

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

NOV 06 2018

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to abandon a well. Use form 3160-3 (APD) for such proposals.

Serial No.
NMLC065705B

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

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

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.

MUY WAYNO 18 FEDERAL 122H

2. Name of Operator

XTO ENERGY INC

Contact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com

9. API Well No.

30-015-44841

3a. Address

6401 HOLIDAY HILL RD BLDG 5
MIDLAND, TX 79707

3b. Phone No. (include area code)

Ph: 432-620-4374

10. Field and Pool or Exploratory Area

WOLFCAMP

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

Sec 18 T25S R30E Mer NMP NWSW 2310FSL 1145FWL

11. County or Parish, State

EDDY COUNTY, NM

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

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

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or 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 recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

XTO Energy Inc, requests permission to make the following changes to the approved APD:

1. Change SHL fr/2310'FSL & 1145'FWL to 2310'FSL & 1115'FWL. No surface disturbance will occur with this change.
4. Change BHL fr/200'FNL & 990'FWL to 200'FSL & 1112'FWL
5. Drilling Program
6. Directional Program

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Attachments:

1. C-102 & Supplement
2. Drilling Program
3. Directional Survey

- 10/26/2018: Engineering review completed by m Hugre

WDP. Approved, no new surface disturbance, use existing COAs from 10/20-2018-002

DOI-BLM-NM

10/20-2018-002

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

Electronic Submission #439456 verified by the BLM Well Information System
For XTO ENERGY INC, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 10/15/2018 ()

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

Signature (Electronic Submission)

Date 10/12/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

Date

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

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)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

11-16-18
APD

Additional data for EC transaction #439456 that would not fit on the form

32. Additional remarks, continued

4. BOP/CM/FH

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

XTO Energy Inc.
Muy Wayno Federal 18 122H
Projected TD: 18563' MD / 10850' TVD
SHL: 2310' FNL & 1115' FWL , Section 18, T25S, R30E
BHL: 200' FNL & 1122' FWL , Section 7, T25S, R30E/W
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	721'	Water
Top of Salt	1036'	Water
Base of Salt	3308'	Water
Delaware	3491'	Water
Bone Spring	7219'	Water/Oil/Gas
1st Bone Spring Ss	8243'	Water/Oil/Gas
2nd Bone Spring Ss	9048'	Water/Oil/Gas
3rd Bone Spring Ss	10141'	Water/Oil/Gas
Wolfcamp	10542'	Water/Oil/Gas
Target/Land Curve	10850'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

*** Groundwater depth 40' (per NM State Engineers Office).

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13-3/8 inch casing @ 840' (196' above the salt) and circulating cement back to surface. The salt will be isolated by setting 9-5/8 inch casing at 3340' and circulating cement to surface. An 8-3/4 inch vertical and curve hole will be drilled and 7 inch casing run and cemented 500' into the 9-5/8 inch casing. A 6 inch curve and lateral hole will be drilled to MD/TD and 4-1/2 inch liner will be set at TD and cemented back 250' into the 7 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' – 840'	13-3/8"	54.5	BTC	J-55	New	2.63	2.94	21.16
12-1/4"	0' – 3340'	9-5/8"	40	BTC	J-55	New	1.39	2.45	5.24
8-3/4"	0' – 10900'	7"	32	BTC	P-110	New	1.31	2.06	2.84
6"	10288' – 18563'	4-1/2"	13.5	BTC	P-110	New	1.31	2.58	2.27

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 9-5/8" & 4-1/2" Collapse analyzed using 50% evacuation based on regional experience.
- 4-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

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

B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 15M top flange

- Wellhead will be installed by manufacturer's representatives.
- Manufacturer will monitor welding process to ensure appropriate temperature of seal.
- Operator will test the 9-5/8" casing to per Onshore Order 2.
- Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, BTC casing to be set at +/- 840'

Lead: 400 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft³/sx, 10.13 gal/sx water)

Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Intermediate Casing: 9-5/8", 40 New J-55, BTC casing to be set at +/- 3340'

Lead: 940 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

Tail: 230 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Intermediate Casing: 7", 32 New P-110, BTC casing to be set at +/- 10900'

Lead: 990 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

Tail: 60 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Production Casing: 4-1/2", 13.5 New P-110, BTC casing to be set at +/- 18563'

Tail: 700 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft³/sx, 8.38 gal/sx water)

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

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. MASP should not exceed 4101 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" 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When the 9-5/8" and 7" casing is set, the packoff seals 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 840'	17-1/2"	FW/Native	8.4-8.8	35-40	NC
840' to 3340'	12-1/4"	Brine/Gel Sweeps	9.8-10.2	30-32	NC
3340' to 10900'	8-3/4"	FW / Cut Brine	8.6-9.5	29-32	NC - 20
10900' to 18563'	6-1/8"	FW / Cut Brine / Polymer	11.2-11.5	32-50	20-Aug

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. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

7. Auxiliary Well Control and Monitoring Equipment

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

8. Logging, Coring and Testing Program

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

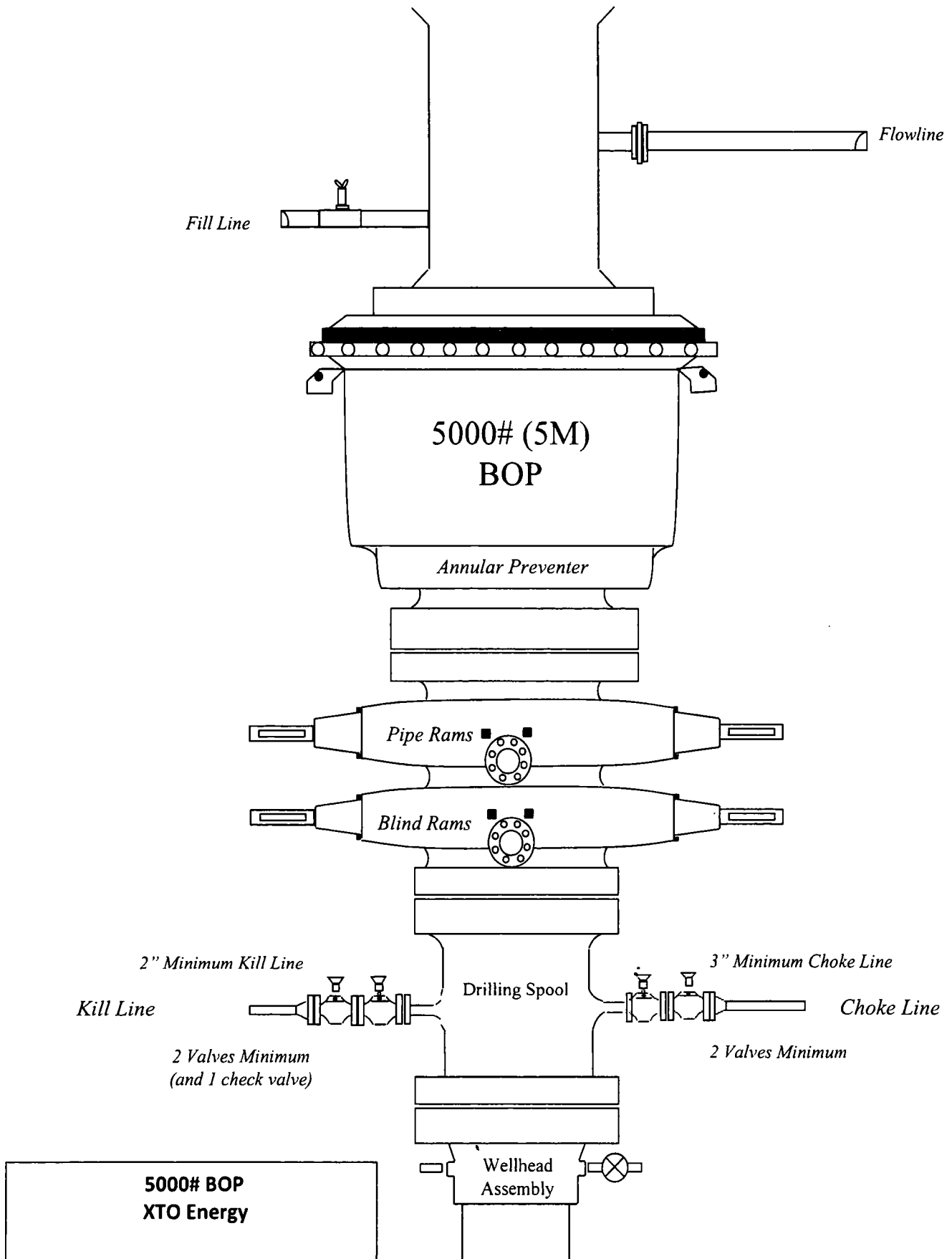
Open hole logging will not be done on this well.

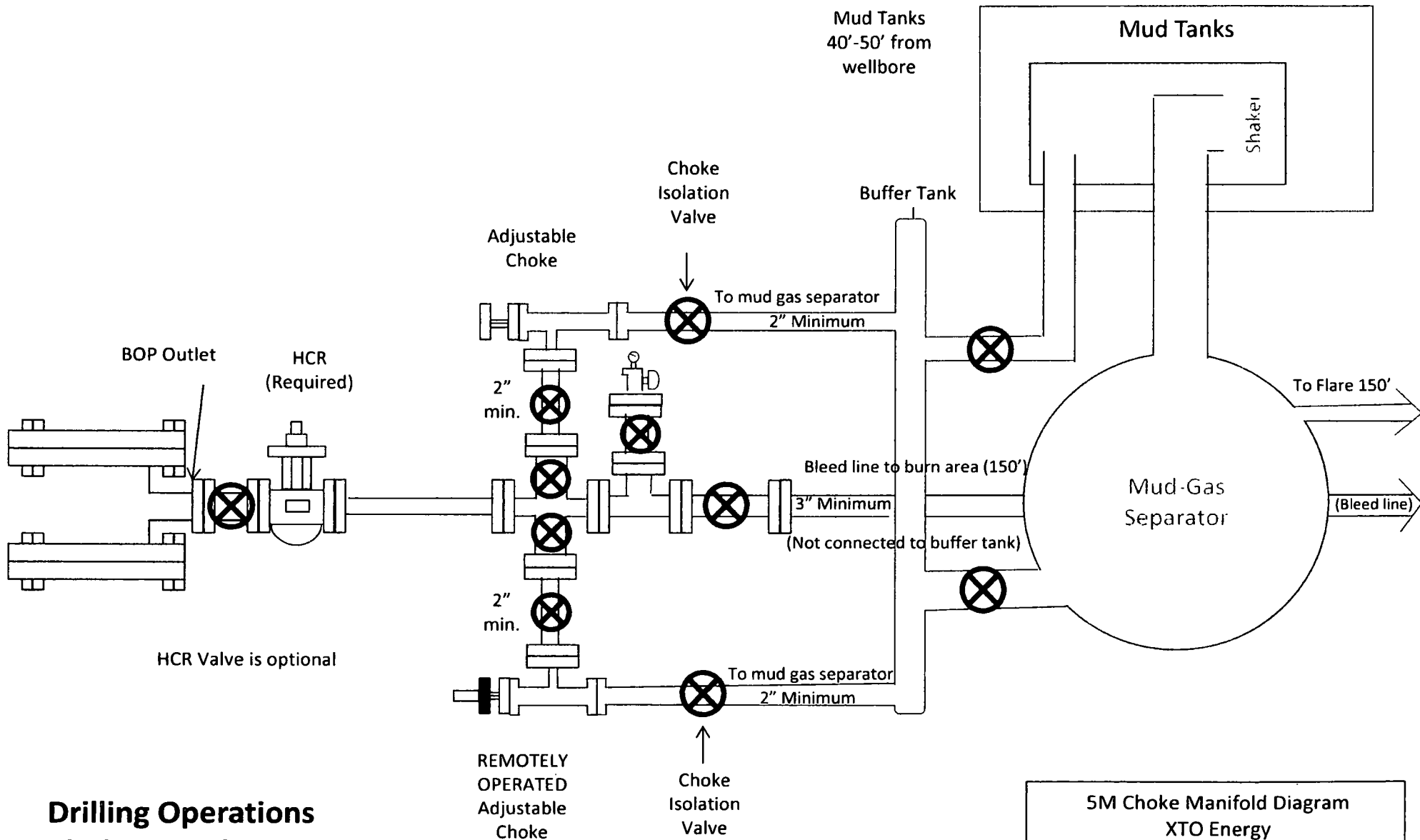
9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 145 to 165 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. Lost circulation could occur but is not expected to be a serious problem in this area and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid. The maximum anticipated bottom hole pressure for this well is 6488 psi.

10. Anticipated Starting Date and Duration of Operations

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





Drilling Operations **Choke Manifold** **5M Service**

5M Choke Manifold Diagram
XTO Energy



GATES E & S NORTH AMERICA, INC
DU-TEX
134 44TH STREET
CORPUS CHRISTI, TEXAS 78405

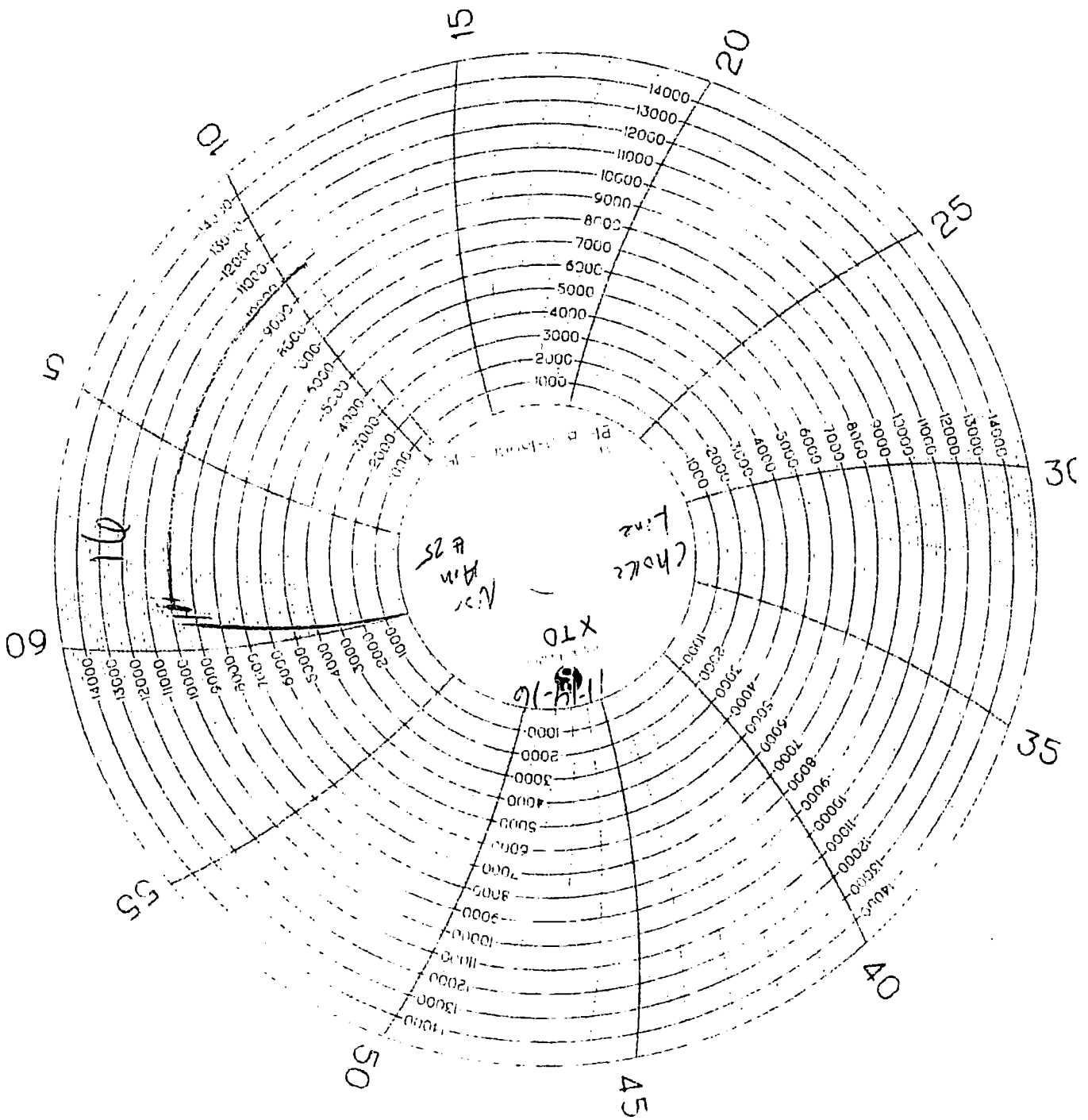
PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: crpe@s@gates.com
WEB: www.gates.com

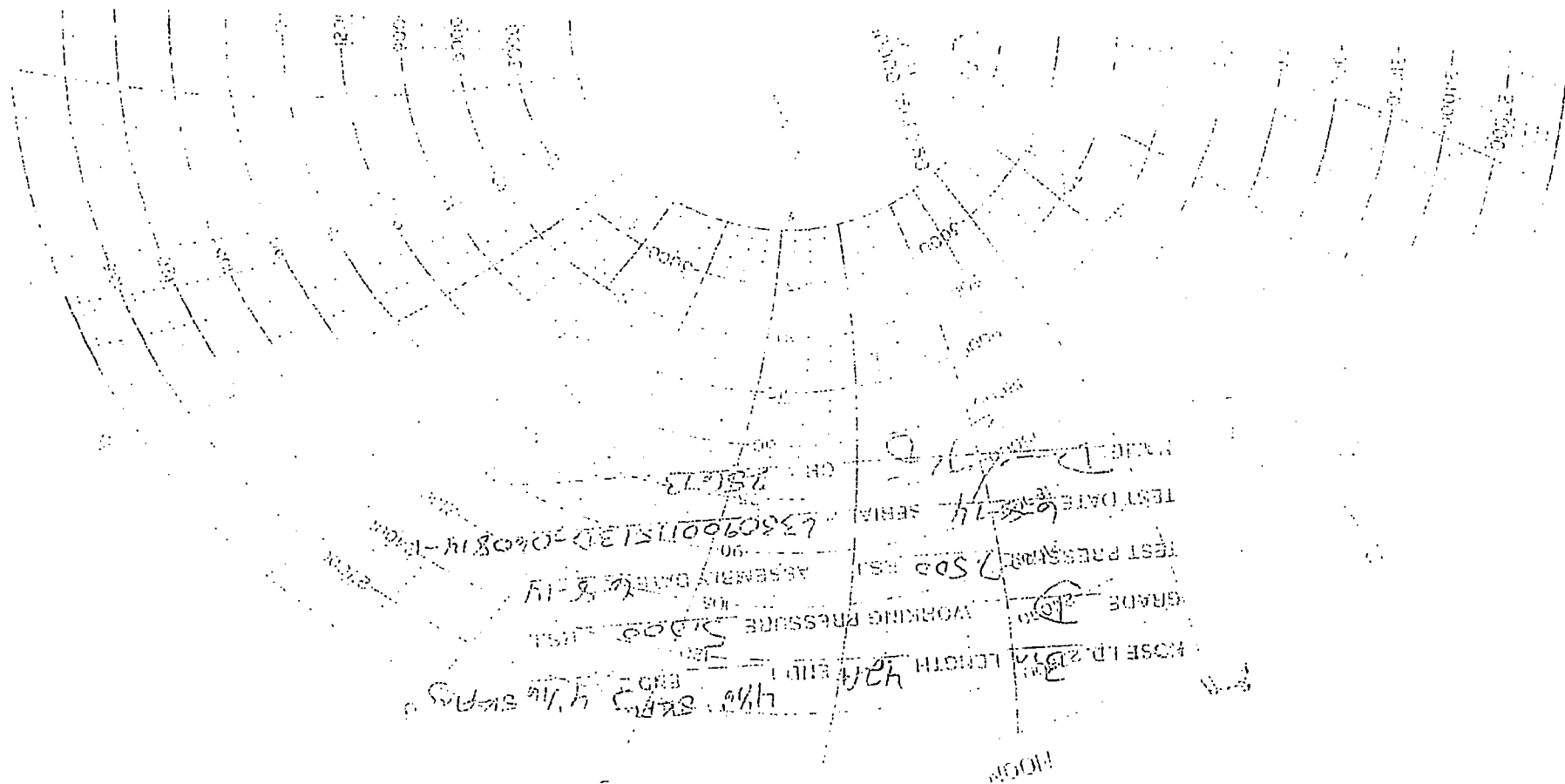
GRADE D PRESSURE TEST CERTIFICATE

Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-06081-1-1
Invoice No. :	201709	Created By:	NORMA
Product Description:	FD3.0-12.0R41/16.5KFLGE/E LE		
End Fitting 1 :	4 1/16 in.5K FLG	End Fitting 2 :	4 1/16 in.5K FLG
Gates Part No. :	4774-6001	Assembly Code :	L33090011513D-06081-1-1
Working Pressure :	5,000 PSI	Test Pressure :	7,500 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality :	QUALITY	Technical Supervisor :	PRODUCTION
Date :	6/8/2014	Date :	6/8/2014
Signature :		Signature :	







Company: XTO Energy
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 122H
Project: Eddy County, New Mexico (NAD 27)
Rig: Patterson 225



Azimuths to Grid North
True North: -0.22°
Magnetic North: 6.82°

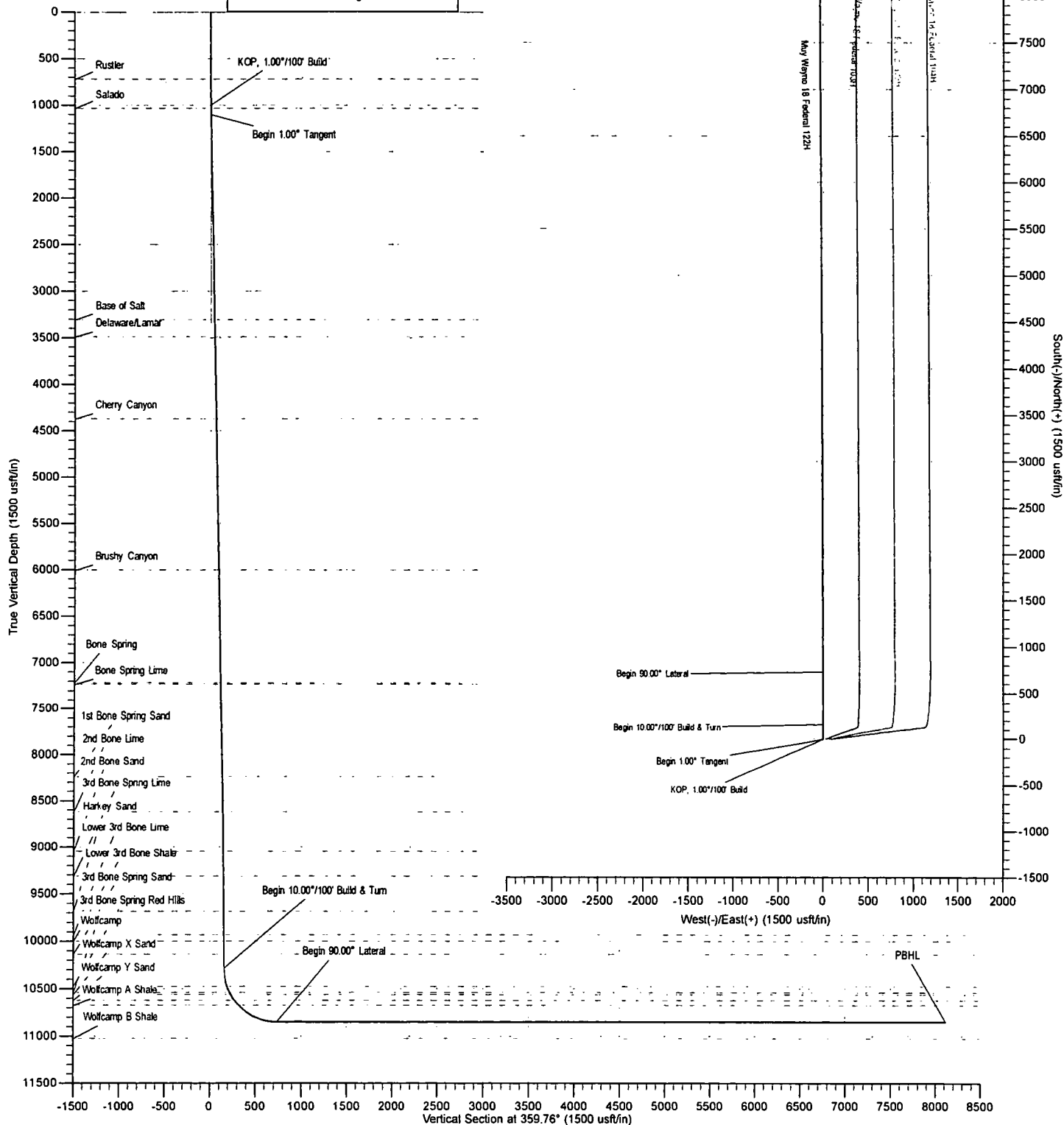
Magnetic Field
Strength: 47745.7nT
Dip Angle: 59.84°
Date: 11/1/2018
Model: BGM2018

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	KOP, 1.00°/100' Build
1100.00	1.00	359.76	1099.99	0.87	0.00	0.87	0.87	Begin 1.00° Tangent
10288.45	1.00	359.76	10287.04	161.23	-0.68	161.23	161.23	Begin 10.00°/100' Build & Turn
11178.45	90.00	359.76	10850.00	734.10	-3.06	734.10	734.10	Begin 90.00° Lateral
18563.41	90.00	359.76	10850.00	8119.00	-33.80	8119.07	8119.07	PBHL

US State Plane 1927 (Exact solution)
New Mexico East 3001

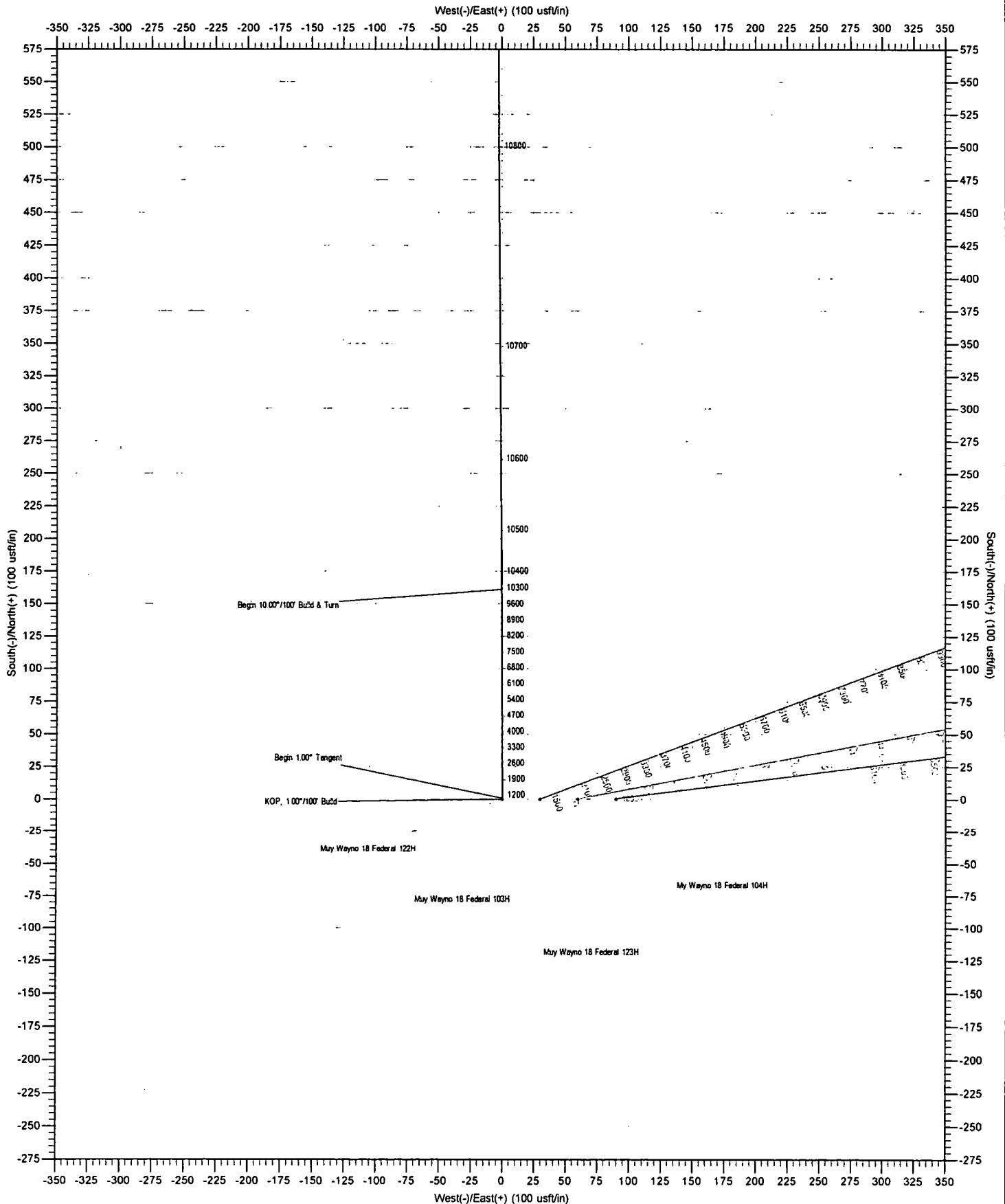
Created By: DLD
Date: 16:59, October 09 2018
Plan: Design #1



The customer should rely only on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented.
Any decisions made or wells drilled utilizing this or any other information supplied by MS Directional are at the sole risk and responsibility of the customer. MS Directional is not responsible for the accuracy of this schematic or the information contained herein.



Company: XTO Energy
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 122H
Project: Eddy County, New Mexico (NAD 27)
Rig: Patterson 225



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XTO Energy

Eddy County, New Mexico (NAD 27)

Muy Wayno 18 Federal

Muy Wayno 18 Federal 122H

Wellbore #1

Plan: Design #1

Standard Planning Report

09 October, 2018





MS Directional Planning Report



Database: EDM 5000.15 Conroe DB
Company: XTO Energy
Project: Eddy County, New Mexico (NAD 27)
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 122H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Muy Wayno 18 Federal 122H
TVD Reference: WELL @ 3192.00usft (Patterson 225)
MD Reference: WELL @ 3192.00usft (Patterson 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, New Mexico (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Muy Wayno 18 Federal

Site Position: Northing: 410,909.90 usft Latitude: 32° 7' 44.581 N
From: Map Easting: 626,306.10 usft Longitude: 103° 55' 31.139 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 "

Well Muy Wayno 18 Federal 122H

Well Position +N/-S 0.00 usft Northing: 410,909.90 usft Latitude: 32° 7' 44.581 N
+E/-W 0.00 usft Easting: 626,306.10 usft Longitude: 103° 55' 31.139 W
Position Uncertainty 0.00 usft Wellhead Elevation: usft Ground Level: 3,166.00 usft
Grid Convergence: 0.217 °

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2018	11/1/2018	7.040	59.841	47,745.75

Design Design #1

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.76

Plan Survey Tool Program Date 10/9/2018

Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1 0.00	18,563.41	Design #1 (Wellbore #1)	MWD	
			OWSG MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,100.00	1.00	359.76	1,099.99	0.87	0.00	1.00	1.00	0.00	359.760	
10,288.45	1.00	359.76	10,287.04	161.23	-0.68	0.00	0.00	0.00	0.000	
11,178.45	90.00	359.76	10,850.00	734.10	-3.06	10.00	10.00	0.00	0.002	
18,563.41	90.00	359.76	10,850.00	8,119.00	-33.80	0.00	0.00	0.00	0.000	PBHL - Muy Wayno



MS Directional
Planning Report



Database: EDM 5000.15 Conroe DB
Company: XTO Energy
Project: Eddy County, New Mexico (NAD 27)
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 122H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Muy Wayno 18 Federal 122H
TVD Reference: WELL @ 3192.00usft (Patterson 225)
MD Reference: WELL @ 3192.00usft (Patterson 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
721.00	0.00	0.00	721.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 1.00°/100' Build									
1,036.00	0.36	359.76	1,036.00	0.11	0.00	0.11	1.00	1.00	0.00
Salado									
1,100.00	1.00	359.76	1,099.99	0.87	0.00	0.87	1.00	1.00	0.00
Begin 1.00° Tangent									
1,200.00	1.00	359.76	1,199.98	2.62	-0.01	2.62	0.00	0.00	0.00
1,300.00	1.00	359.76	1,299.96	4.36	-0.02	4.36	0.00	0.00	0.00
1,400.00	1.00	359.76	1,399.95	6.11	-0.03	6.11	0.00	0.00	0.00
1,500.00	1.00	359.76	1,499.93	7.85	-0.03	7.85	0.00	0.00	0.00
1,600.00	1.00	359.76	1,599.92	9.60	-0.04	9.60	0.00	0.00	0.00
1,700.00	1.00	359.76	1,699.90	11.34	-0.05	11.34	0.00	0.00	0.00
1,800.00	1.00	359.76	1,799.89	13.09	-0.05	13.09	0.00	0.00	0.00
1,900.00	1.00	359.76	1,899.87	14.83	-0.06	14.83	0.00	0.00	0.00
2,000.00	1.00	359.76	1,999.86	16.58	-0.07	16.58	0.00	0.00	0.00
2,100.00	1.00	359.76	2,099.84	18.32	-0.08	18.33	0.00	0.00	0.00
2,200.00	1.00	359.76	2,199.83	20.07	-0.08	20.07	0.00	0.00	0.00
2,300.00	1.00	359.76	2,299.81	21.82	-0.09	21.82	0.00	0.00	0.00
2,400.00	1.00	359.76	2,399.80	23.56	-0.10	23.56	0.00	0.00	0.00
2,500.00	1.00	359.76	2,499.78	25.31	-0.11	25.31	0.00	0.00	0.00
2,600.00	1.00	359.76	2,599.77	27.05	-0.11	27.05	0.00	0.00	0.00
2,700.00	1.00	359.76	2,699.75	28.80	-0.12	28.80	0.00	0.00	0.00
2,800.00	1.00	359.76	2,799.74	30.54	-0.13	30.54	0.00	0.00	0.00
2,900.00	1.00	359.76	2,899.72	32.29	-0.14	32.29	0.00	0.00	0.00
3,000.00	1.00	359.76	2,999.71	34.03	-0.14	34.03	0.00	0.00	0.00
3,100.00	1.00	359.76	3,099.69	35.78	-0.15	35.78	0.00	0.00	0.00
3,200.00	1.00	359.76	3,199.68	37.52	-0.16	37.52	0.00	0.00	0.00
3,300.00	1.00	359.76	3,299.66	39.27	-0.16	39.27	0.00	0.00	0.00
3,308.34	1.00	359.76	3,308.00	39.41	-0.17	39.41	0.00	0.00	0.00
Base of Salt									
3,400.00	1.00	359.76	3,399.64	41.01	-0.17	41.01	0.00	0.00	0.00
3,491.37	1.00	359.76	3,491.00	42.61	-0.18	42.61	0.00	0.00	0.00
Delaware/Lamar									
3,500.00	1.00	359.76	3,499.63	42.76	-0.18	42.76	0.00	0.00	0.00
3,600.00	1.00	359.76	3,599.61	44.50	-0.19	44.50	0.00	0.00	0.00
3,700.00	1.00	359.76	3,699.60	46.25	-0.19	46.25	0.00	0.00	0.00
3,800.00	1.00	359.76	3,799.58	47.99	-0.20	47.99	0.00	0.00	0.00
3,900.00	1.00	359.76	3,899.57	49.74	-0.21	49.74	0.00	0.00	0.00
4,000.00	1.00	359.76	3,999.55	51.48	-0.22	51.48	0.00	0.00	0.00
4,100.00	1.00	359.76	4,099.54	53.23	-0.22	53.23	0.00	0.00	0.00
4,200.00	1.00	359.76	4,199.52	54.97	-0.23	54.98	0.00	0.00	0.00



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Wellbore: Wellbore #1
Design: Design #1

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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)
4,300.00	1.00	359.76	4,299.51	56.72	-0.24	56.72	0.00	0.00	0.00
4,372.50	1.00	359.76	4,372.00	57.99	-0.24	57.99	0.00	0.00	0.00
Cherry Canyon									
4,400.00	1.00	359.76	4,399.49	58.47	-0.24	58.47	0.00	0.00	0.00
4,500.00	1.00	359.76	4,499.48	60.21	-0.25	60.21	0.00	0.00	0.00
4,600.00	1.00	359.76	4,599.46	61.96	-0.26	61.96	0.00	0.00	0.00
4,700.00	1.00	359.76	4,699.45	63.70	-0.27	63.70	0.00	0.00	0.00
4,800.00	1.00	359.76	4,799.43	65.45	-0.27	65.45	0.00	0.00	0.00
4,900.00	1.00	359.76	4,899.42	67.19	-0.28	67.19	0.00	0.00	0.00
5,000.00	1.00	359.76	4,999.40	68.94	-0.29	68.94	0.00	0.00	0.00
5,100.00	1.00	359.76	5,099.39	70.68	-0.30	70.68	0.00	0.00	0.00
5,200.00	1.00	359.76	5,199.37	72.43	-0.30	72.43	0.00	0.00	0.00
5,300.00	1.00	359.76	5,299.36	74.17	-0.31	74.17	0.00	0.00	0.00
5,400.00	1.00	359.76	5,399.34	75.92	-0.32	75.92	0.00	0.00	0.00
5,500.00	1.00	359.76	5,499.32	77.66	-0.33	77.66	0.00	0.00	0.00
5,600.00	1.00	359.76	5,599.31	79.41	-0.33	79.41	0.00	0.00	0.00
5,700.00	1.00	359.76	5,699.29	81.15	-0.34	81.15	0.00	0.00	0.00
5,800.00	1.00	359.76	5,799.28	82.90	-0.35	82.90	0.00	0.00	0.00
5,900.00	1.00	359.76	5,899.26	84.64	-0.35	84.64	0.00	0.00	0.00
6,000.00	1.00	359.76	5,999.25	86.39	-0.36	86.39	0.00	0.00	0.00
6,006.75	1.00	359.76	6,006.00	86.51	-0.36	86.51	0.00	0.00	0.00
Brushy Canyon									
6,100.00	1.00	359.76	6,099.23	88.13	-0.37	88.13	0.00	0.00	0.00
6,200.00	1.00	359.76	6,199.22	89.88	-0.38	89.88	0.00	0.00	0.00
6,300.00	1.00	359.76	6,299.20	91.62	-0.38	91.63	0.00	0.00	0.00
6,400.00	1.00	359.76	6,399.19	93.37	-0.39	93.37	0.00	0.00	0.00
6,500.00	1.00	359.76	6,499.17	95.11	-0.40	95.12	0.00	0.00	0.00
6,600.00	1.00	359.76	6,599.16	96.86	-0.41	96.86	0.00	0.00	0.00
6,700.00	1.00	359.76	6,699.14	98.61	-0.41	98.61	0.00	0.00	0.00
6,800.00	1.00	359.76	6,799.13	100.35	-0.42	100.35	0.00	0.00	0.00
6,900.00	1.00	359.76	6,899.11	102.10	-0.43	102.10	0.00	0.00	0.00
7,000.00	1.00	359.76	6,999.10	103.84	-0.43	103.84	0.00	0.00	0.00
7,100.00	1.00	359.76	7,099.08	105.59	-0.44	105.59	0.00	0.00	0.00
7,200.00	1.00	359.76	7,199.07	107.33	-0.45	107.33	0.00	0.00	0.00
7,219.94	1.00	359.76	7,219.00	107.68	-0.45	107.68	0.00	0.00	0.00
Bone Spring									
7,232.94	1.00	359.76	7,232.00	107.91	-0.45	107.91	0.00	0.00	0.00
Bone Spring Lime									
7,300.00	1.00	359.76	7,299.05	109.08	-0.46	109.08	0.00	0.00	0.00
7,400.00	1.00	359.76	7,399.04	110.82	-0.46	110.82	0.00	0.00	0.00
7,500.00	1.00	359.76	7,499.02	112.57	-0.47	112.57	0.00	0.00	0.00
7,600.00	1.00	359.76	7,599.01	114.31	-0.48	114.31	0.00	0.00	0.00
7,700.00	1.00	359.76	7,698.99	116.06	-0.49	116.06	0.00	0.00	0.00
7,800.00	1.00	359.76	7,798.97	117.80	-0.49	117.80	0.00	0.00	0.00
7,900.00	1.00	359.76	7,898.96	119.55	-0.50	119.55	0.00	0.00	0.00
8,000.00	1.00	359.76	7,998.94	121.29	-0.51	121.29	0.00	0.00	0.00
8,100.00	1.00	359.76	8,098.93	123.04	-0.52	123.04	0.00	0.00	0.00
8,200.00	1.00	359.76	8,198.91	124.78	-0.52	124.78	0.00	0.00	0.00
8,244.09	1.00	359.76	8,243.00	125.55	-0.53	125.55	0.00	0.00	0.00
1st Bone Spring Sand									
8,300.00	1.00	359.76	8,298.90	126.53	-0.53	126.53	0.00	0.00	0.00
8,400.00	1.00	359.76	8,398.88	128.27	-0.54	128.28	0.00	0.00	0.00
8,500.00	1.00	359.76	8,498.87	130.02	-0.54	130.02	0.00	0.00	0.00



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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)
8,600.00	1.00	359.76	8,598.85	131.76	-0.55	131.77	0.00	0.00	0.00
8,623.15	1.00	359.76	8,622.00	132.17	-0.55	132.17	0.00	0.00	0.00
2nd Bone Lime									
8,700.00	1.00	359.76	8,698.84	133.51	-0.56	133.51	0.00	0.00	0.00
8,800.00	1.00	359.76	8,798.82	135.25	-0.57	135.26	0.00	0.00	0.00
8,900.00	1.00	359.76	8,898.81	137.00	-0.57	137.00	0.00	0.00	0.00
9,000.00	1.00	359.76	8,998.79	138.75	-0.58	138.75	0.00	0.00	0.00
9,049.22	1.00	359.76	9,048.00	139.60	-0.58	139.61	0.00	0.00	0.00
2nd Bone Sand									
9,100.00	1.00	359.76	9,098.78	140.49	-0.59	140.49	0.00	0.00	0.00
9,200.00	1.00	359.76	9,198.76	142.24	-0.60	142.24	0.00	0.00	0.00
9,300.00	1.00	359.76	9,298.75	143.98	-0.60	143.98	0.00	0.00	0.00
9,315.26	1.00	359.76	9,314.00	144.25	-0.60	144.25	0.00	0.00	0.00
3rd Bone Spring Lime									
9,400.00	1.00	359.76	9,398.73	145.73	-0.61	145.73	0.00	0.00	0.00
9,500.00	1.00	359.76	9,498.72	147.47	-0.62	147.47	0.00	0.00	0.00
9,600.00	1.00	359.76	9,598.70	149.22	-0.63	149.22	0.00	0.00	0.00
9,689.31	1.00	359.76	9,688.00	150.78	-0.63	150.78	0.00	0.00	0.00
Harkey Sand									
9,700.00	1.00	359.76	9,698.69	150.96	-0.63	150.96	0.00	0.00	0.00
9,800.00	1.00	359.76	9,798.67	152.71	-0.64	152.71	0.00	0.00	0.00
9,900.00	1.00	359.76	9,898.65	154.45	-0.65	154.45	0.00	0.00	0.00
9,936.35	1.00	359.76	9,935.00	155.09	-0.65	155.09	0.00	0.00	0.00
Lower 3rd Bone Lime									
10,000.00	1.00	359.76	9,998.64	156.20	-0.65	156.20	0.00	0.00	0.00
10,002.36	1.00	359.76	10,001.00	156.24	-0.65	156.24	0.00	0.00	0.00
Lower 3rd Bone Shale									
10,100.00	1.00	359.76	10,098.62	157.94	-0.66	157.94	0.00	0.00	0.00
10,142.38	1.00	359.76	10,141.00	158.68	-0.66	158.68	0.00	0.00	0.00
3rd Bone Spring Sand									
10,200.00	1.00	359.76	10,198.61	159.69	-0.67	159.69	0.00	0.00	0.00
10,288.45	1.00	359.76	10,287.04	161.23	-0.68	161.23	0.00	0.00	0.00
Begin 10.00°/100' Build & Turn									
10,300.00	2.16	359.76	10,298.59	161.55	-0.68	161.55	10.00	10.00	0.01
10,400.00	12.16	359.76	10,397.69	173.99	-0.73	173.99	10.00	10.00	0.00
10,482.70	20.43	359.76	10,477.00	197.17	-0.83	197.17	10.00	10.00	0.00
3rd Bone Spring Red Hills									
10,500.00	22.16	359.76	10,493.12	203.45	-0.85	203.45	10.00	10.00	0.00
10,553.89	27.54	359.76	10,542.00	226.09	-0.95	226.09	10.00	10.00	0.00
Wolfcamp									
10,577.84	29.94	359.76	10,563.00	237.60	-0.99	237.61	10.00	10.00	0.00
Wolfcamp X Sand									
10,600.00	32.16	359.76	10,581.98	249.03	-1.04	249.03	10.00	10.00	0.00
10,652.39	37.39	359.76	10,625.00	278.90	-1.17	278.90	10.00	10.00	0.00
Wolfcamp Y Sand									
10,700.00	42.16	359.76	10,661.58	309.35	-1.29	309.35	10.00	10.00	0.00
10,716.99	43.85	359.76	10,674.00	320.94	-1.34	320.94	10.00	10.00	0.00
Wolfcamp A Shale									
10,800.00	52.16	359.76	10,729.49	382.58	-1.60	382.58	10.00	10.00	0.00
10,900.00	62.16	359.76	10,783.66	466.48	-1.95	466.49	10.00	10.00	0.00
11,000.00	72.16	359.76	10,822.44	558.52	-2.33	558.53	10.00	10.00	0.00
11,100.00	82.16	359.76	10,844.64	655.90	-2.73	655.90	10.00	10.00	0.00
11,178.45	90.00	359.76	10,850.00	734.10	-3.06	734.10	10.00	10.00	0.00



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Begin 90.00° Lateral									
11,200.00	90.00	359.76	10,850.00	755.65	-3.15	755.66	0.00	0.00	0.00
11,300.00	90.00	359.76	10,850.00	855.65	-3.57	855.66	0.00	0.00	0.00
11,400.00	90.00	359.76	10,850.00	955.65	-3.98	955.66	0.00	0.00	0.00
11,500.00	90.00	359.76	10,850.00	1,055.65	-4.40	1,055.66	0.00	0.00	0.00
11,600.00	90.00	359.76	10,850.00	1,155.65	-4.81	1,155.66	0.00	0.00	0.00
11,700.00	90.00	359.76	10,850.00	1,255.65	-5.23	1,255.66	0.00	0.00	0.00
11,800.00	90.00	359.76	10,850.00	1,355.65	-5.65	1,355.66	0.00	0.00	0.00
11,900.00	90.00	359.76	10,850.00	1,455.64	-6.06	1,455.66	0.00	0.00	0.00
12,000.00	90.00	359.76	10,850.00	1,555.64	-6.48	1,555.66	0.00	0.00	0.00
12,100.00	90.00	359.76	10,850.00	1,655.64	-6.90	1,655.66	0.00	0.00	0.00
12,200.00	90.00	359.76	10,850.00	1,755.64	-7.31	1,755.66	0.00	0.00	0.00
12,300.00	90.00	359.76	10,850.00	1,855.64	-7.73	1,855.66	0.00	0.00	0.00
12,400.00	90.00	359.76	10,850.00	1,955.64	-8.14	1,955.66	0.00	0.00	0.00
12,500.00	90.00	359.76	10,850.00	2,055.64	-8.56	2,055.66	0.00	0.00	0.00
12,600.00	90.00	359.76	10,850.00	2,155.64	-8.98	2,155.66	0.00	0.00	0.00
12,700.00	90.00	359.76	10,850.00	2,255.64	-9.39	2,255.66	0.00	0.00	0.00
12,800.00	90.00	359.76	10,850.00	2,355.64	-9.81	2,355.66	0.00	0.00	0.00
12,900.00	90.00	359.76	10,850.00	2,455.64	-10.23	2,455.66	0.00	0.00	0.00
13,000.00	90.00	359.76	10,850.00	2,555.64	-10.64	2,555.66	0.00	0.00	0.00
13,100.00	90.00	359.76	10,850.00	2,655.63	-11.06	2,655.66	0.00	0.00	0.00
13,200.00	90.00	359.76	10,850.00	2,755.63	-11.47	2,755.66	0.00	0.00	0.00
13,300.00	90.00	359.76	10,850.00	2,855.63	-11.89	2,855.66	0.00	0.00	0.00
13,400.00	90.00	359.76	10,850.00	2,955.63	-12.31	2,955.66	0.00	0.00	0.00
13,500.00	90.00	359.76	10,850.00	3,055.63	-12.72	3,055.66	0.00	0.00	0.00
13,600.00	90.00	359.76	10,850.00	3,155.63	-13.14	3,155.66	0.00	0.00	0.00
13,700.00	90.00	359.76	10,850.00	3,255.63	-13.56	3,255.66	0.00	0.00	0.00
13,800.00	90.00	359.76	10,850.00	3,355.63	-13.97	3,355.66	0.00	0.00	0.00
13,900.00	90.00	359.76	10,850.00	3,455.63	-14.39	3,455.66	0.00	0.00	0.00
14,000.00	90.00	359.76	10,850.00	3,555.63	-14.80	3,555.66	0.00	0.00	0.00
14,100.00	90.00	359.76	10,850.00	3,655.63	-15.22	3,655.66	0.00	0.00	0.00
14,200.00	90.00	359.76	10,850.00	3,755.62	-15.64	3,755.66	0.00	0.00	0.00
14,300.00	90.00	359.76	10,850.00	3,855.62	-16.05	3,855.66	0.00	0.00	0.00
14,400.00	90.00	359.76	10,850.00	3,955.62	-16.47	3,955.66	0.00	0.00	0.00
14,500.00	90.00	359.76	10,850.00	4,055.62	-16.89	4,055.66	0.00	0.00	0.00
14,600.00	90.00	359.76	10,850.00	4,155.62	-17.30	4,155.66	0.00	0.00	0.00
14,700.00	90.00	359.76	10,850.00	4,255.62	-17.72	4,255.66	0.00	0.00	0.00
14,800.00	90.00	359.76	10,850.00	4,355.62	-18.13	4,355.66	0.00	0.00	0.00
14,900.00	90.00	359.76	10,850.00	4,455.62	-18.55	4,455.66	0.00	0.00	0.00
15,000.00	90.00	359.76	10,850.00	4,555.62	-18.97	4,555.66	0.00	0.00	0.00
15,100.00	90.00	359.76	10,850.00	4,655.62	-19.38	4,655.66	0.00	0.00	0.00
15,200.00	90.00	359.76	10,850.00	4,755.62	-19.80	4,755.66	0.00	0.00	0.00
15,300.00	90.00	359.76	10,850.00	4,855.62	-20.22	4,855.66	0.00	0.00	0.00
15,400.00	90.00	359.76	10,850.00	4,955.61	-20.63	4,955.66	0.00	0.00	0.00
15,500.00	90.00	359.76	10,850.00	5,055.61	-21.05	5,055.66	0.00	0.00	0.00
15,600.00	90.00	359.76	10,850.00	5,155.61	-21.46	5,155.66	0.00	0.00	0.00
15,700.00	90.00	359.76	10,850.00	5,255.61	-21.88	5,255.66	0.00	0.00	0.00
15,800.00	90.00	359.76	10,850.00	5,355.61	-22.30	5,355.66	0.00	0.00	0.00
15,900.00	90.00	359.76	10,850.00	5,455.61	-22.71	5,455.66	0.00	0.00	0.00
16,000.00	90.00	359.76	10,850.00	5,555.61	-23.13	5,555.66	0.00	0.00	0.00
16,100.00	90.00	359.76	10,850.00	5,655.61	-23.55	5,655.66	0.00	0.00	0.00
16,200.00	90.00	359.76	10,850.00	5,755.61	-23.96	5,755.66	0.00	0.00	0.00
16,300.00	90.00	359.76	10,850.00	5,855.61	-24.38	5,855.66	0.00	0.00	0.00



MS Directional Planning Report



Database: EDM 5000.15 Conroe DB
Company: XTO Energy
Project: Eddy County, New Mexico (NAD 27)
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 122H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Muy Wayno 18 Federal 122H
TVD Reference: WELL @ 3192.00usft (Patterson 225)
MD Reference: WELL @ 3192.00usft (Patterson 225)
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)
16,400.00	90.00	359.76	10,850.00	5,955.61	-24.79	5,955.66	0.00	0.00	0.00
16,500.00	90.00	359.76	10,850.00	6,055.60	-25.21	6,055.66	0.00	0.00	0.00
16,600.00	90.00	359.76	10,850.00	6,155.60	-25.63	6,155.66	0.00	0.00	0.00
16,700.00	90.00	359.76	10,850.00	6,255.60	-26.04	6,255.66	0.00	0.00	0.00
16,800.00	90.00	359.76	10,850.00	6,355.60	-26.46	6,355.66	0.00	0.00	0.00
16,900.00	90.00	359.76	10,850.00	6,455.60	-26.88	6,455.66	0.00	0.00	0.00
17,000.00	90.00	359.76	10,850.00	6,555.60	-27.29	6,555.66	0.00	0.00	0.00
17,100.00	90.00	359.76	10,850.00	6,655.60	-27.71	6,655.66	0.00	0.00	0.00
17,200.00	90.00	359.76	10,850.00	6,755.60	-28.12	6,755.66	0.00	0.00	0.00
17,300.00	90.00	359.76	10,850.00	6,855.60	-28.54	6,855.66	0.00	0.00	0.00
17,400.00	90.00	359.76	10,850.00	6,955.60	-28.96	6,955.66	0.00	0.00	0.00
17,500.00	90.00	359.76	10,850.00	7,055.60	-29.37	7,055.66	0.00	0.00	0.00
17,600.00	90.00	359.76	10,850.00	7,155.60	-29.79	7,155.66	0.00	0.00	0.00
17,700.00	90.00	359.76	10,850.00	7,255.59	-30.21	7,255.66	0.00	0.00	0.00
17,800.00	90.00	359.76	10,850.00	7,355.59	-30.62	7,355.66	0.00	0.00	0.00
17,900.00	90.00	359.76	10,850.00	7,455.59	-31.04	7,455.66	0.00	0.00	0.00
18,000.00	90.00	359.76	10,850.00	7,555.59	-31.45	7,555.66	0.00	0.00	0.00
18,100.00	90.00	359.76	10,850.00	7,655.59	-31.87	7,655.66	0.00	0.00	0.00
18,200.00	90.00	359.76	10,850.00	7,755.59	-32.29	7,755.66	0.00	0.00	0.00
18,300.00	90.00	359.76	10,850.00	7,855.59	-32.70	7,855.66	0.00	0.00	0.00
18,400.00	90.00	359.76	10,850.00	7,955.59	-33.12	7,955.66	0.00	0.00	0.00
18,500.00	90.00	359.76	10,850.00	8,055.59	-33.54	8,055.66	0.00	0.00	0.00
18,563.41	90.00	359.76	10,850.00	8,119.00	-33.80	8,119.07	0.00	0.00	0.00
PBHL									

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
PBHL - Muy Wayno 18 - plan hits target center - Point	0.00	0.00	10,850.00	8,119.00	-33.80	419,028.90	626,272.30	32° 9' 4.930 N	103° 55' 31.174 W
LTP - Muy Wayno 18 I - plan misses target center by 0.16usft at 18433.41usft MD (10850.00 TVD, 7989.00 N, -33.26 E) - Point	0.00	0.00	10,850.00	7,989.00	-33.10	418,898.90	626,273.00	32° 9' 3.644 N	103° 55' 31.172 W
FTP - Muy Wayno 18 - plan misses target center by 5.81usft at 11143.48usft MD (10848.93 TVD, 699.15 N, -2.91 E) - Point	0.00	0.00	10,850.00	699.10	2.80	411,609.00	626,308.90	32° 7' 51.500 N	103° 55' 31.075 W



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Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
721.00	721.00	Rustler		0.000	359.76
1,036.00	1,036.00	Salado		0.000	359.76
3,308.34	3,308.00	Base of Salt		0.000	359.76
3,491.37	3,491.00	Delaware/Lamar		0.000	359.76
4,372.50	4,372.00	Cherry Canyon		0.000	359.76
6,006.75	6,006.00	Brushy Canyon		0.000	359.76
7,219.94	7,219.00	Bone Spring		0.000	359.76
7,232.94	7,232.00	Bone Spring Lime		0.000	359.76
8,244.09	8,243.00	1st Bone Spring Sand		0.000	359.76
8,623.15	8,622.00	2nd Bone Lime		0.000	359.76
9,049.22	9,048.00	2nd Bone Sand		0.000	359.76
9,315.26	9,314.00	3rd Bone Spring Lime		0.000	359.76
9,689.31	9,688.00	Harkey Sand		0.000	359.76
9,936.35	9,935.00	Lower 3rd Bone Lime		0.000	359.76
10,002.36	10,001.00	Lower 3rd Bone Shale		0.000	359.76
10,142.38	10,141.00	3rd Bone Spring Sand		0.000	359.76
10,482.70	10,477.00	3rd Bone Spring Red Hills		0.000	359.76
10,553.89	10,542.00	Wolfcamp		0.000	359.76
10,577.84	10,563.00	Wolfcamp X Sand		0.000	359.76
10,652.39	10,625.00	Wolfcamp Y Sand		0.000	359.76
10,716.99	10,674.00	Wolfcamp A Shale		0.000	359.76

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,000.00	1,000.00	0.00	0.00	KOP, 1.00°/100' Build
1,100.00	1,099.99	0.87	0.00	Begin 1.00° Tangent
10,288.45	10,287.04	161.23	-0.68	Begin 10.00°/100' Build & Turn
11,178.45	10,850.00	734.10	-3.06	Begin 90.00° Lateral
18,563.41	10,850.00	8,119.00	-33.80	PBHL

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Energy Inc
LEASE NO.:	LC065705B
WELL NAME & NO.:	122H – Muy Wayno 18 Federal
SURFACE HOLE FOOTAGE:	2310'/S & 1115'/W
BOTTOM HOLE FOOTAGE:	200'/N & 1122'/W, sec. 7
LOCATION:	Section 18, T. 25 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☐ Medium	☒ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

All previous COAs still apply, except for the following:

A. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **840** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9 5/8** inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the 7 inch production casing is:
 - Cement as proposed. Operator shall provide method of verification.
4. The minimum required fill of cement behind the 4 1/2 inch production liner is:
 - Cement should tie-back at least **100** feet into previous casing string. Operator shall provide method of verification.

MHH 10262018

GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)

393-3612

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.