	17,048	5.5"	17	P110	LTC	1.61	2.89	2.73
			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

Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	975	13.375"	54.5	J55	STC	2.53	1.27	9.67
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COG Operating, LLC - Eider Federal #304H

1. Geologic Formations

TVD of target	9,595' EOL	Pilot hole depth	NA
MD at TD:	17,048'	Deepest expected fresh water:	380'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	948	Water	
Top of Salt	1281	Salt	
Base of Salt	4615	Salt	
Lamar	4843	Salt Water	
Bell Canyon	4884	Salt Water	
Cherry Canyon	5793	Oil/Gas	
Brushy Canyon	7173	Oil/Gas	
Bone Spring Lime	8815	Oil/Gas	
U. Avalon Shale	9158	Oil/Gas	
L. Avalon Shale	9345	Oil/Gas	
1st Bone Spring Sand	9917	Not Penetrated	
2nd Bone Spring Sand	X	Not Penetrated	
3rd Bone Spring Sand	X	Not Penetrated	
Wolfcamp	X	Not Penetrated	

2. Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	975	13.375"	54.5	J55	STC	2.53	1.27	9.67
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.07	3.25
12.25"	4000	4870	9.625"	40	L80	LTC	1.21	1.56	5.73
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All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

COG Operating, LLC - Eider Federal #304H

	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.	390	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	930	12.7	2.0	9.6	16	Lead: 35:65:6 C Blend
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl
5.5 Prod	660	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	2020	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	3,500'	25% OH in Lateral (KOP to EOL) – 40% OH in Vertical

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	2000 psi
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			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.

X	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	8.6 - 8.8	28-34	N/C
Surf csg	9-5/8" Int shoe	Saturated Brine	10 - 10.1	28-34	N/C
9-5/8" Int shoe	Lateral TD	Cut Brine	8.6 - 9.3	28-34	N/C

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

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

6. Logging and Testing Procedures

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

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4645 psi at 9595' TVD
Abnormal Temperature	NO 155 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

APD ID: 10400023176
Submission Date: 10/10/2017
Operator Name: COG PRODUCTION LLC
Well Name: EIDER FEDERAL
Well Number: 304H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes
Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Eider_304H_Existing_Road_20171010084712.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? YES

ROW ID(s)

ID: NM132549

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Eider_304H_Maps_Plats_20171010084910.pdf

New road type: RESOURCE

Length: 4954.4 Feet **Width (ft.):** 30

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

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

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

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

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

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Eider_304H_1_Mile_Data_20171010084925.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Production will be sent to the Eider CTB 1, which is adjacent to the Eider Federal 304H well pad.

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: ICE PAD CONSTRUCTION & MAINTENANCE, STIMULATION, SURFACE CASING
Water source type: OTHER
Describe type: Fresh Water
Source latitude:
Source longitude:
Source datum:
Water source permit type: PRIVATE CONTRACT
Source land ownership: PRIVATE
Water source transport method: PIPELINE
Source transportation land ownership: PRIVATE
Water source volume (barrels): 337500
Source volume (acre-feet): 43.50142
Source volume (gal): 14175000

Water source use type: INTERMEDIATE/PRODUCTION CASING
Water source type: OTHER
Describe type: Brine Water
Source latitude:
Source longitude:
Source datum:
Water source permit type: PRIVATE CONTRACT
Source land ownership: COMMERCIAL
Water source transport method: TRUCKING
Source transportation land ownership: COMMERCIAL
Water source volume (barrels): 22500
Source volume (acre-feet): 2.9000947
Source volume (gal): 945000

Water source and transportation map:

COG_Eider_304H_Fresh_H2O_20171010110942.pdf
COG_Eiders_304H_Brine_20171010110951.pdf

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

New Water Well Info

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

Well target aquifer:

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

Aquifer comments:

Aquifer documentation:

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

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

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

Drilling method: **Drill material:**

Grout material: **Grout depth:**

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

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

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

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: SEWAGE

Waste content description: Human waste and gray water.

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

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

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: DRILLING

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

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

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

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: GARBAGE

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

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

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

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Roll off cutting containers on tracks.

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: YES

Ancillary Facilities attachment:

COG_Eider_304H_GCP_20171010084953.pdf

Comments: GCP Attached.

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Eider_304H_CTB_Flowlines_20171010085019.pdf
COG_Eider_304H_Prod_Facility_20171010085032.pdf
COG_Eider_CTB_1_20171010111003.pdf

Comments: Production will be sent to the Eider CTB 1, which is adjacent to the Eider Federal 304H well pad.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: EIDER FEDERAL

Multiple Well Pad Number: 103H, 203H, 104H, 303H, 304H, 204H

Recontouring attachment:

Drainage/Erosion control construction: If needed, immediately following pad construction approximately 400' of straw waddles will be placed on the west side of the location, and 400' of straw waddles will be placed on the south side of the location to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: N/A

Well pad proposed disturbance (acres):	**Well pad interim reclamation (acres):** 4.54	**Well pad long term disturbance (acres):** 3.16
Road proposed disturbance (acres):	**Road interim reclamation (acres):** 1.59	**Road long term disturbance (acres):** 1.59
Powerline proposed disturbance (acres):	**Powerline interim reclamation (acres):**	**Powerline long term disturbance (acres):**
Pipeline proposed disturbance (acres):	**Pipeline interim reclamation (acres):** 0	**Pipeline long term disturbance (acres):** 0
Other proposed disturbance (acres):	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0
Total proposed disturbance:	**Total interim reclamation:** 6.13	**Total long term disturbance:** 4.75

Reconstruction method: Portions of the pad not needed for production operationswill be re-contoured to its original state as much as possible. The caliche that is removed will be reused. The stockpiled topsoil will be spread out over reclaimed area

and reseeded with BLM approved seed mixture

Topsoil redistribution: West 80'. East 60'

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

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:

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

Seed Summary	
Seed Type	**Pounds/Acre**

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

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

Phone: (432)254-5556 **Email:** rfrench@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Eider_304H_Closed_Loop_20171010085047.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: COG PRODUCTION LLC

Well Name: EIDER FEDERAL **Well Number:** 304H

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:**

Section 12 - Other Information

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

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite conpleted on 8/22/2017 by Rand French (COG) and Jeff Robertson (BLM).

Other SUPO Attachment

COG_Eider_304H_Certification_20171010085102.pdf

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:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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:

AFMSS

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

Bond Info Data Report

03/26/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000860

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: