

OCD-ARTESIA

ATS-10-597

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SECRETARY'S POTASH

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

FA 10-865

1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No SL: VO6322 BHL: NMNMO/35612 NMNMO/58935	
1b Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name	
2 Name of Operator Marbob Energy Corporation <14049>		7 If Unit or CA Agreement, Name and No	
3a Address P.O. Box 227, Artesia, NM 88211-0227		8 Lease Name and Well No <38309> Dirty Dozen State Com #1H	
3b Phone No (include area code) 575-748-3303		9 API Well No 30-015-35148	
4 Location of Well (Report location clearly and in accordance with any State requirements*) At surface 700' FNL & 600' FEL (A) At proposed prod zone BHL: 660' FNL & 330' FEL		10 Field and Pool, or Exploratory <97650> WC Williams Sink; Bone Spring	
12 Distance in miles and direction from nearest town or post office* About 6 miles from Halfway, NM		11 Sec, T R M or Blk and Survey or Area SL: Sec. 36 T19S-R31E BL: Sec. 31 T19S-R32E	
13 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 600'		12 County or Parish Eddy County	
14 No of acres in lease SL: 320.00 BHL: 320.81		13 State NM	
15 Spacing Unit dedicated to this well 200			
16 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft		17 BLM/BIA Bond No on file NMB000412	
18 Elevations (Show whether DF, KDB, RT, GL, etc) 3511' GL		19 Approximate date work will start* 06/04/2010	
20 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   | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2 A Drilling Plan  | 5 Operator certification  |
| 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office) | 6 Such other site specific information and/or plans as may be required by the BLM             |

25 Signature <Signature>	Name (Printed Typed) Nancy T. Agnew	Date 05/28/2010
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 USC Section 1001 and Title 43 USC 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)

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

Capitan Controlled Water Basin

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

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.

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 <b>30-015-38148</b>	Pool Code 97650	Pool Name WC WILLIAMS SIN K; BONE SPRING
Property Code <b>38309</b>	Property Name DIRTY DOZEN STATE COM	Well Number 1H
OGRID No 14049	Operator Name MARBOB ENERGY CORPORATION	Elevation 3511'

## 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	36	19-S	31-E		700	NORTH	600	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
A	31	19-S	32-E		660	NORTH	330	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
200			

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

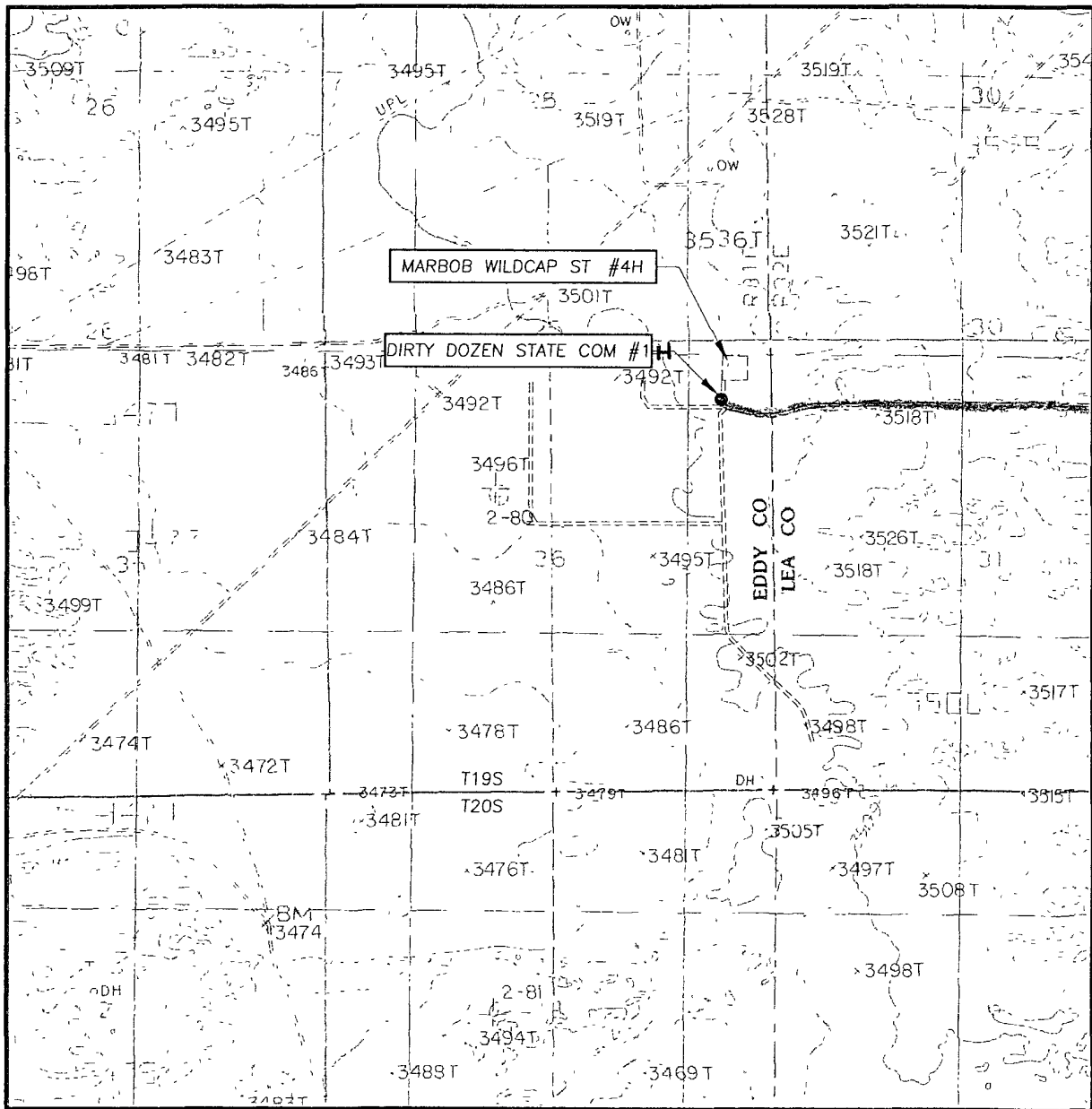
**GEODETIC COORDINATES**  
NAD 27 NMC

**SURFACE LOCATION**  
Y=590452.5 N  
X=659399.6 E

**BOTTOM HOLE LOCATION**  
Y=590503.8 N  
X=664962.5 E

**SCALE** 1"=2000'

# LOCATION VERIFICATION MAP



SCALE 1" = 2000'

SEC 36 TWP 19-S RGE 31-E

SURVEY                      N M P M

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 700' FNL & 600' FEL


ELEVATION                      3511'

OPERATOR MARBOB ENERGY CORPORATION

LEASE DIRTY DOZEN STATE COM

U S G S TOPOGRAPHIC MAP  
WILLIAMS SINK, N M

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

 Existing Roads

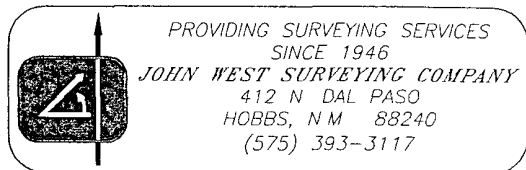


Exhibit #2



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

**Dirty Dozen State Com #1H**  
**Surf: 700' FNL & 600' FEL, Sec 36, T19S-R31E**  
**BHL: 660' FNL & 330' FEL, Sec 31, T19S-R32E**  
**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'	
1 <sup>st</sup> BS	8475'	Oil
2 <sup>nd</sup> BS	9065'	Oil
3 <sup>rd</sup> BS	10030'	Oil
Wolfcamp	10615'	
TD	10815'	
TVD	9400'	
TMD	14758'	

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 1/2" casing to total depth and circulating cement above the base of the 9 5/8" casing.

**3. Proposed Casing Program:**

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 900'	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 3450'	9 5/8"	New	36#	BUTT	J-55	1.125	1.125	1.6
12 1/4"	3450' - 4100'	9 5/8"	New	40#	BUTT	J-55	1.125	1.125	1.6
7 7/8"	4100' - 14758'	5 1/2"	New	17#	LTC	Top 5000' S95/P110 Bottom 9500' N80	1.125	1.125	1.6

*see COA* \* Marbob proposes to drill intermediate hole to 4100' with brine water in 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 1<sup>st</sup> stage with 300 sk "c" light wt 12.7 yield 1.91  
Tail in with 200 sk "c" wt 14.8 yield 1.34. 2<sup>nd</sup> 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' Surf packer stage collar @  
2800'
- c. 5 1/2" Prod Cement 1<sup>st</sup> 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'

See  
COA

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately ~~200'~~ 500' 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: 3910.4 psi

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – 900'	Fresh Water	8.4	29	N.C.
900' – 4100'	Brine	9.9 – 10.0	29	N.C.
4100' – 14758'	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 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

## **10. Testing, Logging and Coring Program:** See COA

- a. Drill stem tests will be based on geological sample shows.
- b. The open hole electrical logging program will be:
  - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
  - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
  - iii. No coring program is planned
  - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

## **11. Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H<sub>2</sub>S in this area. If H<sub>2</sub>S 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 H<sub>2</sub>S 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**

Eddy County

Dirty Dozen State Com

#1

OH

Plan: Plan #1

## **Pathfinder X & Y Planning Report**

25 May, 2010

# **PATHFINDER**





# Pathfinder

Pathfinder X & Y Planning Report



Company:	Marbob	Local Coordinate Reference:	Well #1
Project:	Eddy County	TVD Reference:	WELL @ 3528 00ft (Original Well Elev)
Site:	Dirty Dozen State Com	MD Reference:	WELL @ 3528 00ft (Original Well Elev)
Well:	#1	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:	Dirty Dozen State Com				
Site Position:	From: Map	Northing:	590,452 500 ft	Latitude:	32° 37' 19 885 N
		Easting:	659,399 600 ft	Longitude:	103° 48' 56 192 W
Position Uncertainty:	0 00 ft	Slot Radius:	"	Grid Convergence:	0 28 °

Well:	#1					
Well Position	+N/-S	0 00 ft	Northing:	590,452 500 ft	Latitude:	32° 37' 19 885 N
	+E/-W	0 00 ft	Easting:	659,399 600 ft	Longitude:	103° 48' 56 192 W
Position Uncertainty	0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,511 00ft	

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	05/25/2010	7 84	60 56	48,966

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0 00	0 00	0 00	89 47

Survey Tool Program	Date	05/25/2010		
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0 00	14,758 19	Plan #1 (OH)	MWD	MWD - Standard



# Pathfinder

## Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Com	<b>MD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	D Leg (°/100ft)	Northing (ft)	Easting (ft)	
0 00	0 00	0 00	0 00	-3,528 00	0 00	0 00	0 00	0 00	590,452.50	659,399 60	
100 00	0 00	0 00	100 00	-3,428 00	0 00	0 00	0 00	0.00	590,452 50	659,399 60	
200 00	0 00	0 00	200 00	-3,328 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
300 00	0 00	0 00	300 00	-3,228 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
400 00	0 00	0 00	400 00	-3,128 00	0 00	0 00	0.00	0 00	590,452.50	659,399 60	
500 00	0 00	0 00	500 00	-3,028 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
600 00	0 00	0 00	600 00	-2,928 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
700 00	0 00	0 00	700 00	-2,828 00	0 00	0 00	0 00	0.00	590,452 50	659,399 60	
800 00	0 00	0 00	800 00	-2,728 00	0 00	0 00	0 00	0.00	590,452 50	659,399 60	
900 00	0 00	0 00	900 00	-2,628 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,000 00	0 00	0 00	1,000 00	-2,528 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,100 00	0 00	0 00	1,100 00	-2,428 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,200 00	0 00	0 00	1,200 00	-2,328 00	0 00	0 00	0 00	0.00	590,452 50	659,399 60	
1,300 00	0 00	0 00	1,300 00	-2,228 00	0 00	0 00	0 00	0 00	590,452.50	659,399 60	
1,400 00	0 00	0 00	1,400 00	-2,128 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,500 00	0 00	0 00	1,500 00	-2,028 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,600 00	0 00	0 00	1,600 00	-1,928 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
1,700 00	0 00	0 00	1,700 00	-1,828 00	0 00	0 00	0.00	0 00	590,452 50	659,399 60	
1,800 00	0 00	0 00	1,800 00	-1,728 00	0 00	0 00	0.00	0 00	590,452 50	659,399 60	
1,900 00	0 00	0 00	1,900 00	-1,628 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,000 00	0 00	0 00	2,000 00	-1,528 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,100 00	0 00	0 00	2,100 00	-1,428 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,200 00	0 00	0 00	2,200 00	-1,328 00	0 00	0 00	0.00	0 00	590,452 50	659,399 60	
2,300 00	0 00	0 00	2,300 00	-1,228 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,400 00	0 00	0 00	2,400 00	-1,128 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,500 00	0 00	0 00	2,500 00	-1,028 00	0 00	0 00	0.00	0 00	590,452 50	659,399 60	
2,600 00	0 00	0 00	2,600 00	-928 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	



# Pathfinder

## Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Corn	<b>MD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	-828 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,800 00	0 00	0 00	2,800 00	-728 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
2,900 00	0 00	0 00	2,900 00	-628 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,000 00	0 00	0 00	3,000 00	-528 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,100 00	0 00	0 00	3,100 00	-428 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,200 00	0 00	0 00	3,200 00	-328 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,300 00	0 00	0 00	3,300 00	-228 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,400 00	0 00	0 00	3,400 00	-128 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,500 00	0 00	0 00	3,500 00	-28 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,600 00	0 00	0 00	3,600 00	72 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,700 00	0 00	0 00	3,700 00	172 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,800 00	0 00	0 00	3,800 00	272 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
3,900 00	0 00	0 00	3,900 00	372 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,000 00	0 00	0 00	4,000 00	472 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,100 00	0 00	0 00	4,100 00	572 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,200 00	0 00	0 00	4,200 00	672 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,300 00	0 00	0 00	4,300 00	772 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,400 00	0 00	0 00	4,400 00	872 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,500 00	0 00	0 00	4,500 00	972 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,600 00	0 00	0 00	4,600 00	1,072 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,700 00	0 00	0 00	4,700 00	1,172 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,800 00	0 00	0 00	4,800 00	1,272 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
4,900 00	0 00	0 00	4,900 00	1,372 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,000 00	0 00	0 00	5,000 00	1,472 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,100 00	0 00	0 00	5,100 00	1,572 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,200 00	0 00	0 00	5,200 00	1,672 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,300 00	0 00	0 00	5,300 00	1,772 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	



# Pathfinder

## Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528.00ft (Original Well Elev)
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<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	1,872 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,500 00	0 00	0 00	5,500 00	1,972 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,600 00	0 00	0 00	5,600 00	2,072 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,700 00	0 00	0 00	5,700 00	2,172 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,800 00	0 00	0 00	5,800 00	2,272 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
5,900 00	0 00	0 00	5,900 00	2,372 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,000 00	0 00	0 00	6,000 00	2,472 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,100 00	0 00	0 00	6,100 00	2,572 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,200 00	0 00	0 00	6,200 00	2,672 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,300 00	0 00	0 00	6,300 00	2,772 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,400 00	0 00	0 00	6,400 00	2,872 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,500 00	0 00	0 00	6,500 00	2,972 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,600 00	0 00	0 00	6,600 00	3,072 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,700 00	0 00	0 00	6,700 00	3,172 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,800 00	0 00	0 00	6,800 00	3,272 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
6,900 00	0 00	0 00	6,900 00	3,372 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,000 00	0 00	0 00	7,000 00	3,472 00	0 00	0 00	0 00	0 00	590,452.50	659,399 60	
7,100 00	0 00	0 00	7,100 00	3,572 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,200 00	0 00	0 00	7,200 00	3,672 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,300.00	0 00	0 00	7,300 00	3,772 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,400 00	0 00	0 00	7,400 00	3,872 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,500 00	0 00	0 00	7,500 00	3,972 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,600 00	0 00	0 00	7,600 00	4,072 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,700 00	0 00	0 00	7,700 00	4,172 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,800 00	0 00	0 00	7,800 00	4,272 00	0 00	0 00	0 00	0 00	590,452 50	659,399 60	
7,900 00	0 00	0 00	7,900 00	4,372 00	0 00	0 00	0 00	0 00	590,452.50	659,399 60	
8,000 00	0 00	0 00	8,000 00	4,472 00	0 00	0 00	0 00	0 00	590,452 50	659,399.60	



# Pathfinder

## Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528.00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Com	<b>MD Reference:</b>	WELL @ 3528.00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	4,572.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,200.00	0.00	0.00	8,200.00	4,672.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,300.00	0.00	0.00	8,300.00	4,772.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,400.00	0.00	0.00	8,400.00	4,872.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,500.00	0.00	0.00	8,500.00	4,972.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,600.00	0.00	0.00	8,600.00	5,072.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,700.00	0.00	0.00	8,700.00	5,172.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,800.00	0.00	0.00	8,800.00	5,272.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,900.00	0.00	0.00	8,900.00	5,372.00	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,922.50	0.00	0.00	8,922.50	5,394.50	0.00	0.00	0.00	0.00	590,452.50	659,399.60	
8,925.00	0.30	89.47	8,925.00	5,397.00	0.00	0.01	0.01	12.00	590,452.50	659,399.61	
8,950.00	3.30	89.47	8,949.98	5,421.98	0.01	0.79	0.79	12.00	590,452.51	659,400.39	
8,975.00	6.30	89.47	8,974.89	5,446.89	0.03	2.88	2.88	12.00	590,452.53	659,402.48	
9,000.00	9.30	89.47	8,999.66	5,471.66	0.06	6.28	6.28	12.00	590,452.56	659,405.88	
9,025.00	12.30	89.47	9,024.21	5,496.21	0.10	10.96	10.96	12.00	590,452.60	659,410.56	
9,050.00	15.30	89.47	9,048.49	5,520.49	0.16	16.92	16.92	12.00	590,452.66	659,416.52	
9,075.00	18.30	89.47	9,072.42	5,544.42	0.22	24.14	24.15	12.00	590,452.72	659,423.74	
9,100.00	21.30	89.47	9,095.94	5,567.94	0.30	32.61	32.61	12.00	590,452.80	659,432.21	
9,125.00	24.30	89.47	9,118.98	5,590.98	0.39	42.30	42.30	12.00	590,452.89	659,441.90	
9,150.00	27.30	89.47	9,141.49	5,613.49	0.49	53.18	53.18	12.00	590,452.99	659,452.78	
9,175.00	30.30	89.47	9,163.40	5,635.40	0.60	65.22	65.22	12.00	590,453.10	659,464.82	
9,200.00	33.30	89.47	9,184.64	5,656.64	0.73	78.39	78.39	12.00	590,453.23	659,477.99	
9,225.00	36.30	89.47	9,205.17	5,677.17	0.86	92.65	92.66	12.00	590,453.36	659,492.25	
9,250.00	39.30	89.47	9,224.92	5,696.92	1.00	107.97	107.98	12.00	590,453.50	659,507.57	
9,275.00	42.30	89.47	9,243.84	5,715.84	1.15	124.30	124.31	12.00	590,453.65	659,523.90	
9,300.00	45.30	89.47	9,261.89	5,733.89	1.31	141.60	141.61	12.00	590,453.81	659,541.20	
9,325.00	48.30	89.47	9,279.00	5,751.00	1.48	159.82	159.83	12.00	590,453.98	659,559.42	



# Pathfinder

Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Com	<b>MD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	89 47	9,295 14	5,767 14	1.66	178 91	178 92	12 00	590,454 16	659,578 51	
9,375 00	54 30	89 47	9,310 25	5,782 25	1 84	198 82	198 83	12 00	590,454 34	659,598 42	
9,400 00	57 30	89 47	9,324 30	5,796 30	2 03	219 50	219.51	12 00	590,454 53	659,619 10	
9,425 00	60 30	89 47	9,337 25	5,809 25	2 23	240 88	240 89	12 00	590,454.73	659,640 48	
9,450 00	63 30	89 47	9,349 07	5,821 07	2 43	262 90	262 92	12 00	590,454.93	659,662 50	
9,475 00	66 30	89 47	9,359 71	5,831 71	2 64	285 52	285 53	12.00	590,455 14	659,685 12	
9,500 00	69 29	89 47	9,369 16	5,841 16	2 86	308.66	308 68	12 00	590,455 36	659,708 26	
9,525 00	72 29	89 47	9,377 38	5,849 38	3 07	332 27	332 28	12 00	590,455 57	659,731 87	
9,550 00	75 29	89 47	9,384 36	5,856 36	3 30	356 27	356 29	12 00	590,455.80	659,755 87	
9,575 00	78 29	89 47	9,390 07	5,862.07	3 52	380 61	380 62	12 00	590,456 02	659,780 21	
9,600 00	81 29	89 47	9,394 50	5,866 50	3 75	405 21	405 22	12.00	590,456 25	659,804 81	
9,625 00	84 29	89 47	9,397 63	5,869 63	3 98	430 00	430 02	12.00	590,456 48	659,829 60	
9,650 00	87 29	89 47	9,399 47	5,871 47	4 21	454 93	454 95	12 00	590,456 71	659,854 53	
9,672 56	90 00	89 47	9,400 00	5,872 00	4 42	477.48	477 50	12 00	590,456 92	659,877 08	
9,700 00	90 00	89 47	9,400 00	5,872 00	4 67	504 92	504 94	0 00	590,457 17	659,904 52	
9,800 00	90 00	89 47	9,400 00	5,872 00	5 60	604 92	604.94	0 00	590,458 10	660,004 52	
9,900 00	90 00	89.47	9,400 00	5,872 00	6 52	704 91	704 94	0 00	590,459 02	660,104 51	
10,000.00	90 00	89.47	9,400 00	5,872 00	7 45	804 91	804 94	0 00	590,459.95	660,204 51	
10,100.00	90 00	89 47	9,400 00	5,872 00	8 37	904 91	904 94	0 00	590,460 87	660,304 51	
10,200 00	90 00	89 47	9,400 00	5,872 00	9 30	1,004 90	1,004 94	0.00	590,461 80	660,404 50	
10,300 00	90 00	89 47	9,400 00	5,872 00	10 22	1,104 90	1,104 94	0 00	590,462 72	660,504 50	
10,400.00	90 00	89 47	9,400 00	5,872 00	11 15	1,204 89	1,204 94	0 00	590,463 65	660,604 49	
10,500 00	90 00	89 47	9,400 00	5,872 00	12 07	1,304 89	1,304 94	0.00	590,464 57	660,704 49	
10,600.00	90 00	89 47	9,400 00	5,872 00	13 00	1,404 88	1,404 94	0 00	590,465 50	660,804 48	
10,700 00	90 00	89 47	9,400 00	5,872 00	13 92	1,504 88	1,504 94	0 00	590,466 42	660,904 48	
10,800 00	90 00	89 47	9,400 00	5,872 00	14 85	1,604 88	1,604 94	0.00	590,467 35	661,004 48	
10,900 00	90 00	89 47	9,400 00	5,872 00	15 77	1,704 87	1,704 94	0 00	590,468 27	661,104 47	



# Pathfinder Pathfinder X & Y Planning Report



<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528.00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Com	<b>MD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	89 47	9,400 00	5,872 00	16 70	1,804 87	1,804 94	0 00	590,469.20	661,204 47	
11,100 00	90 00	89 47	9,400 00	5,872 00	17 62	1,904 86	1,904 94	0 00	590,470.12	661,304 46	
11,200 00	90 00	89 47	9,400 00	5,872 00	18 55	2,004 86	2,004.94	0.00	590,471 05	661,404 46	
11,300 00	90 00	89 47	9,400 00	5,872 00	19 47	2,104 85	2,104.94	0 00	590,471 97	661,504 45	
11,400 00	90 00	89 47	9,400 00	5,872 00	20 40	2,204 85	2,204 94	0 00	590,472 90	661,604 45	
11,500 00	90 00	89 47	9,400 00	5,872 00	21 32	2,304 85	2,304.94	0.00	590,473 82	661,704 45	
11,600 00	90 00	89 47	9,400 00	5,872 00	22 25	2,404 84	2,404 94	0 00	590,474 75	661,804 44	
11,700 00	90 00	89 47	9,400 00	5,872 00	23 17	2,504 84	2,504 94	0 00	590,475 67	661,904 44	
11,800 00	90 00	89 47	9,400 00	5,872 00	24 10	2,604 83	2,604 94	0 00	590,476 60	662,004 43	
11,900 00	90 00	89 47	9,400 00	5,872 00	25 02	2,704 83	2,704 94	0.00	590,477 52	662,104 43	
12,000 00	90 00	89 47	9,400 00	5,872 00	25 95	2,804 82	2,804 94	0 00	590,478 45	662,204 42	
12,100 00	90 00	89 47	9,400 00	5,872 00	26 87	2,904 82	2,904.94	0 00	590,479 37	662,304 42	
12,200 00	90 00	89 47	9,400 00	5,872 00	27.80	3,004 82	3,004 94	0 00	590,480 30	662,404 42	
12,300 00	90 00	89 47	9,400 00	5,872 00	28 72	3,104 81	3,104 94	0 00	590,481 22	662,504 41	
12,400 00	90 00	89 47	9,400 00	5,872 00	29 65	3,204 81	3,204 94	0 00	590,482 15	662,604 41	
12,500 00	90 00	89 47	9,400 00	5,872 00	30 57	3,304 80	3,304.94	0.00	590,483 07	662,704 40	
12,600 00	90 00	89 47	9,400 00	5,872 00	31.50	3,404 80	3,404 94	0 00	590,484 00	662,804 40	
12,700 00	90 00	89 47	9,400 00	5,872 00	32 42	3,504 79	3,504 94	0 00	590,484 92	662,904 39	
12,800 00	90.00	89 47	9,400 00	5,872 00	33 35	3,604 79	3,604.94	0.00	590,485 85	663,004 39	
12,900 00	90 00	89 47	9,400 00	5,872 00	34 27	3,704 79	3,704 94	0 00	590,486 77	663,104 39	
13,000 00	90 00	89 47	9,400 00	5,872 00	35 20	3,804 78	3,804 94	0 00	590,487 70	663,204 38	
13,100 00	90 00	89 47	9,400 00	5,872 00	36 12	3,904.78	3,904 94	0 00	590,488 62	663,304 38	
13,200 00	90 00	89 47	9,400 00	5,872 00	37 05	4,004 77	4,004 94	0 00	590,489 55	663,404.37	
13,300 00	90 00	89 47	9,400 00	5,872 00	37 97	4,104.77	4,104 94	0 00	590,490 47	663,504 37	
13,400 00	90 00	89 47	9,400 00	5,872 00	38 90	4,204 76	4,204 94	0 00	590,491 40	663,604 36	
13,500 00	90 00	89 47	9,400 00	5,872 00	39 82	4,304.76	4,304 94	0 00	590,492 32	663,704 36	
13,600 00	90 00	89 47	9,400 00	5,872 00	40 75	4,404 76	4,404 94	0 00	590,493 25	663,804 36	



# Pathfinder

## Pathfinder X & Y Planning Report



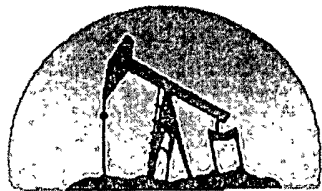
<b>Company:</b>	Marbob	<b>Local Co-ordinate Reference:</b>	Well #1
<b>Project:</b>	Eddy County	<b>TVD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Site:</b>	Dirty Dozen State Com	<b>MD Reference:</b>	WELL @ 3528 00ft (Original Well Elev)
<b>Well:</b>	#1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	89 47	9,400 00	5,872 00	41 67	4,504 75	4,504 94	0 00	590,494 17	663,904 35
13,800 00	90 00	89 47	9,400 00	5,872 00	42 60	4,604 75	4,604 94	0 00	590,495.10	664,004 35
13,900 00	90 00	89 47	9,400 00	5,872 00	43 52	4,704 74	4,704 94	0 00	590,496.02	664,104 34
14,000 00	90 00	89 47	9,400 00	5,872 00	44 45	4,804 74	4,804 94	0 00	590,496.95	664,204 34
14,100 00	90 00	89 47	9,400 00	5,872.00	45 37	4,904 73	4,904 94	0.00	590,497 87	664,304 33
14,200 00	90 00	89 47	9,400 00	5,872 00	46 30	5,004.73	5,004 94	0 00	590,498 80	664,404 33
14,300 00	90.00	89 47	9,400 00	5,872 00	47 22	5,104 73	5,104 94	0 00	590,499 72	664,504 33
14,400 00	90 00	89 47	9,400 00	5,872 00	48 15	5,204 72	5,204 94	0.00	590,500.65	664,604 32
14,500 00	90 00	89 47	9,400 00	5,872 00	49 07	5,304 72	5,304.94	0 00	590,501 57	664,704 32
14,600 00	90 00	89 47	9,400 00	5,872.00	50 00	5,404 71	5,404 94	0 00	590,502 50	664,804 31
14,700 00	90 00	89 47	9,400 00	5,872 00	50 92	5,504.71	5,504 94	0 00	590,503 42	664,904 31
14,758 19	90 00	89 47	9,400 00	5,872 00	51 46	5,562 90	5,563.14	0 00	590,503 96	664,962 50
PBHL(DD#1)										

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(DD#1) - plan hits target center - Point	0 00	0 00	9,400 00	51 30	5,562 90	590,503 800	664,962 500	32° 37' 20.120 N	103° 47' 51 146 W

Checked By _____	Approved By _____	Date: _____
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**marbob**  
energy corporation  
Artesia, N.M.

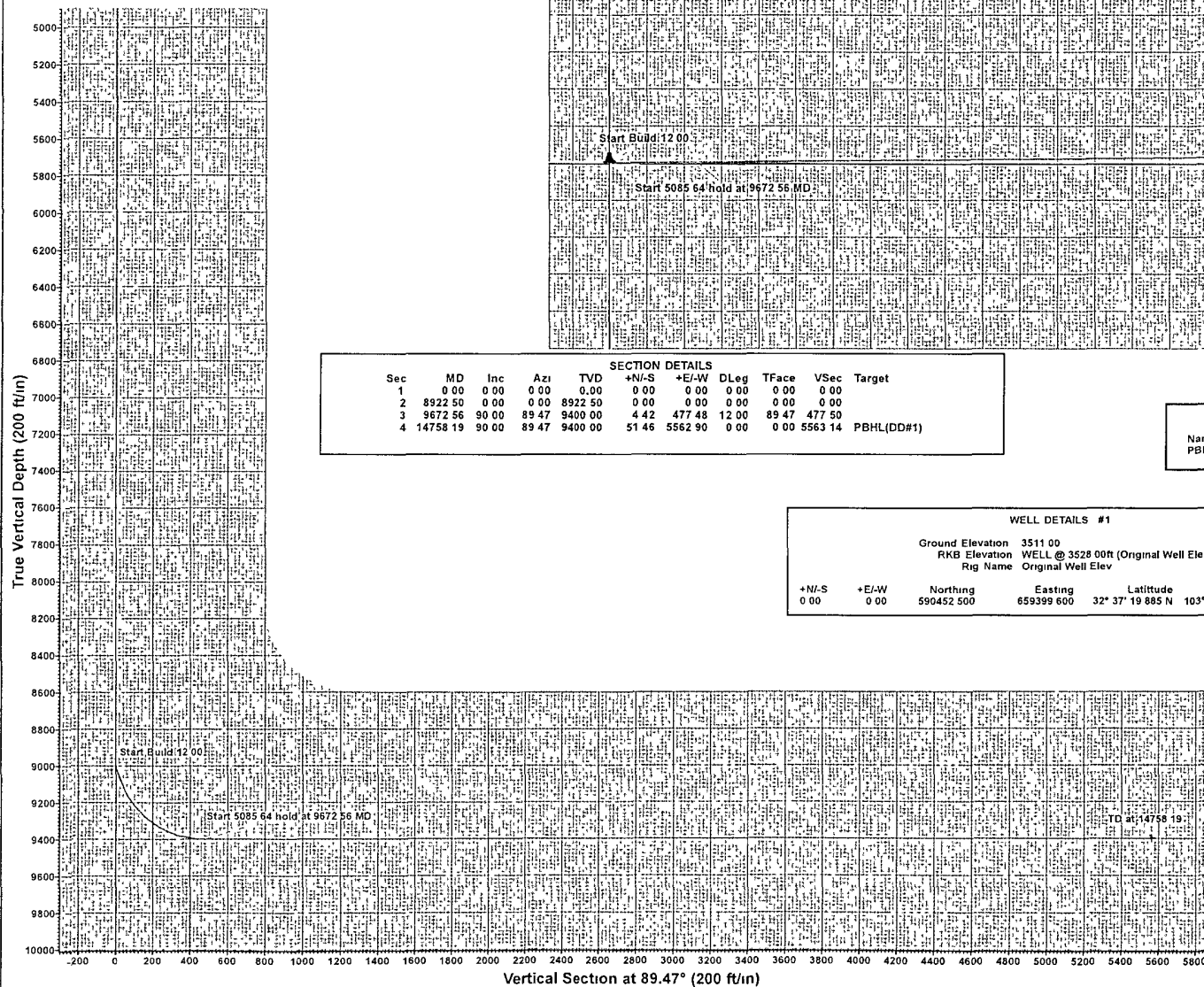
Project: Eddy County  
Site: Dirty Dozen State Co  
Well: #1  
Wellbore: OH  
Plan: Plan #1 (#1/OH)



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

Magnetic Field  
Strength 48965 7snT  
Dip Angle 60.56°  
Date: 05/25/2010  
Model IGRF200510

# PATHFINDER



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	89.47	9400.00	4.42	477.48	12.00	89.47	477.50	
4	14758.19	90.00	89.47	9400.00	51.46	5562.90	0.00	0.00	5563.14	PBHL(DD#1)

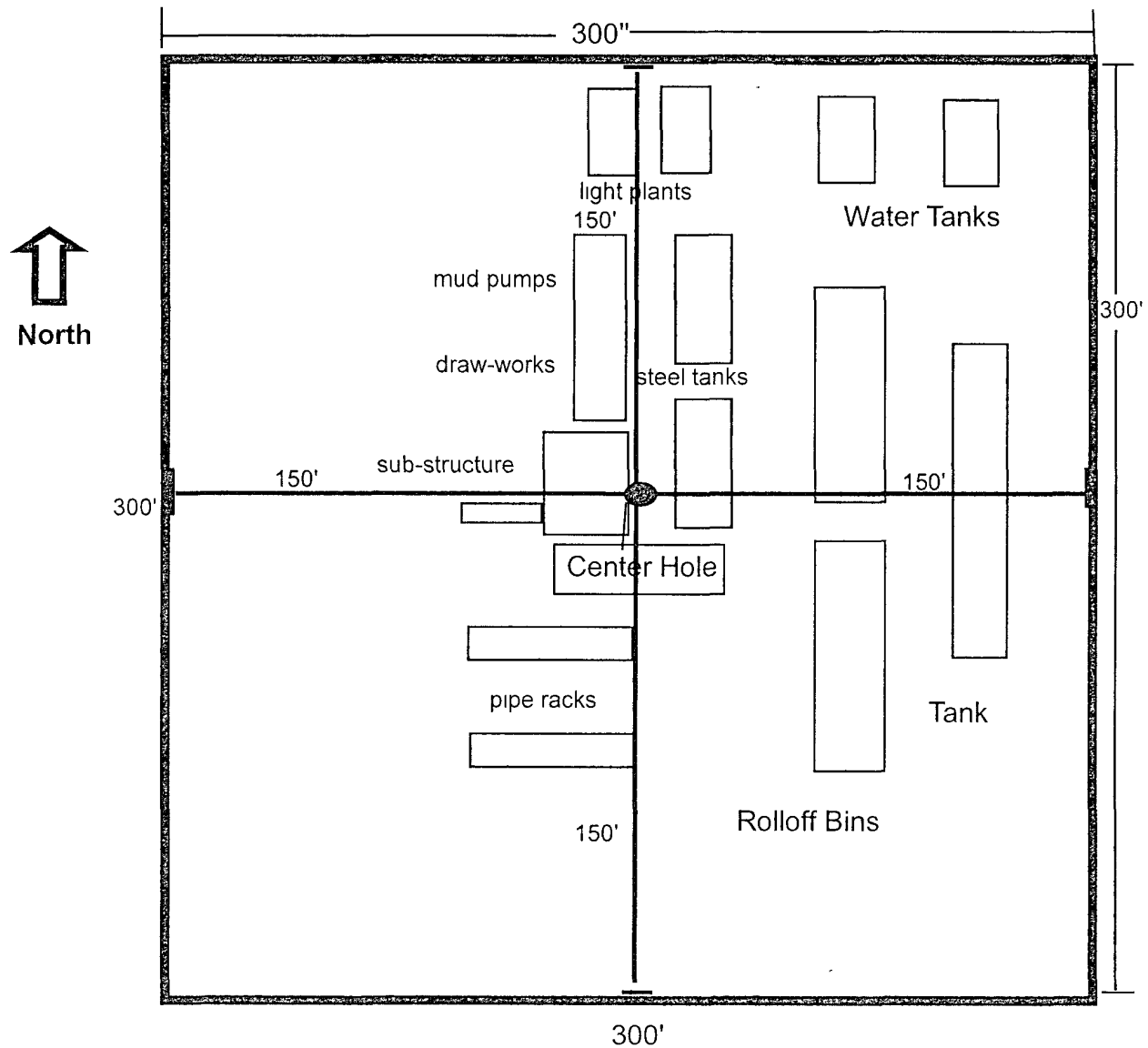
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N-S	+E-W	Northing	Easting
PBHL(DD#1)	9400.00	51.30	5562.90	590503.800	664962.500

WELL DETAILS #1							
Ground Elevation		3511.00					
RKB Elevation		WELL @ 3528.00ft (Original Well Elev)					
Rig Name		Original Well Elev					
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot	
0.00	0.00	590452.500	659399.600	32° 37' 19.885 N	103° 48' 56.192 W		

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

Plan: Plan #1 (#1/OH)  
Created By: Nate Bingham Date: 15.44, May 25 2010  
Checked: \_\_\_\_\_ Date: \_\_\_\_\_

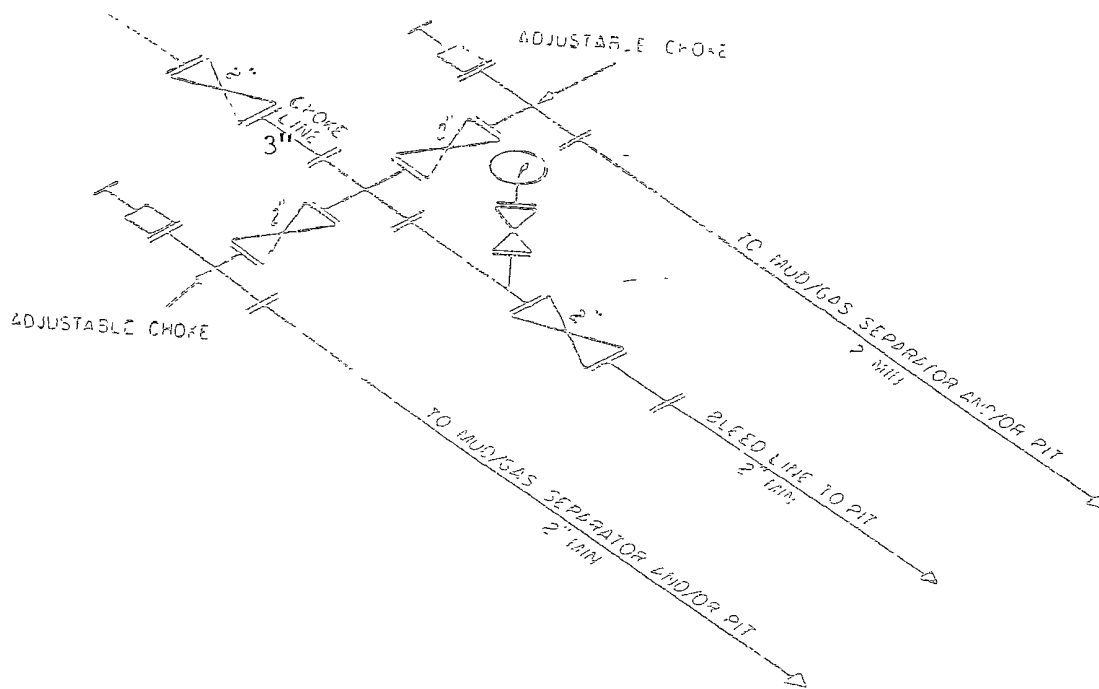
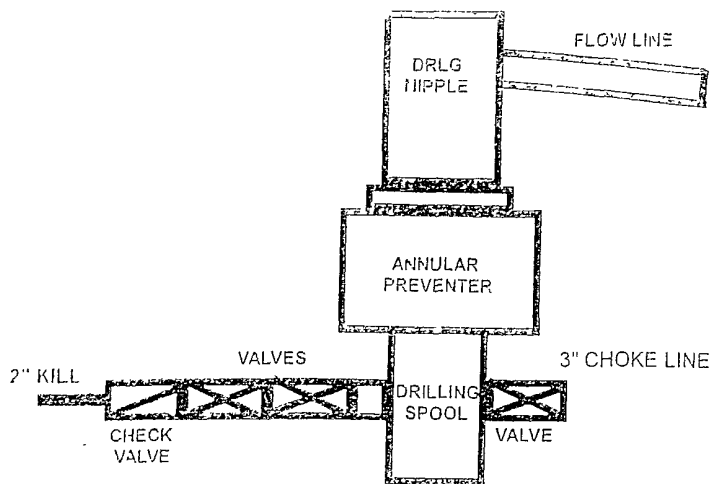
# Well Site Lay-Out Plat



**Dirty Dozen State Com #1H**  
**Surf: 700' FNL & 600' FEL, Sec 36, T19S-R31E**  
**BHL: 660' FNL & 330' FEL, Sec 31, T19S-R32E**  
**Eddy County, New Mexico**

**EXHIBIT THREE**

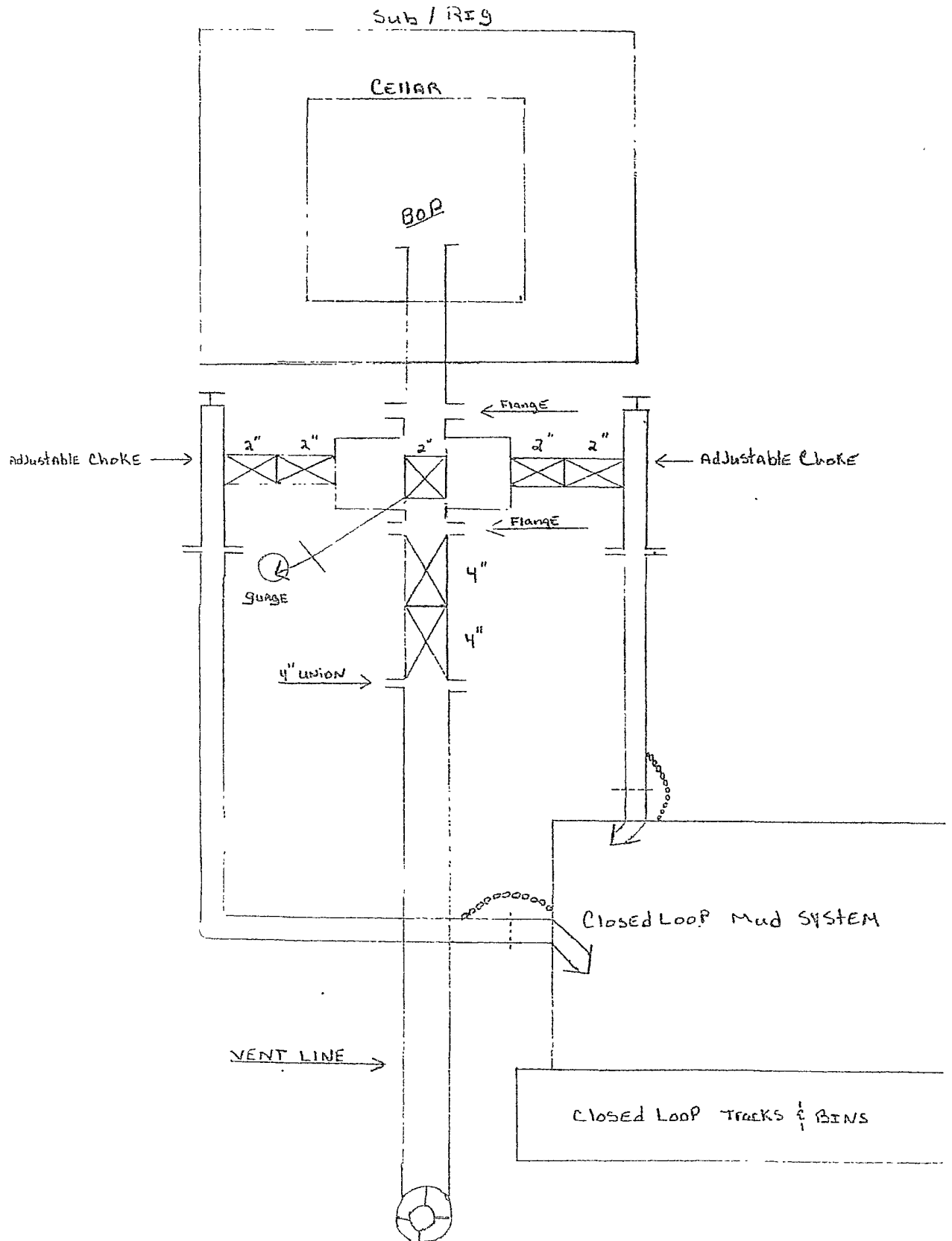
## 211 SYSTEM



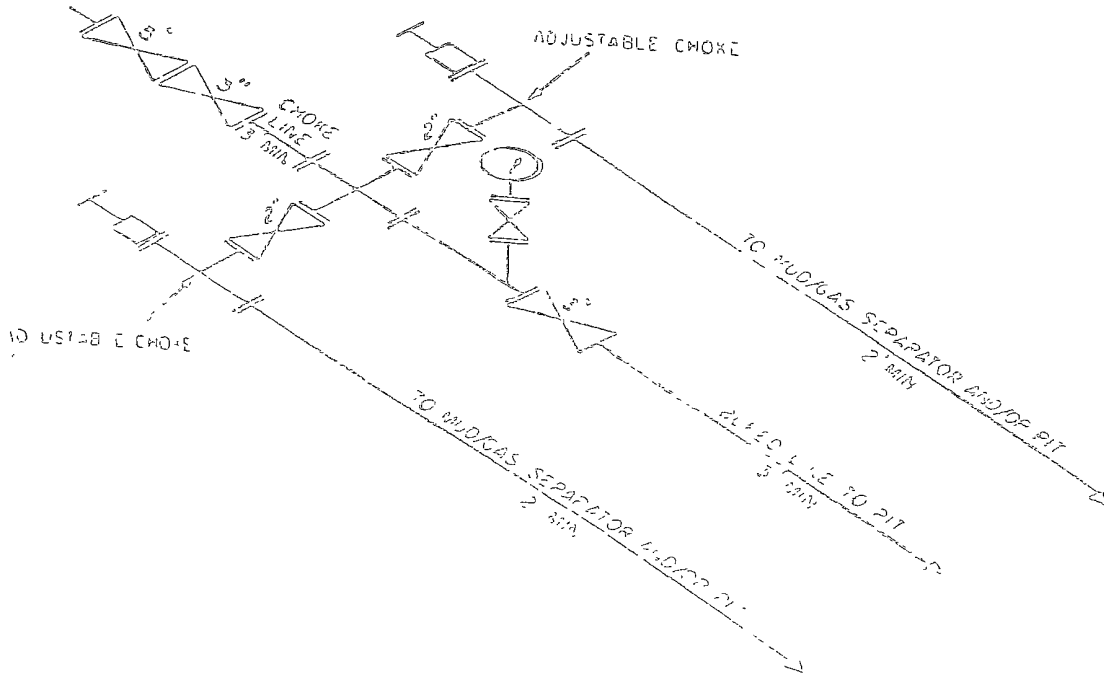
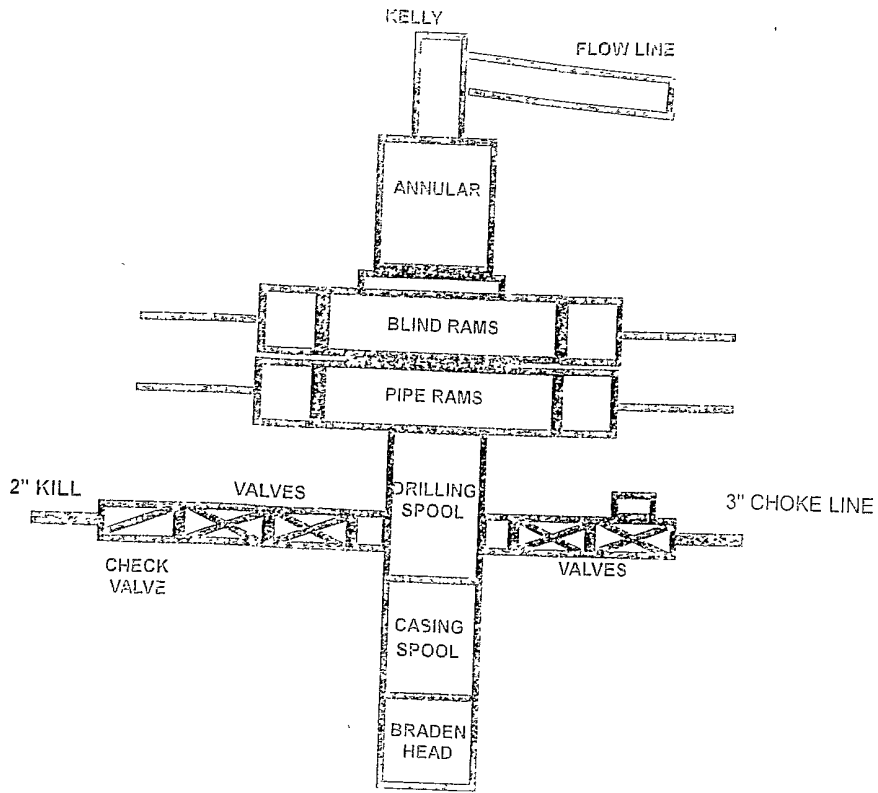
2M CHOKES MANIFOLD EQUIPMENT - CONFIGURATION OF CHOKES

# NAME: \_\_\_\_\_

## 2M Choke Manifold Equipment



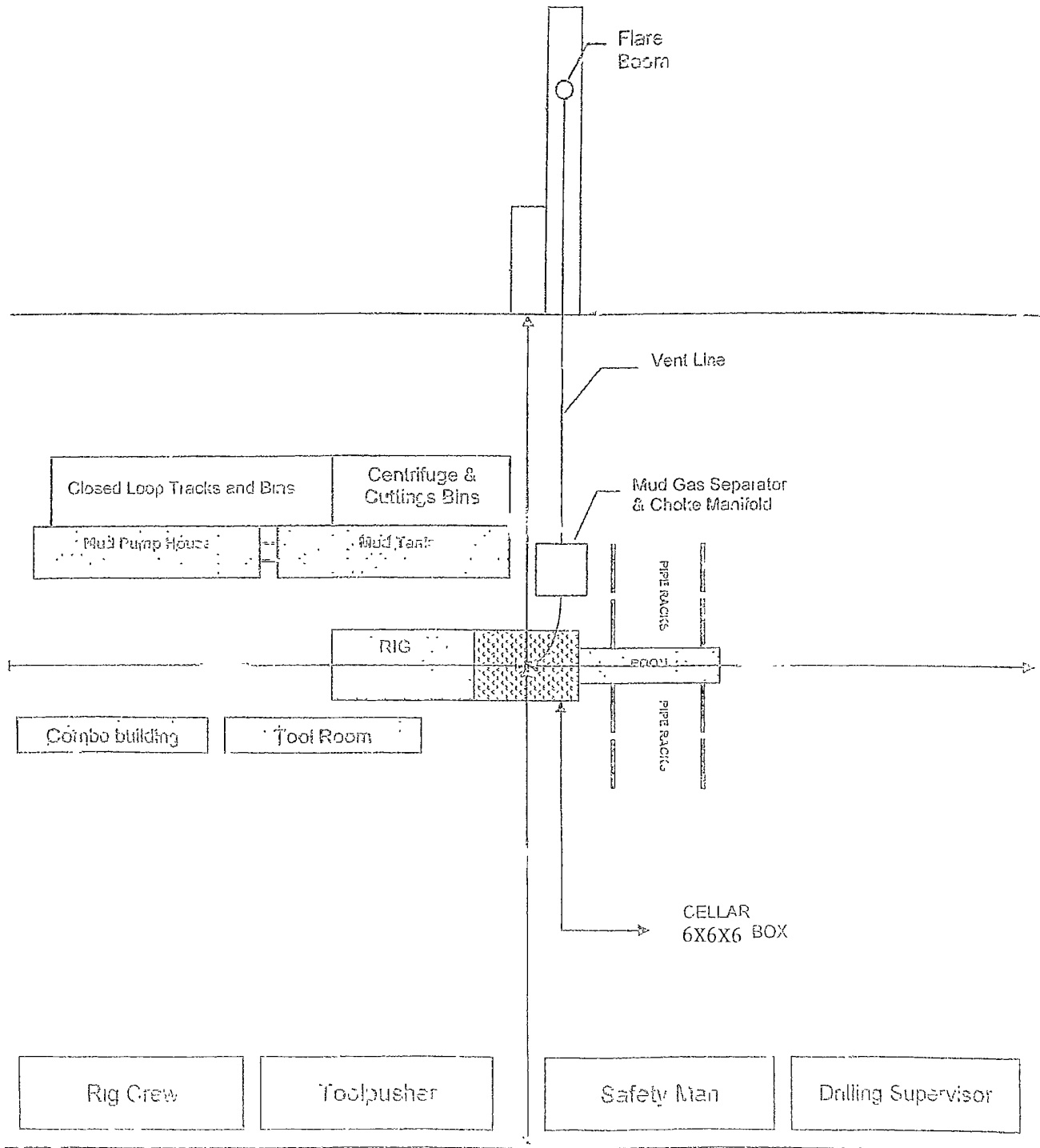
# 3M SYSTEM



3M CHOC MANIFOLD EQUIPMENT - CONFIDENTIAL - CODE

1. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

# 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<sub>2</sub>S).
- B. The proper use and maintenance of personal protective equipment and life support systems.
- C. The proper use of H<sub>2</sub>S 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<sub>2</sub>S 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<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S 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<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H<sub>2</sub>S 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<sub>2</sub>S.

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<sub>2</sub>S detection and monitoring equipment:

2 - portable H<sub>2</sub>S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H<sub>2</sub>S 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<sub>2</sub>S 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<sub>2</sub>S service.

G. Communication:

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

Marbob Energy has conducted a review to determine if an H<sub>2</sub>S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H<sub>2</sub>S concentrations of wells in this area from surface to TD are low enough; therefore we do not believe that an H<sub>2</sub>S Contingency Plan would be necessary.

# **W A R N I N G**

**YOU ARE ENTERING AN H<sub>2</sub>S 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**

|                     | <u>Office</u> | <u>Mobile</u> | <u>Home</u>  |
|---------------------|---------------|---------------|--------------|
| 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**

**Dirty Dozen State Com #1H**  
**Surf: 700' FNL & 600' FEL, Sec 36, T19S-R31E**  
**BHL: 660' FNL & 330' FEL, Sec 31, T19S-R32E**  
**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 Lusk Plant Road and Co. Rd. #H126 (Maljamar Rd.), go south on Co. Rd. #H126 approx. 3.7 miles. Turn left and go west approx 1.1 miles. This location is approx 75 feet north

**2. PLANNED ACCESS ROAD:**

Existing lease road will be utilized.

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

- A. In the event the well is found productive, the Dirty Dozen State Com #1H 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 from 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.

5/1/10  
Date

Marbob Energy Corporation

WAM  
William Miller  
Land Department

# PECOS DISTRICT CONDITIONS OF APPROVAL

|                       |  |
|-----------------------|--|
| OPERATOR'S NAME:      | MARBOB ENERGY CORPORATION                          |
| LEASE NO.:            | BHL: NM58935                                       |
| WELL NAME & NO.:      | DIRTY DOZEN STATE COM # 1H                         |
| SURFACE HOLE FOOTAGE: | 0700' FNL & 0600' FEL, Sec. 36, T. 19 S., R. 31 E. |
| BOTTOM HOLE FOOTAGE:  | 0660' FNL & 0330' FEL                              |
| LOCATION:             | Section 31, T. 19 S., R. 32 E., NMPM               |
| COUNTY:               | SHL: Eddy County, BHL: Lea County, New Mexico      |

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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.

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- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
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  - Ground-level Abandoned Well Marker
  - Communitization Agreement
- ☐ **Construction**
  - Notification
  - V-Door Direction – not stipulated
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Secretary's Potash
  - H2S – Onshore Order 6
  - Casing/Cement – Capitan Reef
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  - Well Structures & Facilities
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  - Electric Lines
- ☐ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**

## **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.**

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**

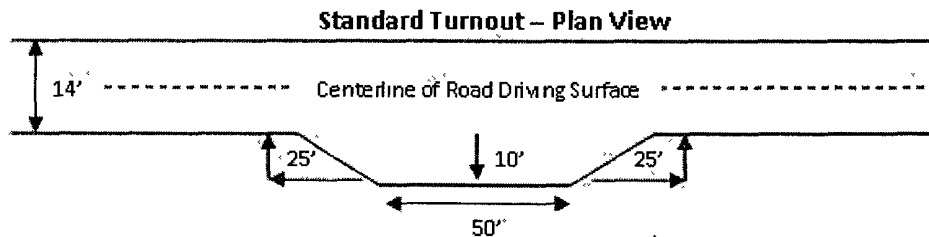
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **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:

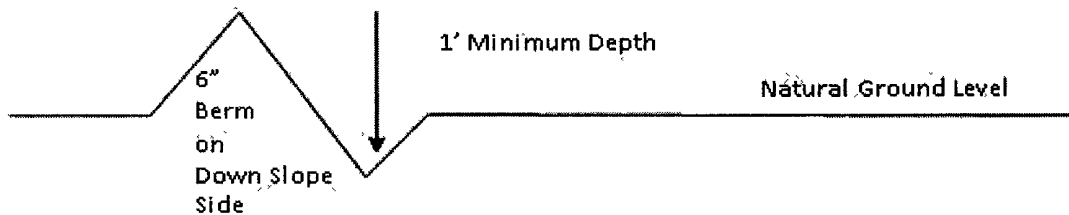


### **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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:

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

#### **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**

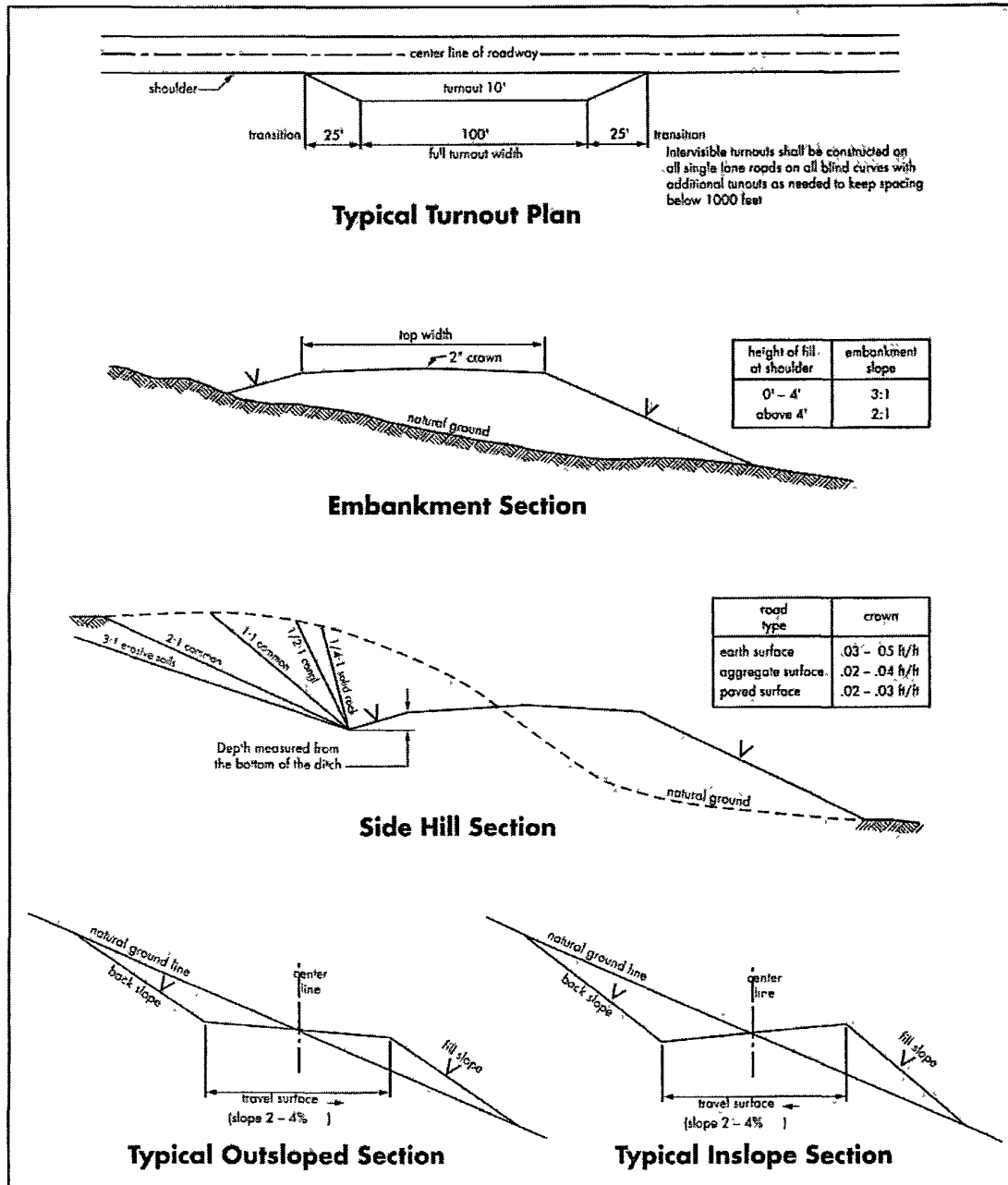
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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**



## VII. 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 (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling below the **surface casing**. **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 are 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 water flows in the Salado and Artesia groups.**

**Possible lost circulation in the Artesia group and Capitan Reef.**

**Possible high pressure in the Wolfcamp (if penetrated) and 3<sup>rd</sup> Bone Spring Sand.**

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 per shift/tour. 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 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 50 feet above the top of the Capitan Reef. 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 utilizing 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.

**DHW 071510**

## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Containment Structures**

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color  
Shale Green, Munsell Soil Color Chart # 5Y 4/2

### **B. PIPELINES – not requested in APD**

### **C. ELECTRIC LINES – not requested in APD**

## **IX. 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:

| <u>Species</u>       | <u>lb/acre</u> |
|----------------------|----------------|
| 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