

13-860

OCD Hobbs

HOBBS OCD

FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010UNORTHODOX
LOCATIONUNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAY 05 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

5. Lease Serial No.	NMNM 000631
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No.	
8. Lease Name and Well No.	(310330) Tiger 11 Federal #2H
9. API Well No.	30-025-41833
10. Field and Pool, or Exploratory	(37570) Lea; Bone Spring
11. Sec., T.R.M. or Blk and Survey or Area	Sec. 11 - T20S - R34E
12. County or Parish	Lea County
13. State	NM
14. Distance in miles and direction from nearest town or post office*	Approximately 25 miles southwest of Hobbs, NM
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	320
17. Spacing Unit dedicated to this well	160
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	SHL: 317' BHL: 466' Horizontal: 150'
19. Proposed Depth	TVD: 10885' MD: 15862'
20. BLM/BIA Bond No. on file	NMB000740 & NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	3656.2' GL
22. Approximate date work will start*	6/1/2014
23. Estimated duration	30 days

1a. Type of Work:	☒ DRILL ☐ REENTER
1b. Type of Well:	☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone
2. Name of Operator	COG Operating LLC. (229137) 229137
3a. Address	2208 West Main Street Artesia, NM 88210
3b. Phone No. (include area code)	575-748-6940
4. Location of Well (Report location clearly and in accordance with any State requirements. *)	At surface 180' FNL & 1270' FWL Unit Letter D (NWNW) SHL Sec 11-T20S-R34E At proposed prod. Zone 330' FSL & 2260' FWL Unit Letter N (SESW) BHL Sec 11-T20S-R34E
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24. Attachments

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

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

25. Signature <i>Mate Reyes</i>	Name (Printed/Typed) Melanie J. Parker	Date 6/4/2013
Title Regulatory Analyst		
Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date APR 30 2014
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

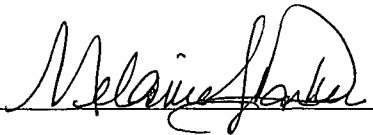
MAY 13 2014

2M

Surface Use Plan
COG Operating, LLC
Tiger 11 Federal #2H
SL: 180' FNL & 1270' FWL UL D
Section 11, T20S, R34E
BHL: 330' FSL & 2260' FWL UL N
Section 11, T20S, R34E
Lea County, New Mexico

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 18th day of March, 2014.

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 Operating LLC
DRILLING AND OPERATIONS PROGRAM
Tiger 11 Federal 2H
SHL: 180' FNL & 1270' FWL
BHL: 330' FSL & 2260' FWL
Section 11 T20S 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	~ 270'
Rustler	1560'
Top of Salt	1645'
Tansill	3236'
Yates	3410'
Top of Reef	3811'
Queen	4519'
Grayburg	4609'
Delaware	5463' Oil
Bone Spring	8207' Oil
Wolfcamp	10,991'
TD TVD	10,885'
TD MD	15,862'

1680' 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 16" casing at 1585' 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 50' above top of Capitan Reef.

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
20"	0' - 1680'	Surface	16"	New	65#	STC	H-40	1.125	1.125	1.6
14 3/4"	0' - 3400'	1 st Intrmd	11 3/4"	New	47#	STC	J-55	1.125	1.125	1.6
10 5/8"	0' - 5400'	2 nd Intrmd	8 5/8"	New	32#	BTC	HCK-55	1.125	1.125	1.6
7 7/8"	0' - 15,862'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

4. Proposed Cement Program

a. 16" Surface

Lead: 900 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)

Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)

**Calculated w/50% excess on OH volumes

a. 11-3/4" Intermediate:

Lead: 1000 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)

Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)

**Calculated w/35% excess on OH volumes

See COA

b. 8 5/8" Intermediate:

1st stg:

Lead: 150 sx 35:65:6 C + Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg / 1.89 cuft/sx)

Tail: 250 sx Class C
(14.8 ppg / 1.35 cuft/sx)

2nd stg:

Lead: 550 sx Class C + 4% Gel
(13.5 ppg / 1.75 cuft/sx)

Tail: 100 sx Class C
(14.8 ppg / 1.35 cuft/sx)

*Calculated w/35% excess on OH volumes

**DVT/ECP set @ ~~3650~~ 3900 *See COA*

d. 5 1/2" Production

Lead: 950 sx 50:50:10 H +Salt+Gilsonite+CFR-3+ HR601
(11.8 ppg / 2.5 cuft/sx)

Tail: 1050 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg / 1.25 cuft/sx)

**Calculated w/35% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurements.
- The 16", 11-3/4" & 8-5/8" cement designs are to circulate to surface.
- The production string will tie back a minimum 50' above top of Capitan Reef

5. Minimum Specifications for Pressure Control:

Nipple up on 16" casing with annular preventer tested to 2000 psi by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 11 3/4" casing with annular preventer tested to 2000 psi by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 8 5/8" with 3M system tested to 3000 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 3000 psi WP rating. If H₂S is monitored with 100 ppm in the gas stream while drilling intermediate, we will shut in and install a remote operated choke.

See COA

6. Estimated BHP & BHT:

Lateral TD = 5100 psi

Lateral TD = 163 °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' - 1585'	Fresh Water	8.4	29	N.C.
1585' - 3400'	Brine	10	29	N.C.
3400' - 5400'	Fresh Water	8.4	29	N.C.
5400' - 15,747' (Lateral)	Cut Brine	8.9 - 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 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:

- See COA
- 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 16" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 16" 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 coring program is 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:

- See COA
- 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:

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.



COG Operating, LLC.

Lea County, N.M.

Section 11-20S-34E Tiger 11 Fed #2H

Tiger 11 FED #2H

Original Hole

Plan: Plan#2

Standard Planning Report

10 March, 2014





Stryker Directional Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Project:		Lea County, N.M.	
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		Section 11-20S-34E Tiger 11 Fed #2H			
Site Position:		Northing:	580,838.80 usft	Latitude:	32° 35' 39.458 N
From:	Map	Easting:	745,911.80 usft	Longitude:	103° 32' 5.546 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.43 °

Well:		Tiger 11 FED #2H				
Well Position	+N/-S	0.0 usft	Northing:	580,838.80 usft	Latitude:	32° 35' 39.458 N
	+E/-W	0.0 usft	Easting:	745,911.80 usft	Longitude:	103° 32' 5.546 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,656.2 usft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/10/2014	7.26	60.47	48,567

Design					Plan#2
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	167.88	

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	
10,492.6	0.00	0.00	10,492.6	0.0	0.0	0.00	0.00	0.00	0.00	
11,251.3	91.04	130.00	10,970.0	-312.5	372.4	12.00	12.00	0.00	130.00	
12,441.9	91.04	177.63	10,947.0	-1,350.3	882.7	4.00	0.00	4.00	89.54	
15,862.0	91.04	177.63	10,885.0	-4,766.9	1,023.8	0.00	0.00	0.00	0.00	PBHL Tiger 11 Fed



Stryker Directional Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

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



Stryker Directional Planning Report



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Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

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)
5,200.0	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
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



Stryker Directional Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

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)
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,492.6	0.00	0.00	10,492.6	0.0	0.0	0.0	0.00	0.00	0.00
10492.6' MD KOP									
10,500.0	0.89	130.00	10,500.0	0.0	0.0	0.0	12.00	12.00	0.00
10,525.0	3.89	130.00	10,525.0	-0.7	0.8	0.9	12.00	12.00	0.00
10,550.0	6.89	130.00	10,549.9	-2.2	2.6	2.7	12.00	12.00	0.00
10,575.0	9.89	130.00	10,574.6	-4.6	5.4	5.6	12.00	12.00	0.00
10,600.0	12.89	130.00	10,599.1	-7.7	9.2	9.5	12.00	12.00	0.00
10,625.0	15.89	130.00	10,623.3	-11.7	14.0	14.4	12.00	12.00	0.00
10,650.0	18.89	130.00	10,647.2	-16.5	19.7	20.3	12.00	12.00	0.00
10,675.0	21.89	130.00	10,670.6	-22.1	26.4	27.2	12.00	12.00	0.00
10,700.0	24.89	130.00	10,693.5	-28.5	34.0	35.0	12.00	12.00	0.00
10,725.0	27.89	130.00	10,715.9	-35.6	42.5	43.8	12.00	12.00	0.00
10,750.0	30.89	130.00	10,737.7	-43.5	51.9	53.5	12.00	12.00	0.00
10,775.0	33.89	130.00	10,758.8	-52.1	62.1	64.0	12.00	12.00	0.00
10,800.0	36.89	130.00	10,779.2	-61.4	73.2	75.4	12.00	12.00	0.00
10,825.0	39.89	130.00	10,798.8	-71.4	85.1	87.7	12.00	12.00	0.00
10,850.0	42.89	130.00	10,817.5	-82.0	97.8	100.7	12.00	12.00	0.00
10,875.0	45.89	130.00	10,835.4	-93.3	111.2	114.5	12.00	12.00	0.00
10,900.0	48.89	130.00	10,852.3	-105.1	125.3	129.1	12.00	12.00	0.00
10,925.0	51.89	130.00	10,868.3	-117.5	140.0	144.3	12.00	12.00	0.00
10,950.0	54.89	130.00	10,883.2	-130.4	155.4	160.1	12.00	12.00	0.00
10,975.0	57.89	130.00	10,897.0	-143.8	171.3	176.5	12.00	12.00	0.00
11,000.0	60.89	130.00	10,909.7	-157.6	187.8	193.5	12.00	12.00	0.00
11,025.0	63.89	130.00	10,921.3	-171.8	204.8	211.0	12.00	12.00	0.00
11,050.0	66.89	130.00	10,931.7	-186.4	222.2	228.9	12.00	12.00	0.00
11,075.0	69.89	130.00	10,940.9	-201.4	240.0	247.3	12.00	12.00	0.00
11,100.0	72.89	130.00	10,948.9	-216.6	258.1	266.0	12.00	12.00	0.00
11,125.0	75.89	130.00	10,955.7	-232.1	276.6	285.0	12.00	12.00	0.00
11,150.0	78.89	130.00	10,961.1	-247.8	295.3	304.2	12.00	12.00	0.00
11,175.0	81.89	130.00	10,965.3	-263.6	314.1	323.7	12.00	12.00	0.00
11,200.0	84.89	130.00	10,968.2	-279.6	333.2	343.3	12.00	12.00	0.00
11,225.0	87.89	130.00	10,969.7	-295.6	352.3	363.0	12.00	12.00	0.00
11,251.3	91.04	130.00	10,970.0	-312.5	372.4	383.7	12.00	12.00	0.00
11,252.3	91.04	130.04	10,970.0	-313.1	373.2	384.5	4.00	0.03	4.00
Begin 4°/100' Turn LP									
11,300.0	91.05	131.95	10,969.1	-344.4	409.2	422.7	4.00	0.03	4.00
11,400.0	91.08	135.95	10,967.2	-413.8	481.2	505.6	4.00	0.03	4.00
11,500.0	91.10	139.95	10,965.3	-488.0	548.1	592.2	4.00	0.02	4.00
11,600.0	91.12	143.95	10,963.4	-566.8	609.7	682.1	4.00	0.02	4.00
11,700.0	91.13	147.95	10,961.4	-649.6	665.7	774.9	4.00	0.01	4.00
11,800.0	91.14	151.95	10,959.4	-736.1	715.7	870.0	4.00	0.01	4.00
11,900.0	91.14	155.95	10,957.5	-825.9	759.6	967.0	4.00	0.00	4.00
12,000.0	91.13	159.95	10,955.5	-918.6	797.1	1,065.5	4.00	-0.01	4.00
12,100.0	91.12	163.96	10,953.5	-1,013.6	828.1	1,164.9	4.00	-0.01	4.00
12,200.0	91.10	167.96	10,951.6	-1,110.6	852.4	1,264.8	4.00	-0.02	4.00
12,300.0	91.08	171.96	10,949.7	-1,209.0	869.8	1,364.7	4.00	-0.02	4.00
12,400.0	91.05	175.96	10,947.8	-1,308.4	880.3	1,464.1	4.00	-0.03	4.00
12,441.9	91.04	177.63	10,947.0	-1,350.2	882.7	1,505.5	4.00	-0.03	4.00
12441.9' MD Hold									
12,500.0	91.04	177.63	10,946.0	-1,408.3	885.1	1,562.7	0.00	0.00	0.00



Stryker Directional Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

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)
12,600.0	91.04	177.63	10,944.2	-1,508.2	889.2	1,661.3	0.00	0.00	0.00
12,700.0	91.04	177.63	10,942.4	-1,608.1	893.3	1,759.8	0.00	0.00	0.00
12,800.0	91.04	177.63	10,940.5	-1,708.0	897.4	1,858.3	0.00	0.00	0.00
12,900.0	91.04	177.63	10,938.7	-1,807.9	901.6	1,956.9	0.00	0.00	0.00
13,000.0	91.04	177.63	10,936.9	-1,907.8	905.7	2,055.4	0.00	0.00	0.00
13,100.0	91.04	177.63	10,935.1	-2,007.7	909.8	2,154.0	0.00	0.00	0.00
13,200.0	91.04	177.63	10,933.3	-2,107.6	913.9	2,252.5	0.00	0.00	0.00
13,300.0	91.04	177.63	10,931.5	-2,207.5	918.1	2,351.0	0.00	0.00	0.00
13,400.0	91.04	177.63	10,929.7	-2,307.4	922.2	2,449.6	0.00	0.00	0.00
13,500.0	91.04	177.63	10,927.8	-2,407.3	926.3	2,548.1	0.00	0.00	0.00
13,600.0	91.04	177.63	10,926.0	-2,507.2	930.5	2,646.6	0.00	0.00	0.00
13,700.0	91.04	177.63	10,924.2	-2,607.1	934.6	2,745.2	0.00	0.00	0.00
13,800.0	91.04	177.63	10,922.4	-2,707.0	938.7	2,843.7	0.00	0.00	0.00
13,900.0	91.04	177.63	10,920.6	-2,806.9	942.8	2,942.3	0.00	0.00	0.00
14,000.0	91.04	177.63	10,918.8	-2,906.8	947.0	3,040.8	0.00	0.00	0.00
14,100.0	91.04	177.63	10,917.0	-3,006.7	951.1	3,139.3	0.00	0.00	0.00
14,200.0	91.04	177.63	10,915.2	-3,106.6	955.2	3,237.9	0.00	0.00	0.00
14,300.0	91.04	177.63	10,913.3	-3,206.5	959.3	3,336.4	0.00	0.00	0.00
14,400.0	91.04	177.63	10,911.5	-3,306.3	963.5	3,434.9	0.00	0.00	0.00
14,500.0	91.04	177.63	10,909.7	-3,406.2	967.6	3,533.5	0.00	0.00	0.00
14,600.0	91.04	177.63	10,907.9	-3,506.1	971.7	3,632.0	0.00	0.00	0.00
14,700.0	91.04	177.63	10,906.1	-3,606.0	975.8	3,730.6	0.00	0.00	0.00
14,800.0	91.04	177.63	10,904.3	-3,705.9	980.0	3,829.1	0.00	0.00	0.00
14,900.0	91.04	177.63	10,902.5	-3,805.8	984.1	3,927.6	0.00	0.00	0.00
15,000.0	91.04	177.63	10,900.6	-3,905.7	988.2	4,026.2	0.00	0.00	0.00
15,100.0	91.04	177.63	10,898.8	-4,005.6	992.4	4,124.7	0.00	0.00	0.00
15,200.0	91.04	177.63	10,897.0	-4,105.5	996.5	4,223.2	0.00	0.00	0.00
15,300.0	91.04	177.63	10,895.2	-4,205.4	1,000.6	4,321.8	0.00	0.00	0.00
15,400.0	91.04	177.63	10,893.4	-4,305.3	1,004.7	4,420.3	0.00	0.00	0.00
15,500.0	91.04	177.63	10,891.6	-4,405.2	1,008.9	4,518.9	0.00	0.00	0.00
15,600.0	91.04	177.63	10,889.8	-4,505.1	1,013.0	4,617.4	0.00	0.00	0.00
15,700.0	91.04	177.63	10,887.9	-4,605.0	1,017.1	4,715.9	0.00	0.00	0.00
15,800.0	91.04	177.63	10,886.1	-4,704.9	1,021.2	4,814.5	0.00	0.00	0.00
15,862.0	91.04	177.63	10,885.0	-4,766.9	1,023.8	4,875.6	0.00	0.00	0.00

15862.0' MD PBHL

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 Tiger 11 Fed #2	0.00	0.00	10,885.0	-4,766.9	1,023.8	576,071.90	746,935.60	32° 34' 52.214 N	103° 31' 54.000 W
- plan hits target center									
- Point									



Stryker Directional Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Plan Annotations:

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,492.6	10,492.6	0.0	0.0	10492.6' MD KOP
11,252.3	10,970.0	-313.1	373.2	Begin 4°/100' Turn LP
12,441.9	10,947.0	-1,350.2	882.7	12441.9' MD Hold
15,862.0	10,885.0	-4,766.9	1,023.8	15862.0' MD PBHL



COG Operating, LLC.

Lea County, N.M.

Section 11-20S-34E Tiger 11 Fed #2H

Tiger 11 FED #2H

Original Hole

Plan: Plan#2

Standard Planning Report - Geographic

10 March, 2014





Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Project:	Lea County, N.M.		
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		Section 11-20S-34E Tiger 11 Fed #2H			
Site Position:		Northing:	580,838.80 usft	Latitude:	32° 35' 39.458 N
From:	Map	Easting:	745,911.80 usft	Longitude:	103° 32' 5.546 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.43 °

Well:	Tiger 11 FED #2H					
Well Position	+N/-S	0.0 usft	Northing:	580,838.80 usft	Latitude:	32° 35' 39.458 N
	+E/-W	0.0 usft	Easting:	745,911.80 usft	Longitude:	103° 32' 5.546 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,656.2 usft

Wellbore:	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/10/2014	7.26	60.47	48,567

Design:	Plan#2			
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	167.88

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	
10,492.6	0.00	0.00	10,492.6	0.0	0.0	0.00	0.00	0.00	0.00	
11,251.3	91.04	130.00	10,970.0	-312.5	372.4	12.00	12.00	0.00	130.00	
12,441.9	91.04	177.63	10,947.0	-1,350.3	882.7	4.00	0.00	4.00	89.54	
15,862.0	91.04	177.63	10,885.0	-4,766.9	1,023.8	0.00	0.00	0.00	0.00	PBHL Tiger 11 Fed



Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

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	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
100.0	0.00	0.00	100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
200.0	0.00	0.00	200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
300.0	0.00	0.00	300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
400.0	0.00	0.00	400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
500.0	0.00	0.00	500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
600.0	0.00	0.00	600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
700.0	0.00	0.00	700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
800.0	0.00	0.00	800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
900.0	0.00	0.00	900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,600.0	0.00	0.00	3,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,700.0	0.00	0.00	3,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,800.0	0.00	0.00	3,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
3,900.0	0.00	0.00	3,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,000.0	0.00	0.00	4,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,100.0	0.00	0.00	4,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,200.0	0.00	0.00	4,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,300.0	0.00	0.00	4,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,400.0	0.00	0.00	4,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,500.0	0.00	0.00	4,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,600.0	0.00	0.00	4,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,700.0	0.00	0.00	4,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,800.0	0.00	0.00	4,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
4,900.0	0.00	0.00	4,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
5,000.0	0.00	0.00	5,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
5,100.0	0.00	0.00	5,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W
5,200.0	0.00	0.00	5,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W



Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,300.0	0.00	0.00	5,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10,400.0	0.00	0.00	10,400.0	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	



Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,492.6	0.00	0.00	10,492.6	0.0	0.0	580,838.80	745,911.80	32° 35' 39.458 N	103° 32' 5.546 W	
10492.6' MD KOP										
10,500.0	0.89	130.00	10,500.0	0.0	0.0	580,838.77	745,911.84	32° 35' 39.457 N	103° 32' 5.546 W	
10,525.0	3.89	130.00	10,525.0	-0.7	0.8	580,838.10	745,912.64	32° 35' 39.451 N	103° 32' 5.536 W	
10,550.0	6.89	130.00	10,549.9	-2.2	2.6	580,836.59	745,914.44	32° 35' 39.436 N	103° 32' 5.515 W	
10,575.0	9.89	130.00	10,574.6	-4.6	5.4	580,834.24	745,917.23	32° 35' 39.412 N	103° 32' 5.483 W	
10,600.0	12.89	130.00	10,599.1	-7.7	9.2	580,831.07	745,921.01	32° 35' 39.381 N	103° 32' 5.439 W	
10,625.0	15.89	130.00	10,623.3	-11.7	14.0	580,827.08	745,925.77	32° 35' 39.341 N	103° 32' 5.384 W	
10,650.0	18.89	130.00	10,647.2	-16.5	19.7	580,822.28	745,931.49	32° 35' 39.293 N	103° 32' 5.317 W	
10,675.0	21.89	130.00	10,670.6	-22.1	26.4	580,816.68	745,938.16	32° 35' 39.237 N	103° 32' 5.240 W	
10,700.0	24.89	130.00	10,693.5	-28.5	34.0	580,810.30	745,945.76	32° 35' 39.173 N	103° 32' 5.152 W	
10,725.0	27.89	130.00	10,715.9	-35.6	42.5	580,803.16	745,954.27	32° 35' 39.102 N	103° 32' 5.053 W	
10,750.0	30.89	130.00	10,737.7	-43.5	51.9	580,795.27	745,963.67	32° 35' 39.023 N	103° 32' 4.944 W	
10,775.0	33.89	130.00	10,758.8	-52.1	62.1	580,786.67	745,973.93	32° 35' 38.937 N	103° 32' 4.825 W	
10,800.0	36.89	130.00	10,779.2	-61.4	73.2	580,777.36	745,985.02	32° 35' 38.844 N	103° 32' 4.696 W	
10,825.0	39.89	130.00	10,798.8	-71.4	85.1	580,767.39	745,996.91	32° 35' 38.745 N	103° 32' 4.558 W	
10,850.0	42.89	130.00	10,817.5	-82.0	97.8	580,756.76	746,009.57	32° 35' 38.639 N	103° 32' 4.411 W	
10,875.0	45.89	130.00	10,835.4	-93.3	111.2	580,745.52	746,022.96	32° 35' 38.526 N	103° 32' 4.255 W	
10,900.0	48.89	130.00	10,852.3	-105.1	125.3	580,733.70	746,037.06	32° 35' 38.408 N	103° 32' 4.091 W	
10,925.0	51.89	130.00	10,868.3	-117.5	140.0	580,721.32	746,051.81	32° 35' 38.285 N	103° 32' 3.920 W	
10,950.0	54.89	130.00	10,883.2	-130.4	155.4	580,708.42	746,067.18	32° 35' 38.156 N	103° 32' 3.741 W	
10,975.0	57.89	130.00	10,897.0	-143.8	171.3	580,695.04	746,083.13	32° 35' 38.022 N	103° 32' 3.556 W	
11,000.0	60.89	130.00	10,909.7	-157.6	187.8	580,681.21	746,099.61	32° 35' 37.884 N	103° 32' 3.365 W	
11,025.0	63.89	130.00	10,921.3	-171.8	204.8	580,666.97	746,116.58	32° 35' 37.742 N	103° 32' 3.168 W	
11,050.0	66.89	130.00	10,931.7	-186.4	222.2	580,652.37	746,133.98	32° 35' 37.596 N	103° 32' 2.966 W	
11,075.0	69.89	130.00	10,940.9	-201.4	240.0	580,637.43	746,151.79	32° 35' 37.447 N	103° 32' 2.759 W	
11,100.0	72.89	130.00	10,948.9	-216.6	258.1	580,622.20	746,169.93	32° 35' 37.295 N	103° 32' 2.548 W	
11,125.0	75.89	130.00	10,955.7	-232.1	276.6	580,606.72	746,188.38	32° 35' 37.141 N	103° 32' 2.334 W	
11,150.0	78.89	130.00	10,961.1	-247.8	295.3	580,591.04	746,207.06	32° 35' 36.984 N	103° 32' 2.117 W	
11,175.0	81.89	130.00	10,965.3	-263.6	314.1	580,575.20	746,225.94	32° 35' 36.826 N	103° 32' 1.898 W	
11,200.0	84.89	130.00	10,968.2	-279.6	333.2	580,559.24	746,244.97	32° 35' 36.667 N	103° 32' 1.677 W	
11,225.0	87.89	130.00	10,969.7	-295.6	352.3	580,543.20	746,264.08	32° 35' 36.507 N	103° 32' 1.455 W	
11,251.3	91.04	130.00	10,970.0	-312.5	372.4	580,526.32	746,284.19	32° 35' 36.338 N	103° 32' 1.221 W	
11,252.3	91.04	130.04	10,970.0	-313.1	373.2	580,525.66	746,284.99	32° 35' 36.331 N	103° 32' 1.212 W	
Begin 4°/100' Turn LP										
11,300.0	91.05	131.95	10,969.1	-344.4	409.2	580,494.38	746,320.98	32° 35' 36.019 N	103° 32' 0.794 W	
11,400.0	91.08	135.95	10,967.2	-413.8	481.2	580,425.00	746,392.95	32° 35' 35.327 N	103° 31' 59.959 W	
11,500.0	91.10	139.95	10,965.3	-488.0	548.1	580,350.77	746,459.90	32° 35' 34.588 N	103° 31' 59.183 W	
11,600.0	91.12	143.95	10,963.4	-566.8	609.7	580,272.05	746,521.51	32° 35' 33.804 N	103° 31' 58.470 W	
11,700.0	91.13	147.95	10,961.4	-649.6	665.7	580,189.23	746,577.47	32° 35' 32.981 N	103° 31' 57.823 W	
11,800.0	91.14	151.95	10,959.4	-736.1	715.7	580,102.70	746,627.53	32° 35' 32.121 N	103° 31' 57.245 W	
11,900.0	91.14	155.95	10,957.5	-825.9	759.6	580,012.89	746,671.42	32° 35' 31.229 N	103° 31' 56.740 W	
12,000.0	91.13	159.95	10,955.5	-918.6	797.1	579,920.24	746,708.94	32° 35' 30.309 N	103° 31' 56.310 W	
12,100.0	91.12	163.96	10,953.5	-1,013.6	828.1	579,825.20	746,739.90	32° 35' 29.367 N	103° 31' 55.956 W	
12,200.0	91.10	167.96	10,951.6	-1,110.6	852.4	579,728.23	746,764.16	32° 35' 28.405 N	103° 31' 55.682 W	
12,300.0	91.08	171.96	10,949.7	-1,209.0	869.8	579,629.80	746,781.59	32° 35' 27.430 N	103° 31' 55.486 W	
12,400.0	91.05	175.96	10,947.8	-1,308.4	880.3	579,530.39	746,792.12	32° 35' 26.446 N	103° 31' 55.372 W	
12,441.9	91.04	177.63	10,947.0	-1,350.2	882.7	579,488.56	746,794.46	32° 35' 26.032 N	103° 31' 55.349 W	
12441.9' MD Hold										
12,500.0	91.04	177.63	10,946.0	-1,408.3	885.1	579,430.52	746,796.86	32° 35' 25.457 N	103° 31' 55.326 W	
12,600.0	91.04	177.63	10,944.2	-1,508.2	889.2	579,330.62	746,800.98	32° 35' 24.468 N	103° 31' 55.286 W	
12,700.0	91.04	177.63	10,942.4	-1,608.1	893.3	579,230.73	746,805.11	32° 35' 23.480 N	103° 31' 55.247 W	



Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
12,800.0	91.04	177.63	10,940.5	-1,708.0	897.4	579,130.83	746,809.24	32° 35' 22.491 N	103° 31' 55.207 W	
12,900.0	91.04	177.63	10,938.7	-1,807.9	901.6	579,030.93	746,813.36	32° 35' 21.502 N	103° 31' 55.168 W	
13,000.0	91.04	177.63	10,936.9	-1,907.8	905.7	578,931.03	746,817.49	32° 35' 20.513 N	103° 31' 55.128 W	
13,100.0	91.04	177.63	10,935.1	-2,007.7	909.8	578,831.13	746,821.62	32° 35' 19.524 N	103° 31' 55.089 W	
13,200.0	91.04	177.63	10,933.3	-2,107.6	913.9	578,731.23	746,825.74	32° 35' 18.536 N	103° 31' 55.050 W	
13,300.0	91.04	177.63	10,931.5	-2,207.5	918.1	578,631.34	746,829.87	32° 35' 17.547 N	103° 31' 55.010 W	
13,400.0	91.04	177.63	10,929.7	-2,307.4	922.2	578,531.44	746,834.00	32° 35' 16.558 N	103° 31' 54.971 W	
13,500.0	91.04	177.63	10,927.8	-2,407.3	926.3	578,431.54	746,838.12	32° 35' 15.569 N	103° 31' 54.931 W	
13,600.0	91.04	177.63	10,926.0	-2,507.2	930.5	578,331.64	746,842.25	32° 35' 14.581 N	103° 31' 54.892 W	
13,700.0	91.04	177.63	10,924.2	-2,607.1	934.6	578,231.74	746,846.38	32° 35' 13.592 N	103° 31' 54.852 W	
13,800.0	91.04	177.63	10,922.4	-2,707.0	938.7	578,131.84	746,850.50	32° 35' 12.603 N	103° 31' 54.813 W	
13,900.0	91.04	177.63	10,920.6	-2,806.9	942.8	578,031.95	746,854.63	32° 35' 11.614 N	103° 31' 54.774 W	
14,000.0	91.04	177.63	10,918.8	-2,906.8	947.0	577,932.05	746,858.76	32° 35' 10.625 N	103° 31' 54.734 W	
14,100.0	91.04	177.63	10,917.0	-3,006.7	951.1	577,832.15	746,862.88	32° 35' 9.637 N	103° 31' 54.695 W	
14,200.0	91.04	177.63	10,915.2	-3,106.6	955.2	577,732.25	746,867.01	32° 35' 8.648 N	103° 31' 54.655 W	
14,300.0	91.04	177.63	10,913.3	-3,206.5	959.3	577,632.35	746,871.14	32° 35' 7.659 N	103° 31' 54.616 W	
14,400.0	91.04	177.63	10,911.5	-3,306.3	963.5	577,532.45	746,875.26	32° 35' 6.670 N	103° 31' 54.576 W	
14,500.0	91.04	177.63	10,909.7	-3,406.2	967.6	577,432.55	746,879.39	32° 35' 5.681 N	103° 31' 54.537 W	
14,600.0	91.04	177.63	10,907.9	-3,506.1	971.7	577,332.66	746,883.52	32° 35' 4.693 N	103° 31' 54.497 W	
14,700.0	91.04	177.63	10,906.1	-3,606.0	975.8	577,232.76	746,887.64	32° 35' 3.704 N	103° 31' 54.458 W	
14,800.0	91.04	177.63	10,904.3	-3,705.9	980.0	577,132.86	746,891.77	32° 35' 2.715 N	103° 31' 54.419 W	
14,900.0	91.04	177.63	10,902.5	-3,805.8	984.1	577,032.96	746,895.90	32° 35' 1.726 N	103° 31' 54.379 W	
15,000.0	91.04	177.63	10,900.6	-3,905.7	988.2	576,933.06	746,900.02	32° 35' 0.738 N	103° 31' 54.340 W	
15,100.0	91.04	177.63	10,898.8	-4,005.6	992.4	576,833.16	746,904.15	32° 34' 59.749 N	103° 31' 54.300 W	
15,200.0	91.04	177.63	10,897.0	-4,105.5	996.5	576,733.27	746,908.28	32° 34' 58.760 N	103° 31' 54.261 W	
15,300.0	91.04	177.63	10,895.2	-4,205.4	1,000.6	576,633.37	746,912.40	32° 34' 57.771 N	103° 31' 54.221 W	
15,400.0	91.04	177.63	10,893.4	-4,305.3	1,004.7	576,533.47	746,916.53	32° 34' 56.782 N	103° 31' 54.182 W	
15,500.0	91.04	177.63	10,891.6	-4,405.2	1,008.9	576,433.57	746,920.66	32° 34' 55.794 N	103° 31' 54.143 W	
15,600.0	91.04	177.63	10,889.8	-4,505.1	1,013.0	576,333.67	746,924.78	32° 34' 54.805 N	103° 31' 54.103 W	
15,700.0	91.04	177.63	10,887.9	-4,605.0	1,017.1	576,233.77	746,928.91	32° 34' 53.816 N	103° 31' 54.064 W	
15,800.0	91.04	177.63	10,886.1	-4,704.9	1,021.2	576,133.88	746,933.04	32° 34' 52.827 N	103° 31' 54.024 W	
15,862.0	91.04	177.63	10,885.0	-4,766.9	1,023.8	576,071.94	746,935.60	32° 34' 52.214 N	103° 31' 54.000 W	
15862.0' MD PBHL										

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 Tiger 11 Fed #2	0.00	0.00	10,885.0	-4,766.9	1,023.8	576,071.90	746,935.60	32° 34' 52.214 N	103° 31' 54.000 W	
- plan hits target center										
- Point										



Stryker Directional Planning Report - Geographic



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Tiger 11 FED #2H
Company:	COG Operating, LLC.	TVD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Project:	Lea County, N.M.	MD Reference:	GL 3656.2 + 26 @ 3682.2usft (Precision 590)
Site:	Section 11-20S-34E Tiger 11 Fed #2H	North Reference:	Grid
Well:	Tiger 11 FED #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan#2		

Plan Annotations:					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,492.6	10,492.6	0.0	0.0	10492.6' MD KOP	
11,252.3	10,970.0	-313.1	373.2	Begin 4"/100' Turn LP	
12,441.9	10,947.0	-1,350.2	882.7	12441.9' MD Hold	
15,862.0	10,885.0	-4,766.9	1,023.8	15862.0' MD PBHL	

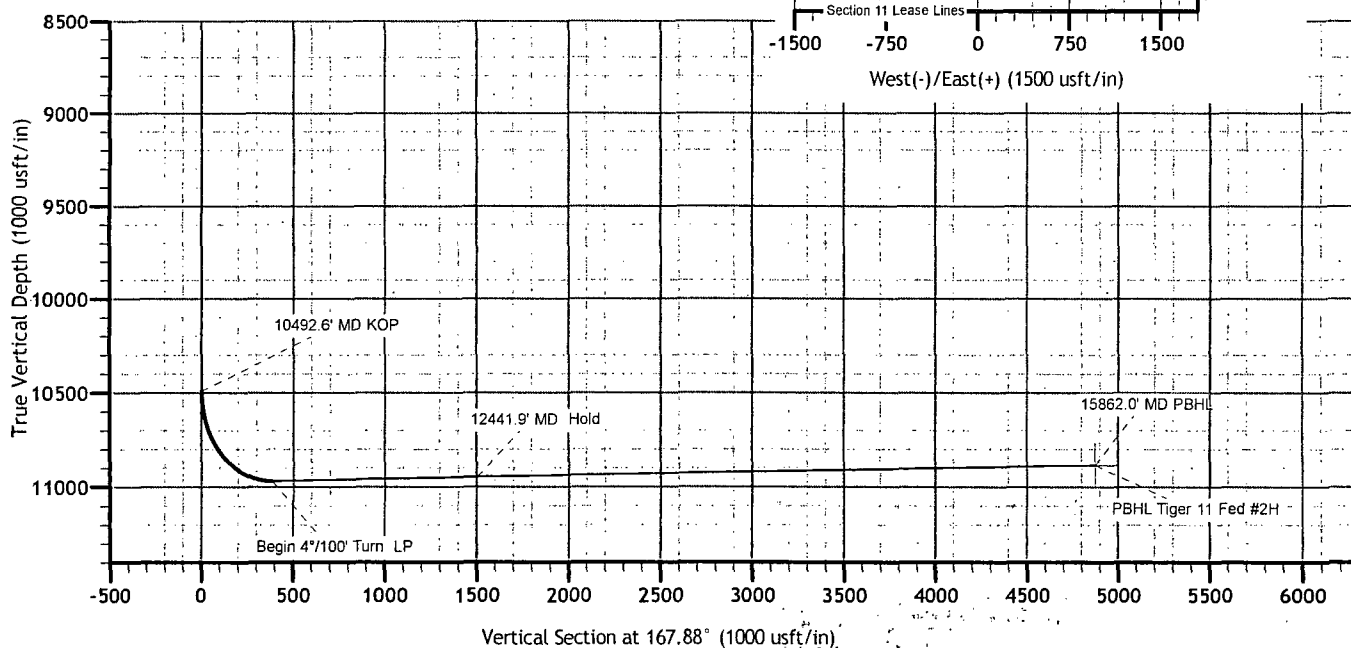
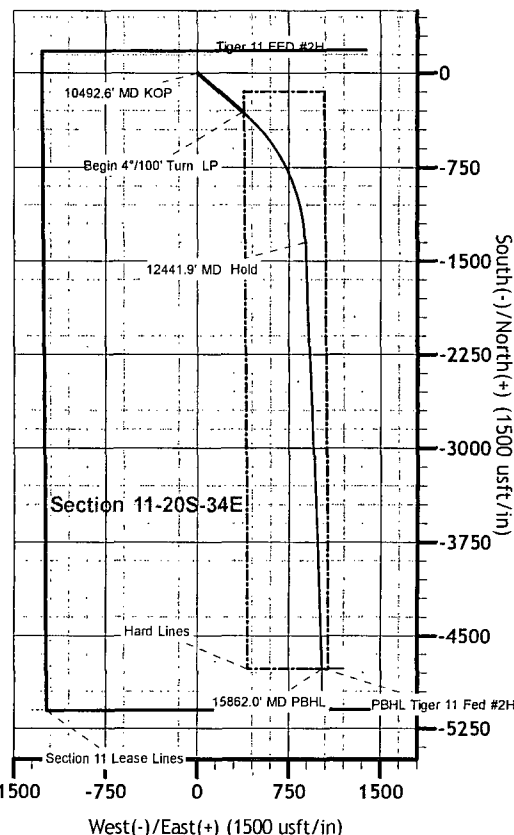
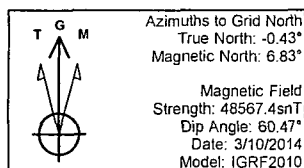


COMPANY: COG Operating, LLC.
 WELL: Tiger 11 FED #2H
 COUNTY: Lea County, N.M.
 DATUM: NAD 1927 (NADCON CONUS)
 RIG: Precision 590
 GRID CORRECTION: To convert a Magnetic Direction to a Grid Direction, Add 6.83°

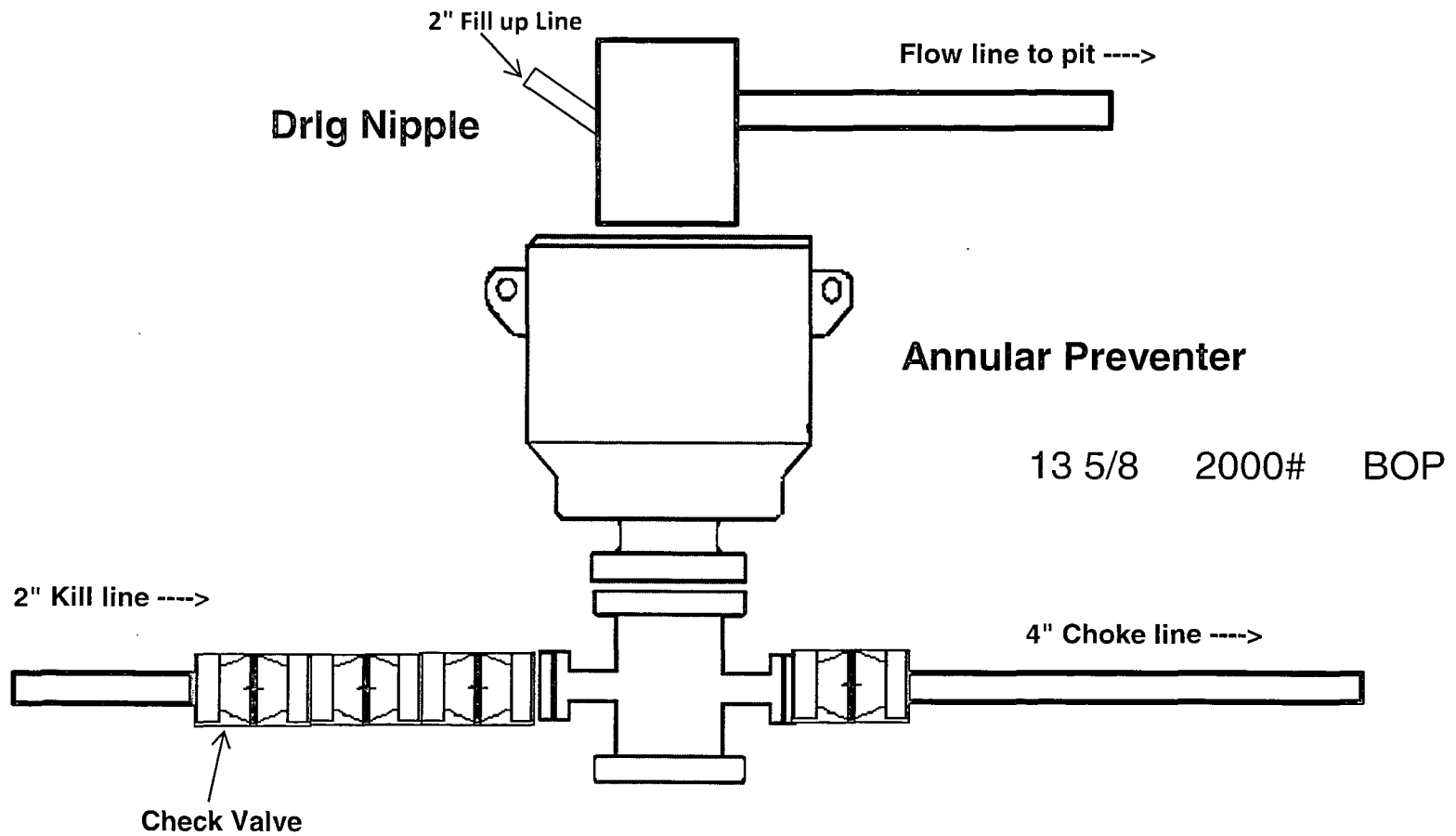


GEODETTIC ZONE: New Mexico East 3001					
GL 3656.2 + 26 @ 3682.2usft (Precision 590)					
GROUND ELEVATION: 3656.2					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	580838.80	745911.80	32° 35' 39.458 N	103° 32' 5.546 W

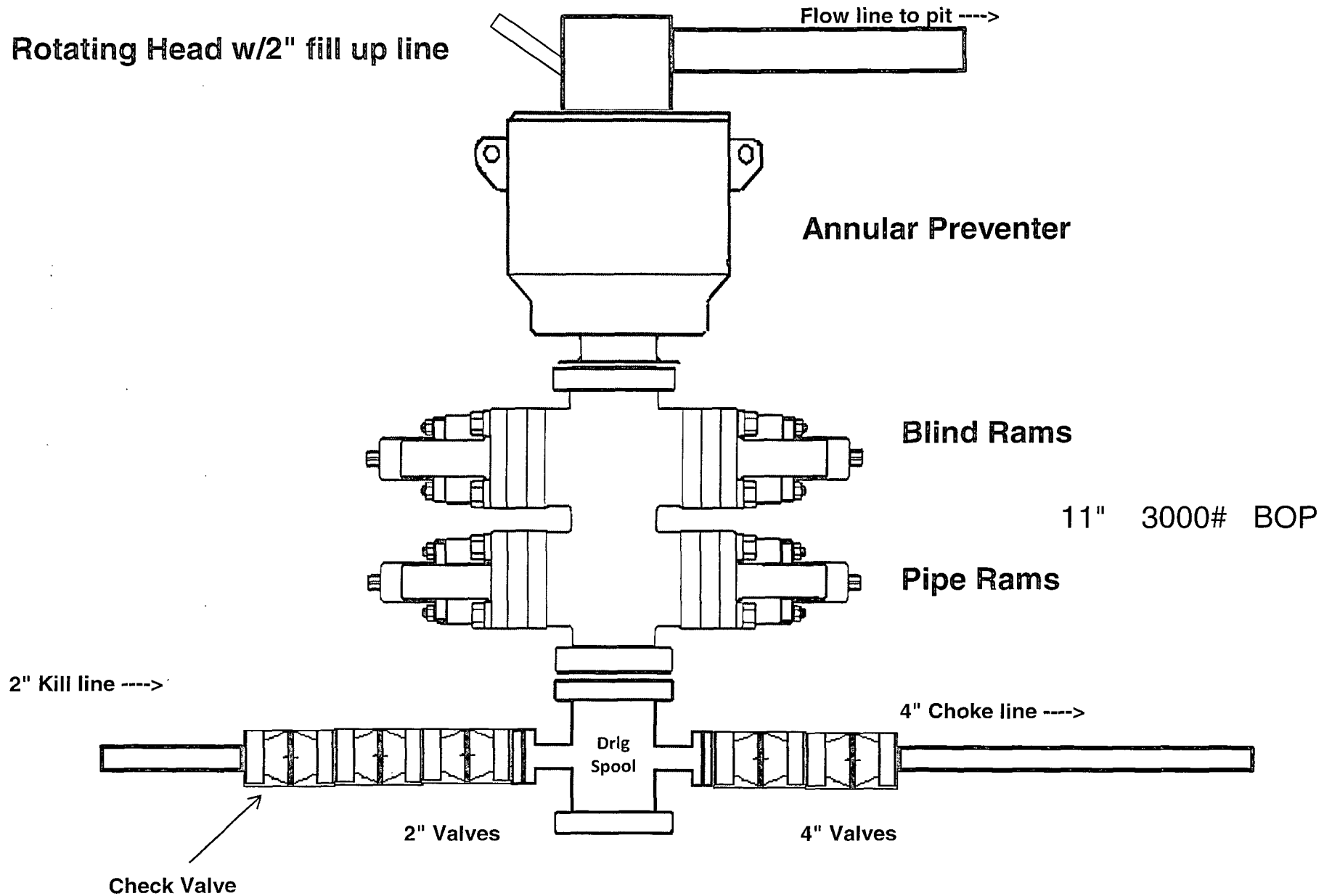
PLAN SECTIONS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10492.6	0.00	0.00	10492.6	0.0	0.0	0.00	0.00	0.0	
3	11251.3	91.04	130.00	10970.0	-312.5	372.4	12.00	130.00	383.7	
4	12441.9	91.04	177.63	10947.0	-1350.3	882.7	4.00	89.54	1505.5	
5	15862.0	91.04	177.63	10885.0	-4766.9	1023.8	0.00	0.00	4875.6	PBHL Tiger 11 Fed #2H



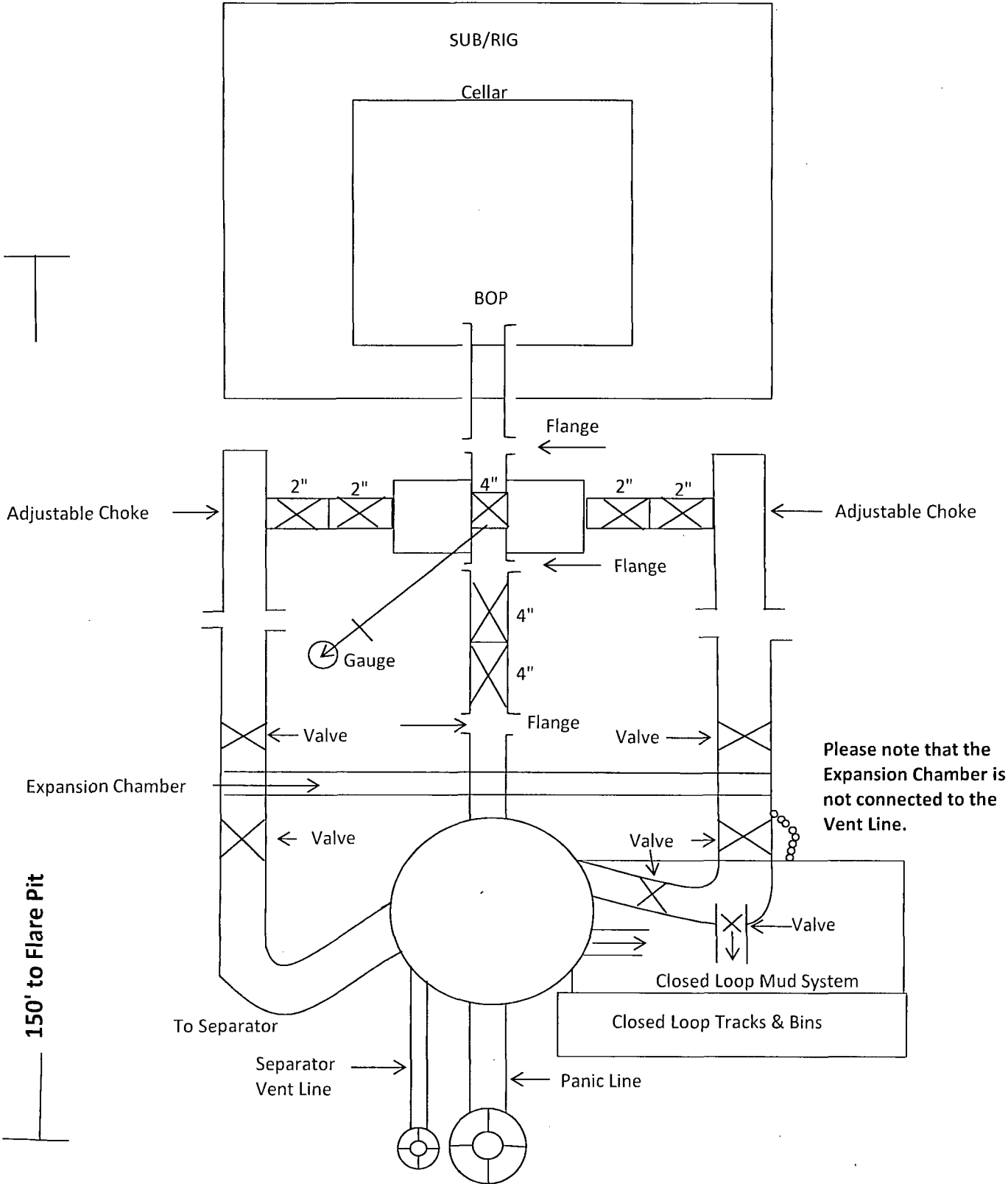
2,000 psi BOP Schematic



3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment

