

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD 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.**

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. NMNM0531277A
2. Name of Operator OXY USA INC.		6. If Indian, Allottee or Tribe Name
Contact: DAVID STEWART E-Mail: david_stewart@oxy.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address P.O. BOX 50250 MIDLAND, TX 79710	3b. Phone No. (include area code) Ph: 432-685-5717 Fx: 432-685-5742	8. Well Name and No. FNR 26 FEDERAL 4H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 26 T23S R30E SWSW 690FSL 373FWL 32.270434 N Lat, 103.858588 W Lon		9. API Well No. 30-015-41012
		10. Field and Pool, or Exploratory FORTY NINER RIDGE DEL,SE
		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
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize <input type="checkbox"/> Deepen <input type="checkbox"/> Production (Start/Resume) <input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing <input type="checkbox"/> Fracture Treat <input type="checkbox"/> Reclamation <input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair <input type="checkbox"/> New Construction <input type="checkbox"/> Recomplete <input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans <input type="checkbox"/> Plug and Abandon <input type="checkbox"/> Temporarily Abandon Change to Original APD
	<input type="checkbox"/> Convert to Injection <input type="checkbox"/> Plug Back <input type="checkbox"/> 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 recomple 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 recomple 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.)

OXY USA Inc. respectfully requests approval for the following changes to the drilling plan:

1. Casing design modification, to drill the well with smaller bit sizes:  
16" surface hole w/ 13-3/8" csg, 12-1/4" intermediate hole w/ 9-5/8" csg and 8-3/4" production w/  
7" csg and 6-1/8" completion hole w/ 4-1/2" csg. Details are below.

2. Cement program adjustment to the new bit/casing sizes. Cement program modifications detailed below.

3. 7" csg will be tested to 70% burst against a retrievable bridge plug for a second time, after drilling the 6-1/8" lateral section section and running the 4-1/2" completion system, before starting the hydraulic frac.

Accepted for record

NMOCD

8/28/2013

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

RECEIVED

AUG 26 2013

NMOCD ARTESIA

14. I hereby certify that the foregoing is true and correct.		Electronic Submission #213926 verified by the BLM Well Information System For OXY USA INC., sent to the Carlsbad Committed to AFMSS for processing by KURT SIMMONS on 07/23/2013 ()
Name (Printed/Typed)	DAVID STEWART	
Signature (Electronic Submission)		Title SR. REGULATORY ADVISOR
Date 07/17/2013		

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By	Title
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.	
BUREAU OF LAND MANAGEMENT CARLSBAD FIELD 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 \*\*

**Additional data for EC transaction #213926 that would not fit on the form**

**32. Additional remarks, continued**

**a. Surface Casing-**

13-3/8" 48# H-40 ST&C new csg @ 0-530', 16" hole w/ 8.6# mud

Coll Rating (psi)-740 Burst Rating (psi)-1730  
SF Coll-3.11 SF Burst-1.43 SF Ten-2.66

**b. Intermediate Casing-**

9-5/8" 36# J-55 LT&C new csg @ 0-3885', 12-1/4" hole w/ 10.0# mud

Coll Rating (psi)-2024 Burst Rating (psi)-3520  
SF Coll-2.50 SF Burst-1.27 SF Ten-2.07

**c. Production Casing**

7" 29# P-110 BT&C new csg @ 0-8120'M, 8-3/4" hole w/ 9.2# mud

Coll Rating (psi)-8532 Burst Rating (psi)-11220  
SF Coll-2.42 SF Burst-1.40 SF Ten-3.18

**c. Completion Casing**

4-1/2" 13.5# P-110 BT&C new csg @ 6900-12054'M, 6-1/8" hole w/ 9.2# mud

Coll Rating (psi)-10686 Burst Rating (psi)-12406  
SF Coll-2.88 SF Burst-1.45 SF Ten-2.63

Collapse and burst loads calculated using Stress Check with anticipated loads, see attached for design assumptions

a. Surface - Circulate cement to surface w/ 445sx PP cmt w/ 2% CaCl<sub>2</sub>, 14.8ppg 1.35 yield 1608# 24hr CS 150% Excess.

b. Intermediate - Circulate cement to surface w/ 1175sx HES light PP cmt w/ 5% Salt + 3#/sx Kol-Seal, 12.9ppg 1.87 yield 734# 24hs CS 105% Excess followed by 150sx PP cmt w/ 1% CaCl<sub>2</sub>, 14.8ppg 1.34 yield 2125# 24hr CS 105% Excess.

c. Production - Circulate cement w/ 700sx Tuned Light cmt w/ 14.8#/sx Silicalite 50/50 Blend + 15#/sx Schotchlite HGS-6000 w/ .125#/sx Poly-E-Flake + 3#/sx Kol-Seal 10.5ppg 2.68 yield 980# 24hr CS 125% Excess followed by 235sx PP cmt w/ 3#/sx salt, 14.8ppg 1.364 yield 2125# 24hr CS 75% Excess.

Contingency 2nd Stage- POST @ 3950' If lost circulation is present in the first stage and cement is not brought to surface, the contingency 2nd stage will be pumped as follows:

Circulate cement w/ 290sx HES light PP cmt w/ 3#/sx Salt, 12.4ppg 2.05 yield 450# 24hs (500#-29hrs) CS 10% Excess followed by 135sx PP cmt, 14.8ppg 1.33 yield 1849# 24hr CS 50% Excess.

d. Completion - not cemented, packer & sleeve system.

Description of Cement Additives: Calcium Chloride, Salt (Accelerator); Silicalite (Additive Material); Schotchlite HGS-6000 (Light Weight Additive); Kol-Seal, Poly-E-Flake (Lost Circulation Additive)

The above cement volumes could be revised pending the caliper measurement.

After hours of trying to input the BOP information and receiving the following message ("There was an unexpected database error while attempting to save.") I have attached the BOP information.

**OXY USA Inc.**  
**FNR 26 Federal #4H – 30-015-41012**  
**PRESSURE CONTROL EQUIPMENT**

**Surface: 0 – 530' None.**

**Intermediate & 8-3/4" Production: 3885' MD/TVD --- 8120 MD' / 7716' TVD** Intermediate and Production hole will be drilled using a 13-5/8" 10M three ram BOP stack with **5" DP Rams**, 5M annular preventer and a 5M Choke Manifold.

- See (ON)
- a) All BOP's and associated equipment will be tested in accordance with Onshore Order #2 (250/5000 psi on rams for 10 minutes each and 250/3500 for 10 minutes for annular preventer, equal to 70% of working pressure) with a third party BOP testing service before drilling out the surface casing shoe. A Multibowl wellhead system will be used in this well therefore the BOPE test will cover the test requirements for the 12-1/4 Intermediate and 8-3/4 Production sections.
  - b) The Surface and intermediate casings strings will be tested to 70% of its burst rating for 30 minutes. This will also test the seals of the lock down pins that hold the pack-off in place in the Multibowl wellhead system.
  - c) Pipe rams will be function tested every 24 hours and blind rams will be tested each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log. A 2" kill line and 3" choke line will be accommodated on the drilling spool below the ram-type BOP.
  - d) The BOPE test will be repeated within 21 days of the original test, on the first trip, if drilling the 12-1/4" intermediate or 8-3/4" production section takes more time than planned.
  - e) Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines, and choke manifold having a 5000 psi working pressure rating and tested to 5000 psi.
  - f) The Operator also requests a variance to connect the BOP choke outlet to the choke manifold using a co-flex hose manufactured by Contitech Rubber Industrial KFT. It is a 3" ID x 35' flexible hose with a 10,000 psi working pressure. It has been tested to 15,000 psi and is built to API Spec 16C. Once the flex line is installed it will be tied down with safety clamps. Certifications attached to original APD
  - g) BOP & Choke manifold as per approved APD
- See (DA)

**6-1/8" Production: 8120 MD' / 7716' TVD -- 12054' MD / 7766' TVD.** Production hole will be drilled using a 13-5/8" 10M three ram BOP stack with **4" DP Rams**, 5M annular preventer and a 5M Choke Manifold.

- a) After changing pipe rams from 5" to 4-1/2" all BOP's and associated equipment will be tested in accordance with Onshore Order #2 (250/5000 psi on rams for 10 minutes each and 250/3500 for 10 minutes for annular preventer, equal to 70% of working pressure) with a third party BOP testing service before drilling out the surface casing shoe.
- b) The 7" production casings string will be tested to 70% of its burst rating for 30 minutes
- c) As above
- d) As above
- e) As above
- f) As above
- g) As above

## **Casing Design Assumptions:**

### **Burst Loads**

#### **CSG Test (Surface)**

- Internal: Displacement fluid + 70% CSG Burst rating
- External: Pore Pressure from section TD to surface

#### **CSG Test (Intermediate)**

- Internal: Displacement fluid + 70% CSG Burst rating
- External: Pore Pressure from the Intermediate hole TD to Surface CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

#### **CSG Test (Production)**

- Internal: Displacement fluid + 80% CSG Burst rating
- External: Pore Pressure from the well TD the Intermediate CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

#### **Gas Kick (Surface/Intermediate)**

- Internal: Gas Kick based on Pore Pressure or Fracture Gradient @ CSG shoe with a gas 0.115psi/ft Gas gradient to surface while drilling the next hole section (e.g. Gas kick while drilling the production hole section is a burst load used to design the intermediate CSG)
- External: Pore Pressure from section TD to previous CSG shoe and MW of the drilling mud that was in the hole when the CSG was run to surface

#### **Stimulation (Production)**

- Internal: Displacement fluid + Max Frac treating pressure (not to exceed 80% CSG Burst rating)
- External: Pore Pressure from the well TD to the Intermediate CSG shoe and 8.5 ppg MWE to surface

### **Collapse Loads**

#### **Lost Circulation (Surface/Intermediate)**

- Internal: Losses experienced while drilling the next hole section (e.g. losses while drilling the production hole section are used as a collapse load to design the intermediate CSG). After losses there will be a column of mud inside the CSG with an equivalent weight to the Pore Pressure of the lost circulation zone
- External: MW of the drilling mud that was in the hole when the CSG was run

#### **Cementing (Surface/Intermediate/Production)**

- Internal: Displacement Fluid
- External: Cement Slurries to TOC, MW to surface

#### **Full Evacuation (Production)**

- Internal: Atmospheric Pressure
- External: MW of the drilling mud that was in the hole when the CSG was run

### **Tension Loads**

#### **Running CSG (Surface/Intermediate/Production)**

- Axial load of the buoyant weight of the string plus either 100 klb over-pull or string weight in air, whichever is less

#### **Green Cement (Surface/Intermediate/Production)**

- Axial load of the buoyant weight of the string plus the cement plug bump pressure (Final displacement + 500 psi)

Burst, Collapse and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software.

## CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA INC.
LEASE NO.:	NM0531277A
WELL NAME & NO.:	4H-FNR 26 FEDERAL
SURFACE HOLE FOOTAGE:	690'/S. & 373'/W.
BOTTOM HOLE FOOTAGE	690'/S. & 330'/E.
LOCATION:	Section 26, T. 23 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

**The original COAs still stand with the following drilling modifications:**

### I. DRILLING

#### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours 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 (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. 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.**

### **R-111-P Potash**

**High cave/karst potential**

**Possible lost circulation in the Delaware Mountain Group.**

1. The **13-3/8** inch surface casing shall be set at approximately **530** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) 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 in the base of the Castile or the Lamar at approximately 3885')**
  - ☒ 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 potash.**
- 3. The minimum required fill of cement behind the **7** inch production casing is:
  - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- 4. Cement not required on the **4-1/2"** casing. **Packer system being used.**
- 5. 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. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. 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.**
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Operator shall perform the 9-5/8" and 7" casing integrity tests to 70% of the casing burst. This will test the multi-bowl seals.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

**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.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
  - 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 080513**