

OCD-ARTESIA

Form 3160-3
(February 2005)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007 **EA1096**

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM114349
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 Marbob Energy Corporation		7. If Unit or CA Agreement, Name and No.
3a. Address P.O. Box 227, Artesia, NM 88211-0227	3b. Phone No. (include area code) 575-748-3303	8. Lease Name and Well No. Jack Federal #1 W
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 330' FNL & 660' FWL (D) At proposed prod. zone BHL: 330' FSL & 660' FWL		9. API Well No. 30-015-38643
14. Distance in miles and direction from nearest town or post office* Approx. 8 miles from White City, NM		10. Field and Pool, or Exploratory WILD CAT G-03 5252676M
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 638.400	11. Sec., T. R. M. or Blk. and Survey or Area Section 31, T25S - R27E
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth 6100' VD 10,525' 10,518' MD 11st HNP - 9100'	12. County or Parish Eddy County
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3237' GL	22. Approximate date work will start* 07/09/2010	13. State NM
20. BLM/BIA Bond No. on file NMB000412		
23. Estimated duration 30 Days		

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. I, must 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 must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature Nancy T. Agnew	Name (Printed/Typed) Nancy T. Agnew	Date 06/09/2010
Title Land Department		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) /s/ Don Peterson	Date MAR 14 2011
Title FIELD MANAGER		
Office CARLSBAD FIELD OFFICE		

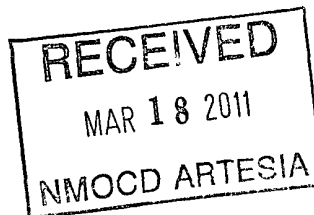
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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.

*(Instructions on page 2)

Carlsbad Controlled Water Basin



**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

KZ 04/01/11

**Approval Subject to General Requirements
& Special Stipulations Attached**

OCD-ARTESIA

Form 3160-5
(August 2007)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM114349

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2.

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No.
Jack Federal #1H2. Name of Operator
Marbob Energy Corporation

9. API Well No.

3a. Address

P.O. Box 227, Artesia, NM 88211-0227

3b. Phone No. (include area code)

575-748-3303

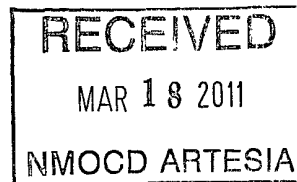
10. Field and Pool or Exploratory Area
Hay Hollow; Bone Spring, North4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Surface: 330' FNL 380' FWL Sec. 31 T25S R27E
Bottom Hole: 330' FSL 660' FWL11. Country or Parish, State
Eddy County, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Location Change
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Marbob respectfully requests a change in the surface location:

TO: SHL 330' FNL 380' FWL
BHL 330' FSL 660' FWLFROM: SHL 330' FNL 660' FWL
BHL 330' FSL 660' FWL14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)
Nancy T. Agnew

Title Land Department

Signature

Nancy T. Agnew

Date 08/16/2010

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

/s/ Don Peterson

Title

FIELD MANAGER

Date

MAR 14 2011

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

CARLSBAD FIELD OFFICE

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.

(Instructions on page 2)

MARBOB ENERGY CORPORATION
DRILLING AND OPERATIONS PROGRAM

^{390'}
Jack Federal #1H
Surf: 330' FNL & 660' FWL, Sec 31, T25S-R27E
BHL: 330' FSL & 660' FWL, Sec 31, T25S-R27E
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:

Top of Salt	450'
Base of Salt	1800'
Delaware	2000' Oil
Bone Spring	5600' Oil
TD (Pilot Hole)	9100' — See COA
TVD	6100'

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 300' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement above the base of the 9 5/8" casing.

3. Proposed Casing Program:

Hole Size	Interval <i>See COA</i>	OD Casing <i>450'</i>	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 300'	13 3/8"	New	48#	STC	H-40	1.125	1.125	1.6
12 1/4"	300' - 1900'	9 5/8"	New	36#	BUTT	J-55	1.125	1.125	1.6
7 7/8"	1900' - 10525'	5 1/2"	New	17#	LTC	N80	1.125	1.125	1.6

5. Proposed Cement Program:

- a. 13 3/8" Surf Cement to surface with 350 sk "C" wt 14.8 yield 1.34
- b. 9 5/8" Int cement to surface with 350 sk "c" wt 13.5 yield 1.69 Tail in with 200 sk "c" wt 14.8 yield 1.34
- c. 5 1/2" Prod 1st stage with 450 sk "H" Acid Soluble cement wt 15.0 yield 2.6, second stage with 650 sk "H" light wt 12.7 yield 1.91 Tail in with 100 sk "H" wt 15.6 yield 1.19 DV Tool @ 5500' TOC 1500'

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.** 400' See COA

6. Minimum Specifications for Pressure Control:

Nipple up with 2M system on 13 3/8 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: 2537.6 psi

8. 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' - 300'	Fresh Water	8.4	29	N.C.
300' - 1900'	Brine	9.9 - 10.0	29	N.C.
1900' - 10525	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.
- d. Drill stem tests will be based on geological sample shows.
- e. 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.

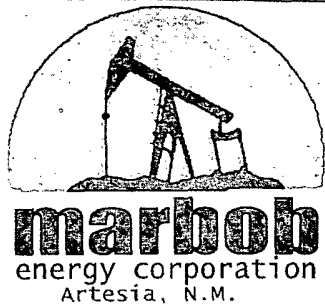
See —
COA

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. 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: 3912.48 psi. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

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



Project: Eddy County
Site: Jack Federal
Well: #1H
Wellbore: OH
Plan: Plan #1 (#1H/OH)



Azimuths to Grid North
True North: -0.05°
Magnetic North: 7.94°

Magnetic Field
Strength: 48621.1nT
Dip Angle: 59.99°
Date: 06/08/2010
Model: IGRF200510

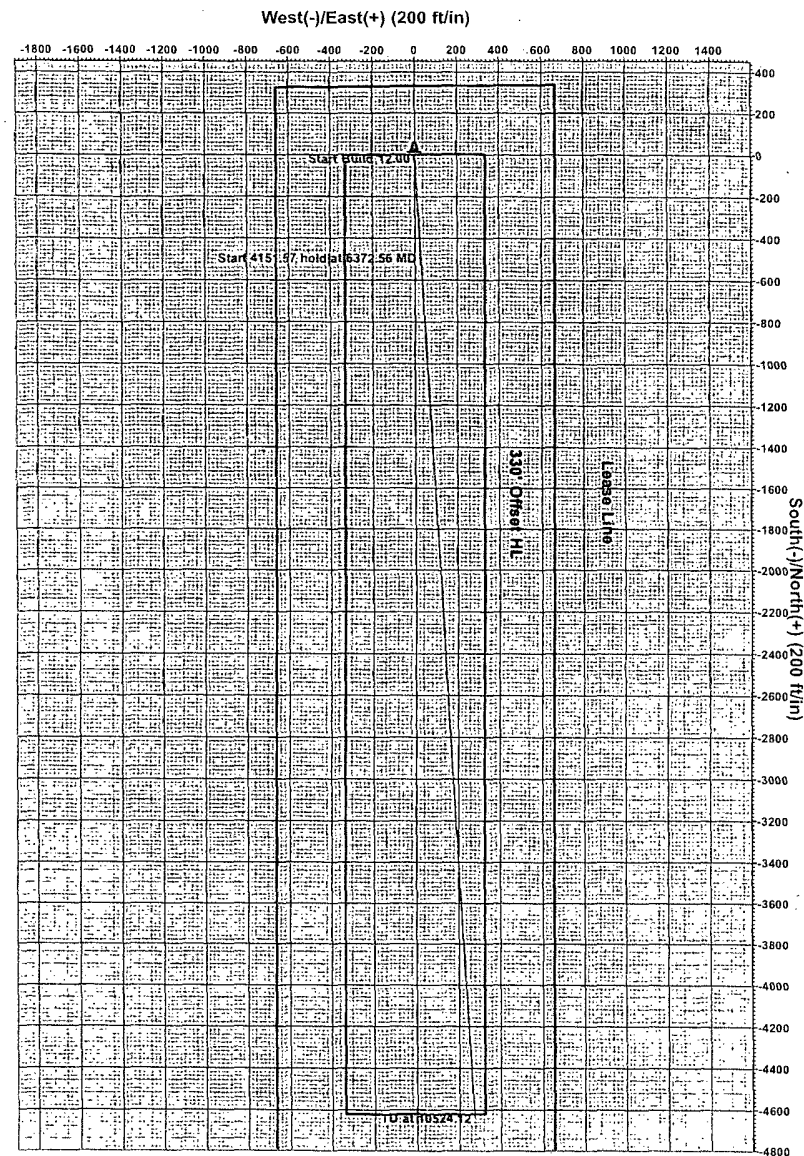
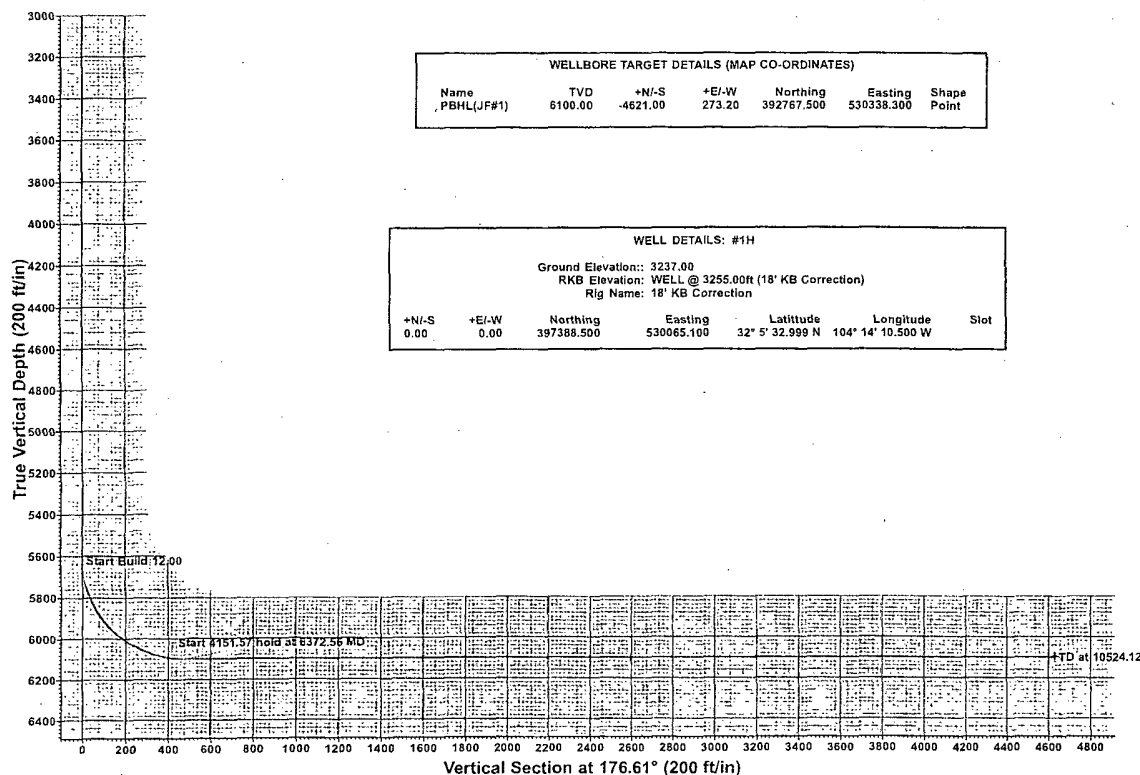
PATHFINDER

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

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5622.56	0.00	0.00	5622.56	0.00	0.00	0.00	0.00	0.00
3	6372.56	90.00	176.61	6100.00	-476.66	28.24	12.00	176.61	477.50
4	10524.12	90.00	176.61	6100.00	-4620.37	273.73	0.00	0.00	4629.07
									PBHL(JF#1)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL(JF#1)	6100.00	-4621.00	273.20	392767.500	530338.300
Shape Point					

WELL DETAILS: #1H						
Ground Elevation:: 3237.00						
RKB Elevation: WELL @ 3255.00ft (18' KB Correction)						
Rig Name: 18' KB Correction						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	397388.500	530065.100	32° 5' 32.999 N	104° 14' 10.500 W	





Marbob

Eddy County

Jack Federal

#1H

OH

Plan: Plan #1

Pathfinder X & Y Planning Report

16 August, 2010

PATHFINDER



Pathfinder

Pathfinder X & Y Planning Report



Company:	Marbob	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County	TVD Reference:	WELL @ 3255.00ft (18' KB Correction)
Site:	Jack Federal	MD Reference:	WELL @ 3255.00ft (18' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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:		Jack Federal				
Site Position:		Northing:	397,388.500 ft	Latitude:	32° 5' 32.999 N	
From:	Map	Easting:	530,065.100 ft	Longitude:	104° 14' 10.500 W	
Position Uncertainty:		0.00 ft	Slot Radius:	"	Grid Convergence:	0.05 °

Well	#1H					
Well Position	+N/-S	0.00 ft	Northing:	397,388.500 ft	Latitude:	32° 5' 32.999 N
	+E/-W	0.00 ft	Easting:	530,065.100 ft	Longitude:	104° 14' 10.500 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,237.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	06/08/2010	7.99	59.99	48,621

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	176.61

Survey Tool Program		Date 08/16/2010			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
0.00	10,524.12	Plan #1 (OH)	MWD	MWD - Standard	



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
 Project: Eddy County
 Site: Jack Federal
 Well: #1H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #1H
 TVD Reference: WELL @ 3255.00ft (18' KB Correction)
 MD Reference: WELL @ 3255.00ft (18' KB Correction)
 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	-3,255.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
100.00	0.00	0.00	100.00	-3,155.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
200.00	0.00	0.00	200.00	-3,055.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
300.00	0.00	0.00	300.00	-2,955.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
400.00	0.00	0.00	400.00	-2,855.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
500.00	0.00	0.00	500.00	-2,755.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
600.00	0.00	0.00	600.00	-2,655.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
700.00	0.00	0.00	700.00	-2,555.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
800.00	0.00	0.00	800.00	-2,455.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
900.00	0.00	0.00	900.00	-2,355.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,000.00	0.00	0.00	1,000.00	-2,255.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,100.00	0.00	0.00	1,100.00	-2,155.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,200.00	0.00	0.00	1,200.00	-2,055.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,300.00	0.00	0.00	1,300.00	-1,955.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,400.00	0.00	0.00	1,400.00	-1,855.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,500.00	0.00	0.00	1,500.00	-1,755.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,600.00	0.00	0.00	1,600.00	-1,655.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,700.00	0.00	0.00	1,700.00	-1,555.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,800.00	0.00	0.00	1,800.00	-1,455.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
1,900.00	0.00	0.00	1,900.00	-1,355.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,000.00	0.00	0.00	2,000.00	-1,255.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,100.00	0.00	0.00	2,100.00	-1,155.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,200.00	0.00	0.00	2,200.00	-1,055.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,300.00	0.00	0.00	2,300.00	-955.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,400.00	0.00	0.00	2,400.00	-855.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,500.00	0.00	0.00	2,500.00	-755.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
2,600.00	0.00	0.00	2,600.00	-655.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10



Pathfinder

Pathfinder X & Y Planning Report

PATHFINDER

Company: Marbob
 Project: Eddy County
 Site: Jack Federal
 Well: #1H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:

Well #1H
 WELL @ 3255.00ft (18' KB Correction)
 WELL @ 3255.00ft (18' KB Correction)
 Grid
 Minimum Curvature
 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	-555.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
2,800.00	0.00	0.00	2,800.00	-455.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
2,900.00	0.00	0.00	2,900.00	-355.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,000.00	0.00	0.00	3,000.00	-255.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,100.00	0.00	0.00	3,100.00	-155.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,200.00	0.00	0.00	3,200.00	-55.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,300.00	0.00	0.00	3,300.00	45.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,400.00	0.00	0.00	3,400.00	145.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,500.00	0.00	0.00	3,500.00	245.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,600.00	0.00	0.00	3,600.00	345.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,700.00	0.00	0.00	3,700.00	445.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,800.00	0.00	0.00	3,800.00	545.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
3,900.00	0.00	0.00	3,900.00	645.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,000.00	0.00	0.00	4,000.00	745.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,100.00	0.00	0.00	4,100.00	845.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,200.00	0.00	0.00	4,200.00	945.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,300.00	0.00	0.00	4,300.00	1,045.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,400.00	0.00	0.00	4,400.00	1,145.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,500.00	0.00	0.00	4,500.00	1,245.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,600.00	0.00	0.00	4,600.00	1,345.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,700.00	0.00	0.00	4,700.00	1,445.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,800.00	0.00	0.00	4,800.00	1,545.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
4,900.00	0.00	0.00	4,900.00	1,645.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
5,000.00	0.00	0.00	5,000.00	1,745.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
5,100.00	0.00	0.00	5,100.00	1,845.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
5,200.00	0.00	0.00	5,200.00	1,945.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	
5,300.00	0.00	0.00	5,300.00	2,045.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10	



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
 Project: Eddy County
 Site: Jack Federal
 Well: #1H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:

Well #1H:
 WELL @ 3255.00ft (18' KB Correction)
 WELL @ 3255.00ft (18' KB Correction)
 Grid
 Minimum Curvature
 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)
5,400.00	0.00	0.00	5,400.00	2,145.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
5,500.00	0.00	0.00	5,500.00	2,245.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
5,600.00	0.00	0.00	5,600.00	2,345.00	0.00	0.00	0.00	0.00	397,388.50	530,065.10
5,622.50	0.00	0.00	5,622.50	2,367.50	0.00	0.00	0.00	0.00	397,388.50	530,065.10
5,625.00	0.30	176.61	5,625.00	2,370.00	-0.01	0.00	0.01	12.00	397,388.49	530,065.10
5,650.00	3.30	176.61	5,649.98	2,394.98	-0.79	0.05	0.79	12.00	397,387.71	530,065.15
5,675.00	6.30	176.61	5,674.89	2,419.89	-2.88	0.17	2.88	12.00	397,385.62	530,065.27
5,700.00	9.30	176.61	5,699.66	2,444.66	-6.26	0.37	6.28	12.00	397,382.24	530,065.47
5,725.00	12.30	176.61	5,724.21	2,469.21	-10.94	0.65	10.96	12.00	397,377.56	530,065.75
5,750.00	15.30	176.61	5,748.49	2,493.49	-16.89	1.00	16.92	12.00	397,371.61	530,066.10
5,775.00	18.30	176.61	5,772.42	2,517.42	-24.10	1.43	24.15	12.00	397,364.40	530,066.53
5,800.00	21.30	176.61	5,795.94	2,540.94	-32.56	1.93	32.61	12.00	397,355.94	530,067.03
5,825.00	24.30	176.61	5,818.98	2,563.98	-42.22	2.50	42.30	12.00	397,346.28	530,067.60
5,850.00	27.30	176.61	5,841.49	2,586.49	-53.08	3.14	53.18	12.00	397,335.42	530,068.24
5,875.00	30.30	176.61	5,863.40	2,608.40	-65.11	3.86	65.22	12.00	397,323.39	530,068.96
5,900.00	33.30	176.61	5,884.64	2,629.64	-78.25	4.64	78.39	12.00	397,310.25	530,069.74
5,925.00	36.30	176.61	5,905.17	2,650.17	-92.49	5.48	92.66	12.00	397,296.01	530,070.58
5,950.00	39.30	176.61	5,924.92	2,669.92	-107.79	6.38	107.98	12.00	397,280.71	530,071.48
5,975.00	42.30	176.61	5,943.84	2,688.84	-124.09	7.35	124.31	12.00	397,264.41	530,072.45
6,000.00	45.30	176.61	5,961.89	2,706.89	-141.36	8.37	141.61	12.00	397,247.14	530,073.47
6,025.00	48.30	176.61	5,979.00	2,724.00	-159.55	9.45	159.83	12.00	397,228.95	530,074.55
6,050.00	51.30	176.61	5,995.14	2,740.14	-178.61	10.58	178.92	12.00	397,209.89	530,075.68
6,075.00	54.30	176.61	6,010.25	2,755.25	-198.48	11.76	198.83	12.00	397,190.02	530,076.86
6,100.00	57.30	176.61	6,024.30	2,769.30	-219.12	12.98	219.51	12.00	397,169.38	530,078.08
6,125.00	60.30	176.61	6,037.25	2,782.25	-240.46	14.24	240.89	12.00	397,148.04	530,079.34
6,150.00	63.30	176.61	6,049.07	2,794.07	-262.46	15.55	262.92	12.00	397,126.04	530,080.65
6,175.00	66.30	176.61	6,059.71	2,804.71	-285.03	16.88	285.53	12.00	397,103.47	530,081.98



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
Project: Eddy County
Site: Jack Federal
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H

WELL @ 3255.00ft (18' KB Correction)
WELL @ 3255.00ft (18' KB Correction)
Grid
Minimum Curvature
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)
6,200.00	69.29	176.61	6,069.16	2,814.16	-308.14	18.25	308.68	12.00	397,080.36	530,083.35
6,225.00	72.29	176.61	6,077.38	2,822.38	-331.70	19.65	332.28	12.00	397,056.80	530,084.75
6,250.00	75.29	176.61	6,084.36	2,829.36	-355.66	21.07	356.29	12.00	397,032.84	530,086.17
6,275.00	78.29	176.61	6,090.07	2,835.07	-379.96	22.51	380.62	12.00	397,008.54	530,087.61
6,300.00	81.29	176.61	6,094.50	2,839.50	-404.51	23.96	405.22	12.00	396,983.99	530,089.06
6,325.00	84.29	176.61	6,097.63	2,842.63	-429.27	25.43	430.02	12.00	396,959.23	530,090.53
6,350.00	87.29	176.61	6,099.47	2,844.47	-454.16	26.90	454.95	12.00	396,934.34	530,092.00
6,372.56	90.00	176.61	6,100.00	2,845.00	-476.66	28.24	477.50	12.00	396,911.84	530,093.34
6,400.00	90.00	176.61	6,100.00	2,845.00	-504.06	29.86	504.94	0.00	396,884.44	530,094.96
6,500.00	90.00	176.61	6,100.00	2,845.00	-603.89	35.77	604.94	0.00	396,784.61	530,100.87
6,600.00	90.00	176.61	6,100.00	2,845.00	-703.71	41.68	704.94	0.00	396,684.79	530,106.78
6,700.00	90.00	176.61	6,100.00	2,845.00	-803.54	47.60	804.94	0.00	396,584.96	530,112.70
6,800.00	90.00	176.61	6,100.00	2,845.00	-903.36	53.51	904.94	0.00	396,485.14	530,118.61
6,900.00	90.00	176.61	6,100.00	2,845.00	-1,003.19	59.42	1,004.94	0.00	396,385.31	530,124.52
7,000.00	90.00	176.61	6,100.00	2,845.00	-1,103.01	65.34	1,104.94	0.00	396,285.49	530,130.44
7,100.00	90.00	176.61	6,100.00	2,845.00	-1,202.84	71.25	1,204.94	0.00	396,185.66	530,136.35
7,200.00	90.00	176.61	6,100.00	2,845.00	-1,302.66	77.16	1,304.94	0.00	396,085.84	530,142.26
7,300.00	90.00	176.61	6,100.00	2,845.00	-1,402.49	83.08	1,404.94	0.00	395,986.01	530,148.18
7,400.00	90.00	176.61	6,100.00	2,845.00	-1,502.31	88.99	1,504.94	0.00	395,886.19	530,154.09
7,500.00	90.00	176.61	6,100.00	2,845.00	-1,602.14	94.90	1,604.94	0.00	395,786.36	530,160.00
7,600.00	90.00	176.61	6,100.00	2,845.00	-1,701.96	100.82	1,704.94	0.00	395,686.54	530,165.92
7,700.00	90.00	176.61	6,100.00	2,845.00	-1,801.79	106.73	1,804.94	0.00	395,586.71	530,171.83
7,800.00	90.00	176.61	6,100.00	2,845.00	-1,901.61	112.64	1,904.94	0.00	395,486.89	530,177.74
7,900.00	90.00	176.61	6,100.00	2,845.00	-2,001.44	118.56	2,004.94	0.00	395,387.06	530,183.66
8,000.00	90.00	176.61	6,100.00	2,845.00	-2,101.26	124.47	2,104.94	0.00	395,287.24	530,189.57
8,100.00	90.00	176.61	6,100.00	2,845.00	-2,201.09	130.38	2,204.94	0.00	395,187.41	530,195.48
8,200.00	90.00	176.61	6,100.00	2,845.00	-2,300.91	136.30	2,304.94	0.00	395,087.59	530,201.40



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
Project: Eddy County
Site: Jack Federal
Well: #1H
Wellbore: OH
Design: Plan #1

Local Coordinate Reference: Well #1H
TVD Reference: WELL @ 3255.00ft (18' KB Correction)
MD Reference: WELL @ 3255.00ft (18' KB Correction)
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	176.61	6,100.00	2,845.00	-2,400.74	142.21	2,404.94	0.00	394,987.76	530,207.31
8,400.00	90.00	176.61	6,100.00	2,845.00	-2,500.56	148.12	2,504.94	0.00	394,887.94	530,213.22
8,500.00	90.00	176.61	6,100.00	2,845.00	-2,600.39	154.04	2,604.94	0.00	394,788.11	530,219.14
8,600.00	90.00	176.61	6,100.00	2,845.00	-2,700.21	159.95	2,704.94	0.00	394,688.29	530,225.05
8,700.00	90.00	176.61	6,100.00	2,845.00	-2,800.04	165.86	2,804.94	0.00	394,588.46	530,230.96
8,800.00	90.00	176.61	6,100.00	2,845.00	-2,899.86	171.78	2,904.94	0.00	394,488.64	530,236.88
8,900.00	90.00	176.61	6,100.00	2,845.00	-2,999.69	177.69	3,004.94	0.00	394,388.81	530,242.79
9,000.00	90.00	176.61	6,100.00	2,845.00	-3,099.51	183.60	3,104.94	0.00	394,288.99	530,248.70
9,100.00	90.00	176.61	6,100.00	2,845.00	-3,199.34	189.52	3,204.94	0.00	394,189.16	530,254.62
9,200.00	90.00	176.61	6,100.00	2,845.00	-3,299.16	195.43	3,304.94	0.00	394,089.34	530,260.53
9,300.00	90.00	176.61	6,100.00	2,845.00	-3,398.99	201.34	3,404.94	0.00	393,989.51	530,266.44
9,400.00	90.00	176.61	6,100.00	2,845.00	-3,498.81	207.25	3,504.94	0.00	393,889.69	530,272.35
9,500.00	90.00	176.61	6,100.00	2,845.00	-3,598.64	213.17	3,604.94	0.00	393,789.86	530,278.27
9,600.00	90.00	176.61	6,100.00	2,845.00	-3,698.46	219.08	3,704.94	0.00	393,690.04	530,284.18
9,700.00	90.00	176.61	6,100.00	2,845.00	-3,798.29	224.99	3,804.94	0.00	393,590.21	530,290.09
9,800.00	90.00	176.61	6,100.00	2,845.00	-3,898.11	230.91	3,904.94	0.00	393,490.39	530,296.01
9,900.00	90.00	176.61	6,100.00	2,845.00	-3,997.94	236.82	4,004.94	0.00	393,390.56	530,301.92
10,000.00	90.00	176.61	6,100.00	2,845.00	-4,097.76	242.73	4,104.94	0.00	393,290.74	530,307.83
10,100.00	90.00	176.61	6,100.00	2,845.00	-4,197.59	248.65	4,204.94	0.00	393,190.91	530,313.75
10,200.00	90.00	176.61	6,100.00	2,845.00	-4,297.41	254.56	4,304.94	0.00	393,091.09	530,319.66
10,300.00	90.00	176.61	6,100.00	2,845.00	-4,397.24	260.47	4,404.94	0.00	392,991.26	530,325.57
10,400.00	90.00	176.61	6,100.00	2,845.00	-4,497.06	266.39	4,504.94	0.00	392,891.44	530,331.49
10,500.00	90.00	176.61	6,100.00	2,845.00	-4,596.89	272.30	4,604.94	0.00	392,791.61	530,337.40
10,524.12	90.00	176.61	6,100.00	2,845.00	-4,620.97	273.73	4,629.07	0.00	392,767.53	530,338.83



Pathfinder
Pathfinder X & Y Planning Report



Company: Marbob
Project: Eddy County
Site: Jack Federal
Well: #1H
Wellbore: OH
Design: Plan #1

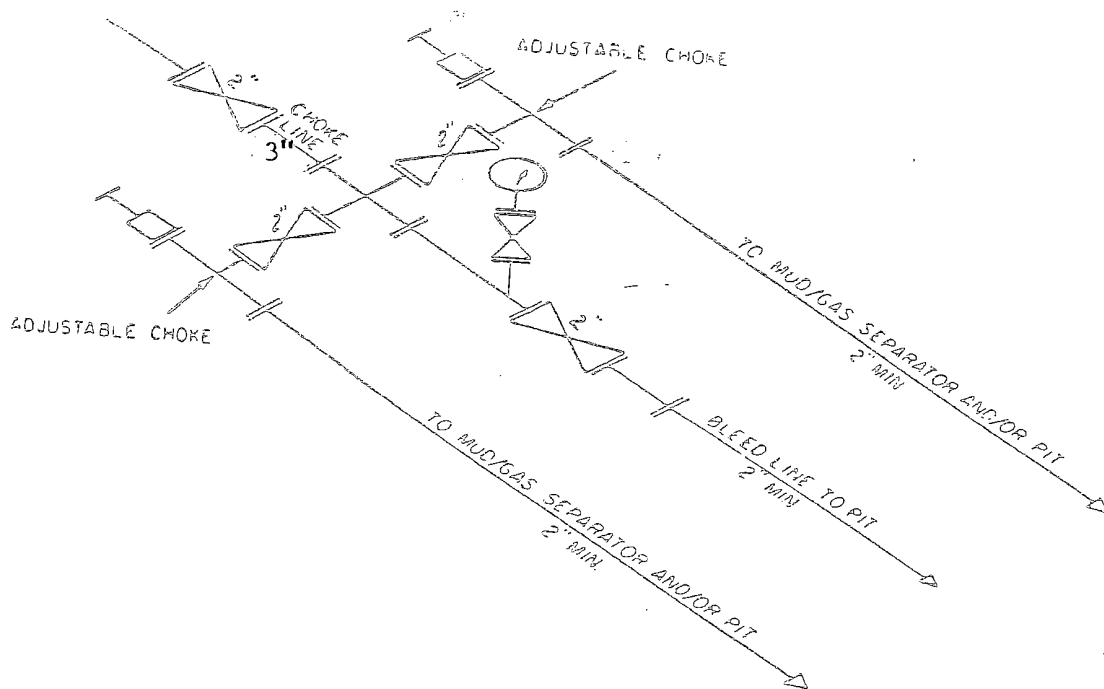
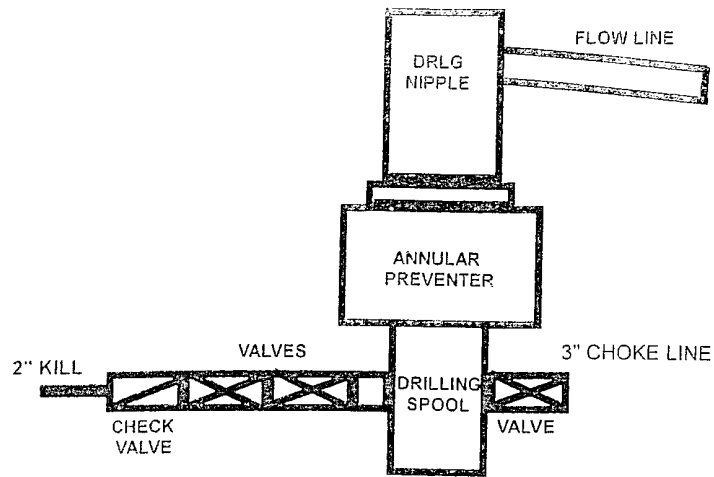
Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3255.00ft (18' KB Correction)
MD Reference: WELL @ 3255.00ft (18' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Targets

Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL(JF#1)	- plan hits target center - Point	0.00	0.00	6,100.00	-4,621.00	273.20	392,767.500	530,338.300	32° 4' 47.264 N	104° 14' 7.373 W

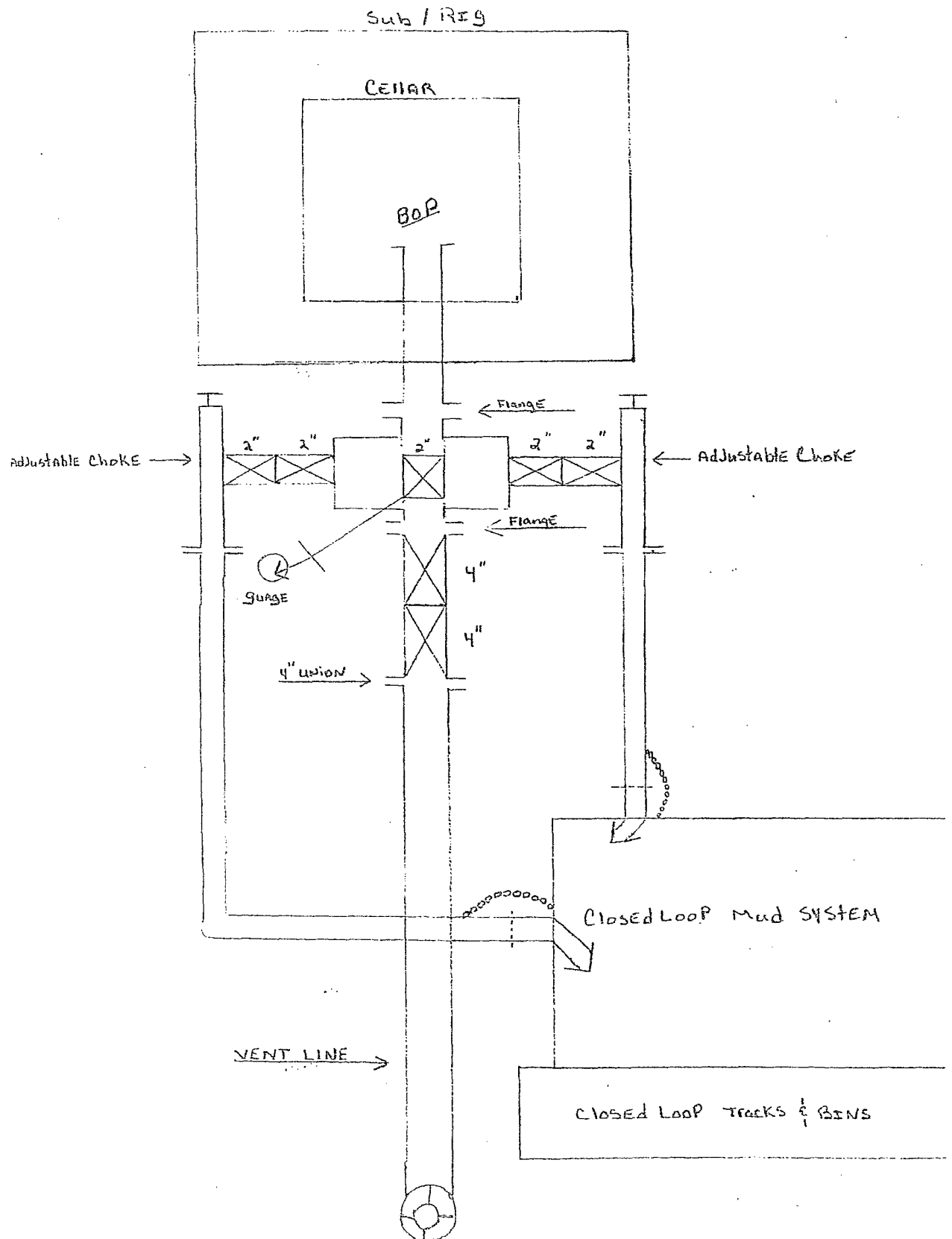
Checked By: _____ Approved By: _____ Date: _____

2M SYSTEM

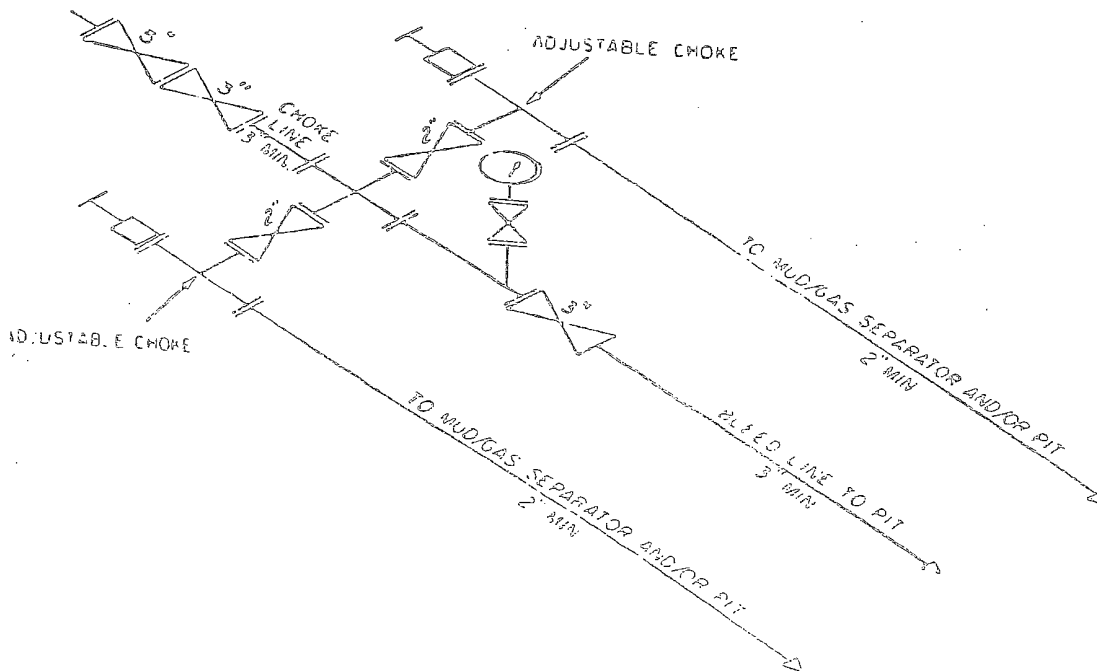
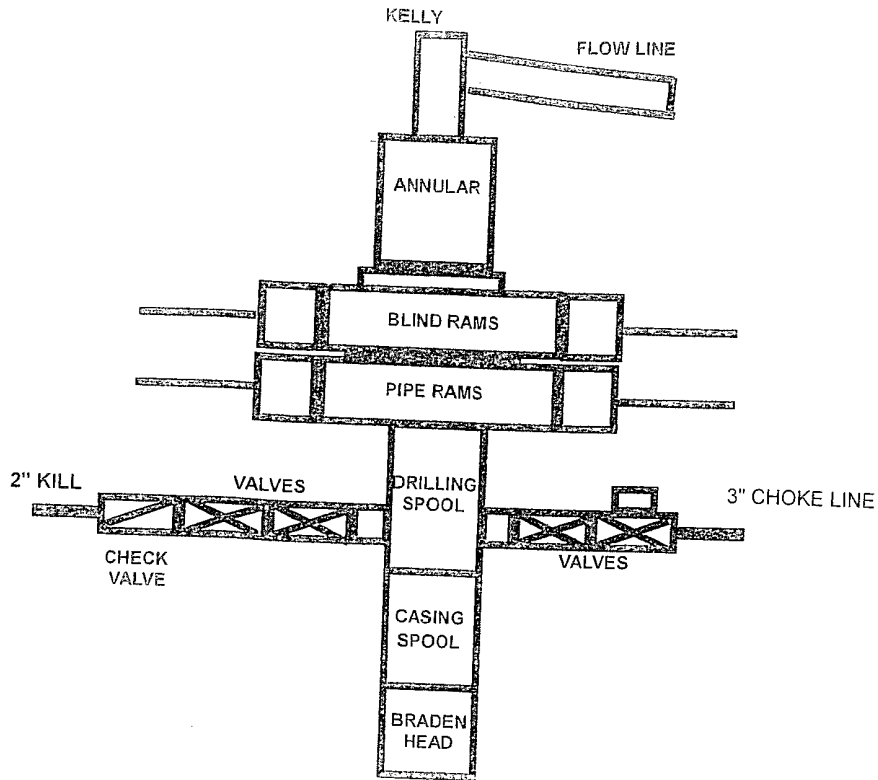


2M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES
MAY VARY

2M Choke Manifold Equipment

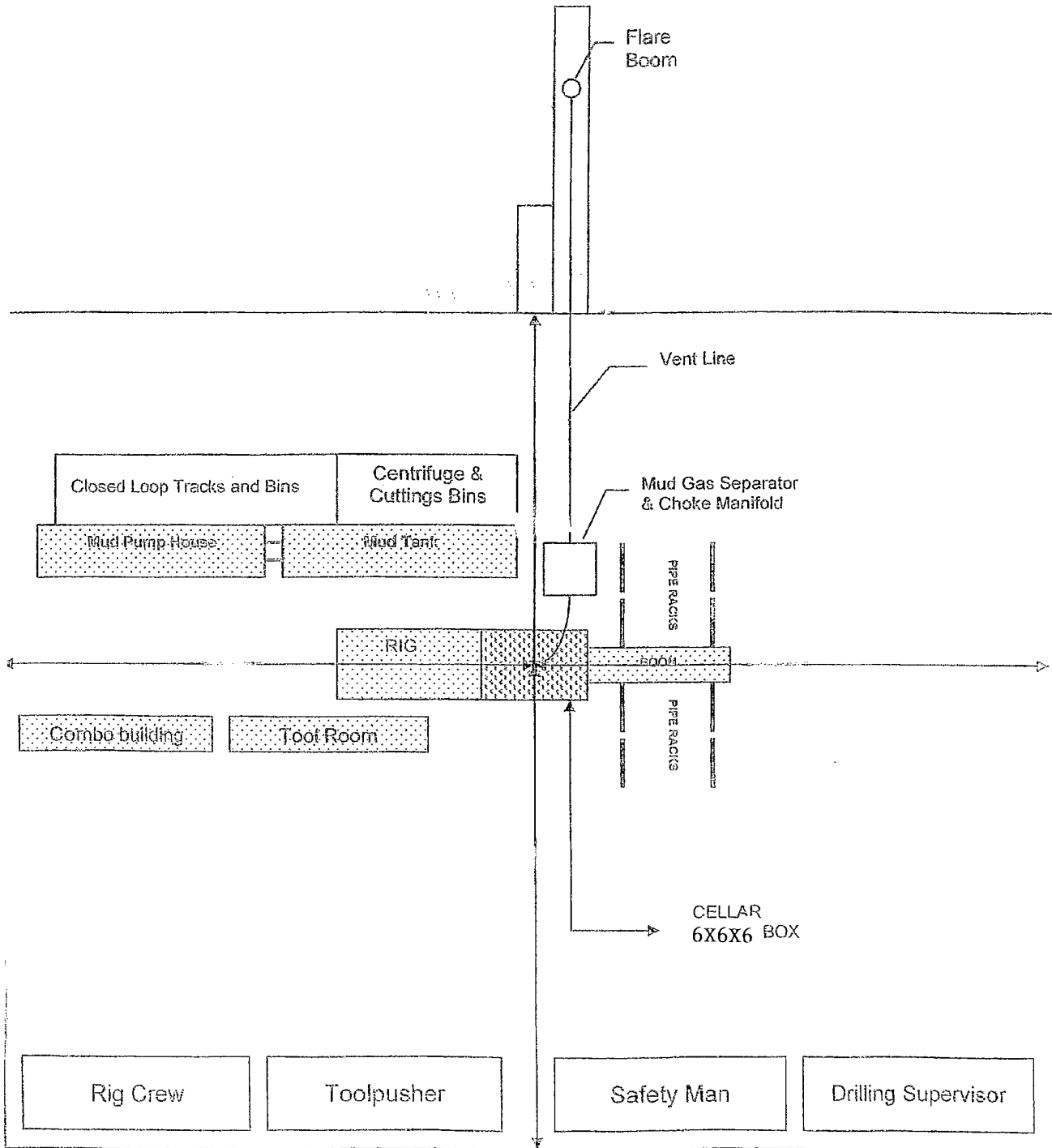


3M SYSTEM



3M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES
MAY VARY

3M Choke Manifold Equipment



DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

Operator COG OPERATING LLC OGRID # 229137
 Well Name & # JACK FEDERAL #1H Surface Type (F)(S)(P)
 Location: UL 31, Sect 25, Township 25 s, RNG 27 e, 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: 4/1/11 # wells 2828 # Inactive wells 7

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: 4/1/11

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 BONESPRING

1. Pool WILDCAT G-03 5252636M Code 92818

a. Dedicated acreage 160, What Units DELM

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 DELM

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 FED

D. Blowout Preventer Yes ☒ No

E. H2S Yes , No Part FED APD

F. C144 Pit Registration Yes , No ☒ need

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 / /

API #30-0 15-38643

8. Reviewers