

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

HOBBS OCD

MAR 12 2019

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.*

RECEIVED

5. Lease Serial No.  
NMNM27506

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.  
SD EA 29 32 FED COM P10 17H9. API Well No.  
30-025-44485-00-X110. Field and Pool or Exploratory Area  
WC025G09S263327G UP WOLFCAMP11. County or Parish, State  
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

## 1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator  
CHEVRON USA INCORPORATEDContact: KAYLA MCCONNELL  
E-Mail: kaylamcconnell@chevron.com3a. Address  
6301 DEAUVILLE BLVD  
MIDLAND, TX 797063b. Phone No. (include area code)  
Ph: 432-687-73754. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
Sec 29 T26S R33E NWNW 120FNL 2605FWL  
32.021431 N Lat, 103.594398 W Lon**12. CHECK THE 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"/> Hydraulic Fracturing	<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 A PD
	<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 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 requests to change the casing design on this well to a 3-string design with 4-string liner contingency plan as shown below. Please see attached, updated 9-point plan. Design factors have also been updated for both designs.

Formations tops in the 9-point plan have also been updated utilizing data from pilot holes Chevron has drilled in the area.

The Cement program in the 9-point plan has also been updated to match the previous cement sundry sent out for this well.

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

Electronic Submission #447680 verified by the BLM Well Information System  
For CHEVRON USA INCORPORATED, sent to the Hobbs  
Committed to AFMSS for processing by PRISCILLA PEREZ on 12/13/2018 (19PP0624SE)

Name (Printed/Typed) KAYLA MCCONNELL

Title PERMITTING SPECIALIST

Signature (Electronic Submission)

Date 12/13/2018

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

Approved By ZQIA STEVENS

Title PETROLEUM ENGINEER

Date 03/05/2019

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 Hobbs

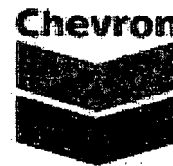
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\***

# **Delaware Basin**

## **Changes to APD/COA for Federal Well**



### **Well Name:**

<b>SD EA 29 32 FED COM P10</b>	<b>17H</b>	<b>30-025-44485</b>
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**Rig: Nabors 1206**

### **CVX CONTACT:**

**Tony Bacon**  
MCBU D&C Engineer – Nabors 1206  
Chevron North America Exploration and Production Co.  
MidContinent Business Unit  
Office: (713) 372-4025  
Cell: (406) 989-0415  
Email: tonybacon@chevron.com

### **Summary of Changes to APD Submission**

Chevron respectfully requests to change the casing design on this well to a 3-string design with 4-string liner contingency plan as shown below. Please see attached, updated 9-point plan. Design factors have also been updated for both designs.

Formations tops in the 9-point plan have also been updated utilizing data from pilot holes Chevron has drilled in the area.

The Cement program in the 9-point plan has also been updated to match the previous cement sundry sent out for this well.

#### 4. CASING PROGRAM

a. The proposed casing program will be as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	850'	17-1/2"	13-3/8"	54.5 #	J55	STC	New
Intermediate	0'	11,500'	12-1/4"	9-5/8"	43.5#	L-80IC	LTC	New
Production	0'	23,000'	8-1/2"	5-1/2"	20.0 #	P-110-ICY	TXP BTC	New

An alternative casing design with a contingency string is as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	850'	17-1/2"	13-3/8"	54.5 #	J55	STC	New
Intermediate	0'	11,500'	12-1/4"	9-5/8"	43.5#	L-80IC	LTC	New
Liner	10,850'	12,300'	8-1/2"	7-5/8"	29.7 #	HCP-110	W-513	New
Production (Taper String)	0'	12,500'	6-3/4"	5.5"	20#	P-110-ICY	TXP BTC	New
	12,500'	23,000'	6-3/4"	5"	18#	P-110 IC	W-521	New

### 1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Rustler		1,043	
Castile		3,065	
Lamar		4,932	
Bell Canyon		4,956	
Cherry Canyon		5,990	
Brushy Canyon		7,519	
Bone Spring Limestone		9,110	
Upr. Avalon		9,145	
Top Bone Spring 1		10,069	
Top Bone Spring 2		10,616	
Top Bone Spring 3		11,740	
Wolfcamp		12,130	
Wolfcamp A1		12,326	
Lateral TD (Wolfcamp A1)		12,393	19,800

### 2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		700
Water	Rustler	1043
Water	Bell Canyon	4956
Water	Cherry Canyon	5990
Oil/Gas	Brushy Canyon	7519
Oil/Gas	Bone Spring Limestone	9110
Oil/Gas	Upr. Avalon	9145
Oil/Gas	Top Bone Spring 1	10069
Oil/Gas	Top Bone Spring 2	10616
Oil/Gas	Top Bone Spring 3	11740
Oil/Gas	Wolfcamp	12130
Oil/Gas	Wolfcamp A1	12326
Oil/Gas		

All shows of fresh water and minerals will be reported and protected.

### 3. BOP EQUIPMENT

Will have a minimum of a 10000 psi rig stack (see proposed schematic) for drill out below surface (Wolfcamp is not exposed until drillout of the intermediate casing). Could possibly utilize the 5000 psi rig stack (see proposed schematic) for drill out below surface casing due to the availability of 10 M annular. (Wolfcamp is not exposed until drillout of the intermediate casing) Stack will be tested as specified in the attached testing requirements. Batch drilling of the surface, intermediate, and production will take place. A full BOP test will be performed unless approval from BLM is received otherwise. Flex choke hose will be used for all wells on the pad (see attached specs) BOP test will be conducted by a third party.

Chevron requests a variance to use a FMC UH2 Multibowl wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

#### 4. CASING PROGRAM

a. The proposed casing program will be as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	850'	17-1/2"	13-3/8"	54.5 #	J55	STC	New
Intermediate	0'	11,500'	12-1/4"	9-5/8"	43.5#	L-80IC	LTC	New
Production	0'	19,800'	8-1/2"	5-1/2"	20.0 #	P-110-ICY	TXP BTC	New

An alternative casing design with a contingency string is as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	850'	17-1/2"	13-3/8"	54.5 #	J55	STC	New
Intermediate	0'	11,500'	12-1/4"	9-5/8"	43.5#	L-80IC	LTC	New
Liner	10,850'	12,300'	8-1/2"	7-5/8"	29.7 #	HCP-110	W-513	New
Production	0'	12,500'	6-3/4"	5.5"	20#	P-110-ICY	TXP BTC	New
(Taper String)	12,500'	19,800'	6-3/4"	5"	18#	P-110 IC	W-521	New

b. Casing design subject to revision based on geologic conditions encountered.

c. \*\*\*A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalculated & sent to the BLM prior to drilling.

d. Chevron will fill casing at a minimum of every 20 jts (840') while running for intermediate and production casing in order to maintain collapse SF.

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 1150'

Intermediate Casing: 11,650' TVD

Production Casing: 23,000' MD/12,851' TVD (10,300' VS @ 90 deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.80	2.15	4.34	2.19
Intermediate	1.25	1.62	1.60	1.57
Production	1.10	1.19	2.35	1.32

Contingency Liner - 4 String Design

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.80	2.15	4.34	2.19
Intermediate	1.24	2.13	1.60	1.51
Liner	2.69	4.14	4.26	3.27
Production	1.12	1.21	1.76	1.38

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 16 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Top	Bottom	Weight	Yield	%Excess	Sacks	Water	Additives
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk	
Tail	Class C	0'	850'	14.8	1.33	50	650	6.57	Extender Antifoam Retarder
Intermediate									
Stage 2 Lead	Class C	0'	4570	11.9	2.53	200	1515	14.55	Antifoam Extender Salt Retarder Viscosifier
Stage 2 Tail	Class C	4570	4870	14.8	1.33	50	109	6.31	Antifoam Retarder Viscosifier
Stage 1 Lead	Class C	4,870'	11,150'	11.9	2.52	100	1154	14.57	Antifoam Retarder Viscosifier
Stage 1 Tail	Class C	11,150'	11,650'	14.8	1.33	50	202	3.30	Antifoam Retarder Dispersent
Contingency Liner	*No change to surface and intermediate cement design with implementation of contingency liner.								
Tail	Class H	10,850'	12,300'	15.6	1.22	17	123	5.34	
Production									
Lead	Class H	9850'	18,300'	15.6	1.183	35	2144	5.14	Antifoam Dispersent Fluid Loss Retarder Viscosifier
Tail	Class H	18,300'	19,800'	16.0	1.903	35	186	7.43	Antifoam Dispersent Fluid Loss Retarder Viscosifier

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. Production casing will have one horizontal type centralizer on every joint for the first 1000' from TD, then every other joint to EOB, and then every third joint to KOP. Bowspring type centralizers will be run from KOP to intermediate casing.

## 6. MUD PROGRAM

From	To	Type	Weight	F. Vis	Filtrate	
0'	850'	Spud Mud	8.3-8.7	32 - 34	NC - NC	
850'	11,500'	Oil Based Mud	8.8-9.8	28 - 30	25-30	
11,150'	12,300'	Oil Based Mud	9.8-12.9	70 - 75	25 - 30	Liner Contingency
11,500'	19,800'	Oil Based Mud	9.8-14.8	70 - 75	25 - 30	

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume. When abnormal pressures are anticipated – a pit volume totalizer (PVT), stroke counter, and flow sensor will be used to detect volume changes indicating loss or gain of circulating fluid volume.

A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions dictate.

## 7. TESTING, LOGGING, AND CORING

The anticipated type and amount of testing, logging, and coring are as follows:

- Drill stem tests are not planned.
- The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

- Conventional whole core samples are not planned.
- A Directional Survey will be run.

## 8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- No abnormal pressures or temperatures are expected. Estimated BHP at intermediate TD is: 5750 psi  
No abnormal pressures or temperatures are expected. Estimated BHP at production TD is: 8650 psi
- Hydrogen sulfide gas is not anticipated. An H<sub>2</sub>S Contingency plan is attached with this APD in the event that H<sub>2</sub>S is encountered

# PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>CHEVRON USA INC.</b>
<b>LEASE NO.:</b>	<b>NMNM27506</b>
<b>WELL NAME &amp; NO.:</b>	<b>17H -SD EA 29 32 FED COM P10</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>120'/N &amp; 2605'/W</b>
<b>BOTTOM HOLE FOOTAGE</b>	<b>25'/S &amp; 2010'/W</b>
<b>LOCATION:</b>	<b>Section 29 T.26 S., R.33E., NMP</b>
<b>COUNTY:</b>	<b>LEA County, New Mexico</b>

COA

**All previous COAs still apply expect the following:**

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

## A. Hydrogen Sulfide

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.

## B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **800** 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)



- 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.

**Operator shall filled 50% of casing with fluid while running intermediate casing to maintain collapse safety factor.**

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:  
Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
  - a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
  - b. Second stage above DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - c. Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to 14%.**

#### **CONTINGENCY PLAN**

**Notify BLM before proceeding with the contingency plan.**

**Operator shall filled 1/3<sup>rd</sup> casing with fluid while running liner to maintain collapse safety factor.**

4. The minimum required fill of cement behind the 7-5/8 inch intermediate liner is:
  - d. Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

*5 1/2" should be shall be set at KOP.*

**Variance is approved for annular spacing between 7 5/8" x 5 1/2 " casing.**

5. The minimum required fill of cement behind the 5-1/2 x 5 inch production casing is:
  - e. Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

#### **C. PRESSURE CONTROL**

1. **Variance approved to use flex line from BOP to choke manifold.**  
**Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).**

2. 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.
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 **10,000 (10M)** psi.

## GENERAL 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)

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

1. 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.
  - a. In the event 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 well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. 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 are located, this does not include the dog house or stairway area.
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.

#### A. CASING

1. 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.
2. 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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. 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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. 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.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. **On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.**
7. 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.

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

#### B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. 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.
3. 5M or higher 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. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - 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. 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.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
5. 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. 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.
- d. 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.
- 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. 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.

### C. 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.

#### **D. 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.

#### **Waste Minimization Plan (WMP)**

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

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