Form 3160-5
(August 2007)

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.

5. Lease Serial No.
NMLC029426B

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.
CROW FEDERAL 37H

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

9. API Well No.
30-015-42142-00-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
FREN

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 3 T17S R31E SWSW 995FSL 525FWL
32.858980 N Lat, 103.863895 W Lon

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.)

BLM-CO-1463 NATIONWIDE/NMB000736

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 02 2014
RECEIVED

Apache proposes to change the csg & cmt program as shown below. The complete updated Drlg Plan:

1. CSG PROGRAM: ALL CSG IS NEW & API APPVD

Hole Sz	Depth	OD Csg	Wt	Collar	Grade	Clps	Burst	Tension
Surf	17-1/2" 0-650'	13-3/8"	48#	STC	H-40	1.125	1.0	1.8
Interm	12-1/4" 0-3500'	9-5/8"	36#	STC	J-55	1.125	1.0	1.8
Prod	8-3/4" 0-5298'	7"	29#	LTC	L-80	1.125	1.0	1.8
	8-3/4" 5298-6036'	5-1/2"	20#	LTC	L-80	1.125	1.0	1.8
	7-7/8" 6036-9997'	5-1/2"	20#	LTC	L-80	1.125	1.0	1.8

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Accepted for record
NMOCD 6-2-2014

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

Electronic Submission #246295 verified by the BLM Well Information System
For APACHE CORPORATION, sent to the Carlsbad
Committed to AFMSS for processing by CHRISTOPHER WALLS on 05/22/2014 (14CRW0280SE)

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

Signature (Electronic Submission) — Date 05/20/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Chris Walls — Title Eng — Date 5/23/14

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 CFO

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 #246295 that would not fit on the form

32. Additional remarks, continued

*Prod csg will be tapered string w/7" csg f/surf to KOP (cmt'd through a stage tool f/KOP to 2500'), uncmt'd 5-1/2" csg f/KOP to LP(with a packer at the top of the Glorieta formation), & uncmt'd 5-1/2" csg w/packers & sleeves f/LPto TD.

2. CMT PROGRAM
A.SURF (TOC-SURF) **100% excess cmt** CMT WITH:
Single Slurry: 730sx Cl C w/2% CaCl2 (14.8wt, 1.34yld, 6.31gal/sk)
Comp Strength: 12hr-1270psi 24hr-2029psi
If lost circ is encountered while drlg the 17-1/2" hole, 200sx Cl C Thixotropic cmt (14.4wt, 1.55yld, 6.65gal/sk) may be pmpd ahead of the cmt slury shown above. If cmt does not circ to surf, the appropriate BLM office shall be notified. The TOC shall be determined by a method approved by BLM. Operator will propose a remediation method & request BLM approval.
B.INTERM(TOC-SURF) **50% EXCESS CMT** CMT WITH:
Lead: 710sx 35/65 Poz C w/6% Gel+5%Salt (12.9wt, 1.92yld, 9.92gal/sk)
Comp Strength: 12hr-820psi 24hr-1189psi
Tail: 290sx Cl C (14.8wt, 1.33yld, 6.31gal/sk)
Comp Strength: 12hr-1120psi 24hr-2106psi
*If wtr flow is encountered, a DVT may be used in the 9-5/8" interm csg. An ECP may be placed below the DVT. Csg slips may be set before cmtg. Assuming the DVT is set @ 1800', the following cmt would be used:
1st stage: 630sx Cl C (14.8wt, 1.33yld, 6.31gal/sx) 50% excess cmt;
2nd stage: 690sx Cl C(14.8wt, 1.33yld, 6.31 gal/sk) 50% excess cmt. If DVT is set at a different depth, cmt volumes will be adjusted accordingly.
C.PROD (TOC: ~2500' F/SURF) **35% EXCESS CMT** CMT WITH:
Lead: 110sx 35/65 Poz C w/6% Gel+5% Salt (12.6wt, 2.06yld, 10.95gal/sk)
Comp Strength: 12hr-317psi 24hr-500psi
Tail: 260sx TXI Lightweight w/1.3% Salt+ 0.3 Retarder (13.0wt, 1.48yld, 7.58wtr/sk) Comp Strenght: 12hr-1100psi 24hr-1755psi
*The above cmt volumes may be revised based on fluid measurement.

DRILLING PLAN: BLM COMPLIANCE
(Supplement to BLM 3160-3)

APACHE CORPORATION (OGRID: 873) CROW FEDERAL #37H

Lease #: NMLC-029426B Projected TVD: 5875' MD: 9997' GL: 3930'
SL: 995' FSL & 525' FWL UL: M SEC: 3 BHL: 995' FSL & 330' FEL UL: P SEC: 3
T17S R31E EDDY COUNTY, NM

1. GEOLOGIC NAME OF SURFACE FORMATION: Eolian/Piedmond Alluvial Deposits

2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Quaternary Aeolian	Surf	Queen	2763'
Rustler	552'	Grayburg	3178'
Salt Top	745'	San Andres	3513' (Oil)
Base of Salt/Tansill	1706'	Glorieta	4977'
Yates	1868'	Yeso (Paddock)	5059' (Oil)
Seven Rivers	2150'	TD	TVD: 5875' MD: 9997'

Avg Depth to Ground Water: ~91'

All fresh water and prospectively valuable minerals, as described by BLM, encountered during drilling, will be recorded by depth and adequately protected. All oil and gas shows within zones of correlative rights will be tested to determine commercial potential. The surface fresh water sands will be protected by setting 13-3/8" surface casing at 650' and circulating cement to surface. All intervals will be isolated by setting a 7" and 5-1/2" tapered production casing string at TD and cementing as shown below.

3. CASING PROGRAM: ALL CASING IS NEW & API APPROVED

STRING	HOLE SIZE	DEPTH	OD CASING	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
Surface	17-1/2"	0' – 650'	13-3/8"	48#	STC	H-40	1.125	1.0	1.8
Intermediate	12-1/4"	0' - 3500'	9-5/8"	36#	STC	J-55	1.125	1.0	1.8
Production*	8-3/4"	0' – 5298'	7"	29#	LTC	L-80			
	8-3/4"	5298' - 6036'	5-1/2"	20#	LTC	L-80	1.125	1.0	1.8
	7-7/8"	6036' - 9997'	5-1/2"	20#	LTC	L-80			

* Production casing will be a tapered string with 7" casing from surface to KOP (cemented through a stage tool from KOP to 2500'), uncemented 5-1/2" casing from KOP to LP (with a packer at the top of the Glorieta formation), and uncemented 5-1/2" casing with packers and sleeves from LP to TD.

4. CEMENT PROGRAM:

A. Surface (TOC – Surface) **100% excess cmt Cmt with:**

Single Slurry: 730 sx Class C w/2% CaCl2 *(14.8 wt, 1.34 yld, 6.31 gal wtr/sk)*
Compressive Strengths : ***12 hr*** *– 1270 psi* ***24 hr*** *– 2029 psi*

If lost circulation is encountered while drilling the 17-1/2" hole, 200 sx Class C thixotropic cement *(14.4 wt, 1.55 yld, 6.65 gal/sk)* may be pumped ahead of the cement slurry shown above.
If cmt does not circulate to surface, the appropriate BLM office shall be notified. The TOC shall be determined by a method approved by BLM. Operator will propose a remediation method and request BLM approval.

B. Intermediate (TOC – Surface) **50% excess cmt **. Cmt with:

Lead: 710 sx 35/65 Poz C w/6% Gel + 5% Salt (12.9 wt, 1.92 yld, 9.92 gal wtr/sk)
Compressive Strengths: 12 hr – 820 psi 24 hr – 1189 psi

Tail: 290 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk)
Compressive Strengths: 12 hr – 1120 psi 24 hr – 2106 psi

If a water flow is encountered, a DV tool may be used in the 9-5/8" intermediate casing. An ECP may be placed below the DV tool. Casing slips may be set before cementing. Assuming the DV tool is set at 1800', the following cement would be used: 1st Stage 630 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk) 50% excess cement 2nd Stage 690 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk) 50% excess cement If the DV tool is set at a different depth, cement volumes will be adjusted accordingly.

C. Production (TOC: ~2500' from Surface) **35% excess cmt Cmt with:**

Lead: 110 sx 35-65 Poz C w/6% Gel + 5% Salt (12.6 wt, 2.06 yld, 10.95 gal wtr/sk)
Compressive Strengths: 12 hr – 317 psi 24 hr – 500 psi

Tail: 260 sx TXI Lightweight w/1.3% Salt + 0.3% Retarder (13.0 wt, 1.48 yld , 7.58 gal wtr/sk)
Compressive Strengths: 12 hr – 1100 psi 24 psi – 1755 psi

The above cmt volumes may be revised based on fluid caliper measurement.

5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3" shows a 13-5/8" 3M psi WP BOP consisting of an annular bag type preventer. This BOP will be nippled up on the 13-3/8" surface casing head and tested to 2000psi using a test plug. After the 9-5/8" intermediate casing is set & cemented, an 11" 3M BOP consisting of an annular bag type preventer, middle pipe rams and bottom blind rams will be installed and utilized continuously until TD is reached *("EXHIBIT 3A")*. That BOP will be tested at 2000 psi; maximum surface pressure is not expected to exceed 2000 psi. BHP is calculated to be approximately 2585 psi. All BOPs and associated equipment will be tested per BLM *Drilling Operations Order #2*. The BOPs will be operated and checked each 24 hour period and blind rams will be operated and checked when the drill pipe is out of the hole. Function tests will be documented on the daily driller's log. *"EXHIBIT 3 & 3A"* also show a 3M psi choke manifold with a 3" blow down line. Full opening stabbing valve and kelly cock will be on the derrick floor in case of need. No abnormal pressures or temperatures are expected in this well. No nearby wells have encountered any well control problems.

6. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

13-5/8" 3000 psi annular preventer (3M BOP/BOPE to be used as a 2M system)
11" 3000 psi double BOP (blind & pipe rams) and annular preventer (3M BOP/BOPE to be used as a 2M system)
4-1/2" x 3000 psi kelly valve
11" x 3000 psi mud cross – H2S detector on production hole
Gate-type safety valve – 3" choke line from BOP to manifold
2" adjustable chokes – 3" blow down line
Fill up line per BLM *Onshore Order #2*

7. PROPOSED MUD CIRCULATION SYSTEM: (CLOSED LOOP SYSTEM)

INTERVAL	MUD WEIGHT (ppg)	VISCOSITY (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' – 650'	8.3 – 8.8	28 – 36	NC	FW
650' - 3500'	9.8 – 10.0	28 – 29	NC	Brine
3500' – 5298'	9.0 – 10.0	28 – 29	NC	Brine/Cut Brine
5298' – 9997'	9.0 – 9.3	28 – 29	NC	Cut Brine

** Visual mud monitoring equipment shall be in place to detect volume changes. A mud test shall be performed every 24 hours after mudding up to determine density, viscosity, gel strength, filtration, and pH. The necessary mud products for weight addition and fluid loss control will be on location at all times.

8. LOGGING, CORING & TESTING PROGRAM:

A. No cores, DSTs, or open hole logs are planned at this time.
B. Mudloggers from 4200' to TD.
C. Additional testing will be initiated subsequent to setting the 7" and 5-1/2" tapered production casing string. Specific intervals will be targeted based on geological sample shows.

9. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, the proposed mud program will be modified to increase the mud-weight. There is known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of Onshore Oil & Gas Order #6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated maximum BHP: 2585 psi and estimated BHT: 115° F.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be after BLM approval and as soon as an appropriate rig is available. Move in operations and drilling is expected to take approximately 20 days. If production casing is run, an additional 90 days will be needed to complete the well and construct surface facilities and/or lay flow lines in order to place the well on production.

11. OTHER FACETS OF OPERATION:

After running casing, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Fren; Glorieta-Yeso formation will be stimulated in order to establish production. The well will be tested and potentialed as an oil well.

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Apache Corporation**
LEASE NO.:	**NMLC-029426B**
WELL NAME & NO.:	**Crow Federal 37H**
SURFACE HOLE FOOTAGE:	**0995' FSL & 0525' FWL**
BOTTOM HOLE FOOTAGE:	**0995' FSL & 0330' FEL**
LOCATION:	**Section 03, T. 17 S., R 31 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

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 500 feet prior to drilling into the **Grayburg** 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. **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 for water flows in the top of salt.
Possibility of lost circulation in the Rustler, Tansill, Yates, Seven Rivers, and San Andres.

1. The **13-3/8** inch surface casing shall be set at approximately **650** feet (**in a competent bed <u>below the Magenta Dolomite</u>, which is a <u>Member of the Rustler</u>, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface. **<u>Fresh water mud to be used to setting depth.</u>**

    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:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Operator proposes a contingency two stage cement job if lost circulation is encountered, DV tool will be set at approximately 1800'. If no lost circulation is encountered the casing will be cemented to surface in a single stage.

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 approved top of cement on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **7 x 5-1/2** inch production casing is:

☒ Cement as proposed by operator. Operator shall provide method of verification. (Cement from KO point to 2500' from surface)

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 **2000 (2M)** psi **(Installing 3M annular, testing to 2,000 psi)**.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **8-5/8** intermediate casing shoe shall be **2000 (2M)** psi (**Installing a 3M, testing to 2,000 psi**).

4. 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. 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.

CRW 052314