Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
OCD Artesia
JAN 03 2014
NMOCD ARTESIA

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM030752

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
WAR HORSE FEDERAL 3H

2. Name of Operator
MURCHISON OIL & GAS INC
Contact: CINDY COTTRELL
E-Mail: ccottrell@jdmii.com

9. API Well No.
30-015-41227

3a. Address
1100 MIRA VISTA BLVD
PLANO, TX 75093-4698

3b. Phone No. (include area code)
Ph: 972-931-0700 Ext: 109

10. Field and Pool, or Exploratory
WILDCAT G-04 S182927M

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 21 T18S R29E 2290FSL 175FEL

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK 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
☐ Subsequent Report	☒ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Murchison Oil and Gas is proposing to alter the casing design.

The original casing design was to set the 9-5/8" casing at 2895' in the top of the San Andres formation. Then to set 7" casing at 7000' in the First Bone Spring Sand. And use a 4.5" liner and hanger for completions.

The proposed new casing design will be to run the 9-5/8" casing to a depth of 6500' in the Bone Spring Lime formation. Eliminating the use of the 7" casing string and 4.5" liner and liner hanger. After the the 9-5/8" casing is set, 8.5" hole will be drilled to TD and 5.5" 17# P-110 casing will be run and cemented to surface. Cement volumes will be adjusted accordingly.

Attached are the original WBS and the proposed WBS. Both contain casing and cement.

Accepted for record
NMOCD JE 1/3/2014

SEE ATTACHED FOR CONDITIONS OF APPROVAL

RECEIVED
JAN 03 2014
NMOCD ARTESIA

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #226896 verified by the BLM Well Information System
For MURCHISON OIL & GAS INC, sent to the Carlsbad
Committed to AFMSS for processing by JOHNNY DICKERSON on 11/21/2013 ()

Name *(Printed/Typed)* STEVE MORRIS — Title SENIOR DRILLING ENGINEER

Signature (Electronic Submission) — Date 11/14/2013

APPROVED
DEC 24 2013
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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 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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Mason, Jennifer <jamason@blm.gov>

RE: War Horse Fed Com #3H

1 message

Steve Morris <smorris@jdmii.com> Tue, Dec 17, 2013 at 4:20 PM
To: "jamason@blm.gov" <jamason@blm.gov>
Cc: Cindy Cottrell <ccottrell@jdmii.com>

Jennifer

I received your phone call and reviewed what I had submitted in the last email. In my haste I had forgotten to change the weight of the 9-5/8" casing. It should have read 47 ppf as per the revised table below. We currently are using 40ppf on our other wells and my mind must have confused the two.

- See COA

HOLE	CASING	WEIGHT	GRADE	CONN	MD/RKB	STAGE
	20"	Structural	LP	N/A	0' – 115'	Conductor
16"	13⅜"	~~54.0~~ 54.5 ppf	J-55	ST&C	0' – ~~290'~~ 290'	Surface
12¼"	9⅝"	47.0 ppf	L-80	LT&C	0' – 6500'	Intermediate
8.5"	5½"	17 ppf	P-110	BT&C	0' – ~~12392'~~ 12,215' per directional plan	Completion

SIZE	COLLAPSE	SF	BURST	SF	TENSION(Klbs)	SF
13⅜"	1130	9.27	2730	5.73	514	33.9
9⅝"	4760	1.64	6870	2.03	893	2.92
5½"	7480	2.09	10640	2.14	568	3.2

13.375" Surface Casing

Cement with 450sx - 14.8ppg – 1.35cuft/sk – 6.33gal/sk - Class Is an API cement intended for surface to a depth of 6000'. It is sulfate resistant and yields early compressive strengths.) C (+ 2% CACL2 (An accelerating additive used for slurries that require fast set times and early compressive strength) + 0.25# Cello-

flake (Used as an LCM) + 0.25% R-38 (Is a powdered defoamer for all types of oil well cement.)

Cement with 100% excess – Circulate cement to surface. If cement does not circulate a 1" grout string will be used to perform a top job.

See COA

9.625" Intermediate Casing

Cement with 980sx Lead – 12.8ppg – 1.92cuft/sk – 10.06gal/sk – Class C 35/65 (Is an API cement intended for surface to a depth of 6000'. It is sulfate resistant and yields early compressive strengths.) + 6% Bentonite + 0.3% C-16A (Is a non-retarding fluid loss additive with particular application in pozzolan slurries. It is highly effective at exceptionally low loadings (0.5% or below) in many slurry designs.) + 2# Star Seal (Is a loss circulation additive for severe loss circulation problems. It increases cement height and the ability to circulate cement through sloughed out formations. Typical loadings are 2#/sk to 5#/sk.) + 1% CACL2 (Is an accelerating additive used for slurries that require fast set times and early strength development) + 0.25% R-38 (Is a powdered defoamer for all types of oil well cement. Typical loadings are 0.25% to 0.5% BWOC.)+ 5% Salt (Salt is a multi purpose additive used as an accelerator from 1% to 6% BWOW, a bonding agent from 6% to 14%, a retarder from 14% to 26% BWOW.)

See COA

Cement with 120sx Tail (500') – 14.8ppg – 1.33cuft/sk – 6.31 gal/sk – Class C (Is an API cement

intended for surface to a depth of 6000'. It is sulfate resistant and yields early compressive strengths.)

+ 0.25% R-38 (Is a powdered defoamer for all types of oil well cement.)

Cement with 55% excess – Circulate cement to surface. If cement does not circulate a 1" grout string will be used to perform a top job

See COA

5.5" Production Casing

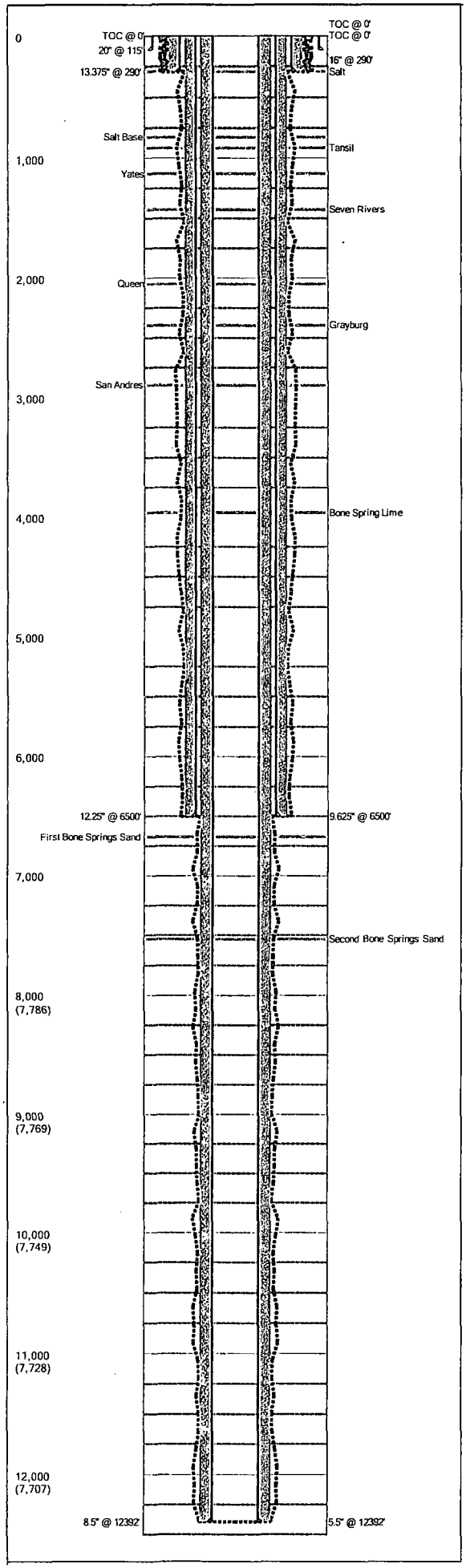
Cement with 918sx Lead (0'-7700') – 12.8ppg 1.92cuft/sk – (50:50) Poz (Fly Ash):Class H Cement +0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 gps FP-6L +

10% bwoc Bentonite + 0.3% bwoc Sodium Metasilicate + 0.5% bwoc R-21 + 0.3% bwoc FL- 52A + 129.4% Fresh Water

Cement with 786sx Tail (7700'-TD) – 13ppg 1.64cuft/sk - (15:61:11) Poz (Fly Ash):Class C Cement:CSE-2 + 0.005 lbs/sack Static Free + 4% bwow Sodium Chloride + 3 lbs/sack LCM-1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.2% bwoc Sodium Metasilicate + 0.15% bwoc R-21 + 0.6% bwoc FL-52A + 76.5% Fresh Water

Regards,

Steve Morris



Last Updated: 10/11/2013 11:41 AM

Field Name	Lease Name	Well No.
Mustang	War Horse Federal Com	3H

County, State	API No.
Eddy, New Mexico	30015412270000

Version	Version Tag
3	

G.L. (ft)	K.B. (ft)	Sec.	Township/Block	Range/Survey
3,479.3	3,501.3	21	18S	29E

Operator	Well Status	Latitude	Longitude
Murchison Oil & Gas INC.	Planning	32.732000	104.071800

Footage Call
2290' FSL & 175' FEL From Section

PropNum	Spud Date	Comp. Date
1		

Additional Information

Prepared By	Updated By	Last Updated
Steve Morris	Steve Morris	10/11/2013 11:41 AM

Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	16.000	0	290	
	12.250	290	6,500	
	8.500	6,500	12,392	

Tubular Summary

Date	Description	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)
	Conductor Casing	20.000	54.50	C-55	0	115
	Surface Casing	13.375	54.50	J-55	0	290
	Intermediate Casing	9.625	40.00	L-80	0	6,500
	Production Casing	5.500	17.00	P-110	0	12,392

Casing Cement Summary

Date	No. Sx	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	450	13.375	0	290	
	775	9.625	0	6,500	
	850	5.500	0	12,392	

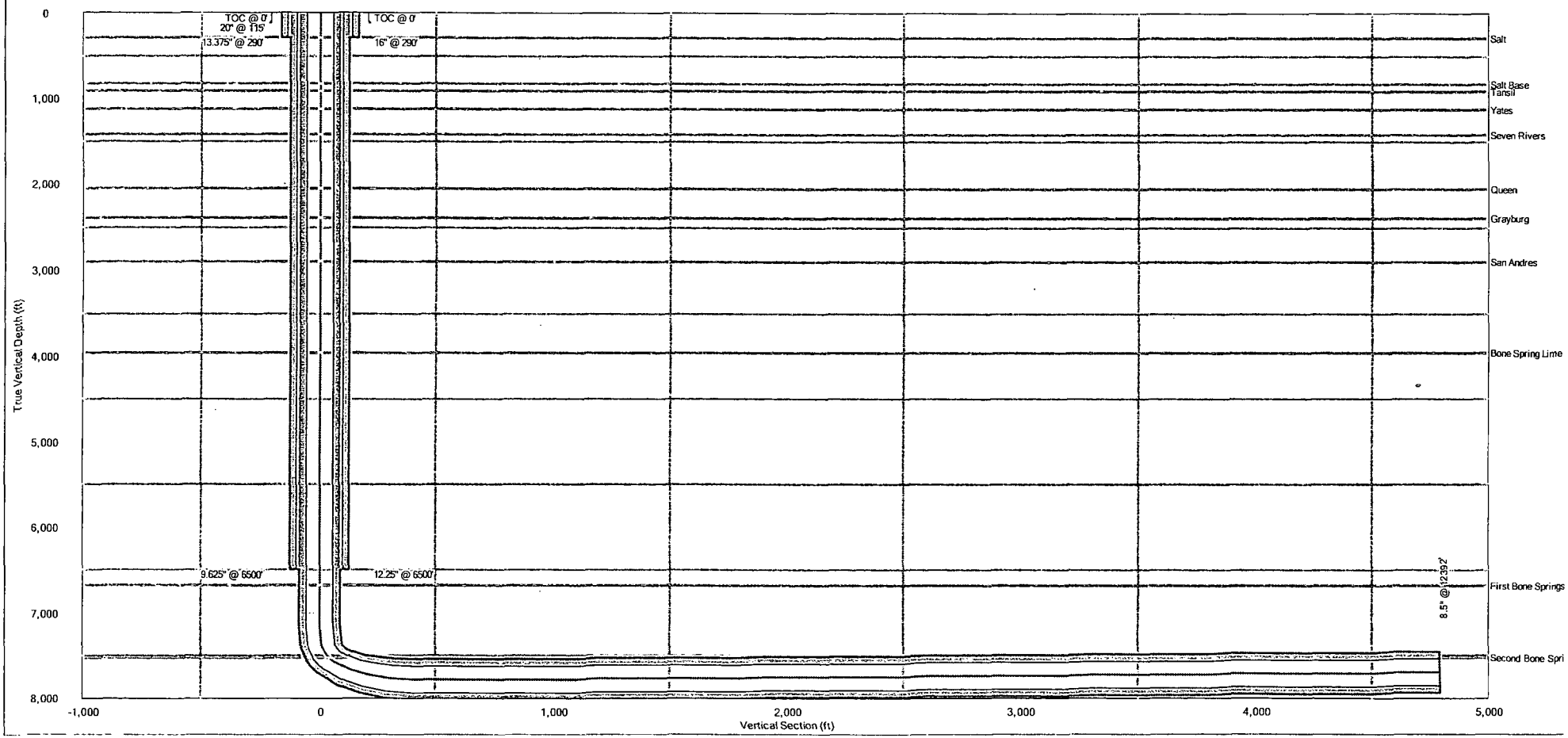
Formation Tops Summary

Formation	Top (MD ft)	Comments
Salt	290	
Salt Base	825	
Tansil	915	
Yates	1,125	
Seven Rivers	1,425	
Queen	2,050	
Grayburg	2,395	
San Andres	2,895	
Bone Spring Lime	3,960	
First Bone Springs Sand	6,675	
Second Bone Springs Sand	7,525	

Field Name	Lease Name	Well No.	County, State	API No.	Version	Version Tag	Spud Date	Comp. Date	G.L. (ft)	K.B. (ft)
Mustang	War Horse Federal Com	3H	Eddy, New Mexico	30015412270000	3				3,479.3	3,501.3

Sec.	Township/Block	Range/Survey	Footage Call	Latitude	Longitude	Well Status	PropNum	Operator
21	18S	29E	2290' FSL & 175' FEL From Section	32.732000	104.071800	Planning	1	Murchison Oil & Gas INC.

Last Updated	Prepared By	Updated By	Additional Information
10/11/13 11:41:29 AM	Steve Morris	Steve Morris	



CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Murchison Oil & Gas, Inc.
LEASE NO.:	NMNM-030752
WELL NAME & NO.:	War Horse Fed Com 3H
SURFACE HOLE FOOTAGE:	2290' FSL & 0175' FEL
BOTTOM HOLE FOOTAGE	2290' FSL & 0330' FWL
LOCATION:	Section 21, T. 18 S., R 29 E., NMPM
COUNTY:	Eddy County, New Mexico

The COAs from 11/04/2013 still stand with the following drilling modifications:

I. 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. **A Hydrogen Sulfide (H2S) Drilling Plan shall be activated prior to drilling out the surface shoe. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

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. 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 is located, this does not include the dog house or stairway area.

4. **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. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

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. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. 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.

Possibility of water and brine flows in the Salado and Artesia Groups.
Possibility of lost circulation in the Grayburg and San Andres formations.

1. The **13-3/8** inch surface casing shall be set at approximately **280** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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.

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to BLM office.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **6500** feet, is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to negative 1% - Additional cement will be required.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to BLM office.

Centralizers required through the curve 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 see B.1.a, c-d above. **Excess calculates to 5% - Additional cement may be required.**

Formation below the 5-1/2" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to 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 **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

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**.

    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.

JAM 121813