

UNITED STATES **OCD-HOBBS**  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No 1004-0135  
Expires January 31, 2004

**SUNDRY NOTICES AND REPORTS ON WELLS**  
**Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**

5 Lease Serial No

NMNM23006

6 If Indian, Allottee or Tribe Name

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

**SUBMIT IN TRIPLICATE - Other instructions on reverse side**

1 Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

Marbob Energy Corporation

3a Address

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

3b Phone No (include area code)

505-748-3303

4. Location of Well (Footage, Sec., T, R, M, or Survey Description)

Sec. 31, T18S - R32E

2210' FNL & 940' FEL

8. Well Name and No

LPC 31 Federal #2

9 API Well No

30-025-38157

10. Field and Pool, or Exploratory Area

Lusk; Bone Spring, North

11 County or Parish, State

Lea County, New Mexico

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other <u>Move Location</u>
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

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

Marbob Energy Corporation proposes to move the location of this well from 2210' FNL & 940' FEL to 1830' FNL & 2280' FEL. The new location will fall on the edge of the existing LPC 31 Federal #1 location. Attached is the revised well pad layout (Exhibit 3). The expanded location will fall within the previously surveyed 600 X 600 area. The well will be horizontally drilled with the ending bottom hole location being approx. 2310' FNL & 330' FEL. 5 1/2" casing will be run to Total Depth.

**RECEIVED**

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

MAR 18 2008

**HOBBS OCD**

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

Nancy T. Agnew

Title Land Department

Signature

*Nancy T. Agnew*

Date 12-18-07

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

Approved by (Signature)

/s/ Don Peterson

Name /s/ Don Peterson  
(Printed/Typed)

Title **FIELD MANAGER**

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

Office

**CARLSBAD FIELD OFFICE**

Date

MAR 14 2008

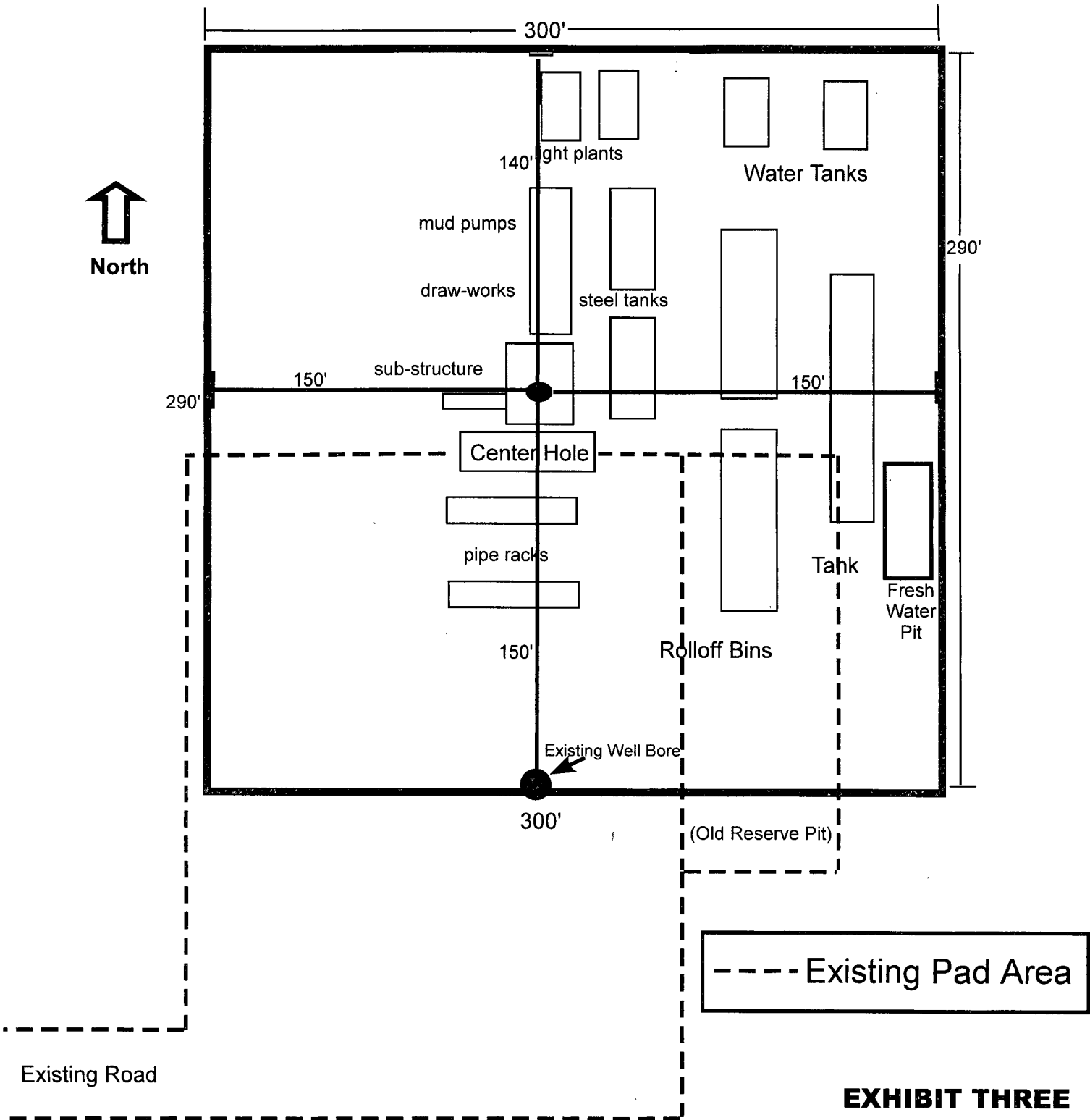
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on next page)

*Ka*

# Well Site Lay-Out Plat

LPC 31 Federal #2  
1830' FNL & 2280' FEL  
Section 31, T18S - R32E  
Lea County, New Mexico



**EXHIBIT THREE**

## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Marbob Energy Corporation
LEASE NO.:	NMNM 23006
WELL NAME & NO.:	LPC 31 Federal 2
SURFACE HOLE FOOTAGE:	1830' FNL & 2280' FEL
BOTTOM HOLE FOOTAGE:	2310' FNL & 0330' FEL
LOCATION:	Section 31, T. 18 S., R 32 E., NMPM
COUNTY:	Lea 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

☒ **Lea County**

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,  
(575) 393-3612

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Queen** formation. **Measurements in the gas stream have been reported between 25-400 ppm.**
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.

## B. CASING

1. The **9-5/8** inch surface casing shall be set **at approximately 1125 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**
  - 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 will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement). **Please provide WOC times to inspector for cement slurries.**
  - 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 **5-1/2** inch production casing is:
  - ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
3. 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 **3000 (3M)** psi.
3. 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.

**WWI 031108**

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

**LPC 31 Federal #2**  
**2210' FNL & 940' FEL, Unit H**  
**Section 31, T18S, R32E**  
**Lea 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. The geological surface formation is Permian.
2. The estimated tops of geologic markers are as follows:

Yates	2830'	Delaware	4560'
Seven Rivers	3060'	Bone Springs	6900'
Queen	3660'		

3. The estimated depths at which anticipated water, oil or gas formations are expected to be encountered:

Yates	2830'	Oil
Bone Springs	6900'	Oil

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 600' and circulating cement back to surface. Any shallower zones above TD which contain commercial quantities of oil and/or gas will have cement circulated across them by inserting a float shoe joint into the 5 1/2" production casing which will be run at TD to sufficiently cover all known oil and gas horizons 200' above.

4. Proposed Casing Program:

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
12 1/4"	0'-1125'	9 5/8"	New	36#	STC	J-55	1.125	1.125	1.6
7 7/8"	1125'-10100'	5 1/2"	New	17#	LTC	N-80	1.125	1.125	1.6

**Proposed Cement Program:**

9 5/8" Surface Casing: Cement to surface with 500 sk "c" Light 12.8 ppg yield 1.91 tail in with 200 sk "c" wt 14.8 yield 1.34.

5 1/2" Production Casing: Cement 1<sup>st</sup> Stage with 225 sk "H" Acid Soluble yield 2.6 wt 15.0 DV Tool @7700'  
2<sup>nd</sup> Stage with 700 sk "H" Light Wt 12.7 yield 1.91 Tail in with 100 sk "H" Wt 13.8 yield 1.64 TOC 900'

5. Pressure Control Equipment:

See Exhibit #1. Nipple up on 9 5/8" surface casing with a 3M system and test to 3000# with 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.

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

Depth	Type	Weight (ppg)	Viscosity (sec)	Waterloss (cc)
0' - 1125'	Fresh Wtr (spud)	8.5	28	N.C.
1125' - 10100'	Brine	9.8-10.2	40-45	N.C.

7. Auxiliary Equipment: Kelly Cock; Sub with full opening valve on floor; and drill pipe connections.

8. Testing, Logging and Coring Program:

No drillstem tests are anticipated.

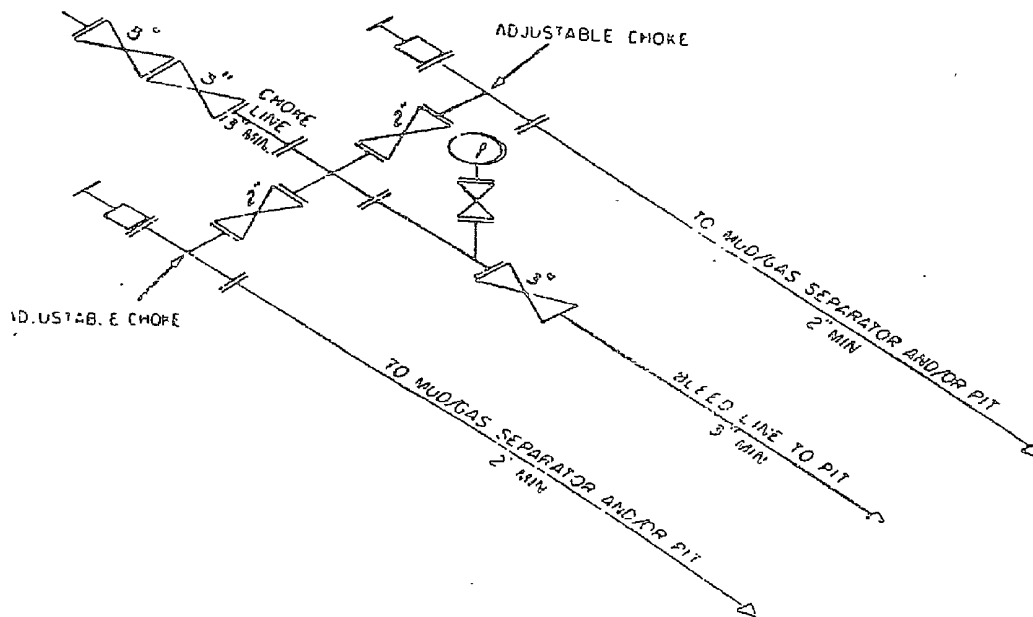
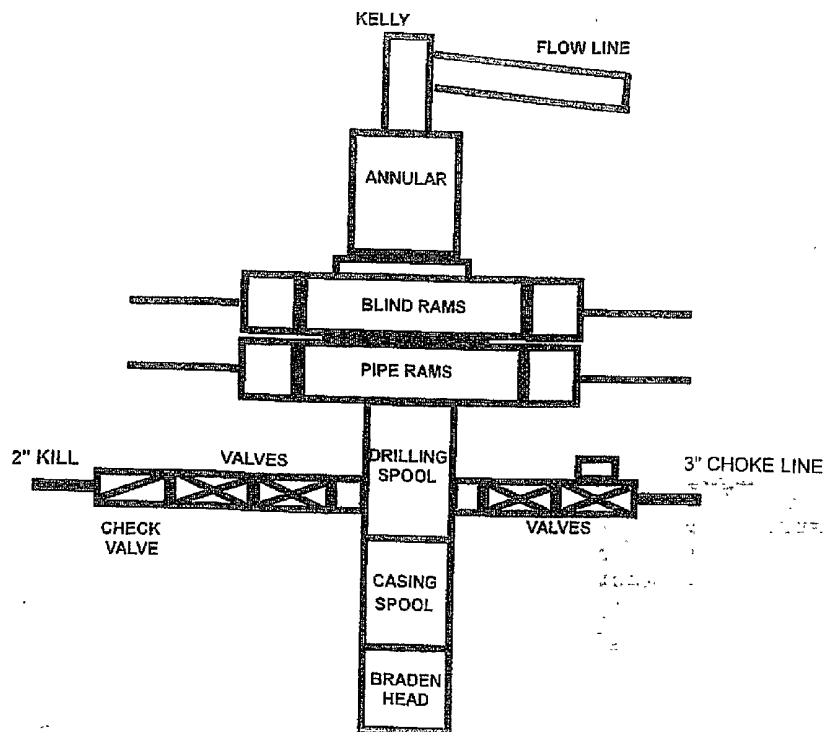
The electric logging program will consist of Dual Laterolog Micro SFL, Spectral Density Dual Spaced Neutron Csg Log, and Depth Control Log.

No conventional coring is anticipated.

9. No abnormal pressures or temperatures are anticipated.

10. Anticipated starting date: As soon as possible after approval.

# 3M SYSTEM

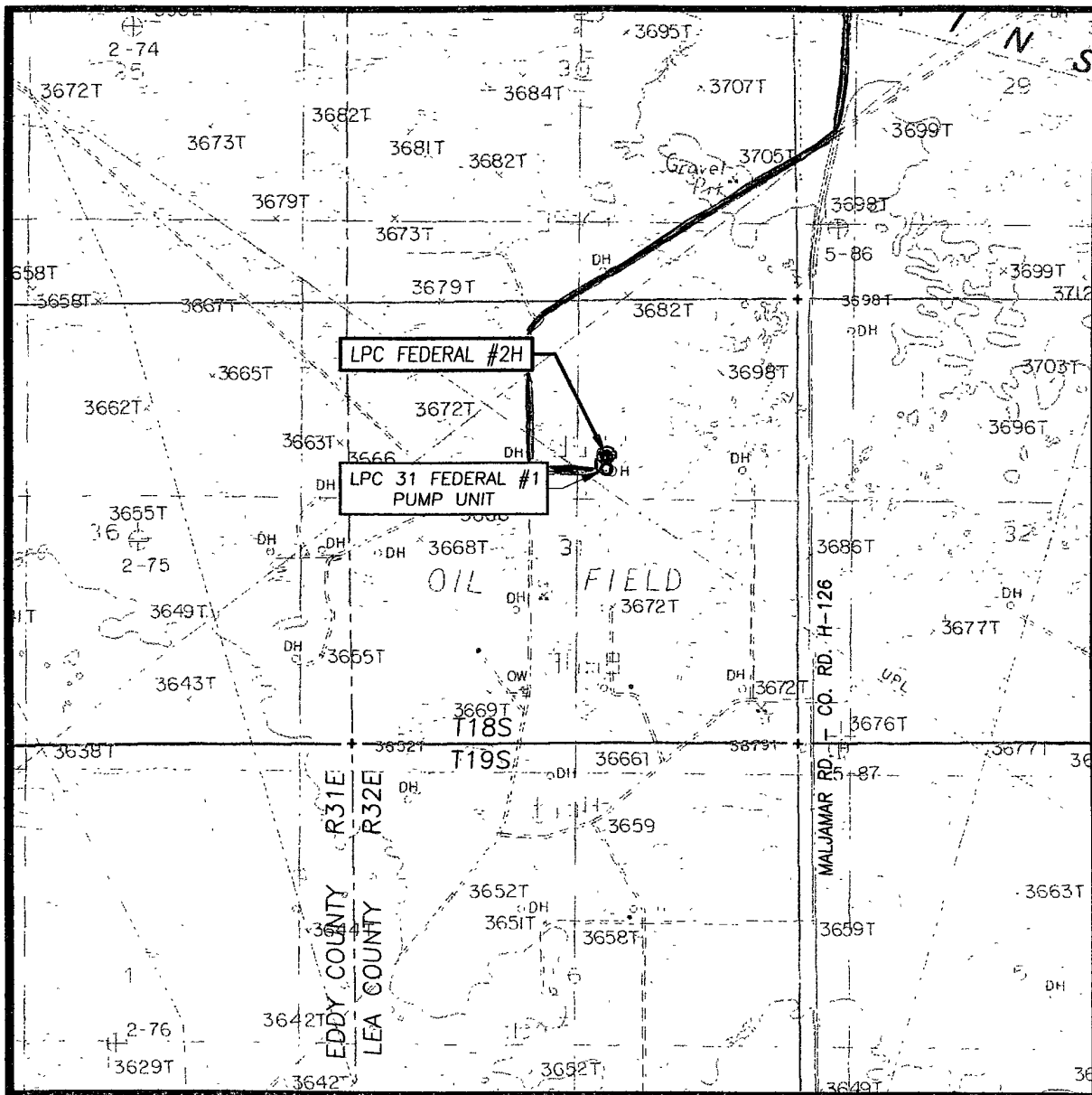


3M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES  
MAY VARY



LOT 1			<h3 style="margin: 0;">OPERATOR CERTIFICATION</h3> <p style="font-size: small; margin: 5px 0;">I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organisation 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.</p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 60%;"> <p style="font-size: large; font-family: cursive;">Nancy T. Agnew</p> <p style="margin: 0;">Signature</p> </div> <div style="width: 35%;"> <p style="margin: 0;">2/12/08</p> <p style="margin: 0;">Date</p> </div> </div> <div style="margin-top: 10px;"> <p style="margin: 0;">Nancy T. Agnew</p> <p style="margin: 0;">Printed Name</p> </div>	
41.18 AC. LOT 2			<h3 style="margin: 0;">SURVEYOR CERTIFICATION</h3> <p style="font-size: small; margin: 5px 0;">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.</p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 60%;"> <p style="font-size: large; font-family: cursive;">Ronald J. Eidson</p> <p style="margin: 0;">Date Surveyed</p> </div> <div style="width: 35%;"> <p style="margin: 0;">FEBRUARY 5/2008</p> <p style="margin: 0;">DSS</p> </div> </div> <div style="margin-top: 10px;"> <p style="margin: 0;">Signature &amp; Seal of Professional Surveyor</p> <p style="font-size: large; font-family: cursive;">Ronald J. Eidson</p> <p style="margin: 0;">08:11:0040</p> </div> <div style="margin-top: 10px;"> <p style="margin: 0;">Certificate No. GARY C. EIDSON 12641</p> <p style="margin: 0;">RONALD J. EIDSON 3239</p> </div>	
41.27 AC. LOT 3			<p style="margin: 0;">LAT.=32.706162° N</p> <p style="margin: 0;">LONG.=103.803978° W</p>	
41.35 AC. LOT 4			<p style="margin: 0;">41.44 AC.</p>	

# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'  
GREENWOOD LAKE, NM

SEC. 31 TWP. 18-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 1830' FNL & 2280 FEL

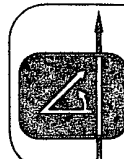
ELEVATION 3683'

OPERATOR MARBOB ENERGY CORPORATION

LEASE LPC FEDERAL

U.S.G.S. TOPOGRAPHIC MAP  
GREENWOOD LAKE, NM

 Existing Roads  
 Proposed Flowline



PROVIDING SURVEYING SERVICES  
SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
412 N. DAL PASO  
HOBBS, N.M. 88240  
(505) 393-3117

**EXHIBIT #2**

# **Marbob**

**Lea County**

**S31T18S R32E**

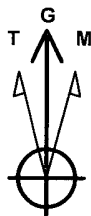
**LPC Federal #2H**

**Original Hole**

**Plan: Plan #1**

## **Pathfinder Survey Report**

**12 February, 2008**



Azimuths to Grid North  
 True North: -0.29°  
 Magnetic North: 7.83°  
 Magnetic Field  
 Strength: 49236.7snT  
 Dip Angle: 60.69°  
 Date: 2/12/2008  
 Model: IGRF200510

Project: Lea County  
 Site: S31 T18S R32E  
 Well: LPC Federal #2H  
 Wellbore: Original Hole  
 Plan: Plan #1 (LPC Federal #2H/Original Hole)



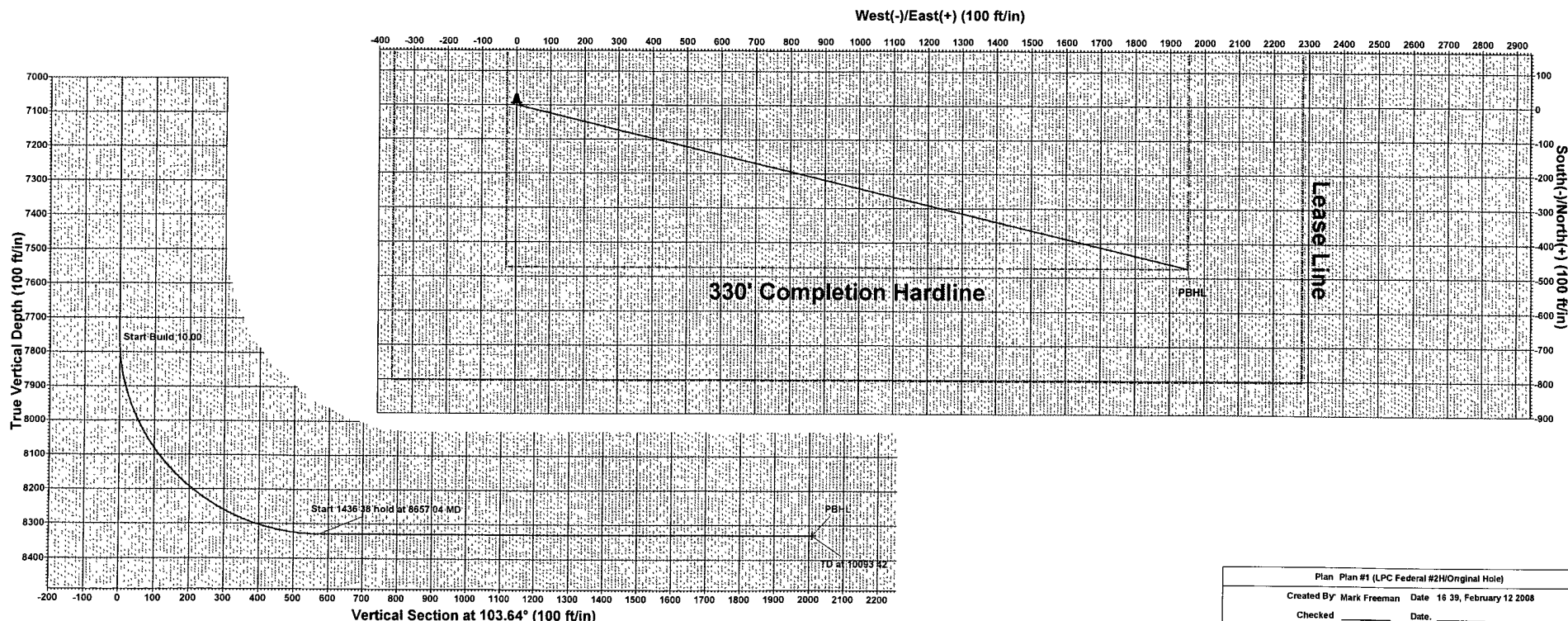
WELL DETAILS LPC Federal #2H						
Ground Elevation: 3683.00						
RKB Elevation: EST RKB @ 3683.00ft						
Rig Name.						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	621019.100	662828.400	32° 42' 22.183 N	103° 48' 14.319 W	

PROJECT DETAILS: Lea 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	7757.04	0.00	0.00	7757.04	0.00	0.00	0.00	0.00	0.00	
3	8657.04	90.00	103.64	8330.00	-135.12	556.80	10.00	103.64	572.96	
4	10093.42	90.00	103.64	8330.00	-473.84	1952.67	0.00	0.00	2009.34	PBHL

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	8330.00	-473.70	1952.70	620545.400	664781.100	Point



Plan: Plan #1 (LPC Federal #2H/Original Hole)	
Created By: Mark Freeman	Date: 16 39, February 12 2008
Checked: _____	Date: _____

# WHS

## Pathfinder Survey Report

**Company:** Marbob  
**Project:** Lea County  
**Site:** S31 T18S R32E  
**Well:** LPC Federal #2H  
**Wellbore:** Original Hole  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well LPC Federal #2H  
**TVD Reference:** EST RKB @ 3683.00ft  
**MD Reference:** EST RKB @ 3683.00ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

<b>Project</b>	Lea County, New Mexico		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site</b>	S31 T18S R32E		
<b>Site Position:</b>		<b>Northing:</b>	621,019.100 ft
<b>From:</b>	Map	<b>Easting:</b>	662,828.400 ft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	32° 42' 22 183 N
		<b>Longitude:</b>	103° 48' 14.319 W
		<b>Grid Convergence:</b>	0.29 °

<b>Well</b>	LPC Federal #2H		
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	32° 42' 22 183 N
		<b>Longitude:</b>	103° 48' 14.319 W
		<b>Ground Level:</b>	3,683.00 ft

**Wellbore** Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/12/2008	8.12	60.69	49,237

**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	103.64

**Survey Tool Program** **Date** 2/12/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	10,093.42	Plan #1 (Original Hole)	MWD	MWD - Standard

### Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00

# WHS

## Pathfinder Survey Report

**Company:** Marbob  
**Project:** Lea County  
**Site:** S31 T18S R32E  
**Well:** LPC Federal #2H  
**Wellbore:** Original Hole  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well LPC Federal #2H  
**TVD Reference:** EST RKB @ 3683.00ft  
**MD Reference:** EST RKB @ 3683 00ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003 16 Single User Db

### Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00

# WHS

## Pathfinder Survey Report

**Company:** Marbob  
**Project:** Lea County  
**Site:** S31 T18S R32E  
**Well:** LPC Federal #2H  
**Wellbore:** Original Hole  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well LPC Federal #2H  
**TVD Reference:** EST RKB @ 3683.00ft  
**MD Reference:** EST RKB @ 3683.00ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

### Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)
5,600.00	0.00	0 00	5,600.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0 00	5,700.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0 00	6,000.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0 00	7,100.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0 00	7,500.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0 00	7,600.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00
7,757.04	0.00	0.00	7,757.04	0.00	0.00	0.00	0.00
7,800.00	4.30	103.64	7,799.96	-0.38	1.56	1.61	10.00
7,850.00	9.30	103.64	7,849.59	-1.77	7.31	7.52	10.00
7,900.00	14.30	103.64	7,898.52	-4.18	17.24	17.74	10.00
7,950.00	19.30	103.64	7,946.37	-7.59	31.28	32.19	10.00
8,000.00	24.30	103.64	7,992.78	-11.97	49.31	50.75	10.00
8,050.00	29.30	103.64	8,037.40	-17.28	71.21	73.28	10.00
8,100.00	34.30	103.64	8,079.88	-23.49	96.81	99.62	10.00
8,150.00	39.30	103.64	8,119.91	-30.55	125.90	129.55	10.00
8,200.00	44.30	103.64	8,157.17	-38.41	158.27	162.87	10.00
8,250.00	49.30	103.64	8,191.39	-47.00	193.68	199.30	10.00
8,300.00	54.30	103.64	8,222.31	-56.26	231.85	238.58	10.00
8,350.00	59.30	103.64	8,249.68	-66.13	272.50	280.40	10.00
8,400.00	64.30	103.64	8,273.30	-76.51	315.30	324.45	10.00
8,450.00	69.30	103.64	8,293.00	-87.35	359.95	370.39	10.00
8,500.00	74.30	103.64	8,308.61	-98.54	406.09	417.88	10.00
8,550.00	79.30	103.64	8,320.03	-110.02	453.38	466.54	10.00
8,600.00	84.30	103.64	8,327.16	-121.69	501.46	516.01	10.00
8,650.00	89.30	103.64	8,329.95	-133.46	549.96	565.92	10.00
8,657.04	90.00	103.64	8,330.00	-135.12	556.80	572.96	10.00
8,700.00	90.00	103.64	8,330.00	-145.25	598.55	615.92	0.00
8,800.00	90.00	103.64	8,330.00	-168.83	695.73	715.92	0.00

# WHS

## Pathfinder Survey Report

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**Wellbore:** Original Hole  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

### Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)
8,900.00	90.00	103.64	8,330.00	-192.41	792.91	815.92	0.00
9,000.00	90.00	103.64	8,330.00	-215.99	890.09	915.92	0.00
9,100.00	90.00	103.64	8,330.00	-239.57	987.27	1,015.92	0.00
9,200.00	90.00	103.64	8,330.00	-263.16	1,084.45	1,115.92	0.00
9,300.00	90.00	103.64	8,330.00	-286.74	1,181.62	1,215.92	0.00
9,400.00	90.00	103.64	8,330.00	-310.32	1,278.80	1,315.92	0.00
9,500.00	90.00	103.64	8,330.00	-333.90	1,375.98	1,415.92	0.00
9,600.00	90.00	103.64	8,330.00	-357.48	1,473.16	1,515.92	0.00
9,700.00	90.00	103.64	8,330.00	-381.07	1,570.34	1,615.92	0.00
9,800.00	90.00	103.64	8,330.00	-404.65	1,667.52	1,715.92	0.00
9,900.00	90.00	103.64	8,330.00	-428.23	1,764.70	1,815.92	0.00
10,000.00	90.00	103.64	8,330.00	-451.81	1,861.88	1,915.92	0.00
10,093.42	90.00	103.64	8,330.00	-473.84	1,952.67	2,009.34	0.00

### Targets

#### Target Name

hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Shape									
PBHL	0.00	0.00	8,330.00	-473.70	1,952.70	620,545.400	664,781.100	32° 42' 17.398 N	103° 47' 51.494 W
- plan hits target									
- Point									

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_