

N.M. OIL CONSERVATION DIVISION

811 S. FIRST STREET

ARTESIA, NM 88210

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

Form 3160-3  
(March 2012)

RECEIVED  
NOV 18 2013  
NMOCD ARTESIA

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.  
NMNM-4433

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No.  
Calgary Federal # <37615>

9. API Well No.  
30-005-64179

10. Field and Pool, or Exploratory  
Round Tank; San Andres <52770>

11. Sec., T. R. M. or Bk. and Survey or Area

Sec. 25 T15S R28E

12. County or Parish  
Chaves

13. State  
NM

1a. Type of work:  DRILL  REENTER

1b. Type of Well:  Oil Well  Gas Well  Other  Single Zone  Multiple Zone

2. Name of Operator  
Mack Energy Corporation

<13837>

3a. Address  
PO Box 960 Artesia, NM 88211-0960

3b. Phone No. (include area code)  
(575)748-1288

4. Location of Well (Report location clearly and in accordance with any State requirements. \*)

At surface 1537 FNL & 452 FEL

At proposed prod. zone 1537 FNL & 452 FEL

14. Distance in miles and direction from nearest town or post office\*  
12 miles northwest of Loco Hills, NM

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 217'

16. No. of acres in lease  
560

17. Spacing Unit dedicated to this well  
40

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft. 871'

19. Proposed Depth  
3500'

20. BLM/BIA Bond No. on file  
NMB000286

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3699' GR

22. Approximate date work will start\*  
11/1/2013

23. Estimated duration  
7 days

24. Attachments  
~~ROSWELL~~ CONTROLLED WATER BASIN

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- 1. Well plat certified by a registered surveyor.
- 2. A Drilling Plan.
- 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

- 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- 5. Operator certification
- 6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature  
*Jerry W. Sherrell*

Name (Printed/Typed)  
Jerry W. Sherrell

Date  
7/12/13

Title  
Production Clerk

Approved by (Signature)  
*151 Angel Mayes*

Name (Printed/Typed)  
ANGEL MAYES

Date  
NOV 15 2013

Title  
Assistant Field Manager,  
Lands And Minerals

Office  
ROSWELL FIELD OFFICE

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

**APPROVED FOR 2 YEARS**

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

(Continued on page 2)

\*(Instructions on page 2)

DECLARED WATER BASIN

RECEIVED  
NOV 18 2013  
NMOCD ARTESIA

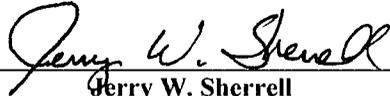
APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS ATTACHED

85"  
CIRCULED

**APD CERTIFICATION**

I hereby certify that I, or person under my direct supervision, have inspected the proposed drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed in conformity with this APD package and terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Date: 7-17-2013

Signed:   
Jerry W. Sherrell

DISTRICT I  
1225 N. FRANCIS DR., HOBBS, NM 80240

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION  
1220 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>30-015-64179</b>	Pool Code 52770	Pool Name Round Tank; San Andres
Property Code <b>37615</b>	Property Name CALGARY FEDERAL	Well Number 4
OGRID No. 013837	Operator Name MACK ENERGY CORPORATION	Elevation 3699'

Surface Location

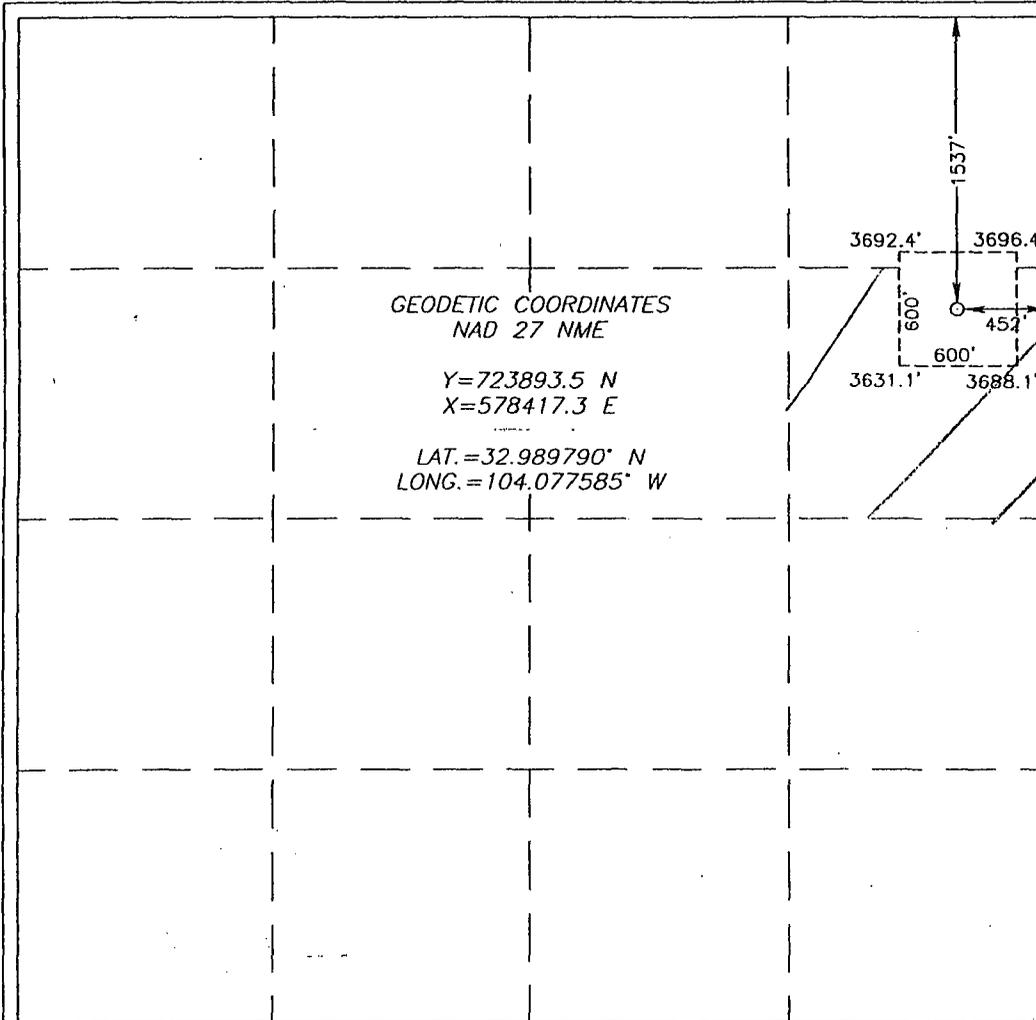
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	25	15-S	28-E		1537	NORTH	452	EAST	CHAVES

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

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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



**OPERATOR CERTIFICATION**

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

*Jerry W. Sherrill* 12-10-08  
Signature Date

Jerry W. Sherrill  
Printed Name

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**SURVEYOR CERTIFICATION**

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

**GARY G. EIDSON**  
OCTOBER 25, 2008  
Date Surveyed AR

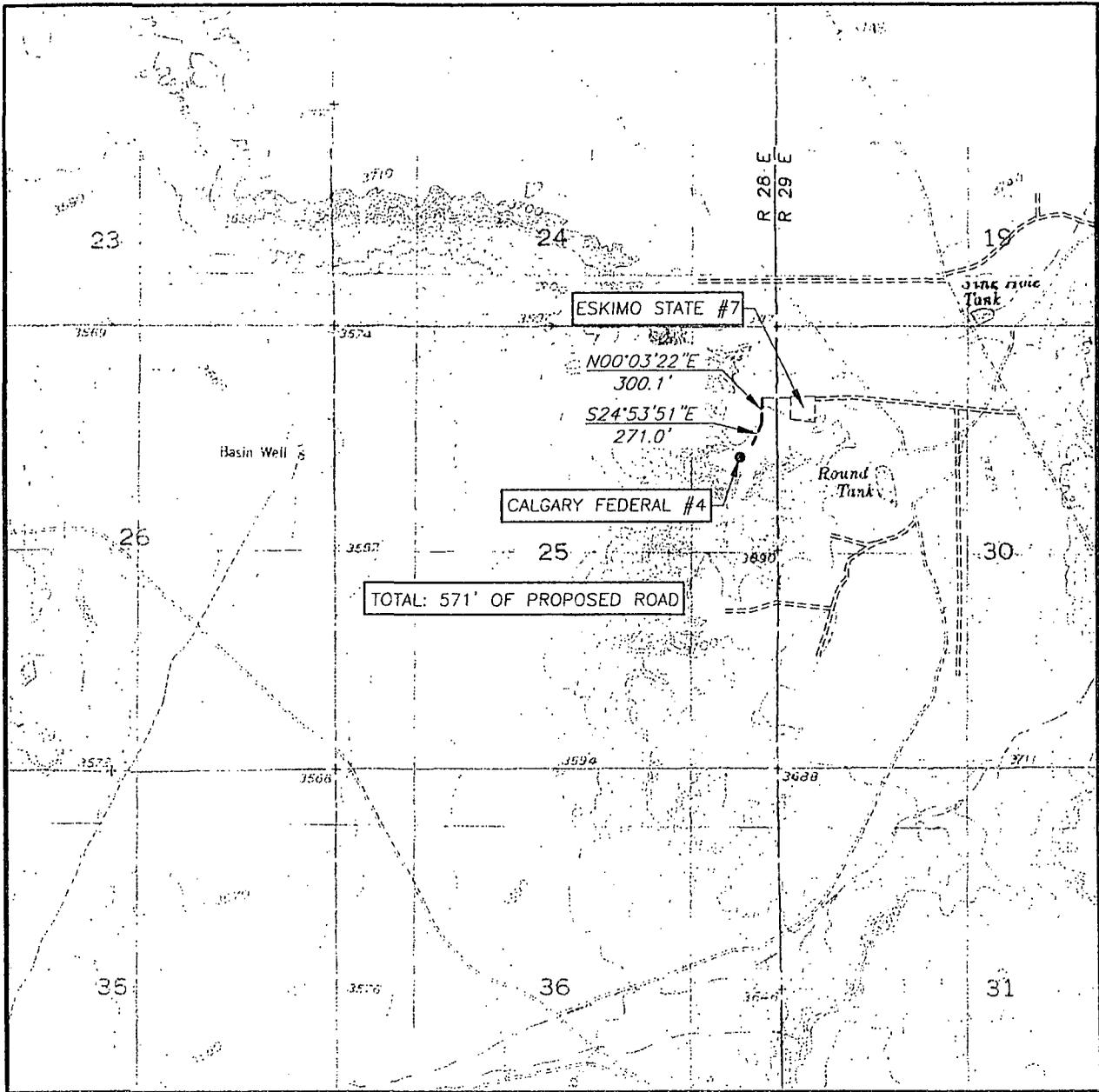
*Bary G. Eidson* 11/03/08  
Signature & Seal of Professional Surveyor

08-11-1831

Certificate No. GARY EIDSON 12641  
RONALD J. EIDSON 3236

SCANNED

# LOCATION VERIFICATION ON MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:  
 BASIN WELL, N.M. - 10'  
 KING CAMP, N.M. - 10'

SEC. 25 TWP. 15-S RGE. 28-E

SURVEY \_\_\_\_\_ N.M.P.M.

COUNTY CHAVES STATE NEW MEXICO

DESCRIPTION 1537' FNL & 452' FEL

ELEVATION 3699'

OPERATOR MACK ENERGY CORPORATION

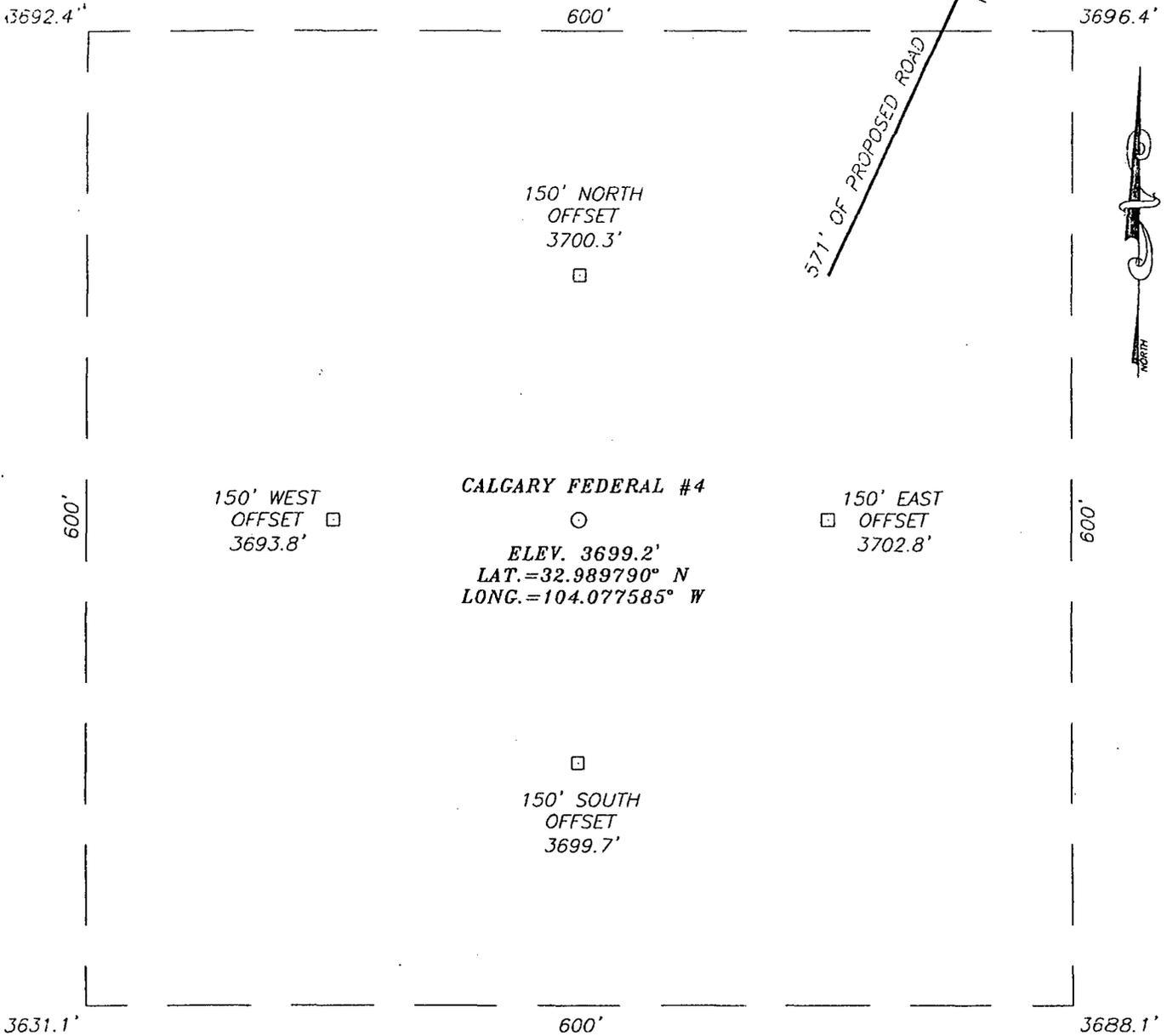
LEASE CALGARY FEDERAL

U.S.G.S. TOPOGRAPHIC MAP  
BASIN WELL, N.M.



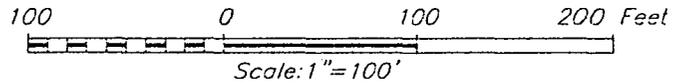
PROVIDING SURVEYING SERVICES  
 SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO  
 HOBBS, N.M. 88240  
 (505) 393-3117

**SCANNED**



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #217, GO NORTH ON CO. RD. #217 APPROX. 11.0 MILES. TURN LEFT AND GO WEST APPROX. 4.8 MILES. VEER RIGHT AND GO NORTHWEST APPROX. 0.4 MILES. TURN LEFT AND GO WEST APPROX. 0.6 MILES TO EXISTING ESKIMO #7 WELL AND PROPOSED ROAD SURVEY. FOLLOW ROAD SURVEY WEST APPROX. 347 FEET AND SOUTHWEST 571 FEET TO THIS LOCATION.

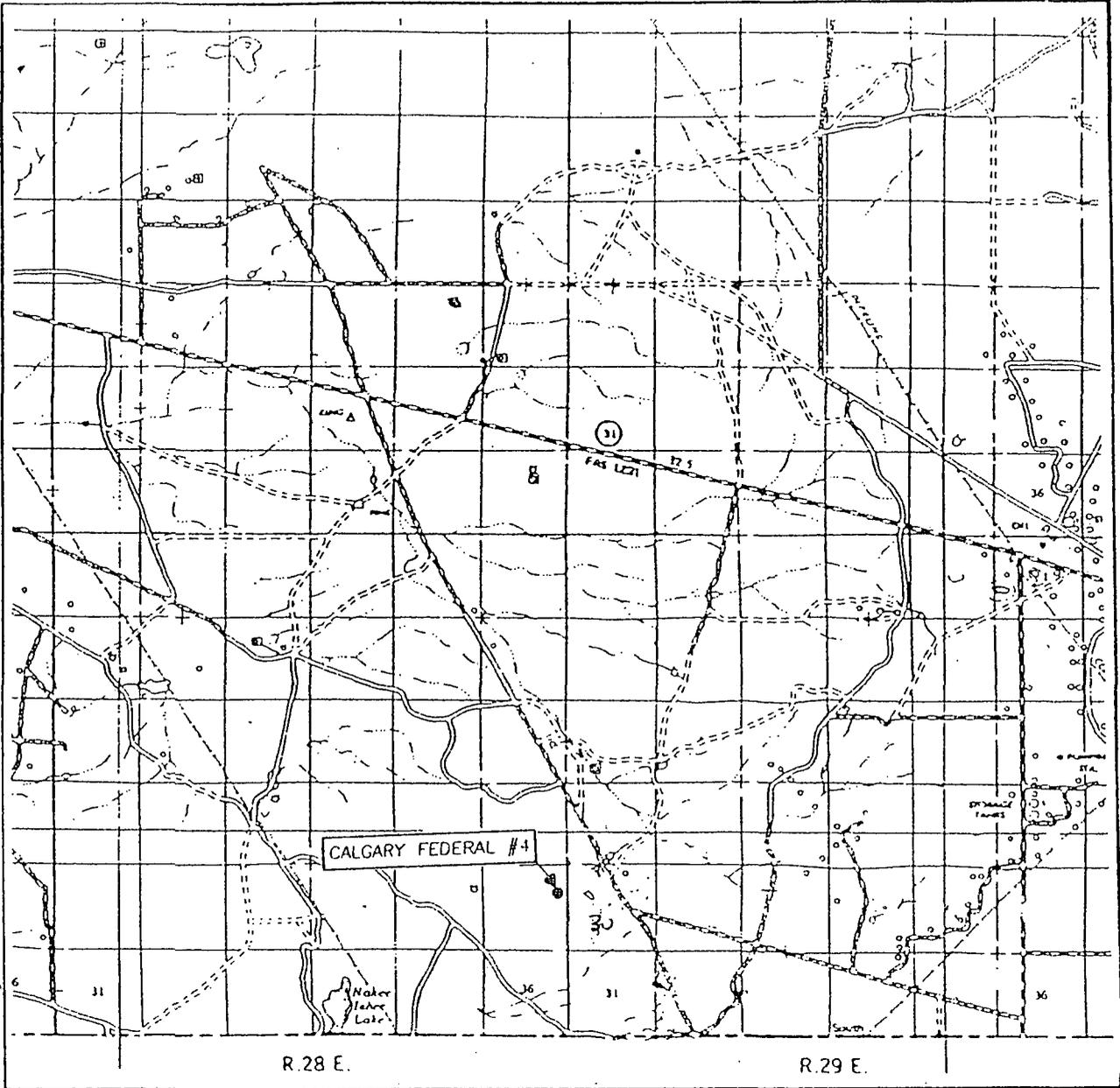


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<b>MACK ENERGY CORPORATION</b>			
CALGARY FEDERAL #4 WELL LOCATED 1537 FEET FROM THE NORTH LINE AND 452 FEET FROM THE EAST LINE OF SECTION 25, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M., CHAVES COUNTY, NEW MEXICO.			
Survey Date: 10/25/08	Sheet 1 of 1 Sheets		
W.O. Number: 08.11.1831	Dr By: AR	Rev 1: N/A	
Date: 10/31/08	Disk:	08111831	Scale: 1"=100'

SCANNER

# VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 25 TWP. 15-S RGE. 28-E  
 SURVEY N.M.P.M.  
 COUNTY CHAVES STATE NEW MEXICO  
 DESCRIPTION 1537' FNL & 452' FEL  
 ELEVATION 3699'  
 OPERATOR MACK ENERGY CORPORATION  
 LEASE CALGARY FEDERAL



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

SCANNED

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## DRILLING PROGRAM

### 1. Geologic Name of Surface Formation

Quaternary

### 2. Estimated Tops of Important Geologic Markers:

Quaternary	760'	Grayburg	1900'
Yates	770'	San Andres	2200'
Queen	1500'		

### 3. Estimated Depths of Anticipated Fresh Water, Oil and Gas:

Water Sand	150'	Fresh Water
Yates	770'	Oil/Gas
Queen	1500'	Oil/Gas
San Andres	2200'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 8 5/8" casing to 450' and circulating cement back to surface will protect the surface fresh water sand. Salt section and shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 1/2" production casing, sufficient cement will be pumped to circulate back to surface.

### 4. Casing Program:

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, collapse/burst/tension
12 1/4"	0-450'	8 5/8"	24#, J-55, ST&C, New, 6.808/5.537/5.9
7 7/8"	0-3500	5 1/2"	17#, L-80, LT&C, New, 2.698/1.817/1.773

### 5. Cement Program:

8 5/8" Surfac Casing: 450sx, Class C + 1% PF1, yield 1.33, wt 14.8 ppg, excess 100%  
5 1/2" Production Casing: Lead 225sx 35/65 Poz C + 5% PF44 + 6% PF20 + .25#/sx PF46 + .125#/sx PF29 + 3% PF46, yield 2.47, wt 11.9 ppg, excess 35%, Tail 200sx PVL + 1.3% PF44, 5% PF174 + 5% PF606 + .1% PF153 + .2% PF13, yield 1.47, wt 13.0 ppg, 35% excess.

### 6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (3000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The 11" BOP will be nipped up on the 8 5/8" surface casing and tested by a 3<sup>rd</sup> party to 2000 psi used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of intermediate casing. 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. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 3000 psi WP rating

**7. Types and Characteristics of the Proposed Mud System:**

The well will be drilled to TD with a combination of brine and cut brine mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-450'	Fresh Water	8.5	28	N.C.
450'-TD'	Brine	9.1	29	N.C.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

**8. Auxiliary Well Control and Monitoring Equipment:**

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

**9. Logging, Testing and Coring Program:**

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log from T.D. to 8 5/8 casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined at TD.

**10. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:**

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 1,515 psig. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H<sub>2</sub>S may be present while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

**11. Anticipated Starting Date and Duration of Operations:**

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is November 1, 2013. Once commenced, the drilling operation should be finished in approximately 7 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

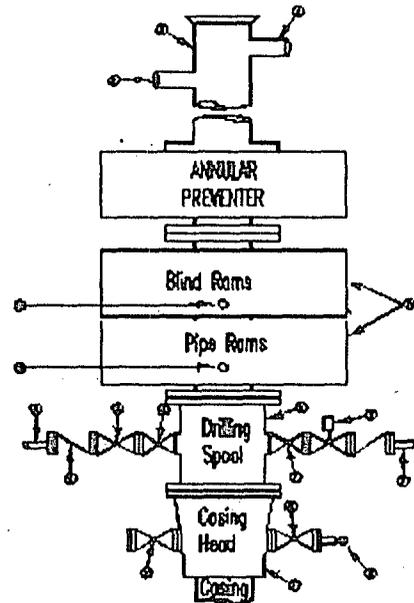
**Attachment to Exhibit #10**  
**NOTES REGARDING THE BLOWOUT PREVENTERS**  
**Calgary Federal #4**  
**Chaves County, New Mexico**

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

**Mack Energy Corporation**  
**Minimum Blowout Preventer Requirements**  
 3000 psi Working Pressure  
 13 3/8 inch- 3 MWP  
 11 Inch - 3 MWP  
**EXHIBIT #10**

**Stack Requirements**

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"



**OPTIONAL**

16	Flanged Valve	1 13/16	
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**CONTRACTOR'S OPTION TO FURNISH:**

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

**MEC TO FURNISH:**

1. Bradenhead or casing head and side valves.
2. Wear bushing. If required.

**GENERAL NOTES:**

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans.

**REPLACEABLE PARTS**

for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.

5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations.

# Mack Energy Corporation

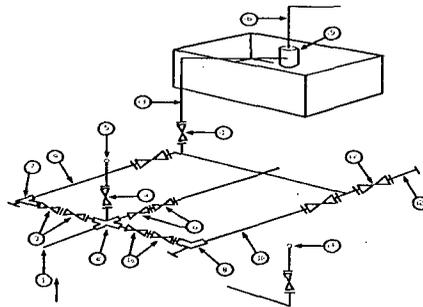
Exhibit #11

## MINIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

3M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

\* Location of separator optional

Below Substructure

### Minimum requirements

No.		3,000 MWP			5,000 MWP			10,000 MWP		
		I.D.	Nominal	Rating	I.D.	Nominal	Rating	I.D.	Nominal	Rating
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure gauge			3,000			5,000			10,000
15	Gas Separator		2' x 5'			2' x 5'			2' x 5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

- (1) Only one required in Class 3M
- (2) Gate valves only shall be used for Class 10 M
- (3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

#### EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

1. All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
2. All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
3. All lines shall be securely anchored.
4. Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
5. alternate with automatic chokes. a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
6. Line from drilling spool to choke manifold should be as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

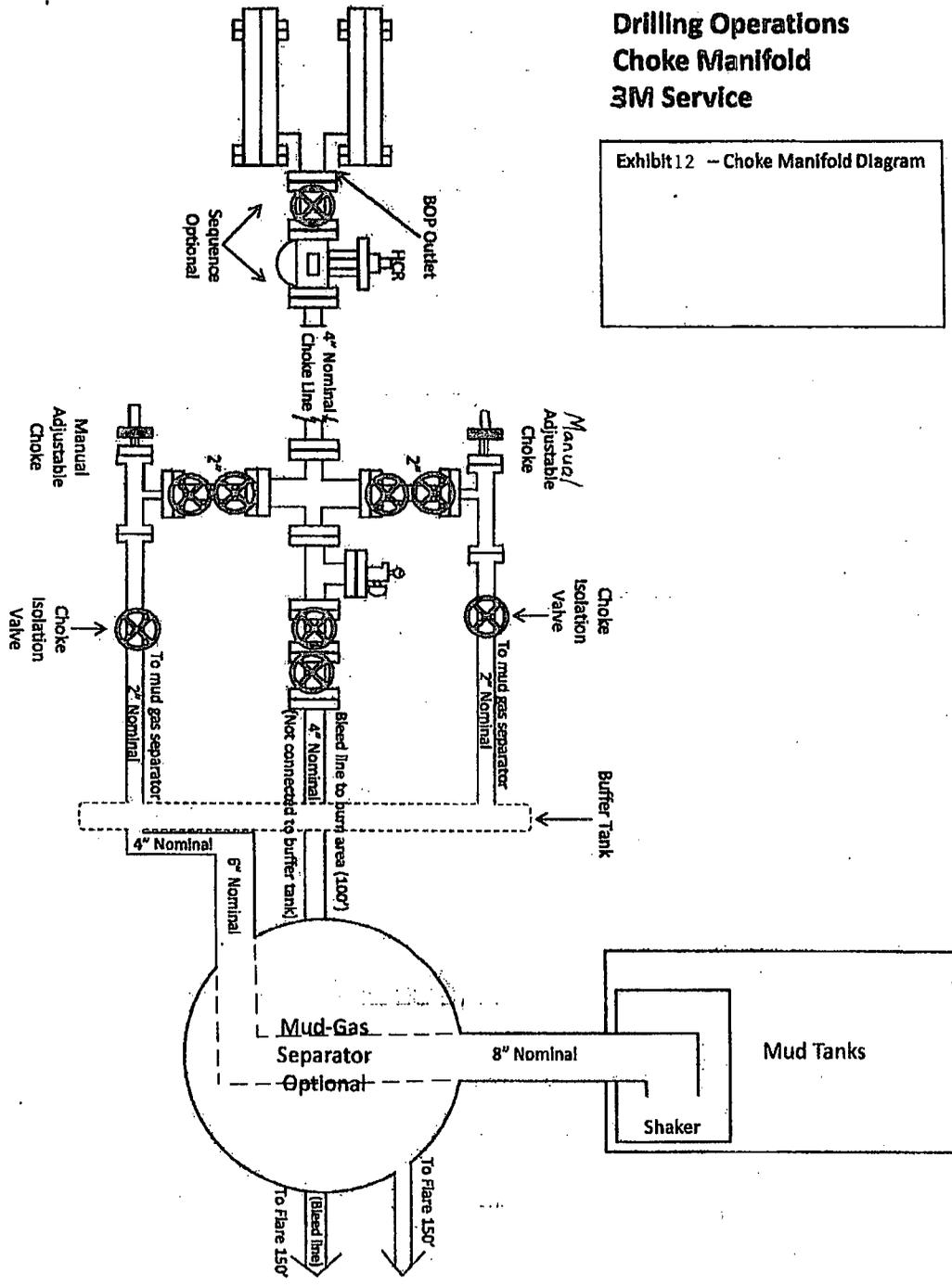
# Mack Energy Corporation

## MANIFOLD SCHEMATIC

Exhibit #12

### Drilling Operations Choke Manifold 3M Service

Exhibit 12 - Choke Manifold Diagram



**Mack Energy Corporation  
Onshore Order #6  
Hydrogen Sulfide Drilling Operation 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:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H<sub>2</sub>S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and 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. **The concentrations of H<sub>2</sub>S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

**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 reasonable expected to contain H<sub>2</sub>S.

**1. Well Control Equipment:**

- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

**2. Protective equipment for essential personnel:**

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

**3. H2S detection and monitoring equipment:**

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

**4. Visual warning systems:**

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) 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.

**5. Mud program:**

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
- B. All elastomers used for packing and seals shall be H2S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

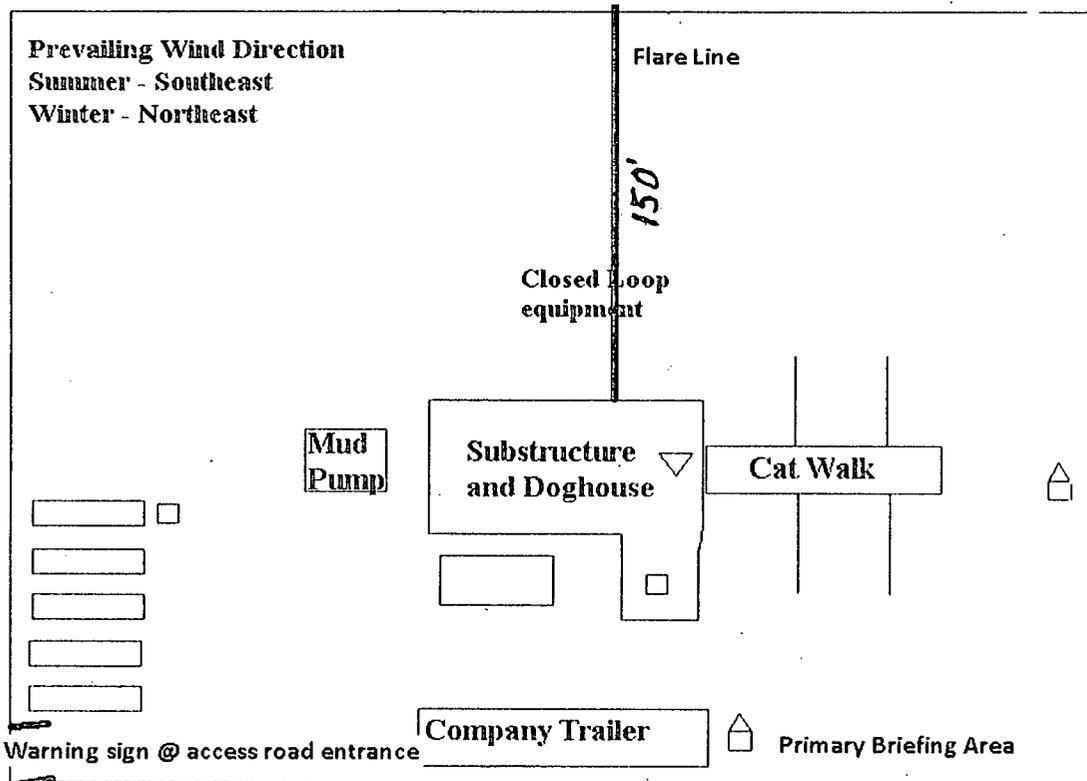
B. There will be no drill stem testing.

EXHIBIT #7

**WARNING**  
**YOU ARE ENTERING AN H2S**  
**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. CHECK WITH MACK ENERGY FOREMAN AT OFFICE

**MACK ENERGY CORPORATION**  
**1-575-748-1288**

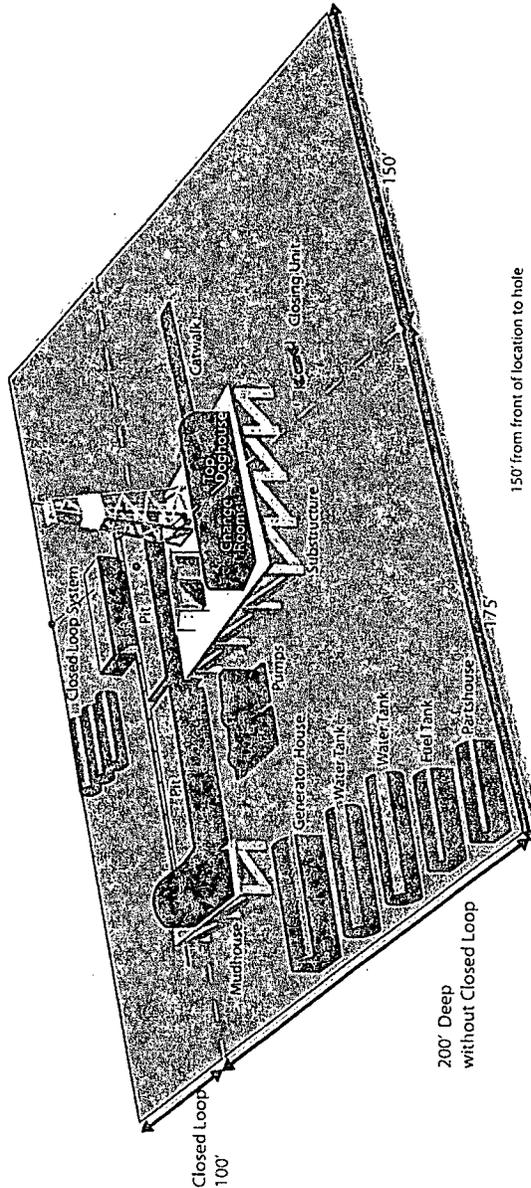


- ▽ H2S Monitors with alarms at the bell nipple
- Wind Direction Indicators
- 🏠 Safe Briefing areas with caution signs and breathing equipment min 150 feet from wellhead

DRILLING LOCATION H2S SAFETY EQUIPMENT

Exhibit # 8

Location Layout



200' Deep  
without Closed Loop

150' from front of location to hole

175' from left of location to hole

50' from hole to back of location (without closed loop)

150' from hole to back of location (with closed loop)

Location size without Closed Loop System  
200' Deep X 325' Wide

Location size with Closed Loop System  
300' Deep X 325' Wide



**Mack Energy Corporation Call List, Chaves County**

<b>Artesia (575)</b>	<b>Cellular</b>	<b>Office</b>
Jim Krogman.....	432-934-1596.....	748-1288
Donald Archer.....	748-7875.....	748-1288
Emilio Martinez.....	432-934-7586.....	748-1288
Kevin Garrett.....	432-934-7948.....	748-1288

**Agency Call List (575)****Roswell**

State Police.....	622-7200
City Police.....	624-6770
Sheriff's Office.....	624-7590
Ambulance.....	624-7590
Fire Department.....	624-7590
LEPC (Local Emergency Planning Committee.....	624-6770
NMOCD.....	748-1283
Bureau of Land Management.....	627-0272

**Emergency Services**

Boots & Coots IWC.....	1-800-256-9688 or (281)931-8884
Cudd pressure Control.....	(915)699-0139 or (915)563-3356
Halliburton.....	746-2757
Par Five.....	748-9539
Flight For Life-Lubbock, TX.....	(806)743-9911
Aerocare-Lubbock, TX.....	(806)747-8923
Med Flight Air Amb-Albuquerque, NM.....	(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM.....	(505)272-3115

# SURFACE USE AND OPERATING PLAN

## 1. Existing Access Roads

- A. All roads to the location are shown in Exhibit #6. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling well, will be done where necessary.
- B. Directions to Location: From the intersection of Co. Rd #217 and Hwy #82, go north on Co. Rd #217, 11 miles, turn left and go west 4.8 miles, veer right, go northwest 0.4 miles, turn left and go west 0.6 miles and go west 347 feet and southwest 571 feet to location.
- 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.

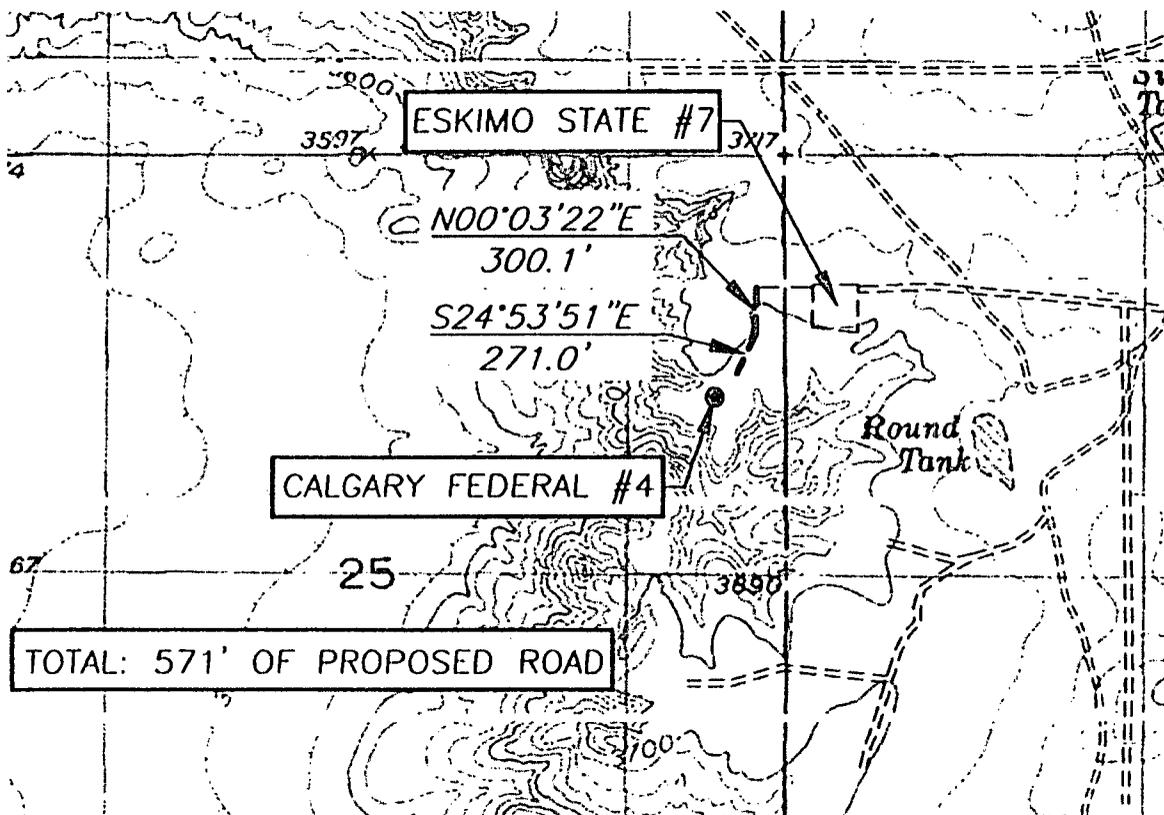


Exhibit #6

## 1. Proposed Access Road:

Vicinity Map this is an existing location with existing road. Proposed upgrade of existing road will be done along staked centerline survey. Necessary maintenance will be done to insure traffic stays within proposed ROW. The road has been constructed as follows:

- A. The Maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3 feet wide. Water will

- √B. The average grade will be less than 1%.
- C. No turnouts are planned.
- D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit.
- F. The access road as shown in Exhibit #6 is existing.

**2. Location of Existing Wells:**

Exhibit #16 shows all existing wells within a one-mile radius of this well.

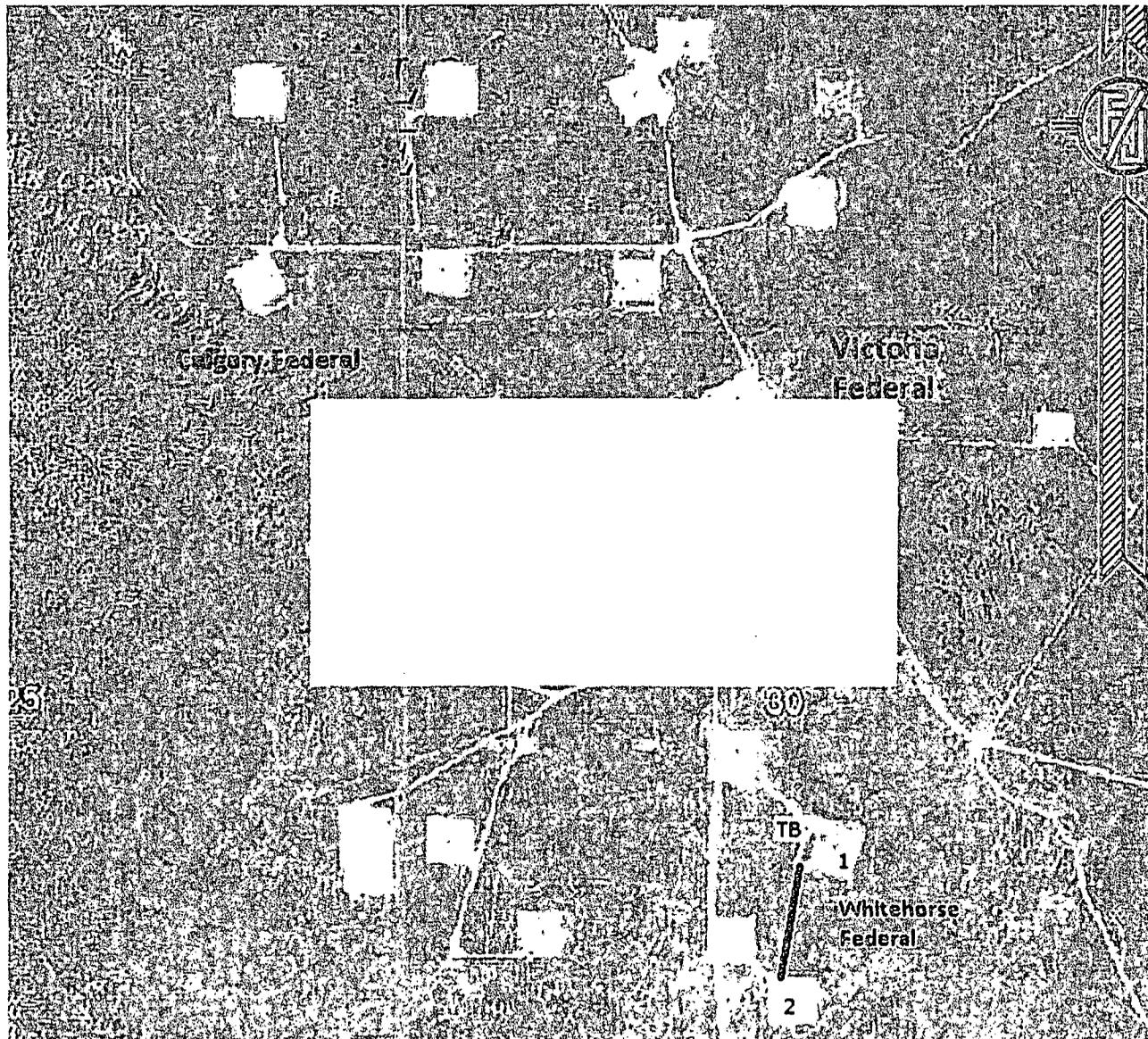


Exhibit #16

**3. Location of Existing and/or Proposed Facilities:**

- A. Mack Energy Corporation does operate a production facility on this lease.
- B. If the well is productive, contemplated facilities will be as follows:
  - 1) Round Tank; San Andres Completion: Will be sent to the Whitehorse Federal TB located at the #1 well. The Facility is shown in Exhibit #13.

be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

- B. The average grade will be less than 1%.
- C. No turnouts are planned.
- D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit.
- F. The access road as shown in Exhibit #6 is existing.

## 2. Location of Existing Wells:

Exhibit #16 shows all existing wells within a one-mile radius of this well.

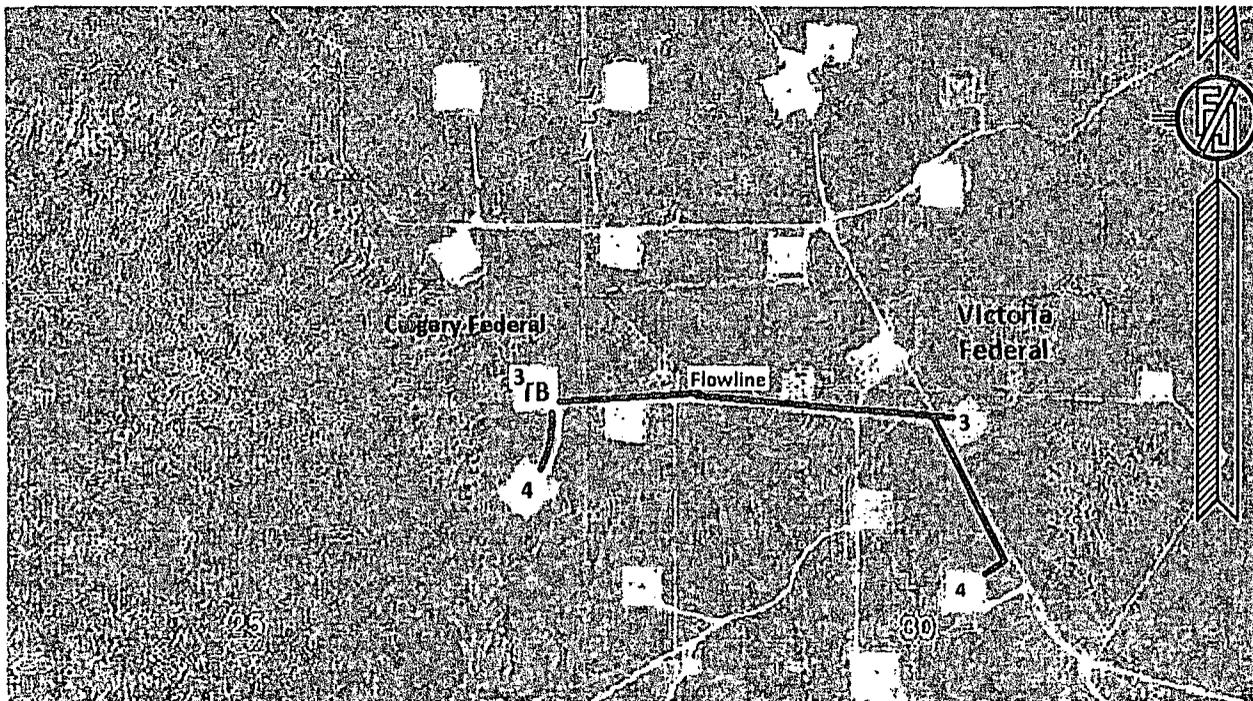


Exhibit #16

## 3. Location of Existing and/or Proposed Facilities:

- A. Mack Energy Corporation will get approval to add this well to existing off lease facility.
- B. If the well is productive, contemplated facilities will be as follows:
  - 1) Round Tank; San Andres Completion: Will be sent to the Calgary Federal TB located at the #3 well. The Facility is shown in Exhibit #13.
  - 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
  - 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
  - 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power.

- 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
  - 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
  - 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power.
- C. Proposed (1) flow line will move oil/gas/water to Tank Battery will trend north to TB at Whitehorse Federal #1. Flowline will be a 2" poly surface line, 1200' in length with a 40 psi working pressure.

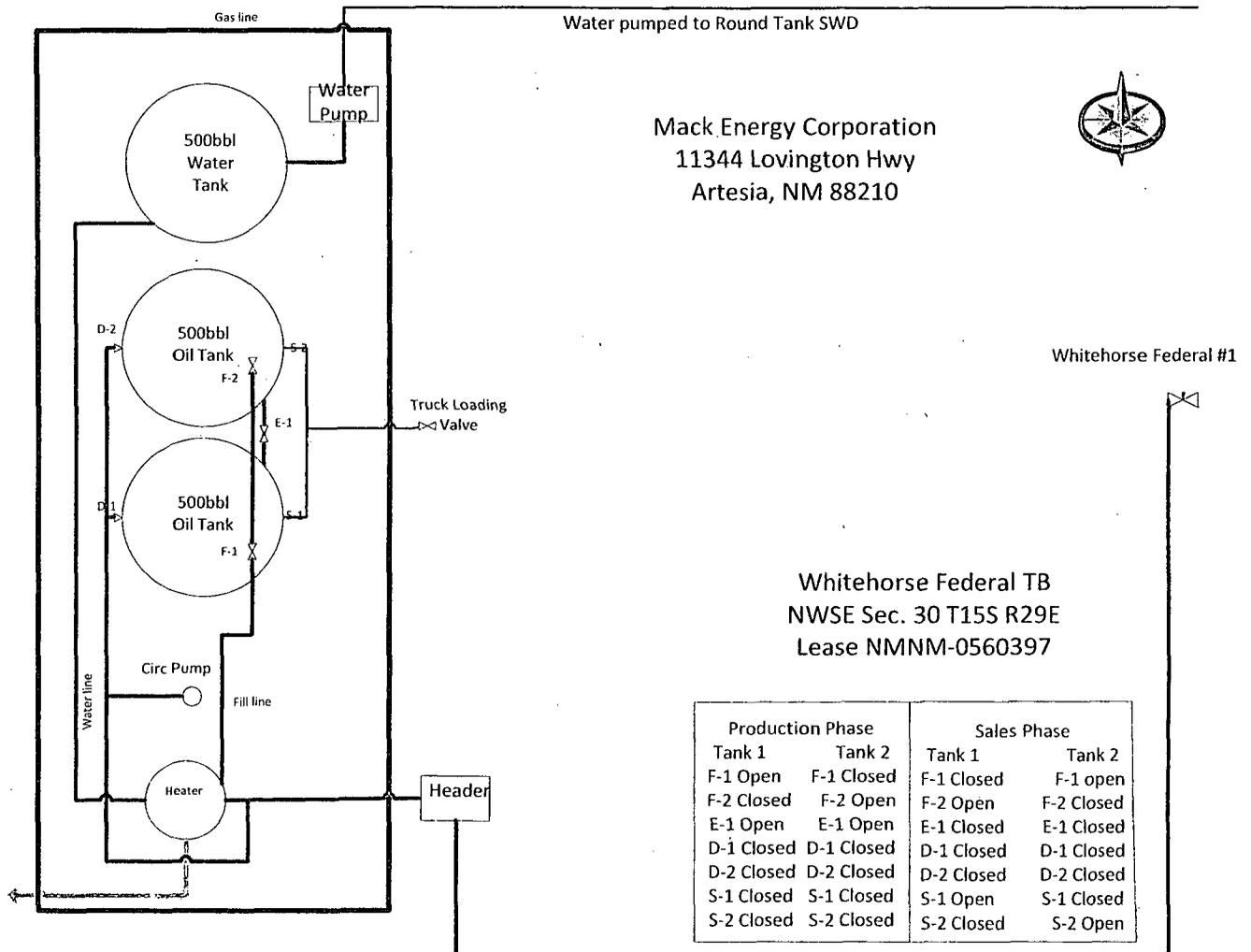
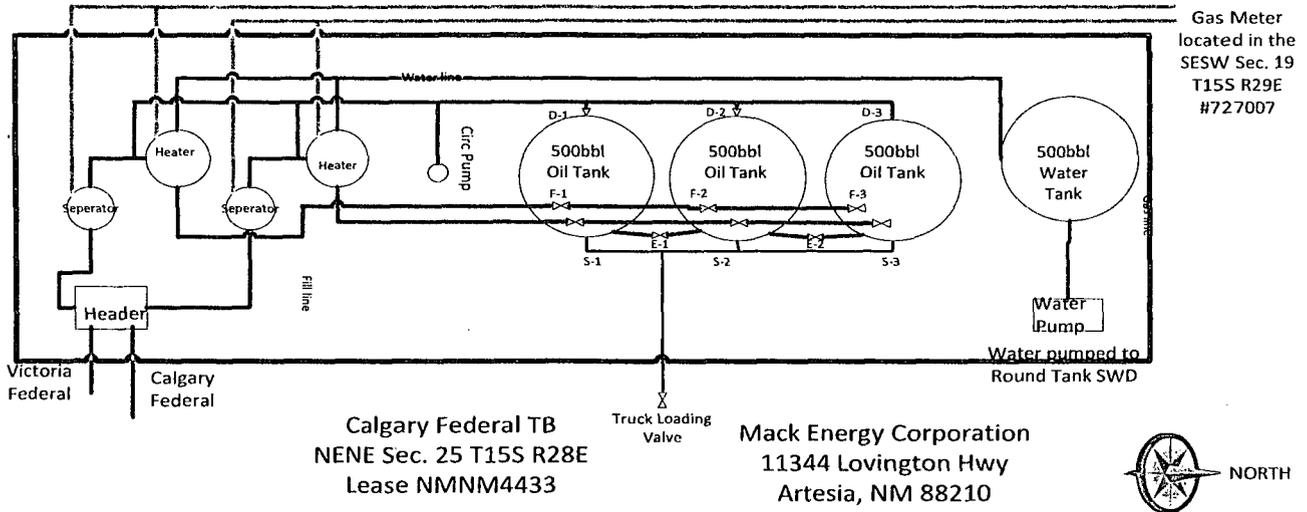


Exhibit #13

#### 4. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #6.

- C. Proposed flow lines will trend west along access road to TB at Calgary Federal #3. Flowline will be a 2" poly surface line, 571' in length with a 40 psi working pressure.



Production Phase

Tank 1	Tank 2	Tank 3
F-1 Open	F-1 Closed	F-1 Closed
F-2 Closed	F-2 Open	F-2 Closed
F-3 Closed	F-3 Closed	F-3 Open
E-1 Open	E-1 Open	E-1 Closed
E-2 Closed	E-2 Closed	E-2 Open
D-1 Open	D-1 Closed	D-1 Closed
D-2 Closed	D-2 Open	D-2 Closed
D-3 Closed	D-3 Closed	D-3 Open
S-1 Closed	S-1 Closed	S-1 Closed
S-2 Closed	S-2 Closed	S-2 Closed
S-3 Closed	S-3 Closed	S-3 Closed

Sales Phase

Tank 1	Tank 2	Tank 3
F-1 Closed	F-1 Closed	F-1 Open
F-2 Closed	F-2 Closed	F-2 Closed
F-3 Open	F-3 Closed	F-3 Closed
E-1 Closed	E-1 Closed	E-1 Open
E-2 Open	E-2 Open	E-2 Closed
D-1 Closed	D-1 Closed	D-1 Open
D-2 Closed	D-2 Closed	D-2 Closed
D-3 Open	D-3 Closed	D-3 Closed
S-1 Open	S-1 Closed	S-1 Closed
S-2 Closed	S-2 Open	S-2 Closed
S-3 Closed	S-3 Closed	S-3 Open

Exhibit #13

4. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #6. If a commercial fresh water source is nearby, fasline may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

5. Source of Construction Materials:

All caliche required for construction of the drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from a BLM approved caliche pit.

6. Methods of Handling Waste:

- A. Drill cuttings not retained for evaluation purposes will be disposed into the steel tanks and hauled to an approved facility.
- B. Drilling fluids will be contained in steel tanks using a closed loop system Exhibit #12.

- C. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) until pumped to an approved disposal system; produced oil will be collected in steel tanks until sold.
- D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. All water and fluids will be disposed of into an approved facility. No toxic waste or hazardous chemicals will be produced by this operation.
- E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.
- F. Sewage and Gray Water will be placed in container and hauled to a approved facility.

**7. Ancillary Facilities:**

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

**8. Well Site Layout:**

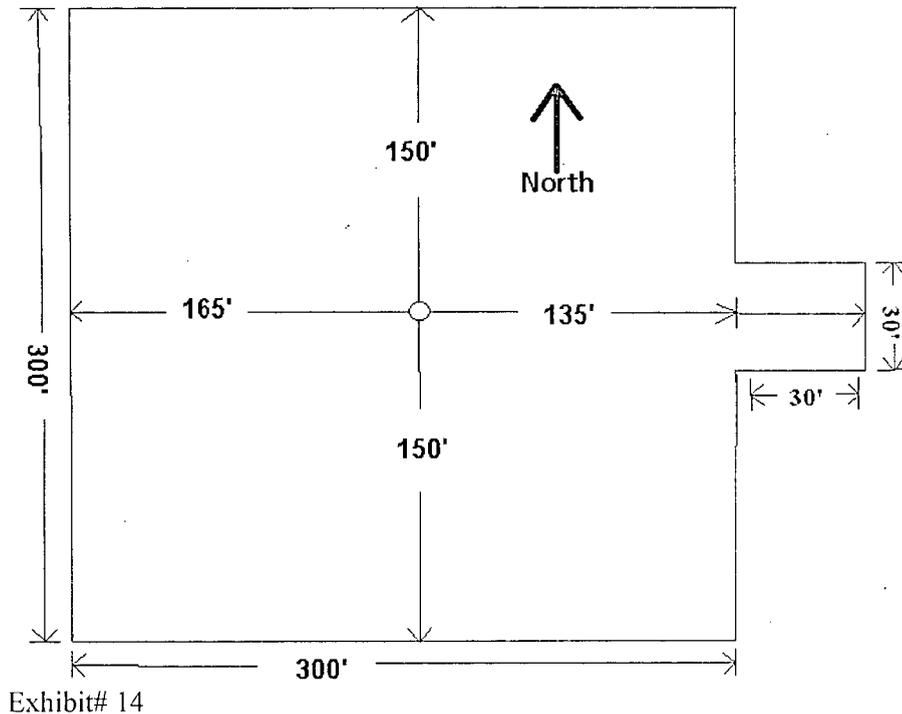
- A. The well site and elevation plat for the proposed well is shown in Exhibit #14. It was staked by John West Surveying, Hobbs, NM.
- B. The drill pad layout, with elevations staked by John West Surveying, is shown in Exhibit #14. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.
- C. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

Note: This location has been built.

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BUREAU OF LAND MANAGEMENT  
ROSWELL OFFICE



**9. Plans for Restoration of the Surface:**

- A. Upon completion of the proposed operations, if the well is completed, any additional caliche required for facilities will be obtained from a BLM approved caliche pit.
- B. Plans for interim and or final remediation:
  - 1) Within 6 months of completion caliche will be removed, ground ripped. Stockpiled topsoil will be used to recontour the surrounding area to the original natural level and reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting.
- C. Exhibit #15 below shows the proposed downsized well site after Interim Reclamation. Dimensions are estimates on present conditions and are subject to change.

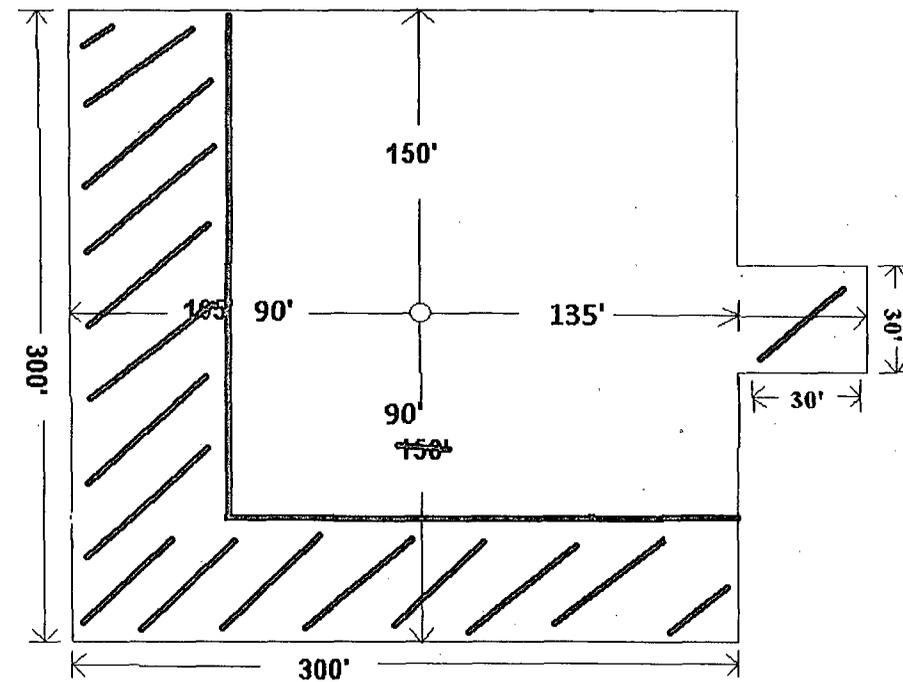


Exhibit #15

**10. Surface Ownership:**

The well site and lease is located entirely on Federal surface. We have notified the surface lessee of the impending operations. According to BLM the lessee is Bogel Limited Company, PO Box 460 Dexter, NM 88230 (575) 365-2996.

**11. Other Information:**

- A. The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.
- B. There is no permanent or live water in the immediate area.
- C. A Cultural Resources Examination has been requested and will be forwarded to your office in the near future.

**12. Lessee's and Operator's Representative:**

The Mack Energy Corporation representative responsible for assuring compliance with the surface use plan is as follows:

Jerry W. Sherrell  
 Mack Energy Corporation  
 P.O. Box 960  
 Artesia, NM 88211-0960  
 Phone (575) 748-1288 (office)

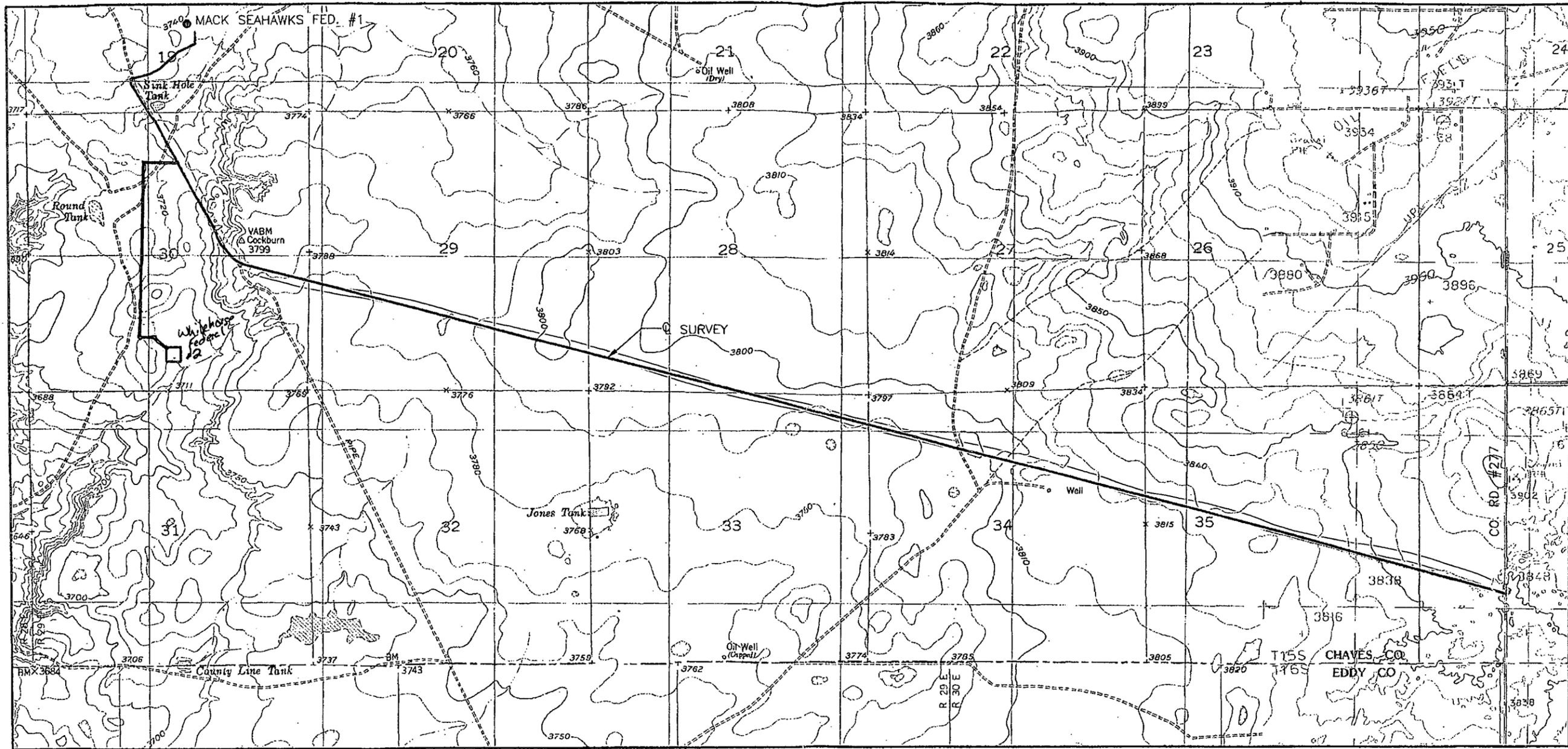
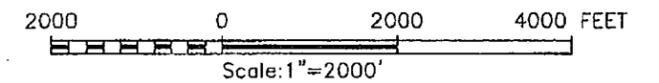


Exhibit C pg 11 of 11



**MACK ENERGY CORPORATION**

SURVEY OF AN EXISTING ROAD TO ACCESS THE SEAHAWKS FED. #1 CROSSING SECTIONS 19, 28, 29, 30, 33, 34, 35 & 36, TOWNSHIP 15S, RANGE 29 EAST, N.M.P.M., CHAVES COUNTY, NEW MEXICO

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

Survey Date: 11/25/07	of 1 Sheets
W.O. Number: 07.13.1825	Drawn By: LA
Date: 12/12/07	07131825 REV: 2/6/08

# OCD Rule 118

## Pasquill-Gifford Equation for Calculating Radius of Exposure (ROE) of Hydrogen Sulfide (H2S)

Enter H2S in PPM

41000

*enter Data in green shaded areas*

Enter Gas flow in mcf/day

60

Constant for 500 ppm ROE	0.4546	constant
Constant for 300 ppm ROE	0.77	constant
Constant for 100 ppm ROE	1.589	constant
Mult factor for 500 ppm ROE	1118.316	formula
Mult factor for 300 ppm ROE	1894.2	formula
Mult factor for 100 ppm ROE	3908.94	formula

Flow Rate of Pure H2S in Gas Stream (Actual Volume Fraction)	2.46	mcf/day
H2S Concentration Volume Fraction	0.041	decimal equivalent
H2S Concentration Volume Fraction in percent %	4.10%	percent

<b>500 ppm radius of exposure (public road)</b>	<b><u>81</u></b>	feet	<b>ANSWER</b>
<b>300 ppm radius of exposure</b>	<b><u>112</u></b>	feet	<b>ANSWER</b>
<b>100 ppm radius of exposure (public area)</b>	<b><u>177</u></b>	feet	<b>ANSWER</b>

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BUREAU OF AIR QUALITY CONTROL

BUREAU OF AIR QUALITY CONTROL  
REGIONAL OFFICE

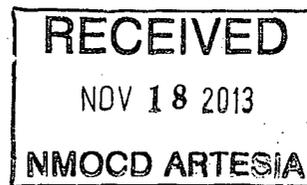
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**EXHIBIT B**

**PECOS DISTRICT - RFO  
CONDITIONS OF APPROVAL**

October 2013  
Whitehorse Federal #2  
518 FSL & 2540 FEL,  
Sec. 30, T. 15 S., R. 29 E., NMPM,  
Chaves County, New Mexico



Mack Energy Corporation  
Mineral Lease # NM-0560397

Environmental Assessment  
DOI-BLM-NM-P010-2009-23-EA  
**DOI-BLM-NM-P010-2013-536-DNA**

**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.

**I. 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).

**II. 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.

Concerning the 1,200' of on lease 2" polyline, the linear corridor shall be inventoried by a qualified archaeologist approved by the Authorized Officer. If any potential Historic Properties are discovered during inventory, the polyline shall be rerouted and construction shall be monitored in order to ensure No Effects to the potential Historic Properties.

### **III. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations (access road and/or well pad). 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.

### **IV. CONSTRUCTION**

#### **A. NOTIFICATION:**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Roswell Field Office at (505) 627-0247 at least 3 working days prior to commencing construction of the access road and/or well pad. A BLM monitor will need to be present during construction of the well pad.

When construction operations are being conducted on this well, the operator shall have the approved Application for Permit to Drill and Conditions of Approval on the well site and they shall be made available upon request by the Authorized Officer.

#### **B. TOPSOIL:**

The topsoil will be stripped to approximately 6 inches in depth within the area designated for construction of the well pad. The operator shall stockpile the stripped topsoil adjacent to the constructed well pad. The topsoil will be used for interim and final reclamation of the surface disturbance created by the construction of the well pad. The topsoil will not be used to construct the containment structure or earthen dike that is constructed and maintained on the outside boundaries of the constructed well pad.

#### **C. CLOSED SYSTEMS OR STEEL TANKS:**

A closed system or steel tanks will be used in lieu of reserve pits.

#### **D. FEDERAL MINERAL MATERIALS PIT:**

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the Roswell Field Office at (505) 627-0236.

#### **E. WELL PAD SURFACING:**

Surfacing of the well pad is not required. If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

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

## F. ON LEASE ACCESS ROADS:

### Road Egress and Ingress

The on lease access road shall be constructed to access the corner of the well pad.

### Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) 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 un-surfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

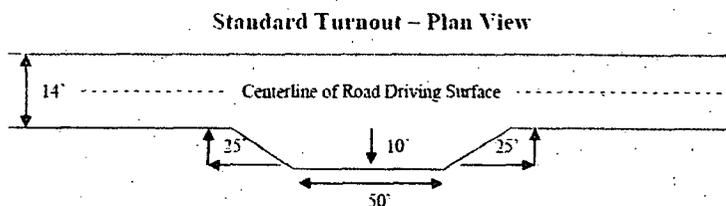
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

### Turnouts

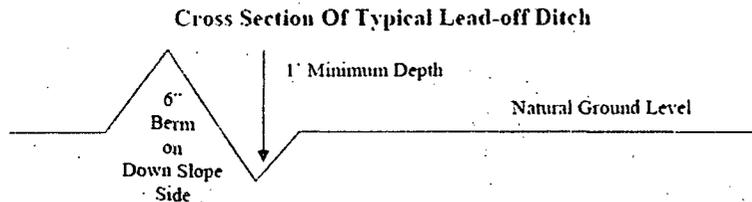
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



## Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, side hill out sloping and in sloping, 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.



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:

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

## Culvert Installations

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

## Cattle guards

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

Any existing cattle guard(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 cattle guard(s) that are in place and are utilized during lease operations. A gate shall be constructed and fastened securely to H-braces.

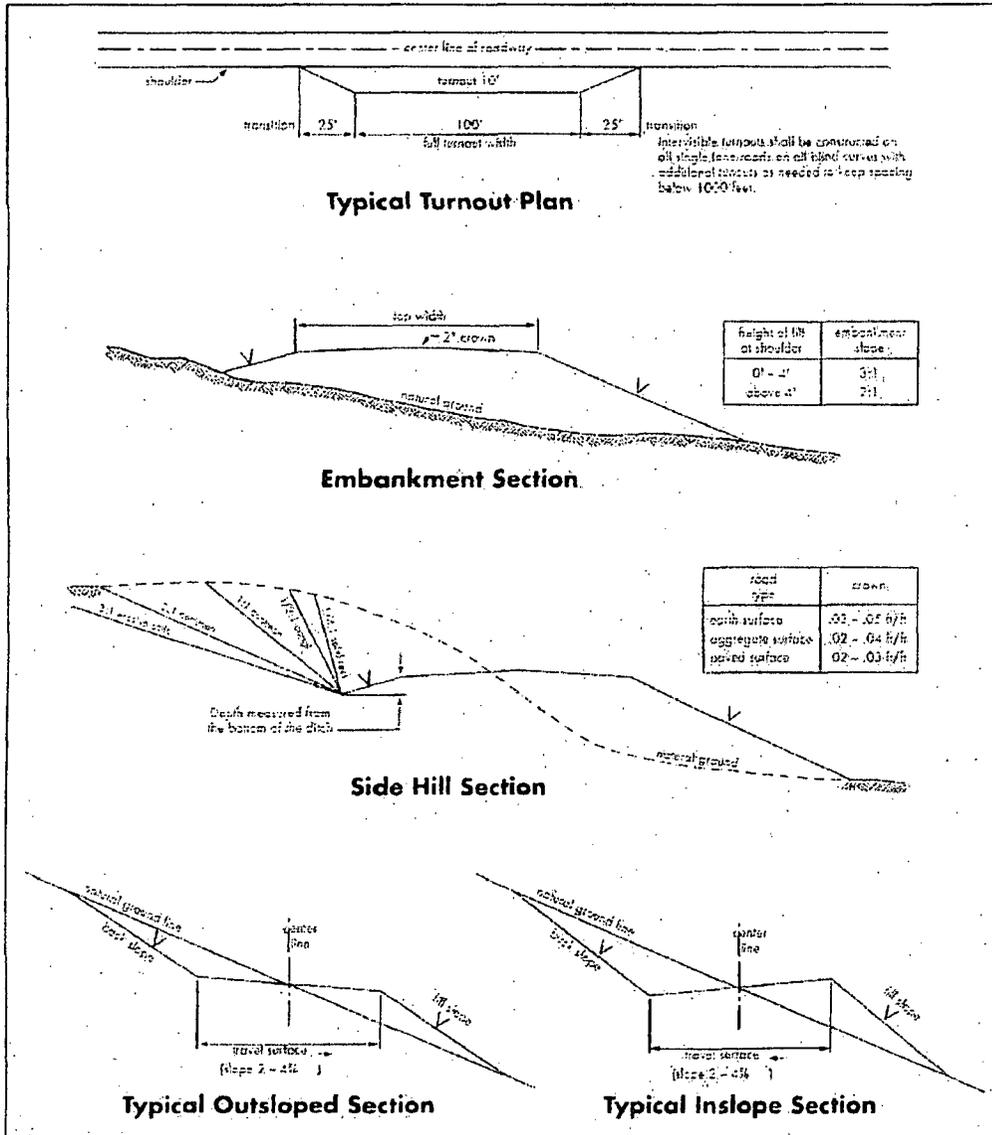
## Fence Requirement

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



## V. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

1. Call the Roswell Field Office, 2909 West Second St., Roswell, NM 88201. During office hours call or after office hours call (575) 627-0205. Engineer on call during office hours call (575) 627-0275 or after office hours call (575) 626-5749.
2. The BLM is to be notified a minimum of 24 hours in advance for a representative to witness:
  - a. Spudding well
  - b. Setting and/or Cementing of all casing strings
  - c. The BLM is to be notified a minimum of 4 hours in advance for a representative to witness BOPE Tests
3. 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.
4. Include the API Number assigned to well by NMOCD on the subsequent report of setting the first casing string.
5. **The operator will accurately measure the drilling rate in ft. /min to set the base of the usable water protection casing string(s) opposite competent rock. The record of the drilling rate along with the caliper-gamma ray-neutron well log run to surface will be submitted to this office as well as all other logs run on the borehole 30 days from completion.**
6. Air, air-mist or fresh water and nontoxic drilling mud shall be used to drill to the base of the usable water protection casing string(s). Any polymers used will be water based and non-toxic.

### B. CASING

1. The **8-5/8** inch usable water protection casing string(s) shall be set between 380 ft. and 450 ft. in competent bedrock. In no way will operator be allowed to set water protection string in Halite.
  - a. If cement does not circulate to the surface, the Roswell Field 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.

- b. Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin or 500 pounds compression strength, whichever is greater. (This is to include the lead cement). Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compression strength, whichever is greater.
  - c. If cement falls back, remedial action 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 **sufficient to tie back 500 feet above the uppermost perforation in the pay zone**. If cement does not circulate, 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.
3. If hard band 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.
4. All casing shall be new or reconditioned and tested casing and meet API standards for new casing. The use of reconditioned and tested casing shall be subject to approval by the authorized officer. Approval will be contingent upon the wall thickness of any casing being verified to be at least 87-1/2 per cent of the nominal wall thickness of new casing.

### C. PRESSURE CONTROL:

1. Before drilling below the 8-5/8 inch surface casing shoe, the blowout preventer assembly shall consist of a minimum of One Annular Preventer or Two Ram-Type Preventers and a Kelly Cock/Stabbing Valve.
2. Before drilling below the 8-5/8 inch surface casing shoe, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be **2000** psi. If operator chooses to use a control device greater than the minimum standard they will have to follow all guidelines as stated within Bureau of Land Management 43 CFR part 3160 and Onshore Oil and Gas Order No. 2 Drilling Operations.
3. The BOPE shall be installed before drilling below the 8-5/8 inch surface casing shoe and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.
4. The BLM Roswell Field office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
5. 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.
6. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test will be submitted to the BLM Roswell Field Office at 2909 West Second Street, Roswell, New Mexico 88201.
7. Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.

8. Testing must be done in a safe workman like manner. Hard line connections shall be required.

#### **D. MUD PROGRAM REQUIREMENTS:**

The drilling operations of this well will be conducted in accordance with the Onshore Oil and Gas Order No. 2 as provided in 43 CFR 3164.1. This includes well control equipment and its testing, mud system and associated equipment, and the casing and cementing.

1. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.
2. A mud test shall be performed at least every 24 hours after mudding up to determine, as applicable density, viscosity, gel strength, filtration, and PH.
3. Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

#### **VI. PRODUCTION**

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

Production facility is located on the #1 Whitehorse Federal well pad. Mack will run a 1200 foot poly line on the surface from the #2 Whitehorse to the existing facility.

##### **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.

A containment structure or earthen dike shall be constructed and maintained on the north, west, and south sides of the outside boundary of the well pad in order to protect the nearby ephemeral drainages. If the well pad is constructed into a cut on a slope then the uphill side of the well pad will not require the construction of the containment structure or earthen dike, but the construction of the containment structure or dike will be required on the remaining three sides of the well pad which will extend into the uphill portion of the well pad. The containment structure or earthen dike is required so that if oilfield waste contaminant or product contaminant were leaked, spilled, and or released upon the well pad the oilfield waste contaminant or product contaminant shall be contained on the well pad and not enter into the nearby ephemeral drainages. The containment structure or earthen dike shall be constructed two (2) feet high (the containment structure or earthen dike can be constructed higher than the two (2) feet high minimum). The containment structure or earthen dike shall be constructed and maintained during the drilling phase, the production phase and for the life of the well. During interim reclamation, if the surface area of the constructed well pad is reduced then the original constructed containment structure or earthen dike and a portion of the constructed well pad will be excavated and removed. During interim reclamation, the containment structure or earthen dike will then be re-constructed on the outside boundaries of the reduced in size constructed well pad.

## **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, Juniper Green (Standard Environmental Color Chart June 2008).

## **VRM Facility Requirement – VRM Class IV**

Low-profile tanks not greater than eight-feet-high shall be used.

## **VII. INTERIM RECLAMATION**

Earthwork for interim and final reclamation must be completed within 6 months of well completion or well plugging (weather permitting).

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.

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

PECOS DISTRICT, BLM  
SEED MIX FOR

The following Soils or Soil associations may represent these ecological sites:

ECTOR VERY COBBLY LOAM, 3-15% SLOPE  
ECTOR VERY COBBLY LOAM, DRY, 3-15% SLOPE

Shallow SD-3 Ecological Site  
Very Shallow, CP-4 Ecological Site

APRIL 4, 2006

<u>Common Name and Preferred Variety</u>	<u>Scientific Name</u>	<u>Pounds of Pure Live Seed Per Acre</u>
Blue grama Or Black grama	( <i>Bouteloua gracilis</i> ) ( <i>B. eriopoda</i> )	3.00
Sideoats grama	( <i>Bouteloua curtipendula</i> )	2.00
New Mexico Feathergrass Or Green sprangletop	( <i>Stipa neomexicana</i> ) ( <i>Leptochloa dubia</i> )	1.00
Desert or Scarlet Globemallow	( <i>Sphaeralcea ambigua</i> or <i>S. coccinea</i> )	1.00
Croton	( <i>Croton spp.</i> )	1.00
Buckwheat	( <i>Eriogonum spp.</i> )	<u>1.00</u>
TOTAL POUNDS PURE LIVE SEED (pls) PER ACRE Certified Weed Free Seed		9.00

If one species is not available  
Increase ALL other proportionately  
Use no less than four (4) species, including one (1) forb.

No less than 9 pounds pls per acre shall be applied.

APPROVED: /s/ Douglas J. Burger  
District Manager, Pecos District

### **C. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS**

- a) Upon abandonment of the well and/or when the access road is no longer in service, a Notice of Intent for Final Abandonment with the proposed surface restoration procedure must be submitted for approval.
- b) Upon abandonment of the well, all casing shall be cut-off at the base of the cellar or 3-feet below final restored ground level (whichever is deeper). The well bore shall then be covered with a metal plate at least ¼ inch thick and welded in place, or a 4-inch pipe, 10 feet in length, shall be installed 4 feet above ground and embedded in cement. The following information shall be permanently inscribed on the dry hole marker: Well name and number, the name of the operator, the lease serial number, the surveyed location (the quarter-quarter section, section, township and range or other authorized survey designation acceptable to the authorized officer; such as metes and bounds).
- c) Surface Reclamation must be completed within 6 months of well plugging. If the operator proposes to modify the plans for surface reclamation approved on the APD, the operator must attach these modifications to the Subsequent Report of Plug and Abandon using Sundry Notices and Reports on Wells, Form 3160-5.