

OCD Hobbs

NOBBS OCD

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ATS-15-583

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

(H)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL: NMNM114997 BHL: NMNM119760, NWSE of Sec 6: Fee SWSE of Sec 6: NMNM120913	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator COG Operating LLC (229137)		7. If Unit or CA Agreement, Name and No.	
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. (315648) Stove Pipe Federal Com #2H	
3b. Phone No. (include area code) 575-748-6940		9. API Well No. 30-025-42926	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 225' FNL & 1905' FEL Lot #2 (NWNE) SHL Sec. 6-25S-T35E At proposed prod. Zone 2310' FNL & 1980' FEL Unit Letter G (SWNE) BHL: Sec 7-T25S-R35E		10. Field and Pool, or Exploratory (48098) BS WC-025 6-09 5243532M, LWR	
14. Distance in miles and direction from nearest town or post office* Approximately 11 miles from Jal		11. Sec., T.R.M. or Blk and Survey or Area Sec 6-T25S-R35E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 225'		12. County or Parish Lea County	
16. No. of acres in lease NMNM114997: 160.6 NMNM120913: 159.75 NMNM119760: 558.76		13. State NM	
17. Spacing Unit dedicated to this well 240.25		18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: None on this lease BHL: 3113'	
19. Proposed Depth TVD: 12,574' MD: 19,728' PH: 12,950'		20. BLM/BIA Bond No. on file NMB000740 & NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3309.5' GL		22. Approximate date work will start* 8/1/2015	
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 4-14-2015
Title Regulatory Analyst		
Approved by (Signature) /S/STEPHEN J. CAFFEY	Name (Printed/Typed)	Date NOV 05 2015
Title FIELD MANAGER		
Office CARLSBAD FIELD OFFICE		

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.

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)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

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1. Geologic Formations

TVD of target	12,574'	Pilot hole depth	12,950'
MD at TD:	19,728'	Deepest expected fresh water:	207'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	819	Water	
Top of Salt	1250	Salt	
Fletcher Anhydrite	5180		
Lamar	5434	Barren	
Delaware Group	5473	Oil/Gas	
Bone Spring	9300	Oil/Gas	
3 rd Bone Spring Lime	12215	Target Zone	
Wolfcamp	12740	Oil/Gas	
Penn Shale	13,598		

See COA

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	850 920	13.375"	54.5	J55	STC	2.84	1.5	46.3
12.25"	0	3500	9.625"	40	J55	LTC	1.41	0.77	2.38
12.25"	3500	5460	9.625"	40	L80	LTC	1.08	0.88	3.33
8.75"	0	12,831	7"	29	P110	LTC	1.32	1.75	2.14
6.125"	11,950	19,728	4.5"	13.5	P110	BTC	1.63	1.89	4.02
BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet				

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

- 9-5/8" J-55: $P_i = 3950$; $P_i/D = 3950 \text{ psi}/5460\text{ft} = 0.72$, above the fracture gradient of 0.7 psi/ft at the shoe.
- 9-5/8" L-80: $P_i = 5750$; $P_i/D = 5750 \text{ psi}/5460\text{ft} = 1.05$, above the fracture gradient of 0.7 psi/ft at the shoe.

Must have table for contingency casing

	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	N

COG Operating, LLC, Stove Pipe Federal Com 2H

justification (loading assumptions, casing design criteria). (Assumption bulleted above)	
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 rd 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 nd 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 ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	350	13.5	1.75	9.4	10	Lead: Class C + 4% Gel + 2% CaCl ₂
	250	14.8	1.34	6.4	8	Tail: Class C + 2% CaCl ₂
Inter. 1 (9-5/8")	1150	13.5	1.75	9.4	11	Lead: Class C + 4% Gel + 2% CaCl ₂
	250	14.8	1.34	6.4	10	Tail: Class C + 2% CaCl ₂
Inter. 2 (7")	475	10.2	3.48	22.0	72	Lead: Tuned Light H Blend (FR, Retarder, FL adds as needed)
	150	16.4	1.10	4.3	12	Tail: Class H (FR, Retarder, FL adds as needed)
Prod. Liner	300	14.4	1.25	5.7	17	Lead: 50:50:2 H Blend (FR, Retarder, FL adds as needed)
	525	14.4	1.25	5.7	17	Tail: 50:50:2 H Blend (FR, FL adds as needed)

COG Operating, LLC, Stove Pipe Federal Com 2H

Casing String	TOC	% Excess
Surface	0'	50%
Intermediate 1	0'	35%
Intermediate 2	4960'	35%
Production Liner	11,950'	35%

Include Pilot Hole Cementing specs:

Pilot hole depth 12,950'

KOP 12,083'

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft ³ /sack	Water gal/sk	Slurry Description and Cement Type
11,900'	12,700'	10	375	17.2	0.98	3.75	Class H
12,700'	12,950'	10	120	17.2	0.98	3.75	Class H

4. Pressure Control Equipment

No	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	System Rated WP	Type	✓	Tested to:
<i>See COA</i> 12-1/4"	13-5/8"	2M	Annular	X	50% of working pressure <i>must test to 2000 psi</i> WP
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	5M	Annular	X	50% testing pressure WP
			Blind Ram	X	
			Pipe Ram	X	
			Double Ram		
			Other*		
6-1/8"	11"	5M	Annular	X	50% testing pressure WP
			Blind Ram	X	
			Pipe Ram	X	
			Double Ram		
			Other*		

COG Operating, LLC, Stove Pipe Federal Com 2H

*Specify if additional ram is utilized.

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.

N	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. See attached schematic.	

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	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	PHTD	Cut Brine	8.5-9.8	28-34	N/C
PBTD	7" shoe	Cut Brine	8.5 – 9.8	28-34	N/C
7" shoe	TD	Cut Brine	8.8 – 9.8	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
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	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.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
x	Coring? If yes, explain – ROTARY SIDEWALL CORES

Additional logs planned		Interval
X	Resistivity	Int. shoe to KOP
X	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	4,000' to TD
X	PEX	Intermediate shoe to TD

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6599 psi
Abnormal Temperature	No

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	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? If yes, describe. **NO**

Will be pre-setting casing? If yes, describe. **NO**

Attachments

 Y Directional Plan

 Other, describe



COG Operating LLC

Lea County, NM

Stove Pipe Federal Com

#2H

OH

Plan: Design #1

Standard Planning Report

09 April, 2015



Wellplanning Planning Report

Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Lea County, NM
Site: Stove Pipe Federal Com
Well: #2H
Wellbore: OH
Design: Design #1

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3337.5usft (Original Well Elev)
MD Reference: WELL @ 3337.5usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project: Lea County, NM

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Stove Pipe Federal Com

Site Position: Northing: 425,345.30 usft Latitude: 32° 9' 57.513 N
From: Map Easting: 787,658.50 usft Longitude: 103° 24' 13.414 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.49 °

Well: #2H

Well Position: +N/-S 0.0 usft Northing: 425,345.30 usft Latitude: 32° 9' 57.513 N
+E/-W 0.0 usft Easting: 787,658.50 usft Longitude: 103° 24' 13.414 W
Position Uncertainty: 0.0 usft Wellhead Elevation: Ground Level: 3,309.5 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/9/2015	7.03	60.06	48,218

Design: Design #1

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	180.26

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
12,082.5	0.00	0.00	12,082.5	0.0	0.0	0.00	0.00	0.00	0.00	
12,831.6	89.88	180.26	12,560.0	-476.5	-2.2	12.00	12.00	0.00	180.26	
19,728.3	89.88	180.26	12,574.4	-7,373.2	-33.5	0.00	0.00	0.00	0.00	PBHL(SPFC#2H)



Wellplanning Planning Report

Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Lea County, NM
Site: Stove Pipe Federal Com
Well: #2H
Wellbore: OH
Design: Design #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well #2H
WELL @ 3337.5usft (Original Well Elev)
WELL @ 3337.5usft (Original Well Elev)
Grid
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3337.5usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3337.5usft (Original Well Elev)
Site:	Stove Pipe Federal Corn	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3337.5usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3337.5usft (Original Well Elev)
Site:	Stove Pipe Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00
11,000.0	0.00	0.00	11,000.0	0.0	0.0	0.0	0.00	0.00	0.00
11,100.0	0.00	0.00	11,100.0	0.0	0.0	0.0	0.00	0.00	0.00
11,200.0	0.00	0.00	11,200.0	0.0	0.0	0.0	0.00	0.00	0.00
11,300.0	0.00	0.00	11,300.0	0.0	0.0	0.0	0.00	0.00	0.00
11,400.0	0.00	0.00	11,400.0	0.0	0.0	0.0	0.00	0.00	0.00
11,500.0	0.00	0.00	11,500.0	0.0	0.0	0.0	0.00	0.00	0.00
11,600.0	0.00	0.00	11,600.0	0.0	0.0	0.0	0.00	0.00	0.00
11,700.0	0.00	0.00	11,700.0	0.0	0.0	0.0	0.00	0.00	0.00
11,800.0	0.00	0.00	11,800.0	0.0	0.0	0.0	0.00	0.00	0.00
11,900.0	0.00	0.00	11,900.0	0.0	0.0	0.0	0.00	0.00	0.00
12,000.0	0.00	0.00	12,000.0	0.0	0.0	0.0	0.00	0.00	0.00
12,082.5	0.00	0.00	12,082.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 12082.5 'MD, 0.00° INC, 0.00° AZI									
12,100.0	2.10	180.26	12,100.0	-0.3	0.0	0.3	12.00	12.00	0.00
12,125.0	5.10	180.26	12,124.9	-1.9	0.0	1.9	12.00	12.00	0.00
12,150.0	8.10	180.26	12,149.8	-4.8	0.0	4.8	12.00	12.00	0.00
12,175.0	11.10	180.26	12,174.4	-8.9	0.0	8.9	12.00	12.00	0.00
12,200.0	14.10	180.26	12,198.8	-14.4	-0.1	14.4	12.00	12.00	0.00
12,225.0	17.10	180.26	12,222.9	-21.1	-0.1	21.1	12.00	12.00	0.00
12,250.0	20.10	180.26	12,246.6	-29.1	-0.1	29.1	12.00	12.00	0.00
12,275.0	23.10	180.26	12,269.8	-38.3	-0.2	38.3	12.00	12.00	0.00
12,300.0	26.10	180.26	12,292.6	-48.7	-0.2	48.7	12.00	12.00	0.00
12,325.0	29.10	180.26	12,314.7	-60.3	-0.3	60.3	12.00	12.00	0.00
12,350.0	32.10	180.26	12,336.2	-73.0	-0.3	73.0	12.00	12.00	0.00
12,375.0	35.10	180.26	12,357.0	-86.8	-0.4	86.8	12.00	12.00	0.00
12,400.0	38.10	180.26	12,377.1	-101.7	-0.5	101.7	12.00	12.00	0.00
12,425.0	41.10	180.26	12,396.4	-117.7	-0.5	117.7	12.00	12.00	0.00
12,450.0	44.10	180.26	12,414.8	-134.6	-0.6	134.6	12.00	12.00	0.00
12,475.0	47.10	180.26	12,432.3	-152.4	-0.7	152.4	12.00	12.00	0.00
12,500.0	50.10	180.26	12,448.8	-171.2	-0.8	171.2	12.00	12.00	0.00
12,525.0	53.10	180.26	12,464.3	-190.8	-0.9	190.8	12.00	12.00	0.00
12,550.0	56.10	180.26	12,478.8	-211.1	-1.0	211.1	12.00	12.00	0.00
12,575.0	59.10	180.26	12,492.2	-232.3	-1.1	232.3	12.00	12.00	0.00
12,600.0	62.10	180.26	12,504.5	-254.0	-1.2	254.0	12.00	12.00	0.00
12,625.0	65.10	180.26	12,515.6	-276.4	-1.3	276.4	12.00	12.00	0.00
12,650.0	68.09	180.26	12,525.5	-299.4	-1.4	299.4	12.00	12.00	0.00
12,675.0	71.09	180.26	12,534.2	-322.8	-1.5	322.8	12.00	12.00	0.00
12,700.0	74.09	180.26	12,541.7	-346.6	-1.6	346.6	12.00	12.00	0.00
12,725.0	77.09	180.26	12,547.9	-370.8	-1.7	370.9	12.00	12.00	0.00
12,750.0	80.09	180.26	12,552.9	-395.4	-1.8	395.4	12.00	12.00	0.00
12,775.0	83.09	180.26	12,556.5	-420.1	-1.9	420.1	12.00	12.00	0.00
12,800.0	86.09	180.26	12,558.9	-445.0	-2.0	445.0	12.00	12.00	0.00
12,825.0	89.09	180.26	12,559.9	-469.9	-2.1	469.9	12.00	12.00	0.00
12,831.6	89.88	180.26	12,560.0	-476.5	-2.2	476.5	12.00	12.00	0.00
EOC - 12831.6 'MD, 89.88° INC, 180.26° AZI									
12,900.0	89.88	180.26	12,560.1	-544.9	-2.5	544.9	0.00	0.00	0.00
13,000.0	89.88	180.26	12,560.4	-644.9	-2.9	644.9	0.00	0.00	0.00
13,100.0	89.88	180.26	12,560.6	-744.9	-3.4	744.9	0.00	0.00	0.00
13,200.0	89.88	180.26	12,560.8	-844.9	-3.8	844.9	0.00	0.00	0.00
13,300.0	89.88	180.26	12,561.0	-944.9	-4.3	944.9	0.00	0.00	0.00
13,400.0	89.88	180.26	12,561.2	-1,044.9	-4.7	1,044.9	0.00	0.00	0.00
13,500.0	89.88	180.26	12,561.4	-1,144.9	-5.2	1,144.9	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3337.5usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3337.5usft (Original Well Elev)
Site:	Stove Pipe Federal Corn	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,600.0	89.88	180.26	12,561.6	-1,244.9	-5.6	1,244.9	0.00	0.00	0.00
13,700.0	89.88	180.26	12,561.8	-1,344.9	-6.1	1,344.9	0.00	0.00	0.00
13,800.0	89.88	180.26	12,562.0	-1,444.9	-6.6	1,444.9	0.00	0.00	0.00
13,900.0	89.88	180.26	12,562.2	-1,544.9	-7.0	1,544.9	0.00	0.00	0.00
14,000.0	89.88	180.26	12,562.4	-1,644.9	-7.5	1,644.9	0.00	0.00	0.00
14,100.0	89.88	180.26	12,562.7	-1,744.9	-7.9	1,744.9	0.00	0.00	0.00
14,200.0	89.88	180.26	12,562.9	-1,844.9	-8.4	1,844.9	0.00	0.00	0.00
14,300.0	89.88	180.26	12,563.1	-1,944.9	-8.8	1,944.9	0.00	0.00	0.00
14,400.0	89.88	180.26	12,563.3	-2,044.9	-9.3	2,044.9	0.00	0.00	0.00
14,500.0	89.88	180.26	12,563.5	-2,144.9	-9.7	2,144.9	0.00	0.00	0.00
14,600.0	89.88	180.26	12,563.7	-2,244.9	-10.2	2,244.9	0.00	0.00	0.00
14,700.0	89.88	180.26	12,563.9	-2,344.9	-10.6	2,344.9	0.00	0.00	0.00
14,800.0	89.88	180.26	12,564.1	-2,444.9	-11.1	2,444.9	0.00	0.00	0.00
14,900.0	89.88	180.26	12,564.3	-2,544.9	-11.5	2,544.9	0.00	0.00	0.00
15,000.0	89.88	180.26	12,564.5	-2,644.9	-12.0	2,644.9	0.00	0.00	0.00
15,100.0	89.88	180.26	12,564.8	-2,744.9	-12.5	2,744.9	0.00	0.00	0.00
15,200.0	89.88	180.26	12,565.0	-2,844.9	-12.9	2,844.9	0.00	0.00	0.00
15,300.0	89.88	180.26	12,565.2	-2,944.9	-13.4	2,944.9	0.00	0.00	0.00
15,400.0	89.88	180.26	12,565.4	-3,044.9	-13.8	3,044.9	0.00	0.00	0.00
15,500.0	89.88	180.26	12,565.6	-3,144.9	-14.3	3,144.9	0.00	0.00	0.00
15,600.0	89.88	180.26	12,565.8	-3,244.9	-14.7	3,244.9	0.00	0.00	0.00
15,700.0	89.88	180.26	12,566.0	-3,344.9	-15.2	3,344.9	0.00	0.00	0.00
15,800.0	89.88	180.26	12,566.2	-3,444.9	-15.6	3,444.9	0.00	0.00	0.00
15,900.0	89.88	180.26	12,566.4	-3,544.9	-16.1	3,544.9	0.00	0.00	0.00
16,000.0	89.88	180.26	12,566.6	-3,644.9	-16.5	3,644.9	0.00	0.00	0.00
16,100.0	89.88	180.26	12,566.8	-3,744.9	-17.0	3,744.9	0.00	0.00	0.00
16,200.0	89.88	180.26	12,567.1	-3,844.9	-17.4	3,844.9	0.00	0.00	0.00
16,300.0	89.88	180.26	12,567.3	-3,944.9	-17.9	3,944.9	0.00	0.00	0.00
16,400.0	89.88	180.26	12,567.5	-4,044.9	-18.4	4,044.9	0.00	0.00	0.00
16,500.0	89.88	180.26	12,567.7	-4,144.9	-18.8	4,144.9	0.00	0.00	0.00
16,600.0	89.88	180.26	12,567.9	-4,244.9	-19.3	4,244.9	0.00	0.00	0.00
16,700.0	89.88	180.26	12,568.1	-4,344.9	-19.7	4,344.9	0.00	0.00	0.00
16,800.0	89.88	180.26	12,568.3	-4,444.9	-20.2	4,444.9	0.00	0.00	0.00
16,900.0	89.88	180.26	12,568.5	-4,544.9	-20.6	4,544.9	0.00	0.00	0.00
17,000.0	89.88	180.26	12,568.7	-4,644.9	-21.1	4,644.9	0.00	0.00	0.00
17,100.0	89.88	180.26	12,568.9	-4,744.9	-21.5	4,744.9	0.00	0.00	0.00
17,200.0	89.88	180.26	12,569.1	-4,844.9	-22.0	4,844.9	0.00	0.00	0.00
17,300.0	89.88	180.26	12,569.4	-4,944.9	-22.4	4,944.9	0.00	0.00	0.00
17,400.0	89.88	180.26	12,569.6	-5,044.9	-22.9	5,044.9	0.00	0.00	0.00
17,500.0	89.88	180.26	12,569.8	-5,144.9	-23.3	5,144.9	0.00	0.00	0.00
17,600.0	89.88	180.26	12,570.0	-5,244.9	-23.8	5,244.9	0.00	0.00	0.00
17,700.0	89.88	180.26	12,570.2	-5,344.9	-24.3	5,344.9	0.00	0.00	0.00
17,800.0	89.88	180.26	12,570.4	-5,444.9	-24.7	5,444.9	0.00	0.00	0.00
17,900.0	89.88	180.26	12,570.6	-5,544.9	-25.2	5,544.9	0.00	0.00	0.00
18,000.0	89.88	180.26	12,570.8	-5,644.9	-25.6	5,644.9	0.00	0.00	0.00
18,100.0	89.88	180.26	12,571.0	-5,744.9	-26.1	5,744.9	0.00	0.00	0.00
18,200.0	89.88	180.26	12,571.2	-5,844.9	-26.5	5,844.9	0.00	0.00	0.00
18,300.0	89.88	180.26	12,571.5	-5,944.9	-27.0	5,944.9	0.00	0.00	0.00
18,400.0	89.88	180.26	12,571.7	-6,044.9	-27.4	6,044.9	0.00	0.00	0.00
18,500.0	89.88	180.26	12,571.9	-6,144.9	-27.9	6,144.9	0.00	0.00	0.00
18,600.0	89.88	180.26	12,572.1	-6,244.9	-28.3	6,244.9	0.00	0.00	0.00
18,700.0	89.88	180.26	12,572.3	-6,344.9	-28.8	6,344.9	0.00	0.00	0.00
18,800.0	89.88	180.26	12,572.5	-6,444.9	-29.2	6,444.9	0.00	0.00	0.00
18,900.0	89.88	180.26	12,572.7	-6,544.9	-29.7	6,544.9	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3337.5usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3337.5usft (Original Well Elev)
Site:	Stove Pipe Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,000.0	89.88	180.26	12,572.9	-6,644.9	-30.2	6,644.9	0.00	0.00	0.00
19,100.0	89.88	180.26	12,573.1	-6,744.9	-30.6	6,744.9	0.00	0.00	0.00
19,200.0	89.88	180.26	12,573.3	-6,844.9	-31.1	6,844.9	0.00	0.00	0.00
19,300.0	89.88	180.26	12,573.5	-6,944.9	-31.5	6,944.9	0.00	0.00	0.00
19,400.0	89.88	180.26	12,573.8	-7,044.9	-32.0	7,044.9	0.00	0.00	0.00
19,500.0	89.88	180.26	12,574.0	-7,144.9	-32.4	7,144.9	0.00	0.00	0.00
19,600.0	89.88	180.26	12,574.2	-7,244.9	-32.9	7,244.9	0.00	0.00	0.00
19,700.0	89.88	180.26	12,574.4	-7,344.9	-33.3	7,344.9	0.00	0.00	0.00
19,728.3	89.88	180.26	12,574.4	-7,373.2	-33.5	7,373.3	0.00	0.00	0.00

TD at 19728.3 - PBHL(SFPC#2H)

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(SFPC#2H)	0.00	0.00	12,574.0	-7,373.2	-33.4	417,972.10	787,625.10	32° 8' 44.556 N	103° 24' 14.543 W
- plan misses target center by 0.4usft at 19728.3usft MD (12574.4 TVD, -7373.2 N, -33.5 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,082.5	12,082.5	0.0	0.0	KOP - 12082.5 'MD, 0.00° INC, 0.00° AZI
12,831.6	12,560.0	-476.5	-2.2	EOC- 12831.6 'MD, 89.88° INC, 180.26° AZI
19,728.3	12,574.4	-7,373.2	-33.5	TD at 19728.3



COG Operating LLC
Project: Lea County, NM
Site: Stove Pipe Federal Com
Well: #2H
Plan: Design #1 (#2H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+E/-W	Dleg	TFace	VSeet
1	0.0	0.00	0.00	0.0	0.0	0.00	0.00	0.0
2	12082.5	0.00	0.00	12082.5	0.0	0.00	0.00	0.0
3	12831.6	89.88	180.26	12560.0	-476.5	-2.2	12.00	180.26
4	19728.3	89.88	180.26	12574.4	-7373.2	-33.5	0.00	7373.3

PBHL(SPPC#2H)

WELL DETAILS: #2H

Ground Elevation:: 3309.5
RKB Elevation: WELL @ 3337.5usft (Original Well Elev)
Rig Name: Original Well Elev

Northing
425345.30

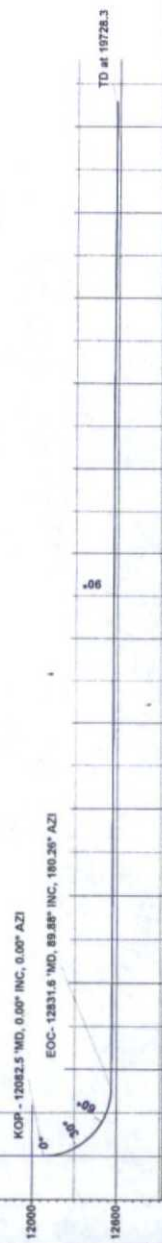
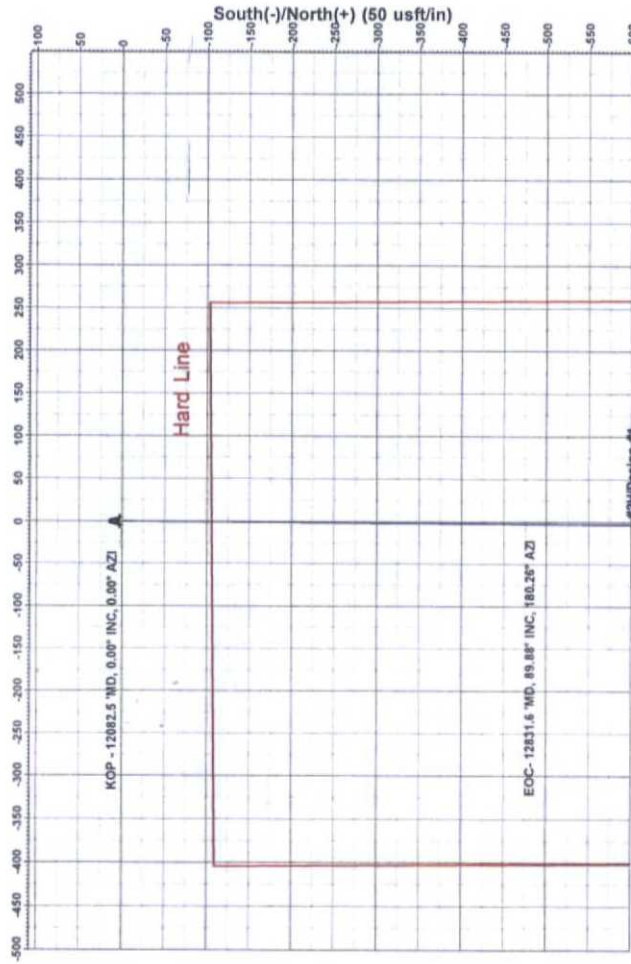
Easting
787658.50

Latitude
32° 9' 57.513 N

Longitude
103° 24' 13.414 W



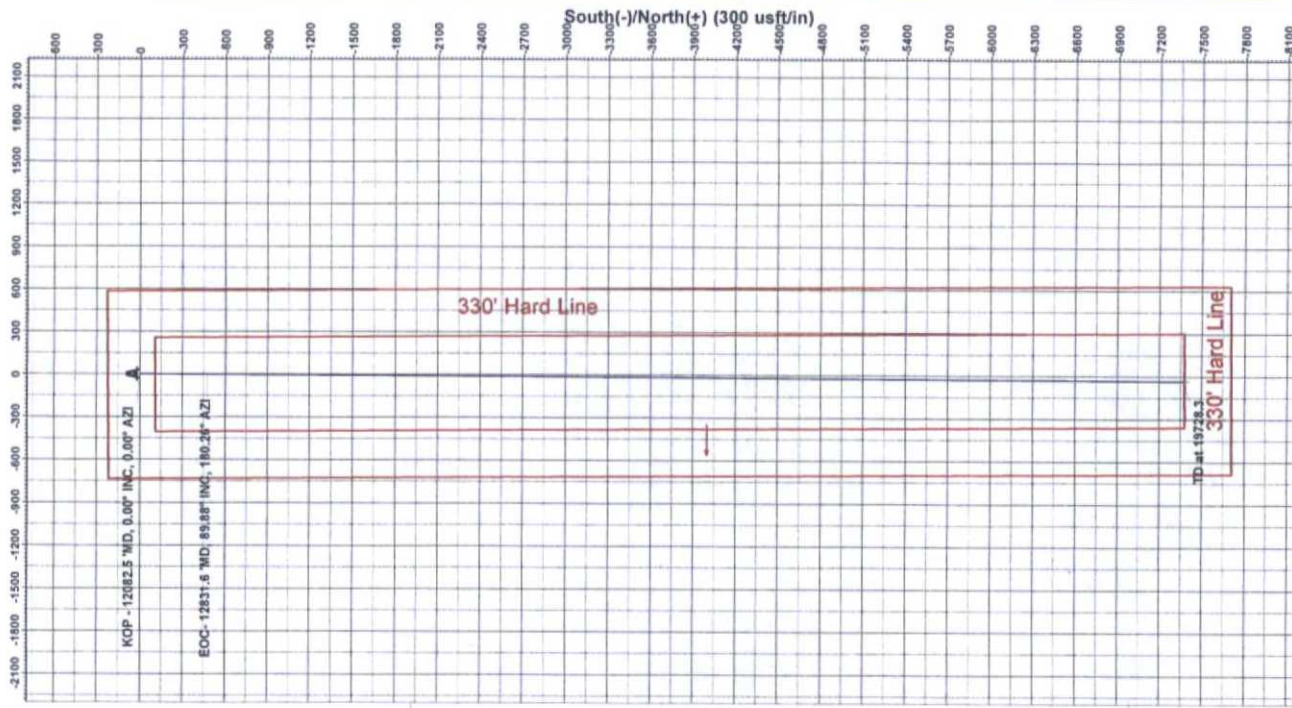
West(-)/East(+) (50 usft/in)



Vertical Section at 180.26° (300 usft/in)

Nexus Directional Solutions

West(-)/East(+) (300 usft/in)



PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Midwest Hose
& Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT			
Customer: INDEPENDENCE CONTRACT DRILLING		P.O. Number: PO00109267	
HOSE SPECIFICATIONS			
Type: Stainless Steel Armor Choke & Kill Hose		Hose Length: 75' FT	
I.D.	3-1/2 INCHES	O.D.	8 INCHES
WORKING PRESSURE	TEST PRESSURE		BURST PRESSURE
10,000 PSI	15,000 PSI		0 PSI
COUPLINGS			
Stem Part No. 4-1/16" 10K 4-1/16" 10K		Ferrule No. 4-1/16" 10K 4-1/16" 10K	
Type of Coupling: Swage-It			
PROCEDURE			
<u>Hose assembly pressure tested with water at ambient temperature.</u>			
TIME HELD AT TEST PRESSURE		ACTUAL BURST PRESSURE:	
17 1/4 MIN.		0 PSI	
Hose Assembly Serial Number: 237726		Hose Serial Number: 10911	
Comments:			
Date:	Tested:	Approved:	
3/6/2014	TONY KELLINGTON	RYAN ADAMS	

Flex Hose Variance Request

Flex Hose Variance Statement

COG Operating LLC (operator) requests a variance if Independence 205 (rig name) is used to drill this well to use a co-flex line between the BOP and choke manifold.

Manufacturer: Midwest Hose & Specialty Inc

Serial Number 237726

Length: 75'

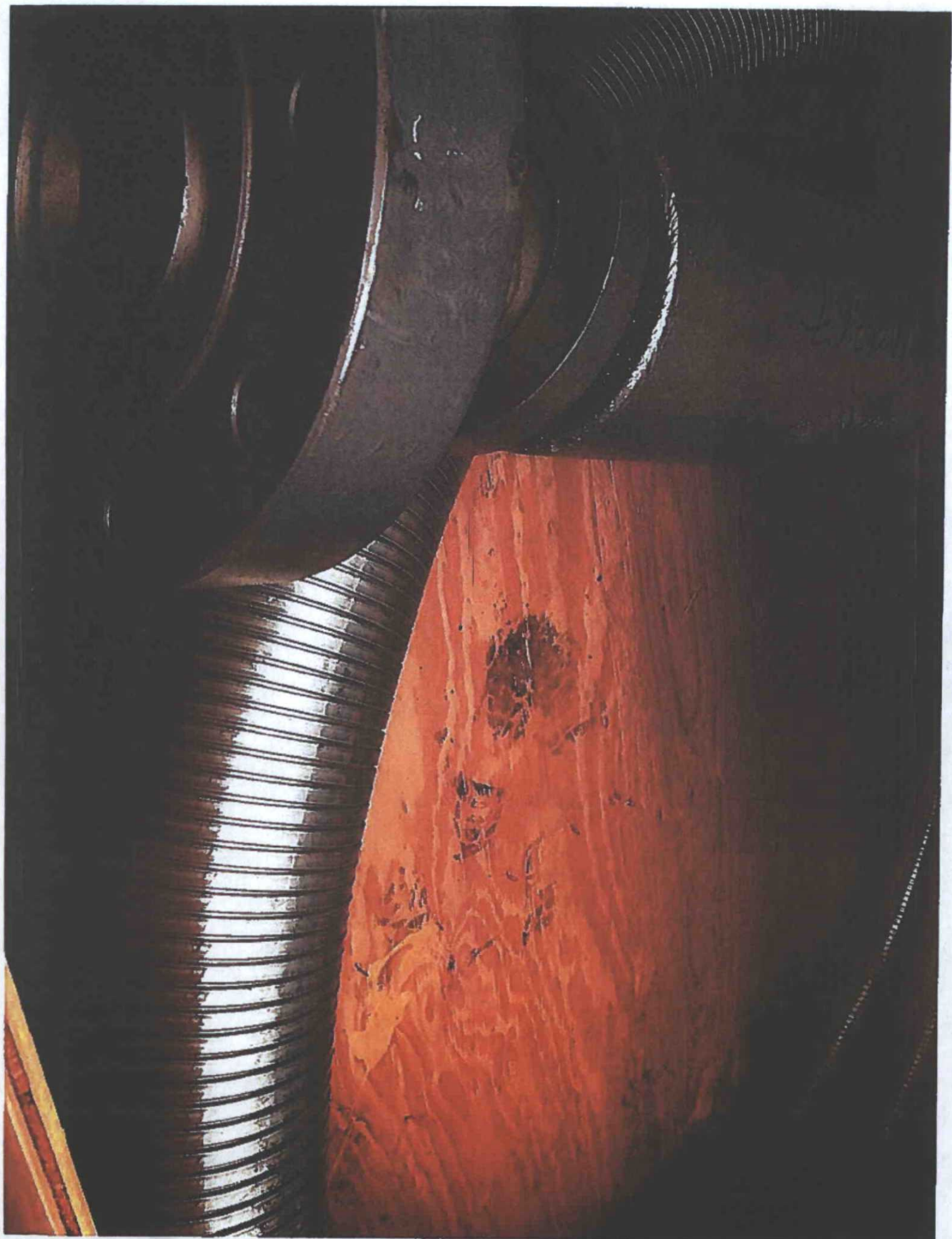
Size: 3-1/2"

Ends - flanges/clamps

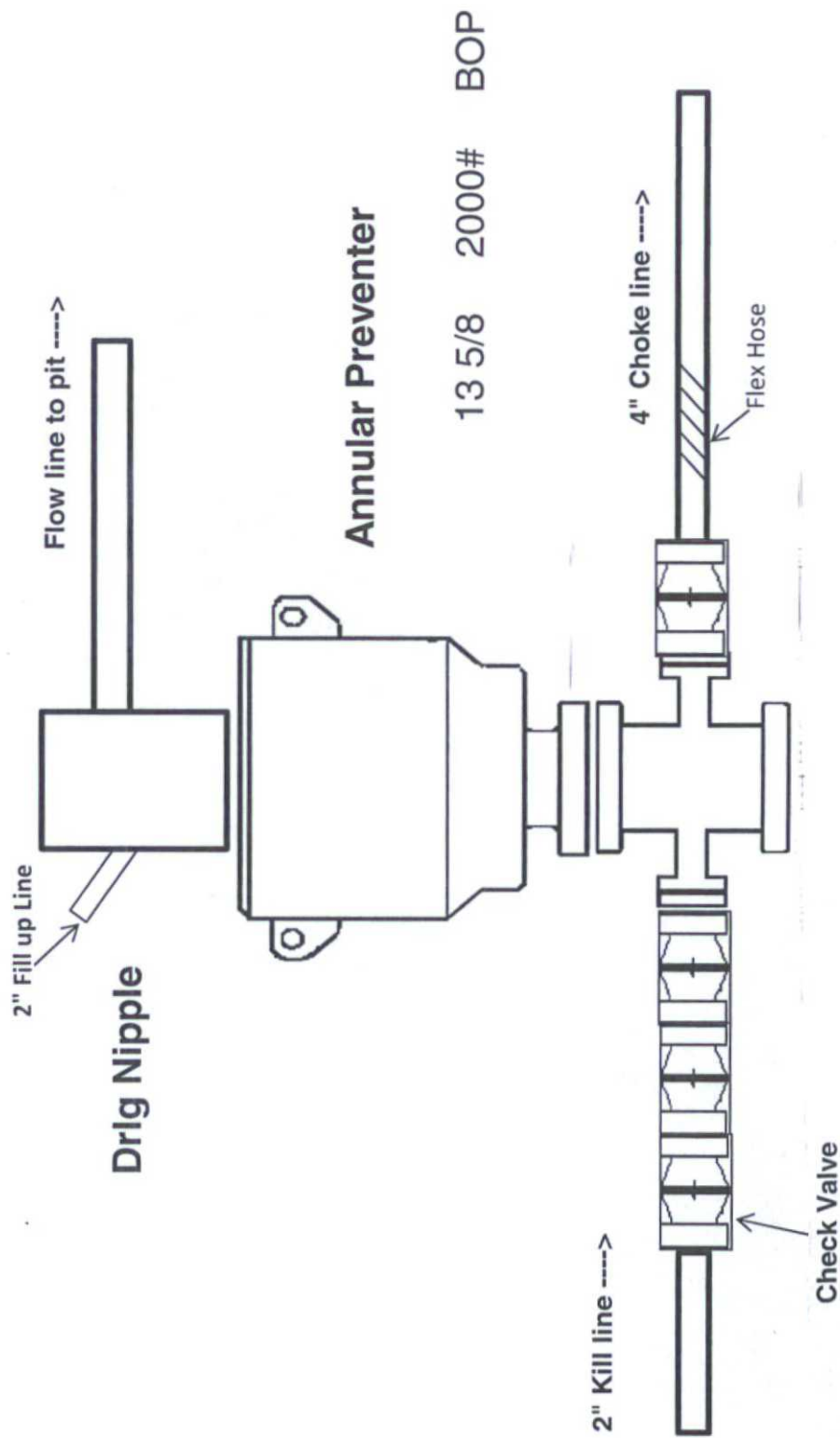
WP rating: 10,000 psi

Anchors required by manufacturer -- Yes/No

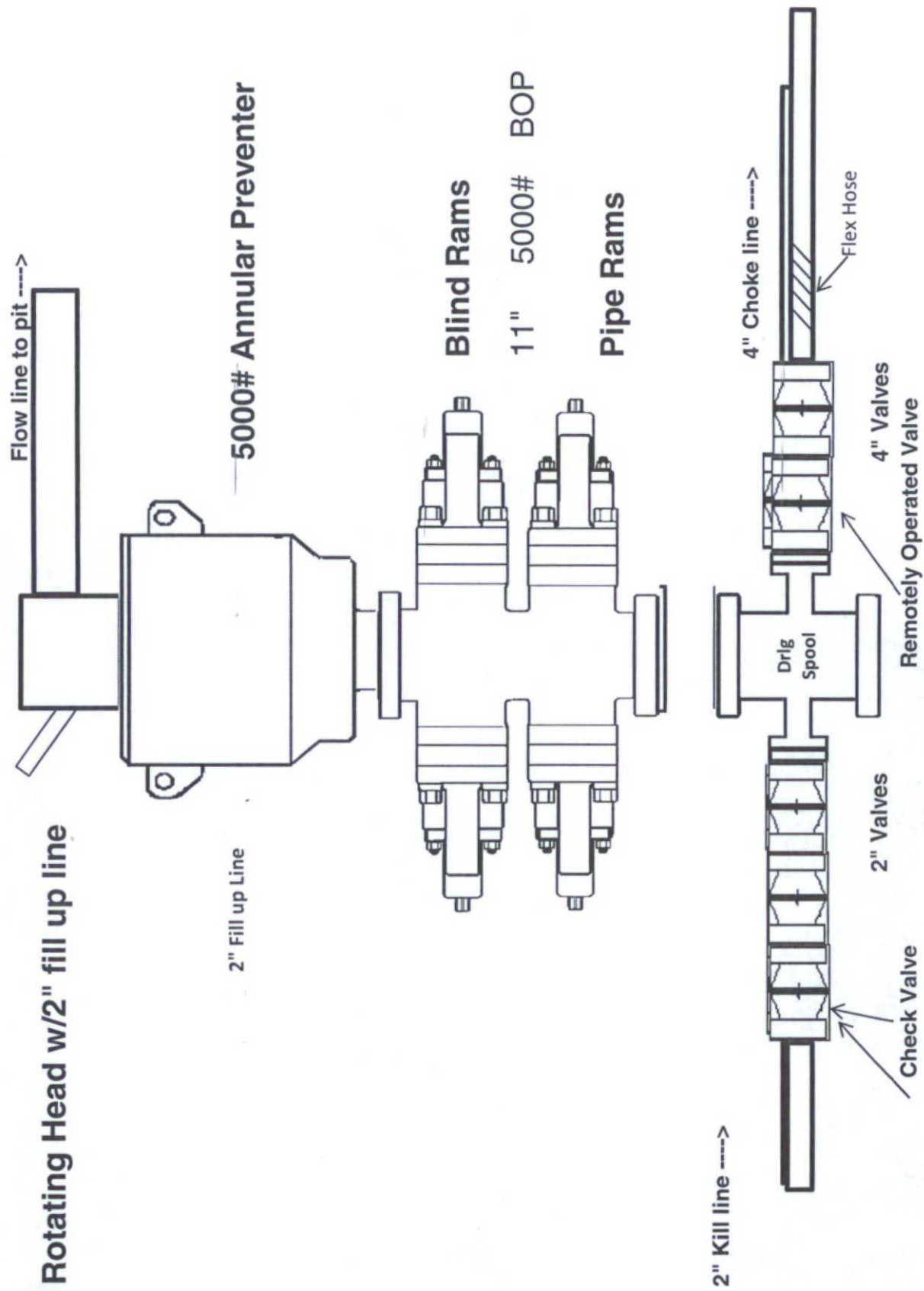
207732



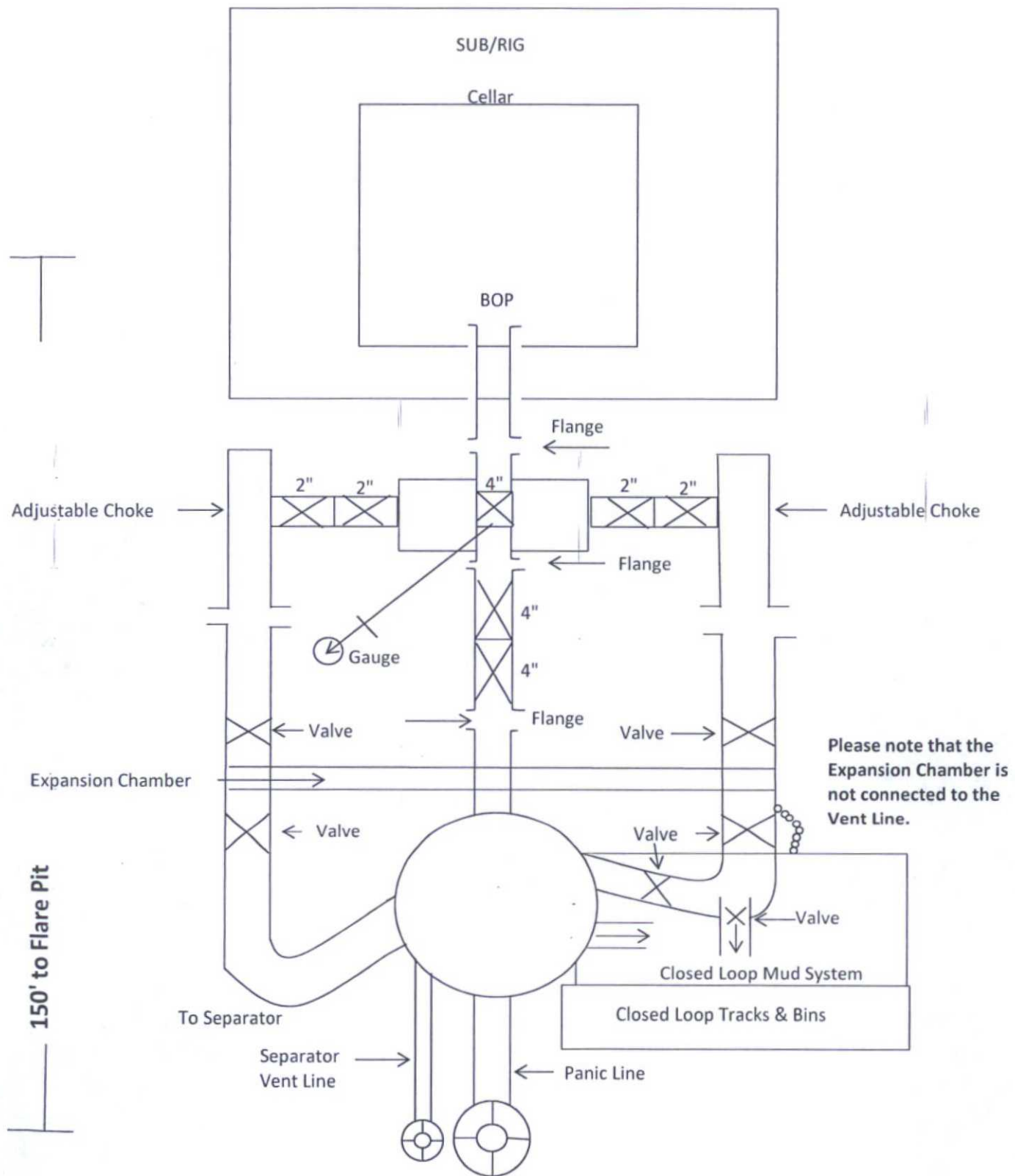
2,000 psi BOP Schematic



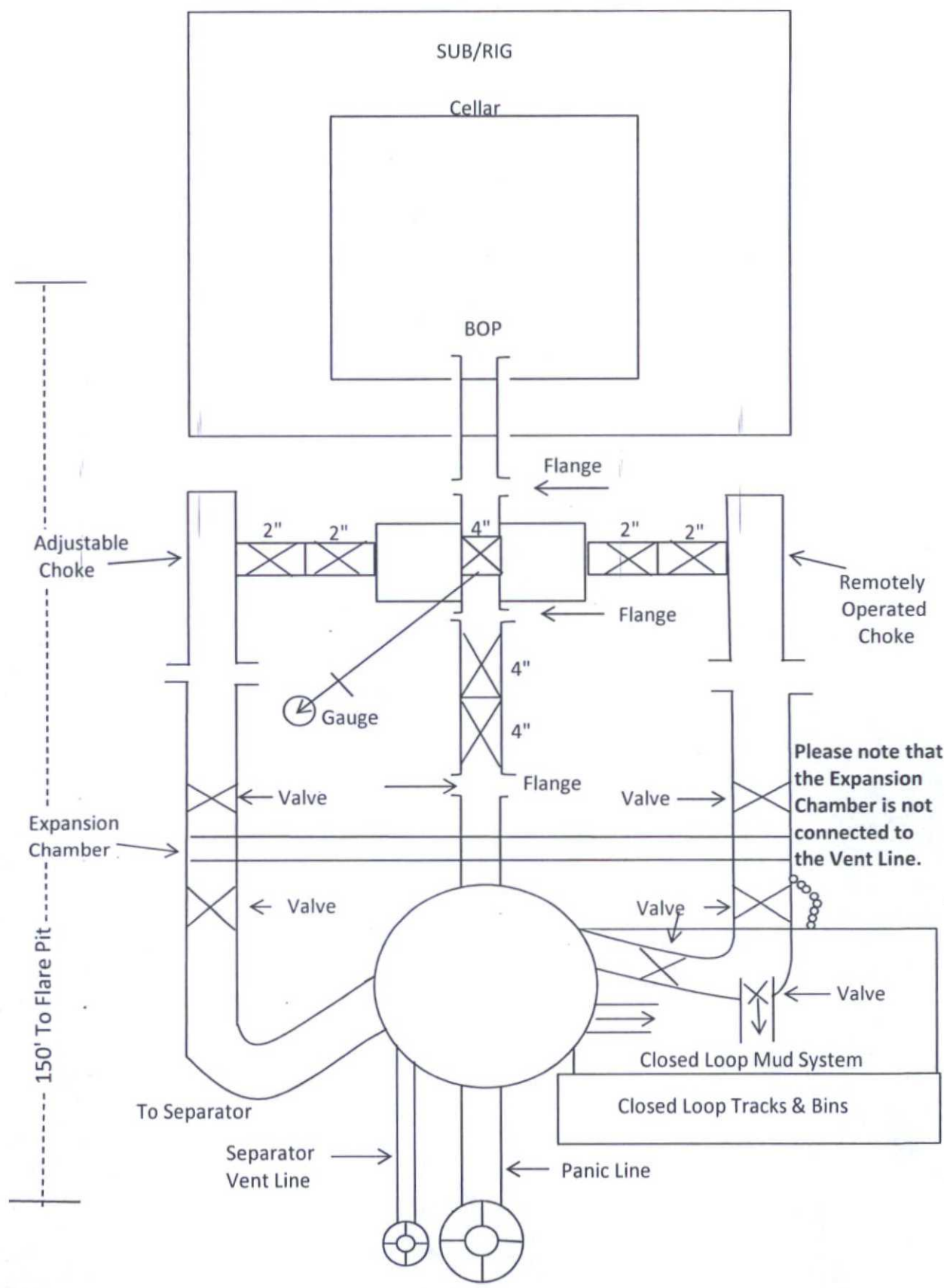
5,000 psi BOP Schematic



2M Choke Manifold Equipment



5M Choke Manifold Equipment



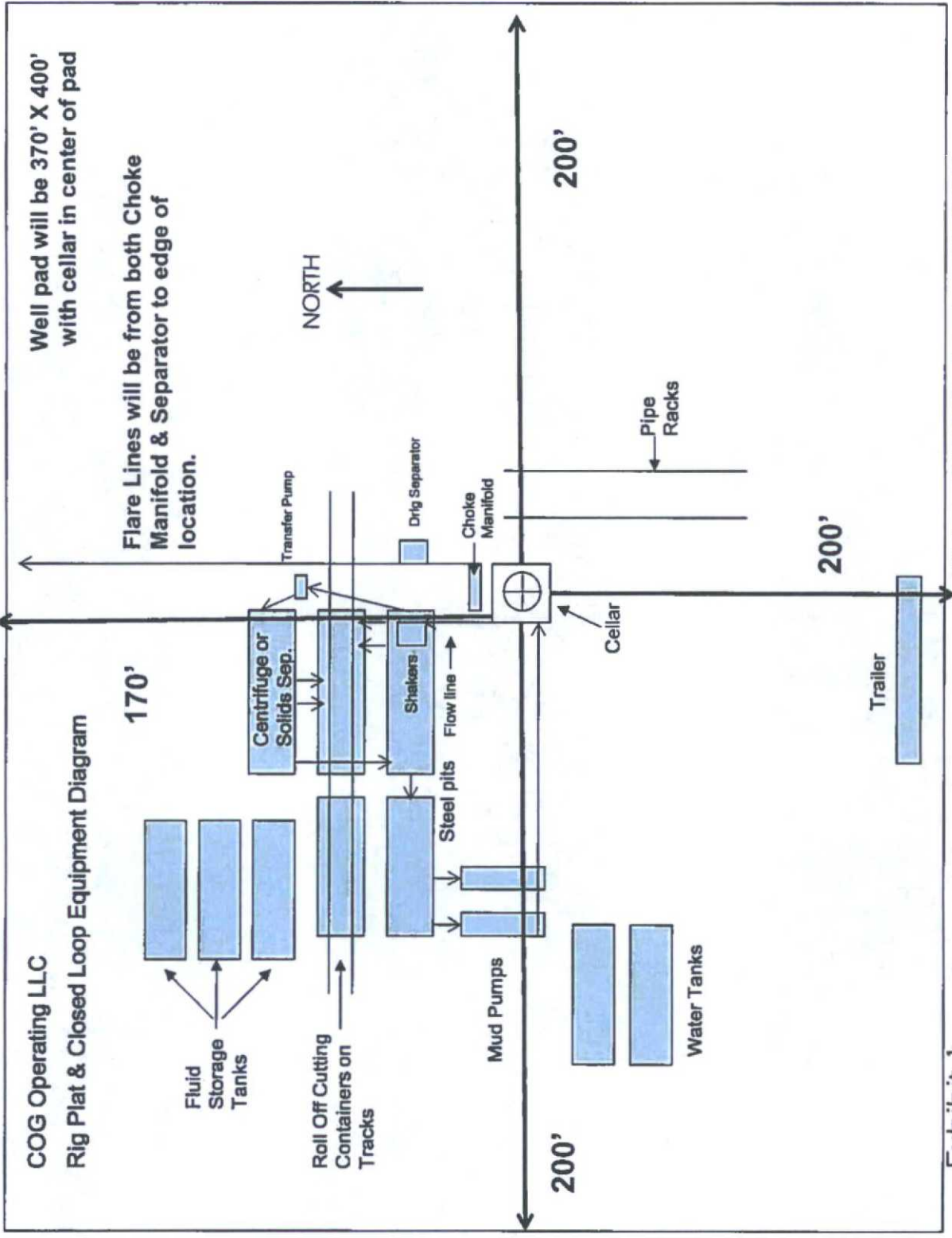


Exhibit 1

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