

Split Estate

OCD Hobbs

13-771

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

UNORTHODOX
LOCATION

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD

JUN 06 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER		RECEIVED		5. Lease Serial No. NMNM0554252	
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		3b. Phone No. (include area code) 575-748-6940		8. Lease Name and Well No. COM (40252) Picasso Federal #2H	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FSL & 1330' FEL Unit Letter O (SWSE) SHL Sec 9-T24S-R34E At proposed prod. Zone 330' FNL & 2260' FEL Unit Letter B (NWNE) BHL Sec 9-T24S-R34E				9. API Well No. 30-025-41905	
14. Distance in miles and direction from nearest town or post office* Approximately 16 miles from Jal				10. Field and Pool, or Exploratory RED HILLS, Wildcat, Bone Spring, NORTH (96434)	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 190'		16. No. of acres in lease 240		11. Sec., T.R.M. or Blk and Survey or Area Sec. 9 - T24S - R34E	
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 660' BHL: 280'		19. Proposed Depth TVD: 10,740' MD: 15,810' PH: 12,250'		12. County or Parish Lea County	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3530.8 GL		22. Approximate date work will start* 11/1/2013		13. State NM	
		17. Spacing Unit dedicated to this well 160			
		20. BLM/BIA Bond No. on file NMB000740 & NMB000215			

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 Mayte Reyes	Name (Printed/Typed) Mayte Reyes	Date 8/27/2013
Title Regulatory Analyst		
Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date MAY 30 2014
Title FIELD MANAGER		
Office 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)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

JUN 09 2014

Surface Use Plan
COG Operating LLC
Picasso Federal #2H
SL: 190' FSL & 1330' FEL UL O
Section 9, T24S, R34E
BHL: 330' FNL & 2260' FEL UL B
Section 9, T24S, R34E
Lea County, New Mexico

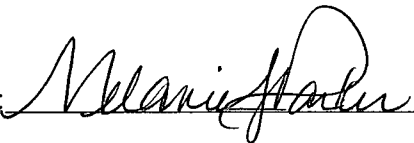
HOBBS OCD

JUN 09 2014

RECEIVED

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 21st day of November, 2013.

Signed: _____

Printed Name: Melanie J. Parker

Position: Regulatory Coordinator

Address: 2208 W. Main Street, Artesia, NM 88210

Telephone: (575) 748-6940

Field Representative (if not above signatory): Rand French

E-mail: mparker@concho.com

COG Production LLC
DRILLING AND OPERATIONS PROGRAM

Picasso Fed Com #2H

SHL: 1630' FSL & 255' FWL Section 4

BHL: 1980' FSL & 330' FWL Section 5

Section 4 & 5 T19S R31E

Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven 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:

Fresh Water	330'	
Rustler	1,164'	
Top of Salt	1,708'	
Base of Salt	5,041'	
Delaware	5,306'	Oil
Bone Springs	9,013'	Oil
Wolfcamp	12,250'	Oil
TD TVD	10,740'	
TD MD	15,810'	
PH TD	12,250'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. ^{1230'}
The surface fresh water sands will be protected by setting 13-3/8" casing at ~~1,190'~~ 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 a minimum of 500' into 9-5/8" csg.

See COA

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

Hole Size	Depths	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - ^{1230'} 1,190'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 4,500'	Intrmd	9 5/8"	New	40#	LTC	J-55	1.125	1.125	1.6
12 1/4"	4,500' - 5,200'	Intrmd	9 5/8"	New	40#	LTC	N-80	1.125	1.125	1.6
7 7/8"	0' - 15,810'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

See COA

4. Proposed Cement Program

- a. 13-3/8" Surface Lead: 550 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx / 9.2 gal/sk)
Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/50% excess on OH volumes
- b. 9 5/8" Intermediate: Lead: 900 sx 35:65:6 C Blend
(12.7 ppg / 2 cuft/sx / 10.6 gal/sk)
Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/35% excess on OH volumes
- c. 5 1/2" Production: Stage #1: Lead: 350 sx 35:65:6 H + Salt + KolSeal + CFR-3 + HR601
(12.7 ppg / 2 cuft/sx / 10.6 gal/sk)
Tail: 975 sx 50:50:2 H + Salt + GasStop + CFR-3
(14.4 ppg / 1.24 cuft/sx / 6.4 gal/sk)
**Calculated w/35% excess on OH volumes
DVT @ 7,500'
Stage #2: Lead: 250 sx 50:50:10 Interfill C Bland
(11.9 ppg / 2.51 cuft/sx / 14.11 gal/sk)
Tail: 100 sx Class C Neat
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/35% excess on OH volumes
- o The above cement volumes could be revised pending the caliper measurement.
 - o The 9-5/8" intermediate string is designed to circulate to surface.
 - o The production string will tie back a minimum of 500' into 9-5/8" shoe
 - o The pilot hole will be plugged back with the below plugs:
 1. Plug #1
 - o 500' from 11,750' - 12,250'
 - o 145 sx Class H
 - o 15.6 ppg 1.18 cuft/sk 4.2 gal/sk
 2. Plug #2
 - o 750' from 10,150' - 10,900'
 - o 260 sx Class H
 - o 17.2 ppg .98 cuft/sk 3.6 gal/sk

5. Pressure Control:

Nipple up on 13 3/8 with annular preventer tested to 50% of rated working pressure by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 9 5/8 with 5M system tested to 5000 psi 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 minimum 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 5000 psi WP rating. A remotely operated choke will be installed before

drilling out intermediate shoe. If H₂S is monitored with 100 ppm in the gas stream while drilling intermediate, we will shut in and install a remote operated choke.

6. Estimated BHP & BHT:

Lateral TD = 5,138 psi

Lateral TD= 162°F

PH TD= 5,861 psi

PH TD= 176°F

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

See COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1,190'	Fresh Water	8.4 - 8.6	29	N.C.
1,190' - 5,200'	Brine	10 - 10.2	29	N.C.
5,200' - 12,250' (P.H.)	Cut Brine	8.8 - 9.2	29	N.C.
5,200' - 15,810' (Lateral)	Cut Brine	8.8 - 9.2	29	N.C.

- The necessary mud products for weight addition and fluid loss control will be on location at all times.
- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume total, stroke counter and flow sensor at flow line.
- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with tourly check by rig personnel.
- After setting intermediate casing, a third party gas unit detection system will be installed at the flow line.

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:

- Drill stem tests will be based on geological sample shows.
- If open hole electrical logging is performed, the 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:

- a. 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. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

- a. 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 35 days.



COG Operating LLC

Lea County, NM

Picasso Federal Com

#2H

OH

Plan: Plan #4

Standard Planning Report

20 November, 2013



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3552.8usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3552.8usft (Original Well Elev)
Site:	Picasso Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Project	Lea County, NM		
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	Picasso Federal Com				
Site Position:		Northing:	446,724.50 usft	Latitude:	32° 13' 30.722 N
From:	Map	Easting:	767,583.70 usft	Longitude:	103° 28' 4.937 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	#2H					
Well Position	+N/-S	-3.0 usft	Northing:	446,721.50 usft	Latitude:	32° 13' 30.746 N
	+E/-W	-669.3 usft	Easting:	766,914.40 usft	Longitude:	103° 28' 12.728 W
Position Uncertainty		3.0 usft	Wellhead Elevation:		Ground Level:	3,530.8 usft

Wellbore	OH				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/13/2013	7.27	60.15	48,411

Design	Plan #4				
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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	348.38	

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	
10,458.0	0.00	0.00	10,458.0	0.0	0.0	0.00	0.00	0.00	0.00	
11,228.0	92.41	318.00	10,935.0	369.7	-332.9	12.00	12.00	0.00	318.00	
11,628.0	92.41	318.00	10,918.2	666.7	-600.3	0.00	0.00	0.00	0.00	
12,672.3	92.41	359.81	10,872.2	1,618.6	-967.5	4.00	0.00	4.00	89.07	
15,810.6	92.41	359.81	10,740.0	4,754.1	-977.9	0.00	0.00	0.00	0.00	PBHL(Picasso#2H)



Wellplanning
Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3552.8usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3552.8usft (Original Well Elev)
Site:	Picasso Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

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

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Company:	COG Operating LLC	TVD Reference:	WELL @ 3552.8usft (Original Well Elev)
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Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

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
10,458.0	0.00	0.00	10,458.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 10458.0 'MD, 0.00° INC, 0.00° AZI									



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3552.8usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3552.8usft (Original Well Elev)
Site:	Picasso Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

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)
10,475.0	2.04	318.00	10,475.0	0.2	-0.2	0.3	12.00	12.00	0.00
10,500.0	5.04	318.00	10,499.9	1.4	-1.2	1.6	12.00	12.00	0.00
10,525.0	8.04	318.00	10,524.8	3.5	-3.1	4.0	12.00	12.00	0.00
10,550.0	11.04	318.00	10,549.4	6.6	-5.9	7.6	12.00	12.00	0.00
10,575.0	14.04	318.00	10,573.8	10.6	-9.5	12.3	12.00	12.00	0.00
10,600.0	17.04	318.00	10,597.9	15.6	-14.0	18.1	12.00	12.00	0.00
10,625.0	20.04	318.00	10,621.6	21.5	-19.3	24.9	12.00	12.00	0.00
10,650.0	23.04	318.00	10,644.9	28.3	-25.5	32.9	12.00	12.00	0.00
10,675.0	26.04	318.00	10,667.6	36.0	-32.4	41.8	12.00	12.00	0.00
10,700.0	29.04	318.00	10,689.8	44.6	-40.2	51.8	12.00	12.00	0.00
10,725.0	32.04	318.00	10,711.3	54.1	-48.7	62.7	12.00	12.00	0.00
10,750.0	35.04	318.00	10,732.1	64.3	-57.9	74.7	12.00	12.00	0.00
10,775.0	38.04	318.00	10,752.2	75.4	-67.9	87.5	12.00	12.00	0.00
10,800.0	41.04	318.00	10,771.5	87.2	-78.5	101.2	12.00	12.00	0.00
10,825.0	44.04	318.00	10,789.9	99.8	-89.8	115.8	12.00	12.00	0.00
10,850.0	47.04	318.00	10,807.4	113.0	-101.8	131.2	12.00	12.00	0.00
10,875.0	50.04	318.00	10,824.0	126.9	-114.3	147.4	12.00	12.00	0.00
10,900.0	53.04	318.00	10,839.5	141.5	-127.4	164.3	12.00	12.00	0.00
10,925.0	56.04	318.00	10,854.0	156.6	-141.0	181.8	12.00	12.00	0.00
10,950.0	59.05	318.00	10,867.4	172.3	-155.1	200.0	12.00	12.00	0.00
10,975.0	62.05	318.00	10,879.7	188.5	-169.7	218.8	12.00	12.00	0.00
11,000.0	65.05	318.00	10,890.9	205.1	-184.7	238.1	12.00	12.00	0.00
11,025.0	68.05	318.00	10,900.8	222.2	-200.0	257.9	12.00	12.00	0.00
11,050.0	71.05	318.00	10,909.5	239.6	-215.7	278.1	12.00	12.00	0.00
11,075.0	74.05	318.00	10,917.0	257.3	-231.7	298.7	12.00	12.00	0.00
11,100.0	77.05	318.00	10,923.3	275.3	-247.9	319.6	12.00	12.00	0.00
11,125.0	80.05	318.00	10,928.2	293.5	-264.2	340.7	12.00	12.00	0.00
11,150.0	83.05	318.00	10,931.9	311.8	-280.8	362.0	12.00	12.00	0.00
11,175.0	86.05	318.00	10,934.3	330.3	-297.4	383.5	12.00	12.00	0.00
11,200.0	89.05	318.00	10,935.4	348.9	-314.1	405.0	12.00	12.00	0.00
11,225.0	92.05	318.00	10,935.1	367.5	-330.9	426.6	12.00	12.00	0.00
11,228.0	92.41	318.00	10,935.0	369.7	-332.9	429.2	12.00	12.00	0.00
EOC- 11228.0 'MD, 92.41° INC, 318.00° AZI									
11,300.0	92.41	318.00	10,932.0	423.2	-381.0	491.2	0.00	0.00	0.00
11,400.0	92.41	318.00	10,927.8	497.4	-447.9	577.4	0.00	0.00	0.00
11,500.0	92.41	318.00	10,923.6	571.7	-514.7	663.6	0.00	0.00	0.00
11,600.0	92.41	318.00	10,919.4	645.9	-581.6	749.8	0.00	0.00	0.00
11,628.0	92.41	318.00	10,918.2	666.7	-600.3	774.0	0.00	0.00	0.00
Start DLS 4.00 TFO 89.07									
11,700.0	92.45	320.88	10,915.1	721.3	-647.1	836.9	4.00	0.06	4.00
11,800.0	92.50	324.89	10,910.8	801.0	-707.3	927.1	4.00	0.05	4.00
11,900.0	92.54	328.89	10,906.4	884.7	-761.9	1,020.0	4.00	0.04	4.00
12,000.0	92.57	332.89	10,901.9	971.9	-810.5	1,115.3	4.00	0.03	4.00
12,100.0	92.58	336.90	10,897.4	1,062.4	-852.9	1,212.4	4.00	0.01	4.00
12,200.0	92.58	340.90	10,892.9	1,155.5	-888.8	1,310.9	4.00	0.00	4.00
12,300.0	92.57	344.90	10,888.4	1,251.0	-918.2	1,410.3	4.00	-0.01	4.00
12,400.0	92.54	348.91	10,884.0	1,348.3	-940.8	1,510.2	4.00	-0.02	4.00
12,500.0	92.51	352.91	10,879.6	1,446.9	-956.6	1,610.0	4.00	-0.04	4.00
12,600.0	92.46	356.92	10,875.2	1,546.4	-965.5	1,709.2	4.00	-0.05	4.00
12,672.3	92.41	359.81	10,872.2	1,618.6	-967.5	1,780.4	4.00	-0.06	4.00
12,700.0	92.41	359.81	10,871.0	1,646.3	-967.6	1,807.5	0.00	0.00	0.00
12,800.0	92.41	359.81	10,866.8	1,746.2	-967.9	1,905.4	0.00	0.00	0.00
12,900.0	92.41	359.81	10,862.6	1,846.1	-968.3	2,003.3	0.00	0.00	0.00
13,000.0	92.41	359.81	10,858.4	1,946.0	-968.6	2,101.3	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 @ 3552.8usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3552.8usft (Original Well Elev)
Site:	Picasso Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

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)
13,100.0	92.41	359.81	10,854.2	2,045.9	-968.9	2,199.2	0.00	0.00	0.00
13,200.0	92.41	359.81	10,850.0	2,145.8	-969.3	2,297.1	0.00	0.00	0.00
13,300.0	92.41	359.81	10,845.7	2,245.7	-969.6	2,395.0	0.00	0.00	0.00
13,400.0	92.41	359.81	10,841.5	2,345.7	-969.9	2,493.0	0.00	0.00	0.00
13,500.0	92.41	359.81	10,837.3	2,445.6	-970.3	2,590.9	0.00	0.00	0.00
13,600.0	92.41	359.81	10,833.1	2,545.5	-970.6	2,688.8	0.00	0.00	0.00
13,700.0	92.41	359.81	10,828.9	2,645.4	-970.9	2,786.8	0.00	0.00	0.00
13,800.0	92.41	359.81	10,824.7	2,745.3	-971.2	2,884.7	0.00	0.00	0.00
13,900.0	92.41	359.81	10,820.5	2,845.2	-971.6	2,982.6	0.00	0.00	0.00
14,000.0	92.41	359.81	10,816.3	2,945.1	-971.9	3,080.5	0.00	0.00	0.00
14,100.0	92.41	359.81	10,812.0	3,045.0	-972.2	3,178.5	0.00	0.00	0.00
14,200.0	92.41	359.81	10,807.8	3,144.9	-972.6	3,276.4	0.00	0.00	0.00
14,300.0	92.41	359.81	10,803.6	3,244.9	-972.9	3,374.3	0.00	0.00	0.00
14,400.0	92.41	359.81	10,799.4	3,344.8	-973.2	3,472.3	0.00	0.00	0.00
14,500.0	92.41	359.81	10,795.2	3,444.7	-973.6	3,570.2	0.00	0.00	0.00
14,600.0	92.41	359.81	10,791.0	3,544.6	-973.9	3,668.1	0.00	0.00	0.00
14,700.0	92.41	359.81	10,786.8	3,644.5	-974.2	3,766.0	0.00	0.00	0.00
14,800.0	92.41	359.81	10,782.6	3,744.4	-974.6	3,864.0	0.00	0.00	0.00
14,900.0	92.41	359.81	10,778.4	3,844.3	-974.9	3,961.9	0.00	0.00	0.00
15,000.0	92.41	359.81	10,774.1	3,944.2	-975.2	4,059.8	0.00	0.00	0.00
15,100.0	92.41	359.81	10,769.9	4,044.1	-975.5	4,157.8	0.00	0.00	0.00
15,200.0	92.41	359.81	10,765.7	4,144.1	-975.9	4,255.7	0.00	0.00	0.00
15,300.0	92.41	359.81	10,761.5	4,244.0	-976.2	4,353.6	0.00	0.00	0.00
15,352.2	92.41	359.81	10,759.3	4,296.2	-976.4	4,404.8	0.00	0.00	0.00
Federal 9 Com #1									
15,400.0	92.41	359.81	10,757.3	4,343.9	-976.5	4,451.5	0.00	0.00	0.00
15,500.0	92.41	359.81	10,753.1	4,443.8	-976.9	4,549.5	0.00	0.00	0.00
15,600.0	92.41	359.81	10,748.9	4,543.7	-977.2	4,647.4	0.00	0.00	0.00
15,700.0	92.41	359.81	10,744.7	4,643.6	-977.5	4,745.3	0.00	0.00	0.00
15,800.0	92.41	359.81	10,740.4	4,743.5	-977.9	4,843.3	0.00	0.00	0.00
15,810.5	92.41	359.81	10,740.0	4,754.0	-977.9	4,853.5	0.00	0.00	0.00
TD at 15810.6									
15,810.6	92.41	359.81	10,740.0	4,754.1	-977.9	4,853.6	0.00	0.00	0.00
PBHL(Picasso#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(Picasso#2H)	0.00	0.00	10,740.0	4,754.1	-977.9	451,475.60	765,936.50	32° 14' 17.867 N	103° 28' 23.668 W
- plan hits target center									
- Point									
Federal 9 Com #1	0.00	0.00	13,820.0	4,426.1	-697.6	451,147.60	766,216.80	32° 14' 14.599 N	103° 28' 20.435 W
- plan misses target center by 3076.1usft at 15352.2usft MD (10759.3 TVD, 4296.2 N, -976.4 E)									
- Circle (radius 10.0)									



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3552.8usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3552.8usft (Original Well Elev)
Site:	Picasso Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,458.0	10,458.0	0.0	0.0	KOP - 10458.0 'MD, 0.00° INC, 0.00° AZI
11,228.0	10,935.0	369.7	-332.9	EOC- 11228.0 'MD, 92.41° INC, 318.00° AZI
11,628.0	10,918.2	666.7	-600.3	Start DLS 4.00 TFO 89.07
15,810.5	10,740.0	4,754.0	-977.9	TD at 15810.6



COG Operating LLC
Project: Lea County, NM
Site: Picasso Federal Com
Well: #2H
Wellbore: OH
Plan: Plan #4 (#2H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	10458.0	0.00	0.00	10458.0	0.0	0.0	0.00	0.00	0.0
3	11228.0	92.41	318.00	10935.0	369.7	-332.9	12.00	318.00	429.2
4	11628.0	92.41	318.00	10918.2	666.7	-600.3	0.00	0.00	774.0
5	12672.3	92.41	359.81	10872.2	1618.6	-967.5	4.00	89.07	1780.4
6	15810.6	92.41	359.81	10740.0	4754.1	-977.9	0.00	0.00	4853.6

PBHL(Picasso#2H)

WELL DETAILS: #2H

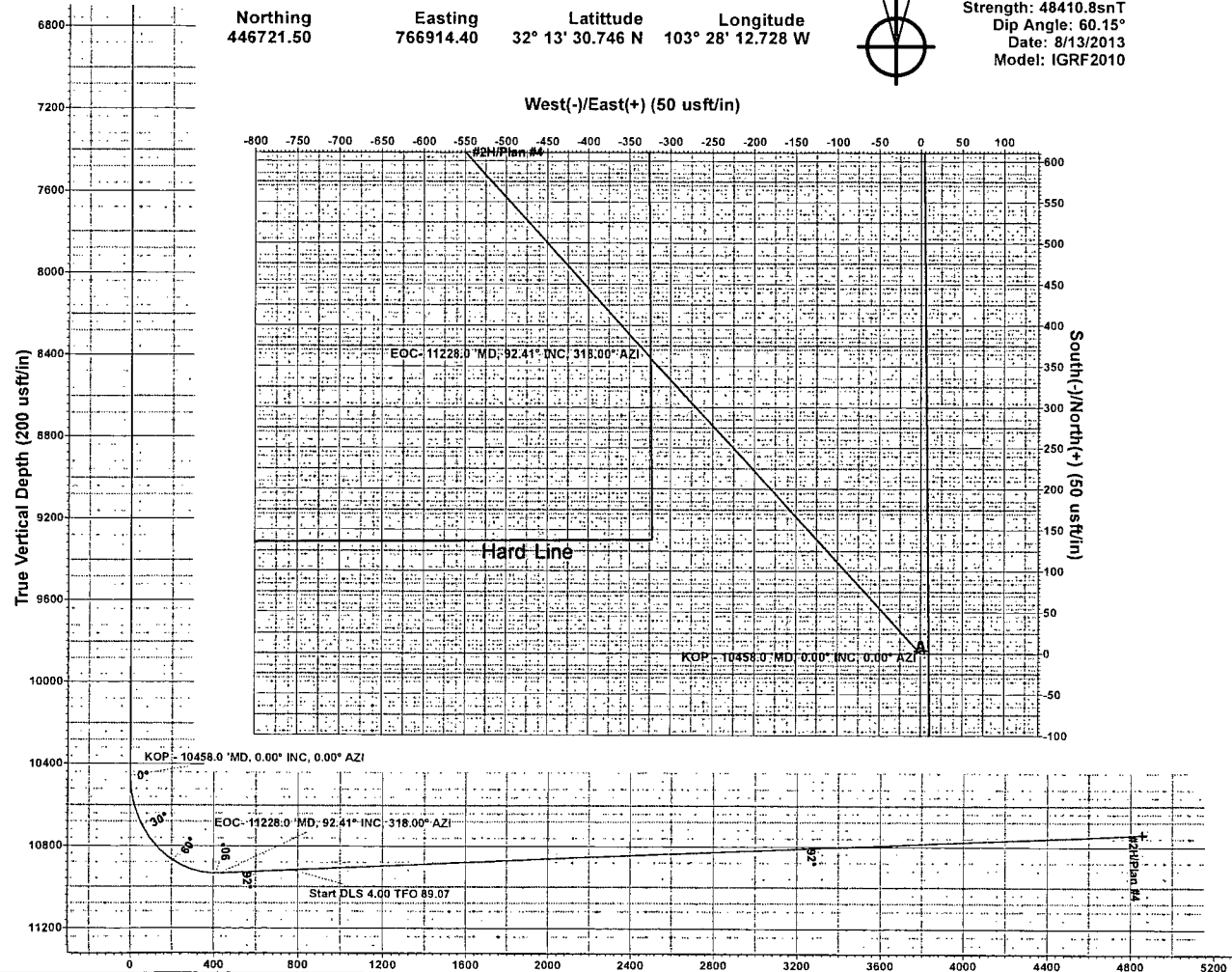
Ground Elevation:: 3530.8
RKB Elevation: WELL @ 3552.8usft (Original Well Elev)
Rig Name: Original Well Elev

Northing 446721.50 Easting 766914.40 Latitude 32° 13' 30.746 N Longitude 103° 28' 12.728 W

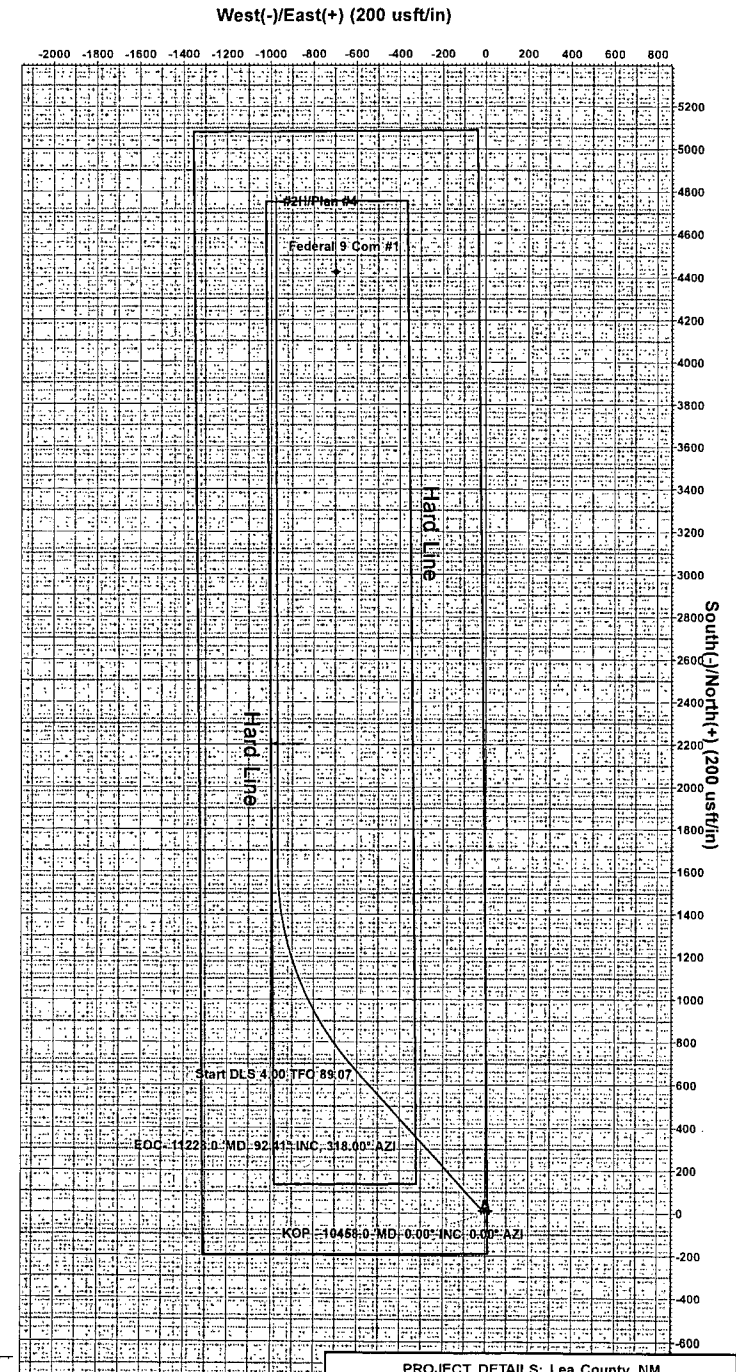


Azimuths to Grid North
True North: -0.46°
Magnetic North: 6.81°

Magnetic Field
Strength: 48410.8nT
Dip Angle: 60.15°
Date: 8/13/2013
Model: IGRF2010



Vertical Section at 348.38° (200 usft/in)



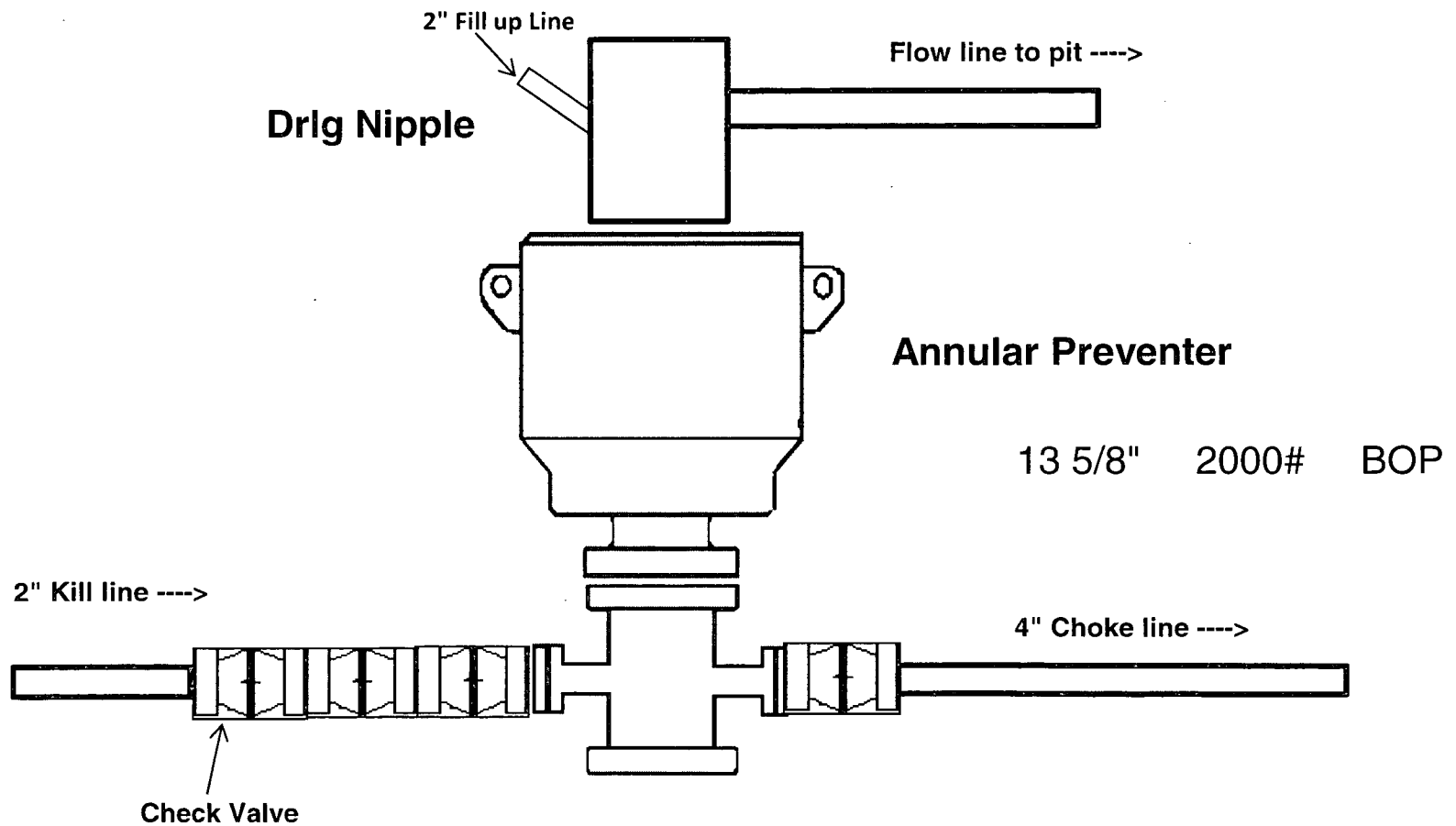
PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



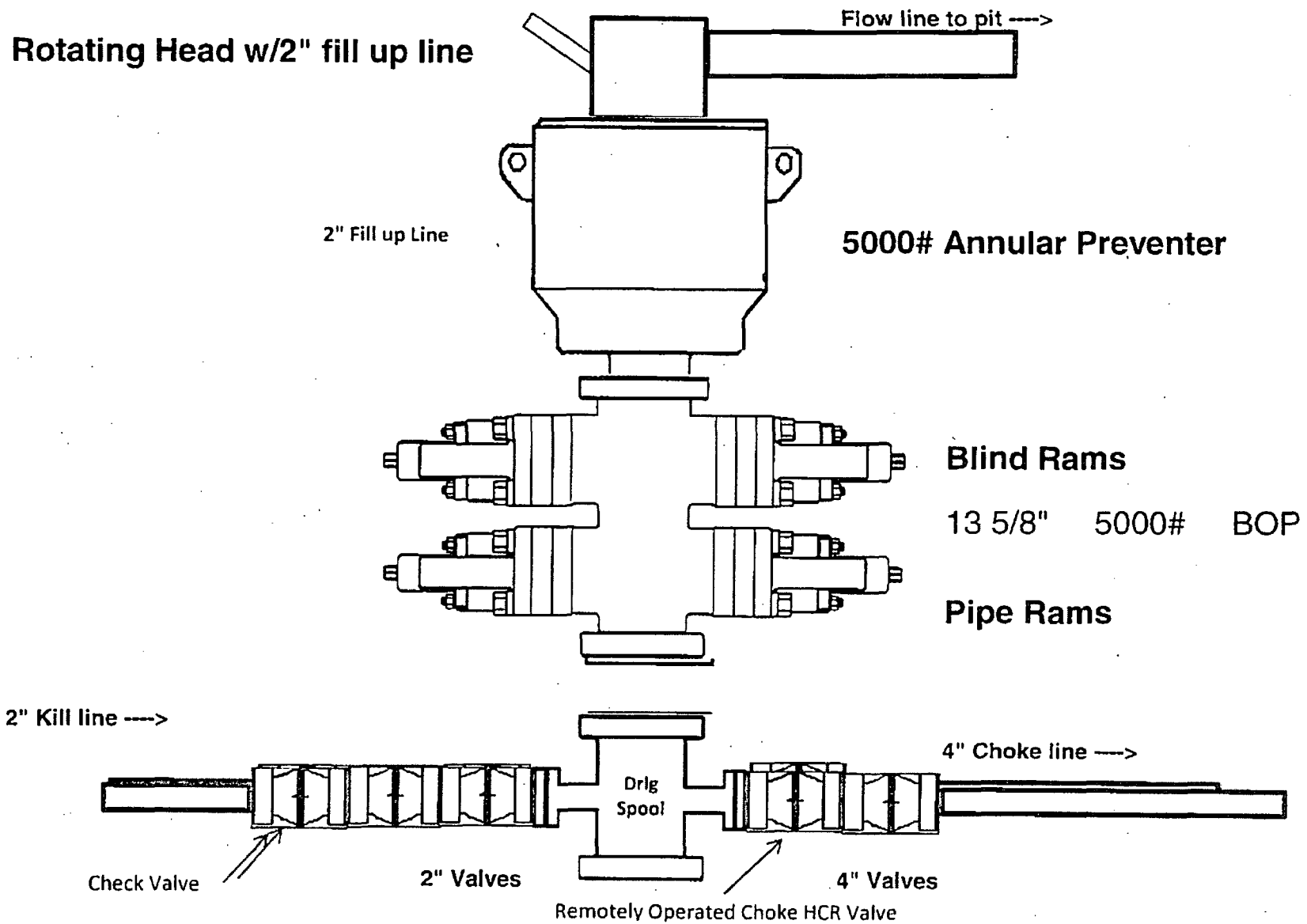
Plan: Plan #4 (#2H/OH)
dated By: Well Planner Date: 20:10, November 20 2013

Terra Directional Services
322 Spring Hill Drive, Suite A100, Spring, Texas 77386
432.425.7532

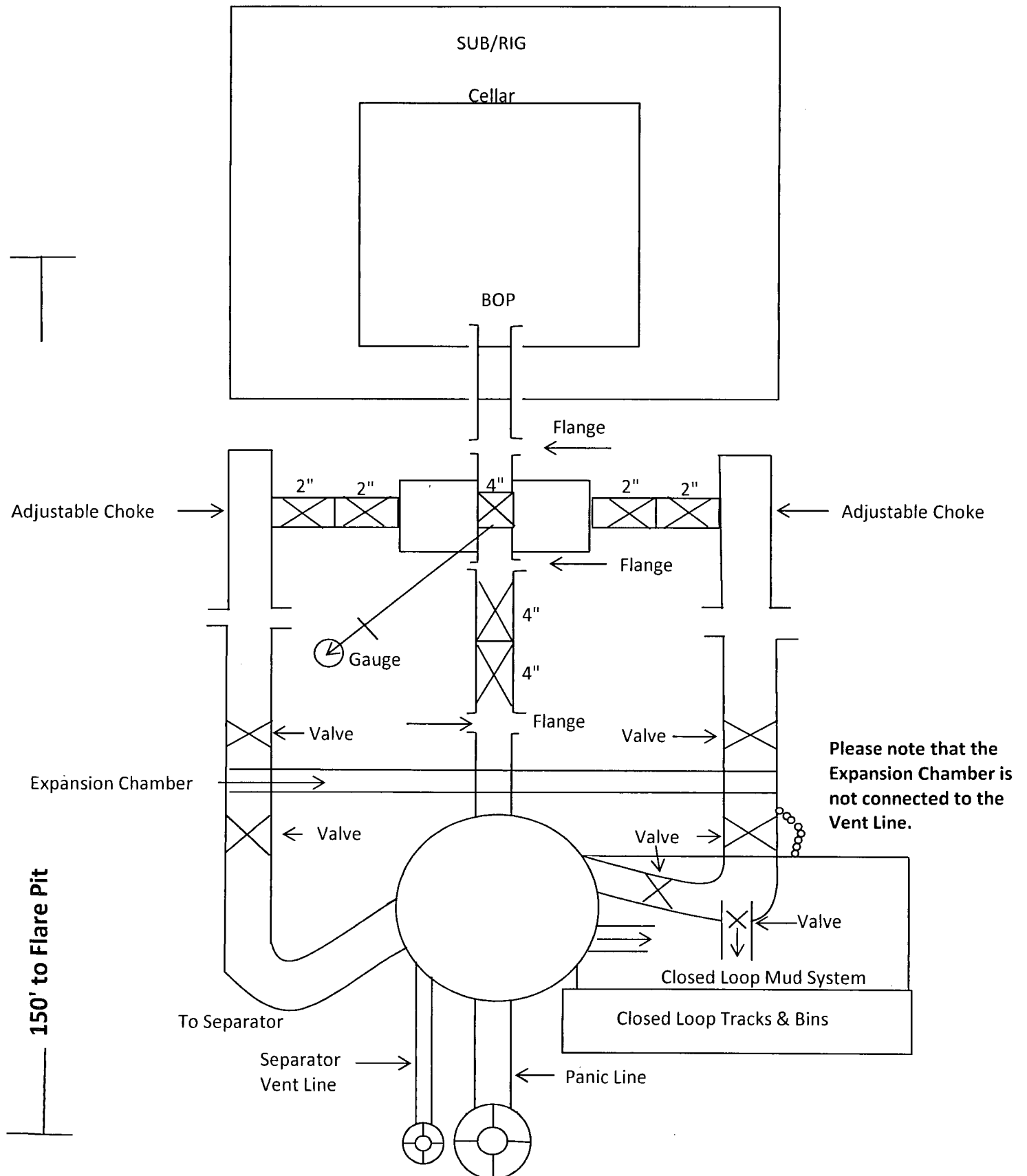
2,000 psi BOP Schematic



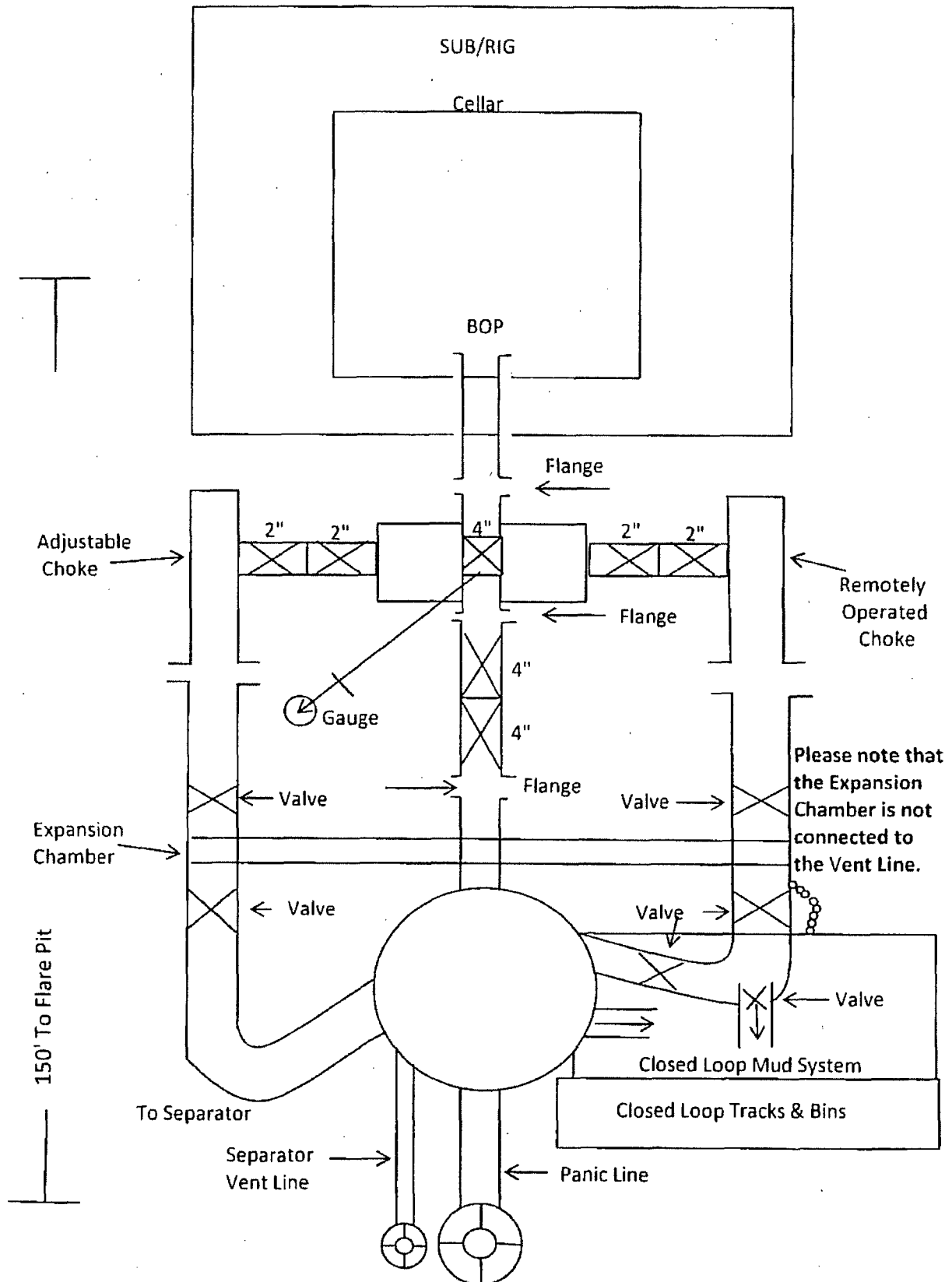
5,000 psi BOP Schematic



2M Choke Manifold Equipment



5M Choke Manifold Equipment



Flex Hose Variance Request

Flex Hose Variance Statement

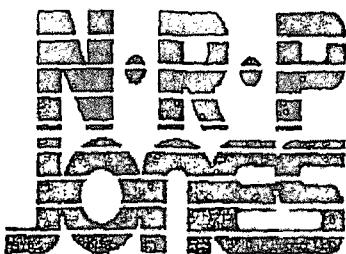
COG (operator) requests a variance if Basic 46 (rig name) is used to drill this well to use a co-flex line between the BOP and choke manifold.

Manufacturer: N. R. P. Jones

Serial Number: MA31113 REPAIR

Length: 23 Size: 3 1/2 Ends - flanges/clamps

WP rating: 5000 psi Anchors required by manufacturer - Yes/No



Certificate of Conformance

DATE ~~2/13~~ 3/11/13

SERIAL NO. MA31113REPAIR PART NO. _____

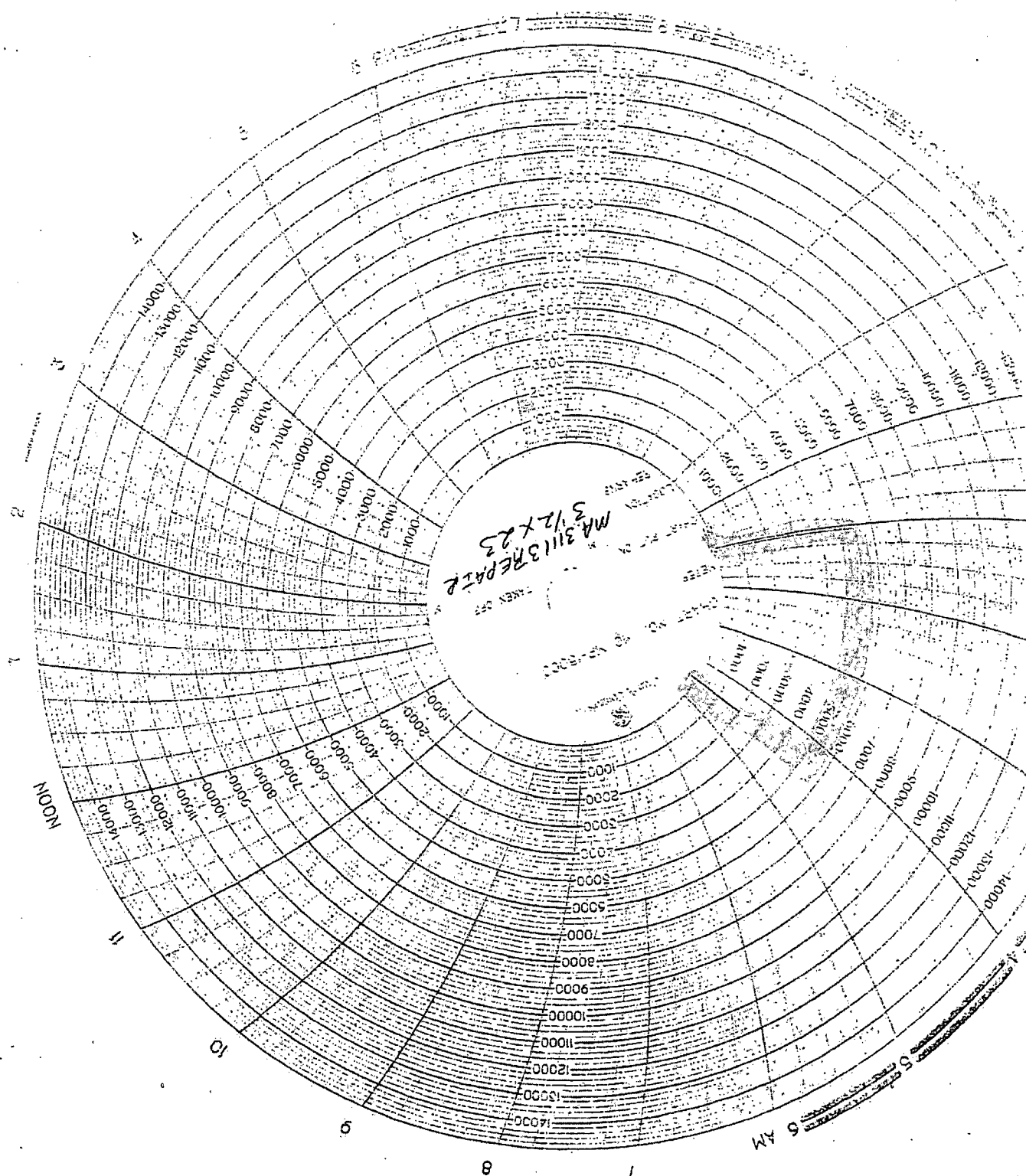
SIZE 3 1/2 LENGTH 23

HYDROSTATICALLY TESTED AT 5000

BY Chance Perkins Q.A. Allen Casey

NEPHI RUBBER PRODUCTS CORP.

Corporate Office: P.O. Box 310 • LaPorte, Indiana 46352 • (800)348-8868 • (219)362-9908 • Fax Number (219)324-0815
Manufacturing: 255 West 11th North • Nephi, Utah 84648 • (800)453-1480 • (435)623-1740 • Fax Number (435)623-2638



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 340' X 340'
with cellar in center of pad

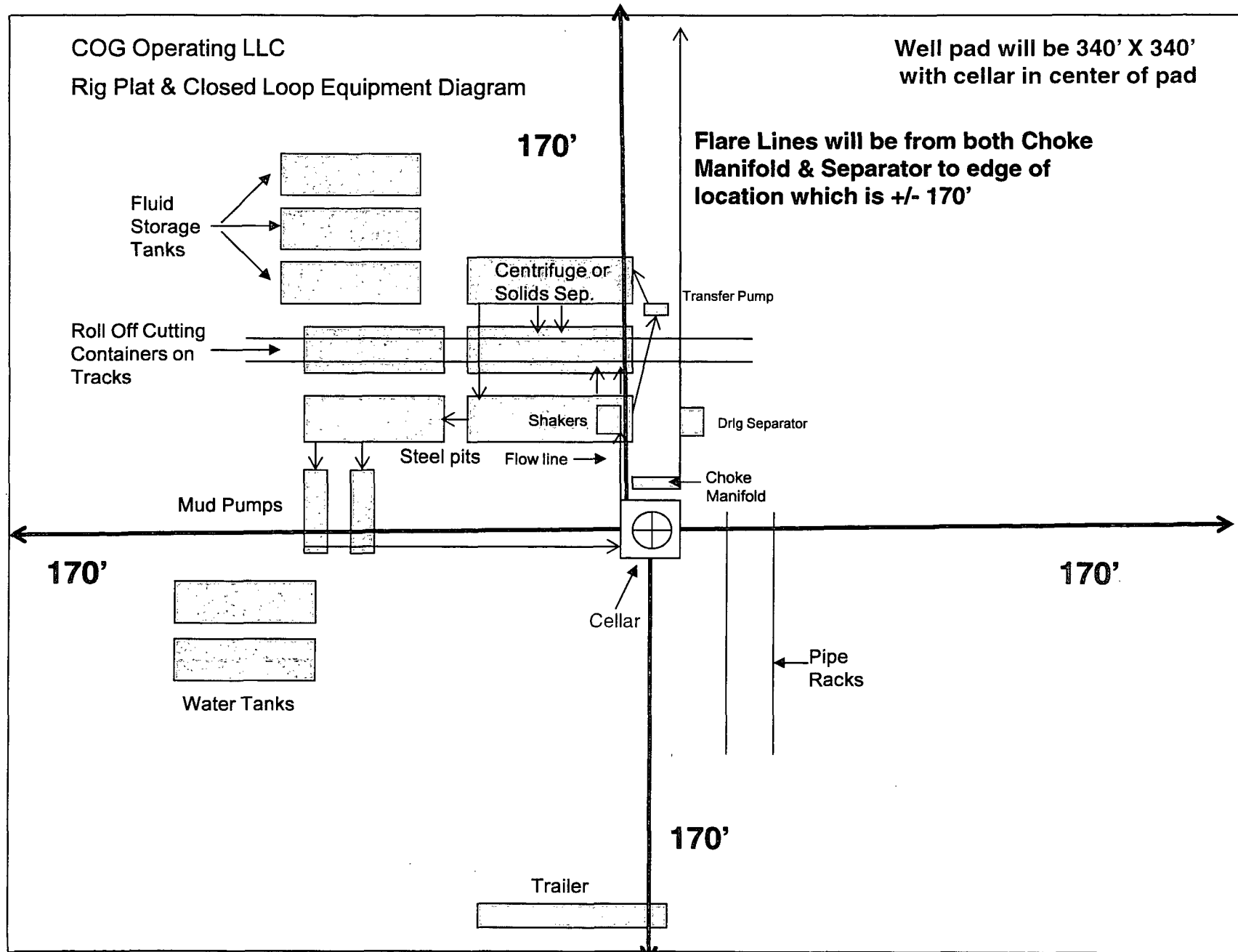


Exhibit 1

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