

OCD-ARTESIA

S

Form 3160-3
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DEC 17 2007

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD-ARTESIA

1a Type of work- ☒ DRILL ☐ REENTER1b Type of Well. ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

2 Name of Operator

Mack Energy Corporation

3a Address

P.O. Box 960 Artesia, NM 88211-0960

3b Phone No (include area code)

(505)748-1288

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

At surface

690 FSL & 330 FEL

At proposed prod. zone

965 FSL & 330 FWL

14 Distance in miles and direction from nearest town or post office*

12 miles northwest of Loco Hills, NM

5 Lease Serial No

NMNM-117554-hc-068677 11-1-07 dm

6 If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No

8, Lease Name and Well No

Oilers Federal #1

9 API Well No.

30-015-35993

10 Field and Pool, or Exploratory

Wildcat Wolfcamp

11 Sec, T R M or Blk and Survey or Area

Sec. 9 T16S R29E

12. County or Parish

Eddy

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

1680

17. Spacing Unit dedicated to this well

160

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

1320

19 Proposed Depth

TOD 7155
11450 MD 11558

20 BLM/BIA Bond No on file

NMB000286

per directional plan

21 Elevations (Show whether DF, KDB, RT, GL, etc)

3702' GR

22 Approximate date work will start*

11/24/07

23 Estimated duration

35 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall 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 shall 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
authorized officer

25. Signature

Jerry W. Sherrell

Name (Printed/Typed)

Jerry W. Sherrell

Date

10/31/07

Title

Production Clerk

Approved by (Signature)

Is/ Don Peterson

Name (Printed/Typed)

Date

DEC 12 2007

Title

FOR 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 attachedTitle 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.

APPROVAL FOR TWO YEARS

*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102

DISTRICT II
1301 W GRAND AVENUE, ARTESIA, NM 88210

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 96086	Pool Name Wildcat Wolfcamp
Property Code 36904	Property Name OILERS FEDERAL	Well Number 1
OGRID No. 013837	Operator Name MACK ENERGY CORPORATION	Elevation 3702'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	9	16-S	29-E		690	SOUTH	330	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	9	16-S	29-E		965	SOUTH	330	WEST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
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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>BOTTOM HOLE LOCATION Y=702669.4 N X=575618.7 E</p>				<p>GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=702409.4 N X=580241.0 E</p>			
				<p>LAT.=32.930725° N LONG.=104.071811° W</p>			
				<p>DETAIL</p> <p>3697 3' 3702 7'</p> <p>600'</p> <p>3700 9' 3704 8'</p>			
<p>330'</p> <p>B.H.</p> <p>595'</p>				<p>GRD AZ = 273° 13' 12"</p> <p>HORIZ DIST = 4630 8'</p> <p>SEE DETAIL</p> <p>330'</p> <p>SURF.</p>			

OPERATOR CERTIFICATION

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

Jerry W. Sherrell 10/30/07
Signature Date

Jerry W. Sherrell
Printed Name

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.

OCTOBER 15 2007

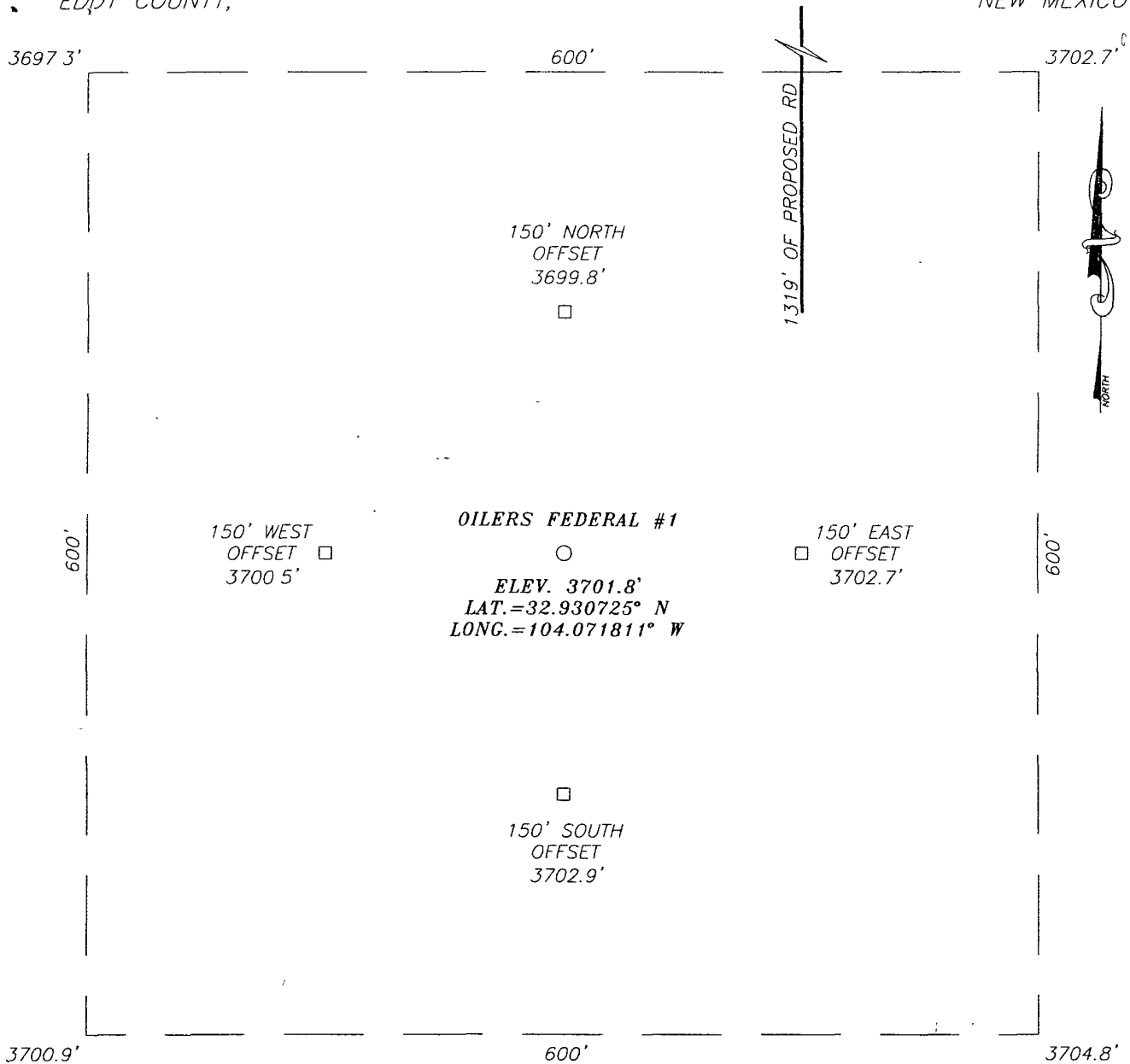
Date Surveyed

Signature & Seal of Professional Surveyor

3239

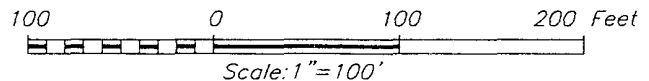
Certificate No. GARY EIDSON 12641
RONALD J. EIDSON 3239

SECTION 9, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND
CO. RD. #214 (BARNAVILLE DRAW), GO NORTH ON
CO. RD. #214 APPROX. 7.5 MILES. TURN RIGHT
AND GO NORTH APPROX. 0.2 MILES. BEND RIGHT
AND GO NORTHEAST APPROX. 0.6 MILES. THIS
LOCATION IS TO THE RIGHT APPROX. 1900 FEET.



MACK ENERGY CORPORATION

OILERS FEDERAL #1 WELL
LOCATED 690 FEET FROM THE SOUTH LINE
AND 330 FEET FROM THE EAST LINE OF SECTION 9,
TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



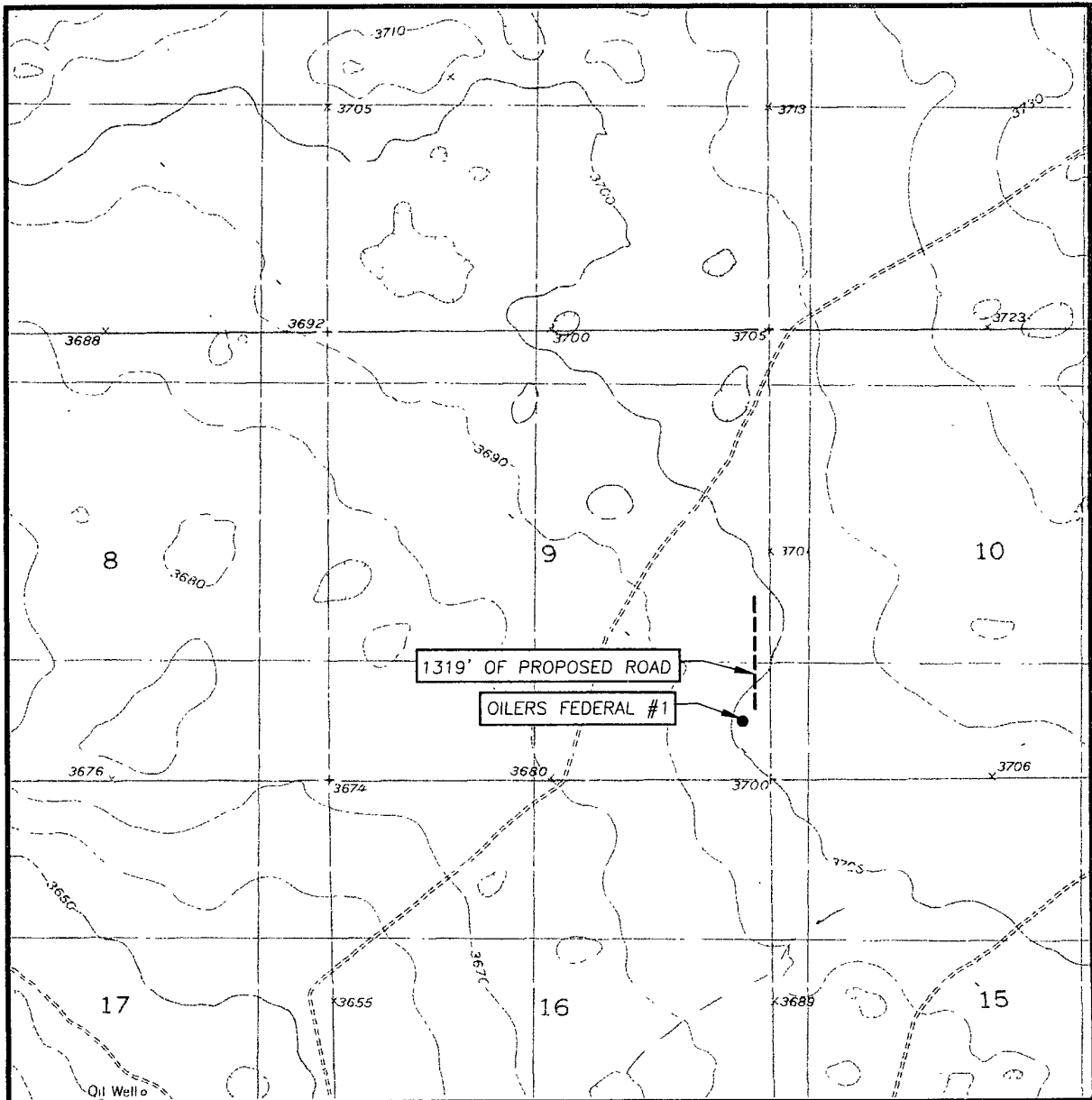
PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

Survey Date: 10/18/07		Sheet 1 of 1 Sheets	
W.O. Number: 07.11 1456		Dr By: AR	Rev 1:N/A
Date: 10/23/07	Disk:	07111456	Scale: 1"=100'

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

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

SEC. 9 TWP. 16-S RGE. 29-E

SURVEY _____ N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

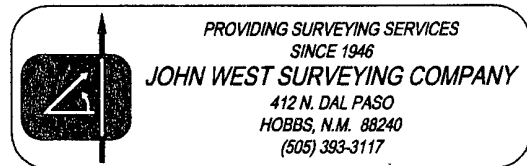
DESCRIPTION 690' FSL & 330' FEL

ELEVATION 3702'

OPERATOR MACK ENERGY CORPORATION

LEASE OILERS FEDERAL

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



Attached to Form 3160-3
Mack Energy Corporation
Oilers Federal #1
SHL 690 FSL & 330 FEL Unit P, Sec. 9 T16S R29E
BHL 965 FSL & 330 FWL Unit M, Sec 9 T16S R29E
Eddy County, NM

DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface	Wolfcamp	7050'
San Andres	2220'		
Glorieta	3750'		
Tubb	4960'		
Abo	5730'		

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

Water Sand	150'	Fresh Water
San Andres	2220'	Oil/Gas
Abo	5730'	Oil/Gas
Wolfcamp	7050'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 250' and circulating cement back to surface will protect the surface fresh water sand. Salt Section will be protected by setting 8 5/8" casing to 1600' 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 1/2" production casing, sufficient cement will be pumped to circulate back to surface.

See
COA

4. Casing Program:

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, burst/collapse/tension
17 1/2"	0-250'	13 3/8"	48#, H-40, ST&C, New, 7.84/3.352/13.42
12 1/4"	0-1600'	8 5/8"	24#, J-55, ST&C, New, 3.28/3.044/7.27
7 7/8"	0-6200'	5 1/2"	17#, HCP-110, LT&C, New, 3.13/2.6/2.21
7 7/8"	6200-11,150'	5 1/2"	17#, HCL-80, Buttress, New, 2.27/2.521/4.14

See
COA

11558

← per directional plan

5. Cement Program:

13 3/8" Surface Casing: Class C, 300sx, yield 1.32.

8 5/8 Intermediate Casing: Class C, 850sx, yield 1.32.

5 1/2" Production Casing: Class C, 2500sx, yield 1.32.

6. Minimum Specifications for Pressure Control:

See
COA → The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 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 BOP will be nipped up on the 13 3/8" surface casing and tested to 1500 psi by a 3rd party. The BOP will then be nipped up on the 8 5/8" intermediate casing and tested by a 3rd party to 2000 psi and 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 2000 psi WP rating.

7. Types and Characteristics of the Proposed Mud System:

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

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-250'	Fresh Water	8.5	28	N.C.
250-1600'	Brine	10	30	N.C.
1600'-TD	Cut 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:

Attached to Form 3160-3
Mack Energy Corporation
Oilers Federal #1
SHL 690 FSL & 330 FEL Unit P, Sec. 9 T16S R29E
BHL 965 FSL & 330 FWL Unit M, Sec 9 T16S R29E
Eddy County, NM

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran 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 after the 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

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

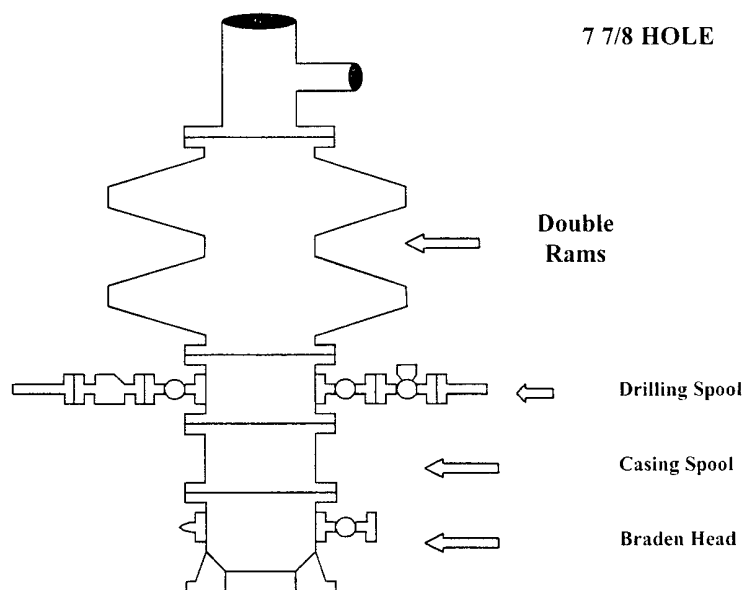
No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 3250 psig. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H2S may be present while drilling of the well a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations:

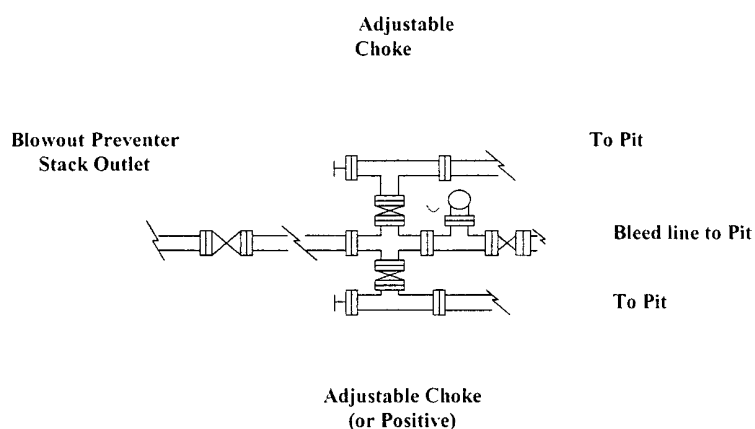
Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is November 24, 2007. Once commenced, the drilling operation should be finished in approximately 35 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

Mack Energy Corporation

Exhibit #9 BOPE Schematic



Choke Manifold Requirement (2000 psi WP minimum)
No Annular Required
See Exhibit #11 for Detail



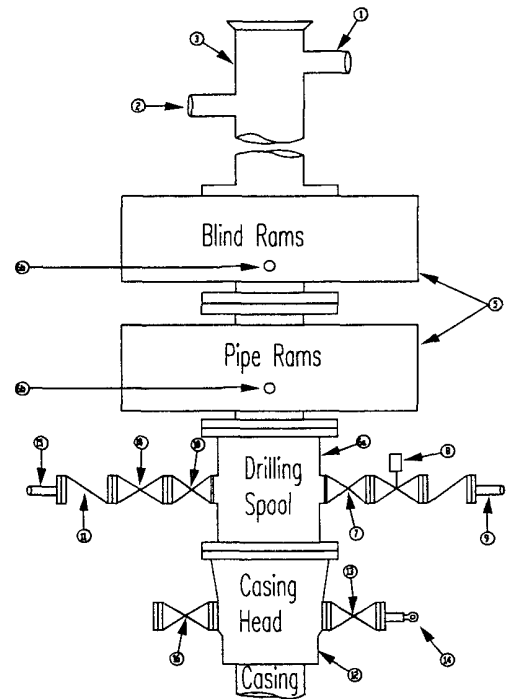
Mack Energy Corporation
Minimum Blowout Preventer Requirements
 2000 psi Working Pressure
 2 MWP
EXHIBIT #10

Stack Requirements

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

OPTIONAL

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

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

MEC TO FURNISH:

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

GENERAL NOTES:

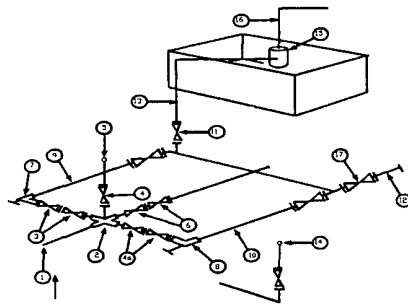
1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working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

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

5. All valves to be equipped with hand-wheels or handles ready for immediate use
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Do 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 quage			3,000			5,000			10,000
15	Gas Separator		2' x 5'			2' x 5'			2' x 5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

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

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

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

Attachment to Exhibit #9
NOTES REGARDING THE BLOWOUT PREVENTERS
Oilers Federal #1
Eddy 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 Corp.

Eddy County, NM (NAD 27 NME)

Oilers Federal #1

Oilers Federal #1

Wellbore #1

Plan: Plan #1

Standard Planning Report

31 October, 2007

Bureau of Land Management
Received

NOV 03 2007

Carlsbad Field Office
Carlsbad, NM



Scientific Drilling
Directional Drilling Operations



Scientific Drilling
Planning Report



Database:	EDM 2003 16 Single User Db	Local Co-ordinate Reference:	Well Oilers Federal #1H
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3720 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3720 00ft (KB Elev)
Site:	Oilers Federal #1H	North Reference:	Grd
Well:	Oilers Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project:	Eddy County, NM (NAD 27 NME)		
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:	Oilers Federal #1H		
Site Position:	Map	Northing:	702,409 40 ft
From:		Easting:	580,241 00 ft
Position Uncertainty:	0 00 ft	Slot Radius:	ft
		Latitude:	32° 55' 50 612 N
		Longitude:	104° 4' 18 521 W
		Grid Convergence:	0 14 °

Well:	Oilers Federal #1H		
Well Position	+N-S	0 00 ft	Northing:
	+E-W	0 00 ft	Easting:
Position Uncertainty	0 00 ft	Wellhead Elevation:	3,720 00 ft
		Latitude:	32° 55' 50 612 N
		Longitude:	104° 4' 18 521 W
		Ground Level:	3,702 00 ft

Wellbore:	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	10/31/2007	8 29
			60 85
			49,368

Design:	Plan #1		
Audit Notes:			
Version:	Phase	PLAN	Tie On Depth:
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(ft)	(ft)	(ft)
	0 00	0 00	0 00
			273 10

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
6,650 00	0 00	0 00	6,650 00	0 00	0 00	0 00	0 00	0 00	0 00	
7,451 98	90 98	273 10	7,155 00	27 80	-512 93	11 34	11 34	0 00	273 10	
11,557 96	90 98	273 10	7,085 00	250 00	-4,612.30	0 00	0 00	0 00	0 00	PBHL-Oilers Fed #1H



Scientific Drilling Planning Report



Database:	EDM:2003.16 Single User Db	Local Co-ordinate Reference:	Well Oilers Federal #1H
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3720 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3720 00ft (KB Elev)
Site:	Oilers Federal #1H	North Reference:	Grid
Well:	Oilers Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North HL-Oilers Fed #1H - West HL-Oilers Fed #1H									
6,650.00	0.00	0.00	6,650.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP: Start 11.34°/100'									
6,700.00	5.67	273.10	6,699.92	0.13	-2.47	2.47	11.34	11.34	0.00
6,800.00	17.02	273.10	6,797.80	1.20	-22.08	22.11	11.34	11.34	0.00
6,900.00	28.36	273.10	6,889.92	3.28	-60.53	60.62	11.34	11.34	0.00
7,000.00	39.70	273.10	6,972.65	6.31	-116.32	116.49	11.34	11.34	0.00
7,100.00	51.05	273.10	7,042.78	10.15	-187.28	187.55	11.34	11.34	0.00
7,200.00	62.39	273.10	7,097.57	14.67	-270.62	271.02	11.34	11.34	0.00
7,300.00	73.74	273.10	7,134.86	19.68	-363.09	363.62	11.34	11.34	0.00
7,400.00	85.08	273.10	7,153.21	24.99	-461.08	461.76	11.34	11.34	0.00
7,451.98	90.98	273.10	7,155.00	27.80	-512.93	513.68	11.34	11.34	0.00
EOC hold 90.98°									
7,500.00	90.98	273.10	7,154.18	30.40	-560.88	561.70	0.00	0.00	0.00
7,600.00	90.98	273.10	7,152.47	35.81	-660.72	661.68	0.00	0.00	0.00
7,700.00	90.98	273.10	7,150.77	41.22	-760.55	761.67	0.00	0.00	0.00
7,800.00	90.98	273.10	7,149.07	46.64	-860.39	861.66	0.00	0.00	0.00
7,900.00	90.98	273.10	7,147.36	52.05	-960.23	961.64	0.00	0.00	0.00
8,000.00	90.98	273.10	7,145.66	57.46	-1,060.07	1,061.63	0.00	0.00	0.00
8,100.00	90.98	273.10	7,143.95	62.87	-1,159.91	1,161.61	0.00	0.00	0.00
8,200.00	90.98	273.10	7,142.25	68.28	-1,259.75	1,261.60	0.00	0.00	0.00
8,300.00	90.98	273.10	7,140.54	73.69	-1,359.59	1,361.58	0.00	0.00	0.00
8,400.00	90.98	273.10	7,138.84	79.11	-1,459.43	1,461.57	0.00	0.00	0.00
8,500.00	90.98	273.10	7,137.13	84.52	-1,559.27	1,561.55	0.00	0.00	0.00
8,600.00	90.98	273.10	7,135.43	89.93	-1,659.10	1,661.54	0.00	0.00	0.00
8,700.00	90.98	273.10	7,133.72	95.34	-1,758.94	1,761.53	0.00	0.00	0.00
8,800.00	90.98	273.10	7,132.02	100.75	-1,858.78	1,861.51	0.00	0.00	0.00
8,900.00	90.98	273.10	7,130.31	106.16	-1,958.62	1,961.50	0.00	0.00	0.00
9,000.00	90.98	273.10	7,128.61	111.57	-2,058.46	2,061.48	0.00	0.00	0.00
9,100.00	90.98	273.10	7,126.90	116.99	-2,158.30	2,161.47	0.00	0.00	0.00
9,200.00	90.98	273.10	7,125.20	122.40	-2,258.14	2,261.45	0.00	0.00	0.00
9,300.00	90.98	273.10	7,123.49	127.81	-2,357.98	2,361.44	0.00	0.00	0.00
9,400.00	90.98	273.10	7,121.79	133.22	-2,457.82	2,461.42	0.00	0.00	0.00
9,500.00	90.98	273.10	7,120.08	138.63	-2,557.65	2,561.41	0.00	0.00	0.00
9,600.00	90.98	273.10	7,118.38	144.04	-2,657.49	2,661.39	0.00	0.00	0.00
9,700.00	90.98	273.10	7,116.67	149.46	-2,757.33	2,761.38	0.00	0.00	0.00
9,800.00	90.98	273.10	7,114.97	154.87	-2,857.17	2,861.37	0.00	0.00	0.00
9,900.00	90.98	273.10	7,113.26	160.28	-2,957.01	2,961.35	0.00	0.00	0.00
10,000.00	90.98	273.10	7,111.56	165.69	-3,056.85	3,061.34	0.00	0.00	0.00
10,100.00	90.98	273.10	7,109.86	171.10	-3,156.69	3,161.32	0.00	0.00	0.00
10,200.00	90.98	273.10	7,108.15	176.51	-3,256.53	3,261.31	0.00	0.00	0.00
10,300.00	90.98	273.10	7,106.45	181.92	-3,356.37	3,361.29	0.00	0.00	0.00
10,400.00	90.98	273.10	7,104.74	187.34	-3,456.20	3,461.28	0.00	0.00	0.00
10,500.00	90.98	273.10	7,103.04	192.75	-3,556.04	3,561.26	0.00	0.00	0.00
10,600.00	90.98	273.10	7,101.33	198.16	-3,655.88	3,661.25	0.00	0.00	0.00
10,700.00	90.98	273.10	7,099.63	203.57	-3,755.72	3,761.23	0.00	0.00	0.00
10,800.00	90.98	273.10	7,097.92	208.98	-3,855.56	3,861.22	0.00	0.00	0.00
10,900.00	90.98	273.10	7,096.22	214.39	-3,955.40	3,961.21	0.00	0.00	0.00
11,000.00	90.98	273.10	7,094.51	219.81	-4,055.24	4,061.19	0.00	0.00	0.00
11,100.00	90.98	273.10	7,092.81	225.22	-4,155.08	4,161.18	0.00	0.00	0.00
11,200.00	90.98	273.10	7,091.10	230.63	-4,254.92	4,261.16	0.00	0.00	0.00
11,300.00	90.98	273.10	7,089.40	236.04	-4,354.75	4,361.15	0.00	0.00	0.00



Scientific Drilling Planning Report



Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well Oilers Federal #1H
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3720.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3720.00ft (KB Elev)
Site:	Oilers Federal #1H	North Reference:	Grid
Well:	Oilers Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,400.00	90.98	273.10	7,087.69	241.45	-4,454.59	4,461.13	0.00	0.00	0.00	
11,500.00	90.98	273.10	7,085.99	246.86	-4,554.43	4,561.12	0.00	0.00	0.00	
11,557.96	90.98	273.10	7,085.00	250.00	-4,612.30	4,619.07	0.00	0.00	0.00	
PBHL-Oilers Fed #1H										

Targets										
Target Name	hit/miss-target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
West HL-Oilers Fed #1H		0.00	0.00	0.00	260.00	-4,622.30	702,669.40	575,618.70	32° 55' 53.295 N	104° 5' 12.747 W
- plan misses by 4629.61ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Rectangle (sides W500.00 H0.00 D0.00)										
North HL-Oilers Fed #1H		0.00	0.00	0.00	260.00	-4,622.30	702,669.40	575,618.70	32° 55' 53.295 N	104° 5' 12.747 W
- plan misses by 4629.61ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Rectangle (sides W0.00 H2,000.00 D0.00)										
PBHL-Oilers Fed #1H		0.00	0.00	7,085.00	250.00	-4,612.30	702,659.40	575,628.70	32° 55' 53.196 N	104° 5' 12.630 W
- plan hits target										
- Circle (radius 10.00)										

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
6,650.00	6,650.00	0.00	0.00	KOP Start 11.34°/100'	
7,451.98	7,155.00	27.80	-512.93	EOC hold 90.98°	



Scientific Drilling for Mack Energy Corp.
Site: Eddy County, NM (NAD 27 NME)
Well: Oilers Federal #1H
Wellbore: Wellbore #1
Design: Plan #1



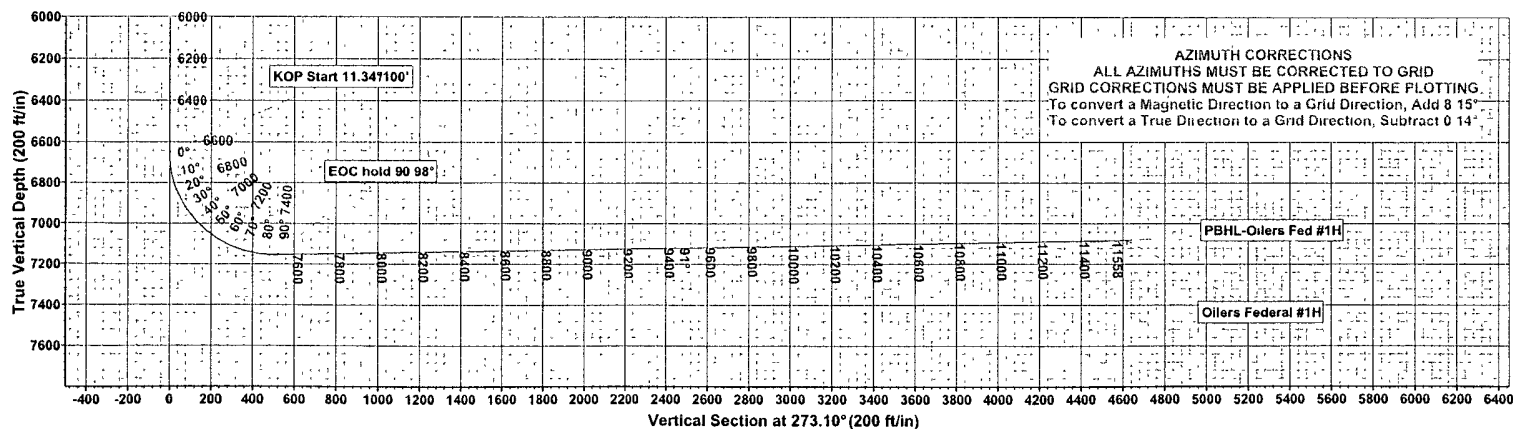
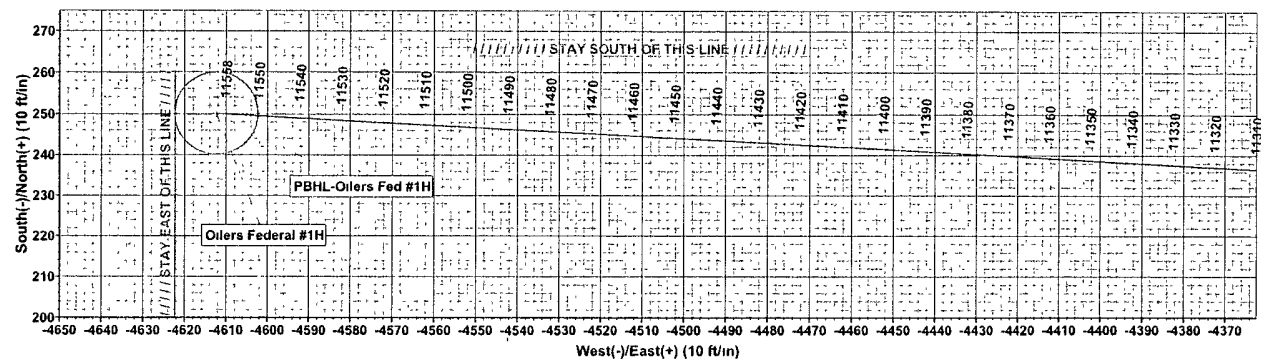
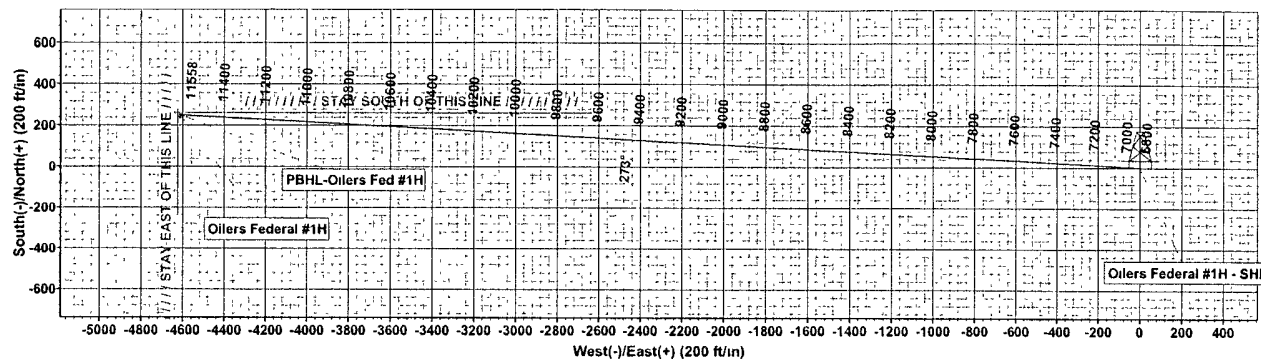
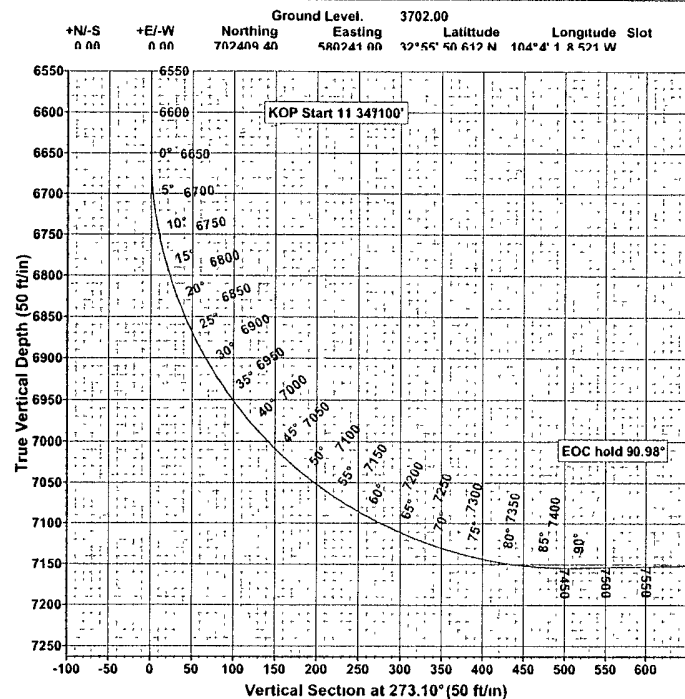
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSoc	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	6650.00	0.00	0.00	6650.00	0.00	0.00	0.00	0.00	0.00	
3	7451.98	90.98	273.10	7155.00	27.80	-512.93	11.34	273.10	513.68	
4	11557.96	90.98	273.10	7085.00	250.00	-4612.30	0.00	0.00	4619.07	PBHL-Oilers Fed #1H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
North HL-Oilers Fed #1H	0.00	260.00	-4622.30	702669.40	575618.70	32°55'53.295 N	104°5'12.747 W	Rectangle (Sides: L0.00 W2000.00)
West HL-Oilers Fed #1H	0.00	260.00	-4622.30	702669.40	575618.70	32°55'53.295 N	104°5'12.747 W	Rectangle (Sides: L500.00 W0.00)
PBHL-Oilers Fed #1H	7085.00	250.00	-4612.30	702659.40	575628.70	32°55'53.196 N	104°5'12.630 W	Circle (Radi us: 10.00)

WELL DETAILS: Oilers Federal #1H



ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 8.15°
To convert a True Direction to a Grid Direction, Subtract 0.14°



Azimuths to Grid North
True North: -0.14°
Magnetic North: 8.15°

Magnetic Field
Strength: 49367.95 nT
Dip Angle: 60.85°
Date: 10/31/2007
Model: IGRF200510

PROJECT DETAILS: Eddy County, NM (NAD 27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

Plan: Plan #1 (Oilers Federal #1H/Wellbore #1)

Created By: Julio Pina Date: 31-Oct-07

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

Mack Energy Corporation

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 reasonable 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

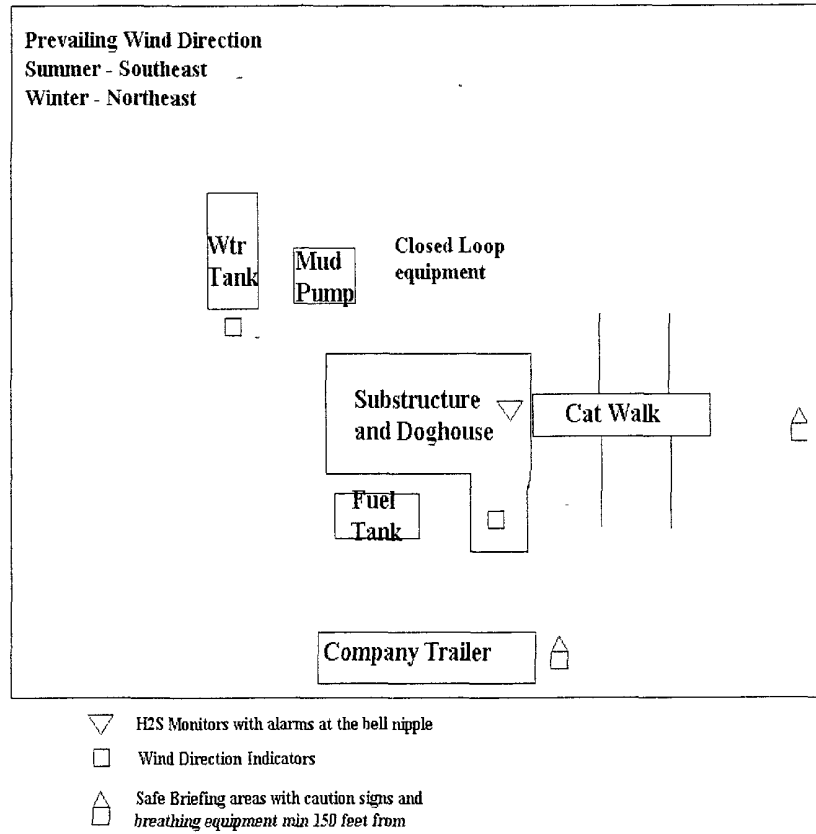
WARNING
YOU ARE ENTERING AN H₂S
AUTHORIZED PERSONNEL ONLY

- 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

1-505-748-1288

DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 8



SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

- A. The well site and elevation plat for the proposed well is shown in Exhibit #1. It was staked by John West Engineering, Hobbs, NM.
- B. All roads to the location are shown in Exhibit below. 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.
- C. Directions to Location: From the intersection of Hwy 82 and CR 214 go north 6.2 miles, turn right at Y .6 mile, turn left at Y 1.3 miles, to Oilers Federal #3, follow road survey south to location.
- D. 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.

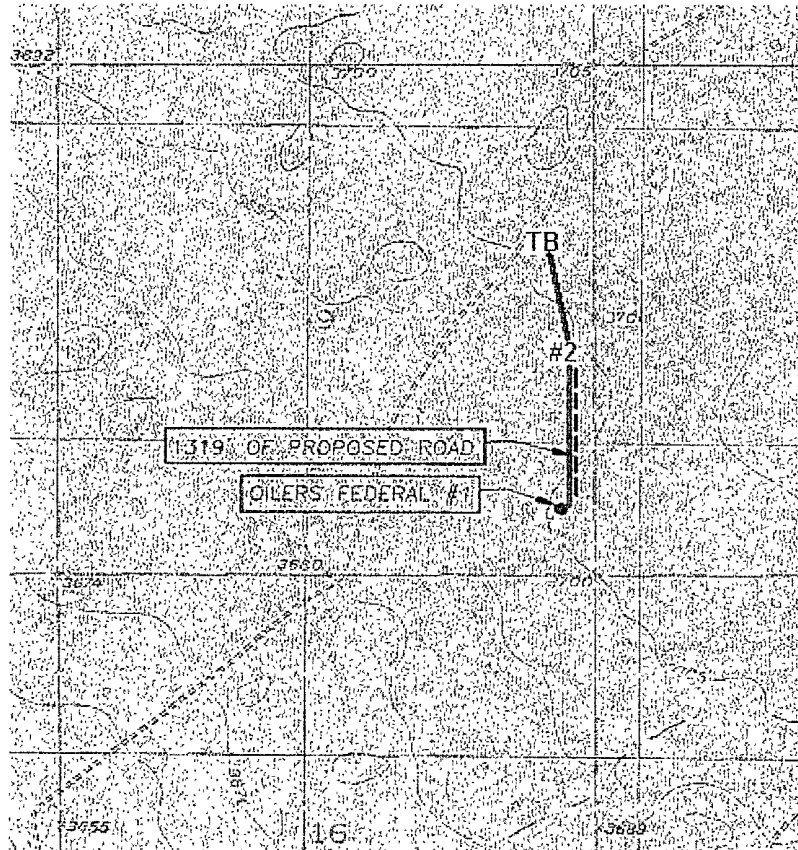


Exhibit #4

2. Proposed Access Road:

Exhibit #3 shows the 1319' of new access road to be constructed. The road will be constructed as follows:

- A. The Maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
- B. The average grade will be less than 1%.
- C. No turnouts are planned.
- D. No culverts, cattle guard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit or reserve pit area.
- F. The proposed access road as shown in Exhibit #3 has been centerline flagged by John West Engineering, Hobbs, New Mexico.

3. Location of Existing Wells & Proposed flow lines for New Wells:

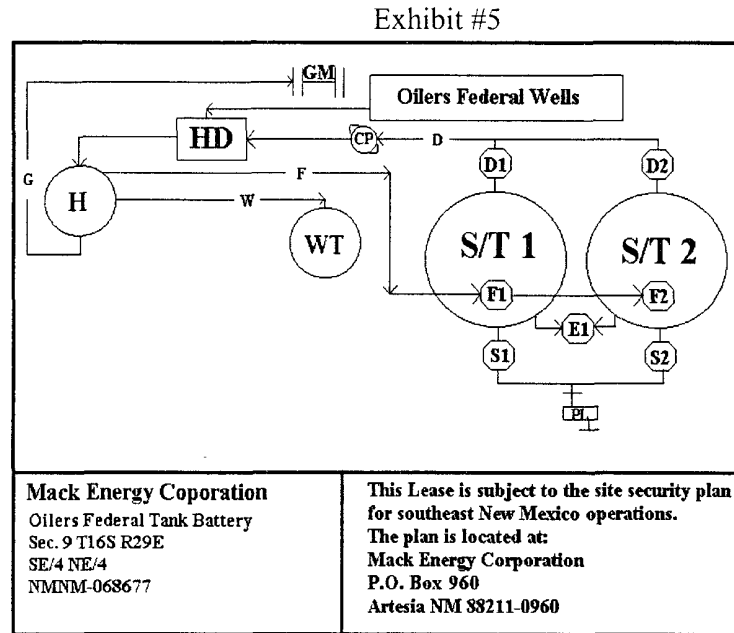
Exhibit #4 shows all existing wells within a one-mile radius of this well. Proposed flow lines, will follow an archaeologically approved route to the Oilers Federal #3 Tank Battery.

4. Location of Existing and/or Proposed Facilities:

- A. Mack Energy Corporation does not operate a production facility on this lease.
- B. If the well is productive, contemplated facilities will be as follows:
 - 1) Wolfcamp Completion: Will be sent to the Oilers Federal TB located at the #3 well. The Facility is shown in Exhibit #5.
 - 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.

Attached to Form 3160-3
Mack Energy Corporation
Oilers Federal #1
SHL 690 FSL & 330 FEL Unit P, Sec. 9 T16S R29E
BHL 965 FSL & 330 FWL Unit M, Sec 9 T16S R29E
Eddy County, NM

- 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.



A. If the well is productive, rehabilitation plans are as follows:

- 1) Topsoil removed from the drill site will be used to recontour the surrounding area to the original natural level, as nearly as possible, and reseeded as per BLM specifications.

5. 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 #4. 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.

6. 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.

7. Methods of Handling Water Disposal:

**Attached to Form 3160-3
Mack Energy Corporation
Oilers Federal #1
SHL 690 FSL & 330 FEL Unit P, Sec. 9 T16S R29E
BHL 965 FSL & 330 FWL Unit M, Sec 9 T16S R29E
Eddy County, NM**

- A. Drill cuttings not retained for evaluation purposes will be disposed into the reserve pit.
- B. Drilling fluids will be contained in steel tanks using a closed loop system.
- C. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) until pumped to an approved disposal system; produced oil will be collected in steel tanks until sold.
- D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. All water and fluids will be disposed of into an approved facility. No toxic waste or hazardous chemicals will be produced by this operation.
- E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

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

9. Well Site Layout:

- A. The drill pad layout, with elevations staked by John West Engineering, is shown in Exhibit #6. 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.
- B. 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.

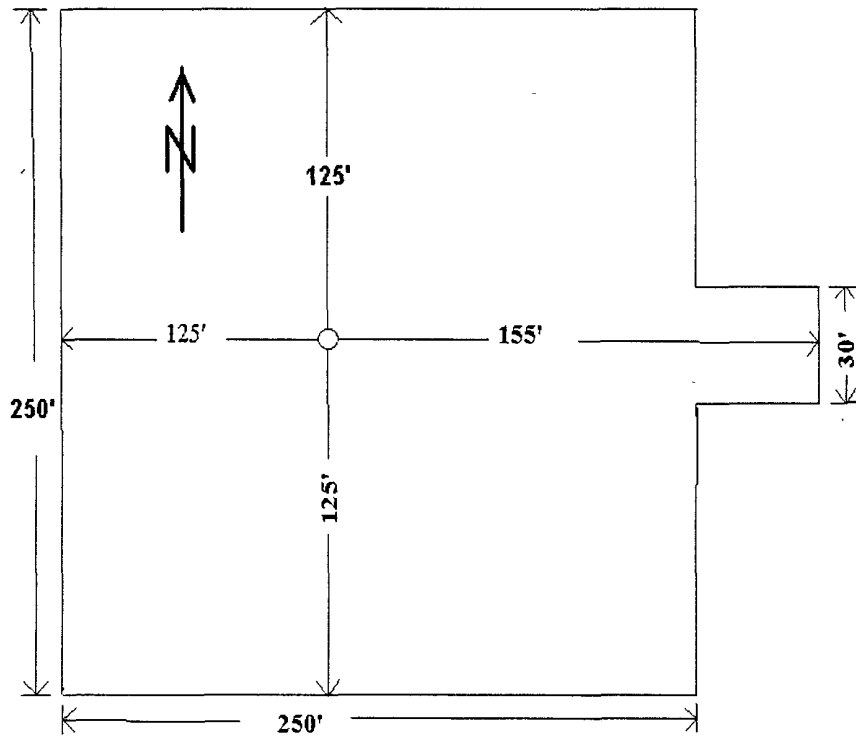


Exhibit #6

See COA's

Attached to Form 3160-3
Mack Energy Corporation
Oilers Federal #1
SHL 690 FSL & 330 FEL Unit P, Sec. 9 T16S R29E
BHL 965 FSL & 330 FWL Unit M, Sec 9 T16S R29E
Eddy County, NM

10. 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. In the event of a dry hole. Topsoil removed from the drill site will be used to recontour the area to its original natural level and reseeded as per BLM specifications.

11. 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 leasee is Bogel Limited Company, Lewis Derrick, P.O. Box 460 Dexter, NM 88230.

12. Other Information:

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

13. Lessee's and Operator's Representative:

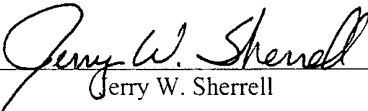
The Mack Energy Corporation representative responsible for assuring compliance with the surface use plan is as follows:

Jerry W. Sherrell
Mack Energy Corporation
P.O. Box 960
Artesia, NM 88211-0960
Phone (505) 748-1288 (office)

CERTIFICATION

I hereby certify that I, or person under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this APD are to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed by Mack Energy Corporation and its contractors and subcontractors in conformity with this plan and the terms and conditions which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date: 10-31-07

Signed: 
Jerry W. Sherrell

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 2 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Chaves and Roosevelt Counties, T16S Eddy County**

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
(575) 627-0205.

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the **Wolfcamp** formation. **Hydrogen Sulfide has been reported in this township measuring 1600-7000 ppm in gas streams and 100 ppm in STVs.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

B. CASING

1. The **13-3/8** inch surface casing shall be set a **minimum of 25 feet into the Rustler Anhydrite and above the Salt at approximately 380 feet** and cemented to the surface. **Fresh water mud to be used to setting depth.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a 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, 24 hours in the potash area, or 500 pounds compressive 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 compressive strength, whichever is greater.
- d. If cement falls back, remedial action will be done prior to drilling out that string.

Possible lost circulation in the Grayburg and San Andres formations.

Possible water flows in the Salado and Artesia Groups.

Possible high pressure gas bursts within the Wolfcamp formation

- 2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a-d above.

Casing to be set at approximately 1600 feet in the Tansill formation.

Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i.

- 3. The minimum required fill of cement behind the 5-1/2 inch production casing is:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

- 4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

- 1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- 2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi.**
- 3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 8-5/8" intermediate casing shoe shall be **3000 (3M) psi. 3M system based on pressures expected by BLM geologist in the Wolfcamp formation.**
- 4. The appropriate BLM office shall be notified a minimum of 2 hours in advance for a representative to witness the tests.

- a. The tests shall be done by an independent service company.
- b. The results of the test shall be reported to the appropriate BLM office.
- c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- d. 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.
- e. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation **if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days**. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.
- f. A variance to test the surface casing and BOP/BOPE to the reduced pressure of **1500** psi is approved.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

Engineer on call phone (after hours): Carlsbad: (575) 706-2779

WWI 113007