Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA
MAY 27 2009

FORM 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.***

***SUBMIT IN TRIPLICATE*** – *Other instructions on page 2.*

5. Lease Serial No.
NMNM117121

6 If Indian, Allottee or Tribe Name

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

1. Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
Showstopper 7 Federal Com #1H

2. Name of Operator
Marbob Energy Corp.

9. API Well No.
30-015-36559

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
~~Undes~~ Willow Lake; ~~Delaware~~ Bone Spring 96217

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*
Surf 330' FNL & 480' FEL, BHL 430' FNL & 330' FWL
Section 7, T25S - R29E

11. Country or Parish, State
Eddy County, New Mexico

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 |
| | ☐ Alter Casing | ☐ Fracture Treat | ☐ Reclamation | ☐ Well Integrity |
| ☐ Subsequent Report | ☐ Casing Repair | ☐ New Construction | ☐ Recomplete | ☑ Other Name, BHL Location |
| | ☐ Change Plans | ☐ Plug and Abandon | ☐ Temporarily Abandon | Total VD & MD, Tops & |
| ☐ Final Abandonment Notice | ☐ Convert to Injection | ☐ Plug Back | ☐ Water Disposal | Drilling Program |

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 recomplete 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 recompletion 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.)

Name: From - Willow Lake 7 Federal #1H, To - Showstopper 7 Federal Com #1H

Bottom Hole Location: From - 330' FNL & 330' FWL , To - 430' FNL & 330' FWL

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Total Vertical Depth To. 9,100' , Total Measured Depth To: 13,365' (New Directional Plan Is Attached)

Tops: Base of Salt - 2,742', Delaware - 2,950' - Oil/Gas, Bone Spring - 6,750' - Oil/Gas

| Size: | Interval: | Csg: | Wt: | Collar: | Grade: |
|---|---|---|---|---|---|
| 20" | 0'-125' | 16" | 65# | BUTT | H-40 |
| 12 1/4" | 125'-2850' | 9 5/8" | 36# | STC | J-55 ← see COA |
| 8 3/4" | 2850'-9100' | 5 1/2" | 17# | LTC | N-80 |
| 7 7/8" | 9100'-13365' | 5 1/2" | 17# | LTC | N-80 |

Surf 16"- Cement to surf w/ 150 sk "c" wt 14.8 yield 1.34, Int 9 5/8"- Cement to surf w/ 500 sk "c" light wt 12.7 yield 1.91 Tail in w/ 200 sk "c" wt 14.8 yield 1.34
Prod 5 1/2"- 1st stage cement w/ 425 sk acid soluble "H" wt 15.0 yield 2.6, 2nd stage w/ 1000 sk "H" light wt 12.7 yield 1.91 Tail in w/ 100 sk "H" wt 13.0 yield 1.64, DV @ 8500' TOC 2500' ← See COA

14 I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*

Nancy Agnew

Title Land Department

Signature Nancy Agnew

Date 04/17/2009

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

APPROVED
MAY 22 2009
Date
WESLEY W. INGRAM
PETROLEUM ENGINEER

Approved by

Title

Office

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.

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)

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
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-015-36559 | ~~64453~~ 96217 | ~~Undes~~ Willow Lake, ~~Delaware~~ Bonespring, South East |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 37336 | Show Stopper Federal Com | 1H |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 14049 | Marbob Energy Corporation | 2905 |

## [10] Surface Location

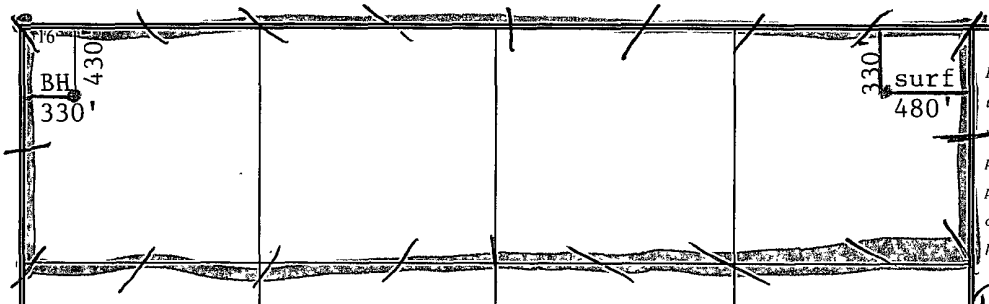
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| A | 7 | 25S | 29E | | 330' | North | 480' | East | Eddy |

## [11] 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 |
|---|---|---|---|---|---|---|---|---|---|
| D | 7 | 25S | 29E | | 430' | North | 330' | West | Eddy |

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 160 | | | |

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.




## [17] OPERATOR CERTIFICATION

*I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division*

Nancy T. Agnew 4/17/09
Signature Date

Nancy T. Agnew
Printed Name

## [18] 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.*

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number

marbob
energy corporation
Artesia, N.M.

# Marbob

**Eddy County**
**Show Stopper Federal #1H**
**#1H**
**OH**

**Plan: Plan #1**

# Pathfinder X & Y Survey Report

**07 April, 2009**

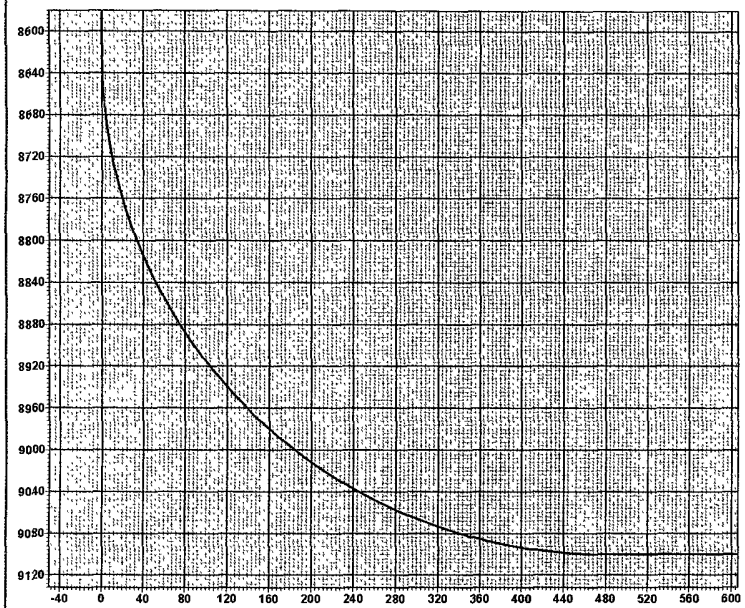
PATHFINDER

marbob energy corporation
Artesia, N.M.

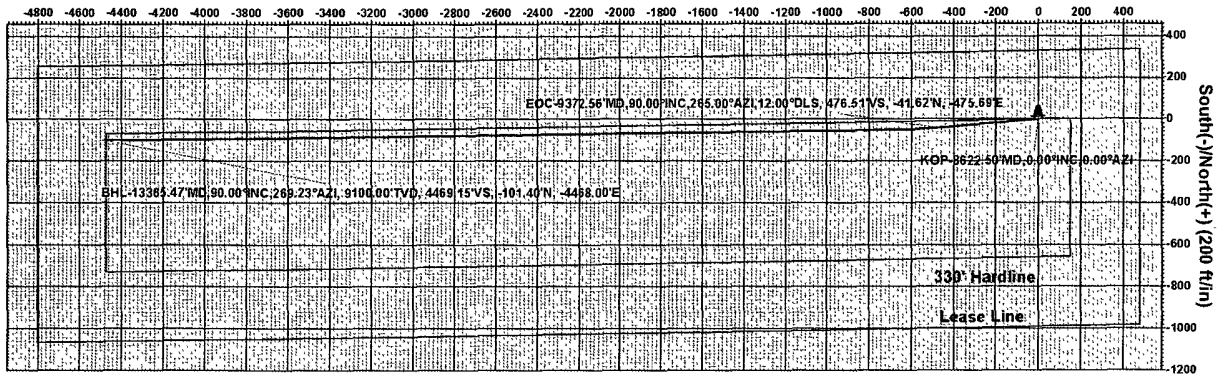

Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.93°

Magnetic Field
Strength: 48822.6snT
Dip Angle: 60.12°
Date: 09/23/2008
Model: IGRF200510

PATHFINDER



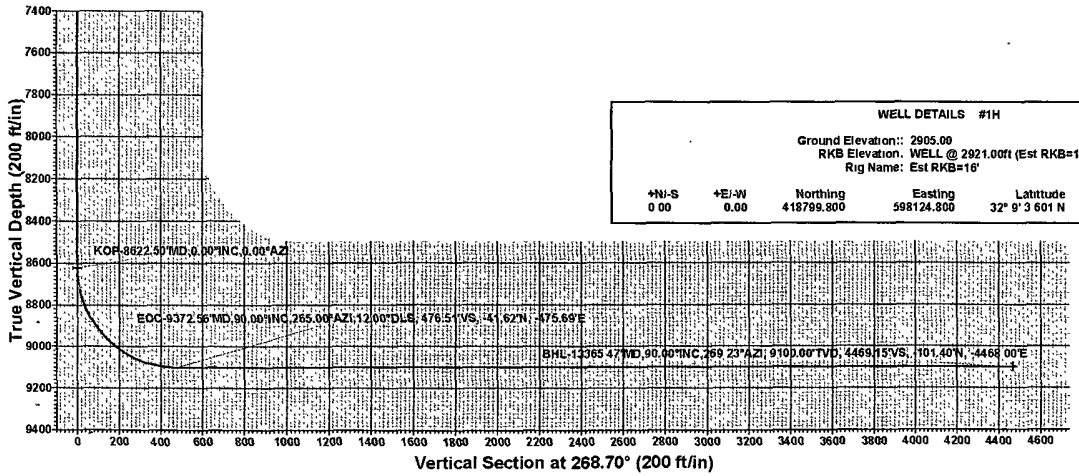

West(-)/East(+) (200 ft/in)




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 | 8622.50 | 0.00 | 0.00 | 8622.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 9372.56 | 90.00 | 265.00 | 9100.00 | -41.62 | -475.68 | 12.00 | 265.00 | 476.50 | |
| 4 | 9541.83 | 90.00 | 269.23 | 9100.00 | -50.13 | -644.70 | 2.50 | 90.00 | 645.67 | |
| 5 | 13365.47 | 90.00 | 269.23 | 9100.00 | -101.40 | -4468.00 | 0.00 | 0.00 | 4469.15 | PBHL |

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




WELL DETAILS #1H

Ground Elevation:: 2905.00
RKB Elevation: WELL @ 2921.00ft (Est RKB=16')
Rig Name: Est RKB=16'

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 418799.800 | 598124.800 | 32° 9' 3.601 N | 104° 0' 58.595 W | |

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Shape |
|---|---|---|---|---|---|---|
| KOP | 8622.50 | 0.00 | 0.00 | 418799.800 | 598124.800 | Point |
| PBHL | 9100.00 | -101.40 | -4468.00 | 418698.400 | 593656.800 | Point |

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

Plan: Plan #1 ( #1H/OH)
Created By: Nate Bingham Date: 10:04, April 07 2009
Checked: _____ Date: _____

# Pathfinder Energy Services

Pathfinder X & Y Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921 00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **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** Show Stopper Federal #1H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 418,799.800 ft | **Latitude:** | 32° 9' 3 601 N |
| **From:** | Map | **Easting:** | 598,124.800 ft | **Longitude:** | 104° 0' 58.595 W |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | " | **Grid Convergence:** | 0 17 ° |

**Well** #1H

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0 00 ft | **Northing:** | 418,799.800 ft | **Latitude:** | 32° 9' 3.601 N |
| | **+E/-W** | 0 00 ft | **Easting:** | 598,124.800 ft | **Longitude:** | 104° 0' 58.595 W |
| **Position Uncertainty** | | 0 00 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 2,905.00 ft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 09/23/2008 | 8.10 | 60.12 | 48,823 |

**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 | 268.70 |

**Survey Tool Program** **Date** 04/07/2009

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0 00 | 13,365.47 | Plan #1 (OH) | MWD | MWD - Standard |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921 00ft (Est RKB=16') |
| **Well:** | #1H | **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 | -2,921.00 | 0.00 | 0 00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 100.00 | 0.00 | 0.00 | 100.00 | -2,821.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 200.00 | 0.00 | 0.00 | 200 00 | -2,721.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 300.00 | 0.00 | 0 00 | 300.00 | -2,621 00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 400.00 | 0.00 | 0.00 | 400 00 | -2,521.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 500.00 | 0 00 | 0 00 | 500.00 | -2,421.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124 80 |
| 600.00 | 0 00 | 0.00 | 600 00 | -2,321.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 700.00 | 0 00 | 0 00 | 700 00 | -2,221.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124 80 |
| 800.00 | 0 00 | 0.00 | 800.00 | -2,121.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 900.00 | 0.00 | 0.00 | 900 00 | -2,021.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 1,000.00 | 0 00 | 0 00 | 1,000.00 | -1,921.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 1,100 00 | 0.00 | 0.00 | 1,100.00 | -1,821.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | -1,721.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 1,300.00 | 0.00 | 0.00 | 1,300 00 | -1,621.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799 80 | 598,124 80 |
| 1,400.00 | 0 00 | 0.00 | 1,400.00 | -1,521 00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 1,500.00 | 0 00 | 0.00 | 1,500.00 | -1,421.00 | 0.00 | 0 00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 1,600.00 | 0 00 | 0.00 | 1,600.00 | -1,321.00 | 0.00 | 0 00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 1,700 00 | 0.00 | 0 00 | 1,700.00 | -1,221.00 | 0 00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 1,800 00 | 0 00 | 0.00 | 1,800.00 | -1,121.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 1,900.00 | 0.00 | 0 00 | 1,900.00 | -1,021 00 | 0.00 | 0.00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |
| 2,000 00 | 0.00 | 0.00 | 2,000.00 | -921.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 2,100.00 | 0.00 | 0.00 | 2,100.00 | -821.00 | 0.00 | 0.00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |
| 2,200.00 | 0.00 | 0 00 | 2,200.00 | -721 00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 2,300.00 | 0.00 | 0 00 | 2,300.00 | -621 00 | 0.00 | 0 00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 2,400.00 | 0.00 | 0.00 | 2,400 00 | -521.00 | 0 00 | 0.00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |
| 2,500.00 | 0.00 | 0.00 | 2,500.00 | -421 00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 2,600.00 | 0 00 | 0.00 | 2,600 00 | -321.00 | 0 00 | 0 00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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 | -221.00 | 0 00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 2,800.00 | 0 00 | 0.00 | 2,800.00 | -121.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 2,900.00 | 0 00 | 0.00 | 2,900.00 | -21.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 3,000.00 | 0.00 | 0.00 | 3,000.00 | 79.00 | 0.00 | 0 00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 3,100.00 | 0 00 | 0.00 | 3,100.00 | 179.00 | 0.00 | 0 00 | 0 00 | 0 00 | 418,799 80 | 598,124.80 |
| 3,200.00 | 0 00 | 0.00 | 3,200.00 | 279.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 3,300.00 | 0.00 | 0.00 | 3,300.00 | 379.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 3,400.00 | 0.00 | 0.00 | 3,400.00 | 479.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 3,500 00 | 0.00 | 0.00 | 3,500.00 | 579.00 | 0.00 | 0 00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 3,600.00 | 0.00 | 0.00 | 3,600.00 | 679.00 | 0 00 | 0.00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |
| 3,700.00 | 0.00 | 0.00 | 3,700.00 | 779.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 3,800.00 | 0.00 | 0 00 | 3,800 00 | 879.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 3,900 00 | 0.00 | 0.00 | 3,900 00 | 979 00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 4,000.00 | 0.00 | 0.00 | 4,000.00 | 1,079.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 4,100.00 | 0 00 | 0 00 | 4,100.00 | 1,179.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 4,200 00 | 0.00 | 0.00 | 4,200.00 | 1,279.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 4,300.00 | 0.00 | 0.00 | 4,300.00 | 1,379.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 4,400.00 | 0 00 | 0.00 | 4,400.00 | 1,479.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 4,500 00 | 0.00 | 0 00 | 4,500.00 | 1,579.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124 80 |
| 4,600.00 | 0.00 | 0 00 | 4,600.00 | 1,679.00 | 0.00 | 0 00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 4,700 00 | 0.00 | 0 00 | 4,700 00 | 1,779.00 | 0 00 | 0 00 | 0.00 | 0 00 | 418,799 80 | 598,124.80 |
| 4,800 00 | 0.00 | 0.00 | 4,800.00 | 1,879 00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 4,900 00 | 0.00 | 0.00 | 4,900.00 | 1,979 00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 5,000 00 | 0 00 | 0.00 | 5,000.00 | 2,079 00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 5,100.00 | 0.00 | 0 00 | 5,100 00 | 2,179.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 5,200.00 | 0 00 | 0.00 | 5,200.00 | 2,279.00 | 0.00 | 0 00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 5,300.00 | 0 00 | 0.00 | 5,300.00 | 2,379.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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 | 2,479.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 5,500 00 | 0.00 | 0.00 | 5,500.00 | 2,579.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 5,600 00 | 0.00 | 0.00 | 5,600.00 | 2,679.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 5,700.00 | 0.00 | 0 00 | 5,700.00 | 2,779.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 5,800 00 | 0.00 | 0 00 | 5,800.00 | 2,879.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 5,900 00 | 0 00 | 0.00 | 5,900.00 | 2,979.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799 80 | 598,124 80 |
| 6,000 00 | 0.00 | 0 00 | 6,000 00 | 3,079.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 6,100 00 | 0.00 | 0.00 | 6,100.00 | 3,179.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 6,200.00 | 0 00 | 0.00 | 6,200.00 | 3,279.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 6,300.00 | 0.00 | 0.00 | 6,300.00 | 3,379.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124 80 |
| 6,400.00 | 0.00 | 0 00 | 6,400.00 | 3,479.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 6,500 00 | 0.00 | 0.00 | 6,500.00 | 3,579.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 6,600.00 | 0.00 | 0 00 | 6,600 00 | 3,679.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 6,700.00 | 0.00 | 0.00 | 6,700.00 | 3,779.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124 80 |
| 6,800 00 | 0 00 | 0.00 | 6,800.00 | 3,879 00 | 0 00 | 0 00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 6,900.00 | 0.00 | 0.00 | 6,900.00 | 3,979.00 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| 7,000 00 | 0.00 | 0.00 | 7,000.00 | 4,079.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124 80 |
| 7,100.00 | 0.00 | 0.00 | 7,100.00 | 4,179.00 | 0.00 | 0.00 | 0 00 | 0.00 | 418,799.80 | 598,124 80 |
| 7,200.00 | 0.00 | 0.00 | 7,200.00 | 4,279.00 | 0 00 | 0 00 | 0 00 | 0.00 | 418,799.80 | 598,124.80 |
| 7,300.00 | 0 00 | 0 00 | 7,300.00 | 4,379.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 7,400 00 | 0.00 | 0 00 | 7,400.00 | 4,479.00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124 80 |
| 7,500 00 | 0.00 | 0 00 | 7,500.00 | 4,579 00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 7,600.00 | 0.00 | 0.00 | 7,600.00 | 4,679 00 | 0.00 | 0 00 | 0.00 | 0 00 | 418,799 80 | 598,124.80 |
| 7,700.00 | 0.00 | 0.00 | 7,700 00 | 4,779.00 | 0 00 | 0 00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |
| 7,800 00 | 0.00 | 0.00 | 7,800 00 | 4,879.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 7,900 00 | 0 00 | 0.00 | 7,900 00 | 4,979.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 8,000 00 | 0.00 | 0.00 | 8,000.00 | 5,079.00 | 0 00 | 0.00 | 0 00 | 0 00 | 418,799.80 | 598,124.80 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921 00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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 | 5,179.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124 80 |
| 8,200.00 | 0.00 | 0.00 | 8,200.00 | 5,279.00 | 0.00 | 0 00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 8,300.00 | 0.00 | 0.00 | 8,300.00 | 5,379.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 8,400.00 | 0.00 | 0.00 | 8,400.00 | 5,479.00 | 0 00 | 0.00 | 0 00 | 0.00 | 418,799 80 | 598,124.80 |
| 8,500.00 | 0.00 | 0.00 | 8,500 00 | 5,579 00 | 0.00 | 0.00 | 0.00 | 0.00 | 418,799.80 | 598,124.80 |
| 8,600.00 | 0 00 | 0.00 | 8,600.00 | 5,679.00 | 0.00 | 0.00 | 0.00 | 0 00 | 418,799.80 | 598,124.80 |
| 8,622.50 | 0.00 | 0.00 | 8,622.50 | 5,701.50 | 0 00 | 0.00 | 0.00 | 0.00 | 418,799 80 | 598,124.80 |
| KOP-8622.50'MD,0.00°INC,0.00°AZI | | | | | | | | | | |
| 8,625 00 | 0.30 | 265.00 | 8,625.00 | 5,704.00 | 0.00 | -0.01 | 0.01 | 12.00 | 418,799.80 | 598,124 79 |
| 8,650.00 | 3.30 | 265.00 | 8,649.98 | 5,728.98 | -0.07 | -0 79 | 0.79 | 12.00 | 418,799.73 | 598,124 01 |
| 8,675.00 | 6 30 | 265.00 | 8,674 89 | 5,753 89 | -0 25 | -2.87 | 2 88 | 12.00 | 418,799 55 | 598,121.93 |
| 8,700 00 | 9.30 | 265.00 | 8,699.66 | 5,778.66 | -0 55 | -6.25 | 6 26 | 12 00 | 418,799 25 | 598,118.55 |
| 8,725.00 | 12 30 | 265.00 | 8,724.21 | 5,803.21 | -0 96 | -10.92 | 10 94 | 12.00 | 418,798.84 | 598,113 88 |
| 8,750.00 | 15.30 | 265.00 | 8,748.49 | 5,827.49 | -1 47 | -16.86 | 16 89 | 12.00 | 418,798 33 | 598,107 94 |
| 8,775.00 | 18.30 | 265.00 | 8,772.42 | 5,851 42 | -2.10 | -24 05 | 24 10 | 12.00 | 418,797 70 | 598,100.75 |
| 8,800.00 | 21.30 | 265.00 | 8,795 94 | 5,874.94 | -2 84 | -32.49 | 32 54 | 12.00 | 418,796.96 | 598,092.31 |
| 8,825 00 | 24.30 | 265.00 | 8,818.98 | 5,897.98 | -3.69 | -42.14 | 42.21 | 12.00 | 418,796.11 | 598,082.66 |
| 8,850.00 | 27.30 | 265.00 | 8,841.49 | 5,920.49 | -4.63 | -52.98 | 53.07 | 12.00 | 418,795.17 | 598,071.82 |
| 8,875.00 | 30 30 | 265.00 | 8,863.40 | 5,942.40 | -5 68 | -64.97 | 65.08 | 12.00 | 418,794.12 | 598,059.83 |
| 8,900.00 | 33 30 | 265.00 | 8,884.64 | 5,963.64 | -6.83 | -78 09 | 78.23 | 12.00 | 418,792.97 | 598,046.71 |
| 8,925.00 | 36 30 | 265.00 | 8,905.17 | 5,984.17 | -8.08 | -92.30 | 92.46 | 12.00 | 418,791 72 | 598,032.50 |
| 8,950 00 | 39.30 | 265 00 | 8,924.92 | 6,003 92 | -9.41 | -107 57 | 107.75 | 12.00 | 418,790.39 | 598,017.23 |
| 8,975 00 | 42.30 | 265 00 | 8,943.84 | 6,022 84 | -10 83 | -123.84 | 124.05 | 12.00 | 418,788.97 | 598,000.96 |
| 9,000 00 | 45.30 | 265 00 | 8,961 89 | 6,040 89 | -12 34 | -141.07 | 141.31 | 12.00 | 418,787.46 | 597,983 73 |
| 9,025 00 | 48.30 | 265.00 | 8,979.00 | 6,058.00 | -13.93 | -159 22 | 159.50 | 12.00 | 418,785 87 | 597,965 58 |
| 9,050.00 | 51 30 | 265.00 | 8,995.14 | 6,074.14 | -15 59 | -178 24 | 178.55 | 12.00 | 418,784.21 | 597,946 56 |
| 9,075.00 | 54.30 | 265.00 | 9,010.25 | 6,089.25 | -17 33 | -198 08 | 198.42 | 12 00 | 418,782.47 | 597,926.72 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921 00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9,100 00 | 57.30 | 265 00 | 9,024.30 | 6,103.30 | -19 13 | -218.67 | 219 05 | 12.00 | 418,780.67 | 597,906.13 |
| 9,125.00 | 60.30 | 265.00 | 9,037.25 | 6,116 25 | -20.99 | -239.97 | 240.38 | 12 00 | 418,778.81 | 597,884.83 |
| 9,150.00 | 63.30 | 265 00 | 9,049.07 | 6,128.07 | -22.91 | -261 91 | 262.37 | 12.00 | 418,776 89 | 597,862.89 |
| 9,175.00 | 66.30 | 265.00 | 9,059.71 | 6,138.71 | -24.89 | -284.45 | 284.94 | 12.00 | 418,774.91 | 597,840.35 |
| 9,200 00 | 69 29 | 265 00 | 9,069.16 | 6,148.16 | -26 90 | -307 50 | 308.03 | 12.00 | 418,772.90 | 597,817.30 |
| 9,225.00 | 72.29 | 265.00 | 9,077.38 | 6,156.38 | -28.96 | -331.02 | 331.59 | 12 00 | 418,770.84 | 597,793.78 |
| 9,250 00 | 75.29 | 265.00 | 9,084.36 | 6,163.36 | -31.05 | -354.93 | 355.54 | 12.00 | 418,768 75 | 597,769.87 |
| 9,275.00 | 78.29 | 265 00 | 9,090.07 | 6,169 07 | -33 17 | -379.17 | 379 83 | 12 00 | 418,766.63 | 597,745.63 |
| 9,300.00 | 81.29 | 265.00 | 9,094.50 | 6,173.50 | -35.32 | -403.68 | 404.38 | 12.00 | 418,764.48 | 597,721 12 |
| 9,325 00 | 84.29 | 265.00 | 9,097.63 | 6,176 63 | -37 48 | -428.39 | 429.13 | 12 00 | 418,762 32 | 597,696.41 |
| 9,350.00 | 87.29 | 265.00 | 9,099.47 | 6,178.47 | -39 65 | -453.22 | 454.00 | 12.00 | 418,760 15 | 597,671 58 |
| 9,372.56 | 90 00 | 265.00 | 9,100.00 | 6,179.00 | -41 62 | -475 68 | 476.50 | 12 00 | 418,758 18 | 597,649 12 |
| **EOC-9372.56'MD,90.00°INC,265.00°AZI,12.00°DLS, 476.51'VS, -41.62'N, -475.69'E** | | | | | | | | | | |
| 9,400.00 | 90.00 | 265.69 | 9,100.00 | 6,179.00 | -43 85 | -503.04 | 503.90 | 2 50 | 418,755 95 | 597,621 76 |
| 9,500.00 | 90.00 | 268.19 | 9,100.00 | 6,179.00 | -49.19 | -602.89 | 603.85 | 2 50 | 418,750.61 | 597,521.91 |
| 9,541.83 | 90.00 | 269.23 | 9,100.00 | 6,179 00 | -50 13 | -644.70 | 645.67 | 2 50 | 418,749.67 | 597,480 10 |
| 9,600.00 | 90 00 | 269.23 | 9,100.00 | 6,179.00 | -50 91 | -702 87 | 703.84 | 0 00 | 418,748.89 | 597,421.93 |
| 9,700 00 | 90 00 | 269 23 | 9,100.00 | 6,179.00 | -52.25 | -802.86 | 803.84 | 0.00 | 418,747.55 | 597,321.94 |
| 9,800.00 | 90.00 | 269.23 | 9,100 00 | 6,179.00 | -53.59 | -902 85 | 903 84 | 0 00 | 418,746.21 | 597,221.95 |
| 9,900 00 | 90 00 | 269 23 | 9,100.00 | 6,179 00 | -54.93 | -1,002.84 | 1,003.83 | 0.00 | 418,744.87 | 597,121.96 |
| 10,000.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -56.28 | -1,102 83 | 1,103 83 | 0.00 | 418,743.52 | 597,021.97 |
| 10,100.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -57 62 | -1,202.82 | 1,203 82 | 0 00 | 418,742.18 | 596,921.98 |
| 10,200.00 | 90.00 | 269 23 | 9,100 00 | 6,179 00 | -58 96 | -1,302.82 | 1,303 82 | 0.00 | 418,740.84 | 596,821.98 |
| 10,300.00 | 90 00 | 269.23 | 9,100.00 | 6,179 00 | -60 30 | -1,402.81 | 1,403 81 | 0 00 | 418,739.50 | 596,721.99 |
| 10,400.00 | 90 00 | 269.23 | 9,100.00 | 6,179 00 | -61 64 | -1,502.80 | 1,503 81 | 0.00 | 418,738.16 | 596,622.00 |
| 10,500 00 | 90.00 | 269 23 | 9,100.00 | 6,179 00 | -62 98 | -1,602.79 | 1,603 81 | 0.00 | 418,736.82 | 596,522.01 |
| 10,600 00 | 90.00 | 269 23 | 9,100.00 | 6,179.00 | -64 32 | -1,702 78 | 1,703.80 | 0.00 | 418,735.48 | 596,422.02 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10,700.00 | 90.00 | 269 23 | 9,100.00 | 6,179 00 | -65.66 | -1,802 77 | 1,803.80 | 0 00 | 418,734.14 | 596,322 03 |
| 10,800 00 | 90.00 | 269.23 | 9,100 00 | 6,179.00 | -67.00 | -1,902.76 | 1,903.79 | 0.00 | 418,732.80 | 596,222.04 |
| 10,900.00 | 90 00 | 269.23 | 9,100.00 | 6,179.00 | -68.34 | -2,002.75 | 2,003 79 | 0.00 | 418,731.46 | 596,122 05 |
| 11,000.00 | 90.00 | 269.23 | 9,100 00 | 6,179.00 | -69 68 | -2,102 74 | 2,103.78 | 0.00 | 418,730 12 | 596,022.06 |
| 11,100 00 | 90 00 | 269 23 | 9,100 00 | 6,179.00 | -71.02 | -2,202 73 | 2,203 78 | 0.00 | 418,728.78 | 595,922 07 |
| 11,200.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -72.37 | -2,302.73 | 2,303 77 | 0.00 | 418,727 43 | 595,822.07 |
| 11,300 00 | 90.00 | 269 23 | 9,100.00 | 6,179 00 | -73.71 | -2,402.72 | 2,403 77 | 0.00 | 418,726.09 | 595,722 08 |
| 11,400.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -75 05 | -2,502.71 | 2,503.77 | 0 00 | 418,724.75 | 595,622.09 |
| 11,500 00 | 90.00 | 269 23 | 9,100.00 | 6,179.00 | -76.39 | -2,602.70 | 2,603 76 | 0 00 | 418,723.41 | 595,522.10 |
| 11,600.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -77 73 | -2,702.69 | 2,703 76 | 0 00 | 418,722.07 | 595,422.11 |
| 11,700.00 | 90 00 | 269 23 | 9,100 00 | 6,179 00 | -79.07 | -2,802 68 | 2,803 75 | 0.00 | 418,720.73 | 595,322.12 |
| 11,800.00 | 90.00 | 269.23 | 9,100.00 | 6,179.00 | -80.41 | -2,902.67 | 2,903.75 | 0.00 | 418,719.39 | 595,222 13 |
| 11,900 00 | 90.00 | 269 23 | 9,100 00 | 6,179.00 | -81.75 | -3,002.66 | 3,003 74 | 0 00 | 418,718.05 | 595,122.14 |
| 12,000 00 | 90 00 | 269 23 | 9,100.00 | 6,179.00 | -83.09 | -3,102 65 | 3,103.74 | 0.00 | 418,716 71 | 595,022 15 |

| | | | |
|---|---|---|---|
| **Company:** | Marbob | **Local Co-ordinate Reference:** | Well #1H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 2921 00ft (Est RKB=16') |
| **Site:** | Show Stopper Federal #1H | **MD Reference:** | WELL @ 2921.00ft (Est RKB=16') |
| **Well:** | #1H | **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 | 0.00 | 0.00 | 9,100.00 | -101.40 | -4,468.00 | 418,698.400 | 593,656.800 | 32° 9' 2.725 N | 104° 1' 50.570 W |
| - plan misses by 1365.47ft at 12000.00ft MD (9100 00 TVD, -83.09 N, -3102.65 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| KOP | 0.00 | 0 00 | 8,622.50 | 0.00 | 0.00 | 418,799.800 | 598,124 800 | 32° 9' 3.601 N | 104° 0' 58.595 W |
| - plan hits target | | | | | | | | | |
| - Point | | | | | | | | | |

**Casing Points**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (") | Hole Diameter (") |
|---|---|---|---|---|
| 2,400.00 | 2,400.00 | 9 5/8" | 9-5/8 | 9-5/8 |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 8,622 50 | 8,622.50 | 0.00 | 0.00 | KOP-8622.50'MD,0 00°INC,0.00°AZI |
| 9,372.56 | 9,100.00 | -41 62 | -475.68 | EOC-9372.56'MD,90.00°INC,265.00°AZI,12 00°DLS, 476.51'VS, -41.62 |
| 13,365 47 | 9,100.00 | -50.13 | -644.70 | BHL-13365.47'MD,90 00°INC,269.23°AZI, 9100.00'TVD, 4469.15'VS, - |

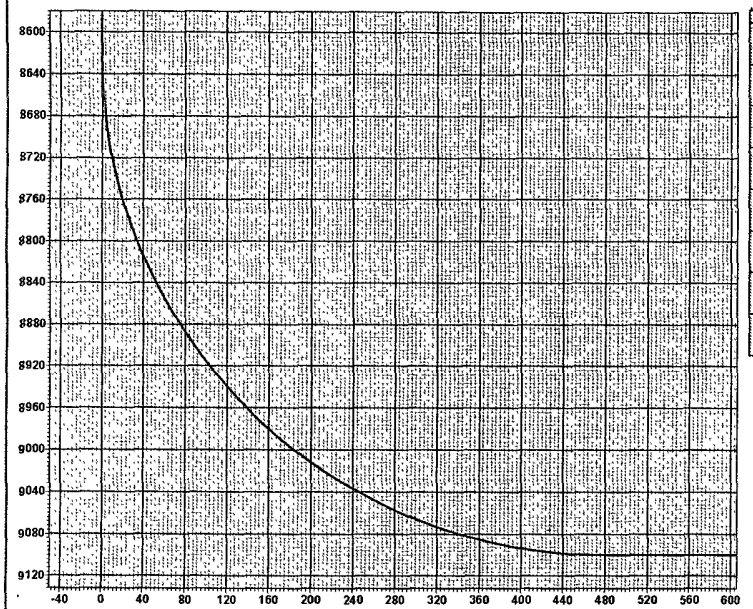
Checked By: _____ Approved By: _____ Date: _____

marbob
energy corporation
Artesia, N.M.

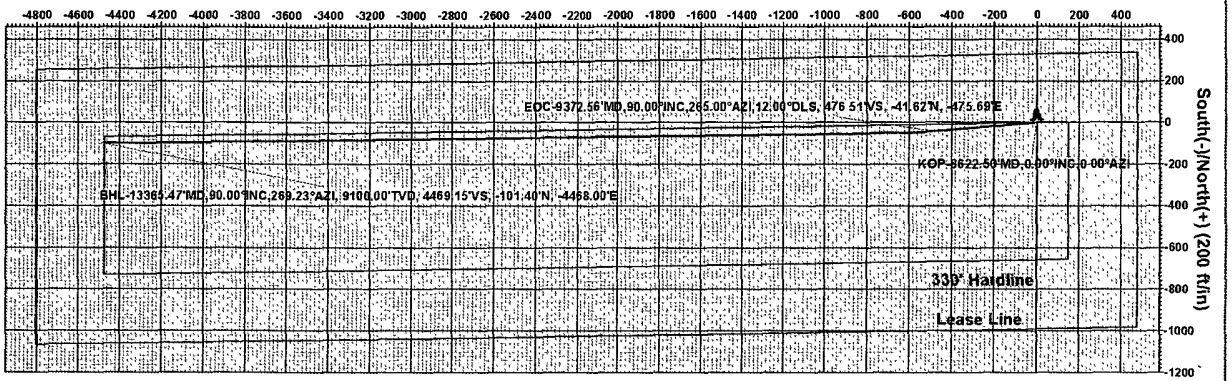

Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.93°

Magnetic Field
Strength: 48822.6snT
Dip Angle: 60.12°
Date: 09/23/2008
Model: IGRF200510

PATHFINDER



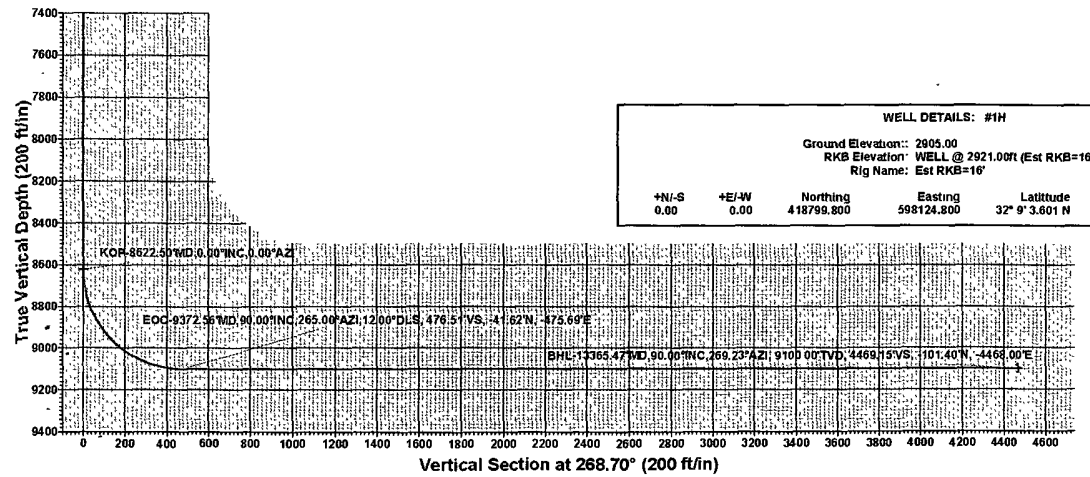

West(-)/East(+) (200 ft/in)




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 | 8622.50 | 0.00 | 0.00 | 8622.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 9372.56 | 90.00 | 265.00 | 9100.00 | -41.62 | -475.68 | 12.00 | 265.00 | 476.50 | |
| 4 | 9541.83 | 90.00 | 269.23 | 9100.00 | -50.13 | -644.70 | 2.50 | 90.00 | 645.67 | |
| 5 | 13365.47 | 90.00 | 269.23 | 9100.00 | -101.40 | -4468.00 | 0.00 | 0.00 | 4469.15 | PBHL |

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




WELL DETAILS: #1H

Ground Elevation:: 2905.00
RKB Elevation: WELL @ 2921.00ft (Est RKB=16')
Rig Name: Est RKB=16'

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 418799.800 | 598124.800 | 32° 9' 3.601 N | 104° 0' 58.595 W | |

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Shape |
|---|---|---|---|---|---|---|
| KOP | 8622.50 | 0.00 | 0.00 | 418799.800 | 598124.800 | Point |
| PBHL | 9100.00 | -101.40 | -4468.00 | 418698.400 | 593656.800 | Point |

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

Plan Plan #1 ( #1H/OH)
Created By Nate Bingham Date 10 04, April 07 2009
Checked _____ Date _____

**Marbob Energy Corp**
**Casing Design Summary**
**Showstopper 7 Federal Com 1H**
**A-7-25s-29e**
**Eddy Co., NM**
**30-015-36559**

**Summary:**

5-1/2"/17 ppf/ N80/LTC casing design is adequate for 0-13365' MD, 9100' TVD

Design SF = 1.125 burst, 1.125 collapse, 1.6 tension
Actual SF = 1.24 burst, 1.43 collapse, 2.14 tension

**Basic Data:**

TVD = 9100', TD = 13365' MD, KOP = 8622', Well Horizontal = 9372' MD
Mud Wt. = 9.3 ppg (1.12 g/cc)
Pipe Friction Factor in Horizontal Portion of Well = 0.45 (SPE Paper Review = 0.35-0.45 Range)

5.5"/17ppf/N80/LTC Burst=7740 psi, Collapse=6290 psi, Tensile=348,000 lbs

**Burst Design:**

Assume: Maximum surface treating pressure = 6250 psi
Design SF = 1.125
Actual SF = 1.24 (7740 psi rating/ 6250 psi STP = 1.24 SF)

**Collapse Design:**

Assume: Empty pipe, 9.3 ppg MW, TVD = 9100'
Design SF = 1.125
Actual SF = 1.43 ((6290 psi rating) / (9100 x 9.3x .052) = 1.43 SF)

**Tension Design:**

Assume:

Weight of casing in horizontal lateral is carried by the borehole
Effective weight of casing in horizontal lateral is the "friction load"
"Friction load" = buoyed weight of casing x friction factor
Friction factor in horizontal lateral = 0.45 (conservative, values vary from 0.35 to 0.45)
Used buoyed weight in vertical and horizontal portion of wellbore
Vertical portion of wellbore assumed to be from 0-9372' MD where well becomes horizontal
Horizontal portion of wellbore assumed to be from 9372-13365' MD (3993' length)
Build angle at 12°/100'

See attached calculation spreadsheet.

Design SF = 1.6
Actual SF = 2.14 at top of string, SF = 2.02 at KOP (top of curve)

Kbc/showstopper 7-1h csg design summary blm apd

# Showstopper 7 Federal Com 1H
# Production Casing Tension Calculations

Spreadsheet created by George Freeman, Marbob Energy Corporation, 8/7/08
Reference: Bourgoyne et Al Applied Drilling Engineering, SPE Publications, 1991 - chapter 7

**Planned Hole Configuration:** Vertical to 8622', then build at 12 deg/100' to horizontal at 9372' MD, 9100' TVD, then horizontal to 13365' MD, 9100' TVD.

**Production Casing Specification:** 5.5" 17 lb./ft./N80/LTC, centralized through curve and lateral

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| o.d., " | 5.5 | wt., lb./ft. | 17 | i.d., " | 4.892 | w.t., " | 0.304 |
| Collapse, psi | 6290 | Burst, psi | 7740 | Tension, lb | 397,000 | Joint strength, lb | 348,000 |
| Yield str., psi | 80,000 | Ult. Tens. Str., psi | 100,000 | | | | |
| Dog leg severity | 12 | Mud density, g/cc | 1.12 | Steel den., g/cc | 7.85 | Drag coef. | 0.45 |
| Youngs Mod | 3.00E+07 | Moment of Inertia | 16.80446 | Joint length, ft. | 42 | | |

**At the top of the casing**

| | | | |
|---|---|---|---|
| Weight of vertical pipe in mud | 9372' * 17lb/ft * (7.85 - 1.12)/7.85 | | 136,592 lbs. |
| Drag force on pipe in lateral | 0.45 * 3993' * 17lb/ft * (7.85 - 1.12)/7.85 | | 26,188 lbs. |
| Total force to pull | Weight + Drag | | 162,781 lbs. |
| **Safety factor** | Joint Strength / Required force | **SF=** | **2.138** |

**At the top of the curve**

| | | | |
|---|---|---|---|
| Weight of lower vertical pipe in mud | 750' * 17lb/ft * (7.85 - 1.12)/7.85 | | 10,931 lbs. |
| Drag force on pipe in lateral | 0.45 * 3993' * 17lb/ft * (7.85 - 1.12)/7.85 | | 26,188 lbs. |
| Total basic axial force | Weight + Drag | | 37,119 lbs. |
| Axial force due to bending | | | |
| for pure bending | Fab = 64 * 12 deg/100' * 5.5" * 17 lb/ft | | 71,808 lbs. |
| for centralized pipe with 37119 lbs. of axial tension | | | |
| K = (37119 / (3E7 * 16.8))^0.5 = | 0.008581 | | |
| Fab = 71808 lb. * 6 * K * 42' / tanh(6 * K * 42') = | | | 159,440 lbs. |
| Total force | Axial force + force due to bending | | 196,559 lbs. |
| **Safety factor** | Body Strength / Required force | **SF=** | **2.020** |

**Effect of bending on joint strength**

For API Round Threads
Area under last perfect thread: Ajp = 0.25 * 3.14159 * ((5.5"-0.1425")^2 -4.892"^2) = 3.747 in.
Axial tension strength for Fcr / Ajp >= yield strength
Fcr = 0.95 * Ajp * (100000 psi - (140.5 * 12 * 5.5" /(100000 psi - 80000 psi)^0.8 )^5) = 354,463 lbs.
Fcr / Ajp = 94593 > 80000 psi, formula ok
Calculated joint strength with bending is greater than the nominal table value for joint strength.
**The table value does not need to be derated for bending.**

Submitted by Brian Collins 15 May 09

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Marbob Energy Corporation |
| LEASE NO.: | NMNM117121 |
| WELL NAME & NO.: | Showstopper 7 Federal Com #1H |
| SURFACE HOLE FOOTAGE: | 0330' FNL & 0480' FEL |
| BOTTOM HOLE FOOTAGE | 0430' FNL & 0330' FWL |
| LOCATION: | Section 7, T. 25 S., R 29 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## 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. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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.

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 are located, this does not include the dog house or stairway area.

4. **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. Operator to supply NMOCD order or description of pool which details the vertical and horizontal extent of pool to verify that requested communitization is within an approved and established pool.**

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.**

**Medium cave/karst.**
**Possible lost circulation in the Delaware Mountain Group.**
**Possible water and brine flows in the Salado and Delaware Mountain Group.**

1. The **13-3/8** inch surface casing shall be set **at approximately 125 feet** 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 a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    **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.

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

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Casing to be set in the Lamar Limestone. Proposed setting depth may be too deep. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry. Additional cement may be required as excess cement calculates to 26%.**

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

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. **Excess cement calculates to a negative 10% - additional cement will be required.**

   b. Second stage above DV tool, cement shall:

   ☒ Cement should tie-back at least 250 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 3M annular will be installed and tested as a 2M.**

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. **A 5M BOP will be installed with a 3M manifold and tested to 3M.**

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

a. The tests shall be done by an independent service company.

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

c. 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.

d. 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.

**WWI 051409**