Form 3160-3
(June 2015)

HOBBS OCD

FEB 20 2020

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM112941

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.
COBBER 21-28 FED
5H (327175)

2. Name of Operator
DEVON ENERGY PRODUCTION COMPANY LP (6137)

9. API Well No.
30-025-46897 (48187)

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
333 West Sheridan Avenue Oklahoma City OK 73102	(800)583-3866	WC-025 G-09 S263619C / WOLFCAMP;

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface NENW / 234 FNL / 1502 FEL / LAT 32.035538 / LONG -103.448514

At proposed prod. zone SWNW / 2619 FNL / 1300 FWL / LAT 32.014474 / LONG -103.479143

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 21 / T26S / R34E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
	LEA	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
234 feet	1920	480

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
501 feet	12975 feet / 20582 feet	FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3313 feet	01/01/2020	45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Rebecca Deal / Ph: (405)228-8429	02/21/2019

Title
Regulatory Compliance Professional

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	02/12/2020

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

Application approval 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.
Conditions of approval, if any, are attached.

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.

GCP Rec 02/20/2020

KZ 02/28/2020

APPROVED WITH CONDITIONS

Approval Date: 02/12/2020

(Continued on page 2)

*(Instructions on page 2)

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company LP
WELL NAME & NO.:	Cobber 21-28 Fed 5H
SURFACE HOLE FOOTAGE:	216'/N & 1418'/E
BOTTOM HOLE FOOTAGE	20'/S & 1665'/E
LOCATION:	Section 21, T.26 S., R.34 E., NMPM
COUNTY:	Lea County, New Mexico

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☑ Fluid Filled	☑ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☐ COM	☐ Unit

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 (Lea County) 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

   - 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 or potash.**

Operator has proposed to pump down 13-3/8" X 8-5/8" annulus. Operator must run a CBL from TD of the 8-5/8" casing to surface. Submit results to BLM.

3. 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.

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. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. 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. **Variance is approved to use a 10,000 (10M) Annular which shall be tested to 5000 (5M) psi.**

   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.

D. SPECIAL RESTRICITONS

1. Operator has been approved for their alternate casing design with a traditional cement job or Bradenhead squeeze. Any deviation from the approved casing plan should follow the sundry process.

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)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ 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 2nd 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 intergrity 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 intergrity 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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. 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.

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 not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

f. 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.

g. 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.

h. 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.

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BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

02/13/2020

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Rebecca Deal **Signed on:** 02/21/2019

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City **State:** OK **Zip:** 73102

Phone: (405)228-8429

Email address: Rebecca.Deal@dvn.com

Field Representative

Representative Name:

Street Address: 333 W SHERIDAN AVE

City: OKC **State:** OK **Zip:** 73102

Phone: (405)552-6556

Email address: blake.richardson@dvn.com

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

02/13/2020

APD ID: 10400039413 **Submission Date:** 02/21/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Section 1 - General

APD ID: 10400039413 **Tie to previous NOS?** **Submission Date:** 02/21/2019

BLM Office: CARLSBAD **User:** Rebecca Deal **Title:** Regulatory Compliance Professional

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM112941 **Lease Acres:** 1920

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue **Zip:** 73102

Operator PO Box:

Operator City: Oklahoma City **State:** OK

Operator Phone: (800)583-3866

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: COBBER 21-28 FED **Well Number:** 5H **Well API Number:**

Field/Pool or Exploratory? Field and Pool [redacted]

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: COBBER 21 WELLPAD

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town:

Well plat: COBBER_21_28_FED_5H_C_102_REV_20190930112015.pdf

Well work start Date: 01/01/2020 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1				FEL	26S	34E	21	Aliquot NENW			LEA	NEW MEXICO	NEW MEXICO	F	NMNM 112941				
KOP Leg #1				FWL	26S	34E	21	Aliquot NWNW			LEA	NEW MEXICO	NEW MEXICO	F	NMNM 112941				
PPP Leg #1-1				FWL	26S	34E	21	Aliquot NWNW			LEA	NEW MEXICO	NEW MEXICO	F	NMNM 112941				

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
EXIT Leg #1	[redacted]			FWL	26S	34E	28	Aliquot SWNW	[redacted]		LEA	NEW MEXICO	NEW MEXICO	F	NMNM 112941	[redacted]			
BHL Leg #1				FWL	26S	34E	28	Aliquot SWNW			LEA	NEW MEXICO	NEW MEXICO	F	NMNM 112941				

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

02/13/2020

APD ID: 10400039413 **Submission Date:** 02/21/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
403210	---	[redacted]	0	0	OTHER, SANDSTONE : SURFACE	NONE	N
403211	RUSTLER		720	720	SANDSTONE	NONE	N
403223	SALADO		1100	1100	SALT	NATURAL GAS, OIL	N
403213	BASE OF SALT		5115	5115	ANHYDRITE	NATURAL GAS, OIL	N
403214	BELL CANYON		5360	5360	SANDSTONE	NATURAL GAS, OIL	N
403220	CHERRY CANYON		6436	6436	SANDSTONE	NATURAL GAS, OIL	N
403221	BRUSHY CANYON		8064	8064	SANDSTONE	NATURAL GAS, OIL	N
403215	BONE SPRINGS		9635	9635	SHALE	NATURAL GAS, OIL	N
403222	BONE SPRING 1ST		10587	10587	SANDSTONE	NATURAL GAS, OIL	N
403216	BONE SPRING 2ND		11148	11148	SANDSTONE	NATURAL GAS, OIL	N
403217	BONE SPRING 3RD		11610	11610	SANDSTONE	NATURAL GAS, OIL	N
403218	WOLFCAMP		12658	12658	SHALE	NATURAL GAS, OIL	Y
403219	PENN		14621	14621	SHALE	NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Pressure Rating (PSI): 10M

[redacted]

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart. Devon requests a variance to run a 5M annular on a 10M BOP system. See separately attached variance request and support documents in AFMSS.
Testing Procedure: A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. 5M annular on 10M system will be tested to 100% of rated working pressure.
Choke Diagram Attachment:

10M_BOPE_CHK_DR_CLS_RKL_20190221115720.pdf

BOP Diagram Attachment:

10M_BOPE_CHK_DR_CLS_RKL_20190221115729.pdf

Pressure Rating (PSI): 5M

[redacted]

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.
Testing Procedure: A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.
Choke Diagram Attachment:

5M_BOPE__CK_20190221115807.pdf

BOP Diagram Attachment:

5M_BOPE__CK_20190221115814.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	725	0	725			725	H-40	48	ST&C	1.125	1	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	12250	0	12250			12250	P-110	29.7	OTHER - FLUSHMAX III	1.125	1	BUOY	1.6	BUOY	1.6
3	PRODUCTION	6.75	5.5	NEW	API	N	0	20582	0	12975			20582	P-110	20	OTHER - VAM SG	1.125	1	BUOY	1.6	BUOY	1.6

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Surf_Csg_Ass_20190221134934.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Int_Csg_Ass_20190221115912.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Prod_Csg_Ass_20190221135049.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead					1.44					
INTERMEDIATE	Lead					3.27					
INTERMEDIATE	Tail										
PRODUCTION	Lead					3.27					

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail										

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
12250	20582	OIL-BASED MUD	10	10.5				12			
0	725	WATER-BASED MUD	8.5	9				2			
725	12250	SALT SATURATED	10	10.5				2			

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Will run GRMWD from TD to from KOP. Cement bond logs will be run in vertical to determine top of cement. Stated logs run will be in the Completion Report and submitted to the BLM.

List of open and cased hole logs run in the well:

CALIPER,CBL,DS,GR,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

[redacted]

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Cobber_21_28_Fed_5H_Ver_2_20190930113509.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Cobber_21_28_Fed_5H_Permit_Plan_2_20190930113619.pdf

Cobber_21_28_Fed_5H_Plot_Permit_Plan_2_20190930113619.pdf

Other proposed operations facets description:

DRILLING PLAN
DIRECTIONAL SURVEY
PLOT
MULTI-BOWL WELLHEAD
MULTI-BOWL VERBIAGE
GAS CAPTURE PLAN
CLOSED LOOP DESIGN
CO-FLEX VARIANCE
SPUDDER RIG DOCUMENT
SPEC SHEETS
ANNULAR VARIANCE REQUEST - DOC & SCHEMATIC

Other proposed operations facets attachment:

Clsd_Loop_20180823120203.pdf

8.625_32.00_P110HSCY_TLW_20190221065123.PDF

5.5_x_20_P110_EC_VAMSG_20190212135119.pdf

7.625_29.70_P110_Flushmax_20190212135120.pdf

Spudder_Rig_Info_20190212133910.pdf

13.375_48__H40_20190212135122.pdf

MB_Verb_10M_20190212133909.pdf

5.5_x_17__P_110_BTC_20190221092949.pdf

Cobber_21_28_Fed_5H_Permit_Plan_2_20190930113713.pdf

Cobber_21_28__WP3_GCP_Form_20190930113732.pdf

MB_Wellhd_10M_13.375_7.625_5.5__20190930113817.pdf

MB_Wellhd_10M_13.375_8.625_5.5_20190930113818.PDF

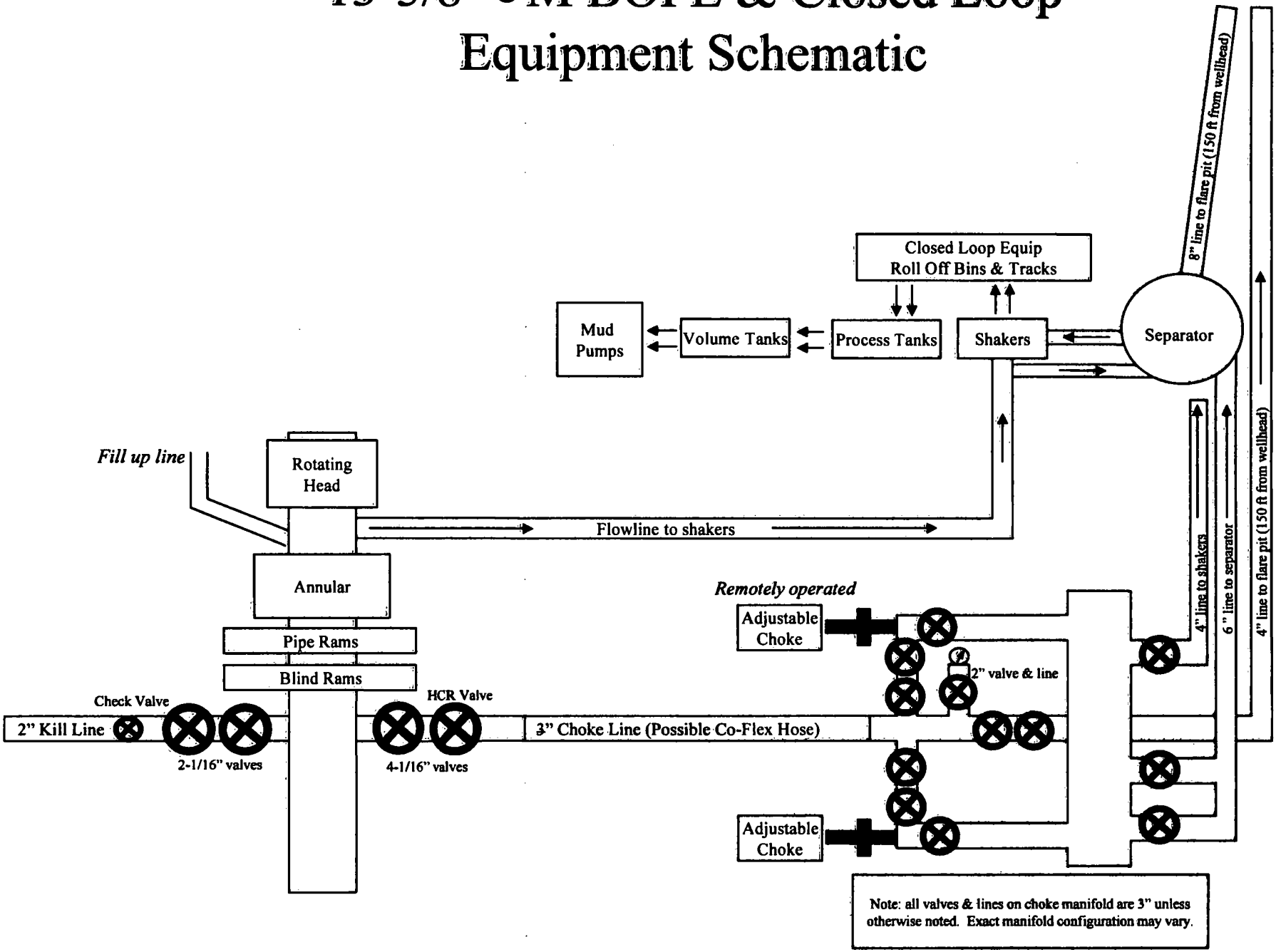
Other Variance attachment:

Co_flex_20180823120220.pdf

10M_BOPE_CHK_DR_CLS_RKL_20190212133813.pdf

Annular_Variance___Preventer_Summary_20190212133828.pdf

13-5/8" 5M BOPE & Closed Loop Equipment Schematic



devon

Devon Energy Center
333 West Sheridan Avenue
Oklahoma City, Oklahoma 73102-5015

Hydrogen Sulfide (H_2S) Contingency Plan

For

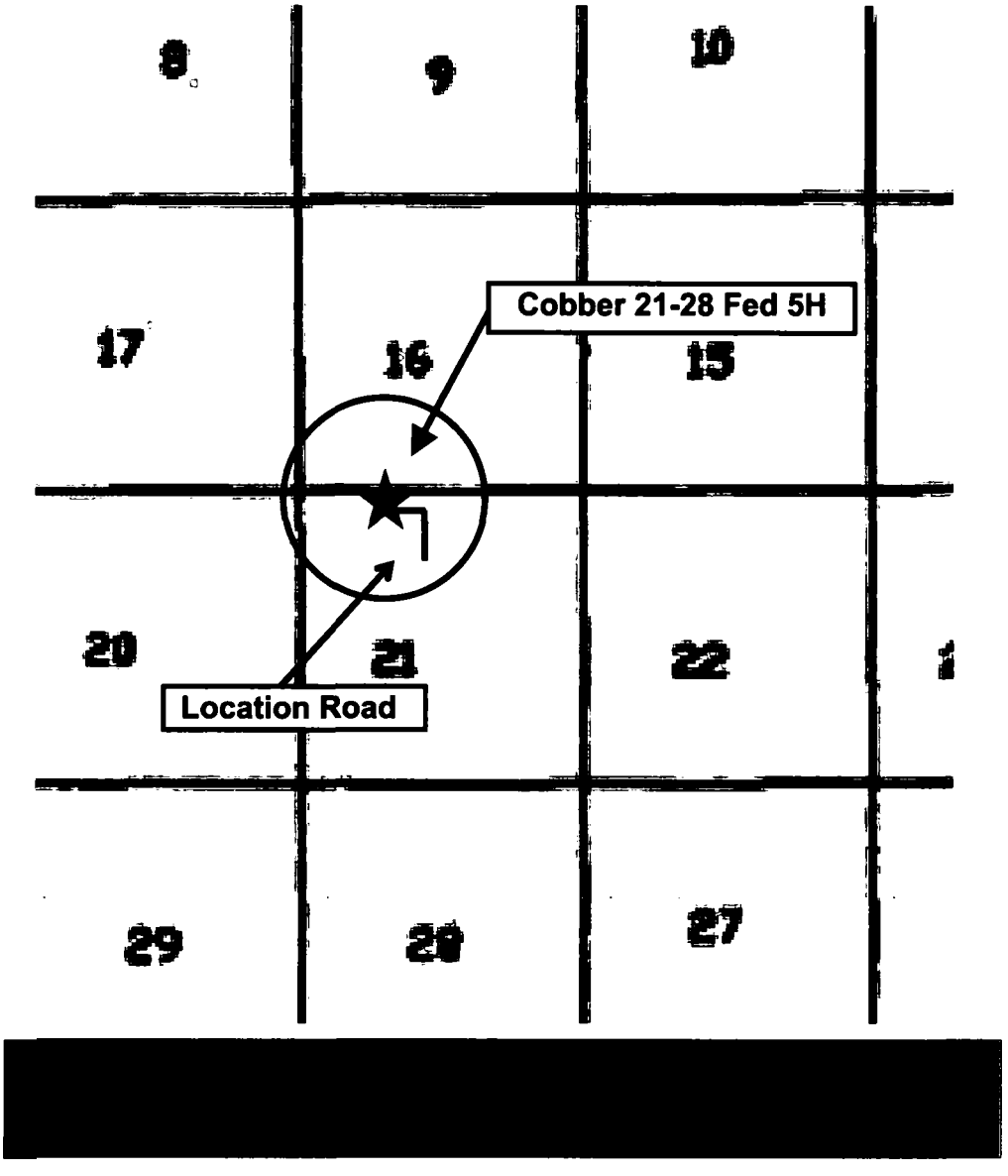
Cobber 21-28 Fed 5H

Sec-21 T-26S R-34E
234' FNL & 1502' FWL
LAT. = 32.035538' N (NAD83)
LONG = 103.478514' W

Lea County NM

Cobber 21-28 Fed 5H

This is an open drilling site. H_2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H_2S, including warning signs, wind indicators and H_2S monitor.



Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

Assumed 100 ppm ROE = 3000'

100 ppm H_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H_2S monitors and air packs in order to control the release.**
- **Use the "buddy system" to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H_2S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H_2S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H_2S)

2. The proper use and maintenance of personal protective equipment and life support systems.

3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H_2S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

3. The contents and requirements of the H_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

1. **Well Control Equipment**

   A. Flare line

   B. Choke manifold – Remotely Operated

   C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

   D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

   E. Mud/Gas Separator

2. **Protective equipment for essential personnel:**

   30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

3. **H_2S detection and monitoring equipment:**

   Portable H_2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H_2S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

   - **Bell nipple**
   - **Rig floor**
   - **Cellar**
   - **Possum Belly/Shale shaker**
   - **Choke manifold**

   Visual warning systems:

   A. Wind direction indicators as shown on well site diagram

   B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

4. **Mud program:**

   The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weight, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

5. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H_2S trim.

   B. All elastomers used for packing and seals shall be H_2S trim.

6. **Communication:**

   A. Company personnel have/use cellular telephones in the field.

   B. Land line (telephone) communications at Office

7. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H_2S environment will use the closed chamber method of testing.

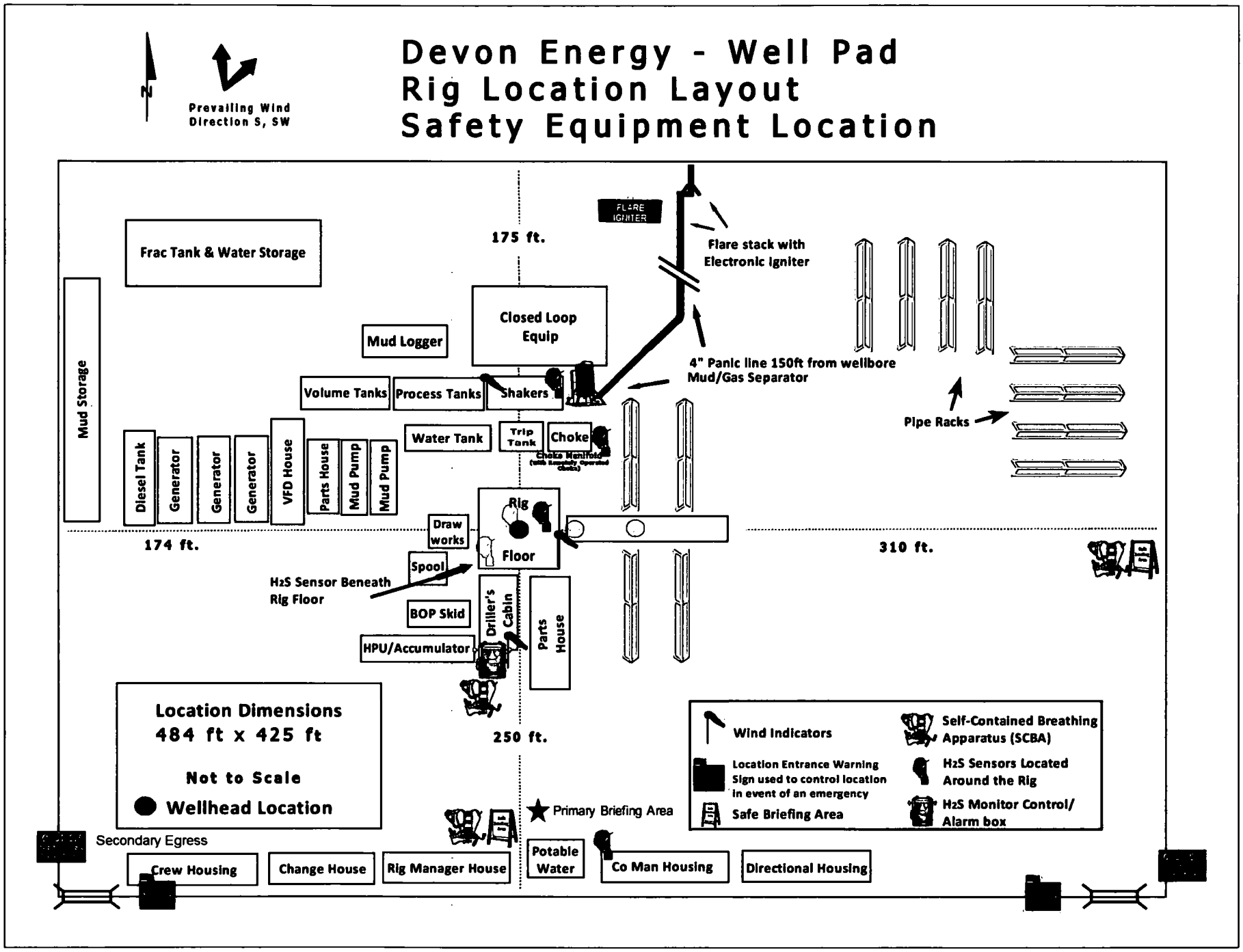
   B. There will be no drill stem testing.

Devon Energy Corp. Company Call List		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
EHS Professional – Laura Wright		405-439-8129
Agency Call List		
Lea County (575)	**Hobbs**	
	Lea County Communication Authority	393-3981
	State Police	392-5588
	City Police	397-9265
	Sheriff's Office	393-2515
	Ambulance	**911**
	Fire Department	397-9308
	LEPC (Local Emergency Planning Committee)	393-2870
	NMOCD	393-6161
	US Bureau of Land Management	393-3612
Eddy County (575)	**Carlsbad**	
	State Police	885-3137
	City Police	885-2111
	Sheriff's Office	887-7551
	Ambulance	**911**
	Fire Department	885-3125
	LEPC (Local Emergency Planning Committee)	887-3798
	US Bureau of Land Management	887-6544
	NM Emergency Response Commission (Santa Fe)	(505) 476-9600
	24 HR	(505) 827-9126
	National Emergency Response Center	(800) 424-8802
	National Pollution Control Center: Direct	(703) 872-6000
	For Oil Spills	(800) 280-7118
	Emergency Services	
	Wild Well Control	(281) 784-4700
	Cudd Pressure Control (915) 699-0139	(915) 563-3356
	Halliburton	(575) 746-2757
	B. J. Services	(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs (NM and TX)	(800)642-7828
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	

Prepared in conjunction with
Dave Small

SHARP
communications and consulting

Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location



WCDSC Permian NM

Lea County (NAD83 New Mexico East)
Sec 21-T26S-R34E
Cobber 21-28 Fed 5H

Wellbore #1

Plan: Permit Plan 2

Standard Planning Report - Geographic

19 September, 2019

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Project	Lea County (NAD83 New Mexico East)		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 21-T26S-R34E				
Site Position:		**Northing:**	372,767.99 usft	**Latitude:**	32.021870
From:	Map	**Easting:**	809,394.37 usft	**Longitude:**	-103.468410
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.46 °

Well	Cobber 21-28 Fed 5H					
Well Position	**+N/-S**	0.00 ft	**Northing:**	377,715.43 usft	**Latitude:**	32.035538
	+E/-W	0.00 ft	**Easting:**	806,223.51 usft	**Longitude:**	-103.478514
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,313.30 ft

Wellbore	Wellbore #1			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	9/18/2019	6.65	59.87	47,605.22840825

Design	Permit Plan 2			
Audit Notes:				
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.00	0.00	0.00	181.00

Plan Survey Tool Program **Date** 9/19/2019

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,581.66	Permit Plan 2 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,666.26	1.66	312.33	2,666.24	1.62	-1.78	1.00	1.00	0.00	312.33	
11,945.10	1.66	312.33	11,941.17	182.92	-200.81	0.00	0.00	0.00	0.00	
12,055.95	0.00	0.00	12,052.00	184.00	-202.00	1.50	-1.50	0.00	180.00	
12,405.99	0.00	0.00	12,402.04	184.00	-202.00	0.00	0.00	0.00	0.00	
13,305.99	90.00	179.51	12,975.00	-388.94	-197.06	10.00	10.00	0.00	179.51	PBHL - Cobber 21-28
20,581.66	90.00	179.51	12,975.00	-7,664.34	-134.39	0.00	0.00	0.00	0.00	PBHL - Cobber 21-28

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
100.00	0.00	0.00	100.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
200.00	0.00	0.00	200.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
300.00	0.00	0.00	300.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
400.00	0.00	0.00	400.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
500.00	0.00	0.00	500.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
600.00	0.00	0.00	600.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
700.00	0.00	0.00	700.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
800.00	0.00	0.00	800.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
900.00	0.00	0.00	900.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,000.00	0.00	0.00	1,000.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,100.00	0.00	0.00	1,100.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,200.00	0.00	0.00	1,200.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,300.00	0.00	0.00	1,300.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,400.00	0.00	0.00	1,400.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,500.00	0.00	0.00	1,500.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,600.00	0.00	0.00	1,600.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,700.00	0.00	0.00	1,700.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,800.00	0.00	0.00	1,800.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
1,900.00	0.00	0.00	1,900.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,000.00	0.00	0.00	2,000.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,100.00	0.00	0.00	2,100.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,200.00	0.00	0.00	2,200.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,300.00	0.00	0.00	2,300.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,400.00	0.00	0.00	2,400.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,500.00	0.00	0.00	2,500.00	0.00	0.00	377,715.43	806,223.51	32.035538	-103.478514
2,600.00	1.00	312.33	2,599.99	0.59	-0.65	377,716.02	806,222.86	32.035540	-103.478516
2,666.26	1.66	312.33	2,666.24	1.62	-1.78	377,717.05	806,221.72	32.035543	-103.478520
2,700.00	1.66	312.33	2,699.96	2.28	-2.51	377,717.71	806,221.00	32.035545	-103.478522
2,800.00	1.66	312.33	2,799.92	4.24	-4.65	377,719.67	806,218.86	32.035550	-103.478529
2,900.00	1.66	312.33	2,899.88	6.19	-6.80	377,721.62	806,216.71	32.035555	-103.478536
3,000.00	1.66	312.33	2,999.84	8.15	-8.94	377,723.57	806,214.57	32.035561	-103.478542
3,100.00	1.66	312.33	3,099.79	10.10	-11.09	377,725.53	806,212.42	32.035566	-103.478549
3,200.00	1.66	312.33	3,199.75	12.05	-13.23	377,727.48	806,210.28	32.035572	-103.478556
3,300.00	1.66	312.33	3,299.71	14.01	-15.38	377,729.43	806,208.13	32.035577	-103.478563
3,400.00	1.66	312.33	3,399.67	15.96	-17.52	377,731.39	806,205.99	32.035583	-103.478570
3,500.00	1.66	312.33	3,499.63	17.91	-19.67	377,733.34	806,203.84	32.035588	-103.478577
3,600.00	1.66	312.33	3,599.58	19.87	-21.81	377,735.30	806,201.70	32.035593	-103.478584
3,700.00	1.66	312.33	3,699.54	21.82	-23.96	377,737.25	806,199.55	32.035599	-103.478591
3,800.00	1.66	312.33	3,799.50	23.78	-26.10	377,739.20	806,197.41	32.035604	-103.478597
3,900.00	1.66	312.33	3,899.46	25.73	-28.25	377,741.16	806,195.26	32.035610	-103.478604
4,000.00	1.66	312.33	3,999.42	27.68	-30.39	377,743.11	806,193.12	32.035615	-103.478611
4,100.00	1.66	312.33	4,099.37	29.64	-32.54	377,745.07	806,190.97	32.035620	-103.478618
4,200.00	1.66	312.33	4,199.33	31.59	-34.68	377,747.02	806,188.83	32.035626	-103.478625
4,300.00	1.66	312.33	4,299.29	33.54	-36.83	377,748.97	806,186.68	32.035631	-103.478632
4,400.00	1.66	312.33	4,399.25	35.50	-38.97	377,750.93	806,184.54	32.035637	-103.478639
4,500.00	1.66	312.33	4,499.20	37.45	-41.12	377,752.88	806,182.39	32.035642	-103.478646
4,600.00	1.66	312.33	4,599.16	39.41	-43.26	377,754.83	806,180.25	32.035648	-103.478652
4,700.00	1.66	312.33	4,699.12	41.36	-45.41	377,756.79	806,178.10	32.035653	-103.478659
4,800.00	1.66	312.33	4,799.08	43.31	-47.55	377,758.74	806,175.96	32.035658	-103.478666
4,900.00	1.66	312.33	4,899.04	45.27	-49.70	377,760.70	806,173.81	32.035664	-103.478673
5,000.00	1.66	312.33	4,998.99	47.22	-51.84	377,762.65	806,171.67	32.035669	-103.478680
5,100.00	1.66	312.33	5,098.95	49.18	-53.99	377,764.60	806,169.52	32.035675	-103.478687
5,200.00	1.66	312.33	5,198.91	51.13	-56.13	377,766.56	806,167.38	32.035680	-103.478694
5,300.00	1.66	312.33	5,298.87	53.08	-58.28	377,768.51	806,165.23	32.035685	-103.478700

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	1.66	312.33	5,398.83	55.04	-60.42	377,770.47	806,163.09	32.035691	-103.478707
5,500.00	1.66	312.33	5,498.78	56.99	-62.57	377,772.42	806,160.94	32.035696	-103.478714
5,600.00	1.66	312.33	5,598.74	58.94	-64.71	377,774.37	806,158.80	32.035702	-103.478721
5,700.00	1.66	312.33	5,698.70	60.90	-66.86	377,776.33	806,156.65	32.035707	-103.478728
5,800.00	1.66	312.33	5,798.66	62.85	-69.00	377,778.28	806,154.51	32.035713	-103.478735
5,900.00	1.66	312.33	5,898.62	64.81	-71.15	377,780.23	806,152.36	32.035718	-103.478742
6,000.00	1.66	312.33	5,998.57	66.76	-73.29	377,782.19	806,150.22	32.035723	-103.478749
6,100.00	1.66	312.33	6,098.53	68.71	-75.44	377,784.14	806,148.07	32.035729	-103.478755
6,200.00	1.66	312.33	6,198.49	70.67	-77.58	377,786.10	806,145.93	32.035734	-103.478762
6,300.00	1.66	312.33	6,298.45	72.62	-79.73	377,788.05	806,143.78	32.035740	-103.478769
6,400.00	1.66	312.33	6,398.40	74.58	-81.87	377,790.00	806,141.64	32.035745	-103.478776
6,500.00	1.66	312.33	6,498.36	76.53	-84.02	377,791.96	806,139.49	32.035750	-103.478783
6,600.00	1.66	312.33	6,598.32	78.48	-86.16	377,793.91	806,137.35	32.035756	-103.478790
6,700.00	1.66	312.33	6,698.28	80.44	-88.31	377,795.86	806,135.20	32.035761	-103.478797
6,800.00	1.66	312.33	6,798.24	82.39	-90.45	377,797.82	806,133.06	32.035767	-103.478804
6,900.00	1.66	312.33	6,898.19	84.34	-92.60	377,799.77	806,130.91	32.035772	-103.478810
7,000.00	1.66	312.33	6,998.15	86.30	-94.74	377,801.73	806,128.77	32.035778	-103.478817
7,100.00	1.66	312.33	7,098.11	88.25	-96.89	377,803.68	806,126.62	32.035783	-103.478824
7,200.00	1.66	312.33	7,198.07	90.21	-99.03	377,805.63	806,124.48	32.035788	-103.478831
7,300.00	1.66	312.33	7,298.03	92.16	-101.18	377,807.59	806,122.33	32.035794	-103.478838
7,400.00	1.66	312.33	7,397.98	94.11	-103.32	377,809.54	806,120.19	32.035799	-103.478845
7,500.00	1.66	312.33	7,497.94	96.07	-105.47	377,811.50	806,118.04	32.035805	-103.478852
7,600.00	1.66	312.33	7,597.90	98.02	-107.61	377,813.45	806,115.90	32.035810	-103.478859
7,700.00	1.66	312.33	7,697.86	99.98	-109.76	377,815.40	806,113.75	32.035815	-103.478865
7,800.00	1.66	312.33	7,797.82	101.93	-111.90	377,817.36	806,111.61	32.035821	-103.478872
7,900.00	1.66	312.33	7,897.77	103.88	-114.05	377,819.31	806,109.46	32.035826	-103.478879
8,000.00	1.66	312.33	7,997.73	105.84	-116.19	377,821.26	806,107.32	32.035832	-103.478886
8,100.00	1.66	312.33	8,097.69	107.79	-118.34	377,823.22	806,105.17	32.035837	-103.478893
8,200.00	1.66	312.33	8,197.65	109.74	-120.48	377,825.17	806,103.03	32.035843	-103.478900
8,300.00	1.66	312.33	8,297.61	111.70	-122.62	377,827.13	806,100.88	32.035848	-103.478907
8,400.00	1.66	312.33	8,397.56	113.65	-124.77	377,829.08	806,098.74	32.035853	-103.478913
8,500.00	1.66	312.33	8,497.52	115.61	-126.91	377,831.03	806,096.59	32.035859	-103.478920
8,600.00	1.66	312.33	8,597.48	117.56	-129.06	377,832.99	806,094.45	32.035864	-103.478927
8,700.00	1.66	312.33	8,697.44	119.51	-131.20	377,834.94	806,092.30	32.035870	-103.478934
8,800.00	1.66	312.33	8,797.39	121.47	-133.35	377,836.90	806,090.16	32.035875	-103.478941
8,900.00	1.66	312.33	8,897.35	123.42	-135.49	377,838.85	806,088.01	32.035880	-103.478948
9,000.00	1.66	312.33	8,997.31	125.37	-137.64	377,840.80	806,085.87	32.035886	-103.478955
9,100.00	1.66	312.33	9,097.27	127.33	-139.78	377,842.76	806,083.72	32.035891	-103.478962
9,200.00	1.66	312.33	9,197.23	129.28	-141.93	377,844.71	806,081.58	32.035897	-103.478968
9,300.00	1.66	312.33	9,297.18	131.24	-144.07	377,846.66	806,079.43	32.035902	-103.478975
9,400.00	1.66	312.33	9,397.14	133.19	-146.22	377,848.62	806,077.29	32.035908	-103.478982
9,500.00	1.66	312.33	9,497.10	135.14	-148.36	377,850.57	806,075.14	32.035913	-103.478989
9,600.00	1.66	312.33	9,597.06	137.10	-150.51	377,852.53	806,073.00	32.035918	-103.478996
9,700.00	1.66	312.33	9,697.02	139.05	-152.65	377,854.48	806,070.85	32.035924	-103.479003
9,800.00	1.66	312.33	9,796.97	141.01	-154.80	377,856.43	806,068.71	32.035929	-103.479010
9,900.00	1.66	312.33	9,896.93	142.96	-156.94	377,858.39	806,066.56	32.035935	-103.479017
10,000.00	1.66	312.33	9,996.89	144.91	-159.09	377,860.34	806,064.42	32.035940	-103.479023
10,100.00	1.66	312.33	10,096.85	146.87	-161.23	377,862.30	806,062.27	32.035945	-103.479030
10,200.00	1.66	312.33	10,196.81	148.82	-163.38	377,864.25	806,060.13	32.035951	-103.479037
10,300.00	1.66	312.33	10,296.76	150.77	-165.52	377,866.20	806,057.98	32.035956	-103.479044
10,400.00	1.66	312.33	10,396.72	152.73	-167.67	377,868.16	806,055.84	32.035962	-103.479051
10,500.00	1.66	312.33	10,496.68	154.68	-169.81	377,870.11	806,053.69	32.035967	-103.479058
10,600.00	1.66	312.33	10,596.64	156.64	-171.96	377,872.06	806,051.55	32.035973	-103.479065
10,700.00	1.66	312.33	10,696.59	158.59	-174.10	377,874.02	806,049.40	32.035978	-103.479072
10,800.00	1.66	312.33	10,796.55	160.54	-176.25	377,875.97	806,047.26	32.035983	-103.479078

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,900.00	1.66	312.33	10,896.51	162.50	-178.39	377,877.93	806,045.11	32.035989	-103.479085
11,000.00	1.66	312.33	10,996.47	164.45	-180.54	377,879.88	806,042.97	32.035994	-103.479092
11,100.00	1.66	312.33	11,096.43	166.41	-182.68	377,881.83	806,040.82	32.036000	-103.479099
11,200.00	1.66	312.33	11,196.38	168.36	-184.83	377,883.79	806,038.68	32.036005	-103.479106
11,300.00	1.66	312.33	11,296.34	170.31	-186.97	377,885.74	806,036.53	32.036011	-103.479113
11,400.00	1.66	312.33	11,396.30	172.27	-189.12	377,887.69	806,034.39	32.036016	-103.479120
11,500.00	1.66	312.33	11,496.26	174.22	-191.26	377,889.65	806,032.24	32.036021	-103.479127
11,600.00	1.66	312.33	11,596.22	176.17	-193.41	377,891.60	806,030.10	32.036027	-103.479133
11,700.00	1.66	312.33	11,696.17	178.13	-195.55	377,893.56	806,027.95	32.036032	-103.479140
11,800.00	1.66	312.33	11,796.13	180.08	-197.70	377,895.51	806,025.81	32.036038	-103.479147
11,900.00	1.66	312.33	11,896.09	182.04	-199.84	377,897.46	806,023.66	32.036043	-103.479154
11,945.10	1.66	312.33	11,941.17	182.92	-200.81	377,898.35	806,022.70	32.036045	-103.479157
12,000.00	0.84	312.33	11,996.06	183.72	-201.70	377,899.15	806,021.81	32.036048	-103.479160
12,055.95	0.00	0.00	12,052.00	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
12,100.00	0.00	0.00	12,096.05	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
12,200.00	0.00	0.00	12,196.05	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
12,300.00	0.00	0.00	12,296.05	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
12,400.00	0.00	0.00	12,396.05	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
12,405.99	0.00	0.00	12,402.04	184.00	-202.00	377,899.43	806,021.51	32.036048	-103.479161
KOP @ 12406' MD, 50' FNL, 1300' FWL									
12,500.00	9.40	179.51	12,495.63	176.30	-201.93	377,891.73	806,021.57	32.036027	-103.479161
12,600.00	19.40	179.51	12,592.37	151.47	-201.72	377,866.89	806,021.79	32.035959	-103.479161
12,647.13	24.11	179.51	12,636.13	134.00	-201.57	377,849.43	806,021.94	32.035911	-103.479161
FTP @ 12647' MD, 100' FNL, 1300' FWL									
12,700.00	29.40	179.51	12,683.32	110.21	-201.36	377,825.63	806,022.14	32.035846	-103.479161
12,800.00	39.40	179.51	12,765.73	53.78	-200.88	377,769.21	806,022.63	32.035690	-103.479161
12,900.00	49.40	179.51	12,837.08	-16.09	-200.28	377,699.33	806,023.23	32.035498	-103.479160
13,000.00	59.40	179.51	12,895.22	-97.30	-199.58	377,618.13	806,023.93	32.035275	-103.479160
13,100.00	69.40	179.51	12,938.37	-187.37	-198.80	377,528.06	806,024.71	32.035028	-103.479160
13,200.00	79.40	179.51	12,965.22	-283.56	-197.97	377,431.87	806,025.54	32.034763	-103.479160
13,300.00	89.40	179.51	12,974.97	-382.95	-197.12	377,332.48	806,026.39	32.034490	-103.479160
13,305.99	90.00	179.51	12,975.00	-388.94	-197.06	377,326.49	806,026.44	32.034474	-103.479160
13,400.00	90.00	179.51	12,975.00	-482.95	-196.25	377,232.48	806,027.25	32.034215	-103.479159
13,500.00	90.00	179.51	12,975.00	-582.94	-195.39	377,132.49	806,028.12	32.033940	-103.479159
13,600.00	90.00	179.51	12,975.00	-682.94	-194.53	377,032.49	806,028.98	32.033665	-103.479159
13,700.00	90.00	179.51	12,975.00	-782.94	-193.67	376,932.49	806,029.84	32.033390	-103.479159
13,800.00	90.00	179.51	12,975.00	-882.93	-192.81	376,832.50	806,030.70	32.033116	-103.479158
13,900.00	90.00	179.51	12,975.00	-982.93	-191.95	376,732.50	806,031.56	32.032841	-103.479158
14,000.00	90.00	179.51	12,975.00	-1,082.92	-191.09	376,632.51	806,032.42	32.032566	-103.479158
14,100.00	90.00	179.51	12,975.00	-1,182.92	-190.22	376,532.51	806,033.28	32.032291	-103.479158
14,200.00	90.00	179.51	12,975.00	-1,282.92	-189.36	376,432.51	806,034.15	32.032016	-103.479158
14,300.00	90.00	179.51	12,975.00	-1,382.91	-188.50	376,332.52	806,035.01	32.031741	-103.479157
14,400.00	90.00	179.51	12,975.00	-1,482.91	-187.64	376,232.52	806,035.87	32.031466	-103.479157
14,500.00	90.00	179.51	12,975.00	-1,582.91	-186.78	376,132.53	806,036.73	32.031191	-103.479157
14,600.00	90.00	179.51	12,975.00	-1,682.90	-185.92	376,032.53	806,037.59	32.030917	-103.479157
14,700.00	90.00	179.51	12,975.00	-1,782.90	-185.06	375,932.53	806,038.45	32.030642	-103.479156
14,800.00	90.00	179.51	12,975.00	-1,882.90	-184.19	375,832.54	806,039.31	32.030367	-103.479156
14,900.00	90.00	179.51	12,975.00	-1,982.89	-183.33	375,732.54	806,040.18	32.030092	-103.479156
15,000.00	90.00	179.51	12,975.00	-2,082.89	-182.47	375,632.54	806,041.04	32.029817	-103.479156
15,100.00	90.00	179.51	12,975.00	-2,182.88	-181.61	375,532.55	806,041.90	32.029542	-103.479156
15,200.00	90.00	179.51	12,975.00	-2,282.88	-180.75	375,432.55	806,042.76	32.029267	-103.479155
15,300.00	90.00	179.51	12,975.00	-2,382.88	-179.89	375,332.56	806,043.62	32.028992	-103.479155
15,400.00	90.00	179.51	12,975.00	-2,482.87	-179.03	375,232.56	806,044.48	32.028718	-103.479155
15,500.00	90.00	179.51	12,975.00	-2,582.87	-178.16	375,132.56	806,045.34	32.028443	-103.479155

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,600.00	90.00	179.51	12,975.00	-2,682.87	-177.30	375,032.57	806,046.21	32.028168	-103.479154
15,700.00	90.00	179.51	12,975.00	-2,782.86	-176.44	374,932.57	806,047.07	32.027893	-103.479154
15,800.00	90.00	179.51	12,975.00	-2,882.86	-175.58	374,832.58	806,047.93	32.027618	-103.479154
15,900.00	90.00	179.51	12,975.00	-2,982.85	-174.72	374,732.58	806,048.79	32.027343	-103.479154
16,000.00	90.00	179.51	12,975.00	-3,082.85	-173.86	374,632.58	806,049.65	32.027068	-103.479153
16,100.00	90.00	179.51	12,975.00	-3,182.85	-173.00	374,532.59	806,050.51	32.026793	-103.479153
16,200.00	90.00	179.51	12,975.00	-3,282.84	-172.13	374,432.59	806,051.37	32.026519	-103.479153
16,300.00	90.00	179.51	12,975.00	-3,382.84	-171.27	374,332.60	806,052.24	32.026244	-103.479153
16,400.00	90.00	179.51	12,975.00	-3,482.84	-170.41	374,232.60	806,053.10	32.025969	-103.479153
16,500.00	90.00	179.51	12,975.00	-3,582.83	-169.55	374,132.60	806,053.96	32.025694	-103.479152
16,600.00	90.00	179.51	12,975.00	-3,682.83	-168.69	374,032.61	806,054.82	32.025419	-103.479152
16,700.00	90.00	179.51	12,975.00	-3,782.82	-167.83	373,932.61	806,055.68	32.025144	-103.479152
16,800.00	90.00	179.51	12,975.00	-3,882.82	-166.97	373,832.62	806,056.54	32.024869	-103.479152
16,900.00	90.00	179.51	12,975.00	-3,982.82	-166.10	373,732.62	806,057.40	32.024594	-103.479151
17,000.00	90.00	179.51	12,975.00	-4,082.81	-165.24	373,632.62	806,058.26	32.024320	-103.479151
17,100.00	90.00	179.51	12,975.00	-4,182.81	-164.38	373,532.63	806,059.13	32.024045	-103.479151
17,200.00	90.00	179.51	12,975.00	-4,282.81	-163.52	373,432.63	806,059.99	32.023770	-103.479151
17,300.00	90.00	179.51	12,975.00	-4,382.80	-162.66	373,332.63	806,060.85	32.023495	-103.479150
17,400.00	90.00	179.51	12,975.00	-4,482.80	-161.80	373,232.64	806,061.71	32.023220	-103.479150
17,500.00	90.00	179.51	12,975.00	-4,582.80	-160.94	373,132.64	806,062.57	32.022945	-103.479150
17,600.00	90.00	179.51	12,975.00	-4,682.79	-160.07	373,032.65	806,063.43	32.022670	-103.479150
17,700.00	90.00	179.51	12,975.00	-4,782.79	-159.21	372,932.65	806,064.29	32.022395	-103.479150
17,800.00	90.00	179.51	12,975.00	-4,882.78	-158.35	372,832.65	806,065.16	32.022121	-103.479149
17,900.00	90.00	179.51	12,975.00	-4,982.78	-157.49	372,732.66	806,066.02	32.021846	-103.479149
17,961.00	90.00	179.51	12,975.00	-5,043.78	-156.97	372,671.66	806,066.54	32.021678	-103.479149
Cross section @ 17961' MD, 0' FNL, 1300' FWL									
18,000.00	90.00	179.51	12,975.00	-5,082.78	-156.63	372,632.66	806,066.88	32.021571	-103.479149
18,100.00	90.00	179.51	12,975.00	-5,182.77	-155.77	372,532.67	806,067.74	32.021296	-103.479149
18,200.00	90.00	179.51	12,975.00	-5,282.77	-154.91	372,432.67	806,068.60	32.021021	-103.479148
18,300.00	90.00	179.51	12,975.00	-5,382.77	-154.04	372,332.67	806,069.46	32.020746	-103.479148
18,400.00	90.00	179.51	12,975.00	-5,482.76	-153.18	372,232.68	806,070.32	32.020471	-103.479148
18,500.00	90.00	179.51	12,975.00	-5,582.76	-152.32	372,132.68	806,071.19	32.020196	-103.479148
18,600.00	90.00	179.51	12,975.00	-5,682.75	-151.46	372,032.69	806,072.05	32.019922	-103.479148
18,700.00	90.00	179.51	12,975.00	-5,782.75	-150.60	371,932.69	806,072.91	32.019647	-103.479147
18,800.00	90.00	179.51	12,975.00	-5,882.75	-149.74	371,832.69	806,073.77	32.019372	-103.479147
18,900.00	90.00	179.51	12,975.00	-5,982.74	-148.88	371,732.70	806,074.63	32.019097	-103.479147
19,000.00	90.00	179.51	12,975.00	-6,082.74	-148.01	371,632.70	806,075.49	32.018822	-103.479147
19,100.00	90.00	179.51	12,975.00	-6,182.74	-147.15	371,532.71	806,076.35	32.018547	-103.479146
19,200.00	90.00	179.51	12,975.00	-6,282.73	-146.29	371,432.71	806,077.22	32.018272	-103.479146
19,300.00	90.00	179.51	12,975.00	-6,382.73	-145.43	371,332.71	806,078.08	32.017997	-103.479146
19,400.00	90.00	179.51	12,975.00	-6,482.72	-144.57	371,232.72	806,078.94	32.017723	-103.479146
19,500.00	90.00	179.51	12,975.00	-6,582.72	-143.71	371,132.72	806,079.80	32.017448	-103.479145
19,600.00	90.00	179.51	12,975.00	-6,682.72	-142.85	371,032.72	806,080.66	32.017173	-103.479145
19,700.00	90.00	179.51	12,975.00	-6,782.71	-141.99	370,932.73	806,081.52	32.016898	-103.479145
19,800.00	90.00	179.51	12,975.00	-6,882.71	-141.12	370,832.73	806,082.38	32.016623	-103.479145
19,900.00	90.00	179.51	12,975.00	-6,982.71	-140.26	370,732.74	806,083.25	32.016348	-103.479145
20,000.00	90.00	179.51	12,975.00	-7,082.70	-139.40	370,632.74	806,084.11	32.016073	-103.479144
20,100.00	90.00	179.51	12,975.00	-7,182.70	-138.54	370,532.74	806,084.97	32.015798	-103.479144
20,200.00	90.00	179.51	12,975.00	-7,282.69	-137.68	370,432.75	806,085.83	32.015523	-103.479144
20,300.00	90.00	179.51	12,975.00	-7,382.69	-136.82	370,332.75	806,086.69	32.015249	-103.479144
20,400.00	90.00	179.51	12,975.00	-7,482.69	-135.96	370,232.76	806,087.55	32.014974	-103.479143
20,500.00	90.00	179.51	12,975.00	-7,582.68	-135.09	370,132.76	806,088.41	32.014699	-103.479143
20,501.64	90.00	179.51	12,975.00	-7,584.32	-135.08	370,131.12	806,088.43	32.014694	-103.479143
LTP @ 20502' MD, 2539' FNL, 1300' FWL									

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-28 Fed 5H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3338.30ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3338.30ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-28 Fed 5H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,581.64	90.00	179.51	12,975.00	-7,664.32	-134.39	370,051.12	806,089.12	32.014474	-103.479143
PBHL; 2619' FNL, 1300' FWL									
20,581.66	90.00	179.51	12,975.00	-7,664.34	-134.39	370,051.11	806,089.12	32.014474	-103.479143

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Cobber 21-28 Fe	0.00	0.00	0.00	-7,664.34	-134.39	370,051.11	806,089.12	32.014474	-103.479143
- plan misses target center by 7665.51ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
12,405.99	12,402.04	184.00	-202.00	KOP @ 12406' MD, 50' FNL, 1300' FWL
12,647.13	12,636.13	134.00	-201.57	FTP @ 12647' MD, 100' FNL, 1300' FWL
17,961.00	12,975.00	-5,043.78	-156.97	Cross section @ 17961' MD, 0' FNL, 1300' FWL
20,501.64	12,975.00	-7,584.32	-135.08	LTP @ 20502' MD, 2539' FNL, 1300' FWL
20,581.64	12,975.00	-7,664.32	-134.39	PBHL; 2619' FNL, 1300' FWL

WCDSC Permian NM

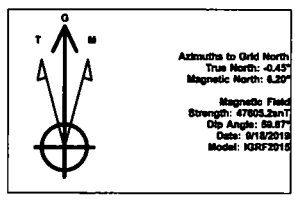
WELL DETAILS: Cobber 21-28 Fed 5H

RKB @ 3338.30ft
3313.30

Northing	Easting	Latitude	Longitude
377715.43	808223.51	32.035538	-103.478514

SECTION DETAILS Permit Plan 2

	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Annotation
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	
	2588.28	1.68	312.33	2588.24	1.62	-1.78	1.00	-1.59	
	11845.10	1.68	312.33	11841.17	182.62	-200.81	0.00	-179.37	
5	12055.95	0.00	0.00	12052.00	184.00	-202.00	1.80	-180.43	
6	12405.99	0.00	0.00	12402.04	184.00	-202.00	0.00	-180.43	KOP @ 12406' MD, 50' FNL, 1300' FWL
7	13325.99	90.00	179.51	12975.00	-388.94	-187.06	10.00	392.33	
8	20561.85	90.00	179.51	12975.00	-7864.34	-134.39	0.00	7663.51	PBHL: 2619' FNL, 1300' FWL



Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.20°

Magnetic Field
Strength: 47605.2nT
Dip Angle: 59.87°
Date: 9/18/2018
Model: IGRF2015

West(-)/East(+) (350 ft/in)

KOP @ 12406' MD, 50' FNL, 1300' FWL

Cobber 21-28 Fed 5H

FTP @ 12647' MD, 100' FNL, 1300' FWL

Sec. 21-26S-34E

Cobber 21 Fed 1H

Cross section @ 17981' MD, 0' FNL, 1300' FWL

LTP @ 20502' MD, 2539' FNL, 1300' FWL

PBHL: 2619' FNL, 1300' FWL

Sec. 28-26S-34E

South(-)/North(+) (400 ft/in)

True Vertical Depth (400 ft/in)

KOP @ 12406' MD, 50' FNL, 1300' FWL

FTP @ 12647' MD, 100' FNL, 1300' FWL

LTP @ 20502' MD, 2539' FNL, 1300' FWL

Cross section @ 17981' MD, 0' FNL, 1300' FWL

PBHL: 2619' FNL, 1300' FWL

Vertical Section at 181.00° (400 ft/in)

1. Geologic Formations

TVD of target	12975	Pilot hole depth	N/A
MD at TD:	20582	Deepest expected fresh water	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	700		
Salado	1100		
Base of Salt	5090		
Delaware	5350		
1BSLM	8500		
Bone Spring 1st	9650		
Bone Spring 2nd	10075		
Bone Spring 3rd	12250		
Wolfcamp	12650		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program (Primary Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17 1/2	0	725 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	12250 TVD	7 5/8	29.7	P110	Flushmax III	1.125	1.25	1.6
6 3/4	0	TD	5 1/2	20.0	P110	Vam SG	1.125	1.25	1.6
			BLM Minimum Safety Factor				1.125	1	1.6 Dry 1.8 Wet

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.
• Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
• A variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing.

• Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.

• A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.

• A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

Casing Program (Alternative Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17 1/2	0	725 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	12250 TVD	8 5/8	32.0	P110	TLW	1.125	1.25	1.6
7 7/8	0	TD	5 1/2	17.0	P110	BTC	1.125	1.25	1.6
			BLM Minimum Safety Factor				1.125	1	1.6 Dry 1.8 Wet

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.
• Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
• A variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing.
• Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.
• A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
•Variance requested to drill 10.625" hole instead of 9.875" for intermediate 1, the 8.625" connection will change from TLW to BTC.
• A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specficition sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program (Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	563	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	768	Surf	9	3.27	Lead: Class C Cement + additives
	783	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 Two Stage w/ DV @ TVD of Delaware	965	Surf	9	3.27	1st stage Lead: Class C Cement + additives
	93	500' above shoe	13.2	1.44	1st stage Tail: Class H / C + additives
	464	Surf	9	3.27	2nd stage Lead: Class C Cement + additives
	93	500' above DV	13.2	1.44	2nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	9	1.44	Squeeze Lead: Class C Cement + additives
	768	Surf	9	3.27	Lead: Class C Cement + additives
	783	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	62	10406	9.0	3.3	Lead: Class H /C + additives
	522	12406	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

3. Cementing Program (Alternative Design)

Casing	# Sks	TOC	Wt. ppg	Yld (ft3/sack)	Slurry Description
Surface	563	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	483	Surf	9	3.27	Lead: Class C Cement + additives
	465	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	567	Surf	9	3.27	1st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.44	1st stage Tail: Class H / C + additives
	304	Surf	9	3.27	2nd stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.44	2nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.44	Squeeze Lead: Class C Cement + additives
	483	Surf	9	3.27	Lead: Class C Cement + additives
	465	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 (10.625" Hole Size)	734	Surf	9	3.27	Lead: Class C Cement + additives
	768	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	117	10406	9.0	3.3	Lead: Class H /C + additives
	1082	12406	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

4. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-58"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	10M	Annular (5M)	X	100% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram		
			Double Ram	X	
			Other*		
			Annular (5M)		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		
N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.				
Y	A variance is requested to run a 5 M annular on a 10M system				

5. Mud Program (Three String Design)

Section	Type	Weight (ppg)
Surface	FW Gel	8.5-9
Intermediate	DBE / Cut Brine	10-10.5
Production	OBM	10-10.5

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well - vertical portion of hole). Stated logs run will be in the Completion Rpeort and sbumitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain.
	Coring? If yes, explain.

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specfiy what type and where?
BH pressure at deepest TVD	7084
Abnormal temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogren Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S plan attached.

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report

02/13/2020

APD ID: 10400039413 **Submission Date:** 02/21/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

02/13/2020

APD ID: 10400039413 **Submission Date:** 02/21/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COBBER 21-28 FED **Well Number:** 5H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: CO1104

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: