Rec'vd 03/25/2020 - NMOCD

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.
NMNM25533

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 18 TWR 105H

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

9. API Well No.
30-015-46556-00-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 (GAS)

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T24S R31E NWNE 300FNL 1856FEL
32.209244 N Lat, 103.814392 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.

XTO requests the following variances:

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. We will also function test BOP equipment after each nipple up. A full BOP test will be required prior to

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

Electronic Submission #507367 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 03/17/2020 (20PP1674SE)

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

Signature (Electronic Submission) — Date 03/17/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ALLISON MORENCY — Title PETROLEUM ENGINEER — Date 03/19/2020

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 ****

Accepted 03/30/2020 - Kurt Simmons NMOCD

Additional data for EC transaction #507367 that would not fit on the form

32. Additional remarks, continued

drilling any production hole.

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 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.

Attachments:
Casing/Cement Design
Multibowl Diagram
Directional Plan

Revisions to Operator-Submitted EC Data for Sundry Notice #507367

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM25533	NMNM25533
Agreement:	NMNM71016X	891000303X (NMNM71016X)
Operator:	XTO ENERGY PERMIAN OPERATING 6401 HOLIDAY HILL RD BLDG 5 MIDLAND, TX 79707 Ph: 432-620-4374	XTO PERMIAN OPERATING LLC 6401 HOLIDAY HILL ROAD BLDG 5 MIDLAND, TX 79707 Ph: 432.683 2277
Admin Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Tech Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Location: State: County:	 NM EDDY	 NM EDDY
Field/Pool:	PURPLE SAGE WOLFCAMP	PURPLE SAGE-WOLFCAMP (GAS)
Well/Facility:	POKER LAKE UNIT 18 TWR 105H Sec 19 T24S R31E Mer NMP NWNE 300FNL 1856FEL	POKER LAKE UNIT 18 TWR 105H Sec 19 T24S R31E NWNE 300FNL 1856FEL 32.209244 N Lat, 103.814392 W Lon

Kardos, Kelly

From: amorency@blm.gov
Sent: Thursday, March 19, 2020 12:05 PM
To: Kardos, Kelly
Subject: Well POKER LAKE UNIT 18 TWR 105H
Attachments: EC507367.pdf

Categories: External Sender

External Email - Think Before You Click

The sundry for Change to Original APD you submitted has been approved by the BLM. Your original Electronic Commerce (EC) transmission was assigned ID 507367. Please be sure to open and save all attachments to this message, since they contain important information.

03/19/2020 - AM
Casing/cement design good. Batch drilling approved. Shell testing not approved. Same COAs apply.

Poker Lake Unit 18 TWR 105H
Projected TD: 21642' MD / 11557' TVD
SHL: 300' FNL & 1856' FEL , Section 19, T24S, R31E
BHL: 200' FSL & 1980' FEL , Section 30, T24S, R31E
Eddy County, NM

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
14-3/4"	0' – 847'	11-3/4"	54	BTC	J-55	New	1.31	5.40	18.58
9-7-8"	0' – 10343'	7-5/8"	29.7	BTC	HCL-80	New	1.62	2.09	2.22
6-3/4"	0' – 10243'	5-1/2"	23	Freedom	P-110	New	1.21	2.14	2.07
6-3/4"	10243' - 21642'	5-1/2"	23	TCSF - semi flush	HCP-110	New	1.21	2.25	2.06

· XTO requests to not utilize centralizers in the curve and lateral
·7-5/8" Collapse analyzed using 50% evacuation based on regional experience.
· 7-0" Collapse analyzed using 33% 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
· Test on Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less

· 5-1/2" 23 ppf casing will be run from surface to 10,243' and crossed over to 5-1/2" 23 ppf semi-flush casing from 10,243' to TD.
·Request to use 5" BTC Float equipment for the the production casing

Wellhead:

Temporary Wellhead

· 16" SOW bottom x 16-3/4" 2M top flange.

Permanent Wellhead – Multibowl System

A. Starting Head: 11" 10M top flange x 11-3/4" SOW bottom
B. Tubing Head: 11" 10M bottom flange x 7-1/16" 15M 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 7-5/8" casing per BLM Onshore Order 2
· Wellhead Manufacturer representative will not be present for BOP test plug installation

Cement Program

Surface Casing:

Lead: 250 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 190 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 4300'

1st Stage

Lead: 1150 sxs Halcem - Class C (mixed at 11.0 ppg, 1.87 ft3/sx, 15.10 gal/sx water)
Tail: 310 sxs Halcem - Class C (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150 psi

2nd Stage

Lead: 750 sxs Halcem - Class C (mixed at 11.0 ppg, 1.88 ft3/sx, 10.13 gal/sx water)
Tail: 320 sxs Halcem-Class C (mixed at 14.8 ppg, 1.33 ft3/sx, 5.29 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150 psi

Production Casing:

Lead: 30 sxs VersaCem (mixed at 11.5 ppg, 2.69 ft3/sx, 15.00 gal/sx water)
Tail: 760 sxs VersaCem (mixed at 13.2 ppg, 1.51 ft3/sx, 7.20 gal/sx water)
Compressives: 12-hr = 800 psi 24 hr = 1500 psi

Mud Circulation Program

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 847'	14-3/4"	FW / Native	8.4-8.8	35-40	NC
847' - 10343'	9-7/8"	Brine / Cut Brine / Direct Emuslion	8.6-9.8	30-32	NC
10343' to 21642'	6-3/4"	Cut Brine / WBM / OBM	10.8-11.8	32-36	NC

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

XTO Energy Inc.
Poker Lake Unit 18 TWR 105H
Projected TD: 21642' MD / 11557' TVD
SHL: 300' FNL & 1856' FEL , Section 19, T24S, R31E
BHL: 200' FSL & 1980' FEL , Section 30, 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	577'	Water
Top of Salt	947'	Water
Base of Salt	4062'	Water
Delaware	4277'	Water
Bone Spring	5157'	Water
1st Bone Spring Ss	9112'	Water/Oil/Gas
2nd Bone Spring Ss	9917'	Water/Oil/Gas
3rd Bone Spring Ss	11087'	Water/Oil/Gas
Wolfcamp	11487'	Water/Oil/Gas
Wolfcamp X	11527'	Water/Oil/Gas
Target/Land Curve	11557'	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 11-3/4" casing @ 847' (100' above the salt) and circulating cement back to surface. The 7-5/8" intermediate casing will be set at 10343' and bring TOC back to surface. A 6-3/4 inch curve and lateral hole will be drilled to MD/TD and 5-1/2" x 5-1/2" semi-flush casing will be set at TD and cemented back 300' into the 7-5/8" casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
14-3/4"	0' – 847'	11-3/4"	54	BTC	J-55	New	1.31	5.40	18.58
9-7-8"	0' – 10343'	7-5/8"	29.7	BTC	HCL-80	New	1.62	2.09	2.22
6-3/4"	0' – 10243'	5-1/2"	23	Freedom	P-110	New	1.21	2.14	2.07
6-3/4"	10243' - 21642'	5-1/2"	23	TCSF - semi flush	HCP-110	New	1.21	2.25	2.06

· XTO requests to not utilize centralizers in the curve and lateral
·7-5/8" 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
· Test on Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less
· 5-1/2" 23 ppf casing will be run from surface to 10,243' and crossed over to 5-1/2" 23 ppf semi-flush casing from 10,243' to TD.
·Request to use 5" BTC Float equipment for the the production casing

Wellhead:

Permanent Wellhead – Multibowl System

A. Starting Head: 11" 10M top flange x 11-3/4" SOW bottom
B. Tubing Head: 11" 10M bottom flange x 7-1/16" 15M 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 7-5/8" casing per BLM Onshore Order 2
· Wellhead Manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 11-3/4", 54 New J-55, BTC casing to be set at +/- 847'

Lead: 250 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.87 ft3/sx, 10.13 gal/sx water)

Tail: 190 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
TOC: Surface

Intermediate Casing: 7-5/8", 29.7 New HCL-80, BTC casing to be set at +/- 10343'
ECP/DV Tool to be set at 4300'
1st Stage
Lead: 1150 sxs Halcem - Class C (mixed at 11.0 ppg, 1.87 ft3/sx, 15.10 gal/sx water)

Tail: 310 sxs Halcem - Class C (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150psi

2nd Stage
Lead: 750 sxs Halcem - Class C (mixed at 11.0 ppg, 1.88 ft3/sx, 10.13 gal/sx water)

Tail: 320 sxs Halcem-Class C (mixed at 14.8 ppg, 1.33 ft3/sx, 5.29 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150 psi
TOC: Surface

Production Casing: 5-1/2", 23 New HCP-110, TCSF - semi flush casing to be set at +/- 21642'
Lead: 30 sxs VersaCem (mixed at 11.5 ppg, 2.69 ft3/sx, 15.00 gal/sx water)

Tail: 760 sxs VersaCem (mixed at 13.2 ppg, 1.51 ft3/sx, 7.20 gal/sx water)
Compressives 12-hr = 800 psi 24 hr = 1500 psi
TOC: 300' inside previous shoe

5. Pressure Control Equipment

Once the permanent WH is installed on the 11-3/4" casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M 3-Ram BOP. MASP should not exceed 4248 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 11-3/4", 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 GE recommendations, XTO will contact the BLM on each rig skid 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 compainace with API Standard 53. API standard 53 states, that for pad drilling operation, moving from one welhead to another with in 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken. We will also function test BOP equipment after each nipple up. A full BOP test will be required prior to drilling any production hole.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 847'	14-3/4"	FW / Native	8.4-8.8	35-40	NC
847' - 10343'	9-7/8"	Brine / Cut Brine / Direct Emuslion	8.6-9.8	30-32	NC
10343' to 21642'	6-3/4"	Cut Brine / WBM / OBM	10.8-11.8	32-36	NC

The necessary mud products for weight addition and fluid loss control will be on location at all times.
Spud with fresh water/native mud and set 11-3/4" surface casing, isolating the fresh water aquifer. Drill out from under 11-3/4" surface casing with a brine/oil direct emulsion mud system. 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 11-3/4" casing.

8. Logging, Coring and Testing Program

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

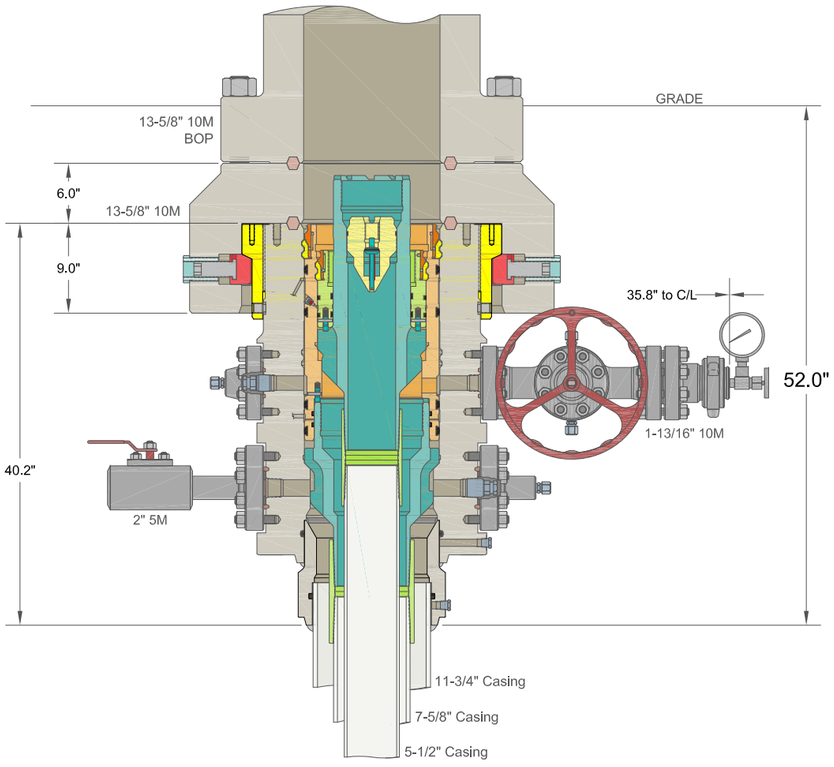
Open hole logging will not be done on this well.

9. Abnormal Pressures and Temperatures / Potential Hazards

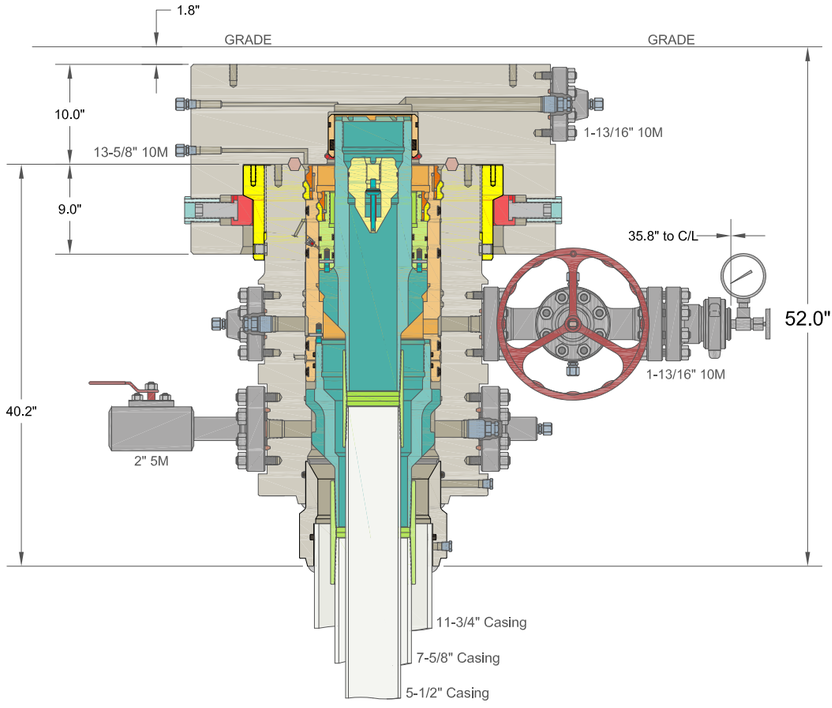
None Anticipated. BHT of 150 to 170 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. 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 6791 psi.

10. Anticipated Starting Date and Duration of Operations

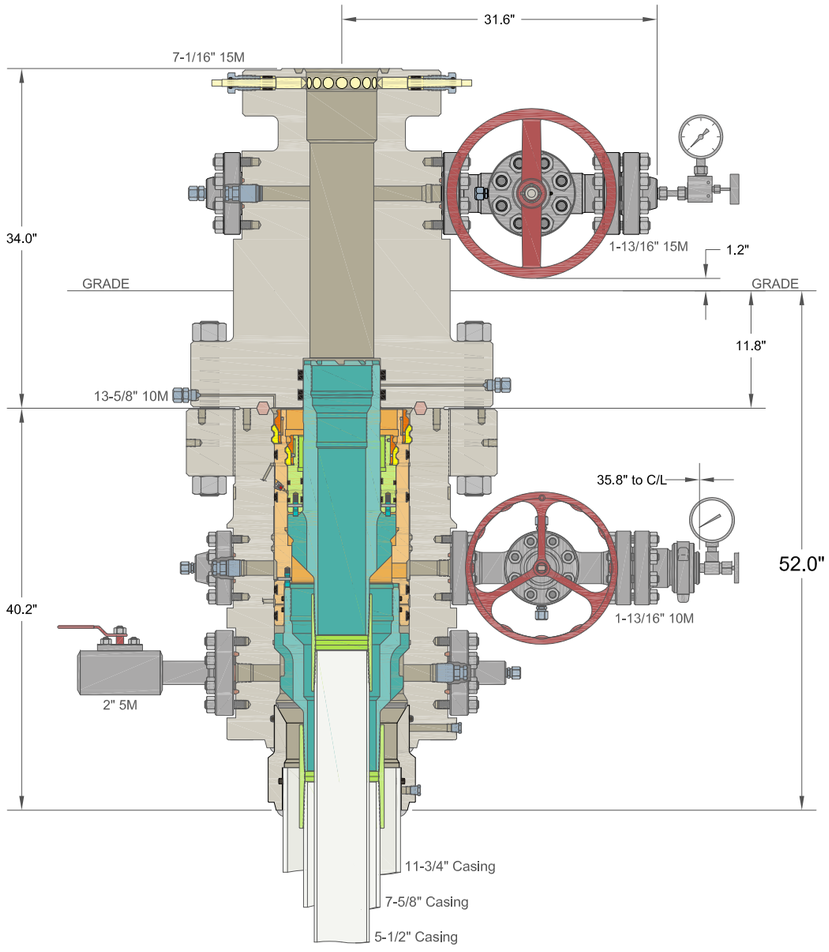
Road and location construction will begin after Santa Fe and BLM have approved the APD. Anticipated spud date will be as soon after Santa Fe and BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 45 days. If production casing is run, an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.



DRILLING



SKID



COMPLETION

ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC		XTO ENERGY INC POKER LAKE, NM	
30" x 11-3/4" x 7-5/8" x 5-1/2" MBU-3T-SF SOW Wellhead System With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS-SB Tubing Head And 7-5/8" & 5-1/2" Fluted Mandrel Casing Hangers	DRAWN	DLE	09DEC19
	APPRV		
	DRAWING NO.	ODE0003261	

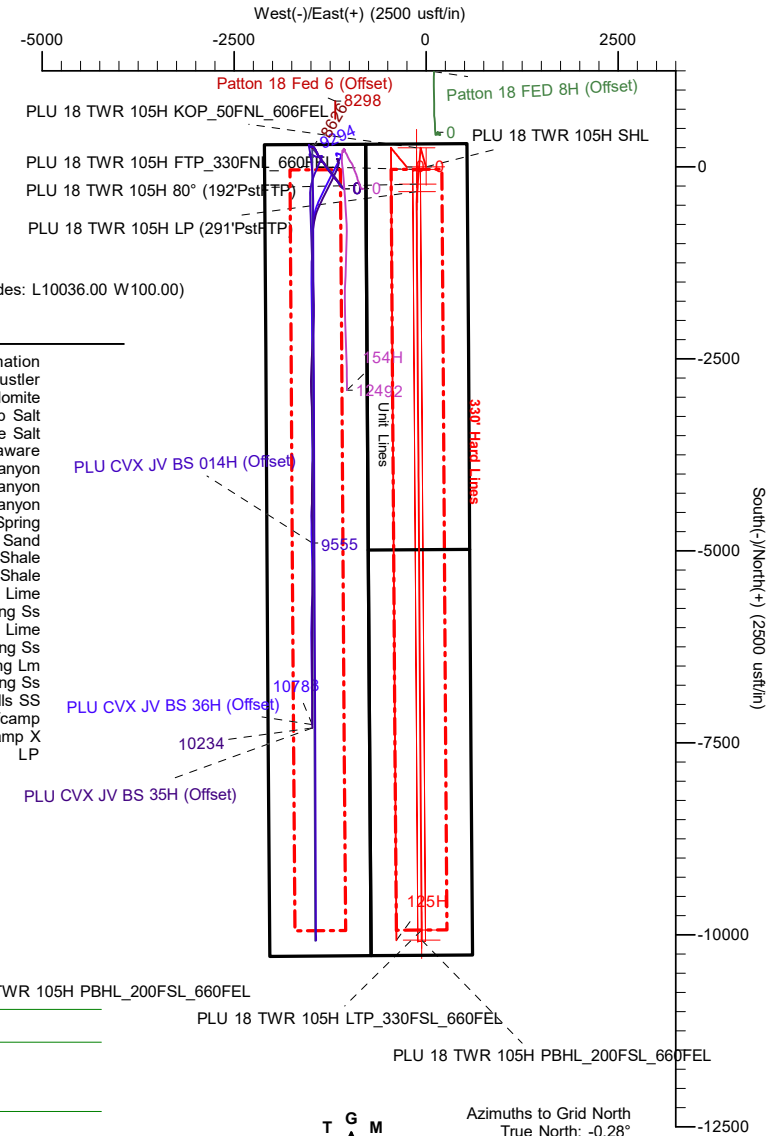
XTO Energy

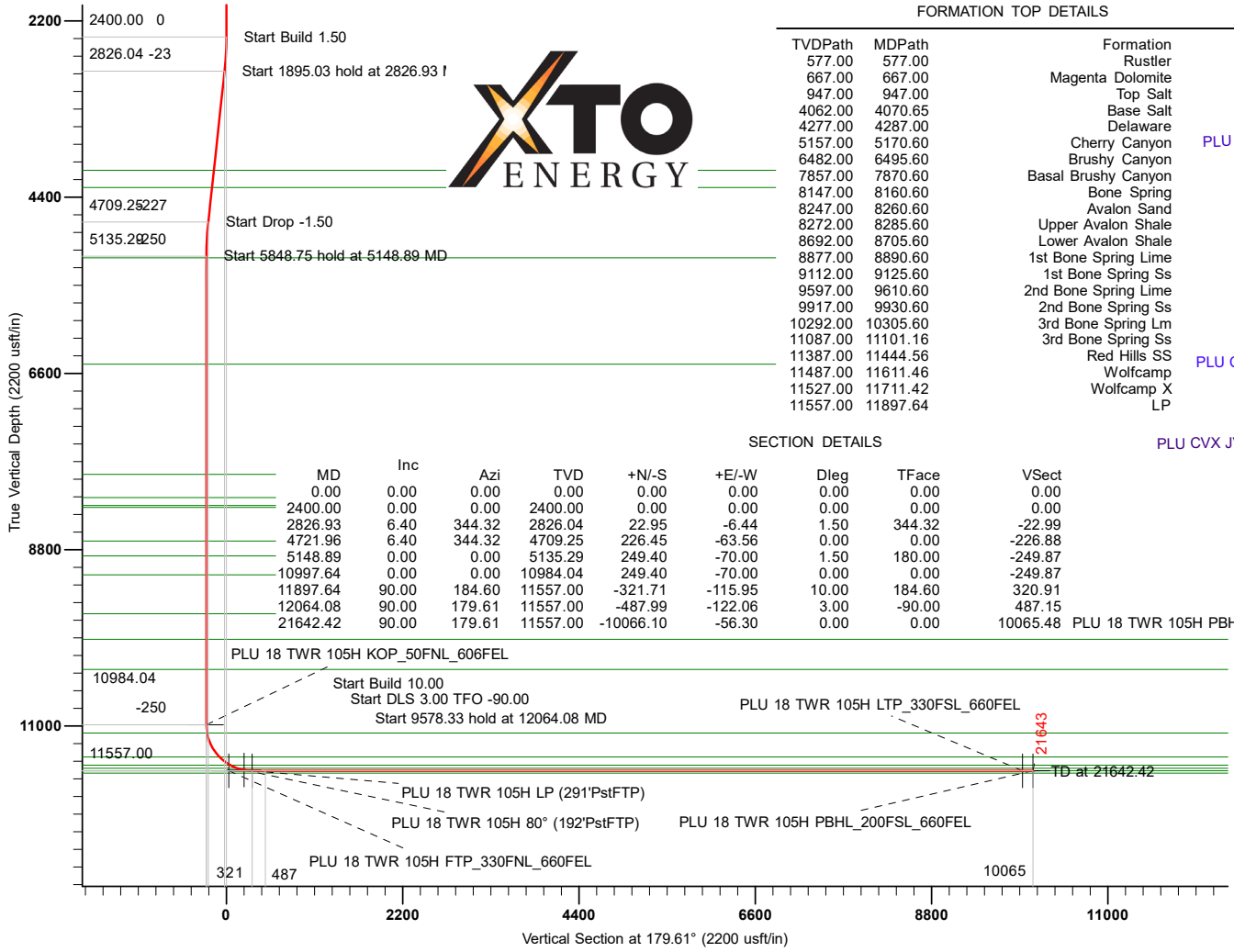
Project: Eddy County, NM (NAD27) NMEZ Grid
Site: PLU 18 TWR
Well: 105H
Wellbore: Lateral
Design: Plan #1

3497+30 @ 3527.00usft (HP549)
NAD 1927 (NADCON CONUS)

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PLU 18 TWR 105H SHL	0.00	0.00	0.00	440185.20	660653.20	Point
PLU 18 TWR 105H KOP_50FNL_606FEL	10984.04	249.40	-123.90	440434.60	660529.30	Point
PLU 18 TWR 105H 80° (192'PstFTP)	11548.29	-222.54	-107.97	439962.66	660545.23	Point
PLU 18 TWR 105H FTP_330FNL_660FEL	11557.00	-30.60	-123.90	440154.60	660529.30	Point
PLU 18 TWR 105H LP (291'PstFTP)	11557.00	-321.71	-115.95	439863.49	660537.25	Point
PLU 18 TWR 105H LTP_330FSL_660FEL	11557.00	-9936.10	-57.20	430249.10	660596.00	Point
PLU 18 TWR 105H PBHL_200FSL_660FEL	11557.00	-10066.10	-56.30	430119.10	660596.90	Rectangle (Sides: L10036.00 W100.00)





FORMATION TOP DETAILS

TVDPath	MDPath	Formation
577.00	577.00	Rustler
667.00	667.00	Magenta Dolomite
947.00	947.00	Top Salt
4062.00	4070.65	Base Salt
4277.00	4287.00	Delaware
5157.00	5170.60	Cherry Canyon
6482.00	6495.60	Brushy Canyon
7857.00	7870.60	Basal Brushy Canyon
8147.00	8160.60	Bone Spring
8247.00	8260.60	Avalon Sand
8272.00	8285.60	Upper Avalon Shale
8692.00	8705.60	Lower Avalon Shale
8877.00	8890.60	1st Bone Spring Lime
9112.00	9125.60	1st Bone Spring Ss
9597.00	9610.60	2nd Bone Spring Lime
9917.00	9930.60	2nd Bone Spring Ss
10292.00	10305.60	3rd Bone Spring Lm
11087.00	11101.16	3rd Bone Spring Ss
11387.00	11444.56	Red Hills SS
11487.00	11611.46	Wolfcamp
11527.00	11711.42	Wolfcamp X
11557.00	11897.64	LP

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00	
2826.93	6.40	344.32	2826.04	22.95	-6.44	1.50	344.32	-22.99	
4721.96	6.40	344.32	4709.25	226.45	-63.56	0.00	0.00	-226.88	
5148.89	0.00	0.00	5135.29	249.40	-70.00	1.50	180.00	-249.87	
10997.64	0.00	0.00	10984.04	249.40	-70.00	0.00	0.00	-249.87	
11897.64	90.00	184.60	11557.00	-321.71	-115.95	10.00	184.60	320.91	
12064.08	90.00	179.61	11557.00	-487.99	-122.06	3.00	-90.00	487.15	
21642.42	90.00	179.61	11557.00	-10066.10	-56.30	0.00	0.00	10065.48	PLU 18 TWR 105H PBHL_200FSL_660FEL

Azimuths to Grid North
True North: -0.28°
Magnetic North: 6.53°

Magnetic Field
Strength: 47596.2nT
Dip Angle: 59.89°
Date: 02/21/2020
Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 6.53°
To convert a Magnetic Direction to a True Direction, Add 6.81° East
Magnetic North is 6.53° East of Grid North (Magnetic Convergence)
Magnetic North is 6.81° East of True North (Magnetic Declination)

Plan: Plan #1 (105H/Lateral)
Created By: Mekka Williams
eSomina Well Design
mekka@esominawelldesign.com
13:51, February 21 2020

TRUE PERFORMANCE DIRECTIONAL
5075 E 52ND ST, ODESSA TX 79762
903-777-6827

TRUE PERFORMANCE DIRECTIONAL DRILLING

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Eddy County, NM (NAD27) NMEZ Grid		
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	PLU 18 TWR				
Site Position:		**Northing:**	439,833.60 usft	**Latitude:**	32.2081635
From:	Map	**Easting:**	659,834.30 usft	**Longitude:**	-103.8165621
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.28 °

Well	105H - Slot PLU 18 TWR 105H SHL					
Well Position	**+N/-S**	351.60 usft	**Northing:**	440,185.20 usft	**Latitude:**	32.2091192
	+E/-W	818.90 usft	**Easting:**	660,653.20 usft	**Longitude:**	-103.8139091
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,497.00 usft

Wellbore	Lateral			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2020	02/21/20	6.81	59.89	47,596.24602375

Design	Plan #1			
Audit Notes:				
Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	179.61

Plan Survey Tool Program **Date** 02/21/20

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,641.86	Plan #1 (Lateral)	MWD+IFR1+MS	
				OWSG MWD + IFR1 + Multi-St	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,826.93	6.40	344.32	2,826.04	22.95	-6.44	1.50	1.50	0.00	344.32	
4,721.96	6.40	344.32	4,709.25	226.45	-63.56	0.00	0.00	0.00	0.00	
5,148.89	0.00	0.00	5,135.29	249.40	-70.00	1.50	-1.50	0.00	180.00	
10,997.64	0.00	0.00	10,984.04	249.40	-70.00	0.00	0.00	0.00	0.00	
11,897.64	90.00	184.60	11,557.00	-321.71	-115.95	10.00	10.00	0.00	184.60	
12,064.08	90.00	179.61	11,557.00	-487.99	-122.06	3.00	0.00	-3.00	-90.00	
21,642.42	90.00	179.61	11,557.00	-10,066.10	-56.30	0.00	0.00	0.00	0.00	PLU 18 TWR 105H P

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	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	0.00
400.00	0.00	0.00	400.00	0.00	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	0.00
577.00	0.00	0.00	577.00	0.00	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	0.00
667.00	0.00	0.00	667.00	0.00	0.00	0.00	0.00	0.00	0.00
Magenta Dolomite									
700.00	0.00	0.00	700.00	0.00	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	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
947.00	0.00	0.00	947.00	0.00	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	0.00
1,100.00	0.00	0.00	1,100.00	0.00	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	0.00
1,300.00	0.00	0.00	1,300.00	0.00	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	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	1.50	344.32	2,499.99	1.26	-0.35	-1.26	1.50	1.50	0.00
2,600.00	3.00	344.32	2,599.91	5.04	-1.41	-5.05	1.50	1.50	0.00
2,700.00	4.50	344.32	2,699.69	11.34	-3.18	-11.36	1.50	1.50	0.00
2,800.00	6.00	344.32	2,799.27	20.15	-5.65	-20.18	1.50	1.50	0.00
2,826.93	6.40	344.32	2,826.04	22.95	-6.44	-22.99	1.50	1.50	0.00
2,900.00	6.40	344.32	2,898.66	30.79	-8.64	-30.85	0.00	0.00	0.00
3,000.00	6.40	344.32	2,998.03	41.53	-11.66	-41.61	0.00	0.00	0.00
3,100.00	6.40	344.32	3,097.41	52.27	-14.67	-52.37	0.00	0.00	0.00
3,200.00	6.40	344.32	3,196.78	63.01	-17.69	-63.13	0.00	0.00	0.00
3,300.00	6.40	344.32	3,296.16	73.75	-20.70	-73.89	0.00	0.00	0.00
3,400.00	6.40	344.32	3,395.54	84.49	-23.71	-84.65	0.00	0.00	0.00
3,500.00	6.40	344.32	3,494.91	95.23	-26.73	-95.41	0.00	0.00	0.00
3,600.00	6.40	344.32	3,594.29	105.97	-29.74	-106.17	0.00	0.00	0.00
3,700.00	6.40	344.32	3,693.66	116.71	-32.76	-116.93	0.00	0.00	0.00
3,800.00	6.40	344.32	3,793.04	127.44	-35.77	-127.68	0.00	0.00	0.00
3,900.00	6.40	344.32	3,892.42	138.18	-38.78	-138.44	0.00	0.00	0.00
4,000.00	6.40	344.32	3,991.79	148.92	-41.80	-149.20	0.00	0.00	0.00
4,070.65	6.40	344.32	4,062.00	156.51	-43.93	-156.80	0.00	0.00	0.00
Base Salt									
4,100.00	6.40	344.32	4,091.17	159.66	-44.81	-159.96	0.00	0.00	0.00
4,200.00	6.40	344.32	4,190.54	170.40	-47.83	-170.72	0.00	0.00	0.00
4,287.00	6.40	344.32	4,277.00	179.74	-50.45	-180.08	0.00	0.00	0.00

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Delaware									
4,300.00	6.40	344.32	4,289.92	181.14	-50.84	-181.48	0.00	0.00	0.00
4,400.00	6.40	344.32	4,389.30	191.88	-53.85	-192.24	0.00	0.00	0.00
4,500.00	6.40	344.32	4,488.67	202.62	-56.87	-203.00	0.00	0.00	0.00
4,600.00	6.40	344.32	4,588.05	213.36	-59.88	-213.76	0.00	0.00	0.00
4,700.00	6.40	344.32	4,687.42	224.09	-62.90	-224.52	0.00	0.00	0.00
4,721.96	6.40	344.32	4,709.25	226.45	-63.56	-226.88	0.00	0.00	0.00
4,800.00	5.23	344.32	4,786.88	234.07	-65.70	-234.51	1.50	-1.50	0.00
4,900.00	3.73	344.32	4,886.57	241.60	-67.81	-242.05	1.50	-1.50	0.00
5,000.00	2.23	344.32	4,986.44	246.61	-69.22	-247.07	1.50	-1.50	0.00
5,100.00	0.73	344.32	5,086.40	249.10	-69.92	-249.57	1.50	-1.50	0.00
5,148.89	0.00	0.00	5,135.29	249.40	-70.00	-249.87	1.50	-1.50	0.00
5,170.60	0.00	0.00	5,157.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Cherry Canyon									
5,200.00	0.00	0.00	5,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,300.00	0.00	0.00	5,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,400.00	0.00	0.00	5,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,500.00	0.00	0.00	5,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,600.00	0.00	0.00	5,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,700.00	0.00	0.00	5,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,800.00	0.00	0.00	5,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
5,900.00	0.00	0.00	5,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,000.00	0.00	0.00	5,986.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,100.00	0.00	0.00	6,086.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,200.00	0.00	0.00	6,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,300.00	0.00	0.00	6,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,400.00	0.00	0.00	6,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,495.60	0.00	0.00	6,482.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Brushy Canyon									
6,500.00	0.00	0.00	6,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,600.00	0.00	0.00	6,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,700.00	0.00	0.00	6,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,800.00	0.00	0.00	6,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
6,900.00	0.00	0.00	6,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,000.00	0.00	0.00	6,986.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,100.00	0.00	0.00	7,086.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,200.00	0.00	0.00	7,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,300.00	0.00	0.00	7,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,400.00	0.00	0.00	7,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,500.00	0.00	0.00	7,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,600.00	0.00	0.00	7,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,700.00	0.00	0.00	7,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,800.00	0.00	0.00	7,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
7,870.60	0.00	0.00	7,857.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Basal Brushy Canyon									
7,900.00	0.00	0.00	7,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,000.00	0.00	0.00	7,986.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,100.00	0.00	0.00	8,086.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,160.60	0.00	0.00	8,147.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Bone Spring									
8,200.00	0.00	0.00	8,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,260.60	0.00	0.00	8,247.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Avalon Sand									

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,285.60	0.00	0.00	8,272.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Upper Avalon Shale									
8,300.00	0.00	0.00	8,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,400.00	0.00	0.00	8,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,500.00	0.00	0.00	8,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,600.00	0.00	0.00	8,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,700.00	0.00	0.00	8,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,705.60	0.00	0.00	8,692.00	249.40	-70.00	-249.87	0.00	0.00	0.00
Lower Avalon Shale									
8,800.00	0.00	0.00	8,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
8,890.60	0.00	0.00	8,877.00	249.40	-70.00	-249.87	0.00	0.00	0.00
1st Bone Spring Lime									
8,900.00	0.00	0.00	8,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,000.00	0.00	0.00	8,986.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,100.00	0.00	0.00	9,086.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,125.60	0.00	0.00	9,112.00	249.40	-70.00	-249.87	0.00	0.00	0.00
1st Bone Spring Ss									
9,200.00	0.00	0.00	9,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,300.00	0.00	0.00	9,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,400.00	0.00	0.00	9,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,500.00	0.00	0.00	9,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,600.00	0.00	0.00	9,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,610.60	0.00	0.00	9,597.00	249.40	-70.00	-249.87	0.00	0.00	0.00
2nd Bone Spring Lime									
9,700.00	0.00	0.00	9,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,800.00	0.00	0.00	9,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,900.00	0.00	0.00	9,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
9,930.60	0.00	0.00	9,917.00	249.40	-70.00	-249.87	0.00	0.00	0.00
2nd Bone Spring Ss									
10,000.00	0.00	0.00	9,986.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,100.00	0.00	0.00	10,086.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,200.00	0.00	0.00	10,186.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,300.00	0.00	0.00	10,286.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,305.60	0.00	0.00	10,292.00	249.40	-70.00	-249.87	0.00	0.00	0.00
3rd Bone Spring Lm									
10,400.00	0.00	0.00	10,386.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,500.00	0.00	0.00	10,486.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,600.00	0.00	0.00	10,586.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,700.00	0.00	0.00	10,686.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,800.00	0.00	0.00	10,786.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,900.00	0.00	0.00	10,886.40	249.40	-70.00	-249.87	0.00	0.00	0.00
10,997.64	0.00	0.00	10,984.04	249.40	-70.00	-249.87	0.00	0.00	0.00
11,000.00	0.24	184.60	10,986.40	249.40	-70.00	-249.87	10.00	10.00	0.00
11,050.00	5.24	184.60	11,036.33	247.02	-70.19	-247.49	10.00	10.00	0.00
11,100.00	10.24	184.60	11,085.86	240.31	-70.73	-240.79	10.00	10.00	0.00
11,101.16	10.35	184.60	11,087.00	240.10	-70.75	-240.58	10.00	10.00	0.00
3rd Bone Spring Ss									
11,150.00	15.24	184.60	11,134.61	229.33	-71.62	-229.81	10.00	10.00	0.00
11,200.00	20.24	184.60	11,182.22	214.15	-72.84	-214.64	10.00	10.00	0.00
11,250.00	25.24	184.60	11,228.32	194.89	-74.39	-195.40	10.00	10.00	0.00
11,300.00	30.24	184.60	11,272.56	171.71	-76.25	-172.22	10.00	10.00	0.00
11,350.00	35.24	184.60	11,314.60	144.76	-78.42	-145.29	10.00	10.00	0.00
11,400.00	40.24	184.60	11,354.13	114.27	-80.87	-114.82	10.00	10.00	0.00

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,444.56	44.69	184.60	11,387.00	84.29	-83.28	-84.85	10.00	10.00	0.00
Red Hills SS									
11,450.00	45.24	184.60	11,390.85	80.46	-83.59	-81.03	10.00	10.00	0.00
11,500.00	50.24	184.60	11,424.46	43.59	-86.56	-44.18	10.00	10.00	0.00
11,550.00	55.24	184.60	11,454.73	3.94	-89.75	-4.55	10.00	10.00	0.00
11,600.00	60.24	184.60	11,481.41	-38.19	-93.14	37.56	10.00	10.00	0.00
11,611.46	61.38	184.60	11,487.00	-48.17	-93.94	47.53	10.00	10.00	0.00
Wolfcamp									
11,650.00	65.24	184.60	11,504.31	-82.48	-96.70	81.82	10.00	10.00	0.00
11,700.00	70.24	184.60	11,523.25	-128.59	-100.41	127.91	10.00	10.00	0.00
11,711.42	71.38	184.60	11,527.00	-139.34	-101.28	138.65	10.00	10.00	0.00
Wolfcamp X									
11,750.00	75.24	184.60	11,538.08	-176.17	-104.24	175.46	10.00	10.00	0.00
11,800.00	80.24	184.60	11,548.70	-224.86	-108.16	224.11	10.00	10.00	0.00
11,850.00	85.24	184.60	11,555.02	-274.28	-112.13	273.51	10.00	10.00	0.00
11,897.64	90.00	184.60	11,557.00	-321.71	-115.95	320.91	10.00	10.00	0.00
LP									
11,900.00	90.00	184.53	11,557.00	-324.06	-116.14	323.27	3.00	0.00	-3.00
12,000.00	90.00	181.53	11,557.00	-423.91	-121.42	423.08	3.00	0.00	-3.00
12,064.08	90.00	179.61	11,557.00	-487.99	-122.06	487.15	3.00	0.00	-3.00
12,100.00	90.00	179.61	11,557.00	-523.91	-121.81	523.06	0.00	0.00	0.00
12,200.00	90.00	179.61	11,557.00	-623.90	-121.12	623.06	0.00	0.00	0.00
12,300.00	90.00	179.61	11,557.00	-723.90	-120.44	723.06	0.00	0.00	0.00
12,400.00	90.00	179.61	11,557.00	-823.90	-119.75	823.06	0.00	0.00	0.00
12,500.00	90.00	179.61	11,557.00	-923.90	-119.06	923.06	0.00	0.00	0.00
12,600.00	90.00	179.61	11,557.00	-1,023.89	-118.38	1,023.06	0.00	0.00	0.00
12,700.00	90.00	179.61	11,557.00	-1,123.89	-117.69	1,123.06	0.00	0.00	0.00
12,800.00	90.00	179.61	11,557.00	-1,223.89	-117.01	1,223.06	0.00	0.00	0.00
12,900.00	90.00	179.61	11,557.00	-1,323.89	-116.32	1,323.06	0.00	0.00	0.00
13,000.00	90.00	179.61	11,557.00	-1,423.88	-115.63	1,423.06	0.00	0.00	0.00
13,100.00	90.00	179.61	11,557.00	-1,523.88	-114.95	1,523.06	0.00	0.00	0.00
13,200.00	90.00	179.61	11,557.00	-1,623.88	-114.26	1,623.06	0.00	0.00	0.00
13,300.00	90.00	179.61	11,557.00	-1,723.88	-113.57	1,723.06	0.00	0.00	0.00
13,400.00	90.00	179.61	11,557.00	-1,823.88	-112.89	1,823.06	0.00	0.00	0.00
13,500.00	90.00	179.61	11,557.00	-1,923.87	-112.20	1,923.06	0.00	0.00	0.00
13,600.00	90.00	179.61	11,557.00	-2,023.87	-111.51	2,023.06	0.00	0.00	0.00
13,700.00	90.00	179.61	11,557.00	-2,123.87	-110.83	2,123.06	0.00	0.00	0.00
13,800.00	90.00	179.61	11,557.00	-2,223.87	-110.14	2,223.06	0.00	0.00	0.00
13,900.00	90.00	179.61	11,557.00	-2,323.86	-109.45	2,323.06	0.00	0.00	0.00
14,000.00	90.00	179.61	11,557.00	-2,423.86	-108.77	2,423.06	0.00	0.00	0.00
14,100.00	90.00	179.61	11,557.00	-2,523.86	-108.08	2,523.06	0.00	0.00	0.00
14,200.00	90.00	179.61	11,557.00	-2,623.86	-107.39	2,623.06	0.00	0.00	0.00
14,300.00	90.00	179.61	11,557.00	-2,723.85	-106.71	2,723.06	0.00	0.00	0.00
14,400.00	90.00	179.61	11,557.00	-2,823.85	-106.02	2,823.06	0.00	0.00	0.00
14,500.00	90.00	179.61	11,557.00	-2,923.85	-105.33	2,923.06	0.00	0.00	0.00
14,600.00	90.00	179.61	11,557.00	-3,023.85	-104.65	3,023.06	0.00	0.00	0.00
14,700.00	90.00	179.61	11,557.00	-3,123.84	-103.96	3,123.06	0.00	0.00	0.00
14,800.00	90.00	179.61	11,557.00	-3,223.84	-103.27	3,223.06	0.00	0.00	0.00
14,900.00	90.00	179.61	11,557.00	-3,323.84	-102.59	3,323.06	0.00	0.00	0.00
15,000.00	90.00	179.61	11,557.00	-3,423.84	-101.90	3,423.06	0.00	0.00	0.00
15,100.00	90.00	179.61	11,557.00	-3,523.84	-101.22	3,523.06	0.00	0.00	0.00
15,200.00	90.00	179.61	11,557.00	-3,623.83	-100.53	3,623.06	0.00	0.00	0.00
15,300.00	90.00	179.61	11,557.00	-3,723.83	-99.84	3,723.06	0.00	0.00	0.00

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,400.00	90.00	179.61	11,557.00	-3,823.83	-99.16	3,823.06	0.00	0.00	0.00
15,500.00	90.00	179.61	11,557.00	-3,923.83	-98.47	3,923.06	0.00	0.00	0.00
15,600.00	90.00	179.61	11,557.00	-4,023.82	-97.78	4,023.06	0.00	0.00	0.00
15,700.00	90.00	179.61	11,557.00	-4,123.82	-97.10	4,123.06	0.00	0.00	0.00
15,800.00	90.00	179.61	11,557.00	-4,223.82	-96.41	4,223.06	0.00	0.00	0.00
15,900.00	90.00	179.61	11,557.00	-4,323.82	-95.72	4,323.06	0.00	0.00	0.00
16,000.00	90.00	179.61	11,557.00	-4,423.81	-95.04	4,423.06	0.00	0.00	0.00
16,100.00	90.00	179.61	11,557.00	-4,523.81	-94.35	4,523.06	0.00	0.00	0.00
16,200.00	90.00	179.61	11,557.00	-4,623.81	-93.66	4,623.06	0.00	0.00	0.00
16,300.00	90.00	179.61	11,557.00	-4,723.81	-92.98	4,723.06	0.00	0.00	0.00
16,400.00	90.00	179.61	11,557.00	-4,823.80	-92.29	4,823.06	0.00	0.00	0.00
16,500.00	90.00	179.61	11,557.00	-4,923.80	-91.60	4,923.06	0.00	0.00	0.00
16,600.00	90.00	179.61	11,557.00	-5,023.80	-90.92	5,023.06	0.00	0.00	0.00
16,700.00	90.00	179.61	11,557.00	-5,123.80	-90.23	5,123.06	0.00	0.00	0.00
16,800.00	90.00	179.61	11,557.00	-5,223.80	-89.54	5,223.06	0.00	0.00	0.00
16,900.00	90.00	179.61	11,557.00	-5,323.79	-88.86	5,323.06	0.00	0.00	0.00
17,000.00	90.00	179.61	11,557.00	-5,423.79	-88.17	5,423.06	0.00	0.00	0.00
17,100.00	90.00	179.61	11,557.00	-5,523.79	-87.48	5,523.06	0.00	0.00	0.00
17,200.00	90.00	179.61	11,557.00	-5,623.79	-86.80	5,623.06	0.00	0.00	0.00
17,300.00	90.00	179.61	11,557.00	-5,723.78	-86.11	5,723.06	0.00	0.00	0.00
17,400.00	90.00	179.61	11,557.00	-5,823.78	-85.43	5,823.06	0.00	0.00	0.00
17,500.00	90.00	179.61	11,557.00	-5,923.78	-84.74	5,923.06	0.00	0.00	0.00
17,600.00	90.00	179.61	11,557.00	-6,023.78	-84.05	6,023.06	0.00	0.00	0.00
17,700.00	90.00	179.61	11,557.00	-6,123.77	-83.37	6,123.06	0.00	0.00	0.00
17,800.00	90.00	179.61	11,557.00	-6,223.77	-82.68	6,223.06	0.00	0.00	0.00
17,900.00	90.00	179.61	11,557.00	-6,323.77	-81.99	6,323.06	0.00	0.00	0.00
18,000.00	90.00	179.61	11,557.00	-6,423.77	-81.31	6,423.06	0.00	0.00	0.00
18,100.00	90.00	179.61	11,557.00	-6,523.76	-80.62	6,523.06	0.00	0.00	0.00
18,200.00	90.00	179.61	11,557.00	-6,623.76	-79.93	6,623.06	0.00	0.00	0.00
18,300.00	90.00	179.61	11,557.00	-6,723.76	-79.25	6,723.06	0.00	0.00	0.00
18,400.00	90.00	179.61	11,557.00	-6,823.76	-78.56	6,823.06	0.00	0.00	0.00
18,500.00	90.00	179.61	11,557.00	-6,923.76	-77.87	6,923.06	0.00	0.00	0.00
18,600.00	90.00	179.61	11,557.00	-7,023.75	-77.19	7,023.06	0.00	0.00	0.00
18,700.00	90.00	179.61	11,557.00	-7,123.75	-76.50	7,123.06	0.00	0.00	0.00
18,800.00	90.00	179.61	11,557.00	-7,223.75	-75.81	7,223.06	0.00	0.00	0.00
18,900.00	90.00	179.61	11,557.00	-7,323.75	-75.13	7,323.06	0.00	0.00	0.00
19,000.00	90.00	179.61	11,557.00	-7,423.74	-74.44	7,423.06	0.00	0.00	0.00
19,100.00	90.00	179.61	11,557.00	-7,523.74	-73.75	7,523.06	0.00	0.00	0.00
19,200.00	90.00	179.61	11,557.00	-7,623.74	-73.07	7,623.06	0.00	0.00	0.00
19,300.00	90.00	179.61	11,557.00	-7,723.74	-72.38	7,723.06	0.00	0.00	0.00
19,400.00	90.00	179.61	11,557.00	-7,823.73	-71.69	7,823.06	0.00	0.00	0.00
19,500.00	90.00	179.61	11,557.00	-7,923.73	-71.01	7,923.06	0.00	0.00	0.00
19,600.00	90.00	179.61	11,557.00	-8,023.73	-70.32	8,023.06	0.00	0.00	0.00
19,700.00	90.00	179.61	11,557.00	-8,123.73	-69.64	8,123.06	0.00	0.00	0.00
19,800.00	90.00	179.61	11,557.00	-8,223.72	-68.95	8,223.06	0.00	0.00	0.00
19,900.00	90.00	179.61	11,557.00	-8,323.72	-68.26	8,323.06	0.00	0.00	0.00
20,000.00	90.00	179.61	11,557.00	-8,423.72	-67.58	8,423.06	0.00	0.00	0.00
20,100.00	90.00	179.61	11,557.00	-8,523.72	-66.89	8,523.06	0.00	0.00	0.00
20,200.00	90.00	179.61	11,557.00	-8,623.72	-66.20	8,623.06	0.00	0.00	0.00
20,300.00	90.00	179.61	11,557.00	-8,723.71	-65.52	8,723.06	0.00	0.00	0.00
20,400.00	90.00	179.61	11,557.00	-8,823.71	-64.83	8,823.06	0.00	0.00	0.00
20,500.00	90.00	179.61	11,557.00	-8,923.71	-64.14	8,923.06	0.00	0.00	0.00
20,600.00	90.00	179.61	11,557.00	-9,023.71	-63.46	9,023.06	0.00	0.00	0.00
20,700.00	90.00	179.61	11,557.00	-9,123.70	-62.77	9,123.06	0.00	0.00	0.00

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
20,800.00	90.00	179.61	11,557.00	-9,223.70	-62.08	9,223.06	0.00	0.00	0.00
20,900.00	90.00	179.61	11,557.00	-9,323.70	-61.40	9,323.06	0.00	0.00	0.00
21,000.00	90.00	179.61	11,557.00	-9,423.70	-60.71	9,423.06	0.00	0.00	0.00
21,100.00	90.00	179.61	11,557.00	-9,523.69	-60.02	9,523.06	0.00	0.00	0.00
21,200.00	90.00	179.61	11,557.00	-9,623.69	-59.34	9,623.06	0.00	0.00	0.00
21,300.00	90.00	179.61	11,557.00	-9,723.69	-58.65	9,723.06	0.00	0.00	0.00
21,400.00	90.00	179.61	11,557.00	-9,823.69	-57.96	9,823.06	0.00	0.00	0.00
21,500.00	90.00	179.61	11,557.00	-9,923.68	-57.28	9,923.06	0.00	0.00	0.00
21,600.00	90.00	179.61	11,557.00	-10,023.68	-56.59	10,023.06	0.00	0.00	0.00
21,642.42	90.00	179.61	11,557.00	-10,066.10	-56.30	10,065.48	0.00	0.00	0.00

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
PLU 18 TWR 105H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	440,185.20	660,653.20	32.2091192	-103.8139091
PLU 18 TWR 105H KOF - plan misses target center by 53.90usft at 10997.65usft MD (10984.05 TVD, 249.40 N, -70.00 E) - Point	0.00	0.00	10,984.04	249.40	-123.90	440,434.60	660,529.30	32.2098064	-103.8143058
PLU 18 TWR 105H 80° (- plan hits target center - Point	0.00	0.00	11,548.29	-222.54	-107.97	439,962.66	660,545.23	32.2085089	-103.8142616
PLU 18 TWR 105H LTP_ - plan misses target center by 0.01usft at 21512.42usft MD (11557.00 TVD, -9936.10 N, -57.19 E) - Point	0.00	0.00	11,557.00	-9,936.10	-57.20	430,249.10	660,596.00	32.1818067	-103.8142491
PLU 18 TWR 105H PBH - plan hits target center - Rectangle (sides W100.00 H10,036.00 D0.00)	0.00	0.00	11,557.00	-10,066.10	-56.30	430,119.10	660,596.90	32.1814493	-103.8142482
PLU 18 TWR 105H FTP_ - plan misses target center by 75.76usft at 11629.41usft MD (11495.35 TVD, -64.00 N, -95.22 E) - Point	0.00	0.00	11,557.00	-30.60	-123.90	440,154.60	660,529.30	32.2090367	-103.8143101
PLU 18 TWR 105H LP (- plan hits target center - Point	0.00	0.00	11,557.00	-321.71	-115.95	439,863.49	660,537.25	32.2082364	-103.8142890

Database:	XTO_EDM	**Local Co-ordinate Reference:**	Well 105H - Slot PLU 18 TWR 105H SHL
Company:	XTO Energy	**TVD Reference:**	3497+30 @ 3527.00usft (HP549)
Project:	Eddy County, NM (NAD27) NMEZ Grid	**MD Reference:**	3497+30 @ 3527.00usft (HP549)
Site:	PLU 18 TWR	**North Reference:**	Grid
Well:	105H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
577.00	577.00	Rustler			
667.00	667.00	Magenta Dolomite			
947.00	947.00	Top Salt			
4,070.65	4,062.00	Base Salt			
4,287.00	4,277.00	Delaware			
5,170.60	5,157.00	Cherry Canyon			
6,495.60	6,482.00	Brushy Canyon			
7,870.60	7,857.00	Basal Brushy Canyon			
8,160.60	8,147.00	Bone Spring			
8,260.60	8,247.00	Avalon Sand			
8,285.60	8,272.00	Upper Avalon Shale			
8,705.60	8,692.00	Lower Avalon Shale			
8,890.60	8,877.00	1st Bone Spring Lime			
9,125.60	9,112.00	1st Bone Spring Ss			
9,610.60	9,597.00	2nd Bone Spring Lime			
9,930.60	9,917.00	2nd Bone Spring Ss			
10,305.60	10,292.00	3rd Bone Spring Lm			
11,101.16	11,087.00	3rd Bone Spring Ss			
11,444.56	11,387.00	Red Hills SS			
11,611.46	11,487.00	Wolfcamp			
11,711.42	11,527.00	Wolfcamp X			
11,897.64	11,557.00	LP			