

OCB-HOBBS HOBBS OCB

ATS-11-604
SECRETARY'S POTASH
FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JUN 27 2011

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

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. <u>38682</u> Airbonita 12 Federal #2H
2. Name of Operator COG Operating LLC. <u>229137</u>		9. API Well No. <u>30-025-40179</u>
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	10. Field and Pool, or Exploratory <u>51683</u> Red Tank; Bone Spring
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 375' FSL & 1980' FEL Unit Letter O (SWSE) SHL At proposed prod. Zone 375' FNL & 1980' FEL Unit Letter B (NWNE) BHL		11. Sec., T.R.M. or Blk and Survey or Area Sec. 12 - T22S - R32E
14. Distance in miles and direction from nearest town or post office* About 26 miles from Lovin		12. County or Parish Lea County
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 375'		13. State NM
16. No. of acres in lease NMNM085937 - 800 NMNM064606 - 160	17. Spacing Unit dedicated to this well 160	20. BLM/BIA Bond No. on file NMB00215 <u>4740</u>
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. 250'	19. Proposed Depth <u>14162</u> PHTD: 12175 TVD: 9840 MD: 14200 <u>4/15/11</u>	21. Estimated duration 30 days
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3635	22. Approximate date work will start* ASAP	

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 <u>Mayte Reyes</u>	Name (Printed/Typed) Mayte Reyes	Date 4/13/2011
-------------------------------------	-------------------------------------	-------------------

Title Regulatory Analyst		
Approved by (Signature) <u>/s/ Jesse J. Juen</u>	Name (Printed/Typed) <u>/s/ Jesse J. Juen</u>	Date JUN 21 2011
Title <u>FOR STATE DIRECTOR</u>	Office NM STATE 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)

*(Instructions on page 2)

CARLSBAD CONTROLLED WATER BASIN

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

JUN 29 2011

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Date: April 13, 2011

Lease #: NMNM085937; NMNM064606
Airbonita 12 Federal #2H

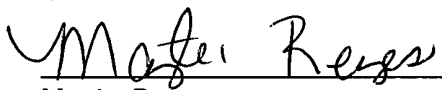
Legal Description: Sec. 2 – T22S – R32E
Lea County, New Mexico

Formation(s): Bone Spring

Bond Coverage: Statewide

BLM Bond File #: NMB00215

COG OPERATING LLC



Mayte Reyes
Regulatory Analyst

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

Airbonita 12 Federal #2H
SHL: 375' FSL & 1980' FEL
BHL: 375' FNL & 1980' FEL
Section 12 T22S R32E
Lea County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following ten items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Rustler	887'	
Top of Salt	1242'	
Base of Salt	4400'	
Delaware	4772'	Oil
Bone Spring	8700'	
1 st BSS	9722'	Oil
2 nd BSS	10,400'	Oil
3 rd BSS	11,650'	Oil
TD(Pilot)	12,175'	
TVD	9840'	
TMD	14,200'	

Top of Wolfcamp - 11,980'

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 915' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to 290' into 9-5/8" casing.

** See COA*

3. Proposed Casing Program: All casing is new and API approved.

** See COA*

Hole Size	Depths	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 915'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 3500'	Intrmd	9 5/8"	New	36#	STC	J-55	1.125	1.125	1.6
12 1/4"	3500' - 4500'	Intrmd	9 5/8"	New	40#	STC	J-55	1.125	1.125	1.6
8 3/4"	0' - 12,175'	Pilot Hole	<i>* Wolfcamp ≈ 11,980'</i>							
7 7/8"	10,000' - 14,200'	Production, Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

4. Proposed Cement Program

- a. 13-3/8" Surface
- Lead: 350 sx Class C + Gilsonite + HR-800
(12.7 ppg / 1.88 cuft/sx)
- Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
- **Calculated w/50% excess on OH volumes
- b. 9 5/8" Intermediate
- Lead: 900 sx Class C + Gilsonite + HR-800
(12.7 ppg / 1.88 cuft/sx)
- Tail: 250 sx Class C + 1% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
- **Calculated w/35% excess on OH volumes
- d. 5 1/2" Production
- 1st Stage:
- Lead: 500 sx Class H + Acid soluble
(15.0 ppg / 2.6 cuft/sx)
- 2nd Stage:
- Lead: 800 sx Class H + Bentonite + HALAD-322
(12.7 ppg / 1.89 cuft/sx)
- Tail: 100 sx Class H
(15.6 ppg / 1.19 cuft/sx)
- * See COA
- * [DVT @ 9300' (approx depth)
**Calculated w/35% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurement from the open hole logs.
- The intermediate string TOC is designed to circulate cement to surface. *See*
- The production string TOC is designed to reach approximately ~~200'~~ into 9-5/8" casing shoe.
- After logging the PH, will plug back to kick off point by setting the following plugs: *TD = 12,175*

plugs: TD = 12,175
 TD Plug f/PH TD - 12,000' → See COA
 100 sx Class H @ 15.6 ppg/1.18 ft³/sx + HR-800 → 283'
 Kick Off Plug f/9300' - 10,000'
 300 sx Class H @ 17.2 ppg / 0.98 ft³/sx + CFR3 + HR-800 → 700'

5. Minimum Specifications for Pressure Control: ** See COA*

Nipple up on 13 3/8 with 2M system (Hydril) tested to 2000# by independent tester,
nipple up on 9 5/8 with ~~3m~~ system tested to 3000# by independent tester

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. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

See COA

6. Estimated BHP

- PH TD = 5280 psi
- Lateral TD = 4267 psi

7. Mud Program: The applicable depths and properties of this system are as follows:

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 915'	Fresh Water	8.4	29	N.C.
915' - 4500'	Brine	10	29	N.C.
4500' - 12,175' (PH)	Cut Brine	9.0-9.4	29	N.C.
4500' - 14,200 (Lateral)	Cut Brine	9.0-9.4	29	N.C.

The necessary mud products for weight addition and fluid loss control will be on location at all times.

8. Auxiliary Well Control and Monitoring Equipment:

** See COA*

- A Kelly cock will be in the drill string at all times.
- A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

9. Testing, Logging and Coring Program:

- * See COA*
- Drill stem tests will be based on geological sample shows.
 - The open hole electrical logging program will be:
 - Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron - Z Density log with Gamma Ray and Caliper.
 - Total Depth to Surface: Compensated Neutron with Gamma Ray
 - No coring program is planned
 - Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted, based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

- No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 4093 psi. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

- Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



A Schlumberger Company

COG Operating LLC

Lea County(NAD27)

Airbonita 12 Federal

2H

OH

Plan: Plan #1

Pathfinder X & Y Planning Report

24 January, 2011



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652.00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652.00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Project	Lea County(NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Airbonita 12 Federal		
Site Position:		Northing:	509,961.400 usft
From:	Map	Easting:	718,394.300 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 24' 0.042 N
		Longitude:	103° 37' 32.672 W
		Grid Convergence:	0 38 "

Well		2H				
Well Position	+N/-S	0.00 usft	Northing:	509,961.400 usft	Latitude:	32° 24' 0.042 N
	+E/-W	0.00 usft	Easting:	718,394.300 usft	Longitude:	103° 37' 32.672 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,635.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	01/21/11	7.66	60.37	48,790

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.60

Survey Tool Program	Date	01/21/11		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	14,161.97	Plan #1 (OH)	MWD	MWD - Standard

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652 00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652 00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	3,652.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
100.00	0.00	0.00	100.00	3,552.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
200.00	0.00	0.00	200.00	3,452.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
300.00	0.00	0.00	300.00	3,352.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
400.00	0.00	0.00	400.00	3,252.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
500.00	0.00	0.00	500.00	3,152.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
600.00	0.00	0.00	600.00	3,052.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
700.00	0.00	0.00	700.00	2,952.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
800.00	0.00	0.00	800.00	2,852.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
900.00	0.00	0.00	900.00	2,752.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,000.00	0.00	0.00	1,000.00	2,652.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,100.00	0.00	0.00	1,100.00	2,552.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,200.00	0.00	0.00	1,200.00	2,452.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,300.00	0.00	0.00	1,300.00	2,352.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,400.00	0.00	0.00	1,400.00	2,252.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,500.00	0.00	0.00	1,500.00	2,152.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,600.00	0.00	0.00	1,600.00	2,052.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,700.00	0.00	0.00	1,700.00	1,952.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,800.00	0.00	0.00	1,800.00	1,852.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
1,900.00	0.00	0.00	1,900.00	1,752.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,000.00	0.00	0.00	2,000.00	1,652.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,100.00	0.00	0.00	2,100.00	1,552.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,200.00	0.00	0.00	2,200.00	1,452.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,300.00	0.00	0.00	2,300.00	1,352.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,400.00	0.00	0.00	2,400.00	1,252.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,500.00	0.00	0.00	2,500.00	1,152.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
2,600.00	0.00	0.00	2,600.00	1,052.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652.00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652.00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,700.00	0.00	0 00	2,700.00	952.00	0 00	0.00	0.00	0 00	509,961.40	718,394.30	
2,800.00	0.00	0 00	2,800.00	852.00	0 00	0.00	0.00	0 00	509,961.40	718,394.30	
2,900.00	0.00	0 00	2,900.00	752.00	0 00	0.00	0.00	0 00	509,961.40	718,394.30	
3,000.00	0.00	0 00	3,000.00	652.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30	
3,100.00	0.00	0.00	3,100.00	552.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,200.00	0.00	0.00	3,200.00	452.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,300.00	0.00	0.00	3,300.00	352.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,400.00	0.00	0 00	3,400.00	252.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,500.00	0.00	0.00	3,500.00	152.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,600.00	0.00	0.00	3,600.00	52.00	0 00	0.00	0.00	0 00	509,961.40	718,394.30	
3,700.00	0.00	0.00	3,700.00	-48.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30	
3,800.00	0.00	0.00	3,800.00	-148.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
3,900.00	0.00	0.00	3,900.00	-248.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,000.00	0.00	0 00	4,000.00	-348.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,100.00	0.00	0 00	4,100.00	-448.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,200.00	0.00	0 00	4,200.00	-548.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,300.00	0 00	0 00	4,300.00	-648.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
4,400.00	0.00	0.00	4,400.00	-748.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30	
4,500.00	0.00	0 00	4,500.00	-848.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,600.00	0 00	0.00	4,600.00	-948.00	0 00	0.00	0.00	0 00	509,961.40	718,394.30	
4,700.00	0 00	0.00	4,700.00	-1,048.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
4,800.00	0 00	0.00	4,800.00	-1,148.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
4,900.00	0 00	0 00	4,900.00	-1,248.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
5,000.00	0.00	0 00	5,000.00	-1,348.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
5,100.00	0.00	0.00	5,100.00	-1,448.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
5,200.00	0.00	0.00	5,200.00	-1,548.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
5,300.00	0.00	0 00	5,300.00	-1,648.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30	



A Schlumberger Company

Pathfinder

Pathfinder X & Y Planning Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652.00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652.00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
5,400.00	0.00	0 00	5,400.00	-1,748 00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
5,500.00	0.00	0.00	5,500.00	-1,848 00	0.00	0 00	0.00	0.00	509,961.40	718,394.30	
5,600.00	0.00	0.00	5,600.00	-1,948 00	0.00	0.00	0.00	0.00	509,961 40	718,394 30	
5,700.00	0.00	0.00	5,700.00	-2,048.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
5,800.00	0.00	0.00	5,800.00	-2,148.00	0.00	0.00	0 00	0.00	509,961.40	718,394.30	
5,900 00	0.00	0.00	5,900.00	-2,248.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
6,000.00	0.00	0.00	6,000.00	-2,348.00	0.00	0.00	0 00	0.00	509,961.40	718,394.30	
6,100 00	0.00	0.00	6,100 00	-2,448.00	0.00	0.00	0.00	0 00	509,961.40	718,394 30	
6,200.00	0.00	0.00	6,200 00	-2,548.00	0.00	0.00	0.00	0 00	509,961.40	718,394 30	
6,300.00	0.00	0.00	6,300.00	-2,648.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
6,400.00	0.00	0.00	6,400.00	-2,748.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30	
6,500.00	0.00	0.00	6,500 00	-2,848.00	0.00	0.00	0.00	0.00	509,961 40	718,394.30	
6,600.00	0.00	0.00	6,600.00	-2,948.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
6,700.00	0.00	0.00	6,700.00	-3,048.00	0.00	0.00	0.00	0.00	509,961 40	718,394 30	
6,800.00	0.00	0 00	6,800.00	-3,148 00	0.00	0.00	0.00	0.00	509,961.40	718,394 30	
6,900.00	0 00	0.00	6,900.00	-3,248.00	0.00	0 00	0.00	0.00	509,961.40	718,394.30	
7,000 00	0.00	0 00	7,000.00	-3,348.00	0.00	0 00	0.00	0.00	509,961.40	718,394.30	
7,100.00	0 00	0.00	7,100 00	-3,448 00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
7,200.00	0 00	0 00	7,200 00	-3,548 00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
7,300.00	0.00	0.00	7,300.00	-3,648.00	0 00	0.00	0.00	0.00	509,961.40	718,394.30	
7,400.00	0 00	0 00	7,400.00	-3,748.00	0.00	0.00	0.00	0.00	509,961 40	718,394.30	
7,500.00	0.00	0.00	7,500.00	-3,848.00	0 00	0 00	0.00	0 00	509,961.40	718,394.30	
7,600.00	0.00	0.00	7,600.00	-3,948.00	0 00	0.00	0.00	0 00	509,961.40	718,394 30	
7,700.00	0.00	0.00	7,700.00	-4,048.00	0 00	0.00	0.00	0.00	509,961.40	718,394 30	
7,800.00	0 00	0 00	7,800 00	-4,148.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
7,900.00	0.00	0.00	7,900.00	-4,248.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	
8,000.00	0.00	0 00	8,000 00	-4,348 00	0.00	0.00	0.00	0.00	509,961.40	718,394.30	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652 00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652 00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000 1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,100.00	0 00	0 00	8,100.00	-4,448.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
8,200.00	0.00	0.00	8,200.00	-4,548.00	0 00	0.00	0.00	0.00	509,961 40	718,394.30
8,300.00	0.00	0 00	8,300 00	-4,648.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
8,400.00	0.00	0.00	8,400.00	-4,748.00	0.00	0.00	0.00	0.00	509,961 40	718,394.30
8,500.00	0.00	0.00	8,500.00	-4,848.00	0.00	0 00	0.00	0 00	509,961.40	718,394.30
8,600.00	0 00	0 00	8,600.00	-4,948 00	0.00	0.00	0 00	0.00	509,961.40	718,394.30
8,700.00	0 00	0 00	8,700.00	-5,048 00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
8,800 00	0.00	0.00	8,800.00	-5,148 00	0.00	0.00	0 00	0.00	509,961 40	718,394.30
8,900.00	0.00	0 00	8,900.00	-5,248 00	0.00	0.00	0 00	0.00	509,961.40	718,394.30
9,000.00	0.00	0.00	9,000.00	-5,348.00	0 00	0.00	0.00	0 00	509,961.40	718,394 30
9,100.00	0.00	0.00	9,100.00	-5,448.00	0 00	0.00	0.00	0 00	509,961.40	718,394 30
9,200.00	0 00	0 00	9,200 00	-5,548.00	0.00	0.00	0.00	0.00	509,961.40	718,394.30
9,300.00	0.00	0 00	9,300.00	-5,648.00	0.00	0.00	0.00	0 00	509,961.40	718,394.30
9,362.50	0 00	0.00	9,362.50	-5,710 50	0.00	0.00	0 00	0.00	509,961 40	718,394.30
9,375 00	1 50	359.60	9,375 00	-5,723.00	0.16	0.00	0 16	12.00	509,961 56	718,394.30
9,400.00	4.50	359.60	9,399.96	-5,747.96	1.47	-0 01	1.47	12.00	509,962.87	718,394 29
9,425.00	7.50	359 60	9,424.82	-5,772.82	4 08	-0 03	4.08	12 00	509,965.48	718,394 27
9,450.00	10 50	359 60	9,449.51	-5,797 51	7.99	-0.06	7.99	12.00	509,969.39	718,394.24
9,475.00	13 50	359.60	9,473.96	-5,821.96	13.19	-0.09	13.19	12.00	509,974.59	718,394.21
9,500.00	16.50	359.60	9,498 11	-5,846.11	19.66	-0.14	19.66	12 00	509,981.06	718,394.16
9,525.00	19.50	359.60	9,521 88	-5,869.88	27.38	-0.19	27.38	12.00	509,988.78	718,394.11
9,550.00	22.50	359 60	9,545 22	-5,893.22	36.34	-0.25	36 34	12 00	509,997.74	718,394.05
9,575 00	25.50	359.60	9,568.05	-5,916 05	46 51	-0.32	46.51	12.00	510,007.91	718,393.98
9,600.00	28.50	359.60	9,590.33	-5,938 33	57 86	-0.40	57.86	12.00	510,019.26	718,393.90
9,625.00	31.50	359.60	9,611 98	-5,959.98	70.35	-0 49	70 35	12.00	510,031.75	718,393.81
9,650.00	34.50	359.60	9,632 94	-5,980.94	83.97	-0 59	83.97	12.00	510,045 37	718,393.71
9,675.00	37 50	359 60	9,653.17	-6,001.17	98.66	-0.69	98.66	12.00	510,060 06	718,393.61



A Schlumberger Company

Pathfinder

Pathfinder X & Y Planning Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652 00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652 00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
9,700.00	40.50	359.60	9,672.59	-6,020.59	114.39	-0.80	114.39	12.00	510,075.79	718,393.50
9,725.00	43.50	359.60	9,691.17	-6,039.17	131.11	-0.92	131.12	12.00	510,092.51	718,393.38
9,750.00	46.50	359.60	9,708.85	-6,056.85	148.79	-1.04	148.79	12.00	510,110.19	718,393.26
9,775.00	49.50	359.60	9,725.57	-6,073.57	167.36	-1.17	167.37	12.00	510,128.76	718,393.13
9,800.00	52.50	359.60	9,741.31	-6,089.31	186.79	-1.30	186.79	12.00	510,148.19	718,393.00
9,825.00	55.50	359.60	9,756.00	-6,104.00	207.01	-1.45	207.01	12.00	510,168.41	718,392.85
9,850.00	58.50	359.60	9,769.62	-6,117.62	227.97	-1.59	227.98	12.00	510,189.37	718,392.71
9,875.00	61.50	359.60	9,782.12	-6,130.12	249.62	-1.74	249.62	12.00	510,211.02	718,392.56
9,900.00	64.50	359.60	9,793.47	-6,141.47	271.89	-1.90	271.90	12.00	510,233.29	718,392.40
9,925.00	67.50	359.60	9,803.64	-6,151.64	294.72	-2.06	294.73	12.00	510,256.12	718,392.24
9,950.00	70.49	359.60	9,812.60	-6,160.60	318.06	-2.22	318.07	12.00	510,279.46	718,392.08
9,975.00	73.49	359.60	9,820.32	-6,168.32	341.83	-2.39	341.84	12.00	510,303.23	718,391.91
10,000.00	76.49	359.60	9,826.80	-6,174.80	365.98	-2.56	365.98	12.00	510,327.38	718,391.74
10,025.00	79.49	359.60	9,832.00	-6,180.00	390.43	-2.73	390.43	12.00	510,351.83	718,391.57
10,050.00	82.49	359.60	9,835.91	-6,183.91	415.11	-2.90	415.12	12.00	510,376.51	718,391.40
10,075.00	85.49	359.60	9,838.52	-6,186.52	439.97	-3.07	439.98	12.00	510,401.37	718,391.23
10,100.00	88.49	359.60	9,839.83	-6,187.83	464.93	-3.25	464.95	12.00	510,426.33	718,391.05
10,112.56	90.00	359.60	9,840.00	-6,188.00	477.49	-3.33	477.50	12.00	510,438.89	718,390.97
10,200.00	90.00	359.60	9,840.00	-6,188.00	564.93	-3.94	564.94	0.00	510,526.33	718,390.36
10,300.00	90.00	359.60	9,840.00	-6,188.00	664.93	-4.64	664.94	0.00	510,626.33	718,389.66
10,400.00	90.00	359.60	9,840.00	-6,188.00	764.93	-5.34	764.94	0.00	510,726.33	718,388.96
10,500.00	90.00	359.60	9,840.00	-6,188.00	864.92	-6.04	864.94	0.00	510,826.32	718,388.26
10,600.00	90.00	359.60	9,840.00	-6,188.00	964.92	-6.74	964.94	0.00	510,926.32	718,387.56
10,700.00	90.00	359.60	9,840.00	-6,188.00	1,064.92	-7.43	1,064.94	0.00	511,026.32	718,386.87
10,800.00	90.00	359.60	9,840.00	-6,188.00	1,164.92	-8.13	1,164.94	0.00	511,126.32	718,386.17
10,900.00	90.00	359.60	9,840.00	-6,188.00	1,264.91	-8.83	1,264.94	0.00	511,226.31	718,385.47
11,000.00	90.00	359.60	9,840.00	-6,188.00	1,364.91	-9.53	1,364.94	0.00	511,326.31	718,384.77

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652.00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652.00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

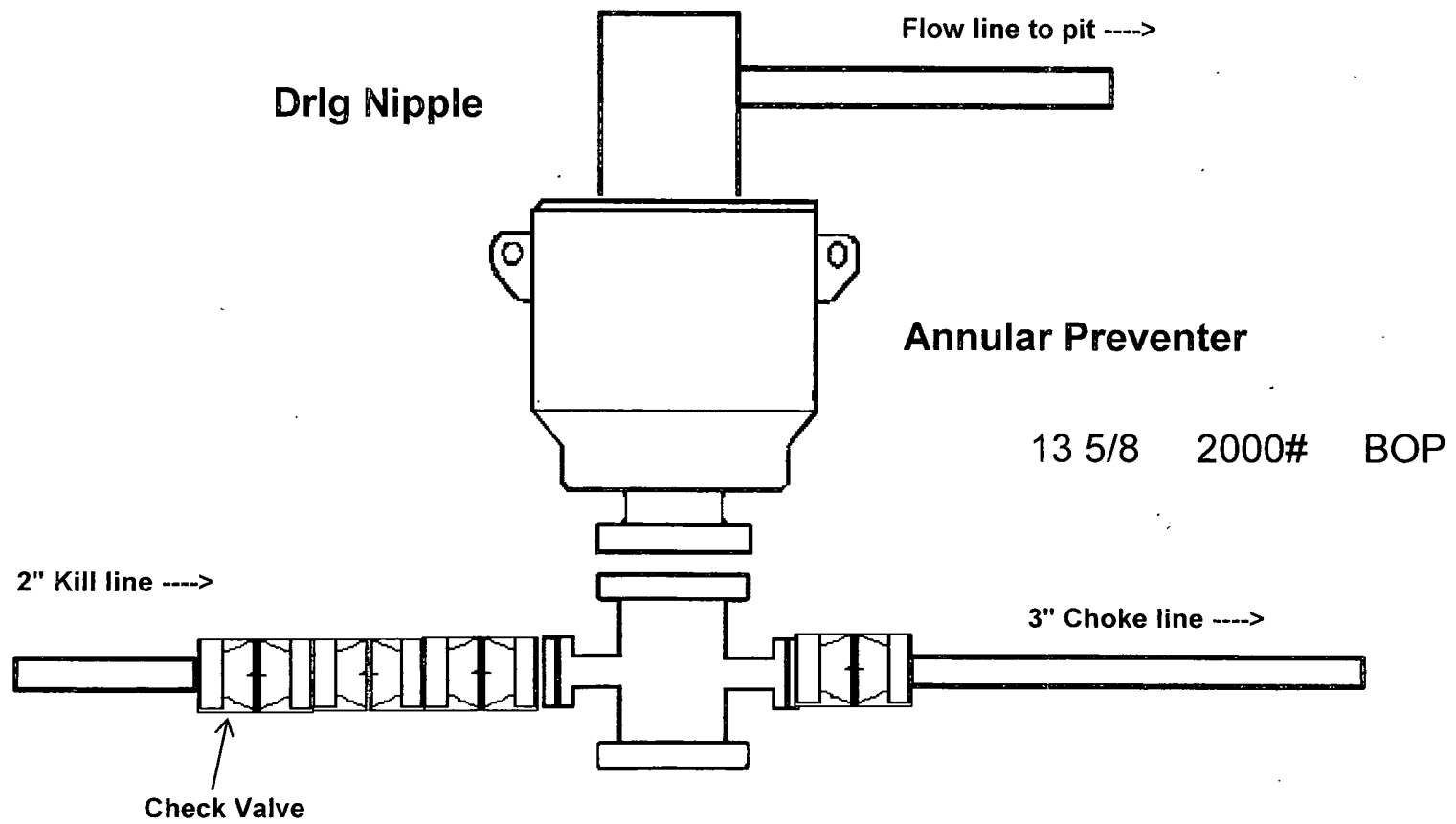
Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,100.00	90.00	359.60	9,840.00	-6,188.00	1,464.91	-10.23	1,464.94	0.00	511,426.31	718,384.07
11,200.00	90.00	359.60	9,840.00	-6,188.00	1,564.91	-10.93	1,564.94	0.00	511,526.31	718,383.37
11,300.00	90.00	359.60	9,840.00	-6,188.00	1,664.90	-11.62	1,664.94	0.00	511,626.30	718,382.68
11,400.00	90.00	359.60	9,840.00	-6,188.00	1,764.90	-12.32	1,764.94	0.00	511,726.30	718,381.98
11,500.00	90.00	359.60	9,840.00	-6,188.00	1,864.90	-13.02	1,864.94	0.00	511,826.30	718,381.28
11,600.00	90.00	359.60	9,840.00	-6,188.00	1,964.90	-13.72	1,964.94	0.00	511,926.30	718,380.58
11,700.00	90.00	359.60	9,840.00	-6,188.00	2,064.89	-14.42	2,064.94	0.00	512,026.29	718,379.88
11,800.00	90.00	359.60	9,840.00	-6,188.00	2,164.89	-15.11	2,164.94	0.00	512,126.29	718,379.19
11,900.00	90.00	359.60	9,840.00	-6,188.00	2,264.89	-15.81	2,264.94	0.00	512,226.29	718,378.49
12,000.00	90.00	359.60	9,840.00	-6,188.00	2,364.89	-16.51	2,364.94	0.00	512,326.29	718,377.79
12,100.00	90.00	359.60	9,840.00	-6,188.00	2,464.88	-17.21	2,464.94	0.00	512,426.28	718,377.09
12,200.00	90.00	359.60	9,840.00	-6,188.00	2,564.88	-17.91	2,564.94	0.00	512,526.28	718,376.39
12,300.00	90.00	359.60	9,840.00	-6,188.00	2,664.88	-18.60	2,664.94	0.00	512,626.28	718,375.70
12,400.00	90.00	359.60	9,840.00	-6,188.00	2,764.88	-19.30	2,764.94	0.00	512,726.28	718,375.00
12,500.00	90.00	359.60	9,840.00	-6,188.00	2,864.87	-20.00	2,864.94	0.00	512,826.27	718,374.30
12,600.00	90.00	359.60	9,840.00	-6,188.00	2,964.87	-20.70	2,964.94	0.00	512,926.27	718,373.60
12,700.00	90.00	359.60	9,840.00	-6,188.00	3,064.87	-21.40	3,064.94	0.00	513,026.27	718,372.90
12,800.00	90.00	359.60	9,840.00	-6,188.00	3,164.87	-22.10	3,164.94	0.00	513,126.27	718,372.20
12,900.00	90.00	359.60	9,840.00	-6,188.00	3,264.87	-22.79	3,264.94	0.00	513,226.27	718,371.51
13,000.00	90.00	359.60	9,840.00	-6,188.00	3,364.86	-23.49	3,364.94	0.00	513,326.26	718,370.81
13,100.00	90.00	359.60	9,840.00	-6,188.00	3,464.86	-24.19	3,464.94	0.00	513,426.26	718,370.11
13,200.00	90.00	359.60	9,840.00	-6,188.00	3,564.86	-24.89	3,564.94	0.00	513,526.26	718,369.41
13,300.00	90.00	359.60	9,840.00	-6,188.00	3,664.86	-25.59	3,664.94	0.00	513,626.26	718,368.71
13,400.00	90.00	359.60	9,840.00	-6,188.00	3,764.85	-26.28	3,764.94	0.00	513,726.25	718,368.02
13,500.00	90.00	359.60	9,840.00	-6,188.00	3,864.85	-26.98	3,864.94	0.00	513,826.25	718,367.32
13,600.00	90.00	359.60	9,840.00	-6,188.00	3,964.85	-27.68	3,964.94	0.00	513,926.25	718,366.62
13,700.00	90.00	359.60	9,840.00	-6,188.00	4,064.85	-28.38	4,064.94	0.00	514,026.25	718,365.92

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 2H
Project:	Lea County(NAD27)	TVD Reference:	WELL @ 3652.00usft (Original Well Elev)
Site:	Airbonita 12 Federal	MD Reference:	WELL @ 3652.00usft (Original Well Elev)
Well:	2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
13,800.00	90.00	359.60	9,840.00	-6,188.00	4,164.84	-29.08	4,164.94	0.00	514,126.24	718,365.22
13,900.00	90.00	359.60	9,840.00	-6,188.00	4,264.84	-29.77	4,264.94	0.00	514,226.24	718,364.53
14,000.00	90.00	359.60	9,840.00	-6,188.00	4,364.84	-30.47	4,364.94	0.00	514,326.24	718,363.83
14,100.00	90.00	359.60	9,840.00	-6,188.00	4,464.84	-31.17	4,464.94	0.00	514,426.24	718,363.13
14,161.97	90.00	359.60	9,840.00	-6,188.00	4,526.80	-31.60	4,526.91	0.00	514,488.20	718,362.70

Checked By: _____	Approved By _____	Date: _____
-------------------	-------------------	-------------

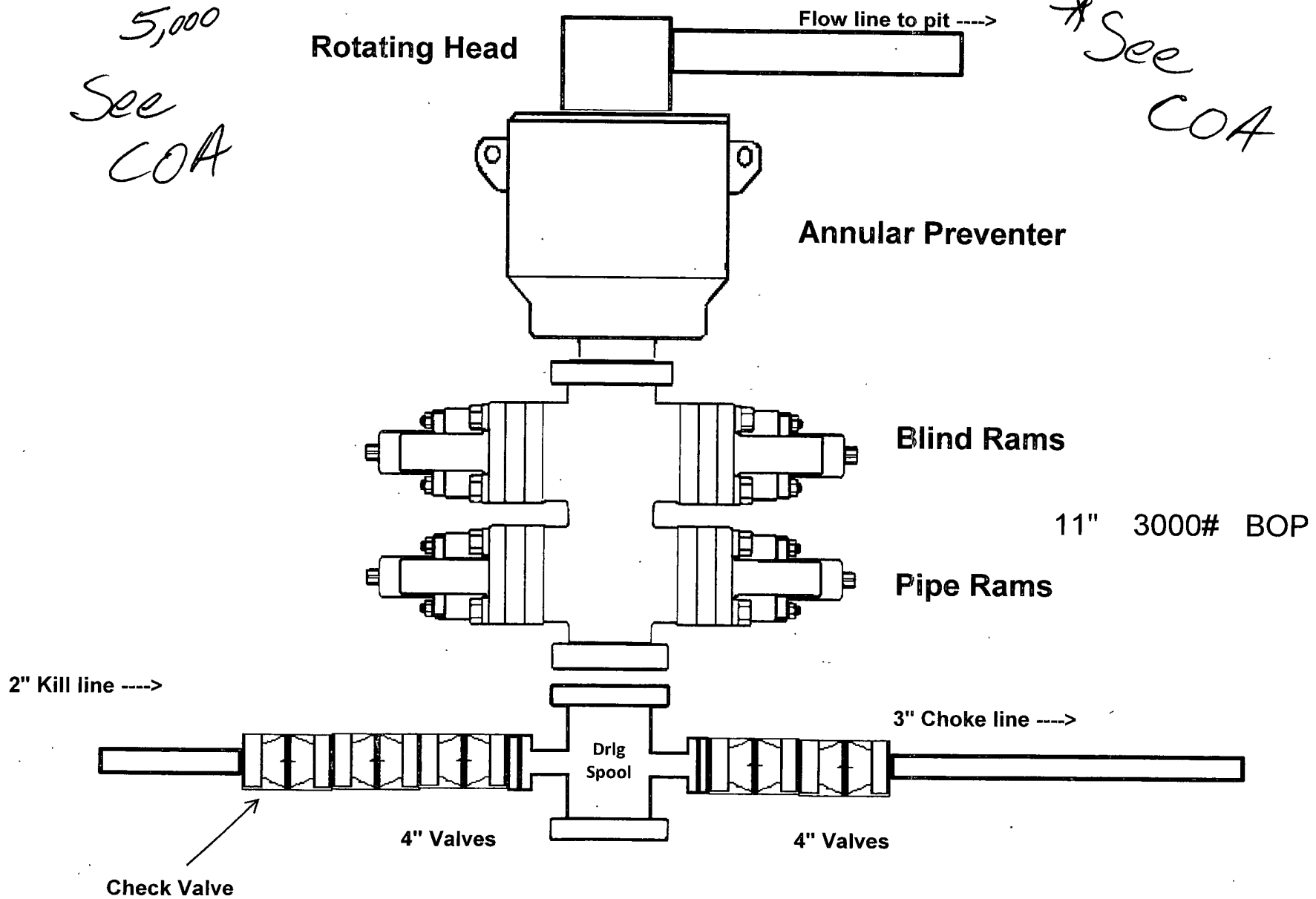
2,000 psi BOP Schematic



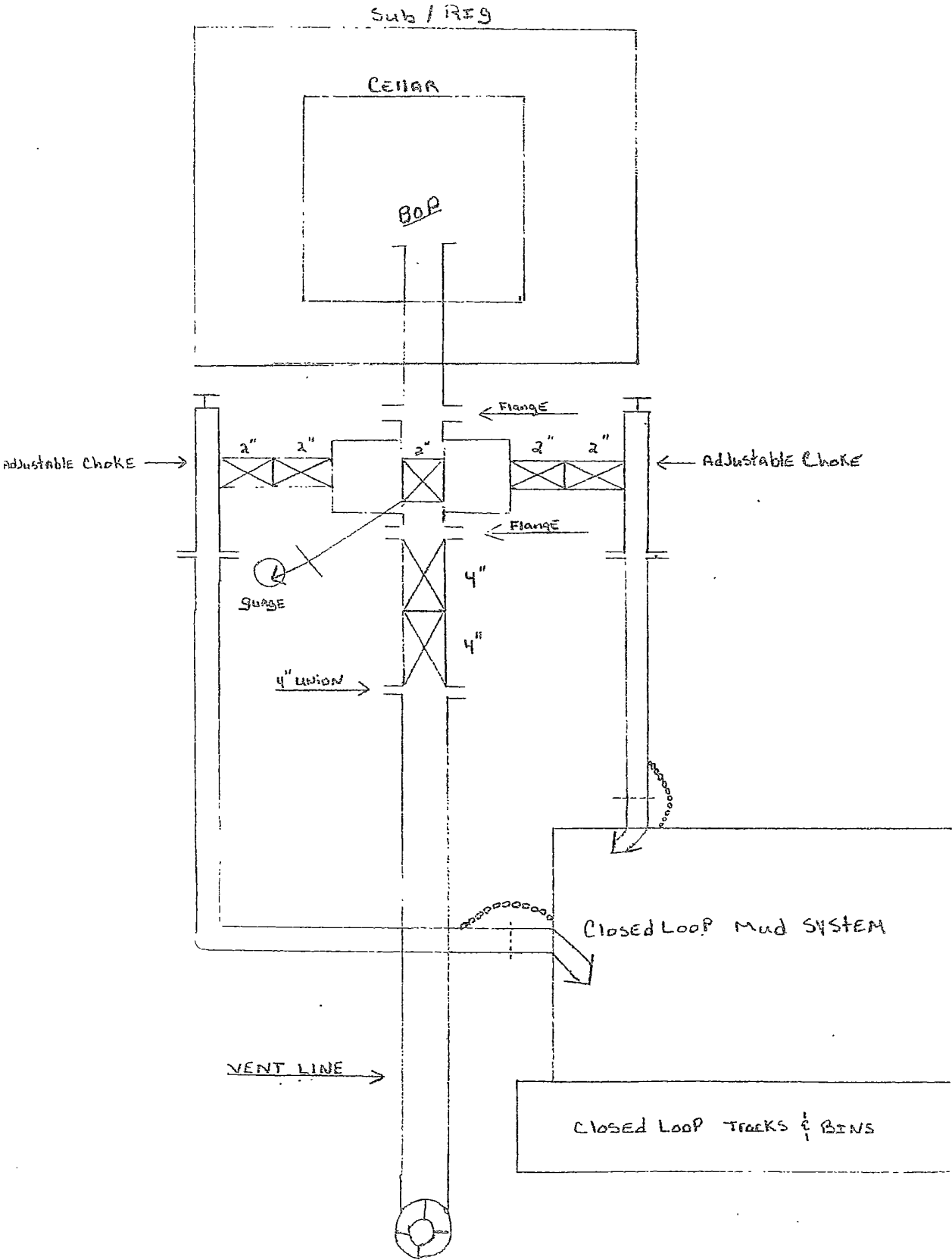
3,000 psi BOP Schematic

5,000
See
COA

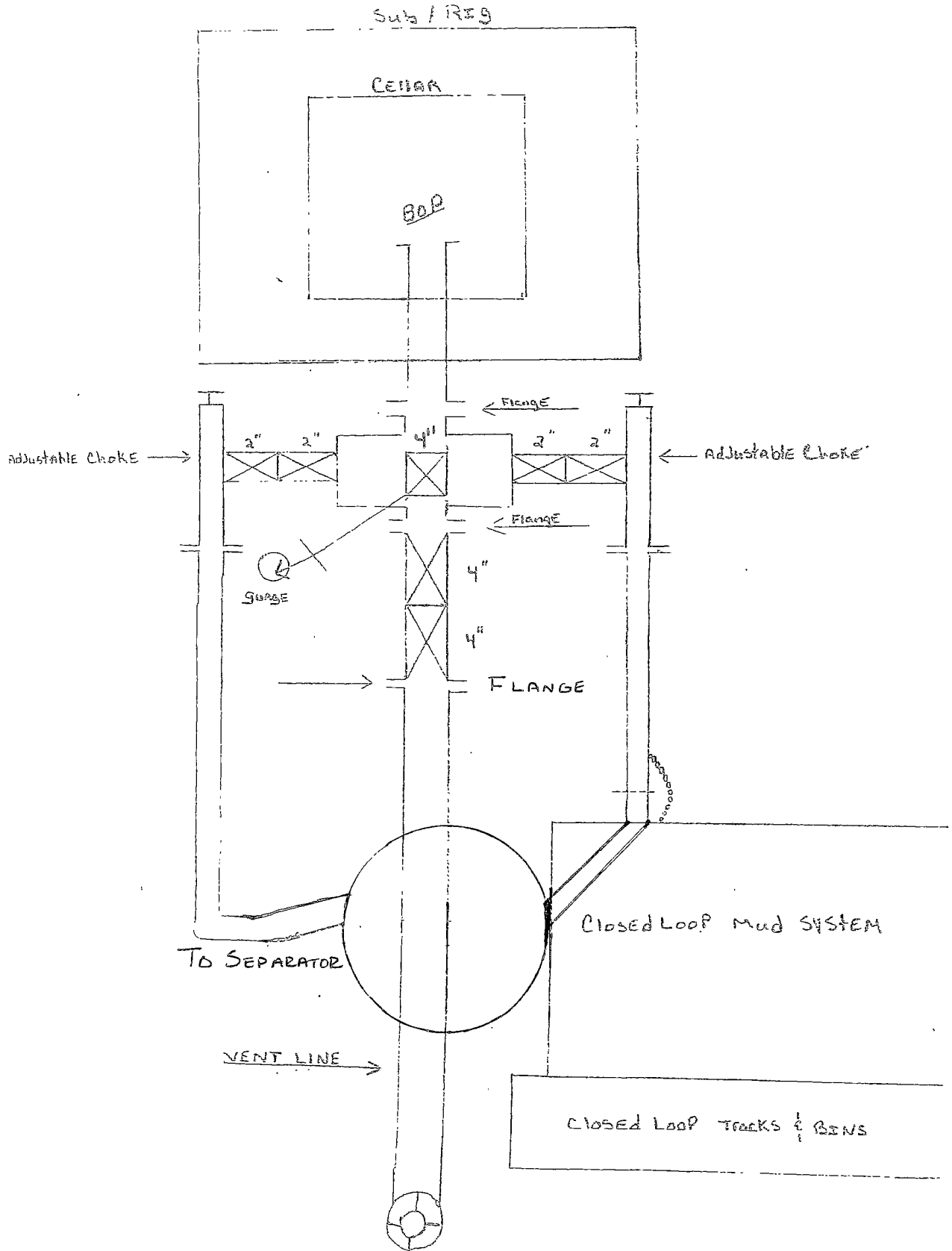
* See
COA



2M Choke Manifold Equipment



~~3M~~ Choke Manifold Equipment
5M Su COA



150' TO FLARE PIT