ATS-13-1223

Form 3160-3
(March 2012)

OCD Hobbs

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
(D)

1a. Type of work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No

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

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

2. Name of Operator
Mack Energy Corporation (13837)

9. API Well No.
30-025-42588

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

4. Location of Well *(Report location clearly and in accordance with any State requirements. *)*
At surface 2500 FNL & 1725 FEL (G)
At proposed prod. zone 2285 FNL & 1675 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) 140'

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. ~~1200~~ 152

19. Proposed Depth
10509' MD
10500' TVD

20. BLM/BIA Bond No. on file
NMB000286

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3941' 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 9/16/13

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)

Roswell Controlled Water Basin

K 05/26/15

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 #8
2500 FNL & 1725 FEL, SW/NE, Sec. 29 T17S R32E
Lea County, NM

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"	0-10509'	5 ½"	17#,L-80,LT&C, New, 1.212/2.363/2.58

See COA

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

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 #8
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, 5000 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 #8
Federal #1
#1

Plan: Plan #1

MEC Survey Report

10 September, 2013

MEC

MEC Survey Report

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Cutthroat Federal #8
Project:	Lea County	**TVD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Site:	Cutthroat Federal #8	**MD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Well:	Federal #1	**North Reference:**	Grid
Wellbore:	#1	**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 #8

Site Position:		**Northing:**	657,338.00 usft	**Latitude:**	32° 48' 21.279 N
From:	Map	**Easting:**	668,439.41 usft	**Longitude:**	103° 47' 6.452 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.30 °

Well Federal #1

Well Position	**+N/-S**	0.0 usft	**Northing:**	657,338.00 usft	**Latitude:**	32° 48' 21.279 N
	+E/-W	0.0 usft	**Easting:**	668,439.41 usft	**Longitude:**	103° 47' 6.452 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,942.0 usft

Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	9/10/2013	7.45	60.66	48,759

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	13.13	

Survey Tool Program **Date** 9/10/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	10,509.1	Plan #1 (#1)		

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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	657,338.00	668,439.41
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	657,338.00	668,439.41
2,400.0	3.00	13.13	2,400.0	2.5	0.6	2.6	3.00	657,340.55	668,440.00
2,465.9	4.98	13.13	2,465.7	7.0	1.6	7.2	3.00	657,345.01	668,441.05
2,500.0	4.98	13.13	2,499.7	9.9	2.3	10.2	0.00	657,347.89	668,441.72

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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)
2,600.0	4.98	13.13	2,599.3	18.3	4.3	18.8	0.00	657,356.34	668,443.69
2,700.0	4.98	13.13	2,698.9	26.8	6.3	27.5	0.00	657,364.79	668,445.66
2,800.0	4.98	13.13	2,798.5	35.2	8.2	36.2	0.00	657,373.24	668,447.63
2,900.0	4.98	13.13	2,898.2	43.7	10.2	44.9	0.00	657,381.69	668,449.60
3,000.0	4.98	13.13	2,997.8	52.1	12.2	53.5	0.00	657,390.14	668,451.57
3,100.0	4.98	13.13	3,097.4	60.6	14.1	62.2	0.00	657,398.59	668,453.55
3,200.0	4.98	13.13	3,197.0	69.0	16.1	70.9	0.00	657,407.04	668,455.52
3,300.0	4.98	13.13	3,296.6	77.5	18.1	79.6	0.00	657,415.49	668,457.49
3,400.0	4.98	13.13	3,396.3	85.9	20.0	88.2	0.00	657,423.94	668,459.46
3,500.0	4.98	13.13	3,495.9	94.4	22.0	96.9	0.00	657,432.38	668,461.43
3,600.0	4.98	13.13	3,595.5	102.8	24.0	105.6	0.00	657,440.83	668,463.40
3,700.0	4.98	13.13	3,695.1	111.3	26.0	114.3	0.00	657,449.28	668,465.37
3,800.0	4.98	13.13	3,794.8	119.7	27.9	122.9	0.00	657,457.73	668,467.34
3,900.0	4.98	13.13	3,894.4	128.2	29.9	131.6	0.00	657,466.18	668,469.32
4,000.0	4.98	13.13	3,994.0	136.6	31.9	140.3	0.00	657,474.63	668,471.29
4,100.0	4.98	13.13	4,093.6	145.1	33.8	149.0	0.00	657,483.08	668,473.26
4,200.0	4.98	13.13	4,193.3	153.5	35.8	157.7	0.00	657,491.53	668,475.23
4,300.0	4.98	13.13	4,292.9	162.0	37.8	166.3	0.00	657,499.98	668,477.20
4,400.0	4.98	13.13	4,392.5	170.4	39.8	175.0	0.00	657,508.43	668,479.17
4,500.0	4.98	13.13	4,492.1	178.9	41.7	183.7	0.00	657,516.88	668,481.14
4,600.0	4.98	13.13	4,591.7	187.3	43.7	192.4	0.00	657,525.33	668,483.11
4,700.0	4.98	13.13	4,691.4	195.8	45.7	201.0	0.00	657,533.77	668,485.09
4,800.0	4.98	13.13	4,791.0	204.2	47.6	209.7	0.00	657,542.22	668,487.06
4,843.5	4.98	13.13	4,834.3	207.9	48.5	213.5	0.00	657,545.90	668,487.91
4,900.0	3.28	13.13	4,890.7	211.9	49.4	217.6	3.00	657,549.86	668,488.84
5,009.4	0.00	0.00	5,000.0	214.9	50.1	220.7	3.00	657,552.91	668,489.55
5,100.0	0.00	0.00	5,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55

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5,200.0	0.00	0.00	5,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,300.0	0.00	0.00	5,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,400.0	0.00	0.00	5,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,500.0	0.00	0.00	5,490.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,600.0	0.00	0.00	5,590.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,700.0	0.00	0.00	5,690.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,800.0	0.00	0.00	5,790.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
5,900.0	0.00	0.00	5,890.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,000.0	0.00	0.00	5,990.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,100.0	0.00	0.00	6,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,200.0	0.00	0.00	6,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,300.0	0.00	0.00	6,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,400.0	0.00	0.00	6,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,500.0	0.00	0.00	6,490.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,600.0	0.00	0.00	6,590.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,700.0	0.00	0.00	6,690.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,800.0	0.00	0.00	6,790.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
6,900.0	0.00	0.00	6,890.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,000.0	0.00	0.00	6,990.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,100.0	0.00	0.00	7,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,200.0	0.00	0.00	7,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,300.0	0.00	0.00	7,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,400.0	0.00	0.00	7,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,500.0	0.00	0.00	7,490.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,600.0	0.00	0.00	7,590.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,700.0	0.00	0.00	7,690.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
7,800.0	0.00	0.00	7,790.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Cutthroat Federal #8
Project:	Lea County	**TVD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Site:	Cutthroat Federal #8	**MD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Well:	Federal #1	**North Reference:**	Grid
Wellbore:	#1	**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)
7,900.0	0.00	0.00	7,890.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,000.0	0.00	0.00	7,990.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,100.0	0.00	0.00	8,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,200.0	0.00	0.00	8,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,300.0	0.00	0.00	8,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,400.0	0.00	0.00	8,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,500.0	0.00	0.00	8,490.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,600.0	0.00	0.00	8,590.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,700.0	0.00	0.00	8,690.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,800.0	0.00	0.00	8,790.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
8,900.0	0.00	0.00	8,890.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,000.0	0.00	0.00	8,990.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,100.0	0.00	0.00	9,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,200.0	0.00	0.00	9,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,300.0	0.00	0.00	9,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,400.0	0.00	0.00	9,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,500.0	0.00	0.00	9,490.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,600.0	0.00	0.00	9,590.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,700.0	0.00	0.00	9,690.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,800.0	0.00	0.00	9,790.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
9,900.0	0.00	0.00	9,890.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,000.0	0.00	0.00	9,990.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,100.0	0.00	0.00	10,090.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,200.0	0.00	0.00	10,190.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,300.0	0.00	0.00	10,290.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,400.0	0.00	0.00	10,390.6	214.9	50.1	220.7	0.00	657,552.91	668,489.55
10,509.4	0.00	0.00	10,500.0	214.9	50.1	220.7	0.00	657,552.91	668,489.55

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Cutthroat Federal #8
Project:	Lea County	**TVD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Site:	Cutthroat Federal #8	**MD Reference:**	WELL @ 3959.0usft (Original Well Elev)
Well:	Federal #1	**North Reference:**	Grid
Wellbore:	#1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____

MACK Energy Corporation

SITE DETAILS: Cutthroat Federal #8	
Site Centre Northing:	657338.00
Easting:	668439.41
Positional Uncertainity:	0.0
Convergence:	0.30
Local North:	Grid

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

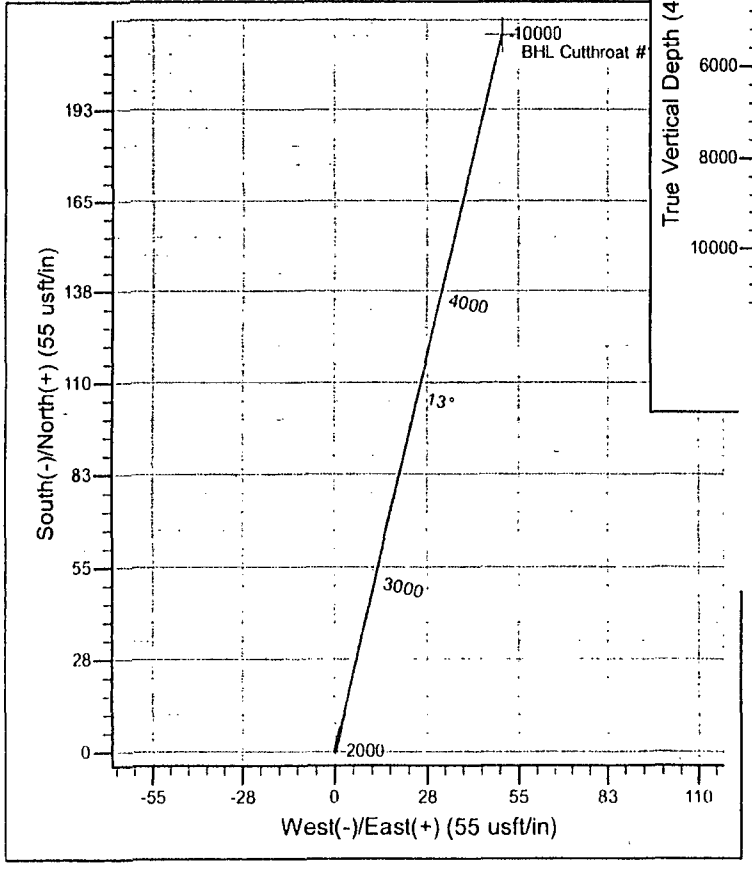
Magnetic Field
Strength: 48758.8snT
Dip Angle: 60.66°
Date: 9/10/2013
Model: IGRF200510

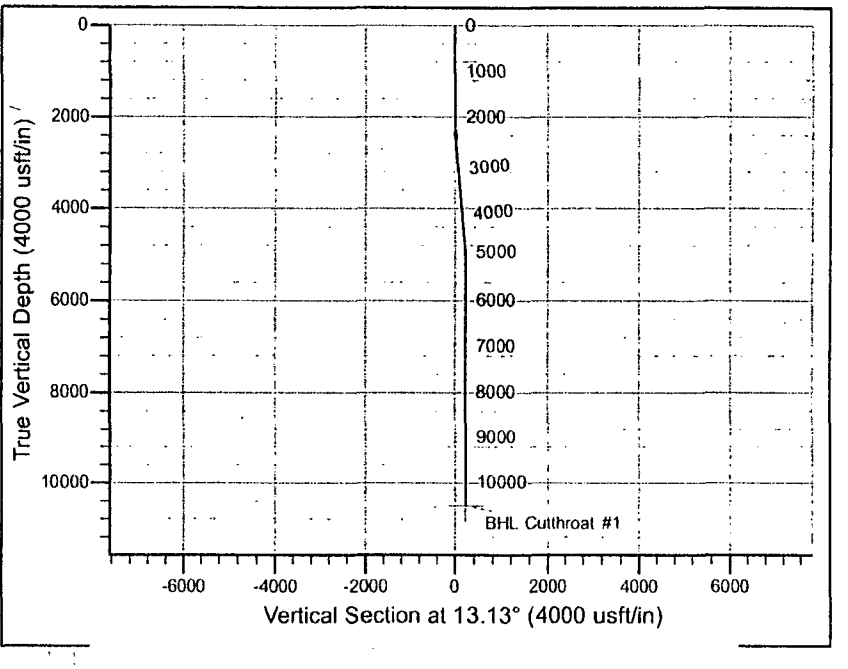
SECTION DETAILS

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	2465.9	4.98	13.13	2465.7	7.0	1.6	3.00	13.13	7.2	
4	4843.5	4.98	13.13	4834.3	207.9	48.5	0.00	0.00	213.5	
5	5009.4	0.00	0.00	5000.0	214.9	50.1	3.00	180.00	220.7	
6	10509.4	0.00	0.00	10500.0	214.9	50.1	0.00	0.00	220.7	BHL Cutthroat #1

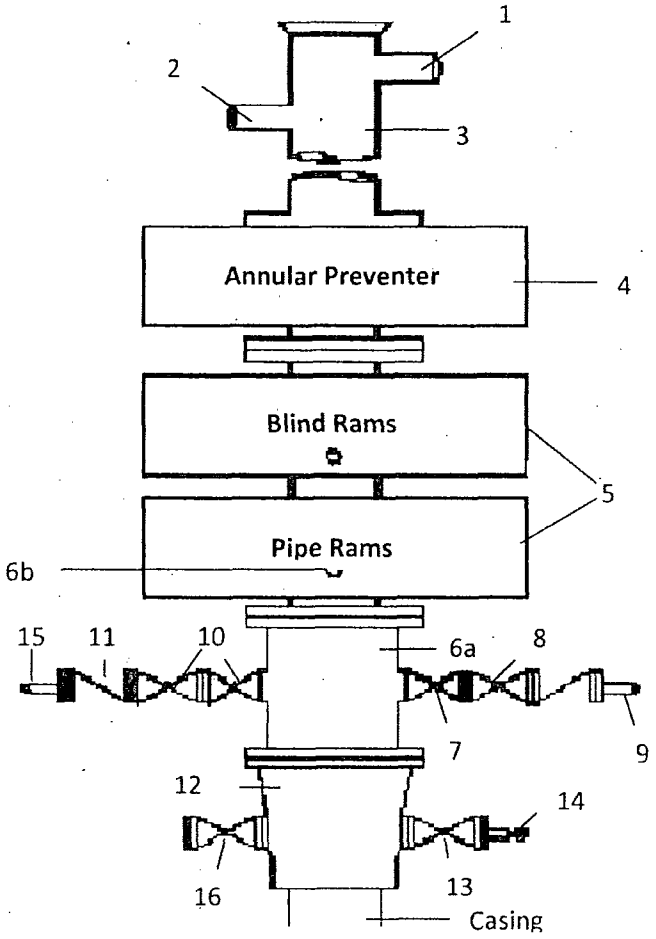
DESIGN TARGET DETAILS

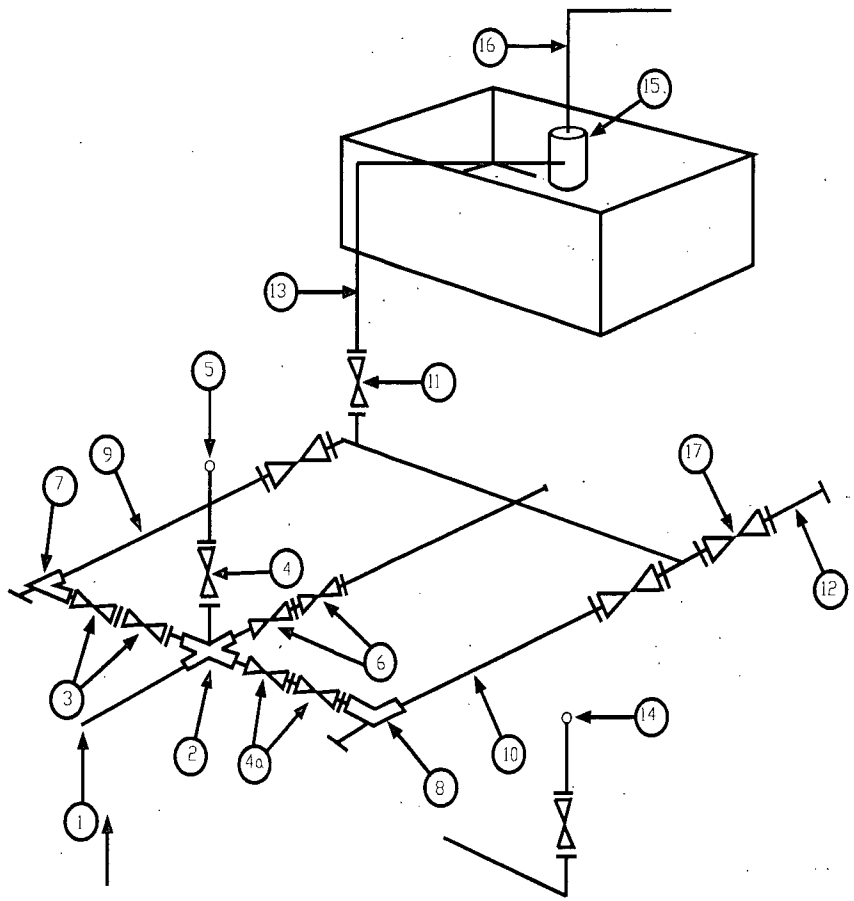
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL Cutthroat #1 - plan hits target center	10500.0	214.9	50.1	657552.91	668489.52	32° 48' 23.403 N	103° 47' 5.851 W	Point





2310 FNL and 1650FEL are Hard Lines. The well can be north, west, or northwest of these hard lines, but not south, east, or southeast. From BHL the well is 25 north of the north hard line and 25' west of the east hardline

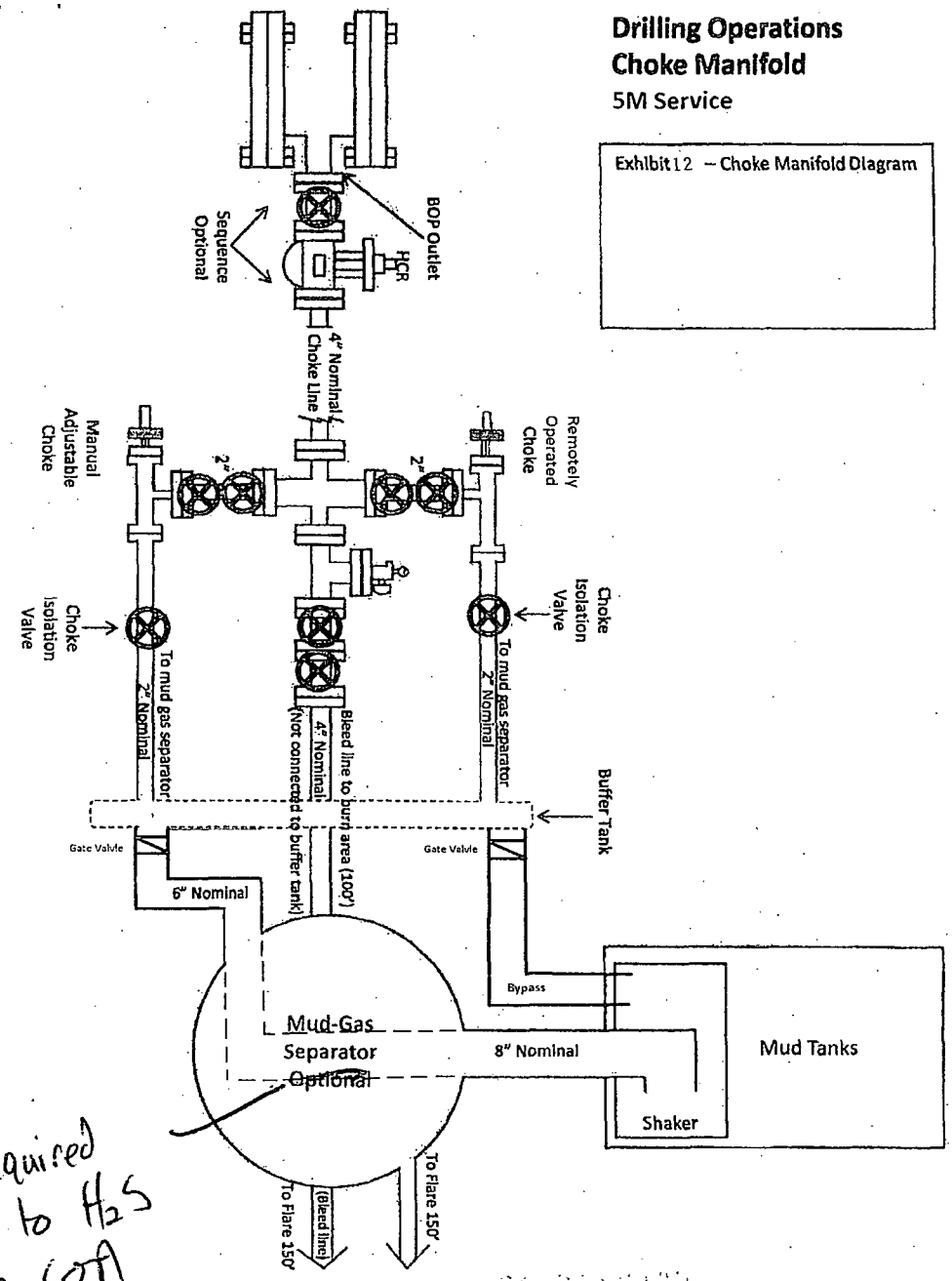

1
2
3
Annular Preventer
4
Blind Rams
5
Pipe Rams
6b
15
11
10
6a
8
7
9
12
14
16
13
Casing


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

Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12



Required due to H_2S see COA

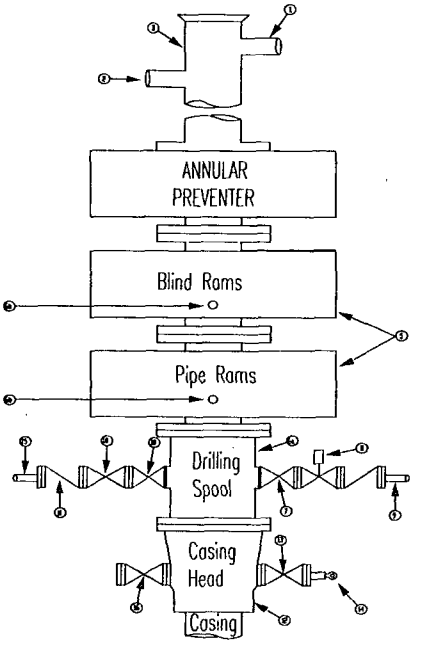
Mack Energy Corporation
Minimum Blowout Preventer Requirements
5000 psi Working Pressure
13 5/8 inch- 5 MWP
11 Inch - 5 MWP
EXHIBIT #10

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.

Mack Energy Corporation

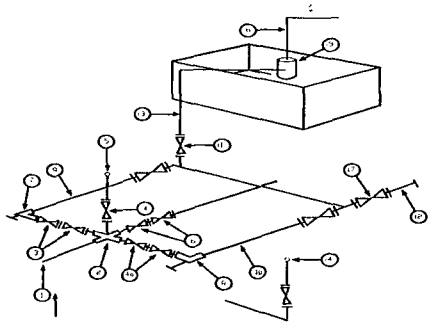
Exhibit #11

MIMIMUM CHOKE MANIFOLD

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

5M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

*** Location of separator optional**

Below Substructure

Mimimum requirements

		3,000 MWP			5,000 MWP			10,000 MWP		
No.		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 quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

(1) Only one required in Class 3M

(2) Gate valves only shall be used for Class 10 M

(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

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

DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 8