

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTNMOCD
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.
NMNM0506A

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
POKER LAKE UNIT 15 TWR 104H9. API Well No.
30-015-4505410. Field and Pool or Exploratory Area
PURPLE SAGE; WOLFCAMP11. 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 RD BLDG 5
MIDLAND, TX 79707

3b. Phone No. (include area code)

Ph: 432-620-4374

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

Sec 15 T24S R31E Mer NMP SESW 360FSL 1805FWL

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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 recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

XTO Permitting Operating, LLC requests permission to change to a 4-string casing design per the attached drilling program.....

RECEIVED

JUL 23 2019

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

DISTRICT/ARTESIA/O.C.D.

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

Electronic Submission #457676 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 03/12/2019 ()

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

Signature

(Electronic Submission)

Date 03/12/2019

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE
MAR 13 2019

Approved By

Title

BUREAU OF LAND MANAGEMENT
ROSWELL FIELD MANAGEMENT

Date:

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

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

RW10-29-19

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

XTO Energy Inc.
PLU 15 Twin Wells Ranch 104H
Projected TD: 25076' MD / 11826' TVD
SHL: 360' FSL & 1805' FWL , Section 15, T24S, R31E
BHL: 2440' FNL & 2310' FWL , Section 34, T24S, R31E
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	719'	Water
Top of Salt	1077'	Water
Base of Salt	4263'	Water
Delaware	4486'	Water
Bone Spring	8441'	Water
1st Bone Spring Ss	9407'	Water/Oil/Gas
2nd Bone Spring Ss	9993'	Water/Oil/Gas
3rd Bone Spring Ss	11240'	Water/Oil/Gas
Target/Land Curve	11826'	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 @ 870' (207' above the salt) and circulating cement back to surface. The salt will be isolated by setting 13-3/8" inch casing at 4320' and circulating cement to surface. The second intermediate will isolate from the salt down to the next casing seat by setting 9-5/8" inch casing at 10650' and a DV tool at 4388'. A 8-3/4" inch curve and lateral hole will be drilled to MD/TD and 5-1/2 inch casing will be set at TD and cemented 500' inside the previous shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 870'	18-5/8"	87.5	STC	H-40	New	1.24	1.58	7.34
17-1/2"	0' – 4320'	13-3/8"	68	STC	J-55	New	1.16	1.46	2.44
12-1/4"	0' – 10650'	9-5/8"	40	LTC	P-110	New	2.23	1.15	2.32
8-3/4"	0' – 25076'	5-1/2"	17	BTC	P-110	New	1.12	1.22	1.91

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" Collapse analyzed using 50% evacuation based on regional experience.
- 9-5/8" Collapse analyzed using 33% evacuation based on regional experience.
- 5-1/2" Tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35
- Test on 2M Annular & Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less.

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" 5M top flange x 13-3/8" SOW bottom

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

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

4. Cement Program

Surface Casing: 18-5/8", 87.5 New H-40, STC casing to be set at +/- 870'

Lead: 760 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft³/sx, 10.13 gal/sx water)
Tail: 550 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft³/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

1st Intermediate Casing: 13-3/8", 68 New J-55, STC casing to be set at +/- 4320'

Lead: 2980 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 P-110, LTC casing to be set at +/- 10650'
ECP/DV Tool to be set at 4388'

1st Stage

Lead: 1910 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: 1290 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", 17 New P-110, BTC casing to be set at +/- 25076'

Lead: 50 sxs NeoCem (mixed at 10.5 ppg, 2.69 ft³/sx, 12.26 gal/sx water)

Tail: 2950 sxs VersaCem (mixed at 13.2 ppg, 1.61 ft³/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) on surface casing temporary wellhead will consist of a 21-1/4" minimum 2M Hydril. MASP should not exceed 1318 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 5M Double Ram BOP. MASP should not exceed 3548 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-3/8", 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When nipping up on the 9-5/8", the BOP will be tested to a minimum of 5000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 5M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 870'	24"	FW/Native	8.4-8.8	35-40	NC
870' - 4320'	17-1/2"	Brine	9.8-10.2	30-32	NC
4320' to 10650'	12-1/4"	FW / Cut Brine	8.7-9.4	30-32	NC
10650' to 25076'	8-3/4"	Cut Brine / Polymer	9.7 - 10	29-32	NC - 20

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

Spud with fresh water/native mud. Drill out from under 18-5/8" surface casing with brine solution. A ppg-10.2ppg brine mud will be used while drilling through the salt formation. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

7. Auxiliary Well Control and Monitoring Equipment

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

8. Logging, Coring and Testing Program

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

Open hole logging will not be done on this well.

9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 175 to 195 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. Lost circulation could occur but is not expected to be a serious problem in this area and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid. The maximum anticipated bottom hole pressure for this well is 6150 psi.

10. Anticipated Starting Date and Duration of Operations

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

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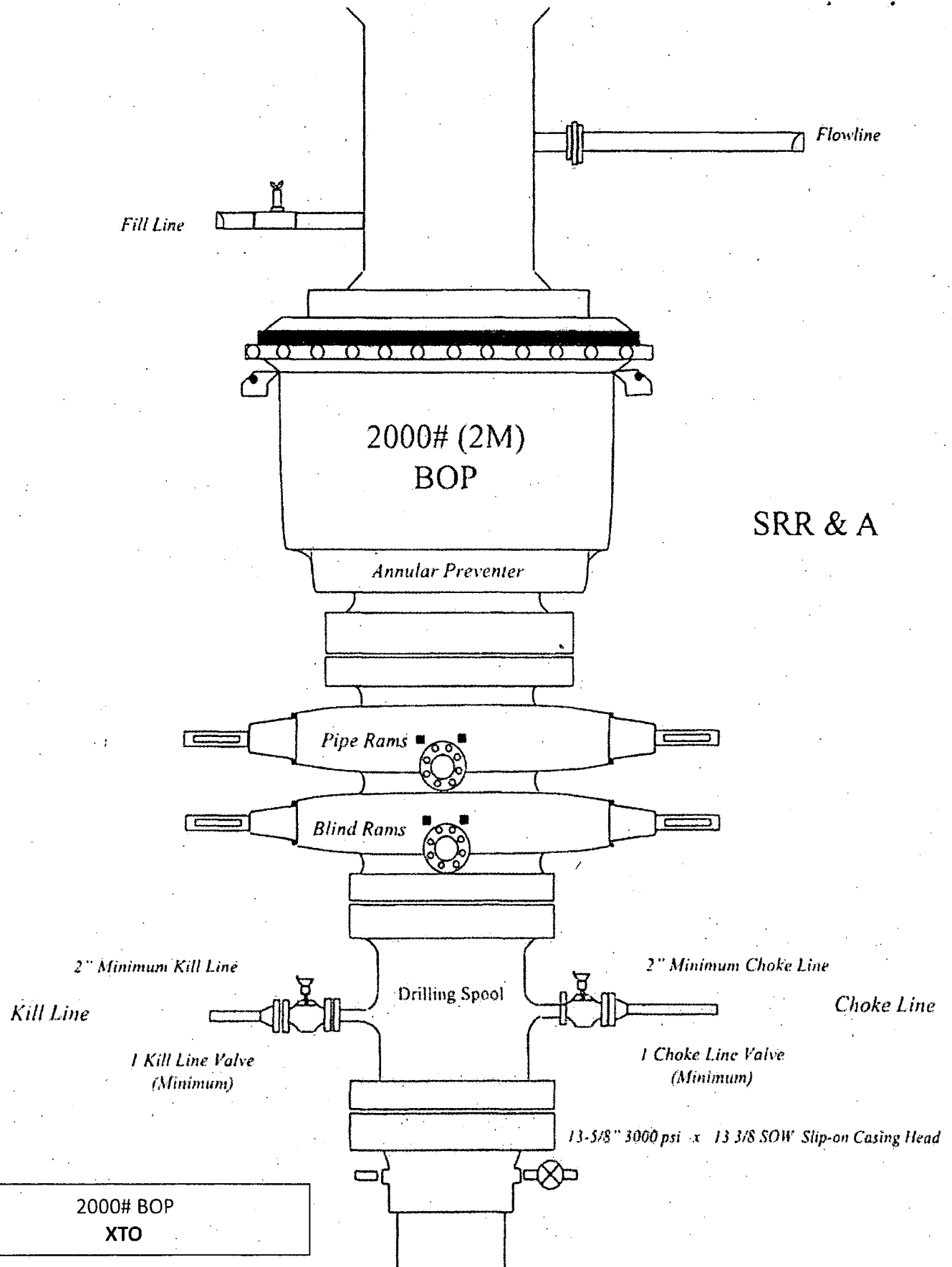
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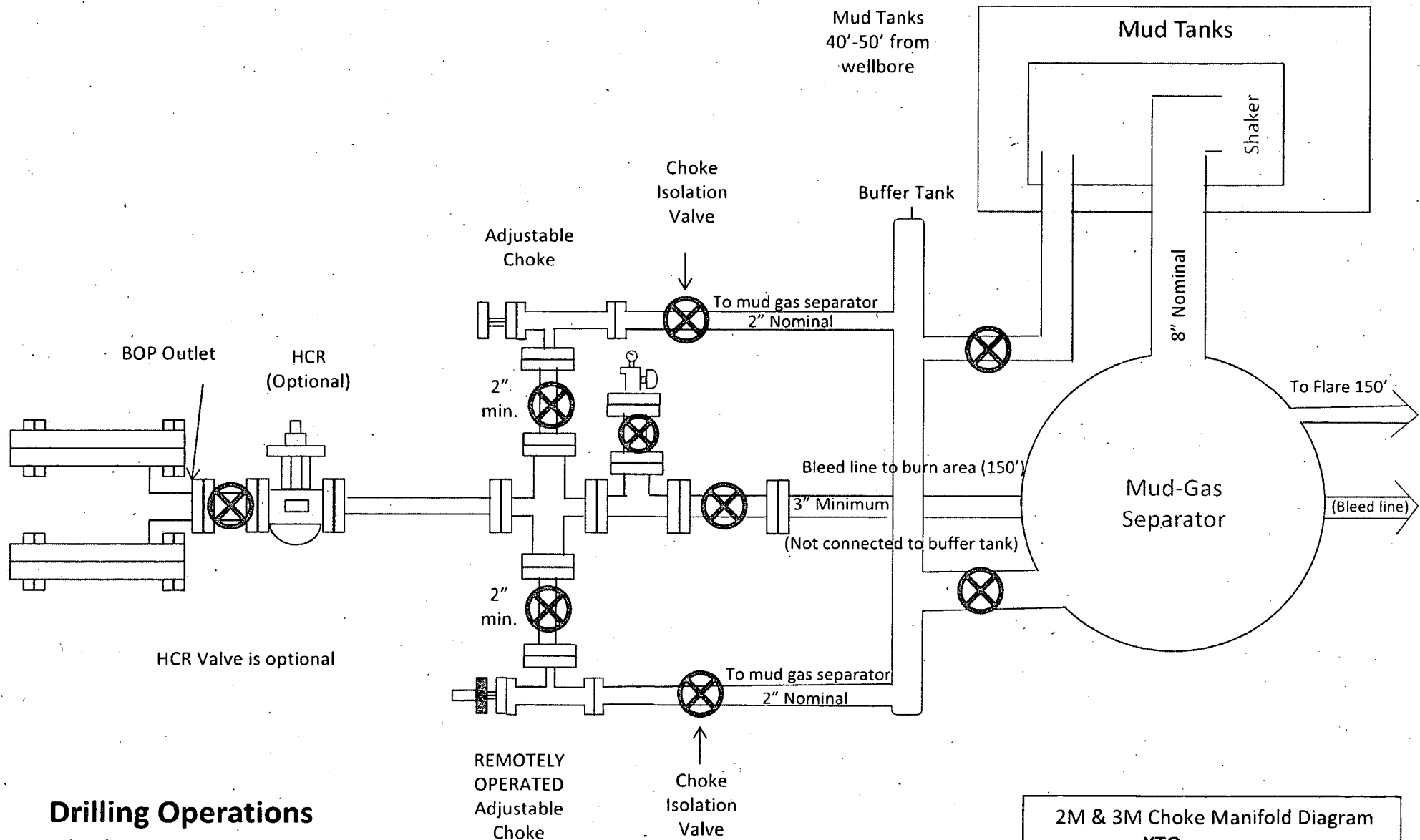
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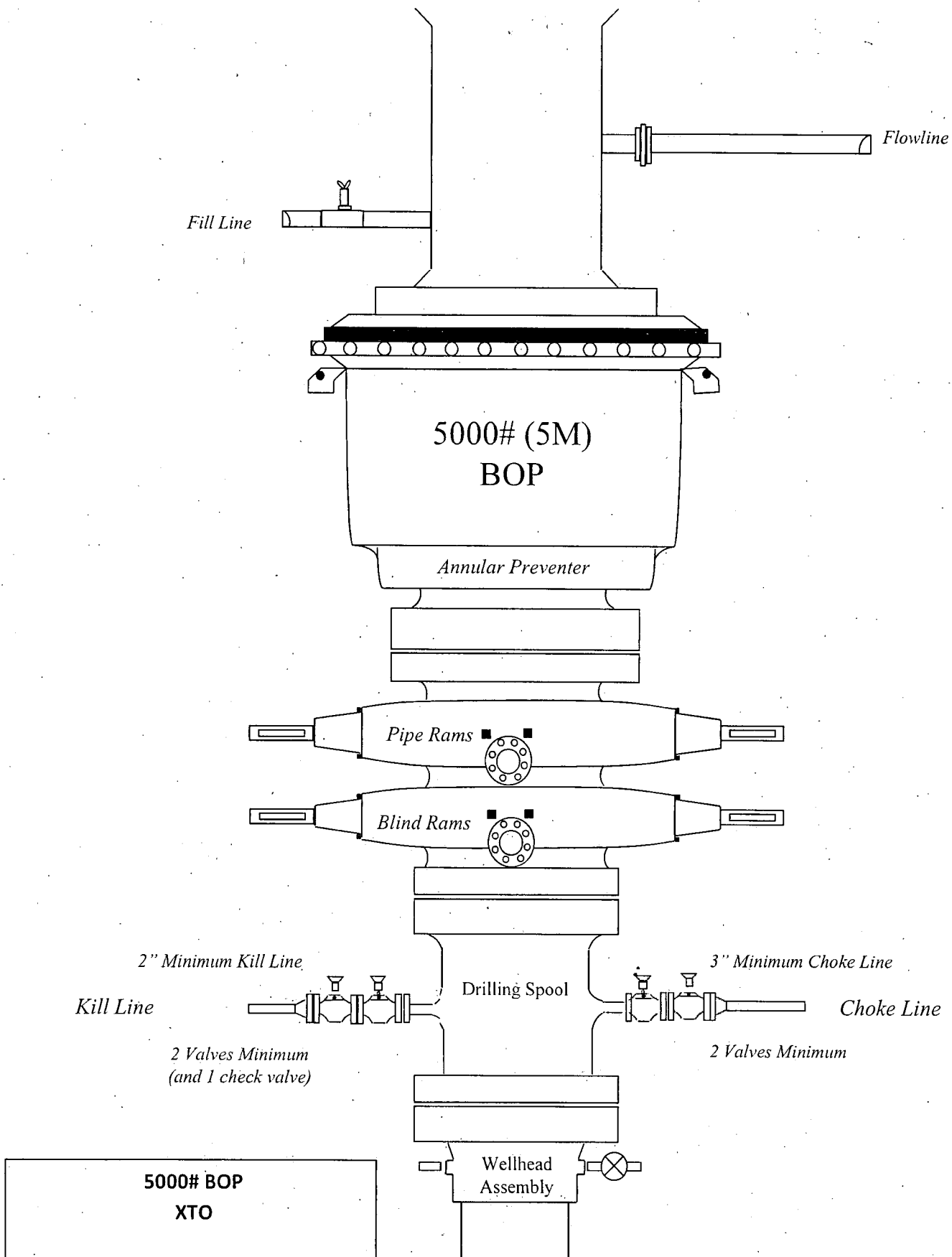
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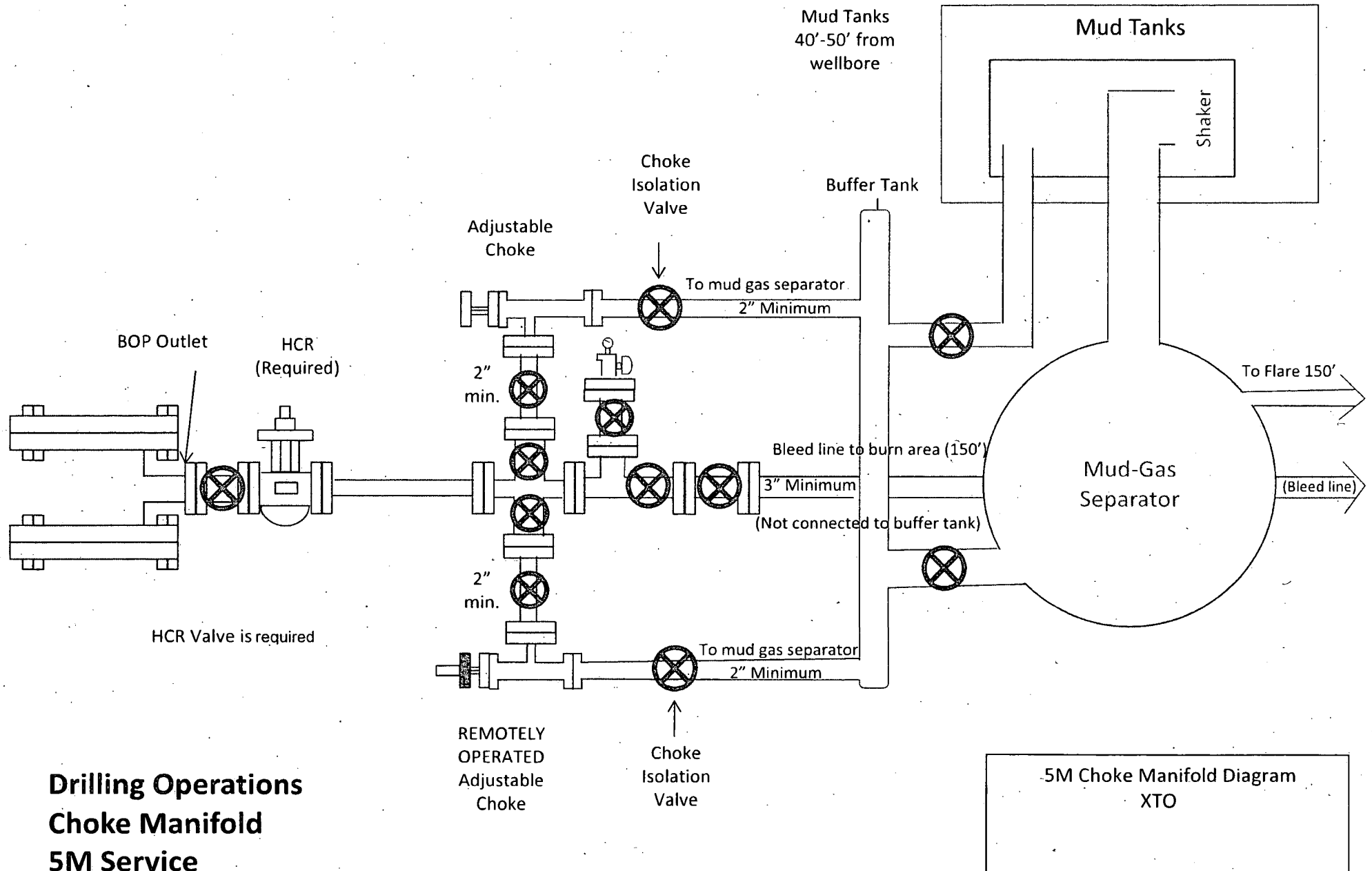




Drilling Operations Choke Manifold 2M & 3M Service

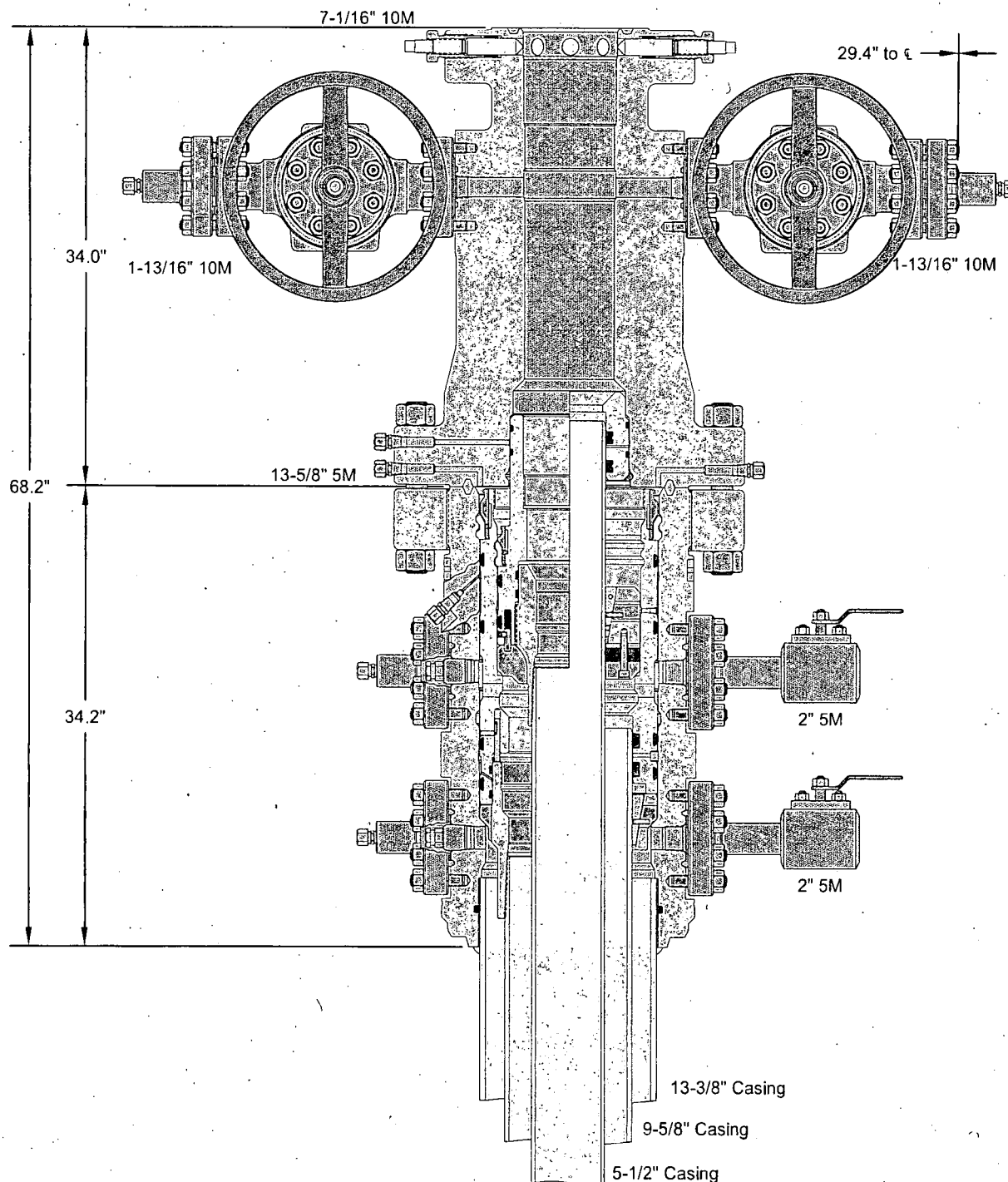
2M & 3M Choke Manifold Diagram
XTO







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

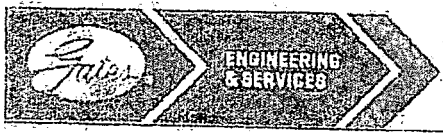
DRAWN VJK 16FEB17

APPRV KN 16FEB17

FOR REFERENCE ONLY

DRAWING NO.

10012842



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

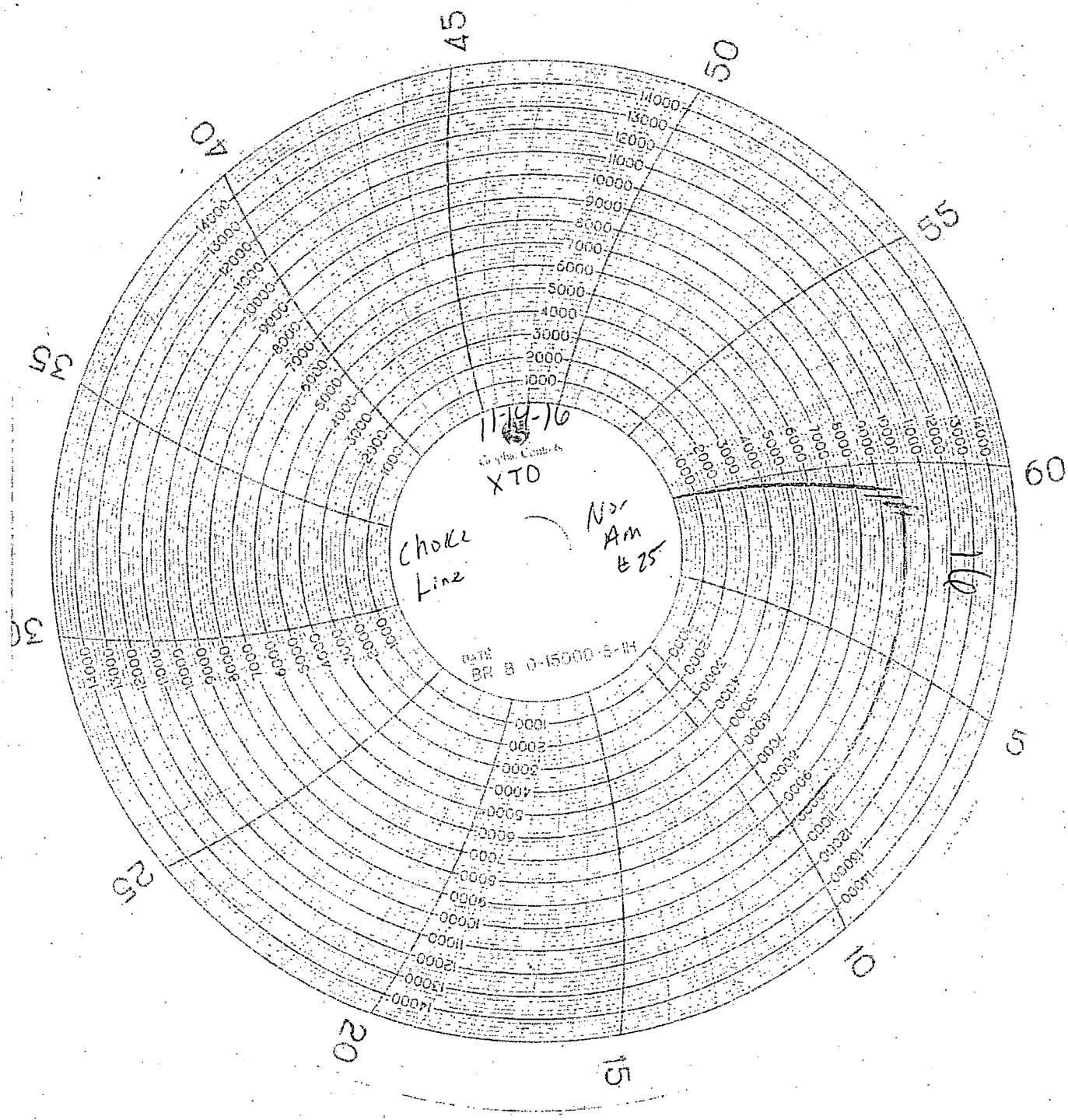
PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: crpe&s@gates.com
WEB: www.gates.com

GRADE D. PRESSURE TEST CERTIFICATE

Customer :	AUSTIN DISTRIBUTING	Test Date :	6/8/2014
Customer Ref. :	FENDING	Hose Serial No. :	D-UG0814-1
Invoice No. :	201709	Created By :	NORMA
Product Description :	FD3.0x2.0R41/16.5KFLGE/E LE		
End Fitting 1 :	4 1/16 in.5K FLG	End Fitting 2 :	4 1/16 in.5K FLG
Gates Part No. :	4774-6001	Assembly Code :	L33090011513D-060814-1
Working Pressure :	5,000 PSI	Test Pressure :	7,500 PSI

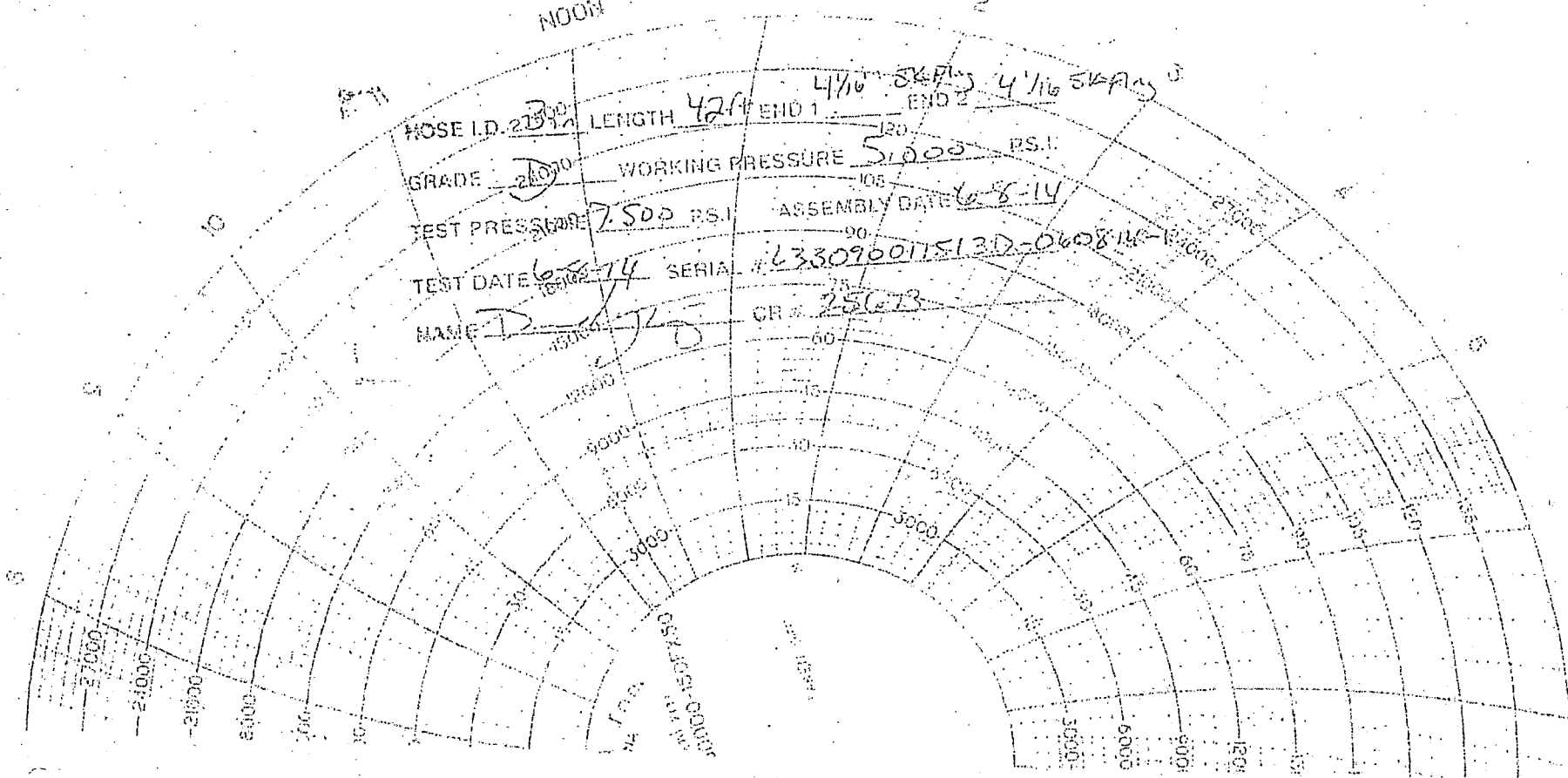
Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance 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 :	



NOON

HOSE I.D. 2 1/2 IN. LENGTH 42 ft END 1 4 1/16 SK PLY END 2 4 1/16 SK PLY
GRADE 24000 WORKING PRESSURE 5000 P.S.I.
TEST PRESSURE 7500 P.S.I. ASSEMBLY DATE 6-8-14
TEST DATE 6-8-14 SERIAL # L330900115130-060814-13000
NAME D. J. L. OR # 2563

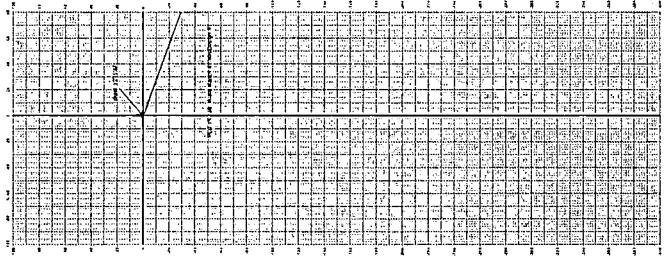
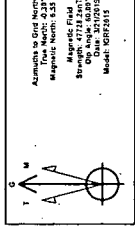


Sec 15, T24S, R31E
PLU 15 Twin Wells Ranch #104H
Q180--- & WT-180---
Design #1

Figure 1. The effect of the number of trials on the number of correct responses.

SIGN-TARGET DETAILS				
Size	Weight	Spalling	Loadings	Longitudi
16x20	437100.00	0.15401.36	31.17 32 253.5	133.45 36 481.90
16x24	437100.00	0.15401.36	31.17 32 253.5	133.45 36 481.90
16x28	437100.00	0.15401.36	31.17 32 253.5	133.45 36 481.90
16x32	437100.00	0.15401.36	31.17 32 253.5	133.45 36 481.90

Wellb Ranch 8104H
3339.0
Latitude Longitude
2° 12' 33.487" N 103° 48' 4.488" W

[illegible]



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15 Twin Wells Ranch #104H
Company:	XTO ENERGY, INC.	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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

Site Sec 15, T24S, R31E					
Site Position:		Northing:	440,929.80 usft	Latitude:	32° 12' 39.487 N
From:	Map	Easting:	674,875.90 usft	Longitude:	103° 46' 4.488 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.30 °

Well:	PLU 15 Twin Wells Ranch #104H					
Well Position	+N-S	0.0 usft	Northing:	440,929.80 usft	Latitude:	32° 12' 39.487 N
	+E-W	0.0 usft	Easting:	674,875.90 usft	Longitude:	103° 46' 4.488 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,539.0 usft	

Wellbore:		Wellbore #1			
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2015	3/21/2019	6.85	60.00	47,728.19082882

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	177.46

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)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
11,091.1	0.00	0.00	11,091.1	0.0	0.0	0.00	0.00	0.00	0.00	
11,591.1	50.00	110.00	11,530.0	-70.0	192.3	10.00	10.00	0.00	110.00	
12,335.0	89.80	179.62	11,811.0	-618.8	508.2	10.00	5.35	9.36	76.72	PLU 15 TWR #104H -
25,076.4	89.80	179.62	11,855.5	-13,359.8	593.4	0.00	0.00	0.00	0.00	PLU 15 TWR #104H -



Well Planning Report



Database: EDM:5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 15, T24S, R31E
Well: PLU 15 Twin Wells Ranch #104H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well PLU 15 Twin Wells Ranch #104H
KB=22 @ 3561.0usft (Akita #22)
KB=22 @ 3561.0usft (Akita #22)
Grid
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
699.0	0.00	0.00	699.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
Magenta Dolomite									
780.0	0.00	0.00	780.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
Top Salt*									
1,057.0	0.00	0.00	1,057.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
Base of Salt (Anhydrite)									
4,243.0	0.00	0.00	4,243.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon Ss./ Delaware									



Well Planning Report



Database:	EDM-5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15 Twin Wells Ranch #104H
Company:	XTO ENERGY, INC.	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey/Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,466.0	0.00	0.00	4,466.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon Ss.									
5,378.0	0.00	0.00	5,378.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon Ss.									
7,002.0	0.00	0.00	7,002.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring Lm.									
8,319.0	0.00	0.00	8,319.0	0.0	0.0	0.0	0.00	0.00	0.00
Avalon Ss.									
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spg. Upper Avalon Shale									
8,421.0	0.00	0.00	8,421.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15' Twin Wells Ranch #104H
Company:	XTO ENERGY, INC.	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid.
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature.
Wellbore:	Wellbore #1		
Design:	Design #1		

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)	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
Bone Spg. Lower Avalon Shale										
8,856.0	0.00	0.00	8,856.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
1st Bone Spring Lime.										
9,196.0	0.00	0.00	9,196.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
1st Bone Spring Ss.										
9,387.0	0.00	0.00	9,387.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
2nd Bone Spring Carb.										
9,776.0	0.00	0.00	9,776.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
2nd Bone Spring Ss.										
9,973.0	0.00	0.00	9,973.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
3rd Bone Spring Carb.										
10,482.0	0.00	0.00	10,482.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
11,000.0	0.00	0.00	11,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
Build 10°/100'										
11,091.1	0.00	0.00	11,091.1	0.0	0.0	0.0	0.00	0.00	0.00	
11,100.0	0.89	110.00	11,100.0	0.0	0.1	0.0	10.00	10.00	0.00	
11,150.0	5.89	110.00	11,149.9	-1.0	2.8	1.2	10.00	10.00	0.00	
11,200.0	10.89	110.00	11,199.3	-3.5	9.7	4.0	10.00	10.00	0.00	
3rd Bone Spring Ss.										
11,221.1	13.00	110.00	11,220.0	-5.0	13.8	5.6	10.00	10.00	0.00	
11,250.0	15.89	110.00	11,248.0	-7.5	20.6	8.4	10.00	10.00	0.00	
11,300.0	20.89	110.00	11,295.4	-12.9	35.4	14.4	10.00	10.00	0.00	
11,350.0	25.89	110.00	11,341.3	-19.7	54.0	22.0	10.00	10.00	0.00	
11,400.0	30.89	110.00	11,385.3	-27.8	76.4	31.2	10.00	10.00	0.00	
11,450.0	35.89	110.00	11,427.0	-37.2	102.2	41.7	10.00	10.00	0.00	
War Wink Ss.										
11,476.4	38.53	110.00	11,448.0	-42.7	117.2	47.8	10.00	10.00	0.00	
11,500.0	40.89	110.00	11,466.2	-47.8	131.4	53.6	10.00	10.00	0.00	
11,550.0	45.89	110.00	11,502.5	-59.6	163.7	66.8	10.00	10.00	0.00	
EOB @ 50.00° Inc / 110.00° Azm - Build 10°/100'										
11,591.1	50.00	110.00	11,530.0	-70.0	192.3	78.5	10.00	10.00	0.00	



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15 Twin Wells Ranch #104H
Company:	XTO ENERGY, INC	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,600.0	50.21	111.13	11,535.7	-72.4	198.7	81.1	10.00	2.36	12.67
11,650.0	51.59	117.32	11,567.3	-88.3	234.1	98.6	10.00	2.75	12.39
Red Hills Ss.									
11,660.9	51.93	118.64	11,574.0	-92.3	241.6	103.0	10.00	3.14	12.09
11,700.0	53.28	123.26	11,597.8	-108.3	268.2	120.1	10.00	3.44	11.82
11,750.0	55.25	128.93	11,627.0	-132.2	301.0	145.5	10.00	3.94	11.33
11,800.0	57.47	134.31	11,654.7	-159.9	332.1	174.5	10.00	4.44	10.77
Wolfcamp Sh									
11,806.1	57.75	134.95	11,658.0	-163.5	335.8	178.3	10.00	4.69	10.46
Wolfcamp X Sd									
11,844.6	59.63	138.88	11,678.0	-187.5	358.2	203.2	10.00	4.88	10.22
11,850.0	59.90	139.42	11,680.7	-191.0	361.3	206.9	10.00	5.05	9.99
11,900.0	62.53	144.27	11,704.8	-225.5	388.3	242.5	10.00	5.25	9.71
11,950.0	65.32	148.90	11,726.8	-263.0	413.0	281.0	10.00	5.57	9.25
12,000.0	68.24	153.31	11,746.5	-303.2	435.2	322.2	10.00	5.84	8.83
Wolfcamp Y Sd									
12,026.6	69.84	155.59	11,756.0	-325.6	445.9	345.0	10.00	6.02	8.55
12,050.0	71.27	157.55	11,763.8	-345.9	454.6	365.7	10.00	6.12	8.39
12,100.0	74.40	161.64	11,778.6	-390.6	471.3	411.1	10.00	6.25	8.17
12,150.0	77.60	165.60	11,790.7	-437.2	485.0	458.2	10.00	6.40	7.92
12,200.0	80.85	169.46	11,800.0	-485.1	495.5	506.6	10.00	6.51	7.73
Wolfcamp A Sh.									
12,244.8	83.80	172.86	11,806.0	-529.0	502.4	550.7	10.00	6.59	7.59
12,250.0	84.15	173.26	11,806.5	-534.1	503.0	555.9	10.00	6.62	7.54
12,300.0	87.47	177.00	11,810.2	-583.8	507.2	605.7	10.00	6.64	7.50
EOC @ 89.80° Inc / 179.62° Azm / 11811.0' TVD									
12,335.0	89.80	179.62	11,811.0	-618.8	508.2	640.7	10.00	6.66	7.46
12,400.0	89.80	179.62	11,811.3	-683.7	508.7	705.6	0.00	0.00	0.00
12,500.0	89.80	179.62	11,811.6	-783.7	509.3	805.6	0.00	0.00	0.00
12,600.0	89.80	179.62	11,812.0	-883.7	510.0	905.5	0.00	0.00	0.00
12,700.0	89.80	179.62	11,812.3	-983.7	510.7	1,005.4	0.00	0.00	0.00
12,800.0	89.80	179.62	11,812.7	-1,083.7	511.4	1,105.3	0.00	0.00	0.00
12,900.0	89.80	179.62	11,813.0	-1,183.7	512.0	1,205.3	0.00	0.00	0.00
13,000.0	89.80	179.62	11,813.4	-1,283.7	512.7	1,305.2	0.00	0.00	0.00
13,100.0	89.80	179.62	11,813.7	-1,383.7	513.4	1,405.1	0.00	0.00	0.00
13,200.0	89.80	179.62	11,814.1	-1,483.7	514.0	1,505.1	0.00	0.00	0.00
13,300.0	89.80	179.62	11,814.4	-1,583.7	514.7	1,605.0	0.00	0.00	0.00
13,400.0	89.80	179.62	11,814.8	-1,683.7	515.4	1,704.9	0.00	0.00	0.00
13,500.0	89.80	179.62	11,815.1	-1,783.7	516.0	1,804.8	0.00	0.00	0.00
13,600.0	89.80	179.62	11,815.5	-1,883.7	516.7	1,904.8	0.00	0.00	0.00
13,700.0	89.80	179.62	11,815.8	-1,983.7	517.4	2,004.7	0.00	0.00	0.00
13,800.0	89.80	179.62	11,816.2	-2,083.7	518.0	2,104.6	0.00	0.00	0.00
13,900.0	89.80	179.62	11,816.5	-2,183.7	518.7	2,204.6	0.00	0.00	0.00
14,000.0	89.80	179.62	11,816.8	-2,283.7	519.4	2,304.5	0.00	0.00	0.00
14,100.0	89.80	179.62	11,817.2	-2,383.7	520.0	2,404.4	0.00	0.00	0.00
14,200.0	89.80	179.62	11,817.5	-2,483.7	520.7	2,504.3	0.00	0.00	0.00
14,300.0	89.80	179.62	11,817.9	-2,583.7	521.4	2,604.3	0.00	0.00	0.00
14,400.0	89.80	179.62	11,818.2	-2,683.7	522.0	2,704.2	0.00	0.00	0.00
14,500.0	89.80	179.62	11,818.6	-2,783.7	522.7	2,804.1	0.00	0.00	0.00
14,600.0	89.80	179.62	11,818.9	-2,883.7	523.4	2,904.1	0.00	0.00	0.00
14,700.0	89.80	179.62	11,819.3	-2,983.7	524.1	3,004.0	0.00	0.00	0.00
14,800.0	89.80	179.62	11,819.6	-3,083.7	524.7	3,103.9	0.00	0.00	0.00
14,900.0	89.80	179.62	11,820.0	-3,183.7	525.4	3,203.8	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15 Twin Wells Ranch #104H
Company:	XTO ENERGY, INC.	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
15,000.0	89.80	179.62	11,820.3	-3,283.7	526.1	3,303.8	0.00	0.00	0.00	
15,100.0	89.80	179.62	11,820.7	-3,383.7	526.7	3,403.7	0.00	0.00	0.00	
15,200.0	89.80	179.62	11,821.0	-3,483.7	527.4	3,503.6	0.00	0.00	0.00	
15,300.0	89.80	179.62	11,821.4	-3,583.6	528.1	3,603.5	0.00	0.00	0.00	
15,400.0	89.80	179.62	11,821.7	-3,683.6	528.7	3,703.5	0.00	0.00	0.00	
15,500.0	89.80	179.62	11,822.1	-3,783.6	529.4	3,803.4	0.00	0.00	0.00	
15,600.0	89.80	179.62	11,822.4	-3,883.6	530.1	3,903.3	0.00	0.00	0.00	
15,700.0	89.80	179.62	11,822.8	-3,983.6	530.7	4,003.3	0.00	0.00	0.00	
15,800.0	89.80	179.62	11,823.1	-4,083.6	531.4	4,103.2	0.00	0.00	0.00	
15,900.0	89.80	179.62	11,823.5	-4,183.6	532.1	4,203.1	0.00	0.00	0.00	
16,000.0	89.80	179.62	11,823.8	-4,283.6	532.7	4,303.0	0.00	0.00	0.00	
16,100.0	89.80	179.62	11,824.2	-4,383.6	533.4	4,403.0	0.00	0.00	0.00	
16,200.0	89.80	179.62	11,824.5	-4,483.6	534.1	4,502.9	0.00	0.00	0.00	
16,300.0	89.80	179.62	11,824.9	-4,583.6	534.7	4,602.8	0.00	0.00	0.00	
16,400.0	89.80	179.62	11,825.2	-4,683.6	535.4	4,702.8	0.00	0.00	0.00	
16,500.0	89.80	179.62	11,825.6	-4,783.6	536.1	4,802.7	0.00	0.00	0.00	
16,600.0	89.80	179.62	11,825.9	-4,883.6	536.8	4,902.6	0.00	0.00	0.00	
16,700.0	89.80	179.62	11,826.3	-4,983.6	537.4	5,002.5	0.00	0.00	0.00	
16,800.0	89.80	179.62	11,826.6	-5,083.6	538.1	5,102.5	0.00	0.00	0.00	
16,900.0	89.80	179.62	11,827.0	-5,183.6	538.8	5,202.4	0.00	0.00	0.00	
17,000.0	89.80	179.62	11,827.3	-5,283.6	539.4	5,302.3	0.00	0.00	0.00	
17,100.0	89.80	179.62	11,827.7	-5,383.6	540.1	5,402.3	0.00	0.00	0.00	
17,200.0	89.80	179.62	11,828.0	-5,483.6	540.8	5,502.2	0.00	0.00	0.00	
17,300.0	89.80	179.62	11,828.4	-5,583.6	541.4	5,602.1	0.00	0.00	0.00	
17,400.0	89.80	179.62	11,828.7	-5,683.6	542.1	5,702.0	0.00	0.00	0.00	
17,500.0	89.80	179.62	11,829.1	-5,783.6	542.8	5,802.0	0.00	0.00	0.00	
17,600.0	89.80	179.62	11,829.4	-5,883.6	543.4	5,901.9	0.00	0.00	0.00	
17,700.0	89.80	179.62	11,829.8	-5,983.6	544.1	6,001.8	0.00	0.00	0.00	
17,800.0	89.80	179.62	11,830.1	-6,083.6	544.8	6,101.8	0.00	0.00	0.00	
17,900.0	89.80	179.62	11,830.5	-6,183.6	545.4	6,201.7	0.00	0.00	0.00	
18,000.0	89.80	179.62	11,830.8	-6,283.6	546.1	6,301.6	0.00	0.00	0.00	
18,100.0	89.80	179.62	11,831.2	-6,383.6	546.8	6,401.5	0.00	0.00	0.00	
18,200.0	89.80	179.62	11,831.5	-6,483.6	547.4	6,501.5	0.00	0.00	0.00	
18,300.0	89.80	179.62	11,831.9	-6,583.6	548.1	6,601.4	0.00	0.00	0.00	
18,400.0	89.80	179.62	11,832.2	-6,683.6	548.8	6,701.3	0.00	0.00	0.00	
18,500.0	89.80	179.62	11,832.6	-6,783.6	549.4	6,801.3	0.00	0.00	0.00	
18,600.0	89.80	179.62	11,832.9	-6,883.6	550.1	6,901.2	0.00	0.00	0.00	
18,700.0	89.80	179.62	11,833.3	-6,983.6	550.8	7,001.1	0.00	0.00	0.00	
18,800.0	89.80	179.62	11,833.6	-7,083.5	551.5	7,101.0	0.00	0.00	0.00	
18,900.0	89.80	179.62	11,834.0	-7,183.5	552.1	7,201.0	0.00	0.00	0.00	
19,000.0	89.80	179.62	11,834.3	-7,283.5	552.8	7,300.9	0.00	0.00	0.00	
19,100.0	89.80	179.62	11,834.7	-7,383.5	553.5	7,400.8	0.00	0.00	0.00	
19,200.0	89.80	179.62	11,835.0	-7,483.5	554.1	7,500.8	0.00	0.00	0.00	
19,300.0	89.80	179.62	11,835.3	-7,583.5	554.8	7,600.7	0.00	0.00	0.00	
19,400.0	89.80	179.62	11,835.7	-7,683.5	555.5	7,700.6	0.00	0.00	0.00	
19,500.0	89.80	179.62	11,836.0	-7,783.5	556.1	7,800.5	0.00	0.00	0.00	
19,600.0	89.80	179.62	11,836.4	-7,883.5	556.8	7,900.5	0.00	0.00	0.00	
19,700.0	89.80	179.62	11,836.7	-7,983.5	557.5	8,000.4	0.00	0.00	0.00	
19,800.0	89.80	179.62	11,837.1	-8,083.5	558.1	8,100.3	0.00	0.00	0.00	
19,900.0	89.80	179.62	11,837.4	-8,183.5	558.8	8,200.3	0.00	0.00	0.00	
20,000.0	89.80	179.62	11,837.8	-8,283.5	559.5	8,300.2	0.00	0.00	0.00	
20,100.0	89.80	179.62	11,838.1	-8,383.5	560.1	8,400.1	0.00	0.00	0.00	
20,200.0	89.80	179.62	11,838.5	-8,483.5	560.8	8,500.0	0.00	0.00	0.00	
20,300.0	89.80	179.62	11,838.8	-8,583.5	561.5	8,600.0	0.00	0.00	0.00	



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Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
20,400.0	89.80	179.62	11,839.2	-8,683.5	562.1	8,699.9	0.00	0.00	0.00
20,500.0	89.80	179.62	11,839.5	-8,783.5	562.8	8,799.8	0.00	0.00	0.00
20,600.0	89.80	179.62	11,839.9	-8,883.5	563.5	8,899.8	0.00	0.00	0.00
20,700.0	89.80	179.62	11,840.2	-8,983.5	564.2	8,999.7	0.00	0.00	0.00
20,800.0	89.80	179.62	11,840.6	-9,083.5	564.8	9,099.6	0.00	0.00	0.00
20,900.0	89.80	179.62	11,840.9	-9,183.5	565.5	9,199.5	0.00	0.00	0.00
21,000.0	89.80	179.62	11,841.3	-9,283.5	566.2	9,299.5	0.00	0.00	0.00
21,100.0	89.80	179.62	11,841.6	-9,383.5	566.8	9,399.4	0.00	0.00	0.00
21,200.0	89.80	179.62	11,842.0	-9,483.5	567.5	9,499.3	0.00	0.00	0.00
21,300.0	89.80	179.62	11,842.3	-9,583.5	568.2	9,599.2	0.00	0.00	0.00
21,400.0	89.80	179.62	11,842.7	-9,683.5	568.8	9,699.2	0.00	0.00	0.00
21,500.0	89.80	179.62	11,843.0	-9,783.5	569.5	9,799.1	0.00	0.00	0.00
21,600.0	89.80	179.62	11,843.4	-9,883.5	570.2	9,899.0	0.00	0.00	0.00
21,700.0	89.80	179.62	11,843.7	-9,983.5	570.8	9,999.0	0.00	0.00	0.00
21,800.0	89.80	179.62	11,844.1	-10,083.5	571.5	10,098.9	0.00	0.00	0.00
21,900.0	89.80	179.62	11,844.4	-10,183.5	572.2	10,198.8	0.00	0.00	0.00
22,000.0	89.80	179.62	11,844.8	-10,283.5	572.8	10,298.7	0.00	0.00	0.00
22,100.0	89.80	179.62	11,845.1	-10,383.5	573.5	10,398.7	0.00	0.00	0.00
22,200.0	89.80	179.62	11,845.5	-10,483.5	574.2	10,498.6	0.00	0.00	0.00
22,300.0	89.80	179.62	11,845.8	-10,583.4	574.8	10,598.5	0.00	0.00	0.00
22,400.0	89.80	179.62	11,846.2	-10,683.4	575.5	10,698.5	0.00	0.00	0.00
22,500.0	89.80	179.62	11,846.5	-10,783.4	576.2	10,798.4	0.00	0.00	0.00
22,600.0	89.80	179.62	11,846.9	-10,883.4	576.8	10,898.3	0.00	0.00	0.00
22,700.0	89.80	179.62	11,847.2	-10,983.4	577.5	10,998.2	0.00	0.00	0.00
22,800.0	89.80	179.62	11,847.6	-11,083.4	578.2	11,098.2	0.00	0.00	0.00
22,900.0	89.80	179.62	11,847.9	-11,183.4	578.9	11,198.1	0.00	0.00	0.00
23,000.0	89.80	179.62	11,848.3	-11,283.4	579.5	11,298.0	0.00	0.00	0.00
23,100.0	89.80	179.62	11,848.6	-11,383.4	580.2	11,398.0	0.00	0.00	0.00
23,200.0	89.80	179.62	11,849.0	-11,483.4	580.9	11,497.9	0.00	0.00	0.00
23,300.0	89.80	179.62	11,849.3	-11,583.4	581.5	11,597.8	0.00	0.00	0.00
23,400.0	89.80	179.62	11,849.7	-11,683.4	582.2	11,697.7	0.00	0.00	0.00
23,500.0	89.80	179.62	11,850.0	-11,783.4	582.9	11,797.7	0.00	0.00	0.00
23,600.0	89.80	179.62	11,850.4	-11,883.4	583.5	11,897.6	0.00	0.00	0.00
23,700.0	89.80	179.62	11,850.7	-11,983.4	584.2	11,997.5	0.00	0.00	0.00
23,800.0	89.80	179.62	11,851.1	-12,083.4	584.9	12,097.5	0.00	0.00	0.00
23,900.0	89.80	179.62	11,851.4	-12,183.4	585.5	12,197.4	0.00	0.00	0.00
24,000.0	89.80	179.62	11,851.8	-12,283.4	586.2	12,297.3	0.00	0.00	0.00
24,100.0	89.80	179.62	11,852.1	-12,383.4	586.9	12,397.2	0.00	0.00	0.00
24,200.0	89.80	179.62	11,852.5	-12,483.4	587.5	12,497.2	0.00	0.00	0.00
24,300.0	89.80	179.62	11,852.8	-12,583.4	588.2	12,597.1	0.00	0.00	0.00
24,400.0	89.80	179.62	11,853.2	-12,683.4	588.9	12,697.0	0.00	0.00	0.00
24,500.0	89.80	179.62	11,853.5	-12,783.4	589.5	12,797.0	0.00	0.00	0.00
24,600.0	89.80	179.62	11,853.8	-12,883.4	590.2	12,896.9	0.00	0.00	0.00
24,700.0	89.80	179.62	11,854.2	-12,983.4	590.9	12,996.8	0.00	0.00	0.00
24,800.0	89.80	179.62	11,854.5	-13,083.4	591.6	13,096.7	0.00	0.00	0.00
24,900.0	89.80	179.62	11,854.9	-13,183.4	592.2	13,196.7	0.00	0.00	0.00
25,000.0	89.80	179.62	11,855.2	-13,283.4	592.9	13,296.6	0.00	0.00	0.00
TD @ 25076.4' MD / 11855.5' TVD									
25,076.4	89.80	179.62	11,855.5	-13,359.8	593.4	13,373.0	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well PLU 15 Twin Wells Ranch #104H
Company:	XTO ENERGY, INC.	TVD Reference:	KB=22 @ 3561.0usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	KB=22 @ 3561.0usft (Akita #22)
Site:	Sec 15, T24S, R31E	North Reference:	Grid
Well:	PLU 15 Twin Wells Ranch #104H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets									
Target Name	hit/miss-target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	
Shape		(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	
PLU 15 TWR #104H - L1		0.00	0.00	0.0	-13,229.8	592.6	427,700.00	675,468.50	32° 10' 28.535 N 103° 45' 58.403 W
- plan misses target center by 11855.0usft at 24905.0usft MD (11854.9 TVD, -13188.4 N, 592.3 E)									
- Point									
PLU 15 TWR #104H - F		0.00	0.00	11,811.0	-686.5	508.7	440,243.30	675,384.60	32° 12' 32.667 N 103° 45' 58.610 W
- plan misses target center by 0.3usft at 12402.8usft MD (11811.3 TVD, -686.5 N, 508.7 E)									
- Point									
PLU 15 TWR #104H - P.		0.00	0.00	11,855.5	-13,359.8	593.4	427,570.00	675,469.30	32° 10' 27.249 N 103° 45' 58.402 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
699.0	699.0	Rustler				
780.0	780.0	Magenta Dolomite				
1,057.0	1,057.0	Top Salt*				
4,243.0	4,243.0	Base of Salt (Anhydrite)				
4,466.0	4,466.0	Bell Canyon Ss./ Delaware				
5,378.0	5,378.0	Cherry Canyon Ss.				
7,002.0	7,002.0	Brushy Canyon Ss.				
8,319.0	8,319.0	Bone Spring Lm.				
8,400.0	8,400.0	Avalon Ss.				
8,421.0	8,421.0	Bone Spg. Upper Avalon Shale				
8,856.0	8,856.0	Bone Spg. Lower Avalon Shale				
9,196.0	9,196.0	1st Bone Spring Lime.				
9,387.0	9,387.0	1st Bone Spring Ss.				
9,776.0	9,776.0	2nd Bone Spring Carb.				
9,973.0	9,973.0	2nd Bone Spring Ss.				
10,482.0	10,482.0	3rd Bone Spring Carb.				
11,221.1	11,220.0	3rd Bone Spring Ss.				
11,476.4	11,448.0	War Wink Ss.				
11,660.9	11,574.0	Red Hills Ss.				
11,806.1	11,658.0	Wolfcamp Sh				
11,844.6	11,678.0	Wolfcamp X Sd				
12,026.6	11,756.0	Wolfcamp Y Sd				
12,244.8	11,806.0	Wolfcamp A Sh.				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S	+E/-W	
(usft)	(usft)	(usft)	(usft)	
11,091.1	11,091.1	0.0	0.0	Build 10°/100'
11,591.1	11,530.0	-70.0	192.3	EOB @ 50.00° Inc / 110.00° Azm - Build 10°/100'
12,335.0	11,811.0	-618.8	508.2	EOC @ 89.80° Inc / 179.62° Azm / 11811.0' TVD
25,076.4	11,855.5	-13,359.8	593.4	TD @ 25076.4' MD / 11855.5' TVD

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Permian Operating, LLC
LEASE NO.:	NMNM-0506A
WELL NAME & NO.:	Poker Lake Unit 15 TWR 104H
SURFACE HOLE FOOTAGE:	0360' FSL & 1805' FWL
BOTTOM HOLE FOOTAGE:	2440' FNL & 2310' FWL Sec. 34, T. 24 S., R 31 E.
LOCATION:	Section 15, T. 24 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

The original COAs still stand with the following drilling modifications:

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. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

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

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

Wait on cement (WOC) for Potash Areas:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

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 **870 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 inch 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:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

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 (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.

9-5/8 inch 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 4388', 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe 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.

Production casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

4. The minimum required fill of cement behind the 5-1/2 inch production casing is:

- ☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

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 5000 (5M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Operator shall perform the 9-5/8 inch 2nd intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
- a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
 - f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
 - 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.

JAM 031319