Form 3160-3
(March 2012)

HOBBS OCD

FEB 28 2018

RECEIVED

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. NMNM0160973

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. TIGERCAT FEDERAL COM 3H (320525)

2. Name of Operator COG OPERATING LLC (229137)

9. API Well No. 30-025-44534

3a. Address 600 West Illinois Ave Midland TX 79701

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

10. Field and Pool, or Exploratory (98097) WILDCAT / WOLFCAMP

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

At surface NENW / 360 FNL / 1650 FWL / LAT 32.064305 / LONG -103.597523

At proposed prod. zone SESW / 200 FSL / 1650 FWL / LAT 32.051337 / LONG -103.597513

11. Sec., T. R. M. or Blk. and Survey or Area SEC 8 / T26S / R33E / 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) 200 feet

16. No. of acres in lease 1238.72

17. Spacing Unit dedicated to this well 160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1489 feet

19. Proposed Depth 12866 feet / 17311 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3324 feet

22. Approximate date work will start* 11/01/2017

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	09/12/2017

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	02/26/2018

Title	Office
Supervisor Multiple Resources	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) GCP 02/28/18

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Approval Date: 02/26/2018

KZ 03/01/18

* Double sided

F/P

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: NENW / 360 FNL / 1650 FWL / TWSP: 26S / RANGE: 33E / SECTION: 8 / LAT: 32.064305 / LONG: -103.597523 (TVD: 0 feet, MD: 0 feet)
   PPP: SENW / 1320 FNL / 1650 FWL / TWSP: 26S / RANGE: 33E / SECTION: 8 / LAT: 32.061668 / LONG: -103.597521 (TVD: 12792 feet, MD: 13550 feet)
   PPP: NENW / 330 FNL / 1650 FWL / TWSP: 26S / RANGE: 33E / SECTION: 8 / LAT: 32.064388 / LONG: -103.597523 (TVD: 12341 feet, MD: 12341 feet)
   BHL: SESW / 200 FSL / 1650 FWL / TWSP: 26S / RANGE: 33E / SECTION: 8 / LAT: 32.051337 / LONG: -103.597513 (TVD: 12866 feet, MD: 17311 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.

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM Well Number: 3H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	13.5	10.75	NEW	API	N	0	~~890~~ 935	0	890	-6999	-7974	890	N-80	45.5	OTHER - BTC	6.06	1.22	DRY	25.68	DRY	25.68
2	INTERMEDIATE	9.875	~~7.875~~ 7 5/8"	NEW	API	Y	0	11575	0	11575	-6999	-18749	11575	P-110	29.7	OTHER - BTC	1.31	1.02	DRY	3.16	DRY	3.16
3	PRODUCTION	6.75	5.0	NEW	API	N	0	17311	0	17311	-6999	-24211	17311	P-110	18	OTHER - BTC	1.81	1.87	DRY	3.15	DRY	3.15

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Tigercat_3H_Casing_Prog_20170912131105.pdf

Approval Date: 02/26/2018

COG Operating, LLC - Tigercat Federal Com #3H

1. Geologic Formations

TVD of target	12,866' EOL	Pilot hole depth	NA
MD at TD:	17,311'	Deepest expected fresh water:	157'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards:
Quaternary Fill	Surface	Water	
Rustler	865	Water	
Top of Salt	1195	Salt	
Base of Salt	4695	Salt	
Lamar	4864'	Salt Water	
Bell Canyon	4884	Salt Water	
Cherry Canyon	5946	Oil/Gas	
Brushy Canyon	7496	Oil/Gas	
Bone Spring Lime	9006	Oil/Gas	
U. Avalon Shale	9176	Oil/Gas	
L. Avalon Shale	9396	Oil/Gas	
1st Bone Spring Sand	9966	Oil/Gas	
2nd Bone Spring Sand	10482	Oil/Gas	
3rd Bone Spring Sand	11548	Oil/Gas	
Wolfcamp	12032	Target Oil/Gas	

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
13.5"	0	~~890~~ 915'	10.75"	45.5	N80	BTC	6.06	1.22	25.68
9.875"	0	11575	~~7.875"~~ 7 5/8"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
6.75"	11075	17,311	5"	18	P110	BTC	1.81	1.87	3.15
				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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

Approval Date: 02/26/2018

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
9-7/8"	13-5/8"	5M	Annular	x	3000 psi
			Blind Ram	X	5M
			Pipe Ram	X	
			Double Ram		
			Other*		
6-3/4"	13-5/8"	10M	Annular	x	50% testing pressure
			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.

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.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original to Appropriate District Office

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GAS CAPTURE PLAN

Date: **12/13/2017**

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: **COG Operating LLC, OGRID 229137**

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Tigercat Federal Com #3H	**30-025-**	**C-8-26S-33E**	**360' FNL & 1650' FWL**	**1989 MMCFD**		**New CTB to be located in Unit A Sec 8 of 26S-33E**

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to **Enlink**, and will be connected to **Lobo low/high** pressure gathering system located in **Loving** County, **Texas.** It will require **approximately 2.5 miles** of pipeline to connect the facility to **low/high** pressure gathering system. **COG Operating LLC** provides (periodically) to **Enlink** a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, **COG Operating LLC** and **Enlink** have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at **Lobo** Processing Plant located in **Sec 3-BLK C-27, PSL Survey, Loving County, Texas.** The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

Approval Date: 02/26/2018

AFMSS

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

Operator Certification Data Report

02/26/2018

Operator Certification

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

NAME: Mayte Reyes **Signed on:** 09/08/2017

Title: Regulatory Analyst

Street Address: 2208 W Main Street

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

Phone: (575)748-6945

Email address: Mreyes1@concho.com

Field Representative

Representative Name: Rand French

Street Address: 2208 West Main Street

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

Phone: (575)748-6940

Email address: rfrench@concho.com

AFMSS

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

Application Data Report

02/26/2018

APD ID: 10400021891
Submission Date: 09/12/2017
Operator Name: COG OPERATING LLC
Well Name: TIGERCAT FEDERAL COM
Well Number: 3H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400021891
Tie to previous NOS?
Submission Date: 09/12/2017
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: NMNM0160973
Lease Acres: 1238.72
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
Mater Development Plan name:
Well in Master SUPO? NO
Master SUPO name:
Well in Master Drilling Plan? NO
Master Drilling Plan name:
Well Name: TIGERCAT FEDERAL COM
Well Number: 3H
Well API Number:
Field/Pool or Exploratory? Field and Pool
Field Name: WILDCAT
Pool Name: WOLFCAMP
Is the proposed well in an area containing other mineral resources? USEABLE WATER,OIL

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

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: SINGLE WELL **Multiple Well Pad Name:** **Number:**

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: 22 Miles **Distance to nearest well:** 1489 FT **Distance to lease line:** 200 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: COG_Tigercat_3H_C102_20170912075955.pdf

Well work start Date: 11/01/2017 **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
SHL Leg #1	360	FNL	1650	FWL	26S	33E	8	Aliquot NENW	32.064305	-103.597523	LEA	NEW MEXICO	NEW MEXICO	F	FEE	3324	0	0
KOP Leg #1	360	FNL	1650	FWL	26S	33E	8	Aliquot NENW	32.064305	-103.597523	LEA	NEW MEXICO	NEW MEXICO	F	FEE	3324	0	0
PPP Leg #1	330	FNL	1650	FWL	26S	33E	8	Aliquot NENW	32.064388	-103.597523	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-9017	12341	12341

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

	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
PPP Leg #1	1320	FNL	1650	FWL	26S	33E	8	Aliquot SENW	32.061668	-103.597521	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 010604 0A	-9468	13550	12792
EXIT Leg #1	330	FSL	1650	FWL	26S	33E	8	Aliquot SESW	32.051695	-103.597513	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 016097 3	-9540	17250	12864
BHL Leg #1	200	FSL	1650	FWL	26S	33E	8	Aliquot SESW	32.051337	-103.597513	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 016097 3	-9542	17311	12866

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

Pressure Rating (PSI): 10M **Rating Depth:** 12866

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 daily tour sheets.

Choke Diagram Attachment:

COG_Tigercat_3H_10M_Choke_20170912130845.pdf

BOP Diagram Attachment:

COG_Tigercat_3H_10M_BOP_20170912130854.pdf

COG_Tigercat_3H_Flex_Hose_20170912130905.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 11575

Equipment: Annular. 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 daily tour sheets.

Choke Diagram Attachment:

COG_Tigercat_3H_5M_Choke_20170912130731.pdf

BOP Diagram Attachment:

COG_Tigercat_3H_5M_BOP_20170912130740.pdf

COG_Tigercat_3H_Flex_Hose_20170912130751.pdf

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	13.5	10.75	NEW	API	N	0	890	0	890	-6999	-7974	890	N-80	45.5	OTHER - BTC	6.06	1.22	DRY	25.68	DRY	25.68
2	INTERMEDIATE	9.875	7.875	NEW	API	Y	0	11575	0	11575	-6999	-18749	11575	P-110	29.7	OTHER - BTC	1.31	1.02	DRY	3.16	DRY	3.16
3	PRODUCTION	6.75	5.0	NEW	API	N	0	17311	0	17311	-6999	-24211	17311	P-110	18	OTHER - BTC	1.81	1.87	DRY	3.15	DRY	3.15

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Tigercat_3H_Casing_Prog_20170912131105.pdf

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Tigercat_3H_Casing_Prog_20170912131123.pdf

Casing Design Assumptions and Worksheet(s):

COG_Tigercat_3H_Casing_Prog_20170912131243.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Tigercat_3H_Casing_Prog_20170912131258.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	890	90	1.75	13.5	157.5	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		0	890	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	11575	950	3.6	10.3	3420	50	Tuned Light Blend	As needed
INTERMEDIATE	Tail		0	11575	250	1.08	16.4	270	50	Tail: Class H	As needed
PRODUCTION	Lead		0	17311	220	2.5	11.9	550	35	50:50:10 H Blend	As needed

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		0	17311	610	1.24	14.4	756	35	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
890	11575	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
0	890	OTHER : FW Gel	8.6	8.8							FW Gel
11575	17311	OIL-BASED MUD	9.6	12							

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

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: 8030 **Anticipated Surface Pressure:** 5199.47

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_Tigercat_3H_H2S_Schem_20170912132145.pdf
COG_Tigercat_3H_H2S_SUP_20170912132153.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Tigercat_3H_AC_Rprt_20170912132221.pdf
COG_Tigercat_3H_Direct_Plan_20170912132229.pdf

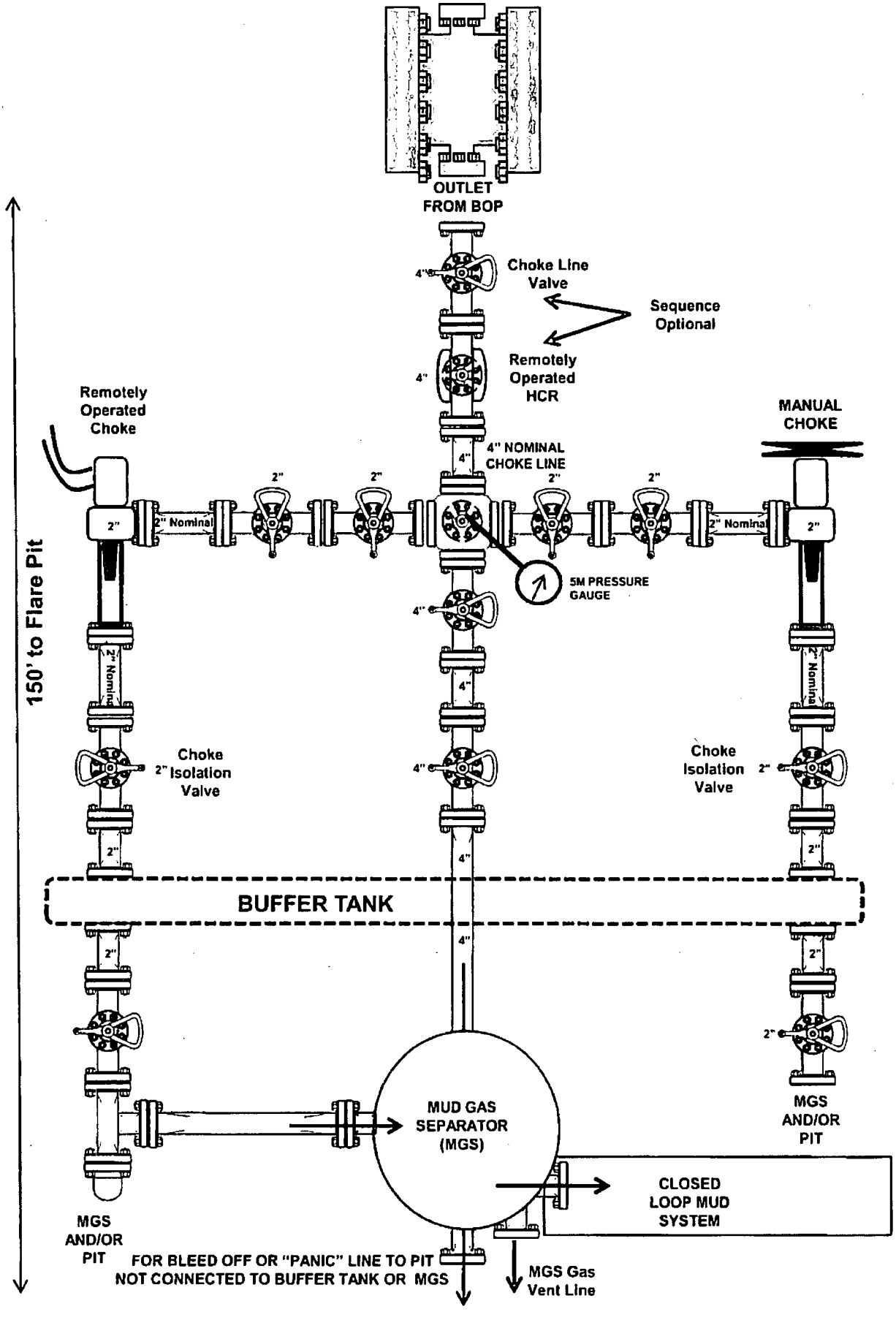
Other proposed operations facets description:

Other proposed operations facets attachment:

COG_Tigercat_3H_Drilling_Prog_20170912132241.pdf

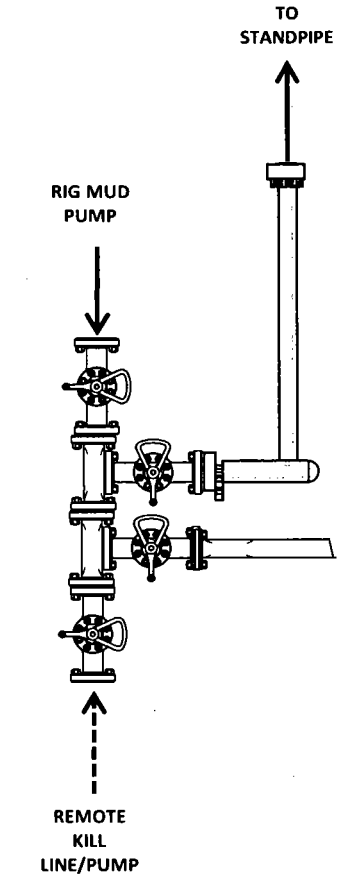
Other Variance attachment:

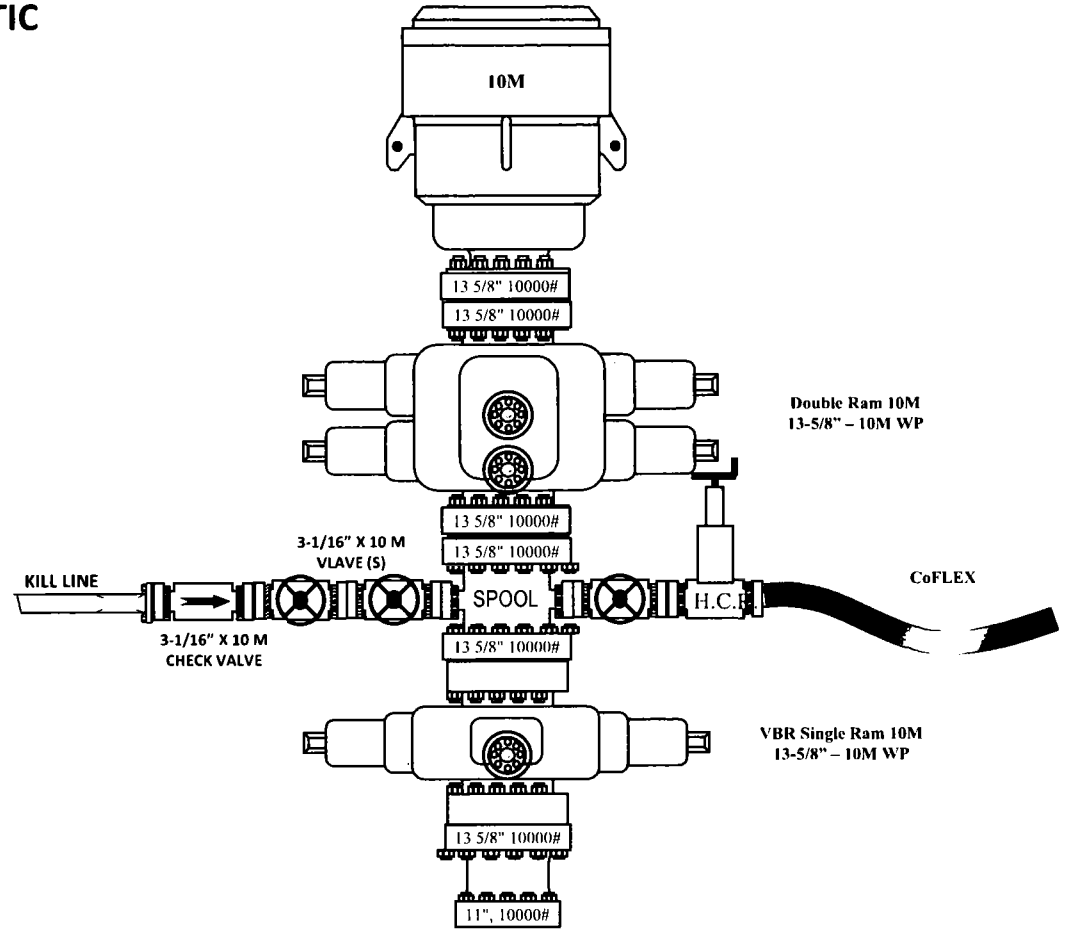
5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



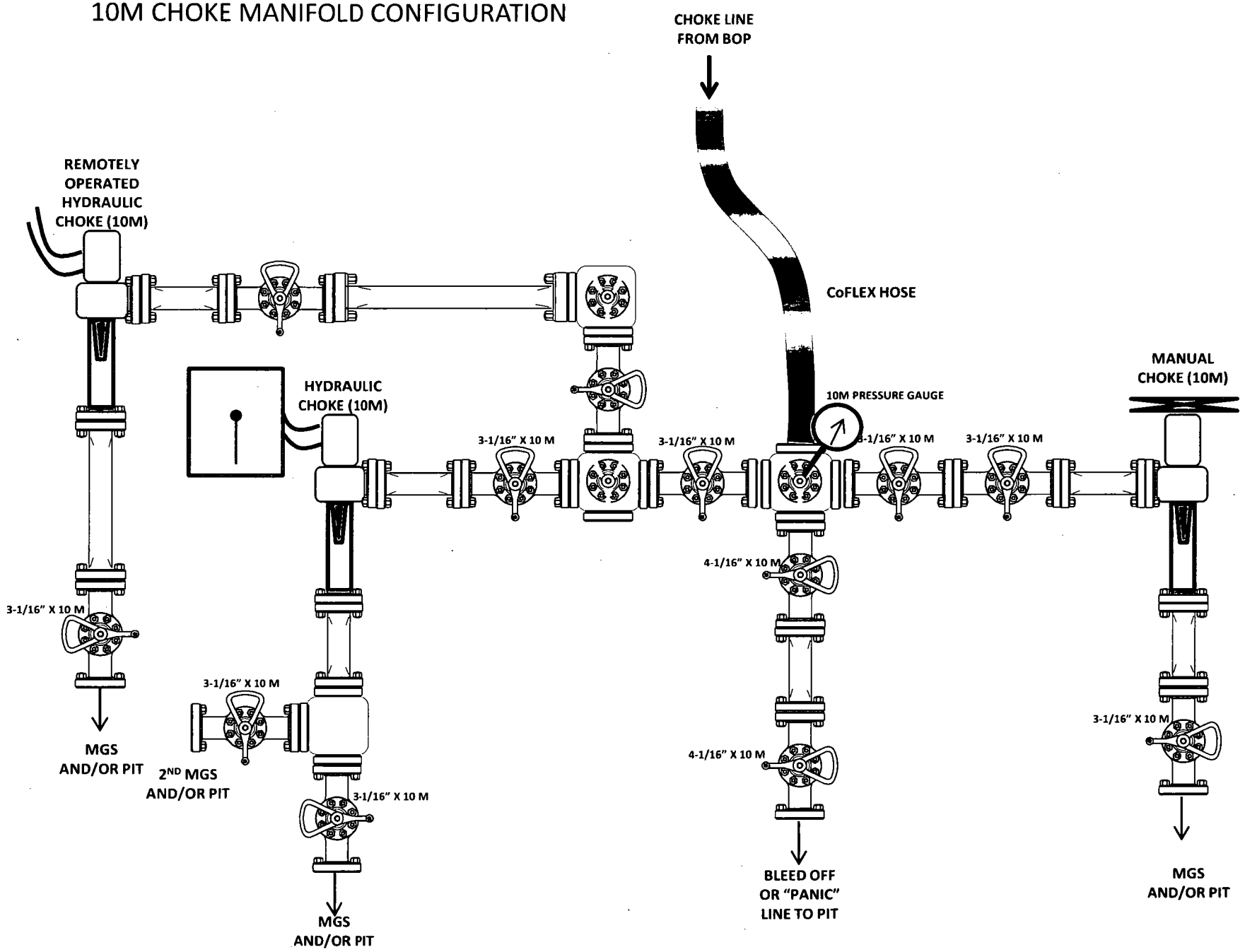
10M BOP Stack

10M REMOTE KILL SCHEMATIC

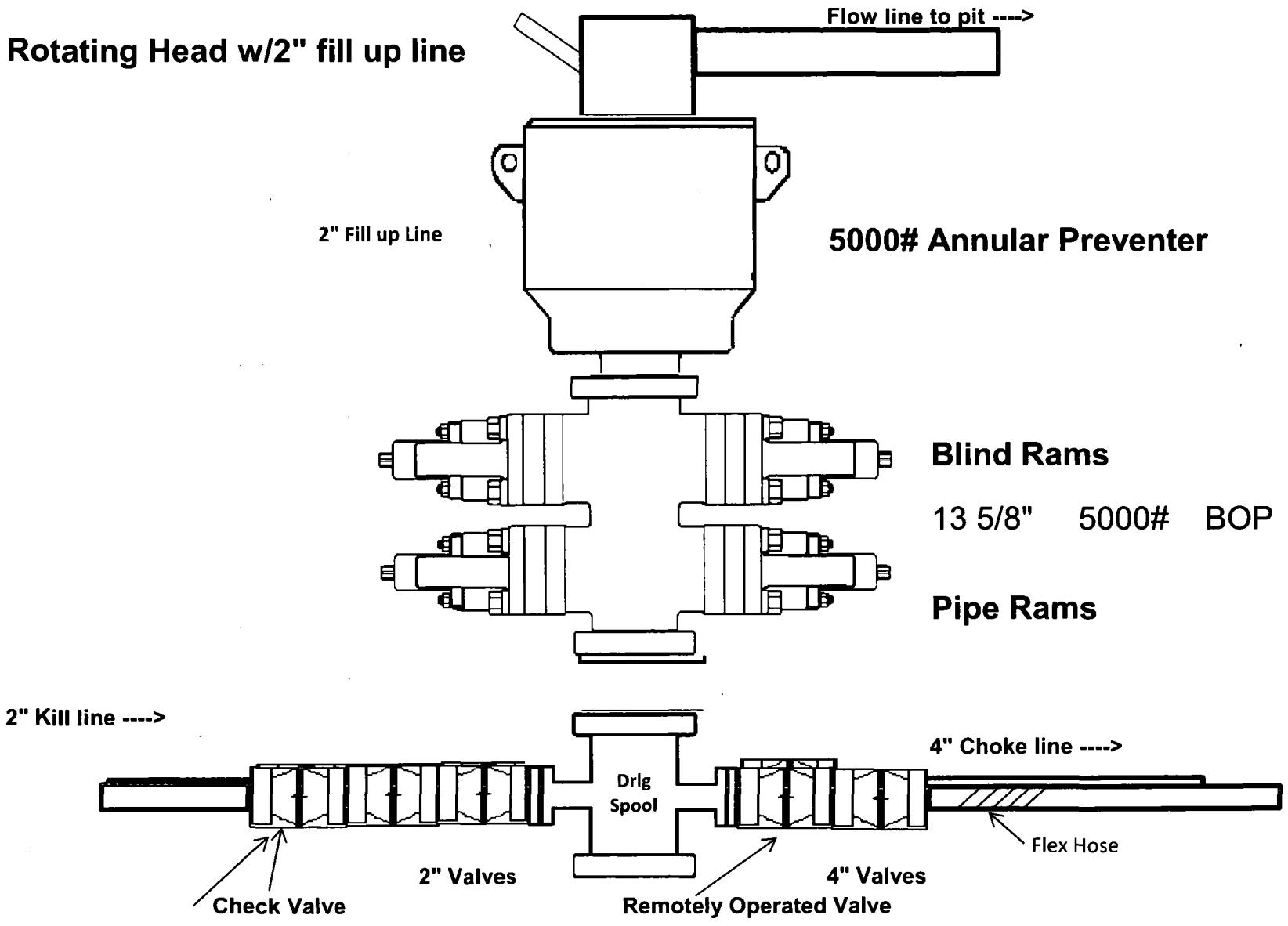




10M CHOKE MANIFOLD CONFIGURATION



5,000 psi BOP Schematic



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	Odessa	Hose Assembly Type	Choke & Kill
MWH Sales Representative	Charles Ash	Certification	API 7K/FSL LEVEL2
Date Assembled	11/11/2016	Hose Grade	Mud
Location Assembled	OKC	Hose Working Pressure	100000
Sales Order #	308747	Hose Lot # and Date Code	12354-09/15
Customer Purchase Order #	345144	Hose I.D. (Inches)	3.5"
Assembly Serial # (Pick Ticket #)	371501	Hose O.D. (Inches)	5.87"
Hose Assembly Length	35 Feet	Armor (yes/no)	No

Fittings			
End A		End B	
Stem (Part and Revision #)	R3.5X64WB	Stem (Part and Revision #)	R3.5X64WB
Stem (Heat #)	A112669	Stem (Heat #)	A112669
Ferrule (Part and Revision #)	RF3.5X5750	Ferrule (Part and Revision #)	RF3.5X5750
Ferrule (Heat #)	41632	Ferrule (Heat #)	41632
Connection (Flange Hammer Union Part	4-1/16 10K	Connection (Part #)	4-1/16 10K
Connection (Heat #)		Connection (Heat #)	
Nut (Part #)		Nut (Part #)	
Nut (Heat #)		Nut (Heat #)	
Dies Used	5.80"	Dies Used	5.80"

Hydrostatic Test Requirements		
Test Pressure (psi)	15,000	*Hose assembly was tested with ambient water temperature.*
Test Pressure Hold Time (minutes)	24 1/2	

Date Tested	Tested By	Approved By
11/11/2016	Richard Dias	Charles Ash

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: **Odessa**	*Customer P.O.#* **345144**
Sales Order # **308747**	*Date Assembled:* **11/11/2016**

Specifications

Hose Assembly Type:	**Choke & Kill**	*Rig #*	**N/A**
Assembly Serial #	**371501**	*Hose Lot # and Date Code*	**12354-09/15**
Hose Working Pressure (psi)	**100000**	*Test Pressure (psi)*	**15000**
Hose Assembly Description:	**CK56-SS-10K-6410K-6410K-35.00' FT-W/LIFTERS**		

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	***Date***
Charles Ash	**11/11/2016**

Midwest Hose & Specialty, Inc.

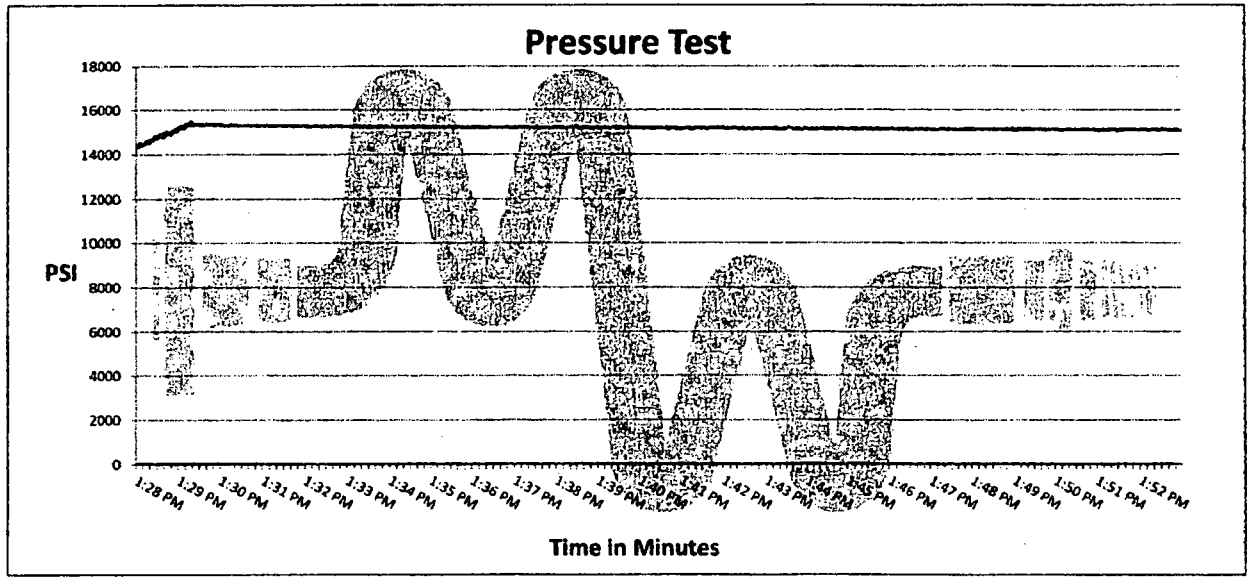
Internal Hydrostatic Test Graph

November 11, 2016

Customer: Odessa

Pick Ticket #: 371501

Hose Specifications		Verification	
Hose Type	**Length**	**Type of Fitting**	**Coupling Method**
Ck	35'	4 1/16 10K	Swage
I.D.	**O.D.**	**Die Size**	**Final O.D.**
3.5""	5.30"	5.80"	5.83"
Working Pressure	**Burst Pressure**	**Hose Serial #**	**Hose Assembly Serial #**
10000 PSI	Standard Safety Multiplier Applies	12354	371501



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	24 2/4 Minutes		15512 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: *Richard Davis*

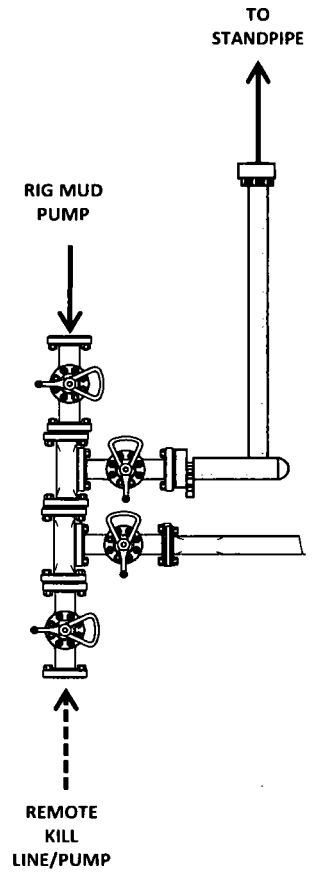
x _____

Approved By: *Charles Ash*

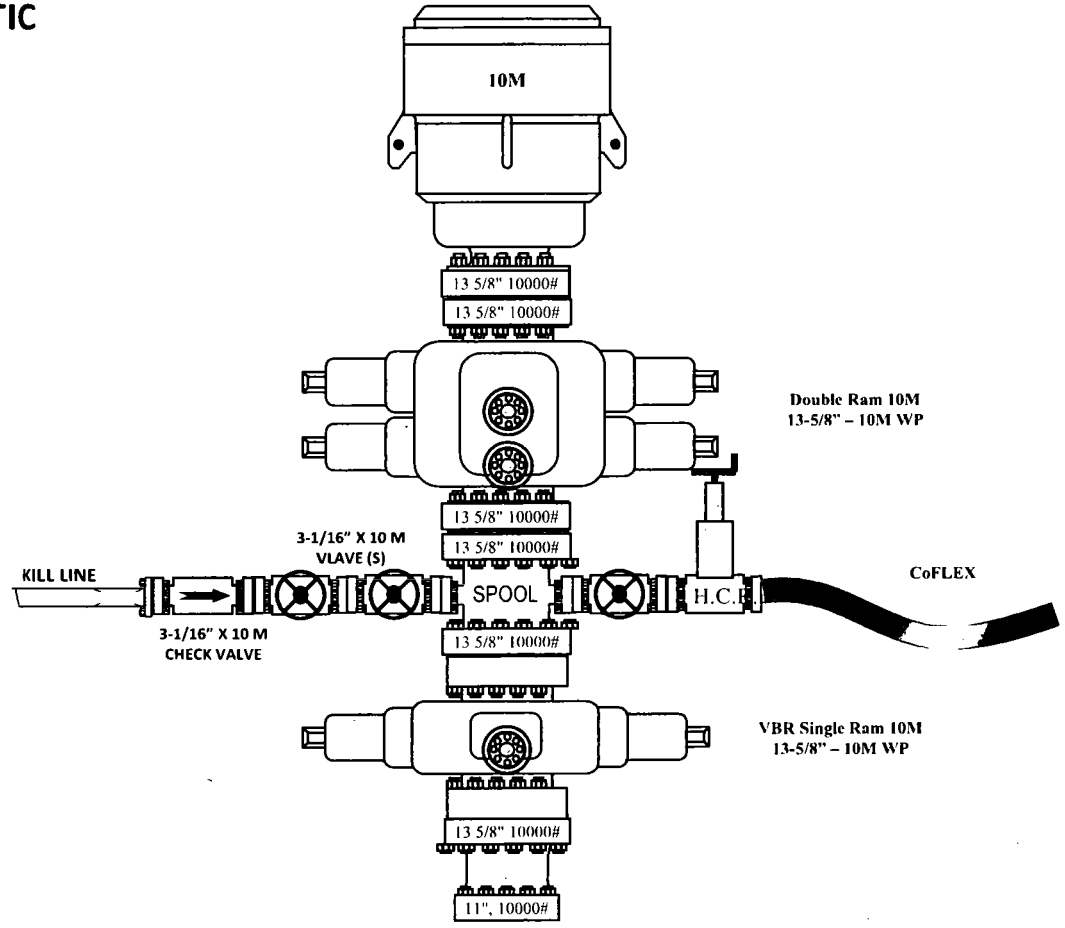
x _____

10M BOP Stack

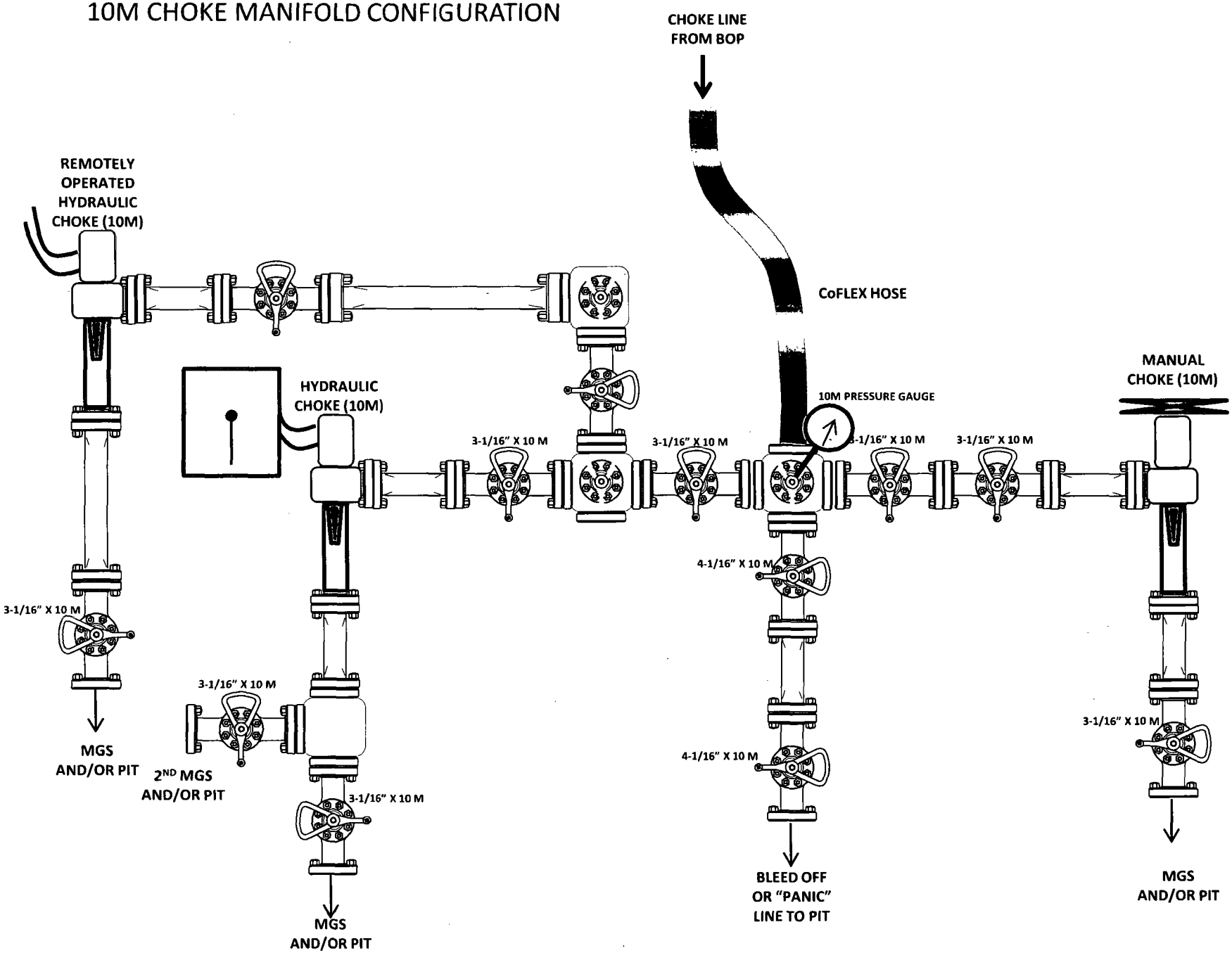
10M REMOTE KILL SCHEMATIC



10M BOP Stack
(10M Annular)



10M CHOKE MANIFOLD CONFIGURATION



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	Odessa	Hose Assembly Type	Choke & Kill
MWH Sales Representative	Charles Ash	Certification	API 7K/FSL LEVEL2
Date Assembled	11/11/2016	Hose Grade	Mud
Location Assembled	OKC	Hose Working Pressure	100000
Sales Order #	308747	Hose Lot # and Date Code	12354-09/15
Customer Purchase Order #	345144	Hose I.D. (Inches)	3.5"
Assembly Serial # (Pick Ticket #)	371501	Hose O.D. (Inches)	5.87"
Hose Assembly Length	35 Feet	Armor (yes/no)	No

Fittings			
End A		End B	
Stem (Part and Revision #)	R3.5X64WB	Stem (Part and Revision #)	R3.5X64WB
Stem (Heat #)	A112669	Stem (Heat #)	A112669
Ferrule (Part and Revision #)	RF3.5X5750	Ferrule (Part and Revision #)	RF3.5X5750
Ferrule (Heat #)	41632	Ferrule (Heat #)	41632
Connection: Flange Hammer Union Part	4-1/16 10K	Connection (Part #)	4-1/16 10K
Connection (Heat #)		Connection (Heat #)	
Nut (Part #)		Nut (Part #)	
Nut (Heat #)		Nut (Heat #)	
Dies Used	5.80"	Dies Used	5.80"

Hydrostatic Test Requirements		
Test Pressure (psi)	15,000	Hose assembly was tested with ambient water temperature.
Test Pressure Hold Time (minutes)	24 1/2	

Date Tested	Tested By	Approved By
11/11/2016	Richard Dix	Charles Ash

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: **Odessa**	*Customer P.O.#* **345144**
Sales Order # **308747**	*Date Assembled:* **11/11/2016**

Specifications

Hose Assembly Type:	**Choke & Kill**	*Rig #*	**N/A**
Assembly Serial #	**371501**	*Hose Lot # and Date Code*	**12354-09/15**
Hose Working Pressure (psi)	**100000**	*Test Pressure (psi)*	**15000**
Hose Assembly Description:	**CK56-SS-10K-6410K-6410K-35.00' FT-W/LIFTERS**		

We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.

Supplier:
Midwest Hose & Specialty, Inc.
3312 S I-35 Service Rd
Oklahoma City, OK 73129

Comments:

Approved By	***Date***
Charles Ash	**11/11/2016**

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Graph

November 11, 2016

Customer: Odessa

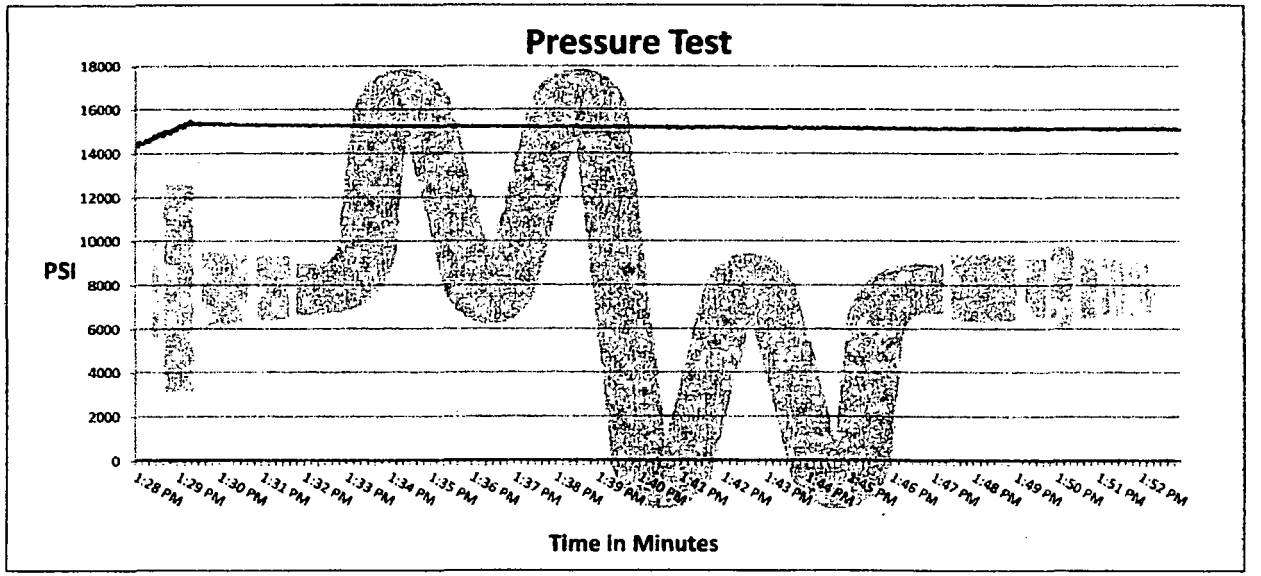
Pick Ticket #: 371501

Hose Specifications

Hose Type	Length
Ck	35'
I.D.	**O.D.**
3.5""	5.30"
Working Pressure	**Burst Pressure**
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4 1/16 10K	Swage
Die Size	**Final O.D.**
5.80"	5.83"
Hose Serial #	**Hose Assembly Serial #**
12354	371501



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	24 2/4 Minutes		15512 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: *Richard Davis*

x

Approved By: *Charles Ash*

x

Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
13.5"	0	975	10.75"	45.5	N80	BTC	5.54	1.20	23.44
9.875"	0	11750	7.625"	29.7	P110	BTC	1.29	1.11	3.11
6.75"	0	11250	5.5"	23	P110	BTC	1.95	2.04	3.25
6.75"	11250	17,212	5"	18	P110	BTC	1.95	2.04	3.25
				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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	875	13.375"	54.5	J55	STC	2.82	1.27	10.78
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.00	3.25
12.25"	4000	4875	9.625"	40	L80	LTC	1.21	1.45	5.73
8.75"	0	14,768	5.5"	17	P110	LTC	1.50	2.69	2.54
			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 Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
13.5"	0	890	10.75"	45.5	N80	BTC	6.06	1.22	25.68
9.875"	0	11575	7.875"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
6.75"	11075	17,311	5"	18	P110	BTC	1.81	1.87	3.15
			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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

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Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
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9.875"	0	11575	7.875"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
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Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
13.5"	0	890	10.75"	45.5	N80	BTC	6.06	1.22	25.68
9.875"	0	11575	7.875"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
6.75"	11075	17,311	5"	18	P110	BTC	1.81	1.87	3.15
			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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

Casing Program

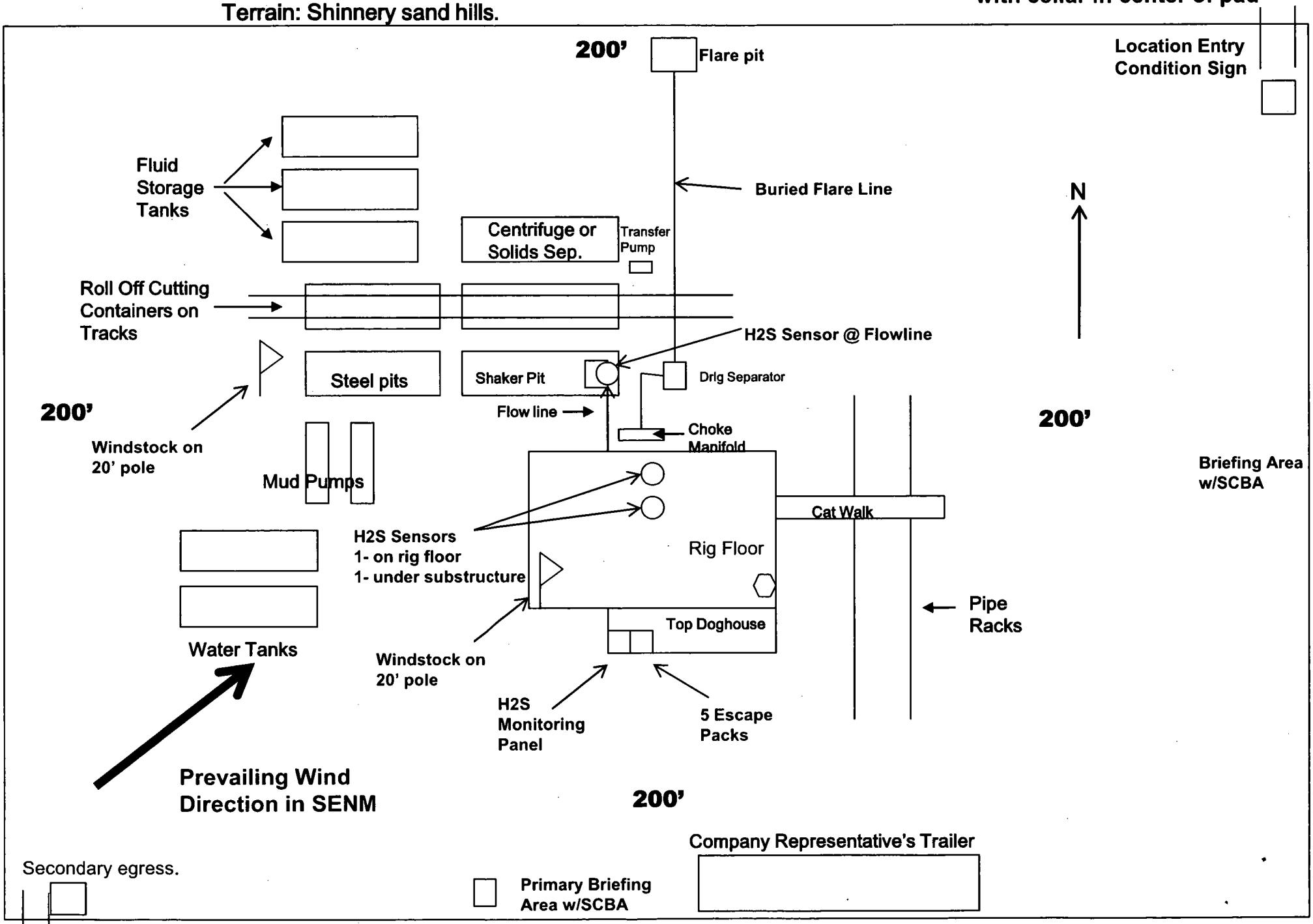
Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
13.5"	0	890	10.75"	45.5	N80	BTC	6.06	1.22	25.68
9.875"	0	11575	7.875"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
6.75"	11075	17,311	5"	18	P110	BTC	1.81	1.87	3.15
			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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

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

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



COG Operating, LLC - Tigercat Federal Com #3H

1. Geologic Formations

TVD of target	12,866' EOL	Pilot hole depth	NA
MD at TD:	17,311'	Deepest expected fresh water:	157'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	865	Water	
Top of Salt	1195	Salt	
Base of Salt	4695	Salt	
Lamar	4864	Salt Water	
Bell Canyon	4884	Salt Water	
Cherry Canyon	5946	Oil/Gas	
Brushy Canyon	7496	Oil/Gas	
Bone Spring Lime	9006	Oil/Gas	
U. Avalon Shale	9176	Oil/Gas	
L. Avalon Shale	9396	Oil/Gas	
1st Bone Spring Sand	9966	Oil/Gas	
2nd Bone Spring Sand	10482	Oil/Gas	
3rd Bone Spring Sand	11548	Oil/Gas	
Wolfcamp	12032	Target Oil/Gas	

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
13.5"	0	890	10.75"	45.5	N80	BTC	6.06	1.22	25.68
9.875"	0	11575	7.875"	29.7	P110	BTC	1.31	1.02	3.16
6.75"	0	11075	5.5"	23	P110	BTC	1.81	1.87	3.15
6.75"	11075	17,311	5"	18	P110	BTC	1.81	1.87	3.15
			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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Tigercat Federal Com #3H

	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.	90	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.	950	10.3	3.6	21.48	16	Tuned Light Blend
	250	16.4	1.08	4.32	8	Tail: Class H
Prod	220	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	610	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% OH in Lateral (KOP to EOL)

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
9-7/8"	13-5/8"	5M	Annular	x	3000 psi
			Blind Ram		5M
			Pipe Ram		
			Double Ram		
			Other*		
6-3/4"	13-5/8"	10M	Annular	x	50% testing pressure
			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.

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	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12	35-45	<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.
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	8030 psi at 12866' 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

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

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

APD ID: 10400021891 **Submission Date:** 09/12/2017

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

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_Tigercat_3H_Existing_Road_20170912132259.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_Tigercat_3H_Maps_Plats_20170912132355.pdf

New road type: TWO-TRACK

Length: 101.7 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:

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_Tigercat_3H_1Mile_Data_20170912132412.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 proposed Tigercat Central Tank Battery facility. A surface flow line of approximately 2157.1' of 3" steel pipe carrying oil, gas and water under a maximum pressure of 125 psi will follow the road to the facility at the Tigercat Central Tank Battery location. We plan to install a 4" surface polyethylene pipe transporting Gas Lift Gas from the Tigercat Central Tank Battery to the Tigercat Federal Com 3H. The surface Gas Lift Gas pipe of approximately 2157.1' under a maximum pressure of 125 psi will be installed no farther than 10 feet from the edge of the road.

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

Section 5 - Location and Types of Water Supply

Water Source Table

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

Describe type: Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E., and will be provided by Malaga Brine Station. **Source longitude:**

Source latitude:

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): 15000 **Source volume (acre-feet):** 1.9333965

Source volume (gal): 630000

Water source use type: STIMULATION, SURFACE CASING **Water source type:** OTHER

Describe type: Fresh water will be obtained from Dinwiddie Cattle Co. LLC. Po Box 963, Capitan, NM 88354 C-02289 Water Well located in Section 3. T26S. R33E. **Source longitude:**

Source latitude:

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): 225000 **Source volume (acre-feet):** 29.000946

Source volume (gal): 9450000

Water source and transportation map:

COG_Tigercat_3H_Brine_H2O_20170912132703.pdf

COG_Tigercat_3H_Fresh_H2O_20170912132713.pdf

Water source comments: Fresh water will be obtained from Dinwiddie Cattle Co. LLC. Po Box 963, Capitan, NM 88354 C-02289 Water Well located in Section 3. T26S. R33E. Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E., and will be provided by Malaga Brine Station.

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 available. If not available onsite, caliche will be obtained from Dinwiddie Cattle Co., LLC caliche pit located in Section 4, T26S, R33E Phone 575-390-2076.
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

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 FACILITY **Disposal location ownership:** COMMERCIAL
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 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: 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 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 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?: YES

Ancillary Facilities attachment:

COG_Tigercat_4H_GCP_20170912163518.pdf

Comments: GCP Attached.

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Tigercat_3H_Prod_Facility_20170912155822.pdf
COG_Tigercat_CTB_Schem_20170912155829.pdf
COG_Tigercat_CTB_20170912155838.pdf

Comments: Production will be sent to the proposed Tigercat Central Tank Battery facility. A surface flow line of approximately 2157.1' of 3" steel pipe carrying oil, gas and water under a maximum pressure of 125 psi will follow the road to the facility at the Tigercat Central Tank Battery location. We plan to install a 4" surface polyethylene pipe transporting Gas Lift Gas from the Tigercat Central Tank Battery to the Tigercat Federal Com 3H. The surface Gas Lift Gas pipe of approximately 2157.1' under a maximum pressure of 125 psi will be installed no farther than 10 feet from the edge of the road.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring attachment:

Drainage/Erosion control construction: Immediately following pad construction approximately 400' of straw waddles will be placed on the North and West sides of the location to reduce sediment impacts to fragile/sensitive soils.
Drainage/Erosion control reclamation: Reclaim the south side 80'

Wellpad long term disturbance (acres): 2.94

Wellpad short term disturbance (acres): 3.67

Access road long term disturbance (acres): 0.03

Access road short term disturbance (acres): 0.03

Pipeline long term disturbance (acres): 9.1827366E-7

Pipeline short term disturbance (acres): 9.1827366E-7

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 2.970001

Total short term disturbance: 3.700001

Reconstruction method: New construction of pad.

Topsoil redistribution: South 80'

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:

Seed Summary

Total pounds/Acre:

Seed Type	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_Tigercat_3H_Closed_Loop_20170912132958.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:

Operator Name: COG OPERATING LLC

Well Name: TIGERCAT FEDERAL COM **Well Number:** 3H

USFWS Local Office:

Other Local Office:

USFS Region:

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

Fee Owner: AE&J Royalties, LLC. Elizabeth J. Written
Phone: (646)637-6355

Fee Owner Address: 23 Bergen Street. Bropklyn, New York 11201.
Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: COG Operating LLC is in the process of getting a Surface Use Agreement.

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 6/13/2017 by Rand French (COG); Gerald Herrera (COG) and Jeff Robertson (BLM). Note: Well was previously named Tigercat Federal Com 26H.

Other SUPO Attachment

COG_Tigercat_3H_Certification_20170912133051.pdf

OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently 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 COG Operating LLC, 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. Executed this 17th day of August, 2017.

Signed: Mayte Reyes

Printed Name: Mayte Reyes
Position: Regulatory Analyst
Address: 2208 W. Main Street, Artesia, NM 88210
Telephone: (575) 748-6945
E-mail: mreyes1@concho.com
Field Representative (if not above signatory): Rand French
Telephone: (575) 748-6940. E-mail: rfrench@concho.com

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

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

Flare Lines will be from both Choke Manifold & Separator to edge of location.

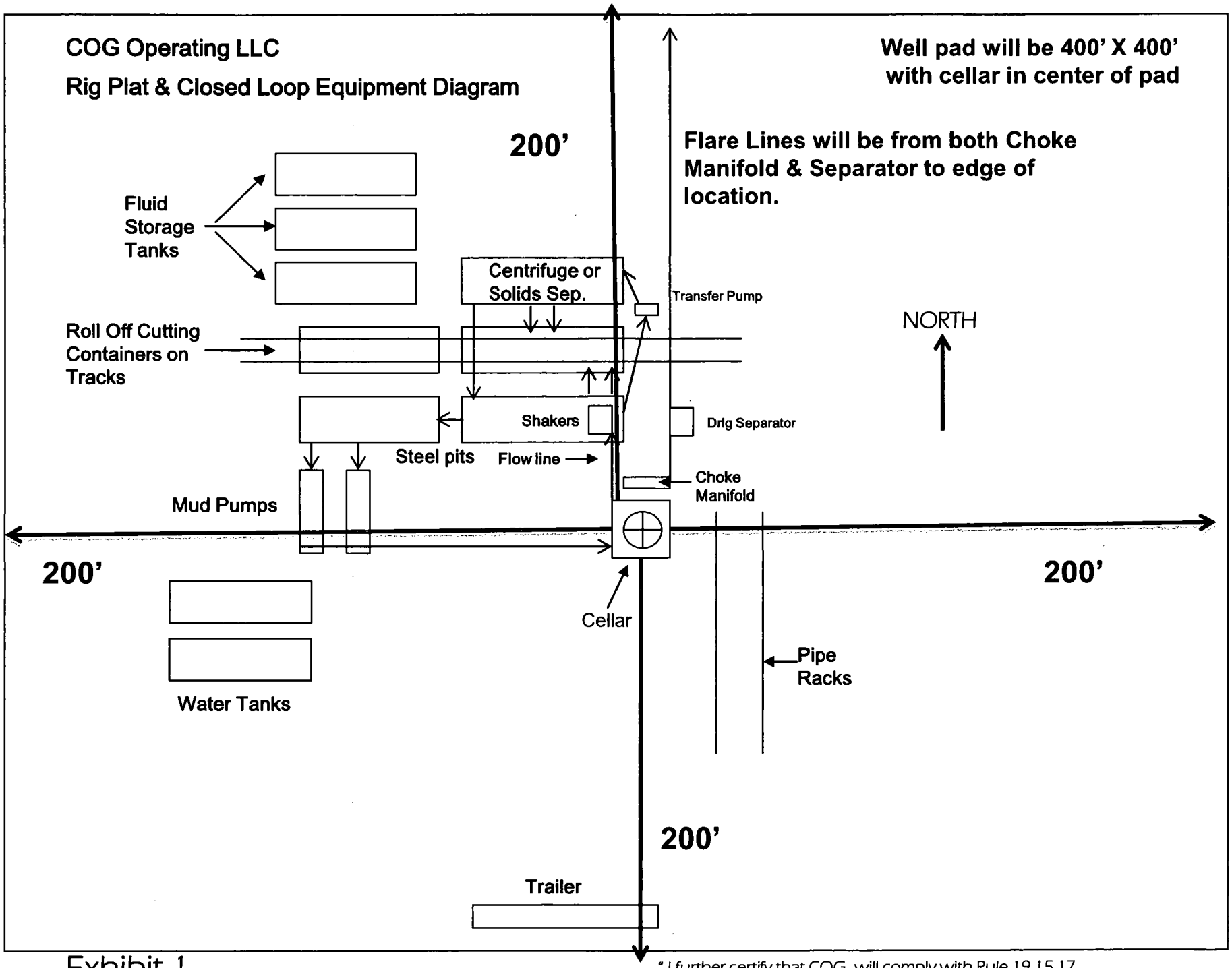


Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

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

02/26/2018

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: