Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.
NMNM118108

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.
HH SO 8 P2 14H

2. Name of Operator
CHEVRON USA INCORPORATED
Contact: DORIAN K FUENTES
E-Mail: djvo@chevron.com

9. API Well No.
30-015-43931-00-X1

3a. Address
6301 DEAUVILLE BLVD
MIDLAND, TX 79706

3b. Phone No. (include area code)
Ph: 432-687-7631

10. Field and Pool or Exploratory Area
WILDCAT

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 17 T26S R27E NWNW 330FNL 960FWL

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 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 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.

Chevron respectfully request the ability to add an 7-5/8" liner hanger to the current design.
Please see information on the attached.

Should questions arise please contact me or Rod at 281-413-9797.

SEE ATTACHED FOR
CONDITIONS OF APPROVA

Accepted for record - NMOCD 9-11-17

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 08 2017

RECEIVED

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

**Electronic Submission #386686 verified by the BLM Well Information System**
**For CHEVRON USA INCORPORATED, sent to the Carlsbad**
**Committed to AFMSS for processing by ZOTA STEVENS on 08/29/2017 (17ZS0008SE)**

Name *(Printed/Typed)* DORIAN K FUENTES — Title REGULATORY SPECIALIST

Signature (Electronic Submission) — Date 08/29/2017

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

Approved By ZOTA STEVENS — Title PETROLEUM ENGINEER — Date 08/28/201

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 ****

# Delaware Basin
# Changes to APD/COA for Federal Well

Chevron

## Well Names:

| | | |
|---|---|---|
| HH SO 8 P2 | 14H | 30-015-43931 |

## Rig: Patterson 815

**CVX CONTACT:**

**Roderick Milligan**
MCBU Drilling Engineer
Chevron North America Exploration and Production Co.
MidContinent Business Unit
Office: (713) 372-2011
Cell: (281) 413-9794
Email: RXMQ@CHEVRON.COM

## Summary of Changes to APD Submission

Chevron respectfully request the ability to add an 7-5/8" liner hanger to the current design. Please see information below.

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **Chevron USA Inc.** |
| **LEASE NO.:** | **NMNM-118108** |
| **WELL NAME & NO.:** | **HH SO 8 P2 14H** |
| **SURFACE HOLE FOOTAGE:** | **0330' FNL & 0960' FWL** |
| **BOTTOM HOLE FOOTAGE LOCATION:** | **0180' FNL & 0996' FWL Sec. 05, T. 26 S., R 27 E. Section 17, T. 26 S., R 27 E., NMPM** |
| **COUNTY:** | **Eddy County, New Mexico** |

## All previous COAs still apply except the following:

## TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

☒ **Drilling**
- Cement Requirements
- High Cave/Karst
- Logging Requirements
- Waste Material and Fluids

## 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. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall 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. **The operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other wells.**

4. 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.

5. **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 Water Basin:**

**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 at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.**

**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**
**Possibility of water flows in the Castillo and Salado.**
**Possibility of lost circulation in the Delaware.**
**Abnormal Pressures may be encountered when penetrating the 3rd Bone Spring Sandstone and all subsequent formations.**

**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. IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.**

1. The **13-3/8** inch surface casing shall be set at approximately **450** 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.

**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 is:

**Operator has proposed DV tool at depth of 2100', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.**

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 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. Excess calculates to 22% - Additional cement may 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 for the bottom of the hole. Report results to BLM office.**

3. The minimum required fill of cement behind the **7-5/8** inch liner is:

☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to -31% - Additional cement may be required.**

**Formation below the 7-5/8" 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 for the bottom of the hole. Report results to BLM office.**

**The pilot hole plugging procedure is approved as written. Note plug top on Subsequent Report sundry of drilling activities.**

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

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

☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

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 53.

2. Variance approved to use flex line from BOP choke manifold. Check condition of flexible line from BOP to choke manifold, replaced 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. 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.
    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.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

**D. DRILLING MUD**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

**E. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**F. 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 082917**

Medium Cave Karst: two casing strings, both to circulate cement to surface.

| 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" | 54.50 | K 55 | | ST&C | 22.30 | 5.56 | 0.61 | 450 | 24,525 |
| "B" | | | | | | | | 0 | 0 |
| w/8.4#/g mud, 30min Sfc Csg Test psig: | 1,500 | | | Tail Cmt | does | circ to sfc. | Totals: | 450 | 24,525 |

Comparison of Proposed to Minimum Required Cement Volumes

| Hole Size | Annular Volume | 1 Stage Cmt Sx | 1 Stage CuFt Cmt | Min Cu Ft | 1 Stage % Excess | Drilling Mud Wt | Calc MASP | Req'd BOPE | Min Dist Hole-Cplg |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0.6946 | 356 | 473 | 367 | 29 | 8.70 | 2466 | 3M | 1.56 |

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

| 9 5/8 | casing inside the | | 13 3/8 | | | Design Factors | | INTERMEDIATE | |
|---|---|---|---|---|---|---|---|---|---|
| Segment | #/ft | Grade | | Coupling | Joint | Collapse | Burst | Length | Weight |
| "A" | 40.00 | L 80 | | TXP | 2.54 | 0.87 | 0.82 | 9,015 | 360,600 |
| "B" | | | | | | | | 0 | 0 |
| w/8.4#/g mud, 30min Sfc Csg Test psig: | | | | | | | Totals: | 9,015 | 360,600 |
| The cement volume(s) are intended to achieve a top of | | | | | 0 | ft from surface or a | | 450 | overlap. |

| Hole Size | Annular Volume | 1 Stage Cmt Sx | 1 Stage CuFt Cmt | Min Cu Ft | 1 Stage % Excess | Drilling Mud Wt | Calc MASP | Req'd BOPE | Min Dist Hole-Cplg |
|---|---|---|---|---|---|---|---|---|---|
| 12 1/4 | 0.3132 | look ↘ | 0 | 2864 | | 9.50 | 4813 | 5M | 0.81 |
| D V Tool(s): | | | 2100 | | | | sum of sx | Σ CuFt | Σ%excess |
| t by stage % : | | 91 | 22 | | | | 2361 | 5004 | 75 |

Class 'H' tail cmt yld > 1.20 MASP is within 10% of 5000psig, need

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.64, b, c, d

<0.70 a Problem!!

Tail cmt

| 7 5/8 | Liner w/top @ | | 8600 | | | Design Factors | | LINER | |
|---|---|---|---|---|---|---|---|---|---|
| Segment | #/ft | Grade | | Coupling | Joint | Collapse | Burst | Length | Weight |
| "A" | 29.70 | P 110 | | TXP | 20.14 | 1.04 | 1.33 | 1,500 | 44,550 |
| "B" | | | | TXP | | | | 0 | 0 |
| w/8.4#/g mud, 30min Sfc Csg Test psig: | 2,200 | | | | | | Totals: | 1,500 | 44,550 |
| A would be: | | | | | 12.66 | 1.02 | if it were a vertical wellbore. | | |

| No Pilot Hole Planned | MTD | Max VTD | Csg VD | Curve KOP | Dogleg° | Severity° | MEOC |
|---|---|---|---|---|---|---|---|
| | 10100 | 10000 | 10000 | 9431 | 90 | -1 | 0 |

The cement volume(s) are intended to achieve a top of 7015 ft from surface or a 2000 overlap.

| Hole Size | Annular Volume | 1 Stage Cmt Sx | 1 Stage CuFt Cmt | Min Cu Ft | 1 Stage % Excess | Drilling Mud Wt | Calc MASP | Req'd BOPE | Min Dist Hole-Cplg |
|---|---|---|---|---|---|---|---|---|---|
| 8 1/2 | 0.0770 | 170 | 209 | 304 | -31 | 13.50 | 4891 | 5M | 0.44 |

Class 'H' tail cmt yld > 1.20 MASP is within 10% of 5000psig, need exrta equip?

Tail cmt

| 5 1/2 | casing inside the | | 7 5/8 | | | Design Factors | | PRODUCTION | |
|---|---|---|---|---|---|---|---|---|---|
| Segment | #/ft | Grade | | Coupling | Joint | Collapse | Burst | Length | Weight |
| "A" | 20.00 | P 110 | | LT&C | 3.24 | 1.87 | 1.83 | 8,400 | 168,000 |
| "B" | 18.00 | P 110 | | LT&C | 4.64 | 1.93 | 1.96 | 12,213 | 219,834 |
| w/8.4#/g mud, 30min Sfc Csg Test psig: | 1,848 | | | | | | Totals: | 20,613 | 387,834 |
| B egment Design Factors would be: | | | | | 14.38 | 2.09 | if it were a vertical wellbore. | | |

| No Pilot Hole Planned | MTD | Max VTD | Csg VD | Curve KOP | Dogleg° | Severity° | MEOC |
|---|---|---|---|---|---|---|---|
| | 20613 | 10054 | 10054 | 9431 | 90 | 10 | 10327.67 |

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 10100 overlap.

| Hole Size | Annular Volume | 1 Stage Cmt Sx | 1 Stage CuFt Cmt | Min Cu Ft | 1 Stage % Excess | Drilling Mud Wt | Calc MASP | Req'd BOPE | Min Dist Hole-Cplg |
|---|---|---|---|---|---|---|---|---|---|
| 6 1/8 | 0.0396 | 4035 | 4846 | 1358 | 257 | 13.60 | | | 0.38 |

MASP is within 10% of 5000psig, need exrta equip?