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Approval Subject to General R & Special Stimulations At						
	JUN 1 6 2014 C	ONDITIONS OF APPROVAL				
Carlsbad Controlled Water Pasin ^{NM}	OIL CONSERVATION ARTESIA DISTRICT S	EE ATTACHED FOR				
*(Instructions on page 2)	1					
States any false, fictitious or fraudulent statements or representations	as to any matter within its juris iction.	is any te make to any department of agency of the Onited				
Title 18 U.S.C. Section 1001 and Tide 43 U.S.C. Section 1212 make	it a crime for any person knowirilly and will	AFFRUVAL FUK I WU YEARS				
Application approval does not warrantor certify that the applicant ho conduct operations thereon.	ilds lega brequitable title to those rights in the	ADDONAL FOR TIMO VEADO				
FIELD MANAGER						
	Office					
Approved by (Signature)	Name (Printedl/Typed)	DattIIN - 5 2014				
Production Clerk	1 4					
Tide Yenn W. Shevell	Jerry W. Sherrell	11/15/12				
25. Signature	Namc (Printed'/Typed)	Date				
SUPO shall be filed with the appropriate Forest Service Office).	6. Such other site specification	n ic information and/or plans as may be required by the				
2. A Drilling Plan.	Item 20 above),					
1. Well plat certified by a registered surveyor.	4. Bond to cover the op	erations unless covered by an existing bond on file (see				
The following, completed in accordance with the requirements of Onsh	hore Oil and Gas Order No. 1, shall be attach	ed to this form:				
	24. Attachments					
4217' GR	12/30/2012	30 days				
2.1 Elevations (Show whether DE KDB RT GL etc.)	22 Approximate date work will start*	2.3. Estimated duration				
to nearest well, drilling, completed, applied for, on this lease, ft.	2281' TVD	40000287				
18 Distance from proposed location*	19. Proposed Depth 20.	BLM/BIA Bond No. on file				
 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest dria unit line, if any) 220. 	16. No. of acres in lease 17. 400-5tate 1.520 - Fed 1.61	spacing Unit dedicated to this well				
23 miles SW of Carlsbad, NM	16 No. of agrees in lance 17	Eddy NM ·				
14. Distance in miles and direction from nearest town or post office*		12. County or Parish 13. State				
At proposed prod. zone 355 FSL & 2285 FWL		Sec. 3 T23S R23E				
At surface 330 FNL & 2285 FWL	,					
4. Location of Well (Report location clearly and inaccoronace with a	ny State requirements*)	14. Sec., T. R. M. or Blk, and Survey or Area				
P.O. Box 960 Artesia, NM 88211-0960	(575)748-1288	Indian Basin; Yeso, South 6963547				
3a. Address	3b. PhoneNo: (include area code)	10. Field and Pool, or Exploratory				
2. Name of Operator Mack Energy Cornoration	< 12837=	3/2-015-42.448				
1b. Type of Well: Oil Well Gas Well Other	Single Zone Multiple Z	Pawn State Com #1 +3133687				
Ia. Typeofwork-: DRILLKEEN		8. Lease Name and Well No.				
		7 If Unit or CA Agreement, Name and No.				
APPLICATION FOR PERMIT TO	DRILL OR REENTER	6. If Indian, Allotee or Tribe Name 6-11-61.				
BUREAU OF LAND MA	NMNM-114947					
UNITED STATE DEPARTMENT OF THE	5. Lease Serial No.					
Form 3160 -3 (April 2004)	00-3 004) OCD Artesia					

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APD CERTIFICATION

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

Date: 11-15-2012

rend Signed: Very W. Sherrell



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2285

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 CORNER COORDINATES TABLE
 Date of Survey

 A) Y=487500.2 N, X=420127.9 E
 Signature & Seal of Professional Surveyor:

 B) Y=487497.2 N, X=420127.9 E
 N ME

 C) Y=482212.9 N, X=420117.4 E
 Signature & Seal of Professional Surveyor:

 D) Y=482212.3 N, X=421434.8 E
 Signature & Seal of Professional Surveyor:

Certificate Number Gar

Certificate Jumber Gari G.Eidson 12641 Gari G.Eidson 3239 AF Grand J. Eidson 3239 AF Grand Stream Stream

2012



[©] ABEL\2012\Mack Energy Corporation\Wells

VICINITY MAP

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SCALE: 1'' = 2 MILES

SEC.3TWP. 23-SRGE.23-ESURVEYN.M.P.M.COUNTYEDDYSTATENEWMEXICODESCRIPTION330'FNL& 2285'FWLELEVATION4217'OPERATORMACKENERGYCORPORATIONLEASEPAWNSTATECOM

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NORTH



LOCATION VERIFICATION MAP



SCALE: 1'' = 2000'

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SEC. <u>3</u> TWP. <u>23-S</u> RGE. <u>23-E</u> SURVEY <u>N.M.P.M.</u> COUNTY EDDY STATE NEW MEXICO DESCRIPTION <u>330' FNL & 2285' FWL</u> ELEVATION <u>4217'</u> OPERATOR <u>MACK ENERGY CORPORATION</u> LEASE <u>PAWN STATE COM</u> U.S.G.S. TOPOGRAPHIC MAP BANDANA POINT, N.M. CONTOUR INTERVAL: BANDANA POINT, N.M. - 20'





Mack-Fuergy Corporation Pawu State Com #T SE: 330 FNL & 2285 FWL, NE/NW, Sec. 3 F18S R31E, BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

DRILLING PROGRAM

1. Geologic Name of Surface Formation

to:Form-3160-3

Quaternary

2. Estimated Tops of Important Geologic Markers:

Grayburg:	Surface	1	(Jeto) Paddock	2200'
San Andres:	650' [`]		Bone Spring	2950'
Glorieta:	2100'		·	

We can add the Paddock top at 2200' between the Glorieta and Bone Spring. This location sits in a shelf-edge setting, which is too basinward for the usual section between the Paddock member and Bone Spring formation to be present.

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

OD Casing

13 3/8"

8 5/8"

5 1/2"

Water Sand	150'	Fresh Wate
San Andres	650'	Oil/Gas
Glorieta	2100'	Qil/Gas
thie	is not	+ Ye = 10.

this is not yeso. Yeso big ing w Paddock. No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 375' and circulating cement back to surface will protect the surface fresh water sand. Potencial Cave/Karst zones will be protected by the 8 5/8" casing at 2600'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.

4. Casing Program:

Hole Size Interval

0-375

0-6627'

0-2600-160

Wt, Grade, Jt, cond, collapse/burst/tension

· ·	17 1/2"
SEGA	12 1/4"
	7 7/8"

48#,H-40, ST&C, New, 3.95/3.40/3.46 24#, J-55, ST&C, New, 2.01/4.63/11.09 17#,P-110,LT&C, New, 7.77/3.28/3.48

5. Cement Program:

- 13 3/8" Surface Casing: Lead 375sx, Class C + 2% PF1 + .125% PF29, wt 14.8, yield 1.33 100% excess.
- 8 5/8" Intermediate Casing: Lead 650sx, Class C + 4% PF20 + 2% PF1+ .125#/sk PF29, wt 12.9, yield 1.97, excess 100%, Tail 685sx Class C 2% PF1, .125% PF29, wt 14.8, yield 1.33
- 5 ½" Production Casing: Lead 200sx POZ/C + 5% PF44 + 6% PF 20 + 1.5% PF 112 + .125/sk PF29 + .2# sk PF42 + .2% PF 46 + .2% PF13, yield 1.95, excess 35%, Tail 815sx PVL + 2% PF167 + .2% PF65 + .2% PF46 + .2% PF13 , yield 1.47.

Mack Energy Corporation Pawn State Cont #1 St.: 330 FNL & 2285 FWL, NE/NW, Sec. 3 T185 R31F BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

Allached IG FORM STORE

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (3000 psi WP) minimum preventer, 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 nippled up on the 13 3/8" surface casing and tested by a 3rd party to 2000 psi. The 13 5/8" BOP will then be nippled 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 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 #11) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #12) with a minimum 3000 psi WP rating

7. Types and Characteristics of the Proposed Mud System:

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

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-375'	Fresh Water	8.3-8.7	28	N.C.
375-2600	Fresh Water	8.3-8.7	28	N.C.
2600'-TD	Fresh Water	8.3-8.7	28	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.
- C. If gas is encountered. Well will be shut-in and a Mud Gas Seperator will be installed.

9. Logging, Testing and Coring Program:

bre COA

- 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:

Max (10 million 1: 1: 13

Attached to Form 3160-3 Mack Energy Corporation Pawn State Com #1 SL: 330 FNL & 2285 FWL, NE/NW, Sec. 3 T18S R31E BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

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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 December 30, 2012. Once commenced, the drilling operation should be finished in approximately 20 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 Pawn State Com #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 Pawn State #1H State #1H
- #1H

Plan: Plan #1

MEC Survey Report

29 October, 2012



MACK Enorgy Exponentia	-			MACIK Energy Elegenteen			
Company: M Project E Site: Pa Well: St Wellbore: Pi Design: Pi	ack Energy Corp ddy County awn State #1H ate #1H H an #1	5. 1995 - 4 CORDAN SALSKAR AND S			Local Co-ordinate R TVD Reference: 8 MD Reference: North Reference Survey Calculation I Database	eference: Site Pawn State #1H WELL @ 4234.0usft (C WELL @ 4234.0usft (C Grid Minimum Curvature EDM 5000.1 Single Us	er Db
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1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	487,168.20	421,092.40	
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COMPASS 5000.1 Build 56

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Company: 200 Mack Energy Corp
Project Eddy County
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Well. State #1H
Wellbore: #1H
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Local Co-ordinate Reference: Site Pawn State #1H TVD Reference: WELL @ 4234.0usft (Original Well Elev) MD Reference: Grid Survey Calculation Method: Grid Database: EDM 5000.1 Single User Db

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2400.0 70.0 180.09 2.237.7 -377.9 -0.6 377.9 10.00 486.790.27 421,091.81 2450.0 75.10 180.09 2.252.7 -425.6 -0.7 425.6 10.00 486.790.27 421,091.73 2.500.0 80.10 180.09 2.265.4 -474.4 -0.7 474.4 10.00 486.693.75 421,091.65 2.550.0 85.10 180.09 2.272.0 -572.1 -0.9 572.1 10.00 486.694.18 421,091.50 2.680.0 89.91 180.09 2.272.0 -574.0 -0.9 574.0 0.00 486.594.24 421,091.50 2.680.0 89.91 180.09 2.272.0 -600.2 -1.0 608.2 0.00 486.594.24 421,091.50 2.684.3 98.87 180.09 2.272.0 -608.2 -1.0 608.2 0.00 486.594.24 421,091.35 2.680.0 89.87 180.09 2.272.4 -774.0 -1.2 774.0 0.00 486.994.24 421,091.35 2.800.0 89.87 180.09 2.27		2,350.0	65.10	180.09	2,218.7	-331.7	-0.5	331.7	10.00	486,836.48	421,091.88	
2.450.0 75.10 180.09 2.252.7 425.6 -0.7 425.6 10.00 486.742.57 421.091.73 2.500.0 80.10 180.09 2.263.4 474.4 -0.7 744.4 10.00 486.693.75 421.091.55 2.550.0 85.10 180.09 2.272.0 -572.1 -0.9 574.0 0.00 486.593.75 421.091.50 2.660.0 89.91 180.09 2.272.0 -572.1 -0.9 574.0 0.00 486.595.2 421.091.50 2.660.0 89.91 180.09 2.272.0 -600.0 -0.9 500.0 0.00 486.595.2 421.091.50 2.660.0 89.87 180.09 2.272.0 -600.0 -1.1 608.2 0.50 486.599.6 421.091.51 2.600.0 89.87 180.09 2.272.6 -874.0 -1.1 674.0 0.00 486.942.4 421.091.55 2.800.0 89.87 180.09 2.272.6 -874.0 -1.4 674.0 0.00 486.942.4 421.091.55 3.000.0 89.87 180.09 2.273.3 <td>]</td> <td>2,400.0</td> <td>70.10</td> <td>180.09</td> <td>2,237.7</td> <td>-377.9</td> <td>-0.6</td> <td>377,9</td> <td>10.00</td> <td>486,790.27</td> <td>421,091.81</td> <td></td>]	2,400.0	70.10	180.09	2,237.7	-377.9	-0.6	377,9	10.00	486,790.27	421,091.81	
2.500.080.10180.092.283.4-474.4-0.7474.410.00486.683.75421.091.652.550.085.10180.092.289.9-524.0-0.8524.010.00486.644.18421.091.862.598.189.91180.092.272.0-572.1-0.9572.110.00486.596.12421.091.602.560.089.91180.092.272.0-574.0-0.9574.00.00486.568.20421.091.602.526.089.91180.092.272.0-600.0-0.9500.00.00486.568.20421.091.462.534.398.87180.092.272.0-608.2-1.0608.20.50466.599.66421.091.442.700.099.87180.092.272.6-874.0-1.1674.00.00486.594.24421.091.352.800.089.87180.092.272.6-874.0-1.4774.00.00486.594.24421.091.653.000.089.87180.092.273.1-1074.0-1.61.074.00.00486.594.24421.091.053.100.089.87180.092.273.7-1.374.0-1.81.174.00.00486.594.25421.090.053.300.089.87180.092.273.7-1.374.0-1.81.174.00.00485.594.25421.090.013.300.089.87180.092.273.7-1.374.0-1.81.174.00.00485.594.25421.090.013.300.089.87180.092.274.0 <td></td> <td>2,450.0</td> <td>75.10</td> <td>180.09</td> <td>2.252.7</td> <td>-425.6</td> <td>-0.7</td> <td>425.6</td> <td>10.00</td> <td>486,742.57</td> <td>421,091.73</td> <td></td>		2,450.0	75.10	180.09	2.252.7	-425.6	-0.7	425.6	10.00	486,742.57	421,091.73	
2.550.085.10180.092.269.9-524.0-0.8524.010.00486.644.18421.091.582.598.189.91180.092.272.0-572.1-0.9572.110.00486.596.12421.091.502.600.089.91180.092.272.0-574.0-0.9574.00.00486.598.24421.091.502.652.089.91180.092.272.0-608.2-1.0608.20.50486.559.96421.091.442.634.389.87180.092.272.2-674.0-1.1674.00.00486.594.24421.091.352.800.089.87180.092.272.4-774.0-1.2774.00.00486.594.24421.091.202.900.089.87180.092.272.8-874.0-1.4874.00.00486.594.24421.091.053.000.089.87180.092.273.1-1.074.0-1.61.074.00.00486.594.24421.091.053.000.089.87180.092.273.3-1.174.0-1.61.074.00.00486.594.25421.090.753.200.089.87180.092.273.7-1.374.0-1.81.174.00.00485.594.25421.090.553.200.089.87180.092.273.7-1.374.0-2.11.374.00.00485.594.25421.090.453.300.089.87180.092.273.7-1.374.0-2.21.474.00.00485.594.25421.090.453.300.089.87180.092.274.0		2,500.0	80.10	180.09	2,263.4	-474.4	-0.7	474.4	10.00	486,693.75	421,091.65	
2.598.1 89.91 180.09 $2.272.0$ -572.1 -0.9 572.1 10.00 $486.596.12$ $421.091.50$ $2.600.0$ 89.91 180.09 $2.272.0$ -574.0 -0.9 574.0 0.00 $486.594.24$ $421.091.50$ $2.626.0$ 89.91 180.09 $2.272.0$ -600.0 -0.9 600.0 0.00 $486.594.24$ $421.091.46$ $2.534.3$ 89.87 180.09 $2.272.0$ -608.2 -1.0 608.2 0.50 $486.59.96$ $421.091.46$ $2.700.0$ 89.87 180.09 $2.272.2$ -674.0 -1.1 674.0 0.00 $486.494.24$ $421.091.35$ $2.800.0$ 89.87 180.09 $2.272.6$ -674.0 -1.2 774.0 0.00 $486.394.24$ $421.091.20$ $2.900.0$ 89.87 180.09 $2.272.8$ -874.0 -1.2 774.0 0.00 $486.94.24$ $421.091.05$ $3.000.0$ 89.87 180.09 $2.272.8$ -874.0 -1.4 874.0 0.00 $486.94.24$ $421.090.90$ $3.000.0$ 89.87 180.09 $2.273.3$ $-1.174.0$ -1.6 $1.074.0$ 0.00 $486.94.24$ $421.090.90$ $3.000.0$ 89.87 180.09 $2.273.3$ $-1.174.0$ -1.6 $1.074.0$ 0.00 $486.94.24$ $421.090.60$ $3.000.0$ 89.87 180.09 $2.273.7$ $-1.374.0$ -1.8 $1.74.0$ 0.00 $485.94.25$ $421.090.60$ $3.000.0$ <		2.550.0	85.10	180.09	2,269.9	-524.0	-0.8	524.0	10.00	486,644.18	421,091.58	
2,600.089.91180.092,272.0-574.0-0.9574.00.00486,594.24421,091.502,626.089.91180.092,272.0-600.0-0.9600.00.00486,588.20421,091.462,634.389.87180.092,272.0-608.2-1.0608.20.50486,59.96421,091.462,700.089.87180.092,272.2-674.0-1.1674.00.00486,494.24421,091.352,800.089.67180.092,272.4-774.0-1.2774.00.00486,394.24421,091.352,900.089.87180.092,272.6-874.0-1.4874.00.00486,294.24421,091.053,000.089.67180.092,273.1-1.074.0-1.61.074.00.00486,994.24421,090.503,100.089.87180.092,273.3-1,174.0-1.61.074.00.00485,994.25421,090.603,200.089.87180.092,273.5-1,274.0-1.81,174.00.00485,994.25421,090.603,300.089.87180.092,273.7-1,374.0-2.21,474.00.00485,994.25421,090.303,500.089.87180.092,274.0-1,474.0-2.21,474.00.00485,994.25421,090.303,500.089.87180.092,274.0-1,474.0-2.21,474.00.00485,994.25421,090.163,600.089.87180.092,274.		2,598.1	89.91	180.09	2,272.0	-572.1	-0.9	572.1	10.00	486,596.12	421,091.50	
2.526.089.91180.092.272.0-600.0-0.9600.00.00486.568.20421.091.462.534.389.87180.092.272.0-608.2-1.0608.20.50486.559.96421.091.442.700.089.87180.092.272.2-674.0-1.1674.00.00486.494.24421.091.352.800.089.87180.092.272.6-874.0-1.2774.00.00486.394.24421.091.052.900.089.87180.092.272.8-974.0-1.5974.00.00486.94.24421.091.053.000.089.87180.092.273.1-1.074.0-1.61.074.00.00486.94.24421.090.753.000.089.87180.092.273.3-1.174.0-1.61.074.00.00485.94.25421.090.453.200.089.87180.092.273.5-1.274.0-1.91.274.00.00485.94.25421.090.453.200.089.87180.092.273.7-1.374.0-1.91.274.00.00485.94.25421.090.453.400.089.87180.092.274.0-1.674.0-2.21.474.00.00485.94.25421.090.163.500.089.87180.092.274.2-1.574.0-1.91.274.00.00485.94.25421.090.163.600.089.87180.092.274.2-1.674.0-2.21.474.00.00485.94.25421.090.013.600.089.87180.092.274.4 </td <td></td> <td>2,600.0</td> <td>89.91</td> <td>180.09</td> <td>2,272.0</td> <td>-574.0</td> <td>-0.9</td> <td>574.0</td> <td>0.00</td> <td>486,594,24</td> <td>421,091.50</td> <td></td>		2,600.0	89.91	180.09	2,272.0	-574.0	-0.9	574.0	0.00	486,594,24	421,091.50	
2.634.3 89.87 180.09 $2.272.0$ -608.2 -1.0 508.2 0.50 $486,559.66$ $421.091.44$ $2.700.0$ 89.87 180.09 $2.272.2$ -674.0 -1.1 674.0 0.00 $486,494.24$ $421.091.35$ $2.800.0$ 89.87 180.09 $2.272.4$ -774.0 -1.2 774.0 0.00 $486,294.24$ $421.091.20$ $2.900.0$ 89.87 180.09 $2.272.6$ -874.0 -1.4 874.0 0.00 $486,294.24$ $421.091.05$ $3.000.0$ 89.87 180.09 $2.273.8$ -974.0 -1.6 $1.074.0$ 0.00 $486,994.24$ $421.090.90$ $3.100.0$ 89.87 180.09 $2.273.1$ $-1.074.0$ -1.6 $1.074.0$ 0.00 $486,994.24$ $421.090.75$ $3.200.0$ 89.87 180.09 $2.273.5$ $-1.274.0$ -1.6 $1.074.0$ 0.00 $485,994.25$ $421.090.60$ $3.300.0$ 89.87 180.09 $2.273.7$ $-1.374.0$ -1.8 $1.174.0$ 0.00 $485,994.25$ $421.090.45$ $3.400.0$ 89.87 180.09 $2.274.2$ $-1.674.0$ -1.8 $1.174.0$ 0.00 $485,694.25$ $421.090.45$ $3.500.0$ 89.87 180.09 $2.274.2$ $-1.674.0$ -2.2 $1.574.0$ 0.00 $485,694.25$ $421.090.16$ $3.600.0$ 89.87 180.09 $2.274.4$ $-1.674.0$ -2.4 $1.574.0$ 0.00 $485,694.25$ $421.089.71$ <td></td> <td>2,626.0</td> <td>89.91</td> <td>180.09</td> <td>2,272.0</td> <td>-600.0</td> <td>-0.9</td> <td>600.0</td> <td>0.00</td> <td>486,568.20</td> <td>421,091.46</td> <td></td>		2,626.0	89.91	180.09	2,272.0	-600.0	-0.9	600.0	0.00	486,568.20	421,091.46	
2,700.089.87160.092,272.2-674.0-1.1674.00.00486,494.24421,091.352,800.089.87180.092,272.4-774.0-1.2774.00.00486,394.24421,091.202,900.083.87180.092,272.6-874.0-1.4874.00.00486,294.24421,091.053,000.089.87180.092,272.8-974.0-1.5974.00.00486,094.24421,090.903,100.089.87180.092,273.1-1.074.0-1.61.074.00.00486,094.24421,090.753,200.089.87180.092,273.3-1,174.0-1.81,174.00.00485,994.25421,090.453,200.089.87180.092,273.5-1,274.0-1.91,274.00.00485,894.25421,090.453,400.089.87180.092,274.0-1,474.0-2.21,474.00.00485,694.25421,090.303,600.089.87180.092,274.2-1,574.0-2.41,574.00.00485,694.25421,090.163,600.089.87180.092,274.4-1,674.0-2.51,674.00.00485,594.25421,099.163,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,594.25421,099.163,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,594.25421,099.713,900.089.87180.09<		2.634.3	89.87	180.09	2,272.0	-608.2	-1.0	608.2	0.50	486,559,96	421,091.44	
1.1.0050.011.00.051.1.1<		2 700 0	89.87	180.09	2 272 2	-674.0	-1 1	674.0	0.00	486 494 24	421 091 35	
1.0010101001.111111011111110 <t< td=""><td></td><td>2,800.0</td><td>89.87</td><td>180.09</td><td>2 272 4</td><td>-774 0</td><td>-1.2</td><td>774.0</td><td>0.00</td><td>486 394 24</td><td>421,091,20</td><td></td></t<>		2,800.0	89.87	180.09	2 272 4	-774 0	-1.2	774.0	0.00	486 394 24	421,091,20	
1.101.01.01.01.11<		2,000.0	89.87	180.09	2,272.4	-874.0	-1 4	874.0	0.00	486 294 24	421 091 05	
1.1.1		3,000,0	89.87	180.09	2,272.8	-974 (1	-1.5	974.0	0.00	486 194 24	421 090 90	
3.200.089.87180.092.273.3-1,174.0-1.81,174.00.00485,994.25421,090.603.300.089.87180.092.273.5-1,274.0-1.91,274.00.00485,894.25421,090.453.400.089.87180.092.273.7-1,374.0-2.11,374.00.00485,794.25421,090.303.500.089.87180.092.274.0-1,474.0-2.21,474.00.00485,694.25421,090.163.600.089.87180.092.274.2-1,574.0-2.41,574.00.00485,594.25421,090.163.600.089.87180.092.274.4-1,674.0-2.51,674.00.00485,494.25421,089.863.800.089.87180.092.274.6-1,774.0-2.71,774.00.00485,394.25421,089.863.800.089.87180.092.274.9-1,874.0-2.71,774.00.00485,394.25421,089.713.900.089.87180.092.274.9-1,874.0-2.81,874.00.00485,294.25421,089.564.000.089.87180.092,275.1-1,974.0-2.81,874.00.00485,194.25421,089.564.000.089.87180.092,275.1-1,974.0-3.01,974.00.00485,194.25421,089.41		3,100,0	89.87	180.09	2 273 1	-1 074 0	-1.6	1 074 0	0.00	486 094 24	421 090 75	
3.200.089.87180.092.273.3-1,174.0-1.81.174.00.00485,994.25421,090.603,300.089.87180.092.273.5-1.274.0-1.91.274.00.00485,894.25421,090.453,400.089.87180.092.273.7-1.374.0-2.11.374.00.00485,694.25421,090.303,500.089.87180.092.274.0-1.474.0-2.21.474.00.00485,694.25421,090.163,600.089.87180.092.274.2-1.574.0-2.41.574.00.00485,594.25421,090.163,700.089.87180.092.274.4-1.674.0-2.51.674.00.00485,394.25421,089.863,800.089.87180.092.274.6-1.774.0-2.71.774.00.00485,394.25421,089.713,900.089.87180.092.275.1-1.974.0-2.81.874.00.00485,294.25421,089.564,000.089.87180.092.275.1-1.974.0-3.01.974.00.00485,194.25421,089.56		0,100.0	00.07	100.00	2,2,0.1	-1,014.0		7,07 1.0		100,00 1.2 1	421,000.0	
3,300.089.87180.092,273.5-1,274.0-1.91,274.00.00485,894.25421,090.453,400.089.87180.092,273.7-1,374.0-2.11,374.00.00485,794.25421,090.303,500.089.87180.092,274.0-1,474.0-2.21,474.00.00485,694.25421,090.163,600.089.87180.092,274.2-1,574.0-2.41,574.00.00485,594.25421,090.013,700.089.87180.092,274.4-1,674.0-2.51,674.00.00485,494.25421,089.863,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,394.25421,089.713,900.089.87180.092,274.9-1,874.0-2.81,874.00.00485,294.25421,089.564,000.089.87180.092,275.1-1,974.0-3.01,974.00.00485,194.25421,089.41		3.200.0	89.87	180.09	2,273.3	-1,174.0	-1.8	1,174.0	0.00	485,994.25	421,090.60	
3,400.089.87180.092,273.7-1,374.0-2.11,374.00.00485,794.25421,090.303,500.089.87180.092,274.0-1,474.0-2.21,474.00.00485,694.25421,090.163,600.089.87180.092,274.2-1,574.0-2.41,574.00.00485,594.25421,090.013,700.089.87180.092,274.4-1,674.0-2.51,674.00.00485,494.25421,089.863,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,394.25421,089.863,900.089.87180.092,274.9-1,874.0-2.81,874.00.00485,294.25421,089.564,000.089.87180.092,275.1-1,974.0-3.01,974.00.00485,194.25421,089.56		3,300.0	89.87	180.09	2,273.5	-1,274.0	-1.9	1,274.0	0.00	485,894.25	421,090.45	
3,500.089.87180.092,274.0-1,474.0-2.21,474.00.00485,694.25421,090.163,600.089.87180.092,274.2-1,574.0-2.41,574.00.00485,594.25421,090.013,700.089.87180.092,274.4-1,674.0-2.51,674.00.00485,494.25421,089.863,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,394.25421,089.713,900.089.87180.092,274.9-1,874.0-2.81,874.00.00485,294.25421,089.564,000.089.87180.092,275.1-1,974.0-3.01,974.00.00485,194.25421,089.41		3,400.0	89.87	180.09	2,273.7	-1,374.0	-2.1	1,374.0	0.00	485,794.25	421,090.30	
3.600.089.87180.092.274.2-1.574.0-2.41.574.00.00485,594.25421,090.013.700.089.87180.092.274.4-1.674.0-2.51.674.00.00485,494.25421,089.863.800.089.87180.092.274.6-1.774.0-2.71.774.00.00485,394.25421,089.713.900.089.87180.092.274.9-1.874.0-2.81.874.00.00485,294.25421,089.564,000.089.87180.092.275.1-1.974.0-3.01.974.00.00485,194.25421,089.41		3,500.0	89.87	180.09	2,274.0	-1,474.0	-2.2	1,474.0	0.00	485,694.25	421,090.16	
3.700.089.87180.092.274.4-1.674.0-2.51.674.00.00485,494.25421,089.863,800.089.87180.092.274.6-1.774.0-2.71.774.00.00485,394.25421,089.713,900.089.87180.092.274.9-1.874.0-2.81.874.00.00485,294.25421,089.564,000.089.87180.092.275.1-1.974.0-3.01.974.00.00485,194.25421,089.41		3,600.0	89.87	180.09	2,274.2	-1,574.0	-2.4	1,574.0	0.00	485,594.25	421,090.01	
3,800.089.87180.092,274.6-1,774.0-2.71,774.00.00485,394.25421,089.713,900.089.87180.092,274.9-1,874.0-2.81,874.00.00485,294.25421,089.564,000.089.87180.092,275.1-1,974.0-3.01,974.00.00485,194.25421,089.41		3.700.0	89,87	180.09	2,274.4	-1,674.0	-2.5	1,674.0	0.00	485,494.25	421,089.86	
3.900.0 89.87 180.09 2.274.9 -1.874.0 -2.8 1.874.0 0.00 485.294.25 421,089.56 4,000.0 89.87 180.09 2.275.1 -1.974.0 -3.0 1.974.0 0.00 485,194.25 421,089.41		3,800.0	89.87	180.09	2,274.6	-1,774.0	-2.7	1,774.0	0.00	485,394.25	421,089.71	
4,000.0 89.87 180.09 2,275.1 -1,974.0 -3.0 1,974.0 0.00 485,194.25 421,089.41		3.900.0	89.87	180.09	2,274.9	-1,874.0	-2.8	1,874.0	0.00	485,294.25	421,089.56	
		4,000.0	89.87	180.09	2,275.1	-1,974.0	-3.0	1,974.0	0.00	485,194.25	421,089.41	

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MEC Survey Report



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Company:) Project: Site: Well: Wellbore: Design:	Mack Energy Cor Eddy County Pawn State #1H State #1H #1H Plan #1	p				Local Co-ordi TVD Reference MD Reference North Reference Survey Calcul Database:	nate Reference e ce: ation Method:	Site Pawn State i WELL @ 4234.0u WELL @ 4234.0u Grid Minimum Curvatu EDM 5000.1 Sing	#1H Jsft (Original Well Elev) Jsft (Original Well Elev) Jre Jle User Db	
Planned Survey MD (usft)	lnC+ (*)	Azi.(azimuth)	TVD (usft)	N/S (usft)	E/W; (usft)	V: Sec (usft)	DLeg (!/100usft)	Northing (usft)	Easting (usit)	
4,10	0.0 8	9.87 180.0	09 2,275.3	-2,074.0	-3.1	2,074.0	0.00	485,094.25	421,089.26	1. 94 A
4,20	0.0 8	9.87 180.0	09 2,275.5	-2,174.0	-3.3	2,174.0	0.00	484,994.25	421,089.11	
4,30	0.0 8	9.87 180.0	2,275.8	-2,274.0	-3.4	2,274.0	0.00	484,894.25	421,088.96	
4,40	0.0 8	9.87 180.0	2,276.0	-2,374.0	-3.6	2,374.0	0.00	484,794.25	421,088.82	
4,50	0.0 8	9.87 180.0	2,276.2	-2,474.0	-3.7	2,474.0	0.00	484,694.25	421,088.67	
4,60	0.0 8	9.87 180.0	2,276.4	-2,573.9	-3.9	2,574.0	0.00	484,594.25	421,088.52	
4,70	0.0 8	9.87 180.0	2,276.7	-2,673.9	-4.0	2,674.0	0.00	484,494.25	421,088.37	
4,80	0.0 8	9.87 180.0	2,276.9	-2,773.9	-4.2	2,774.0	0.00	484,394,25	421,088.22	
- 4,90	0.0 8	9.87 180.0	2,277.1	-2,873.9	-4.3	2,874.0	0.00	484,294.25	421,088.07	
5,00	0.0 89	9.87 180.0	2,277.3	-2,973.9	-4.5	2,974.0	0.00	484,194.25	421,087.92	
. 5,10	0.0 89	9.87 180.0	2,277.6	-3,073,9	-4.6	3,074.0	0.00	484,094.25	421,087.77	
5,20	0.0 89	9.87 180.0	9 2,277.8	-3,173.9	-4.8	3,174.0	0.00	483,994.25	421,087.62	
5,30	0.0 89	9.87 180.0	2,278.0	-3,273.9	-4.9	3,274.0	0.00	483,894.25	421.087.48	
5,40	0.0 89	9.87 180.0	9 2,278.2	-3,373.9	-5.1	3.374.0	0.00	483,794,25	421,087.33	
5,50	0.0 89	9.87 180.0	9 2,278.5	-3,473.9	-5.2	3,474.0	0.00	483,694.25	421,087.18	
5,60	0.0 89	9.87 180.0	2,278.7	-3,573.9	-5.4	3,574.0	0.00	483,594.25	421,087.03	
5,70	0.0 89	9.87 180.0	9 2,278.9	-3,673.9	-5.5	3,673.9	0.00	483,494.25	421,086.88	
5,80	0.0 89	9.87 180.0	9 2,279.1	-3,773.9	-5.7	3,773.9	0.00	483,394.25	421,086.73	
5.90	0.0 89	9.87 180.0	9 2,279.4	-3,873.9	-5.8	3,873.9	0.00	483,294.25	421,086.58	
6,00	0.0 89	9.87 180.0	9 2,279.6	-3.973.9	-6.0	3,973.9	0.00	483,194.26	421,086.43	
6,10	0.0 89	9.87 180.0	2,279.8	-4,073.9	-6.1	4,073.9	0.00	483,094.26	421,086.28	
6.20	0.0 89	9.87 180.0	2,280.0	-4.173.9	-6.3	4,173.9	0.00	482,994.26	421,086.14	
6,30	0.0 89	9.87 180.0	2,280.3	-4,273.9	-6.4	4,273.9	0.00	482,894.26	421,085.99	
6,40	0.0 89	9.87 180.0	9 2,280.5	-4,373.9	-6.6	4,373.9	0.00	482,794.26	421.085.84	
6,50	0.0 89	9.87 180.0	9 2,280.7	-4,473.9	-6.7	4,473.9	0.00	482,694.26	421,085.69	
6,60	0.0 89	9.87 180.0	2,280.9	-4,573.9	-6.9	4,573.9	0.00	482,594.26	421,085.54	
6.62	6.9 89	9.87 180.0	9 2,281.0	-4,600.8	-6.9	4,600.8	0.00	482,567.40	421,085.50	

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COMPASS 5000.1 Build 56

Enorgy Economic	MEC MEC Survey Report	MACK Energy Envertine
Company: Mack Energy Corp Project: Edy County Site Pawn State #1H Wellbore: #1H Design: Plan #1 Planned:Survey	Local Co-ordina TVD Reference MD Reference North Reference Survey Calculat Database	te Reference: Site Pawn State #1H WELL @ 4234.0usft (Original Well Elev) WELL @ 4234.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db
MD Inc Azi (azin (usft) (:)	nuth), PTVD (N/S, E/W V: Sec (usft) (usft) (usft) (usft) Approved By:	DL'eg Northing Easting ((//00üsft) (usft) (usft)

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Mack Energy Corporation Minimum Blowout Preventer Requirements 3000 psi Working Pressure 13 5/8 inch- 3 MWP 11 Inch - 3 MWP EXHIBIT #10

Stack Requirements

NO.	Items	Min.	Min.
		I.D.	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 shoke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		Choice
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

CONTRACTOR'S OPTION TO

 CONTRACTOR'S OPTION TO FURNISH:
 All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.

Flanged Valve

16

- 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.
- 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.
- Extra set pipe rams to fit drill pipe in use on location at all times.
 Type RX ring gaskets in place of
- 9. Type RX ring gaskets in place of Type R.
 - MEC TO FURNISH:
 - I. Bradenhead or casing head and side valves.
 - 2. Wear bushing. If required.

GENERAL NOTES:

1 13/16

10.

ME

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



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

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



Mack Energy Corporation

MIMIMUM 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										
	3,000 MWP			- 5,	,000 MWP		1(0,000 MWP		
No.		I.D.	1		1.D.			I.D.		
			Nominal	Rating		Nominal	Rating		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		<u> </u>	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

Only one required in Class 3M (1)

Gate valves only shall be used for Class 10 M (2) (3)

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

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating. 1.

All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP. 2.

All lines shall be securely anchored. 3.

Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available. 4.

- alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the 5. 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



Mack Energy Corporation Onshore Order #6 Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- 1. The hazards an 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 well 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. Remote chole will be used.
- 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.

Attached to Form 3160-3 Mack Energy Corporation Pawn State Com #1 SL: 330 FNL & 2285 FWL, NE/NW, Sec. 3 T18S R31E BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

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. Cellular communications in company vehicles including hand held devices.
- 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.

Attached to Form 3160-3 Mack Energy Corporation Pawn State Com #1 SL: 330 FNL & 2285 FWL, NE/NW, Sec. 3 T18S R31E BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

B. There will be no drill stem testing.



H2S Monitors with alarms at the bell nipple

Wind Direction Indicators

Safe Briefing areas with caution signs and

breathing equipment min 150 feet from Well bead

Mack Energy Corporation Call List, Eddy County

Artesia (575)	Cellular	Office	Home
Jim Krogman		748-1288	746-2674
Donald Archer		748-1288	748-2287
Chris Davis		748-1288	
Emilio Martinez		748-1288	
Matt Buckles		748-1288	
Kevin Garrett		748-1288	

Agency Call List (575)

Artesia

State Police	.746-2703
City Police	.746-2703
Sheriff's Office	.746-9888
Ambulance	911
Fire Department	.746-2701
LEPC (Local Emergency Planning Committee	746-2122
NMOCD	748-1283

Carlsbad

State Police	885-3137
City Police	885-2111
Sheriff's Office	887-7551
Ambulance	911
Fire Department	885-2111
LEPC (Local Emergency Planning Committee	887-3798
Bureau of Land Management	887-6544
New Mexico Emergency Response Commission	(505)476-9690
24 Hour	(505)827-9126
Natonal Emergency Response Center (Washington)	(800)424-8802

Emergency Services

Boots & Coots IWC	.1-800-256-9688 or (281)931-8884
Cudd pressure Control	(915)699-0139 or (915)563-3356
Halliburton	
B. J. Services	746-3569

Flight For Life-Lubbock, TX	(806)743-9911
Aerocare-Lubbock, TX	(806)747-8923
Med Flight Air Amb-Albuquerque, NM	(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM	(505)272-3115

SURFACE USE AND OPERATING PLAN

1: Existing Access Roads

- A. All roads to the location are shown in Exhibit #6. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling well, will be done where necessary.
- B. Directions to Location: From the intersection of U.S. HWY #82 and CO. RD #222 (Shugart Rd.) intersection. Go South approx.. 3.25 miles on CO RD. #222, turn left and go NE approx. 0.75 miles, turn right and go East approx.. 0.45 miles, turn left and go North approx.. 0.55 miles to road survey, follow survey 550' east to location.
- C. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.



Exhibit #6

1. Proposed Access Road:

Location Verification map shows the 230' of new access road to be constructed. Proposed upgrade of existing road will be done along staked centerline survey. Necessary maintenance will be done to insure traffic stays within proposed ROW. The road 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 3 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, cattleguard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit.
- F. The proposed access road as shown in Exhibit #6 has been centerline flagged by John West Surveying Company, Hobbs, New Mexico.

2. Location of Existing Wells:

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



3. 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) Yeso Completion: Will be contained on the Pawn State Com #1 well location. The Facility is shown in Exhibit #134 #15.
 - 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
- Guli#
- 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
- 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power.
- C. Proposed flow lines will be contained on location. Flowline will be a 2" poly surface line, 160' in length with a 40 psi working pressure.



Exhibit #13

4. Location and Type of Water Supply:

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

5. Source of Construction Materials:

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

6. Methods of Handling Waste:

- A. Drill cuttings not retained for evaluation purposes will be disposed into the steel tanks and hauled to an approved facility.
- B. Drilling fluids will be contained in steel tanks using a closed loop system Exhibit #12.
- C. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) until pumped to an approved disposal system; produced oil will be collected in steel tanks until sold.
- D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. All water and fluids will be disposed of into an approved facility. No toxic waste or hazardous chemicals will be produced by this operation.
- E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.
- F. Sewage and Gray Water will be place in container and hauled to a approved facility.

7. Ancillary Facilities:

1

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

Pawn State Com #1 SL: 330 FNL & 2285 FWL, NE/NW, Sec. 3 T18S R31E BHL: 355 FSL & 2285 FWL, SESW, Sec. 3 T18S R31E Eddy County, NM

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (3000 psi WP) minimum preventer, 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 nippled up on the 13 3/8" surface casing and tested by a 3rd party to 2000 psi. The 13 5/8" BOP will then be nippled 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 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 #11) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #12) with a minimum 3000 psi WP rating

7. Types and Characteristics of the Proposed Mud System:

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

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-375'	Fresh Water	8.3-8.7	28	N.C.
375-2600	Fresh Water	8.3-8.7	28	N.C.
2600'-TD'	Fresh Water	8.3-8.7	28	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.
- C. If gas is encountered. Well will be shut-in and a Mud Gas Seperator will be installed.

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:

9. Plans for Restoration of the Surface:

- A. Upon completion of the proposed operations, if the well is completed, any additional caliche required for facilities will be obtained from a BLM approved caliche pit.
- B. 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.
- C. 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 and reseeded as per BLM specifications.
 - D. Exhibit #15 below shows the proposed downsized well site after Interim Reclamation. Dimensions are estimates on present conditions and are subject to change.



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	MACK ENERGY CORPORATION
LEASE NO.:	NM114947
WELL NAME & NO.:	1-PAWN STATE COM
SURFACE HOLE FOOTAGE:	330'/N. & 2285'/W.
BOTTOM HOLE FOOTAGE	355'/S. & 2285'/W.
LOCATION:	Section 3, T. 23 S., R. 23 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

General Provisions Permit Expiration Archaeology, Paleontology, and Historical Sites **Noxious Weeds Special Requirements Painting Requirement** Berming Well Pad **Road Requirement** Dry Hole Marker Requirement Cave/Karst **Communitization Agreement Construction** Notification Topsoil) Closed Loop System Federal Mineral Material Pits Well Pads Roads **Road Section Diagram** 🛛 Drilling H₂S Requirements High Cave/Karst Logging Requirements Waste Material and Fluids **Production (Post Drilling)** Well Structures & Facilities **Pipelines Electric Lines Interim Reclamation** Final Abandonment & Reclamation

GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

I. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

II. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

III. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

IV. SPECIAL REQUIREMENT(S)

Painting Requirement:

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color <u>Shadow Gray</u> from the BLM Standard Environmental Color chart. Mr. Sherrell received a BLM color chart on 03/29/2012 during the Knight Federal Com #1 onsite or one can be picked up at the BLM office in Carlsbad, NM.

Berming of Well Pad:

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The berm shall be constructed at a minimum of 12 inches high with impermeable mineral material.
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

Road Requirement:

The existing access road that the proposed new road ties into shall not be widened more than 15 feet all the way back to the highway.

Ground-level Abandoned Well Marker:

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain $1\frac{1}{2}$ times the content of the largest tank.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:

Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cavebearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

V. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

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

F. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

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

Crowning

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

Ditching

Ditching shall be required on both sides of the road.

Turnouts

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



Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch

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

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

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

Culvert Installations

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

Cattleguards

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

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.



Figure 1 - Cross Sections and Plans For Typical Road Sections

VI. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

- 1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is encountered in quantities greater than 10 PPM the well shall be shut in and a mud/gas separator installed and flare line must be extended pursuant to Onshore Oil and Gas Order #6. After detection, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items.
- 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. If the drilling rig is removed without approval an Incident of Non-Compliance will be written and will be a "Major" violation.
- 3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out 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 for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

HIGH CAVE/KARST –IF LOST CIRCULATION OCCURS WHILE DRILLING THE 7-7/8" HOLE, THE CEMENT PROGRAM FOR THE 5-1/2" CASING WILL NEED TO BE MODIFIED AND <u>THE BLM IS TO BE CONTACTED PRIOR TO</u> <u>RUNNING THE CASING.</u> A MINIMUM OF TWO CASING STRINGS CEMENTED ACROSS THE CAVE ZONE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

Possible lost circulation in the San Andres formation.

- 1. The 13-3/8 inch surface casing shall be set at approximately 375 feet and cemented to the surface.
 - 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 surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
 - 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 cementing will be done prior to drilling out that string.

- 2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is: (Ensure casing is set below cave potential zone at 1600')
 - Cement to surface. If cement does not circulate see B.1.a, c-d above. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

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. Operator installing a 3M and testing as a 2M.
 - a. For surface casing only: If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
- 3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
- d. The results of the test shall be reported to the appropriate BLM office.
- e. 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.
- f. 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. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CRW 051313

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color <u>Shadow Gray</u> from the BLM Standard Environmental Color chart.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

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

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species

	<u>Ib/acre</u>
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed