

District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-015-45310
5. Indicate Type of Lease STATE ☒ FEE ☐
6. State Oil & Gas Lease No. STATE
7. Lease Name or Unit Agreement Name REMUDA NORTH 31 STATE
8. Well Number 164H
9. OGRID Number 5380
10. Pool name or Wildcat WOLFCAMP

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☒ Other ☐ **ARTESIA DISTRICT**

2. Name of Operator
XTO ENERGY, INC

3. Address of Operator
6401 HOLIDAY HILL RD, BLDG 5, MIDLAND TX 79705 **RECEIVED**

4. Well Location
Unit Letter K : 2020 feet from the SOUTH line and 2420 feet from the WEST line
Section 31 Township 23S Range 30E NMPM County EDDY

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3215' GL

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☒
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐
CLOSED-LOOP SYSTEM ☐
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

XTO Energy, Inc requests permission to revise the casing/cement design. See attached:

Revised Drilling Program
Revised Directional Drill Plan

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Kelly Kardos TITLE Regulatory Coordinator DATE: 10/10/18

Type or print name Kelly Kardos E-mail address: kelly_kardos@xtoenergy.com PHONE: 432-620-4374

For State Use Only

APPROVED BY: Raymond W. Rodany TITLE Geologist DATE 10-12-18
Conditions of Approval (if any):

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

XTO Energy Inc.
Remuda North 31 State 164H
Projected TD: 24646' MD / 11555' TVD
SHL: 2020' FSL & 2420' FWL , Section 31, T23S, R30E
BHL: 200' FNL & 2310' FWL , Section 19, T23S, R30E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Quaternary

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	450'	Water
Top of Salt	574'	Water
Base of Salt	3303'	Water
Delaware	3545'	Water
Bone Spring	7264'	Water
1st Bone Spring Ss	8284'	Water/Oil/Gas
2nd Bone Spring Ss	9029'	Water/Oil/Gas
3rd Bone Spring Ss	10185'	Water/Oil/Gas
Wolfcamp	10550'	Water/Oil/Gas
Target/Land Curve	11555'	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 18-5/8" inch casing @ 549' (25' above the salt) and circulating cement back to surface. The salt will be isolated by setting 13-3/8" inch casing at 3328' and circulating cement to surface. The second intermediate will isolate from the salt down to the next casing seat by setting 9-5/8" inch casing at 10600' and a DV tool at 3378'. A 8-3/4" inch curve and lateral hole will be drilled to MD/TD and 5-1/2 inch casing will be set at TD and cemented back up to surface per Potash regulations.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 549'	18-5/8"	87.5	STC	H-40	New	1.60	2.51	11.64
17-1/2"	0' – 3328'	13-3/8"	68	STC	J-55	New	1.19	1.89	2.98
12-1/4"	0' – 10600'	9-5/8"	40	LTC	J-55	New	1.09	1.41	1.71
8-3/4"	0' – 24646'	5-1/2"	20	BTC	P-110	New	1.30	1.42	1.96

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" Collapse analyzed using 50% evacuation based on regional experience.
- 9-5/8" 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

Wellhead:

Temporary Wellhead

- 18-5/8" SOW bottom x 16-3/4" 2M top flange.

Permanent Wellhead – GE RSH Multibowl System

A. Starting Head: 13-5/8" 5M top flange x 13-3/8" SOW bottom

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 BLM Onshore Order 2
- Wellhead Manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 18-5/8", 87.5 New H-40, STC casing to be set at +/- 549'

Lead: 330 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft3/sx, 10.13 gal/sx water)

Tail: 550 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: 13-3/8", 68 New J-55, STC casing to be set at +/- 3328'

Lead: 2240 sxs EconoCem-HLTRRC (mixed at 12.9 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

2nd Intermediate Casing: 9-5/8", 40 New J-55, LTC casing to be set at +/- 10600'

ECP/DV Tool to be set at 3378'

1st Stage

Lead: 2230 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 230 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: 950 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 230 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: 5-1/2", 20 New P-110, BTC casing to be set at +/- 24646'

Lead: 1280 sxs NeoCem (mixed at 10.5 ppg, 2.69 ft3/sx, 12.26 gal/sx water)

Tail: 2870 sxs VersaCem (mixed at 13.2 ppg, 1.61 ft3/sx, 8.38 gal/sx water)

Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) on surface casing temporary wellhead will consist of a 21-1/4" minimum 2M Hydril. MASP should not exceed 1016 psi.

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 10M Hydril and a 13-5/8" minimum 10M Double Ram BOP. MASP should not exceed 5269 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-3/8", 10M bradenhead and flange, the BOP test will be limited to 510000 psi. When nipping up on the 9-5/8", the BOP will be tested to a minimum of 510000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 10M 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.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 549'	24"	FW/Native	8.4-8.8	35-40	NC
549' - 3328'	17-1/2"	Brine	9.8-10.2	30-32	NC
3328' to 10600'	12-1/4"	FW / Cut Brine	8.7-9.4	30-32	NC
10600' to 24646'	8-3/4"	Cut Brine / Polymer	12.7 - 13	29-32	NC - 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 18-5/8" surface casing with brine solution. A ppg-10.2ppg brine mud will be used while drilling through the salt formation. 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 intermediate casing.

Open hole logging will not be done on this well.

9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 178.995 to 198.995 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 7811 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.



XTO Energy

Eddy County, NM (NAD-27)

Remuda North 31 State

#164H

OH

Plan: PERMIT Rev2

Standard Planning Report

09 October, 2018



Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev2

PROJECT DETAILS: Eddy County, NM (NAD-27)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

WELL DETAILS: #164H

Rig Name: RKB = 30' @ 3245.00usft
Ground Level: 3215.00
Northing: 458327.90
Easting: 627363.40
Latitude: 32.259388
Longitude: -103.921249

DESIGN TARGET DETAILS

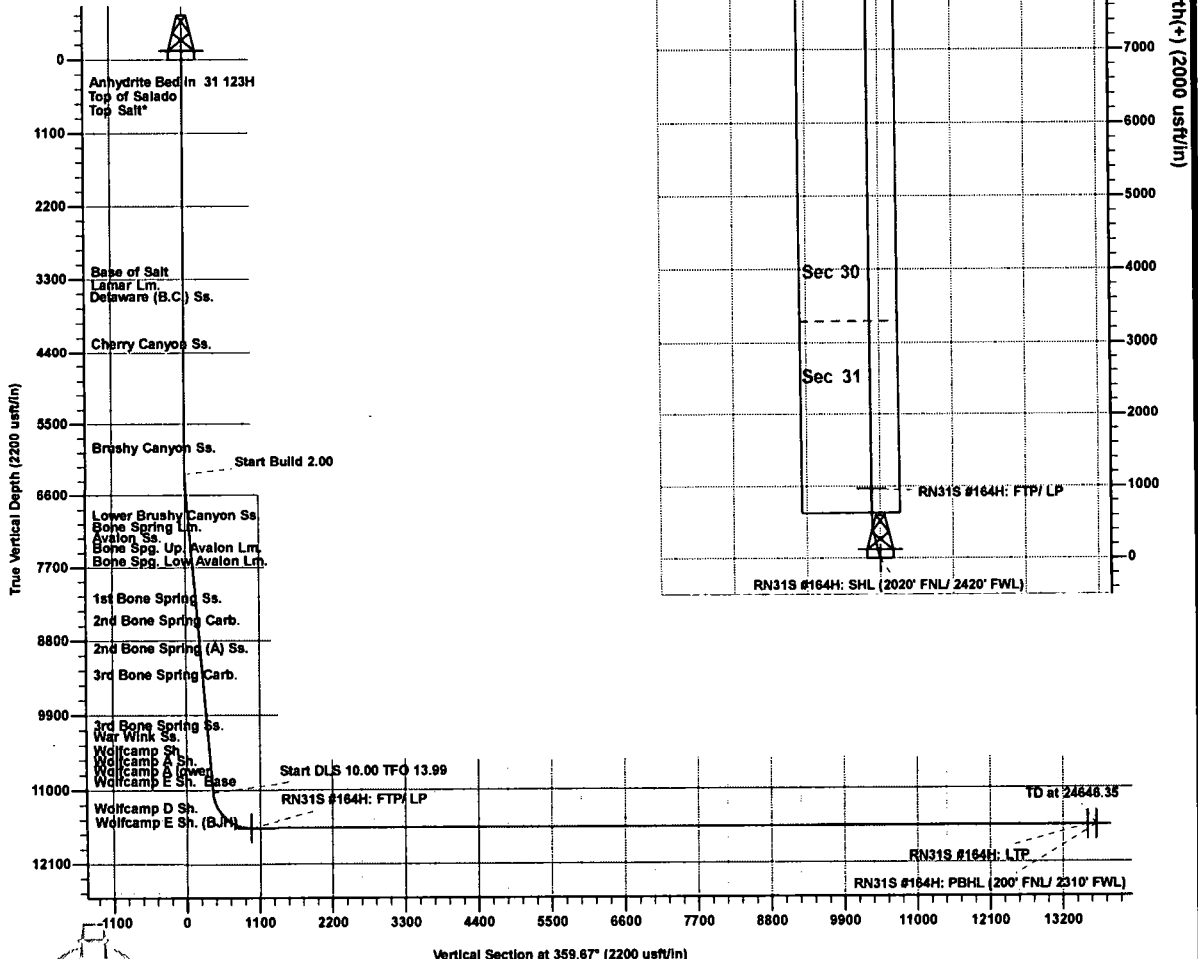
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
RN31S #164H: SHL (2020' FNL/ 2420' FWL)	0.00	0.00	0.00	458327.90	627363.40	32.259388	-103.921249	Point
RN31S #164H: PBHL (200' FNL/ 2310' FWL)	11555.00	13703.20	-186.50	472031.10	627196.90	32.297059	-103.921683	Point
RN31S #164H: LTP	11555.07	13573.20	-185.60	471901.10	627197.80	32.296702	-103.921681	Point
RN31S #164H: FTP/LP	11562.00	964.00	-114.20	459291.90	627269.20	32.262039	-103.921607	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	6275.00	0.00	0.00	6275.00	0.00	0.00	0.00	0.00	0.00
3	6524.76	5.00	345.73	8524.45	10.55	-2.88	2.00	345.73	10.56
4	11055.10	5.00	345.73	11037.58	392.85	-99.91	0.00	0.00	393.42
5	11906.94	90.03	359.67	11562.00	964.00	-114.20	10.00	13.89	964.84
6	24516.34	90.03	359.67	11555.07	13573.20	-185.76	0.00	0.00	13574.04
7	24646.35	90.03	359.67	11555.00	13703.20	-186.50	0.00	0.00	13704.05

FORMATION TOP DETAILS

TVDPath	Formation
450.00	Anhydrite Bed in 31 123H
506.00	Top of Salado
574.00	Top Salt*
3303.00	Base of Salt
3516.00	Lamar Lm.
3545.00	Delaware (B.C.) Ss.
4377.00	Cherry Canyon Ss.
5981.00	Brushy Canyon Ss.
7021.00	Lower Brushy Canyon Ss.
7264.00	Bone Spring Lm.
7337.00	Avalon Ss.
7446.00	Bone Spg. Up. Avalon Lm.
7719.00	Bone Spg. Low Avalon Lm.
8284.00	1st Bone Spring Ss.
8611.00	2nd Bone Spring Carb.
9029.00	2nd Bone Spring (A) Ss.
9417.00	3rd Bone Spring Carb.
10185.00	3rd Bone Spring Ss.
10412.00	War Wink Ss.
10497.00	Red Hills Ss. Low
10550.00	Wolfcamp Sh
10578.00	Wolfcamp X Sd
10643.00	Wolfcamp Y Sd
10686.00	Wolfcamp A Sh.
10807.00	Wolfcamp A lower
10920.00	Wolfcamp E Sh. Base
11360.00	Wolfcamp D Sh.
11520.00	Wolfcamp E Sh. (BUH)



The customer should only rely on this document after independently verifying all paths, targets, coordinates, hole and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by Prototype are at the sole risk and responsibility of the customer.

Plan: PERMIT Rev2 (#164H/OH)

Created By: Prototype Well Planning, LLC Date: 7:07, October 09 2018



Database: EDM 5000.1 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev2

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM (NAD-27)		
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	Remuda North 31 State			
Site Position:		Northing:	458,327.90 usft	Latitude: 32.259388
From:	Map	Easting:	627,383.40 usft	Longitude: -103.921250
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.22 °

Well	#164H			
Well Position	+N/-S	0.00 usft	Northing:	458,327.90 usft
	+E/-W	0.00 usft	Easting:	627,383.40 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft
			Ground Level:	3,215.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/25/2018	6.98	60.02	47,793

Design	PERMIT Rev2			
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	359.67

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Buidl 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	
6,275.00	0.00	0.01	6,275.00	0.00	0.00	0.00	0.00	0.00	0.01	
6,524.76	5.00	345.73	6,524.45	10.55	-2.68	2.00	2.00	0.00	345.73	
11,055.10	5.00	345.73	11,037.58	392.85	-99.91	0.00	0.00	0.00	0.00	
11,906.94	90.03	359.67	11,562.00	964.00	-114.20	10.00	9.98	1.64	13.99	RN31S #164H: FTF
24,516.34	90.03	359.67	11,555.07	13,573.20	-185.76	0.00	0.00	0.00	0.00	RN31S #164H: LTF
24,646.35	90.03	359.67	11,555.00	13,703.20	-186.50	0.00	0.00	0.00	0.00	RN31S #164H: PBI



Database: EDM 5000.1 Single User Db
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Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
450.00	0.00	0.00	450.00	0.00	0.00	0.00	0.00	0.00	0.00
Anhydrite Bed in 31 123H									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
506.00	0.00	0.00	506.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salado									
574.00	0.00	0.00	574.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt*									
600.00	0.00	0.00	600.00	0.00	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	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
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	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,303.00	0.00	0.00	3,303.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,516.00	0.00	0.00	3,516.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar Lm.									
3,545.00	0.00	0.00	3,545.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware (B.C.) Ss.									
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00



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 Company: XTO Energy
 Project: Eddy County, NM (NAD-27)
 Site: Remuda North 31 State
 Well: #164H
 Wellbore: OH
 Design: PERMIT Rev2

Local Co-ordinate Reference: Well #164H
 TVD Reference: RKB = 30' @ 3245.00usft
 MD Reference: RKB = 30' @ 3245.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,377.00	0.00	0.00	4,377.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherry Canyon Ss.									
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,981.00	0.00	0.00	5,981.00	0.00	0.00	0.00	0.00	0.00	0.00
Brushy Canyon Ss.									
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,275.00	0.00	0.01	6,275.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.50	345.73	6,300.00	0.11	-0.03	0.11	2.00	2.00	0.00
6,400.00	2.50	345.73	6,399.96	2.64	-0.67	2.65	2.00	2.00	0.00
6,500.00	4.50	345.73	6,499.77	8.56	-2.18	8.57	2.00	2.00	0.00
6,524.76	5.00	345.73	6,524.45	10.55	-2.68	10.56	2.00	2.00	0.00
6,600.00	5.00	345.73	6,599.40	16.89	-4.30	16.92	0.00	0.00	0.00
6,700.00	5.00	345.73	6,699.02	25.33	-6.44	25.37	0.00	0.00	0.00
6,800.00	5.00	345.73	6,798.64	33.77	-8.59	33.82	0.00	0.00	0.00
6,900.00	5.00	345.73	6,898.26	42.21	-10.73	42.27	0.00	0.00	0.00
7,000.00	5.00	345.73	6,997.88	50.65	-12.88	50.72	0.00	0.00	0.00
7,023.21	5.00	345.73	7,021.00	52.61	-13.38	52.68	0.00	0.00	0.00
Lower Brushy Canyon Ss.									
7,100.00	5.00	345.73	7,097.50	59.09	-15.03	59.17	0.00	0.00	0.00
7,200.00	5.00	345.73	7,197.12	67.53	-17.17	67.62	0.00	0.00	0.00
7,267.14	5.00	345.73	7,264.00	73.19	-18.61	73.30	0.00	0.00	0.00
Bone Spring Lm.									
7,300.00	5.00	345.73	7,296.74	75.97	-19.32	76.08	0.00	0.00	0.00
7,340.41	5.00	345.73	7,337.00	79.38	-20.19	79.49	0.00	0.00	0.00
Avalon Ss.									
7,400.00	5.00	345.73	7,396.36	84.40	-21.47	84.53	0.00	0.00	0.00
7,449.83	5.00	345.73	7,446.00	88.61	-22.53	88.74	0.00	0.00	0.00
Bone Spg. Up. Avalon Lm.									
7,500.00	5.00	345.73	7,495.98	92.84	-23.61	92.98	0.00	0.00	0.00
7,600.00	5.00	345.73	7,595.60	101.28	-25.76	101.43	0.00	0.00	0.00
7,700.00	5.00	345.73	7,695.22	109.72	-27.90	109.88	0.00	0.00	0.00
7,723.87	5.00	345.73	7,719.00	111.73	-28.42	111.90	0.00	0.00	0.00
Bone Spg. Low Avalon Lm.									



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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
7,800.00	5.00	345.73	7,794.84	118.16	-30.05	118.33	0.00	0.00	0.00
7,900.00	5.00	345.73	7,894.46	126.60	-32.20	126.78	0.00	0.00	0.00
8,000.00	5.00	345.73	7,994.08	135.04	-34.34	135.23	0.00	0.00	0.00
8,100.00	5.00	345.73	8,093.70	143.48	-36.49	143.68	0.00	0.00	0.00
8,200.00	5.00	345.73	8,193.32	151.91	-38.63	152.13	0.00	0.00	0.00
8,291.02	5.00	345.73	8,284.00	159.60	-40.59	159.83	0.00	0.00	0.00
1st Bone Spring Ss.									
8,300.00	5.00	345.73	8,292.94	160.35	-40.78	160.59	0.00	0.00	0.00
8,400.00	5.00	345.73	8,392.56	168.79	-42.93	169.04	0.00	0.00	0.00
8,500.00	5.00	345.73	8,492.18	177.23	-45.07	177.49	0.00	0.00	0.00
8,600.00	5.00	345.73	8,591.80	185.67	-47.22	185.94	0.00	0.00	0.00
8,619.27	5.00	345.73	8,611.00	187.30	-47.63	187.57	0.00	0.00	0.00
2nd Bone Spring Carb.									
8,700.00	5.00	345.73	8,691.42	194.11	-49.36	194.39	0.00	0.00	0.00
8,800.00	5.00	345.73	8,791.04	202.55	-51.51	202.84	0.00	0.00	0.00
8,900.00	5.00	345.73	8,890.66	210.99	-53.66	211.29	0.00	0.00	0.00
9,000.00	5.00	345.73	8,990.28	219.42	-55.80	219.74	0.00	0.00	0.00
9,038.87	5.00	345.73	9,029.00	222.70	-56.64	223.03	0.00	0.00	0.00
2nd Bone Spring (A) Ss.									
9,100.00	5.00	345.73	9,089.90	227.86	-57.95	228.19	0.00	0.00	0.00
9,200.00	5.00	345.73	9,189.52	236.30	-60.09	236.64	0.00	0.00	0.00
9,300.00	5.00	345.73	9,289.14	244.74	-62.24	245.09	0.00	0.00	0.00
9,400.00	5.00	345.73	9,388.76	253.18	-64.39	253.55	0.00	0.00	0.00
9,428.34	5.00	345.73	9,417.00	255.57	-65.00	255.94	0.00	0.00	0.00
3rd Bone Spring Carb.									
9,500.00	5.00	345.73	9,488.38	261.62	-66.53	262.00	0.00	0.00	0.00
9,600.00	5.00	345.73	9,588.00	270.06	-68.68	270.45	0.00	0.00	0.00
9,700.00	5.00	345.73	9,687.62	278.50	-70.83	278.90	0.00	0.00	0.00
9,800.00	5.00	345.73	9,787.24	286.93	-72.97	287.35	0.00	0.00	0.00
9,900.00	5.00	345.73	9,886.86	295.37	-75.12	295.80	0.00	0.00	0.00
10,000.00	5.00	345.73	9,986.48	303.81	-77.26	304.25	0.00	0.00	0.00
10,100.00	5.00	345.73	10,086.10	312.25	-79.41	312.70	0.00	0.00	0.00
10,199.27	5.00	345.73	10,185.00	320.63	-81.54	321.09	0.00	0.00	0.00
3rd Bone Spring Ss.									
10,200.00	5.00	345.73	10,185.72	320.69	-81.56	321.15	0.00	0.00	0.00
10,300.00	5.00	345.73	10,285.35	329.13	-83.70	329.60	0.00	0.00	0.00
10,400.00	5.00	345.73	10,384.97	337.57	-85.85	338.06	0.00	0.00	0.00
10,427.14	5.00	345.73	10,412.00	339.86	-86.43	340.35	0.00	0.00	0.00
War Wink Ss.									
10,500.00	5.00	345.73	10,484.59	346.01	-87.99	346.51	0.00	0.00	0.00
10,512.46	5.00	345.73	10,497.00	347.06	-88.26	347.56	0.00	0.00	0.00
Red Hills Ss. Low									
10,565.66	5.00	345.73	10,550.00	351.55	-89.40	352.06	0.00	0.00	0.00
Wolfcamp Sh									
10,593.77	5.00	345.73	10,578.00	353.92	-90.01	354.43	0.00	0.00	0.00
Wolfcamp X Sd									
10,600.00	5.00	345.73	10,584.21	354.44	-90.14	354.96	0.00	0.00	0.00
10,659.02	5.00	345.73	10,643.00	359.42	-91.41	359.95	0.00	0.00	0.00
Wolfcamp Y Sd									
10,700.00	5.00	345.73	10,683.83	362.88	-92.29	363.41	0.00	0.00	0.00
10,702.18	5.00	345.73	10,686.00	363.07	-92.33	363.59	0.00	0.00	0.00
Wolfcamp A Sh.									
10,800.00	5.00	345.73	10,783.45	371.32	-94.43	371.86	0.00	0.00	0.00



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10,823.64	5.00	345.73	10,807.00	373.32	-94.94	373.86	0.00	0.00	0.00
Wolfcamp A lower									
10,900.00	5.00	345.73	10,883.07	379.76	-96.58	380.31	0.00	0.00	0.00
10,937.08	5.00	345.73	10,920.00	382.89	-97.37	383.44	0.00	0.00	0.00
Wolfcamp E Sh. Base									
11,000.00	5.00	345.73	10,982.69	388.20	-98.72	388.76	0.00	0.00	0.00
11,055.10	5.00	345.73	11,037.58	392.85	-99.91	393.42	0.00	0.00	0.00
11,100.00	9.41	352.38	11,082.11	398.39	-100.88	398.96	10.00	9.84	14.80
11,150.00	14.39	354.96	11,131.02	408.63	-101.96	409.21	10.00	9.95	5.18
11,200.00	19.37	356.24	11,178.85	423.11	-103.05	423.69	10.00	9.97	2.55
11,250.00	24.37	357.01	11,225.24	441.69	-104.14	442.29	10.00	9.98	1.54
11,300.00	29.36	357.53	11,269.83	464.25	-105.20	464.85	10.00	9.99	1.04
11,350.00	34.36	357.91	11,312.29	490.62	-106.25	491.22	10.00	9.99	0.76
11,400.00	39.35	358.20	11,352.28	520.58	-107.26	521.19	10.00	9.99	0.59
11,436.84	43.04	358.38	11,380.00	544.83	-107.98	545.44	10.00	9.99	0.49
Wolfcamp D Sh.									
11,450.00	44.35	358.44	11,389.51	553.91	-108.24	554.53	10.00	10.00	0.44
11,500.00	49.35	358.64	11,423.70	590.37	-109.16	590.99	10.00	10.00	0.40
11,550.00	54.35	358.81	11,454.58	629.66	-110.04	630.29	10.00	10.00	0.34
11,600.00	59.35	358.96	11,481.91	671.50	-110.85	672.13	10.00	10.00	0.30
11,650.00	64.34	359.09	11,505.50	715.57	-111.60	716.20	10.00	10.00	0.27
11,685.85	67.93	359.18	11,520.00	748.35	-112.09	748.98	10.00	10.00	0.25
Wolfcamp E Sh. (BJH)									
11,700.00	69.34	359.22	11,525.15	761.52	-112.27	762.15	10.00	10.00	0.24
11,750.00	74.34	359.34	11,540.73	809.01	-112.87	809.65	10.00	10.00	0.23
11,800.00	79.34	359.45	11,552.11	857.68	-113.39	858.32	10.00	10.00	0.22
11,850.00	84.34	359.55	11,559.21	907.15	-113.82	907.80	10.00	10.00	0.22
11,900.00	89.34	359.66	11,561.96	957.06	-114.16	957.70	10.00	10.00	0.21
11,906.94	90.03	359.67	11,562.00	964.00	-114.20	964.64	10.00	10.00	0.21
12,000.00	90.03	359.67	11,561.95	1,057.06	-114.73	1,057.70	0.00	0.00	0.00
12,100.00	90.03	359.67	11,561.89	1,157.06	-115.30	1,157.70	0.00	0.00	0.00
12,200.00	90.03	359.67	11,561.84	1,257.06	-115.86	1,257.70	0.00	0.00	0.00
12,300.00	90.03	359.67	11,561.78	1,357.05	-116.43	1,357.70	0.00	0.00	0.00
12,400.00	90.03	359.67	11,561.73	1,457.05	-117.00	1,457.70	0.00	0.00	0.00
12,500.00	90.03	359.67	11,561.67	1,557.05	-117.57	1,557.70	0.00	0.00	0.00
12,600.00	90.03	359.67	11,561.62	1,657.05	-118.13	1,657.70	0.00	0.00	0.00
12,700.00	90.03	359.67	11,561.56	1,757.05	-118.70	1,757.70	0.00	0.00	0.00
12,800.00	90.03	359.67	11,561.51	1,857.05	-119.27	1,857.70	0.00	0.00	0.00
12,900.00	90.03	359.67	11,561.45	1,957.05	-119.84	1,957.70	0.00	0.00	0.00
13,000.00	90.03	359.67	11,561.40	2,057.04	-120.40	2,057.70	0.00	0.00	0.00
13,100.00	90.03	359.67	11,561.34	2,157.04	-120.97	2,157.70	0.00	0.00	0.00
13,200.00	90.03	359.67	11,561.29	2,257.04	-121.54	2,257.70	0.00	0.00	0.00
13,300.00	90.03	359.67	11,561.23	2,357.04	-122.11	2,357.70	0.00	0.00	0.00
13,400.00	90.03	359.67	11,561.18	2,457.04	-122.67	2,457.70	0.00	0.00	0.00
13,500.00	90.03	359.67	11,561.12	2,557.04	-123.24	2,557.70	0.00	0.00	0.00
13,600.00	90.03	359.67	11,561.07	2,657.03	-123.81	2,657.70	0.00	0.00	0.00
13,700.00	90.03	359.67	11,561.02	2,757.03	-124.38	2,757.70	0.00	0.00	0.00
13,800.00	90.03	359.67	11,560.96	2,857.03	-124.94	2,857.70	0.00	0.00	0.00
13,900.00	90.03	359.67	11,560.91	2,957.03	-125.51	2,957.70	0.00	0.00	0.00
14,000.00	90.03	359.67	11,560.85	3,057.03	-126.08	3,057.70	0.00	0.00	0.00
14,100.00	90.03	359.67	11,560.80	3,157.03	-126.65	3,157.70	0.00	0.00	0.00
14,200.00	90.03	359.67	11,560.74	3,257.02	-127.21	3,257.70	0.00	0.00	0.00
14,300.00	90.03	359.67	11,560.69	3,357.02	-127.78	3,357.70	0.00	0.00	0.00



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14,400.00	90.03	359.67	11,560.63	3,457.02	-128.35	3,457.70	0.00	0.00	0.00
14,500.00	90.03	359.67	11,560.58	3,557.02	-128.92	3,557.70	0.00	0.00	0.00
14,600.00	90.03	359.67	11,560.52	3,657.02	-129.48	3,657.70	0.00	0.00	0.00
14,700.00	90.03	359.67	11,560.47	3,757.02	-130.05	3,757.70	0.00	0.00	0.00
14,800.00	90.03	359.67	11,560.41	3,857.01	-130.62	3,857.70	0.00	0.00	0.00
14,900.00	90.03	359.67	11,560.36	3,957.01	-131.19	3,957.70	0.00	0.00	0.00
15,000.00	90.03	359.67	11,560.30	4,057.01	-131.75	4,057.70	0.00	0.00	0.00
15,100.00	90.03	359.67	11,560.25	4,157.01	-132.32	4,157.70	0.00	0.00	0.00
15,200.00	90.03	359.67	11,560.19	4,257.01	-132.89	4,257.70	0.00	0.00	0.00
15,300.00	90.03	359.67	11,560.14	4,357.01	-133.46	4,357.70	0.00	0.00	0.00
15,400.00	90.03	359.67	11,560.08	4,457.00	-134.02	4,457.70	0.00	0.00	0.00
15,500.00	90.03	359.67	11,560.03	4,557.00	-134.59	4,557.70	0.00	0.00	0.00
15,600.00	90.03	359.67	11,559.97	4,657.00	-135.16	4,657.70	0.00	0.00	0.00
15,700.00	90.03	359.67	11,559.92	4,757.00	-135.73	4,757.70	0.00	0.00	0.00
15,800.00	90.03	359.67	11,559.86	4,857.00	-136.29	4,857.70	0.00	0.00	0.00
15,900.00	90.03	359.67	11,559.81	4,957.00	-136.86	4,957.70	0.00	0.00	0.00
16,000.00	90.03	359.67	11,559.75	5,056.99	-137.43	5,057.70	0.00	0.00	0.00
16,100.00	90.03	359.67	11,559.70	5,156.99	-138.00	5,157.70	0.00	0.00	0.00
16,200.00	90.03	359.67	11,559.64	5,256.99	-138.56	5,257.70	0.00	0.00	0.00
16,300.00	90.03	359.67	11,559.59	5,356.99	-139.13	5,357.70	0.00	0.00	0.00
16,400.00	90.03	359.67	11,559.53	5,456.99	-139.70	5,457.70	0.00	0.00	0.00
16,500.00	90.03	359.67	11,559.48	5,556.99	-140.27	5,557.70	0.00	0.00	0.00
16,600.00	90.03	359.67	11,559.42	5,656.99	-140.83	5,657.70	0.00	0.00	0.00
16,700.00	90.03	359.67	11,559.37	5,756.98	-141.40	5,757.70	0.00	0.00	0.00
16,800.00	90.03	359.67	11,559.31	5,856.98	-141.97	5,857.70	0.00	0.00	0.00
16,900.00	90.03	359.67	11,559.26	5,956.98	-142.54	5,957.70	0.00	0.00	0.00
17,000.00	90.03	359.67	11,559.20	6,056.98	-143.10	6,057.70	0.00	0.00	0.00
17,100.00	90.03	359.67	11,559.15	6,156.98	-143.67	6,157.70	0.00	0.00	0.00
17,200.00	90.03	359.67	11,559.09	6,256.98	-144.24	6,257.70	0.00	0.00	0.00
17,300.00	90.03	359.67	11,559.04	6,356.97	-144.81	6,357.70	0.00	0.00	0.00
17,400.00	90.03	359.67	11,558.98	6,456.97	-145.37	6,457.70	0.00	0.00	0.00
17,500.00	90.03	359.67	11,558.93	6,556.97	-145.94	6,557.70	0.00	0.00	0.00
17,600.00	90.03	359.67	11,558.87	6,656.97	-146.51	6,657.70	0.00	0.00	0.00
17,700.00	90.03	359.67	11,558.82	6,756.97	-147.08	6,757.70	0.00	0.00	0.00
17,800.00	90.03	359.67	11,558.76	6,856.97	-147.64	6,857.70	0.00	0.00	0.00
17,900.00	90.03	359.67	11,558.71	6,956.96	-148.21	6,957.70	0.00	0.00	0.00
18,000.00	90.03	359.67	11,558.65	7,056.96	-148.78	7,057.70	0.00	0.00	0.00
18,100.00	90.03	359.67	11,558.60	7,156.96	-149.35	7,157.70	0.00	0.00	0.00
18,200.00	90.03	359.67	11,558.54	7,256.96	-149.92	7,257.70	0.00	0.00	0.00
18,300.00	90.03	359.67	11,558.49	7,356.96	-150.48	7,357.70	0.00	0.00	0.00
18,400.00	90.03	359.67	11,558.43	7,456.96	-151.05	7,457.70	0.00	0.00	0.00
18,500.00	90.03	359.67	11,558.38	7,556.95	-151.62	7,557.70	0.00	0.00	0.00
18,600.00	90.03	359.67	11,558.32	7,656.95	-152.19	7,657.70	0.00	0.00	0.00
18,700.00	90.03	359.67	11,558.27	7,756.95	-152.75	7,757.70	0.00	0.00	0.00
18,800.00	90.03	359.67	11,558.21	7,856.95	-153.32	7,857.70	0.00	0.00	0.00
18,900.00	90.03	359.67	11,558.16	7,956.95	-153.89	7,957.70	0.00	0.00	0.00
19,000.00	90.03	359.67	11,558.10	8,056.95	-154.46	8,057.70	0.00	0.00	0.00
19,100.00	90.03	359.67	11,558.05	8,156.94	-155.02	8,157.70	0.00	0.00	0.00
19,200.00	90.03	359.67	11,557.99	8,256.94	-155.59	8,257.70	0.00	0.00	0.00
19,300.00	90.03	359.67	11,557.94	8,356.94	-156.16	8,357.70	0.00	0.00	0.00
19,400.00	90.03	359.67	11,557.88	8,456.94	-156.73	8,457.70	0.00	0.00	0.00
19,500.00	90.03	359.67	11,557.83	8,556.94	-157.29	8,557.70	0.00	0.00	0.00
19,600.00	90.03	359.67	11,557.77	8,656.94	-157.86	8,657.70	0.00	0.00	0.00
19,700.00	90.03	359.67	11,557.72	8,756.93	-158.43	8,757.70	0.00	0.00	0.00



www.prototypewellplanning.com
Planning Report

Database: EDM 5000.1 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev2

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,800.00	90.03	359.67	11,557.66	8,856.93	-159.00	8,857.70	0.00	0.00	0.00
19,900.00	90.03	359.67	11,557.61	8,956.93	-159.56	8,957.70	0.00	0.00	0.00
20,000.00	90.03	359.67	11,557.55	9,056.93	-160.13	9,057.70	0.00	0.00	0.00
20,100.00	90.03	359.67	11,557.50	9,156.93	-160.70	9,157.70	0.00	0.00	0.00
20,200.00	90.03	359.67	11,557.44	9,256.93	-161.27	9,257.70	0.00	0.00	0.00
20,300.00	90.03	359.67	11,557.39	9,356.93	-161.83	9,357.70	0.00	0.00	0.00
20,400.00	90.03	359.67	11,557.33	9,456.92	-162.40	9,457.70	0.00	0.00	0.00
20,500.00	90.03	359.67	11,557.28	9,556.92	-162.97	9,557.70	0.00	0.00	0.00
20,600.00	90.03	359.67	11,557.22	9,656.92	-163.54	9,657.70	0.00	0.00	0.00
20,700.00	90.03	359.67	11,557.17	9,756.92	-164.10	9,757.70	0.00	0.00	0.00
20,800.00	90.03	359.67	11,557.11	9,856.92	-164.67	9,857.70	0.00	0.00	0.00
20,900.00	90.03	359.67	11,557.06	9,956.92	-165.24	9,957.70	0.00	0.00	0.00
21,000.00	90.03	359.67	11,557.00	10,056.91	-165.81	10,057.70	0.00	0.00	0.00
21,100.00	90.03	359.67	11,556.95	10,156.91	-166.37	10,157.70	0.00	0.00	0.00
21,200.00	90.03	359.67	11,556.89	10,256.91	-166.94	10,257.70	0.00	0.00	0.00
21,300.00	90.03	359.67	11,556.84	10,356.91	-167.51	10,357.70	0.00	0.00	0.00
21,400.00	90.03	359.67	11,556.78	10,456.91	-168.08	10,457.70	0.00	0.00	0.00
21,500.00	90.03	359.67	11,556.73	10,556.91	-168.64	10,557.70	0.00	0.00	0.00
21,600.00	90.03	359.67	11,556.67	10,656.90	-169.21	10,657.70	0.00	0.00	0.00
21,700.00	90.03	359.67	11,556.62	10,756.90	-169.78	10,757.70	0.00	0.00	0.00
21,800.00	90.03	359.67	11,556.56	10,856.90	-170.35	10,857.70	0.00	0.00	0.00
21,900.00	90.03	359.67	11,556.51	10,956.90	-170.91	10,957.70	0.00	0.00	0.00
22,000.00	90.03	359.67	11,556.45	11,056.90	-171.48	11,057.70	0.00	0.00	0.00
22,100.00	90.03	359.67	11,556.40	11,156.90	-172.05	11,157.70	0.00	0.00	0.00
22,200.00	90.03	359.67	11,556.34	11,256.89	-172.62	11,257.70	0.00	0.00	0.00
22,300.00	90.03	359.67	11,556.29	11,356.89	-173.18	11,357.70	0.00	0.00	0.00
22,400.00	90.03	359.67	11,556.23	11,456.89	-173.75	11,457.70	0.00	0.00	0.00
22,500.00	90.03	359.67	11,556.18	11,556.89	-174.32	11,557.70	0.00	0.00	0.00
22,600.00	90.03	359.67	11,556.12	11,656.89	-174.89	11,657.70	0.00	0.00	0.00
22,700.00	90.03	359.67	11,556.07	11,756.89	-175.45	11,757.70	0.00	0.00	0.00
22,800.00	90.03	359.67	11,556.01	11,856.88	-176.02	11,857.70	0.00	0.00	0.00
22,900.00	90.03	359.67	11,555.96	11,956.88	-176.59	11,957.70	0.00	0.00	0.00
23,000.00	90.03	359.67	11,555.90	12,056.88	-177.16	12,057.70	0.00	0.00	0.00
23,100.00	90.03	359.67	11,555.85	12,156.88	-177.72	12,157.70	0.00	0.00	0.00
23,200.00	90.03	359.67	11,555.79	12,256.88	-178.29	12,257.70	0.00	0.00	0.00
23,300.00	90.03	359.67	11,555.74	12,356.88	-178.86	12,357.70	0.00	0.00	0.00
23,400.00	90.03	359.67	11,555.69	12,456.87	-179.43	12,457.70	0.00	0.00	0.00
23,500.00	90.03	359.67	11,555.63	12,556.87	-179.99	12,557.70	0.00	0.00	0.00
23,600.00	90.03	359.67	11,555.58	12,656.87	-180.56	12,657.70	0.00	0.00	0.00
23,700.00	90.03	359.67	11,555.52	12,756.87	-181.13	12,757.70	0.00	0.00	0.00
23,800.00	90.03	359.67	11,555.47	12,856.87	-181.70	12,857.70	0.00	0.00	0.00
23,900.00	90.03	359.67	11,555.41	12,956.87	-182.26	12,957.70	0.00	0.00	0.00
24,000.00	90.03	359.67	11,555.36	13,056.87	-182.83	13,057.70	0.00	0.00	0.00
24,100.00	90.03	359.67	11,555.30	13,156.86	-183.40	13,157.70	0.00	0.00	0.00
24,200.00	90.03	359.67	11,555.25	13,256.86	-183.97	13,257.70	0.00	0.00	0.00
24,300.00	90.03	359.67	11,555.19	13,356.86	-184.53	13,357.70	0.00	0.00	0.00
24,400.00	90.03	359.67	11,555.14	13,456.86	-185.10	13,457.70	0.00	0.00	0.00
24,500.00	90.03	359.67	11,555.08	13,556.86	-185.67	13,557.70	0.00	0.00	0.00
24,516.34	90.03	359.67	11,555.07	13,573.20	-185.76	13,574.04	0.00	0.00	0.00
24,600.00	90.03	359.67	11,555.03	13,656.86	-186.24	13,657.70	0.00	0.00	0.00
24,646.35	90.03	359.67	11,555.00	13,703.20	-186.50	13,704.05	0.00	0.00	0.00



Database: EDM 5000.1 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev2

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
RN31S #164H: SHL (: - plan hits target center - Point	0.00	0.01	0.00	0.00	0.00	458,327.90	627,383.40	32.259388	-103.921250
RN31S #164H: PBHL - plan hits target center - Point	0.00	0.01	11,555.00	13,703.20	-186.50	472,031.10	627,196.90	32.297059	-103.921683
RN31S #164H: LTP - plan misses target center by 0.16usft at 24516.34usft MD (11555.07 TVD, 13573.20 N, -185.76 E) - Point	0.00	0.01	11,555.07	13,573.20	-185.60	471,901.10	627,197.80	32.296702	-103.921682
RN31S #164H: FTP/I - plan hits target center - Point	0.00	0.01	11,562.00	964.00	-114.20	459,291.90	627,269.20	32.262039	-103.921607

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
450.00	450.00	Anhydrite Bed in 31 123H			
506.00	506.00	Top of Salado			
574.00	574.00	Top Salt*			
3,303.00	3,303.00	Base of Salt			
3,516.00	3,516.00	Lamar Lm.			
3,545.00	3,545.00	Delaware (B.C.) Ss.			
4,377.00	4,377.00	Cherry Canyon Ss.			
5,981.00	5,981.00	Brushy Canyon Ss.			
7,023.21	7,021.00	Lower Brushy Canyon Ss.			
7,267.14	7,264.00	Bone Spring Lm.			
7,340.41	7,337.00	Avalon Ss.			
7,449.83	7,446.00	Bone Spg. Up. Avalon Lm.			
7,723.87	7,719.00	Bone Spg. Low Avalon Lm.			
8,291.02	8,284.00	1st Bone Spring Ss.			
8,619.27	8,611.00	2nd Bone Spring Carb.			
9,038.87	9,029.00	2nd Bone Spring (A) Ss.			
9,428.34	9,417.00	3rd Bone Spring Carb.			
10,199.27	10,185.00	3rd Bone Spring Ss.			
10,427.14	10,412.00	War Wink Ss.			
10,512.46	10,497.00	Red Hills Ss. Low			
10,565.66	10,550.00	Wolfcamp Sh			
10,593.77	10,578.00	Wolfcamp X Sd			
10,659.02	10,643.00	Wolfcamp Y Sd			
10,702.18	10,686.00	Wolfcamp A Sh.			
10,823.64	10,807.00	Wolfcamp A lower			
10,937.08	10,920.00	Wolfcamp E Sh. Base			
11,436.84	11,380.00	Wolfcamp D Sh.			
11,685.85	11,520.00	Wolfcamp E Sh. (BJH)			