Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

OCD Artesia

**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
NMNM90807

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
OSAGE 34 FEDERAL COM 3H

2. Name of Operator
SM ENERGY
Contact: VICKIE MARTINEZ
E-Mail. VMARTINEZ@SM-ENERGY COM

9. API Well No.
30-015-39785-00-X1

3a. Address
3300 N A ST BLDG 7 STE 200
MIDLAND, TX 79705

3b Phone No. (include area code)
Ph: 432-688-1709
Fx: 432-688-1701

10. Field and Pool, or Exploratory
PARKWAY

4. Location of Well *(Footage, Sec., T, R, M, or Survey Description)*
Sec 34 T19S R29E NWSW Lot L 1880FSL 330FWL

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 to Original A PD |
| | ☐ 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 )

The following changes are requested to be made to the Osage Federal 34 ? 3H:
Change #1:
SM Energy requests to change the casing design to the following.

Hole Size Casing Size Wt./Ft Grade Coupling Interval
17 1/2" 13 3/8" 48 # J-55 STC 210'
12 1/4" 9 5/8" 36 # J-55 LTC 3,300'
8 3/4" 5 1/2" 17 # L-80 LTC 12,375'

Accepted for record
NMOCD

RECEIVED
JUN 22 2012
NMOCD ARTESIA

Change 2:
SM Energy requests the use of a 20? conductor pipe to be set at 40? and cemented to surface, to protect the rig from washout.

14. I hereby certify that the foregoing is true and correct

**Electronic Submission #141078 verified by the BLM Well Information System**
**For SM ENERGY, sent to the Carlsbad**
**Committed to AFMSS for processing by WESLEY INGRAM on 06/20/2012 (12WWI0088SE)**

Name *(Printed/Typed)* VICKIE MARTINEZ — Title ENGINEER TECH II

Signature (Electronic Submission) — Date 06/20/2012

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

APPROVED
JUN 21 2012
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved By EDWARD FERNANDEZ — Title PETROLEUM ENGINEER — Date 06/21/2012

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 Carlsbad

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

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

## Additional data for EC transaction #141078 that would not fit on the form

**32. Additional remarks, continued**

Change 3:
SM Energy requests the ability to use an air unit in the Capitan Reef if large losses occur. Estimated mud weight is 6 ppg. If a well control situation is encountered the emergency shut offs on the air units will be utilized and the rig pumps will be used to regain the 8.4 ppg mud weight.

Interval Mud Type Weight Viscosity Fluid Loss
0-210' Fresh Water Spud Mud 8.6-9.4 32-34 No Control
210'-3,300' Brine 10 28-30 No Control
2,000'-3,300 Brine 6 N/A No Control
3,300'-8,356' Cut Brine 8.4-8 6 28-30 No Control
8,356'-TD MD Cur Brine / polymer 8.4-8.6 32-40 No Control

NOTE: THE 2,000? -3,300? Reflects the possible usage of an air package.
NOTE: Should complete losses occur in the Capitan Reef fresh water will be used to complete the section.

Change 4:
SM Energy would like to request the use of a 3M annular be used after surface on the 13-3/8? Casing as seen in Case 1.
Once the 9-5/8? Casing is set a 5M annular and 5M double rams will be set on 9-5/8? casing and will remain for the remainder of the well. This set up is seen in Case IV. See attached for BOP diagram.

Change 5:
SM Energy requests the surface and intermediate cementing programs to be changed to the following:

13 - 3/8" Surface Lead: 500 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 4% bwoc Bentonite + 81.4 % Fresh Water, 13.5 ppg. Yield 1 75 cf/sk

Tail: 250 sacks Class C Cement +2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 56.3 Fresh Water, 14.8 ppg Tield. 1.35 cf/sk TOC @ SURFACE

9 - 5/8" Intermediate Lead 1000 sacks (35:65) Poz (Fly Ash): Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 6% bwoc Bentonite + 107.8% Fresh Water, 12.5 ppg Yield: 2.04ch/sk

Tail: 300 sacks (60:40) Poz (Fly Ash): Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.44% bwoc Sodium Metasilicate + 4% bwoc MPA - 5 + 64.7% Water, 13.8 ppg Yield 1.37 cf/sk TOC @ SURFACE
 
Change 6.
SM Energy request the permission to complete and cement the production casing in two stages with a Stage Frac Cement Diverter Tool set at approx. 7,400?. The stages are as follows:

Stage 1 5-1/2" Production 12,353' - 8,324 packer/port system No Cement in lateral after inflating the packers

Stage 2 5-1/2" Production Lead: 800 sks (50:50:10) Class C + 0.40% FL-52 + 0.05% ASA-301 + 5.00% Salt +5.00 lb/sk LCM + 0.125 lb/sk Cello Flake. - yld = 2.461
Tail: 255 sks Class H + 0.20% FL-25 + 1.00% Salt BLM show the Capitan Reef Marker at 1,900'. TOC is designed for 1,800' with 35% excess - yld = 1.186

SM ENERGY

3300 N A. St. Bldg 7 Suite 200
Midland, TX. 79705

Requested By: Michael Mataalii

The following changes are requested to be made to the Osage Federal 34 – 3H:

Change #1:

SM Energy requests to change the casing design to the following:

| Hole Size | Casing Size | Wt./Ft | Grade | Coupling | Interval |
|---|---|---|---|---|---|
| 17 1/2" | 13 3/8" | 48 # | J-55 | STC | 210' |
| 12 1/4" | 9 5/8" | 36 # | J-55 | LTC | 3,300' |
| 8 3/4" | 5 1/2" | 17 # | L-80 | LTC | 12,375' |

Change 2:

SM Energy requests the use of a 20" conductor pipe to be set at 40' and cemented to surface, to protect the rig from washout.

Change 3: * ⇒ See COA

SM Energy requests the ability to use an air unit in the Capitan Reef if large losses occur. Estimated mud weight is 6 ppg. If a well control situation is encountered the emergency shut offs on the air units will be utilized and the rig pumps will be used to regain the 8.4 ppg mud weight.

| Interval | Mud Type | Weight | Viscosity | Fluid Loss |
|---|---|---|---|---|
| 0-210' | Fresh Water Spud Mud | 8.6-9.4 | 32-34 | No Control |
| 210'-3,300' | Brine | 10 | 28-30 | No Control |
| 2,000'-3,300 | Brine | 6 | N/A | No Control |
| 3,300'-8,356' | Cut Brine | 8.4-8.6 | 28-30 | No Control |
| 8,356'-TD MD | Cur Brine / polymer | 8.4-8.6 | 32-40 | No Control |

NOTE: THE 2,000' -3,300' Reflects the possible usage of an air package.

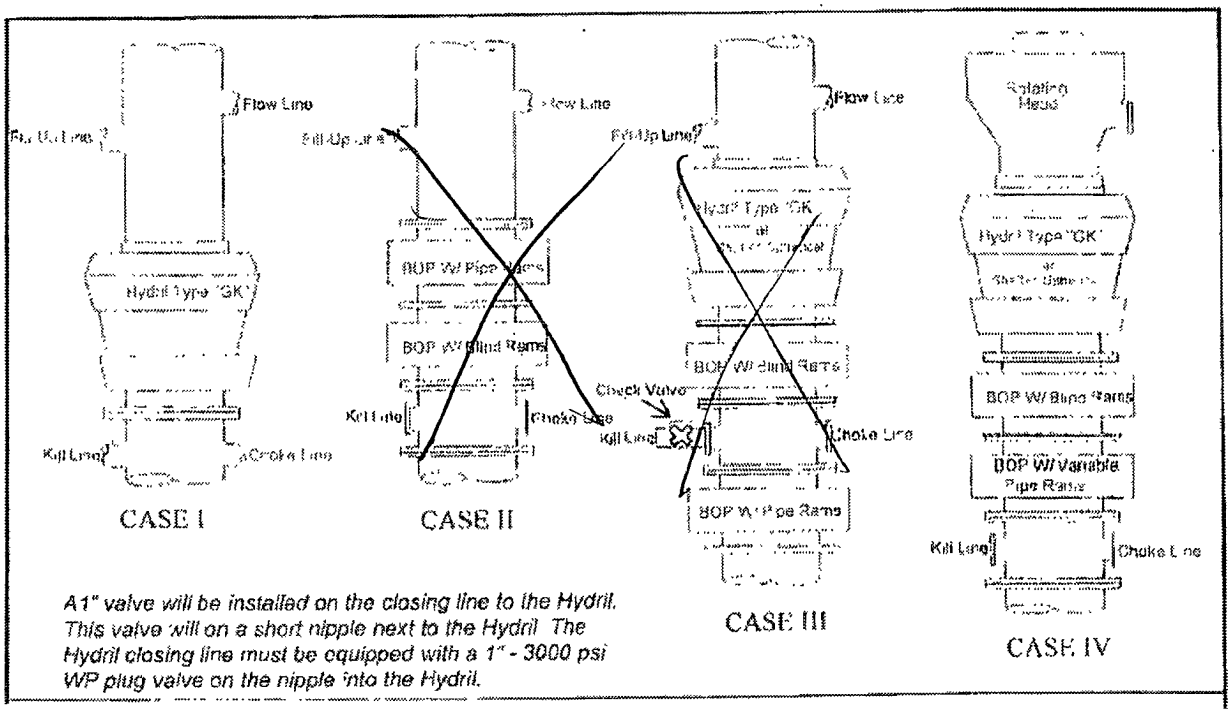
NOTE: Should complete losses occur in the Capitan Reef fresh water will be used to complete the section.

Change 4:

SM Energy would like to request the use of a 3M annular be used after surface on the 13-3/8" Casing as seen in Case 1.

Once the 9-5/8" Casing is set a 5M annular and 5M double rams will be set on 9-5/8" casing and will remain for the remainder of the well. This set up is seen in Case IV.

# SM Energy Company
## MINIMUM BLOWOUT PREVENTER REQUIREMENTS




Change 5:

SM Energy requests the surface and intermediate cementing programs to be changed to the following:

| | | |
|---|---|---|
| 13 - 3/8" | Surface | Lead: 500 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 4% bwoc Bentonite + 81.4 % Fresh Water, 13.5 ppg. Yield 1.75 cf/sk |
| | | Tail: 250 sacks Class C Cement +2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 56.3 Fresh Water, 14.8 ppg Tield: 1.35 cf/sk **TOC @ SURFACE** |
| 9 - 5/8" | Intermediate | Lead 1000 sacks (35:65) Poz (Fly Ash): Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 6% bwoc Bentonite + 107.8% Fresh Water, 12.5 ppg Yield: 2.04ch/sk |
| | | Tail: 300 sacks (60:40) Poz (Fly Ash): Class C Cement + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.44% bwoc Sodium Metasilicate + 4% bwoc MPA - 5 + 64.7% Water, 13.8 ppg Yield 1.37 cf/sk **TOC @ SURFACE** |

Change 6.

SM Energy request the permission to complete and cement the production casing in two stages with a Stage Frac Cement Diverter Tool set at approx. 7,400'. The stages are as follows:

| | | | | Per operator Yield cf/sk |
|---|---|---|---|---|
| Stage 1 | 5-1/2" | Production | 12,353' - 8,324 packer/port system No Cement in lateral after inflating the packers | |
| Stage 2 | 5-1/2" | Production | Lead: 800 sks (50:50:10) Class C + 0.40% FL-52 + 0.05% ASA-301 + 5.00% Salt +5.00 lb/sk LCM + 0.125 lb/sk Cello Flake. | 2.461 |
| | | | Tail: 255 sks Class H + 0.20% FL-25 + 1.00% Salt **BLM show the Capitan Reef Marker at 1,900'. TOC is designed for 1,800' with 35% excess** | 1.186 |

* See COA

# CONDITIONS OF APPROVAL

Sundry dated 06/20/2012

| | |
|---|---|
| OPERATOR'S NAME: | SM ENERGY COMPANY |
| LEASE NO.: | NM90807 |
| WELL NAME & NO.: | OSAGE 34 FEDERAL - 3H 3001539785 |
| SURFACE HOLE FOOTAGE: | 1880' FSL & 330' FWL |
| BOTTOM HOLE FOOTAGE | 1980' FSL & 330' FEL |
| LOCATION: | Section 34, T.19 S., R.29 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

**Original COA still applies with the following changes:**

**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**
**Capitan Reef**
**Possible lost circulation in the Artesia, Delaware and Bone Spring Groups.**
**Possible brine and water flows in the Artesia and Salado Groups.**
**20" conductor approved as stated**

1. The **13-3/8** inch surface casing shall be set at approximately **210** feet (a minimum of 25 feet into a Competent Bed 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 **which shall be set in the Base of the Capitan Reef or in the Top of the Delaware Mountain Group at approximately 3300'** is:

☒ Cement to surface. If cement does not circulate see a, c-d above under surface casing. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

**The BLM shows the Capitan Reef marker at 1900 feet. Top of cement on 7" production casing shall reach a minimum of 50 feet above that depth.**

**Special Capitan Reef requirements:**

**If any lost circulation occurs below the Base of the Salt, the operator shall do the following:**

- **Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.**

- **Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning (ONLY IF LOSS CIRCULATION OCCURS blow the base of salt). Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.**

**Pilot hole has been removed per conversation with operator**

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

   ☒ FIRST STAGE No cement required on the as it utilizes a Packer/Port completion system from TD to 8,324'.

   ☒ **Second Stage - Cement to 1,800' as stated in sundry-. (Due to high cave/karst and the elimination of a casing string)** Operator shall provide method of verification; note: recommended practice is a cement bond log.

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.

## 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 **13-3/8** inch first intermediate casing shoe shall be **2000 (2M)** psi.

   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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi. Operator installing 5M system and testing as a 3M system.

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**. 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 results of the test shall be reported to the appropriate BLM office.

d. 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.**

e. 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.

**DRILLING MUD**

**Approved for aerated mud, but not air drilling, in the Capitan Reef.**

**EGF 062112**