

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

**HOBBS OCD**  
**FEB 07 2020**  
**RECEIVED**

1a. Type of work:  DRILL  REENTER  
 1b. Type of Well:  Oil Well  Gas Well  Other  
 1c. Type of Completion:  Hydraulic Fracturing  Single Zone  Multiple

5. Lease Serial No.  
NMNM115000  
6. If Indian, Allottee or Tribe Name  
7. If Unit or CA Agreement, Name and No.  
8. Lease Name and Well No.  
BILLIKEN 7-6 FED COM  
5H 327195

2. Name of Operator  
DEVON ENERGY PRODUCTION COMPANY LP (6137)  
3a. Address  
333 West Sheridan Avenue Oklahoma City OK 73102  
3b. Phone No. (include area code)  
(800)583-3866

9. API Well No.  
30-025-46858 (46117)  
10. Field and Pool, or Exploratory  
WC-025 G-09 S263416B / UPPER WOLF

4. Location of Well (Report location clearly and in accordance with any State requirements. \*)  
At surface SWSW / 294 FSL / 1218 FWL / LAT 32.051416 / LONG -103.411193  
At proposed prod. zone NWNW / 20 FNL / 360 FWL / LAT 32.07959 / LONG -103.413969

11. Sec., T, R, M, or Blk. and Survey or Area  
SEC 7 / T26S / R35E / NMP

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

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1218 feet  
16. No of acres in lease 921.45  
17. Spacing Unit dedicated to this well 324

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft. 391 feet  
19. Proposed Depth 12550 feet / 22833 feet  
20. BLM/BIA Bond No. in file FED: NMB000801

21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3275 feet  
22. Approximate date work will start\* 02/29/2020  
23. Estimated duration 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 (Electronic Submission) Name (Printed/Typed) Date  
Rebecca Deal / Ph: (405)228-8429 08/20/2019

Title  
Regulatory Compliance Professional

Approved by (Signature) (Electronic Submission) Name (Printed/Typed) Date  
Cody Layton / Ph: (575)234-5959 01/29/2020

Title  
Assistant Field Manager Lands & Minerals Office  
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.

BCP Rec 02/07/2020

Ka  
02/10/2020

**APPROVED WITH CONDITIONS**

**PECOS DISTRICT  
DRILLING CONDITIONS OF APPROVAL**

<b>OPERATOR'S NAME:</b>	<b>Devon Energy Production Company LP</b>
<b>LEASE NO.:</b>	<b>NMNM115000</b>
<b>WELL NAME &amp; NO.:</b>	<b>Billiken 7-6 FED COM 5H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>294'/S &amp; 1218'/W</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>20'N &amp; 360'/W</b>
<b>LOCATION:</b>	<b>Section 7, T.26 S., R.35 E., NMP</b>
<b>COUNTY:</b>	<b>Lea County, New Mexico</b>

COA

H2S	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input type="radio"/> Multibowl	<input checked="" type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input checked="" type="checkbox"/> Fluid Filled	<input checked="" type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

**A. HYDROGEN SULFIDE**

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Wildcat subplay**. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

**B. CASING**

**Primary Casing Design:**

1. The 13-3/8 inch surface casing shall be set at approximately **1150 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 7-5/8 inch intermediate casing is:

**Option 1 (Single Stage):**

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Cement excess is less than 25%, more cement might be required.**

**Option 2:**

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. **Cement excess is less than 25%, more cement might be required.**

**Operator has proposed to pump down 13-3/8" X 7-5/8" annulus. Operator must run a CBL from TD of the 7-5/8" 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.

**Alternate Casing Design:**

4. The 13-3/8 inch surface casing shall be set at approximately 1150 feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - e. 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.
  - f. 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)
  - g. 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.
  - h. 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.**

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

**Option 1 (Single Stage):**

- Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Cement excess is less than 25%, more cement might be required.**

**Option 2:**

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.

- c. 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.
- d. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.  
**Cement excess is less than 25%, more cement might be required.**

**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.**

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

6. 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.

#### **Option 1:**

- a. 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**.
- b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M) psi**. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

#### **Option 2:**

1. 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 **10,000 (10M) psi**. **Variance is approved to use a 5000 (5M) 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 REQUIREMENT (S)**

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

## 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 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. 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.



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

# Operator Certification Data Report

02/04/2020

## 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:** 08/19/2019

**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



APD ID: 10400045996

Submission Date: 08/20/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

Well Number: 5H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

**Section 1 - General**

APD ID: 10400045996

Tie to previous NOS? N

Submission Date: 08/20/2019

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: NMNM115000

Lease Acres: 921.45

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? Y

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: BILLIKEN 7-6 FED COM

Well Number: 5H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: WC-025 G-09 S263416B

Pool Name: UPPER WOLFCAMP

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

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? N New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:

Number: 1

Well Class: HORIZONTAL

BILLIKEN 7 WELLPAD

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:

Distance to nearest well: 391 FT

Distance to lease line: 1218 FT

Reservoir well spacing assigned acres Measurement: 324 Acres

Well plat: BILLIKEN\_7\_6\_FED\_COM\_5H\_C\_102\_20190819132235.pdf

Well work start Date: 02/29/2020

Duration: 45 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum: GROUND LEVEL

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	294	FSL	1218	FWL	26S	35E	7	Aliquot SWS W	32.051416	-103.411193	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 115000	3275	0	0	Y
KOP Leg #1	50	FSL	360	FWL	26S	35E	7	Aliquot SWS W	32.050765	-103.413969	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 115000	-8702	12019	11977	Y
PPP Leg #1-1	1	FNL	360	FWL	26S	35E	7	Aliquot NWN W	32.06493	-103.413969	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	-9275	17500	12550	Y

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

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?
PPP Leg #1-2	100	FSL	360	FW L	26S	35E	7	Aliquot SWS W	32.050903	-103.413969	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 115000	-8936	12261	12211	Y
EXIT Leg #1	100	FNL	360	FW L	26S	35E	6	Aliquot NWN W	32.07937	-103.413969	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 125401	-9275	22753	12550	Y
BHL Leg #1	20	FNL	360	FW L	26S	35E	6	Aliquot NWN W	32.07959	-103.413969	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 125401	-9275	22833	12550	Y



APD ID: 10400045996

Submission Date: 08/20/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

Well Number: 5H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

**Section 1 - Geologic Formations**

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
517124	--	3275	0	0	OTHER : SURFACE	NONE	N
517125	RUSTLER	2245	1030	1030	ANHYDRITE, SANDSTONE	NONE	N
517126	SALADO	1800	1475	1475	ANHYDRITE, SALT	NONE	N
517127	BASE OF SALT	-1805	5080	5080	LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
517128	DELAWARE	-2065	5340	5340	SANDSTONE	NATURAL GAS, OIL	N
517129	CHERRY CANYON	-3125	6400	6400	SANDSTONE	NATURAL GAS, OIL	N
517130	BRUSHY CANYON	-4725	8000	8000	SANDSTONE	NATURAL GAS, OIL	N
517131	BONE SPRING	-5975	9250	9250	LIMESTONE, SHALE	NATURAL GAS, NONE, OIL	N
517132	BONE SPRING 1ST	-7100	10375	10375	SANDSTONE	NATURAL GAS, OIL	N
517133	BONE SPRING 2ND	-7675	10950	10950	SANDSTONE	NATURAL GAS, OIL	N
517134	BONE SPRING 3RD	-8775	12050	12050	SANDSTONE	NATURAL GAS, OIL	N
517135	WOLFCAMP	-9175	12450	12450	SANDSTONE, SHALE	NATURAL GAS, OIL	Y
517136	STRAWN	-10725	14000	14000	LIMESTONE	NATURAL GAS, OIL	N

**Section 2 - Blowout Prevention**

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** BILLIKEN 7-6 FED COM

**Well Number:** 5H

**Pressure Rating (PSI):** 10M

**Rating Depth:** 12550

**Equipment:** BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below intermediate casing, a 13-5/8" BOP/BOPE system with a minimum rating of 10M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

**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\_20190730112951.pdf

**BOP Diagram Attachment:**

10M\_BOPE\_CHK\_DR\_CLS\_RKL\_20190730113000.pdf

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**Pressure Rating (PSI):** 5M

**Rating Depth:** 12050

**Equipment:** BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

**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\_20190730113129.pdf

**BOP Diagram Attachment:**

5M\_BOPE\_\_CK\_20190730113136.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

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	905	0	905	3275	2370	905	H-40	48	ST&C	1.125	1	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	12050	0	12050	3576	-8775	12050	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	22833	0	12550	3576	-9275	22833	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\_20190730113310.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

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\_20190730113522.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Prod\_Csg\_Ass\_20190730113701.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: BILLIKEN 7-6 FED COM

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
0	905	WATER-BASED MUD	8.5	9				2			
905	1205 0	SALT SATURATED	10	10.5				2			
1205 0	2283 3	OIL-BASED MUD	10	10.5				12			

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** BILLIKEN 7-6 FED COM

**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, CEMENT BOND LOG, DIRECTIONAL SURVEY, GAMMA RAY LOG, MUD LOG/GEOLOGICAL LITHOLOGY LOG,

**Coring operation description for the well:**

N/A

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 6852

**Anticipated Surface Pressure:** 4091

**Anticipated Bottom Hole Temperature(F):** 176

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

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

Billiken\_7\_6\_Fed\_Com\_5H\_H2S\_PLAN\_20190816121018.pdf

### Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Billiken\_7\_6\_Fed\_Com\_5H\_Dir\_Svy\_20190816121048.pdf

Devon\_Billiken\_7\_6\_Fed\_Com\_5H\_Permit\_Plan\_1\_Plot\_20190816121048.pdf

**Other proposed operations facets description:**

DIRECTIONAL SURVEY

PLOT

DRILLING PLAN

SPEC SHEETS

MB WELLHEAD

MB VERBIAGE

CLOSED LOOP DOC

SPUDDER RIG REQUEST

GAS CAPTURE PLAN

ANNULAR VARIANCE REQUEST DOC

COFLEX DOC

**Other proposed operations facets attachment:**

13.375\_48\_H40\_20190730115538.pdf

5.5\_17\_P\_110\_BTC\_20190730115614.pdf

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** BILLIKEN 7-6 FED COM

**Well Number:** 5H

5.5\_20\_P110\_EC\_VAMSG\_20190730115304.pdf

7.625\_29.70\_P110\_Flushmax\_20190730115303.pdf

8.625\_32.00\_P110HSCY\_TLW\_20190730115304.PDF

Clsd\_Loop\_20190730115304.pdf

MB\_Verb\_10M\_20190730115304.pdf

MB\_Wellhd\_10M\_13.375\_7.625\_5.5\_20190730115340.pdf

MB\_Wellhd\_10M\_13.375\_8.625\_20190730115305.PDF

Spudder\_Rig\_Info\_20190730115304.pdf

Billiken\_7\_6\_Fed\_Com\_5H\_Drlg\_Plan\_20190816121119.pdf

Billiken\_7\_WP\_1\_GCP\_Form\_20190820103427.pdf

**Other Variance attachment:**

10M\_BOPE\_CHK\_DR\_CLS\_RKL\_20190730115411.pdf

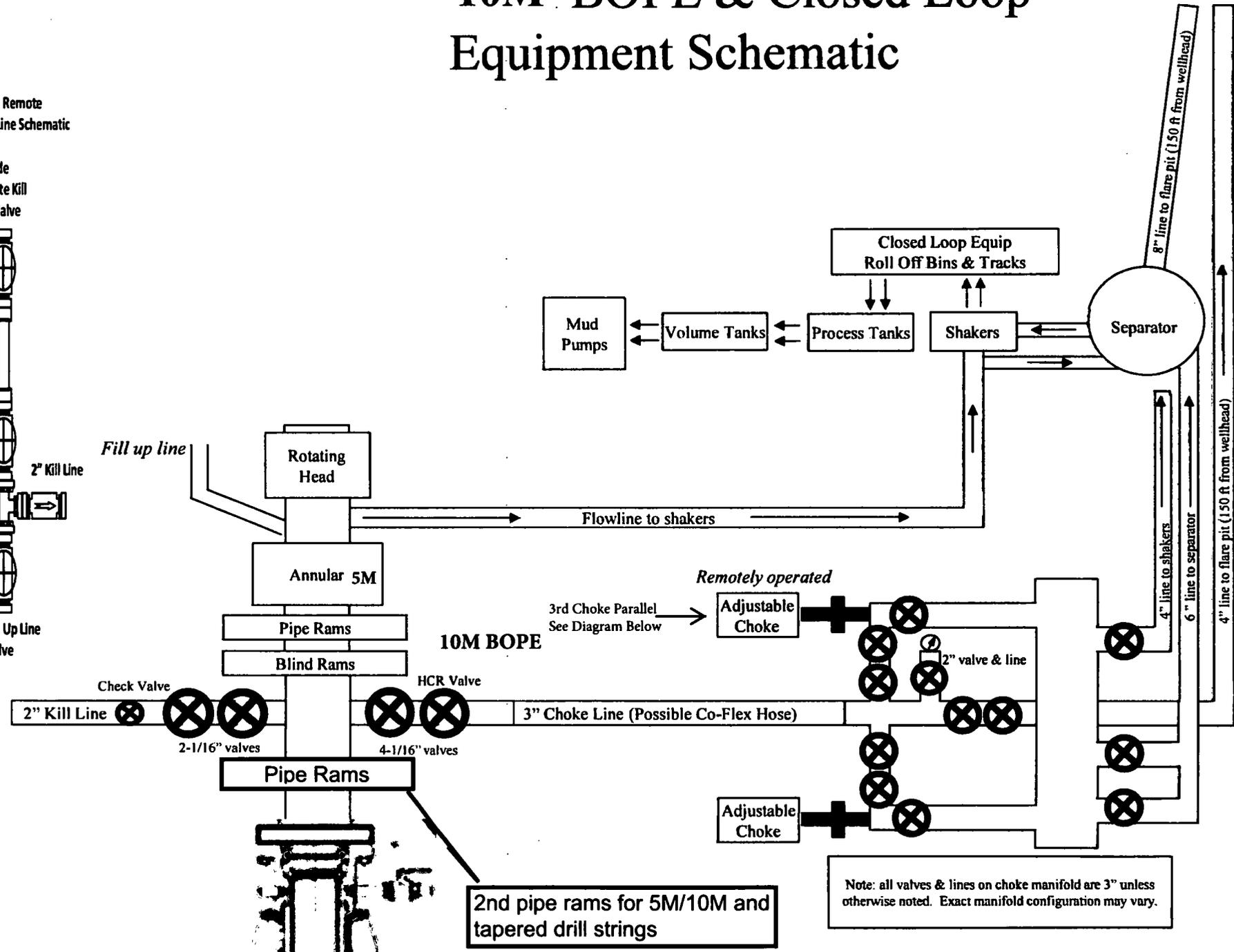
Annular\_Variance\_\_Preventer\_Summary\_20190730115410.pdf

Co\_flex\_20190730115411.pdf

# 10M BOPE & Closed Loop Equipment Schematic

10M Remote Kill Line Schematic

Outside Remote Kill Line Valve



2nd pipe rams for 5M/10M and tapered drill strings

Note: all valves & lines on choke manifold are 3" unless otherwise noted. Exact manifold configuration may vary.



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

# **Hydrogen Sulfide (H<sub>2</sub>S) Contingency Plan**

**For**

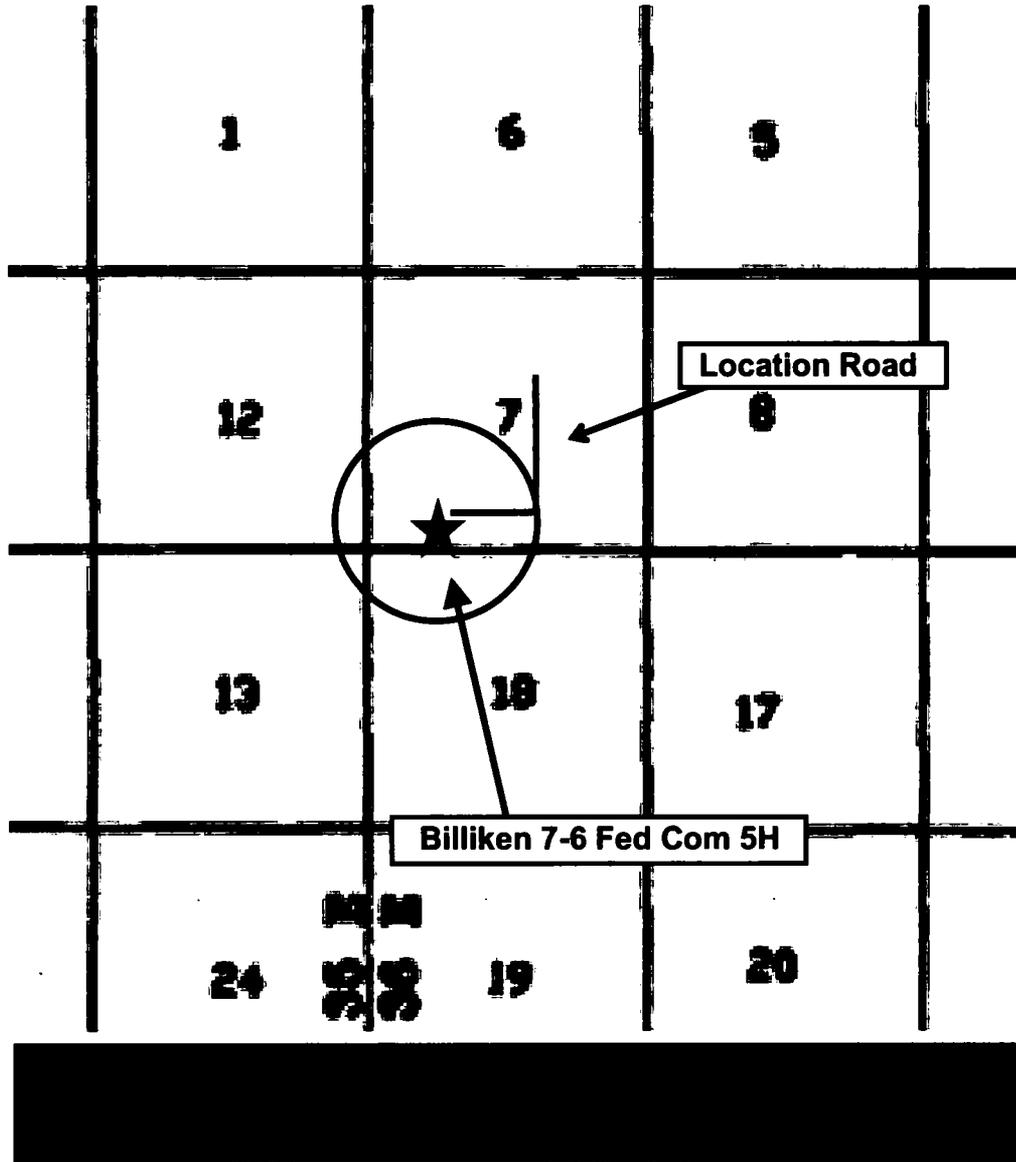
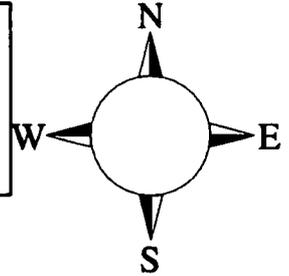
**Billiken 7-6 Fed Com 5H**

**Sec-7 T-26S R-35E  
294' FSL & 1218' FWL  
LAT. = 32.051416' N (NAD83)  
LONG = 103.411193' W**

**Lea County NM**

# Billiken 7-6 Fed Com 5H

This is an open drilling site. H<sub>2</sub>S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H<sub>2</sub>S, including warning signs, wind indicators and H<sub>2</sub>S 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<sub>2</sub>S concentration shall trigger activation of this plan.**

### **Emergency Procedures**

**In the event of a release of gas containing H<sub>2</sub>S, 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<sub>2</sub>S 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<sub>2</sub>S, 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<sub>2</sub>). 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<sub>2</sub>S and SO<sub>2</sub>**

<b>Common Name</b>	<b>Chemical Formula</b>	<b>Specific Gravity</b>	<b>Threshold Limit</b>	<b>Hazardous Limit</b>	<b>Lethal Concentration</b>
<b>Hydrogen Sulfide</b>	<b>H<sub>2</sub>S</b>	<b>1.189 Air = 1</b>	<b>10 ppm</b>	<b>100 ppm/hr</b>	<b>600 ppm</b>
<b>Sulfur Dioxide</b>	<b>SO<sub>2</sub></b>	<b>2.21 Air = 1</b>	<b>2 ppm</b>	<b>N/A</b>	<b>1000 ppm</b>

### **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<sub>2</sub>S) 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<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S 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<sub>2</sub>S 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<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

### **II. HYDROGEN SULFIDE TRAINING**

Note: All H<sub>2</sub>S 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<sub>2</sub>S.

## **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<sub>2</sub>S detection and monitoring equipment:**

Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights which activate when H<sub>2</sub>S 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<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S 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<sub>2</sub>S trim.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**6. Communication:**

- A. Company personnel have/use cellular telephones in the field.
- B. Land line (telephone) communications at Office

**7. Well testing:**

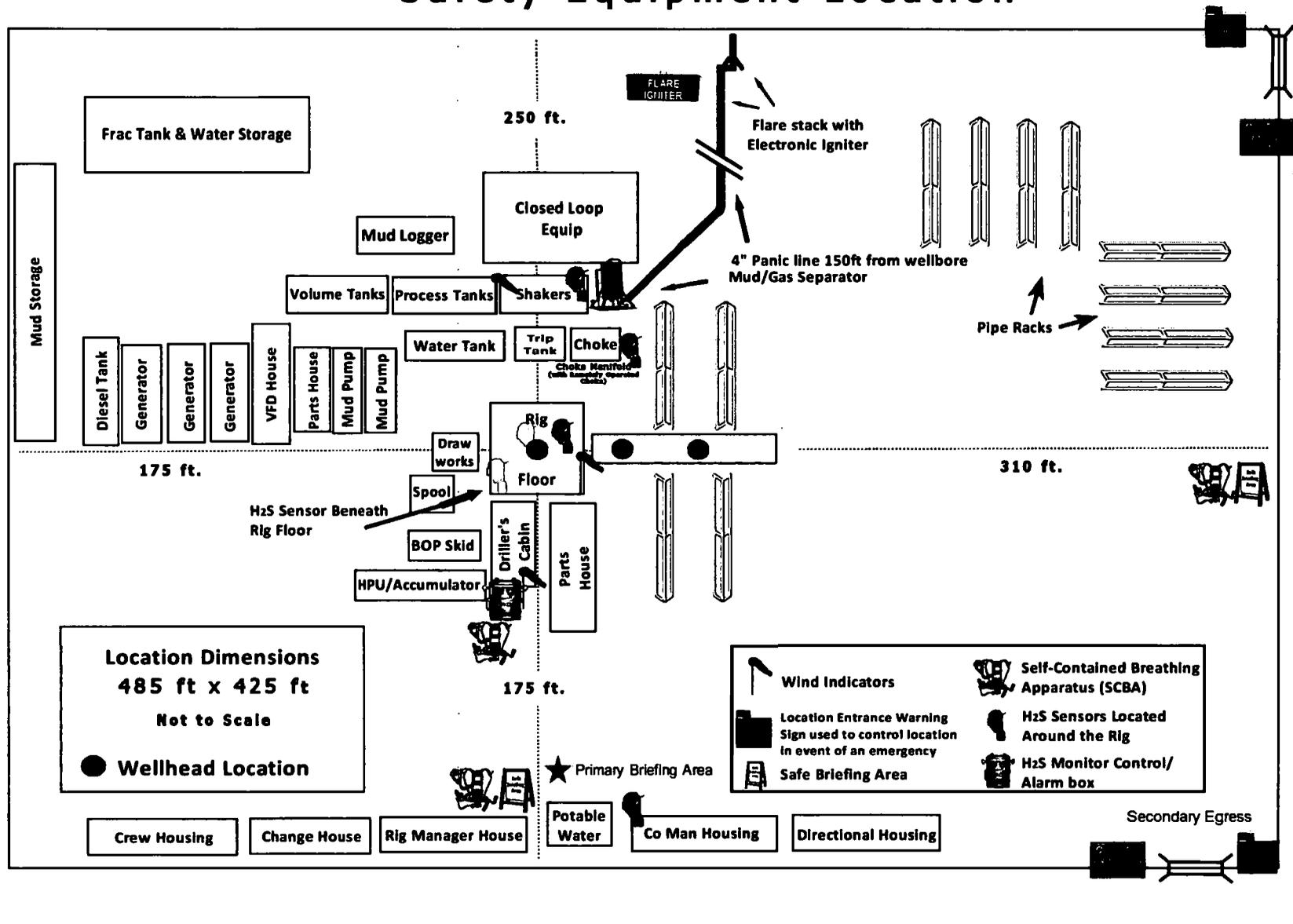
- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

<b><u>Devon Energy Corp. Company Call List</u></b>			
Drilling Supervisor – Basin – Mark Kramer		405-823-4796	
EHS Professional – Laura Wright		405-439-8129	
<b><u>Agency Call List</u></b>			
<b><u>Lea County (575)</u></b>	<b>Hobbs</b>		
	Lea County Communication Authority	393-3981	
	State Police	392-5588	
	City Police	397-9265	
	Sheriff's Office	393-2515	
	<b>Ambulance</b>	<b>911</b>	
	Fire Department	397-9308	
	LEPC (Local Emergency Planning Committee)	393-2870	
	NMOCD	393-6161	
	US Bureau of Land Management	393-3612	
	<b><u>Eddy County (575)</u></b>	<b>Carlsbad</b>	
State Police		885-3137	
City Police		885-2111	
Sheriff's Office		887-7551	
<b>Ambulance</b>		<b>911</b>	
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	
<b>Emergency Services</b>			
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	
<b><u>Give GPS position:</u></b>		Native Air – Emergency Helicopter – Hobbs (TX & NM)	(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 - <a href="http://www.nhc.noaa.gov">www.nhc.noaa.gov</a>		

Prepared in conjunction with  
Dave Small



# Devon Energy - Well Pad Rig Location Layout Safety Equipment Location





# **WCDSC Permian NM**

**Lea County (NAD83 New Mexico East)**

**Sec 07-T26S-R35E**

**Billiken 7-6 Fed Com 5H**

**Wellbore #1**

**Plan: Permit Plan 1**

## **Standard Planning Report - Geographic**

**08 August, 2019**

Planning Report - Geographic

<b>Database:</b>	EDM r5000.141_Prod US	<b>Local Co-ordinate Reference:</b>	Well Billiken 7-6 Fed Com 5H
<b>Company:</b>	WCDSC Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

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

<b>Site</b>	Sec 07-T26S-R35E				
<b>Site Position:</b>		<b>Northing:</b>	388,642.30 usft	<b>Latitude:</b>	32.065131
<b>From:</b>	Map	<b>Easting:</b>	825,774.90 usft	<b>Longitude:</b>	-103.415126
<b>Position Uncertainty:</b>	5.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.49 °

<b>Well</b>	Billiken 7-6 Fed Com 5H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	383,663.21 usft	<b>Latitude:</b>	32.051416
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	827,035.71 usft	<b>Longitude:</b>	-103.411194
<b>Position Uncertainty</b>		0.50 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	3,275.00 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF2015	8/8/2019	6.63	59.90	47,633.33380162

<b>Design</b>	Permit Plan 1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	354.72	

<b>Plan Survey Tool Program</b>	<b>Date</b>	8/8/2019			
<b>Depth From</b>	<b>Depth To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
(ft)	(ft)				
1	0.00	22,833.17 Permit Plan 1 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM		

<b>Plan Sections</b>										
<b>Measured</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg</b>	<b>Build</b>	<b>Turn</b>	<b>TFO</b>	<b>Target</b>
<b>Depth</b>	(°)	(°)	<b>Depth</b>	(ft)	(ft)	<b>Rate</b>	<b>Rate</b>	<b>Rate</b>	(°)	
(ft)			(ft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,556.01	5.56	254.13	2,555.13	-7.37	-25.93	1.00	1.00	0.00	254.13	
11,298.92	5.56	254.13	11,256.91	-239.08	-840.71	0.00	0.00	0.00	0.00	
11,669.59	0.00	0.00	11,627.00	-244.00	-858.00	1.50	-1.50	0.00	180.00	
12,019.63	0.00	0.00	11,977.04	-244.00	-858.00	0.00	0.00	0.00	0.00	
12,919.63	90.00	359.51	12,550.00	328.94	-862.87	10.00	10.00	0.00	359.51	PBHL - Billiken 7-6 Fe
22,833.17	90.00	359.51	12,550.00	10,242.12	-947.16	0.00	0.00	0.00	0.00	PBHL - Billiken 7-6 Fe

Planning Report - Geographic

<b>Database:</b>	EDM r5000.141_Prod US	<b>Local Co-ordinate Reference:</b>	Well Billiken 7-6 Fed Com 5H
<b>Company:</b>	WCDSC Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

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	383,663.21	827,035.71	32.051416	-103.411194
100.00	0.00	0.00	100.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
200.00	0.00	0.00	200.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
300.00	0.00	0.00	300.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
400.00	0.00	0.00	400.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
500.00	0.00	0.00	500.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
600.00	0.00	0.00	600.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
700.00	0.00	0.00	700.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
800.00	0.00	0.00	800.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
900.00	0.00	0.00	900.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,000.00	0.00	0.00	1,000.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,100.00	0.00	0.00	1,100.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,200.00	0.00	0.00	1,200.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,300.00	0.00	0.00	1,300.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,400.00	0.00	0.00	1,400.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,500.00	0.00	0.00	1,500.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,600.00	0.00	0.00	1,600.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,700.00	0.00	0.00	1,700.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,800.00	0.00	0.00	1,800.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
1,900.00	0.00	0.00	1,900.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
2,000.00	0.00	0.00	2,000.00	0.00	0.00	383,663.21	827,035.71	32.051416	-103.411194
2,100.00	1.00	254.13	2,099.99	-0.24	-0.84	383,662.97	827,034.87	32.051415	-103.411196
2,200.00	2.00	254.13	2,199.96	-0.95	-3.36	383,662.25	827,032.35	32.051413	-103.411204
2,300.00	3.00	254.13	2,299.86	-2.15	-7.55	383,661.06	827,028.16	32.051410	-103.411218
2,400.00	4.00	254.13	2,399.68	-3.82	-13.42	383,659.39	827,022.28	32.051406	-103.411237
2,500.00	5.00	254.13	2,499.37	-5.96	-20.97	383,657.24	827,014.74	32.051400	-103.411261
2,556.01	5.56	254.13	2,555.13	-7.37	-25.93	383,655.83	827,009.78	32.051396	-103.411277
2,600.00	5.56	254.13	2,598.92	-8.54	-30.03	383,654.67	827,005.68	32.051393	-103.411291
2,700.00	5.56	254.13	2,698.45	-11.19	-39.35	383,652.02	826,996.36	32.051386	-103.411321
2,800.00	5.56	254.13	2,797.98	-13.84	-48.67	383,649.37	826,987.04	32.051379	-103.411351
2,900.00	5.56	254.13	2,897.51	-16.49	-57.99	383,646.72	826,977.72	32.051372	-103.411381
3,000.00	5.56	254.13	2,997.04	-19.14	-67.31	383,644.07	826,968.40	32.051365	-103.411411
3,100.00	5.56	254.13	3,096.57	-21.79	-76.63	383,641.42	826,959.08	32.051358	-103.411441
3,200.00	5.56	254.13	3,196.10	-24.44	-85.94	383,638.77	826,949.76	32.051351	-103.411472
3,300.00	5.56	254.13	3,295.63	-27.09	-95.26	383,636.12	826,940.44	32.051344	-103.411502
3,400.00	5.56	254.13	3,395.16	-29.74	-104.58	383,633.47	826,931.13	32.051337	-103.411532
3,500.00	5.56	254.13	3,494.69	-32.39	-113.90	383,630.82	826,921.81	32.051330	-103.411562
3,600.00	5.56	254.13	3,594.22	-35.04	-123.22	383,628.17	826,912.49	32.051323	-103.411592
3,700.00	5.56	254.13	3,693.75	-37.69	-132.54	383,625.52	826,903.17	32.051316	-103.411622
3,800.00	5.56	254.13	3,793.28	-40.34	-141.86	383,622.87	826,893.85	32.051308	-103.411652
3,900.00	5.56	254.13	3,892.80	-42.99	-151.18	383,620.22	826,884.53	32.051301	-103.411683
4,000.00	5.56	254.13	3,992.33	-45.64	-160.50	383,617.57	826,875.21	32.051294	-103.411713
4,100.00	5.56	254.13	4,091.86	-48.29	-169.82	383,614.92	826,865.89	32.051287	-103.411743
4,200.00	5.56	254.13	4,191.39	-50.94	-179.14	383,612.26	826,856.57	32.051280	-103.411773
4,300.00	5.56	254.13	4,290.92	-53.59	-188.46	383,609.61	826,847.25	32.051273	-103.411803
4,400.00	5.56	254.13	4,390.45	-56.24	-197.78	383,606.96	826,837.93	32.051266	-103.411833
4,500.00	5.56	254.13	4,489.98	-58.89	-207.10	383,604.31	826,828.61	32.051259	-103.411864
4,600.00	5.56	254.13	4,589.51	-61.54	-216.42	383,601.66	826,819.29	32.051252	-103.411894
4,700.00	5.56	254.13	4,689.04	-64.20	-225.74	383,599.01	826,809.97	32.051245	-103.411924
4,800.00	5.56	254.13	4,788.57	-66.85	-235.06	383,596.36	826,800.65	32.051238	-103.411954
4,900.00	5.56	254.13	4,888.10	-69.50	-244.37	383,593.71	826,791.33	32.051231	-103.411984
5,000.00	5.56	254.13	4,987.63	-72.15	-253.69	383,591.06	826,782.02	32.051224	-103.412014
5,100.00	5.56	254.13	5,087.16	-74.80	-263.01	383,588.41	826,772.70	32.051217	-103.412044
5,200.00	5.56	254.13	5,186.69	-77.45	-272.33	383,585.76	826,763.38	32.051210	-103.412075
5,300.00	5.56	254.13	5,286.22	-80.10	-281.65	383,583.11	826,754.06	32.051202	-103.412105

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<b>Company:</b>	WCDSC Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

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	5.56	254.13	5,385.75	-82.75	-290.97	383,580.46	826,744.74	32.051195	-103.412135	
5,500.00	5.56	254.13	5,485.28	-85.40	-300.29	383,577.81	826,735.42	32.051188	-103.412165	
5,600.00	5.56	254.13	5,584.81	-88.05	-309.61	383,575.16	826,726.10	32.051181	-103.412195	
5,700.00	5.56	254.13	5,684.34	-90.70	-318.93	383,572.51	826,716.78	32.051174	-103.412225	
5,800.00	5.56	254.13	5,783.87	-93.35	-328.25	383,569.86	826,707.46	32.051167	-103.412255	
5,900.00	5.56	254.13	5,883.40	-96.00	-337.57	383,567.21	826,698.14	32.051160	-103.412286	
6,000.00	5.56	254.13	5,982.92	-98.65	-346.89	383,564.56	826,688.82	32.051153	-103.412316	
6,100.00	5.56	254.13	6,082.45	-101.30	-356.21	383,561.91	826,679.50	32.051146	-103.412346	
6,200.00	5.56	254.13	6,181.98	-103.95	-365.53	383,559.26	826,670.18	32.051139	-103.412376	
6,300.00	5.56	254.13	6,281.51	-106.60	-374.85	383,556.61	826,660.86	32.051132	-103.412406	
6,400.00	5.56	254.13	6,381.04	-109.25	-384.17	383,553.96	826,651.54	32.051125	-103.412436	
6,500.00	5.56	254.13	6,480.57	-111.90	-393.48	383,551.31	826,642.22	32.051118	-103.412467	
6,600.00	5.56	254.13	6,580.10	-114.55	-402.80	383,548.66	826,632.91	32.051111	-103.412497	
6,700.00	5.56	254.13	6,679.63	-117.20	-412.12	383,546.01	826,623.59	32.051104	-103.412527	
6,800.00	5.56	254.13	6,779.16	-119.85	-421.44	383,543.36	826,614.27	32.051096	-103.412557	
6,900.00	5.56	254.13	6,878.69	-122.50	-430.76	383,540.71	826,604.95	32.051089	-103.412587	
7,000.00	5.56	254.13	6,978.22	-125.15	-440.08	383,538.06	826,595.63	32.051082	-103.412617	
7,100.00	5.56	254.13	7,077.75	-127.80	-449.40	383,535.41	826,586.31	32.051075	-103.412647	
7,200.00	5.56	254.13	7,177.28	-130.45	-458.72	383,532.76	826,576.99	32.051068	-103.412677	
7,300.00	5.56	254.13	7,276.81	-133.10	-468.04	383,530.11	826,567.67	32.051061	-103.412708	
7,400.00	5.56	254.13	7,376.34	-135.75	-477.36	383,527.46	826,558.35	32.051054	-103.412738	
7,500.00	5.56	254.13	7,475.87	-138.40	-486.68	383,524.81	826,549.03	32.051047	-103.412768	
7,600.00	5.56	254.13	7,575.40	-141.05	-496.00	383,522.16	826,539.71	32.051040	-103.412798	
7,700.00	5.56	254.13	7,674.93	-143.70	-505.32	383,519.51	826,530.39	32.051033	-103.412828	
7,800.00	5.56	254.13	7,774.46	-146.35	-514.64	383,516.86	826,521.07	32.051026	-103.412858	
7,900.00	5.56	254.13	7,873.99	-149.00	-523.96	383,514.21	826,511.75	32.051019	-103.412889	
8,000.00	5.56	254.13	7,973.51	-151.65	-533.28	383,511.55	826,502.43	32.051012	-103.412919	
8,100.00	5.56	254.13	8,073.04	-154.30	-542.59	383,508.90	826,493.11	32.051005	-103.412949	
8,200.00	5.56	254.13	8,172.57	-156.95	-551.91	383,506.25	826,483.80	32.050998	-103.412979	
8,300.00	5.56	254.13	8,272.10	-159.60	-561.23	383,503.60	826,474.48	32.050990	-103.413009	
8,400.00	5.56	254.13	8,371.63	-162.26	-570.55	383,500.95	826,465.16	32.050983	-103.413039	
8,500.00	5.56	254.13	8,471.16	-164.91	-579.87	383,498.30	826,455.84	32.050976	-103.413070	
8,600.00	5.56	254.13	8,570.69	-167.56	-589.19	383,495.65	826,446.52	32.050969	-103.413100	
8,700.00	5.56	254.13	8,670.22	-170.21	-598.51	383,493.00	826,437.20	32.050962	-103.413130	
8,800.00	5.56	254.13	8,769.75	-172.86	-607.83	383,490.35	826,427.88	32.050955	-103.413160	
8,900.00	5.56	254.13	8,869.28	-175.51	-617.15	383,487.70	826,418.56	32.050948	-103.413190	
9,000.00	5.56	254.13	8,968.81	-178.16	-626.47	383,485.05	826,409.24	32.050941	-103.413220	
9,100.00	5.56	254.13	9,068.34	-180.81	-635.79	383,482.40	826,399.92	32.050934	-103.413250	
9,200.00	5.56	254.13	9,167.87	-183.46	-645.11	383,479.75	826,390.60	32.050927	-103.413281	
9,300.00	5.56	254.13	9,267.40	-186.11	-654.43	383,477.10	826,381.28	32.050920	-103.413311	
9,400.00	5.56	254.13	9,366.93	-188.76	-663.75	383,474.45	826,371.96	32.050913	-103.413341	
9,500.00	5.56	254.13	9,466.46	-191.41	-673.07	383,471.80	826,362.64	32.050906	-103.413371	
9,600.00	5.56	254.13	9,565.99	-194.06	-682.39	383,469.15	826,353.32	32.050899	-103.413401	
9,700.00	5.56	254.13	9,665.52	-196.71	-691.71	383,466.50	826,344.00	32.050892	-103.413431	
9,800.00	5.56	254.13	9,765.05	-199.36	-701.02	383,463.85	826,334.69	32.050884	-103.413461	
9,900.00	5.56	254.13	9,864.58	-202.01	-710.34	383,461.20	826,325.37	32.050877	-103.413492	
10,000.00	5.56	254.13	9,964.11	-204.66	-719.66	383,458.55	826,316.05	32.050870	-103.413522	
10,100.00	5.56	254.13	10,063.63	-207.31	-728.98	383,455.90	826,306.73	32.050863	-103.413552	
10,200.00	5.56	254.13	10,163.16	-209.96	-738.30	383,453.25	826,297.41	32.050856	-103.413582	
10,300.00	5.56	254.13	10,262.69	-212.61	-747.62	383,450.60	826,288.09	32.050849	-103.413612	
10,400.00	5.56	254.13	10,362.22	-215.26	-756.94	383,447.95	826,278.77	32.050842	-103.413642	
10,500.00	5.56	254.13	10,461.75	-217.91	-766.26	383,445.30	826,269.45	32.050835	-103.413672	
10,600.00	5.56	254.13	10,561.28	-220.56	-775.58	383,442.65	826,260.13	32.050828	-103.413703	
10,700.00	5.56	254.13	10,660.81	-223.21	-784.90	383,440.00	826,250.81	32.050821	-103.413733	
10,800.00	5.56	254.13	10,760.34	-225.86	-794.22	383,437.35	826,241.49	32.050814	-103.413763	

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<b>Database:</b>	EDM r5000.141_Prod US	<b>Local Co-ordinate Reference:</b>	Well Billiken 7-6 Fed Com 5H
<b>Company:</b>	WCDSC Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

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	5.56	254.13	10,859.87	-228.51	-803.54	383,434.70	826,232.17	32.050807	-103.413793	
11,000.00	5.56	254.13	10,959.40	-231.16	-812.86	383,432.05	826,222.85	32.050800	-103.413823	
11,100.00	5.56	254.13	11,058.93	-233.81	-822.18	383,429.40	826,213.53	32.050793	-103.413853	
11,200.00	5.56	254.13	11,158.46	-236.46	-831.50	383,426.75	826,204.21	32.050786	-103.413884	
11,298.92	5.56	254.13	11,256.91	-239.08	-840.71	383,424.12	826,195.00	32.050779	-103.413913	
11,300.00	5.54	254.13	11,257.99	-239.11	-840.82	383,424.10	826,194.90	32.050778	-103.413914	
11,400.00	4.04	254.13	11,357.64	-241.40	-848.85	383,421.81	826,186.86	32.050772	-103.413940	
11,500.00	2.54	254.13	11,457.47	-242.97	-854.38	383,420.24	826,181.33	32.050768	-103.413958	
11,600.00	1.04	254.13	11,557.42	-243.83	-857.39	383,419.38	826,178.32	32.050766	-103.413967	
11,669.59	0.00	0.00	11,627.00	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
11,700.00	0.00	0.00	11,657.41	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
11,800.00	0.00	0.00	11,757.41	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
11,900.00	0.00	0.00	11,857.41	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
12,000.00	0.00	0.00	11,957.41	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
12,019.63	0.00	0.00	11,977.04	-244.00	-858.00	383,419.21	826,177.71	32.050765	-103.413969	
<b>KOP @ 12020' MD, 50' FSL, 360' FWL</b>										
12,100.00	8.04	359.51	12,057.15	-238.37	-858.05	383,424.84	826,177.66	32.050781	-103.413969	
12,200.00	18.04	359.51	12,154.45	-215.84	-858.24	383,447.37	826,177.47	32.050843	-103.413969	
12,260.77	24.11	359.51	12,211.13	-194.00	-858.43	383,469.21	826,177.29	32.050903	-103.413969	
<b>FTP @ 12261' MD, 100' FSL, 360' FWL</b>										
12,300.00	28.04	359.51	12,246.36	-176.76	-858.57	383,486.45	826,177.14	32.050950	-103.413969	
12,400.00	38.04	359.51	12,330.08	-122.31	-859.03	383,540.89	826,176.68	32.051100	-103.413969	
12,500.00	48.04	359.51	12,403.08	-54.16	-859.61	383,609.05	826,176.10	32.051287	-103.413969	
12,600.00	58.04	359.51	12,463.13	25.64	-860.29	383,688.85	826,175.42	32.051507	-103.413969	
12,700.00	68.04	359.51	12,508.42	114.66	-861.05	383,777.86	826,174.66	32.051751	-103.413969	
12,800.00	78.04	359.51	12,537.56	210.18	-861.86	383,873.39	826,173.85	32.052014	-103.413969	
12,900.00	88.04	359.51	12,549.66	309.31	-862.70	383,972.52	826,173.01	32.052286	-103.413969	
12,919.63	90.00	359.51	12,550.00	328.94	-862.87	383,992.15	826,172.84	32.052340	-103.413969	
13,000.00	90.00	359.51	12,550.00	409.31	-863.55	384,072.51	826,172.16	32.052561	-103.413969	
13,100.00	90.00	359.51	12,550.00	509.30	-864.41	384,172.51	826,171.30	32.052836	-103.413969	
13,200.00	90.00	359.51	12,550.00	609.30	-865.26	384,272.51	826,170.45	32.053111	-103.413969	
13,300.00	90.00	359.51	12,550.00	709.30	-866.11	384,372.50	826,169.60	32.053386	-103.413969	
13,400.00	90.00	359.51	12,550.00	809.29	-866.96	384,472.50	826,168.75	32.053661	-103.413969	
13,500.00	90.00	359.51	12,550.00	909.29	-867.81	384,572.49	826,167.90	32.053936	-103.413969	
13,600.00	90.00	359.51	12,550.00	1,009.28	-868.66	384,672.49	826,167.05	32.054210	-103.413969	
13,700.00	90.00	359.51	12,550.00	1,109.28	-869.51	384,772.49	826,166.20	32.054485	-103.413969	
13,800.00	90.00	359.51	12,550.00	1,209.28	-870.36	384,872.48	826,165.35	32.054760	-103.413969	
13,900.00	90.00	359.51	12,550.00	1,309.27	-871.21	384,972.48	826,164.50	32.055035	-103.413969	
14,000.00	90.00	359.51	12,550.00	1,409.27	-872.06	385,072.48	826,163.65	32.055310	-103.413969	
14,100.00	90.00	359.51	12,550.00	1,509.27	-872.91	385,172.47	826,162.80	32.055585	-103.413969	
14,200.00	90.00	359.51	12,550.00	1,609.26	-873.76	385,272.47	826,161.95	32.055860	-103.413969	
14,300.00	90.00	359.51	12,550.00	1,709.26	-874.61	385,372.46	826,161.10	32.056135	-103.413969	
14,400.00	90.00	359.51	12,550.00	1,809.26	-875.46	385,472.46	826,160.25	32.056409	-103.413969	
14,500.00	90.00	359.51	12,550.00	1,909.25	-876.31	385,572.46	826,159.40	32.056684	-103.413969	
14,600.00	90.00	359.51	12,550.00	2,009.25	-877.16	385,672.45	826,158.55	32.056959	-103.413969	
14,700.00	90.00	359.51	12,550.00	2,109.24	-878.01	385,772.45	826,157.70	32.057234	-103.413969	
14,800.00	90.00	359.51	12,550.00	2,209.24	-878.86	385,872.45	826,156.85	32.057509	-103.413969	
14,900.00	90.00	359.51	12,550.00	2,309.24	-879.71	385,972.44	826,156.00	32.057784	-103.413969	
15,000.00	90.00	359.51	12,550.00	2,409.23	-880.56	386,072.44	826,155.15	32.058059	-103.413969	
15,100.00	90.00	359.51	12,550.00	2,509.23	-881.41	386,172.43	826,154.30	32.058334	-103.413969	
15,200.00	90.00	359.51	12,550.00	2,609.23	-882.26	386,272.43	826,153.45	32.058608	-103.413969	
15,300.00	90.00	359.51	12,550.00	2,709.22	-883.11	386,372.43	826,152.60	32.058883	-103.413969	
15,400.00	90.00	359.51	12,550.00	2,809.22	-883.96	386,472.42	826,151.75	32.059158	-103.413969	
15,500.00	90.00	359.51	12,550.00	2,909.22	-884.81	386,572.42	826,150.90	32.059433	-103.413969	

Planning Report - Geographic

<b>Database:</b>	EDM r5000.141_Prod US	<b>Local Co-ordinate Reference:</b>	Well Billiken 7-6 Fed Com 5H
<b>Company:</b>	WCDSC Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

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	359.51	12,550.00	3,009.21	-885.66	386,672.41	826,150.05	32.059708	-103.413969
15,700.00	90.00	359.51	12,550.00	3,109.21	-886.51	386,772.41	826,149.20	32.059983	-103.413969
15,800.00	90.00	359.51	12,550.00	3,209.20	-887.36	386,872.41	826,148.35	32.060258	-103.413969
15,900.00	90.00	359.51	12,550.00	3,309.20	-888.21	386,972.40	826,147.50	32.060533	-103.413969
16,000.00	90.00	359.51	12,550.00	3,409.20	-889.06	387,072.40	826,146.65	32.060807	-103.413969
16,100.00	90.00	359.51	12,550.00	3,509.19	-889.91	387,172.40	826,145.80	32.061082	-103.413969
16,200.00	90.00	359.51	12,550.00	3,609.19	-890.76	387,272.39	826,144.95	32.061357	-103.413969
16,300.00	90.00	359.51	12,550.00	3,709.19	-891.61	387,372.39	826,144.10	32.061632	-103.413969
16,400.00	90.00	359.51	12,550.00	3,809.18	-892.46	387,472.38	826,143.25	32.061907	-103.413969
16,500.00	90.00	359.51	12,550.00	3,909.18	-893.31	387,572.38	826,142.40	32.062182	-103.413969
16,600.00	90.00	359.51	12,550.00	4,009.18	-894.16	387,672.38	826,141.55	32.062457	-103.413969
16,700.00	90.00	359.51	12,550.00	4,109.17	-895.01	387,772.37	826,140.70	32.062732	-103.413969
16,800.00	90.00	359.51	12,550.00	4,209.17	-895.86	387,872.37	826,139.85	32.063006	-103.413969
16,900.00	90.00	359.51	12,550.00	4,309.17	-896.71	387,972.37	826,139.00	32.063281	-103.413969
17,000.00	90.00	359.51	12,550.00	4,409.16	-897.57	388,072.36	826,138.15	32.063556	-103.413969
17,100.00	90.00	359.51	12,550.00	4,509.16	-898.42	388,172.36	826,137.29	32.063831	-103.413969
17,200.00	90.00	359.51	12,550.00	4,609.15	-899.27	388,272.35	826,136.44	32.064106	-103.413969
17,300.00	90.00	359.51	12,550.00	4,709.15	-900.12	388,372.35	826,135.59	32.064381	-103.413969
17,400.00	90.00	359.51	12,550.00	4,809.15	-900.97	388,472.35	826,134.74	32.064656	-103.413969
17,500.00	90.00	359.51	12,550.00	4,909.14	-901.82	388,572.34	826,133.89	32.064930	-103.413969
17,577.00	90.00	359.51	12,550.00	4,986.14	-902.47	388,649.34	826,133.24	32.065142	-103.413969
<b>Cross section @ 17577' MD, 0' FSL, 360' FWL</b>									
17,600.00	90.00	359.51	12,550.00	5,009.14	-902.67	388,672.34	826,133.04	32.065205	-103.413969
17,700.00	90.00	359.51	12,550.00	5,109.14	-903.52	388,772.33	826,132.19	32.065480	-103.413969
17,800.00	90.00	359.51	12,550.00	5,209.13	-904.37	388,872.33	826,131.34	32.065755	-103.413969
17,900.00	90.00	359.51	12,550.00	5,309.13	-905.22	388,972.33	826,130.49	32.066030	-103.413969
18,000.00	90.00	359.51	12,550.00	5,409.13	-906.07	389,072.32	826,129.64	32.066305	-103.413969
18,100.00	90.00	359.51	12,550.00	5,509.12	-906.92	389,172.32	826,128.79	32.066580	-103.413969
18,200.00	90.00	359.51	12,550.00	5,609.12	-907.77	389,272.32	826,127.94	32.066855	-103.413969
18,300.00	90.00	359.51	12,550.00	5,709.11	-908.62	389,372.31	826,127.09	32.067129	-103.413969
18,400.00	90.00	359.51	12,550.00	5,809.11	-909.47	389,472.31	826,126.24	32.067404	-103.413969
18,500.00	90.00	359.51	12,550.00	5,909.11	-910.32	389,572.30	826,125.39	32.067679	-103.413969
18,600.00	90.00	359.51	12,550.00	6,009.10	-911.17	389,672.30	826,124.54	32.067954	-103.413969
18,700.00	90.00	359.51	12,550.00	6,109.10	-912.02	389,772.30	826,123.69	32.068229	-103.413969
18,800.00	90.00	359.51	12,550.00	6,209.10	-912.87	389,872.29	826,122.84	32.068504	-103.413969
18,900.00	90.00	359.51	12,550.00	6,309.09	-913.72	389,972.29	826,121.99	32.068779	-103.413969
19,000.00	90.00	359.51	12,550.00	6,409.09	-914.57	390,072.29	826,121.14	32.069054	-103.413969
19,100.00	90.00	359.51	12,550.00	6,509.09	-915.42	390,172.28	826,120.29	32.069328	-103.413969
19,200.00	90.00	359.51	12,550.00	6,609.08	-916.27	390,272.28	826,119.44	32.069603	-103.413969
19,300.00	90.00	359.51	12,550.00	6,709.08	-917.12	390,372.27	826,118.59	32.069878	-103.413969
19,400.00	90.00	359.51	12,550.00	6,809.07	-917.97	390,472.27	826,117.74	32.070153	-103.413969
19,500.00	90.00	359.51	12,550.00	6,909.07	-918.82	390,572.27	826,116.89	32.070428	-103.413969
19,600.00	90.00	359.51	12,550.00	7,009.07	-919.67	390,672.26	826,116.04	32.070703	-103.413969
19,700.00	90.00	359.51	12,550.00	7,109.06	-920.52	390,772.26	826,115.19	32.070978	-103.413969
19,800.00	90.00	359.51	12,550.00	7,209.06	-921.37	390,872.25	826,114.34	32.071253	-103.413969
19,900.00	90.00	359.51	12,550.00	7,309.06	-922.22	390,972.25	826,113.49	32.071527	-103.413969
20,000.00	90.00	359.51	12,550.00	7,409.05	-923.07	391,072.25	826,112.64	32.071802	-103.413969
20,100.00	90.00	359.51	12,550.00	7,509.05	-923.92	391,172.24	826,111.79	32.072077	-103.413969
20,200.00	90.00	359.51	12,550.00	7,609.05	-924.77	391,272.24	826,110.94	32.072352	-103.413969
20,300.00	90.00	359.51	12,550.00	7,709.04	-925.62	391,372.24	826,110.09	32.072627	-103.413969
20,400.00	90.00	359.51	12,550.00	7,809.04	-926.47	391,472.23	826,109.24	32.072902	-103.413969
20,500.00	90.00	359.51	12,550.00	7,909.04	-927.32	391,572.23	826,108.39	32.073177	-103.413969
20,600.00	90.00	359.51	12,550.00	8,009.03	-928.17	391,672.22	826,107.54	32.073452	-103.413969
20,700.00	90.00	359.51	12,550.00	8,109.03	-929.02	391,772.22	826,106.69	32.073726	-103.413969

Planning Report - Geographic

<b>Database:</b>	EDM r5000.141_Prod US	<b>Local Co-ordinate Reference:</b>	Well Billiken 7-6 Fed Com 5H
<b>Company:</b>	WCDCS Permian NM	<b>TVD Reference:</b>	RKB @ 3300.00ft
<b>Project:</b>	Lea County (NAD83 New Mexico East)	<b>MD Reference:</b>	RKB @ 3300.00ft
<b>Site:</b>	Sec 07-T26S-R35E	<b>North Reference:</b>	Grid
<b>Well:</b>	Billiken 7-6 Fed Com 5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,800.00	90.00	359.51	12,550.00	8,209.02	-929.87	391,872.22	826,105.84	32.074001	-103.413969
20,900.00	90.00	359.51	12,550.00	8,309.02	-930.73	391,972.21	826,104.99	32.074276	-103.413969
21,000.00	90.00	359.51	12,550.00	8,409.02	-931.58	392,072.21	826,104.14	32.074551	-103.413969
21,100.00	90.00	359.51	12,550.00	8,509.01	-932.43	392,172.20	826,103.28	32.074826	-103.413969
21,200.00	90.00	359.51	12,550.00	8,609.01	-933.28	392,272.20	826,102.43	32.075101	-103.413969
21,300.00	90.00	359.51	12,550.00	8,709.01	-934.13	392,372.20	826,101.58	32.075376	-103.413969
21,400.00	90.00	359.51	12,550.00	8,809.00	-934.98	392,472.19	826,100.73	32.075650	-103.413969
21,500.00	90.00	359.51	12,550.00	8,909.00	-935.83	392,572.19	826,099.88	32.075925	-103.413969
21,600.00	90.00	359.51	12,550.00	9,009.00	-936.68	392,672.19	826,099.03	32.076200	-103.413969
21,700.00	90.00	359.51	12,550.00	9,108.99	-937.53	392,772.18	826,098.18	32.076475	-103.413969
21,800.00	90.00	359.51	12,550.00	9,208.99	-938.38	392,872.18	826,097.33	32.076750	-103.413969
21,900.00	90.00	359.51	12,550.00	9,308.98	-939.23	392,972.17	826,096.48	32.077025	-103.413969
22,000.00	90.00	359.51	12,550.00	9,408.98	-940.08	393,072.17	826,095.63	32.077300	-103.413969
22,100.00	90.00	359.51	12,550.00	9,508.98	-940.93	393,172.17	826,094.78	32.077575	-103.413969
22,200.00	90.00	359.51	12,550.00	9,608.97	-941.78	393,272.16	826,093.93	32.077849	-103.413969
22,300.00	90.00	359.51	12,550.00	9,708.97	-942.63	393,372.16	826,093.08	32.078124	-103.413969
22,400.00	90.00	359.51	12,550.00	9,808.97	-943.48	393,472.16	826,092.23	32.078399	-103.413969
22,500.00	90.00	359.51	12,550.00	9,908.96	-944.33	393,572.15	826,091.38	32.078674	-103.413969
22,600.00	90.00	359.51	12,550.00	10,008.96	-945.18	393,672.15	826,090.53	32.078949	-103.413969
22,700.00	90.00	359.51	12,550.00	10,108.96	-946.03	393,772.14	826,089.68	32.079224	-103.413969
22,753.17	90.00	359.51	12,550.00	10,162.12	-946.48	393,825.31	826,089.23	32.079370	-103.413969
<b>LTP @ 22753' MD, 100' FNL, 360' FWL</b>									
22,800.00	90.00	359.51	12,550.00	10,208.95	-946.88	393,872.14	826,088.83	32.079499	-103.413969
22,833.16	90.00	359.51	12,550.00	10,242.11	-947.16	393,905.30	826,088.55	32.079590	-103.413969
<b>PBHL; 20' FNL, 360' FWL</b>									
22,833.17	90.00	359.51	12,550.00	10,242.12	-947.16	393,905.31	826,088.55	32.079590	-103.413969

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Billiken 7-6 Fed	0.00	0.00	0.00	10,242.12	-947.16	393,905.31	826,088.55	32.079590	-103.413969
- hit/miss target									
- Shape									
- plan misses target center by 10285.82ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
12,019.63	11,977.04	-244.00	-858.00	KOP @ 12020' MD, 50' FSL, 360' FWL
12,260.77	12,211.13	-194.00	-858.43	FTP @ 12261' MD, 100' FSL, 360' FWL
17,577.00	12,550.00	4,986.14	-902.47	Cross section @ 17577' MD, 0' FSL, 360' FWL
22,753.17	12,550.00	10,162.12	-946.48	LTP @ 22753' MD, 100' FNL, 360' FWL
22,833.16	12,550.00	10,242.11	-947.16	PBHL; 20' FNL, 360' FWL

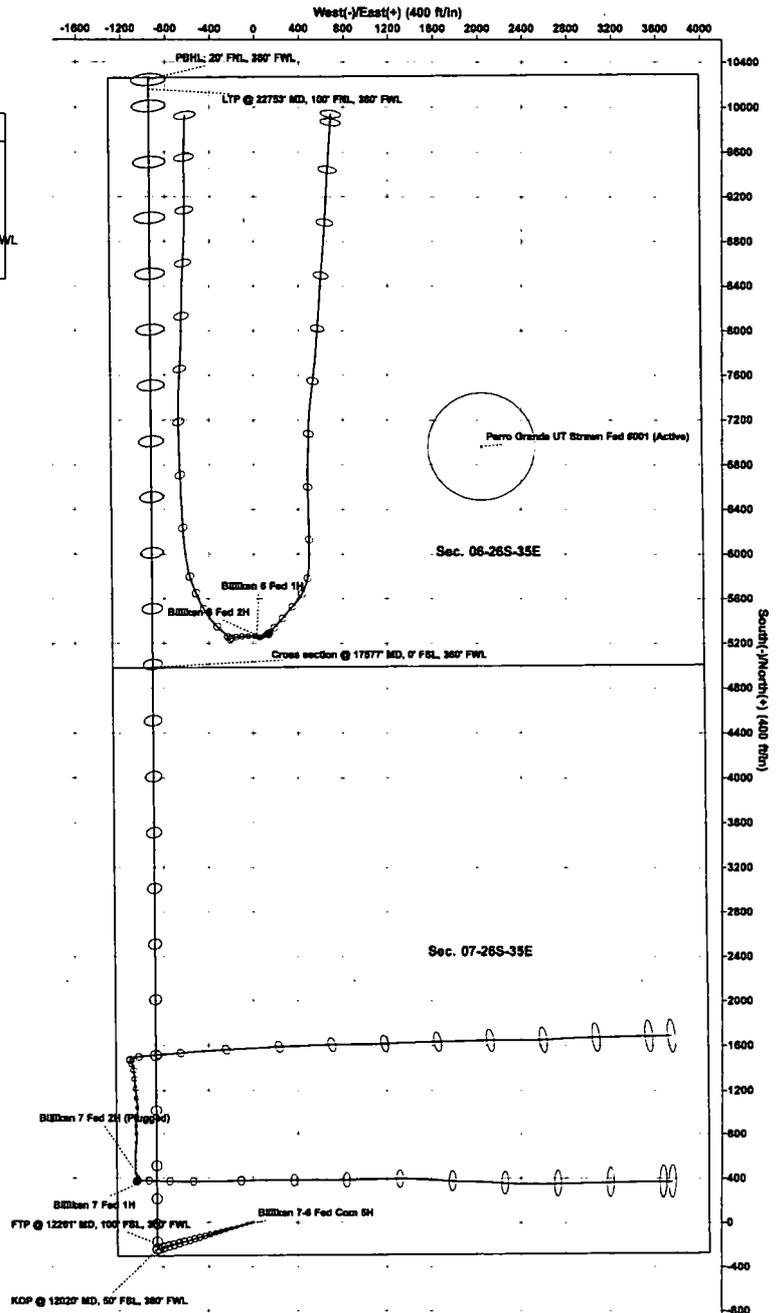
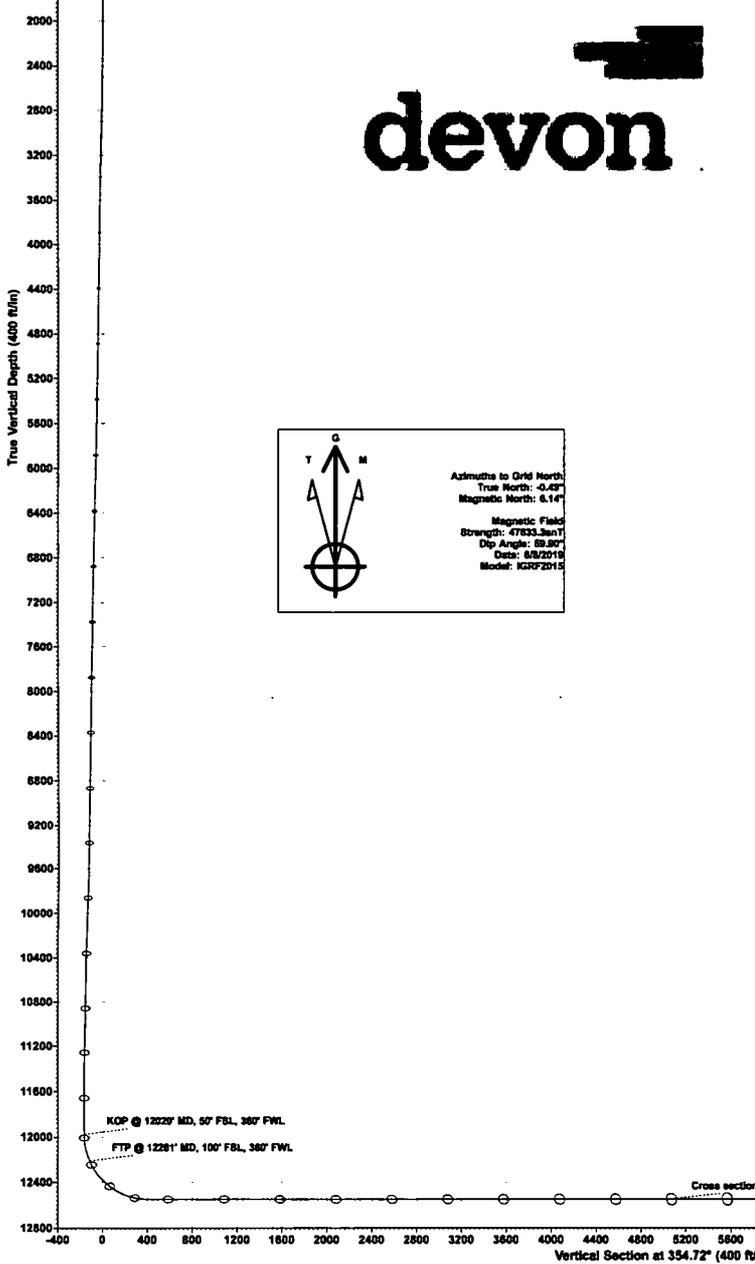
# Devon Energy

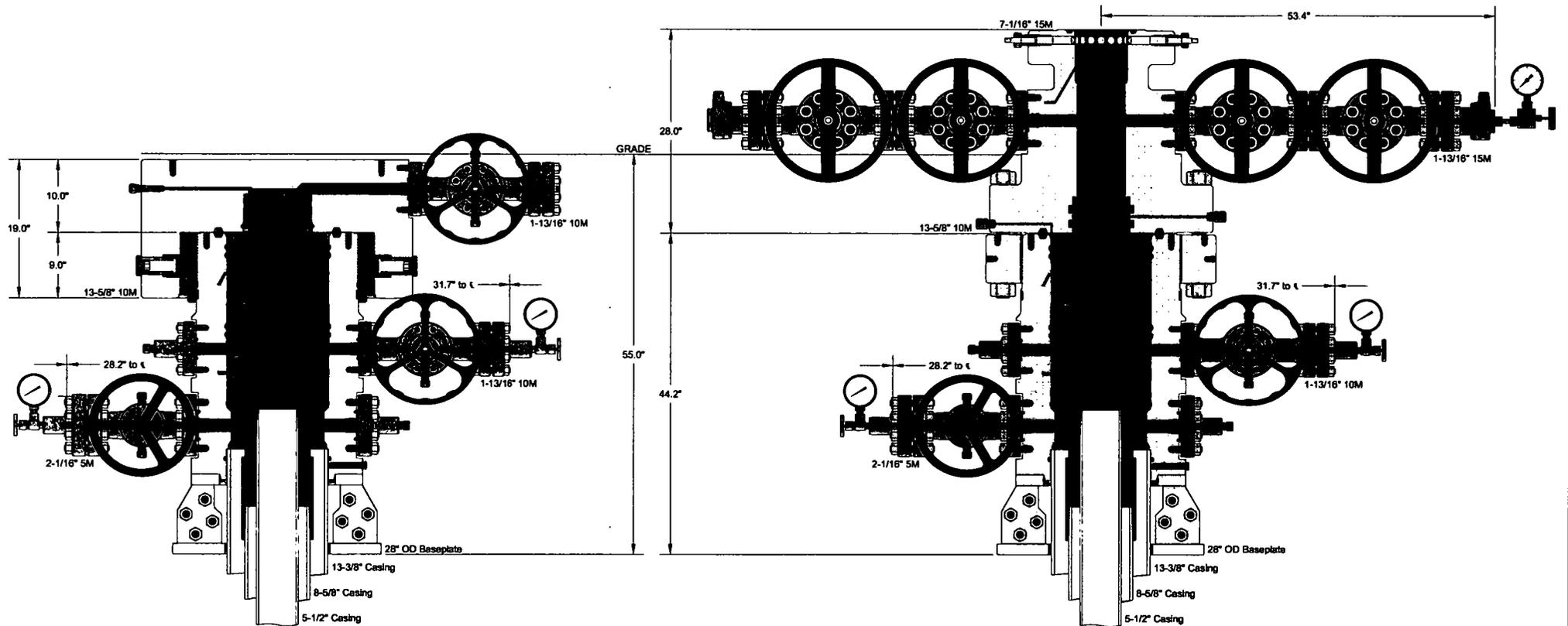
WELL DETAILS: Biliken 7-6 Fed Com 5H

RKB @ 3300.00ft			
3275.00			
Northing	Easting	Latitude	Longitude
383663.21	827035.71	32.051418	-103.411193

## SECTION DETAILS Permit Plan 1

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dipg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	
2558.01	5.58	254.13	2555.13	-7.37	-25.93	1.00	-4.95	
11298.92	5.58	254.13	11256.91	-239.08	-840.71	1.00	-160.65	
5	11889.59	0.00	0.00	11827.00	-244.00	-858.00	1.00	-183.96
6	12019.83	0.00	0.00	11977.94	-244.00	-858.00	0.00	-183.96
7	12819.83	90.00	359.51	12550.00	328.94	-882.87	10.00	407.00
8	22833.17	90.00	359.51	12550.00	10242.12	-947.16	0.00	10285.82





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## CACTUS WELLHEAD LLC

13-3/8" x 8-5/8" x 5-1/2" 5M MBU-3T Wellhead System  
 With 8-5/8" & 5-1/2" Pin Down Rotating Mandrel Hangers  
 And 13-5/8" 10M x 7-1/16" 15M CTH-P-DBLHPS Tubing Head

DEVON ENERGY CORPORATION

DRAWN DLE 10MAY18

APPRV

DRAWING NO. ODE0002309



Billiken 7-6 Fed Com 5H

**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	905 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	12050 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 contingency 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	905 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	12050 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 contingency 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.

Billiken 7-6 Fed Com 5H

	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 specification 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 3 <sup>rd</sup> 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 2 <sup>nd</sup> 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	# Sk	TOC	Wt. (lb/gal)	Yld (ft <sup>3</sup> /sack)	Slurry Description
Surface	693	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	766	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	948	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
	479	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
	766	Surf	9	3.27	Lead: Class C Cement + additives
	783	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	63	10020	9.0	3.3	Lead: Class H / C + additives
	690	12020	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 (ft <sup>3</sup> /sack)	Slurry Description
Surface	693	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	490	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	557	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
	321	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
	490	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)	728	Surf	9	3.27	Lead: Class C Cement + additives
	768	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	117	10020	9.0	3.3	Lead: Class H / C + additives
	1431	12020	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%

Billiken 7-6 Fed Com 5H

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 Report and submitted 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	Specify what type and where?
BH pressure at deepest TVD	6852
Abnormal temperature	No

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

Hydrogen 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.

**8. Other facets of operation**

Is this a walking operation? Potentially

- 1 If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
- 2 The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
- 3 The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

- 1 Spudder rig will move in and batch drill surface hole.
  - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.,
- 2 After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
- 3 The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
- 4 A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
- 5 Spudder rig operations is expected to take 4-5 days per well on a multi-well pa.
- 6 The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
- 7 Drilling operations will be performed with drilling rig. A that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
  - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

- X Directional Plan  
           Other, describe

## Devon Energy Annular Preventer Summary

### 1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

Component	OD	Preventer	RWP
Drillpipe	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
HWDP	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
Drill collars and MWD tools	4.75"	Upper 4.5-7" VBR	10M
Mud Motor	4.75"	Upper 4.5-7" VBR	10M
Production casing	5.5"	Upper 4.5-7" VBR	10M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram. Compatible range listed in chart.

### 2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may chose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

#### General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

## **Devon Energy Annular Preventer Summary**

### **General Procedure While Tripping**

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

### **General Procedure While Running Casing**

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

### **General Procedure With No Pipe In Hole (Open Hole)**

1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
  - a. SICP
  - b. Pit gain
  - c. Time
6. Regroup and identify forward plan

## Devon Energy Annular Preventer Summary

### General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drillpipe thru the stack.
  - a. Perform flowcheck, if flowing:
  - b. Sound alarm (alert crew)
  - c. Stab full opening safety valve and close
  - d. Space out drill string with tool joint just beneath the upper pipe ram.
  - e. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
  - f. Confirm shut-in
  - g. Notify toolpusher/company representative
  - h. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. Stab crossover and full opening safety valve and close
  - c. Space out drill string with upset just beneath the compatible pipe ram.
  - d. Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
  - e. Confirm shut-in
  - f. Notify toolpusher/company representative
  - g. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
  - c. If impossible to pick up high enough to pull the string clear of the stack:
  - d. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
  - e. Space out drill string with tooljoint just beneath the upper pipe ram.
  - f. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
  - g. Confirm shut-in
  - h. Notify toolpusher/company representative
  - i. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - j. Regroup and identify forward plan



APD ID: 10400045996

Submission Date: 08/20/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

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? N

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:

Describe 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: BILLIKEN 7-6 FED COM**

**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? N**

**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:**

**Describe 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:** BILLIKEN 7-6 FED COM

**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?** N

**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?** N

**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?** N

**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: BILLIKEN 7-6 FED COM**

**Well Number: 5H**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



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

## Bond Info Data Report

02/04/2020

APD ID: 10400045996

Submission Date: 08/20/2019

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: BILLIKEN 7-6 FED COM

Well Number: 5H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

### Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000801

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: