14-5

Form 3160-3
(March 2012)

OCD HOBBS OCD

MAY 26 2015

RECEIVED

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**

5. Lease Serial No.
NMLC-060199A

6. If Indian, Allotee or Tribe Name

7. If Unit or CA Agreement, Name and No. (D)

1a. Type of work: ☒ DRILL ☐ REENTER

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

8. Lease Name and Well No.
Cutthroat Federal #7 (40291)

2. Name of Operator
Mack Energy Corporation (7837)

9. API Well No.
30-025-42587

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

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

10. Field and Pool, or Exploratory
WC-025 G-06 S173230A;Wolfcamp (98039)

4. Location of Well *(Report location clearly and in accordance with any State requirements. *)*
At surface 1800 FNL & 2310 FEL (G)
At proposed prod. zone 2285 FNL & 2285 FEL (G)

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 29 T17S R32E

14. Distance in miles and direction from nearest town or post office*
3 miles SW of Maljamar, NM

12. County or Parish
Lea

13. State
NM

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
80

17. Spacing Unit dedicated to this well
40

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 150'

19. Proposed Depth
10546' MD
10500' TVD

20. BLM/BIA Bond No. on file
NMB000286

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3952' GR

22. Approximate date work will start*
10/19/2013

23. Estimated duration
15 days

24. Attachments

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

1. Well plat certified by a registered surveyor.
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 9/20/13

Title
Production Clerk

Approved by (Signature) Steve Caffey — Name *(Printed/Typed)* — Date MAY 21 2015

Title
FIELD MANAGER

Office
CARLSBAD 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.

APPROVAL FOR TWO 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)

Kz 05/26/15

Roswell Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

MAY 26 2015

Attached to Form 3160-3
Mack Energy Corporation
Cutthroat Federal #7
SHL 1800 FNL & 2310 FEL, SW/NE, Sec. 29 T17S R32E
BHL 2285 FNL & 2285 FEL, SW/NE, Sec. 29 T17S R32E
Lea County, NM

HOBBS OCD

MAY 26 2015

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# DRILLING PROGRAM

## 1. Geologic Name of Surface Formation

Quaternary

## 2. Estimated Tops of Important Geologic Markers:

| | | | |
|---|---|---|---|
| Rustler | 723' | Grayburg | 3480' |
| TOS | 840' | San Andres | 3810' |
| BOS | 2170' | Glorieta | 5360' |
| Yates | 2200' | Abo | 7516' |
| Seven Rivers | 2500' | Wolfcamp | 9260' |
| Queen | 3100' | | |

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

| | | |
|---|---|---|
| Water Sand | 150' | Fresh Water |
| Yates | 2200' | Oil/Gas |
| San Andres | 3810' | Oil/Gas |
| Glorieta | 5360' | Oil/Gas |
| Wolfcamp | 9260' | Oil/Gas |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~800'~~ 850' and circulating cement back to surface will protect the surface fresh water sand. Salt section and zones will be protected by the 8 5/8" casing at 2250'and circulating cement back to surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 ½" 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 |
|---|---|---|---|
| 17 1/2" | 0-~~800'~~ 850' | 13 3/8" | 48#,H-40, ST&C, New, 1.852/3.348/3.46 |
| 12 ¼" | 0-2250' | 8 5/8" | 24#, J-55, ST&C, New, 1.136/8.345/5.9 |
| 7 7/8" | 0-10546' | 5 ½" | 17#,L-80,LT&C, New, 1.212/2.363/2.58 |

## 5. Cement Program:

13 3/8" Surface Casing: Lead 500sx, Class C + 4% PF20 + 2% PF1 + .25#/sx PF29 + .2% PF46, yield 1.75, excess 100% ,Tail 200sx Class C 1% PF1, yield 1.33.
8 5/8" Intermediate Casing: Lead 700sx, Class C + 4% PF20 + 2% PF1+ .125#/sk PF29 + 2% PF46, yield 1.98, excess 100%, Tail 200sx Class C 1% PF13, yield 1.34
5 ½" Production Casing: Lead 925sx 35/65POZ/H + 5% PF44 + 6% PF20 + .25#/sx PF46 + 3#/sx PF42 + .6% PF13 + .125#/sx PF29, yield 2.05, excess 35%, Tail 850sx PVL + 1.3% PF44 + 5% PF174 + .5% PF606 +.1% PF153 + .6% PF13 , yield 1.47.

**6. Minimum Specifications for Pressure Control:**

The blowout preventer equipment (BOP Exhibit #10) will consist of a double ram-type (5000 psi WP) minimum preventer, with annular. 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 13 5/8" BOP will be nipped up on the 13 3/8" surface casing and tested by a 3rd party to 5000 psi. The 13 5/8" BOP will then be nipped up on the 8 5/8" casing using a double stud adapter and used continuously until TD is reached. All BOP's and accessory equipment will be tested to 5000 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 #11) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #12) with a minimum 5000 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 |
|---|---|---|---|---|
| 0-800' 850' | Fresh Water | 8.5 | 28 | N.C. |
| 800-2250 | Brine | 10 | 30 | N.C. |
| 2250'-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. Pason Equipment: Flow system and pit leveler.

**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.
C. If gas is encountered. Well will be shut-in and a Mud Gas Seperator will be installed.

See COA

Separator required due to $H_2S$

**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 4,568 psig, Based on offset well data. 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 October 19, 2013. Once commenced, the drilling operation should be finished in approximately 15 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**
**Cutthroat Federal #7**
**Lea 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 5000 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 Corp

Lea County
Cutthroat Federal #7
Federal #7
#7

Plan: Plan #1

# MEC Survey Report

19 September, 2013

# MEC

MEC Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Mack Energy Corp | **Local Co-ordinate Reference:** | Site Cutthroat Federal #7 |
| **Project:** | Lea County | **TVD Reference:** | WELL @ 3969.0usft (Original Well Elev) |
| **Site:** | Cutthroat Federal #7 | **MD Reference:** | WELL @ 3969.0usft (Original Well Elev) |
| **Well:** | Federal #7 | **North Reference:** | Grid |
| **Wellbore:** | #7 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

**Project** Lea County

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | |

**Site** Cutthroat Federal #7

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 658,034.80 usft | **Latitude:** | 32° 48' 28.204 N |
| **From:** | Map | **Easting:** | 667,850.90 usft | **Longitude:** | 103° 47' 13.305 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.30 ° |

**Well** Federal #7

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 658,034.80 usft | **Latitude:** | 32° 48' 28.204 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 667,850.90 usft | **Longitude:** | 103° 47' 13.305 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,952.0 usft |

**Wellbore** #7

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 9/19/2013 | 7.44 | 60.66 | 48,757 |

**Design** Plan #1

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PROTOTYPE | **Tie On Depth:** | 0.0 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 176.75 |

**Survey Tool Program** Date 9/19/2013

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 10,545.5 | Plan #1 (#7) | | |

| | | | |
|---|---|---|---|
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| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 900.0 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,400.0 | 0.00 | 0.00 | 1,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,500.0 | 0.00 | 0.00 | 1,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,600.0 | 0.00 | 0.00 | 1,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,700.0 | 0.00 | 0.00 | 1,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,800.0 | 0.00 | 0.00 | 1,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 1,900.0 | 0.00 | 0.00 | 1,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 2,000.0 | 0.00 | 0.00 | 2,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 2,100.0 | 0.00 | 0.00 | 2,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 2,200.0 | 0.00 | 0.00 | 2,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 2,300.0 | 0.00 | 0.00 | 2,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 658,034.80 | 667,850.90 |
| 2,400.0 | 5.00 | 176.75 | 2,399.9 | -4.4 | 0.2 | 4.4 | 5.00 | 658,030.45 | 667,851.15 |
| 2,500.0 | 10.00 | 176.75 | 2,499.0 | -17.4 | 1.0 | 17.4 | 5.00 | 658,017.42 | 667,851.89 |
| 2,521.7 | 11.09 | 176.75 | 2,520.4 | -21.4 | 1.2 | 21.4 | 5.00 | 658,013.45 | 667,852.11 |

| | | | |
|---|---|---|---|
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| **Well:** | Federal #7 | **North Reference:** | Grid |
| **Wellbore:** | #7 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 2,600.0 | 11.09 | 176.75 | 2,597.2 | -36.4 | 2.1 | 36.4 | 0.00 | 657,998.42 | 667,852.96 |
| 2,700.0 | 11.09 | 176.75 | 2,695.3 | -55.6 | 3.2 | 55.7 | 0.00 | 657,979.22 | 667,854.05 |
| 2,800.0 | 11.09 | 176.75 | 2,793.4 | -74.8 | 4.2 | 74.9 | 0.00 | 657,960.03 | 667,855.14 |
| 2,900.0 | 11.09 | 176.75 | 2,891.6 | -94.0 | 5.3 | 94.1 | 0.00 | 657,940.83 | 667,856.23 |
| 3,000.0 | 11.09 | 176.75 | 2,989.7 | -113.2 | 6.4 | 113.4 | 0.00 | 657,921.63 | 667,857.32 |
| 3,100.0 | 11.09 | 176.75 | 3,087.8 | -132.4 | 7.5 | 132.6 | 0.00 | 657,902.43 | 667,858.41 |
| 3,200.0 | 11.09 | 176.75 | 3,186.0 | -151.6 | 8.6 | 151.8 | 0.00 | 657,883.23 | 667,859.50 |
| 3,300.0 | 11.09 | 176.75 | 3,284.1 | -170.8 | 9.7 | 171.0 | 0.00 | 657,864.03 | 667,860.59 |
| 3,400.0 | 11.09 | 176.75 | 3,382.2 | -190.0 | 10.8 | 190.3 | 0.00 | 657,844.84 | 667,861.68 |
| 3,500.0 | 11.09 | 176.75 | 3,480.4 | -209.2 | 11.9 | 209.5 | 0.00 | 657,825.64 | 667,862.77 |
| 3,600.0 | 11.09 | 176.75 | 3,578.5 | -228.4 | 13.0 | 228.7 | 0.00 | 657,806.44 | 667,863.86 |
| 3,700.0 | 11.09 | 176.75 | 3,676.6 | -247.6 | 14.0 | 248.0 | 0.00 | 657,787.24 | 667,864.95 |
| 3,800.0 | 11.09 | 176.75 | 3,774.8 | -266.8 | 15.1 | 267.2 | 0.00 | 657,768.04 | 667,866.03 |
| 3,900.0 | 11.09 | 176.75 | 3,872.9 | -286.0 | 16.2 | 286.4 | 0.00 | 657,748.84 | 667,867.12 |
| 4,000.0 | 11.09 | 176.75 | 3,971.0 | -305.2 | 17.3 | 305.6 | 0.00 | 657,729.65 | 667,868.21 |
| 4,100.0 | 11.09 | 176.75 | 4,069.2 | -324.4 | 18.4 | 324.9 | 0.00 | 657,710.45 | 667,869.30 |
| 4,200.0 | 11.09 | 176.75 | 4,167.3 | -343.6 | 19.5 | 344.1 | 0.00 | 657,691.25 | 667,870.39 |
| 4,300.0 | 11.09 | 176.75 | 4,265.4 | -362.8 | 20.6 | 363.3 | 0.00 | 657,672.05 | 667,871.48 |
| 4,400.0 | 11.09 | 176.75 | 4,363.6 | -381.9 | 21.7 | 382.6 | 0.00 | 657,652.85 | 667,872.57 |
| 4,500.0 | 11.09 | 176.75 | 4,461.7 | -401.1 | 22.8 | 401.8 | 0.00 | 657,633.65 | 667,873.66 |
| 4,600.0 | 11.09 | 176.75 | 4,559.8 | -420.3 | 23.8 | 421.0 | 0.00 | 657,614.45 | 667,874.75 |
| 4,700.0 | 11.09 | 176.75 | 4,658.0 | -439.5 | 24.9 | 440.3 | 0.00 | 657,595.26 | 667,875.84 |
| 4,800.0 | 11.09 | 176.75 | 4,756.1 | -458.7 | 26.0 | 459.5 | 0.00 | 657,576.06 | 667,876.93 |
| 4,824.0 | 11.09 | 176.75 | 4,779.6 | -463.3 | 26.3 | 464.1 | 0.00 | 657,571.45 | 667,877.19 |
| 4,900.0 | 7.29 | 176.75 | 4,854.7 | -475.5 | 27.0 | 476.2 | 5.00 | 657,559.34 | 667,877.88 |
| 5,000.0 | 2.29 | 176.75 | 4,954.3 | -483.8 | 27.4 | 484.6 | 5.00 | 657,551.01 | 667,878.35 |
| 5,045.7 | 0.00 | 0.00 | 5,000.0 | -484.7 | 27.5 | 485.5 | 5.00 | 657,550.10 | 667,878.40 |

| | | | |
|---|---|---|---|
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| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 0.00 | 0.00 | 5,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,200.0 | 0.00 | 0.00 | 5,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,300.0 | 0.00 | 0.00 | 5,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,400.0 | 0.00 | 0.00 | 5,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,500.0 | 0.00 | 0.00 | 5,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,600.0 | 0.00 | 0.00 | 5,554.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,700.0 | 0.00 | 0.00 | 5,654.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,800.0 | 0.00 | 0.00 | 5,754.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 5,900.0 | 0.00 | 0.00 | 5,854.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,000.0 | 0.00 | 0.00 | 5,954.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,100.0 | 0.00 | 0.00 | 6,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,200.0 | 0.00 | 0.00 | 6,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,300.0 | 0.00 | 0.00 | 6,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,400.0 | 0.00 | 0.00 | 6,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,500.0 | 0.00 | 0.00 | 6,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,600.0 | 0.00 | 0.00 | 6,554.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,700.0 | 0.00 | 0.00 | 6,654.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,800.0 | 0.00 | 0.00 | 6,754.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 6,900.0 | 0.00 | 0.00 | 6,854.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,000.0 | 0.00 | 0.00 | 6,954.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,100.0 | 0.00 | 0.00 | 7,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,200.0 | 0.00 | 0.00 | 7,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,300.0 | 0.00 | 0.00 | 7,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,400.0 | 0.00 | 0.00 | 7,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,500.0 | 0.00 | 0.00 | 7,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,600.0 | 0.00 | 0.00 | 7,554.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,700.0 | 0.00 | 0.00 | 7,654.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |

| | | | |
|---|---|---|---|
| **Company:** | Mack Energy Corp | **Local Co-ordinate Reference:** | Site Cutthroat Federal #7 |
| **Project:** | Lea County | **TVD Reference:** | WELL @ 3969.0usft (Original Well Elev) |
| **Site:** | Cutthroat Federal #7 | **MD Reference:** | WELL @ 3969.0usft (Original Well Elev) |
| **Well:** | Federal #7 | **North Reference:** | Grid |
| **Wellbore:** | #7 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 7,800.0 | 0.00 | 0.00 | 7,754.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 7,900.0 | 0.00 | 0.00 | 7,854.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,000.0 | 0.00 | 0.00 | 7,954.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,100.0 | 0.00 | 0.00 | 8,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,200.0 | 0.00 | 0.00 | 8,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,300.0 | 0.00 | 0.00 | 8,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,400.0 | 0.00 | 0.00 | 8,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,500.0 | 0.00 | 0.00 | 8,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,600.0 | 0.00 | 0.00 | 8,554.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,700.0 | 0.00 | 0.00 | 8,654.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,800.0 | 0.00 | 0.00 | 8,754.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 8,900.0 | 0.00 | 0.00 | 8,854.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,000.0 | 0.00 | 0.00 | 8,954.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,100.0 | 0.00 | 0.00 | 9,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,200.0 | 0.00 | 0.00 | 9,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,300.0 | 0.00 | 0.00 | 9,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,400.0 | 0.00 | 0.00 | 9,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,500.0 | 0.00 | 0.00 | 9,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,600.0 | 0.00 | 0.00 | 9,554.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,700.0 | 0.00 | 0.00 | 9,654.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,800.0 | 0.00 | 0.00 | 9,754.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 9,900.0 | 0.00 | 0.00 | 9,854.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,000.0 | 0.00 | 0.00 | 9,954.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,100.0 | 0.00 | 0.00 | 10,054.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,200.0 | 0.00 | 0.00 | 10,154.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,300.0 | 0.00 | 0.00 | 10,254.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,400.0 | 0.00 | 0.00 | 10,354.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |

| | | | |
|---|---|---|---|
| **Company:** | Mack Energy Corp | **Local Co-ordinate Reference:** | Site Cutthroat Federal #7 |
| **Project:** | Lea County | **TVD Reference:** | WELL @ 3969.0usft (Original Well Elev) |
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| **Well:** | Federal #7 | **North Reference:** | Grid |
| **Wellbore:** | #7 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | EDM 5000.1 Single User Db |

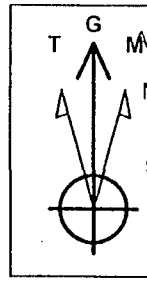
**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 10,500.0 | 0.00 | 0.00 | 10,454.3 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |
| 10,545.7 | 0.00 | 0.00 | 10,500.0 | -484.7 | 27.5 | 485.5 | 0.00 | 657,550.10 | 667,878.40 |

Checked By: _____ Approved By: _____ Date: _____

MACK Energy Corporation

| SITE DETAILS: Cutthroat Federal #7 | |
|---|---|
| Site Centre Northing: | 658034.80 |
| Easting: | 667850.90 |
| Positional Uncertainity: | 0.0 |
| Convergence: | 0.30 |
| Local North: | Grid |




Azimuths to Grid North
True North: -0.30°
Magnetic North: 7.15°

Magnetic Field
Strength: 48757.3snT
Dip Angle: 60.66°
Date: 9/19/2013
Model: IGRF200510

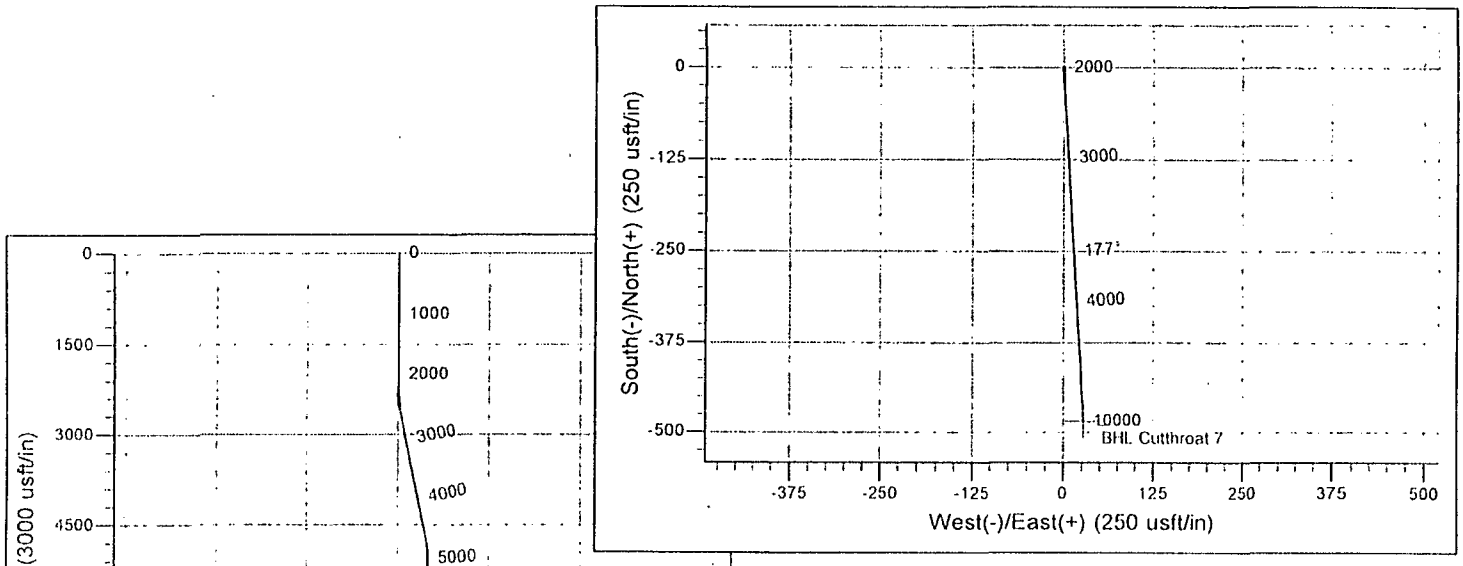
SECTION DETAILS

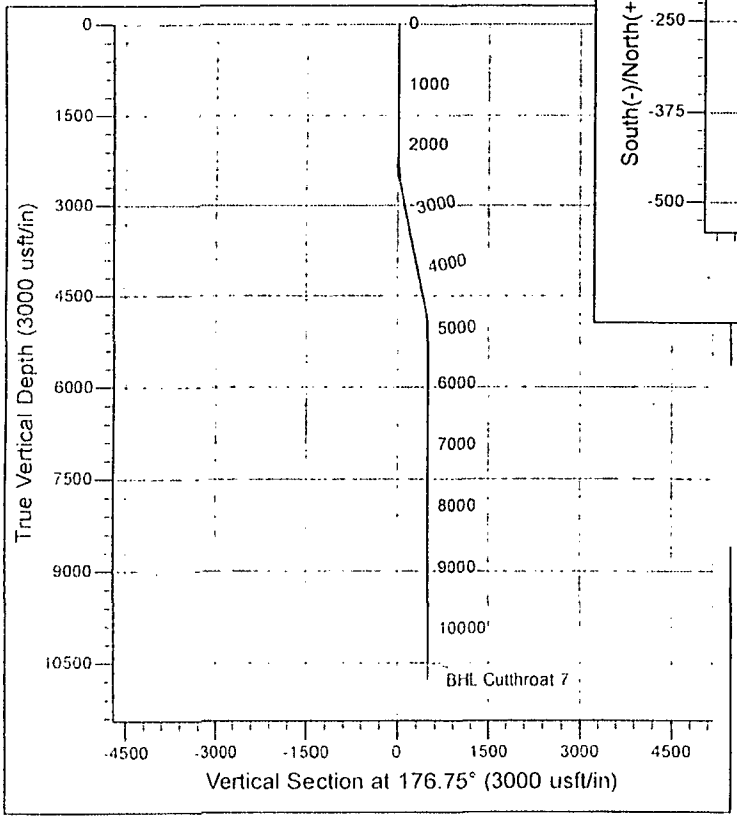
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 2300.0 | 0.00 | 0.00 | 2300.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 2521.7 | 11.09 | 176.75 | 2520.4 | -21.4 | 1.2 | 5.00 | 176.75 | 21.4 | |
| 4 | 4824.0 | 11.09 | 176.75 | 4779.6 | -463.3 | 26.3 | 0.00 | 0.00 | 464.1 | |
| 5 | 5045.7 | 0.00 | 0.00 | 5000.0 | -484.7 | 27.5 | 5.00 | 180.00 | 485.5 | |
| 6 | 10545.7 | 0.00 | 0.00 | 10500.0 | -484.7 | 27.5 | 0.00 | 0.00 | 485.5 | BHL Cutthroat 7 |

DESIGN TARGET DETAILS

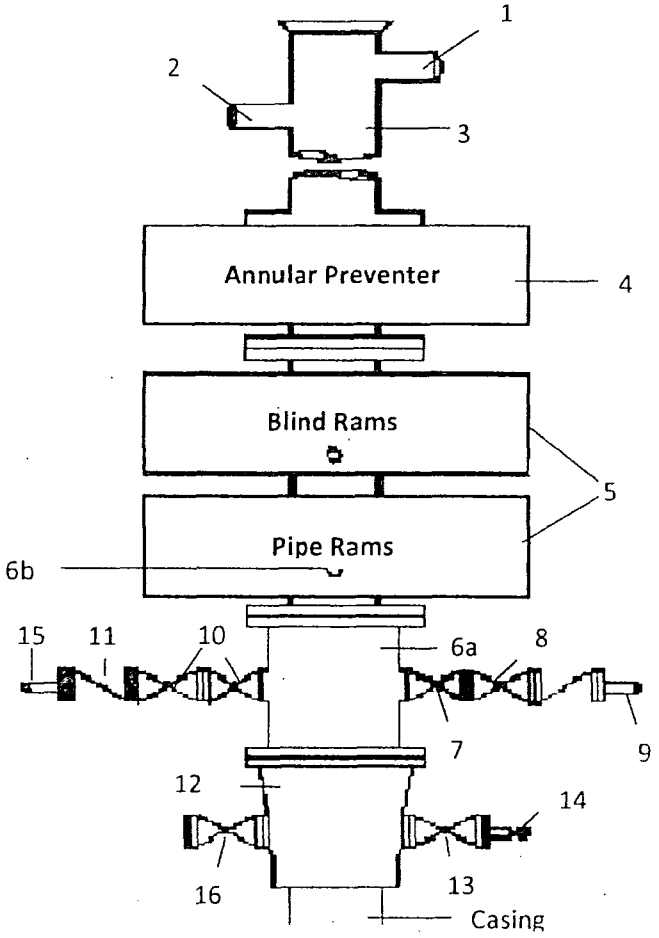
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|---|---|
| tthroat 7 | 10500.0 | -484.7 | 27.5 | 657550.10 | 667878.40 | 32° 48' 23.407 N | 103° 47' 13.012 W | Point |

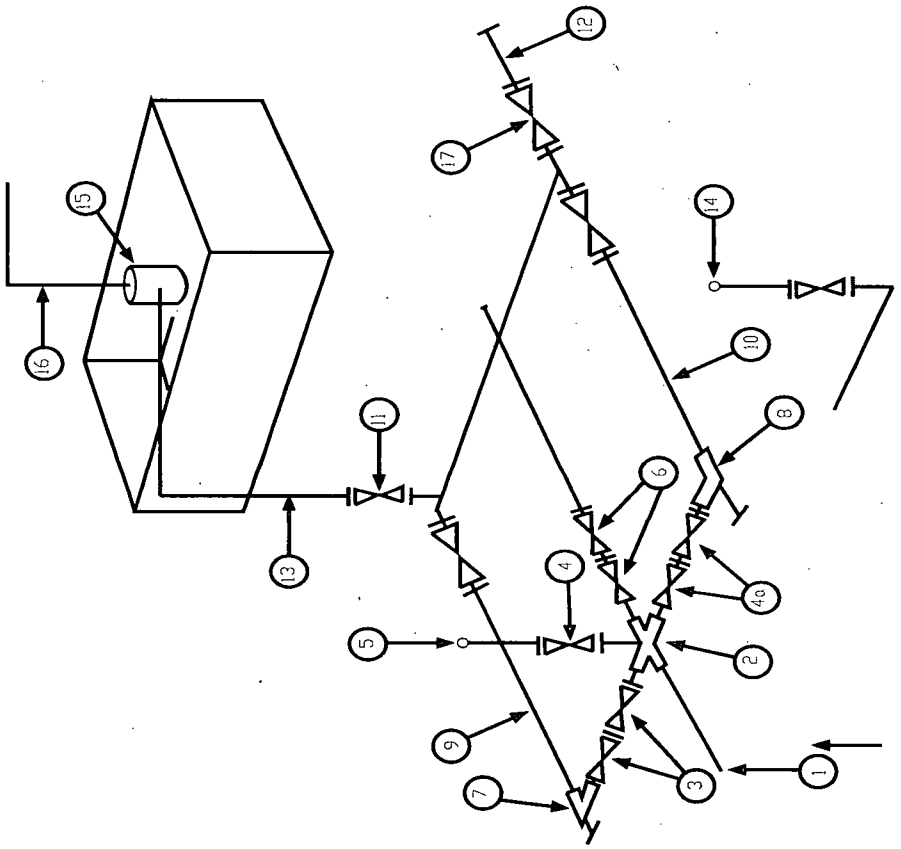
- plan hits target center




2310 FNL and 2310 FEL are hard lines. The well can be north, east, or northeast or these hard lines but not south, west, or southwest. From the BHL the well is 25' north of the north hard line and 25' east of the east hard line

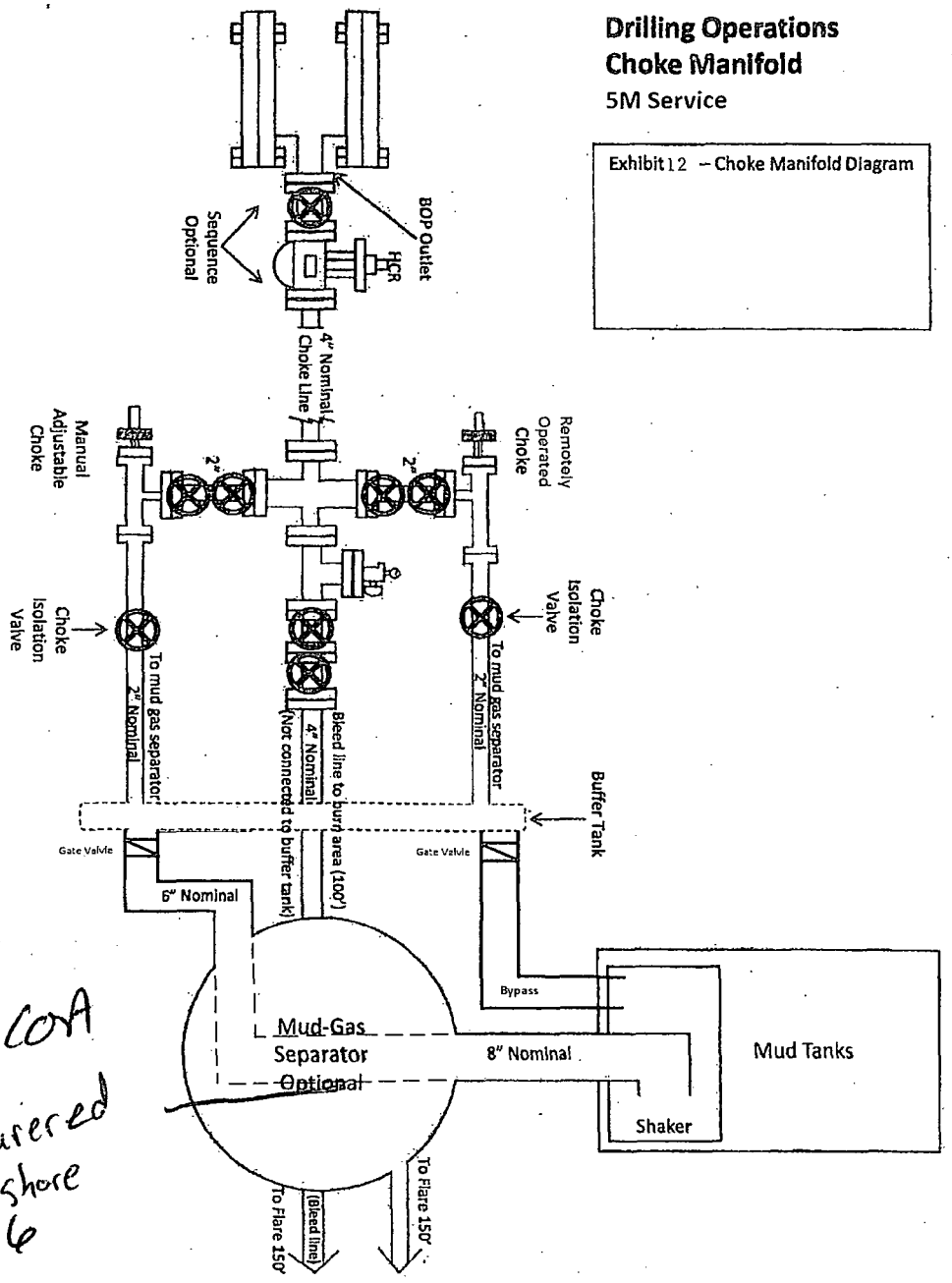

1
2
3
Annular Preventer
4
Blind Rams
5
Pipe Rams
6b
15
11
10
6a
8
7
9
12
14
16
13
Casing


12
17
15
14
16
10
11
8
6
13
4
4a
5
2
9
7
3
1

# Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12




See COA

Requered Per Onshore Order #6

# Mack Energy Corporation

## Minimum Blowout Preventer Requirements

### 5000 psi Working Pressure

### 13 5/8 inch- 5 MWP

### 11 Inch - 5 MWP

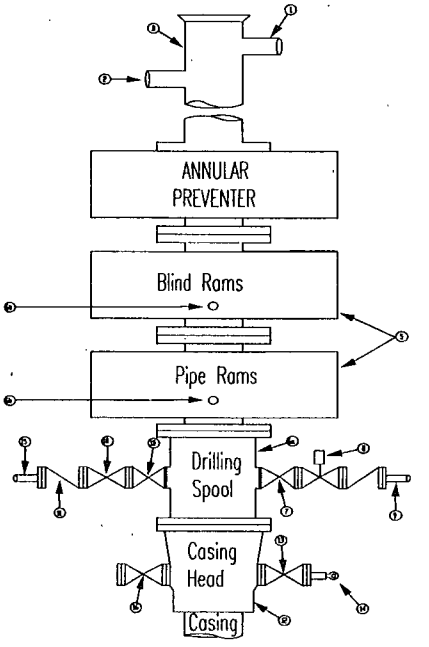
### EXHIBIT #10

## 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:

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.
10.

ME

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.