Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Artesia

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

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 page 2

5. Lease Serial No.
NMNM114973

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.
SALT FORK 3 4 FEDERAL COM 1H

2. Name of Operator
APACHE CORPORATION
Contact: SORINA FLORES
E-Mail: sorina.flores@apachecorp.com

9. API Well No.
30-015-43665-00-X1

3a. Address
303 VETERANS AIRPARK LANE SUITE 3000
MIDLAND, TX 79705

3b. Phone No. (include area code)
Ph: 432.818.1167

10. Field and Pool or Exploratory Area
LEO

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 3 T19S R30E NESW 2364FSL 2258FWL

11. County or Parish, State
EDDY COUNTY, 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
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ 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 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.

Accepted for record - NMOCD
8-8-17
DC

BLM-CO-1463 NATIONWIDE; NMB000736

Apache respectfully request approval to modify single stage option for prod cmt job. This option will request to pmp scavenger cmt slurry ahead of lead slurry to aid in removal of OBM & contribute to better cmt bond with csg/open hole. Lead slurry volume will be calc to circ to surf. All scavenger slurry is planned to circ out. Apache also respectfully request approval to add an addl contingency option for prod csg cmt procedure. This option will allow for 2-stage cmt job utilizing DVT - ECP may be placed below DVT. DVT shall be set minimum of 50' below previous csg shoe & minimum of 200' above current shoe. Cmt will be adjusted proportionately based on placement. Please see following update to cmt details for modification to single stage prod cmt job & contingency 2-stage cmt job:

SEE ATTACHED FOR CONDITIONS OF APPROVAL

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 07 2017
RECEIVED

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #382651 verified by the BLM Well Information System
For APACHE CORPORATION, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 07/29/2017 (17PP0782SE)

Name *(Printed/Typed)* SORINA FLORES — Title SUBMITTING CONTACT

Signature (Electronic Submission) — Date 07/26/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS — Title PETROLEUM ENGINEER — Date 08/02/2017

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.

(Instructions on page 2)

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

Additional data for EC transaction #382651 that would not fit on the form

32. Additional remarks, continued

Prod Casing:
Apache plans to cmt to surf regardless of whether a single stage or 2-stage procedure is implemented.

Old Prod Csg Single Stage Cmt Job:
(20% excess on lead & 20% excess on tail to design for cmt top @ 3450')

Lead: 265sx 50/50 Poz:H, 10% gel, 5% salt(11.9# 2.32yld, 13.08gal/sk)
(12 hr-47 psi; 24 hr-284 psi 500# comp strength hrs: 72)
Tail: 1600sx TXI light w/0.3% fluid loss, 0.2% retarder
(12.8# 1.44yld 7.56gal/sk)
(12 hr-28 psi; 24 hr-1193 psi 500# comp strength hrs: 18)

New Prod Csg Single Stage Cmt Job Modification:
(20% excess on lead & 20% excess on tail to design for lead cmt top at surf)

Scavenger: 100sx 50/50 Poz:H, 10% gel, 0.25% CR-150(11.0# 2.98yld 18.3gal/sk)
(12 hr-1 psi; 24 hr-16 ps 41 hr comp strength: 50 psi)

Lead: 500sx 50/50 Poz:H, 10% gel, 5% salt(11.9# 2.32yld 13.08gal/sx
(12 hr-47 psi; 24 hr-284 psi 500# comp strength hrs: 72)

Tail: 1600sx TXI light w/0.3% fluid loss, 0.2% retarder(12.8# 1.44yld
7.56gal/sx) (12 hr-28 psi; 24hr-1193 psi 500# comp strength hrs: 18)

New Contingency Prod Csg 2- Stage Cmt Job:
(20% excess on lead & 20% excess on tail for both stages to design for cmt top at surf)

DVT set @ 7200'; If the setting depth changes, cmt volumes will be adjusted proportionately.

Stage 1:
Tail: 1565sx TXI light w/0.3% fluid loss, 0.2% retarder (12.8# 1.44yld
7.56gal/sx) (12 hr-28 psi; 1193 psi 500# comp strength hrs: 18)

Stage 2
Lead: 471sx 50/50 Poz:H, 10% gel, 5% salt (11.9# 2.32yld 13.08gal/sx
(12 hr-47 psi; 24 hr-284 psi 500# comp strength hrs: 72)

Tail: 100sx Class H w/1.00% FL62, 0.30% FL52, 0.40% CD32, 0.75% EC1, 0.25%
SMS, 0.005 #/sk Static Free, 0.005 gps FP6L (15.6# 1.2yld 5.207 gal/sk)
(12 hr-1533 psi; 24 hr-2041 psi 500# comp strength hrs: 5.3)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Apache Corporation
LEASE NO.:	NMNM114973
WELL NAME & NO.:	Salt Fork 3 4 Federal Com 1H
SURFACE HOLE FOOTAGE:	2364'/S & 2258'/W
BOTTOM HOLE FOOTAGE	1980'/S & 330'/W
LOCATION:	Section 3, T.19 S., R.30 E., NMPM
COUNTY:	Eddy County, New Mexico

All previous COAs still apply except the following:

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 500 feet prior to drilling into the **Queen** formation. **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, please 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 or are Non-API. 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.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

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

Wait on cement (WOC) for Potash Areas:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. 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. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

HIGH CAVE/ KARST AREA: A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH.

ON A THREE STRING DESIGN: IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.

Risks:
Possibility of water flows in the Salado and in the Artesia Group.
Possibility of lost circulation in the Artesia Group.
Secretary Potash.

1. The **13-3/8** inch surface casing shall be set at approximately 415 feet (in a competent bed of an anhydrite zone, and if salt is encountered, set casing at least 25 feet 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:

Option 1:

☒ 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 and potash.**

Option 2:

Operator has proposed DV tool at depth of 1200 feet, but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50 feet below previous shoe and a minimum of 200 feet above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 19% - Additional cement may be required.**

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

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:

Option 1:

☒ 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 and potash.**

Option 2:

Operator has proposed DV tool at depth of 7200 feet, but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50 feet below previous shoe and a minimum of 200 feet above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

c. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

d. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to -18% - Additional cement may be required.**

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.

5. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

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 53.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. 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.

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

5. 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two 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.

ZS 08022017

193003k Sundry-382651 Salt Fork 3 4 Federal Com 1H 30015 NM113962 Apache ZS 08-02-2017 v12.42

R-111-P Section: 3 strings circ, a casing seal test of 600psi(hydrl) for the surface and 1000 for intermediate, <100psi drop in 30min. In a Lesser Prairie-Chicken section.

13 3/8	surface csg in a		17 1/2	inch hole.		Design Factors		SURFACE	
Segment	**#/ft**	**Grade**		**Coupling**	**Joint**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	48.00	H 40		ST&C	16.16	4.15	1.42	415	19,920
"B"								**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:		1,030		Tail Cmt	does	circ to sfc.	Totals:	415	19,920

Comparison of Proposed to Minimum Required Cement Volumes

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	**Volume**	**Cmt Sx**	**CuFt Cmt**	**Cu Ft**	**% Excess**	**Mud Wt**	**MASP**	**BOPE**	**Hole-Cplg**
17 1/2	0.6946	**370**	496	**343**	45	**8.60**	704	**2M**	1.56

Setting Depth for D V TooL: 1st Stg 2nd Stg sum of sx Σ CuFt

% Excess Cmt: 0 0

9 5/8	casing inside the		13 3/8			Design Factors		INTERMEDIATE	
Segment	**#/ft**	**Grade**		**Coupling**	**Joint**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	36.00	J 55		ST&C	4.66	1.65	0.84	2,350	84,600
"B"								**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	2,350	84,600

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 415 overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	**Volume**	**Cmt Sx**	**CuFt Cmt**	**Cu Ft**	**% Excess**	**Mud Wt**	**MASP**	**BOPE**	**Hole-Cplg**
12 1/4	0.3132	**570**	988	**781**	26	**10.00**	2314	**3M**	0.81

Setting Depths for D V Tool(s): 1200 sum of sx Σ CuFt Σ%excess

excess cmt by stage % : 26 19 720 958 23

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.5, b, c, d All > 0.70, OK.

Tail cmt

5 1/2	casing inside the		9 5/8			Design Factors		PRODUCTION	
Segment	**#/ft**	**Grade**		**Coupling**	**Joint**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	20.00	L 80		LT&C	2.46	2.25	2.2	7,965	159,292
"B"	**20.00**	**L 80**		**LT&C**	4.57	**1.82**	**2.2**	**7,571**	**151,415**
w/8.4#/g mud, 30min Sfc Csg Test psig:		1,752					Totals:	15,535	310,707
B would be:					41.82	2.11	if it were a vertical wellbore.		

No Pilot Hole Planned

MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
15535	8462	8462	7965	91	12	8741.67

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 2350 overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	**Volume**	**Cmt Sx**	**CuFt Cmt**	**Cu Ft**	**% Excess**	**Mud Wt**	**MASP**	**BOPE**	**Hole-Cplg**
7 7/8	0.1733	**2200**	3762	**2922**	29	**9.50**			0.91

Setting Depths for D V Tool(s): 7200 sum of sx Σ CuFt Σ%excess

% excess cmt by stage: 55 -18 2136 3466 19

Class 'H' tail cmt yld > 1.20