AT5-10-629

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NMOCD ARTESIA

OCD-ARTESIA

Form 3160-3
(February 2005)

# Split Estate

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007 FA-10-838

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No
SL: VO-6322,BHL: NMNM057239 BHL

6 If Indian, Allotee or Tribe Name

1a Type of work ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No

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

8 Lease Name and Well No (38297)
Lizard Pot State Com #3H

2 Name of Operator
Marbob Energy Corporation (14049)

9 API Well No
30-015-38147

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
WC Williams Sink; Bone Spring (97650)

4 Location of Well *(Report location clearly and in accordance with any State requirements *)*
At surface 1650' FSL & 2310' FEL (J)
At proposed prod zone BHL: 330' FSL & 1980' FEL

11 Sec, T R M or Blk and Survey or Area
SL: Sec 36, T19S - R31E
BHL: Sec 1, T20S - R31E

14 Distance in miles and direction from nearest town or post office*
About 6 miles from Halfway, NM

12 County or Parish
Eddy County

13 State
NM

| 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 SL: 320.00 BHL: 637.480 | 17 Spacing Unit dedicated to this well 240 |
|---|---|---|
| 18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft | 19 Proposed Depth TVD: 9405' MD: 15797' 9400' | 20 BLM/BIA Bond No on file NMB000412 |
| 21 Elevations (Show whether DF, KDB, RT, GL, etc) 3487' GL | 22 Approximate date work will start* 07/15/2010 | 23 Estimated duration 40 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

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

| 25 Signature Nancy T. Agnew | Name *(Printed Typed)* Nancy T. Agnew | Date 06/15/2010 |
|---|---|---|
| Title Land Department | | |
| Approved by *(Signature)* /s/ Linda S.C. Rundell | Name *(Printed Typed)* | Date AUG 18 2010 |
| Title STATE DIRECTOR | Office NM STATE 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)

KZ 09/13/10

CAPITAN CONTROLLED WATER BASIN

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

SEE ATTACHED FOR CONDITIONS OF APPROVAL

DISTRICT I
1625 N FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410

DISTRICT IV
11885 S ST FRANCIS DR., SANTA FE NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

# OIL CONSERVATION DIVISION
11885 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015-38147 | 97650 | WC WILLIAMS SINK; BONE SPRING |

| Property Code | Property Name | Well Number |
|---|---|---|
| 38297 | LIZARD POT STATE COM | 3 |

| OGRID No | Operator Name | Elevation |
|---|---|---|
| 14049 | MARBOB ENERGY CORPORATION | 3487' |

### Surface Location

| UL or lot No | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| J | 36 | 19-S | 31-E | | 1650 | SOUTH | 2310 | EAST | EDDY |

### Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 1 | 20-S | 31-E | | 330 | SOUTH | 1980 | EAST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No |
|---|---|---|---|
| 240 | | | |

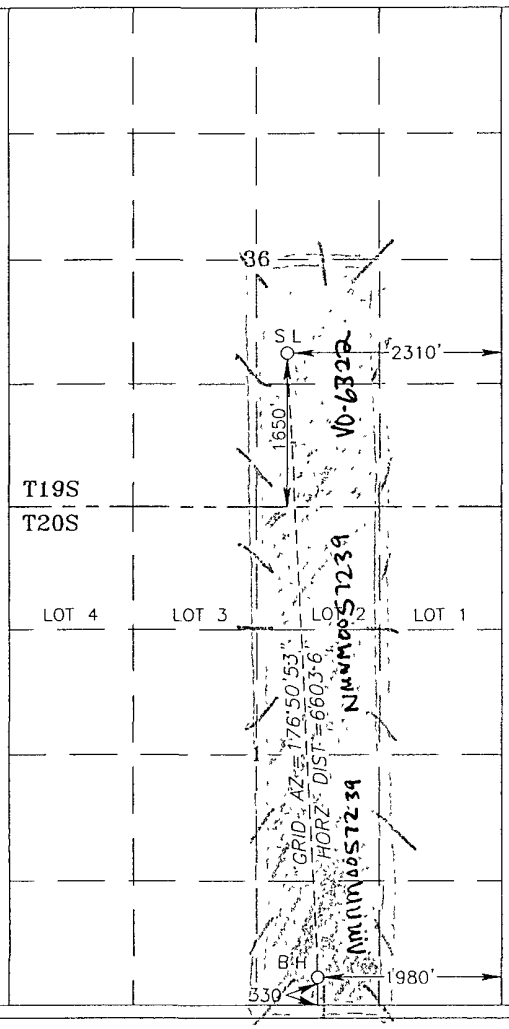
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=587509 7 N
X=657709 8 E

LAT.=32 614124° N
LONG =103 821143° W

BOTTOM HOLE LOCATION
Y=580917 7 N
X=658072 7 E




SCALE 1"=2000'

### OPERATOR CERTIFICATION

*I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division*

Nancy T. Agnew 6/15/10
Signature Date

Nancy T. Agnew
Printed Name

### SURVEYOR CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief*

MAY 25, 2010
Date Surveyed

Signature & Seal of Professional Surveyor

Ronald J. Eidson 06/04/2010

10 11 0783

Certificate No GARY G EIDSON 12641
RONALD J. EIDSON 3239

JUN 07 2010

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Date: June 15, 2010

Lease #: SL: VO-6322
BHL: NMNM0057239
Lizard Pot State Com #3H

Legal Description: SL: Sec. 36-T19S-R31E
BHL: Sec. 1, T20S-R31E
Eddy County, New Mexico

Formation(s): Permian

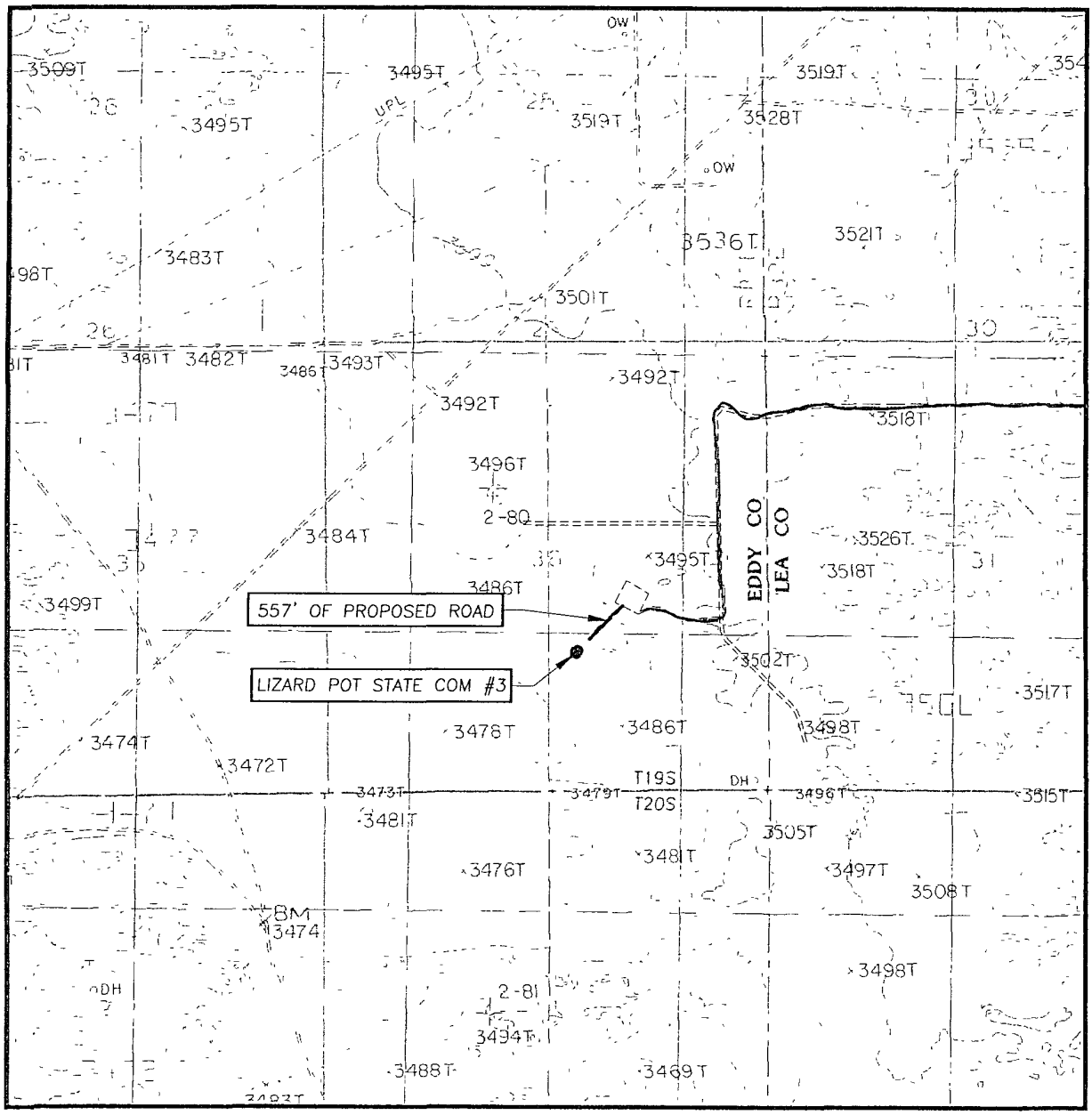
Bond Coverage: Statewide

BLM Bond File #: NMB000412

Marbob Energy Corporation

Nancy Agnew
Land Department

# LOCATION VERIFICATION MAP




SCALE 1" = 2000'

CONTOUR INTERVAL
WILLIAMS SINK, N M – 10'
GREENWOOD LAKE, N M – 10'

SEC 36 TWP 19-S RGE 31-E

SURVEY N M P M

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1650' FSL & 2310' FEL

ELEVATION 3487'

OPERATOR MARBOB ENERGY CORPORATION

LEASE LIZARD POT STATE COM

U S G S TOPOGRAPHIC MAP
WILLIAMS SINK, N M

**Existing Roads**

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N M 88240
(575) 393-3117

**Exhibit #2**

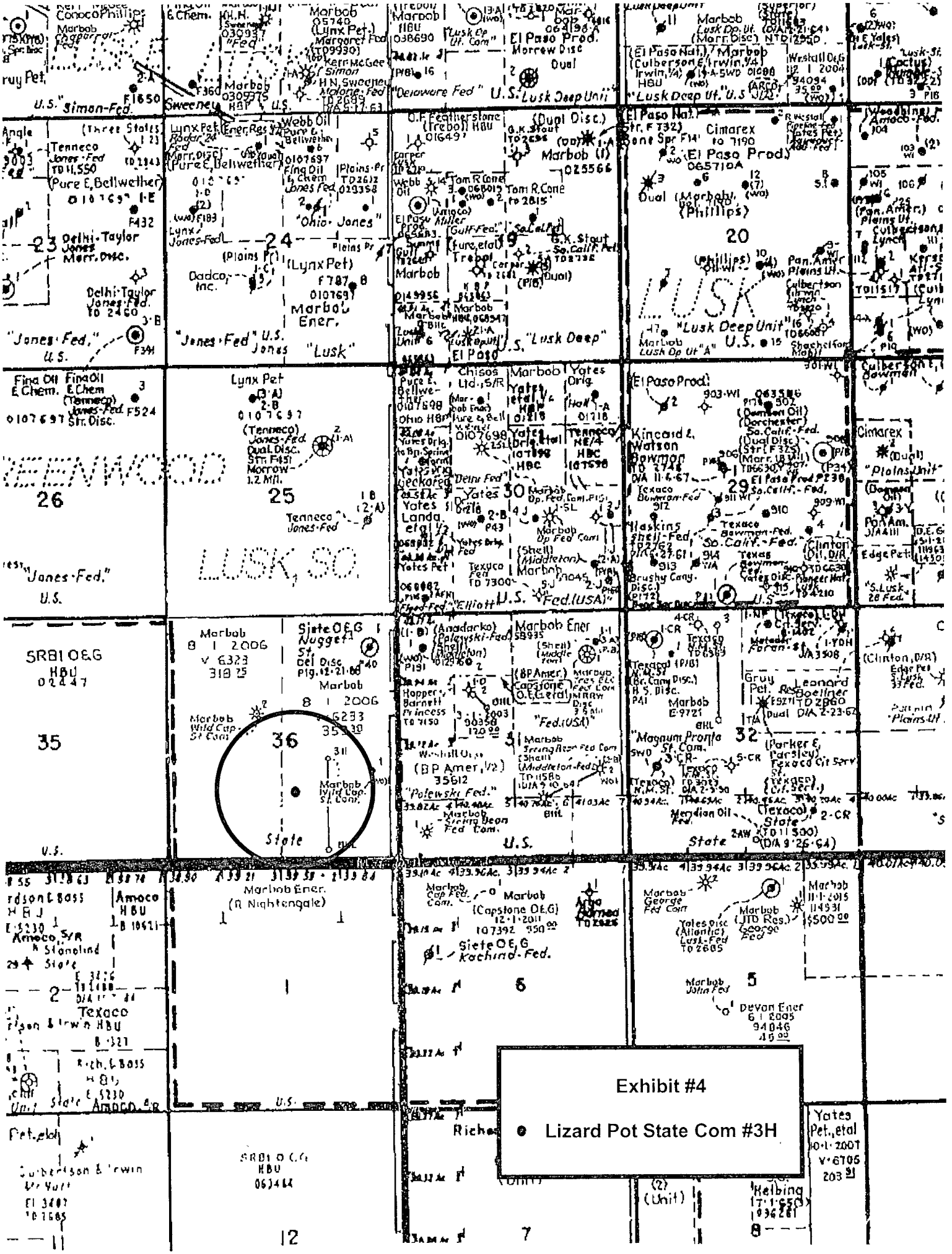


Exhibit #4
Lizard Pot State Com #3H

**MARBOB ENERGY CORPORATION**
**DRILLING AND OPERATIONS PROGRAM**

**Lizard Pot State Com #3H**
**Surf: 1650' FSL & 2310' FEL, Sec 36, T19S-R31E**
**BHL: 330' FSL & 1980' FEL, Sec 1, T20S-R31E**
**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:

| | | |
|---|---|---|
| Rustler | 875' | |
| Top of Salt | 1040' | |
| Base of Salt | 2535' | |
| Yates | 2785' | Oil |
| 7 Rivers | 3065' | |
| Reef | 3165' | |
| Delaware | 4450' | Oil |
| Bone Spring | 7310' | |
| 1st BS | 8475' | Oil |
| 2nd BS | 9065' | Oil |
| 3rd BS | 10030' | Oil |
| Wolfcamp | 10615' | |
| TD | 10815' | |
| TVD | 9405' | |
| TMD | 15797' | |

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 900' and circulating cement back to surface. All intervals will be isolated by setting 5 ½" casing to total depth and circulating cement above the base of the 9 5/8" casing.

3. **Proposed Casing Program:**

| Hole Size | Interval | OD Casing | New or Used | Wt | Collar | Grade | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---|---|---|---|---|---|---|---|---|---|
| 17 ½" | 0' –900' | 13 3/8" | New | 54.5# | STC | J-55 | 1.125 | 1.125 | 1.6 |
| 12 ¼" | 0' – 3450' | 9 5/8" | New | 36# | BUTT | J-55 | 1.125 | 1.125 | 1.6 |
| 12 ¼" | 3450' – 4100' | 9 5/8" | New | 40# | BUTT | J-55 | 1.125 | 1.125 | 1.6 |
| 7 7/8" | 4100' – ~~15997'~~ 15797 | 5 ½" | New | 17# | LTC | Top 5000' S95/P110<br>Bottom ~~10130'~~ N80 10797 | 1.125 | 1.125 | 1.6 |

* Marbob proposes to drill intermediate hole to 4100' with brine water if lost circulation is encountered in the reef will immediately switch to fresh water and drill to csg setting depth

Revised 7/15/10

**5. Proposed Cement Program:**

| | |
|---|---|
| a. 13 3/8" Surf | Cement to surface with 500 sk "C" light wt 13.5 yield 1.69 Tail in with 200 sk "c" wt 14.8 yield 1.34 |
| b. 9 5/8" Int | cement 1st stage with 300 sk "c" light wt 12.7 yield 1.91 Tail in with 200 sk "c" wt 14.8 yield 1.34. 2nd stage with 600 sk "c" light wt 12.7 yield 1.91 Tail in with 100 sk "c" wt 14.8 yield 1.34 TOC ~~700'~~ Surface - See COA Surf packer stage collar @ 2800' |
| c. 5 1/2" Prod | Cement 1st stage with 600 sk acid soluble "H" wt 15.0 yield 2.6, second stage with 750 sk "H" light wt 12.7 yield 1.91 Tail in with 100 sk "H" wt 13.0 yield 1.64. DV @ 8850' TOC 2800' |

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'~~ 1350' - See COA 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 tested to 2000 psi, 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:** 3912.48 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' – 900' | Fresh Water | 8.4 | 29 | N.C. |
| 900' – 4100' | Brine | 9.9 – 10.0 | 29 | N.C. |
| 4100' – 15797' | Cut Brine | 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 ½" 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:**

a. Drill stem tests will be based on geological sample shows.
See COA — 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 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

**11. 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. 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.

**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 40 days.

marbob
energy corporation
Artesia, N.M.

# Marbob

Eddy County
Lizard Pot State Com
#3H
OH

Plan: Plan #1

# Pathfinder X & Y Planning Report

08 June, 2010

PATHFINDER

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project: | Eddy County | TVD Reference: | WELL @ 3505.00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505.00ft (18' KB) |
| Well: | #3H | 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** Lizard Pot State Com

| | | | | | |
|---|---|---|---|---|---|
| Site Position: | | Northing: | 586,506 400 ft | Latitude: | 32° 36' 41 027 N |
| From: | Map | Easting: | 655,405 700 ft | Longitude: | 103° 49' 43.108 W |
| Position Uncertainty: | 0 00 ft | Slot Radius: | " | Grid Convergence: | 0 27 ° |

**Well** #3H

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Position | +N/-S | 0 00 ft | Northing: | 587,509 700 ft | Latitude: | 32° 36' 50 846 N |
| | +E/-W | 0 00 ft | Easting: | 657,709 800 ft | Longitude: | 103° 49' 16 115 W |
| Position Uncertainty | | 0 00 ft | Wellhead Elevation: | ft | Ground Level: | 3,487 00 ft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 06/08/2010 | 7 84 | 60 55 | 48,957 |

**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 | 176 85 |

**Survey Tool Program** Date 06/08/2010

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0 00 | 15,797 04 | Plan #1 (OH) | MWD | MWD - Standard |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #3H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3505 00ft (18' KB) |
| **Site:** | Lizard Pot State Com | **MD Reference:** | WELL @ 3505 00ft (18' KB) |
| **Well:** | #3H | **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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 00 | 0 00 | 0 00 | 0 00 | -3,505 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 100 00 | 0 00 | 0 00 | 100 00 | -3,405 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 200 00 | 0 00 | 0 00 | 200 00 | -3,305 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 300 00 | 0 00 | 0 00 | 300 00 | -3,205 00 | 0 00 | 0.00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 400 00 | 0 00 | 0 00 | 400 00 | -3,105 00 | 0 00 | 0 00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 500 00 | 0 00 | 0 00 | 500 00 | -3,005 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 600 00 | 0 00 | 0 00 | 600 00 | -2,905 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 700 00 | 0 00 | 0 00 | 700.00 | -2,805 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 800 00 | 0 00 | 0 00 | 800 00 | -2,705 00 | 0 00 | 0 00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 900 00 | 0 00 | 0 00 | 900 00 | -2,605 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,000 00 | 0 00 | 0 00 | 1,000 00 | -2,505 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,100 00 | 0 00 | 0 00 | 1,100 00 | -2,405 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,200 00 | 0 00 | 0 00 | 1,200 00 | -2,305 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,300 00 | 0 00 | 0 00 | 1,300 00 | -2,205 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,400 00 | 0 00 | 0 00 | 1,400 00 | -2,105 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,500 00 | 0 00 | 0 00 | 1,500 00 | -2,005 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,600 00 | 0 00 | 0 00 | 1,600 00 | -1,905 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,700 00 | 0 00 | 0 00 | 1,700 00 | -1,805 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,800 00 | 0 00 | 0 00 | 1,800 00 | -1,705 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 1,900 00 | 0 00 | 0 00 | 1,900 00 | -1,605 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709.80 |
| 2,000 00 | 0 00 | 0 00 | 2,000 00 | -1,505 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 2,100 00 | 0 00 | 0 00 | 2,100 00 | -1,405 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509.70 | 657,709 80 |
| 2,200 00 | 0 00 | 0 00 | 2,200 00 | -1,305 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,300 00 | 0 00 | 0 00 | 2,300 00 | -1,205 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,400 00 | 0 00 | 0 00 | 2,400 00 | -1,105 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,500 00 | 0 00 | 0 00 | 2,500 00 | -1,005 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,600 00 | 0 00 | 0 00 | 2,600 00 | -905 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project: | Eddy County | TVD Reference: | WELL @ 3505.00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505 00ft (18' KB) |
| Well: | #3H | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,700 00 | 0 00 | 0 00 | 2,700 00 | -805 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,800 00 | 0 00 | 0 00 | 2,800 00 | -705 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 2,900 00 | 0 00 | 0 00 | 2,900 00 | -605 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,000 00 | 0 00 | 0 00 | 3,000 00 | -505 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,100 00 | 0 00 | 0 00 | 3,100 00 | -405 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,200 00 | 0 00 | 0 00 | 3,200 00 | -305 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,300 00 | 0 00 | 0 00 | 3,300 00 | -205 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,400 00 | 0 00 | 0 00 | 3,400 00 | -105 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,500 00 | 0 00 | 0 00 | 3,500 00 | -5 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,600 00 | 0 00 | 0 00 | 3,600 00 | 95 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 3,700 00 | 0 00 | 0 00 | 3,700 00 | 195 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,800 00 | 0 00 | 0 00 | 3,800 00 | 295 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 3,900 00 | 0 00 | 0 00 | 3,900 00 | 395 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,000 00 | 0 00 | 0 00 | 4,000 00 | 495 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,100 00 | 0 00 | 0 00 | 4,100 00 | 595 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,200 00 | 0 00 | 0 00 | 4,200 00 | 695 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,300 00 | 0 00 | 0 00 | 4,300 00 | 795 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,400 00 | 0 00 | 0 00 | 4,400 00 | 895 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,500 00 | 0 00 | 0 00 | 4,500 00 | 995 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,600 00 | 0 00 | 0 00 | 4,600 00 | 1,095 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 4,700 00 | 0 00 | 0 00 | 4,700 00 | 1,195 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709.80 |
| 4,800 00 | 0 00 | 0 00 | 4,800 00 | 1,295 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509.70 | 657,709 80 |
| 4,900 00 | 0 00 | 0 00 | 4,900 00 | 1,395 00 | 0 00 | 0 00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,000 00 | 0 00 | 0 00 | 5,000 00 | 1,495 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,100 00 | 0 00 | 0 00 | 5,100 00 | 1,595 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,200 00 | 0 00 | 0 00 | 5,200 00 | 1,695 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,300 00 | 0 00 | 0 00 | 5,300 00 | 1,795 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #3H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3505 00ft (18' KB) |
| **Site:** | Lizard Pot State Com | **MD Reference:** | WELL @ 3505.00ft (18' KB) |
| **Well:** | #3H | **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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,400 00 | 0 00 | 0 00 | 5,400 00 | 1,895 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,500 00 | 0 00 | 0 00 | 5,500 00 | 1,995 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,600 00 | 0 00 | 0 00 | 5,600 00 | 2,095 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 5,700 00 | 0 00 | 0 00 | 5,700 00 | 2,195 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 5,800.00 | 0 00 | 0 00 | 5,800 00 | 2,295 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 5,900 00 | 0 00 | 0 00 | 5,900 00 | 2,395 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509.70 | 657,709 80 |
| 6,000 00 | 0 00 | 0 00 | 6,000 00 | 2,495 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,100 00 | 0 00 | 0 00 | 6,100 00 | 2,595 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,200 00 | 0 00 | 0 00 | 6,200 00 | 2,695 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 6,300 00 | 0 00 | 0 00 | 6,300 00 | 2,795 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,400 00 | 0 00 | 0 00 | 6,400 00 | 2,895 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,500 00 | 0 00 | 0 00 | 6,500 00 | 2,995 00 | 0 00 | 0 00 | 0 00 | 0.00 | 587,509 70 | 657,709 80 |
| 6,600 00 | 0 00 | 0 00 | 6,600 00 | 3,095 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,700 00 | 0 00 | 0 00 | 6,700 00 | 3,195 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,800 00 | 0 00 | 0 00 | 6,800 00 | 3,295 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 6,900 00 | 0 00 | 0 00 | 6,900 00 | 3,395 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,000 00 | 0 00 | 0 00 | 7,000 00 | 3,495 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,100 00 | 0 00 | 0 00 | 7,100 00 | 3,595 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,200 00 | 0 00 | 0 00 | 7,200 00 | 3,695 00 | 0 00 | 0 00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,300 00 | 0 00 | 0 00 | 7,300 00 | 3,795 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,400 00 | 0 00 | 0 00 | 7,400 00 | 3,895 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,500 00 | 0 00 | 0 00 | 7,500 00 | 3,995 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,600 00 | 0 00 | 0 00 | 7,600 00 | 4,095 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,700 00 | 0 00 | 0 00 | 7,700 00 | 4,195.00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509.70 | 657,709 80 |
| 7,800 00 | 0 00 | 0 00 | 7,800 00 | 4,295 00 | 0 00 | 0 00 | 0.00 | 0 00 | 587,509 70 | 657,709 80 |
| 7,900 00 | 0 00 | 0 00 | 7,900 00 | 4,395 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,000 00 | 0 00 | 0 00 | 8,000 00 | 4,495 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509.70 | 657,709 80 |

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project. | Eddy County | TVD Reference: | WELL @ 3505 00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505 00ft (18' KB) |
| Well: | #3H | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8,100 00 | 0 00 | 0 00 | 8,100 00 | 4,595 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,200 00 | 0 00 | 0 00 | 8,200 00 | 4,695 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,300.00 | 0 00 | 0 00 | 8,300 00 | 4,795 00 | 0 00 | 0.00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,400.00 | 0 00 | 0 00 | 8,400 00 | 4,895 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,500 00 | 0 00 | 0 00 | 8,500 00 | 4,995 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,600 00 | 0 00 | 0 00 | 8,600 00 | 5,095 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,700 00 | 0 00 | 0 00 | 8,700 00 | 5,195 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,800 00 | 0 00 | 0 00 | 8,800 00 | 5,295 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509.70 | 657,709 80 |
| 8,900 00 | 0 00 | 0 00 | 8,900 00 | 5,395 00 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,922 50 | 0 00 | 0 00 | 8,922 50 | 5,417 50 | 0 00 | 0 00 | 0 00 | 0 00 | 587,509 70 | 657,709 80 |
| 8,925 00 | 0 30 | 176 85 | 8,925 00 | 5,420 00 | -0 01 | 0 00 | 0 01 | 12 00 | 587,509 69 | 657,709 80 |
| 8,950 00 | 3 30 | 176 85 | 8,949 98 | 5,444 98 | -0 79 | 0 04 | 0 79 | 12 00 | 587,508 91 | 657,709 84 |
| 8,975 00 | 6 30 | 176 85 | 8,974 89 | 5,469 89 | -2 88 | 0 16 | 2 88 | 12 00 | 587,506 82 | 657,709 96 |
| 9,000 00 | 9 30 | 176 85 | 8,999 66 | 5,494 66 | -6 27 | 0 34 | 6 28 | 12.00 | 587,503 43 | 657,710 14 |
| 9,025 00 | 12 30 | 176 85 | 9,024 21 | 5,519 21 | -10 94 | 0 60 | 10 96 | 12 00 | 587,498 76 | 657,710 40 |
| 9,050.00 | 15 30 | 176 85 | 9,048 49 | 5,543 49 | -16 90 | 0 93 | 16 92 | 12.00 | 587,492 80 | 657,710 73 |
| 9,075 00 | 18 30 | 176 85 | 9,072 42 | 5,567 42 | -24 11 | 1 33 | 24 15 | 12 00 | 587,485.59 | 657,711 13 |
| 9,100.00 | 21 30 | 176 85 | 9,095 94 | 5,590 94 | -32 56 | 1 79 | 32 61 | 12.00 | 587,477 14 | 657,711 59 |
| 9,125.00 | 24 30 | 176 85 | 9,118 98 | 5,613.98 | -42 23 | 2 32 | 42 30 | 12 00 | 587,467 47 | 657,712 12 |
| 9,150 00 | 27 30 | 176 85 | 9,141 49 | 5,636 49 | -53 10 | 2 92 | 53 18 | 12 00 | 587,456 60 | 657,712 72 |
| 9,175 00 | 30 30 | 176 85 | 9,163 40 | 5,658 40 | -65 12 | 3 58 | 65 22 | 12 00 | 587,444 58 | 657,713 38 |
| 9,200 00 | 33 30 | 176.85 | 9,184 64 | 5,679 64 | -78 27 | 4 31 | 78 39 | 12.00 | 587,431 43 | 657,714 11 |
| 9,225 00 | 36 30 | 176 85 | 9,205 17 | 5,700 17 | -92 52 | 5.09 | 92 66 | 12 00 | 587,417 18 | 657,714 89 |
| 9,250 00 | 39 30 | 176 85 | 9,224 92 | 5,719 92 | -107 81 | 5 93 | 107 98 | 12 00 | 587,401 89 | 657,715 73 |
| 9,275 00 | 42 30 | 176 85 | 9,243 84 | 5,738 84 | -124 12 | 6 83 | 124 31 | 12 00 | 587,385 58 | 657,716 63 |
| 9,300 00 | 45 30 | 176 85 | 9,261 89 | 5,756 89 | -141 40 | 7.78 | 141 61 | 12 00 | 587,368 30 | 657,717 58 |
| 9,325.00 | 48 30 | 176 85 | 9,279 00 | 5,774 00 | -159 59 | 8 78 | 159 83 | 12 00 | 587,350 11 | 657,718 58 |

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project: | Eddy County | TVD Reference: | WELL @ 3505 00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505 00ft (18' KB) |
| Well: | #3H | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9,350 00 | 51 30 | 176 85 | 9,295 14 | 5,790 14 | -178 65 | 9 83 | 178 92 | 12 00 | 587,331 05 | 657,719 63 |
| 9,375 00 | 54 30 | 176 85 | 9,310 25 | 5,805 25 | -198.53 | 10 93 | 198 83 | 12 00 | 587,311 17 | 657,720 73 |
| 9,400 00 | 57 30 | 176 85 | 9,324 30 | 5,819 30 | -219 17 | 12 06 | 219 51 | 12 00 | 587,290 53 | 657,721 86 |
| 9,425 00 | 60 30 | 176 85 | 9,337 25 | 5,832 25 | -240 52 | 13 24 | 240.89 | 12 00 | 587,269.18 | 657,723 04 |
| 9,450 00 | 63 30 | 176 85 | 9,349 07 | 5,844 07 | -262 52 | 14 45 | 262 92 | 12 00 | 587,247.18 | 657,724 25 |
| 9,475 00 | 66 30 | 176 85 | 9,359 71 | 5,854 71 | -285 10 | 15 69 | 285 53 | 12 00 | 587,224.60 | 657,725 49 |
| 9,500 00 | 69 29 | 176 85 | 9,369 16 | 5,864 16 | -308 21 | 16 96 | 308 68 | 12 00 | 587,201 49 | 657,726 76 |
| 9,525 00 | 72 29 | 176 85 | 9,377 38 | 5,872 38 | -331.78 | 18 26 | 332 28 | 12 00 | 587,177 92 | 657,728 06 |
| 9,550 00 | 75 29 | 176 85 | 9,384 36 | 5,879 36 | -355 75 | 19 58 | 356 29 | 12 00 | 587,153.95 | 657,729 38 |
| 9,575 00 | 78 29 | 176 85 | 9,390 07 | 5,885 07 | -380 05 | 20 92 | 380 62 | 12 00 | 587,129 65 | 657,730 72 |
| 9,600 00 | 81 29 | 176 85 | 9,394 50 | 5,889 50 | -404 61 | 22 27 | 405 22 | 12 00 | 587,105 09 | 657,732 07 |
| 9,625 00 | 84 29 | 176 85 | 9,397 63 | 5,892 63 | -429 37 | 23 63 | 430.02 | 12 00 | 587,080 33 | 657,733 43 |
| 9,650 00 | 87 29 | 176 85 | 9,399 47 | 5,894 47 | -454 27 | 25 00 | 454 95 | 12 00 | 587,055 43 | 657,734 80 |
| 9,672 56 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -476 78 | 26 24 | 477.50 | 12 00 | 587,032 92 | 657,736 04 |
| 9,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -504 18 | 27 75 | 504 94 | 0 00 | 587,005 52 | 657,737 55 |
| 9,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -604 03 | 33 24 | 604 94 | 0 00 | 586,905 67 | 657,743 04 |
| 9,900 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -703 88 | 38 74 | 704 94 | 0 00 | 586,805.82 | 657,748 54 |
| 10,000 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -803 73 | 44 23 | 804 94 | 0 00 | 586,705.97 | 657,754 03 |
| 10,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -903 58 | 49 73 | 904 94 | 0 00 | 586,606 12 | 657,759 53 |
| 10,200 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,003 43 | 55 22 | 1,004 94 | 0 00 | 586,506 27 | 657,765 02 |
| 10,300 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,103 28 | 60 72 | 1,104 94 | 0.00 | 586,406 42 | 657,770 52 |
| 10,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,203 12 | 66 21 | 1,204 94 | 0 00 | 586,306 58 | 657,776 01 |
| 10,500 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,302.97 | 71 71 | 1,304 94 | 0 00 | 586,206.73 | 657,781 51 |
| 10,600 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,402 82 | 77 20 | 1,404 94 | 0 00 | 586,106 88 | 657,787 00 |
| 10,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,502 67 | 82 70 | 1,504 94 | 0 00 | 586,007 03 | 657,792 50 |
| 10,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,602 52 | 88 19 | 1,604 94 | 0 00 | 585,907.18 | 657,797 99 |
| 10,900 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,702 37 | 93 69 | 1,704 94 | 0 00 | 585,807 33 | 657,803 49 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #3H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3505 00ft (18' KB) |
| **Site:** | Lizard Pot State Com | **MD Reference:** | WELL @ 3505 00ft (18' KB) |
| **Well:** | #3H | **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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 11,000 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,802 22 | 99 18 | 1,804 94 | 0 00 | 585,707 48 | 657,808 98 |
| 11,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -1,902 07 | 104 68 | 1,904 94 | 0 00 | 585,607 63 | 657,814 48 |
| 11,200.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,001 92 | 110 17 | 2,004.94 | 0 00 | 585,507 78 | 657,819 97 |
| 11,300.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,101 76 | 115 67 | 2,104.94 | 0 00 | 585,407 94 | 657,825 47 |
| 11,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,201 61 | 121 16 | 2,204 94 | 0 00 | 585,308 09 | 657,830 96 |
| 11,500 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,301 46 | 126 66 | 2,304 94 | 0 00 | 585,208 24 | 657,836 46 |
| 11,600.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,401 31 | 132 15 | 2,404 94 | 0 00 | 585,108 39 | 657,841 95 |
| 11,700.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,501.16 | 137 65 | 2,504 94 | 0 00 | 585,008 54 | 657,847 45 |
| 11,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,601 01 | 143 14 | 2,604 94 | 0 00 | 584,908 69 | 657,852 94 |
| 11,900.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,700 86 | 148 64 | 2,704 94 | 0 00 | 584,808 84 | 657,858 44 |
| 12,000.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,800 71 | 154.13 | 2,804 94 | 0 00 | 584,708 99 | 657,863 93 |
| 12,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -2,900 56 | 159 63 | 2,904 94 | 0 00 | 584,609.14 | 657,869 43 |
| 12,200 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,000 40 | 165.12 | 3,004 94 | 0 00 | 584,509.30 | 657,874 92 |
| 12,300 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,100 25 | 170 62 | 3,104 94 | 0 00 | 584,409 45 | 657,880 42 |
| 12,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,200 10 | 176 11 | 3,204 94 | 0 00 | 584,309 60 | 657,885 91 |
| 12,500.00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,299 95 | 181 61 | 3,304 94 | 0 00 | 584,209 75 | 657,891 41 |
| 12,600 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,399 80 | 187 10 | 3,404 94 | 0 00 | 584,109 90 | 657,896 90 |
| 12,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,499 65 | 192 60 | 3,504.94 | 0 00 | 584,010 05 | 657,902 40 |
| 12,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,599 50 | 198.09 | 3,604 94 | 0 00 | 583,910 20 | 657,907 89 |
| 12,900 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,699 35 | 203 59 | 3,704 94 | 0 00 | 583,810 35 | 657,913 39 |
| 13,000 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,799.20 | 209 08 | 3,804 94 | 0 00 | 583,710 50 | 657,918 88 |
| 13,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,899 04 | 214 58 | 3,904 94 | 0 00 | 583,610 66 | 657,924 38 |
| 13,200 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -3,998 89 | 220 07 | 4,004 94 | 0 00 | 583,510 81 | 657,929 87 |
| 13,300 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,098 74 | 225 57 | 4,104 94 | 0 00 | 583,410 96 | 657,935 37 |
| 13,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,198 59 | 231 06 | 4,204 94 | 0 00 | 583,311 11 | 657,940 86 |
| 13,500 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,298 44 | 236 56 | 4,304 94 | 0 00 | 583,211 26 | 657,946 36 |
| 13,600 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,398 29 | 242 05 | 4,404 94 | 0 00 | 583,111 41 | 657,951 85 |

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project: | Eddy County | TVD Reference: | WELL @ 3505 00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505 00ft (18' KB) |
| Well: | #3H | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,498 14 | 247 55 | 4,504 94 | 0 00 | 583,011 56 | 657,957 35 |
| 13,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,597 99 | 253 04 | 4,604 94 | 0 00 | 582,911 71 | 657,962 84 |
| 13,900 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,697 84 | 258 54 | 4,704 94 | 0 00 | 582,811 86 | 657,968 34 |
| 14,000 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,797 68 | 264 03 | 4,804 94 | 0 00 | 582,712.02 | 657,973 83 |
| 14,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,897 53 | 269.53 | 4,904 94 | 0 00 | 582,612 17 | 657,979 33 |
| 14,200 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -4,997 38 | 275 02 | 5,004.94 | 0 00 | 582,512 32 | 657,984 82 |
| 14,300 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,097 23 | 280 52 | 5,104 94 | 0 00 | 582,412 47 | 657,990 32 |
| 14,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,197 08 | 286 01 | 5,204 94 | 0 00 | 582,312.62 | 657,995 81 |
| 14,500 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,296 93 | 291 51 | 5,304 94 | 0 00 | 582,212 77 | 658,001.31 |
| 14,600 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,396 78 | 297 00 | 5,404 94 | 0 00 | 582,112 92 | 658,006.80 |
| 14,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,496 63 | 302 50 | 5,504 94 | 0 00 | 582,013 07 | 658,012 30 |
| 14,800 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,596 48 | 307 99 | 5,604 94 | 0 00 | 581,913 22 | 658,017 79 |
| 14,900 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,696 33 | 313 49 | 5,704 94 | 0 00 | 581,813 37 | 658,023.29 |
| 15,000 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,796 17 | 318 98 | 5,804 94 | 0 00 | 581,713 53 | 658,028 78 |
| 15,100 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,896 02 | 324 48 | 5,904.94 | 0 00 | 581,613 68 | 658,034 28 |
| 15,200 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -5,995 87 | 329 97 | 6,004 94 | 0 00 | 581,513 83 | 658,039 77 |
| 15,300 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,095 72 | 335 47 | 6,104 94 | 0 00 | 581,413.98 | 658,045 27 |
| 15,400 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,195 57 | 340 96 | 6,204.94 | 0 00 | 581,314.13 | 658,050 76 |
| 15,500 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,295 42 | 346 46 | 6,304.94 | 0 00 | 581,214 28 | 658,056 26 |
| 15,600 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,395 27 | 351 95 | 6,404 94 | 0 00 | 581,114 43 | 658,061 75 |
| 15,700 00 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,495 12 | 357.45 | 6,504 94 | 0 00 | 581,014 58 | 658,067 25 |
| 15,797 04 | 90 00 | 176 85 | 9,400 00 | 5,895 00 | -6,592 01 | 362 78 | 6,601 98 | 0 00 | 580,917.69 | 658,072 58 |
| PBHL(LP#3) | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Company: | Marbob | Local Co-ordinate Reference: | Well #3H |
| Project: | Eddy County | TVD Reference: | WELL @ 3505 00ft (18' KB) |
| Site: | Lizard Pot State Com | MD Reference: | WELL @ 3505 00ft (18' KB) |
| Well: | #3H | North Reference: | Grid |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | Plan #1 | Database: | Midland Database |

Targets

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| PBHL(LP#3)<br>- plan hits target center<br>- Point | 0 00 | 0 00 | 9,400 00 | -6,592 00 | 362 90 | 580,917 700 | 658,072 700 | 32° 35' 45 598 N | 103° 49' 12 244 W |

Checked By _____ Approved By _____ Date _____

marbob
energy corporation
Artesia, N.M.

Project: Eddy County
Site: Lizard Pot State Co
Well: #3H
Wellbore: OH
Plan: Plan #1 (#3H/OH)


Azimuths to Grid North
True North -0.28°
Magnetic North 7.56°

Magnetic Field
Strength 48956.7snT
Dip Angle 60.55°
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 | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 8922.50 | 0.00 | 0.00 | 8922.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 9672.56 | 90.00 | 176.85 | 9400.00 | -476.78 | 26.24 | 12.00 | 176.85 | 477.50 | |
| 4 | 15797.04 | 90.00 | 176.85 | 9400.00 | -6592.01 | 362.78 | 0.00 | 0.00 | 6601.98 | PBHL(LP#3) |

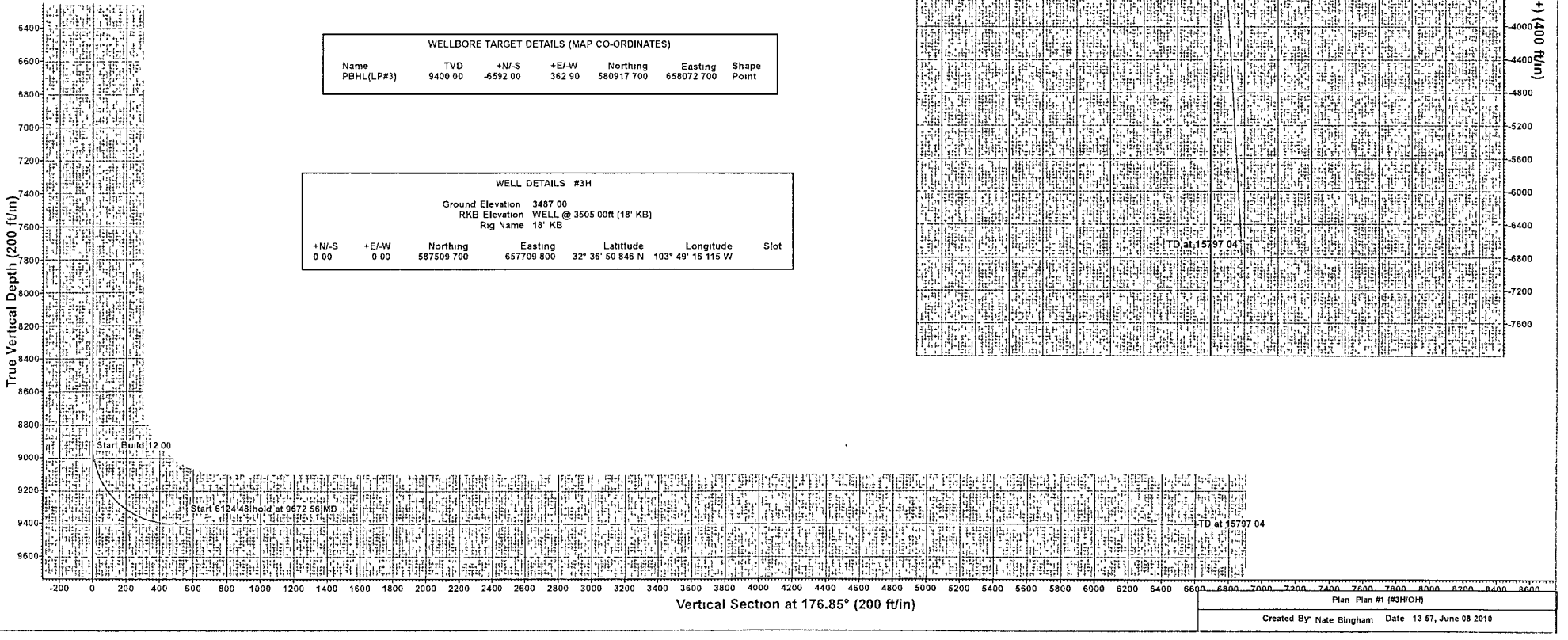
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Shape |
|---|---|---|---|---|---|---|
| PBHL(LP#3) | 9400.00 | -6592.00 | 362.90 | 580917.700 | 658072.700 | Point |

WELL DETAILS #3H

Ground Elevation 3487.00
RKB Elevation WELL @ 3505.00ft (18' KB)
Rig Name 18' KB

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 587509.700 | 657709.800 | 32° 36' 50.846 N | 103° 49' 16.115 W | |

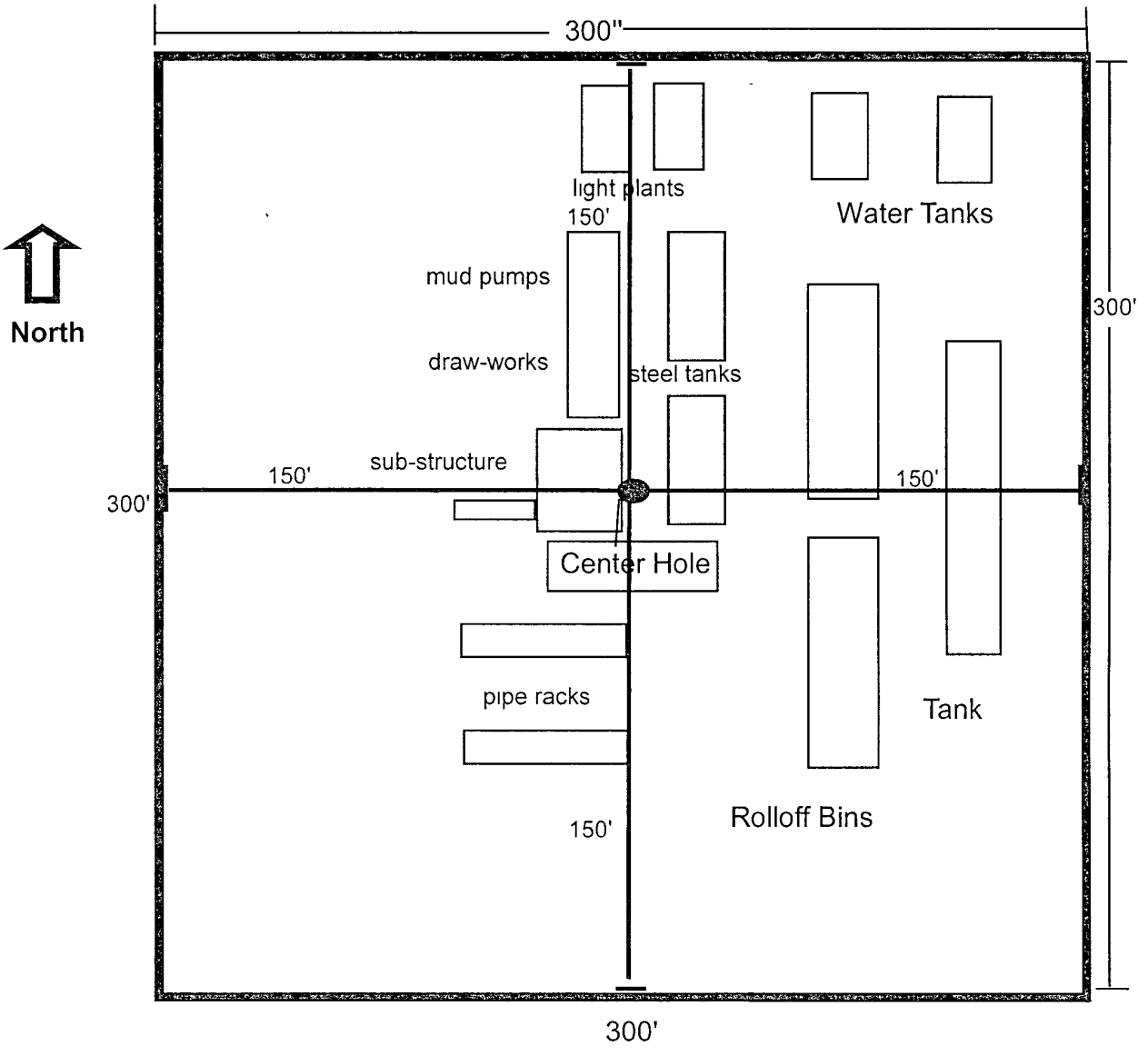






Plan Plan #1 (#3H/OH)
Created By Nate Bingham Date 13:57, June 08 2010

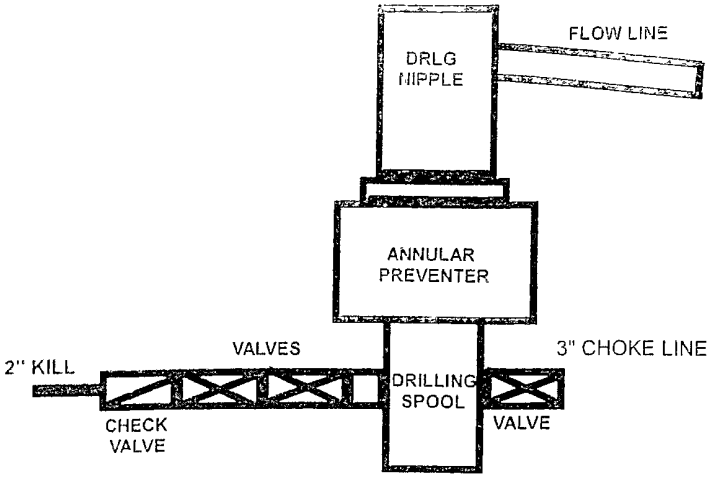
# Well Site Lay-Out Plat

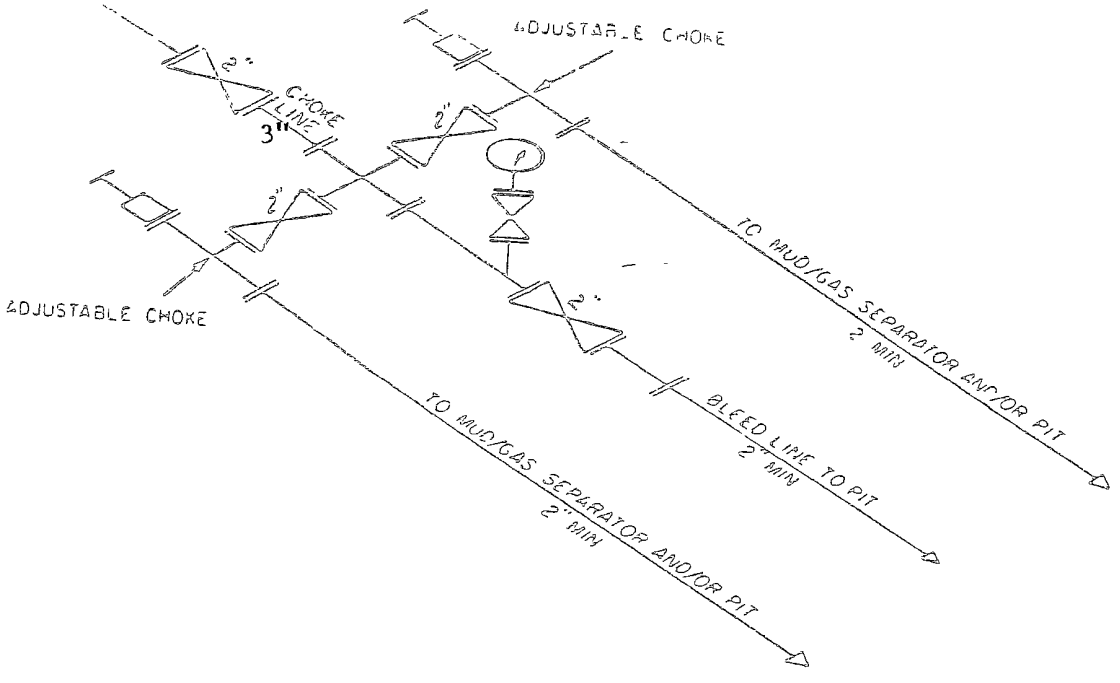



**Lizard Pot State Com #3H**
**Surf: 1650' FSL & 2310' FEL, Sec 36, T19S-R31E**
**BHL: 330' FSL & 1980' FEL, Sec 1, T20S-R31E**
**Eddy County, New Mexico**

EXHIBIT THREE

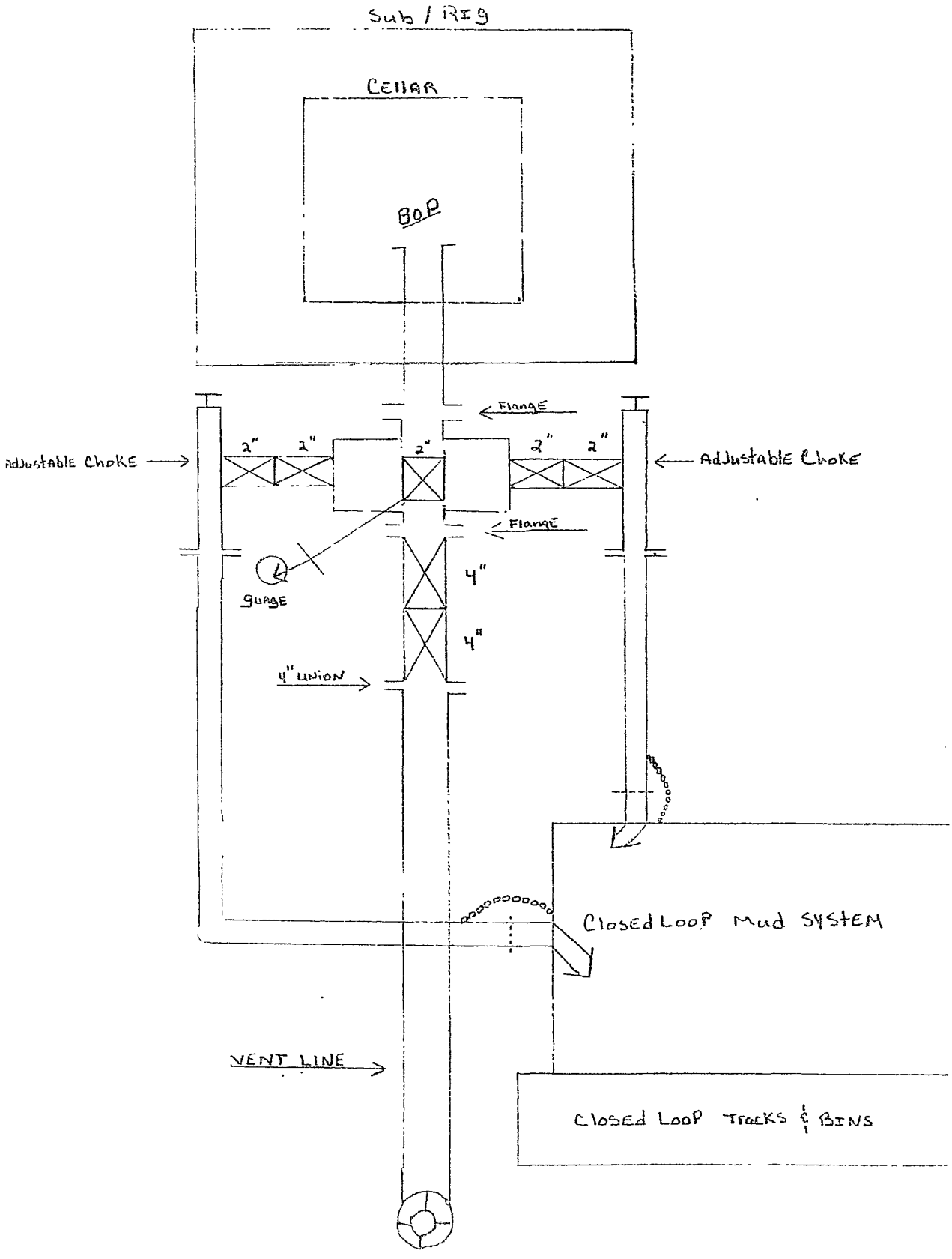
2M SYSTEM



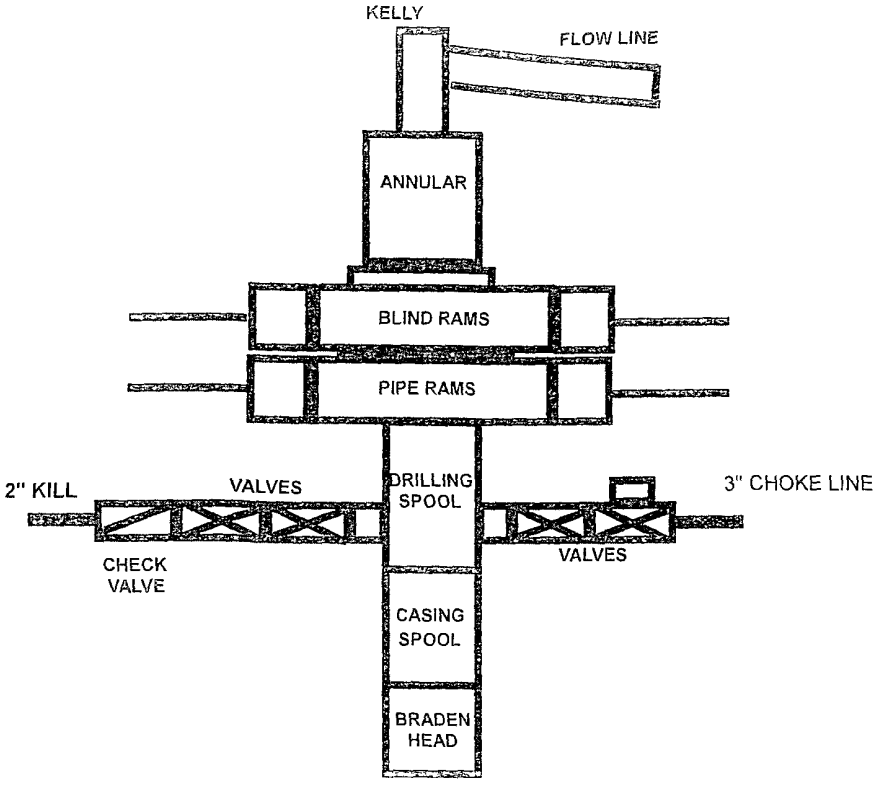



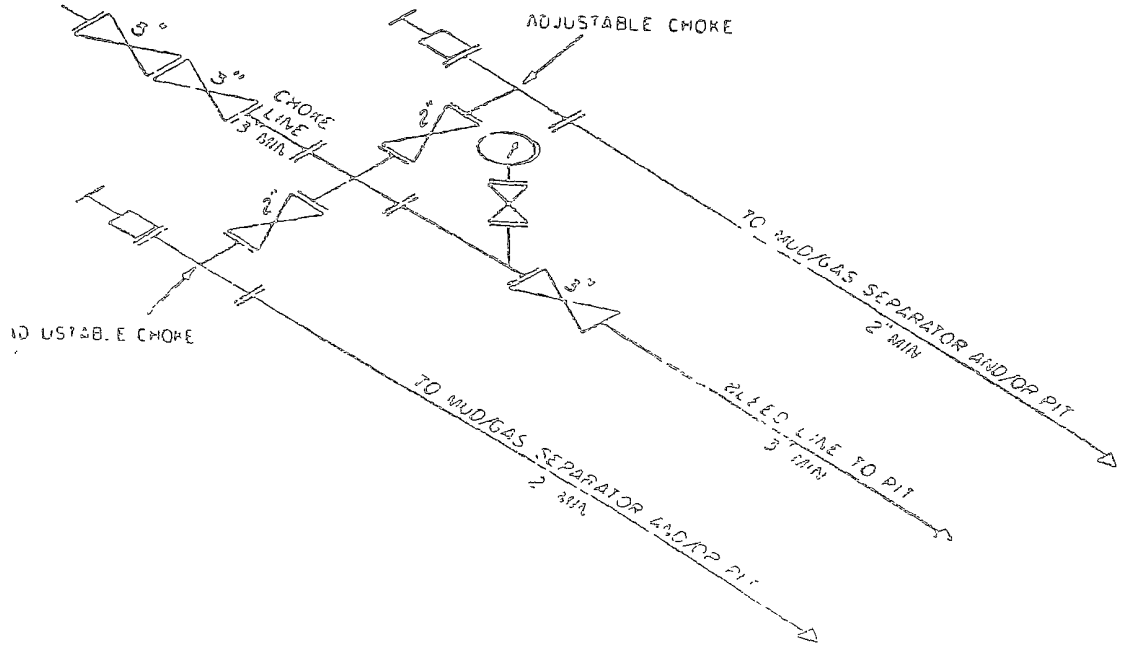

2M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES MAY VARY

# 2M Choke Manifold Equipment



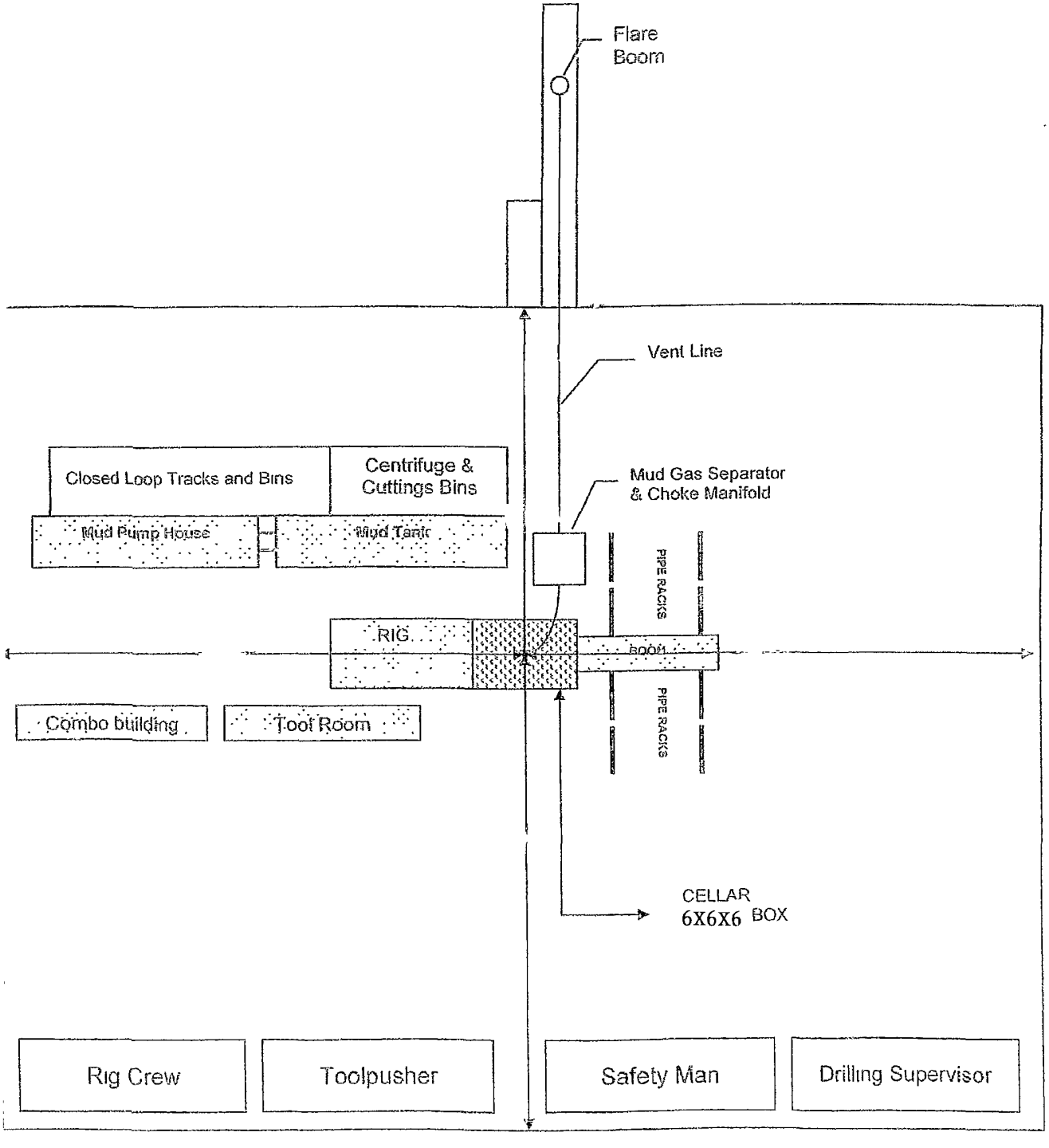
# 3M SYSTEM




3M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES

# 3M Choke Manifold Equipment



**MARBOB ENERGY CORPORATION**

**HYDROGEN SULFIDE DRILLING OPERATIONS PLAN**

## I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

A. The hazards and characteristics of hydrogen sulfide ($H_2S$).

B. The proper use and maintenance of personal protective equipment and life support systems.

C. The proper use of $H_2S$ detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

D. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

A. The effects of $H_2S$ on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

B. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

C. The contents and requirements of the $H_2S$ Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable $H_2S$ zone (within 3 days or 500 feet) and weekly $H_2S$ and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific $H_2S$ Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

## II. $H_2S$ SAFETY EQUIPMENT AND SYSTEMS

Note: All $H_2S$ safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain $H_2S$.

A. Well Control Equipment:

Flare line.

Choke manifold.

Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

B. Protective equipment for essential personnel:

Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

C. $H_2S$ detection and monitoring equipment:

2 - portable $H_2S$ monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when $H_2S$ levels of 20 ppm are reached.

D. Visual warning systems:

Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

E. Mud Program:

The mud program has been designed to minimize the volume of $H_2S$ circulated to the surface.

F. Metallurgy:

All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for $H_2S$ service.

G. Communication:

Company vehicles equipped with cellular telephone and 2-way radio.

Marbob Energy has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore we do not believe that an H2S Contingency Plan would be necessary.

# WARNING

**YOU ARE ENTERING AN $H_2S$ AREA**
**AUTHORIZED PERSONNEL ONLY**

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH MARBOB FOREMAN AT MAIN OFFICE***

MARBOB ENERGY CORPORATION

1-575-748-3303

## EMERGENCY CALL LIST

| | Office | Mobile | Home |
|---|---|---|---|
| Marbob Energy Corp. | 575-748-3303 | | |
| Sheryl Baker | 575-748-3303 | 575-748-5489 | 575-748-2396 |
| Johnny C. Gray | 575-748-3303 | 575-748-5983 | 575-885-3879 |
| Raye Miller | 575-748-3303 | 575-513-0176 | 575-746-9577 |
| Dean Chumbley | 575-748-3303 | 575-748-5988 | 575-748-2426 |

## EMERGENCY RESPONSE NUMBERS
**Eddy County, New Mexico**

| | |
|---|---|
| State Police | 575-748-9718 |
| Eddy County Sheriff | 575-746-2701 |
| Emergency Medical Services (Ambulance) | 911 or 575-746-2701 |
| Eddy County Emergency Management (Harry Burgess) | 575-887-9511 |
| State Emergency Response Center (SERC) | 575-476-9620 |
| Carlsbad Police Department | 575-885-2111 |
| Carlsbad Fire Department | 575-885-3125 |
| New Mexico Oil Conservation Division | 575-748-1283 |
| Indian Fire & Safety | 800-530-8693 |
| Halliburton Services | 800-844-8451 |

**MARBOB ENERGY CORPORATION**
**MULTI-POINT SURFACE USE AND OPERATIONS PLAN**

**Lizard Pot State Com #3H**
**Surf: 1650' FSL & 2310' FEL, Sec 36, T19S-R31E**
**BHL: 330' FSL & 1980' FEL, Sec 1, T20S-R31E**
**Eddy County, New Mexico**

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

**1. EXISTING ROADS:**

a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by John West Surveying Company.
b. Exhibit 2 is a portion of a topo map showing the well and roads in the vicinity of the proposed location. The proposed wellsite and the access route to the location are indicated in red on Exhibit 2. Right of way using this proposed route is being requested if necessary.
c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

**DIRECTIONS:**

From the intersection of St. Hwy. #243 (Lusk Plant) and Co. Rd. #126 (Maljamar Rd.), go west approx. 1.1 miles. Turn left and go south approx. 0.5 miles. Turn right at the Wildcap State #1 battery and go west-southwest approx. 0.2 to the Wildcap #3H well pad and proposed road survey. Follow road survey southwest 557 feet to this location.

**2. PLANNED ACCESS ROAD:**

Marbob will be using a proposed access road of 557' coming in on the northeastern corner of the well pad. Please see directions above.

**3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:**

A. In the event the well is found productive, the Lizard Pot State Com #3H tank battery would be utilized and the necessary production equipment will be installed at the well site. A Site Facilities Diagram will be submitted upon completion of facility. All flowlines will adhere to API standards

B. If electricity is needed, power will be obtained from Central Valley Electric. Central Valley Electric will apply for ROW for their power lines.
C. If the well is productive, rehabilitation plans are as follows:
    i. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.

**4. LOCATION AND TYPES OF WATER SUPPLY:**

This location will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown in Exhibit #2. On occasion, water will be obtained form a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, the existing and proposed road shown in Exhibit "2" will be utilized.

**5. CONSTRUCTION MATERIALS:**

All Caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM approved pit or from prevailing deposits found under the location. All roads will be constructed of 6" rolled and compacted caliche. Will use BLM recommended use of extra caliche from other locations close by for roads, if available.

**6. METHODS OF HANDLING WASTE MATERIAL:**

a. All trash, junk and other waste material will be removed from the wellsite within 30 days after finishing drilling and/or completion operations. All waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
b. The supplier, including broken sacks, will pick up slats remaining after completion of well.
c. A porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
d. Disposal of fluids to be transported by an approved disposal company.

**7. ANCILLARY FACILITIES:**

No campsite or other facilities will be constructed as a result of this well.

**8. WELLSITE LAYOUT:**

a. Exhibit 3 shows the proposed well site layout with dimensions of the pad layout.
b. This exhibit indicates proposed location of fresh water sump pits if utilized and living facilities.
c. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

**9. PLANS FOR SURFACE RECLAMATION:**

a. After finishing drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original state.

b. The location and road will be rehabilitated as recommended by the BLM.

a. If the well is deemed commercially productive, caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography. Reserve pit will not be used on this location therefore no reclamation is needed.

b. Topsoil will be stockpiled on the *EAST SIDE* of the location until it is needed for interim reclamation described in paragraph above.

**10. SURFACE OWNERSHIP:**

The surface is owned by the State Of New Mexico and is administered by the NM state Land office. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The proposed road routes and the surface location will be restored as directed by the BLM.

**11. OTHER INFORMATION:**

a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, some mesquite bushes and shinnery oak. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.

b. There is no permanent or live water in the general proximity of the location.

c. There are no dwellings within 2 miles of location.

d. A Cultural Resources Examination will be completed by Boone Archeological and forwarded to the BLM office in Carlsbad, New Mexico.

**12. OPERATOR'S REPRESENTATIVE:**

A. Through A.P.D. Approval:
Dean Chumbley, Landman
Marbob Energy Corporation
P. O. Box 227
Artesia, NM 88211-0227
Phone (575)748-3303
Cell (575) 748-5988

B. Through Drilling Operations
Sheryl Baker, Drilling Supervisor
Marbob Energy Corporation
P. O. Box 227
Artesia, NM 88211-0227
Phone (575)748-3303
Cell (575)748-5489

**CERTIFICATION:**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Marbob Energy Corporation and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Marbob Energy Corporation

6/15/10
Date

William Miller
Land Department

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | MARBOB ENERGY |
| LEASE NO.: | NM-057239 |
| WELL NAME & NO.: | 3H-LIZARD POT STATE COM |
| SURFACE HOLE FOOTAGE: | 1650' FSL & 2310' FEL (36-19S-31E) |
| BOTTOM HOLE FOOTAGE | 0330' FSL & 1980' FEL (1-20S-31E) |
| LOCATION: | Section 36, T. 19 S., R 31 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

## I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

# V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:
Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

**Communitization Agreement :**
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. V-DOOR DIRECTION: not stipulated

## C. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 8 inches in depth. The topsoil will be used for interim and final reclamation.

## D. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

## E. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call theCarlsbad Field Office at (575) 234-5972.

## F. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## G. ON LEASE ACCESS ROADS

**Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed twelve (12) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

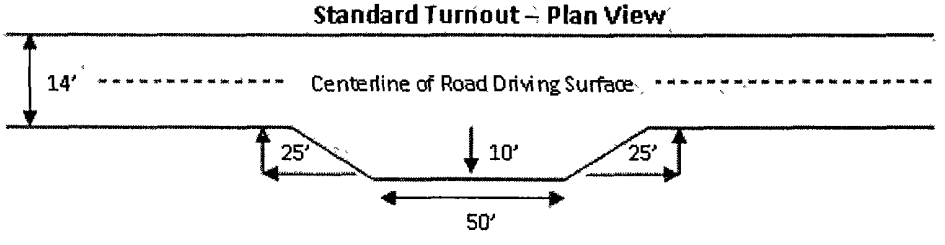
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

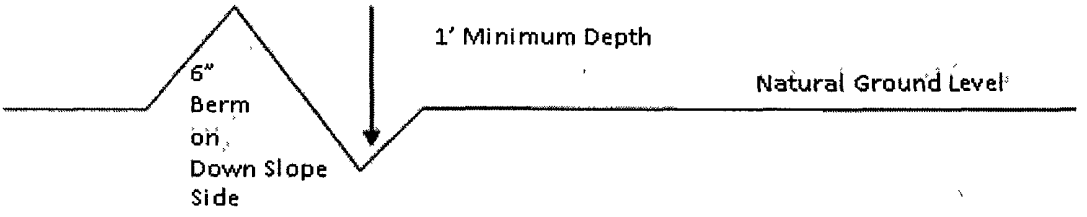
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:




**Drainage**
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**




All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Culvert Installations**
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

**Cattleguards**
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

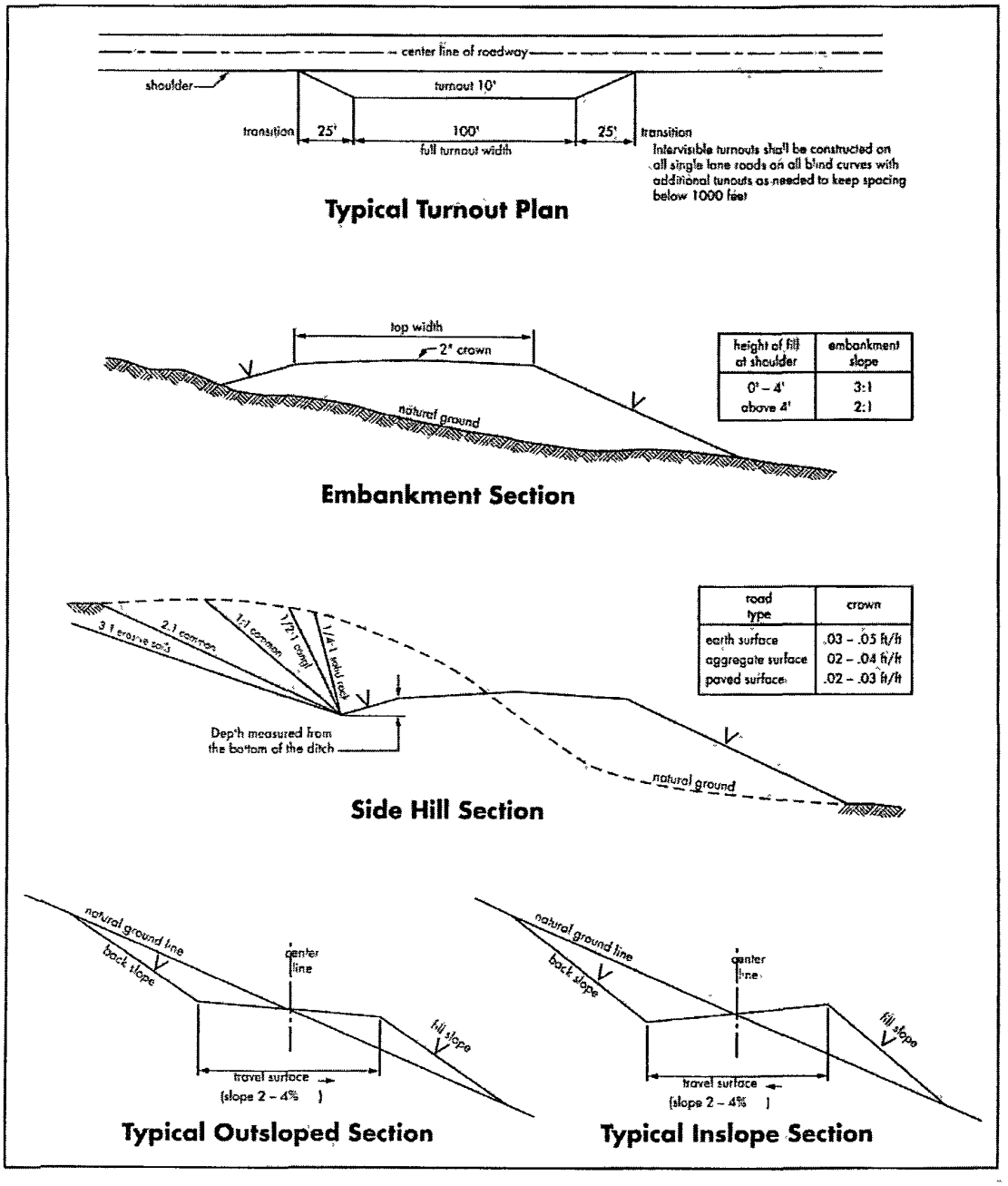
A gate shall be constructed and fastened securely to H-braces.

**Fence Requirement**
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

## Figure 1 – Cross Sections and Plans For Typical Road Sections



# I. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **A Hydrogen Sulfide (H2S) Drilling Plan should be activated prior to drilling out the surface shoe. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Secretary's Potash**
**Possible lost circulation in the Capitan Reef and Glorieta formation.**
**Possible water and brine flows in the Salado and Blinebry formations.**

1. The **13-3/8** inch surface casing shall be set at **approximately 900 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Special Capitan Reef requirements:**

**If any lost circulation occurs below the Base of the Salt, the operator is to switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.**

**In addition, daily drilling reports are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning from the setting of the surface casing until the intermediate casing is set. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume on an hourly basis. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a fluid caliper survey for the intermediate well bore and submit to the appropriate BLM office.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    a. First stage to DV tool, cement shall:

    ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

    b. Second stage above DV tool, cement shall:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

**Centralizers required on horizontal leg, must be type for horizontal service and minimum of one every other joint.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

    a. First stage to DV tool, cement shall:

    ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

    b. Second stage above DV tool, cement shall:

    ☒ Cement should tie-back at least **1300** feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

    a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. In addition, for the potash area, no tests are to be initiated prior to 24 hours (R-111-P regulations). Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.

    b. The tests shall be done by an independent service company using a test plug.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

## D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**RGH 071510**

## III. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared; these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Plains Bristlegrass | 5lbs/A |
| Sand Bluestem | 5lbs/A |
| Little Bluestem | 3lbs/A |
| Big Bluestem | 6lbs/A |
| Plains Coreopsis | 2lbs/A |
| Sand Dropseed | 1lbs/A |
| Four-winged Saltbush | 5lbs/A |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed