13-408

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AUG 20 2013
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OCD Hobbs

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER UNORTHODOX LOCATION

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

5. Lease Serial No.: NMNM086

6. If Indian, Allotee or Tribe Name:

1a. Type of Work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.:

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. (38664)
Tusk Federal #4H

2. Name of Operator
COG Operating LLC. (229137)

9. API Well No.
30-025-41358

3a. Address
2208 West Main Street
Artesia, NM 88210

3b. Phone No. *(include area code)*
575-748-6940

10. Field and Pool, or Exploratory
Lea; Bone Spring

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface: 250' FSL & **2080'** FEL Unit Letter O (SWSE) SHL Sec 25-T19S-R34E
At proposed prod. Zone: 330' FNL & 1980' FEL Unit Letter B (NWNE) BHL Sec 25-T19S-R34E

11. Sec., T.R.M. or Blk and Survey or Area
Sec. 25 - T19S - R34E

14. Distance in miles and direction from nearest town or post office*
Approximately 11 miles from Monument

12. County or Parish: Lea County
13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
250'	640	160

18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
SHL: **1287'** BHL: 660' **Closest to the wellbore: 0'**	TVD: 10,880' MD: **15,441'** PH: 11,250'	NMB000740 &NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3736.6' GL	4/30/2013	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.
2. A Drilling Plan
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature	Name *(Printed/Typed)*	Date
Mayte Reyes	Mayte Reyes	2/14/2013

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/George MacDonell		AUG 16 2013
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 theron.
APPROVAL FOR TWO YEARS
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

Capitan Controlled Water Basin
(Instructions on page

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

KZ 08/22/13

AUG 26 2013

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Tusk Federal 4H
SHL: 250' FSL & 2080' FEL
BHL: 330' FNL & 1980' FEL
Section 25, T19S R34E
Lea 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	83'	
Rustler	1,742'	
Top of Salt	1,831'	
Base of Salt	3,279'	
Yates	3,491'	
Seven Rivers	3,932'	
Cherry Canyon	5,699'	Oil
Brushy Canyon	6,599'	Oil
Bone Spring	8,161'	Oil
1st BS Sand	9,466'	Oil
2nd BS Sand	9,976'	Oil
3rd BS Sand	10,738'	Oil
Wolfcamp	10,963'	Oil
PH TD/TVD	11,250'	
TD TVD	10,880'	
TV MD	15,441'	

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 ~~1,800'~~ 1910' and circulating cement back to surface.

The salt sections will be isolated by setting 9-5/8" casing at 3,750' and circulating cement back to surface.

Other intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement to ~ 3,250' (500' overlap).

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 ½"	0' – ~~1,800'~~ 1410'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 ¼"	0' – 3,750'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
7 7/8"	0' – 15,441'	Production Curve & Lateral	5 ½"	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.
- Will run one centralizer per joint in lateral section of well.

See COA

4. Proposed Cement Program

a. 13-3/8" Surface

Lead: 820 sx Class C + 4% Gel + 2% $CaCl_2$ (13.5 ppg /1.75 cuft/sk)
Tail: 220 sx Class C + 2% $CaCl_2$ (14.8 ppg / 1.34 cuft/sk)
**Calculated w/35% excess on OH volumes based on offset wells

b. 9 5/8" Intermediate:

Lead: 860 sx Class C + 4% Gel + 1% $CaCl_2$ (13.5 ppg /1.75 cuft/sk)
Tail: 200 sx Class C + 2% $CaCl_2$ (14.8 ppg / 1.34 cuft/sk)
**Calculated w/50% excess on OH volumes

c. 5 1/2" Production

Lead: 890 sx 50:50:10 H w/ 8# salt, 5# kolseal, 0.5% Halad-322, 0.3% HR-601 & 1/4# D-Air 5000 (11.9 ppg / 2.51 cuft/sk)
Tail: 1140 sx 50:50:2 H w/ 1% salt, 0.4% GasStop, 0.3% CFR-3 & 0.1% HR601, & CFR-3 (14.4 ppg /1.25 cuft/sk)
**Calculated w/70% excess on OH volumes

- The above cement volumes could be revised pending caliper measurements.
- Surface and intermediate strings are designed to circulate to surface. The production string will be cemented 500' into the intermediate casing.
- Pilot hole will be plugged back with the following plug:

1050' plug f/10,200' – 11,250' with 400 sx Class H @ 17.2 ppg/0.98 yield

See COA

5. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8" with minimum 2M annular preventer. Annular will be tested to 50% of WP and remainder of system tested to 2000 psi by independent tester.

Nipple up on 9 5/8" with minimum 5M annular and double ram preventers. Annular will be tested to 50% of WP and remainder of 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.

6. Estimated BHP & BHT:

Lateral TD = 4752 psi
Lateral TD = 167° F
PHTD = 5382 psi
PHTD = 170° F

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1,800'	Fresh Water	8.4	29	N.C.
1,800' - 3,750'	Brine	10.0	29	N.C.
3,750' - 11,250' (PH)	Cut Brine	8.6 - 9.5	29	N.C.
10,463' - 15,441' (Lateral)	Cut Brine	8.6 - 9.2	29	N.C.

See COA

- 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 totalizer, 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:

a. A Kelly cock will be in the drill string at all times.
b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.

c. 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.

See COA

9. Testing, Logging and Coring Program:

a. Drill stem tests will be based on geological sample shows.
b. If open hole electrical logging is performed, the program will be:
   i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
   ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
   iii. **300' of whole core will be taken from ~ 10,750 ' – 11,050'.**
   iv. 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.

See COA

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 soon 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.

CONCHO

COG Operating LLC

Lea County, NM (NAD27 NME)
Tusk Federal
#4 H

OH

Plan: Plan #1

Standard Planning Report

11 July, 2013

NEXUS
DIRECTIONAL SOLUTIONS, L.P.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #4 H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3753.0usft (McVay 7)
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	WELL @ 3753.0usft (McVay 7)
Site:	Tusk Federal	**North Reference:**	Grid
Well:	#4 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Lea County, NM (NAD27 NME)		
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	Tusk Federal				
Site Position:		**Northing:**	0.00 usft	**Latitude:**	30° 59' 24.512 N
From:	Map	**Easting:**	0.00 usft	**Longitude:**	105° 55' 44.137 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well	#4 H					
Well Position	**+N/-S**	591,927.6 usft	**Northing:**	591,927.60 usft	**Latitude:**	32° 37' 28.641 N
	+E/-W	753,046.6 usft	**Easting:**	753,046.60 usft	**Longitude:**	103° 30' 41.153 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,736.0 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	07/11/13	7.33	60.52	48,654

Design	Plan #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	0.71	

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	
10,462.3	0.00	0.00	10,462.3	0.0	0.0	0.00	0.00	0.00	0.00	
11,219.0	90.81	0.71	10,939.7	484.2	6.0	12.00	12.00	0.00	0.71	
15,441.5	90.81	0.71	10,880.0	4,705.9	58.3	0.00	0.00	0.00	0.00	PBHL Tusk 25 Fed 4H

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #4 H
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Site:	Tusk Federal	**North Reference:**	Grid
Well:	#4 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #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)
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

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #4 H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3753.0usft (McVay 7)
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	WELL @ 3753.0usft (McVay 7)
Site:	Tusk Federal	**North Reference:**	Grid
Well:	#4 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #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
10,462.3	0.00	0.00	10,462.3	0.0	0.0	0.0	0.00	0.00	0.00

Start Build 12.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #4 H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3753.0usft (McVay 7)
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	WELL @ 3753.0usft (McVay 7)
Site:	Tusk Federal	**North Reference:**	Grid
Well:	#4 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #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)
10,475.0	1.53	0.71	10,475.0	0.2	0.0	0.2	12.00	12.00	0.00
10,500.0	4.53	0.71	10,500.0	1.5	0.0	1.5	12.00	12.00	0.00
10,525.0	7.53	0.71	10,524.8	4.1	0.1	4.1	12.00	12.00	0.00
10,550.0	10.53	0.71	10,549.5	8.0	0.1	8.0	12.00	12.00	0.00
10,575.0	13.53	0.71	10,574.0	13.2	0.2	13.2	12.00	12.00	0.00
10,600.0	16.53	0.71	10,598.1	19.7	0.2	19.7	12.00	12.00	0.00
10,625.0	19.53	0.71	10,621.9	27.5	0.3	27.5	12.00	12.00	0.00
10,650.0	22.53	0.71	10,645.2	36.4	0.5	36.4	12.00	12.00	0.00
10,675.0	25.53	0.71	10,668.0	46.6	0.6	46.6	12.00	12.00	0.00
10,700.0	28.53	0.71	10,690.3	58.0	0.7	58.0	12.00	12.00	0.00
10,725.0	31.53	0.71	10,711.9	70.5	0.9	70.5	12.00	12.00	0.00
10,750.0	34.53	0.71	10,732.9	84.1	1.0	84.1	12.00	12.00	0.00
10,775.0	37.53	0.71	10,753.1	98.8	1.2	98.8	12.00	12.00	0.00
10,800.0	40.53	0.71	10,772.5	114.5	1.4	114.5	12.00	12.00	0.00
10,825.0	43.53	0.71	10,791.1	131.3	1.6	131.3	12.00	12.00	0.00
10,850.0	46.53	0.71	10,808.8	149.0	1.8	149.0	12.00	12.00	0.00
10,875.0	49.53	0.71	10,825.5	167.5	2.1	167.5	12.00	12.00	0.00
10,900.0	52.53	0.71	10,841.2	187.0	2.3	187.0	12.00	12.00	0.00
10,925.0	55.53	0.71	10,855.9	207.2	2.6	207.2	12.00	12.00	0.00
10,950.0	58.53	0.71	10,869.5	228.2	2.8	228.2	12.00	12.00	0.00
10,975.0	61.53	0.71	10,882.0	249.8	3.1	249.8	12.00	12.00	0.00
11,000.0	64.53	0.71	10,893.3	272.1	3.4	272.1	12.00	12.00	0.00
11,025.0	67.53	0.71	10,903.5	294.9	3.7	295.0	12.00	12.00	0.00
11,050.0	70.53	0.71	10,912.4	318.3	3.9	318.3	12.00	12.00	0.00
11,075.0	73.53	0.71	10,920.1	342.0	4.2	342.1	12.00	12.00	0.00
11,100.0	76.53	0.71	10,926.6	366.2	4.5	366.2	12.00	12.00	0.00
11,125.0	79.53	0.71	10,931.8	390.6	4.8	390.7	12.00	12.00	0.00
11,150.0	82.53	0.71	10,935.7	415.3	5.1	415.4	12.00	12.00	0.00
11,175.0	85.53	0.71	10,938.3	440.2	5.5	440.2	12.00	12.00	0.00
11,200.0	88.53	0.71	10,939.6	465.2	5.8	465.2	12.00	12.00	0.00
11,219.0	90.81	0.71	10,939.7	484.2	6.0	484.2	12.00	12.00	0.00
Start 4222.5 hold at 11219.0 MD									
11,300.0	90.81	0.71	10,938.5	565.1	7.0	565.2	0.00	0.00	0.00
11,400.0	90.81	0.71	10,937.1	665.1	8.2	665.2	0.00	0.00	0.00
11,500.0	90.81	0.71	10,935.7	765.1	9.5	765.2	0.00	0.00	0.00
11,600.0	90.81	0.71	10,934.3	865.1	10.7	865.2	0.00	0.00	0.00
11,700.0	90.81	0.71	10,932.9	965.1	12.0	965.1	0.00	0.00	0.00
11,800.0	90.81	0.71	10,931.5	1,065.1	13.2	1,065.1	0.00	0.00	0.00
11,900.0	90.81	0.71	10,930.1	1,165.0	14.4	1,165.1	0.00	0.00	0.00
12,000.0	90.81	0.71	10,928.7	1,265.0	15.7	1,265.1	0.00	0.00	0.00
12,100.0	90.81	0.71	10,927.2	1,365.0	16.9	1,365.1	0.00	0.00	0.00
12,200.0	90.81	0.71	10,925.8	1,465.0	18.1	1,465.1	0.00	0.00	0.00
12,300.0	90.81	0.71	10,924.4	1,565.0	19.4	1,565.1	0.00	0.00	0.00
12,400.0	90.81	0.71	10,923.0	1,664.9	20.6	1,665.1	0.00	0.00	0.00
12,500.0	90.81	0.71	10,921.6	1,764.9	21.9	1,765.1	0.00	0.00	0.00
12,600.0	90.81	0.71	10,920.2	1,864.9	23.1	1,865.1	0.00	0.00	0.00
12,700.0	90.81	0.71	10,918.8	1,964.9	24.3	1,965.0	0.00	0.00	0.00
12,800.0	90.81	0.71	10,917.3	2,064.9	25.6	2,065.0	0.00	0.00	0.00
12,900.0	90.81	0.71	10,915.9	2,164.9	26.8	2,165.0	0.00	0.00	0.00
13,000.0	90.81	0.71	10,914.5	2,264.8	28.1	2,265.0	0.00	0.00	0.00
13,100.0	90.81	0.71	10,913.1	2,364.8	29.3	2,365.0	0.00	0.00	0.00
13,200.0	90.81	0.71	10,911.7	2,464.8	30.5	2,465.0	0.00	0.00	0.00
13,300.0	90.81	0.71	10,910.3	2,564.8	31.8	2,565.0	0.00	0.00	0.00
13,400.0	90.81	0.71	10,908.9	2,664.8	33.0	2,665.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #4 H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3753.0usft (McVay 7)
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	WELL @ 3753.0usft (McVay 7)
Site:	Tusk Federal	**North Reference:**	Grid
Well:	#4 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #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)
13,500.0	90.81	0.71	10,907.4	2,764.7	34.3	2,765.0	0.00	0.00	0.00
13,600.0	90.81	0.71	10,906.0	2,864.7	35.5	2,865.0	0.00	0.00	0.00
13,700.0	90.81	0.71	10,904.6	2,964.7	36.7	2,964.9	0.00	0.00	0.00
13,800.0	90.81	0.71	10,903.2	3,064.7	38.0	3,064.9	0.00	0.00	0.00
13,900.0	90.81	0.71	10,901.8	3,164.7	39.2	3,164.9	0.00	0.00	0.00
14,000.0	90.81	0.71	10,900.4	3,264.7	40.4	3,264.9	0.00	0.00	0.00
14,100.0	90.81	0.71	10,899.0	3,364.6	41.7	3,364.9	0.00	0.00	0.00
14,200.0	90.81	0.71	10,897.6	3,464.6	42.9	3,464.9	0.00	0.00	0.00
14,300.0	90.81	0.71	10,896.1	3,564.6	44.2	3,564.9	0.00	0.00	0.00
14,400.0	90.81	0.71	10,894.7	3,664.6	45.4	3,664.9	0.00	0.00	0.00
14,500.0	90.81	0.71	10,893.3	3,764.6	46.6	3,764.9	0.00	0.00	0.00
14,600.0	90.81	0.71	10,891.9	3,864.6	47.9	3,864.9	0.00	0.00	0.00
14,700.0	90.81	0.71	10,890.5	3,964.5	49.1	3,964.8	0.00	0.00	0.00
14,800.0	90.81	0.71	10,889.1	4,064.5	50.4	4,064.8	0.00	0.00	0.00
14,900.0	90.81	0.71	10,887.7	4,164.5	51.6	4,164.8	0.00	0.00	0.00
15,000.0	90.81	0.71	10,886.2	4,264.5	52.8	4,264.8	0.00	0.00	0.00
15,100.0	90.81	0.71	10,884.8	4,364.5	54.1	4,364.8	0.00	0.00	0.00
15,200.0	90.81	0.71	10,883.4	4,464.4	55.3	4,464.8	0.00	0.00	0.00
15,300.0	90.81	0.71	10,882.0	4,564.4	56.5	4,564.8	0.00	0.00	0.00
15,400.0	90.81	0.71	10,880.6	4,664.4	57.8	4,664.8	0.00	0.00	0.00
15,441.5	90.81	0.71	10,880.0	4,705.9	58.3	4,706.3	0.00	0.00	0.00
TD at 15441.5									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL Tusk 25 Fed 4H - plan hits target center - Point	0.00	0.00	10,880.0	4,705.9	58.3	596,633.50	753,104.90	32° 38' 15.200 N	103° 30' 40.046 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,462.3	10,462.3	0.0	0.0	Start Build 12.00
11,219.0	10,939.7	484.2	6.0	Start 4222.5 hold at 11219.0 MD
15,441.5	10,880.0	4,705.9	58.3	TD at 15441.5

CONCHO

NEXUS DIRECTIONAL SOLUTIONS, L.P.

Azimuths to Grid North
True North: -0.44°
Magnetic North: 6.89°

Magnetic Field
Strength: 48654.3snT
Dip Angle: 60.52°
Date: 07/11/2013
Model: IGRF2010

Tusk Federal #4 H
County, NM (NAD27 NME)
ling: (Y) 591927.60
ng: (X) 753046.60
Plan #1

WELL DETAILS:

WELL @ 3753.0usft (McVay 7)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	591927.60	753046.60	32° 37' 28.641 N	103° 30' 41.153 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
10462.3	0.00	0.00	10462.3	0.0	0.0	0.00	0.00	0.0	
11219.0	90.81	0.71	10939.7	484.2	6.0	12.00	0.71	484.2	
15441.5	90.81	0.71	10880.0	4705.9	58.3	0.00	0.00	4706.3	PBHL Tusk 25 Fed 4H

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL Tusk 25 Fed 4H	10880.0	4705.9	58.3	596633.50	753104.90

LEGEND

Plan #1

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #4 H, Grid North

Latitude: 32° 37' 28.641 N
Longitude: 103° 30' 41.153 W

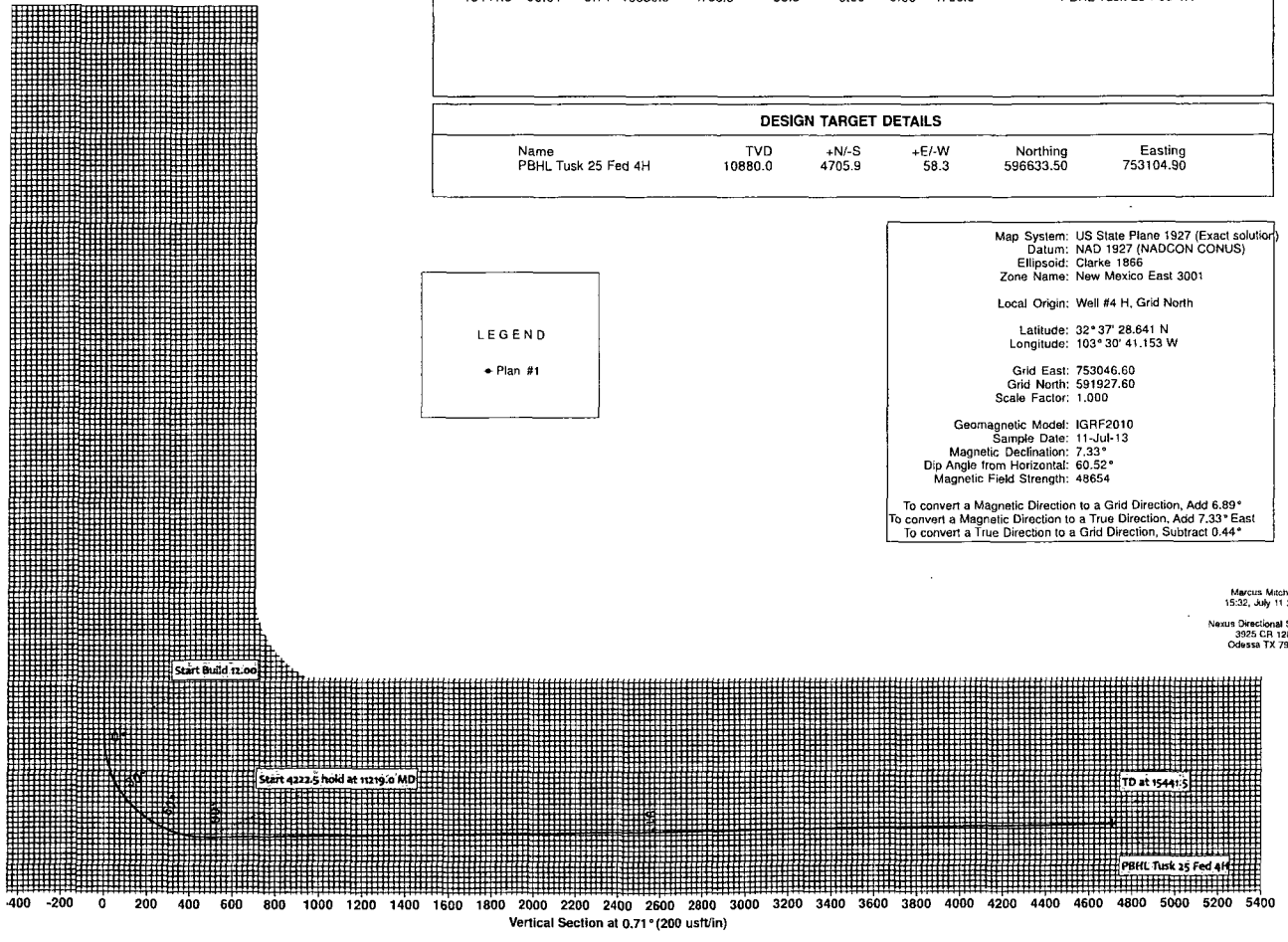
Grid East: 753046.60
Grid North: 591927.60
Scale Factor: 1.000

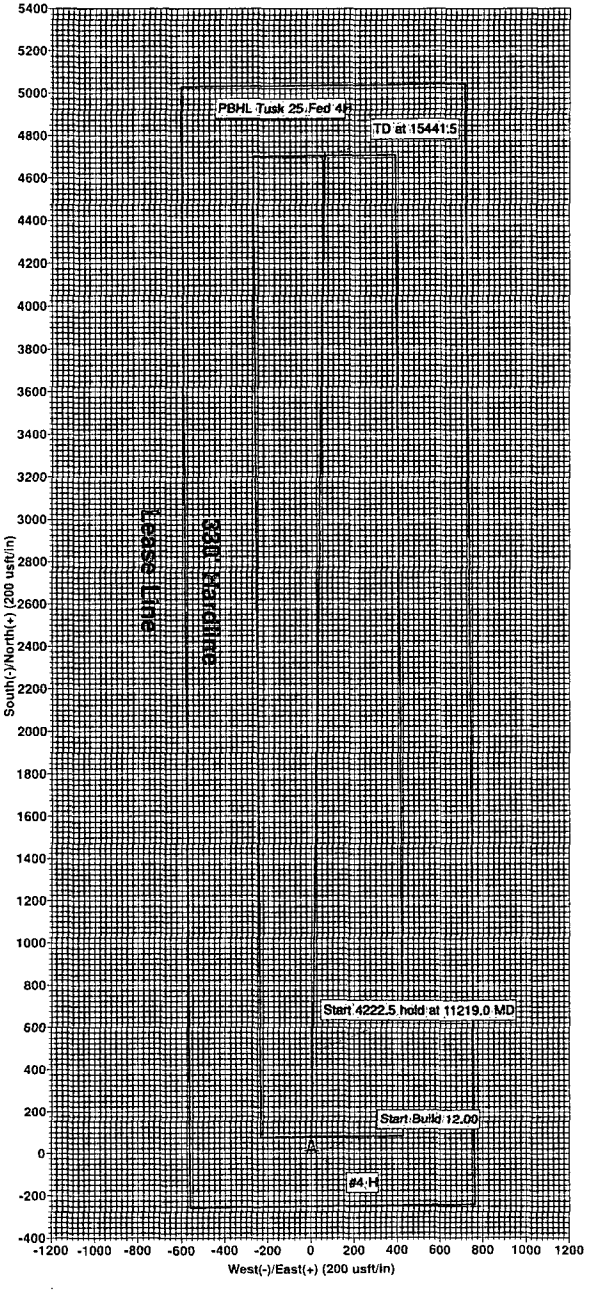
Geomagnetic Model: IGRF2010
Sample Date: 11-Jul-13
Magnetic Declination: 7.33°
Dip Angle from Horizontal: 60.52°
Magnetic Field Strength: 48654

To convert a Magnetic Direction to a Grid Direction, Add 6.89°
To convert a Magnetic Direction to a True Direction, Add 7.33° East
To convert a True Direction to a Grid Direction, Subtract 0.44°

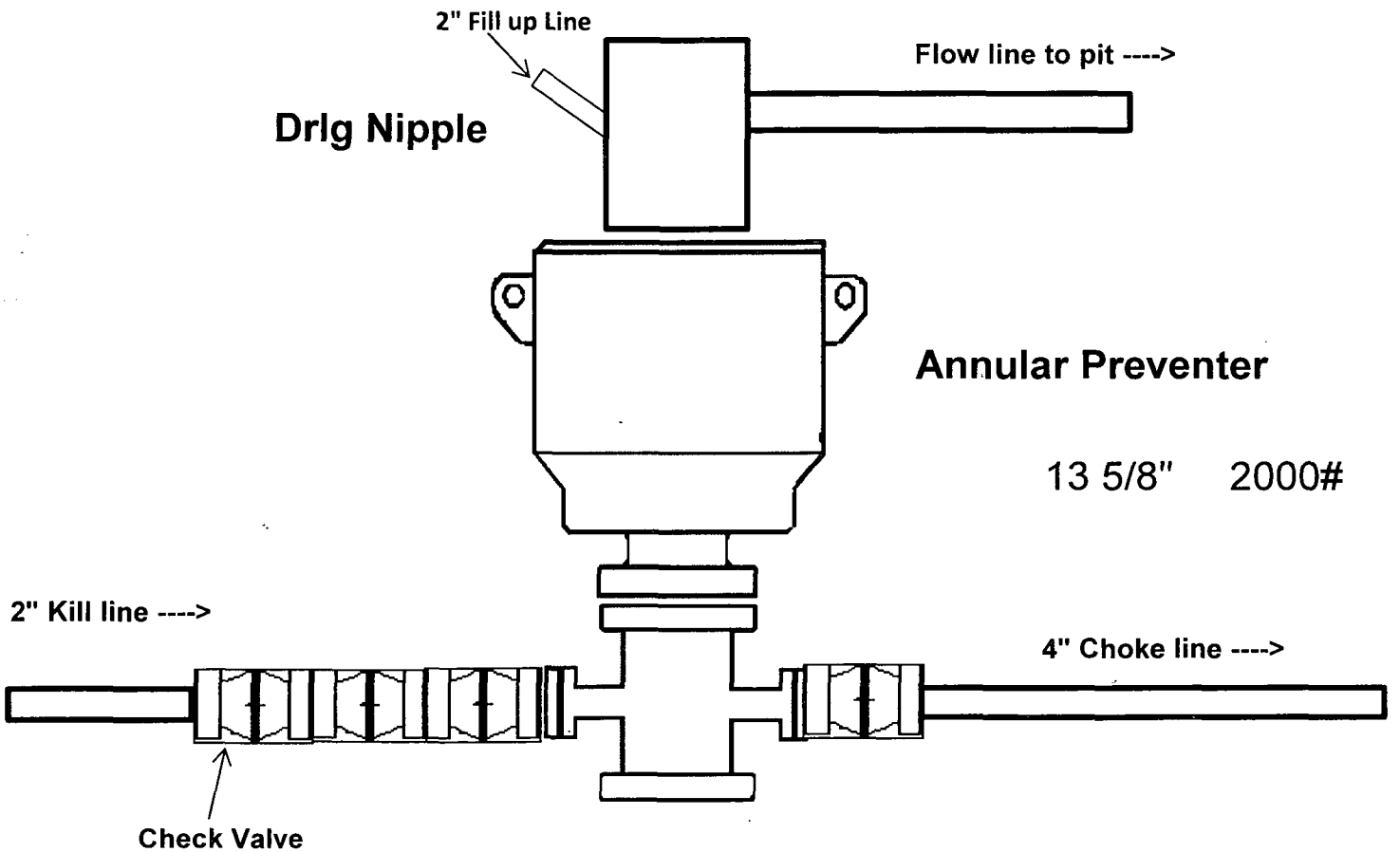
Marcus Mitcham
15:32, July 11 2013

Nexus Directional Solutions
3925 CR 1285
Odessa TX 79765





2,000 psi BOP Schematic



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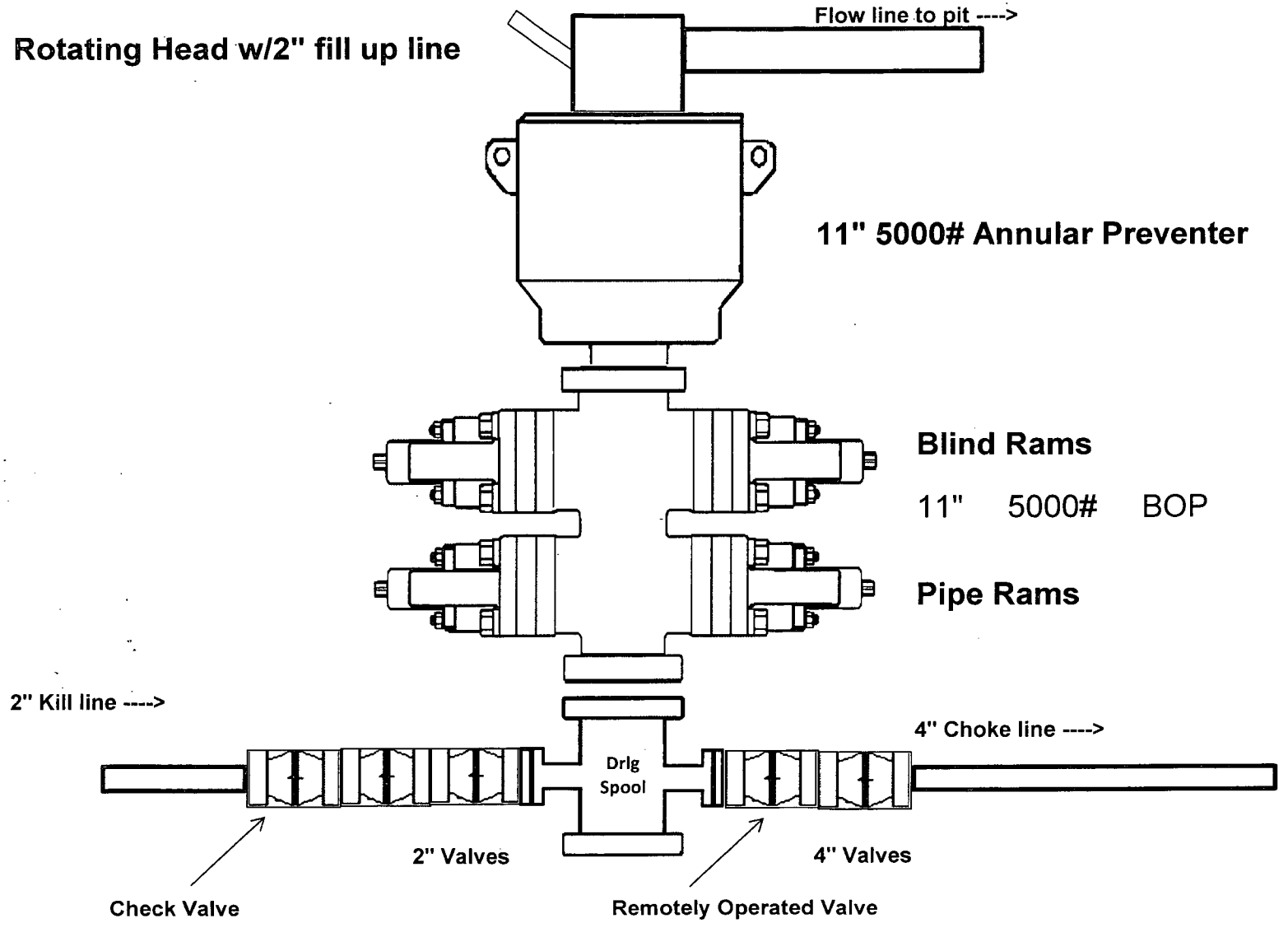
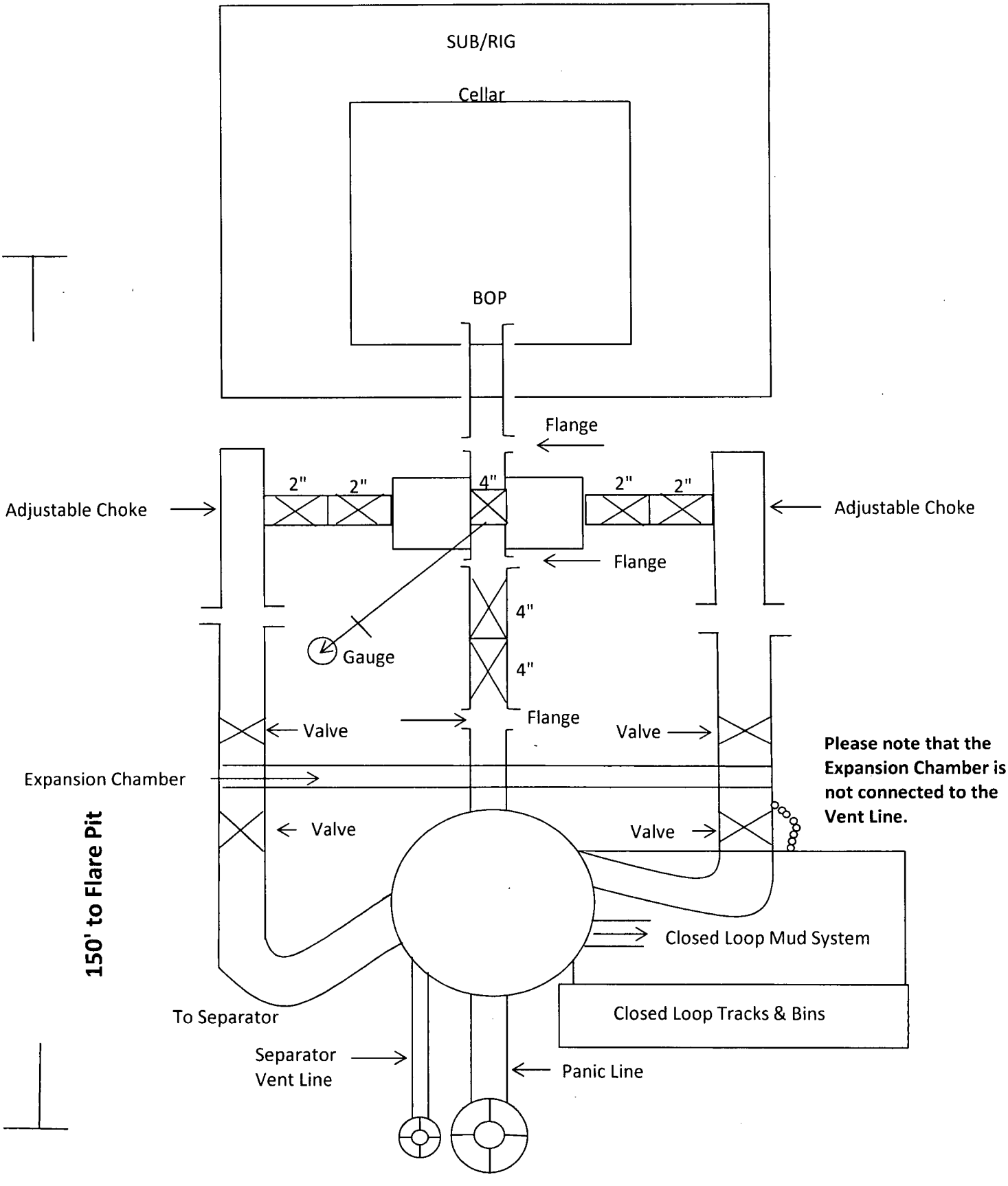
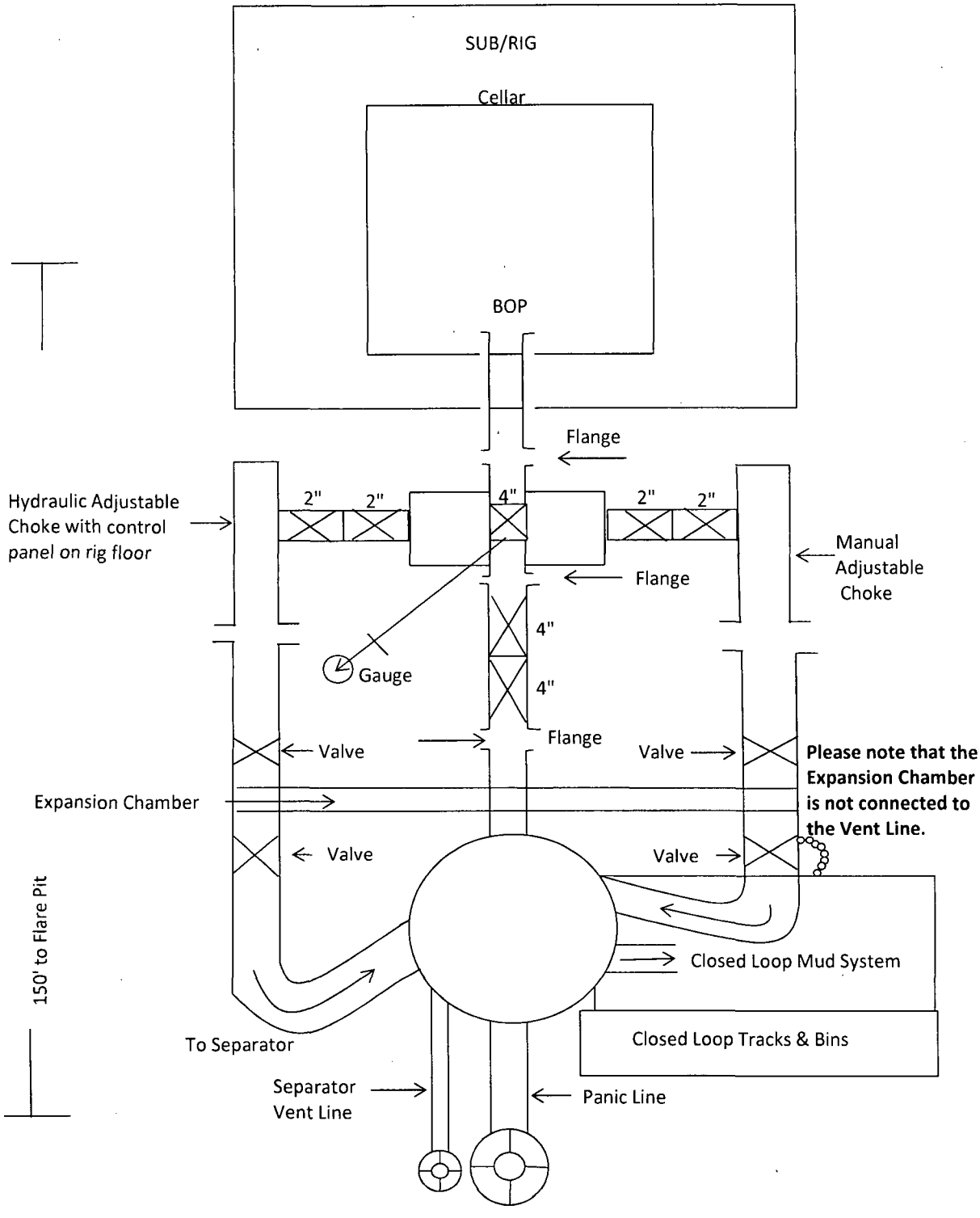


2M Choke Manifold Equipment



5M Choke Manifold Equipment



Continental CONTITECH

Fluid Technology

PHOENIX

Quality Document

QUALITY CONTROL	No.: QC-DB- 44/2007
	Page : 1/60
Hose No.: 49364 , 49365 , 49366 , 49367 49378 , 49379 , 49380	Revision : 0
	Date : 02. February 2007.
	Prepared by :
	Appr. by:

CHOKE AND KILL HOSES

(id.: 3" 68,9 MPa x 10,67 m)

DATA BOOK

Purchaser:

Purchaser Order No.:

Phoenix Rubber Order No.: 366566

Phoenix Beattie Co. Order No.: 001184

Phoenix Rubber Industrial LTD.
Budapesti út 10., Szeged H 6728
P.O.Box 152 Szeged H-6701
Hungary

Phone: +36 62 560 707
Fax. +36 62 560 738
e-mail: info@phoenix-rubber.hu
Internet: www.phoenix-rubber.hu

The Court of Csongrad County as
Registry Court
Registry Court No. Cg.06-09-002602
EU VAT No: HU11697209

Bank data
Commercial and Creditbank Rt.
Szeged
10402605-26014250-00000000

CERTIFICATE

DNV ZERTIFIZIERUNG UND UMWELTGUTACHTER GMBH

certifies that the company

PHOENIX RUBBER Industrial Ltd.

Budapesti út 10.
H-6728 Szeged

has established a

quality system
in conformity with

ISO 9001:2000

This Certificate is valid for:

Designing and manufacturing of high pressure rotary drilling hoses, dredge hoses, industrial hoses and rubber compound

This Certificate is valid until:
2007-08-31

Certificate-Registration-No.:
14078-2004-AQ-BUD-TGA

Budapest, 2004-09-15

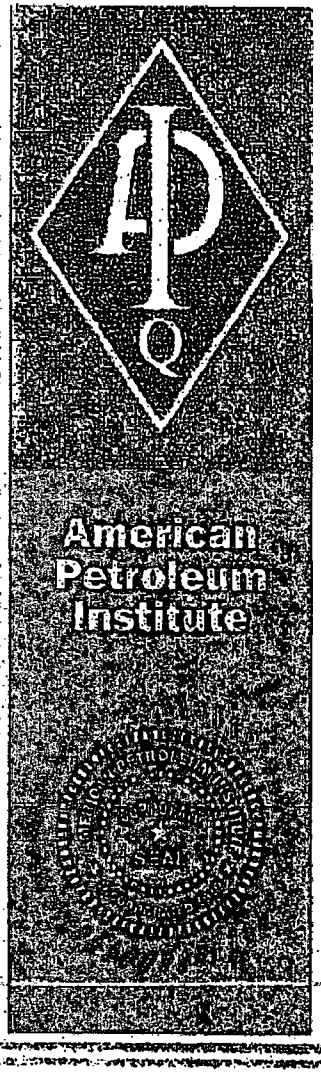
János Zrupkó
Manager

Deutscher Akkreditierungs Rat
DAR
TGA-ZM-004-92-00

Budapest, 2004-09-15

László Adlovits
Lead-Auditor

This Certificate is only valid in connection with the original Certificate 14078-2004-AQ-BUD-TGA.



Certificate of Authority to use the Official API Monogram

License Number: 16C-0004 **ORIGINAL**

The American Petroleum Institute hereby grants to

PHOENIX RUBBER INDUSTRIAL LTD.
Budapesti ut 10
Szeged
Hungary

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and API Spec 16C and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: 16C-0004

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following product: Flexible Choke and Kill Lines

No Exclusions are Identified as Applicable to this Quality Management System

Effective Date: AUGUST 30, 2005
Expiration Date: AUGUST 30, 2008

American Petroleum Institute

Director of Certification Programs

To verify the authenticity of this license, go to www.api.org/compositelist.

PHOENIX RUBBER Industrial Ltd.

No.: QC-DB- 44/2007

Page: 4/60

Rig 105

Continental CONTITECH

Fluid Technology

PHOENIX

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 151
PURCHASER: Phoenix Beattie Co.				P.O. N°: 001184
PHOENIX ORDER N°: 366566		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 49379		NOMINAL / ACTUAL LENGTH:		10,67 m
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 16 MPa

COUPLINGS

Type	Serial N°	Quality	Heat N°
3" coupling with	226 234	AISI 4130	T4109A
4 1/16" Flange end		AISI 4130	115245 835257

API Spec 16 C
Temperature rate: "B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
27. January.2007		PHOENIX RUBBER Industrial Ltd. Hose Inspection and Certification Dept.

Phoenix Rubber Industrial LTD.
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Internet: www.phoenix-rubber.hu

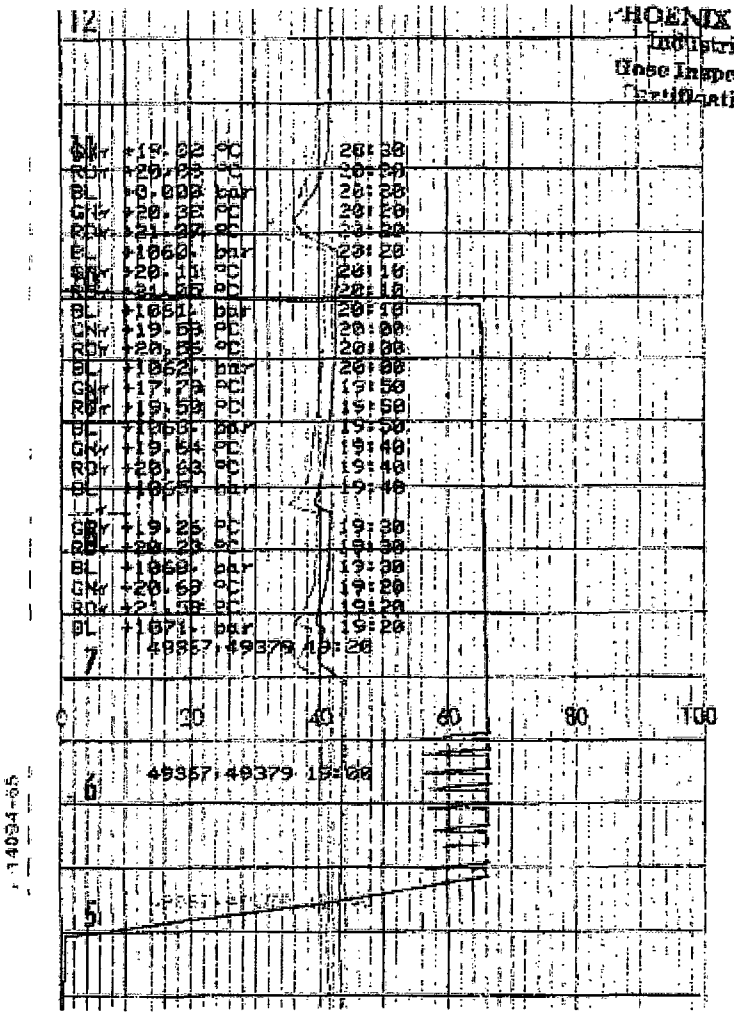
The Court of Csongrad County as Registry Court
Registry Court No: Cg.06-09-002502
EU VAT No: HU11097209

Bank data
Commercial and Creditbank Rt., Szeged
10402605-28014250-00000000

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE No.: 150,151

Page: 1/1

PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.



14034-05

CONTENT

		Page
1.	Det Norske Veritas Quality System Certificate (No.: 14078-2004-AQ-BUD-TGA,)	3.
2.	American Petroleum Institute Certificate of Authority To Use the Official API Monogram (No.: 16C-0004,)	4.
3.	Quality Control Inspection and Test Certificates (No.: 150, 151, 152, 153, 154, 155, 156,)	5-11.
4.	Metal Parts	
4.1.	Raw Material Quality Certificates (No.: TR031428, 54385/06-0, 53845/06-0, 53845/06-1, 54147/06-1, 51816/06-0,)	12-22.
4.2.	Hardness Test Certificates (No.: 406705/6/HB/2007, 406705/8/HB/2007,)	23-24.
4.3.	Ultrasonic Examination Reports (No.: 006/07, 007/07, 008/07, 009/07, 010/07, 011/07,)	25-30.
4.4.	NDT Examiner Certificate (Name: Varga Miklós,)	31-32.
4.5.	Welding Procedure Specification (No.: 140-60,)	33-36.
4.6.	Welding Procedure Qualification Record (No.: BUD 0600014/1,)	37-38.
4.7.	Welder Performance Qualification (WPQ) Certificate (No.: BUD 0600014/2,)	39-40.
4.8.	Welding Log Sheets (No.: 07/70, 07/78,)	41-42.
4.9.	Radiographic Test Certificates (No.: 049/07, 057/07, 074/07,)	43-45.
4.10.	NDT Examiner Certificate (Name: Varga Miklós,)	46-47.
4.11.	Examination Records (No.: 72/2007, 73/2007,)	48-49.
4.12.	NDT Examiner Certificate (Name: Dávid Ferenc,)	50-51.
4.13.	Outside Stripwound Tube	
4.13.1.	Inspection Certificate (No.: 0408549,)	52.
5.	Steel Cord	
5.1.	Inspection Certificate (No.: 278064,)	53.
6.	Certificate of Fire Approval (No.: SAS F040397,)	54-55.
7.	Certificate of Calibration (Manometer Serial No.: G36699,)	56-59.
8.	Certificate of Conformity	60.
9.	Attachment	
9.1.	Certificate of Wooden Packing	

PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

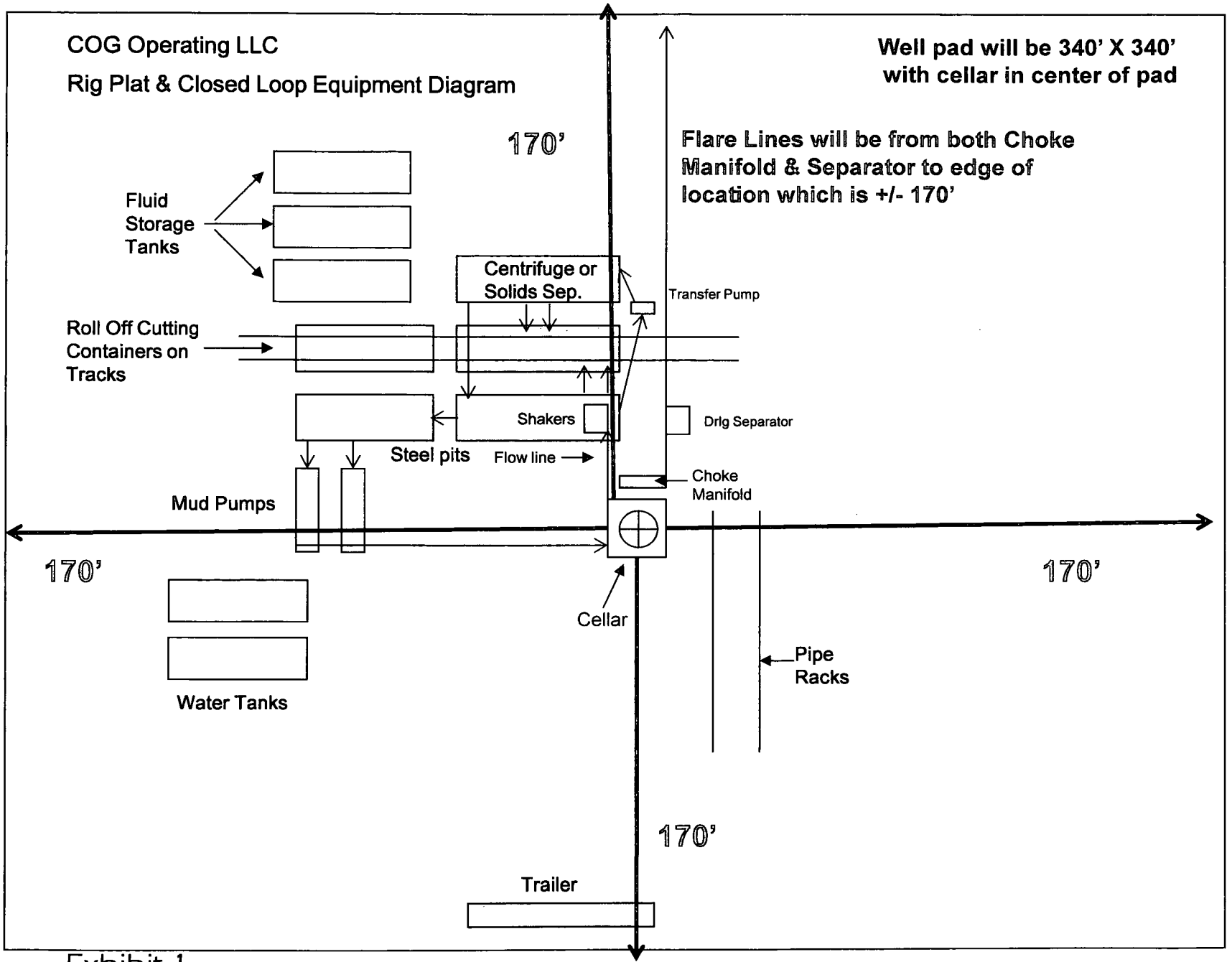

COG Operating LLC
Rig Plat & Closed Loop Equipment Diagram
Well pad will be 340' X 340' with cellar in center of pad
Flare Lines will be from both Choke Manifold & Separator to edge of location which is +/- 170'
170'
Fluid Storage Tanks
Centrifuge or Solids Sep.
Transfer Pump
Roll Off Cutting Containers on Tracks
Shakers
Drlg Separator
Steel pits
Flow line
Choke Manifold
Mud Pumps
170'
170'
Cellar
Pipe Racks
Water Tanks
170'
Trailer

Exhibit 1