

N.M. OIL CONSERVATION DIVISION

811 S. FIRST STREET
ARTESIA, NM 88210

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

| | | |
|--|--|--|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER | | 5. Lease Serial No. NMNM-4433 |
| 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 Mack Energy Corporation | | 7. If Unit or CA Agreement, Name and No. |
| 3a. Address PO Box 960 Artesia, NM 88211-0960 | | 8. Lease Name and Well No. Calgary Federal #6 <37615> |
| 3b. Phone No. (include area code) (575)748-1288 | | 9. API Well No. 30-005-64194 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 2310 FNL & 1945 FEL At proposed prod. zone | | 10. Field and Pool, or Exploratory Round Tank; San Andres <52770> |
| 14. Distance in miles and direction from nearest town or post office* 12 miles northwest of Loco Hills, NM | | 11. Sec., T. R. M. or Blk. and Survey or Area Sec. 24 T15S R28E |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 330' | 16. No. of acres in lease 560 | 12. County or Parish Chaves |
| 17. Spacing Unit dedicated to this well 40 | 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1055' | 13. State NM |
| 19. Proposed Depth 3500' | 20. BLM/BIA Bond No. on file NMB000286 | |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3724' GR | 22. Approximate date work will start* 2/1/2014 | 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 <i>Jerry W. Sherrell</i> | Name (Printed/Typed) Jerry W. Sherrell | Date 12-18-2013 |
| Title Production Clerk | | |
| Approved by (Signature) <i>/s/ Angel Mayes</i> | Name (Printed/Typed) Angel Mayes | Date MAR 17 2014 |
| Title Assistant Field Manager, Lands And Minerals | Office ROSWELL FIELD OFFICE | APPROVED FOR 2 YEARS |

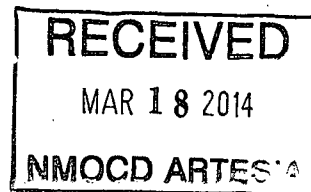
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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 in 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)

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS ATTACHED



12. Lessee's and Operator's Representative:

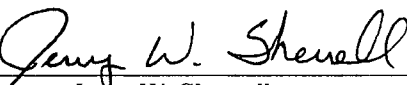
The Mack Energy Corporation representative responsible for assuring compliance with the surface use plan is as follows:

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

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: 1-28-2014

Signed: 
Jerry W. Sherrell

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1090 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| | | | |
|---|--|--|---|
| ¹ API Number 30-005-6494 | | ² Pool Code 52770 | ³ Pool Name Round Tank; San Andres |
| ⁴ Property Code 37615 | ⁵ Property Name CALGARY FEDERAL | | ⁶ Well Number 6 |
| ⁷ OGRID No. 13837 | ⁸ Operator Name MACK ENERGY CORPORATION | | ⁹ Elevation 3723.6 |

¹⁰ Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|-----------|-------------|-------------|---------|---------------|------------------|---------------|----------------|---------------|
| G | 24 | 15 S | 28 E | | 2310 | NORTH | 1945 | EAST | CHAVES |

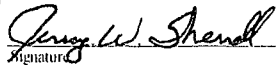
¹¹ Bottom Hole Location If Different From Surface

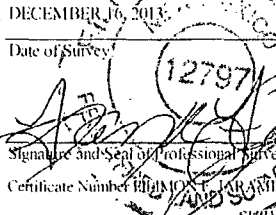
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| | | | | | | | | | |

| | | | |
|--|-------------------------------|----------------------------------|-------------------------|
| ¹² Dedicated Acres 40 | ¹³ Joint or Infill | ¹⁴ Consolidation Code | ¹⁵ Order No. |
|--|-------------------------------|----------------------------------|-------------------------|

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.

| | | | | | |
|---|--|---|--|---|--|
| <p>S89°11'40"E 2644.79 FT</p> <p>NW CORNER SEC. 24 LAT. = 33.0086812°N LONG. = 104.0934097°W NMSP EAST (FT) N = 730755.04 E = 573549.47</p> | | <p>S89°11'04"E 2643.77 FT</p> <p>N/4 CORNER SEC. 24 LAT. = 33.0085621°N LONG. = 104.0847856°W NMSP EAST (FT) N = 730717.85 E = 576193.31</p> | | <p>S00°05'16"E 2626.72 FT</p> <p>NE CORNER SEC. 24 LAT. = 33.0084412°N LONG. = 104.0761650°W NMSP EAST (FT) N = 730680.21 E = 578836.12</p> | |
| <p>N00°12'53"W 2645.42 FT</p> | | <p> CALGARY FEDERAL #6 ELEV. = 3723.6' LAT. = 33.0021817°N (NAD27) LONG. = 104.0825146°W NMSP EAST (FT) N = 728398.18 E = 576895.04 SURFACE LOCATION </p> | | <p>S00°08'59"E 2628.39 FT</p> | |
| <p>N00°18'08"W 2644.62 FT</p> | | <p> NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT. </p> | | <p>S00°05'16"E 2626.72 FT</p> | |
| <p>W/4 CORNER SEC. 24 LAT. = 33.0014119°N LONG. = 104.0933971°W NMSP EAST (FT) N = 728110.35 E = 573559.36</p> | | <p> E/4 CORNER SEC. 24 LAT. = 33.0012233°N LONG. = 104.0761728°W NMSP EAST (FT) N = 728054.20 E = 578840.13 </p> | | <p>S00°05'16"E 2626.72 FT</p> | |
| <p>SW CORNER SEC. 24 LAT. = 32.9941448°N LONG. = 104.0933713°W NMSP EAST (FT) N = 725466.49 E = 573573.31</p> | | <p>SE CORNER SEC. 24 LAT. = 32.9940008°N LONG. = 104.0761714°W NMSP EAST (FT) N = 725426.53 E = 578846.98</p> | | <p>N89°33'59"W 2637.60 FT</p> | |
| <p>N89°33'59"W 2637.60 FT</p> | | <p>N89°33'59"W 2637.60 FT</p> | | <p>N89°33'59"W 2637.60 FT</p> | |

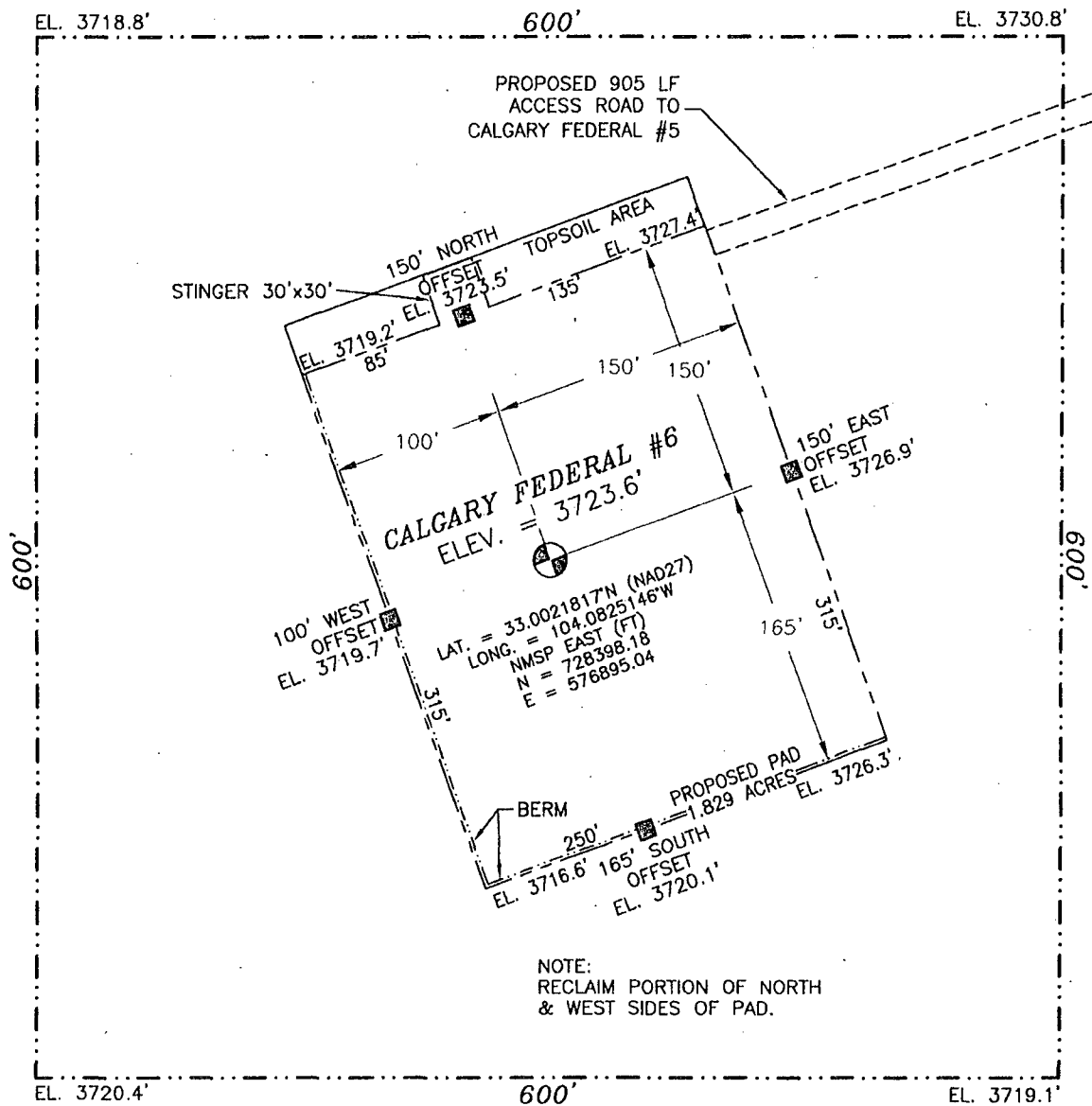
¹⁷ OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

 Signature: _____ Date: **12/18/13**
 Printed Name: **Jerry W. Sherrell**
 E-mail Address: **jerrys@mec.com**

¹⁸ SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
 DECEMBER 16, 2013
 Date of Survey: _____

 Signature and Seal of Professional Surveyor: _____
 Certificate Number: **12797**
 SURVEY NO. 206511

SECTION 24, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO

SITE MAP

NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN
USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN
DECIMAL DEGREE FORMAT.



NOTE:
RECLAIM PORTION OF NORTH
& WEST SIDES OF PAD.

0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF STATE HIGHWAY 249 AND CR 30 (JEMINA) GO
NORTHWEST ON STATE HIGHWAY 249 FOR APPROX. 2.1 MILES. GO SOUTH
ON CALICHE LEASE ROAD APPROX. 4.4 MILES. GO SOUTHEAST APPROX. 0.5
OF A MILE. GO SOUTHWEST APPROX. 1.2 MILES. GO WEST APPROX. 0.75
OF A MILE. GO NORTHWEST APPROX. 0.6 OF A MILE. LOCATION IS APPROX.
880' NORTHEAST.

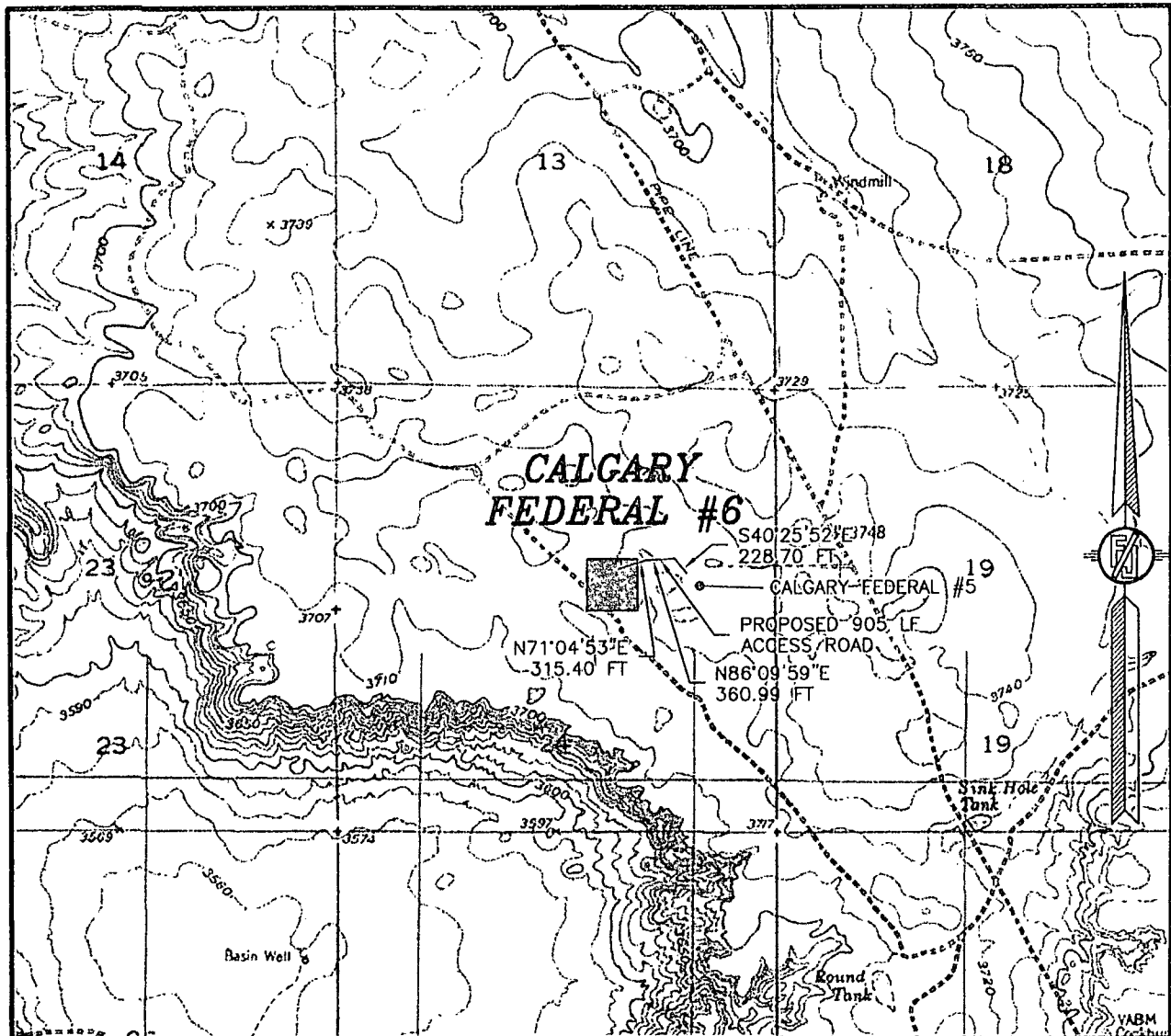
MACK ENERGY CORPORATION
CALGARY FEDERAL #6
LOCATED 2310 FT. FROM THE NORTH LINE
AND 1945 FT. FROM THE EAST LINE OF
SECTION 24, TOWNSHIP 15 SOUTH,
RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO

DECEMBER 16, 2013

SURVEY NO. 2065B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 24, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
KING CAMP

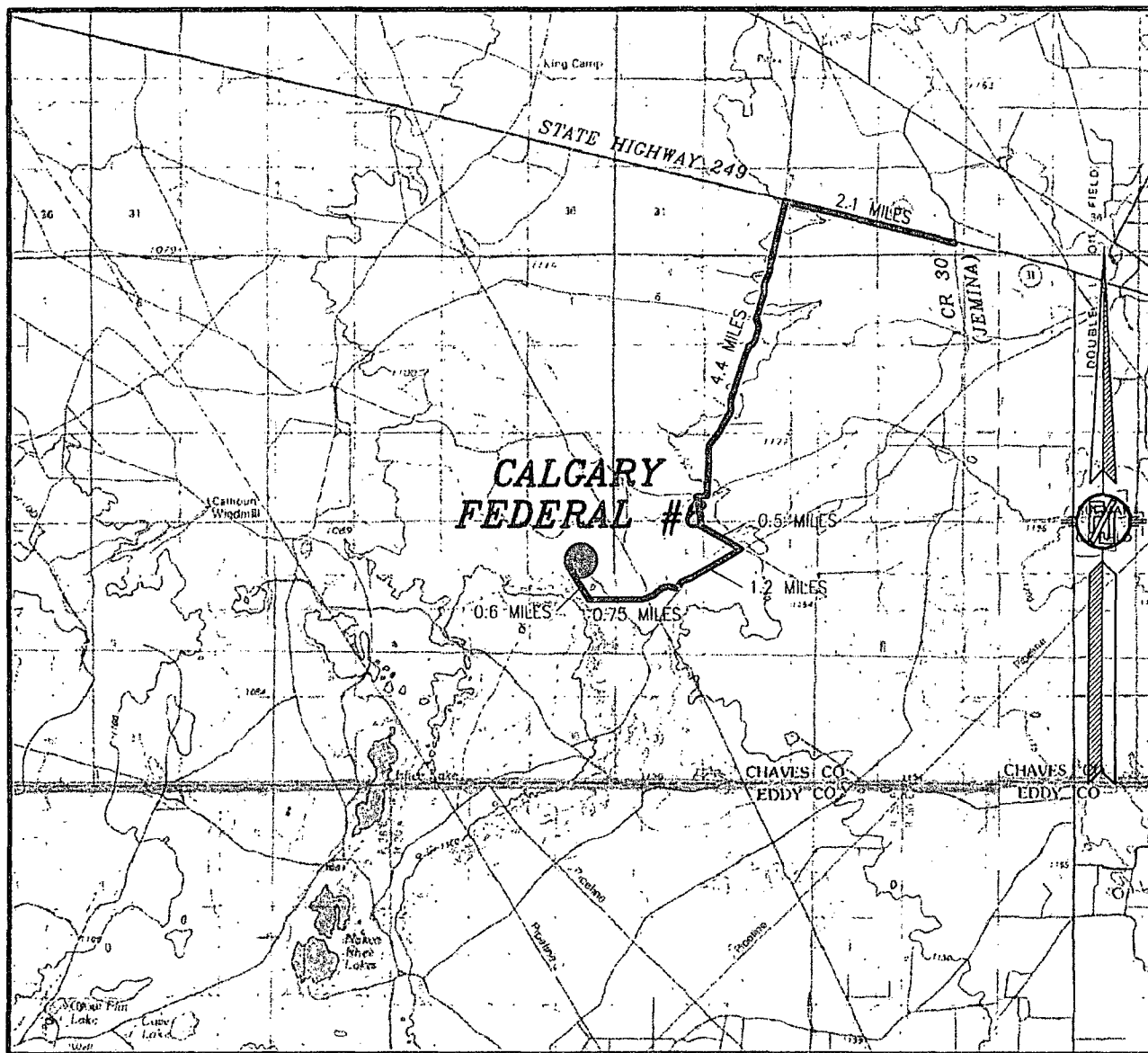
NOT TO SCALE

MACK ENERGY CORPORATION
CALGARY FEDERAL #6
LOCATED 2310 FT. FROM THE NORTH LINE
AND 1945 FT. FROM THE EAST LINE OF
SECTION 24, TOWNSHIP 15 SOUTH,
RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO

DECEMBER 16, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO SURVEY NO. 2065B

SECTION 24, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO
VICINITY MAP



NOT TO SCALE

MACK ENERGY CORPORATION
CALGARY FEDERAL #6
LOCATED 2310 FT. FROM THE NORTH LINE
AND 1945 FT. FROM THE EAST LINE OF
SECTION 24, TOWNSHIP 15 SOUTH,
RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO

DIRECTIONS TO LOCATION

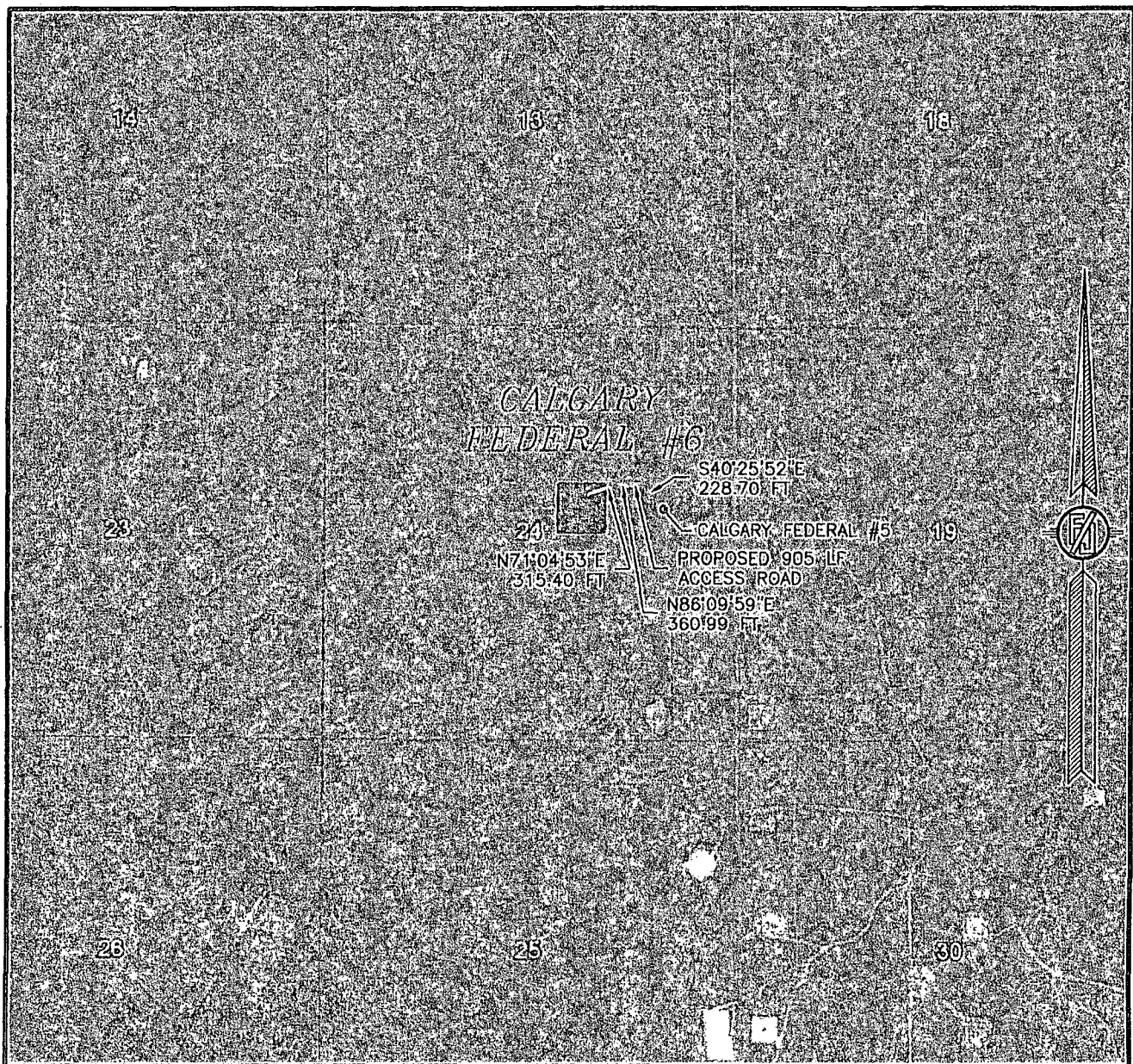
FROM THE INTERSECTION OF STATE HIGHWAY 249 AND CR 30 (JEMINA) GO NORTHWEST ON STATE HIGHWAY 249 FOR APPROX. 2.1 MILES. GO SOUTH ON CALICHE LEASE ROAD APPROX. 4.4 MILES. GO SOUTHEAST APPROX. 0.5 OF A MILE. GO SOUTHWEST APPROX. 1.2 MILES. GO WEST APPROX. 0.75 OF A MILE. GO NORTHWEST APPROX. 0.6 OF A MILE. LOCATION IS APPROX. 880' NORTHEAST.

DECEMBER 16, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341

SURVEY NO. 2065B
CARLSBAD, NEW MEXICO

SECTION 24, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
MARCH 2010

MACK ENERGY CORPORATION
CALGARY FEDERAL #6
LOCATED 2310 FT. FROM THE NORTH LINE
AND 1945 FT. FROM THE EAST LINE OF
SECTION 24, TOWNSHIP 15 SOUTH,
RANGE 28 EAST, N.M.P.M.
CHAVES COUNTY, STATE OF NEW MEXICO

DECEMBER 16, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO
SURVEY NO. 2065B

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" | 32#, J-55, ST&C, New, 12.572/7.377/7.860 |
| 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" Surface 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 3rd 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 H2S 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 February 1, 2014. 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.

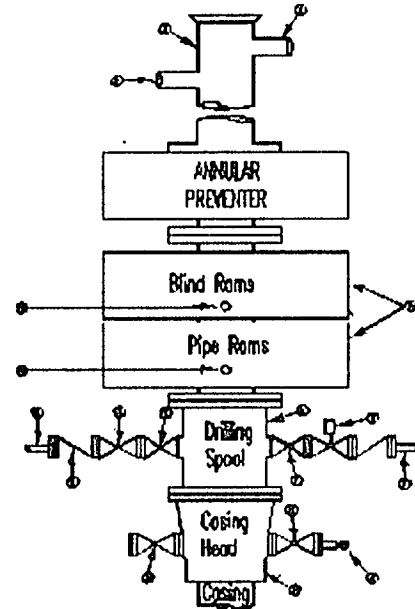
Attachment to Exhibit #10
NOTES REGARDING THE BLOWOUT PREVENTERS
Calgary Federal #6
Chaves County, New Mexico

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 | |
|----|---------------|---------|--|

CONTRACTOR'S OPTION TO FURNISH:

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

MEC TO FURNISH:

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

10.

ME

GENERAL NOTES:

- Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
- 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.
- Controls to be of standard design and each marked, showing opening and closing position
- Chokes will be positioned so as not to hamper or delay changing of choke beans.

- Replacable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
- All valves to be equipped with hand-wheels or handles ready for immediate use.
- Choke lines must be suitably anchored.
- Handwheels and extensions to be connected and ready for use.
- Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
- All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
- Casinghead connections shall not be used except in case of emergency.
- Does not use kill line for routine fill up operations.

Mack Energy Corporation

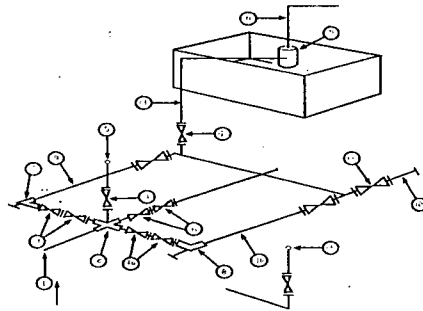
Exhibit #11

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

- All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
- All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
- All lines shall be securely anchored.
- Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
- alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
- 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

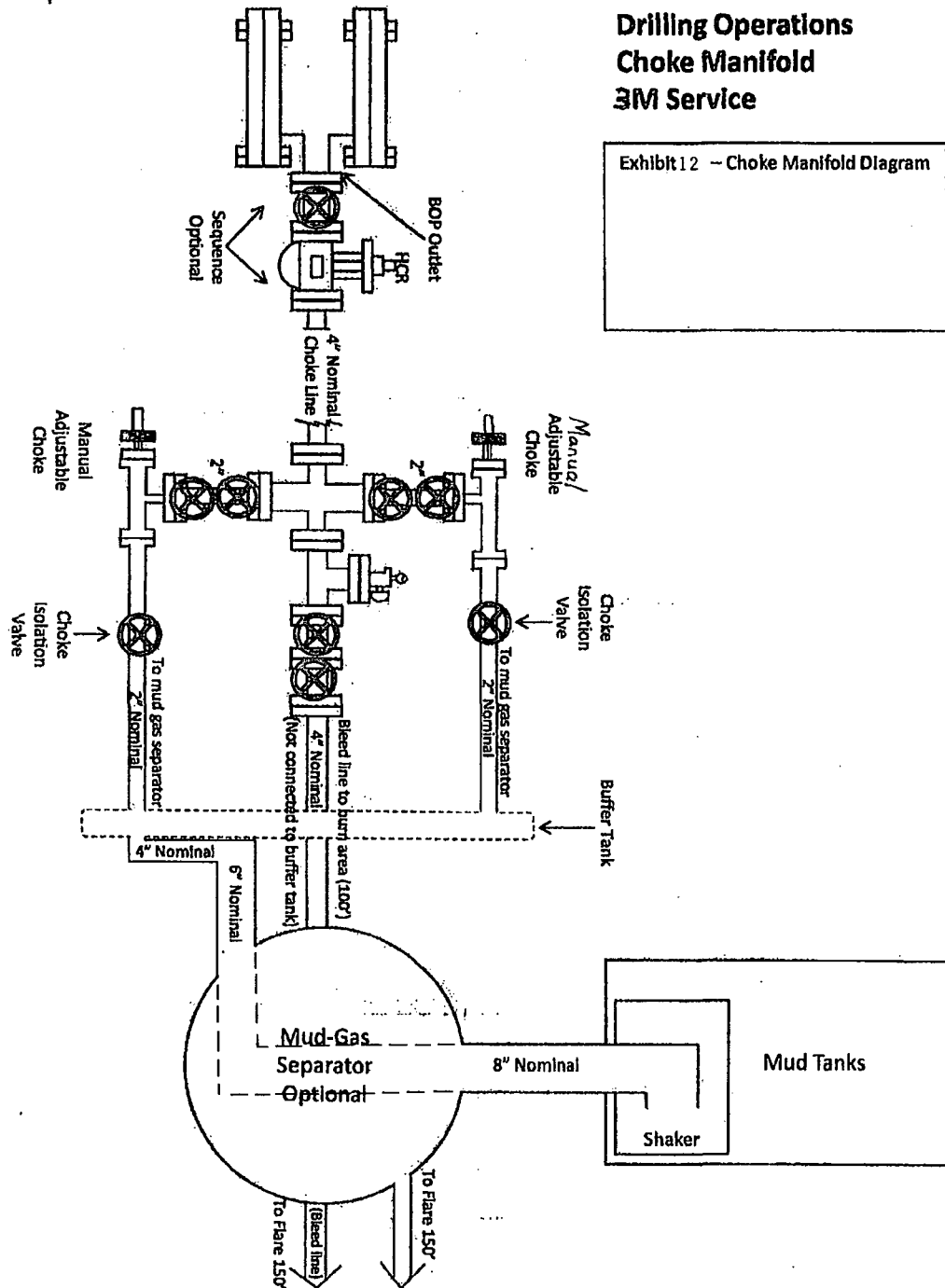
Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12

**Drilling Operations
Choke Manifold
3M Service**

Exhibit12 - 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 (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S 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 H₂S 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 H₂S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H₂S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H₂S SAFETY EQUIPMENT AND SYSTEMS

Note: All H₂S 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 H₂S.

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

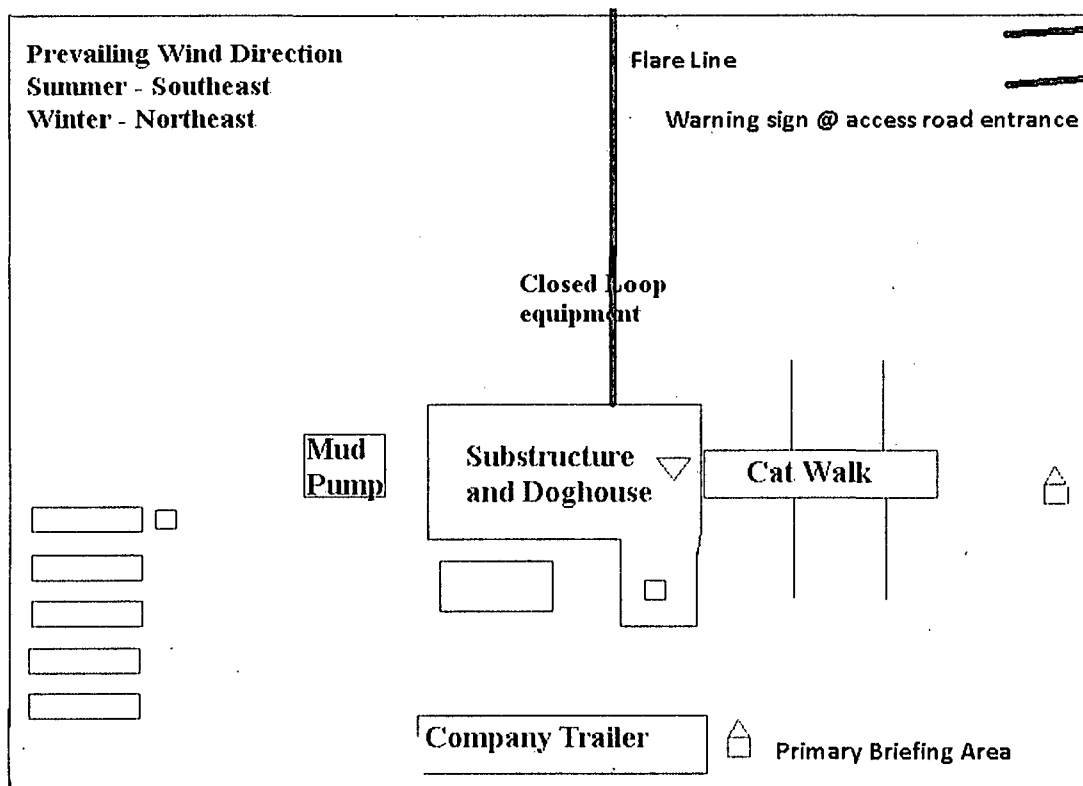
WARNING

**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

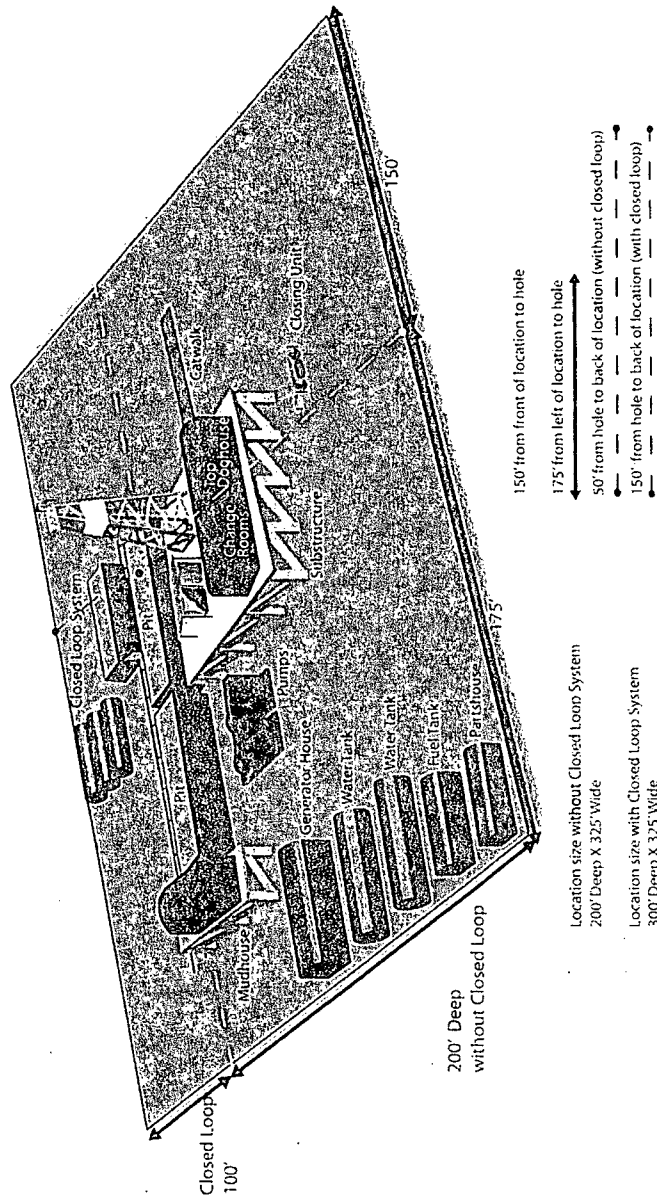


- ▽ H2S Monitors with alarms at the bell nipple
- Wind Direction Indicators
- △ Safe Briefing areas with caution signs and breathing equipment min 150 feet from wellhead

DRILLING LOCATION H2S SAFTY EQUIPMENT

Exhibit # 8

Location Layout



Silver Oak Drilling, 10 Bilco Road, Artesia, NM 88210, 575-746-4405

Info@silveroakdrilling.com, www.silveroakdrilling.com

Mack Energy Corporation Call List, Chaves County

| Artesia (575) | Cellular | Office |
|----------------------|-------------------|---------------|
| 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 State Hwy 249 and County Rd #30, go northwest on 249 approx. 2.1 miles, turn south and go 4.4 miles, go southeast 0.5 mile, go southwest 1.2 miles, go west 0.5 mile, go north 0.1 to Calgary #2 pad, continue 1300' to Calgary #5, follow proposed road 905' west 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.

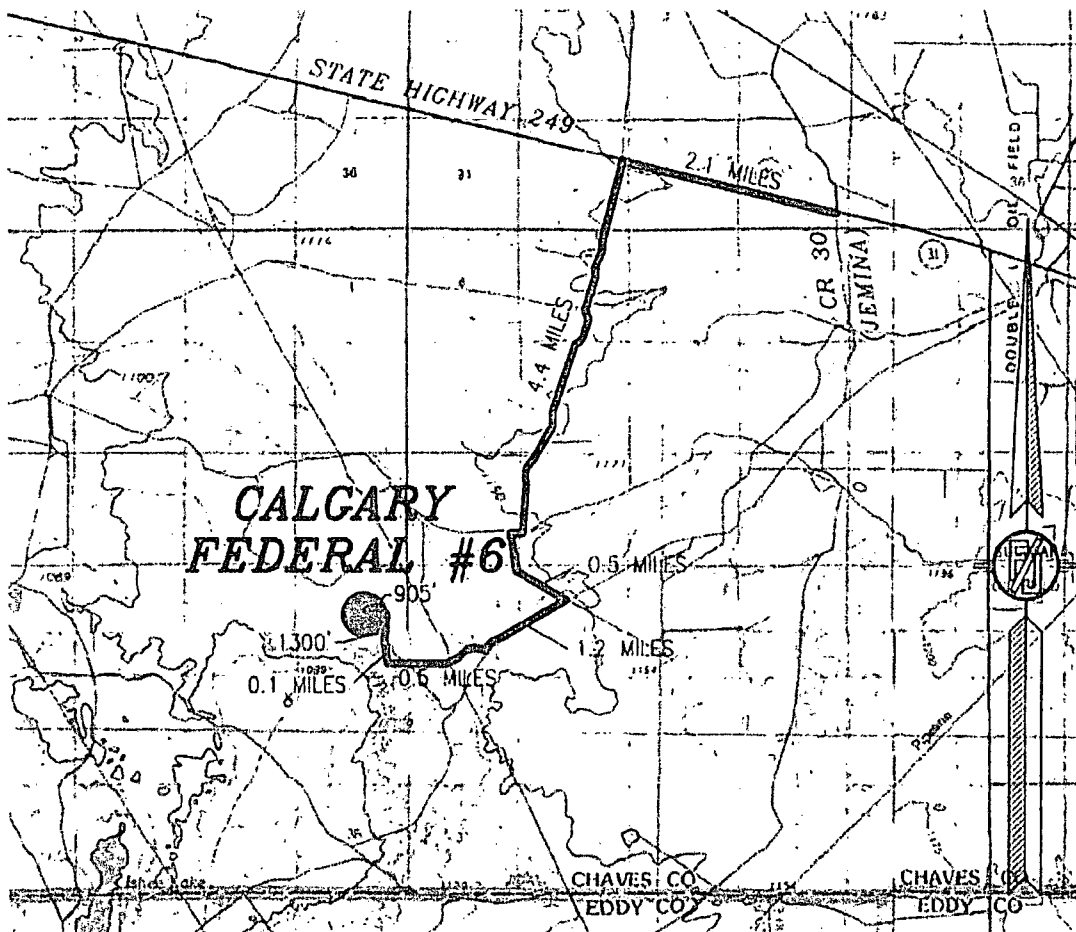


Exhibit #6

1. Proposed Access Road:

Vicinity Map this reclaimed location with existing road and 905' of new 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:

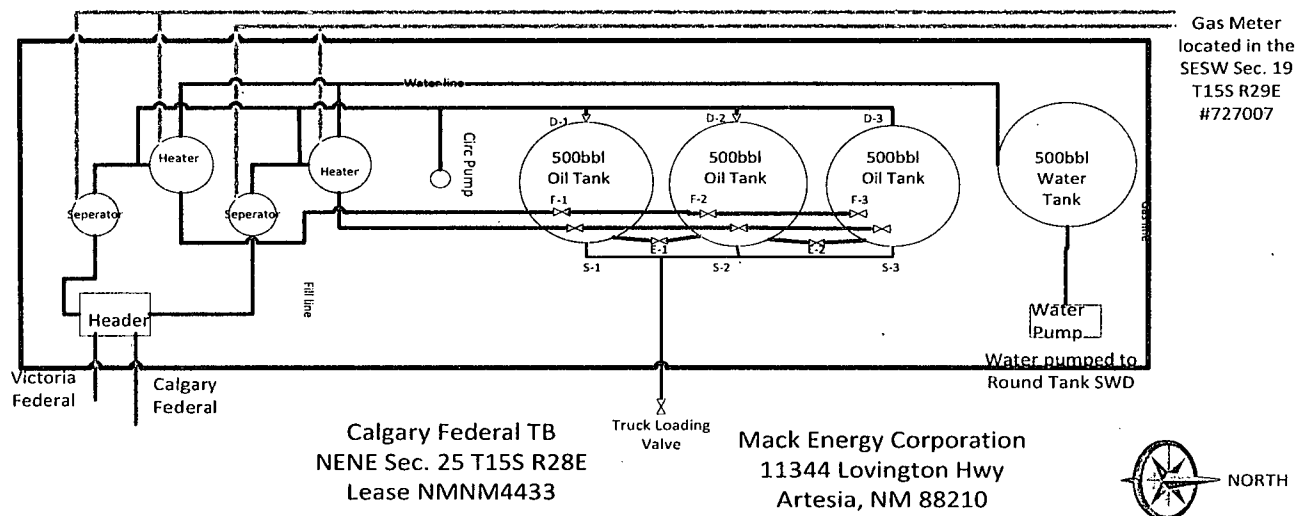
- ## 2. Location of Existing Wells:

[illegible]

Exhibit #16

3. Location of Existing and/or Proposed Facilities:

- A. Mack Energy Corporation will add this well to existing 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.
- C. Proposed flow lines will trend southeast then east along access road, within six feet of the roads edge then south along NM-130747 to TB at Calgary Federal #3. Flowline will be a 3" poly surface line, 4900' 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:

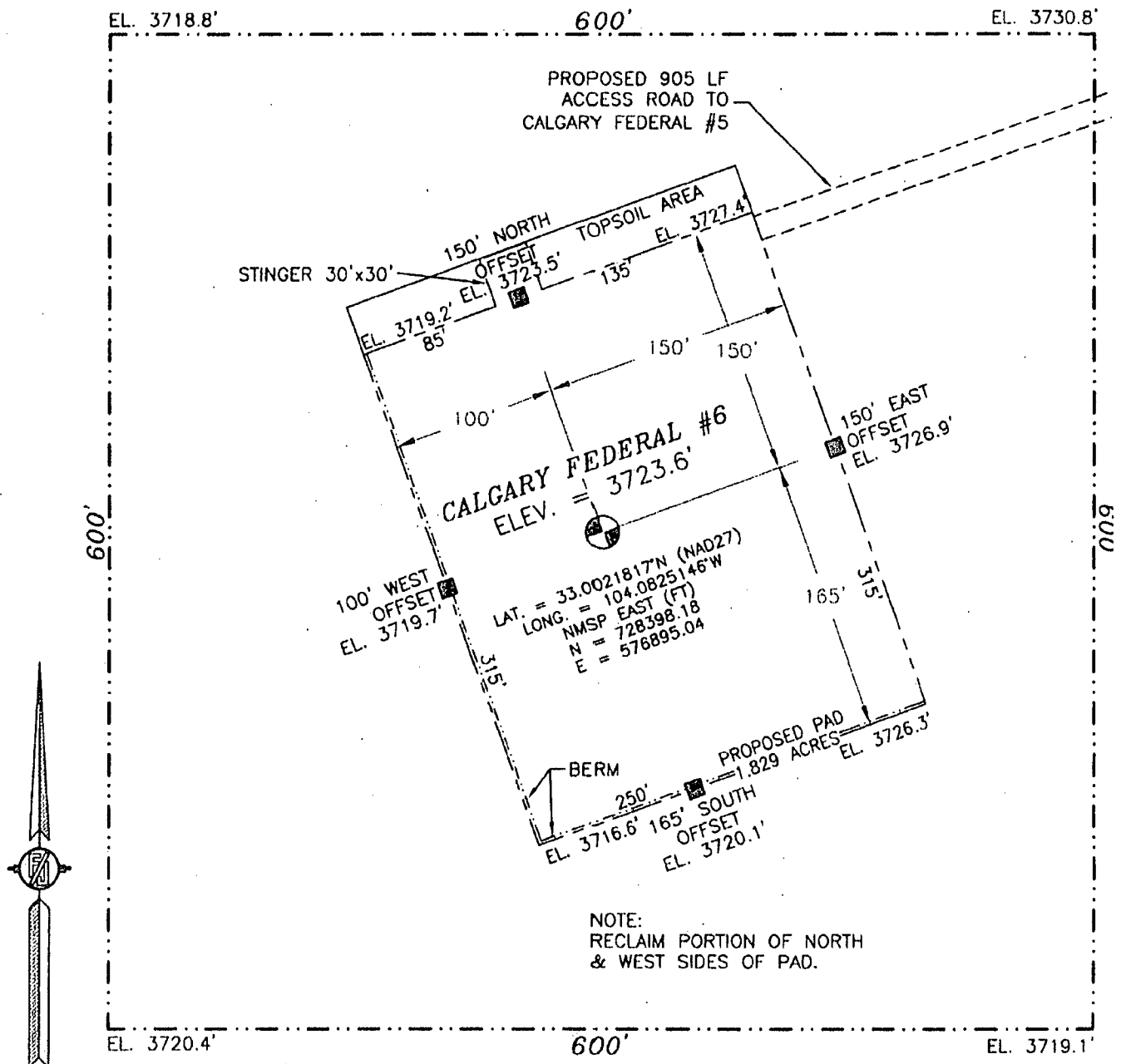
- A. Drill cuttings and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on Hwy 62 at MM 66.
- B. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) until pumped to our Round Tank SWD; produced oil will be collected in steel tanks until sold.
- C. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation.
- D. 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.
- E. Sewage and Gray Water will be placed in container and hauled to a approved facility. Container and disposal handled by L&S Septic.

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:

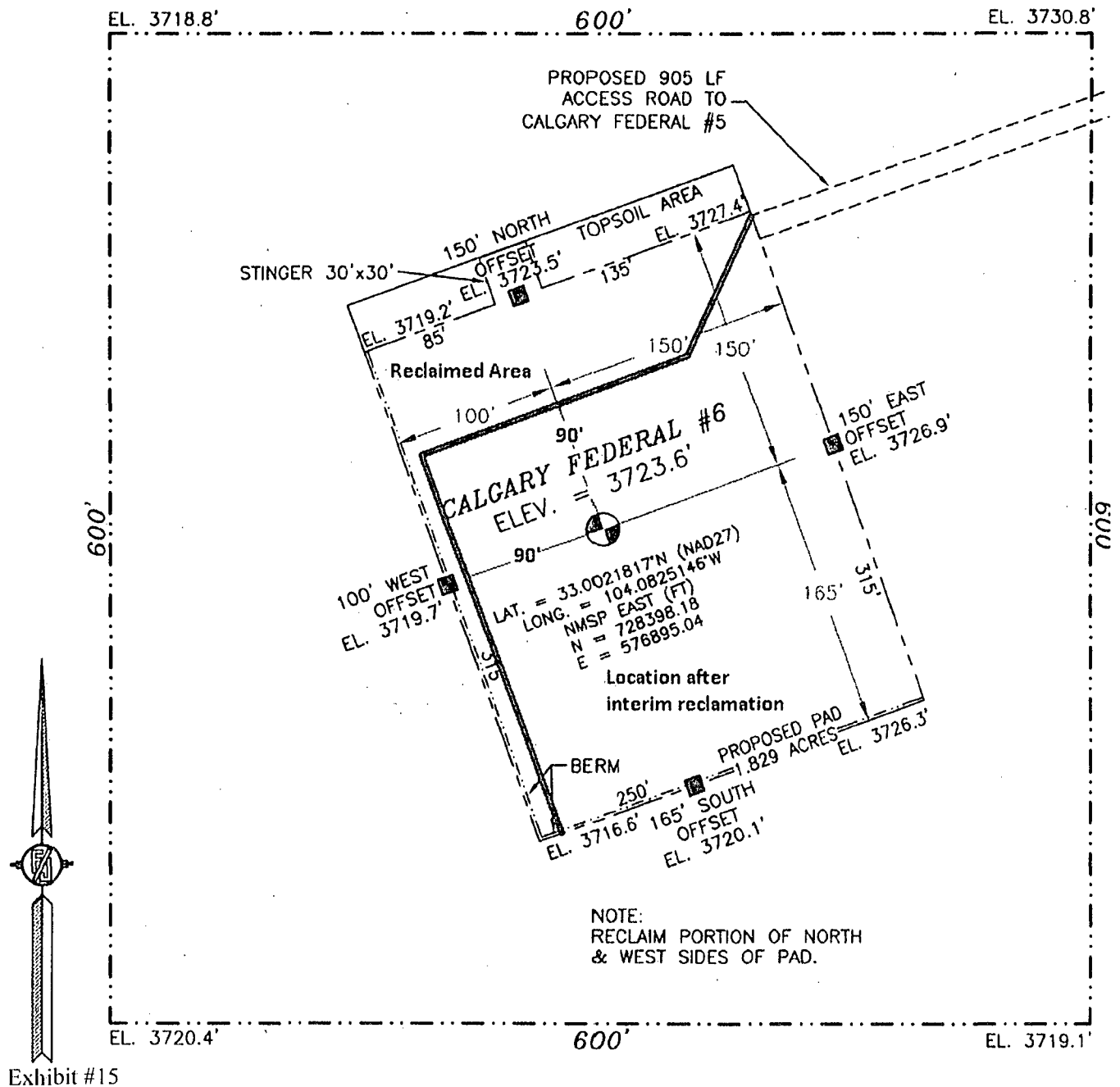
- A. The well site and elevation plat for the proposed well is shown in Exhibit #14. It was staked by Maddron Surveying, Carlsbad, NM.
- B. The drill pad layout, with elevations staked by Maddron Surveying, is shown in Exhibit #14. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled 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.



Exhibit# 14

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) Caliche will be removed, ground ripped and stockpiled topsoil used to recontoured as close as possible to the original natural level to prevent erosion and ponding of water.
 - 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure live seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.
- C. Exhibit #15 below shows the proposed downsized well site after Interim Reclamation. Dimensions are estimates on present conditions and are subject to change.



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:

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

Roswell, NM 88201
CONDITIONS OF APPROVAL
Exhibit C

Lease Number: NM-4433 and Federal minerals
Location: Section 24 and 25, T. 15 S., R. 28 E.
Applicant: Mack Energy Corporation
PO Box 960
Artesia, NM 88211

File Code: 3160

Project: Applications for Permit to Drill and Plan of Development dated February 7, 2014 for lease NM 4433.

| Well Name | Location | Footage | Well Spacing | | Acres |
|-----------------|--------------------------------|---------------------|--------------|---------|-------|
| | | | Well Type | Lease# | |
| #1 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 330 FSL & 990 FEL | 40 Acre Oil | NM 4433 | 3.23 |
| #2 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 1650 FSL & 990 FEL | 40 Acre Oil | NM-4433 | 4.75 |
| #5 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 2310 FNL & 890 FEL | 40 Acre Oil | NM-4433 | 4.68 |
| #6 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 2310 FNL & 1945 FEL | 40 Acre Oil | NM-4433 | 4.33 |
| #7 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 2310 FNI & 1600 FWL | 40 Acre Oil | NM-4433 | 5.43 |
| #8 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 1900 FSL & 1500 FWL | 40 Acre Oil | NM-4433 | 5.25 |
| #11 Calgary Fed | Section 24, T. 15 S., R. 28 E. | 1800 FSL & 2310 FEL | 40 Acre Oil | NM-4433 | 4.52 |
| Total | | | | | 32.19 |

A. 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. Approval of the APD does not warrant that any party holds equitable or legal title. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

The Operator shall submit a Sundry Notice (Form 3160-5) to the Bureau of Land Management, Roswell Field Office (address above) for approval prior to beginning any new surface-disturbing activities or operations that are not specifically addressed and approved by this APD.

A site facility diagram (Onshore Order 3, Section III, I. and 43 CFR 3162.7-5(d)) for the purpose of a site security plan (Onshore Order 3, Section III, H and 43 CFR 3162.7-5 c shall be filed no later than 60 calendar days following first production.

B. 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).

C. ARCHAEOLOGICAL & 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. A valuation 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.

D. PALEONTOLOGICAL RESOURCES.

If previously undocumented paleontological sites are encountered during construction, the project proponent will immediately stop all construction activities in the immediate vicinity of the discovery. The proponent will then immediately notify the paleontological monitor (if required), or the BLM/RFO paleontology resource staff. It is necessary to protect fossil material and their geological context upon discovery during construction. The BLM would then evaluate the site. Should the discovery be evaluated as significant, it will be protected in place until mitigation measures can be developed and implemented according to guidelines set by the BLM. Mitigation measures such as data and fossil recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

E. 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.

F. CONSTRUCTION

NOTIFICATION: The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Roswell Field Office at (505) 627-0272 at least three (3) working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved 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.

Construction over and/or immediately adjacent to existing pipelines shall be coordinated, and in accordance with, the relevant pipeline companies' policy.

Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped fauna. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried fauna. All fauna will be released a minimum of 100 yards from the trench.

For trenches left open for eight (8) hours or more, earthen escape ramps (built at nor more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Structures will also be authorized within the trench. Metal structures will not be authorized. Structures used as escape ramps will be placed at no more than a 30 degree slope and spaced no more than 500 feet apart.

G. 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 in shallow rows 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.

Road construction requirements and regular maintenance would alleviate potential impacts to the access road from water erosion damage.

H. CLOSED LOOP SYSTEMS:

The use of closed system or steel tanks would reduce or eliminate the seepage of drilling fluid into the soil and groundwater. Spills of produced fluids (e.g. saltwater, oil, and/or condensate in the event of a breach, overflow, or spill from storage tanks) could results in contamination of the soil onsite, or offsite, and may potentially impact surface and groundwater resources in the long term.

No reserve pit will be used.

Steel tanks are required for drilling operations: No Pits Allowed.

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

I. FEDERAL MINERAL MATERIALS PIT:

Caliche may be used to construct and surface the well pad and access road. If caliche is needed for construction or surfacing material, payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Roswell Field Office (575) 627-0270.

J. WELL PAD SURFACING:

Surfacing of the well pad is not required. If the operator elects to surface the well pad, the surfacing material will 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.

K. ON LEASE ACCESS ROADS:

Road Egress and Ingress

The access roads are constructed on corner.

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 will 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

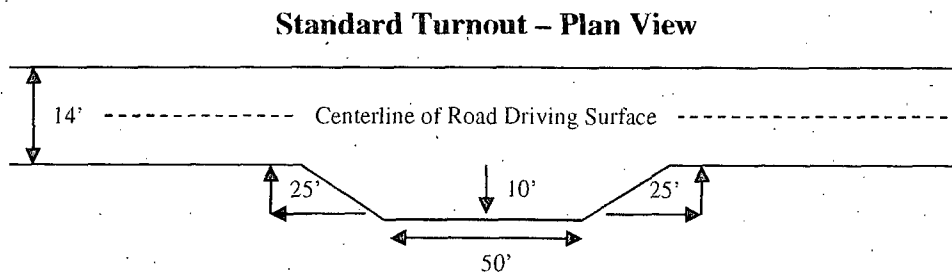
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

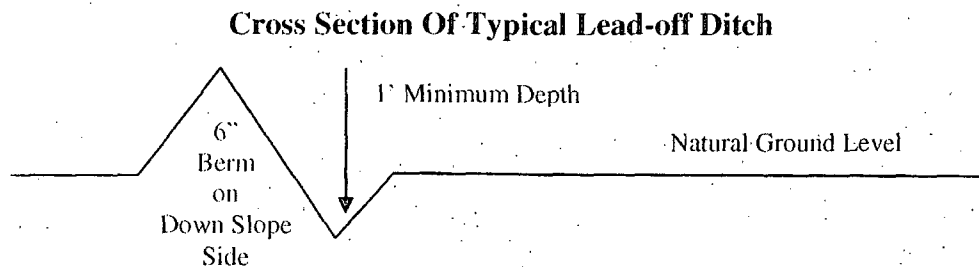
Turnouts

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, 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.



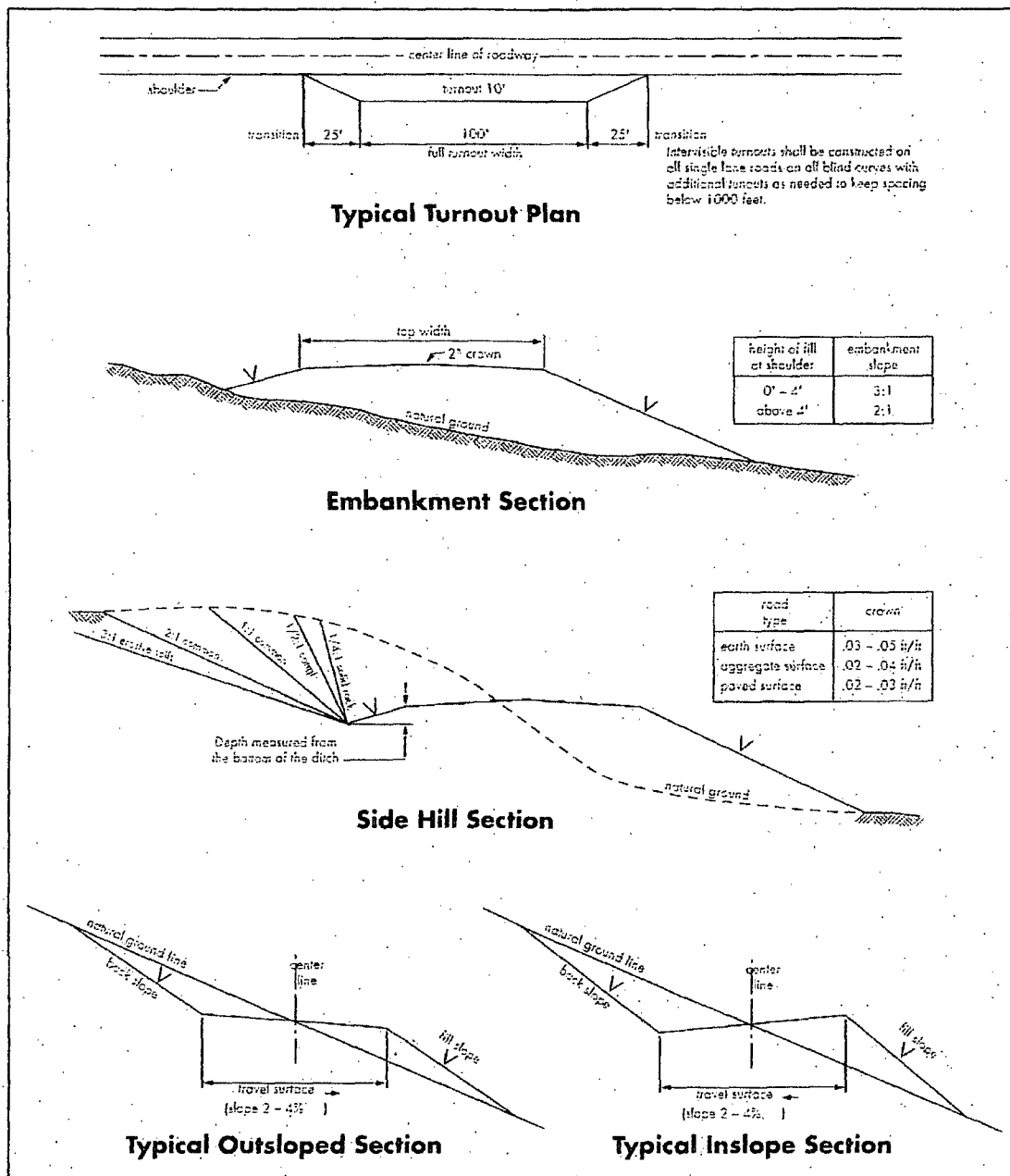
All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing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

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



Culvert Installations

Appropriately sized culvert(s) shall be installed at any 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 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. Gates or cattle guards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the authorized officer.

A gate shall be constructed and fastened securely to H-braces. The Gate shall not be locked.

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 along this road will not be restricted by the holder without specific written approval being granted by the authorized officer. Gates or cattle guards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the authorized officer.

L. DRILLING:

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
 - d. A follow-up report on Form 3160-5 confirming the date and time of actual spud (re-entry) shall be submitted to the Roswell Field Office within 5 working days from the date of spud.
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.

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).
- 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 compression strength, whichever is greater.
- d. 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.

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.
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 24 hours in advance for a representative to witness the tests.
5. The tests shall be done by an independent service company.
6. 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.
7. 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.

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

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.

M. SPECIAL STIPULATION

If frac ponds are necessary submit for approval a right-of-way application or Sundry Notice (Form 3160-5) to the BLM, Roswell Field Office 2909 West Second, Roswell, NM 88201. If frac pond is located on private/State surface and support the enhanced production of federal minerals BLM approval is necessary.

The frac pond will only be authorized to contain freshwater and testing of water quality is required. Additives are not allowed without consent of the authorized officer. If at any time the water in the frac pond becomes polluted with salts or other contaminants, use of frac pond will cease and desist, and all liquids will be removed from the frac pond and disposed of properly. Mineral materials extracted during construction of the frac pond will be stored on-location and/or used for construction the frac pond.

N. PRODUCTION

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim re-contouring and re-vegetation 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, *Oil Green* from the Standard Environmental Supplemental Colors (March 2007). The paint formula is *17-0115 TPX (Pantone for Architecture and Interior Colors Guide 2003)*.

O. Netting

Netting storage tanks and installation of cones on separator stacks would alleviate losses of wildlife species. Interim reclamation and final rehabilitation through re-vegetation would return to wildlife previous levels.

P. Cave/Karst

1. Any cave or karst feature, such as a deep sinkhole, discovered by the co-operator/contractor or any person working on the co-operator/contractor behalf, on BLM-managed public land shall be immediately reported to the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate action(s). Any decision as to the further mitigation measures will be made by the Authorized Officer after consulting with the co-operator/contractor.
2. Livestock entrapment could be prevented by creating exclosures around identified karst features that pose a hazard to livestock. A separate Environmental Analysis would be prepared to construct an exclosure fence.
3. If at a later date, more significant caves or karst features are found on public land within the proposed action area, that cave or feature may be fenced to exclude livestock grazing and Off Highway Vehicle Use.

Q. Completion Report

In accordance with 43 CFR 3160, Form 3160-4 (Well Completion or Re-completion Report and Log) must be submitted to the Bureau of Land Management, Roswell Field Office within 30 days after completion of the well or producer. Copies of all open hole and cased hole logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, formation test reports, stimulation reports, directional survey (if applicable), and all other surveys or data obtained and compiled during the drilling, completion, and/or work over operations, shall be included with Form 3160-4.

R. Facility Requirement

None.

S. INTERIM RECLAMATION

Reclamation earthwork for interim and/or final reclamation shall be completed within 6 months of well completion or well plugging (weather permitting), and shall consist of: 1) backfilling pits if used, 2) re-contouring and stabilizing the well site, access road, cut/fill slopes, drainage channels, utility and pipeline corridors, and all other disturbed areas, to approximately the original contour, shape, function, and configuration that existed before construction (any compacted backfilling activities shall ensure proper spoils placement, settling, and stabilization), 3) surface ripping, prior to topsoil placement, to a depth of 18-24 inches deep on 18-24 inch centers to reduce compaction, 4) final grading and replacement of all topsoil so that no topsoil's remains in the stockpile, 5) seeding in accordance with reclamation portions of the APD and these COA's.

Any subsequent re-disturbance of interim reclamation shall be reclaimed within six (6) months by the same means described herein.

Prior to conducting interim reclamation, the operator is required to:

- Submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

- Contact BLM at least three (3) working days prior to conducting any interim reclamation activities, and prior to seeding.

During reclamation, the removal of caliche is important to increasing the success of 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 vegetated areas for production or work over operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be vegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Disturbing re-vegetated areas for production or work over operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be re-vegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Use a certified noxious weed-free seed mixture. Use seed tested for viability and purity in accordance with State law(s) within nine months prior to purchase. Use a commercial seed mixture certified or registered and tagged in accordance with State law(s). Make the seed mixture labels available for BLM inspection.

**PECOS DISTRICT, BLM
SEED MIX FOR**

The following Soils or Soil Association may represent these ecological sites:
 Albino silt loam, dry, 0-3% slope, Archa, Biggins-Peeco, Harkey fine sandy loam, Holloman, Holloman-
 Gypsum Tuffal, Holloman loam, 1-6% slope, dry, Lugo loam, Milner loam, 0-2% slope, dry, Reagan
 loam, Renker, Renker-Biggins, Renker-Tenney, Reeves loam, 0-2% slope, dry, Russell, Shasta, Upton-
 Renker

Loamy, SD-3 Ecological Site
 Loamy CP-2
 Gyp Upland CP-2

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, | (<i>Bouteloua gracilis</i>) | 4.0 |
| Sideoats grama, | (<i>Panicum capispicatum</i>) | 1.0 |
| Sand dropseed | (<i>Sporobolus cryptandrus</i>) | 0.5 |
| Wine mesquite | (<i>Panicum obtusum</i>) | 1.0 |
| Plains bristlegross | (<i>Setaria macrostachya</i>) | 1.0 |
| Indian blanketflower | (<i>Gaillardia aristata</i>) | 0.5 |
| Flaxseed or Scarlet Cockemallow | (<i>Sphaeralcea mutabilis</i>) or (<i>S. coccinea</i>) | 1.0 |
| Annual sunflower | (<i>Helianthus annuus</i>) | 0.75 |
| TOTAL POUNDS PURE LIVE SEED (PLV) PER ACRE | | 9.75 |
| Certified Weed Free Seed | | |

If one species is not available, increase ALL others proportionately.
 Use No Less than 4 species, including one forb.

No less than 9.75 pounds/pls per acre shall be applied

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

T. FINAL ABANDONMENT

1. Upon abandonment of the well a Notice of Intent for Plug and Abandonment describing plugging procedures. Followed within 30 days you shall file with this office, a Subsequent Report of Abandonment (Form 3160-5). To be included with this report is where the plugs were placed; volumes of cement used and well bore schematic as plugged.
2. On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the Private Surface Land Owner agreements and a copy of the release is to be submitted upon abandonment.
3. 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. 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).
4. **The Operator shall promptly plug and abandoned each newly completed, re-completed or producing well which is not capable of producing in paying quantities.** No well may be temporarily abandoned for more than 30 days without prior approval from this office. When justified by the Operator, BLM may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment from the site of a well which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with an approved Notice of Intent for reclamation.

SURFACE USE PLAN OF OPERATIONS

1. Surface Reclamation must be completed within 6 months of well plugging. The Operator shall submit to this office a Notice of Intent for Reclamation with described procedures, Form 3160-5.
2. No surface use is allowed during the following time periods; unless otherwise specified. This stipulation does not apply to the operation and maintenance of production facilities.

PIPELINE PROTECTION REQUIREMENT

Precautionary measures shall be taken by the operator during construction of the access road to protect existing pipelines that the access road will cross over. An earthen berm; 2 feet high by 3 feet wide and 14 feet across the access road travel way (2' X 3' X 14'), shall be constructed over existing pipelines. The operator shall be held responsible for any damage to existing pipelines. If the pipeline is ruptured and/or damaged the operator shall immediately cease construction operations and repair the pipeline. The operator shall be held liable for any unsafe construction operations that threaten human life and/or cause the destruction of equipment.

RANGE REQUIREMENT

The Operator shall keep traffic to a minimum, with the speed limit less than 20 MPH. When conflicts with livestock do arise as a result of the access road and well pad construction, in consultation with the allottee, measures will be taken to resolve the conflicts.