

OCD Hobbs

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

16-1337

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

HOBBS OCD  
APR 03 2018  
RECEIVED

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.  NMNM120907
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator COG Production LLC. (217955)		7. If Unit or CA Agreement, Name and No.
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940 MIN F 144P R	8. Lease Name and Well No. (314193) Eider Federal #15H
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 210' FSL & 1020' FWL Unit Letter M (SWSW) Sec 35-T24S-R32E At proposed prod. Zone 2410' FSL & 1320' FWL Unit Letter L (NWSW) Sec 26-T24S-R32E		9. API Well No. 30-025 44627
14. Distance in miles and direction from nearest town or post office* Approximately 24 miles East from Malaga		10. Field and Pool, or Exploratory (97784) WC-025 G-07 32432255, Lower Bone Spring WC-025 G-06 3233201M; 41
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 200'	16. No. of acres in lease 1840	11. Sec., T.R.M. or Blk and Survey or Area Sec. 35 - T24S - R32E
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 60' (Prop. Eider 16H) BHL: 995'	19. Proposed Depth TVD: 9,370' MD: 16,707'	12. County or Parish Lea
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3522.0' GL	22. Approximate date work will start* 12/1/2017	13. State NM
20. BLM/BIA Bond No. on file NMB000860 & NMB000845		
23. Estimated duration 30 days		

24. Attachments

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

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

25. Signature <i>Mayte Reyes</i>	Name (Printed/Typed) Mayte Reyes	Date 7-15-2016
Title Regulatory Analyst		
Approved by (Signature) <i>/s/Cody Layton</i>	Name (Printed/Typed) FIELD MANAGER	Date MAR 29 2013
Title CARLSBAD FIELD OFFICE		

Application approval does not warrant or certify that the applicant holds legan 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.

APPROVAL FOR TWO YEARS

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 rec 4/3/18

TOP 1136 9895  
TD WELL 9370

\*(Instructions on page 2)

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

Approval Subject to General Requirements  
& Special Stipulations Attached

Carlsbad Controlled Water Basin

KZ  
04/04/18

REQUIRES NSL

KZ

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

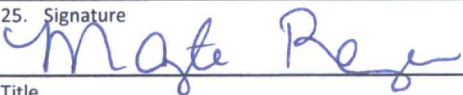
APPLICATION FOR PERMIT TO DRILL OR REENTER

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1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.  Eider Federal #15H
2. Name of Operator  COG Production LLC.		8. Lease Name and Well No.
3a. Address  2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code)  575-748-6940	9. API Well No.
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14. Distance in miles and direction from nearest town or post office*  Approximately 24 miles East from Malaga		11. Sec., T.R.M. or Blk and Survey or Area  Sec. 35 - T24S - R32E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any)  200'	16. No. of acres in lease  1840	17. Spacing Unit dedicated to this well  240
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 60' (Prop. Eider 16H) BHL: 995'	19. Proposed Depth  TVD: 9,370' MD: 16,707'	20. BLM/BIA Bond No. on file  NMB000860 & NMB000845
21. Elevations (Show whether DF, KDB, RT, GL, etc.)  3522.0' GL	22. Approximate date work will start*  12/1/2017	23. Estimated duration  30 days

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25. Signature 	Name (Printed/Typed)  Mayte Reyes	Date  7-15-2016
Title  Regulatory Analyst		
Approved by (Signature)	Name (Printed/Typed)	Date
Title  Office		

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(Continued on page 2)

\*(Instructions on page 2)





**United States Department of the Interior**  
BUREAU OF LAND MANAGEMENT  
HOBBS FIELD STATION FIELD OFFICE  
414 W. Taylor  
Hobbs, NM 88240  
blm\_nm\_hfs\_apd@blm.gov



**Attn: COG OPERATING LLC**  
**600 WEST ILLINOIS AVE**  
**MIDLAND, TX 79701**

MAR 29 2010

**Re: Notice of Decision**

**Operator Name: COG OPERATING LLC**  
**Well Name: EIDER FEDERAL**  
**Well Number: 15H**  
**APD#: 10400003837**

Dear Operator:

The BLM made a decision regarding the above referenced APD. Please see the enclosed permit for details.

**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.

Sincerely,

**/s/Cody Layton**

Highlight All Changes

Application

**Section 1 - General**

APD ID: 10400003837      Tie to previous NOS?      Submission Date: 07/28/2016  
BLM Office: HOBBS      User: Priscilla Perez      Title: Legal Instruments Examiner  
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? N      Federal or Indian agreement:  
Agreement number:  
Agreement name:  
Keep application confidential? N  
Permitting Agent? NO      APD Operator: COG OPERATING LLC  
Operator letter of designation:  
Keep application confidential? N

Signed By: Mayte Reyes      Title: Regulatory Analyst      Signed Date: 07/15/2016

APD Form Attachment(s)      Eider\_Federal\_15H\_3160\_08-21-2017.PDF

Operator Info

Operator Organization Name: COG OPERATING LLC      Zip: 79701  
Operator Address: 600 West Illinois Ave  
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: EIDER FEDERAL      Well Number: 15H      Well API Number:  
Field/Pool or Exploratory? Field and Pool      Field Name: WC-025 G-07      Pool Name: LOWER BONE SPRING  
S243225S

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

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 Number: 15H & 16H  
FEDERAL

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 24 Miles

Distance to nearest well: 60 FT

Distance to lease line: 50 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Eider\_Federal\_15H\_Plat\_08-21-2017.PDF

Well work start Date: 10/01/2016

Duration: 30 DAYS

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD27

**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	210	FSL	102 0	FWL	24S	32E	35	Lot 4	32.16726 8	- 103.6502 13	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 120907	352 2	0	0
PPP Leg #1	50	FNL	990	FWL	24S	32E	26	Aliquot NWN W	32.19557 6	- 103.6503	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 120907	- 613 8	196 51	966 0
BHL Leg #1	50	FNL	990	FWL	24S	32E	26	Aliquot NWN W	32.19557 6	- 103.6503	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 120907	- 613 8	196 51	966 0

### Drilling Plan

#### Drilling Plan Attachments

**Drilling Plan Attachment(s)**

Eider\_Federal\_15H\_Drilling\_Plan\_08-21-2017.PDF

**Hydrogen Sulfide Drilling Operations Plan**

Eider\_Federal\_15H\_H2S\_08-21-2017.PDF

**Other Attachments**

Eider\_Federal\_15H\_Plat\_and\_maps\_08-21-2017.PDF

**DP General Comments:**

### SUPO

#### SUPO Attachments

**Surface Use Plan Attachment(s)**

Eider\_Federal\_15H\_SUPO\_08-21-2017.PDF

**Map or Plat Attachment(s)**

Eider\_Federal\_15H\_Plat\_and\_maps\_08-21-2017.PDF



SUPO General Comments:

## PWD

### PWD Attachments

Produced Water Disposal Plan Attachment

Produces Water Disposal Plan Map Attachment(s)

PWD General Comments:

## Bond Info

### Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000860

BIA Bond number:

Do you have a reclamation bond?

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:

Bond Attachment(s)

BIA Bond Comments:

## Operator Certification

### Operator Certification

Operator Certification Attachment

Eider\_Federal\_15H\_Certification\_08-21-2017.PDF

## Payment Info

## **Payment**

APD Fee Payment Method: BLM DIRECT

CBS Receipt number: 3610915

### **Form Attachment(s)**

#### **APD Form Attachment(s)**

Eider\_Federal\_15H\_3160\_08-21-2017.PDF

#### **Well Plat Attachment(s)**

Eider\_Federal\_15H\_Plat\_08-21-2017.PDF

### **Drilling Plan Attachment(s)**

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Eider\_Federal\_15H\_Drilling\_Plan\_08-21-2017.PDF

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#### **Other Attachments**

Eider\_Federal\_15H\_Plat\_and\_maps\_08-21-2017.PDF

### **Surface Use Plan Attachment(s)**

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Eider\_Federal\_15H\_SUPO\_08-21-2017.PDF

#### **Map or Plat Attachment(s)**

Eider\_Federal\_15H\_Plat\_and\_maps\_08-21-2017.PDF

### **Produce Water Disposal Attachment**

#### **Produced Water Disposal Plan Attachment**

Produces Water Disposal Plan Map Attachment

### **Bond Information Attachments**

#### **Bond Attachment(s)**

### **Operator Certification Attachment**

#### **Operator Certification Attachment**

Eider\_Federal\_15H\_Certification\_08-21-2017.PDF



# COG Production, LLC - Eider Federal 15H

## 1. Geologic Formations

TVD of target	9,370' EOL	Pilot hole depth	NA
MD at TD:	16,707'	Deepest expected fresh water:	350'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1015	Water	
Top of Salt	1300	Salt	
Base of Salt	4605	Salt	
Lamar	4835	Salt Water	
Bell Canyon	4880	Salt Water	
Cherry Canyon	5850	Oil/Gas	
Brushy Canyon	7130	Oil/Gas	
Bone Spring Lime	8795	Oil/Gas	
U. Avalon Shale	9140	Oil/Gas	
L. Avalon Shale	9320	Target Oil/Gas	
1st Bone Spring Sand	9895	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 Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1040	13.375"	54.5	J55	STC	2.37	1.31	9.07
12.25"	0	4860	9.625"	40	J55	LTC	1.00	1.08	2.67
8.75"	0	16,707	5.5"	17	P110	LTC	1.63	2.92	2.79
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



**COG Production, LLC - Eider Federal 15H**

	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 3 <sup>rd</sup> 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 2 <sup>nd</sup> string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	



## COG Production, LLC - Eider Federal 15H

### 3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft <sup>3</sup> / sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	430	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl <sub>2</sub>
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl <sub>2</sub>
Inter.	920	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	630	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	1990	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%
1 <sup>st</sup> Intermediate	0'	50%
Production	4,360'	25% OH in Lateral (KOP to EOL) – 40% OH in Vertical



# COG Production, LLC - Eider Federal 15H

## 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.

## COG Production, LLC - Eider Federal 15H

### 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 - 10.2	28-34	N/C
9-5/8" Int shoe	Lateral TD	Cut Brine	8.6 - 9.4	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	

## COG Production, LLC - Eider Federal 15H

### 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4585 psi at 9370' TVD
Abnormal Temperature	NO 150 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 (H<sub>2</sub>S) monitors will be installed prior to drilling out the surface shoe. If H<sub>2</sub>S 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 H<sub>2</sub>S is present

Y H<sub>2</sub>S Plan attached

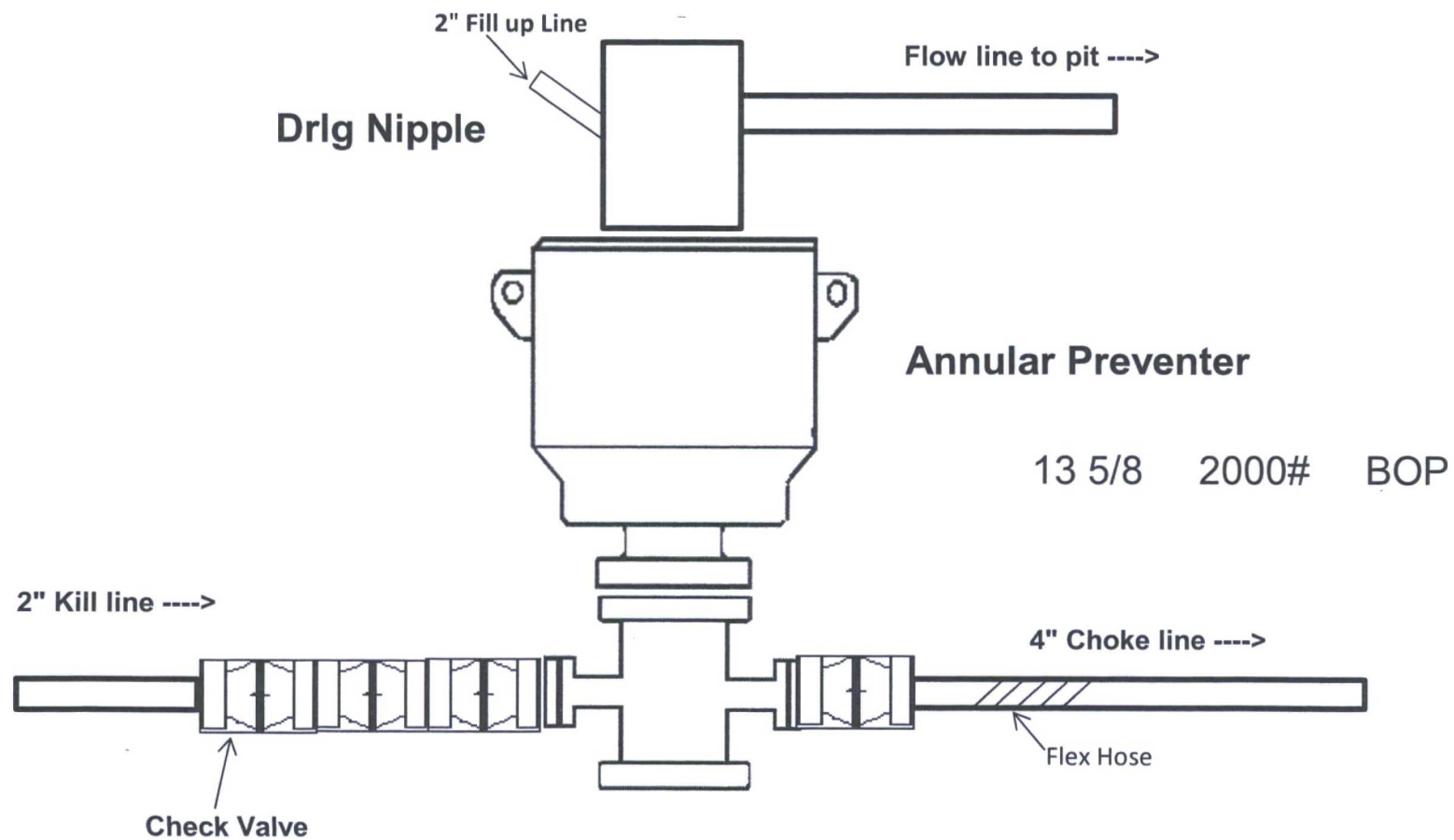
### 8. Other Facets of Operation

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

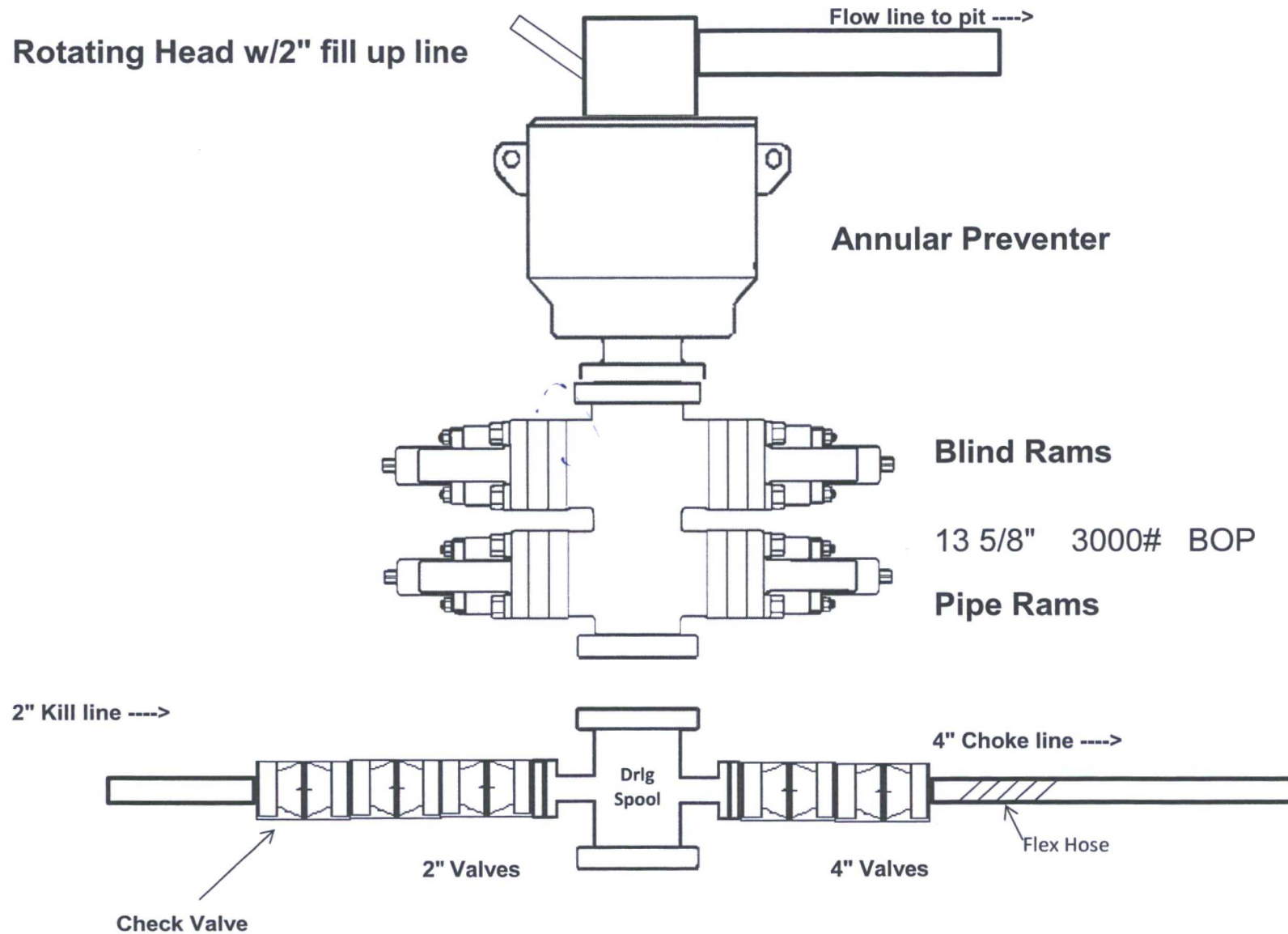
x	H <sub>2</sub> S Plan.
x	BOP & Choke Schematics.
x	Directional Plan



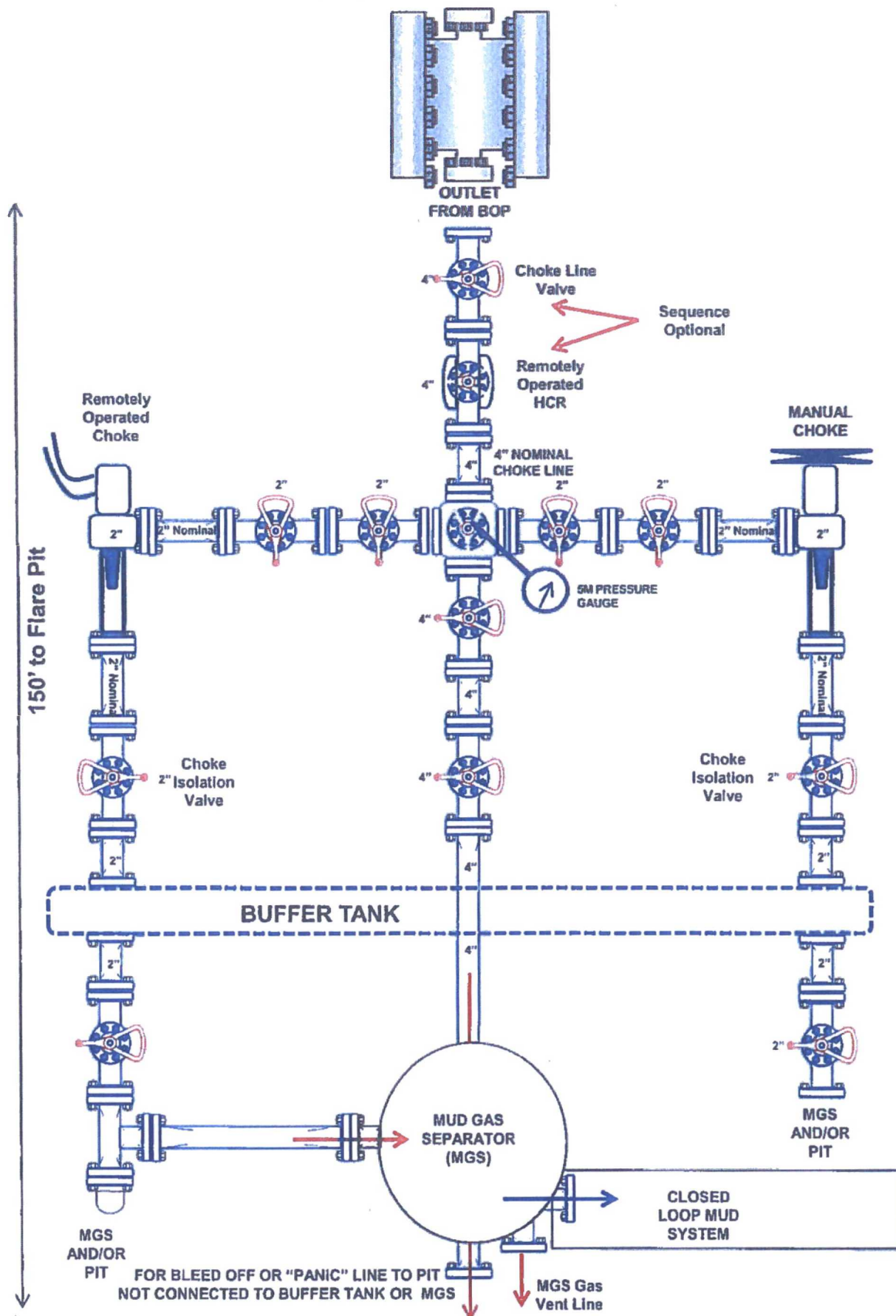
## 2,000 psi BOP Schematic



# 3,000 psi BOP Schematic

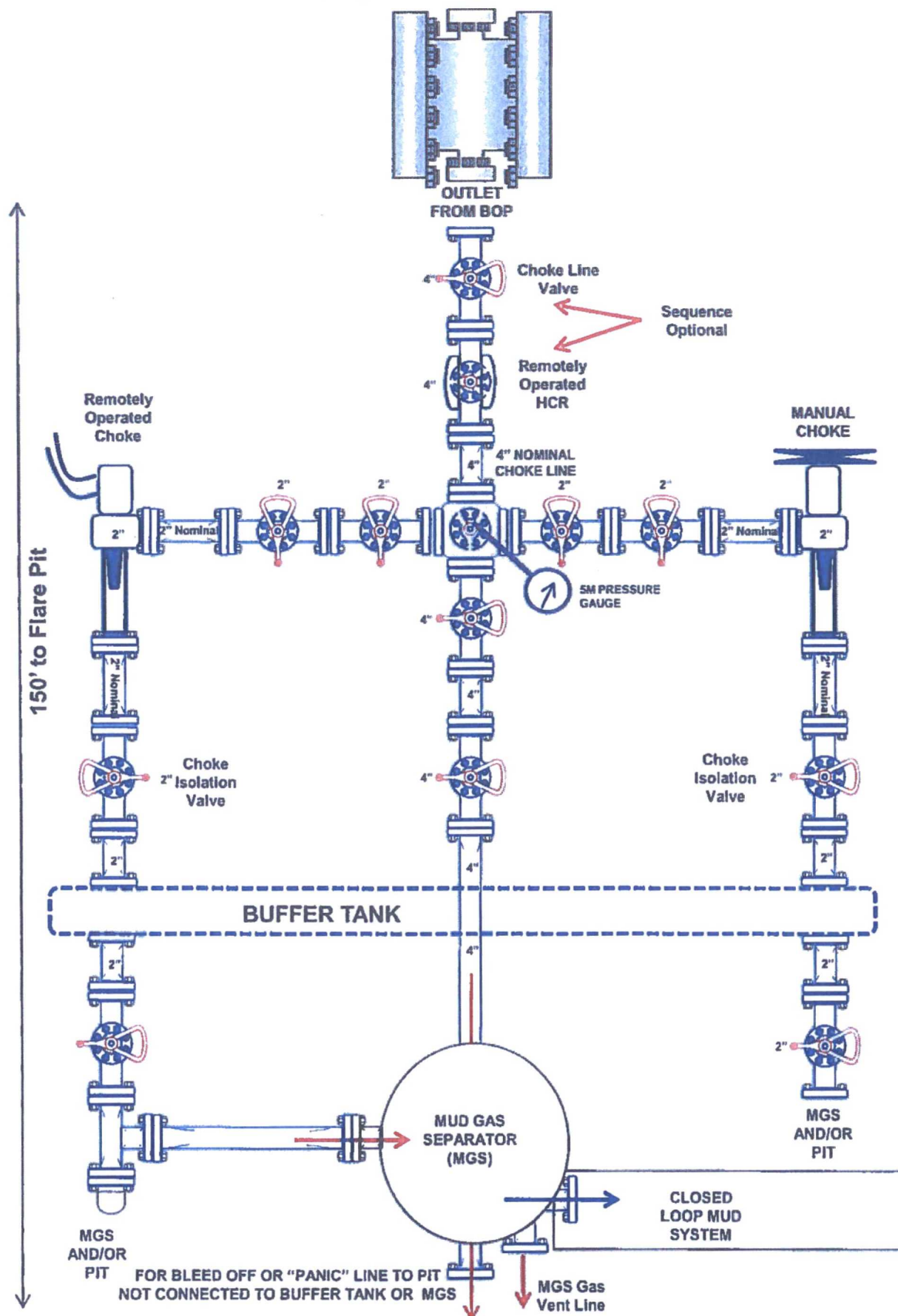


## 2M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)





# 3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



COG Production LLC

Rig Plat & Closed Loop Equipment Diagram

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

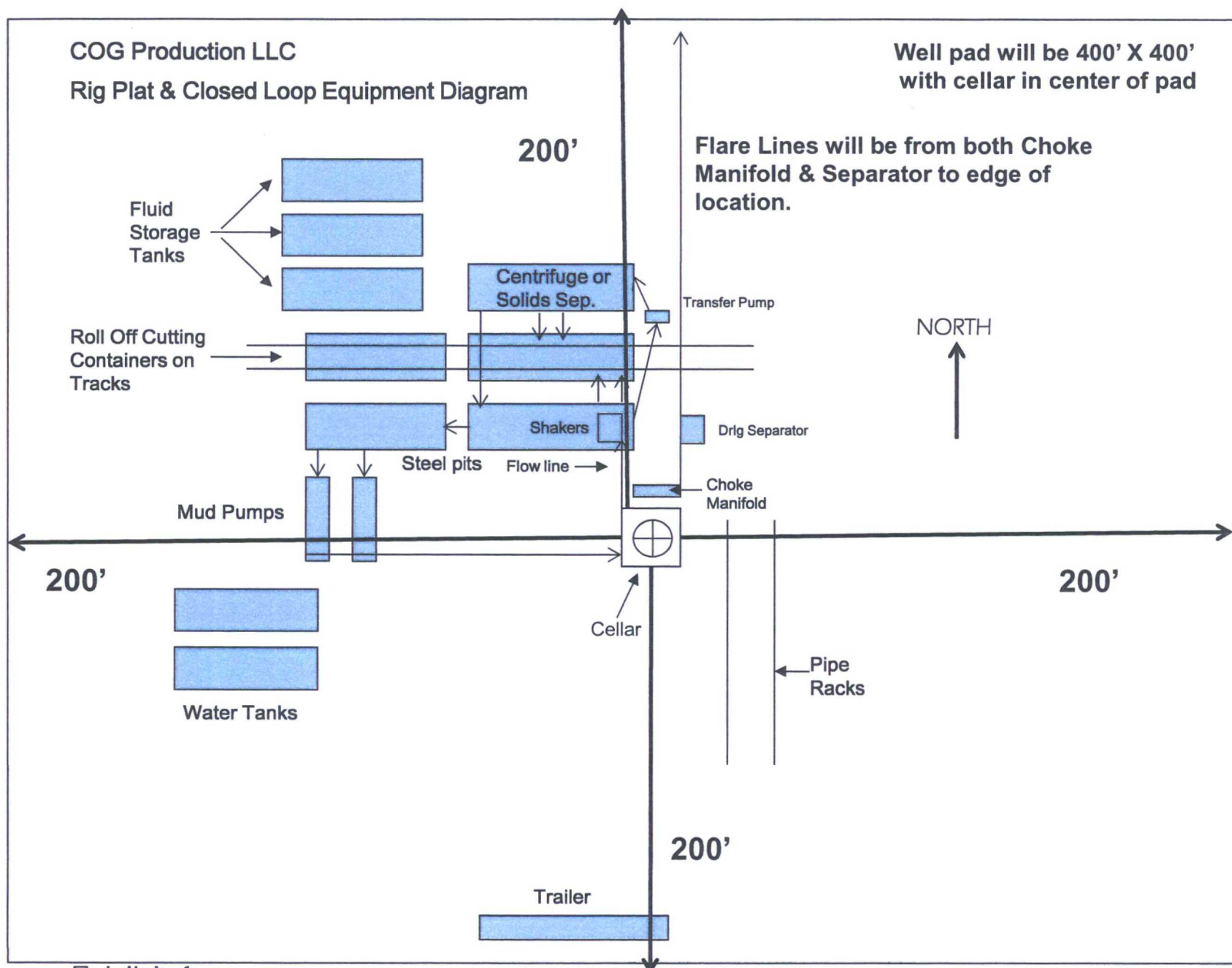


Exhibit 1

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

COG Production LLC  
H<sub>2</sub>S Equipment Schematic  
Terrain: Shinnery sand hills.

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

