

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**NMOCD**
ArtesiaFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No. NMNM030453
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No. 891000303X
8. Well Name and No. POKER LAKE UNIT 13 DTD 121H
9. API Well No. 30-015-45825-00-X1
10. 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 ☐ Other	2. Name of Operator XTO PERMIAN OPERATING LLC Contact: KELLY KARDOS E-Mail: kelly_kardos@xtoenergy.com	3a. Address 6401 HOLIDAY HILL ROAD BLDG 5 MIDLAND, TX 79707	3b. Phone No. (include area code) Ph: 432-620-4374	10. Field and Pool or Exploratory Area PURPLE SAGE-WOLFCAMP (GAS)
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 24 T24S R30E NWNW 150FNL 35FWL 32.210228 N Lat, 103.842857 W Lon				11. County or Parish, State. EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original PD
	☐ 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 recomple 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 respectfully requests permission to make the following changes to the original APD

Change the BHL from 2440'FNL & 330'FWL Sec. 36, T24S, R30E to 200'FSL & 330'FWL Sec. 25, T24S, R30E (updated C102 attached).

Change drilling program from a 3-string to a 4-string design per the attached drilling program.

XTO requests a variance to be able to batch drill these wells if necessary. In doing so, XTO will set 13-3/8" intermediate casing and ensure that the well is cemented properly and the well is dead. With floats holding, no pressure on the intermediate csg annulus, and the installation of a TA cap as per GE recommendations, XTO will contact the BLM to skid the rig to drill the surface and

RECEIVED

JUN 25 2019

DISTRICT II-ARTESIA O.C.D.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct. Electronic Submission #466284 verified by the BLM Well Information System For XTO PERMIAN OPERATING LLC, sent to the Carlsbad Committed to AFMSS for processing by PRISCILLA PEREZ on 05/22/2019 (19PP2202SE)	
Name (Printed/Typed) KELLY KARDOS	Title REGULATORY COORDINATOR
Signature (Electronic Submission)	APPROVED
Date 05/22/2019	
THIS SPACE FOR FEDERAL OR STATE OFFICE USE JUN 18 2019	
Approved By	Title BUREAU OF LAND MANAGEMENT
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 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.	

Additional data for EC transaction #466284 that would not fit on the form

32. Additional remarks, continued

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

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

XTO Energy Inc.
PLU 13 DTD 121H (aka 161H)
Projected TD: 22512' MD / 12533' TVD
SHL: 150' FNL & 35' FWL , Section 23, T24S, R30E
BHL: 200' FSL & 330' FWL , Section 25, T24S, R30E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Quaternary

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	468'	Water
Top of Salt	838'	Water
Base of Salt	3888'	Water
Delaware	4118'	Water
Bone Spring	8003'	Water/Oil/Gas
1st Bone Spring Ss	8923'	Water/Oil/Gas
2nd Bone Spring Ss	9693'	Water/Oil/Gas
3rd Bone Spring Ss	10828'	Water/Oil/Gas
Wolfcamp	11248'	Water/Oil/Gas
Wolfcamp A	11438'	Water/Oil/Gas
Wolfcamp D	12193'	Water/Oil/Gas
Target/Land Curve	12533'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

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

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 18-5/8 inch casing @ 780' (58' above the salt) and circulating cement back to surface. The salt will be isolated by setting 13-3/8 inch casing at 3930' and circulating cement to surface. 9-5/8 inch intermediate casing will be set at 11590'. An 8-3/4 inch curve and 8-1/2 inch lateral hole will be drilled to TD, where 5-1/2 inch casing will be set and cemented back up to the 9-5/8 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' - 780'	18-5/8"	87.5	STC	J-55	New	1.84	2.31	11.05
17-1/2"	0' - 3930'	13-3/8"	68	STC	J-55	New	1.07	1.58	2.53
12-1/4"	0' - 11590'	9-5/8"	40	LTC	HCL-80	New	1.07	1.18	1.84
8-3/4" x 8-1/2"	0' - 22512'	5-1/2"	20	BTC	P-110	New	1.30	1.36	1.97

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 18-5/8" Collapse analyzed using 75% evacuation. Casing to be filled while running.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

- 18-5/8" SOW bottom x 21-1/4" 2M top flange.

Permanent Wellhead - GE RSH Multibowl System

A. Starting Head: 13-5/8" 10M top flange x 13-3/8" SOW bottom

B. Tubing Head: 13-5/8" 10M bottom flange x 7" 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 per BLM Onshore Order 2

-
- Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 18-5/8", 87.5 New J-55, STC casing to be set at +/- 780'

Lead: 2690 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

1st Intermediate Casing: 13-3/8", 68 New J-55, STC casing to be set at +/- 3930'

Lead: 2690 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft³/sx, 10.13 gal/sx water)

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

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

2nd Intermediate Casing: 9-5/8", 40 New HCL-80, LTC casing to be set at +/- 11590'

ECP/DV Tool to be set at 4030'

1st Stage

Lead: 2350 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

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

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

2nd Stage

Lead: 1170 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

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

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

Production Casing: 5-1/2", 20 New P-110, BTC casing to be set at +/- 22512'

Tail: 2060 sxs VersaCem (mixed at 13.2 ppg, 1.61 ft³/sx, 8.38 gal/sx water)

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

XTO requests a variance to be able to batch drill these wells if necessary. In doing so, XTO will set 13-3/8" intermediate casing and ensure that the well is cemented properly and the well is dead. With floats holding, no pressure on the intermediate csg annulus, and the installation of a TA cap as per GE recommendations, XTO will contact the BLM to skid the rig to drill the surface and intermediate for the remaining wells on the pad. Once surface and intermediate are all completed, XTO will begin drilling the production hole on each of the wells.

5. Pressure Control Equipment

The blow out preventer equipment (BOP) on surface casing/temp. wellhead will consist of a 21-1/4" minimum 2M Hydril. MASP should not exceed 1220 psi.

Once the permanent WH is installed on the 13-3/8 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 10M 3-Ram BOP. MASP should not exceed 5389 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).

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 10M psi. Since a multibowl system will be used, subsequent BOP pressure tests will be performed as necessary based on required testing schedule (i.e., at least every 30 days). All BOP tests will include a low pressure test as per BLM regulations. The 10M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

6. Proposed Mud Circulation System

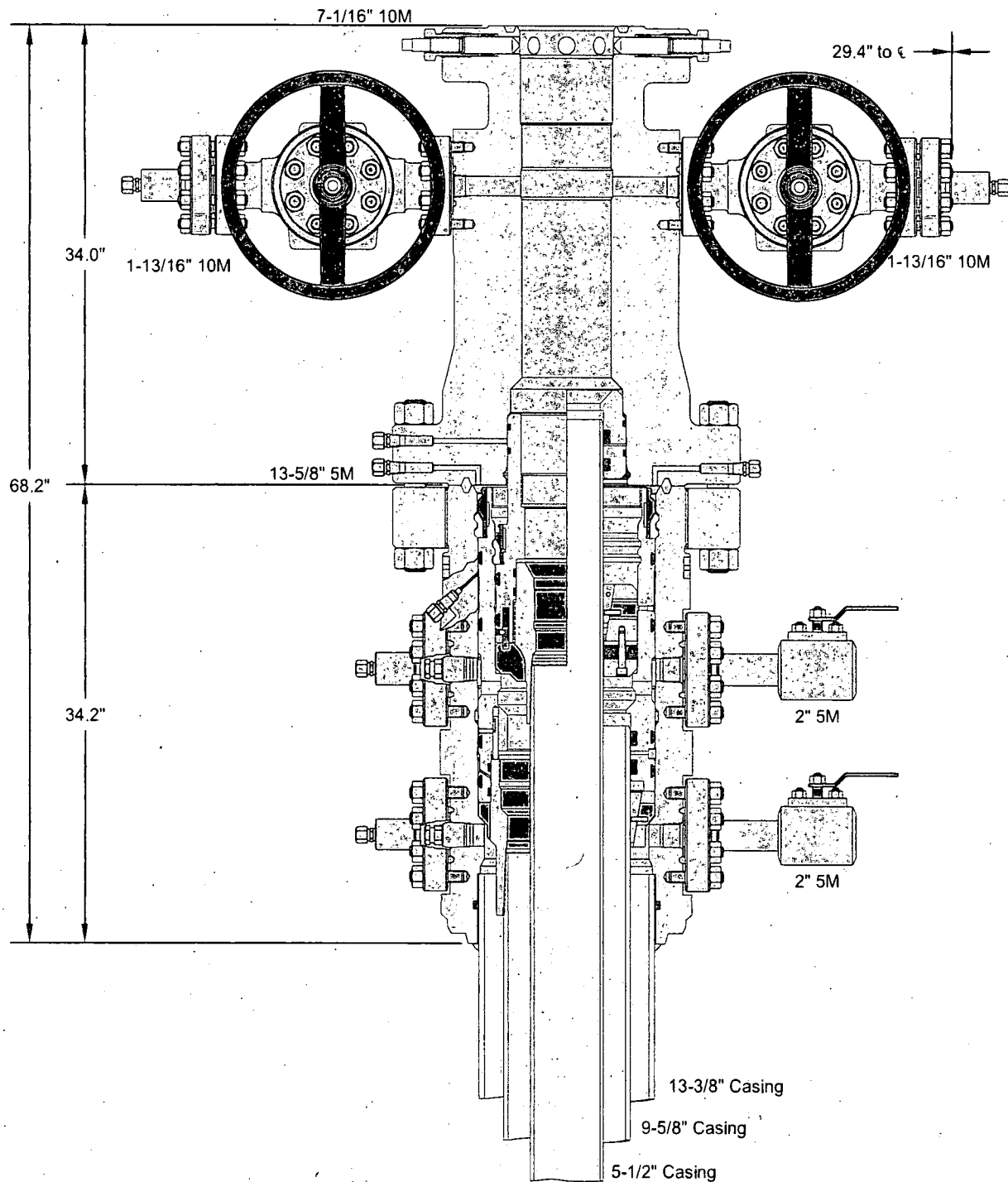
INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 780'	24"	FW/Native	8.4-9.0	45-60	NC
780' - 3930'	17-1/2"	Brine / OBM	9.0-10.2	30-32	NC
3930' to 11590'	12-1/4"	FW/Cut Brine	8.7-10.0	30-32	NC
11590' to 22512'	8-3/4" x 8-1/2"	FW / Cut Brine / Polymer / OBM	12.1 - 12.9	29-32	NC - 20

The necessary mud products for weight addition and fluid loss control will be on location at all times.

Spud with fresh water/native mud. Drill out from under 18-5/8" surface casing with brine solution. A 9.0ppg-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.



GE Oil & Gas



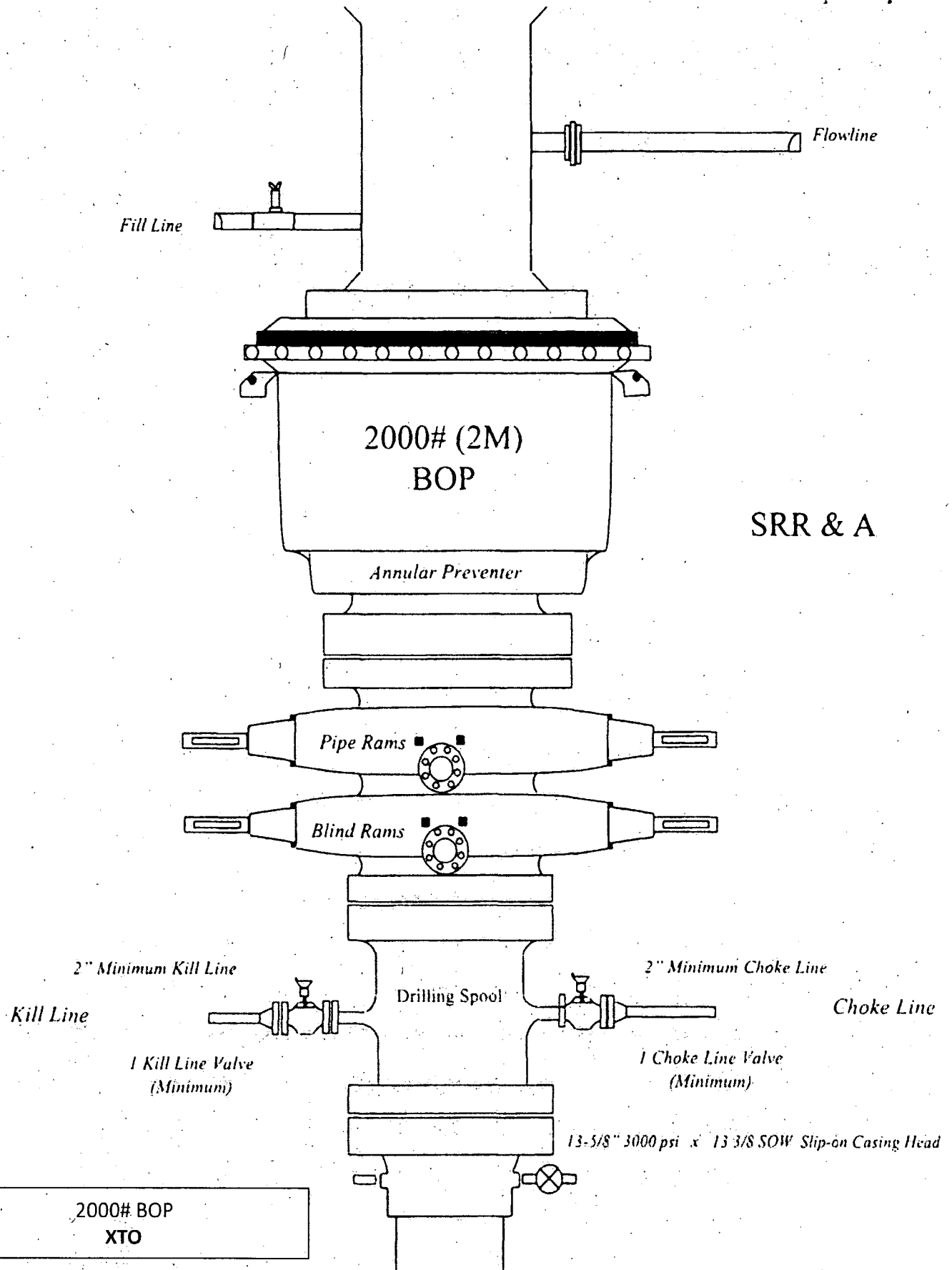
ALL DIMENSIONS ARE APPROXIMATE

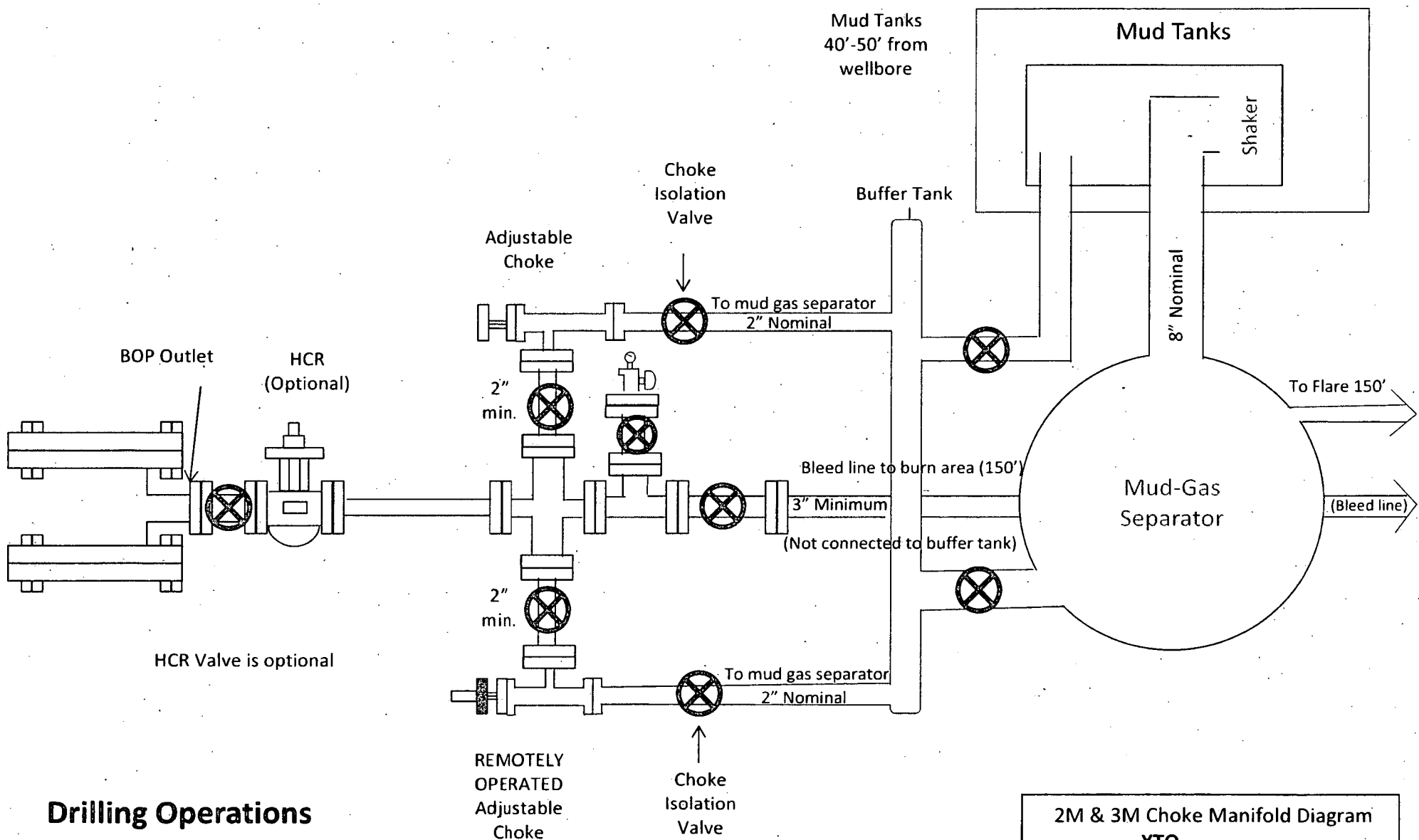
This drawing is the property of GE Oil & Gas Pressure Control LP and is considered confidential. Unless otherwise approved in writing, neither it nor its contents may be used, copied, transmitted or reproduced except for the sole purpose of GE Oil & Gas Pressure Control LP.

XTO ENERGY, INC.

13-3/8" x 9-5/8" x 5-1/2" 10M RSH-2 Wellhead
Assembly, With T-EBS-F Tubing Head

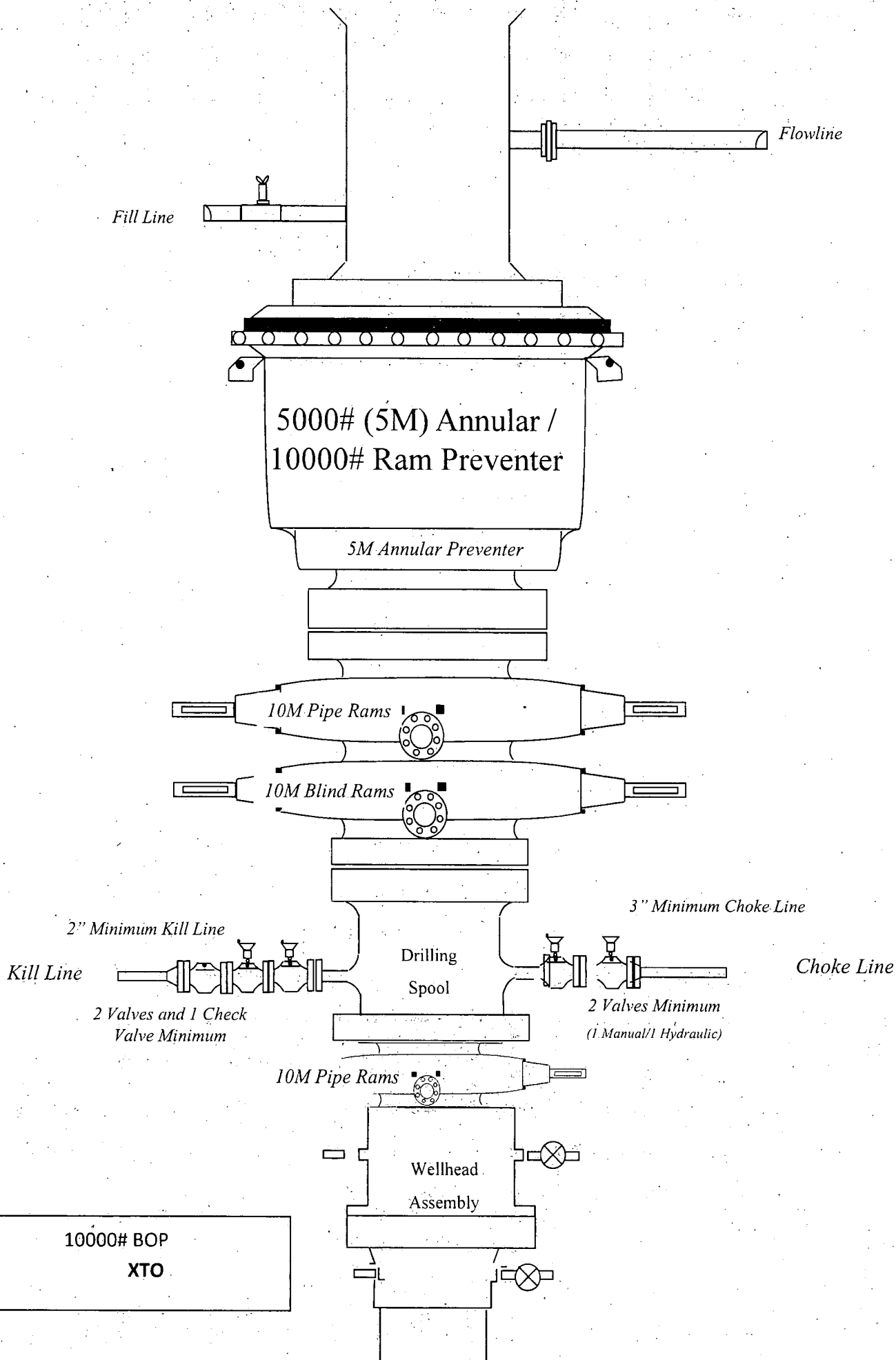
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APPRV	KN	16FEB17
FOR REFERENCE ONLY		
DRAWING NO.		10012842



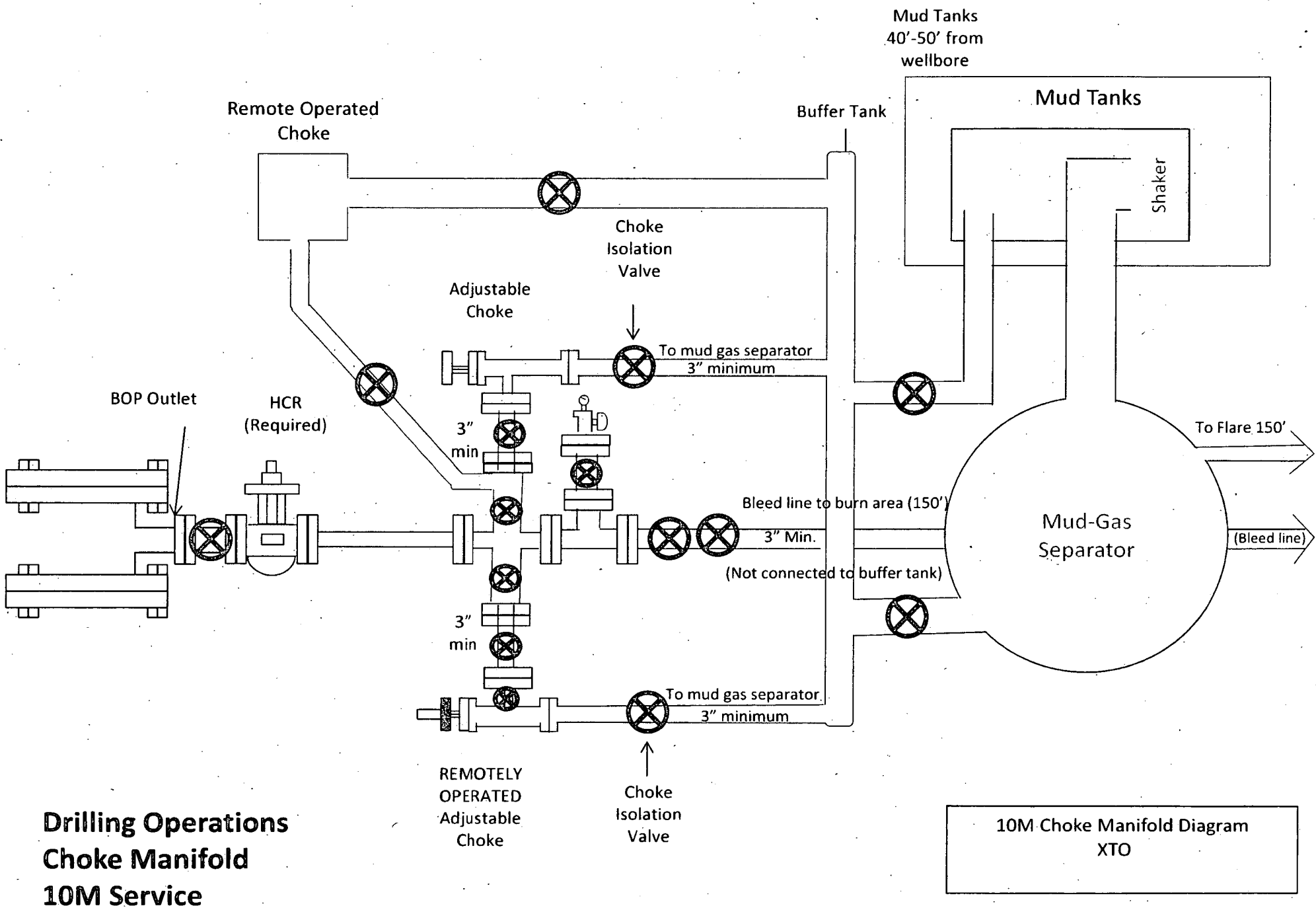


Drilling Operations Choke Manifold 2M & 3M Service

2M & 3M Choke Manifold Diagram
XTO



10000# BOP
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.

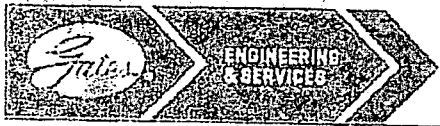
General Procedure With No Pipe In Hole (Open Hole)

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

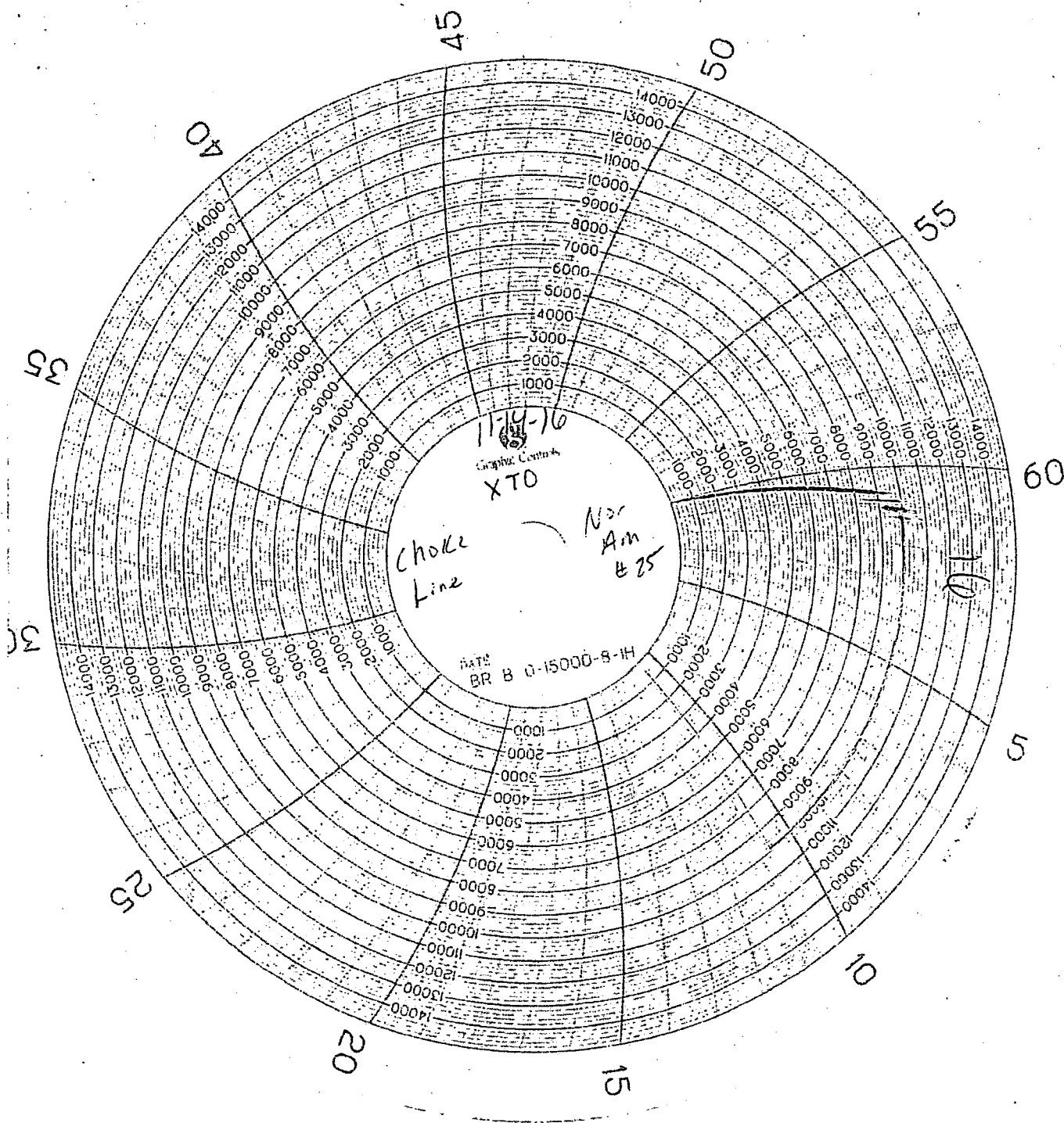
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FAX: 361-887-0812
EMAIL: crpe@s@gates.com
WEB: www.gates.com

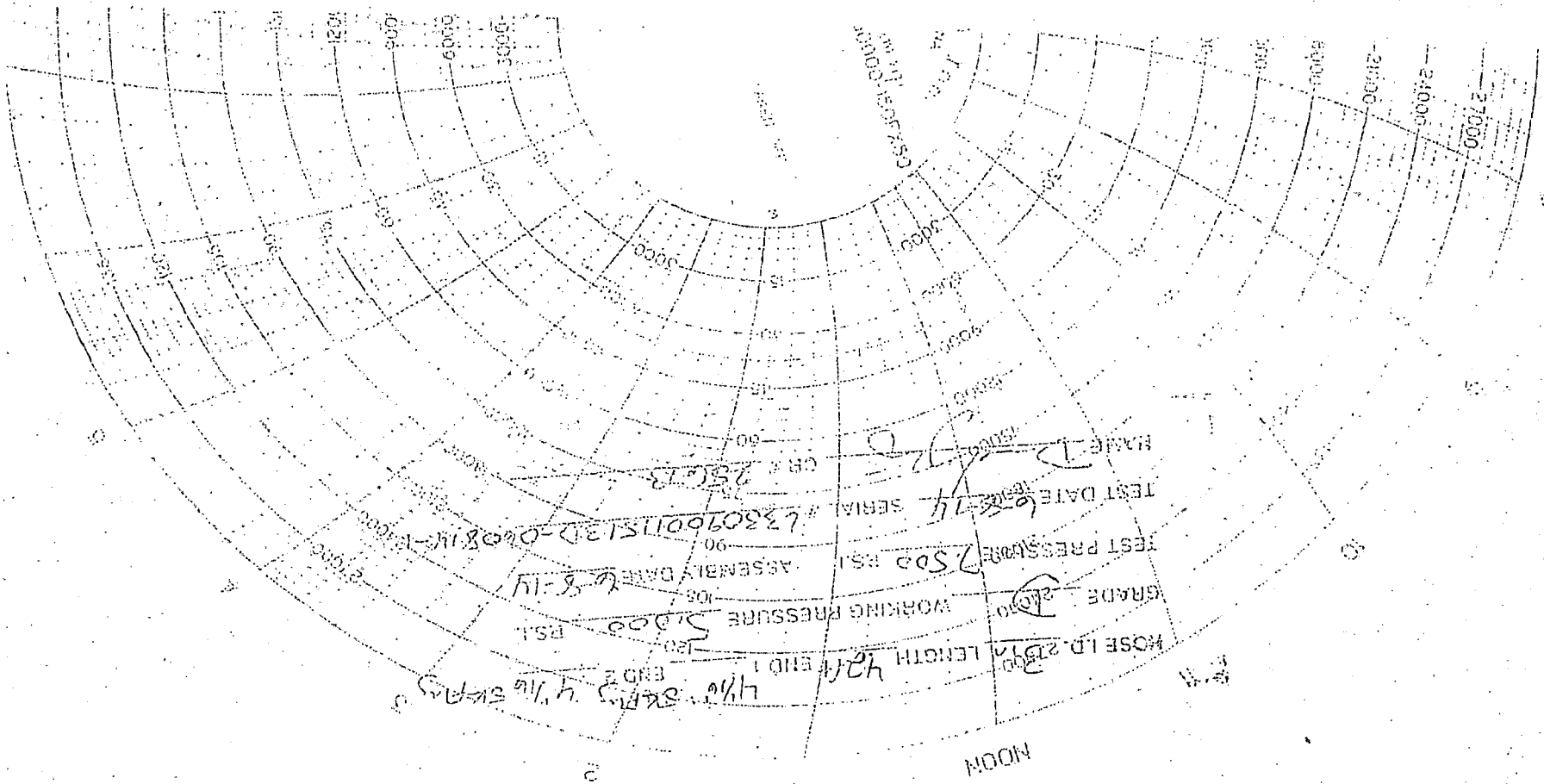
GRADE D PRESSURE TEST CERTIFICATE

Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-060814-1
Invoice No. :	201709	Created By:	NORMA
Product Description:	FD3.0-12.0R-11/16.5KFLGE/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 :	L33090011513D-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:	





NAME D-77
TEST DATE 6-27-74
TEST PRESSURE 7500 PSI
GRADE 2500
HOSE I.D. 2 1/2
LENGTH 424
END 1 4 1/2
END 2 4 1/2
ASSEMBLY DATE 7-8-74
SERIAL # 633090015137-060814-15000
CR # 25013

XTO ENERGY INC.

Project: Eddy County, NM (NMEZ) NAD27 Grid
 Site: Poker Lake Unit 13 DTD
 Well: 13-DTD #161H 3441+22 @ 3463.00usft (Akita22)
 Wellbore: 161H Lateral NAD 1927 (NADCON CONUS)
 Design: Plan #1



West(-)/East(+) (2000 usft/in)
 -4000 -2000 0 2000

PLAN SECTIONS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4500.00	0.00	0.00	4500.00	0.00	0.00	0.00	0.00	0.00	
3	5300.00	8.00	90.00	5297.40	0.00	55.76	1.00	90.00	1.83	
4	6610.00	8.00	90.00	6594.65	0.00	238.08	0.00	0.00	7.83	
5	7410.00	0.00	90.00	7392.05	0.00	293.84	1.00	180.00	9.66	
6	11977.98	0.00	90.00	11960.04	0.00	293.84	0.00	90.00	9.66	
7	12877.98	90.00	179.77	12533.00	-572.95	296.19	10.00	179.77	582.38	
8	22512.11	90.00	179.77	12533.00	-10207.00	335.70	0.00	0.00	10212.52	PLU 13 DTD 161H PBHL_200FSL_330FWL

FORMATION TOP DETAILS

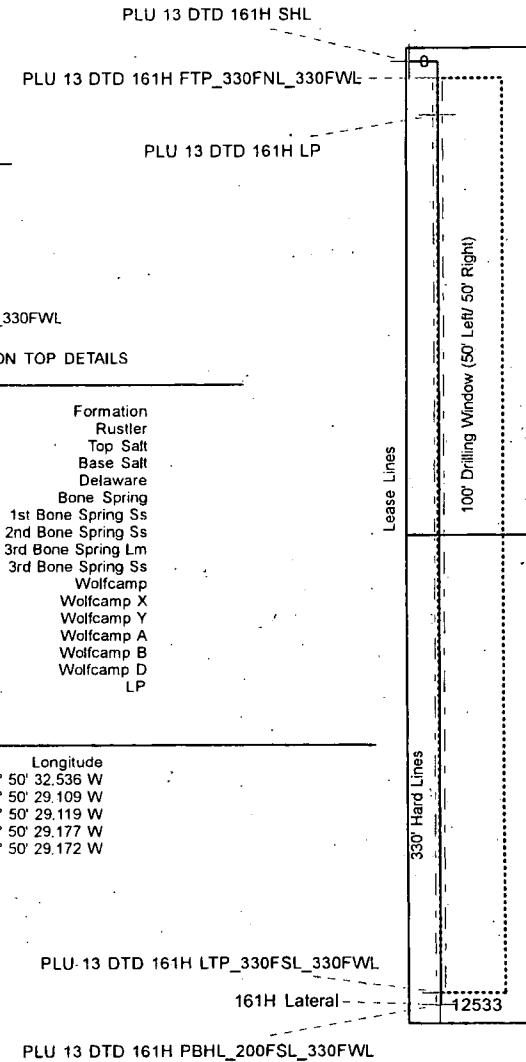
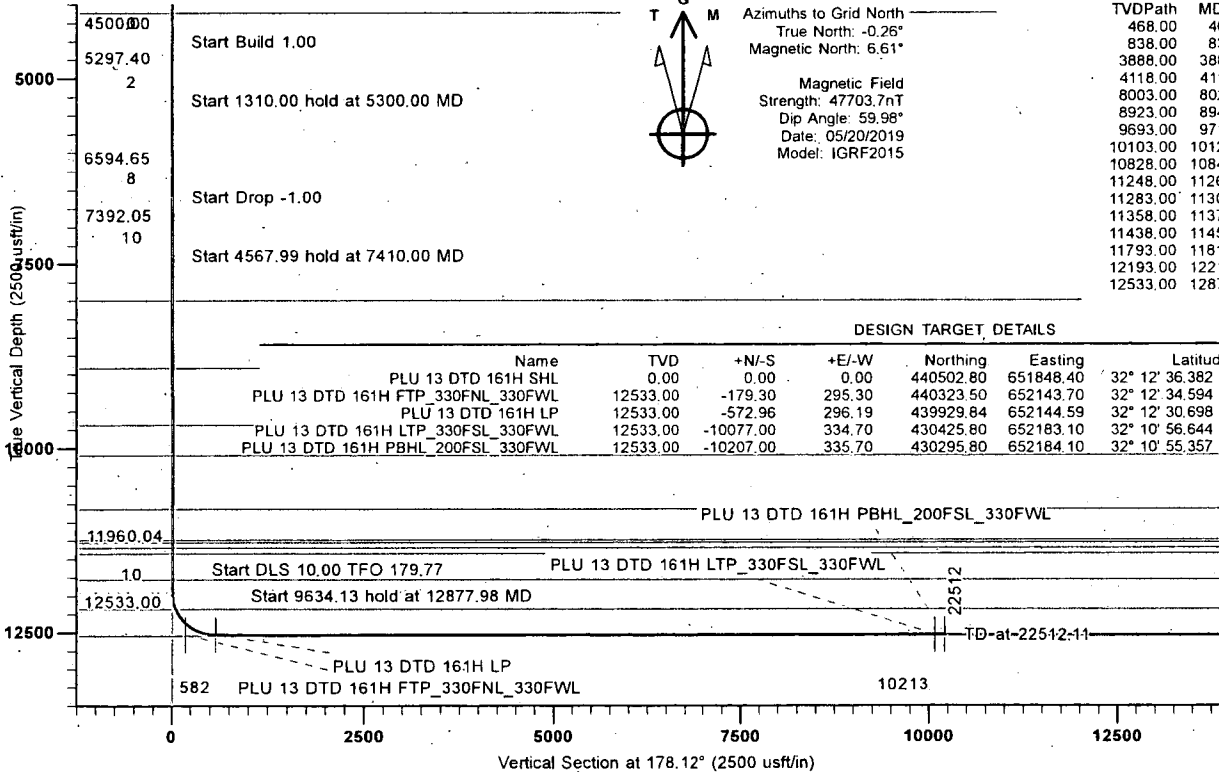
TVDPath	MDPath	Formation
468.00	468.00	Rustler
838.00	838.00	Top Salt
3888.00	3888.00	Base Salt
4118.00	4118.00	Delaware
8003.00	8020.94	Bone Spring
8923.00	8940.94	1st Bone Spring Ss
9693.00	9710.94	2nd Bone Spring Ss
10103.00	10120.94	3rd Bone Spring Lm
10828.00	10845.94	3rd Bone Spring Ss
11248.00	11265.94	Wolfcamp
11283.00	11300.94	Wolfcamp X
11358.00	11375.94	Wolfcamp Y
11438.00	11455.94	Wolfcamp A
11793.00	11810.94	Wolfcamp B
12193.00	12217.89	Wolfcamp D
12533.00	12877.98	LP



Azimuths to Grid North
 True North: -0.26°
 Magnetic North: 6.61°
 Magnetic Field
 Strength: 47703.7nT
 Dip Angle: 59.98°
 Date: 05/20/2019
 Model: IGRF2015

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PLU 13 DTD 161H SHL	0.00	0.00	0.00	440502.80	651848.40	32° 12' 36.382 N	103° 50' 32.536 W
PLU 13 DTD 161H FTP_330FNL_330FWL	12533.00	-179.30	295.30	440323.50	652143.70	32° 12' 34.594 N	103° 50' 29.109 W
PLU 13 DTD 161H LP	12533.00	-572.96	296.19	439929.84	652144.59	32° 12' 30.698 N	103° 50' 29.119 W
PLU 13 DTD 161H LTP_330FSL_330FWL	12533.00	-10077.00	334.70	430425.80	652183.10	32° 10' 56.644 N	103° 50' 29.177 W
PLU 13 DTD 161H PBHL_200FSL_330FWL	12533.00	-10207.00	335.70	430295.80	652184.10	32° 10' 55.357 N	103° 50' 29.172 W



To convert a Magnetic Direction to a Grid Direction, Add 6.61°
 Magnetic North is 6.61° East of Grid North (Magnetic Convergence)
 Magnetic North is 6.87° East of True North (Magnetic Declination)



XTO ENERGY INC.

Project: Eddy County, NM (NMEZ) NAD27 Grid
 Site: Poker Lake Unit 13 DTD
 Well: 13-DTD #161H
 Wellbore: 161H Lateral
 Design: Plan #1

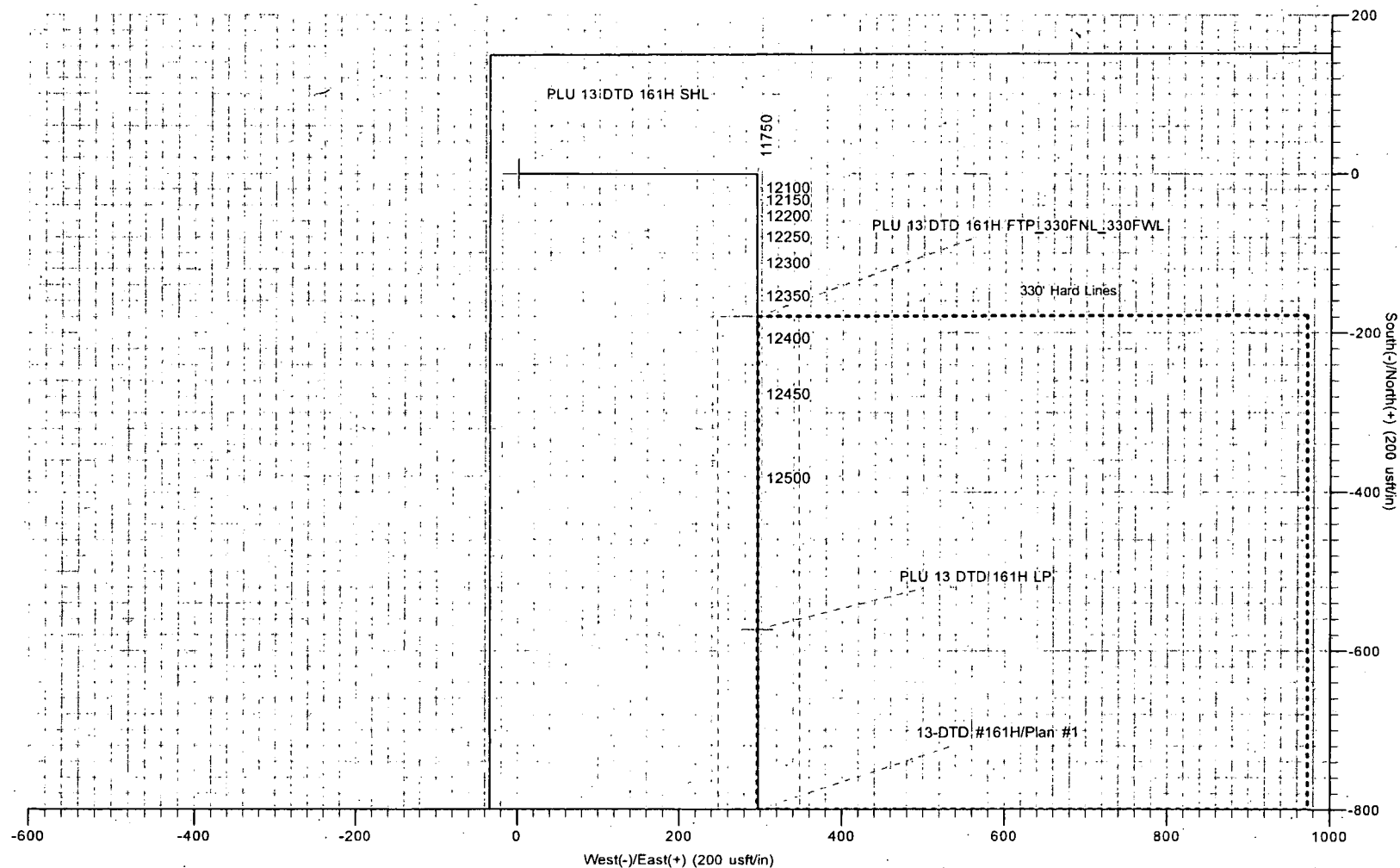
3441+22 @ 3463.00usft (Akita22)
 NAD 1927 (NADCON CONUS)

To convert a Magnetic Direction to a Grid Direction, Add 6.61°
 Magnetic North is 6.61° East of Grid North (Magnetic Convergence)
 Magnetic North is 6.87° East of True North (Magnetic Declination)



Azimuths to Grid North
 True North: -0.26°
 Magnetic North: 6.61°

Magnetic Field
 Strength: 47703.7nT
 Dip Angle: 59.98°
 Date: 05/20/2019
 Model: IGRF2015



Plan: Plan #1 (13-DTD #161H/161H Lateral)
 Created By: Mekka Williams
 eSomina Well Design
 mekka@esominawelldesign.com
 17:01, May 20 2019

CRUDE OILFIELD SOLUTIONS
 14427 Interdrive W Houston 77032
 832-230-2519



Planning Report

Database: CRUDE_EDM	Local Co-ordinate Reference: Well 13-DTD #161H
Company: XTO ENERGY INC.	TVD Reference: 3441+22 @ 3463.00usft (Akita22)
Project: Eddy County, NM (NMEZ) NAD27 Grid	MD Reference: 3441+22 @ 3463.00usft (Akita22)
Site: Poker Lake Unit 13 DTD	North Reference: Grid
Well: 13-DTD #161H	Survey Calculation Method: Minimum Curvature
Wellbore: 161H Lateral	
Design: Plan #1	

Project Eddy County, NM (NMEZ) NAD27 Grid		
Map System: US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum: NAD 1927 (NADCON CONUS)		
Map Zone: New Mexico East 3001		

Site Poker Lake Unit 13 DTD		
Site Position:	Northing: 440,502.80 usft	Latitude: 32° 12' 36.382 N
From: Map	Easting: 651,848.40 usft	Longitude: 103° 50' 32.536 W
Position Uncertainty: 0.00 usft	Slot Radius: 13.20 in	Grid Convergence: 0.26 °

Well 13-DTD #161H		
Well Position +N/-S 0.00 usft	Northing: 440,502.80 usft	Latitude: 32° 12' 36.382 N
+E/-W 0.00 usft	Easting: 651,848.40 usft	Longitude: 103° 50' 32.536 W
Position Uncertainty 0.00 usft	Wellhead Elevation:	Ground Level: 3,441.00 usft

Wellbore 161H Lateral		
Magnetics	Model Name	Sample Date
	IGRF2015	05/20/19
	Declination (°)	Dip Angle (°)
	6.87	59.98
		Field Strength (nT)
		47,703.67323606

Design Plan #1		
Audit Notes:		
Version:	Phase: PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	Direction (°)
	0.00	178.12

Plan Survey Tool Program	Date 05/20/19	
Depth From (usft)	Depth To (usft)	Survey (Wellbore)
1 0.00	22,511.11	Plan #1 (161H Lateral)
		Tool Name MWD+IFR1+MS
		Remarks OWSG MWD + IFR1 + Multi-Si

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,300.00	8.00	90.00	5,297.40	0.00	55.76	1.00	1.00	0.00	90.00	
6,610.00	8.00	90.00	6,594.65	0.00	238.08	0.00	0.00	0.00	0.00	
7,410.00	0.00	90.00	7,392.05	0.00	293.84	1.00	-1.00	0.00	180.00	
11,977.98	0.00	90.00	11,960.04	0.00	293.84	0.00	0.00	0.00	90.00	
12,877.98	90.00	179.77	12,533.00	-572.95	296.19	10.00	10.00	9.97	179.77	
22,512.11	90.00	179.77	12,533.00	-10,207.00	335.70	0.00	0.00	0.00	0.00	PLU 13 DTD 161H PE

Planning Report

Database: CRUDE_EDM
 Company: XTO ENERGY INC.
 Project: Eddy County, NM (NMEZ) NAD27 Grid
 Site: Poker Lake Unit 13 DTD
 Well: 13-DTD #161H
 Wellbore: 161H Lateral
 Design: Plan #1

Local Co-ordinate Reference: Well 13-DTD #161H
 TVD Reference: 3441+22 @ 3463.00usft (Akita22)
 MD Reference: 3441+22 @ 3463.00usft (Akita22)
 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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLU 13 DTD 161H SHL									
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
468.00	0.00	0.00	468.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
838.00	0.00	0.00	838.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	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
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,888.00	0.00	0.00	3,888.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
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
4,118.00	0.00	0.00	4,118.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
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

Planning Report

Database:	CRUDE_EDM	Local Co-ordinate Reference:	Well 13-DTD #161H
Company:	XTO ENERGY INC.	TVD Reference:	3441+22 @ 3463.00usft (Akita22)
Project:	Eddy County, NM (NMEZ) NAD27 Grid	MD Reference:	3441+22 @ 3463.00usft (Akita22)
Site:	Poker Lake Unit 13 DTD	North Reference:	Grid
Well:	13-DTD #161H	Survey Calculation Method:	Minimum Curvature
Wellbore:	161H Lateral		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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	1.00	90.00	4,600.00	0.00	0.87	0.03	1.00	1.00	0.00
4,700.00	2.00	90.00	4,699.96	0.00	3.49	0.11	1.00	1.00	0.00
4,800.00	3.00	90.00	4,799.86	0.00	7.85	0.26	1.00	1.00	0.00
4,900.00	4.00	90.00	4,899.68	0.00	13.96	0.46	1.00	1.00	0.00
5,000.00	5.00	90.00	4,999.37	0.00	21.80	0.72	1.00	1.00	0.00
5,100.00	6.00	90.00	5,098.90	0.00	31.39	1.03	1.00	1.00	0.00
5,200.00	7.00	90.00	5,198.26	0.00	42.71	1.40	1.00	1.00	0.00
5,300.00	8.00	90.00	5,297.40	0.00	55.76	1.83	1.00	1.00	0.00
5,400.00	8.00	90.00	5,396.43	0.00	69.68	2.29	0.00	0.00	0.00
5,500.00	8.00	90.00	5,495.46	0.00	83.59	2.75	0.00	0.00	0.00
5,600.00	8.00	90.00	5,594.48	0.00	97.51	3.21	0.00	0.00	0.00
5,700.00	8.00	90.00	5,693.51	0.00	111.43	3.66	0.00	0.00	0.00
5,800.00	8.00	90.00	5,792.54	0.00	125.35	4.12	0.00	0.00	0.00
5,900.00	8.00	90.00	5,891.56	0.00	139.26	4.58	0.00	0.00	0.00
6,000.00	8.00	90.00	5,990.59	0.00	153.18	5.04	0.00	0.00	0.00
6,100.00	8.00	90.00	6,089.62	0.00	167.10	5.49	0.00	0.00	0.00
6,200.00	8.00	90.00	6,188.64	0.00	181.02	5.95	0.00	0.00	0.00
6,300.00	8.00	90.00	6,287.67	0.00	194.93	6.41	0.00	0.00	0.00
6,400.00	8.00	90.00	6,386.70	0.00	208.85	6.87	0.00	0.00	0.00
6,500.00	8.00	90.00	6,485.72	0.00	222.77	7.32	0.00	0.00	0.00
6,610.00	8.00	90.00	6,594.65	0.00	238.08	7.83	0.00	0.00	0.00
6,700.00	7.10	90.00	6,683.87	0.00	249.90	8.21	1.00	-1.00	0.00
6,800.00	6.10	90.00	6,783.21	0.00	261.40	8.59	1.00	-1.00	0.00
6,900.00	5.10	90.00	6,882.73	0.00	271.15	8.91	1.00	-1.00	0.00
7,000.00	4.10	90.00	6,982.41	0.00	279.17	9.18	1.00	-1.00	0.00
7,100.00	3.10	90.00	7,082.21	0.00	285.45	9.38	1.00	-1.00	0.00
7,200.00	2.10	90.00	7,182.10	0.00	289.99	9.53	1.00	-1.00	0.00
7,300.00	1.10	90.00	7,282.06	0.00	292.78	9.62	1.00	-1.00	0.00
7,410.00	0.00	90.00	7,392.05	0.00	293.84	9.66	1.00	-1.00	0.00
7,500.00	0.00	90.00	7,482.06	0.00	293.84	9.66	0.00	0.00	0.00
7,600.00	0.00	90.00	7,582.06	0.00	293.84	9.66	0.00	0.00	0.00
7,700.00	0.00	90.00	7,682.06	0.00	293.84	9.66	0.00	0.00	0.00
7,800.00	0.00	90.00	7,782.06	0.00	293.84	9.66	0.00	0.00	0.00
7,900.00	0.00	90.00	7,882.06	0.00	293.84	9.66	0.00	0.00	0.00
8,000.00	0.00	90.00	7,982.06	0.00	293.84	9.66	0.00	0.00	0.00
8,020.94	0.00	90.00	8,003.00	0.00	293.84	9.66	0.00	0.00	0.00
Bone Spring									
8,100.00	0.00	90.00	8,082.06	0.00	293.84	9.66	0.00	0.00	0.00
8,200.00	0.00	90.00	8,182.06	0.00	293.84	9.66	0.00	0.00	0.00
8,300.00	0.00	90.00	8,282.06	0.00	293.84	9.66	0.00	0.00	0.00
8,400.00	0.00	90.00	8,382.06	0.00	293.84	9.66	0.00	0.00	0.00
8,500.00	0.00	90.00	8,482.06	0.00	293.84	9.66	0.00	0.00	0.00
8,600.00	0.00	90.00	8,582.06	0.00	293.84	9.66	0.00	0.00	0.00
8,700.00	0.00	90.00	8,682.06	0.00	293.84	9.66	0.00	0.00	0.00
8,800.00	0.00	90.00	8,782.06	0.00	293.84	9.66	0.00	0.00	0.00
8,900.00	0.00	90.00	8,882.06	0.00	293.84	9.66	0.00	0.00	0.00
8,940.94	0.00	0.00	8,923.00	0.00	293.84	9.66	0.00	0.00	0.00
1st Bone Spring Ss									
9,000.00	0.00	90.00	8,982.06	0.00	293.84	9.66	0.00	0.00	0.00
9,100.00	0.00	90.00	9,082.06	0.00	293.84	9.66	0.00	0.00	0.00
9,200.00	0.00	90.00	9,182.06	0.00	293.84	9.66	0.00	0.00	0.00
9,300.00	0.00	90.00	9,282.06	0.00	293.84	9.66	0.00	0.00	0.00

Planning Report

Database: CRUDE_EDM
 Company: XTO ENERGY INC.
 Project: Eddy County, NM (NMEZ) NAD27 Grid
 Site: Poker Lake Unit 13 DTD
 Well: 13-DTD #161H
 Wellbore: 161H Lateral
 Design: Plan #1

Local Co-ordinate Reference: Well 13-DTD #161H
 TVD Reference: 3441+22 @ 3463.00usft (Akita22)
 MD Reference: 3441+22 @ 3463.00usft (Akita22)
 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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,400.00	0.00	90.00	9,382.06	0.00	293.84	9.66	0.00	0.00	0.00
9,500.00	0.00	90.00	9,482.06	0.00	293.84	9.66	0.00	0.00	0.00
9,600.00	0.00	90.00	9,582.06	0.00	293.84	9.66	0.00	0.00	0.00
9,700.00	0.00	90.00	9,682.06	0.00	293.84	9.66	0.00	0.00	0.00
9,710.94	0.00	0.00	9,693.00	0.00	293.84	9.66	0.00	0.00	0.00
2nd Bone Spring Ss									
9,800.00	0.00	90.00	9,782.06	0.00	293.84	9.66	0.00	0.00	0.00
9,900.00	0.00	90.00	9,882.06	0.00	293.84	9.66	0.00	0.00	0.00
10,000.00	0.00	90.00	9,982.06	0.00	293.84	9.66	0.00	0.00	0.00
10,100.00	0.00	90.00	10,082.06	0.00	293.84	9.66	0.00	0.00	0.00
10,120.94	0.00	0.00	10,103.00	0.00	293.84	9.66	0.00	0.00	0.00
3rd Bone Spring Lm									
10,200.00	0.00	90.00	10,182.06	0.00	293.84	9.66	0.00	0.00	0.00
10,300.00	0.00	90.00	10,282.06	0.00	293.84	9.66	0.00	0.00	0.00
10,400.00	0.00	90.00	10,382.06	0.00	293.84	9.66	0.00	0.00	0.00
10,500.00	0.00	90.00	10,482.06	0.00	293.84	9.66	0.00	0.00	0.00
10,600.00	0.00	90.00	10,582.06	0.00	293.84	9.66	0.00	0.00	0.00
10,700.00	0.00	90.00	10,682.06	0.00	293.84	9.66	0.00	0.00	0.00
10,800.00	0.00	90.00	10,782.06	0.00	293.84	9.66	0.00	0.00	0.00
10,845.94	0.00	90.00	10,828.00	0.00	293.84	9.66	0.00	0.00	0.00
3rd Bone Spring Ss									
10,900.00	0.00	90.00	10,882.06	0.00	293.84	9.66	0.00	0.00	0.00
11,000.00	0.00	90.00	10,982.06	0.00	293.84	9.66	0.00	0.00	0.00
11,100.00	0.00	90.00	11,082.06	0.00	293.84	9.66	0.00	0.00	0.00
11,200.00	0.00	90.00	11,182.06	0.00	293.84	9.66	0.00	0.00	0.00
11,265.94	0.00	0.00	11,248.00	0.00	293.84	9.66	0.00	0.00	0.00
Wolfcamp									
11,300.00	0.00	90.00	11,282.06	0.00	293.84	9.66	0.00	0.00	0.00
11,300.94	0.00	90.00	11,283.00	0.00	293.84	9.66	0.00	0.00	0.00
Wolfcamp X									
11,375.94	0.00	90.00	11,358.00	0.00	293.84	9.66	0.00	0.00	0.00
Wolfcamp Y									
11,400.00	0.00	90.00	11,382.06	0.00	293.84	9.66	0.00	0.00	0.00
11,455.94	0.00	90.00	11,438.00	0.00	293.84	9.66	0.00	0.00	0.00
Wolfcamp A									
11,500.00	0.00	90.00	11,482.06	0.00	293.84	9.66	0.00	0.00	0.00
11,600.00	0.00	90.00	11,582.06	0.00	293.84	9.66	0.00	0.00	0.00
11,700.00	0.00	90.00	11,682.06	0.00	293.84	9.66	0.00	0.00	0.00
11,800.00	0.00	90.00	11,782.06	0.00	293.84	9.66	0.00	0.00	0.00
11,810.94	0.00	0.00	11,793.00	0.00	293.84	9.66	0.00	0.00	0.00
Wolfcamp B									
11,900.00	0.00	90.00	11,882.06	0.00	293.84	9.66	0.00	0.00	0.00
11,977.98	0.00	90.00	11,960.04	0.00	293.84	9.66	0.00	0.00	0.00
12,000.00	2.20	179.77	11,982.05	-0.42	293.84	10.08	10.00	10.00	407.70
12,050.00	7.20	179.77	12,031.87	-4.52	293.85	14.18	10.00	10.00	0.00
12,100.00	12.20	179.77	12,081.14	-12.94	293.89	22.60	10.00	10.00	0.00
12,150.00	17.20	179.77	12,129.49	-25.63	293.94	35.28	10.00	10.00	0.00
12,200.00	22.20	179.77	12,176.54	-42.48	294.01	52.12	10.00	10.00	0.00
12,217.89	23.99	179.77	12,193.00	-49.50	294.04	59.14	10.00	10.00	0.00
Wolfcamp D									
12,250.00	27.20	179.77	12,221.95	-63.37	294.10	73.00	10.00	10.00	0.00
12,300.00	32.20	179.77	12,265.37	-88.13	294.20	97.76	10.00	10.00	0.00
12,350.00	37.20	179.77	12,306.46	-116.59	294.31	126.20	10.00	10.00	0.00

Planning Report

Database:	CRUDE_EDM	Local Co-ordinate Reference:	Well 13-DTD #161H
Company:	XTO ENERGY INC.	TVD Reference:	3441+22 @ 3463.00usft (Akita22)
Project:	Eddy County, NM (NMEZ) NAD27 Grid	MD Reference:	3441+22 @ 3463.00usft (Akita22)
Site:	Poker Lake Unit 13 DTD	North Reference:	Grid
Well:	13-DTD #161H	Survey Calculation Method:	Minimum Curvature
Wellbore:	161H Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,400.00	42.20	179.77	12,344.92	-148.52	294.45	158.12	10.00	10.00	0.00
12,450.00	47.20	179.77	12,380.45	-183.68	294.59	193.26	10.00	10.00	0.00
12,500.00	52.20	179.77	12,412.78	-221.80	294.75	231.37	10.00	10.00	0.00
12,534.80	55.68	179.77	12,433.25	-249.93	294.86	259.48	10.00	10.00	0.00
PLU 13 DTD 161H FTP_330FNL_330FWL									
12,550.00	57.20	179.77	12,441.66	-262.59	294.91	272.15	10.00	10.00	0.00
12,600.00	62.20	179.77	12,466.88	-305.75	295.09	315.29	10.00	10.00	0.00
12,650.00	67.20	179.77	12,488.24	-350.94	295.28	360.46	10.00	10.00	0.00
12,700.00	72.20	179.77	12,505.57	-397.82	295.47	407.32	10.00	10.00	0.00
12,750.00	77.20	179.77	12,518.76	-446.03	295.67	455.51	10.00	10.00	0.00
12,800.00	82.20	179.77	12,527.70	-495.21	295.87	504.67	10.00	10.00	0.00
12,850.00	87.20	179.77	12,532.31	-544.98	296.07	554.42	10.00	10.00	0.00
12,877.98	90.00	179.77	12,533.00	-572.95	296.19	582.38	10.00	10.00	0.00
LP									
12,877.99	90.00	179.77	12,533.00	-572.96	296.19	582.39	0.00	0.00	0.00
PLU 13 DTD 161H LP									
12,900.00	90.00	179.77	12,533.00	-594.97	296.28	604.39	0.00	0.00	0.00
13,000.00	90.00	179.77	12,533.00	-694.97	296.69	704.35	0.00	0.00	0.00
13,100.00	90.00	179.77	12,533.00	-794.97	297.10	804.31	0.00	0.00	0.00
13,200.00	90.00	179.77	12,533.00	-894.97	297.51	904.26	0.00	0.00	0.00
13,300.00	90.00	179.77	12,533.00	-994.97	297.92	1,004.22	0.00	0.00	0.00
13,400.00	90.00	179.77	12,533.00	-1,094.97	298.33	1,104.18	0.00	0.00	0.00
13,500.00	90.00	179.77	12,533.00	-1,194.97	298.74	1,204.14	0.00	0.00	0.00
13,600.00	90.00	179.77	12,533.00	-1,294.97	299.15	1,304.10	0.00	0.00	0.00
13,700.00	90.00	179.77	12,533.00	-1,394.96	299.56	1,404.06	0.00	0.00	0.00
13,800.00	90.00	179.77	12,533.00	-1,494.96	299.97	1,504.02	0.00	0.00	0.00
13,900.00	90.00	179.77	12,533.00	-1,594.96	300.38	1,603.97	0.00	0.00	0.00
14,000.00	90.00	179.77	12,533.00	-1,694.96	300.79	1,703.93	0.00	0.00	0.00
14,100.00	90.00	179.77	12,533.00	-1,794.96	301.20	1,803.89	0.00	0.00	0.00
14,200.00	90.00	179.77	12,533.00	-1,894.96	301.61	1,903.85	0.00	0.00	0.00
14,300.00	90.00	179.77	12,533.00	-1,994.96	302.02	2,003.81	0.00	0.00	0.00
14,400.00	90.00	179.77	12,533.00	-2,094.96	302.43	2,103.77	0.00	0.00	0.00
14,500.00	90.00	179.77	12,533.00	-2,194.96	302.84	2,203.73	0.00	0.00	0.00
14,600.00	90.00	179.77	12,533.00	-2,294.96	303.25	2,303.68	0.00	0.00	0.00
14,700.00	90.00	179.77	12,533.00	-2,394.96	303.66	2,403.64	0.00	0.00	0.00
14,800.00	90.00	179.77	12,533.00	-2,494.95	304.07	2,503.60	0.00	0.00	0.00
14,900.00	90.00	179.77	12,533.00	-2,594.95	304.48	2,603.56	0.00	0.00	0.00
15,000.00	90.00	179.77	12,533.00	-2,694.95	304.89	2,703.52	0.00	0.00	0.00
15,100.00	90.00	179.77	12,533.00	-2,794.95	305.30	2,803.48	0.00	0.00	0.00
15,200.00	90.00	179.77	12,533.00	-2,894.95	305.71	2,903.44	0.00	0.00	0.00
15,300.00	90.00	179.77	12,533.00	-2,994.95	306.12	3,003.39	0.00	0.00	0.00
15,400.00	90.00	179.77	12,533.00	-3,094.95	306.53	3,103.35	0.00	0.00	0.00
15,500.00	90.00	179.77	12,533.00	-3,194.95	306.94	3,203.31	0.00	0.00	0.00
15,600.00	90.00	179.77	12,533.00	-3,294.95	307.35	3,303.27	0.00	0.00	0.00
15,700.00	90.00	179.77	12,533.00	-3,394.95	307.76	3,403.23	0.00	0.00	0.00
15,800.00	90.00	179.77	12,533.00	-3,494.95	308.17	3,503.19	0.00	0.00	0.00
15,900.00	90.00	179.77	12,533.00	-3,594.95	308.58	3,603.15	0.00	0.00	0.00
16,000.00	90.00	179.77	12,533.00	-3,694.94	308.99	3,703.11	0.00	0.00	0.00
16,100.00	90.00	179.77	12,533.00	-3,794.94	309.40	3,803.06	0.00	0.00	0.00
16,200.00	90.00	179.77	12,533.00	-3,894.94	309.81	3,903.02	0.00	0.00	0.00
16,300.00	90.00	179.77	12,533.00	-3,994.94	310.22	4,002.98	0.00	0.00	0.00
16,400.00	90.00	179.77	12,533.00	-4,094.94	310.63	4,102.94	0.00	0.00	0.00
16,500.00	90.00	179.77	12,533.00	-4,194.94	311.04	4,202.90	0.00	0.00	0.00

Planning Report

Database:	CRUDE_EDM	Local Co-ordinate Reference:	Well 13-DTD #161H
Company:	XTO ENERGY INC.	TVD Reference:	3441+22 @ 3463.00usft (Akita22)
Project:	Eddy County, NM (NMEZ) NAD27 Grid	MD Reference:	3441+22 @ 3463.00usft (Akita22)
Site:	Poker Lake Unit 13 DTD	North Reference:	Grid
Well:	13-DTD #161H	Survey Calculation Method:	Minimum Curvature
Wellbore:	161H Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,600.00	90.00	179.77	12,533.00	-4,294.94	311.45	4,302.86	0.00	0.00	0.00
16,700.00	90.00	179.77	12,533.00	-4,394.94	311.86	4,402.82	0.00	0.00	0.00
16,800.00	90.00	179.77	12,533.00	-4,494.94	312.27	4,502.77	0.00	0.00	0.00
16,900.00	90.00	179.77	12,533.00	-4,594.94	312.68	4,602.73	0.00	0.00	0.00
17,000.00	90.00	179.77	12,533.00	-4,694.94	313.09	4,702.69	0.00	0.00	0.00
17,100.00	90.00	179.77	12,533.00	-4,794.94	313.50	4,802.65	0.00	0.00	0.00
17,200.00	90.00	179.77	12,533.00	-4,894.93	313.91	4,902.61	0.00	0.00	0.00
17,300.00	90.00	179.77	12,533.00	-4,994.93	314.32	5,002.57	0.00	0.00	0.00
17,400.00	90.00	179.77	12,533.00	-5,094.93	314.73	5,102.53	0.00	0.00	0.00
17,500.00	90.00	179.77	12,533.00	-5,194.93	315.14	5,202.48	0.00	0.00	0.00
17,600.00	90.00	179.77	12,533.00	-5,294.93	315.55	5,302.44	0.00	0.00	0.00
17,700.00	90.00	179.77	12,533.00	-5,394.93	315.96	5,402.40	0.00	0.00	0.00
17,800.00	90.00	179.77	12,533.00	-5,494.93	316.37	5,502.36	0.00	0.00	0.00
17,900.00	90.00	179.77	12,533.00	-5,594.93	316.78	5,602.32	0.00	0.00	0.00
18,000.00	90.00	179.77	12,533.00	-5,694.93	317.19	5,702.28	0.00	0.00	0.00
18,100.00	90.00	179.77	12,533.00	-5,794.93	317.60	5,802.24	0.00	0.00	0.00
18,200.00	90.00	179.77	12,533.00	-5,894.93	318.01	5,902.19	0.00	0.00	0.00
18,300.00	90.00	179.77	12,533.00	-5,994.93	318.42	6,002.15	0.00	0.00	0.00
18,400.00	90.00	179.77	12,533.00	-6,094.92	318.83	6,102.11	0.00	0.00	0.00
18,500.00	90.00	179.77	12,533.00	-6,194.92	319.24	6,202.07	0.00	0.00	0.00
18,600.00	90.00	179.77	12,533.00	-6,294.92	319.65	6,302.03	0.00	0.00	0.00
18,700.00	90.00	179.77	12,533.00	-6,394.92	320.06	6,401.99	0.00	0.00	0.00
18,800.00	90.00	179.77	12,533.00	-6,494.92	320.48	6,501.95	0.00	0.00	0.00
18,900.00	90.00	179.77	12,533.00	-6,594.92	320.89	6,601.90	0.00	0.00	0.00
19,000.00	90.00	179.77	12,533.00	-6,694.92	321.30	6,701.86	0.00	0.00	0.00
19,100.00	90.00	179.77	12,533.00	-6,794.92	321.71	6,801.82	0.00	0.00	0.00
19,200.00	90.00	179.77	12,533.00	-6,894.92	322.12	6,901.78	0.00	0.00	0.00
19,300.00	90.00	179.77	12,533.00	-6,994.92	322.53	7,001.74	0.00	0.00	0.00
19,400.00	90.00	179.77	12,533.00	-7,094.92	322.94	7,101.70	0.00	0.00	0.00
19,500.00	90.00	179.77	12,533.00	-7,194.92	323.35	7,201.66	0.00	0.00	0.00
19,600.00	90.00	179.77	12,533.00	-7,294.91	323.76	7,301.61	0.00	0.00	0.00
19,700.00	90.00	179.77	12,533.00	-7,394.91	324.17	7,401.57	0.00	0.00	0.00
19,800.00	90.00	179.77	12,533.00	-7,494.91	324.58	7,501.53	0.00	0.00	0.00
19,900.00	90.00	179.77	12,533.00	-7,594.91	324.99	7,601.49	0.00	0.00	0.00
20,000.00	90.00	179.77	12,533.00	-7,694.91	325.40	7,701.45	0.00	0.00	0.00
20,100.00	90.00	179.77	12,533.00	-7,794.91	325.81	7,801.41	0.00	0.00	0.00
20,200.00	90.00	179.77	12,533.00	-7,894.91	326.22	7,901.37	0.00	0.00	0.00
20,300.00	90.00	179.77	12,533.00	-7,994.91	326.63	8,001.32	0.00	0.00	0.00
20,400.00	90.00	179.77	12,533.00	-8,094.91	327.04	8,101.28	0.00	0.00	0.00
20,500.00	90.00	179.77	12,533.00	-8,194.91	327.45	8,201.24	0.00	0.00	0.00
20,600.00	90.00	179.77	12,533.00	-8,294.91	327.86	8,301.20	0.00	0.00	0.00
20,700.00	90.00	179.77	12,533.00	-8,394.91	328.27	8,401.16	0.00	0.00	0.00
20,800.00	90.00	179.77	12,533.00	-8,494.90	328.68	8,501.12	0.00	0.00	0.00
20,900.00	90.00	179.77	12,533.00	-8,594.90	329.09	8,601.08	0.00	0.00	0.00
21,000.00	90.00	179.77	12,533.00	-8,694.90	329.50	8,701.04	0.00	0.00	0.00
21,100.00	90.00	179.77	12,533.00	-8,794.90	329.91	8,800.99	0.00	0.00	0.00
21,200.00	90.00	179.77	12,533.00	-8,894.90	330.32	8,900.95	0.00	0.00	0.00
21,300.00	90.00	179.77	12,533.00	-8,994.90	330.73	9,000.91	0.00	0.00	0.00
21,400.00	90.00	179.77	12,533.00	-9,094.90	331.14	9,100.87	0.00	0.00	0.00
21,500.00	90.00	179.77	12,533.00	-9,194.90	331.55	9,200.83	0.00	0.00	0.00
21,600.00	90.00	179.77	12,533.00	-9,294.90	331.96	9,300.79	0.00	0.00	0.00
21,700.00	90.00	179.77	12,533.00	-9,394.90	332.37	9,400.75	0.00	0.00	0.00
21,800.00	90.00	179.77	12,533.00	-9,494.90	332.78	9,500.70	0.00	0.00	0.00
21,900.00	90.00	179.77	12,533.00	-9,594.90	333.19	9,600.66	0.00	0.00	0.00

Planning Report

Database: CRUDE_EDM
Company: XTO ENERGY INC.
Project: Eddy County, NM (NMEZ) NAD27 Grid
Site: Poker Lake Unit 13 DTD
Well: 13-DTD #161H
Wellbore: 161H Lateral
Design: Plan #1

Local Co-ordinate Reference: Well 13-DTD #161H
TVD Reference: 3441+22 @ 3463.00usft (Akita22)
MD Reference: 3441+22 @ 3463.00usft (Akita22)
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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
22,000.00	90.00	179.77	12,533.00	-9,694.89	333.60	9,700.62	0.00	0.00	0.00
22,100.00	90.00	179.77	12,533.00	-9,794.89	334.01	9,800.58	0.00	0.00	0.00
22,200.00	90.00	179.77	12,533.00	-9,894.89	334.42	9,900.54	0.00	0.00	0.00
22,300.00	90.00	179.77	12,533.00	-9,994.89	334.83	10,000.50	0.00	0.00	0.00
22,382.11	90.00	179.77	12,533.00	-10,077.00	335.17	10,082.57	0.00	0.00	0.00
PLU 13 DTD 161H LTP_330FSL_330FWL									
22,400.00	90.00	179.77	12,533.00	-10,094.89	335.24	10,100.46	0.00	0.00	0.00
22,500.00	90.00	179.77	12,533.00	-10,194.89	335.65	10,200.41	0.00	0.00	0.00
22,512.11	90.00	179.77	12,533.00	-10,207.00	335.70	10,212.52	0.00	0.00	0.00
PLU 13 DTD 161H PBHL_200FSL_330FWL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PLU 13 DTD 161H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	440,502.80	651,848.40	32° 12' 36.382 N	103° 50' 32.536 W
PLU 13 DTD 161H PBH - plan hits target center - Rectangle (sides W100.00 H10,028.00 D0.00)	0.00	0.00	12,533.00	-10,207.00	335.70	430,295.80	652,184.10	32° 10' 55.357 N	103° 50' 29.172 W
PLU 13 DTD 161H LTP_ - plan misses target center by 0.47usft at 22382.11usft MD (12533.00 TVD, -10077.00 N, 335.17 E) - Point	0.00	0.00	12,533.00	-10,077.00	334.70	430,425.80	652,183.10	32° 10' 56.644 N	103° 50' 29.177 W
PLU 13 DTD 161H FTP_ - plan misses target center by 122.22usft at 12534.80usft MD (12433.25 TVD, -249.93 N, 294.86 E) - Point	0.00	0.00	12,533.00	-179.30	295.30	440,323.50	652,143.70	32° 12' 34.594 N	103° 50' 29.109 W
PLU 13 DTD 161H LP - plan hits target center - Point	0.00	0.00	12,533.00	-572.96	296.19	439,929.84	652,144.59	32° 12' 30.698 N	103° 50' 29.119 W

Planning Report

Database:	CRUDE_EDM	Local Co-ordinate Reference:	Well 13-DTD #161H
Company:	XTO ENERGY INC.	TVD Reference:	3441+22 @ 3463.00usft (Akita22)
Project:	Eddy County, NM (NMEZ) NAD27 Grid	MD Reference:	3441+22 @ 3463.00usft (Akita22)
Site:	Poker Lake Unit 13 DTD	North Reference:	Grid
Well:	13-DTD #161H	Survey Calculation Method:	Minimum Curvature
Wellbore:	161H Lateral		
Design:	Plan #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
468.00	468.00	Rustler				
838.00	838.00	Top Salt				
3,888.00	3,888.00	Base Salt				
4,118.00	4,118.00	Delaware				
8,020.94	8,003.00	Bone Spring				
8,940.94	8,923.00	1st Bone Spring Ss				
9,710.94	9,693.00	2nd Bone Spring Ss				
10,120.94	10,103.00	3rd Bone Spring Lm				
10,845.94	10,828.00	3rd Bone Spring Ss				
11,265.94	11,248.00	Wolfcamp				
11,300.94	11,283.00	Wolfcamp X				
11,375.94	11,358.00	Wolfcamp Y				
11,455.94	11,438.00	Wolfcamp A				
11,810.94	11,793.00	Wolfcamp B				
12,217.89	12,193.00	Wolfcamp D				
12,877.98	12,533.00	LP				

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Permian Operating, LLC
LEASE NO.:	NMNM-0030453
WELL NAME & NO.:	Poker Lake Unit 13 DTD 121H
SURFACE HOLE FOOTAGE:	0150' FNL & 0035' FWL
BOTTOM HOLE FOOTAGE:	0200' FSL & 0330' FWL Sec. 25, T. 24 S., R 30 E.
LOCATION:	Section 24, T. 24 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

Commercial Well Determination

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

Unit Wells

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☒ **Eddy County**

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

1. **Hydrogen Sulfide (H₂S) monitors shall be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**

3. 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 wells.
4. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
5. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) 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.

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.

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

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.

1. The 18-5/8 inch surface casing shall be set at approximately 780 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet 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 is to include the lead cement slurry.
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

13-3/8" 1st Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the 13-3/8 inch 1st intermediate casing is (ensure casing is 25 feet below the base of the salt):

☒ Cement to surface. If cement does not circulate see B.1 a, c-d above.

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

9-5/8" 2nd Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

3. The minimum required fill of cement behind the 9-5/8 inch 2nd intermediate casing is:

Operator has proposed DV tool at depth of 4030', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

- ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

4. 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 18% - Additional cement may be required.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi.**
4. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the 13-3/8 inch 1st intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 inch 1st intermediate casing shoe shall be 10,000 (10M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Operator shall perform the 9-5/8" casing integrity tests to 70% of the casing burst. This will test the multi-bowl seals.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)

10M 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.

D. 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.

E. DRILL STEM TEST

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

F. 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.

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