

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**Carlsbad Field Office**
OCD ArtesiaFORM 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 re-enter an
abandoned well. Use form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMNM02953C

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 27. If Unit or CA/Agreement, Name and/or No.
891000558X

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No.
JAMES RANCH UNIT 146H2. Name of Operator
BOPCO LPContact: STEPHANIE RABADUE
E-Mail: stephanie_rabadue@xtenergy.com9. API Well No.
30-015-42756-00-X13a. Address
P O BOX 2760
MIDLAND, TX 797023b. Phone No. (include area code)
Ph: 432-620-671410. Field and Pool or Exploratory Area
LOS MEDANOS

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 36 T22S R30E SESE 0800FSL 0405FEL
32.203616 N Lat, 103.493519 W Lon11. 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 Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 recompleat 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.

BOPCO, L.P. respectfully requests the following changes to the original APD:

1. New TPs/BHL location
2. Updated BOP / CM & Flex Hose Variance
3. Updated Production Hole, Casing & Cement Design

An updated plat, directional drill survey, drilling program, BOP diagram, Choke Manifold diagram, and Flex Hose chart is attached.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL****NM OIL CONSERVATION**
ARTESIA DISTRICT

AUG 29 2017

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

Electronic Submission #384278 verified by the BLM Well Information System**For BOPCO LP, sent to the Carlsbad****Committed to AFMSS for processing by ZOTA STEVENS on 08/21/2017 (17ZS0007SE)****RECEIVED**

Name (Printed/Typed) STEPHANIE RABADUE

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 08/10/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USEApproved By ZOTA STEVENS

Title PETROLEUM ENGINEER

Date 08/22/2017

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 ****

Rev 9-13-17

DRILLING PLAN: BLM COMPLIANCE

XTO Energy Inc.
James Ranch Unit 146H
Projected TD: 16557' MD / 11226' TVD
SHL: 800' FSL & 405' FEL, SECTION 36, T22S, R30E
BHL: 330' FSL & 200' FEL, SECTION 31, T22S, 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	262'	Water
Salado Salt	574'	
Delaware	3882'	Water
Bell Canyon	3892'	Water
Cherry Canyon	4840'	Water
Brushy Canyon	6400'	Water/Oil/Gas
Bone Spring	7715'	Water/Oil/Gas
Avalon Sand	7815	Water/Oil/Gas
1 st Bone Spring	7760'	Water/Oil/Gas
2 nd Bone Spring	9237'	Water/Oil/Gas
3 rd Bone Spring	9885'	Water/Oil/Gas
Wolfcamp	11020'	Water/Oil/Gas
Target/Land Curve	11110'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

*** Groundwater depth 100' (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" casing @ 561' above the salt and circulating cement back to surface. The salt will be isolated by setting 9-5/8" casing at 3889' and circulating cement to surface. An 8-3/4" vertical and curve hole be drilled and 7" casing run and cemented to surface using a DV & ECP tool. A 6-1/8" curve and lateral hole will be drilled to MD/TD and a 4-1/2" liner will be set at TD and cemented back 500' into the 7" casing shoe.

3. CASING PROGRAM:

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' – 561'	13-3/8"	48#	STC	H-40	New	6.92	3.00	11.96
12-1/4"	0' – 3889'	9-5/8"	40#	LTC	J-55	New	2.93	1.25	3.34
8-3/4"	0' – 11600'	7"	29#	LTC	P-110	New	1.18	1.45	2.37
6-1/8"	11600' – 16557'	4-1/2"	11.6#	BTC	P-110	New	1.13	1.29	4.99

WELLHEAD:

- A. Starting Head: 13-5/8" 5,000 psi top flange x 13-3/8" SOW bottom
- B. Tubing Head: 13-5/8" 5,000 psi bottom flange x 7-1/16" 10,000 psi top flange

4. CEMENT PROGRAM:

- A. **Surface Casing:** 13-3/8", 48#, NEW H-40, STC casing to be set at $\pm 561'$.

20bbbls FW, then 575 sx HalCem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft³/sk, 6.39 gal/sx wtr)

***All volumes 100% excess in open hole. Cement to surface.

- B. **Intermediate Casing:** 9-5/8", 40#, NEW J-55, LTC casing to be set at $\pm 3889'$.

Lead: 20 bbbls FW, then 1130 sx EconoCem-HLC + 3 lbm/sk Kol-Seal + 0.25 lbm D-air 5000 (mixed at 11.9 ppg, 1.88 ft³/sk, 14.18 gal/sx wtr)

Tail: 240 sx HalCem-C (mixed at 14.8 ppg, 1.33 ft³/sk, 6.34 gal/sx wtr)

***All volumes 100% excess in open hole. Cement to surface.

- C. **Production Casing:** 7", 29#, NEW P-110, LTC casing to be set at $\pm 11600'$ near the bottom of the curve. With a DV / ECP tool @ 4300.

Stage 1:

Lead: 20 bbbls FW, then 650 sx Class C + 2 lbm/sk Kol-Seal + 0.3 lbm/sk CFR-3 (mixed at 11 ppg, 2.99 ft³/sk, 14.5 gal/sx wtr)

Tail: 620 sx HaclCem - C + 3 lbm/sk Kol-Seal + 0.4% Halad 344 + 0.3% CFR-3 + 0.3% Super CBL + 0.25 lbm/sk D-air 5000 (mixed at 14 ppg, 1.33ft³/sk, 5.33 gal/sx wtr)

Stage 2:

Lead: 20 bbbls FW, then 565 sx Tuned Light + 2 lbm/sk Kol-Seal + 0.3 lbm/sk CFR-3 (mixed at 11 ppg, 2.99 ft³/sk, 14.5 gal/sx wtr)

Tail: 140 sx VersaCem - H + 3 lbm/sk Kol-Seal + 0.4% Halad 344 + 0.3% CFR-3 + 0.3% Super CBL + 0.25 lbm/sk D-air 5000 (mixed at 13.2 ppg, 1.66 ft³/sk, 5.33 gal/sx wtr)

***All volumes 1st stage 50% excess in open hole, 2nd stage are 75% excess in open hole. Planned top of cement to surface per BLM.

- D. **Production Liner:** 4-1/2", 13.5#, NEW P-110, BTC casing to be set at $\pm 16557'$. Liner top will be at $\pm 10281'$. Casing will be cemented.

Tail: 475 sx VersaCem PBHS2 + 0.25 lbm/sk D-air 5000 + 0.5% Halad 344 + 0.3% CFR-3 (mixed at 13.2 ppg, 1.59 ft³/sk, 8.31 gal/sx wtr)

***All volumes 30% excess in open hole. Planned top of cement 500' below liner top

5. PRESSURE CONTROL EQUIPMENT:

The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M Double Ram BOP. Max bottom hole pressure should not exceed 6750 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 13-5/8" 3M bradenhead and flange, the BOP test will be limited to 3000psi. When nipping up on the 9-5/8" and 7", the BOP will be tested to a minimum of 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.

6. PROPOSED MUD CIRCULATION SYSTEM:

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' to 561'	17-1/2"	FW/Native	8.4 - 8.8	35 - 40	NC
561' to 3889'	12-1/4"	Brine/Gel Sweeps	9.8 - 10.2	30 - 32	NC
3889' to 11600'	8-3/4"	FW / Cut Brine / Polymer	8.6 - 10.0	29 - 32	NC - 20
11600' to 16557'	6-1/8"	OBM	9.5 - 11.5	32 - 50	8 - 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 solution. A 9.8ppg - 10.2ppg brine mud will be used while drilling through the salt formation. Cut brine / brine will be used to drill the 8-3/4" section. An oil-based mud will be used to drill the 6-1/8" section. 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. Solids control equipment will be used 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) on @ 3889'.
Catch 20' samples from 3889' to TD
Send 1 set of dry samples to Midland Sample Library.

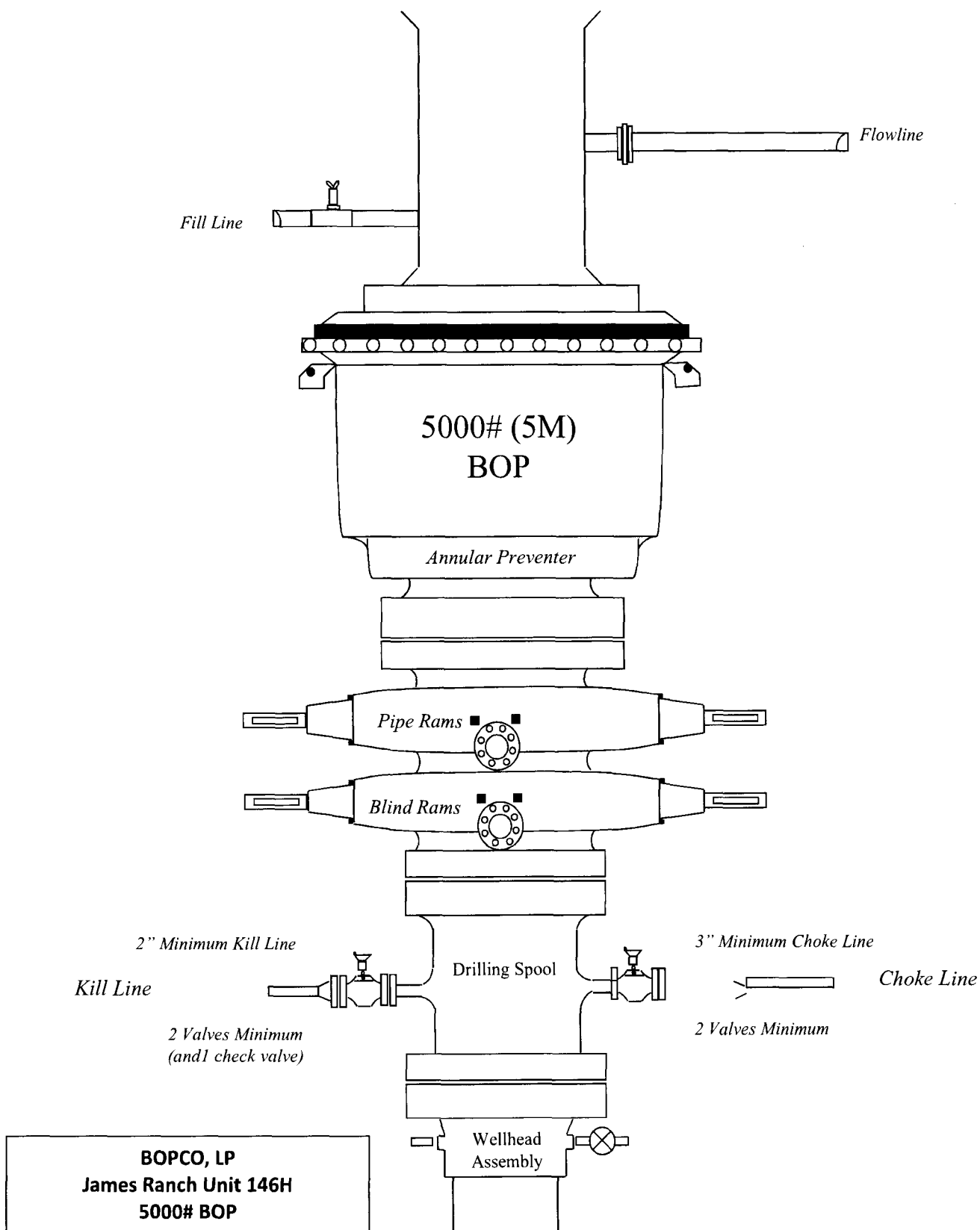
Open hole logging to include Density/Neutron/PE/Dual Laterlog/Spectral Gamma from landing point to intermediate casing shoe. And then GR/neutron from intermediate casing to surface.

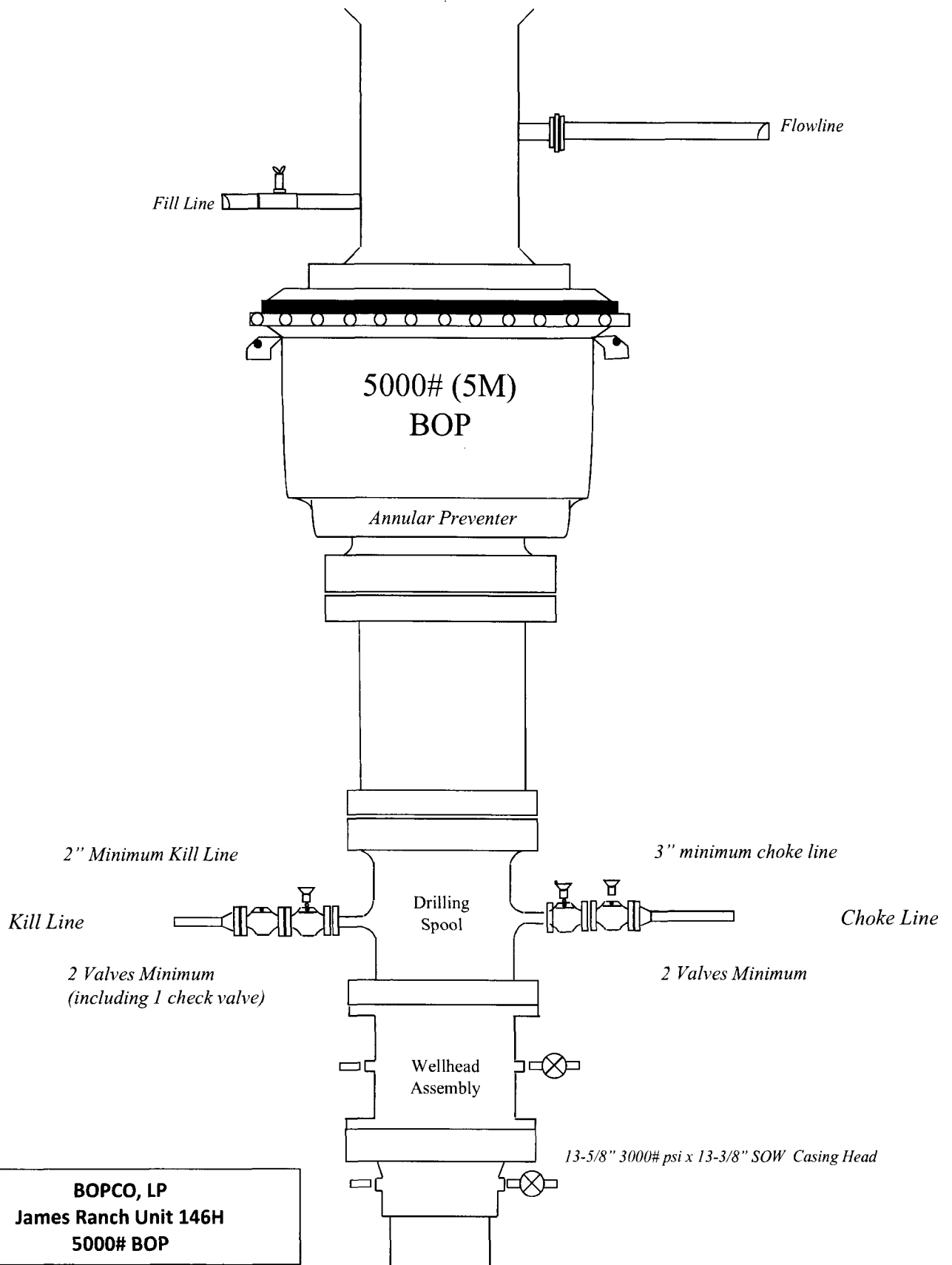
9. ABNORMAL PRESSURES AND TEMPERATURES / POTENTIAL HAZARDS:

None anticipated. BHT of 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.

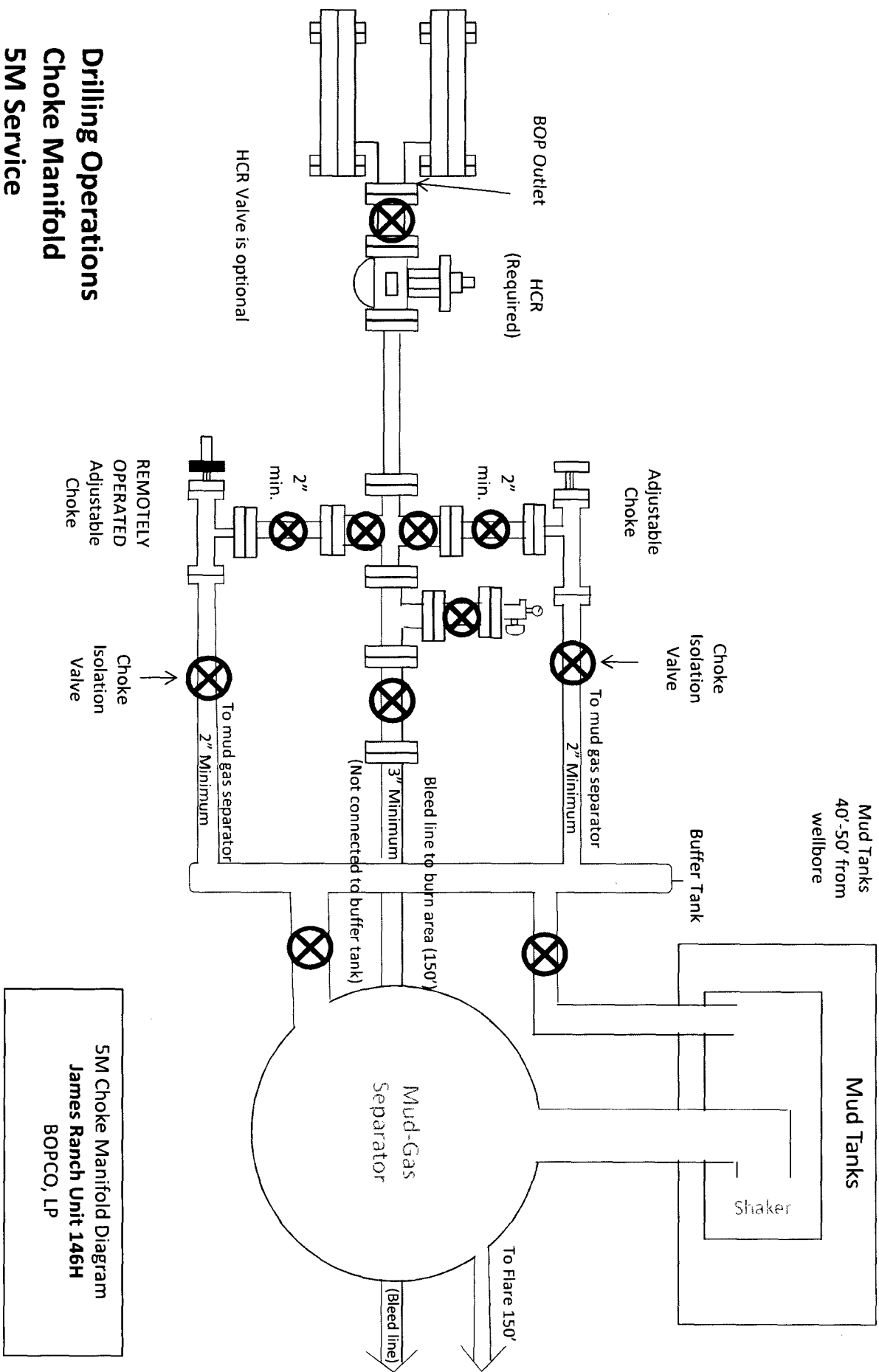
10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

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.





BOPCO, LP
James Ranch Unit 146H
5000# BOP



Drilling Operations
Choke Manifold
5M Service



NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 29 2017

RECEIVED

XTO ENERGY, INC.

Eddy County, NM
Sec 36, T22S, R30E
James Ranch Unit #146H

Wellbore #1

Plan: Design #2

QES Well Planning Report

07 August, 2017





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ARTESIA DISTRICT

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07 August, 2017





Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM		
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 36, T22S, R30E
Site Position:
From: Map
Position Uncertainty: 0.0 usft
Northing: 489,009.50 usft
Easting: 656,459.00 usft
Slot Radius: 13-3/16"
Latitude: 32° 20' 36.188 N
Longitude: 103° 49' 36.206 W
Grid Convergence: 0.27°

Well James Ranch Unit #146H
Well Position +N/-S 0.0 usft
+E/-W 0.0 usft
Position Uncertainty 0.0 usft
Northing: 489,009.50 usft
Easting: 656,459.00 usft
Wellhead Elevation:
Latitude: 32° 20' 36.188 N
Longitude: 103° 49' 36.206 W
Ground Level: 3,312.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/11/2017	7.07	60.13	47,967.25175007

Design Design #2

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.0
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
 (usft) (usft) (usft) (°)
 0.0 0.0 0.0 96.58

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.50	1.50	0.00	165.00	
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	0.00	0.00	0.00	0.00	
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	8.00	7.98	-2.73	-19.77	
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	8.00	3.92	-7.40	-72.11	FTP James Ranch
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	0.00	0.00	0.00	0.00	PBHL James Ranch



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
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Wellbore: Wellbore #1
Design: Design #2

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Site Sec 36, T22S, R30E
Site Position:
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Well James Ranch Unit #146H
Well Position +N/-S 0.0 usft
+E/-W 0.0 usft
Position Uncertainty 0.0 usft
Northing: 489,009.50 usft
Easting: 656,459.00 usft
Wellhead Elevation:
Latitude: 32° 20' 36.188 N
Longitude: 103° 49' 36.206 W
Ground Level: 3,312.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/11/2017	7.07	60.13	47,967.25175007

Design Design #2

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.0
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
 (usft) (usft) (usft) (°)
 0.0 0.0 0.0 96.58

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.50	1.50	0.00	165.00	
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	0.00	0.00	0.00	0.00	
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	8.00	7.98	-2.73	-19.77	
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Site Sec 36, T22S, R30E

Site Position:		Northing:	489,009.50 usft	Latitude:	32° 20' 36.188 N
From:	Map	Easting:	656,459.00 usft	Longitude:	103° 49' 36.206 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.27°

Well James Ranch Unit #146H

Well Position	+N/-S	0.0 usft	Northing:	489,009.50 usft	Latitude:	32° 20' 36.188 N
	+E/-W	0.0 usft	Easting:	656,459.00 usft	Longitude:	103° 49' 36.206 W
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Audit Notes:

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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	96.58

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.50	1.50	0.00	165.00	
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Well Position	+N/-S	0.0 usft	Northing:	489,009.50 usft	Latitude:	32° 20' 36.188 N
	+E/-W	0.0 usft	Easting:	656,459.00 usft	Longitude:	103° 49' 36.206 W
Position Uncertainty	0.0 usft		Wellhead Elevation:		Ground Level:	3,312.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/11/2017	7.07	60.13	47,967.25175007

Design Design #2

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	96.58

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.50	1.50	0.00	165.00	
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	0.00	0.00	0.00	0.00	
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	8.00	7.98	-2.73	-19.77	
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	8.00	3.92	-7.40	-72.11	FTP James Ranch
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	0.00	0.00	0.00	0.00	PBHL James Ranch



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
265.0	0.00	0.00	265.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
577.0	0.00	0.00	577.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware/Lamar									
3,885.0	0.00	0.00	3,885.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
3,895.0	0.00	0.00	3,895.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
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Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

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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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
265.0	0.00	0.00	265.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
577.0	0.00	0.00	577.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware/Lamar									
3,885.0	0.00	0.00	3,885.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
3,895.0	0.00	0.00	3,895.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



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Company: XTO ENERGY, INC.
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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)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
265.0	0.00	0.00	265.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
577.0	0.00	0.00	577.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware/Lamar									
3,885.0	0.00	0.00	3,885.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
3,895.0	0.00	0.00	3,895.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



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Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
265.0	0.00	0.00	265.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
577.0	0.00	0.00	577.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware/Lamar									
3,885.0	0.00	0.00	3,885.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
3,895.0	0.00	0.00	3,895.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
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Site: Sec 36, T22S, R30E
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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)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
4,843.0	0.00	0.00	4,843.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Manzanita									
4,996.0	0.00	0.00	4,996.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon									
6,403.0	0.00	0.00	6,403.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Basal Brushy Canyon									
7,423.0	0.00	0.00	7,423.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Brushy Canyon Sands									
7,688.0	0.00	0.00	7,688.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring									
7,718.0	0.00	0.00	7,718.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Avalon Sand									
7,818.0	0.00	0.00	7,818.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00



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4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
4,843.0	0.00	0.00	4,843.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Manzanita									
4,996.0	0.00	0.00	4,996.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon									
6,403.0	0.00	0.00	6,403.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Basal Brushy Canyon									
7,423.0	0.00	0.00	7,423.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Brushy Canyon Sands									
7,688.0	0.00	0.00	7,688.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring									
7,718.0	0.00	0.00	7,718.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Avalon Sand									
7,818.0	0.00	0.00	7,818.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00



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4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
4,843.0	0.00	0.00	4,843.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Manzanita									
4,996.0	0.00	0.00	4,996.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon									
6,403.0	0.00	0.00	6,403.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Basal Brushy Canyon									
7,423.0	0.00	0.00	7,423.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Brushy Canyon Sands									
7,688.0	0.00	0.00	7,688.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring									
7,718.0	0.00	0.00	7,718.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Avalon Sand									
7,818.0	0.00	0.00	7,818.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
4,843.0	0.00	0.00	4,843.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Manzanita									
4,996.0	0.00	0.00	4,996.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon									
6,403.0	0.00	0.00	6,403.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Basal Brushy Canyon									
7,423.0	0.00	0.00	7,423.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Brushy Canyon Sands									
7,688.0	0.00	0.00	7,688.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring									
7,718.0	0.00	0.00	7,718.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Avalon Sand									
7,818.0	0.00	0.00	7,818.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
Lower Avalon Shale									
8,310.0	0.00	0.00	8,310.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 1.50°/100'									
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
First Bone Spring Sand									
8,768.0	1.02	165.00	8,768.0	-0.6	0.2	0.2	1.50	1.50	0.00
8,800.0	1.50	165.00	8,800.0	-1.3	0.3	0.5	1.50	1.50	0.00
EOB: 3.00° Inc, 165.00° Azi									
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.9	1.50	1.50	0.00
9,000.0	3.00	165.00	8,999.8	-10.1	2.7	3.9	0.00	0.00	0.00
9,100.0	3.00	165.00	9,099.6	-15.2	4.1	5.8	0.00	0.00	0.00
9,200.0	3.00	165.00	9,199.5	-20.2	5.4	7.7	0.00	0.00	0.00
Second Bone Spring Limestone									
9,240.6	3.00	165.00	9,240.0	-22.3	6.0	8.5	0.00	0.00	0.00
9,300.0	3.00	165.00	9,299.4	-25.3	6.8	9.6	0.00	0.00	0.00
9,400.0	3.00	165.00	9,399.2	-30.3	8.1	11.6	0.00	0.00	0.00
9,500.0	3.00	165.00	9,499.1	-35.4	9.5	13.5	0.00	0.00	0.00
9,600.0	3.00	165.00	9,598.9	-40.4	10.8	15.4	0.00	0.00	0.00
Second Bone Spring Sand									
9,622.1	3.00	165.00	9,621.0	-41.6	11.1	15.8	0.00	0.00	0.00
9,700.0	3.00	165.00	9,698.8	-45.5	12.2	17.3	0.00	0.00	0.00
9,800.0	3.00	165.00	9,798.7	-50.6	13.5	19.3	0.00	0.00	0.00
Third Bone Spring Limestone									
9,889.4	3.00	165.00	9,888.0	-55.1	14.8	21.0	0.00	0.00	0.00
9,900.0	3.00	165.00	9,898.5	-55.6	14.9	21.2	0.00	0.00	0.00
10,000.0	3.00	165.00	9,998.4	-60.7	16.3	23.1	0.00	0.00	0.00
10,100.0	3.00	165.00	10,098.3	-65.7	17.6	25.0	0.00	0.00	0.00
10,200.0	3.00	165.00	10,198.1	-70.8	19.0	27.0	0.00	0.00	0.00
KOP : Build 8.00°/100'									
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	29.0	0.00	0.00	0.00
10,350.0	6.27	154.53	10,347.8	-79.4	21.7	30.7	8.00	7.78	-24.93
10,400.0	10.23	150.88	10,397.3	-85.7	25.0	34.7	8.00	7.94	-7.31
10,450.0	14.22	149.26	10,446.2	-94.9	30.3	41.0	8.00	7.97	-3.24
10,500.0	18.21	148.34	10,494.2	-106.8	37.6	49.6	8.00	7.99	-1.84
10,550.0	22.21	147.74	10,541.1	-121.5	46.7	60.3	8.00	7.99	-1.20
Third Bone Spring Sand									
10,580.4	24.64	147.46	10,569.0	-131.7	53.2	68.0	8.00	7.99	-0.90
10,600.0	26.21	147.31	10,586.7	-138.7	57.7	73.3	8.00	8.00	-0.77
10,650.0	30.21	146.99	10,630.7	-158.6	70.6	88.3	8.00	8.00	-0.64
10,700.0	34.21	146.74	10,673.0	-180.9	85.1	105.3	8.00	8.00	-0.50
10,750.0	38.21	146.54	10,713.4	-205.6	101.4	124.3	8.00	8.00	-0.41
10,800.0	42.21	146.37	10,751.5	-232.5	119.2	145.1	8.00	8.00	-0.34
10,850.0	46.21	146.22	10,787.4	-261.5	138.5	167.6	8.00	8.00	-0.29
10,900.0	50.21	146.10	10,820.7	-292.4	159.3	191.8	8.00	8.00	-0.26
10,950.0	54.21	145.98	10,851.3	-325.2	181.4	217.5	8.00	8.00	-0.23
11,000.0	58.21	145.88	10,879.1	-359.6	204.6	244.5	8.00	8.00	-0.21
Build/Turn 8.00°/100'									
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	249.3	8.00	8.00	-0.19
11,050.0	59.96	142.22	10,904.7	-394.5	229.7	273.4	8.00	2.58	-8.80
11,100.0	61.38	137.93	10,929.2	-427.9	257.7	305.0	8.00	2.84	-8.58



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
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TVD Reference: RKB @ 3339.0usft (Frontier #27)
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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)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Lower Avalon Shale									
8,310.0	0.00	0.00	8,310.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 1.50°/100'									
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
First Bone Spring Sand									
8,768.0	1.02	165.00	8,768.0	-0.6	0.2	0.2	1.50	1.50	0.00
8,800.0	1.50	165.00	8,800.0	-1.3	0.3	0.5	1.50	1.50	0.00
EOB: 3.00° Inc, 165.00° Azi									
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.9	1.50	1.50	0.00
9,000.0	3.00	165.00	8,999.8	-10.1	2.7	3.9	0.00	0.00	0.00
9,100.0	3.00	165.00	9,099.6	-15.2	4.1	5.8	0.00	0.00	0.00
9,200.0	3.00	165.00	9,199.5	-20.2	5.4	7.7	0.00	0.00	0.00
Second Bone Spring Limestone									
9,240.6	3.00	165.00	9,240.0	-22.3	6.0	8.5	0.00	0.00	0.00
9,300.0	3.00	165.00	9,299.4	-25.3	6.8	9.6	0.00	0.00	0.00
9,400.0	3.00	165.00	9,399.2	-30.3	8.1	11.6	0.00	0.00	0.00
9,500.0	3.00	165.00	9,499.1	-35.4	9.5	13.5	0.00	0.00	0.00
9,600.0	3.00	165.00	9,598.9	-40.4	10.8	15.4	0.00	0.00	0.00
Second Bone Spring Sand									
9,622.1	3.00	165.00	9,621.0	-41.6	11.1	15.8	0.00	0.00	0.00
9,700.0	3.00	165.00	9,698.8	-45.5	12.2	17.3	0.00	0.00	0.00
9,800.0	3.00	165.00	9,798.7	-50.6	13.5	19.3	0.00	0.00	0.00
Third Bone Spring Limestone									
9,889.4	3.00	165.00	9,888.0	-55.1	14.8	21.0	0.00	0.00	0.00
9,900.0	3.00	165.00	9,898.5	-55.6	14.9	21.2	0.00	0.00	0.00
10,000.0	3.00	165.00	9,998.4	-60.7	16.3	23.1	0.00	0.00	0.00
10,100.0	3.00	165.00	10,098.3	-65.7	17.6	25.0	0.00	0.00	0.00
10,200.0	3.00	165.00	10,198.1	-70.8	19.0	27.0	0.00	0.00	0.00
KOP : Build 8.00°/100'									
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	29.0	0.00	0.00	0.00
10,350.0	6.27	154.53	10,347.8	-79.4	21.7	30.7	8.00	7.78	-24.93
10,400.0	10.23	150.88	10,397.3	-85.7	25.0	34.7	8.00	7.94	-7.31
10,450.0	14.22	149.26	10,446.2	-94.9	30.3	41.0	8.00	7.97	-3.24
10,500.0	18.21	148.34	10,494.2	-106.8	37.6	49.6	8.00	7.99	-1.84
10,550.0	22.21	147.74	10,541.1	-121.5	46.7	60.3	8.00	7.99	-1.20
Third Bone Spring Sand									
10,580.4	24.64	147.46	10,569.0	-131.7	53.2	68.0	8.00	7.99	-0.90
10,600.0	26.21	147.31	10,586.7	-138.7	57.7	73.3	8.00	8.00	-0.77
10,650.0	30.21	146.99	10,630.7	-158.6	70.6	88.3	8.00	8.00	-0.64
10,700.0	34.21	146.74	10,673.0	-180.9	85.1	105.3	8.00	8.00	-0.50
10,750.0	38.21	146.54	10,713.4	-205.6	101.4	124.3	8.00	8.00	-0.41
10,800.0	42.21	146.37	10,751.5	-232.5	119.2	145.1	8.00	8.00	-0.34
10,850.0	46.21	146.22	10,787.4	-261.5	138.5	167.6	8.00	8.00	-0.29
10,900.0	50.21	146.10	10,820.7	-292.4	159.3	191.8	8.00	8.00	-0.26
10,950.0	54.21	145.98	10,851.3	-325.2	181.4	217.5	8.00	8.00	-0.23
11,000.0	58.21	145.88	10,879.1	-359.6	204.6	244.5	8.00	8.00	-0.21
Build/Turn 8.00°/100'									
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	249.3	8.00	8.00	-0.19
11,050.0	59.96	142.22	10,904.7	-394.5	229.7	273.4	8.00	2.58	-8.80
11,100.0	61.38	137.93	10,929.2	-427.9	257.7	305.0	8.00	2.84	-8.58



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
Lower Avalon Shale									
8,310.0	0.00	0.00	8,310.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 1.50°/100'									
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
First Bone Spring Sand									
8,768.0	1.02	165.00	8,768.0	-0.6	0.2	0.2	1.50	1.50	0.00
8,800.0	1.50	165.00	8,800.0	-1.3	0.3	0.5	1.50	1.50	0.00
EOB: 3.00° Inc, 165.00° Azi									
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.9	1.50	1.50	0.00
9,000.0	3.00	165.00	8,999.8	-10.1	2.7	3.9	0.00	0.00	0.00
9,100.0	3.00	165.00	9,099.6	-15.2	4.1	5.8	0.00	0.00	0.00
9,200.0	3.00	165.00	9,199.5	-20.2	5.4	7.7	0.00	0.00	0.00
Second Bone Spring Limestone									
9,240.6	3.00	165.00	9,240.0	-22.3	6.0	8.5	0.00	0.00	0.00
9,300.0	3.00	165.00	9,299.4	-25.3	6.8	9.6	0.00	0.00	0.00
9,400.0	3.00	165.00	9,399.2	-30.3	8.1	11.6	0.00	0.00	0.00
9,500.0	3.00	165.00	9,499.1	-35.4	9.5	13.5	0.00	0.00	0.00
9,600.0	3.00	165.00	9,598.9	-40.4	10.8	15.4	0.00	0.00	0.00
Second Bone Spring Sand									
9,622.1	3.00	165.00	9,621.0	-41.6	11.1	15.8	0.00	0.00	0.00
9,700.0	3.00	165.00	9,698.8	-45.5	12.2	17.3	0.00	0.00	0.00
9,800.0	3.00	165.00	9,798.7	-50.6	13.5	19.3	0.00	0.00	0.00
Third Bone Spring Limestone									
9,889.4	3.00	165.00	9,888.0	-55.1	14.8	21.0	0.00	0.00	0.00
9,900.0	3.00	165.00	9,898.5	-55.6	14.9	21.2	0.00	0.00	0.00
10,000.0	3.00	165.00	9,998.4	-60.7	16.3	23.1	0.00	0.00	0.00
10,100.0	3.00	165.00	10,098.3	-65.7	17.6	25.0	0.00	0.00	0.00
10,200.0	3.00	165.00	10,198.1	-70.8	19.0	27.0	0.00	0.00	0.00
KOP : Build 8.00°/100'									
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	29.0	0.00	0.00	0.00
10,350.0	6.27	154.53	10,347.8	-79.4	21.7	30.7	8.00	7.78	-24.93
10,400.0	10.23	150.88	10,397.3	-85.7	25.0	34.7	8.00	7.94	-7.31
10,450.0	14.22	149.26	10,446.2	-94.9	30.3	41.0	8.00	7.97	-3.24
10,500.0	18.21	148.34	10,494.2	-106.8	37.6	49.6	8.00	7.99	-1.84
10,550.0	22.21	147.74	10,541.1	-121.5	46.7	60.3	8.00	7.99	-1.20
Third Bone Spring Sand									
10,580.4	24.64	147.46	10,569.0	-131.7	53.2	68.0	8.00	7.99	-0.90
10,600.0	26.21	147.31	10,586.7	-138.7	57.7	73.3	8.00	8.00	-0.77
10,650.0	30.21	146.99	10,630.7	-158.6	70.6	88.3	8.00	8.00	-0.64
10,700.0	34.21	146.74	10,673.0	-180.9	85.1	105.3	8.00	8.00	-0.50
10,750.0	38.21	146.54	10,713.4	-205.6	101.4	124.3	8.00	8.00	-0.41
10,800.0	42.21	146.37	10,751.5	-232.5	119.2	145.1	8.00	8.00	-0.34
10,850.0	46.21	146.22	10,787.4	-261.5	138.5	167.6	8.00	8.00	-0.29
10,900.0	50.21	146.10	10,820.7	-292.4	159.3	191.8	8.00	8.00	-0.26
10,950.0	54.21	145.98	10,851.3	-325.2	181.4	217.5	8.00	8.00	-0.23
11,000.0	58.21	145.88	10,879.1	-359.6	204.6	244.5	8.00	8.00	-0.21
Build/Turn 8.00°/100'									
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	249.3	8.00	8.00	-0.19
11,050.0	59.96	142.22	10,904.7	-394.5	229.7	273.4	8.00	2.58	-8.80
11,100.0	61.38	137.93	10,929.2	-427.9	257.7	305.0	8.00	2.84	-8.58



Well Planning Report



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Project: Eddy County, NM
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Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
Lower Avalon Shale									
8,310.0	0.00	0.00	8,310.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 1.50°/100'									
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
First Bone Spring Sand									
8,768.0	1.02	165.00	8,768.0	-0.6	0.2	0.2	1.50	1.50	0.00
8,800.0	1.50	165.00	8,800.0	-1.3	0.3	0.5	1.50	1.50	0.00
EOB: 3.00° Inc, 165.00° Azi									
8,900.0	3.00	165.00	8,899.9	-5.1	1.4	1.9	1.50	1.50	0.00
9,000.0	3.00	165.00	8,999.8	-10.1	2.7	3.9	0.00	0.00	0.00
9,100.0	3.00	165.00	9,099.6	-15.2	4.1	5.8	0.00	0.00	0.00
9,200.0	3.00	165.00	9,199.5	-20.2	5.4	7.7	0.00	0.00	0.00
Second Bone Spring Limestone									
9,240.6	3.00	165.00	9,240.0	-22.3	6.0	8.5	0.00	0.00	0.00
9,300.0	3.00	165.00	9,299.4	-25.3	6.8	9.6	0.00	0.00	0.00
9,400.0	3.00	165.00	9,399.2	-30.3	8.1	11.6	0.00	0.00	0.00
9,500.0	3.00	165.00	9,499.1	-35.4	9.5	13.5	0.00	0.00	0.00
9,600.0	3.00	165.00	9,598.9	-40.4	10.8	15.4	0.00	0.00	0.00
Second Bone Spring Sand									
9,622.1	3.00	165.00	9,621.0	-41.6	11.1	15.8	0.00	0.00	0.00
9,700.0	3.00	165.00	9,698.8	-45.5	12.2	17.3	0.00	0.00	0.00
9,800.0	3.00	165.00	9,798.7	-50.6	13.5	19.3	0.00	0.00	0.00
Third Bone Spring Limestone									
9,889.4	3.00	165.00	9,888.0	-55.1	14.8	21.0	0.00	0.00	0.00
9,900.0	3.00	165.00	9,898.5	-55.6	14.9	21.2	0.00	0.00	0.00
10,000.0	3.00	165.00	9,998.4	-60.7	16.3	23.1	0.00	0.00	0.00
10,100.0	3.00	165.00	10,098.3	-65.7	17.6	25.0	0.00	0.00	0.00
10,200.0	3.00	165.00	10,198.1	-70.8	19.0	27.0	0.00	0.00	0.00
KOP : Build 8.00°/100'									
10,308.0	3.00	165.00	10,306.0	-76.2	20.4	29.0	0.00	0.00	0.00
10,350.0	6.27	154.53	10,347.8	-79.4	21.7	30.7	8.00	7.78	-24.93
10,400.0	10.23	150.88	10,397.3	-85.7	25.0	34.7	8.00	7.94	-7.31
10,450.0	14.22	149.26	10,446.2	-94.9	30.3	41.0	8.00	7.97	-3.24
10,500.0	18.21	148.34	10,494.2	-106.8	37.6	49.6	8.00	7.99	-1.84
10,550.0	22.21	147.74	10,541.1	-121.5	46.7	60.3	8.00	7.99	-1.20
Third Bone Spring Sand									
10,580.4	24.64	147.46	10,569.0	-131.7	53.2	68.0	8.00	7.99	-0.90
10,600.0	26.21	147.31	10,586.7	-138.7	57.7	73.3	8.00	8.00	-0.77
10,650.0	30.21	146.99	10,630.7	-158.6	70.6	88.3	8.00	8.00	-0.64
10,700.0	34.21	146.74	10,673.0	-180.9	85.1	105.3	8.00	8.00	-0.50
10,750.0	38.21	146.54	10,713.4	-205.6	101.4	124.3	8.00	8.00	-0.41
10,800.0	42.21	146.37	10,751.5	-232.5	119.2	145.1	8.00	8.00	-0.34
10,850.0	46.21	146.22	10,787.4	-261.5	138.5	167.6	8.00	8.00	-0.29
10,900.0	50.21	146.10	10,820.7	-292.4	159.3	191.8	8.00	8.00	-0.26
10,950.0	54.21	145.98	10,851.3	-325.2	181.4	217.5	8.00	8.00	-0.23
11,000.0	58.21	145.88	10,879.1	-359.6	204.6	244.5	8.00	8.00	-0.21
Build/Turn 8.00°/100'									
11,008.6	58.89	145.86	10,883.6	-365.6	208.7	249.3	8.00	8.00	-0.19
11,050.0	59.96	142.22	10,904.7	-394.5	229.7	273.4	8.00	2.58	-8.80
11,100.0	61.38	137.93	10,929.2	-427.9	257.7	305.0	8.00	2.84	-8.58



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
11,150.0	62.94	133.76	10,952.5	-459.6	288.5	339.3	8.00	3.11	-8.34
11,200.0	64.61	129.70	10,974.6	-489.4	321.9	375.9	8.00	3.34	-8.11
11,250.0	66.39	125.76	10,995.4	-517.3	357.9	414.9	8.00	3.56	-7.88
11,300.0	68.27	121.93	11,014.7	-543.0	396.2	455.9	8.00	3.75	-7.66
Wolfcamp									
11,323.0	69.16	120.21	11,023.0	-554.0	414.6	475.3	8.00	3.88	-7.51
11,350.0	70.23	118.21	11,032.4	-566.4	436.7	498.7	8.00	3.96	-7.41
11,400.0	72.27	114.57	11,048.5	-587.4	479.1	543.3	8.00	4.08	-7.27
11,450.0	74.37	111.01	11,062.8	-605.9	523.2	589.3	8.00	4.21	-7.11
11,500.0	76.53	107.53	11,075.4	-621.9	568.9	636.5	8.00	4.32	-6.96
11,550.0	78.73	104.12	11,086.1	-635.2	615.9	684.7	8.00	4.41	-6.84
11,600.0	80.98	100.75	11,094.9	-645.8	663.9	733.6	8.00	4.49	-6.73
Wolfcamp Y Sand									
11,620.9	81.93	99.36	11,098.0	-649.4	684.3	754.2	8.00	4.53	-6.67
11,650.0	83.25	97.43	11,101.8	-653.6	712.8	783.1	8.00	4.56	-6.63
11,700.0	85.55	94.14	11,106.6	-658.6	762.3	832.8	8.00	4.59	-6.58
11,750.0	87.86	90.86	11,109.5	-660.8	812.2	882.6	8.00	4.62	-6.54
EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD									
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	898.5	8.00	4.64	-6.53
11,800.0	88.61	89.82	11,110.8	-660.8	862.2	932.3	0.00	0.00	0.00
11,900.0	88.61	89.82	11,113.3	-660.5	962.1	1,031.5	0.00	0.00	0.00
12,000.0	88.61	89.82	11,115.7	-660.2	1,062.1	1,130.8	0.00	0.00	0.00
12,100.0	88.61	89.82	11,118.1	-659.8	1,162.1	1,230.1	0.00	0.00	0.00
12,200.0	88.61	89.82	11,120.6	-659.5	1,262.1	1,329.4	0.00	0.00	0.00
12,300.0	88.61	89.82	11,123.0	-659.2	1,362.0	1,428.6	0.00	0.00	0.00
12,400.0	88.61	89.82	11,125.4	-658.9	1,462.0	1,527.9	0.00	0.00	0.00
12,500.0	88.61	89.82	11,127.9	-658.6	1,562.0	1,627.2	0.00	0.00	0.00
12,600.0	88.61	89.82	11,130.3	-658.3	1,661.9	1,726.4	0.00	0.00	0.00
12,700.0	88.61	89.82	11,132.7	-657.9	1,761.9	1,825.7	0.00	0.00	0.00
12,800.0	88.61	89.82	11,135.2	-657.6	1,861.9	1,925.0	0.00	0.00	0.00
12,900.0	88.61	89.82	11,137.6	-657.3	1,961.8	2,024.3	0.00	0.00	0.00
13,000.0	88.61	89.82	11,140.0	-657.0	2,061.8	2,123.5	0.00	0.00	0.00
13,100.0	88.61	89.82	11,142.4	-656.7	2,161.8	2,222.8	0.00	0.00	0.00
13,200.0	88.61	89.82	11,144.9	-656.4	2,261.8	2,322.1	0.00	0.00	0.00
13,300.0	88.61	89.82	11,147.3	-656.0	2,361.7	2,421.4	0.00	0.00	0.00
13,400.0	88.61	89.82	11,149.7	-655.7	2,461.7	2,520.6	0.00	0.00	0.00
13,500.0	88.61	89.82	11,152.2	-655.4	2,561.7	2,619.9	0.00	0.00	0.00
13,600.0	88.61	89.82	11,154.6	-655.1	2,661.6	2,719.2	0.00	0.00	0.00
13,700.0	88.61	89.82	11,157.0	-654.8	2,761.6	2,818.5	0.00	0.00	0.00
13,800.0	88.61	89.82	11,159.5	-654.5	2,861.6	2,917.7	0.00	0.00	0.00
13,900.0	88.61	89.82	11,161.9	-654.1	2,961.5	3,017.0	0.00	0.00	0.00
14,000.0	88.61	89.82	11,164.3	-653.8	3,061.5	3,116.3	0.00	0.00	0.00
14,100.0	88.61	89.82	11,166.8	-653.5	3,161.5	3,215.6	0.00	0.00	0.00
14,200.0	88.61	89.82	11,169.2	-653.2	3,261.5	3,314.8	0.00	0.00	0.00
14,300.0	88.61	89.82	11,171.6	-652.9	3,361.4	3,414.1	0.00	0.00	0.00
14,400.0	88.61	89.82	11,174.1	-652.6	3,461.4	3,513.4	0.00	0.00	0.00
14,500.0	88.61	89.82	11,176.5	-652.2	3,561.4	3,612.7	0.00	0.00	0.00
14,600.0	88.61	89.82	11,178.9	-651.9	3,661.3	3,711.9	0.00	0.00	0.00
14,700.0	88.61	89.82	11,181.4	-651.6	3,761.3	3,811.2	0.00	0.00	0.00
14,800.0	88.61	89.82	11,183.8	-651.3	3,861.3	3,910.5	0.00	0.00	0.00
14,900.0	88.61	89.82	11,186.2	-651.0	3,961.2	4,009.8	0.00	0.00	0.00
15,000.0	88.61	89.82	11,188.7	-650.7	4,061.2	4,109.0	0.00	0.00	0.00
15,100.0	88.61	89.82	11,191.1	-650.3	4,161.2	4,208.3	0.00	0.00	0.00



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11,150.0	62.94	133.76	10,952.5	-459.6	288.5	339.3	8.00	3.11	-8.34
11,200.0	64.61	129.70	10,974.6	-489.4	321.9	375.9	8.00	3.34	-8.11
11,250.0	66.39	125.76	10,995.4	-517.3	357.9	414.9	8.00	3.56	-7.88
11,300.0	68.27	121.93	11,014.7	-543.0	396.2	455.9	8.00	3.75	-7.66
Wolfcamp									
11,323.0	69.16	120.21	11,023.0	-554.0	414.6	475.3	8.00	3.88	-7.51
11,350.0	70.23	118.21	11,032.4	-566.4	436.7	498.7	8.00	3.96	-7.41
11,400.0	72.27	114.57	11,048.5	-587.4	479.1	543.3	8.00	4.08	-7.27
11,450.0	74.37	111.01	11,062.8	-605.9	523.2	589.3	8.00	4.21	-7.11
11,500.0	76.53	107.53	11,075.4	-621.9	568.9	636.5	8.00	4.32	-6.96
11,550.0	78.73	104.12	11,086.1	-635.2	615.9	684.7	8.00	4.41	-6.84
11,600.0	80.98	100.75	11,094.9	-645.8	663.9	733.6	8.00	4.49	-6.73
Wolfcamp Y Sand									
11,620.9	81.93	99.36	11,098.0	-649.4	684.3	754.2	8.00	4.53	-6.67
11,650.0	83.25	97.43	11,101.8	-653.6	712.8	783.1	8.00	4.56	-6.63
11,700.0	85.55	94.14	11,106.6	-658.6	762.3	832.8	8.00	4.59	-6.58
11,750.0	87.86	90.86	11,109.5	-660.8	812.2	882.6	8.00	4.62	-6.54
EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD									
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	898.5	8.00	4.64	-6.53
11,800.0	88.61	89.82	11,110.8	-660.8	862.2	932.3	0.00	0.00	0.00
11,900.0	88.61	89.82	11,113.3	-660.5	962.1	1,031.5	0.00	0.00	0.00
12,000.0	88.61	89.82	11,115.7	-660.2	1,062.1	1,130.8	0.00	0.00	0.00
12,100.0	88.61	89.82	11,118.1	-659.8	1,162.1	1,230.1	0.00	0.00	0.00
12,200.0	88.61	89.82	11,120.6	-659.5	1,262.1	1,329.4	0.00	0.00	0.00
12,300.0	88.61	89.82	11,123.0	-659.2	1,362.0	1,428.6	0.00	0.00	0.00
12,400.0	88.61	89.82	11,125.4	-658.9	1,462.0	1,527.9	0.00	0.00	0.00
12,500.0	88.61	89.82	11,127.9	-658.6	1,562.0	1,627.2	0.00	0.00	0.00
12,600.0	88.61	89.82	11,130.3	-658.3	1,661.9	1,726.4	0.00	0.00	0.00
12,700.0	88.61	89.82	11,132.7	-657.9	1,761.9	1,825.7	0.00	0.00	0.00
12,800.0	88.61	89.82	11,135.2	-657.6	1,861.9	1,925.0	0.00	0.00	0.00
12,900.0	88.61	89.82	11,137.6	-657.3	1,961.8	2,024.3	0.00	0.00	0.00
13,000.0	88.61	89.82	11,140.0	-657.0	2,061.8	2,123.5	0.00	0.00	0.00
13,100.0	88.61	89.82	11,142.4	-656.7	2,161.8	2,222.8	0.00	0.00	0.00
13,200.0	88.61	89.82	11,144.9	-656.4	2,261.8	2,322.1	0.00	0.00	0.00
13,300.0	88.61	89.82	11,147.3	-656.0	2,361.7	2,421.4	0.00	0.00	0.00
13,400.0	88.61	89.82	11,149.7	-655.7	2,461.7	2,520.6	0.00	0.00	0.00
13,500.0	88.61	89.82	11,152.2	-655.4	2,561.7	2,619.9	0.00	0.00	0.00
13,600.0	88.61	89.82	11,154.6	-655.1	2,661.6	2,719.2	0.00	0.00	0.00
13,700.0	88.61	89.82	11,157.0	-654.8	2,761.6	2,818.5	0.00	0.00	0.00
13,800.0	88.61	89.82	11,159.5	-654.5	2,861.6	2,917.7	0.00	0.00	0.00
13,900.0	88.61	89.82	11,161.9	-654.1	2,961.5	3,017.0	0.00	0.00	0.00
14,000.0	88.61	89.82	11,164.3	-653.8	3,061.5	3,116.3	0.00	0.00	0.00
14,100.0	88.61	89.82	11,166.8	-653.5	3,161.5	3,215.6	0.00	0.00	0.00
14,200.0	88.61	89.82	11,169.2	-653.2	3,261.5	3,314.8	0.00	0.00	0.00
14,300.0	88.61	89.82	11,171.6	-652.9	3,361.4	3,414.1	0.00	0.00	0.00
14,400.0	88.61	89.82	11,174.1	-652.6	3,461.4	3,513.4	0.00	0.00	0.00
14,500.0	88.61	89.82	11,176.5	-652.2	3,561.4	3,612.7	0.00	0.00	0.00
14,600.0	88.61	89.82	11,178.9	-651.9	3,661.3	3,711.9	0.00	0.00	0.00
14,700.0	88.61	89.82	11,181.4	-651.6	3,761.3	3,811.2	0.00	0.00	0.00
14,800.0	88.61	89.82	11,183.8	-651.3	3,861.3	3,910.5	0.00	0.00	0.00
14,900.0	88.61	89.82	11,186.2	-651.0	3,961.2	4,009.8	0.00	0.00	0.00
15,000.0	88.61	89.82	11,188.7	-650.7	4,061.2	4,109.0	0.00	0.00	0.00
15,100.0	88.61	89.82	11,191.1	-650.3	4,161.2	4,208.3	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
11,150.0	62.94	133.76	10,952.5	-459.6	288.5	339.3	8.00	3.11	-8.34
11,200.0	64.61	129.70	10,974.6	-489.4	321.9	375.9	8.00	3.34	-8.11
11,250.0	66.39	125.76	10,995.4	-517.3	357.9	414.9	8.00	3.56	-7.88
11,300.0	68.27	121.93	11,014.7	-543.0	396.2	455.9	8.00	3.75	-7.66
Wolfcamp									
11,323.0	69.16	120.21	11,023.0	-554.0	414.6	475.3	8.00	3.88	-7.51
11,350.0	70.23	118.21	11,032.4	-566.4	436.7	498.7	8.00	3.96	-7.41
11,400.0	72.27	114.57	11,048.5	-587.4	479.1	543.3	8.00	4.08	-7.27
11,450.0	74.37	111.01	11,062.8	-605.9	523.2	589.3	8.00	4.21	-7.11
11,500.0	76.53	107.53	11,075.4	-621.9	568.9	636.5	8.00	4.32	-6.96
11,550.0	78.73	104.12	11,086.1	-635.2	615.9	684.7	8.00	4.41	-6.84
11,600.0	80.98	100.75	11,094.9	-645.8	663.9	733.6	8.00	4.49	-6.73
Wolfcamp Y Sand									
11,620.9	81.93	99.36	11,098.0	-649.4	684.3	754.2	8.00	4.53	-6.67
11,650.0	83.25	97.43	11,101.8	-653.6	712.8	783.1	8.00	4.56	-6.63
11,700.0	85.55	94.14	11,106.6	-658.6	762.3	832.8	8.00	4.59	-6.58
11,750.0	87.86	90.86	11,109.5	-660.8	812.2	882.6	8.00	4.62	-6.54
EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD									
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	898.5	8.00	4.64	-6.53
11,800.0	88.61	89.82	11,110.8	-660.8	862.2	932.3	0.00	0.00	0.00
11,900.0	88.61	89.82	11,113.3	-660.5	962.1	1,031.5	0.00	0.00	0.00
12,000.0	88.61	89.82	11,115.7	-660.2	1,062.1	1,130.8	0.00	0.00	0.00
12,100.0	88.61	89.82	11,118.1	-659.8	1,162.1	1,230.1	0.00	0.00	0.00
12,200.0	88.61	89.82	11,120.6	-659.5	1,262.1	1,329.4	0.00	0.00	0.00
12,300.0	88.61	89.82	11,123.0	-659.2	1,362.0	1,428.6	0.00	0.00	0.00
12,400.0	88.61	89.82	11,125.4	-658.9	1,462.0	1,527.9	0.00	0.00	0.00
12,500.0	88.61	89.82	11,127.9	-658.6	1,562.0	1,627.2	0.00	0.00	0.00
12,600.0	88.61	89.82	11,130.3	-658.3	1,661.9	1,726.4	0.00	0.00	0.00
12,700.0	88.61	89.82	11,132.7	-657.9	1,761.9	1,825.7	0.00	0.00	0.00
12,800.0	88.61	89.82	11,135.2	-657.6	1,861.9	1,925.0	0.00	0.00	0.00
12,900.0	88.61	89.82	11,137.6	-657.3	1,961.8	2,024.3	0.00	0.00	0.00
13,000.0	88.61	89.82	11,140.0	-657.0	2,061.8	2,123.5	0.00	0.00	0.00
13,100.0	88.61	89.82	11,142.4	-656.7	2,161.8	2,222.8	0.00	0.00	0.00
13,200.0	88.61	89.82	11,144.9	-656.4	2,261.8	2,322.1	0.00	0.00	0.00
13,300.0	88.61	89.82	11,147.3	-656.0	2,361.7	2,421.4	0.00	0.00	0.00
13,400.0	88.61	89.82	11,149.7	-655.7	2,461.7	2,520.6	0.00	0.00	0.00
13,500.0	88.61	89.82	11,152.2	-655.4	2,561.7	2,619.9	0.00	0.00	0.00
13,600.0	88.61	89.82	11,154.6	-655.1	2,661.6	2,719.2	0.00	0.00	0.00
13,700.0	88.61	89.82	11,157.0	-654.8	2,761.6	2,818.5	0.00	0.00	0.00
13,800.0	88.61	89.82	11,159.5	-654.5	2,861.6	2,917.7	0.00	0.00	0.00
13,900.0	88.61	89.82	11,161.9	-654.1	2,961.5	3,017.0	0.00	0.00	0.00
14,000.0	88.61	89.82	11,164.3	-653.8	3,061.5	3,116.3	0.00	0.00	0.00
14,100.0	88.61	89.82	11,166.8	-653.5	3,161.5	3,215.6	0.00	0.00	0.00
14,200.0	88.61	89.82	11,169.2	-653.2	3,261.5	3,314.8	0.00	0.00	0.00
14,300.0	88.61	89.82	11,171.6	-652.9	3,361.4	3,414.1	0.00	0.00	0.00
14,400.0	88.61	89.82	11,174.1	-652.6	3,461.4	3,513.4	0.00	0.00	0.00
14,500.0	88.61	89.82	11,176.5	-652.2	3,561.4	3,612.7	0.00	0.00	0.00
14,600.0	88.61	89.82	11,178.9	-651.9	3,661.3	3,711.9	0.00	0.00	0.00
14,700.0	88.61	89.82	11,181.4	-651.6	3,761.3	3,811.2	0.00	0.00	0.00
14,800.0	88.61	89.82	11,183.8	-651.3	3,861.3	3,910.5	0.00	0.00	0.00
14,900.0	88.61	89.82	11,186.2	-651.0	3,961.2	4,009.8	0.00	0.00	0.00
15,000.0	88.61	89.82	11,188.7	-650.7	4,061.2	4,109.0	0.00	0.00	0.00
15,100.0	88.61	89.82	11,191.1	-650.3	4,161.2	4,208.3	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
11,150.0	62.94	133.76	10,952.5	-459.6	288.5	339.3	8.00	3.11	-8.34
11,200.0	64.61	129.70	10,974.6	-489.4	321.9	375.9	8.00	3.34	-8.11
11,250.0	66.39	125.76	10,995.4	-517.3	357.9	414.9	8.00	3.56	-7.88
11,300.0	68.27	121.93	11,014.7	-543.0	396.2	455.9	8.00	3.75	-7.66
Wolfcamp									
11,323.0	69.16	120.21	11,023.0	-554.0	414.6	475.3	8.00	3.88	-7.51
11,350.0	70.23	118.21	11,032.4	-566.4	436.7	498.7	8.00	3.96	-7.41
11,400.0	72.27	114.57	11,048.5	-587.4	479.1	543.3	8.00	4.08	-7.27
11,450.0	74.37	111.01	11,062.8	-605.9	523.2	589.3	8.00	4.21	-7.11
11,500.0	76.53	107.53	11,075.4	-621.9	568.9	636.5	8.00	4.32	-6.96
11,550.0	78.73	104.12	11,086.1	-635.2	615.9	684.7	8.00	4.41	-6.84
11,600.0	80.98	100.75	11,094.9	-645.8	663.9	733.6	8.00	4.49	-6.73
Wolfcamp Y Sand									
11,620.9	81.93	99.36	11,098.0	-649.4	684.3	754.2	8.00	4.53	-6.67
11,650.0	83.25	97.43	11,101.8	-653.6	712.8	783.1	8.00	4.56	-6.63
11,700.0	85.55	94.14	11,106.6	-658.6	762.3	832.8	8.00	4.59	-6.58
11,750.0	87.86	90.86	11,109.5	-660.8	812.2	882.6	8.00	4.62	-6.54
EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD									
11,766.0	88.61	89.82	11,110.0	-660.9	828.2	898.5	8.00	4.64	-6.53
11,800.0	88.61	89.82	11,110.8	-660.8	862.2	932.3	0.00	0.00	0.00
11,900.0	88.61	89.82	11,113.3	-660.5	962.1	1,031.5	0.00	0.00	0.00
12,000.0	88.61	89.82	11,115.7	-660.2	1,062.1	1,130.8	0.00	0.00	0.00
12,100.0	88.61	89.82	11,118.1	-659.8	1,162.1	1,230.1	0.00	0.00	0.00
12,200.0	88.61	89.82	11,120.6	-659.5	1,262.1	1,329.4	0.00	0.00	0.00
12,300.0	88.61	89.82	11,123.0	-659.2	1,362.0	1,428.6	0.00	0.00	0.00
12,400.0	88.61	89.82	11,125.4	-658.9	1,462.0	1,527.9	0.00	0.00	0.00
12,500.0	88.61	89.82	11,127.9	-658.6	1,562.0	1,627.2	0.00	0.00	0.00
12,600.0	88.61	89.82	11,130.3	-658.3	1,661.9	1,726.4	0.00	0.00	0.00
12,700.0	88.61	89.82	11,132.7	-657.9	1,761.9	1,825.7	0.00	0.00	0.00
12,800.0	88.61	89.82	11,135.2	-657.6	1,861.9	1,925.0	0.00	0.00	0.00
12,900.0	88.61	89.82	11,137.6	-657.3	1,961.8	2,024.3	0.00	0.00	0.00
13,000.0	88.61	89.82	11,140.0	-657.0	2,061.8	2,123.5	0.00	0.00	0.00
13,100.0	88.61	89.82	11,142.4	-656.7	2,161.8	2,222.8	0.00	0.00	0.00
13,200.0	88.61	89.82	11,144.9	-656.4	2,261.8	2,322.1	0.00	0.00	0.00
13,300.0	88.61	89.82	11,147.3	-656.0	2,361.7	2,421.4	0.00	0.00	0.00
13,400.0	88.61	89.82	11,149.7	-655.7	2,461.7	2,520.6	0.00	0.00	0.00
13,500.0	88.61	89.82	11,152.2	-655.4	2,561.7	2,619.9	0.00	0.00	0.00
13,600.0	88.61	89.82	11,154.6	-655.1	2,661.6	2,719.2	0.00	0.00	0.00
13,700.0	88.61	89.82	11,157.0	-654.8	2,761.6	2,818.5	0.00	0.00	0.00
13,800.0	88.61	89.82	11,159.5	-654.5	2,861.6	2,917.7	0.00	0.00	0.00
13,900.0	88.61	89.82	11,161.9	-654.1	2,961.5	3,017.0	0.00	0.00	0.00
14,000.0	88.61	89.82	11,164.3	-653.8	3,061.5	3,116.3	0.00	0.00	0.00
14,100.0	88.61	89.82	11,166.8	-653.5	3,161.5	3,215.6	0.00	0.00	0.00
14,200.0	88.61	89.82	11,169.2	-653.2	3,261.5	3,314.8	0.00	0.00	0.00
14,300.0	88.61	89.82	11,171.6	-652.9	3,361.4	3,414.1	0.00	0.00	0.00
14,400.0	88.61	89.82	11,174.1	-652.6	3,461.4	3,513.4	0.00	0.00	0.00
14,500.0	88.61	89.82	11,176.5	-652.2	3,561.4	3,612.7	0.00	0.00	0.00
14,600.0	88.61	89.82	11,178.9	-651.9	3,661.3	3,711.9	0.00	0.00	0.00
14,700.0	88.61	89.82	11,181.4	-651.6	3,761.3	3,811.2	0.00	0.00	0.00
14,800.0	88.61	89.82	11,183.8	-651.3	3,861.3	3,910.5	0.00	0.00	0.00
14,900.0	88.61	89.82	11,186.2	-651.0	3,961.2	4,009.8	0.00	0.00	0.00
15,000.0	88.61	89.82	11,188.7	-650.7	4,061.2	4,109.0	0.00	0.00	0.00
15,100.0	88.61	89.82	11,191.1	-650.3	4,161.2	4,208.3	0.00	0.00	0.00



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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)
15,200.0	88.61	89.82	11,193.5	-650.0	4,261.2	4,307.6	0.00	0.00	0.00
15,300.0	88.61	89.82	11,196.0	-649.7	4,361.1	4,406.9	0.00	0.00	0.00
15,400.0	88.61	89.82	11,198.4	-649.4	4,461.1	4,506.1	0.00	0.00	0.00
15,500.0	88.61	89.82	11,200.8	-649.1	4,561.1	4,605.4	0.00	0.00	0.00
15,600.0	88.61	89.82	11,203.3	-648.8	4,661.0	4,704.7	0.00	0.00	0.00
15,700.0	88.61	89.82	11,205.7	-648.4	4,761.0	4,804.0	0.00	0.00	0.00
15,800.0	88.61	89.82	11,208.1	-648.1	4,861.0	4,903.2	0.00	0.00	0.00
15,900.0	88.61	89.82	11,210.6	-647.8	4,960.9	5,002.5	0.00	0.00	0.00
16,000.0	88.61	89.82	11,213.0	-647.5	5,060.9	5,101.8	0.00	0.00	0.00
16,100.0	88.61	89.82	11,215.4	-647.2	5,160.9	5,201.1	0.00	0.00	0.00
16,200.0	88.61	89.82	11,217.9	-646.9	5,260.9	5,300.3	0.00	0.00	0.00
16,300.0	88.61	89.82	11,220.3	-646.5	5,360.8	5,399.6	0.00	0.00	0.00
16,400.0	88.61	89.82	11,222.7	-646.2	5,460.8	5,498.9	0.00	0.00	0.00
16,500.0	88.61	89.82	11,225.2	-645.9	5,560.8	5,598.1	0.00	0.00	0.00
TD @ 16534.6' MD, 11226.0' TVD									
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	5,632.5	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
LTP James Ranch Un	0.00	0.00	0.0	-646.4	5,465.4	488,363.10	661,924.40	32° 20' 29.531 N	103° 48' 32.537 W
- plan misses target center by 5503.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									
FTP James Ranch Ur	0.00	0.00	11,110.0	-660.9	828.2	488,348.60	657,287.20	32° 20' 29.609 N	103° 49' 26.589 W
- plan hits target center									
- Point									
PBHL James Ranch L	0.00	0.00	11,226.0	-645.8	5,595.4	488,363.70	662,054.40	32° 20' 29.531 N	103° 48' 31.022 W
- plan hits target center									
- Point									



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
15,200.0	88.61	89.82	11,193.5	-650.0	4,261.2	4,307.6	0.00	0.00	0.00
15,300.0	88.61	89.82	11,196.0	-649.7	4,361.1	4,406.9	0.00	0.00	0.00
15,400.0	88.61	89.82	11,198.4	-649.4	4,461.1	4,506.1	0.00	0.00	0.00
15,500.0	88.61	89.82	11,200.8	-649.1	4,561.1	4,605.4	0.00	0.00	0.00
15,600.0	88.61	89.82	11,203.3	-648.8	4,661.0	4,704.7	0.00	0.00	0.00
15,700.0	88.61	89.82	11,205.7	-648.4	4,761.0	4,804.0	0.00	0.00	0.00
15,800.0	88.61	89.82	11,208.1	-648.1	4,861.0	4,903.2	0.00	0.00	0.00
15,900.0	88.61	89.82	11,210.6	-647.8	4,960.9	5,002.5	0.00	0.00	0.00
16,000.0	88.61	89.82	11,213.0	-647.5	5,060.9	5,101.8	0.00	0.00	0.00
16,100.0	88.61	89.82	11,215.4	-647.2	5,160.9	5,201.1	0.00	0.00	0.00
16,200.0	88.61	89.82	11,217.9	-646.9	5,260.9	5,300.3	0.00	0.00	0.00
16,300.0	88.61	89.82	11,220.3	-646.5	5,360.8	5,399.6	0.00	0.00	0.00
16,400.0	88.61	89.82	11,222.7	-646.2	5,460.8	5,498.9	0.00	0.00	0.00
16,500.0	88.61	89.82	11,225.2	-645.9	5,560.8	5,598.1	0.00	0.00	0.00
TD @ 16534.6' MD, 11226.0' TVD									
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	5,632.5	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
LTP James Ranch Un - plan misses target center by 5503.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.00	0.0	-646.4	5,465.4	488,363.10	661,924.40	32° 20' 29.531 N	103° 48' 32.537 W
FTP James Ranch Ur - plan hits target center - Point	0.00	0.00	11,110.0	-660.9	828.2	488,348.60	657,287.20	32° 20' 29.609 N	103° 49' 26.589 W
PBHL James Ranch L - plan hits target center - Point	0.00	0.00	11,226.0	-645.8	5,595.4	488,363.70	662,054.40	32° 20' 29.531 N	103° 48' 31.022 W



Well Planning Report



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Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
15,200.0	88.61	89.82	11,193.5	-650.0	4,261.2	4,307.6	0.00	0.00	0.00
15,300.0	88.61	89.82	11,196.0	-649.7	4,361.1	4,406.9	0.00	0.00	0.00
15,400.0	88.61	89.82	11,198.4	-649.4	4,461.1	4,506.1	0.00	0.00	0.00
15,500.0	88.61	89.82	11,200.8	-649.1	4,561.1	4,605.4	0.00	0.00	0.00
15,600.0	88.61	89.82	11,203.3	-648.8	4,661.0	4,704.7	0.00	0.00	0.00
15,700.0	88.61	89.82	11,205.7	-648.4	4,761.0	4,804.0	0.00	0.00	0.00
15,800.0	88.61	89.82	11,208.1	-648.1	4,861.0	4,903.2	0.00	0.00	0.00
15,900.0	88.61	89.82	11,210.6	-647.8	4,960.9	5,002.5	0.00	0.00	0.00
16,000.0	88.61	89.82	11,213.0	-647.5	5,060.9	5,101.8	0.00	0.00	0.00
16,100.0	88.61	89.82	11,215.4	-647.2	5,160.9	5,201.1	0.00	0.00	0.00
16,200.0	88.61	89.82	11,217.9	-646.9	5,260.9	5,300.3	0.00	0.00	0.00
16,300.0	88.61	89.82	11,220.3	-646.5	5,360.8	5,399.6	0.00	0.00	0.00
16,400.0	88.61	89.82	11,222.7	-646.2	5,460.8	5,498.9	0.00	0.00	0.00
16,500.0	88.61	89.82	11,225.2	-645.9	5,560.8	5,598.1	0.00	0.00	0.00
TD @ 16534.6' MD, 11226.0' TVD									
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	5,632.5	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
LTP James Ranch Un	0.00	0.00	0.0	-646.4	5,465.4	488,363.10	661,924.40	32° 20' 29.531 N	103° 48' 32.537 W
- plan misses target center by 5503.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									
FTP James Ranch Ur	0.00	0.00	11,110.0	-660.9	828.2	488,348.60	657,287.20	32° 20' 29.609 N	103° 49' 26.589 W
- plan hits target center									
- Point									
PBHL James Ranch L	0.00	0.00	11,226.0	-645.8	5,595.4	488,363.70	662,054.40	32° 20' 29.531 N	103° 48' 31.022 W
- plan hits target center									
- Point									



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
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)
15,200.0	88.61	89.82	11,193.5	-650.0	4,261.2	4,307.6	0.00	0.00	0.00
15,300.0	88.61	89.82	11,196.0	-649.7	4,361.1	4,406.9	0.00	0.00	0.00
15,400.0	88.61	89.82	11,198.4	-649.4	4,461.1	4,506.1	0.00	0.00	0.00
15,500.0	88.61	89.82	11,200.8	-649.1	4,561.1	4,605.4	0.00	0.00	0.00
15,600.0	88.61	89.82	11,203.3	-648.8	4,661.0	4,704.7	0.00	0.00	0.00
15,700.0	88.61	89.82	11,205.7	-648.4	4,761.0	4,804.0	0.00	0.00	0.00
15,800.0	88.61	89.82	11,208.1	-648.1	4,861.0	4,903.2	0.00	0.00	0.00
15,900.0	88.61	89.82	11,210.6	-647.8	4,960.9	5,002.5	0.00	0.00	0.00
16,000.0	88.61	89.82	11,213.0	-647.5	5,060.9	5,101.8	0.00	0.00	0.00
16,100.0	88.61	89.82	11,215.4	-647.2	5,160.9	5,201.1	0.00	0.00	0.00
16,200.0	88.61	89.82	11,217.9	-646.9	5,260.9	5,300.3	0.00	0.00	0.00
16,300.0	88.61	89.82	11,220.3	-646.5	5,360.8	5,399.6	0.00	0.00	0.00
16,400.0	88.61	89.82	11,222.7	-646.2	5,460.8	5,498.9	0.00	0.00	0.00
16,500.0	88.61	89.82	11,225.2	-645.9	5,560.8	5,598.1	0.00	0.00	0.00
TD @ 16534.6' MD, 11226.0' TVD									
16,534.6	88.61	89.82	11,226.0	-645.8	5,595.4	5,632.5	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
LTP James Ranch Un	0.00	0.00	0.0	-646.4	5,465.4	488,363.10	661,924.40	32° 20' 29.531 N	103° 48' 32.537 W
- plan misses target center by 5503.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									
FTP James Ranch Ur	0.00	0.00	11,110.0	-660.9	828.2	488,348.60	657,287.20	32° 20' 29.609 N	103° 49' 26.589 W
- plan hits target center									
- Point									
PBHL James Ranch L	0.00	0.00	11,226.0	-645.8	5,595.4	488,363.70	662,054.40	32° 20' 29.531 N	103° 48' 31.022 W
- plan hits target center									
- Point									



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
MD Reference: RKB @ 3339.0usft (Frontier #27)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
265.0	265.0	Rustler			
577.0	577.0	Salado			
3,885.0	3,885.0	Delaware/Lamar			
3,895.0	3,895.0	Bell Canyon			
4,843.0	4,843.0	Cherry Canyon			
4,996.0	4,996.0	Base Manzanita			
6,403.0	6,403.0	Brushy Canyon			
7,423.0	7,423.0	Basal Brushy Canyon			
7,688.0	7,688.0	Base Brushy Canyon Sands			
7,718.0	7,718.0	Bone Spring			
7,818.0	7,818.0	Avalon Sand			
8,310.0	8,310.0	Lower Avalon Shale			
8,768.0	8,768.0	First Bone Spring Sand			
9,240.6	9,240.0	Second Bone Spring Limestone			
9,622.1	9,621.0	Second Bone Spring Sand			
9,889.4	9,888.0	Third Bone Spring Limestone			
10,580.4	10,569.0	Third Bone Spring Sand			
11,323.0	11,023.0	Wolfcamp			
11,620.9	11,098.0	Wolfcamp Y Sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,700.0	8,700.0	0.0	0.0	Build 1.50°/100'
8,900.0	8,899.9	-5.1	1.4	EOB: 3.00° Inc, 165.00° Azi
10,308.0	10,306.0	-76.2	20.4	KOP : Build 8.00°/100'
11,008.6	10,883.6	-365.6	208.7	Build/Turn 8.00°/100'
11,766.0	11,110.0	-660.9	828.2	EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD
16,534.6	11,226.0	-645.8	5,595.4	TD @ 16534.6' MD, 11226.0' TVD



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
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Local Co-ordinate Reference: Well James Ranch Unit #146H
TVD Reference: RKB @ 3339.0usft (Frontier #27)
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
265.0	265.0	Rustler			
577.0	577.0	Salado			
3,885.0	3,885.0	Delaware/Lamar			
3,895.0	3,895.0	Bell Canyon			
4,843.0	4,843.0	Cherry Canyon			
4,996.0	4,996.0	Base Manzanita			
6,403.0	6,403.0	Brushy Canyon			
7,423.0	7,423.0	Basal Brushy Canyon			
7,688.0	7,688.0	Base Brushy Canyon Sands			
7,718.0	7,718.0	Bone Spring			
7,818.0	7,818.0	Avalon Sand			
8,310.0	8,310.0	Lower Avalon Shale			
8,768.0	8,768.0	First Bone Spring Sand			
9,240.6	9,240.0	Second Bone Spring Limestone			
9,622.1	9,621.0	Second Bone Spring Sand			
9,889.4	9,888.0	Third Bone Spring Limestone			
10,580.4	10,569.0	Third Bone Spring Sand			
11,323.0	11,023.0	Wolfcamp			
11,620.9	11,098.0	Wolfcamp Y Sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,700.0	8,700.0	0.0	0.0	Build 1.50°/100'
8,900.0	8,899.9	-5.1	1.4	EOB: 3.00° Inc, 165.00° Azi
10,308.0	10,306.0	-76.2	20.4	KOP: Build 8.00°/100'
11,008.6	10,883.6	-365.6	208.7	Build/Turn 8.00°/100'
11,766.0	11,110.0	-660.9	828.2	EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD
16,534.6	11,226.0	-645.8	5,595.4	TD @ 16534.6' MD, 11226.0' TVD



Well Planning Report



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Company: XTO ENERGY, INC.
Project: Eddy County, NM
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Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
265.0	265.0	Rustler			
577.0	577.0	Salado			
3,885.0	3,885.0	Delaware/Lamar			
3,895.0	3,895.0	Bell Canyon			
4,843.0	4,843.0	Cherry Canyon			
4,996.0	4,996.0	Base Manzanita			
6,403.0	6,403.0	Brushy Canyon			
7,423.0	7,423.0	Basal Brushy Canyon			
7,688.0	7,688.0	Base Brushy Canyon Sands			
7,718.0	7,718.0	Bone Spring			
7,818.0	7,818.0	Avalon Sand			
8,310.0	8,310.0	Lower Avalon Shale			
8,768.0	8,768.0	First Bone Spring Sand			
9,240.6	9,240.0	Second Bone Spring Limestone			
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9,889.4	9,888.0	Third Bone Spring Limestone			
10,580.4	10,569.0	Third Bone Spring Sand			
11,323.0	11,023.0	Wolfcamp			
11,620.9	11,098.0	Wolfcamp Y Sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,700.0	8,700.0	0.0	0.0	Build 1.50°/100'
8,900.0	8,899.9	-5.1	1.4	EOB: 3.00° Inc, 165.00° Azi
10,308.0	10,306.0	-76.2	20.4	KOP : Build 8.00°/100'
11,008.6	10,883.6	-365.6	208.7	Build/Turn 8.00°/100'
11,766.0	11,110.0	-660.9	828.2	EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD
16,534.6	11,226.0	-645.8	5,595.4	TD @ 16534.6' MD, 11226.0' TVD



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 36, T22S, R30E
Well: James Ranch Unit #146H
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Local Co-ordinate Reference: Well James Ranch Unit #146H
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North Reference: Grid
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Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
265.0	265.0	Rustler			
577.0	577.0	Salado			
3,885.0	3,885.0	Delaware/Lamar			
3,895.0	3,895.0	Bell Canyon			
4,843.0	4,843.0	Cherry Canyon			
4,996.0	4,996.0	Base Manzanita			
6,403.0	6,403.0	Brushy Canyon			
7,423.0	7,423.0	Basal Brushy Canyon			
7,688.0	7,688.0	Base Brushy Canyon Sands			
7,718.0	7,718.0	Bone Spring			
7,818.0	7,818.0	Avalon Sand			
8,310.0	8,310.0	Lower Avalon Shale			
8,768.0	8,768.0	First Bone Spring Sand			
9,240.6	9,240.0	Second Bone Spring Limestone			
9,622.1	9,621.0	Second Bone Spring Sand			
9,889.4	9,888.0	Third Bone Spring Limestone			
10,580.4	10,569.0	Third Bone Spring Sand			
11,323.0	11,023.0	Wolfcamp			
11,620.9	11,098.0	Wolfcamp Y Sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,700.0	8,700.0	0.0	0.0	Build 1.50°/100'
8,900.0	8,899.9	-5.1	1.4	EOB: 3.00° Inc, 165.00° Azi
10,308.0	10,306.0	-76.2	20.4	KOP : Build 8.00°/100'
11,008.6	10,883.6	-365.6	208.7	Build/Turn 8.00°/100'
11,766.0	11,110.0	-660.9	828.2	EOC: 88.61° Inc, 89.82° Azi, 11110.0' TVD
16,534.6	11,226.0	-645.8	5,595.4	TD @ 16534.6' MD, 11226.0' TVD

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME: BOPCO LP - Lockhart, Courtney
LEASE NO.: NM02953C
WELL NAME & NO.: James Ranch Unit - 146H
SURFACE HOLE FOOTAGE: 0800' FSL 0405' FEL
BOTTOM HOLE FOOTAGE: 0660' FSL 0330' FELSec.31,T22.S,R31E
LOCATION: Section 36, T22. S., R 30 E., NMPM
COUNTY: Eddy County, New Mexico

TABLE OF CONTENTS

☒ **Drilling**

R-111-P-Potash/WIPP
Medium Cave/Karst
H2S Requirements
Carlsbad water basin
Witness surface and intermediate casing

All previous COAs still apply except the following

I. DRILLING

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 encountered in quantities greater than 10 PPM the well shall be shut in and H₂S equipment shall be installed and flare line must be extended pursuant to Onshore Oil and Gas Order #6. Report measured values and formation to the BLM. After detection, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items.**
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. **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.**
4. **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) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC

CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

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

R-111-P-Potash/WIPP

Medium Cave/Karst

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Rustler and Delaware.

Abnormal pressure may be encountered within the 3rd Bone Spring Sandstone and the Wolfcamp formation.

1. The **13-3/8** inch surface casing shall be set at approximately **561** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - 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.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **3889** feet (base of the Lamar Limestone), is:
 - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst and potash.**

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.

Centralizers required through the curve and a minimum of one every other joint.

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

Operator has proposed DV tool at depth of 4300', but will adjust cement proportionately if moved. 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.

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.

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

☒ Cement should tie-back to the top of the liner. Operator shall provide method of verification. **Approved for a minimum of 100' liner overlap.**

5. 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.

6. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

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 RP 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.
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.
5. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**
 - 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" 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.

5M 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.

6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
 - 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.

D. DRILL STEM TEST

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

E. 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.

F. WIPP Requirements

The proposed well is located within 330' of the WIPP Land Withdrawal Area boundary. As a result, BOPCO, L.P. is required to submit daily drilling reports, logs and deviation survey information to the Bureau of Land Management and the Department of Energy per requirements of the Joint Powers Agreement until a total vertical depth of 7,000 feet is reached. These reports will have at a minimum the rate of penetration and a clearly marked section showing the deviation for each 500 foot interval. Operator may be required to do more frequent deviation surveys based on the daily information submitted and may be required to take other corrective measures. Information from this well will be included in the Quarterly Drilling Report. Information will also be provided to the New Mexico Oil Conservation Division after drilling activities have been completed. Upon completion of the well, the operator shall submit a complete directional survey. Any future entry into the well for purposes of completing additional drilling will require supplemental information.

BOPCO, L.P. can email the required information to Mr. Melvin Balderrama at Melvin.Balderama@wipp.ws or Mr. J. Neatherlin at Jimmy.Neatherlin@wipp.ws fax to his attention at 575-234-6062.

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