

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

Operator

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or recomplete an abandoned well. Use form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMNM05039A

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
891000303X8. Well Name and No.
POKER LAKE UNIT 21 BD 102H9. API Well No.
30-015-45476-00-X110. Field and Pool or Exploratory Area
PURPLE SAGE-WOLFCAMP (GAS)11. County or Parish, State
EDDY COUNTY, NM

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
XTO PERMIAN OPERATING LLC
Contact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com3a. Address
6401 HOLIDAY HILL ROAD BLDG 5
MIDLAND, TX 797073b. Phone No. (include area code)
Ph: 432-620-43744. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 21 T25S R30E SWSW 452FSL 948FWL
32.109608 N Lat, 103.891747 W Lon

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.

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

Change the casing/cement program per the attached procedure.

XTO requests to not utilize centralizers in the curve and lateral.

8-5/8" sing will be a split string with CYP-110 run from surface to 3810' & HCL-80 from 3810' to 70' because the 8-5/8" HCL-80 casing fails at SF burst at surface. The split string design passes our internal requirements.

XTO requests a variance to be able to batch drill this well if necessary. In doing so, XTO will set each casing string and ensure that the well is cemented properly and the well is static. With

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

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

Electronic Submission #497751 verified by the BLM Well Information System
For XTO PERMIAN OPERATING LLC, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER SANCHEZ on 01/07/2020 (20JAS0068SE)

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

Signature (Electronic Submission)

Date 01/06/2020

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

JAN 13 2020

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

BUREAU OF LAND MANAGEMENT
ROSWELL FIELD 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)

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

Accepted

RWP 1-23-2020

Additional data for EC transaction #497751 that would not fit on the form

32. Additional remarks, continued

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

Poker Lake Unit 21 BD 701H ? 30-015-45699

Poker Lake Unit 21 BD 901H ? 30-015-45477

Poker Lake Unit 21 BD 121H ? 30-015-45513

Poker Lake Unit 21 BD 122H ? 30-015-45696

Poker Lake Unit 21 BD 102H ? 30-015-45476

Revisions to Operator-Submitted EC Data for Sundry Notice #497751

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM05039A	NMNM05039A
Agreement:	NMNM71016X	891000303X (NMNM71016X)
Operator:	XTO PERMIAN OPERATING, LLC 6401 HOLIDAY HILL RD BLDG 5 MIDLAND, TX 79707 Ph: 432-620-4374	XTO PERMIAN OPERATING LLC 6401 HOLIDAY HILL ROAD BLDG 5 MIDLAND, TX 79707 Ph: 432.683 2277
Admin Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Tech Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Location:		
State:	NM	NM
County:	EDDY	EDDY
Field/Pool:	PURPLE SAGE WOLFCAMP	PURPLE SAGE-WOLFCAMP (GAS)
Well/Facility:	POKER LAKE UNIT 21 BD 102H Sec 21 T25S R30E Mer NMP SWSW 452FSL 948FWL	POKER LAKE UNIT 21 BD 102H Sec 21 T25S R30E SWSW 452FSL 948FWL 32.109608 N Lat, 103.891747 W Lon

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

XTO Energy Inc.
PLU 21, Brushy Draw, 102H
Projected TD: 22340' MD / 11889' TVD
SHL: 452' FSL & 948' FWL, Section 21, T25S, R30E
BHL: 200' FSL & 990' FWL, Section 33, T25S, R30E
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	979'	Water
Top of Salt	1136'	Water
Base of Salt	3516'	Water
Delaware	3753'	Water
Bone Spring	7570'	Water/Oil/Gas
1st Bone Spring Ss	8534'	Water/Oil/Gas
2nd Bone Spring Ss	9364'	Water/Oil/Gas
3rd Bone Spring Ss	10449'	Water/Oil/Gas
Wolfcamp	10784'	Water/Oil/Gas
Wolfcamp A	10939'	Water/Oil/Gas
Wolfcamp B	11399'	Water/Oil/Gas
Wolfcamp E	11870'	Water/Oil/Gas
Target/Land Curve	11889'	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 16 inch casing @ (1136' above the salt) and circulating cement back to surface. The salt will be isolated by setting 11-3/4 inch casing at 1030' and circulating cement to surface. A 10-5/8 inch vertical hole will be drilled to 11039' and 8-5/8 inch casing run and cemented 500' into the 11-3/4 inch casing. An 7-7/8 inch curve and lateral hole will be drilled to MD/TD and 5-1/2 casing will be set at TD and cemented back 300' into the 8-5/8 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
14-3/4"	0' - 1030'	11-3/4"	47	BTC	J-55	New	1.12	2.82	9.85
10-5/8"	0' - 3810'	8-5/8"	32	BTC	CYP-110	New	1.33	1.23	2.85
10-5/8"	3810' - 11039'	8-5/8"	32	BTC	HCL-80	New	0.96	1.37	2.07
7-7/8"	0' - 22340'	5-1/2"	20	BTC	P-110	New	1.18	1.33	2.12

- XTO requests to not utilize centralizers in the curve and lateral
- 8-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 8-5/8" casing will be a split string with CYP-110 run from surface to 3810' & HCL-80 from 3810' to TD because the 8-5/8" HCL-80 casing fails at SF burst at surface. The split string design passes our internal requirements
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35
- Test on Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less

WELLHEAD:

Permanent Wellhead - GE RSH Multibowl System

A. Starting Head (RSH System): 11-3/4" SOW bottom x 13-5/8" 5M top flange

B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 10M top flange

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

4. Cement Program

Surface Casing: 11-3/4", 47 New J-55, BTC casing to be set at +/- 1030'

Lead: 330 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 190 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)

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

Top of Cement: Surface

Intermediate Casing: 8-5/8", 32 New CYP-110, BTC casing to be set at +/- 11039'

ECP/DV Tool to be set at 1080'

1st Stage

Lead: 10 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.87 ft3/sx, 9.61 gal/sx water)

Tail: 70 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)

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

2nd Stage

Lead: 1990 sxs Halcem-C + 2% CaCl (mixed at 12.8 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 310 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)

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

Top of Cement: 290' inside previous casing shoe: *surface*

Production Casing: 5-1/2", 20 New P-110, BTC casing to be set at +/- 22340'

Lead: 1790 sxs Halcem-C + 2% CaCl (mixed at 11.5 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 1790 sxs VersaCem (mixed at 13.2 ppg, 10875 ft3/sx, 8.38 gal/sx water)

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

Top of Cement: 300' inside previous casing shoe

5. Pressure Control Equipment

Once the permanent WH is installed on the 13-3/8 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 10M 3-Ram BOP. MASP should not exceed 5730 psi. In any instance where 10M BOP is required by BLM, XTO requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M). Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-5/8" 10M bradenhead and flange, the BOP test will be limited to 10000 psi. When the 11-3/4" and 8-5/8" casing is set, the packoff seals will be tested to a minimum of 10000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 10M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

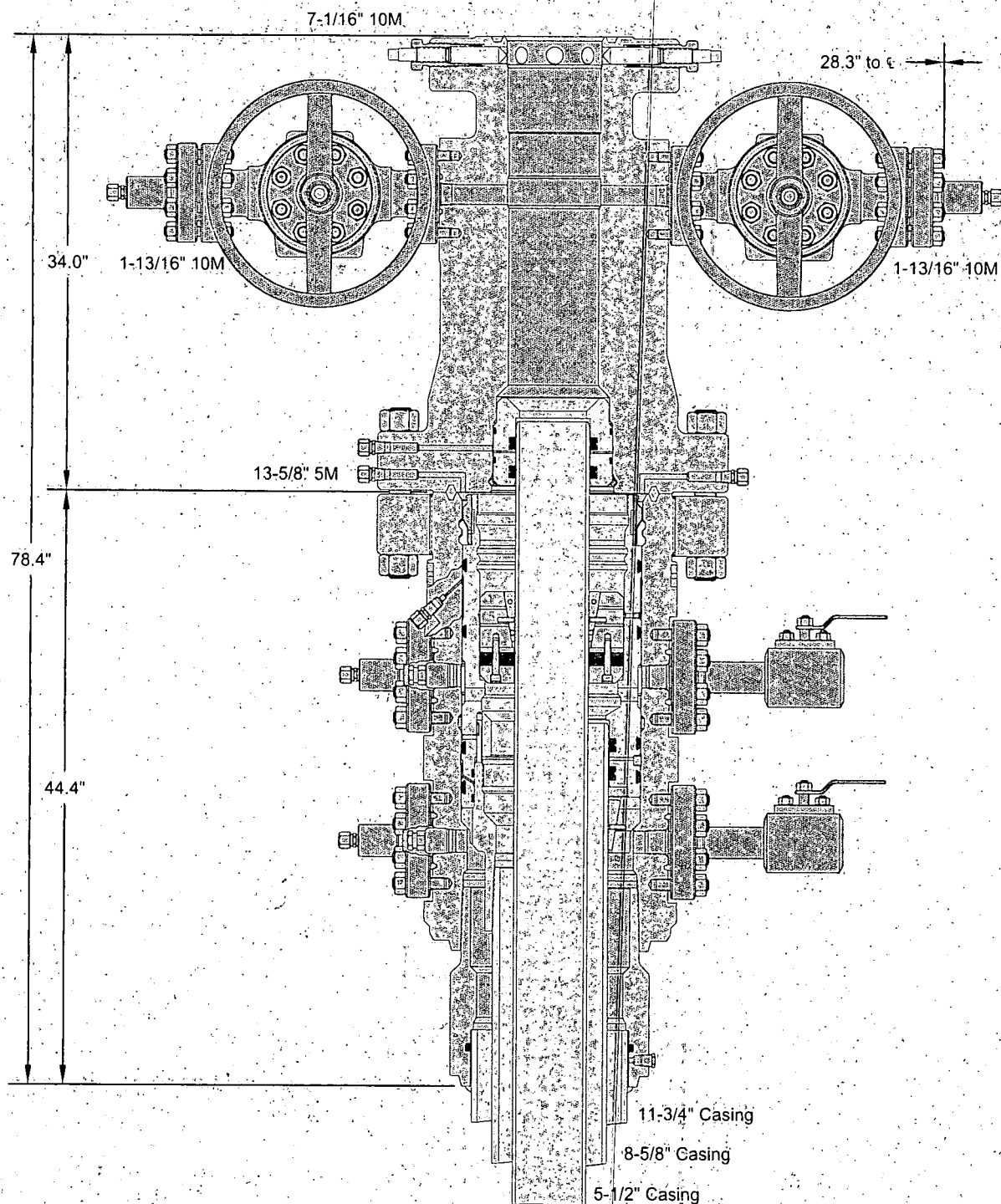
XTO requests a variance to be able to batch drill this well if necessary. In doing so, XTO will set each casing string and ensure that the well is cemented properly and the well is static. With floats holding, no pressure on the csg annulus, and the installation of a 10K TA cap as per GE recommendations,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

*10m BOP
required*

remaining wells on the pad. Once surface and intermediate strings are all completed, XTO will begin drilling the production hole on each of the wells.



GE Oil & Gas



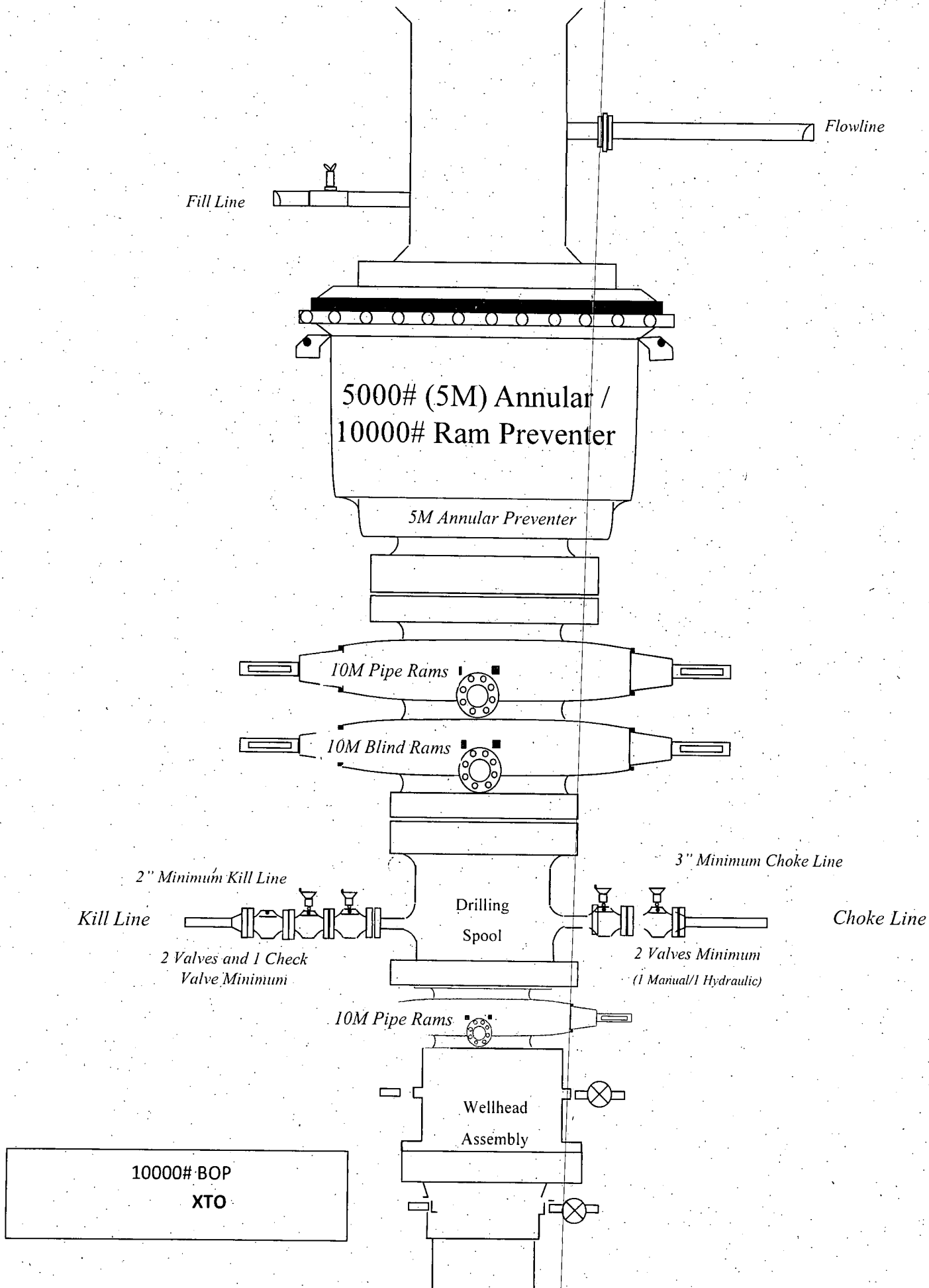
ALL DIMENSIONS ARE APPROXIMATE

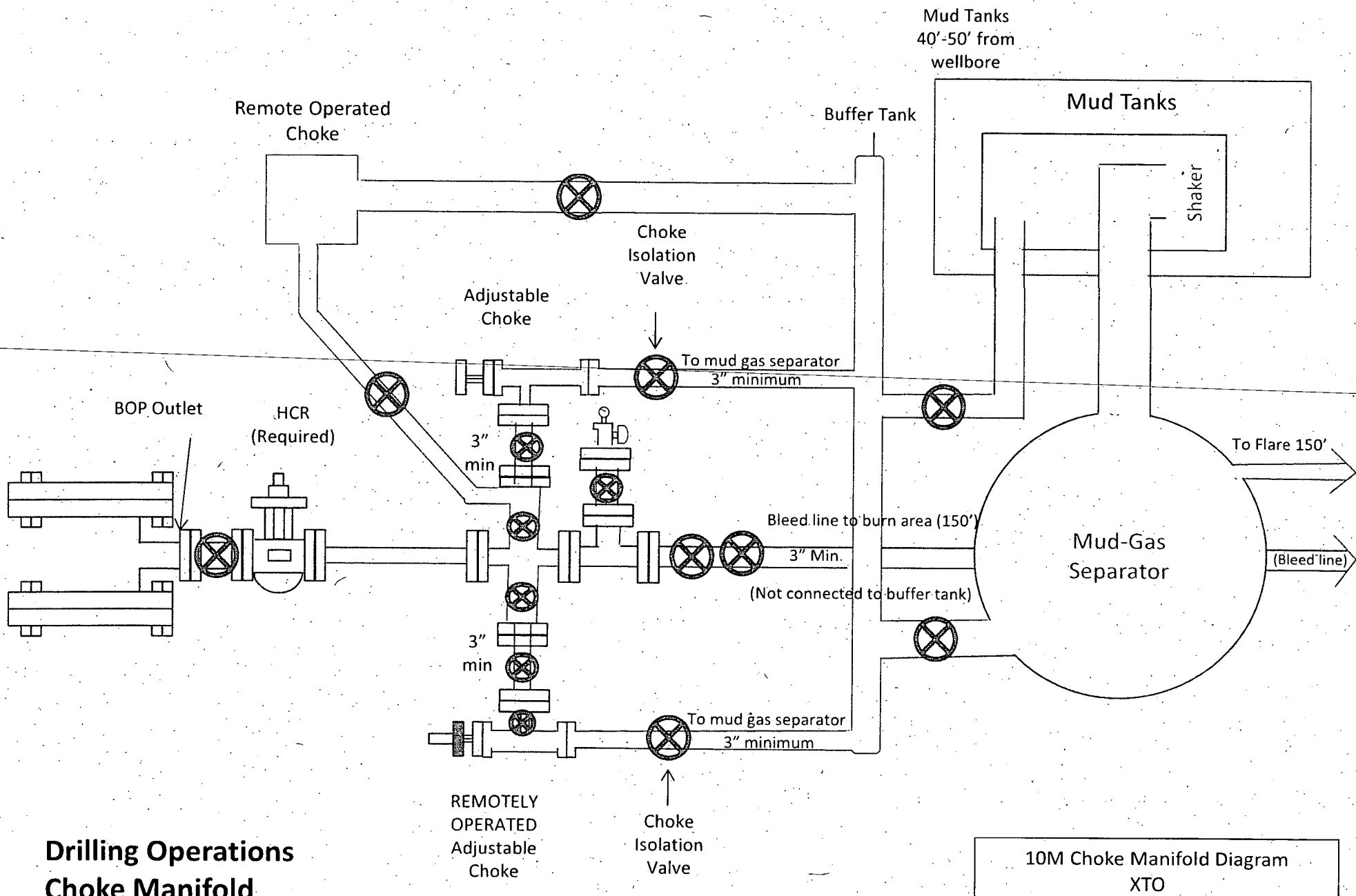
This drawing is the property of GE Oil & Gas Pressure Control LP and is considered confidential. Unless otherwise approved in writing, neither it nor its contents may be used, copied, transmitted or reproduced except for the sole purpose of GE Oil & Gas Pressure Control LP.

XTO ENERGY, INC.

11-3/4" x 8-5/8" x 5-1/2" 10M RSH-2 Wellhead
Assembly, With T-EBS-F Tubing Head

DRAWN	VJK	31OCT16
APPRV	KN	31OCT16
FOR REFERENCE ONLY		
DRAWING NO.		10012358





**Drilling Operations
Choke Manifold
10M Service**

10M Choke Manifold Diagram
XTO

10,000 PSI Annular BOP Variance Request

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

1. Component and Preventer Compatibility Tables

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

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

2. Well Control Procedures

Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the XTO Energy/Permian Operating drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore O&G Order No. 2 with the exception of the 5000 psi annular which will be tested to 70% of its RWP.

General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP & SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan

9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP & SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

General Procedure While Running Production Casing

1. Sound alarm (alert crew)
2. Stab crossover and full-opening safety valve and close
3. Space out string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP & SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

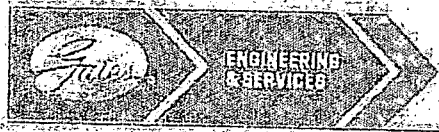
General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams (HCR & choke will already be in the closed position)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
6. Regroup and identify forward plan

General Procedures While Pulling BHA Through Stack

1. PRIOR to pulling last joint of drillpipe through stack:
 - a. Perform flow check. If flowing, continue to (b).
 - b. Sound alarm (alert crew)
 - c. Stab full-opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper variable bore rams
 - e. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full-opening safety valve and close
 - c. Space out drill string with upset just beneath the upper variable bore rams
 - d. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP & SICP

- ii. Pit gain
 - iii. Time
- h. Regroup and identify forward plan
- 3. With BHA in the stack and NO compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
 - c. If impossible to pull string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe and full-opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper variable bore ram
 - f. Shut-in using upper variable bore ram (HCR & choke will already be in the closed position)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan



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

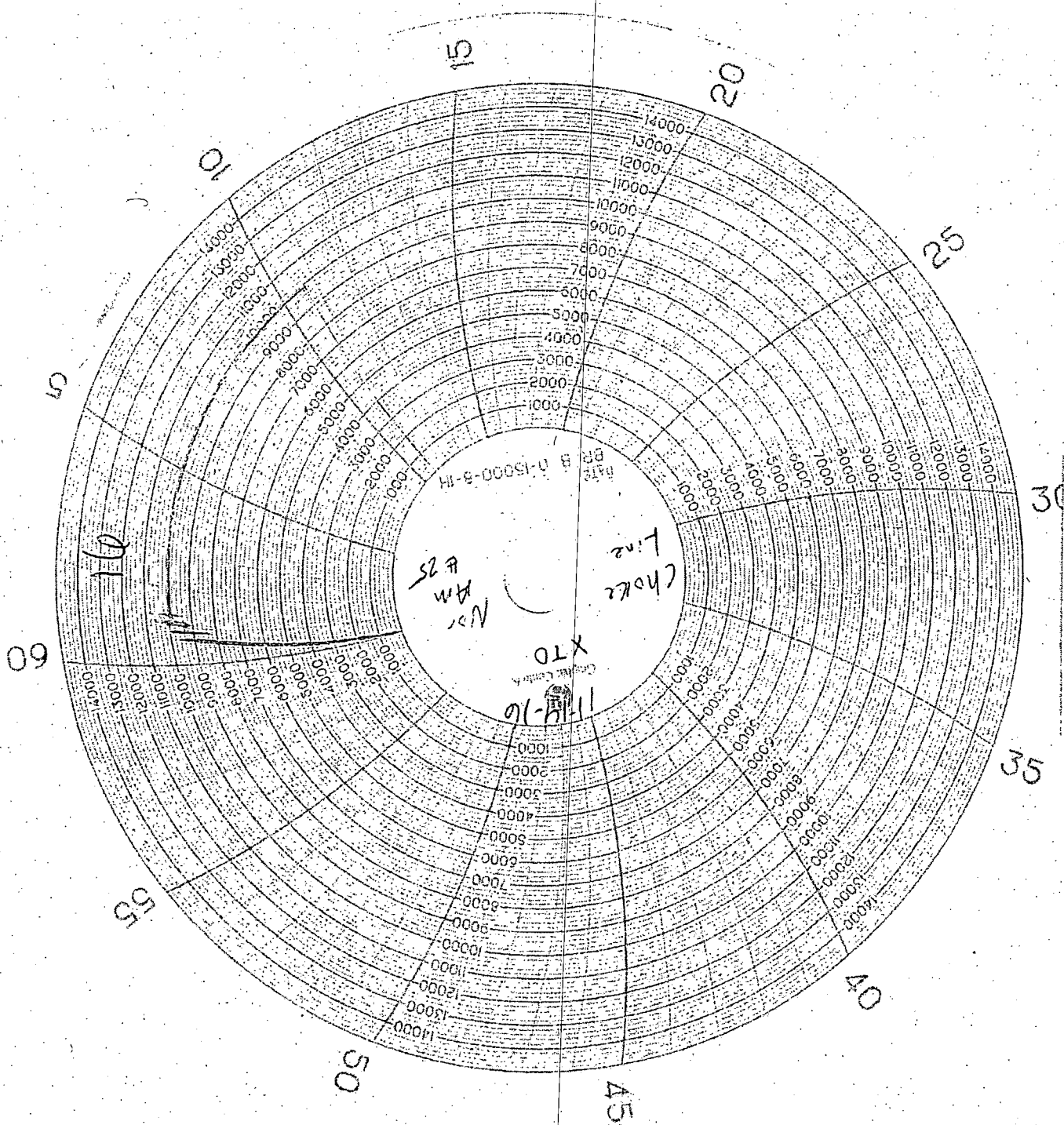
PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: crpe@s@gates.com
WEB: www.gates.com

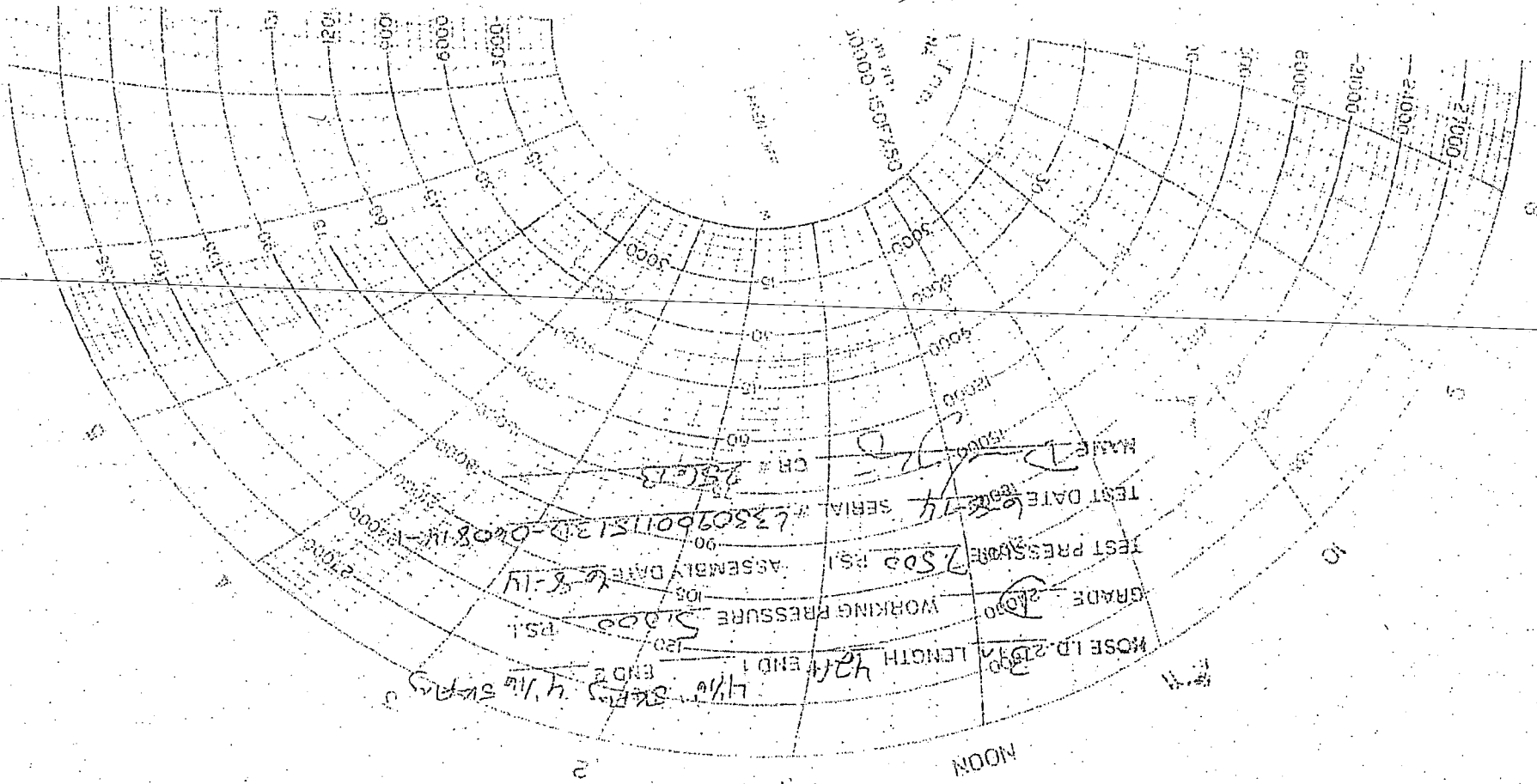
GRADE D PRESSURE TEST CERTIFICATE

Customer:	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref.:	PENDING	Hose Serial No.:	D-060814-1
Invoice No.:	201709	Created By:	NORHA
Product Description:	FD3.0-12.0R-1/16.5KFLGE/E LE		
End Fitting 1:	4 1/16 in. SK FLG	End Fitting 2:	4 1/16 in. SK FLG
Gates Part No.:	4774-6001	Assembly Code:	L33090011S13D-060814-1
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:	







XTO Energy

Eddy County, NM (NAD-27)

PLU 21 Brushy Draw

102H

OH

Plan: PERMITV2

Standard Planning Report

01 October, 2019



Project: Eddy County, NM (NAD-27)
Site: PLU 21 Brushy Draw
Well: 102H
Wellbore: OH.
Design: PERMITV2

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

WELL DETAILS: 102H

Rig Name
RKB = 31' @ 3249.00ust
Ground Level 3218.00
+N-S +E-W Northing Easting Latitude Longitude
0.00 0.00 403833.80 636877.20 32.1094838 -103.8912622

DESIGN TARGET DETAILS

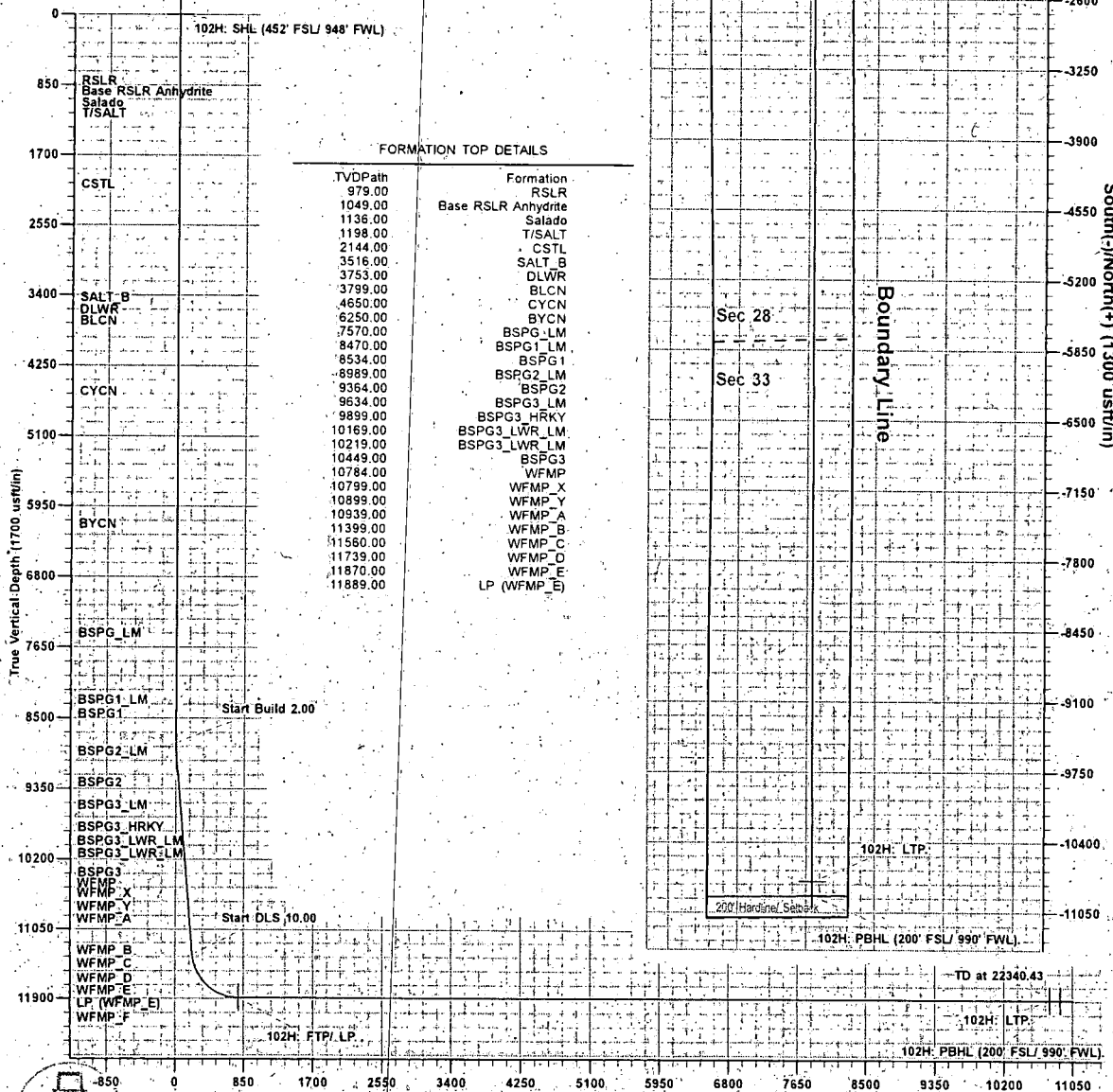
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
102H: SHL (452' FSU/ 948' FWL)	0.00	0.00	0.00	403833.80	636877.20	32.1094838	-103.8912622	Point
102H: FTP/ LP	11889.00	-781.40	45.20	403052.40	636922.40	32.1073352	-103.8911266	Point
102H: LTP	11889.00	-10766.60	62.80	393067.20	636940.00	32.0798860	-103.8912020	Point
102H: PBHL (200' FSU/ 990' FWL)	11889.00	-10895.60	62.40	392937.20	636939.60	32.0795286	-103.8912050	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8799.00	0.00	0.00	8799.00	0.00	0.00	0.00	0.00	0.00
3	9048.16	5.00	170.17	9048.84	-10.76	1.86	2.00	170.17	10.76
4	11374.53	5.00	170.17	11365.35	-210.58	36.48	0.00	0.00	10.64
5	12225.22	90.00	179.90	11889.00	-781.40	45.20	10.00	9.77	781.48
6	22340.43	90.00	179.90	11889.00	-10895.60	62.40	0.00	0.00	10896.69

FORMATION TOP DETAILS

TVDPath	Formation
979.00	RSLR
1049.00	Base RSLR Anhydrite
1136.00	Salado
1198.00	T/SALT
2144.00	CSTL
3516.00	SALT_B
3753.00	DLWR
3798.00	BLCN
4650.00	CYCN
6250.00	BYCN
7570.00	BSPG_LM
8470.00	BSPG1_LM
8534.00	BSPG1
8989.00	BSPG2_LM
9364.00	BSPG2
9634.00	BSPG3_LM
9899.00	BSPG3_HRKY
10169.00	BSPG3_LWR_LM
10219.00	BSPG3_LWR_LM
10449.00	BSPG3
10784.00	WFMP
10799.00	WFMP_X
10899.00	WFMP_Y
10939.00	WFMP_A
11399.00	WFMP_B
11560.00	WFMP_C
11739.00	WFMP_D
11870.00	WFMP_E
11889.00	LP (WFMP_E)



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

Vertical Section at 179.90° (1700 usf/in)

Plan: PERMITV2 (102H/OH)

Created By: Matthew May Date: 13.00, October 01.2019



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well 102H
Company:	XTO Energy	TVD Reference:	RKB = 31' @ 3249.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	RKB = 31' @ 3249.00usft
Site:	PLU 21 Brushy Draw	North Reference:	Grid
Well:	102H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMITV2		

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

Site	PLU 21 Brushy Draw		
Site Position:		Northing:	403,833.80 usft
From:	Map	Easting:	636,877.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.1094838
		Longitude:	-103.8912622
		Grid Convergence:	0.24 °

Well	102H					
Well Position	+N/-S	0.00 usft	Northing:	403,833.80 usft	Latitude:	32.1094838
	+E/-W	0.00 usft	Easting:	636,877.20 usft	Longitude:	-103.8912622
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,218.00 usft

Wellbore	OH		
----------	----	--	--

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2015	11/27/17	7.05	59.90	47,792

Design		PERMITV2		
Audit Notes:				
Version:		Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	179.90

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(%/100usft)	(%/100usft)	(%/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,799.00	0.00	0.00	8,799.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,049.16	5.00	170.17	9,048.84	-10.76	1.86	2.00	2.00	0.00	170.17	
11,374.53	5.00	170.17	11,365.35	-210.58	36.48	0.00	0.00	0.00	0.00	
12,225.22	90.00	179.90	11,889.00	-781.40	45.20	10.00	9.99	1.14	9.77	102H: FTP/ LP.
22,340.43	90.00	179.90	11,889.00	-10,896.60	62.40	0.00	0.00	0.00	0.00	102H: PBHL (200' F



Planning Report

Database: EDM 5000.1.13 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: PLU 21 Brushy Draw
Well: 102H
Wellbore: OH
Design: PERMITV2

Local Co-ordinate Reference: Well-102H
TVD Reference: RKB = 31' @ 3249.00usft
MD Reference: RKB = 31' @ 3249.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
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
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
979.00	0.00	0.00	979.00	0.00	0.00	0.00	0.00	0.00	0.00
RSLR									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,049.00	0.00	0.00	1,049.00	0.00	0.00	0.00	0.00	0.00	0.00
Base RSLR Anhydrite									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,136.00	0.00	0.00	1,136.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,198.00	0.00	0.00	1,198.00	0.00	0.00	0.00	0.00	0.00	0.00
T/SALT									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,144.00	0.00	0.00	2,144.00	0.00	0.00	0.00	0.00	0.00	0.00
CSTL									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,516.00	0.00	0.00	3,516.00	0.00	0.00	0.00	0.00	0.00	0.00
SALT_B									
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,753.00	0.00	0.00	3,753.00	0.00	0.00	0.00	0.00	0.00	0.00
DLWR									
3,799.00	0.00	0.00	3,799.00	0.00	0.00	0.00	0.00	0.00	0.00



Planning Report

Database: EDM 5000.1.13 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: PLU 21 Brushy Draw
Well: 102H
Wellbore: OH
Design: PERMITV2

Local Co-ordinate Reference: Well 102H
TVD Reference: RKB = 31' @ 3249.00usft
MD Reference: RKB = 31' @ 3249.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
BLCN									
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,650.00	0.00	0.00	4,650.00	0.00	0.00	0.00	0.00	0.00	0.00
CYCN									
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,250.00	0.00	0.00	6,250.00	0.00	0.00	0.00	0.00	0.00	0.00
BYCN									
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,570.00	0.00	0.00	7,570.00	0.00	0.00	0.00	0.00	0.00	0.00
BSPG_LM									
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Planning Report

Database: EDM 5000.1.13 Single User Db
 Company: XTO Energy
 Project: Eddy County, NM (NAD-27)
 Site: PLU 21 Brushy Draw
 Well: 102H
 Wellbore: OH
 Design: PERMITV2

Local Co-ordinate Reference: Well 102H
 TVD Reference: RKB = 31' @ 3249.00usft
 MD Reference: RKB = 31' @ 3249.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,470.00	0.00	0.00	8,470.00	0.00	0.00	0.00	0.00	0.00	0.00	
BSPG1_LM										
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,534.00	0.00	0.00	8,534.00	0.00	0.00	0.00	0.00	0.00	0.00	
BSPG1										
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,799.00	0.00	0.00	8,799.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,800.00	0.02	170.17	8,800.00	0.00	0.00	0.00	2.00	2.00	0.00	
8,900.00	2.02	170.17	8,899.98	-1.75	0.30	1.75	2.00	2.00	0.00	
8,989.14	3.80	170.17	8,989.00	-6.22	1.08	6.22	2.00	2.00	0.00	
BSPG2_LM										
9,000.00	4.02	170.17	8,999.84	-6.94	1.20	6.95	2.00	2.00	0.00	
9,049.16	5.00	170.17	9,048.84	-10.76	1.86	10.76	2.00	2.00	0.00	
9,100.00	5.00	170.17	9,099.49	-15.12	2.62	15.13	0.00	0.00	0.00	
9,200.00	5.00	170.17	9,199.11	-23.72	4.11	23.72	0.00	0.00	0.00	
9,300.00	5.00	170.17	9,298.73	-32.31	5.60	32.32	0.00	0.00	0.00	
9,365.52	5.00	170.17	9,364.00	-37.94	6.57	37.95	0.00	0.00	0.00	
BSPG2										
9,400.00	5.00	170.17	9,398.35	-40.90	7.09	40.92	0.00	0.00	0.00	
9,500.00	5.00	170.17	9,497.96	-49.50	8.57	49.51	0.00	0.00	0.00	
9,600.00	5.00	170.17	9,597.58	-58.09	10.06	58.11	0.00	0.00	0.00	
9,636.56	5.00	170.17	9,634.00	-61.23	10.61	61.25	0.00	0.00	0.00	
BSPG3_LM										
9,700.00	5.00	170.17	9,697.20	-66.68	11.55	66.70	0.00	0.00	0.00	
9,800.00	5.00	170.17	9,796.82	-75.28	13.04	75.30	0.00	0.00	0.00	
9,900.00	5.00	170.17	9,896.44	-83.87	14.53	83.89	0.00	0.00	0.00	
9,902.57	5.00	170.17	9,899.00	-84.09	14.57	84.11	0.00	0.00	0.00	
BSPG3_HRKY										
10,000.00	5.00	170.17	9,996.06	-92.46	16.02	92.49	0.00	0.00	0.00	
10,100.00	5.00	170.17	10,095.68	-101.06	17.51	101.09	0.00	0.00	0.00	
10,173.60	5.00	170.17	10,169.00	-107.38	18.60	107.41	0.00	0.00	0.00	
BSPG3_LWR_LM										
10,200.00	5.00	170.17	10,195.30	-109.65	19.00	109.68	0.00	0.00	0.00	
10,223.79	5.00	170.17	10,219.00	-111.69	19.35	111.73	0.00	0.00	0.00	
BSPG3_LWR_LM										
10,300.00	5.00	170.17	10,294.92	-118.24	20.48	118.28	0.00	0.00	0.00	
10,400.00	5.00	170.17	10,394.54	-126.83	21.97	126.87	0.00	0.00	0.00	
10,454.67	5.00	170.17	10,449.00	-131.53	22.79	131.57	0.00	0.00	0.00	
BSPG3										
10,500.00	5.00	170.17	10,494.15	-135.43	23.46	135.47	0.00	0.00	0.00	
10,600.00	5.00	170.17	10,593.77	-144.02	24.95	144.06	0.00	0.00	0.00	
10,700.00	5.00	170.17	10,693.39	-152.61	26.44	152.66	0.00	0.00	0.00	
10,790.95	5.00	170.17	10,784.00	-160.43	27.79	160.48	0.00	0.00	0.00	
WFMP										
10,800.00	5.00	170.17	10,793.01	-161.21	27.93	161.26	0.00	0.00	0.00	
10,806.01	5.00	170.17	10,799.00	-161.72	28.02	161.77	0.00	0.00	0.00	
WFMP_X										
10,900.00	5.00	170.17	10,892.63	-169.80	29.42	169.85	0.00	0.00	0.00	
10,906.39	5.00	170.17	10,899.00	-170.35	29.51	170.40	0.00	0.00	0.00	
WFMP_Y										



Planning Report

Database:	EDM 5000.1.13 Single User.Db	Local Co-ordinate Reference:	Well 102H
Company:	XTO Energy	TVD Reference:	RKB = 31' @ 3249.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	RKB = 31' @ 3249.00usft
Site:	PLU 21 Brushy Draw	North Reference:	Grid
Well:	102H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMITV2		

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)
10,946.55	5.00	170.17	10,939.00	-173.80	30.11	173.85	0.00	0.00	0.00
WFMP_A									
11,000.00	5.00	170.17	10,992.25	-178.39	30.91	178.45	0.00	0.00	0.00
11,100.00	5.00	170.17	11,091.87	-186.99	32.39	187.04	0.00	0.00	0.00
11,200.00	5.00	170.17	11,191.49	-195.58	33.88	195.64	0.00	0.00	0.00
11,300.00	5.00	170.17	11,291.11	-204.17	35.37	204.23	0.00	0.00	0.00
11,374.53	5.00	170.17	11,365.35	-210.58	36.48	210.64	0.00	0.00	0.00
11,400.00	7.53	173.47	11,390.67	-213.33	36.86	213.39	10.00	9.90	12.96
11,408.41	8.36	174.13	11,399.00	-214.48	36.99	214.55	10.00	9.94	7.77
WFMP_B									
11,450.00	12.51	176.08	11,439.89	-221.99	37.60	222.05	10.00	9.97	4.69
11,500.00	17.50	177.21	11,488.17	-234.91	38.34	234.97	10.00	9.98	2.27
11,550.00	22.49	177.85	11,535.14	-251.98	39.06	252.05	10.00	9.99	1.28
11,577.18	25.21	178.10	11,560.00	-262.97	39.45	263.03	10.00	9.99	0.91
WFMP_C									
11,600.00	27.49	178.27	11,580.45	-273.09	39.77	273.16	10.00	9.99	0.75
11,650.00	32.49	178.57	11,623.74	-298.06	40.45	298.13	10.00	10.00	0.60
11,700.00	37.49	178.80	11,664.69	-326.72	41.11	326.79	10.00	10.00	0.45
11,750.00	42.49	178.98	11,702.99	-358.83	41.73	358.90	10.00	10.00	0.36
11,800.00	47.48	179.13	11,738.34	-394.16	42.31	394.23	10.00	10.00	0.30
11,800.98	47.58	179.13	11,739.00	-394.88	42.32	394.95	10.00	10.00	0.27
WFMP_D									
11,850.00	52.48	179.25	11,770.48	-432.44	42.85	432.51	10.00	10.00	0.25
11,900.00	57.48	179.36	11,799.16	-473.37	43.35	473.45	10.00	10.00	0.22
11,950.00	62.48	179.46	11,824.17	-516.65	43.79	516.72	10.00	10.00	0.20
12,000.00	67.48	179.55	11,845.31	-561.94	44.18	562.02	10.00	10.00	0.18
12,050.00	72.48	179.63	11,862.42	-608.90	44.51	608.98	10.00	10.00	0.17
12,077.24	75.20	179.68	11,870.00	-635.07	44.67	635.14	10.00	10.00	0.16
WFMP_E									
12,100.00	77.48	179.71	11,875.37	-657.18	44.79	657.26	10.00	10.00	0.16
12,150.00	82.48	179.79	11,884.07	-706.40	45.00	706.48	10.00	10.00	0.15
12,200.00	87.48	179.87	11,888.45	-756.19	45.15	756.27	10.00	10.00	0.15
12,225.22	90.00	179.90	11,889.00	-781.40	45.20	781.48	10.00	10.00	0.15
LP (WFMP_E)									
12,300.00	90.00	179.90	11,889.00	-856.18	45.33	856.26	0.00	0.00	0.00
12,400.00	90.00	179.90	11,889.00	-956.18	45.50	956.26	0.00	0.00	0.00
12,500.00	90.00	179.90	11,889.00	-1,056.18	45.67	1,056.26	0.00	0.00	0.00
12,600.00	90.00	179.90	11,889.00	-1,156.18	45.84	1,156.26	0.00	0.00	0.00
12,700.00	90.00	179.90	11,889.00	-1,256.18	46.01	1,256.26	0.00	0.00	0.00
12,800.00	90.00	179.90	11,889.00	-1,356.18	46.18	1,356.26	0.00	0.00	0.00
12,900.00	90.00	179.90	11,889.00	-1,456.18	46.35	1,456.26	0.00	0.00	0.00
13,000.00	90.00	179.90	11,889.00	-1,556.18	46.52	1,556.26	0.00	0.00	0.00
13,100.00	90.00	179.90	11,889.00	-1,656.18	46.69	1,656.26	0.00	0.00	0.00
13,200.00	90.00	179.90	11,889.00	-1,756.18	46.86	1,756.26	0.00	0.00	0.00
13,300.00	90.00	179.90	11,889.00	-1,856.18	47.03	1,856.26	0.00	0.00	0.00
13,400.00	90.00	179.90	11,889.00	-1,956.18	47.20	1,956.26	0.00	0.00	0.00
13,500.00	90.00	179.90	11,889.00	-2,056.18	47.37	2,056.26	0.00	0.00	0.00
13,600.00	90.00	179.90	11,889.00	-2,156.18	47.54	2,156.26	0.00	0.00	0.00
13,700.00	90.00	179.90	11,889.00	-2,256.18	47.71	2,256.26	0.00	0.00	0.00
13,800.00	90.00	179.90	11,889.00	-2,356.18	47.88	2,356.26	0.00	0.00	0.00
13,900.00	90.00	179.90	11,889.00	-2,456.18	48.05	2,456.26	0.00	0.00	0.00
14,000.00	90.00	179.90	11,889.00	-2,556.18	48.22	2,556.26	0.00	0.00	0.00
14,100.00	90.00	179.90	11,889.00	-2,656.18	48.39	2,656.26	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.1:13 Single User Db	Local Co-ordinate Reference:	Well 102H
Company:	XTO Energy	TVD Reference:	RKB = 31' @ 3249.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	RKB = 31' @ 3249.00usft
Site:	PLU 21 Brushy Draw	North Reference:	Grid
Well:	102H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMITV2		

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)	
14,200.00	90.00	179.90	11,889.00	-2,756.18	48.56	2,756.26	0.00	0.00	0.00	
14,300.00	90.00	179.90	11,889.00	-2,856.18	48.73	2,856.26	0.00	0.00	0.00	
14,400.00	90.00	179.90	11,889.00	-2,956.18	48.90	2,956.26	0.00	0.00	0.00	
14,500.00	90.00	179.90	11,889.00	-3,056.18	49.07	3,056.26	0.00	0.00	0.00	
14,600.00	90.00	179.90	11,889.00	-3,156.18	49.24	3,156.26	0.00	0.00	0.00	
14,700.00	90.00	179.90	11,889.00	-3,256.18	49.41	3,256.26	0.00	0.00	0.00	
14,800.00	90.00	179.90	11,889.00	-3,356.18	49.58	3,356.26	0.00	0.00	0.00	
14,900.00	90.00	179.90	11,889.00	-3,456.18	49.75	3,456.26	0.00	0.00	0.00	
15,000.00	90.00	179.90	11,889.00	-3,556.18	49.92	3,556.26	0.00	0.00	0.00	
15,100.00	90.00	179.90	11,889.00	-3,656.18	50.09	3,656.26	0.00	0.00	0.00	
15,200.00	90.00	179.90	11,889.00	-3,756.18	50.26	3,756.26	0.00	0.00	0.00	
15,300.00	90.00	179.90	11,889.00	-3,856.18	50.43	3,856.26	0.00	0.00	0.00	
15,400.00	90.00	179.90	11,889.00	-3,956.18	50.60	3,956.26	0.00	0.00	0.00	
15,500.00	90.00	179.90	11,889.00	-4,056.18	50.77	4,056.26	0.00	0.00	0.00	
15,600.00	90.00	179.90	11,889.00	-4,156.18	50.94	4,156.26	0.00	0.00	0.00	
15,700.00	90.00	179.90	11,889.00	-4,256.18	51.11	4,256.26	0.00	0.00	0.00	
15,800.00	90.00	179.90	11,889.00	-4,356.18	51.28	4,356.26	0.00	0.00	0.00	
15,900.00	90.00	179.90	11,889.00	-4,456.18	51.45	4,456.26	0.00	0.00	0.00	
16,000.00	90.00	179.90	11,889.00	-4,556.18	51.62	4,556.26	0.00	0.00	0.00	
16,100.00	90.00	179.90	11,889.00	-4,656.18	51.79	4,656.26	0.00	0.00	0.00	
16,200.00	90.00	179.90	11,889.00	-4,756.18	51.96	4,756.26	0.00	0.00	0.00	
16,300.00	90.00	179.90	11,889.00	-4,856.18	52.13	4,856.26	0.00	0.00	0.00	
16,400.00	90.00	179.90	11,889.00	-4,956.18	52.30	4,956.26	0.00	0.00	0.00	
16,500.00	90.00	179.90	11,889.00	-5,056.18	52.47	5,056.26	0.00	0.00	0.00	
16,600.00	90.00	179.90	11,889.00	-5,156.18	52.64	5,156.26	0.00	0.00	0.00	
16,700.00	90.00	179.90	11,889.00	-5,256.18	52.81	5,256.26	0.00	0.00	0.00	
16,800.00	90.00	179.90	11,889.00	-5,356.18	52.98	5,356.26	0.00	0.00	0.00	
16,900.00	90.00	179.90	11,889.00	-5,456.18	53.15	5,456.26	0.00	0.00	0.00	
17,000.00	90.00	179.90	11,889.00	-5,556.18	53.32	5,556.26	0.00	0.00	0.00	
17,100.00	90.00	179.90	11,889.00	-5,656.18	53.49	5,656.26	0.00	0.00	0.00	
17,200.00	90.00	179.90	11,889.00	-5,756.18	53.66	5,756.26	0.00	0.00	0.00	
17,300.00	90.00	179.90	11,889.00	-5,856.18	53.83	5,856.26	0.00	0.00	0.00	
17,400.00	90.00	179.90	11,889.00	-5,956.18	54.00	5,956.26	0.00	0.00	0.00	
17,500.00	90.00	179.90	11,889.00	-6,056.18	54.17	6,056.26	0.00	0.00	0.00	
17,600.00	90.00	179.90	11,889.00	-6,156.18	54.34	6,156.26	0.00	0.00	0.00	
17,700.00	90.00	179.90	11,889.00	-6,256.18	54.51	6,256.26	0.00	0.00	0.00	
17,800.00	90.00	179.90	11,889.00	-6,356.18	54.68	6,356.26	0.00	0.00	0.00	
17,900.00	90.00	179.90	11,889.00	-6,456.18	54.85	6,456.26	0.00	0.00	0.00	
18,000.00	90.00	179.90	11,889.00	-6,556.18	55.02	6,556.26	0.00	0.00	0.00	
18,100.00	90.00	179.90	11,889.00	-6,656.18	55.19	6,656.26	0.00	0.00	0.00	
18,200.00	90.00	179.90	11,889.00	-6,756.18	55.36	6,756.26	0.00	0.00	0.00	
18,300.00	90.00	179.90	11,889.00	-6,856.17	55.53	6,856.26	0.00	0.00	0.00	
18,400.00	90.00	179.90	11,889.00	-6,956.17	55.70	6,956.26	0.00	0.00	0.00	
18,500.00	90.00	179.90	11,889.00	-7,056.17	55.87	7,056.26	0.00	0.00	0.00	
18,600.00	90.00	179.90	11,889.00	-7,156.17	56.04	7,156.26	0.00	0.00	0.00	
18,700.00	90.00	179.90	11,889.00	-7,256.17	56.21	7,256.26	0.00	0.00	0.00	
18,800.00	90.00	179.90	11,889.00	-7,356.17	56.38	7,356.26	0.00	0.00	0.00	
18,900.00	90.00	179.90	11,889.00	-7,456.17	56.55	7,456.26	0.00	0.00	0.00	
19,000.00	90.00	179.90	11,889.00	-7,556.17	56.72	7,556.26	0.00	0.00	0.00	
19,100.00	90.00	179.90	11,889.00	-7,656.17	56.89	7,656.26	0.00	0.00	0.00	
19,200.00	90.00	179.90	11,889.00	-7,756.17	57.06	7,756.26	0.00	0.00	0.00	
19,300.00	90.00	179.90	11,889.00	-7,856.17	57.23	7,856.26	0.00	0.00	0.00	
19,400.00	90.00	179.90	11,889.00	-7,956.17	57.40	7,956.26	0.00	0.00	0.00	
19,500.00	90.00	179.90	11,889.00	-8,056.17	57.57	8,056.26	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.1:13 Single User Db	Local Co-ordinate Reference:	Well 102H
Company:	XTO Energy	TVD Reference:	RKB = 31' @ 3249.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	RKB = 31' @ 3249.00usft
Site:	PLU 21 Brushy Draw	North Reference:	Grid
Well:	102H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMITV2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,600.00	90.00	179.90	11,889.00	-8,156.17	57.74	8,156.26	0.00	0.00	0.00
19,700.00	90.00	179.90	11,889.00	-8,256.17	57.91	8,256.26	0.00	0.00	0.00
19,800.00	90.00	179.90	11,889.00	-8,356.17	58.08	8,356.26	0.00	0.00	0.00
19,900.00	90.00	179.90	11,889.00	-8,456.17	58.25	8,456.26	0.00	0.00	0.00
20,000.00	90.00	179.90	11,889.00	-8,556.17	58.42	8,556.26	0.00	0.00	0.00
20,100.00	90.00	179.90	11,889.00	-8,656.17	58.59	8,656.26	0.00	0.00	0.00
20,200.00	90.00	179.90	11,889.00	-8,756.17	58.76	8,756.26	0.00	0.00	0.00
20,300.00	90.00	179.90	11,889.00	-8,856.17	58.93	8,856.26	0.00	0.00	0.00
20,400.00	90.00	179.90	11,889.00	-8,956.17	59.10	8,956.26	0.00	0.00	0.00
20,500.00	90.00	179.90	11,889.00	-9,056.17	59.27	9,056.26	0.00	0.00	0.00
20,600.00	90.00	179.90	11,889.00	-9,156.17	59.44	9,156.26	0.00	0.00	0.00
20,700.00	90.00	179.90	11,889.00	-9,256.17	59.61	9,256.26	0.00	0.00	0.00
20,800.00	90.00	179.90	11,889.00	-9,356.17	59.78	9,356.26	0.00	0.00	0.00
20,900.00	90.00	179.90	11,889.00	-9,456.17	59.95	9,456.26	0.00	0.00	0.00
21,000.00	90.00	179.90	11,889.00	-9,556.17	60.12	9,556.26	0.00	0.00	0.00
21,100.00	90.00	179.90	11,889.00	-9,656.17	60.29	9,656.26	0.00	0.00	0.00
21,200.00	90.00	179.90	11,889.00	-9,756.17	60.46	9,756.26	0.00	0.00	0.00
21,300.00	90.00	179.90	11,889.00	-9,856.17	60.63	9,856.26	0.00	0.00	0.00
21,400.00	90.00	179.90	11,889.00	-9,956.17	60.80	9,956.26	0.00	0.00	0.00
21,500.00	90.00	179.90	11,889.00	-10,056.17	60.97	10,056.26	0.00	0.00	0.00
21,600.00	90.00	179.90	11,889.00	-10,156.17	61.14	10,156.26	0.00	0.00	0.00
21,700.00	90.00	179.90	11,889.00	-10,256.17	61.31	10,256.26	0.00	0.00	0.00
21,800.00	90.00	179.90	11,889.00	-10,356.17	61.48	10,356.26	0.00	0.00	0.00
21,900.00	90.00	179.90	11,889.00	-10,456.17	61.65	10,456.26	0.00	0.00	0.00
22,000.00	90.00	179.90	11,889.00	-10,556.17	61.82	10,556.26	0.00	0.00	0.00
22,100.00	90.00	179.90	11,889.00	-10,656.17	61.99	10,656.26	0.00	0.00	0.00
22,200.00	90.00	179.90	11,889.00	-10,756.17	62.16	10,756.26	0.00	0.00	0.00
22,300.00	90.00	179.90	11,889.00	-10,856.17	62.33	10,856.26	0.00	0.00	0.00
22,340.43	90.00	179.90	11,889.00	-10,896.60	62.40	10,896.69	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
102H: SHL (452' FSL) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	403,833.80	636,877.20	32.1094838	-103.8912622
102H: FTP/LP - plan hits target center - Point	0.00	0.01	11,889.00	-781.40	45.20	403,052.40	636,922.40	32.1073352	-103.8911266
102H: PBHL (200' FSI) - plan hits target center - Point	0.00	0.00	11,889.00	-10,896.60	62.40	392,937.20	636,939.60	32.0795287	-103.8912050
102H: LTP - plan misses target center by 0.62usft at 22210.43usft MD (11889.00 TVD, -10766.60 N, 62.18 E) - Point	0.00	0.00	11,889.00	-10,766.60	62.80	393,067.20	636,940.00	32.0798860	-103.8912020



Planning Report

Database: EDM 5000.1.13 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: PLU 21 Brushy Draw
Well: 102H
Wellbore: OH
Design: PERMITV2

Local Co-ordinate Reference: Well 102H
TVD Reference: RKB = 31' @ 3249.00usft
MD Reference: RKB = 31' @ 3249.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
979.00	979.00	RSLR			
1,049.00	1,049.00	Base RSLR Anhydrite			
1,136.00	1,136.00	Salado			
1,198.00	1,198.00	T/SALT			
2,144.00	2,144.00	CSTL			
3,516.00	3,516.00	SALT_B			
3,753.00	3,753.00	DLWR			
3,799.00	3,799.00	BLCN			
4,650.00	4,650.00	CYCN			
6,250.00	6,250.00	BYCN			
7,570.00	7,570.00	BSPG_LM			
8,470.00	8,470.00	BSPG1_LM			
8,534.00	8,534.00	BSPG1			
8,989.14	8,989.00	BSPG2_LM			
9,365.52	9,364.00	BSPG2			
9,636.56	9,634.00	BSPG3_LM			
9,902.57	9,899.00	BSPG3_HRKY			
10,173.60	10,169.00	BSPG3_LWR_LM			
10,223.79	10,219.00	BSPG3_LWR_LM			
10,454.67	10,449.00	BSPG3			
10,790.95	10,784.00	WFMP			
10,806.01	10,799.00	WFMP_X			
10,906.39	10,899.00	WFMP_Y			
10,946.55	10,939.00	WFMP_A			
11,408.41	11,399.00	WFMP_B			
11,577.18	11,560.00	WFMP_C			
11,800.98	11,739.00	WFMP_D			
12,077.24	11,870.00	WFMP_E			
12,225.22	11,889.00	LP (WFMP_E)			

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Permian Operating, LLC.
LEASE NO.:	NMNM-05039A
WELL NAME & NO.:	Poker Lake Unit 21 BD 102H
SURFACE HOLE FOOTAGE:	0452' FSL & 0943' FWL
BOTTOM HOLE FOOTAGE:	0200' FSL & 0990' FWL Sec. 33, T.25 S., R.30 E.
LOCATION:	Section 21, T.25 S., R.30 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	☒ Yes	☐ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☒ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☐ COM	☒ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Red Beds, Rustler, and Delaware.

Abnormal pressure may be encountered in the 3rd Bone Spring and all subsequent formations.

B. CASING

1. The 11-3/4 inch surface casing shall be set at approximately 1030 feet (a minimum of 70 feet (Eddy County) 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 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to negative 58% - Additional cement will be required.**
3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 19% - Additional cement may be required.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M) psi. Variance is approved to use a 5000 (5M) Annular which shall be tested to 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. 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.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

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.

Commercial Well Determination

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

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)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220;
(575) 361-2822

1. 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.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. 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 are located, this does not include the dog house or stairway area.
3. 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.

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 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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. 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.
4. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
5. 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.
6. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
7. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flexible line must meet the requirements of API 16C. 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.
3. 5M or higher 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.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

JAM 011320