

HOBBS OCD
JAN 24 2014

UNORTHODOX
LOCATION

OCD Hobbs

ATS-13-866

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

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM006413
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator COG Operating LLC. <229137>		7. If Unit or CA Agreement, Name and No.
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. <3946> Prickly Pear 6 Federal #3H
3b. Phone No. (include area code) 575-748-6940		9. API Well No. 30-025-41629
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FNL & 2000' FWL Lot 3 (NENW) SHL Sec 6-T20S-R35E At proposed prod. Zone 330' FSL & 1980' FWL Unit Letter N (SESW) BHL Sec 6-T20S-R35E		10. Field and Pool, or Exploratory WC-025 G-08 S203506D; Bone Spring
14. Distance in miles and direction from nearest town or post office* Approximately 12 miles from Monument		11. Sec., T.R.M. or Blk and Survey or Area Section 6 - T20S - R35E
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 600.12	17. Spacing Unit dedicated to this well 160.39
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 470' BHL: 2661'	19. Proposed Depth TVD: 11,115' MD: 15,699'	20. BLM/BIA Bond No. on file NMB000740 & NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3699.7' GL	22. Approximate date work will start* 2/1/2013	23. Estimated duration 30 days

24. Attachments

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

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

25. Signature Mayte Reyes	Name (Printed/Typed) Mayte Reyes	Date 11/6/2013
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Title

Regulatory Analyst

Approved by (Signature) /s/ STEPHEN J. CAFFEY	Name (Printed/Typed) CARLSBAD FIELD OFFICE	Date JAN 21 2014
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Title

FIELD MANAGER

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)

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Lea County Controlled Water Basin

JAN 28 2014

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Prickly Pear 6 Federal 3H
SHL: 190' FNL & 2000' FWL
BHL: 330' FSL & 1980' FWL
Section 6, T20S R35E
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	46'	
Rustler	1,863'	
Top of Salt	1,953'	
Bottom of Salt	3,371'	
Tansill	3,463'	
Yates	3,604'	
Seven Rivers	4,012'	
Queen	4,610'	
Cherry Canyon	5,561'	Oil
Brushy Canyon	6,699'	Oil
Bone Spring	8,151'	Oil
1 st BS Sand	9,601'	Oil
2 nd BS Sand	10,191'	Oil
3 rd BS Sand	10,976'	Oil
Wolfcamp	11,126'	Will not penetrate
TD MD	15,699'	
TD TVD	11,115'	

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 ^{1930'}~~1,900'~~ and circulating cement back to surface.

The salt sections will be isolated by setting 9-5/8" casing at ^{4100'}~~3,650'~~ and circulating cement back to surface.

Other intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement to surface.

See COA

See COA

1930

- 4100

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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 3000 psi WP rating.

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string depth or 1500 psig, whichever is greater, but not to exceed 70 percent of casing's minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

While drilling the intermediate section, if a reading of H₂S is greater than 100 ppm, well will be shut-in and a remote operated choke will be installed.

6. Estimated BHP & BHT:

Lateral TD = 4855 psi

Lateral TD = 168° F

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

Dep
COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1,900'	Fresh Water	8.4	29	N.C.
1,900' - 3,650'	Brine	10.0	29	N.C.
3,650' - 15,699' (Lateral)	Cut Brine	8.5 - 8.7	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 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.

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. No cores are planned.
 - 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.

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.

Legal Land Desc - Acreage

Run Time: 09:54 AM

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTRun Date: 11/04/2013
Page 1 of 1

LLD ACREAGE REPORT

Admin State: NM

Geo State: NM

MTR: 23 0200S 0350E

Section: 006

Sur Type	Sur No	Lid Suff	NE NNSS	NW NNSS	SW NNSS	SE NNSS	Sur Note	Dup Flg	Sub Surf	Acreage
			EWWE	EWWE	EWWE	EWWE				
A			--XX	---X	X--X	XXXX				360.000
L	1		X---	----	----	----				40.910
L	2		-X--	----	----	----				40.650
L	3		----	X---	----	----				40.390
L	4		----	-X--	----	----				39.410
L	5		----	----	X---	----				39.430
L	6		----	----	-X--	----				39.590
L	7		----	----	--X-	----				39.740

Section 006 Total: 640.120

MTR Total Excluding Survey Notes C/D/R
and Sub Surf = Y 640.120Grand Total Excluding Survey Notes C/D/R
and Sub Surf = Y: 640.120



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the
POD suffix indicates the
POD has been replaced
& no longer serves a
water right file.)

(R=POD has
been replaced,
O=orphaned,
C=the file is
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 04157	L	LE		3	3	06	20S	35E		640483	3607561*	1435	70	64	6
CP 00683		LE		3	3	4	25	19S	34E	639530	3610685*	2237	120	28	92

Average Depth to Water: **46 feet**

Minimum Depth: **28 feet**

Maximum Depth: **64 feet**

Record Count: 2

UTMNAD83 Radius Search (in meters):

Easting (X): 640917.27

Northing (Y): 3608928.88

Radius: 2500

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



COG Operating LLC

Lea County, NM (NAD27 NME)

Prickly Pear 6 Fed

3H

OH

Plan: Design #1

Standard Planning Report - Geographic

23 October, 2013



Nexus Directional Solutions L.P.
Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3717.2usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3717.2usft (Original Well Elev)
Site:	Prickly Pear 6 Fed	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #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:	Prickly Pear 6 Fed			
Site Position:		Northing:	586,248.00 usft	Latitude: 32° 36' 32.124 N
From:	Map	Easting:	757,174.90 usft	Longitude: 103° 29' 53.407 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.45 °

Well:	3H			
Well Position	+N/-S	0.0 usft	Northing:	586,248.00 usft
	+E/-W	0.0 usft	Easting:	757,174.90 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	
			Ground Level:	3,699.7 usft

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/23/13	7.29	60.50	48,618

Design:	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.82

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	
10,612.6	0.00	0.00	10,612.6	0.0	0.0	0.00	0.00	0.00	0.00	
11,359.8	89.67	179.82	11,090.0	-474.7	1.5	12.00	12.00	0.00	179.82	
15,699.1	89.67	179.82	11,115.0	-4,813.9	15.2	0.00	0.00	0.00	0.00	PBHL Prickly Pear 6 f



Nexus Directional Solutions L.P.
Planning Report - Geographic



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Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3717.2usft (Original Well Elev)
Site:	Prickly Pear 6 Fed	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
100.0	0.00	0.00	100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
200.0	0.00	0.00	200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
300.0	0.00	0.00	300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
400.0	0.00	0.00	400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
500.0	0.00	0.00	500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
600.0	0.00	0.00	600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
700.0	0.00	0.00	700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
800.0	0.00	0.00	800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
900.0	0.00	0.00	900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,600.0	0.00	0.00	3,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,700.0	0.00	0.00	3,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,800.0	0.00	0.00	3,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
3,900.0	0.00	0.00	3,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,000.0	0.00	0.00	4,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,100.0	0.00	0.00	4,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,200.0	0.00	0.00	4,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,300.0	0.00	0.00	4,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,400.0	0.00	0.00	4,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,500.0	0.00	0.00	4,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,600.0	0.00	0.00	4,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,700.0	0.00	0.00	4,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,800.0	0.00	0.00	4,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
4,900.0	0.00	0.00	4,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
5,000.0	0.00	0.00	5,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
5,100.0	0.00	0.00	5,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
5,200.0	0.00	0.00	5,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
5,300.0	0.00	0.00	5,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W
5,400.0	0.00	0.00	5,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W



Nexus Directional Solutions L.P.
Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3717.2usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3717.2usft (Original Well Elev)
Site:	Prickly Pear 6 Fed	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,400.0	0.00	0.00	10,400.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,500.0	0.00	0.00	10,500.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,600.0	0.00	0.00	10,600.0	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,612.6	0.00	0.00	10,612.6	0.0	0.0	586,248.00	757,174.90	32° 36' 32.124 N	103° 29' 53.407 W	
10,625.0	1.49	179.82	10,625.0	-0.2	0.0	586,247.84	757,174.90	32° 36' 32.123 N	103° 29' 53.407 W	
10,650.0	4.49	179.82	10,650.0	-1.5	0.0	586,246.54	757,174.90	32° 36' 32.110 N	103° 29' 53.407 W	



Nexus Directional Solutions L.P.
Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3717.2usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3717.2usft (Original Well Elev)
Site:	Prickly Pear 6 Fed	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,675.0	7.49	179.82	10,674.8	-4.1	0.0	586,243.92	757,174.91	32° 36' 32.084 N	103° 29' 53.408 W	
10,700.0	10.49	179.82	10,699.5	-8.0	0.0	586,240.02	757,174.92	32° 36' 32.045 N	103° 29' 53.408 W	
10,725.0	13.49	179.82	10,724.0	-13.2	0.0	586,234.82	757,174.94	32° 36' 31.994 N	103° 29' 53.408 W	
10,750.0	16.49	179.82	10,748.1	-19.6	0.1	586,228.36	757,174.96	32° 36' 31.930 N	103° 29' 53.408 W	
10,775.0	19.49	179.82	10,771.9	-27.4	0.1	586,220.63	757,174.98	32° 36' 31.854 N	103° 29' 53.409 W	
10,800.0	22.49	179.82	10,795.2	-36.3	0.1	586,211.68	757,175.01	32° 36' 31.765 N	103° 29' 53.409 W	
10,825.0	25.49	179.82	10,818.1	-46.5	0.1	586,201.51	757,175.04	32° 36' 31.664 N	103° 29' 53.410 W	
10,850.0	28.49	179.82	10,840.3	-57.8	0.2	586,190.17	757,175.08	32° 36' 31.552 N	103° 29' 53.411 W	
10,875.0	31.49	179.82	10,862.0	-70.3	0.2	586,177.67	757,175.12	32° 36' 31.429 N	103° 29' 53.411 W	
10,900.0	34.49	179.82	10,882.9	-83.9	0.3	586,164.06	757,175.16	32° 36' 31.294 N	103° 29' 53.412 W	
10,925.0	37.49	179.82	10,903.2	-98.6	0.3	586,149.37	757,175.21	32° 36' 31.148 N	103° 29' 53.413 W	
10,950.0	40.49	179.82	10,922.6	-114.4	0.4	586,133.64	757,175.26	32° 36' 30.993 N	103° 29' 53.414 W	
10,975.0	43.49	179.82	10,941.2	-131.1	0.4	586,116.91	757,175.31	32° 36' 30.827 N	103° 29' 53.415 W	
11,000.0	46.49	179.82	10,958.9	-148.8	0.5	586,099.24	757,175.37	32° 36' 30.652 N	103° 29' 53.416 W	
11,025.0	49.49	179.82	10,975.6	-167.3	0.5	586,080.67	757,175.43	32° 36' 30.469 N	103° 29' 53.417 W	
11,050.0	52.49	179.82	10,991.3	-186.8	0.6	586,061.24	757,175.49	32° 36' 30.276 N	103° 29' 53.418 W	
11,075.0	55.49	179.82	11,006.0	-207.0	0.7	586,041.02	757,175.55	32° 36' 30.076 N	103° 29' 53.419 W	
11,100.0	58.49	179.82	11,019.6	-227.9	0.7	586,020.06	757,175.62	32° 36' 29.869 N	103° 29' 53.420 W	
11,125.0	61.49	179.82	11,032.1	-249.6	0.8	585,998.41	757,175.69	32° 36' 29.655 N	103° 29' 53.421 W	
11,150.0	64.49	179.82	11,043.5	-271.9	0.9	585,976.14	757,175.76	32° 36' 29.434 N	103° 29' 53.422 W	
11,175.0	67.49	179.82	11,053.7	-294.7	0.9	585,953.30	757,175.83	32° 36' 29.208 N	103° 29' 53.424 W	
11,200.0	70.49	179.82	11,062.6	-318.0	1.0	585,929.97	757,175.90	32° 36' 28.978 N	103° 29' 53.425 W	
11,225.0	73.49	179.82	11,070.3	-341.8	1.1	585,906.20	757,175.98	32° 36' 28.742 N	103° 29' 53.426 W	
11,250.0	76.49	179.82	11,076.8	-366.0	1.2	585,882.05	757,176.05	32° 36' 28.503 N	103° 29' 53.428 W	
11,275.0	79.49	179.82	11,082.0	-390.4	1.2	585,857.60	757,176.13	32° 36' 28.261 N	103° 29' 53.429 W	
11,300.0	82.49	179.82	11,085.9	-415.1	1.3	585,832.91	757,176.21	32° 36' 28.017 N	103° 29' 53.430 W	
11,325.0	85.49	179.82	11,088.5	-440.0	1.4	585,808.05	757,176.29	32° 36' 27.771 N	103° 29' 53.432 W	
11,350.0	88.49	179.82	11,089.9	-464.9	1.5	585,783.09	757,176.36	32° 36' 27.524 N	103° 29' 53.433 W	
11,359.8	89.67	179.82	11,090.0	-474.7	1.5	585,773.29	757,176.40	32° 36' 27.427 N	103° 29' 53.433 W	
11,400.0	89.67	179.82	11,090.2	-514.9	1.6	585,733.09	757,176.52	32° 36' 27.029 N	103° 29' 53.436 W	
11,500.0	89.67	179.82	11,090.8	-614.9	1.9	585,633.09	757,176.84	32° 36' 26.040 N	103° 29' 53.441 W	
11,600.0	89.67	179.82	11,091.4	-714.9	2.3	585,533.10	757,177.15	32° 36' 25.050 N	103° 29' 53.447 W	
11,700.0	89.67	179.82	11,092.0	-814.9	2.6	585,433.10	757,177.47	32° 36' 24.061 N	103° 29' 53.452 W	
11,800.0	89.67	179.82	11,092.5	-914.9	2.9	585,333.10	757,177.79	32° 36' 23.072 N	103° 29' 53.458 W	
11,900.0	89.67	179.82	11,093.1	-1,014.9	3.2	585,233.10	757,178.10	32° 36' 22.082 N	103° 29' 53.463 W	
12,000.0	89.67	179.82	11,093.7	-1,114.9	3.5	585,133.11	757,178.42	32° 36' 21.093 N	103° 29' 53.469 W	
12,100.0	89.67	179.82	11,094.3	-1,214.9	3.8	585,033.11	757,178.73	32° 36' 20.103 N	103° 29' 53.474 W	
12,200.0	89.67	179.82	11,094.8	-1,314.9	4.2	584,933.11	757,179.05	32° 36' 19.114 N	103° 29' 53.480 W	
12,300.0	89.67	179.82	11,095.4	-1,414.9	4.5	584,833.11	757,179.36	32° 36' 18.124 N	103° 29' 53.485 W	
12,400.0	89.67	179.82	11,096.0	-1,514.9	4.8	584,733.11	757,179.68	32° 36' 17.135 N	103° 29' 53.491 W	
12,500.0	89.67	179.82	11,096.6	-1,614.9	5.1	584,633.12	757,180.00	32° 36' 16.145 N	103° 29' 53.496 W	
12,600.0	89.67	179.82	11,097.2	-1,714.9	5.4	584,533.12	757,180.31	32° 36' 15.156 N	103° 29' 53.502 W	
12,700.0	89.67	179.82	11,097.7	-1,814.9	5.7	584,433.12	757,180.63	32° 36' 14.166 N	103° 29' 53.507 W	
12,800.0	89.67	179.82	11,098.3	-1,914.9	6.0	584,333.12	757,180.94	32° 36' 13.177 N	103° 29' 53.513 W	
12,900.0	89.67	179.82	11,098.9	-2,014.9	6.4	584,233.12	757,181.26	32° 36' 12.187 N	103° 29' 53.518 W	
13,000.0	89.67	179.82	11,099.5	-2,114.9	6.7	584,133.13	757,181.57	32° 36' 11.198 N	103° 29' 53.524 W	
13,100.0	89.67	179.82	11,100.0	-2,214.9	7.0	584,033.13	757,181.89	32° 36' 10.208 N	103° 29' 53.529 W	
13,200.0	89.67	179.82	11,100.6	-2,314.9	7.3	583,933.13	757,182.21	32° 36' 9.219 N	103° 29' 53.535 W	
13,300.0	89.67	179.82	11,101.2	-2,414.9	7.6	583,833.13	757,182.52	32° 36' 8.229 N	103° 29' 53.540 W	
13,400.0	89.67	179.82	11,101.8	-2,514.9	7.9	583,733.14	757,182.84	32° 36' 7.240 N	103° 29' 53.546 W	
13,500.0	89.67	179.82	11,102.3	-2,614.9	8.3	583,633.14	757,183.15	32° 36' 6.250 N	103° 29' 53.551 W	
13,600.0	89.67	179.82	11,102.9	-2,714.9	8.6	583,533.14	757,183.47	32° 36' 5.261 N	103° 29' 53.556 W	
13,700.0	89.67	179.82	11,103.5	-2,814.9	8.9	583,433.14	757,183.78	32° 36' 4.271 N	103° 29' 53.562 W	
13,800.0	89.67	179.82	11,104.1	-2,914.9	9.2	583,333.14	757,184.10	32° 36' 3.282 N	103° 29' 53.567 W	
13,900.0	89.67	179.82	11,104.6	-3,014.9	9.5	583,233.15	757,184.42	32° 36' 2.293 N	103° 29' 53.573 W	



Nexus Directional Solutions L.P.
Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3717.2usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3717.2usft (Original Well Elev)
Site:	Prickly Pear 6 Fed	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Planned Survey:									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,000.0	89.67	179.82	11,105.2	-3,114.9	9.8	583,133.15	757,184.73	32° 36' 1.303 N	103° 29' 53.578 W
14,100.0	89.67	179.82	11,105.8	-3,214.9	10.2	583,033.15	757,185.05	32° 36' 0.314 N	103° 29' 53.584 W
14,200.0	89.67	179.82	11,106.4	-3,314.9	10.5	582,933.15	757,185.36	32° 35' 59.324 N	103° 29' 53.589 W
14,300.0	89.67	179.82	11,106.9	-3,414.8	10.8	582,833.15	757,185.68	32° 35' 58.335 N	103° 29' 53.595 W
14,400.0	89.67	179.82	11,107.5	-3,514.8	11.1	582,733.16	757,186.00	32° 35' 57.345 N	103° 29' 53.600 W
14,500.0	89.67	179.82	11,108.1	-3,614.8	11.4	582,633.16	757,186.31	32° 35' 56.356 N	103° 29' 53.606 W
14,600.0	89.67	179.82	11,108.7	-3,714.8	11.7	582,533.16	757,186.63	32° 35' 55.366 N	103° 29' 53.611 W
14,700.0	89.67	179.82	11,109.2	-3,814.8	12.0	582,433.16	757,186.94	32° 35' 54.377 N	103° 29' 53.617 W
14,800.0	89.67	179.82	11,109.8	-3,914.8	12.4	582,333.17	757,187.26	32° 35' 53.387 N	103° 29' 53.622 W
14,900.0	89.67	179.82	11,110.4	-4,014.8	12.7	582,233.17	757,187.57	32° 35' 52.398 N	103° 29' 53.628 W
15,000.0	89.67	179.82	11,111.0	-4,114.8	13.0	582,133.17	757,187.89	32° 35' 51.408 N	103° 29' 53.633 W
15,100.0	89.67	179.82	11,111.5	-4,214.8	13.3	582,033.17	757,188.21	32° 35' 50.419 N	103° 29' 53.639 W
15,200.0	89.67	179.82	11,112.1	-4,314.8	13.6	581,933.17	757,188.52	32° 35' 49.429 N	103° 29' 53.644 W
15,300.0	89.67	179.82	11,112.7	-4,414.8	13.9	581,833.18	757,188.84	32° 35' 48.440 N	103° 29' 53.650 W
15,400.0	89.67	179.82	11,113.3	-4,514.8	14.3	581,733.18	757,189.15	32° 35' 47.450 N	103° 29' 53.655 W
15,500.0	89.67	179.82	11,113.9	-4,614.8	14.6	581,633.18	757,189.47	32° 35' 46.461 N	103° 29' 53.661 W
15,600.0	89.67	179.82	11,114.4	-4,714.8	14.9	581,533.18	757,189.78	32° 35' 45.471 N	103° 29' 53.666 W
15,699.1	89.67	179.82	11,115.0	-4,813.9	15.2	581,434.10	757,190.10	32° 35' 44.491 N	103° 29' 53.672 W

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 Prickly Pear 6 Fed	0.00	0.00	11,115.0	-4,813.9	15.2	581,434.10	757,190.10	32° 35' 44.491 N	103° 29' 53.672 W
- plan hits target center									
- Point									



NEXUS

DIRECTIONAL SOLUTIONS, L.P.



Azimuths to Grid North
True North: -0.45°
Magnetic North: 8.84°

Magnetic Field
Strength: 48617.8nT
Dip Angle: 60.50°
Date: 10/23/2013
Model: IGRF2010

To convert a Magnetic Direction to a Grid Direction, Add 6.84°
To convert a True Direction to a Grid Direction, Subtract 0.45°

Prickly Pear 6 Fed 3H
Lea County, NM (NAD27 NME)
Northing: (Y) 586248.00
Easting: (X) 757174.90
Design #1

WELL DETAILS:						
WELL @ 3717.2usft (Original Well Elev)						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.0	0.0	586248.00	757174.90	32° 36' 32.124 N	103° 29' 53.407 W	

SECTION DETAILS						
MD	Inc	Azi	TVD	+N/-S	+E/-W	Target
0.0	0.00	0.00	0.0	0.0	0.00	0.0
10612.6	0.00	0.00	10612.6	0.0	0.00	0.0
11359.8	89.67	179.82	11090.0	-474.7	1.5	12.00 179.82 474.7
15699.1	89.67	179.82	11115.0	-4813.9	15.2	0.00 0.00 4813.9
PBHL Prickly Pear 6 Fed #3H						

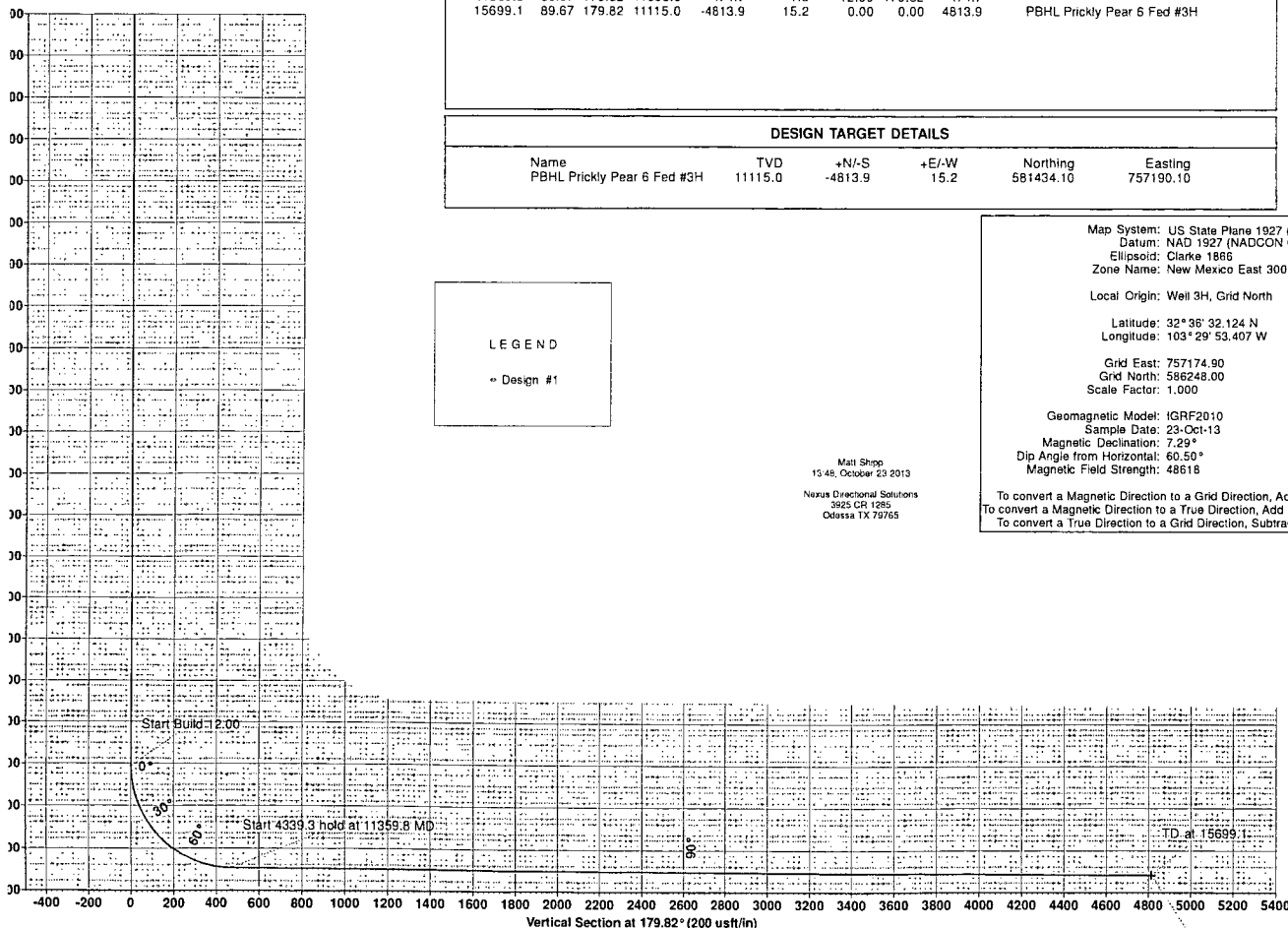
DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL Prickly Pear 6 Fed #3H	11115.0	-4813.9	15.2	581434.10	757190.10

LEGEND

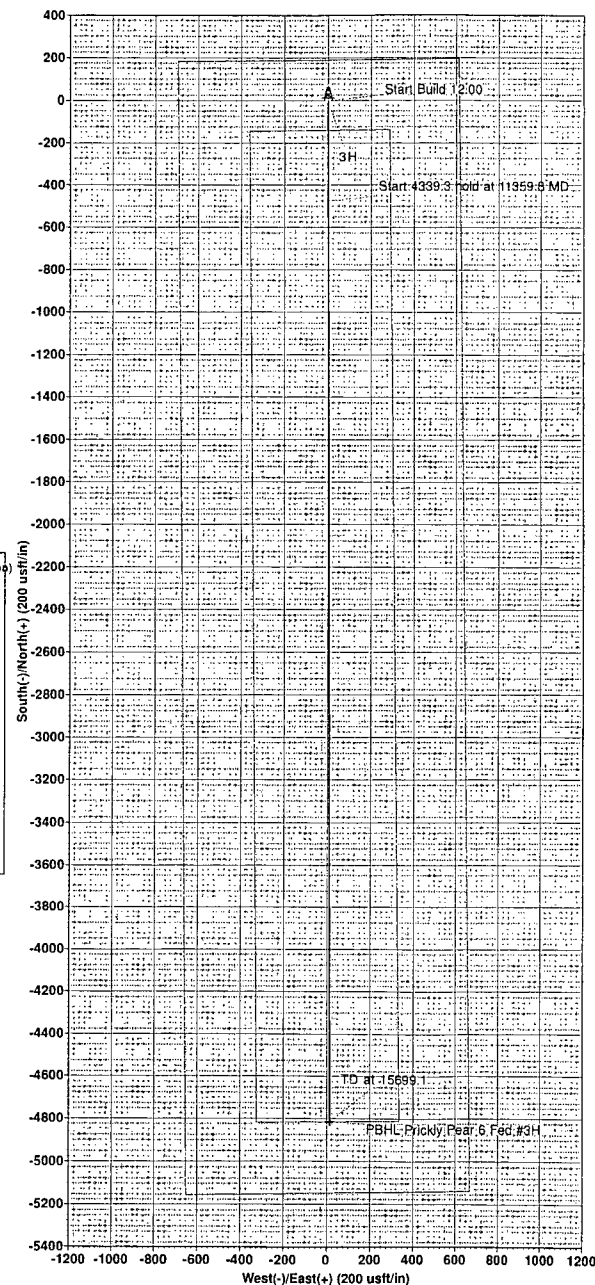
• Design #1

Mail Stop
1548, October 23 2013
Nexus Directional Solutions
3925 CR 1285
Odessa TX 79765

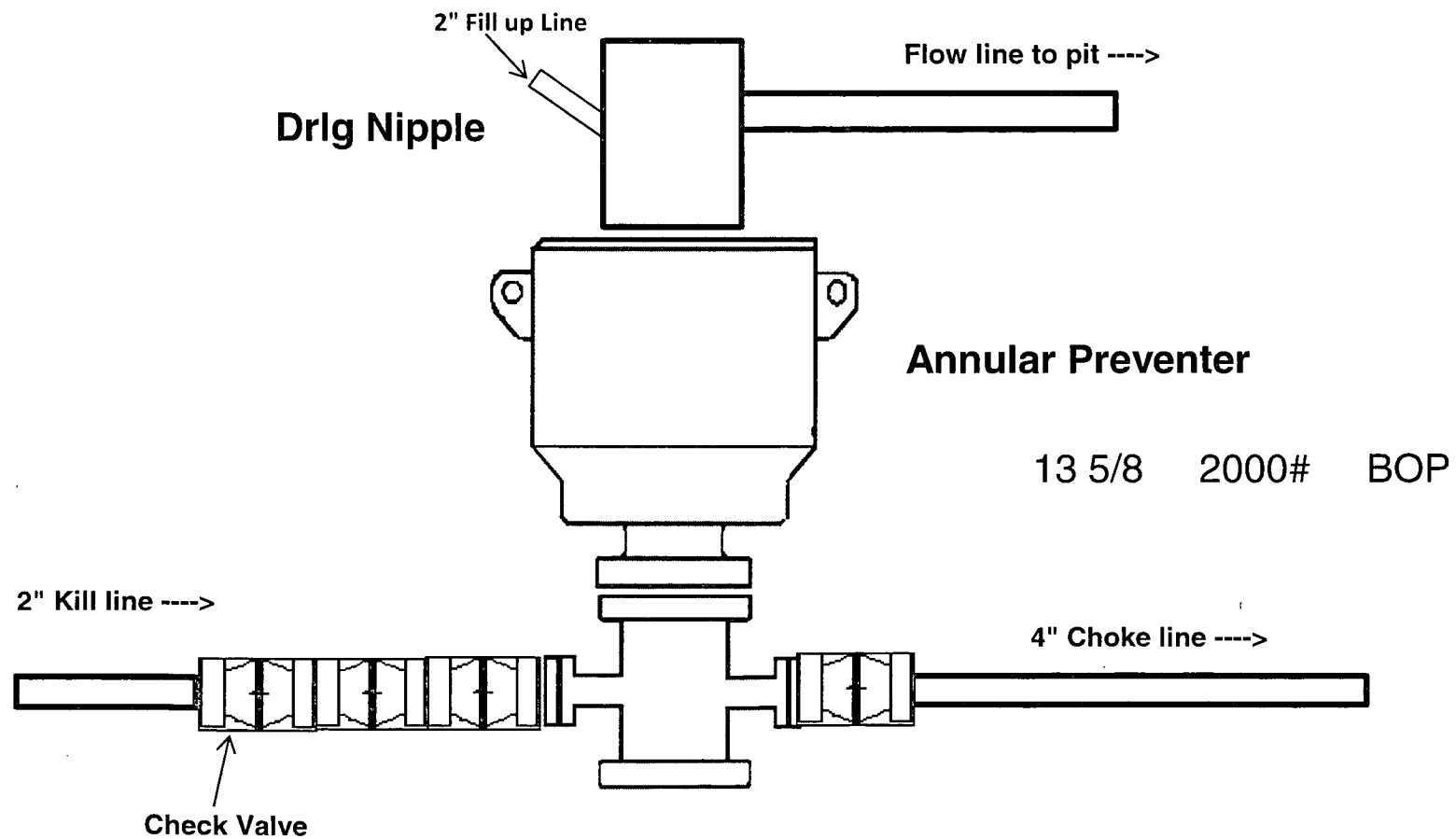
Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1886
Zone Name: New Mexico East 3001
Local Origin: Well 3H, Grid North
Latitude: 32° 36' 32.124 N
Longitude: 103° 29' 53.407 W
Grid East: 757174.90
Grid North: 586248.00
Scale Factor: 1.000
Geomagnetic Model: IGRF2010
Sample Date: 23-Oct-13
Magnetic Declination: 7.29°
Dip Angle from Horizontal: 60.50°
Magnetic Field Strength: 48618
To convert a Magnetic Direction to a Grid Direction, Add 6.84°
To convert a Magnetic Direction to a True Direction, Add 7.29° East
To convert a True Direction to a Grid Direction, Subtract 0.45°



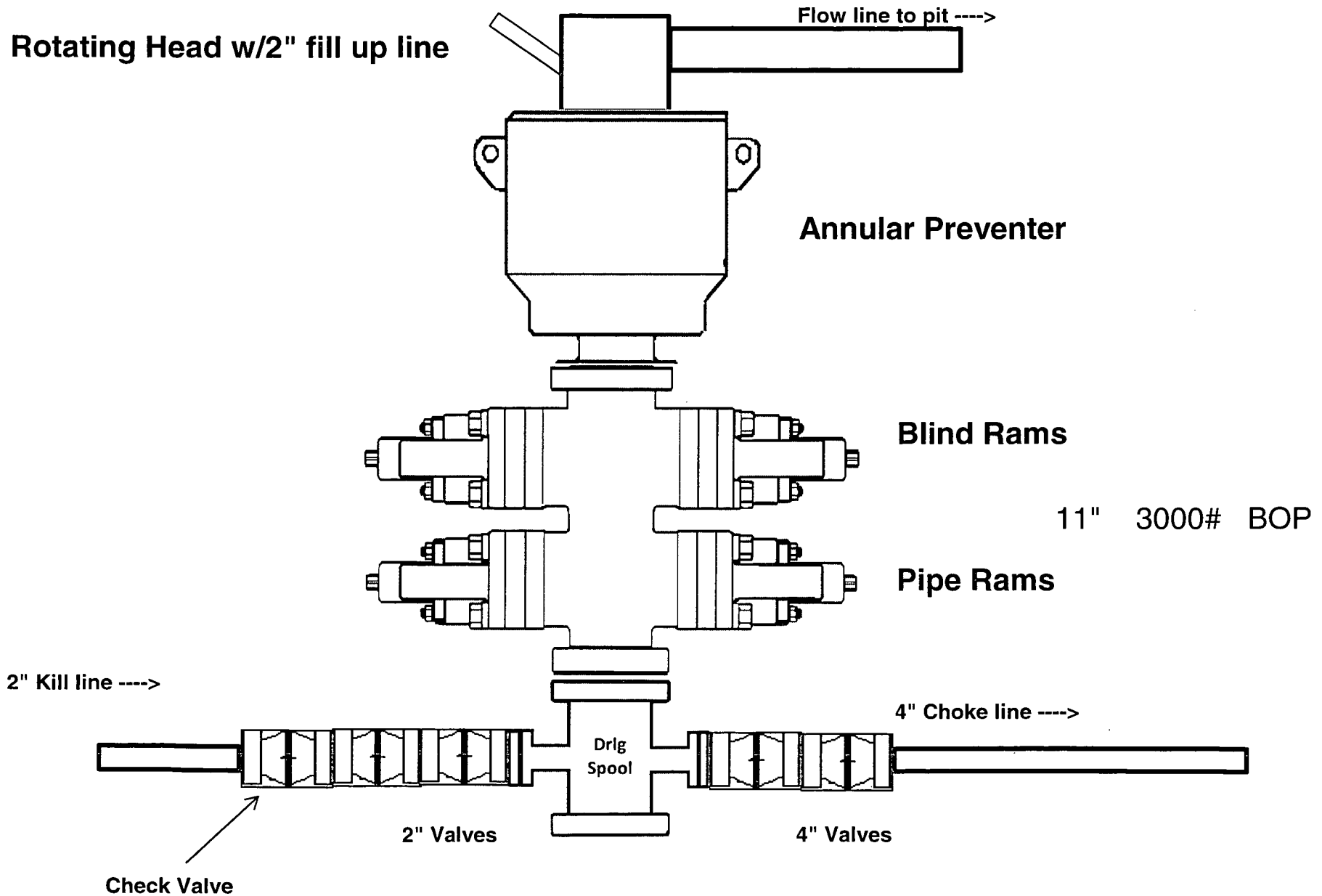
PBHL Prickly Pear 6 Fed #3H



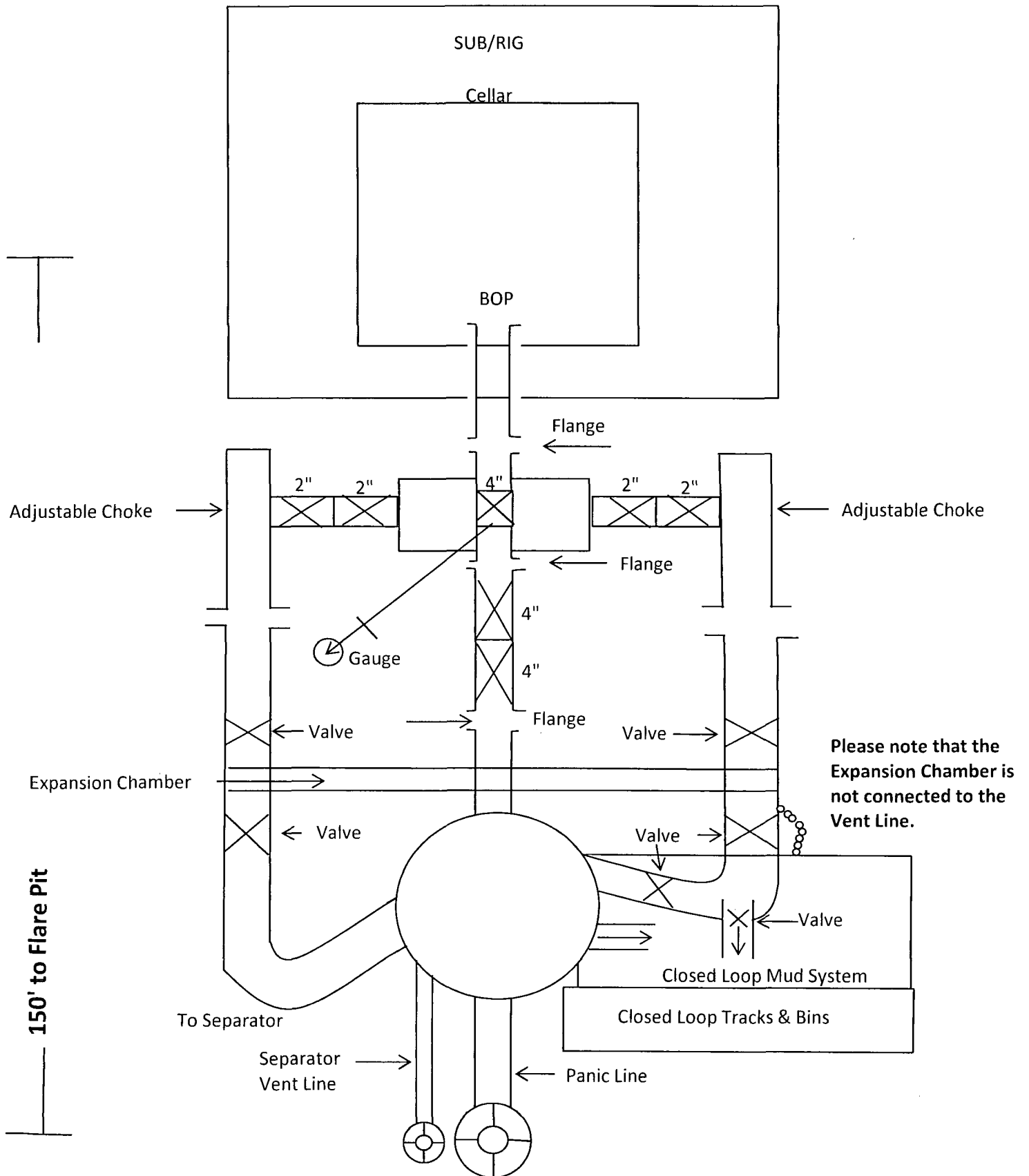
2,000 psi BOP Schematic



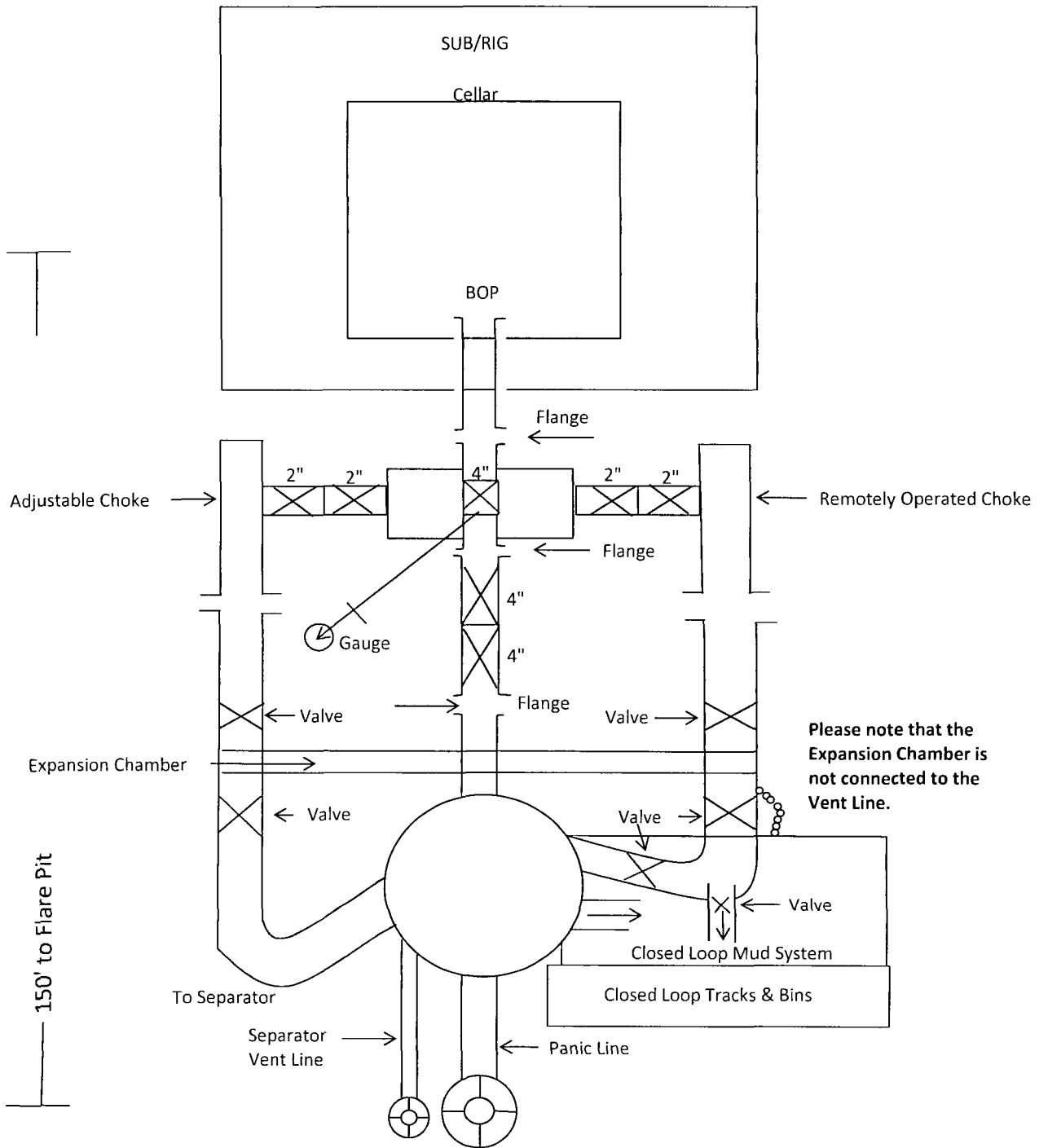
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



COG Operating LLC
Rig Plat & Closed Loop Equipment Diagram

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

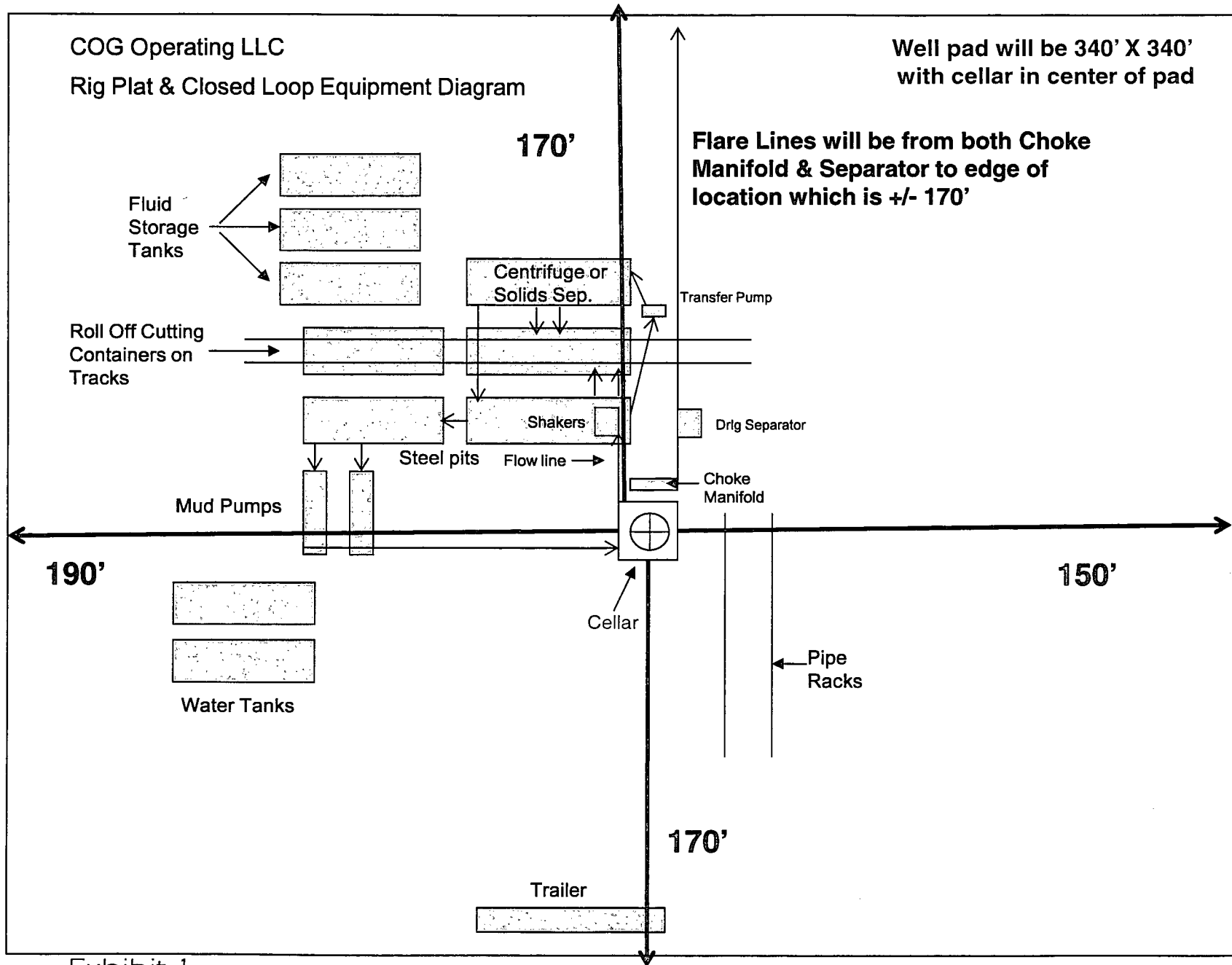


Exhibit 1

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