

ATS-11-116

OCDD Artesia

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

EA261

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM 100316
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator COG Operating LLC (229137)		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 2208 W Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	8. Lease Name and Well No. Tamago 24 Federal #2H (38582)
3a. Address		9. API Well No. 30-015-38955 (96403)
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 1650' FNL & 330' FEL (H) At proposed prod. zone 1650' FNL & 330' FWL		10. Field and Pool or Exploratory WILD CAT; BOKE HALLS
14. Distance in miles and direction from nearest town or post office* Approx 12 miles to White City, NM		11. Sec., T. R. M. or Blk. and Survey or Area Sect 24 T26S R24E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'	16. No. of acres in lease 2518.3	12. County or Parish Eddy County
17. Spacing Unit dedicated to this well 160 acres	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	13. State NM
19. Proposed Depth 9,455' MD (~5,000' TVD)	20. BLM/BIA Bond No. on file NMB000215	RECEIVED APR 04 2011 NMOCDD ARTESIA
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3849.7' GL	22. Approximate date work will start* 12/28/2010	
23. Estimated duration 30 days		

24. Attachments

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

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

25. Signature 	Name (Printed/Typed) Seth Wild	Date 12/02/2010
-------------------	-----------------------------------	--------------------

Title
Drilling Engineer

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed)	Date APR 1 2011
---------------------------------------------	----------------------	--------------------

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)

**DISTRICT REQUIRED
SEE COA**

Carlsbad Controlled Water Basin

EE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

Tamago 24 Federal #2H
Surf: 1650' FNL & 330' FEL
BHL: 1650' FNL & 330' FWL
Section 24, T26S, R24E
Eddy County, New Mexico

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

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

Delaware	1025'	Oil
Bone Spring	4385'	
Avalon Shale	9555'	Oil/Gas
TD(Pilot)	7000'	Oil
TVD	5000'	
TMD	9455'	

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 9-5/8" casing at 1000' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement to surface.

3. Proposed Casing Program:

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
12 1/4"	0' - 1000'	9 5/8"	New	36#	BUTT	J-55	1.125	1.125	1.6
7 7/8"	1000' - 11560'	5 1/2"	New	17#	LTC	N-80	1.125	1.125	1.6

See COA
↓
Attached e-mail 3 casing strings 9455



Sheryl Baker
<SBaker@conchoresources.com>

03/29/2011 08:58 AM

To "cwalls@blm.gov" <cwalls@blm.gov>

cc Seth Wild <swild@conchoresources.com>, Rand French
<rfrench@conchoresources.com>

bcc

Subject Additional Casing

Concho proposes to drill 17.5" hole to 350 feet, run 350 feet of 48#, H40, 13 3/8" casing and cement to surface with 400 sacks class "c" 2% Cacl, wt. 14.8 yield 1.34 all other casing designs will remain the same. Sheryl Baker

5. Proposed Cement Program:

see CoA

- a. 9 5/8" Surface Cement to surface with 200 sx Class C wt 12.7 yield 1.91
Tail in with 200 sx Class C wt 14.8 yield 1.34

- b. 5 1/2" Production Cement 1st stage with 400 sx "H" acid soluble cement wt
15.0 yield 2.6, cement second stage with 400 sk Class C
wt 12.7 yield 1.91 & Tail in with 100 sx Class C wt 14.8
yield 1.33. DV Tool @ 4400'. TOC @ 800' *See CoA*

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 200' above the 9 5/8" casing shoe. **All casing is new and API approved.**

6. Minimum Specifications for Pressure Control:

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

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

7. Estimated BHP: 2100 psi

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1000'	Fresh Water	8.4	29	N.C.
1000' - 9460'	Cut Brine	8.9 - 9.0	29	N.C.

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

9. 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.

10. Testing, Logging and Coring Program: *See CoA*

- a. Drill stem tests will be based on geological sample shows.
- b. The open hole electrical logging 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.

11. 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. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 2100 psi. No H₂S is anticipated to be encountered.

12. Anticipated starting date and Duration of Operations:

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



Cog Operating LLC/Marbob

Eddy County

~~Tamago 24 Fed~~

~~#24~~

OH

Tsmago 24 Federal #24

Plan: Plan #1

Pathfinder X & Y Planning Report

08 November, 2010

PATHFINDER[®]

A Schlumberger Company



Pathfinder
Pathfinder X & Y Planning Report



Company: Cog Operating LLC/Marbob
 Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #24
 TVD Reference: WELL @ 3866.70ft (17' KB)
 MD Reference: WELL @ 3866.70ft (17' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Project	Eddy County		
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	Tamago 24 Fed		
Site Position:		Northing:	374,588.890 ft
From: Map		Easting:	506,868.250 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 1' 47.486 N
		Longitude:	104° 18' 40.212 W
		Grid Convergence:	0.01 °

Well	#24					
Well Position	+N/-S	0.00 ft	Northing:	374,588.890 ft	Latitude:	32° 1' 47.486 N
	+E/-W	0.00 ft	Easting:	506,868.250 ft	Longitude:	104° 18' 40.212 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,849.70ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/08/10	7.97	59.91	48,506

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	270.07

Survey Tool Program	Date	11/08/10		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	9,455.07	Plan #1 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X & Y Planning Report



A Schlumberger Company

Company: Cog Operating LLC/Marbob
 Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #24
 TVD Reference: WELL @ 3866.70ft (17' KB)
 MD Reference: WELL @ 3866.70ft (17' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,866.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
100.00	0.00	0.00	100.00	-3,766.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
200.00	0.00	0.00	200.00	-3,666.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
300.00	0.00	0.00	300.00	-3,566.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
400.00	0.00	0.00	400.00	-3,466.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
500.00	0.00	0.00	500.00	-3,366.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
600.00	0.00	0.00	600.00	-3,266.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
700.00	0.00	0.00	700.00	-3,166.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
800.00	0.00	0.00	800.00	-3,066.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
900.00	0.00	0.00	900.00	-2,966.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,000.00	0.00	0.00	1,000.00	-2,866.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,100.00	0.00	0.00	1,100.00	-2,766.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,200.00	0.00	0.00	1,200.00	-2,666.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,300.00	0.00	0.00	1,300.00	-2,566.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,400.00	0.00	0.00	1,400.00	-2,466.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,500.00	0.00	0.00	1,500.00	-2,366.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,600.00	0.00	0.00	1,600.00	-2,266.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,700.00	0.00	0.00	1,700.00	-2,166.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,800.00	0.00	0.00	1,800.00	-2,066.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
1,900.00	0.00	0.00	1,900.00	-1,966.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,000.00	0.00	0.00	2,000.00	-1,866.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,100.00	0.00	0.00	2,100.00	-1,766.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,200.00	0.00	0.00	2,200.00	-1,666.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,300.00	0.00	0.00	2,300.00	-1,566.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,400.00	0.00	0.00	2,400.00	-1,466.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,500.00	0.00	0.00	2,500.00	-1,366.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,600.00	0.00	0.00	2,600.00	-1,266.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25



Pathfinder
Pathfinder X & Y Planning Report



A Schlumberger Company

Company: Cog Operating LLC/Marbob
 Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #24
 TVD Reference: WELL @ 3866.70ft (17' KB)
 MD Reference: WELL @ 3866.70ft (17' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	0.00	0.00	2,700.00	-1,166.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,800.00	0.00	0.00	2,800.00	-1,066.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
2,900.00	0.00	0.00	2,900.00	-966.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,000.00	0.00	0.00	3,000.00	-866.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,100.00	0.00	0.00	3,100.00	-766.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,200.00	0.00	0.00	3,200.00	-666.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,300.00	0.00	0.00	3,300.00	-566.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,400.00	0.00	0.00	3,400.00	-466.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,500.00	0.00	0.00	3,500.00	-366.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,600.00	0.00	0.00	3,600.00	-266.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,700.00	0.00	0.00	3,700.00	-166.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,800.00	0.00	0.00	3,800.00	-66.70	0.00	0.00	0.00	0.00	374,588.89	506,868.25
3,900.00	0.00	0.00	3,900.00	33.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,000.00	0.00	0.00	4,000.00	133.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,100.00	0.00	0.00	4,100.00	233.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,200.00	0.00	0.00	4,200.00	333.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,300.00	0.00	0.00	4,300.00	433.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,400.00	0.00	0.00	4,400.00	533.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,500.00	0.00	0.00	4,500.00	633.30	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,522.50	0.00	0.00	4,522.50	655.80	0.00	0.00	0.00	0.00	374,588.89	506,868.25
4,525.00	0.30	270.07	4,525.00	658.30	0.00	-0.01	0.01	12.00	374,588.89	506,868.24
4,550.00	3.30	270.07	4,549.98	683.28	0.00	-0.79	0.79	12.00	374,588.89	506,867.46
4,575.00	6.30	270.07	4,574.89	708.19	0.00	-2.88	2.88	12.00	374,588.89	506,865.37
4,600.00	9.30	270.07	4,599.66	732.96	0.01	-6.28	6.28	12.00	374,588.90	506,861.97
4,625.00	12.30	270.07	4,624.21	757.51	0.01	-10.96	10.96	12.00	374,588.90	506,857.29
4,650.00	15.30	270.07	4,648.49	781.79	0.02	-16.92	16.92	12.00	374,588.91	506,851.33
4,675.00	18.30	270.07	4,672.42	805.72	0.03	-24.15	24.15	12.00	374,588.92	506,844.10



Pathfinder
Pathfinder X & Y Planning Report



Company:	Cog Operating LLC/Marbob	Local Co-ordinate Reference:	Well #24
Project:	Eddy County	TVD Reference:	WELL @ 3866.70ft (17' KB)
Site:	Tamago 24 Fed	MD Reference:	WELL @ 3866.70ft (17' KB)
Well:	#24	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
4,700.00	21.30	270.07	4,695.94	829.24	0.04	-32.61	32.61	12.00	374,588.93	506,835.64	
4,725.00	24.30	270.07	4,718.98	852.28	0.05	-42.30	42.30	12.00	374,588.94	506,825.95	
4,750.00	27.30	270.07	4,741.49	874.79	0.06	-53.18	53.18	12.00	374,588.95	506,815.07	
4,775.00	30.30	270.07	4,763.40	896.70	0.08	-65.22	65.22	12.00	374,588.97	506,803.03	
4,800.00	33.30	270.07	4,784.64	917.94	0.10	-78.39	78.39	12.00	374,588.99	506,789.86	
4,825.00	36.30	270.07	4,805.17	938.47	0.11	-92.66	92.66	12.00	374,589.00	506,775.59	
4,850.00	39.30	270.07	4,824.92	958.22	0.13	-107.98	107.98	12.00	374,589.02	506,760.27	
4,875.00	42.30	270.07	4,843.84	977.14	0.15	-124.31	124.31	12.00	374,589.04	506,743.94	
4,900.00	45.30	270.07	4,861.89	995.19	0.17	-141.61	141.61	12.00	374,589.06	506,726.64	
4,925.00	48.30	270.07	4,879.00	1,012.30	0.20	-159.83	159.83	12.00	374,589.09	506,708.42	
4,950.00	51.30	270.07	4,895.14	1,028.44	0.22	-178.92	178.92	12.00	374,589.11	506,689.33	
4,975.00	54.30	270.07	4,910.25	1,043.55	0.24	-198.83	198.83	12.00	374,589.13	506,669.42	
5,000.00	57.30	270.07	4,924.30	1,057.60	0.27	-219.51	219.51	12.00	374,589.16	506,648.74	
5,025.00	60.30	270.07	4,937.25	1,070.55	0.29	-240.89	240.89	12.00	374,589.18	506,627.36	
5,050.00	63.30	270.07	4,949.07	1,082.37	0.32	-262.92	262.92	12.00	374,589.21	506,605.33	
5,075.00	66.30	270.07	4,959.71	1,093.01	0.35	-285.53	285.53	12.00	374,589.24	506,582.72	
5,100.00	69.29	270.07	4,969.16	1,102.46	0.38	-308.68	308.68	12.00	374,589.27	506,559.57	
5,125.00	72.29	270.07	4,977.38	1,110.68	0.41	-332.28	332.28	12.00	374,589.30	506,535.97	
5,150.00	75.29	270.07	4,984.36	1,117.66	0.44	-356.29	356.29	12.00	374,589.33	506,511.96	
5,175.00	78.29	270.07	4,990.07	1,123.37	0.47	-380.62	380.62	12.00	374,589.36	506,487.63	
5,200.00	81.29	270.07	4,994.50	1,127.80	0.50	-405.22	405.22	12.00	374,589.39	506,463.03	
5,225.00	84.29	270.07	4,997.63	1,130.93	0.53	-430.02	430.02	12.00	374,589.42	506,438.23	
5,250.00	87.29	270.07	4,999.47	1,132.77	0.56	-454.95	454.95	12.00	374,589.45	506,413.30	
5,272.56	90.00	270.07	5,000.00	1,133.30	0.58	-477.50	477.50	12.00	374,589.47	506,390.75	
5,300.00	90.00	270.07	5,000.00	1,133.30	0.62	-504.94	504.94	0.00	374,589.51	506,363.31	
5,400.00	90.00	270.07	5,000.00	1,133.30	0.74	-604.94	604.94	0.00	374,589.63	506,263.31	
5,500.00	90.00	270.07	5,000.00	1,133.30	0.86	-704.94	704.94	0.00	374,589.75	506,163.31	



Pathfinder
Pathfinder X & Y Planning Report



Company: Cog Operating LLC/Marbob
 Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #24
 TVD Reference: WELL @ 3866.70ft (17' KB)
 MD Reference: WELL @ 3866.70ft (17' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,600.00	90.00	270.07	5,000.00	1,133.30	0.98	-804.94	804.94	0.00	374,589.87	506,063.31
5,700.00	90.00	270.07	5,000.00	1,133.30	1.11	-904.94	904.94	0.00	374,590.00	505,963.31
5,800.00	90.00	270.07	5,000.00	1,133.30	1.23	-1,004.94	1,004.94	0.00	374,590.12	505,863.31
5,900.00	90.00	270.07	5,000.00	1,133.30	1.35	-1,104.94	1,104.94	0.00	374,590.24	505,763.31
6,000.00	90.00	270.07	5,000.00	1,133.30	1.47	-1,204.94	1,204.94	0.00	374,590.36	505,663.31
6,100.00	90.00	270.07	5,000.00	1,133.30	1.59	-1,304.94	1,304.94	0.00	374,590.48	505,563.31
6,200.00	90.00	270.07	5,000.00	1,133.30	1.72	-1,404.94	1,404.94	0.00	374,590.61	505,463.31
6,300.00	90.00	270.07	5,000.00	1,133.30	1.84	-1,504.94	1,504.94	0.00	374,590.73	505,363.31
6,400.00	90.00	270.07	5,000.00	1,133.30	1.96	-1,604.94	1,604.94	0.00	374,590.85	505,263.31
6,500.00	90.00	270.07	5,000.00	1,133.30	2.08	-1,704.94	1,704.94	0.00	374,590.97	505,163.31
6,600.00	90.00	270.07	5,000.00	1,133.30	2.21	-1,804.94	1,804.94	0.00	374,591.10	505,063.31
6,700.00	90.00	270.07	5,000.00	1,133.30	2.33	-1,904.94	1,904.94	0.00	374,591.22	504,963.31
6,800.00	90.00	270.07	5,000.00	1,133.30	2.45	-2,004.94	2,004.94	0.00	374,591.34	504,863.31
6,900.00	90.00	270.07	5,000.00	1,133.30	2.57	-2,104.94	2,104.94	0.00	374,591.46	504,763.31
7,000.00	90.00	270.07	5,000.00	1,133.30	2.69	-2,204.94	2,204.94	0.00	374,591.58	504,663.31
7,100.00	90.00	270.07	5,000.00	1,133.30	2.82	-2,304.94	2,304.94	0.00	374,591.71	504,563.31
7,200.00	90.00	270.07	5,000.00	1,133.30	2.94	-2,404.94	2,404.94	0.00	374,591.83	504,463.31
7,300.00	90.00	270.07	5,000.00	1,133.30	3.06	-2,504.94	2,504.94	0.00	374,591.95	504,363.31
7,400.00	90.00	270.07	5,000.00	1,133.30	3.18	-2,604.94	2,604.94	0.00	374,592.07	504,263.31
7,500.00	90.00	270.07	5,000.00	1,133.30	3.30	-2,704.94	2,704.94	0.00	374,592.19	504,163.31
7,600.00	90.00	270.07	5,000.00	1,133.30	3.43	-2,804.94	2,804.94	0.00	374,592.32	504,063.31
7,700.00	90.00	270.07	5,000.00	1,133.30	3.55	-2,904.94	2,904.94	0.00	374,592.44	503,963.31
7,800.00	90.00	270.07	5,000.00	1,133.30	3.67	-3,004.94	3,004.94	0.00	374,592.56	503,863.31
7,900.00	90.00	270.07	5,000.00	1,133.30	3.79	-3,104.94	3,104.94	0.00	374,592.68	503,763.31
8,000.00	90.00	270.07	5,000.00	1,133.30	3.92	-3,204.94	3,204.94	0.00	374,592.81	503,663.31
8,100.00	90.00	270.07	5,000.00	1,133.30	4.04	-3,304.94	3,304.94	0.00	374,592.93	503,563.31
8,200.00	90.00	270.07	5,000.00	1,133.30	4.16	-3,404.94	3,404.94	0.00	374,593.05	503,463.31



Pathfinder
Pathfinder X & Y Planning Report



Company: Cog Operating LLC/Marbob
 Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #24
 TVD Reference: WELL @ 3866.70ft (17' KB)
 MD Reference: WELL @ 3866.70ft (17' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,300.00	90.00	270.07	5,000.00	1,133.30	4.28	-3,504.94	3,504.94	0.00	374,593.17	503,363.31
8,400.00	90.00	270.07	5,000.00	1,133.30	4.40	-3,604.94	3,604.94	0.00	374,593.29	503,263.31
8,500.00	90.00	270.07	5,000.00	1,133.30	4.53	-3,704.94	3,704.94	0.00	374,593.42	503,163.31
8,600.00	90.00	270.07	5,000.00	1,133.30	4.65	-3,804.94	3,804.94	0.00	374,593.54	503,063.31
8,700.00	90.00	270.07	5,000.00	1,133.30	4.77	-3,904.94	3,904.94	0.00	374,593.66	502,963.31
8,800.00	90.00	270.07	5,000.00	1,133.30	4.89	-4,004.94	4,004.94	0.00	374,593.78	502,863.31
8,900.00	90.00	270.07	5,000.00	1,133.30	5.02	-4,104.94	4,104.94	0.00	374,593.91	502,763.31
9,000.00	90.00	270.07	5,000.00	1,133.30	5.14	-4,204.94	4,204.94	0.00	374,594.03	502,663.31
9,100.00	90.00	270.07	5,000.00	1,133.30	5.26	-4,304.94	4,304.94	0.00	374,594.15	502,563.31
9,200.00	90.00	270.07	5,000.00	1,133.30	5.38	-4,404.94	4,404.94	0.00	374,594.27	502,463.31
9,300.00	90.00	270.07	5,000.00	1,133.30	5.50	-4,504.94	4,504.94	0.00	374,594.39	502,363.31
9,400.00	90.00	270.07	5,000.00	1,133.30	5.63	-4,604.94	4,604.94	0.00	374,594.52	502,263.31
9,455.07	90.00	270.07	5,000.00	1,133.30	5.69	-4,660.01	4,660.01	0.00	374,594.58	502,208.24

PBHL(Ta#24)

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/S (ft)	+E/W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target - Shape									
PBHL(Ta#24) - plan hits target center - Point	0.00	0.00	5,000.00	5.85	-4,660.01	374,594.740	502,208.240	32° 1' 47.551 N	104° 19' 34.347 W

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy County
 Site: Tamago 24 Fed
 Well: #24
 Wellbore: OH
 Plan: Plan #1 (#24/OH)



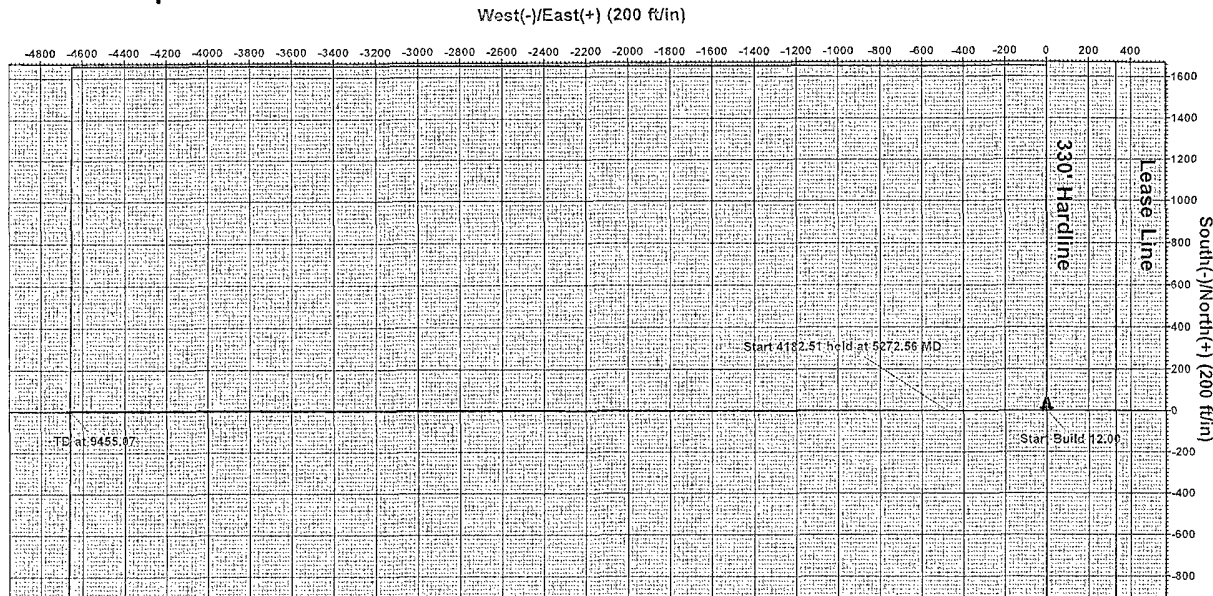
Azimuths to Grid North
 True North: -0.01°
 Magnetic North: 7.95°

Magnetic Field
 Strength: 48506.0snT
 Dip Angle: 59.91°
 Date: 11/08/2010
 Model: IGRF200510



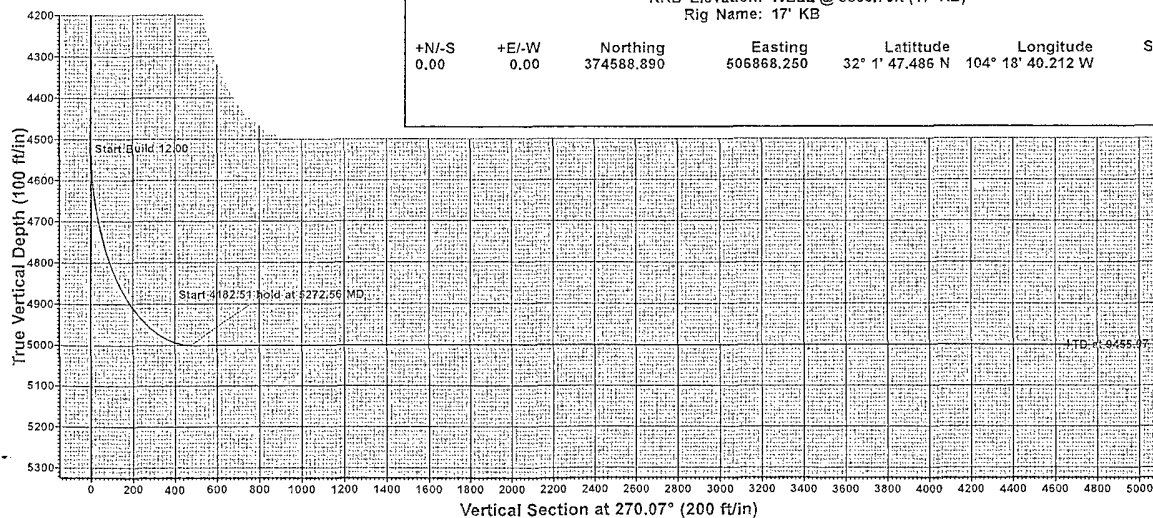
A Schlumberger Company

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4522.50	0.00	0.00	4522.50	0.00	0.00	0.00	0.00	0.00	
3	5272.56	90.00	270.07	5000.00	0.58	-477.50	12.00	270.07	477.50	
4	9455.07	90.00	270.07	5000.00	5.69	-4660.01	0.00	0.00	4660.01	PBHL(Ta#24)



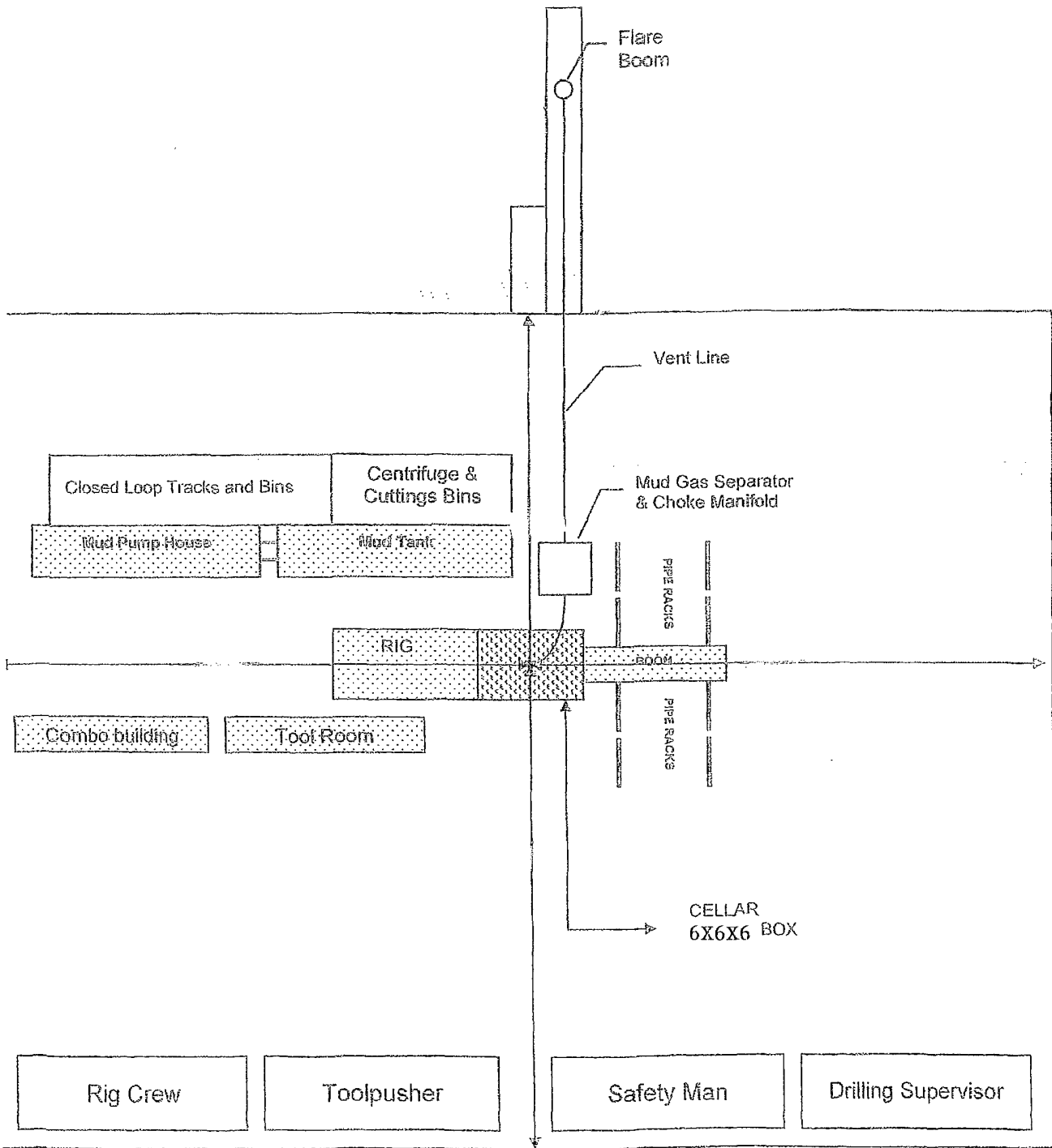
WELL DETAILS: #24							
Ground Elevation:: 3849.70							
RKB Elevation: WELL @ 3866.70ft (17' KB)							
Rig Name: 17' KB							
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
0.00	0.00	374588.890	506868.250	32° 1' 47.486 N	104° 18' 40.212 W		

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

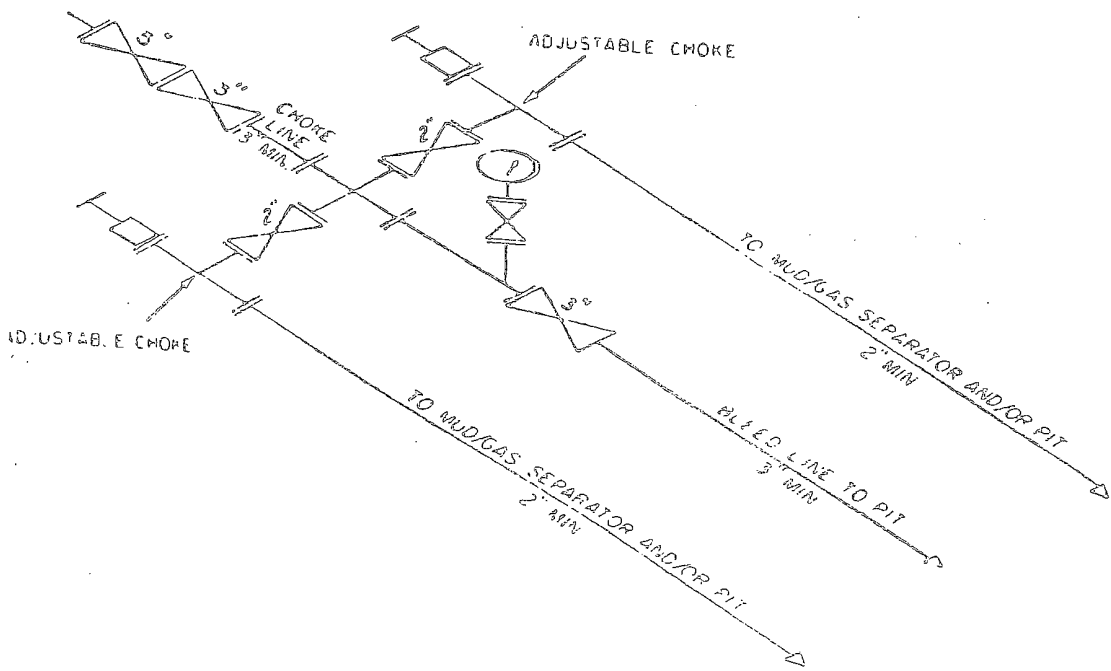
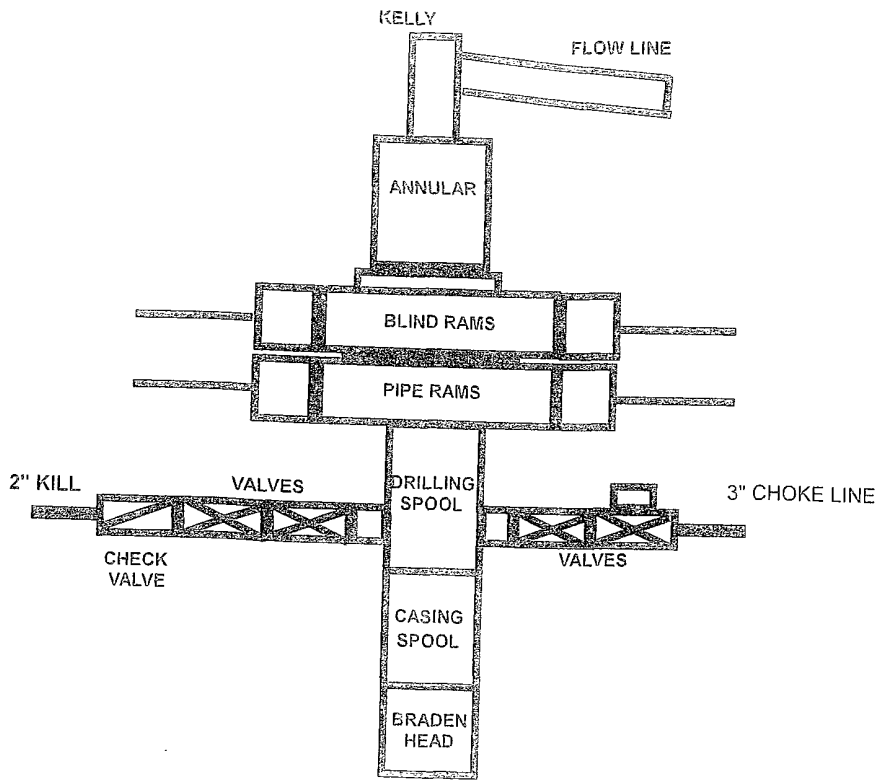


WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL(Ta#24)	5000.00	5.85	-4660.01	374594.740	502208.240	Point

3M Choke Manifold Equipment

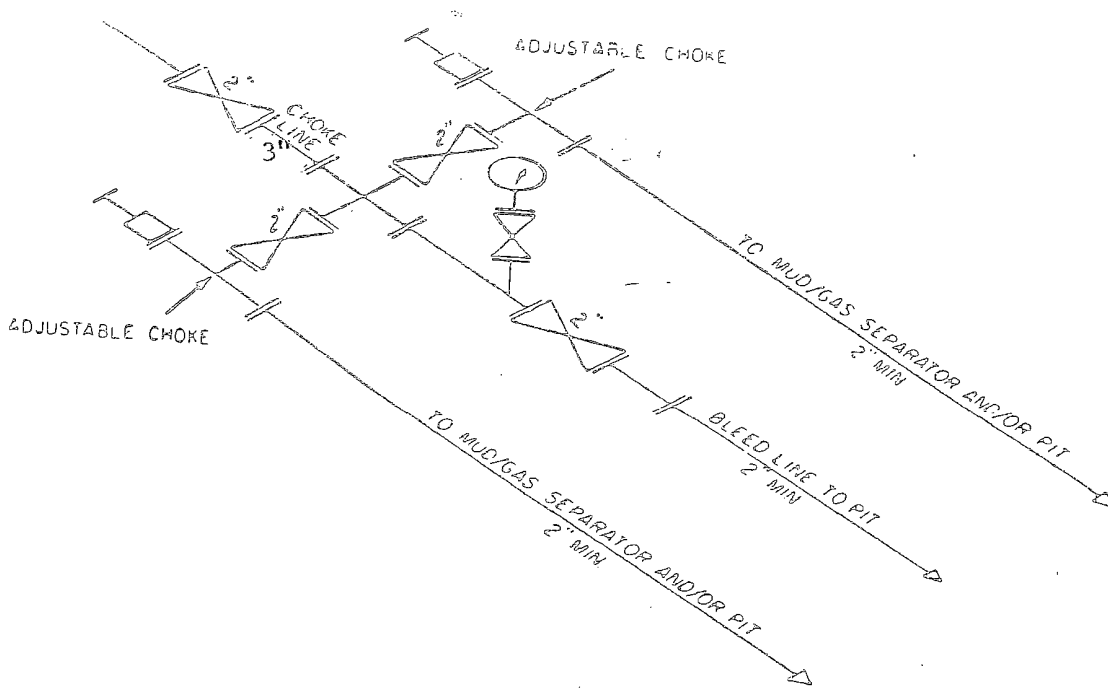
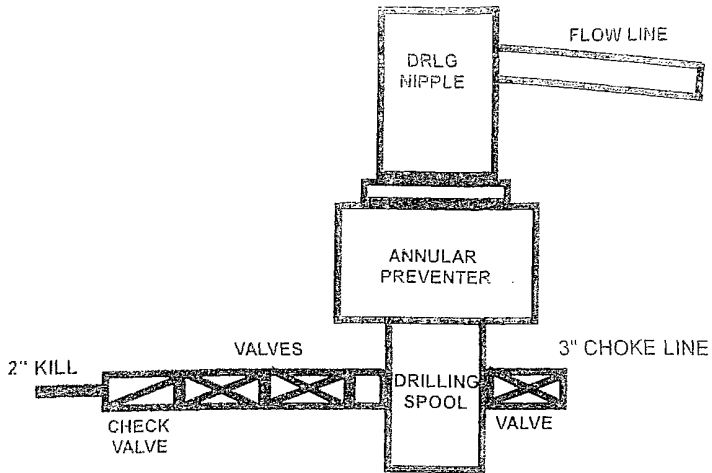


3M SYSTEM



3M CHOKE MANIFOLD EQUIPMENT - CONFIGURATION OF CHOKES
MAY VARY

2M SYSTEM



2M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES

MAY VARY

DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

(38582)

Operator COG OPERATING LLC OGRID # 229137
Well Name & # TAMAGO 24 FED #2 H Surface Type (F)(S)(P)
Location: UL H, Sect 24, Township 26 s, RNG 24E,
E 24 - 26 - 24 Sub-surface Type (F)(S)(P)

A. Date C101 rec'd / / C101 reviewed / /

B. 1. Check mark, Information is OK on Forms:

OGRID BONDING FED PROP CODE WELL # SIGNATURE

2. Inactive Well list as of: 4/13/11 # wells 2842 # Inactive wells 6

a. District Grant APD but see number of inactive wells:

No letter required ; Sent Letter to Operator , to Santa Fe

3. Additional Bonding as of: 4/13/11

a. District Denial because operator needs addition bonding:

No Letter required ; Sent Letter to Operator , To Santa Fe

b. District Denial because of Inactive well list and Financial Assurance:

No Letter required ; Sent Letter to Operator , To Santa Fe

C. C102 YES NO , Signature

1. Pool WILDCAT; BS, Code 96403

a. Dedicated acreage 160, What Units EFGH

b. SUR. Location Standard ; Non-Standard Location

c. Well shares acres: Yes , No # of wells plus this well #

2. 2nd. Operator in same acreage, Yes , No

Agreement Letter , Disagreement letter

3. Intent to Directional Drill Yes No

a. Dedicated acreage 160, What Units EFGH

b. Bottomhole Location Standard Non-Standard Bottomhole

4. Downhole Commingle: Yes , No

a. Pool #2 , Code , Acres

Pool #3 , Code , Acres

Pool #4 , Code , Acres

5. POTASH Area Yes , No

D. Blowout Preventer Yes No

E. H2S Yes , No , PART FED APD

F. C144 Pit Registration Yes , No

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes , No NSL #

2. Non-Standard Proration: Yes , No NSP #

3. Simultaneous Dedication: Yes , No SD #

Number of wells Plus #

4. Injection order Yes , No ; PMX # or WFX #

5. SWD order Yes , NO ; SWD #

6. DHC from SF ; DHC-HOB ; Holding

7. OCD Approval Date 4/13/11

API #30-014--38983

8. Reviewers