Form 3160-5
(August 2007)

OCD Artesia

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No 1004-0137
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2.

1. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other	5 Lease Serial No.: NMNM-89882
	6. If Indian, Allottee or Tribe Name:
	7. If Unit of CA/Agreement, Name and/or No
	8. Well Name and No.: Razorback Federal #1
2 Name of Operator: Mack Energy Corporation	9. API Well No: 30-015-39103
3a Address: P.O. Box 960 Artesia, NM 88210-0960 / 3b Phone No. *(include area code)*: (575) 748-1288	10. Field and Pool or Exploratory Area: Tamano; San Andres
4 Location of Well *(Footage, Sec., T,R,M, or Survey Description)*: SHL 710 FNL & 660 FWL, BHL 355 FNL & 2285 FWL Sec. 3 T18S R31E	11. Country or Parish, State: Eddy, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☒ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans .	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operation. Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Mack Energy is proposing to change the casing strings as follows:

Surface Casing: Dtill a 17 1/2" hole to 800', run 13 3/8" 48# H-40 and cement w/700sx.
Intermediate Casing: Drill a 12 1/4" hole to 2050', run 9 5/8" 36# J-55 and cement w/800sx. If water flow or lost circulation is encountered we will do a two stage cement job. Placement of DV tool will be determined at that time.
Production Casing: Drill 8 3/4 hole to 5693', run 5 1/2 17# P-110 and cement w/1010sx.

Cement detail and Safety Factors attached.

RDade 02/02/12
Accepted for record
NMOCD

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14 I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*: Jerry W. Sherrell — Title: Production Clerk

Signature: Jerry W. Sherrell — Date: 1/18/12

APPROVED
JAN 18 2012
WESLEY W. INGRAM
PETROLEUM ENGINEER

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice 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 — Office

Title 18 U.S.C Section 1001 and Title 43 U S C. Section 1212, make it a crime for my 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.

(Instructions on page 2)

Surface-800' 13 3/8"48# H-40

Stage 1	Slurry	Density	Yield	# of sacks	% Excess	Slurry Top
Lead	C + 4%PF20 + 2%PF1 + .25#/sk PF29	13.5	1.75	500	100	Surface
Tail	Class C 1% PF1	14.8	1.34	200	100	500

Comments:	

Intermediate- 2050' 9 5/8"36# J-55

Stage 1	Slurry	Density	Yield	# of sacks	% Excess	Slurry Top
Lead	C + 4%PF20 + 2%PF1 + .25#/sk PF29	13.5	1.75	600	100	Surface
Tail	Class C 1% PF1	14.8	1.34	200	100	1500

Comments:	If water flow or lost circulation is encountered we will do a 2 stage cement job. Placement of the DV-Tool will be determined at that time.

Production-5693' 5 1/2" 17 # P-110 BTC

Stage 1	Slurry	Density	Yield	# of sacks	% Excess	Slurry Top
Lead	POZ/C + 5%PF44 + 6%PF20 + 1.5% PF112 + .125/sk PF130 + .2# sk PF42 + .2%PF46 + .2%PF13	12.8	1.95	385	35	Surface
Tail	PVL + .2% PF167 + .2% PF65 + .2% PF 46 + .2% PF13	13.0	1.47	625	35	3000'

Comments:	

Stage 2	Slurry	Density	Yield	# of sacks	% Excess	Slurry Top
Lead						
Tail						

Comments:	

Razorback Federal 1
30-015-39103
Mack Energy Corporation
January 18, 2012
Conditions of Approval

1. **Additional cement may be required on the production casing as the excess calculates to 13%. Surface – 89%. Intermediate – 61%.**
2. **Operator shall submit sundry requesting approval if a DV tool is needed due to water flows on either the intermediate or production casing strings as water flows are indicated in the Salt and Grayburg.**
3. **Operator stated in the telephone discussion (January 17, 2012) that a pilot hole would be drilled to 5650', the well logged and then the horizontal leg drilled. Operator shall set a Class C cement plug at the bottom of the pilot hole to a minimum of 50' above the Bone Spring top. Operator to contact BLM for witness of tag of this plug. Operator shall also set a plug over the top of the Brushy Canyon. This plug shall be 145' in length and shall be tagged a minimum of 50' above the top of the Brushy Canyon. Operator has the option of placing one plug from the bottom of the pilot hole to the KOP, which eliminates the tags.**

WWI 011812

Casing Design **Well:** Razorback Federal [redacted] #1

String Size & Function: 13 3/8 in surface x intermediate

Total Depth: 800 ft

Pressure Gradient for Calculations **(While drilling)**

Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 399.36 psi Burst: 399.36 psi, joint strength: 399.36 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	800 ft to 0 ft			Make up Torque ft-lbs		Total ft = 800
O.D.	Weight	Grade	Threads	opt.	min.	mx.
13.375 inches	48 #/ft	H-40	ST&C	3,220	2,420	4,030
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
740	1,730 psi	322 ,000 #		541 ,000 #		12.559

2nd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O D	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi					

4th s

Casing Design **Well:** Razorback Fed #1

String Size & Function: 9 5/8 in surface intermediate x

Total Depth: 2050 ft

Pressure Gradient for Calculations **(While drilling)**

Mud weight, collapse: 10.2 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10.2 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10.2 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1087.32 psi Burst: 1087.32 psi, joint strength: 1087.32 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	2050 ft to 0 ft			Make up Torque ft-lbs			Total ft = 2050
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
9.625 inches	36 #/ft	J-55	ST&C	4,530	3,400	5,660	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
2,020 psi	3,520 psi	394 ,000 #		564 ,000 #		8.765	

2nd segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D	Weight	Grade	Threads	opt	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi						

Casing Design **Well:** Razorback Federal [redacted] #1

String Size & Function: 5 1/2 in surface intermediate

Total Depth: 5693 ft Producution x

Pressure Gradient for Calculations **(While drilling)**

Mud weight, collapse: 10.4 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10.4 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10.4 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 3078.774 psi Burst: 3078.774 psi, joint strength: 3078.774 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment	5693 ft to 3950 ft			Make up Torque ft-lbs			Total ft = 1743
O.D	Weight	Grade	Threads	opt.	min.	mx.	
5.5 inches	17 #/ft	HCP-110	Buttress	4,620	3,470	5,780	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
8,580 psi	10,640 psi-lrcr	568 ,000 #		546 ,000 #		4.767	

2nd segment	ft to 0 ft			Make up Torque ft-lbs			Total ft =
O D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			

3rd segment	0 ft to 0 ft			Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	,000 #		,000 #			