Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EMNRD-OCD ARTESIA
REC'D: 4/28/2020

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

**SUNDRY NOTICES AND REPORTS ON WELLS**

***Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.***

***SUBMIT IN TRIPLICATE - Other instructions on page 2***

5. Lease Serial No.
NMLC061705B

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
891000303X

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
POKER LAKE UNIT 17 TWR 121H

2. Name of Operator
XTO PERMIAN OPERATING LLC
Contact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com

9. API Well No.
30-015-45923-00-X1

3a. Address
6401 HOLIDAY HILL ROAD BLDG 5
MIDLAND, TX 79707

3b. Phone No. (include area code)
Ph: 432-620-4374

10. Field and Pool or Exploratory Area
PURPLE SAGE WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 20 T24S R31E NWNW 248FNL 533FWL
32.209389 N Lat, 103.806671 W Lon

11. County or Parish, State
EDDY COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

| TYPE OF SUBMISSION | TYPE OF ACTION | | | |
|---|---|---|---|---|
| ☒ Notice of Intent | ☐ Acidize | ☐ Deepen | ☐ Production (Start/Resume) | ☐ Water Shut-Off |
| ☐ Subsequent Report | ☐ Alter Casing | ☐ Hydraulic Fracturing | ☐ Reclamation | ☐ Well Integrity |
| ☐ Final Abandonment Notice | ☐ Casing Repair | ☐ New Construction | ☐ Recomplete | ☒ Other Change to Original APD |
| | ☐ Change Plans | ☐ Plug and Abandon | ☐ Temporarily Abandon | |
| | ☐ Convert to Injection | ☐ Plug Back | ☐ Water Disposal | |

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

XTO Permian Operating, LLC requests permission to make the following changes to the original APD:

Change the casing/cement design per the attached drilling program. 3-string primary design with 4-string contingency design.

XTO requests the following variances:

XTO requests to use a 5000 psi annular BOP with a 10,000 psi BOP stack. Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi

Batch drill this well if necessary. In doing so, XTO will set each casing string and ensure that

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

**Electronic Submission #511316 verified by the BLM Well Information System**
**For XTO PERMIAN OPERATING LLC, sent to the Carlsbad**
**Committed to AFMSS for processing by PRISCILLA PEREZ on 04/17/2020 (20PP2104SE)**

Name *(Printed/Typed)* KELLY KARDOS — Title REGULATORY COORDINATOR

Signature (Electronic Submission) — Date 04/17/2020

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

Approved By JENNIFER SANCHEZ — Title PETROLEUM ENGINEER — Date 04/28/2020

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Carlsbad

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

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

RWP

Accepted 4/28/2020

## Additional data for EC transaction #511316 that would not fit on the form

**32. Additional remarks, continued**

the well is cemented properly and the well is static. With floats holding, no pressure on the csg annulus, and the installation of a 10K TA cap as per GE recommendations, XTO will contact the BLM to skid the rig to drill the remaining wells on the pad. Once surface and intermediate strings are all completed, XTO will begin drilling the production hole on each of the wells.

ONLY test broken pressure seals on the BOP equipment when moving from wellhead to wellhead which is in compliance with API Standard 53. API standard 53 states, that for pad drilling operation, moving from one wellhead to another within 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken. Based on discussions with the BLM on February 27th 2020, we will request permission to ONLY retest broken pressure seals if the following conditions are met: 1. After a full BOP test is conducted on the first well on the pad (First well will be the deepest Intermediate) 2. When skidding to drill an intermediate section does not penetrate into the Wolfcamp 3. Full BOP test will be required prior to drilling the production hole.

A variance is requested to cement offline for the surface and intermediate casing strings.

Attachments:
3-String Casing/Cement Design & 4-String Contingency
Multibowl Diagram
5M10M Diagram / Well Control Plan

## Revisions to Operator-Submitted EC Data for Sundry Notice #511316

| | Operator Submitted | BLM Revised (AFMSS) |
|---|---|---|
| Sundry Type: | APDCH<br>NOI | APDCH<br>NOI |
| Lease: | NMLC061705B | NMLC061705B |
| Agreement: | | 891000303X (NMNM71016X) |
| Operator: | XTO PERMIAN OPERATING, LLC<br>6401 HOLIDAY HILL RD BLDG 5<br>MIDLAND, TX 79707<br>Ph: 432-620-4374 | XTO PERMIAN OPERATING LLC<br>6401 HOLIDAY HILL ROAD BLDG 5<br>MIDLAND, TX 79707<br>Ph: 432.683 2277 |
| Admin Contact: | KELLY KARDOS<br>REGULATORY COORDINATOR<br>E-Mail: kelly_kardos@xtoenergy.com<br><br>Ph: 432-620-4374 | KELLY KARDOS<br>REGULATORY COORDINATOR<br>E-Mail: kelly_kardos@xtoenergy.com<br><br>Ph: 432-620-4374 |
| Tech Contact: | KELLY KARDOS<br>REGULATORY COORDINATOR<br>E-Mail: kelly_kardos@xtoenergy.com<br><br>Ph: 432-620-4374 | KELLY KARDOS<br>REGULATORY COORDINATOR<br>E-Mail: kelly_kardos@xtoenergy.com<br><br>Ph: 432-620-4374 |
| Location:<br>State:<br>County: | <br>NM<br>EDDY | <br>NM<br>EDDY |
| Field/Pool: | PURPLE SAGE WOLFCAMP | PURPLE SAGE WOLFCAMP |
| Well/Facility: | POKER LAKE UNIT 17 TWR 121H<br>Sec 20 T24S R31E Mer NMP NWNW 248FNL 533FWL | POKER LAKE UNIT 17 TWR 121H<br>Sec 20 T24S R31E NWNW 248FNL 533FWL<br>32.209389 N Lat, 103.806671 W Lon |

# PECOS DISTRICT DRILLING
# CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **XTO Permian Operating, LLC.** |
| **LEASE NO.:** | **NMLC-0061705B** |
| **WELL NAME & NO.:** | **Poker Lake Unit 17 TWR 121H** |
| **SURFACE HOLE FOOTAGE:** | **0248' FNL & 0533' FWL** |
| **BOTTOM HOLE FOOTAGE** | **0220' FDL & 0430' FWL Sec. 29, T. 24 S., R 31 E.** |
| **LOCATION:** | **Section 20, T. 24 S., R 31 E., NMPM** |
| **COUNTY:** | **Eddy County, New Mexico** |

**Offline cementing and BOP testing variance is NOT approved.**

**Commercial Well Determination**
A commercial well determination shall be submitted after production has been established for at least six months.

**Unit Wells**
The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

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

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. **The operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other wells.**

4. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

5. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) for Water Basin:**
**After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.**

**Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possibility of water flows in the Salado and Castile.**
**Possibility of lost circulation in the Red Beds, Rustler, and Delaware.**
**Abnormal pressure may be encountered in the 3rd Bone Spring and all subsequent formations.**

1. The **13-3/8** inch surface casing shall be set at approximately **850** feet (**in a competent bed <u>below the Magenta Dolomite</u>, which is a <u>Member of the Rustler</u>, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**9-5/8'' Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing (**if contingency is used set at 4120 feet**) is:

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

    a. First stage to DV tool:

    ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

**Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

3. The minimum required fill of cement behind the **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. **Excess calculates to 21% - Additional cement may be required.**

**Contingency Casing**

The **9-5/8''** string shall be set at **4120** feet

4. The minimum required fill of cement behind the **7** inch production casing is:

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

**Formation below the 7" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.**

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

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 9% - Additional cement may be required.**

6. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **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.**
    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. **Operator shall perform the 9-5/8" and 7" (if contingency used) casing integrity tests to 70% of the casing burst. This will test the multi-bowl seals.**
    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.**

**Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)**

**10M 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. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

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

## D. DRILLING MUD

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

## E. DRILL STEM TEST

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

## F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 04282020**

**Poker Lake Unit 17 TWR 121H**
Projected TD: 22659' MD / 12605' TVD
SHL: 248' FNL & 533' FWL , Section 20, T24S, R31E
BHL: 220' FSL & 430' FWL , Section 29, T24S, R31E
Eddy County, NM

## Casing Design 3-String (Primary)

*The surface fresh water sands will be protected by setting 13-3/8 inch casing @ 850' (55' above the salt) and circulating cement back to surface. A 12-1/4 inch vertical hole will be drilled to 11839' and 9-5/8 inch casing ran and cemented 200' into the 13-3/8 inch casing. An 8-3/4 inch curve and lateral hole will be drilled to MD/TD and 5-1/2 casing will be set at TD and cemented back 300' into the 9-5/8 inch casing shoe.*

| Hole Size | Depth | OD Csg | Weight | Collar | Grade | New/Used | SF Burst | SF Collapse | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2" | 0' – 850' | 13-3/8" | 68 | BTC | J-55 | New | 1.18 | 5.07 | 18.49 |
| 12-1/4" | 0' – 11839' | 9-5/8" | 40 | BTC | HCL-80 | New | 1.00 | 1.30 | 1.93 |
| 8-3/4-8-1/2" | 0' – 22659' | 5-1/2" | 20 | BTC | P-110 | New | 1.03 | 1.30 | 1.96 |

XTO requests to not utilize centralizers in the curve and lateral
9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

**WELLHEAD:**

*Permanent Wellhead – GE RSH Multibowl System*

A. Starting Head (RSH System): 13-3/8" SOW bottom x 13-5/8" 5M top flange
B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 10M top flange
Wellhead will be installed by manufacturer's representatives.
Manufacturer will monitor welding process to ensure appropriate temperature of seal.
Operator will test the 9-5/8" casing per Onshore Order 2.
Wellhead manufacturer representative may not be present for BOP test plug installation

## Cement Program 3-String (Primary)

### Surface Casing:

Lead: 400 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

### Intermediate Casing:

*ECP/DV Tool to be set at 3765'*

*1st Stage*

Lead: 1280 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 3.45 ft3/sx, 21.14 gal/sx water)
Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 500 psi 24 hr = 1151 psi

*2nd Stage*

Lead: 540 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 3.45 ft3/sx, 21.14 gal/sx water)
Tail: 350 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 500 psi 24 hr = 1151 psi

### Production Casing:

Tail: 2530 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft3/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

## Mud Circulation Program 3-String (Primary)

| INTERVAL | Hole Size | Mud Type | MW (ppg) | Viscosity (sec/qt) | Fluid Loss (cc) |
|---|---|---|---|---|---|
| 0' to 850' | 17-1/2" | FW/Native | 8.4-8.8 | 35-40 | NC |
| 850' to 11839' | 12-1/4" | FW / Cut Brine / Direct Emulsion | 8.5-9.5 | 29-32 | NC - 20 |
| 11839' to 22659' | 8-3/4-8-1/2" | FW / Cut Brine / Polymer/ OBM | 12-14 | 32-50 | NC - 20 |

## Casing Design 4-String (Contingency)

*XTO requests the option to set the 9-5/8 inch casing early and swap to a 4-string casing design if deemed necessary. In this scenario, the salt will be isolated by setting 9-5/8 inch casing at 5270' and circulating cement to surface. An 8-3/4 inch vertical hole and curve will be drilled and 7 inch casing run and cemented 200' into the 9-5/8 inch casing. A 6 inch lateral hole will be drilled to MD/TD and 4-1/2 inch liner will be set at TD and cemented back 250' into the 7 inch casing shoe. In the even this option has to be excercised due to wellbore conditions, the BLM will be notified. In this scenario, the casing design will be as follows:*

| Hole Size | Depth | OD Csg | Weight | Collar | Grade | New/Used | SF Burst | SF Collapse | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2" | 0' – 850' | 13-3/8" | 68 | BTC | J-55 | New | 2.64 | 5.07 | 18.49 |
| 12-1/4" | 0' – 5270' | 9-5/8" | 40 | BTC | J-55 | New | 1.35 | 1.93 | 2.99 |
| 8-3/4" | 0' – 11839' | 7" | 32 | BTC | P-110 | New | 1.04 | 1.95 | 2.71 |
| 6" | 12039' – 22659' | 4-1/2" | 13.5 | BTC | P-110 | New | 1.04 | 1.98 | 1.91 |

## Cement Program 4-String (Contingency)

### Surface Casing:

Lead: 400 sxs EconoCem-HLTRRC (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

### 1st Intermediate Casing (2 stage):

*ECP/DV Tool to be set at 2500'*

*1st Stage*

Lead: 580 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)
Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

*2nd Stage*

Lead: 490 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)
Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

### 2nd Intermediate Casing:

Lead: 860 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 1.88 ft3/sx, 9.61 gal/sx water)
Tail: 60 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

### Production Casing:

Tail: 860 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft3/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

## Mud Circulation Program 4-String (Contingency)

| INTERVAL | Hole Size | Mud Type | MW (ppg) | Viscosity (sec/qt) | Fluid Loss (cc) |
|---|---|---|---|---|---|
| 0' to 850' | 17-1/2" | FW/Native | 8.4-8.8 | 35-40 | NC |
| 850' to 5270' | 12-1/4" | FW / Cut Brine / Direct Emulsion | 8.4-9.5 | 29-32 | NC |
| 5270' to 11839' | 8-3/4" | FW / Cut Brine / Direct Emulsion | 8.4-9.5 | 29-32 | NC - 20 |
| 11839' to 22659' | 6" | FW / Cut Brine / Polymer/ OBM | 12-14 | 32-50 | 20' |

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

XTO Energy Inc.
PLU 17 TWR 121H
Projected TD: 22659' MD / 12605' TVD
SHL: 248' FNL & 533' FWL , Section 20, T24S, R31E
BHL: 220' FSL & 430' FWL , Section 29, T24S, R31E
Eddy County, NM

**1. Geologic Name of Surface Formation**

A. Permian

**2. Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas:**

| Formation | Well Depth (TVD) | Water/Oil/Gas |
|---|---|---|
| Rustler | 545' | Water |
| Top of Salt | 905' | Water |
| Base of Salt | 4045' | Water |
| Delaware | 4265' | Water |
| Bone Spring | 8105' | Water/Oil/Gas |
| 1st Bone Spring Ss | 9065' | Water/Oil/Gas |
| 2nd Bone Spring Ss | 9885' | Water/Oil/Gas |
| 3rd Bone Spring Ss | 11045' | Water/Oil/Gas |
| Wolfcamp | 11445' | Water/Oil/Gas |
| Wolfcamp A | 11605' | Water/Oil/Gas |
| Wolcamp B | 12005' | Water/Oil/Gas |
| Wolfcamp D | 12405' | Water/Oil/Gas |
| Target/Land Curve | 12605' | Water/Oil/Gas |

*** Hydrocarbons @ Brushy Canyon
*** Groundwater depth 40’ (per NM State Engineers Office).

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13-3/8 inch casing @ 850' (55' above the salt) and circulating cement back to surface. A 12-1/4 inch vertical hole will be drilled to 11839' and 9-5/8 inch casing ran and cemented 200' into the 13-3/8 inch casing. An 8-3/4 inch curve and lateral hole will be drilled to MD/TD and 5-1/2 casing will be set at TD and cemented back 300' into the 9-5/8 inch casing shoe.

**3. Casing Design**

**3 String (Primary)**

| Hole Size | Depth | OD Csg | Weight | Collar | Grade | New/Used | SF Burst | SF Collapse | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2" | 0’ – 850' | 13-3/8" | 68 | BTC | J-55 | New | 1.18 | 5.07 | 18.49 |
| 12-1/4" | 0’ – 11839' | 9-5/8" | 40 | BTC | HCL-80 | New | 1.00 | 1.30 | 1.93 |
| 8-3/4-8-1/2" | 0' – 22659' | 5-1/2” | 20 | BTC | P-110 | New | 1.03 | 1.30 | 1.96 |

XTO requests to not utilize centralizers in the curve and lateral
9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
5-1/2” tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

**4 String (Contingency)**

XTO requests the option to set the 9-5/8 inch casing early and swap to a 4-string casing design if deemed necessary. In this scenario, the salt will be isolated by setting 9-5/8 inch casing at 5270' and circulating cement to surface. An 8-3/4 inch vertical hole and curve will be drilled and 7 inch casing run and cemented 200' into the 9-5/8 inch casing. A 6 inch lateral hole will be drilled to MD/TD and 4-1/2 inch liner will be set at TD and cemented back 250' into the 7 inch casing shoe. In the even this option has to be excercised due to wellbore conditions, the BLM will be notified. In this scenario, the casing design will be as follows:

will be notified. In this scenario, the casing design will be as follows:

| Hole Size | Depth | OD Csg | Weight | Collar | Grade | New/Used | SF Burst | SF Collapse | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2” | 0’ – 850' | 13-3/8” | 68 | BTC | J-55 | New | 2.64 | 5.07 | 18.49 |
| 12-1/4” | 0’ – 5270' | 9-5/8” | 40 | BTC | J-55 | New | 1.35 | 1.93 | 2.99 |
| 8-3/4" | 0’ – 11839' | 7" | 32 | BTC | P-110 | New | 1.04 | 1.95 | 2.71 |
| 6" | 12039' – 22659' | 4-1/2” | 13.5 | BTC | P-110 | New | 1.04 | 1.98 | 1.91 |

**WELLHEAD:**

Permanent Wellhead – GE RSH Multibowl System

A. Starting Head (RSH System): 13-3/8” SOW bottom x 13-5/8” 5M top flange
B. Tubing Head: 13-5/8” 5M bottom flange x 7-1/16” 10M top flange
   - Wellhead will be installed by manufacturer’s representatives.
   - Manufacturer will monitor welding process to ensure appropriate temperature of seal.
   - Operator will test the 9-5/8" casing per Onshore Order 2.
   - Wellhead manufacturer representative may not be present for BOP test plug installation

## 4. Cement Program

**3 String (Primary)**

*Surface Casing: 13-3/8", 68 New J-55, BTC casing to be set at +/- 850'*

Lead: 400 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Top of Cement: Surface

*2nd Intermediate Casing (Stage 2): 9-5/8", 40 New HCL-80, BTC casing to be set at +/- 11839'*
*ECP/DV Tool to be set at 3765'*

*1st Stage*

Lead: 1280 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 3.45 ft3/sx, 21.14 gal/sx water)

Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 500 psi 24 hr = 1151 psi

*2nd Stage*

Lead: 540 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 3.45 ft3/sx, 21.14 gal/sx water)

Tail: 350 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 500 psi 24 hr = 1151 psi

Top of Cement: 200' inside previous casing shoe

*Production Casing: 5-1/2", 20 New P-110, BTC casing to be set at +/- 22659'*

Lead: 0 sxs Halcem-C + 2% CaCl (mixed at 11.5 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 2530 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft3/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

Top of Cement: 300' inside previous casing shoe

**4 String (Contingency)**

*Surface Casing: 13-3/8", 68 New J-55, BTC casing to be set at +/- 850'*

Lead: 400 sxs EconoCem-HLTRRC (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Top of Cement: Surface

*1st Intermediate Casing (2 stage): 9-5/8", 40 New J-55, BTC casing to be set at +/- 5270'*
*ECP/DV Tool to be set at 2500'*

*1st Stage*

*Lead: 580 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)*

*Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)*
*Compressives: 12-hr = 900 psi 24 hr = 1500 psi*

*2nd Stage*

Lead: 490 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 470 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Top of Cement: Surface

*2nd Intermediate Casing: 7", 32 New P-110, BTC casing to be set at +/- 11839'*

Lead: 860 sxs Halcem-C + 2% CaCl (mixed at 11.0 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 60 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Top of Cement: 200' inside previous casing shoe

*Production Casing: 4-1/2", 13.5 New P-110, BTC casing to be set at +/- 22659'*

Tail: 860 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft3/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

Top of Cement: Top of liner

**5. Pressure Control Equipment**

Once the permanent WH is installed on the 13-3/8 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 10M 3-Ram BOP. MASP should not exceed 5748 psi. In any instance where 10M BOP is required by BLM, XTO requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M). Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 70% of the working pressure. When nippling up on the 13-3/8", 5M bradenhead and flange, the BOP test will be limited to 5000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 5M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

A variance is requested to allow use of a flex hose as the choke line from the BOP to the Choke Manifold. If this hose is used, a copy of the manufacturer's certification and pressure test chart will be kept on the rig. Attached is an example of a certification and pressure test chart. The manufacturer does not require anchors.

XTO requests a variance to be able to batch drill this well if necessary. In doing so, XTO will set each casing string and ensure that the well is cemented properly and the well is static. With floats holding, no pressure on the csg annulus, and the installation of a 10K TA cap as per wellhead manf. recommendations, XTO will contact the BLM to skid the rig to drill the remaining wells on the pad. Once surface and intermediate strings are all completed, XTO will begin drilling the production hole on each of the wells.

A variance is requested to ONLY test broken pressure seals on the BOP equipment when moving from wellhead to wellhead which is in compliance with API Standard 53. API standard 53 states, that for pad drilling operation, moving from one wellhead to another within 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken. Based on discussions with the BLM on February 27th 2020, we will request permission to ONLY retest broken pressure seals if the following conditions are met: 1. After a full BOP test is conducted on the first well on the pad (First well will be the deepest Intermediate) 2. When skidding to drill an intermediate section does not penetrate into the Wolfcamp 3. Full BOP test will be required prior to drilling the production hole.

A variance is requested to cement offline for the surface and intermediate casing strings.

## 6. Proposed Mud Circulation System

**3 String (Primary)**

| INTERVAL | Hole Size | Mud Type | MW (ppg) | Viscosity (sec/qt) | Fluid Loss (cc) |
|---|---|---|---|---|---|
| 0’ to 850' | 17-1/2" | FW/Native | 8.4-8.8 | 35-40 | NC |
| 850' to 11839' | 12-1/4" | FW / Cut Brine / Direct Emulsion | 8.5-9.5 | 29-32 | NC - 20 |
| 11839' to 22659' | 8-3/4-8-1/2" | FW / Cut Brine / Polymer/ OBM | 12-14 | 32-50 | NC - 20 |

**4 String (Contingency)**

| INTERVAL | Hole Size | Mud Type | MW (ppg) | Viscosity (sec/qt) | Fluid Loss (cc) |
|---|---|---|---|---|---|
| 0’ to 850' | 17-1/2” | FW/Native | 8.4-8.8 | 35-40 | NC |
| 850' to 5270' | 12-1/4” | FW / Cut Brine / Direct Emulsion | 8.4-9.5 | 29-32 | NC |
| 5270' to 11839' | 8-3/4" | FW / Cut Brine / Direct Emulsion | 8.4-9.5 | 29-32 | NC - 20 |
| 11839' to 22659' | 6" | FW / Cut Brine / Polymer/ OBM | 12-14 | 32-50 | 20' |

The necessary mud products for weight addition and fluid loss control will be on location at all times.

Spud with fresh water/native mud. Drill out from under 13-3/8” surface casing with brine / oil direct emulsion mud. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

## 7. Auxiliary Well Control and Monitoring Equipment

A. A Kelly cock will be in the drill string at all times.
B. A full opening drill pipe stabbing valve having appropriate connections will be on the rig floor at all times.
C. H2S monitors will be on location when drilling below the 13-3/8” casing.

## 8. Logging, Coring and Testing Program

Mud Logger: Mud Logging Unit (2 man) below 1st intermediate casing.

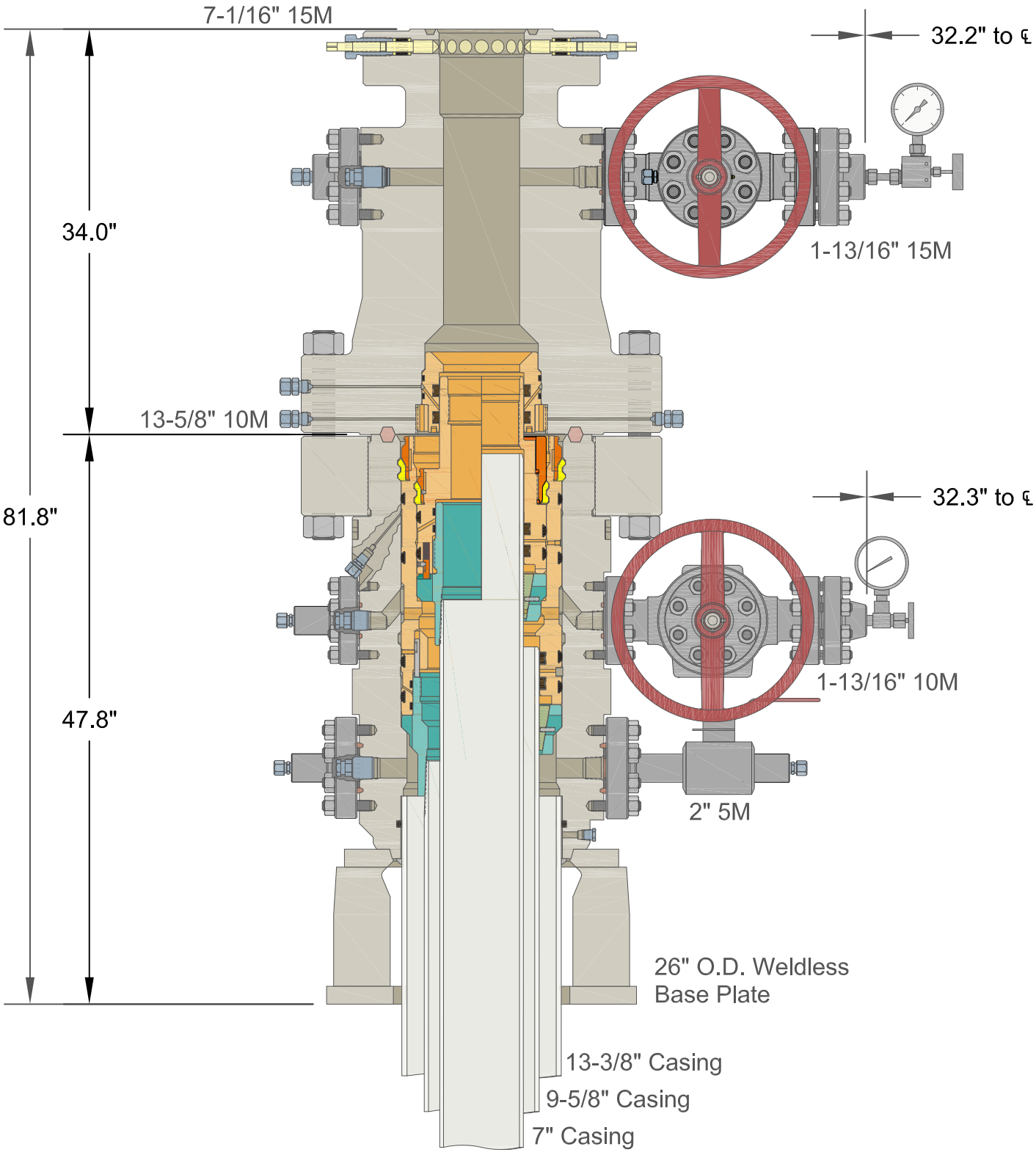
Open hole logging will not be done on this well.

## 9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 160 to 180 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. Lost circulation could occur but is not expected to be a serious problem in this area and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid. The maximum anticipated bottom hole pressure for this well is 8521 psi.

**10. Anticipated Starting Date and Duration of Operations**

Road and location construction will begin after Santa Fe and BLM have approved the APD. Anticipated spud date will be as soon after Santa Fe and BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 40 days. If production casing is run, an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.




BAKER HUGHES a GE company

# Pressure Control

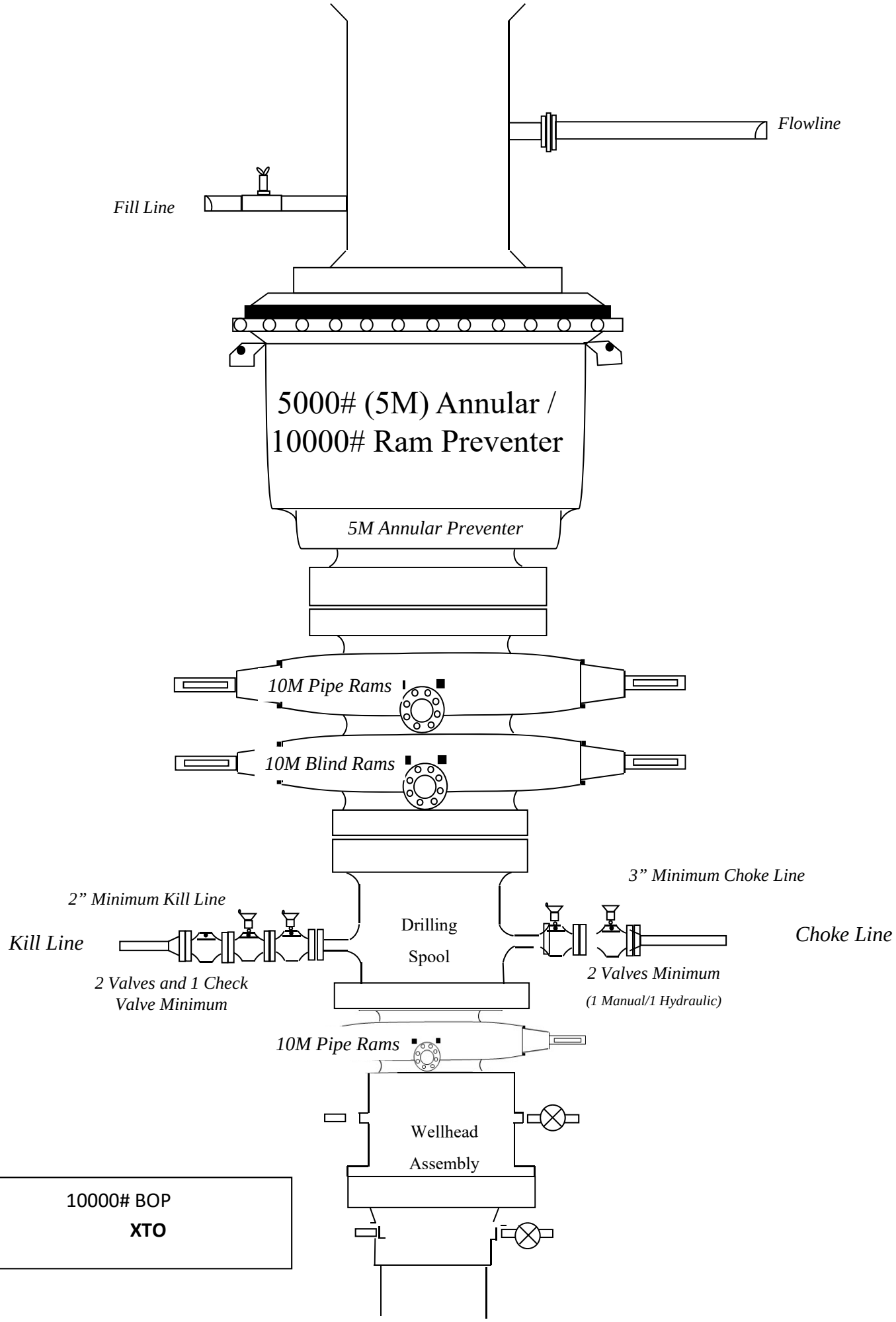
## 13-3/8" x 9-5/8" x 7" 15M RSH-2 Wellhead Assembly, With T-EBS-F-HP Tubing Head



ALL DIMENSIONS ARE APPROXIMATE, NOT FOR MANUFACTURING USE.

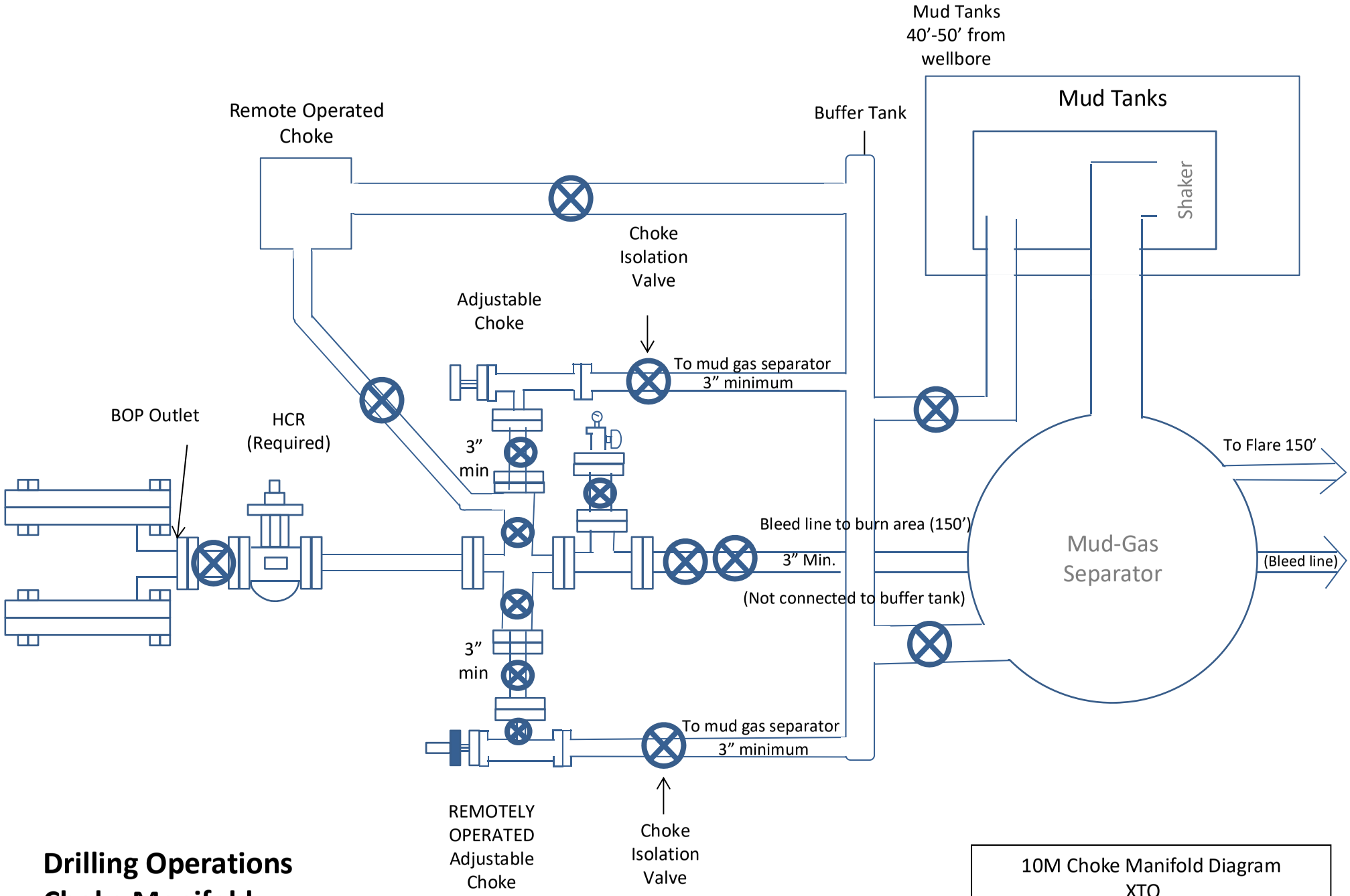
| | | | |
|---|---|---|---|
| DRAWN BY: VJK | | DRAWING NO. HP180197 | |
| REVIEWED BY: | | Rev. NC | Sht. 1 of 1 |
| APPROVED BY: | | DATE: 31OCT18 | |

XTO ENERGY, INC.




10000# BOP

**XTO**




**Drilling Operations**
**Choke Manifold**
**10M Service**

10M Choke Manifold Diagram
XTO

# 10,000 PSI Annular BOP Variance Request

XTO Energy/XTO Permian Op. request a variance to use a 5000 psi annular BOP with a 10,000 psi BOP stack. The component and compatibility tables along with the general well control plans demonstrate how the 5000 psi annular BOP will be protected from pressures that exceed its rated working pressure (RWP). The pressure at which the control of the wellbore is transferred from the annular preventer to another available preventer will not exceed 3500 psi (70% of the RWP of the 5000 psi annular BOPL).

## 1. Component and Preventer Compatibility Tables

The tables below outline the tubulars and the compatible preventers in use. This table, combined with the drilling fluid, documents that two barriers to flow will be maintained at all times.

| 8-1/2" Production Hole Section<br>10M psi Requirement | | | | | |
|---|---|---|---|---|---|
| **Component** | **OD** | **Primary Preventer** | **RWP** | **Alternate Preventer(s)** | **RWP** |
| Drillpipe | 5.000" or<br>4.500" | Annular | 5M | Upper 3.5"-5.5" VBR<br>Lower 3.5"-5.5" VBR | 10M<br>10M |
| HWDP | 5.000" or<br>4.500" | Annular | 5M | Upper 3.5"-5.5" VBR<br>Lower 3.5"-5.5" VBR | 10M<br>10M |
| Jars | 6.500" | Annular | 5M | - | - |
| DCs and MWD tools | 6.500"-8.000" | Annular | 5M | - | - |
| Mud Motor | 6.750"-8.000" | Annular | 5M | - | - |
| Production Casing | 5-1/2" | Annular | 5M | - | - |
| Open-Hole | - | Blind Rams | 10M | - | - |

## 2. Well Control Procedures

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. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the XTO Energy/Permian Operating drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore O&G Order No. 2 with the exception of the 5000 psi annular which will be tested to 70% of its RWP.

<u>General Procedure While Drilling</u>

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 & 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 & 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 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & 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 & 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 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

General Procedure While Running Production Casing

1. Sound alarm (alert crew)
2. Stab crossover and full-opening safety valve and close
3. Space out string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & 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 & 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 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams (HCR & 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

General Procedures While Pulling BHA Through Stack

1. PRIOR to pulling last joint of drillpipe through stack:
    a. Perform flow check. If flowing, continue to (b).
    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 variable bore rams
    e. Shut-in using upper variable bore rams (HCR & 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 & SICP
        ii. Pit gain
        iii. Time
    i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combination 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 upper variable bore rams
    d. Shut-in using upper variable bore rams (HCR & 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 & 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 combination immediately available:
    a. Sound alarm (alert crew)
    b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
    c. If impossible to pull 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 variable bore ram
    f. Shut-in using upper variable bore ram (HCR & 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 & SICP
        ii. Pit gain
        iii. Time
    j. Regroup and identify forward plan

# XTO Energy Inc.

**Eddy County, NM (NAD27)**
**SEC 20-T24S-R31E (PLU 17)**
**Twin Wells Ranch 701H**

**Horizontal**

**Plan: #1 (03.25.20)**

# Standard Planning Report

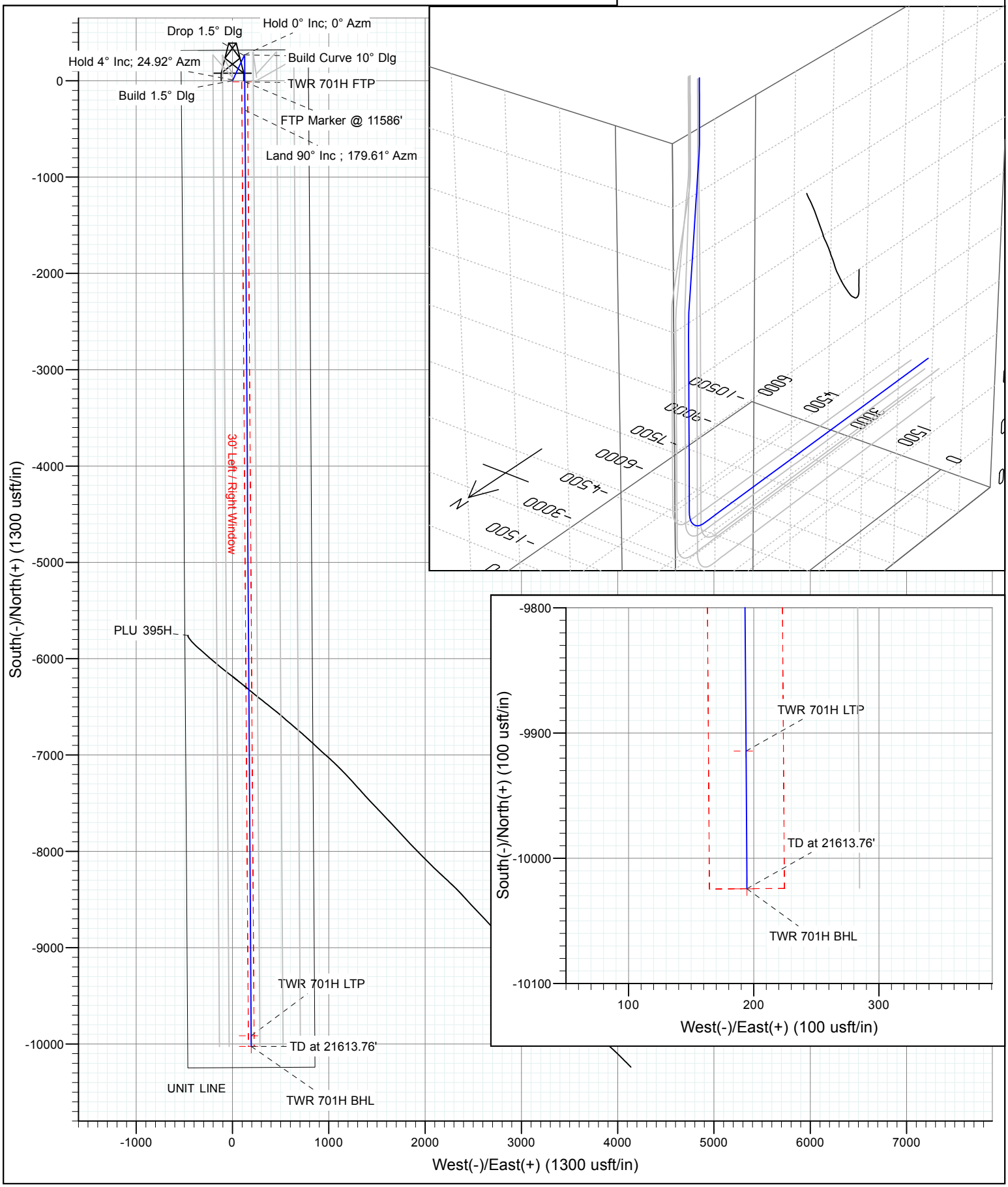
**31 March, 2020**

XTO ENERGY

Azimuths to Grid North
True North: -0.28°
Magnetic North: 6.39°

Magnetic Field
Strength: 47805.5nT
Dip Angle: 59.88°
Date: 4/14/2020
Model: HDGM_FILE

US State Plane 1927 (Exact solution)
New Mexico East 3001
Project: Eddy County, NM (NAD27)
Site: SEC 20-T24S-R31E (PLU 17)
Well: Twin Wells Ranch 701H
Wellbore: Horizontal
33' KB @ 3526.00usft (Nabors X02)
Ground Elevation: 3493.00
Plan: #1 (03.25.20)



XTO ENERGY

Azimuths to Grid North
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Magnetic North: 6.39°

Magnetic Field
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Dip Angle: 59.88°
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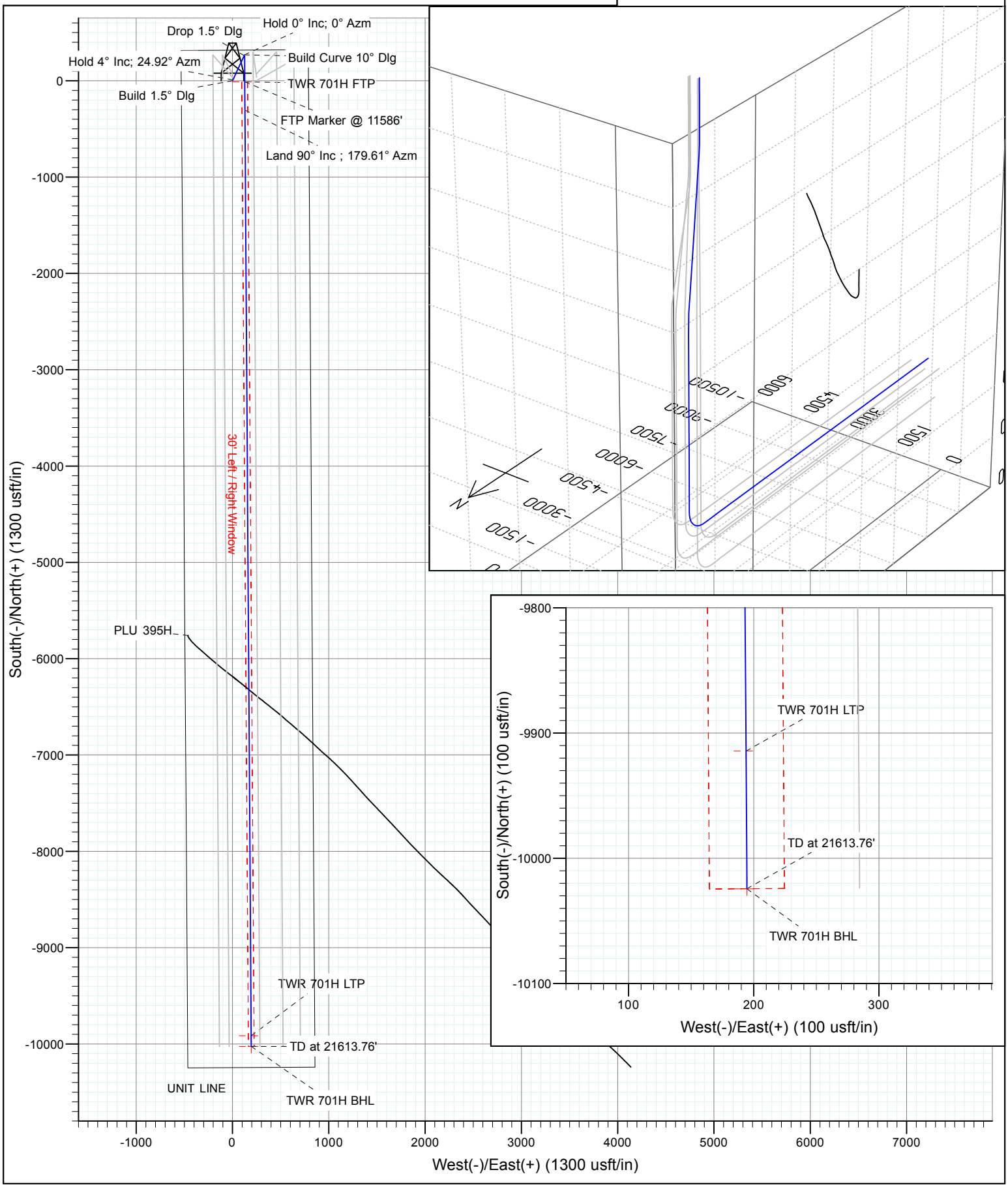

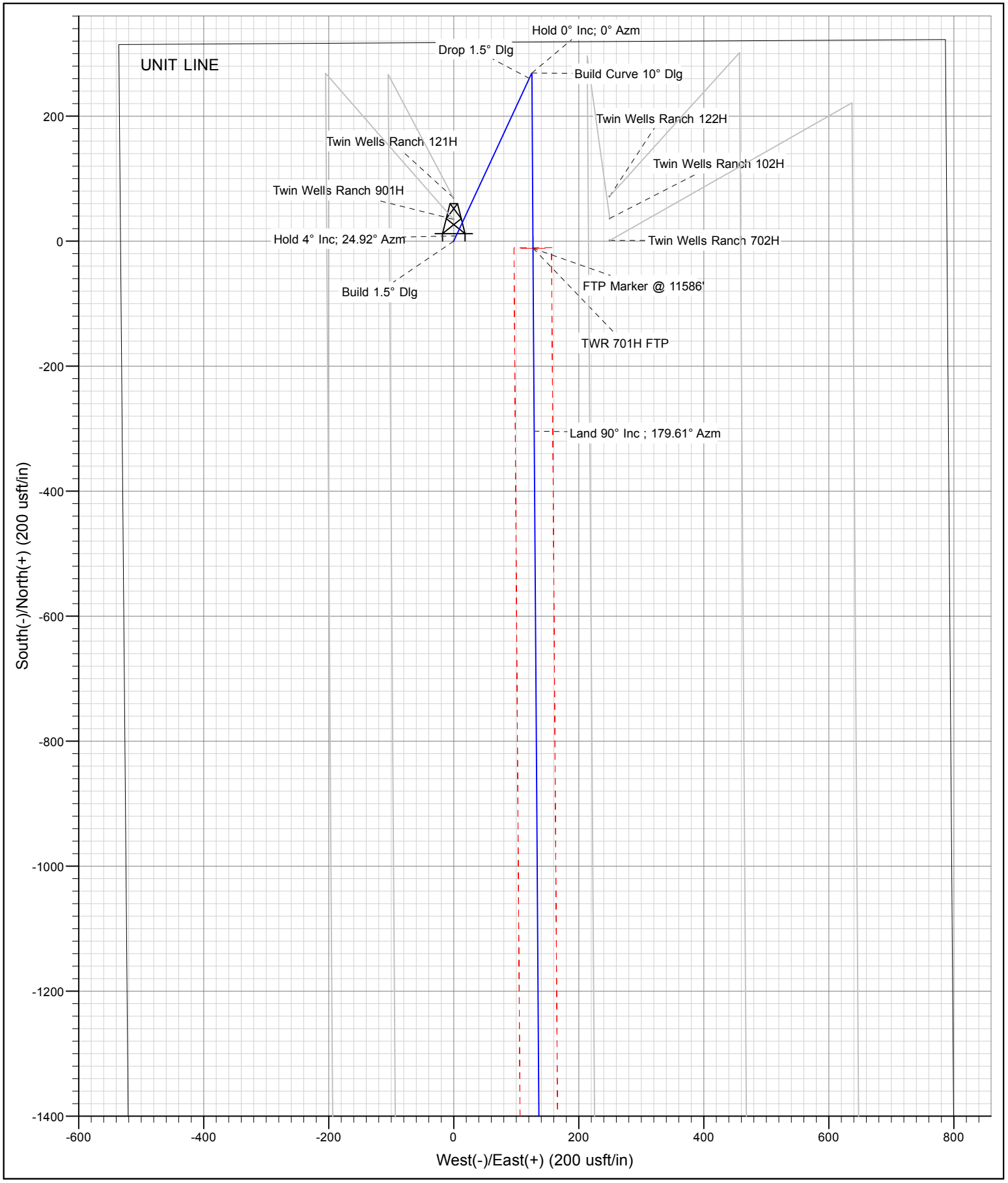
US State Plane 1927 (Exact solution)
New Mexico East 3001
Project: Eddy County, NM (NAD27)
Site: SEC 20-T24S-R31E (PLU 17)
Well: Twin Wells Ranch 701H
Wellbore: Horizontal
33' KB @ 3526.00usft (Nabors X02)
Ground Elevation: 3493.00
Plan: #1 (03.25.20)
CATHEDRAL
UNIT LINE
Hold 0° Inc; 0° Azm
Drop 1.5° Dlg
Build Curve 10° Dlg
Twin Wells Ranch 122H
Twin Wells Ranch 121H
Twin Wells Ranch 102H
Twin Wells Ranch 901H
Hold 4° Inc; 24.92° Azm
Twin Wells Ranch 702H
Build 1.5° Dlg
FTP Marker @ 11586'
TWR 701H FTP
Land 90° Inc ; 179.61° Azm
200
0
-200
-400
-600
-800
-1000
-1200
-1400
-600
-400
-200
0
200
400
600
800
South(-)/North(+) (200 usft/in)
West(-)/East(+) (200 usft/in)

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Project** Eddy County, NM (NAD27)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | |

**Site** SEC 20-T24S-R31E (PLU 17), GRAVITY = 0.99843

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 440,249.20 usft | **Latitude:** | 32.209263 |
| **From:** | Map | **Easting:** | 663,041.50 usft | **Longitude:** | -103.806186 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13-3/16" | **Grid Convergence:** | 0.28 ° |

**Well** Twin Wells Ranch 701H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 440,179.40 usft | **Latitude:** | 32.209071 |
| | **+E/-W** | 0.00 usft | **Easting:** | 663,042.20 usft | **Longitude:** | -103.806185 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,493.00 usft |

**Wellbore** Horizontal

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 4/14/2020 | 6.67 | 59.88 | 47,805.50000000 |

**Design** #1 (03.25.20)

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 178.89 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,490.00 | 0.00 | 0.00 | 1,490.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,756.58 | 4.00 | 24.92 | 1,756.36 | 8.43 | 3.92 | 1.50 | 1.50 | 0.00 | 24.92 | |
| 5,743.56 | 4.00 | 24.92 | 5,733.64 | 260.57 | 121.08 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,010.14 | 0.00 | 0.00 | 6,000.00 | 269.00 | 125.00 | 1.50 | -1.50 | 0.00 | 180.00 | |
| 10,993.18 | 0.00 | 0.00 | 10,983.04 | 269.00 | 125.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 11,893.18 | 90.00 | 179.61 | 11,556.00 | -303.94 | 128.87 | 10.00 | 10.00 | 0.00 | 179.61 | |
| 21,613.76 | 90.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 0.00 | 0.00 | 0.00 | 0.00 | TWR 701H BHL |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft | Build Rate (°/100u | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 546.00 | 0.00 | 0.00 | 546.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Rustler |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 906.00 | 0.00 | 0.00 | 906.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Top Salt |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,490.00 | 0.00 | 0.00 | 1,490.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Build 1.5° Dlg |
| 1,500.00 | 0.15 | 24.92 | 1,500.00 | 0.01 | 0.01 | -0.01 | 1.50 | 1.50 | |
| 1,600.00 | 1.65 | 24.92 | 1,599.98 | 1.44 | 0.67 | -1.42 | 1.50 | 1.50 | |
| 1,700.00 | 3.15 | 24.92 | 1,699.89 | 5.23 | 2.43 | -5.19 | 1.50 | 1.50 | |
| 1,756.58 | 4.00 | 24.92 | 1,756.36 | 8.43 | 3.92 | -8.35 | 1.50 | 1.50 | Hold 4° Inc; 24.92° Azm |
| 1,800.00 | 4.00 | 24.92 | 1,799.68 | 11.18 | 5.19 | -11.08 | 0.00 | 0.00 | |
| 1,900.00 | 4.00 | 24.92 | 1,899.43 | 17.50 | 8.13 | -17.34 | 0.00 | 0.00 | |
| 2,000.00 | 4.00 | 24.92 | 1,999.19 | 23.83 | 11.07 | -23.61 | 0.00 | 0.00 | |
| 2,100.00 | 4.00 | 24.92 | 2,098.95 | 30.15 | 14.01 | -29.87 | 0.00 | 0.00 | |
| 2,200.00 | 4.00 | 24.92 | 2,198.70 | 36.47 | 16.95 | -36.14 | 0.00 | 0.00 | |
| 2,300.00 | 4.00 | 24.92 | 2,298.46 | 42.80 | 19.89 | -42.40 | 0.00 | 0.00 | |
| 2,400.00 | 4.00 | 24.92 | 2,398.22 | 49.12 | 22.83 | -48.67 | 0.00 | 0.00 | |
| 2,500.00 | 4.00 | 24.92 | 2,497.97 | 55.45 | 25.76 | -54.94 | 0.00 | 0.00 | |
| 2,600.00 | 4.00 | 24.92 | 2,597.73 | 61.77 | 28.70 | -61.20 | 0.00 | 0.00 | |
| 2,700.00 | 4.00 | 24.92 | 2,697.49 | 68.09 | 31.64 | -67.47 | 0.00 | 0.00 | |
| 2,800.00 | 4.00 | 24.92 | 2,797.24 | 74.42 | 34.58 | -73.73 | 0.00 | 0.00 | |
| 2,900.00 | 4.00 | 24.92 | 2,897.00 | 80.74 | 37.52 | -80.00 | 0.00 | 0.00 | |
| 3,000.00 | 4.00 | 24.92 | 2,996.76 | 87.07 | 40.46 | -86.26 | 0.00 | 0.00 | |
| 3,100.00 | 4.00 | 24.92 | 3,096.51 | 93.39 | 43.40 | -92.53 | 0.00 | 0.00 | |
| 3,200.00 | 4.00 | 24.92 | 3,196.27 | 99.71 | 46.34 | -98.80 | 0.00 | 0.00 | |
| 3,300.00 | 4.00 | 24.92 | 3,296.03 | 106.04 | 49.27 | -105.06 | 0.00 | 0.00 | |
| 3,400.00 | 4.00 | 24.92 | 3,395.78 | 112.36 | 52.21 | -111.33 | 0.00 | 0.00 | |
| 3,500.00 | 4.00 | 24.92 | 3,495.54 | 118.69 | 55.15 | -117.59 | 0.00 | 0.00 | |
| 3,600.00 | 4.00 | 24.92 | 3,595.30 | 125.01 | 58.09 | -123.86 | 0.00 | 0.00 | |
| 3,700.00 | 4.00 | 24.92 | 3,695.05 | 131.33 | 61.03 | -130.12 | 0.00 | 0.00 | |
| 3,800.00 | 4.00 | 24.92 | 3,794.81 | 137.66 | 63.97 | -136.39 | 0.00 | 0.00 | |
| 3,900.00 | 4.00 | 24.92 | 3,894.57 | 143.98 | 66.91 | -142.66 | 0.00 | 0.00 | |
| 4,000.00 | 4.00 | 24.92 | 3,994.32 | 150.31 | 69.84 | -148.92 | 0.00 | 0.00 | |
| 4,051.80 | 4.00 | 24.92 | 4,046.00 | 153.58 | 71.37 | -152.17 | 0.00 | 0.00 | Base Salt |
| 4,100.00 | 4.00 | 24.92 | 4,094.08 | 156.63 | 72.78 | -155.19 | 0.00 | 0.00 | |
| 4,200.00 | 4.00 | 24.92 | 4,193.84 | 162.95 | 75.72 | -161.45 | 0.00 | 0.00 | |
| 4,272.34 | 4.00 | 24.92 | 4,266.00 | 167.53 | 77.85 | -165.99 | 0.00 | 0.00 | Delaware |
| 4,300.00 | 4.00 | 24.92 | 4,293.59 | 169.28 | 78.66 | -167.72 | 0.00 | 0.00 | |
| 4,400.00 | 4.00 | 24.92 | 4,393.35 | 175.60 | 81.60 | -173.98 | 0.00 | 0.00 | |
| 4,500.00 | 4.00 | 24.92 | 4,493.11 | 181.93 | 84.54 | -180.25 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft | Build Rate (°/100u | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 4,600.00 | 4.00 | 24.92 | 4,592.86 | 188.25 | 87.48 | -186.52 | 0.00 | 0.00 | |
| 4,700.00 | 4.00 | 24.92 | 4,692.62 | 194.57 | 90.42 | -192.78 | 0.00 | 0.00 | |
| 4,800.00 | 4.00 | 24.92 | 4,792.37 | 200.90 | 93.35 | -199.05 | 0.00 | 0.00 | |
| 4,900.00 | 4.00 | 24.92 | 4,892.13 | 207.22 | 96.29 | -205.31 | 0.00 | 0.00 | |
| 5,000.00 | 4.00 | 24.92 | 4,991.89 | 213.55 | 99.23 | -211.58 | 0.00 | 0.00 | |
| 5,100.00 | 4.00 | 24.92 | 5,091.64 | 219.87 | 102.17 | -217.84 | 0.00 | 0.00 | |
| 5,164.51 | 4.00 | 24.92 | 5,156.00 | 223.95 | 104.07 | -221.89 | 0.00 | 0.00 | Cherry Canyon |
| 5,200.00 | 4.00 | 24.92 | 5,191.40 | 226.19 | 105.11 | -224.11 | 0.00 | 0.00 | |
| 5,300.00 | 4.00 | 24.92 | 5,291.16 | 232.52 | 108.05 | -230.38 | 0.00 | 0.00 | |
| 5,400.00 | 4.00 | 24.92 | 5,390.91 | 238.84 | 110.99 | -236.64 | 0.00 | 0.00 | |
| 5,500.00 | 4.00 | 24.92 | 5,490.67 | 245.16 | 113.92 | -242.91 | 0.00 | 0.00 | |
| 5,600.00 | 4.00 | 24.92 | 5,590.43 | 251.49 | 116.86 | -249.17 | 0.00 | 0.00 | |
| 5,700.00 | 4.00 | 24.92 | 5,690.18 | 257.81 | 119.80 | -255.44 | 0.00 | 0.00 | |
| 5,743.56 | 4.00 | 24.92 | 5,733.64 | 260.57 | 121.08 | -258.17 | 0.00 | 0.00 | Drop 1.5° Dlg |
| 5,800.00 | 3.15 | 24.92 | 5,789.97 | 263.76 | 122.56 | -261.33 | 1.50 | -1.50 | |
| 5,900.00 | 1.65 | 24.92 | 5,889.88 | 267.56 | 124.33 | -265.10 | 1.50 | -1.50 | |
| 6,000.00 | 0.15 | 24.92 | 5,989.86 | 268.99 | 124.99 | -266.51 | 1.50 | -1.50 | |
| 6,010.14 | 0.00 | 0.00 | 6,000.00 | 269.00 | 125.00 | -266.52 | 1.50 | -1.50 | Hold 0° Inc; 0° Azm |
| 6,100.00 | 0.00 | 0.00 | 6,089.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,200.00 | 0.00 | 0.00 | 6,189.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,300.00 | 0.00 | 0.00 | 6,289.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,400.00 | 0.00 | 0.00 | 6,389.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,466.14 | 0.00 | 0.00 | 6,456.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Brushy Canyon |
| 6,500.00 | 0.00 | 0.00 | 6,489.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,600.00 | 0.00 | 0.00 | 6,589.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,700.00 | 0.00 | 0.00 | 6,689.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,800.00 | 0.00 | 0.00 | 6,789.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 6,900.00 | 0.00 | 0.00 | 6,889.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,000.00 | 0.00 | 0.00 | 6,989.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,100.00 | 0.00 | 0.00 | 7,089.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,200.00 | 0.00 | 0.00 | 7,189.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,300.00 | 0.00 | 0.00 | 7,289.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,400.00 | 0.00 | 0.00 | 7,389.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,500.00 | 0.00 | 0.00 | 7,489.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,600.00 | 0.00 | 0.00 | 7,589.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,700.00 | 0.00 | 0.00 | 7,689.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,800.00 | 0.00 | 0.00 | 7,789.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 7,836.14 | 0.00 | 0.00 | 7,826.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Basal Brushy Canyon |
| 7,900.00 | 0.00 | 0.00 | 7,889.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,000.00 | 0.00 | 0.00 | 7,989.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,100.00 | 0.00 | 0.00 | 8,089.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,116.14 | 0.00 | 0.00 | 8,106.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Bone Spring Lime |
| 8,200.00 | 0.00 | 0.00 | 8,189.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,236.14 | 0.00 | 0.00 | 8,226.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Avalon Sand |
| 8,256.14 | 0.00 | 0.00 | 8,246.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Upper Avalon Shale |
| 8,300.00 | 0.00 | 0.00 | 8,289.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,400.00 | 0.00 | 0.00 | 8,389.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,500.00 | 0.00 | 0.00 | 8,489.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,600.00 | 0.00 | 0.00 | 8,589.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,666.14 | 0.00 | 0.00 | 8,656.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Lower Avalon Shale |
| 8,700.00 | 0.00 | 0.00 | 8,689.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 8,800.00 | 0.00 | 0.00 | 8,789.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft | Build Rate (°/100u | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 8,876.14 | 0.00 | 0.00 | 8,866.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | 1st Bone Spring Lime |
| 8,900.00 | 0.00 | 0.00 | 8,889.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,000.00 | 0.00 | 0.00 | 8,989.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,076.14 | 0.00 | 0.00 | 9,066.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | 1st Bone Spring Ss |
| 9,100.00 | 0.00 | 0.00 | 9,089.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,200.00 | 0.00 | 0.00 | 9,189.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,300.00 | 0.00 | 0.00 | 9,289.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,400.00 | 0.00 | 0.00 | 9,389.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,500.00 | 0.00 | 0.00 | 9,489.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,566.14 | 0.00 | 0.00 | 9,556.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | 2nd Bone Spring Lime |
| 9,600.00 | 0.00 | 0.00 | 9,589.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,700.00 | 0.00 | 0.00 | 9,689.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,800.00 | 0.00 | 0.00 | 9,789.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 9,896.14 | 0.00 | 0.00 | 9,886.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | 2nd Bone Spring Ss |
| 9,900.00 | 0.00 | 0.00 | 9,889.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,000.00 | 0.00 | 0.00 | 9,989.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,100.00 | 0.00 | 0.00 | 10,089.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,200.00 | 0.00 | 0.00 | 10,189.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,266.14 | 0.00 | 0.00 | 10,256.00 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | 3rd Bone Spring Lm |
| 10,300.00 | 0.00 | 0.00 | 10,289.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,400.00 | 0.00 | 0.00 | 10,389.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,500.00 | 0.00 | 0.00 | 10,489.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,600.00 | 0.00 | 0.00 | 10,589.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,700.00 | 0.00 | 0.00 | 10,689.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,800.00 | 0.00 | 0.00 | 10,789.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,900.00 | 0.00 | 0.00 | 10,889.86 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | |
| 10,993.18 | 0.00 | 0.00 | 10,983.04 | 269.00 | 125.00 | -266.52 | 0.00 | 0.00 | Build Curve 10° Dlg |
| 11,000.00 | 0.68 | 179.61 | 10,989.86 | 268.96 | 125.00 | -266.48 | 10.00 | 10.00 | |
| 11,056.27 | 6.31 | 179.61 | 11,046.00 | 265.53 | 125.02 | -263.05 | 10.00 | 10.00 | 3rd Bone Spring Ss |
| 11,100.00 | 10.68 | 179.61 | 11,089.24 | 259.07 | 125.07 | -256.60 | 10.00 | 10.00 | |
| 11,200.00 | 20.68 | 179.61 | 11,185.40 | 232.08 | 125.25 | -229.60 | 10.00 | 10.00 | |
| 11,300.00 | 30.68 | 179.61 | 11,275.41 | 188.80 | 125.54 | -186.32 | 10.00 | 10.00 | |
| 11,399.30 | 40.61 | 179.61 | 11,356.00 | 131.00 | 125.93 | -128.53 | 10.00 | 10.00 | Red Hills SS |
| 11,400.00 | 40.68 | 179.61 | 11,356.53 | 130.54 | 125.94 | -128.07 | 10.00 | 10.00 | |
| 11,500.00 | 50.68 | 179.61 | 11,426.31 | 59.09 | 126.42 | -56.62 | 10.00 | 10.00 | |
| 11,532.20 | 53.90 | 179.61 | 11,446.00 | 33.61 | 126.59 | -31.15 | 10.00 | 10.00 | Wolfcamp |
| 11,586.00 | 59.28 | 179.61 | 11,475.61 | -11.28 | 126.90 | 13.74 | 10.00 | 10.00 | FTP Marker @ 11586' |
| 11,586.77 | 59.36 | 179.61 | 11,476.00 | -11.94 | 126.90 | 14.40 | 10.00 | 10.00 | Wolfcamp X |
| 11,600.00 | 60.68 | 179.61 | 11,482.61 | -23.40 | 126.98 | 25.86 | 10.00 | 10.00 | |
| 11,700.00 | 70.68 | 179.61 | 11,523.74 | -114.41 | 127.59 | 116.86 | 10.00 | 10.00 | |
| 11,800.00 | 80.68 | 179.61 | 11,548.44 | -211.18 | 128.25 | 213.63 | 10.00 | 10.00 | |
| 11,893.18 | 90.00 | 179.61 | 11,556.00 | -303.94 | 128.87 | 306.39 | 10.00 | 10.00 | Land 90° Inc ; 179.61° Azm |
| 11,900.00 | 90.00 | 179.61 | 11,556.00 | -310.76 | 128.92 | 313.21 | 0.00 | 0.00 | |
| 12,000.00 | 90.00 | 179.61 | 11,556.00 | -410.76 | 129.60 | 413.20 | 0.00 | 0.00 | |
| 12,100.00 | 90.00 | 179.61 | 11,556.00 | -510.76 | 130.27 | 513.19 | 0.00 | 0.00 | |
| 12,200.00 | 90.00 | 179.61 | 11,556.00 | -610.76 | 130.95 | 613.18 | 0.00 | 0.00 | |
| 12,300.00 | 90.00 | 179.61 | 11,556.00 | -710.75 | 131.62 | 713.18 | 0.00 | 0.00 | |
| 12,400.00 | 90.00 | 179.61 | 11,556.00 | -810.75 | 132.30 | 813.17 | 0.00 | 0.00 | |
| 12,500.00 | 90.00 | 179.61 | 11,556.00 | -910.75 | 132.98 | 913.16 | 0.00 | 0.00 | |
| 12,600.00 | 90.00 | 179.61 | 11,556.00 | -1,010.75 | 133.65 | 1,013.15 | 0.00 | 0.00 | |
| 12,700.00 | 90.00 | 179.61 | 11,556.00 | -1,110.75 | 134.33 | 1,113.14 | 0.00 | 0.00 | |
| 12,800.00 | 90.00 | 179.61 | 11,556.00 | -1,210.74 | 135.01 | 1,213.14 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft | Build Rate (°/100u | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 12,900.00 | 90.00 | 179.61 | 11,556.00 | -1,310.74 | 135.68 | 1,313.13 | 0.00 | 0.00 | |
| 13,000.00 | 90.00 | 179.61 | 11,556.00 | -1,410.74 | 136.36 | 1,413.12 | 0.00 | 0.00 | |
| 13,100.00 | 90.00 | 179.61 | 11,556.00 | -1,510.74 | 137.03 | 1,513.11 | 0.00 | 0.00 | |
| 13,200.00 | 90.00 | 179.61 | 11,556.00 | -1,610.73 | 137.71 | 1,613.10 | 0.00 | 0.00 | |
| 13,300.00 | 90.00 | 179.61 | 11,556.00 | -1,710.73 | 138.39 | 1,713.10 | 0.00 | 0.00 | |
| 13,400.00 | 90.00 | 179.61 | 11,556.00 | -1,810.73 | 139.06 | 1,813.09 | 0.00 | 0.00 | |
| 13,500.00 | 90.00 | 179.61 | 11,556.00 | -1,910.73 | 139.74 | 1,913.08 | 0.00 | 0.00 | |
| 13,600.00 | 90.00 | 179.61 | 11,556.00 | -2,010.72 | 140.41 | 2,013.07 | 0.00 | 0.00 | |
| 13,700.00 | 90.00 | 179.61 | 11,556.00 | -2,110.72 | 141.09 | 2,113.06 | 0.00 | 0.00 | |
| 13,800.00 | 90.00 | 179.61 | 11,556.00 | -2,210.72 | 141.77 | 2,213.06 | 0.00 | 0.00 | |
| 13,900.00 | 90.00 | 179.61 | 11,556.00 | -2,310.72 | 142.44 | 2,313.05 | 0.00 | 0.00 | |
| 14,000.00 | 90.00 | 179.61 | 11,556.00 | -2,410.72 | 143.12 | 2,413.04 | 0.00 | 0.00 | |
| 14,100.00 | 90.00 | 179.61 | 11,556.00 | -2,510.71 | 143.80 | 2,513.03 | 0.00 | 0.00 | |
| 14,200.00 | 90.00 | 179.61 | 11,556.00 | -2,610.71 | 144.47 | 2,613.02 | 0.00 | 0.00 | |
| 14,300.00 | 90.00 | 179.61 | 11,556.00 | -2,710.71 | 145.15 | 2,713.02 | 0.00 | 0.00 | |
| 14,400.00 | 90.00 | 179.61 | 11,556.00 | -2,810.71 | 145.82 | 2,813.01 | 0.00 | 0.00 | |
| 14,500.00 | 90.00 | 179.61 | 11,556.00 | -2,910.70 | 146.50 | 2,913.00 | 0.00 | 0.00 | |
| 14,600.00 | 90.00 | 179.61 | 11,556.00 | -3,010.70 | 147.18 | 3,012.99 | 0.00 | 0.00 | |
| 14,700.00 | 90.00 | 179.61 | 11,556.00 | -3,110.70 | 147.85 | 3,112.98 | 0.00 | 0.00 | |
| 14,800.00 | 90.00 | 179.61 | 11,556.00 | -3,210.70 | 148.53 | 3,212.98 | 0.00 | 0.00 | |
| 14,900.00 | 90.00 | 179.61 | 11,556.00 | -3,310.70 | 149.20 | 3,312.97 | 0.00 | 0.00 | |
| 15,000.00 | 90.00 | 179.61 | 11,556.00 | -3,410.69 | 149.88 | 3,412.96 | 0.00 | 0.00 | |
| 15,100.00 | 90.00 | 179.61 | 11,556.00 | -3,510.69 | 150.56 | 3,512.95 | 0.00 | 0.00 | |
| 15,200.00 | 90.00 | 179.61 | 11,556.00 | -3,610.69 | 151.23 | 3,612.94 | 0.00 | 0.00 | |
| 15,300.00 | 90.00 | 179.61 | 11,556.00 | -3,710.69 | 151.91 | 3,712.94 | 0.00 | 0.00 | |
| 15,400.00 | 90.00 | 179.61 | 11,556.00 | -3,810.68 | 152.59 | 3,812.93 | 0.00 | 0.00 | |
| 15,500.00 | 90.00 | 179.61 | 11,556.00 | -3,910.68 | 153.26 | 3,912.92 | 0.00 | 0.00 | |
| 15,600.00 | 90.00 | 179.61 | 11,556.00 | -4,010.68 | 153.94 | 4,012.91 | 0.00 | 0.00 | |
| 15,700.00 | 90.00 | 179.61 | 11,556.00 | -4,110.68 | 154.61 | 4,112.90 | 0.00 | 0.00 | |
| 15,800.00 | 90.00 | 179.61 | 11,556.00 | -4,210.67 | 155.29 | 4,212.90 | 0.00 | 0.00 | |
| 15,900.00 | 90.00 | 179.61 | 11,556.00 | -4,310.67 | 155.97 | 4,312.89 | 0.00 | 0.00 | |
| 16,000.00 | 90.00 | 179.61 | 11,556.00 | -4,410.67 | 156.64 | 4,412.88 | 0.00 | 0.00 | |
| 16,100.00 | 90.00 | 179.61 | 11,556.00 | -4,510.67 | 157.32 | 4,512.87 | 0.00 | 0.00 | |
| 16,200.00 | 90.00 | 179.61 | 11,556.00 | -4,610.67 | 157.99 | 4,612.86 | 0.00 | 0.00 | |
| 16,300.00 | 90.00 | 179.61 | 11,556.00 | -4,710.66 | 158.67 | 4,712.86 | 0.00 | 0.00 | |
| 16,400.00 | 90.00 | 179.61 | 11,556.00 | -4,810.66 | 159.35 | 4,812.85 | 0.00 | 0.00 | |
| 16,500.00 | 90.00 | 179.61 | 11,556.00 | -4,910.66 | 160.02 | 4,912.84 | 0.00 | 0.00 | |
| 16,600.00 | 90.00 | 179.61 | 11,556.00 | -5,010.66 | 160.70 | 5,012.83 | 0.00 | 0.00 | |
| 16,700.00 | 90.00 | 179.61 | 11,556.00 | -5,110.65 | 161.38 | 5,112.82 | 0.00 | 0.00 | |
| 16,800.00 | 90.00 | 179.61 | 11,556.00 | -5,210.65 | 162.05 | 5,212.82 | 0.00 | 0.00 | |
| 16,900.00 | 90.00 | 179.61 | 11,556.00 | -5,310.65 | 162.73 | 5,312.81 | 0.00 | 0.00 | |
| 17,000.00 | 90.00 | 179.61 | 11,556.00 | -5,410.65 | 163.40 | 5,412.80 | 0.00 | 0.00 | |
| 17,100.00 | 90.00 | 179.61 | 11,556.00 | -5,510.64 | 164.08 | 5,512.79 | 0.00 | 0.00 | |
| 17,200.00 | 90.00 | 179.61 | 11,556.00 | -5,610.64 | 164.76 | 5,612.78 | 0.00 | 0.00 | |
| 17,300.00 | 90.00 | 179.61 | 11,556.00 | -5,710.64 | 165.43 | 5,712.78 | 0.00 | 0.00 | |
| 17,400.00 | 90.00 | 179.61 | 11,556.00 | -5,810.64 | 166.11 | 5,812.77 | 0.00 | 0.00 | |
| 17,500.00 | 90.00 | 179.61 | 11,556.00 | -5,910.64 | 166.78 | 5,912.76 | 0.00 | 0.00 | |
| 17,600.00 | 90.00 | 179.61 | 11,556.00 | -6,010.63 | 167.46 | 6,012.75 | 0.00 | 0.00 | |
| 17,700.00 | 90.00 | 179.61 | 11,556.00 | -6,110.63 | 168.14 | 6,112.74 | 0.00 | 0.00 | |
| 17,800.00 | 90.00 | 179.61 | 11,556.00 | -6,210.63 | 168.81 | 6,212.74 | 0.00 | 0.00 | |
| 17,900.00 | 90.00 | 179.61 | 11,556.00 | -6,310.63 | 169.49 | 6,312.73 | 0.00 | 0.00 | |
| 18,000.00 | 90.00 | 179.61 | 11,556.00 | -6,410.62 | 170.17 | 6,412.72 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft | Build Rate (°/100u | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 18,100.00 | 90.00 | 179.61 | 11,556.00 | -6,510.62 | 170.84 | 6,512.71 | 0.00 | 0.00 | |
| 18,200.00 | 90.00 | 179.61 | 11,556.00 | -6,610.62 | 171.52 | 6,612.70 | 0.00 | 0.00 | |
| 18,300.00 | 90.00 | 179.61 | 11,556.00 | -6,710.62 | 172.19 | 6,712.70 | 0.00 | 0.00 | |
| 18,400.00 | 90.00 | 179.61 | 11,556.00 | -6,810.62 | 172.87 | 6,812.69 | 0.00 | 0.00 | |
| 18,500.00 | 90.00 | 179.61 | 11,556.00 | -6,910.61 | 173.55 | 6,912.68 | 0.00 | 0.00 | |
| 18,600.00 | 90.00 | 179.61 | 11,556.00 | -7,010.61 | 174.22 | 7,012.67 | 0.00 | 0.00 | |
| 18,700.00 | 90.00 | 179.61 | 11,556.00 | -7,110.61 | 174.90 | 7,112.66 | 0.00 | 0.00 | |
| 18,800.00 | 90.00 | 179.61 | 11,556.00 | -7,210.61 | 175.57 | 7,212.66 | 0.00 | 0.00 | |
| 18,900.00 | 90.00 | 179.61 | 11,556.00 | -7,310.60 | 176.25 | 7,312.65 | 0.00 | 0.00 | |
| 19,000.00 | 90.00 | 179.61 | 11,556.00 | -7,410.60 | 176.93 | 7,412.64 | 0.00 | 0.00 | |
| 19,100.00 | 90.00 | 179.61 | 11,556.00 | -7,510.60 | 177.60 | 7,512.63 | 0.00 | 0.00 | |
| 19,200.00 | 90.00 | 179.61 | 11,556.00 | -7,610.60 | 178.28 | 7,612.62 | 0.00 | 0.00 | |
| 19,300.00 | 90.00 | 179.61 | 11,556.00 | -7,710.59 | 178.96 | 7,712.62 | 0.00 | 0.00 | |
| 19,400.00 | 90.00 | 179.61 | 11,556.00 | -7,810.59 | 179.63 | 7,812.61 | 0.00 | 0.00 | |
| 19,500.00 | 90.00 | 179.61 | 11,556.00 | -7,910.59 | 180.31 | 7,912.60 | 0.00 | 0.00 | |
| 19,600.00 | 90.00 | 179.61 | 11,556.00 | -8,010.59 | 180.98 | 8,012.59 | 0.00 | 0.00 | |
| 19,700.00 | 90.00 | 179.61 | 11,556.00 | -8,110.59 | 181.66 | 8,112.58 | 0.00 | 0.00 | |
| 19,800.00 | 90.00 | 179.61 | 11,556.00 | -8,210.58 | 182.34 | 8,212.58 | 0.00 | 0.00 | |
| 19,900.00 | 90.00 | 179.61 | 11,556.00 | -8,310.58 | 183.01 | 8,312.57 | 0.00 | 0.00 | |
| 20,000.00 | 90.00 | 179.61 | 11,556.00 | -8,410.58 | 183.69 | 8,412.56 | 0.00 | 0.00 | |
| 20,100.00 | 90.00 | 179.61 | 11,556.00 | -8,510.58 | 184.36 | 8,512.55 | 0.00 | 0.00 | |
| 20,200.00 | 90.00 | 179.61 | 11,556.00 | -8,610.57 | 185.04 | 8,612.54 | 0.00 | 0.00 | |
| 20,300.00 | 90.00 | 179.61 | 11,556.00 | -8,710.57 | 185.72 | 8,712.54 | 0.00 | 0.00 | |
| 20,400.00 | 90.00 | 179.61 | 11,556.00 | -8,810.57 | 186.39 | 8,812.53 | 0.00 | 0.00 | |
| 20,500.00 | 90.00 | 179.61 | 11,556.00 | -8,910.57 | 187.07 | 8,912.52 | 0.00 | 0.00 | |
| 20,600.00 | 90.00 | 179.61 | 11,556.00 | -9,010.56 | 187.75 | 9,012.51 | 0.00 | 0.00 | |
| 20,700.00 | 90.00 | 179.61 | 11,556.00 | -9,110.56 | 188.42 | 9,112.50 | 0.00 | 0.00 | |
| 20,800.00 | 90.00 | 179.61 | 11,556.00 | -9,210.56 | 189.10 | 9,212.50 | 0.00 | 0.00 | |
| 20,900.00 | 90.00 | 179.61 | 11,556.00 | -9,310.56 | 189.77 | 9,312.49 | 0.00 | 0.00 | |
| 21,000.00 | 90.00 | 179.61 | 11,556.00 | -9,410.56 | 190.45 | 9,412.48 | 0.00 | 0.00 | |
| 21,100.00 | 90.00 | 179.61 | 11,556.00 | -9,510.55 | 191.13 | 9,512.47 | 0.00 | 0.00 | |
| 21,200.00 | 90.00 | 179.61 | 11,556.00 | -9,610.55 | 191.80 | 9,612.46 | 0.00 | 0.00 | |
| 21,300.00 | 90.00 | 179.61 | 11,556.00 | -9,710.55 | 192.48 | 9,712.46 | 0.00 | 0.00 | |
| 21,400.00 | 90.00 | 179.61 | 11,556.00 | -9,810.55 | 193.15 | 9,812.45 | 0.00 | 0.00 | |
| 21,500.00 | 90.00 | 179.61 | 11,556.00 | -9,910.54 | 193.83 | 9,912.44 | 0.00 | 0.00 | |
| 21,600.00 | 90.00 | 179.61 | 11,556.00 | -10,010.54 | 194.51 | 10,012.43 | 0.00 | 0.00 | |
| 21,613.76 | 90.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 10,026.19 | 0.00 | 0.00 | TD at 21613.76' |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| TWR 701H BHL<br>- plan hits target center<br>- Rectangle (sides W10,014.00 H60.00 D15.00) | 0.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 430,155.10 | 663,236.80 | 32.181513 | -103.805715 |
| TWR 701H FTP<br>- plan misses target center by 70.50usft at 11619.22usft MD (11491.74 TVD, -40.31 N, 127.09 E)<br>- Point | 0.00 | 0.00 | 11,556.00 | -11.30 | 127.10 | 440,168.10 | 663,169.30 | 32.209038 | -103.805775 |
| TWR 701H LTP<br>- plan misses target center by 0.04usft at 21503.76usft MD (11556.00 TVD, -9914.30 N, 193.86 E)<br>- Point | 0.00 | 0.00 | 11,556.00 | -9,914.30 | 193.90 | 430,265.10 | 663,236.10 | 32.181815 | -103.805716 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 546.00 | 546.00 | Rustler | | 0.00 | |
| 906.00 | 906.00 | Top Salt | | 0.00 | |
| 4,051.80 | 4,046.00 | Base Salt | | 0.00 | |
| 4,272.34 | 4,266.00 | Delaware | | 0.00 | |
| 5,164.51 | 5,156.00 | Cherry Canyon | | 0.00 | |
| 6,466.14 | 6,456.00 | Brushy Canyon | | 0.00 | |
| 7,836.14 | 7,826.00 | Basal Brushy Canyon | | 0.00 | |
| 8,116.14 | 8,106.00 | Bone Spring Lime | | 0.00 | |
| 8,236.14 | 8,226.00 | Avalon Sand | | 0.00 | |
| 8,256.14 | 8,246.00 | Upper Avalon Shale | | 0.00 | |
| 8,666.14 | 8,656.00 | Lower Avalon Shale | | 0.00 | |
| 8,876.14 | 8,866.00 | 1st Bone Spring Lime | | 0.00 | |
| 9,076.14 | 9,066.00 | 1st Bone Spring Ss | | 0.00 | |
| 9,566.14 | 9,556.00 | 2nd Bone Spring Lime | | 0.00 | |
| 9,896.14 | 9,886.00 | 2nd Bone Spring Ss | | 0.00 | |
| 10,266.14 | 10,256.00 | 3rd Bone Spring Lm | | 0.00 | |
| 11,056.27 | 11,046.00 | 3rd Bone Spring Ss | | 0.00 | |
| 11,399.30 | 11,356.00 | Red Hills SS | | 0.00 | |
| 11,532.20 | 11,446.00 | Wolfcamp | | 0.00 | |
| 11,586.77 | 11,476.00 | Wolfcamp X | | 0.00 | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 1,490.00 | 1,490.00 | 0.00 | 0.00 | Build 1.5° Dlg |
| 1,756.58 | 1,756.36 | 8.43 | 3.92 | Hold 4° Inc; 24.92° Azm |
| 5,743.56 | 5,733.64 | 260.57 | 121.08 | Drop 1.5° Dlg |
| 6,010.14 | 6,000.00 | 269.00 | 125.00 | Hold 0° Inc; 0° Azm |
| 10,993.18 | 10,983.04 | 269.00 | 125.00 | Build Curve 10° Dlg |
| 11,586.00 | 11,475.61 | -11.28 | 126.90 | FTP Marker @ 11586' |
| 11,893.18 | 11,556.00 | -303.94 | 128.87 | Land 90° Inc ; 179.61° Azm |
| 21,613.76 | 11,556.00 | -10,024.30 | 194.60 | TD at 21613.76' |

# XTO Energy Inc.

**Eddy County, NM (NAD27)**
**SEC 20-T24S-R31E (PLU 17)**
**Twin Wells Ranch 701H**

**Horizontal**

**Plan: #1 (03.25.20)**

# Standard Planning Report - Geographic

**31 March, 2020**

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Project** Eddy County, NM (NAD27)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | |

**Site** SEC 20-T24S-R31E (PLU 17), GRAVITY = 0.99843

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 440,249.20 usft | **Latitude:** | 32.209263 |
| **From:** | Map | **Easting:** | 663,041.50 usft | **Longitude:** | -103.806187 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.28 ° |

**Well** Twin Wells Ranch 701H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 440,179.40 usft | **Latitude:** | 32.209071 |
| | **+E/-W** | 0.00 usft | **Easting:** | 663,042.20 usft | **Longitude:** | -103.806186 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | | **Ground Level:** | 3,493.00 usft |

**Wellbore** Horizontal

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 4/14/2020 | 6.67 | 59.88 | 47,805.50000000 |

**Design** #1 (03.25.20)

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 178.89 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,490.00 | 0.00 | 0.00 | 1,490.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,756.58 | 4.00 | 24.92 | 1,756.36 | 8.43 | 3.92 | 1.50 | 1.50 | 0.00 | 24.92 | |
| 5,743.56 | 4.00 | 24.92 | 5,733.64 | 260.57 | 121.08 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,010.14 | 0.00 | 0.00 | 6,000.00 | 269.00 | 125.00 | 1.50 | -1.50 | 0.00 | 180.00 | |
| 10,993.18 | 0.00 | 0.00 | 10,983.04 | 269.00 | 125.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 11,893.18 | 90.00 | 179.61 | 11,556.00 | -303.94 | 128.87 | 10.00 | 10.00 | 0.00 | 179.61 | |
| 21,613.76 | 90.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 0.00 | 0.00 | 0.00 | 0.00 | TWR 701H BHL |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 546.00 | 0.00 | 0.00 | 546.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| **Rustler** | | | | | | | | | |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 906.00 | 0.00 | 0.00 | 906.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| **Top Salt** | | | | | | | | | |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| 1,490.00 | 0.00 | 0.00 | 1,490.00 | 0.00 | 0.00 | 440,179.40 | 663,042.20 | 32.209071 | -103.806186 |
| **Build 1.5° Dlg** | | | | | | | | | |
| 1,500.00 | 0.15 | 24.92 | 1,500.00 | 0.01 | 0.01 | 440,179.41 | 663,042.21 | 32.209071 | -103.806186 |
| 1,600.00 | 1.65 | 24.92 | 1,599.98 | 1.44 | 0.67 | 440,180.84 | 663,042.87 | 32.209075 | -103.806183 |
| 1,700.00 | 3.15 | 24.92 | 1,699.89 | 5.23 | 2.43 | 440,184.63 | 663,044.64 | 32.209086 | -103.806178 |
| 1,756.58 | 4.00 | 24.92 | 1,756.36 | 8.43 | 3.92 | 440,187.83 | 663,046.12 | 32.209094 | -103.806173 |
| **Hold 4° Inc; 24.92° Azm** | | | | | | | | | |
| 1,800.00 | 4.00 | 24.92 | 1,799.68 | 11.18 | 5.19 | 440,190.58 | 663,047.40 | 32.209102 | -103.806169 |
| 1,900.00 | 4.00 | 24.92 | 1,899.43 | 17.50 | 8.13 | 440,196.90 | 663,050.34 | 32.209119 | -103.806159 |
| 2,000.00 | 4.00 | 24.92 | 1,999.19 | 23.83 | 11.07 | 440,203.23 | 663,053.28 | 32.209137 | -103.806149 |
| 2,100.00 | 4.00 | 24.92 | 2,098.95 | 30.15 | 14.01 | 440,209.55 | 663,056.22 | 32.209154 | -103.806140 |
| 2,200.00 | 4.00 | 24.92 | 2,198.70 | 36.47 | 16.95 | 440,215.87 | 663,059.15 | 32.209171 | -103.806130 |
| 2,300.00 | 4.00 | 24.92 | 2,298.46 | 42.80 | 19.89 | 440,222.20 | 663,062.09 | 32.209189 | -103.806121 |
| 2,400.00 | 4.00 | 24.92 | 2,398.22 | 49.12 | 22.83 | 440,228.52 | 663,065.03 | 32.209206 | -103.806111 |
| 2,500.00 | 4.00 | 24.92 | 2,497.97 | 55.45 | 25.76 | 440,234.85 | 663,067.97 | 32.209223 | -103.806101 |
| 2,600.00 | 4.00 | 24.92 | 2,597.73 | 61.77 | 28.70 | 440,241.17 | 663,070.91 | 32.209241 | -103.806092 |
| 2,700.00 | 4.00 | 24.92 | 2,697.49 | 68.09 | 31.64 | 440,247.49 | 663,073.85 | 32.209258 | -103.806082 |
| 2,800.00 | 4.00 | 24.92 | 2,797.24 | 74.42 | 34.58 | 440,253.82 | 663,076.79 | 32.209275 | -103.806073 |
| 2,900.00 | 4.00 | 24.92 | 2,897.00 | 80.74 | 37.52 | 440,260.14 | 663,079.72 | 32.209293 | -103.806063 |
| 3,000.00 | 4.00 | 24.92 | 2,996.76 | 87.07 | 40.46 | 440,266.47 | 663,082.66 | 32.209310 | -103.806053 |
| 3,100.00 | 4.00 | 24.92 | 3,096.51 | 93.39 | 43.40 | 440,272.79 | 663,085.60 | 32.209327 | -103.806044 |
| 3,200.00 | 4.00 | 24.92 | 3,196.27 | 99.71 | 46.34 | 440,279.11 | 663,088.54 | 32.209345 | -103.806034 |
| 3,300.00 | 4.00 | 24.92 | 3,296.03 | 106.04 | 49.27 | 440,285.44 | 663,091.48 | 32.209362 | -103.806025 |
| 3,400.00 | 4.00 | 24.92 | 3,395.78 | 112.36 | 52.21 | 440,291.76 | 663,094.42 | 32.209380 | -103.806015 |
| 3,500.00 | 4.00 | 24.92 | 3,495.54 | 118.69 | 55.15 | 440,298.09 | 663,097.36 | 32.209397 | -103.806005 |
| 3,600.00 | 4.00 | 24.92 | 3,595.30 | 125.01 | 58.09 | 440,304.41 | 663,100.29 | 32.209414 | -103.805996 |
| 3,700.00 | 4.00 | 24.92 | 3,695.05 | 131.33 | 61.03 | 440,310.73 | 663,103.23 | 32.209432 | -103.805986 |
| 3,800.00 | 4.00 | 24.92 | 3,794.81 | 137.66 | 63.97 | 440,317.06 | 663,106.17 | 32.209449 | -103.805977 |
| 3,900.00 | 4.00 | 24.92 | 3,894.57 | 143.98 | 66.91 | 440,323.38 | 663,109.11 | 32.209466 | -103.805967 |
| 4,000.00 | 4.00 | 24.92 | 3,994.32 | 150.31 | 69.84 | 440,329.71 | 663,112.05 | 32.209484 | -103.805957 |
| 4,051.80 | 4.00 | 24.92 | 4,046.00 | 153.58 | 71.37 | 440,332.98 | 663,113.57 | 32.209493 | -103.805952 |
| **Base Salt** | | | | | | | | | |
| 4,100.00 | 4.00 | 24.92 | 4,094.08 | 156.63 | 72.78 | 440,336.03 | 663,114.99 | 32.209501 | -103.805948 |
| 4,200.00 | 4.00 | 24.92 | 4,193.84 | 162.95 | 75.72 | 440,342.35 | 663,117.93 | 32.209518 | -103.805938 |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 4,272.34 | 4.00 | 24.92 | 4,266.00 | 167.53 | 77.85 | 440,346.93 | 663,120.05 | 32.209531 | -103.805931 |
| **Delaware** | | | | | | | | | |
| 4,300.00 | 4.00 | 24.92 | 4,293.59 | 169.28 | 78.66 | 440,348.68 | 663,120.87 | 32.209536 | -103.805929 |
| 4,400.00 | 4.00 | 24.92 | 4,393.35 | 175.60 | 81.60 | 440,355.00 | 663,123.80 | 32.209553 | -103.805919 |
| 4,500.00 | 4.00 | 24.92 | 4,493.11 | 181.93 | 84.54 | 440,361.33 | 663,126.74 | 32.209570 | -103.805909 |
| 4,600.00 | 4.00 | 24.92 | 4,592.86 | 188.25 | 87.48 | 440,367.65 | 663,129.68 | 32.209588 | -103.805900 |
| 4,700.00 | 4.00 | 24.92 | 4,692.62 | 194.57 | 90.42 | 440,373.97 | 663,132.62 | 32.209605 | -103.805890 |
| 4,800.00 | 4.00 | 24.92 | 4,792.37 | 200.90 | 93.35 | 440,380.30 | 663,135.56 | 32.209622 | -103.805881 |
| 4,900.00 | 4.00 | 24.92 | 4,892.13 | 207.22 | 96.29 | 440,386.62 | 663,138.50 | 32.209640 | -103.805871 |
| 5,000.00 | 4.00 | 24.92 | 4,991.89 | 213.55 | 99.23 | 440,392.94 | 663,141.44 | 32.209657 | -103.805861 |
| 5,100.00 | 4.00 | 24.92 | 5,091.64 | 219.87 | 102.17 | 440,399.27 | 663,144.37 | 32.209674 | -103.805852 |
| 5,164.51 | 4.00 | 24.92 | 5,156.00 | 223.95 | 104.07 | 440,403.35 | 663,146.27 | 32.209686 | -103.805846 |
| **Cherry Canyon** | | | | | | | | | |
| 5,200.00 | 4.00 | 24.92 | 5,191.40 | 226.19 | 105.11 | 440,405.59 | 663,147.31 | 32.209692 | -103.805842 |
| 5,300.00 | 4.00 | 24.92 | 5,291.16 | 232.52 | 108.05 | 440,411.92 | 663,150.25 | 32.209709 | -103.805833 |
| 5,400.00 | 4.00 | 24.92 | 5,390.91 | 238.84 | 110.99 | 440,418.24 | 663,153.19 | 32.209726 | -103.805823 |
| 5,500.00 | 4.00 | 24.92 | 5,490.67 | 245.16 | 113.92 | 440,424.56 | 663,156.13 | 32.209744 | -103.805813 |
| 5,600.00 | 4.00 | 24.92 | 5,590.43 | 251.49 | 116.86 | 440,430.89 | 663,159.07 | 32.209761 | -103.805804 |
| 5,700.00 | 4.00 | 24.92 | 5,690.18 | 257.81 | 119.80 | 440,437.21 | 663,162.01 | 32.209778 | -103.805794 |
| 5,743.56 | 4.00 | 24.92 | 5,733.64 | 260.57 | 121.08 | 440,439.97 | 663,163.29 | 32.209786 | -103.805790 |
| **Drop 1.5° Dlg** | | | | | | | | | |
| 5,800.00 | 3.15 | 24.92 | 5,789.97 | 263.76 | 122.56 | 440,443.16 | 663,164.77 | 32.209795 | -103.805785 |
| 5,900.00 | 1.65 | 24.92 | 5,889.88 | 267.56 | 124.33 | 440,446.96 | 663,166.54 | 32.209805 | -103.805779 |
| 6,000.00 | 0.15 | 24.92 | 5,989.86 | 268.99 | 124.99 | 440,448.39 | 663,167.20 | 32.209809 | -103.805777 |
| 6,010.14 | 0.00 | 0.00 | 6,000.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Hold 0° Inc; 0° Azm** | | | | | | | | | |
| 6,100.00 | 0.00 | 0.00 | 6,089.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,200.00 | 0.00 | 0.00 | 6,189.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,300.00 | 0.00 | 0.00 | 6,289.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,400.00 | 0.00 | 0.00 | 6,389.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,466.14 | 0.00 | 0.00 | 6,456.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Brushy Canyon** | | | | | | | | | |
| 6,500.00 | 0.00 | 0.00 | 6,489.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,600.00 | 0.00 | 0.00 | 6,589.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,700.00 | 0.00 | 0.00 | 6,689.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,800.00 | 0.00 | 0.00 | 6,789.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 6,900.00 | 0.00 | 0.00 | 6,889.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,000.00 | 0.00 | 0.00 | 6,989.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,100.00 | 0.00 | 0.00 | 7,089.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,200.00 | 0.00 | 0.00 | 7,189.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,300.00 | 0.00 | 0.00 | 7,289.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,400.00 | 0.00 | 0.00 | 7,389.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,500.00 | 0.00 | 0.00 | 7,489.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,600.00 | 0.00 | 0.00 | 7,589.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,700.00 | 0.00 | 0.00 | 7,689.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,800.00 | 0.00 | 0.00 | 7,789.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 7,836.14 | 0.00 | 0.00 | 7,826.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Basal Brushy Canyon** | | | | | | | | | |
| 7,900.00 | 0.00 | 0.00 | 7,889.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,000.00 | 0.00 | 0.00 | 7,989.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,100.00 | 0.00 | 0.00 | 8,089.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,116.14 | 0.00 | 0.00 | 8,106.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Bone Spring Lime** | | | | | | | | | |
| 8,200.00 | 0.00 | 0.00 | 8,189.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 8,236.14 | 0.00 | 0.00 | 8,226.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Avalon Sand** | | | | | | | | | |
| 8,256.14 | 0.00 | 0.00 | 8,246.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Upper Avalon Shale** | | | | | | | | | |
| 8,300.00 | 0.00 | 0.00 | 8,289.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,400.00 | 0.00 | 0.00 | 8,389.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,500.00 | 0.00 | 0.00 | 8,489.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,600.00 | 0.00 | 0.00 | 8,589.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,666.14 | 0.00 | 0.00 | 8,656.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Lower Avalon Shale** | | | | | | | | | |
| 8,700.00 | 0.00 | 0.00 | 8,689.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,800.00 | 0.00 | 0.00 | 8,789.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 8,876.14 | 0.00 | 0.00 | 8,866.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **1st Bone Spring Lime** | | | | | | | | | |
| 8,900.00 | 0.00 | 0.00 | 8,889.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,000.00 | 0.00 | 0.00 | 8,989.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,076.14 | 0.00 | 0.00 | 9,066.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **1st Bone Spring Ss** | | | | | | | | | |
| 9,100.00 | 0.00 | 0.00 | 9,089.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,200.00 | 0.00 | 0.00 | 9,189.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,300.00 | 0.00 | 0.00 | 9,289.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,400.00 | 0.00 | 0.00 | 9,389.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,500.00 | 0.00 | 0.00 | 9,489.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,566.14 | 0.00 | 0.00 | 9,556.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **2nd Bone Spring Lime** | | | | | | | | | |
| 9,600.00 | 0.00 | 0.00 | 9,589.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,700.00 | 0.00 | 0.00 | 9,689.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,800.00 | 0.00 | 0.00 | 9,789.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 9,896.14 | 0.00 | 0.00 | 9,886.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **2nd Bone Spring Ss** | | | | | | | | | |
| 9,900.00 | 0.00 | 0.00 | 9,889.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,000.00 | 0.00 | 0.00 | 9,989.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,100.00 | 0.00 | 0.00 | 10,089.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,200.00 | 0.00 | 0.00 | 10,189.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,266.14 | 0.00 | 0.00 | 10,256.00 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **3rd Bone Spring Lm** | | | | | | | | | |
| 10,300.00 | 0.00 | 0.00 | 10,289.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,400.00 | 0.00 | 0.00 | 10,389.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,500.00 | 0.00 | 0.00 | 10,489.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,600.00 | 0.00 | 0.00 | 10,589.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,700.00 | 0.00 | 0.00 | 10,689.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,800.00 | 0.00 | 0.00 | 10,789.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,900.00 | 0.00 | 0.00 | 10,889.86 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| 10,993.18 | 0.00 | 0.00 | 10,983.04 | 269.00 | 125.00 | 440,448.40 | 663,167.20 | 32.209809 | -103.805777 |
| **Build Curve 10° Dlg** | | | | | | | | | |
| 11,000.00 | 0.68 | 179.61 | 10,989.86 | 268.96 | 125.00 | 440,448.36 | 663,167.21 | 32.209809 | -103.805777 |
| 11,056.27 | 6.31 | 179.61 | 11,046.00 | 265.53 | 125.02 | 440,444.93 | 663,167.23 | 32.209800 | -103.805777 |
| **3rd Bone Spring Ss** | | | | | | | | | |
| 11,100.00 | 10.68 | 179.61 | 11,089.24 | 259.07 | 125.07 | 440,438.47 | 663,167.27 | 32.209782 | -103.805777 |
| 11,200.00 | 20.68 | 179.61 | 11,185.40 | 232.08 | 125.25 | 440,411.48 | 663,167.45 | 32.209708 | -103.805777 |
| 11,300.00 | 30.68 | 179.61 | 11,275.41 | 188.80 | 125.54 | 440,368.20 | 663,167.75 | 32.209589 | -103.805777 |
| 11,399.30 | 40.61 | 179.61 | 11,356.00 | 131.00 | 125.93 | 440,310.40 | 663,168.14 | 32.209430 | -103.805776 |
| **Red Hills SS** | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 11,400.00 | 40.68 | 179.61 | 11,356.53 | 130.54 | 125.94 | 440,309.94 | 663,168.14 | 32.209428 | -103.805776 |
| 11,500.00 | 50.68 | 179.61 | 11,426.31 | 59.09 | 126.42 | 440,238.49 | 663,168.62 | 32.209232 | -103.805776 |
| 11,532.20 | 53.90 | 179.61 | 11,446.00 | 33.61 | 126.59 | 440,213.01 | 663,168.80 | 32.209162 | -103.805776 |
| **Wolfcamp** | | | | | | | | | |
| 11,586.00 | 59.28 | 179.61 | 11,475.61 | -11.28 | 126.90 | 440,168.12 | 663,169.10 | 32.209039 | -103.805776 |
| **FTP Marker @ 11586'** | | | | | | | | | |
| 11,586.77 | 59.36 | 179.61 | 11,476.00 | -11.94 | 126.90 | 440,167.46 | 663,169.10 | 32.209037 | -103.805776 |
| **Wolfcamp X** | | | | | | | | | |
| 11,600.00 | 60.68 | 179.61 | 11,482.61 | -23.40 | 126.98 | 440,156.00 | 663,169.18 | 32.209005 | -103.805775 |
| 11,700.00 | 70.68 | 179.61 | 11,523.74 | -114.41 | 127.59 | 440,064.99 | 663,169.80 | 32.208755 | -103.805775 |
| 11,800.00 | 80.68 | 179.61 | 11,548.44 | -211.18 | 128.25 | 439,968.22 | 663,170.45 | 32.208489 | -103.805774 |
| 11,893.18 | 90.00 | 179.61 | 11,556.00 | -303.94 | 128.87 | 439,875.46 | 663,171.08 | 32.208234 | -103.805774 |
| **Land 90° Inc ; 179.61° Azm** | | | | | | | | | |
| 11,900.00 | 90.00 | 179.61 | 11,556.00 | -310.76 | 128.92 | 439,868.64 | 663,171.13 | 32.208215 | -103.805774 |
| 12,000.00 | 90.00 | 179.61 | 11,556.00 | -410.76 | 129.60 | 439,768.64 | 663,171.80 | 32.207940 | -103.805773 |
| 12,100.00 | 90.00 | 179.61 | 11,556.00 | -510.76 | 130.27 | 439,668.64 | 663,172.48 | 32.207666 | -103.805773 |
| 12,200.00 | 90.00 | 179.61 | 11,556.00 | -610.76 | 130.95 | 439,568.64 | 663,173.15 | 32.207391 | -103.805772 |
| 12,300.00 | 90.00 | 179.61 | 11,556.00 | -710.75 | 131.62 | 439,468.65 | 663,173.83 | 32.207116 | -103.805771 |
| 12,400.00 | 90.00 | 179.61 | 11,556.00 | -810.75 | 132.30 | 439,368.65 | 663,174.51 | 32.206841 | -103.805771 |
| 12,500.00 | 90.00 | 179.61 | 11,556.00 | -910.75 | 132.98 | 439,268.65 | 663,175.18 | 32.206566 | -103.805770 |
| 12,600.00 | 90.00 | 179.61 | 11,556.00 | -1,010.75 | 133.65 | 439,168.65 | 663,175.86 | 32.206291 | -103.805770 |
| 12,700.00 | 90.00 | 179.61 | 11,556.00 | -1,110.75 | 134.33 | 439,068.65 | 663,176.53 | 32.206016 | -103.805769 |
| 12,800.00 | 90.00 | 179.61 | 11,556.00 | -1,210.74 | 135.01 | 438,968.66 | 663,177.21 | 32.205741 | -103.805768 |
| 12,900.00 | 90.00 | 179.61 | 11,556.00 | -1,310.74 | 135.68 | 438,868.66 | 663,177.89 | 32.205466 | -103.805768 |
| 13,000.00 | 90.00 | 179.61 | 11,556.00 | -1,410.74 | 136.36 | 438,768.66 | 663,178.56 | 32.205192 | -103.805767 |
| 13,100.00 | 90.00 | 179.61 | 11,556.00 | -1,510.74 | 137.03 | 438,668.66 | 663,179.24 | 32.204917 | -103.805767 |
| 13,200.00 | 90.00 | 179.61 | 11,556.00 | -1,610.73 | 137.71 | 438,568.67 | 663,179.91 | 32.204642 | -103.805766 |
| 13,300.00 | 90.00 | 179.61 | 11,556.00 | -1,710.73 | 138.39 | 438,468.67 | 663,180.59 | 32.204367 | -103.805765 |
| 13,400.00 | 90.00 | 179.61 | 11,556.00 | -1,810.73 | 139.06 | 438,368.67 | 663,181.27 | 32.204092 | -103.805765 |
| 13,500.00 | 90.00 | 179.61 | 11,556.00 | -1,910.73 | 139.74 | 438,268.67 | 663,181.94 | 32.203817 | -103.805764 |
| 13,600.00 | 90.00 | 179.61 | 11,556.00 | -2,010.73 | 140.41 | 438,168.67 | 663,182.62 | 32.203542 | -103.805764 |
| 13,700.00 | 90.00 | 179.61 | 11,556.00 | -2,110.72 | 141.09 | 438,068.68 | 663,183.30 | 32.203267 | -103.805763 |
| 13,800.00 | 90.00 | 179.61 | 11,556.00 | -2,210.72 | 141.77 | 437,968.68 | 663,183.97 | 32.202992 | -103.805762 |
| 13,900.00 | 90.00 | 179.61 | 11,556.00 | -2,310.72 | 142.44 | 437,868.68 | 663,184.65 | 32.202718 | -103.805762 |
| 14,000.00 | 90.00 | 179.61 | 11,556.00 | -2,410.72 | 143.12 | 437,768.68 | 663,185.32 | 32.202443 | -103.805761 |
| 14,100.00 | 90.00 | 179.61 | 11,556.00 | -2,510.71 | 143.80 | 437,668.69 | 663,186.00 | 32.202168 | -103.805761 |
| 14,200.00 | 90.00 | 179.61 | 11,556.00 | -2,610.71 | 144.47 | 437,568.69 | 663,186.68 | 32.201893 | -103.805760 |
| 14,300.00 | 90.00 | 179.61 | 11,556.00 | -2,710.71 | 145.15 | 437,468.69 | 663,187.35 | 32.201618 | -103.805759 |
| 14,400.00 | 90.00 | 179.61 | 11,556.00 | -2,810.71 | 145.82 | 437,368.69 | 663,188.03 | 32.201343 | -103.805759 |
| 14,500.00 | 90.00 | 179.61 | 11,556.00 | -2,910.70 | 146.50 | 437,268.70 | 663,188.70 | 32.201068 | -103.805758 |
| 14,600.00 | 90.00 | 179.61 | 11,556.00 | -3,010.70 | 147.18 | 437,168.70 | 663,189.38 | 32.200793 | -103.805758 |
| 14,700.00 | 90.00 | 179.61 | 11,556.00 | -3,110.70 | 147.85 | 437,068.70 | 663,190.06 | 32.200518 | -103.805757 |
| 14,800.00 | 90.00 | 179.61 | 11,556.00 | -3,210.70 | 148.53 | 436,968.70 | 663,190.73 | 32.200243 | -103.805756 |
| 14,900.00 | 90.00 | 179.61 | 11,556.00 | -3,310.70 | 149.20 | 436,868.70 | 663,191.41 | 32.199969 | -103.805756 |
| 15,000.00 | 90.00 | 179.61 | 11,556.00 | -3,410.69 | 149.88 | 436,768.71 | 663,192.09 | 32.199694 | -103.805755 |
| 15,100.00 | 90.00 | 179.61 | 11,556.00 | -3,510.69 | 150.56 | 436,668.71 | 663,192.76 | 32.199419 | -103.805755 |
| 15,200.00 | 90.00 | 179.61 | 11,556.00 | -3,610.69 | 151.23 | 436,568.71 | 663,193.44 | 32.199144 | -103.805754 |
| 15,300.00 | 90.00 | 179.61 | 11,556.00 | -3,710.69 | 151.91 | 436,468.71 | 663,194.11 | 32.198869 | -103.805753 |
| 15,400.00 | 90.00 | 179.61 | 11,556.00 | -3,810.68 | 152.59 | 436,368.72 | 663,194.79 | 32.198594 | -103.805753 |
| 15,500.00 | 90.00 | 179.61 | 11,556.00 | -3,910.68 | 153.26 | 436,268.72 | 663,195.47 | 32.198319 | -103.805752 |
| 15,600.00 | 90.00 | 179.61 | 11,556.00 | -4,010.68 | 153.94 | 436,168.72 | 663,196.14 | 32.198044 | -103.805752 |
| 15,700.00 | 90.00 | 179.61 | 11,556.00 | -4,110.68 | 154.61 | 436,068.72 | 663,196.82 | 32.197769 | -103.805751 |
| 15,800.00 | 90.00 | 179.61 | 11,556.00 | -4,210.67 | 155.29 | 435,968.73 | 663,197.49 | 32.197495 | -103.805750 |
| 15,900.00 | 90.00 | 179.61 | 11,556.00 | -4,310.67 | 155.97 | 435,868.73 | 663,198.17 | 32.197220 | -103.805750 |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 16,000.00 | 90.00 | 179.61 | 11,556.00 | -4,410.67 | 156.64 | 435,768.73 | 663,198.85 | 32.196945 | -103.805749 |
| 16,100.00 | 90.00 | 179.61 | 11,556.00 | -4,510.67 | 157.32 | 435,668.73 | 663,199.52 | 32.196670 | -103.805749 |
| 16,200.00 | 90.00 | 179.61 | 11,556.00 | -4,610.67 | 157.99 | 435,568.73 | 663,200.20 | 32.196395 | -103.805748 |
| 16,300.00 | 90.00 | 179.61 | 11,556.00 | -4,710.66 | 158.67 | 435,468.74 | 663,200.88 | 32.196120 | -103.805747 |
| 16,400.00 | 90.00 | 179.61 | 11,556.00 | -4,810.66 | 159.35 | 435,368.74 | 663,201.55 | 32.195845 | -103.805747 |
| 16,500.00 | 90.00 | 179.61 | 11,556.00 | -4,910.66 | 160.02 | 435,268.74 | 663,202.23 | 32.195570 | -103.805746 |
| 16,600.00 | 90.00 | 179.61 | 11,556.00 | -5,010.66 | 160.70 | 435,168.74 | 663,202.90 | 32.195295 | -103.805746 |
| 16,700.00 | 90.00 | 179.61 | 11,556.00 | -5,110.65 | 161.38 | 435,068.75 | 663,203.58 | 32.195021 | -103.805745 |
| 16,800.00 | 90.00 | 179.61 | 11,556.00 | -5,210.65 | 162.05 | 434,968.75 | 663,204.26 | 32.194746 | -103.805744 |
| 16,900.00 | 90.00 | 179.61 | 11,556.00 | -5,310.65 | 162.73 | 434,868.75 | 663,204.93 | 32.194471 | -103.805744 |
| 17,000.00 | 90.00 | 179.61 | 11,556.00 | -5,410.65 | 163.40 | 434,768.75 | 663,205.61 | 32.194196 | -103.805743 |
| 17,100.00 | 90.00 | 179.61 | 11,556.00 | -5,510.65 | 164.08 | 434,668.75 | 663,206.28 | 32.193921 | -103.805743 |
| 17,200.00 | 90.00 | 179.61 | 11,556.00 | -5,610.64 | 164.76 | 434,568.76 | 663,206.96 | 32.193646 | -103.805742 |
| 17,300.00 | 90.00 | 179.61 | 11,556.00 | -5,710.64 | 165.43 | 434,468.76 | 663,207.64 | 32.193371 | -103.805741 |
| 17,400.00 | 90.00 | 179.61 | 11,556.00 | -5,810.64 | 166.11 | 434,368.76 | 663,208.31 | 32.193096 | -103.805741 |
| 17,500.00 | 90.00 | 179.61 | 11,556.00 | -5,910.64 | 166.78 | 434,268.76 | 663,208.99 | 32.192821 | -103.805740 |
| 17,600.00 | 90.00 | 179.61 | 11,556.00 | -6,010.63 | 167.46 | 434,168.77 | 663,209.67 | 32.192547 | -103.805740 |
| 17,700.00 | 90.00 | 179.61 | 11,556.00 | -6,110.63 | 168.14 | 434,068.77 | 663,210.34 | 32.192272 | -103.805739 |
| 17,800.00 | 90.00 | 179.61 | 11,556.00 | -6,210.63 | 168.81 | 433,968.77 | 663,211.02 | 32.191997 | -103.805738 |
| 17,900.00 | 90.00 | 179.61 | 11,556.00 | -6,310.63 | 169.49 | 433,868.77 | 663,211.69 | 32.191722 | -103.805738 |
| 18,000.00 | 90.00 | 179.61 | 11,556.00 | -6,410.62 | 170.17 | 433,768.78 | 663,212.37 | 32.191447 | -103.805737 |
| 18,100.00 | 90.00 | 179.61 | 11,556.00 | -6,510.62 | 170.84 | 433,668.78 | 663,213.05 | 32.191172 | -103.805737 |
| 18,200.00 | 90.00 | 179.61 | 11,556.00 | -6,610.62 | 171.52 | 433,568.78 | 663,213.72 | 32.190897 | -103.805736 |
| 18,300.00 | 90.00 | 179.61 | 11,556.00 | -6,710.62 | 172.19 | 433,468.78 | 663,214.40 | 32.190622 | -103.805735 |
| 18,400.00 | 90.00 | 179.61 | 11,556.00 | -6,810.62 | 172.87 | 433,368.78 | 663,215.07 | 32.190347 | -103.805735 |
| 18,500.00 | 90.00 | 179.61 | 11,556.00 | -6,910.61 | 173.55 | 433,268.79 | 663,215.75 | 32.190072 | -103.805734 |
| 18,600.00 | 90.00 | 179.61 | 11,556.00 | -7,010.61 | 174.22 | 433,168.79 | 663,216.43 | 32.189798 | -103.805734 |
| 18,700.00 | 90.00 | 179.61 | 11,556.00 | -7,110.61 | 174.90 | 433,068.79 | 663,217.10 | 32.189523 | -103.805733 |
| 18,800.00 | 90.00 | 179.61 | 11,556.00 | -7,210.61 | 175.57 | 432,968.79 | 663,217.78 | 32.189248 | -103.805732 |
| 18,900.00 | 90.00 | 179.61 | 11,556.00 | -7,310.60 | 176.25 | 432,868.80 | 663,218.46 | 32.188973 | -103.805732 |
| 19,000.00 | 90.00 | 179.61 | 11,556.00 | -7,410.60 | 176.93 | 432,768.80 | 663,219.13 | 32.188698 | -103.805731 |
| 19,100.00 | 90.00 | 179.61 | 11,556.00 | -7,510.60 | 177.60 | 432,668.80 | 663,219.81 | 32.188423 | -103.805731 |
| 19,200.00 | 90.00 | 179.61 | 11,556.00 | -7,610.60 | 178.28 | 432,568.80 | 663,220.48 | 32.188148 | -103.805730 |
| 19,300.00 | 90.00 | 179.61 | 11,556.00 | -7,710.59 | 178.96 | 432,468.80 | 663,221.16 | 32.187873 | -103.805729 |
| 19,400.00 | 90.00 | 179.61 | 11,556.00 | -7,810.59 | 179.63 | 432,368.81 | 663,221.84 | 32.187598 | -103.805729 |
| 19,500.00 | 90.00 | 179.61 | 11,556.00 | -7,910.59 | 180.31 | 432,268.81 | 663,222.51 | 32.187324 | -103.805728 |
| 19,600.00 | 90.00 | 179.61 | 11,556.00 | -8,010.59 | 180.98 | 432,168.81 | 663,223.19 | 32.187049 | -103.805728 |
| 19,700.00 | 90.00 | 179.61 | 11,556.00 | -8,110.59 | 181.66 | 432,068.81 | 663,223.86 | 32.186774 | -103.805727 |
| 19,800.00 | 90.00 | 179.61 | 11,556.00 | -8,210.58 | 182.34 | 431,968.82 | 663,224.54 | 32.186499 | -103.805726 |
| 19,900.00 | 90.00 | 179.61 | 11,556.00 | -8,310.58 | 183.01 | 431,868.82 | 663,225.22 | 32.186224 | -103.805726 |
| 20,000.00 | 90.00 | 179.61 | 11,556.00 | -8,410.58 | 183.69 | 431,768.82 | 663,225.89 | 32.185949 | -103.805725 |
| 20,100.00 | 90.00 | 179.61 | 11,556.00 | -8,510.58 | 184.36 | 431,668.82 | 663,226.57 | 32.185674 | -103.805725 |
| 20,200.00 | 90.00 | 179.61 | 11,556.00 | -8,610.57 | 185.04 | 431,568.83 | 663,227.25 | 32.185399 | -103.805724 |
| 20,300.00 | 90.00 | 179.61 | 11,556.00 | -8,710.57 | 185.72 | 431,468.83 | 663,227.92 | 32.185124 | -103.805723 |
| 20,400.00 | 90.00 | 179.61 | 11,556.00 | -8,810.57 | 186.39 | 431,368.83 | 663,228.60 | 32.184850 | -103.805723 |
| 20,500.00 | 90.00 | 179.61 | 11,556.00 | -8,910.57 | 187.07 | 431,268.83 | 663,229.27 | 32.184575 | -103.805722 |
| 20,600.00 | 90.00 | 179.61 | 11,556.00 | -9,010.57 | 187.75 | 431,168.83 | 663,229.95 | 32.184300 | -103.805722 |
| 20,700.00 | 90.00 | 179.61 | 11,556.00 | -9,110.56 | 188.42 | 431,068.84 | 663,230.63 | 32.184025 | -103.805721 |
| 20,800.00 | 90.00 | 179.61 | 11,556.00 | -9,210.56 | 189.10 | 430,968.84 | 663,231.30 | 32.183750 | -103.805720 |
| 20,900.00 | 90.00 | 179.61 | 11,556.00 | -9,310.56 | 189.77 | 430,868.84 | 663,231.98 | 32.183475 | -103.805720 |
| 21,000.00 | 90.00 | 179.61 | 11,556.00 | -9,410.56 | 190.45 | 430,768.84 | 663,232.65 | 32.183200 | -103.805719 |
| 21,100.00 | 90.00 | 179.61 | 11,556.00 | -9,510.55 | 191.13 | 430,668.85 | 663,233.33 | 32.182925 | -103.805719 |
| 21,200.00 | 90.00 | 179.61 | 11,556.00 | -9,610.55 | 191.80 | 430,568.85 | 663,234.01 | 32.182650 | -103.805718 |
| 21,300.00 | 90.00 | 179.61 | 11,556.00 | -9,710.55 | 192.48 | 430,468.85 | 663,234.68 | 32.182376 | -103.805717 |
| 21,400.00 | 90.00 | 179.61 | 11,556.00 | -9,810.55 | 193.15 | 430,368.85 | 663,235.36 | 32.182101 | -103.805717 |

| | | | |
|---|---|---|---|
| **Database:** | USA EDM 5000 Multi Users DB | **Local Co-ordinate Reference:** | Well Twin Wells Ranch 701H |
| **Company:** | XTO Energy Inc. | **TVD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 21,500.00 | 90.00 | 179.61 | 11,556.00 | -9,910.54 | 193.83 | 430,268.86 | 663,236.04 | 32.181826 | -103.805716 |
| 21,600.00 | 90.00 | 179.61 | 11,556.00 | -10,010.54 | 194.51 | 430,168.86 | 663,236.71 | 32.181551 | -103.805716 |
| 21,613.76 | 90.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 430,155.10 | 663,236.80 | 32.181513 | -103.805715 |
| **TD at 21613.76'** | | | | | | | | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| TWR 701H BHL<br>- plan hits target center<br>- Rectangle (sides W60.00 H10,014.00 D30.00) | 0.00 | 179.61 | 11,556.00 | -10,024.30 | 194.60 | 430,155.10 | 663,236.80 | 32.181513 | -103.805715 |
| TWR 701H FTP<br>- plan misses target center by 70.50usft at 11619.22usft MD (11491.74 TVD, -40.31 N, 127.09 E)<br>- Point | 0.00 | 0.00 | 11,556.00 | -11.30 | 127.10 | 440,168.10 | 663,169.30 | 32.209039 | -103.805775 |
| TWR 701H LTP<br>- plan misses target center by 0.04usft at 21503.76usft MD (11556.00 TVD, -9914.30 N, 193.86 E)<br>- Point | 0.00 | 0.00 | 11,556.00 | -9,914.30 | 193.90 | 430,265.10 | 663,236.10 | 32.181815 | -103.805716 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 546.00 | 546.00 | Rustler | | 0.00 | |
| 906.00 | 906.00 | Top Salt | | 0.00 | |
| 4,051.80 | 4,046.00 | Base Salt | | 0.00 | |
| 4,272.34 | 4,266.00 | Delaware | | 0.00 | |
| 5,164.51 | 5,156.00 | Cherry Canyon | | 0.00 | |
| 6,466.14 | 6,456.00 | Brushy Canyon | | 0.00 | |
| 7,836.14 | 7,826.00 | Basal Brushy Canyon | | 0.00 | |
| 8,116.14 | 8,106.00 | Bone Spring Lime | | 0.00 | |
| 8,236.14 | 8,226.00 | Avalon Sand | | 0.00 | |
| 8,256.14 | 8,246.00 | Upper Avalon Shale | | 0.00 | |
| 8,666.14 | 8,656.00 | Lower Avalon Shale | | 0.00 | |
| 8,876.14 | 8,866.00 | 1st Bone Spring Lime | | 0.00 | |
| 9,076.14 | 9,066.00 | 1st Bone Spring Ss | | 0.00 | |
| 9,566.14 | 9,556.00 | 2nd Bone Spring Lime | | 0.00 | |
| 9,896.14 | 9,886.00 | 2nd Bone Spring Ss | | 0.00 | |
| 10,266.14 | 10,256.00 | 3rd Bone Spring Lm | | 0.00 | |
| 11,056.27 | 11,046.00 | 3rd Bone Spring Ss | | 0.00 | |
| 11,399.30 | 11,356.00 | Red Hills SS | | 0.00 | |
| 11,532.20 | 11,446.00 | Wolfcamp | | 0.00 | |
| 11,586.77 | 11,476.00 | Wolfcamp X | | 0.00 | |

| | | | |
|---|---|---|---|
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| **Project:** | Eddy County, NM (NAD27) | **MD Reference:** | 33' KB @ 3526.00usft (Nabors X02) |
| **Site:** | SEC 20-T24S-R31E (PLU 17) | **North Reference:** | Grid |
| **Well:** | Twin Wells Ranch 701H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Horizontal | | |
| **Design:** | #1 (03.25.20) | | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 1,490.00 | 1,490.00 | 0.00 | 0.00 | Build 1.5° Dlg |
| 1,756.58 | 1,756.36 | 8.43 | 3.92 | Hold 4° Inc; 24.92° Azm |
| 5,743.56 | 5,733.64 | 260.57 | 121.08 | Drop 1.5° Dlg |
| 6,010.14 | 6,000.00 | 269.00 | 125.00 | Hold 0° Inc; 0° Azm |
| 10,993.18 | 10,983.04 | 269.00 | 125.00 | Build Curve 10° Dlg |
| 11,586.00 | 11,475.61 | -11.28 | 126.90 | FTP Marker @ 11586' |
| 11,893.18 | 11,556.00 | -303.94 | 128.87 | Land 90° Inc ; 179.61° Azm |
| 21,613.76 | 11,556.00 | -10,024.30 | 194.60 | TD at 21613.76' |