

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Operator

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

JAN 06 2020

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other	5. Lease Serial No. NMLC063875A
2. Name of Operator XTO PERMIAN OPERATING LLC Contact: KELLY KARDOS E-Mail: kelly_kardos@xtoenergy.com	6. If Indian, Allottee or Tribe Name
3a. Address 6401 HOLIDAY HILL ROAD BLDG 5 MIDLAND, TX 79707	7. If Unit or CA/Agreement, Name and/or No. 891000303X
3b. Phone No. (include area code) Ph: 432-620-4374	8. Well Name and No. POKER LAKE UNIT 27 BD 154H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 27 T25S R30E SENW 2510FNL 2013FWL 32.101555 N Lat, 103.871071 W Lon	9. API Well No. 30-015-46254-00-X1
	10. Field and Pool or Exploratory Area PURPLE SAGE-WOLFCAMP (GAS)
	11. County or Parish, State EDDY COUNTY, NM

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

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

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or 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 requests permission to make the following changes to the original APD:

Change the casing/cement design per the attached drilling program.

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

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

ATTACHED FOR
CONDITIONS OF APPROVAL
JAN 09 2020

EMNRD-OCD ARTESIA

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

Electronic Submission #496511 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 12/19/2019 (20JAS0041SE)

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

Signature (Electronic Submission)

Date 12/19/2019

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE
DEC 19 2019

Approved By

Title

BUREAU OF LAND MANAGEMENT
ROSWELL FIELD OFFICE

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

(Instructions on page 2)

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

1/28/20 KS

Revisions to Operator-Submitted EC Data for Sundry Notice #496511

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMLC063875A	NMLC063875A
Agreement:	NMNM71016X	891000303X-(NMNM71016X)
Operator:	XTO PERMIAN OPERATING, LLC 6401 HOLIDAY HILL RD BLDG 5 MIDLAND, TX 79707 Ph: 432-620-4374	XTO PERMIAN OPERATING LLC 6401 HOLIDAY HILL ROAD BLDG 5 MIDLAND, TX 79707 Ph: 432.683 2277
Admin Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Tech Contact:	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374	KELLY KARDOS REGULATORY COORDINATOR E-Mail: kelly_kardos@xtoenergy.com Ph: 432-620-4374
Location:		
State:	NM	NM
County:	EDDY	EDDY
Field/Pool:	PURPLE SAGE WOLFCAMP GAS	PURPLE SAGE-WOLFCAMP (GAS)
Well/Facility:	POKER LAKE UNIT 27 BD 154H Sec 27 T25S R30E Mer NMP SENW 2510FNL 2013FWL	POKER LAKE UNIT 27 BD 154H Sec 27 T25S R30E SENW 2510FNL 2013FWL 32.101555 N Lat, 103.871071 W Lon

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

XTO Energy Inc.

Poker Lake Unit 27 Brushy Draw 154H

Projected TD: 27801' MD / 12015' TVD

SHL: 2510' FNL & 2013' FWL , Section 27, T25S, R30E

BHL: 2440' FNL & 2310' FWL , Section 10, T26S, 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	1065'	Water
Top of Salt	1350'	Water
Base of Salt	3670'	Water
Delaware	3883'	Water
Bone Spring	7682'	Water
1st Bone Spring Ss	8622'	Water/Oil/Gas
2nd Bone Spring Ss	9425'	Water/Oil/Gas
3rd Bone Spring Ss	10595'	Water/Oil/Gas
Wolfcamp Shale	10990'	Water/Oil/Gas
Wolfcamp A	11130'	Water/Oil/Gas
Wolfcamp D	11915'	Water/Oil/Gas
Target/Land Curve	12015'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

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

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13 3/8" inch casing @ 1250' (100' above the salt) and circulating cement back to surface. The 9-5/8" intermediate casing will be set at 11250' and bring TOC back 200' inside the previous shoe. An 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 back 500' into the 9-5/8" casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' – 1250'	13 3/8"	68	STC	J-55	New	1.12	3.45	7.94
12-1/4"	0' – 11250'	9-5/8"	40	BTC	HCL-80	New	1.05	1.24	2.10
8-3/4 - 8-1/2"	0' – 27801'	5-1/2"	20	BTC	P-110	New	1.20	1.37	1.88

- XTO requests to not utilize centralizers in the curve and lateral
- 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
- Test on Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less

Wellhead:

Permanent Wellhead – GE RSH Multibowl System

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

B. Tubing Head: 13-5/8" 10M bottom flange x 7-1/16" 15M top flange

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

4. Cement Program

Surface Casing: 13 3/8", 68 New J-55, STC casing to be set at +/- 1250'

Lead: 700 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
TOC @ Surface

Intermediate Casing: 9-5/8", 40 New HCL-80, BTC casing to be set at +/- 11250'
ECP/DV Tool to be set at 6000'

1st Stage

Lead: 1420 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 460 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Stage

Lead: 1490 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.88 ft3/sx, 10.13 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

TOC @ 1000' *Surface*

Production Casing: 5-1/2", 20 New P-110, BTC casing to be set at +/- 27801'

Tail: 3180 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

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 5479 psi. In any instance where 10M BOP is required by BLM, XTO requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M). Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 70% of the working pressure. When nipping up on the 13 3/8", 10M bradenhead and flange, the BOP test will be limited to 10000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 10M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

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

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 1250'	17-1/2"	FW / Native	8.4-8.8	35-40	NC
1250' - 11250'	12-1/4"	Brine / Cut Brine / WBM	8.8-9.8	30-32	NC
11250' to 27801'	8-3/4"	Cut Brine / WBM / OBM	12.0-13.0	32-36	NC

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

Spud with fresh water/native mud and set 13 3/8" surface casing, isolating the fresh water aquifer. Drill out from under 13-3/8" surface casing with a brine/oil direct emulsion water-based mud. 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

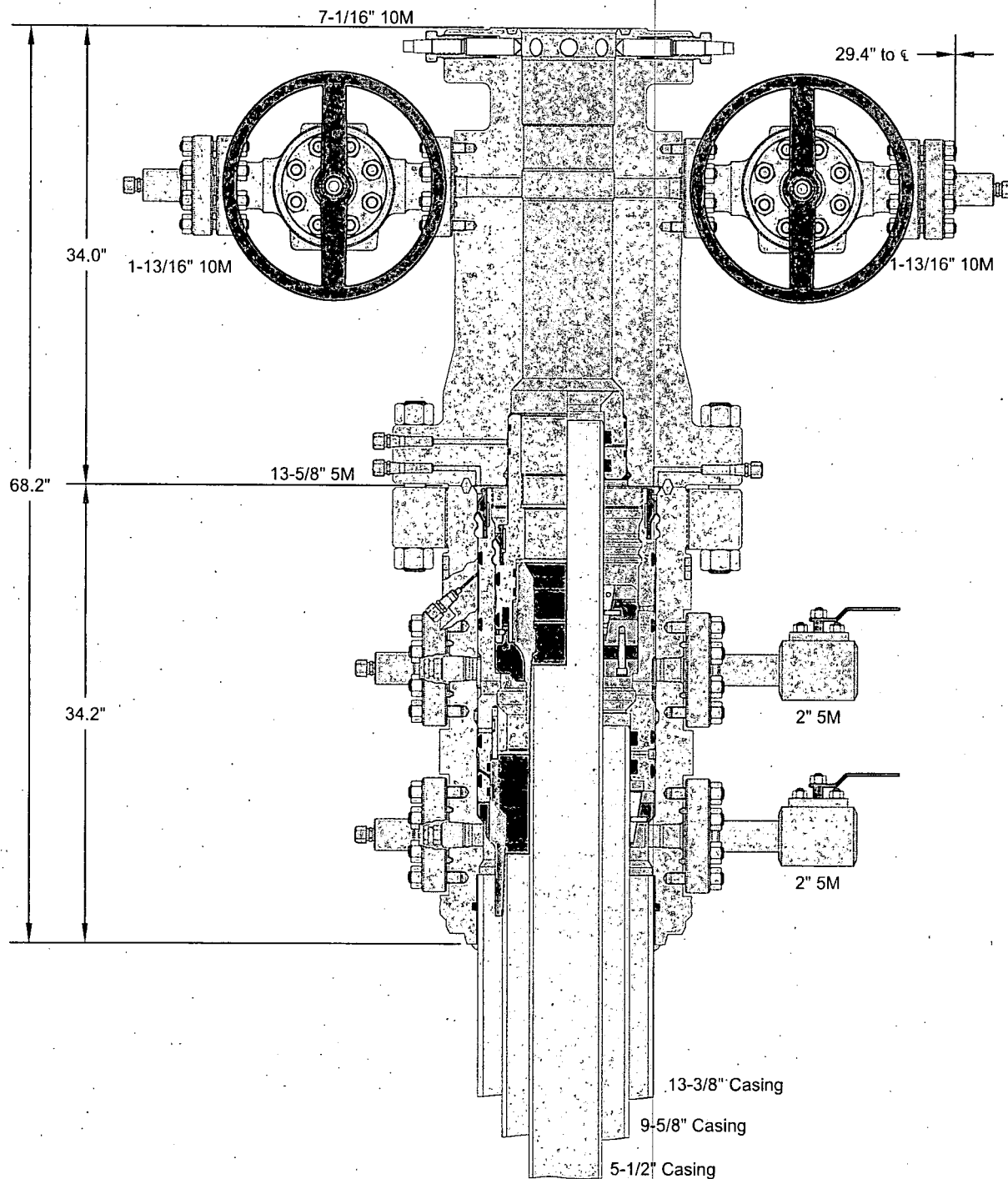
None Anticipated: BHT of 155 to 175 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. 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 8122 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 45 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.



GE Oil & Gas



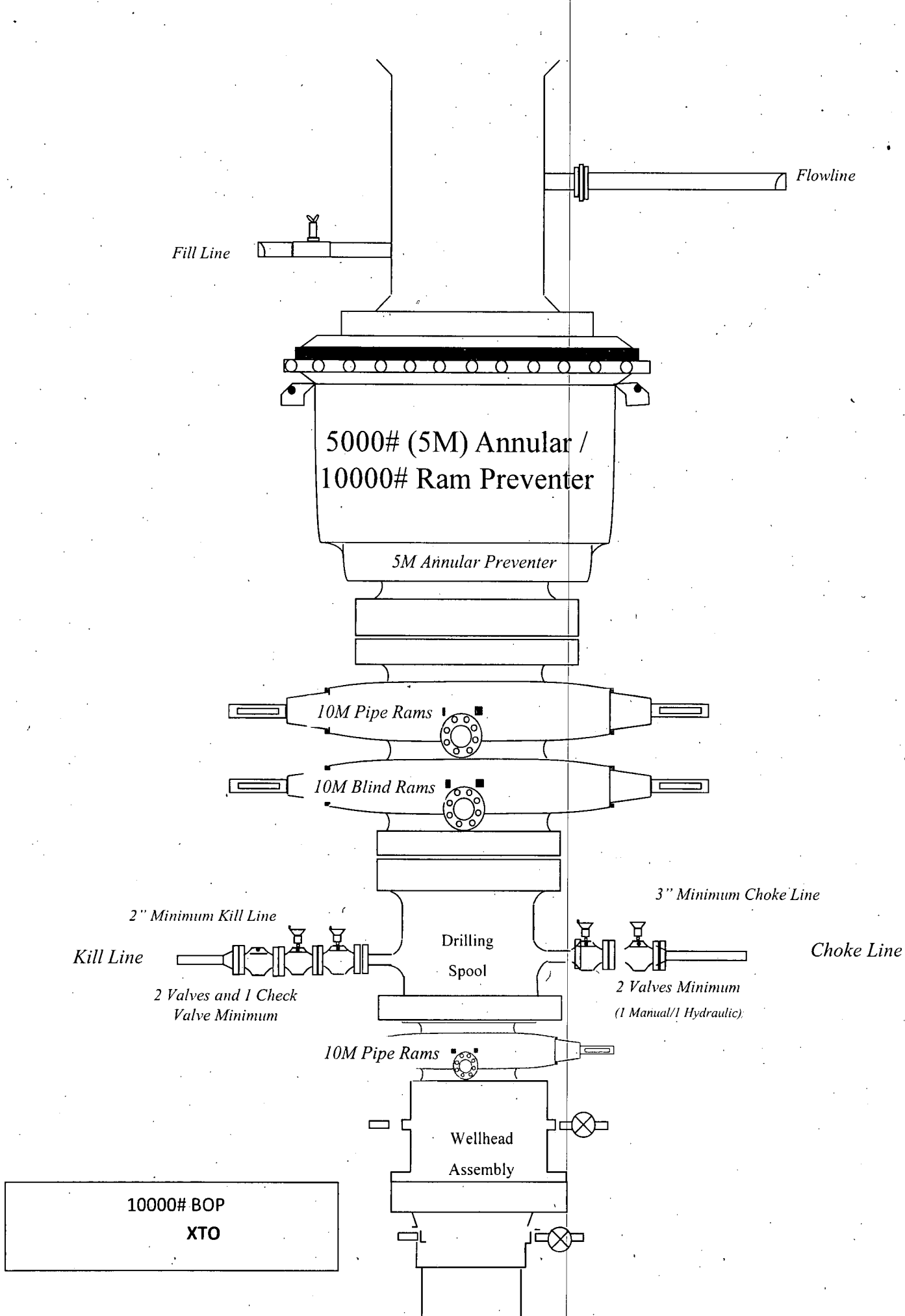
ALL DIMENSIONS ARE APPROXIMATE

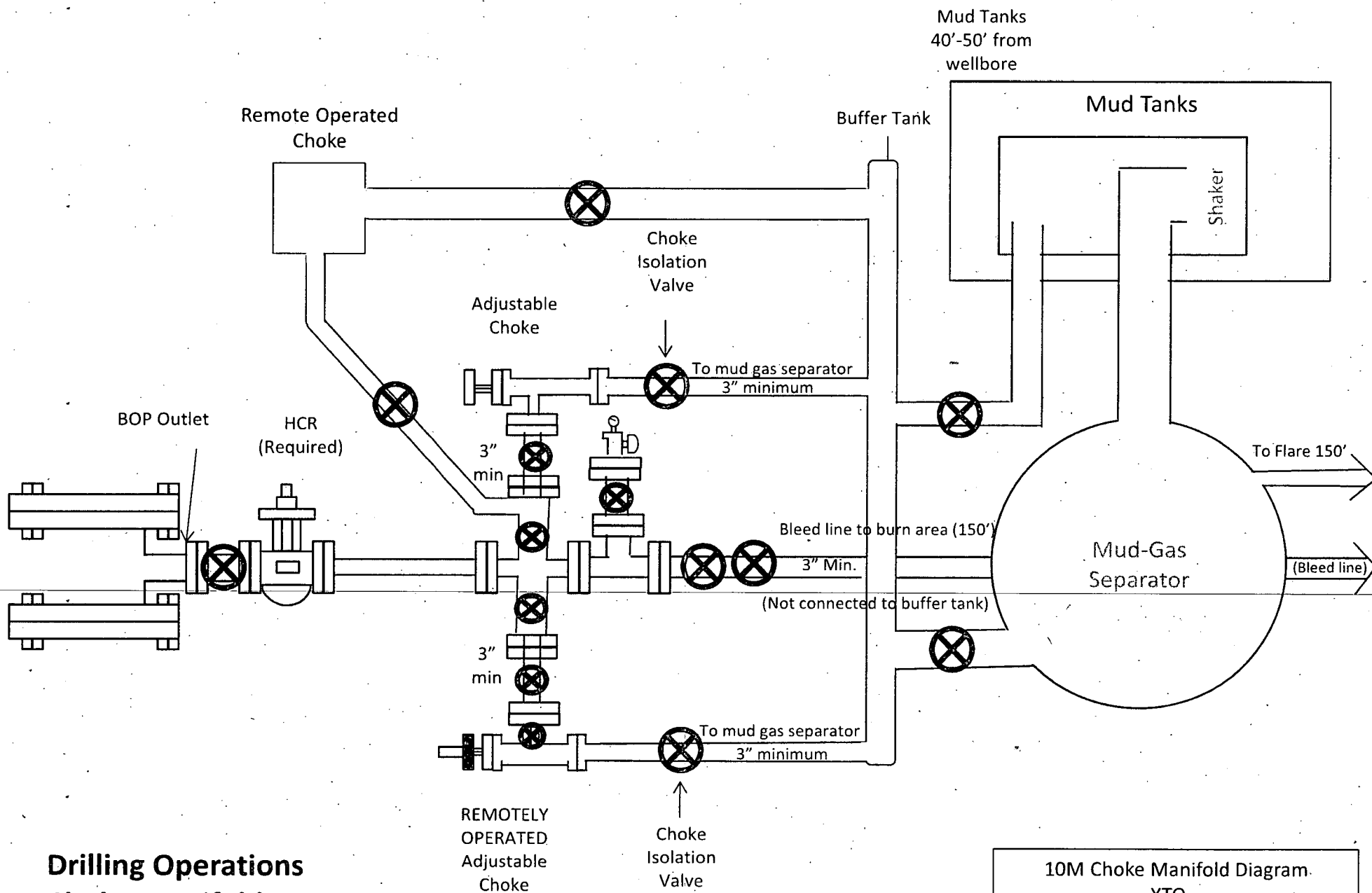
This drawing is the property of GE Oil & Gas Pressure Control LP and is considered confidential. Unless otherwise approved in writing, neither it nor its contents may be used, copied, transmitted or reproduced except for the sole purpose of GE Oil & Gas Pressure Control LP.

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





**Drilling Operations
Choke Manifold
10M Service**

**10M Choke Manifold Diagram.
XTO**

10,000 PSI Annular BOP Variance Request

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

1. Component and Preventer Compatibility Tables

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

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

2. Well Control Procedures

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

General Procedure While Drilling

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

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

General Procedure While Tripping

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

General Procedure While Running Production Casing

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

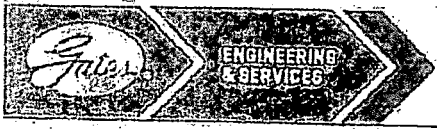
General Procedure With No Pipe In Hole (Open Hole)

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

General Procedures While Pulling BHA Through Stack

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

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



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

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

GRADE D PRESSURE TEST CERTIFICATE

Customer :
Customer Ref. :
Invoice No. :

AUSTIN DISTRIBUTING
PENDING
201709

Test Date:
Hose Serial No.:
Created By:

6/8/2014
D-060814-1
NORMA

Product Description:

FD3.042.0R41/16.5KFLGE/E LE

End Fitting 1 :
Gates Part No. :
Working Pressure :

4 1/16 in.5K FLG
4774-6001
5,000 PSI

End Fitting 2 :
Assembly Code :
Test Pressure :

4 1/16 in.5K FLG
L33090011513D-060814-1
7,500 PSI

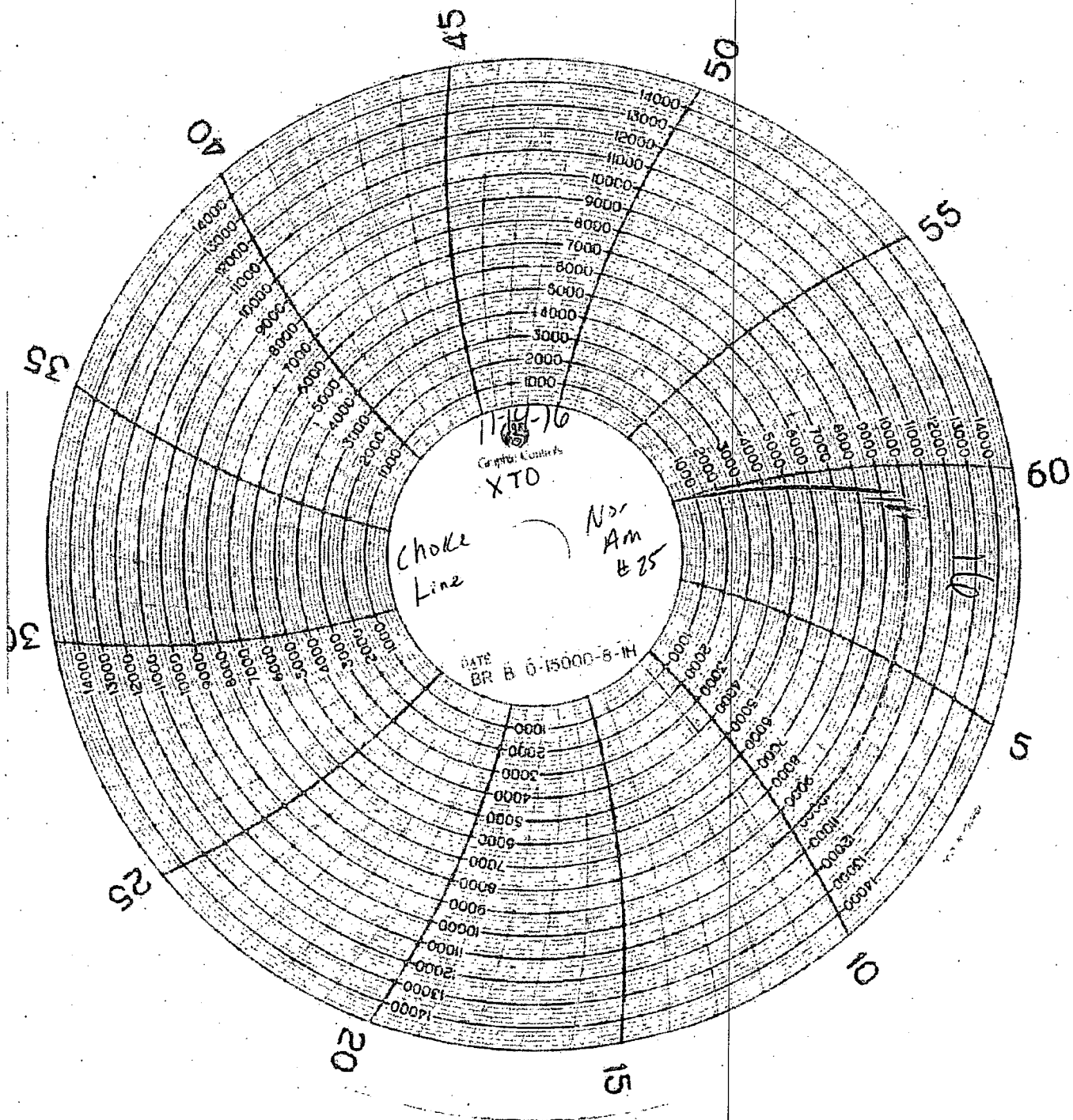
Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance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

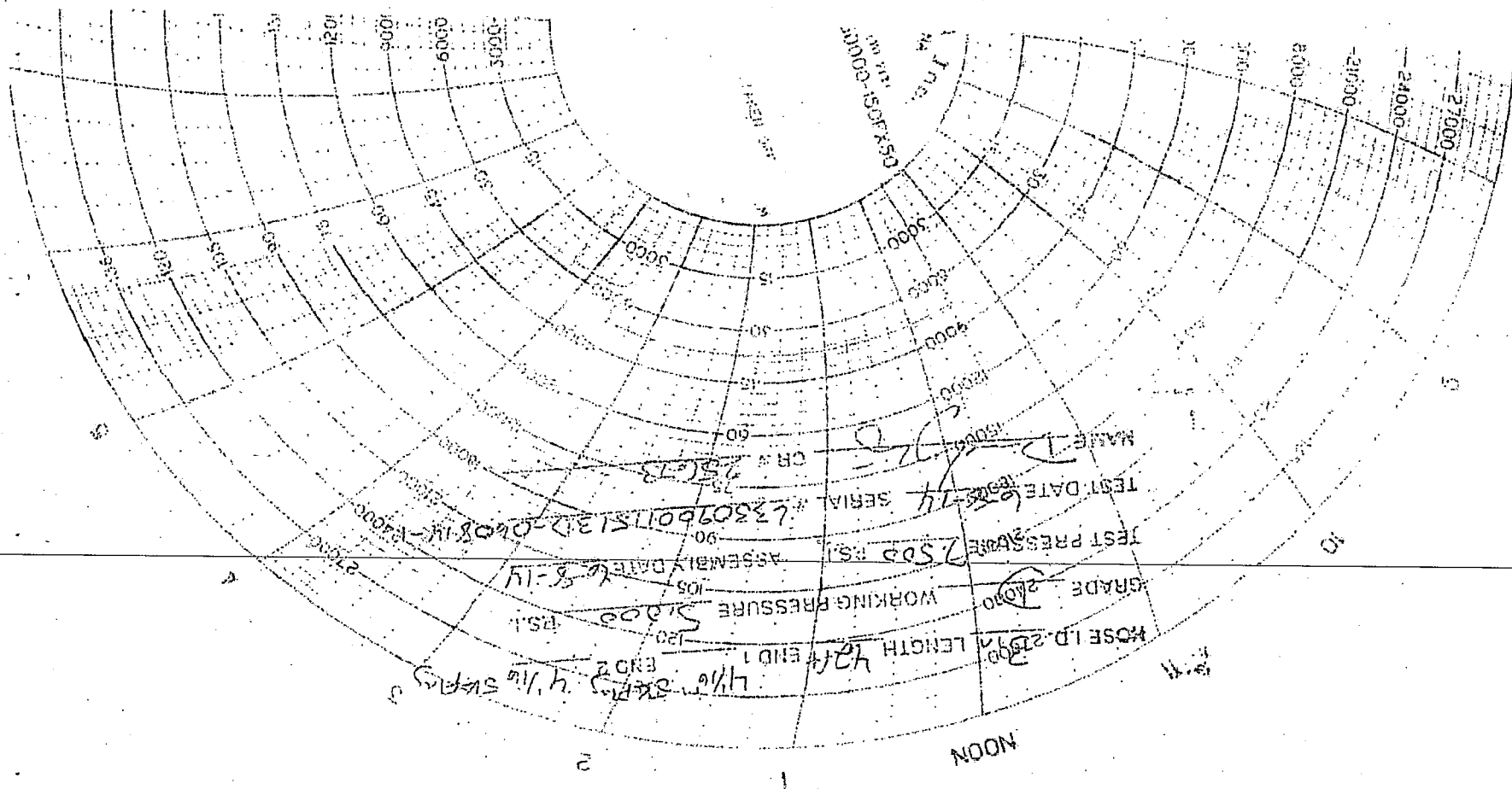
Quality:
Date :
Signature :

QUALITY
6/8/2014
<i>[Signature]</i>

Technical Supervisor :
Date :
Signature :

PRODUCTION
6/8/2014
<i>[Signature]</i>







XTO Permian Operating, LLC

Eddy Co., NM

Poker Lake Unit 27 BD

154H

Wellbore #1

Plan: Design #1

Standard Planning Report

07 December, 2019



NABORS



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project:	Eddy Co., 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:	Poker Lake Unit 27 BD		
Site Position:		Northing:	400,930.000 usft
From:	Map	Easting:	643,201.200 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 6' 5.142208 N
		Longitude:	103° 52' 15.162455 W
		Grid Convergence:	0.25 °

Well:	154H		
Well Position	+N/-S	1.20 ft	Northing:
	+E/-W	90.00 ft	Easting:
Position Uncertainty	2.00 ft	Wellhead Elevation:	
		Latitude:	32° 6' 5.150262 N
		Longitude:	103° 52' 14.116097 W
		Ground Level:	3,277.00 ft

Wellbore:	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	HDGM_FILE	11/8/2019	6.73
			Dip Angle
			59.72
			Field Strength
			47,761.60000000

Design:	Design #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			179.89

Plan Survey Tool Program	Date	12/7/2019		
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(ft)	(ft)			
1	0.00	27,801.02	Design #1 (Wellbore #1)	MWD+HRGM
				OWSG MWD + HRGM



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
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	1.50	68.77	3,099.99	0.47	1.22	-0.47	1.50	1.50	0.00
3,200.00	3.00	68.77	3,199.91	1.90	4.88	-1.89	1.50	1.50	0.00
3,300.00	4.50	68.77	3,299.69	4.26	10.98	-4.24	1.50	1.50	0.00
3,338.22	5.07	68.77	3,337.78	5.42	13.95	-5.39	1.50	1.50	0.00
3,400.00	5.07	68.77	3,399.32	7.40	19.04	-7.36	0.00	0.00	0.00
3,500.00	5.07	68.77	3,498.92	10.60	27.28	-10.55	0.00	0.00	0.00
3,600.00	5.07	68.77	3,598.53	13.80	35.53	-13.73	0.00	0.00	0.00
3,700.00	5.07	68.77	3,698.14	17.00	43.77	-16.92	0.00	0.00	0.00
3,800.00	5.07	68.77	3,797.75	20.21	52.01	-20.11	0.00	0.00	0.00
3,900.00	5.07	68.77	3,897.36	23.41	60.25	-23.29	0.00	0.00	0.00
4,000.00	5.07	68.77	3,996.97	26.61	68.50	-26.48	0.00	0.00	0.00
4,100.00	5.07	68.77	4,096.57	29.81	76.74	-29.67	0.00	0.00	0.00
4,200.00	5.07	68.77	4,196.18	33.02	84.98	-32.85	0.00	0.00	0.00
4,300.00	5.07	68.77	4,295.79	36.22	93.23	-36.04	0.00	0.00	0.00
4,400.00	5.07	68.77	4,395.40	39.42	101.47	-39.23	0.00	0.00	0.00
4,500.00	5.07	68.77	4,495.01	42.62	109.71	-42.41	0.00	0.00	0.00
4,600.00	5.07	68.77	4,594.62	45.83	117.95	-45.60	0.00	0.00	0.00
4,700.00	5.07	68.77	4,694.22	49.03	126.20	-48.79	0.00	0.00	0.00
4,800.00	5.07	68.77	4,793.83	52.23	134.44	-51.97	0.00	0.00	0.00
4,900.00	5.07	68.77	4,893.44	55.43	142.68	-55.16	0.00	0.00	0.00
5,000.00	5.07	68.77	4,993.05	58.64	150.93	-58.35	0.00	0.00	0.00



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,100.00	5.07	68.77	5,092.66	61.84	159.17	-61.53	0.00	0.00	0.00
5,200.00	5.07	68.77	5,192.26	65.04	167.41	-64.72	0.00	0.00	0.00
5,300.00	5.07	68.77	5,291.87	68.24	175.65	-67.91	0.00	0.00	0.00
5,400.00	5.07	68.77	5,391.48	71.45	183.90	-71.09	0.00	0.00	0.00
5,500.00	5.07	68.77	5,491.09	74.65	192.14	-74.28	0.00	0.00	0.00
5,600.00	5.07	68.77	5,590.70	77.85	200.38	-77.47	0.00	0.00	0.00
5,700.00	5.07	68.77	5,690.31	81.05	208.63	-80.65	0.00	0.00	0.00
5,800.00	5.07	68.77	5,789.91	84.26	216.87	-83.84	0.00	0.00	0.00
5,900.00	5.07	68.77	5,889.52	87.46	225.11	-87.03	0.00	0.00	0.00
6,000.00	5.07	68.77	5,989.13	90.66	233.35	-90.21	0.00	0.00	0.00
6,100.00	5.07	68.77	6,088.74	93.86	241.60	-93.40	0.00	0.00	0.00
6,200.00	5.07	68.77	6,188.35	97.07	249.84	-96.59	0.00	0.00	0.00
6,300.00	5.07	68.77	6,287.96	100.27	258.08	-99.77	0.00	0.00	0.00
6,400.00	5.07	68.77	6,387.56	103.47	266.32	-102.96	0.00	0.00	0.00
6,506.18	5.07	68.77	6,493.33	106.87	275.08	-106.34	0.00	0.00	0.00
6,600.00	4.14	68.77	6,586.84	109.60	282.10	-109.06	1.00	-1.00	0.00
6,700.00	3.14	68.77	6,686.64	111.89	288.01	-111.34	1.00	-1.00	0.00
6,800.00	2.14	68.77	6,786.53	113.56	292.29	-113.00	1.00	-1.00	0.00
6,900.00	1.14	68.77	6,886.49	114.59	294.95	-114.03	1.00	-1.00	0.00
7,000.00	0.14	68.77	6,986.48	114.99	295.99	-114.43	1.00	-1.00	0.00
7,013.52	0.00	280.21	7,000.00	115.00	296.00	-114.43	1.00	-1.00	0.00
7,100.00	0.00	0.00	7,086.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,200.00	0.00	0.00	7,186.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,300.00	0.00	0.00	7,286.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,400.00	0.00	0.00	7,386.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,500.00	0.00	0.00	7,486.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,600.00	0.00	0.00	7,586.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,700.00	0.00	0.00	7,686.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,800.00	0.00	0.00	7,786.48	115.00	296.00	-114.43	0.00	0.00	0.00
7,900.00	0.00	0.00	7,886.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,000.00	0.00	0.00	7,986.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,100.00	0.00	0.00	8,086.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,200.00	0.00	0.00	8,186.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,300.00	0.00	0.00	8,286.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,400.00	0.00	0.00	8,386.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,500.00	0.00	0.00	8,486.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,600.00	0.00	0.00	8,586.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,700.00	0.00	0.00	8,686.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,800.00	0.00	0.00	8,786.48	115.00	296.00	-114.43	0.00	0.00	0.00
8,900.00	0.00	0.00	8,886.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,000.00	0.00	0.00	8,986.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,100.00	0.00	0.00	9,086.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,200.00	0.00	0.00	9,186.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,300.00	0.00	0.00	9,286.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,400.00	0.00	0.00	9,386.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,500.00	0.00	0.00	9,486.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,600.00	0.00	0.00	9,586.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,700.00	0.00	0.00	9,686.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,800.00	0.00	0.00	9,786.48	115.00	296.00	-114.43	0.00	0.00	0.00
9,900.00	0.00	0.00	9,886.48	115.00	296.00	-114.43	0.00	0.00	0.00
10,000.00	0.00	0.00	9,986.48	115.00	296.00	-114.43	0.00	0.00	0.00
10,100.00	0.00	0.00	10,086.48	115.00	296.00	-114.43	0.00	0.00	0.00



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
10,200.00	0.00	0.00	10,186.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,300.00	0.00	0.00	10,286.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,400.00	0.00	0.00	10,386.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,500.00	0.00	0.00	10,486.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,600.00	0.00	0.00	10,586.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,700.00	0.00	0.00	10,686.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,800.00	0.00	0.00	10,786.48	115.00	296.00	-114.43	0.00	0.00	0.00	
10,900.00	0.00	0.00	10,886.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,000.00	0.00	0.00	10,986.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,100.00	0.00	0.00	11,086.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,200.00	0.00	0.00	11,186.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,300.00	0.00	0.00	11,286.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,400.00	0.00	0.00	11,386.48	115.00	296.00	-114.43	0.00	0.00	0.00	
11,456.52	0.00	280.21	11,443.00	115.00	296.00	-114.43	0.00	0.00	0.00	
11,500.00	4.35	179.89	11,486.44	113.35	296.00	-112.78	10.00	10.00	0.00	
11,550.00	9.35	179.89	11,536.07	107.39	296.01	-106.82	10.00	10.00	0.00	
11,600.00	14.35	179.89	11,584.99	97.13	296.03	-96.56	10.00	10.00	0.00	
11,650.00	19.35	179.89	11,632.83	82.64	296.06	-82.07	10.00	10.00	0.00	
11,700.00	24.35	179.89	11,679.22	64.04	296.10	-63.47	10.00	10.00	0.00	
11,750.00	29.35	179.89	11,723.82	41.46	296.14	-40.90	10.00	10.00	0.00	
11,800.00	34.35	179.89	11,766.28	15.09	296.19	-14.52	10.00	10.00	0.00	
11,850.00	39.35	179.89	11,806.28	-14.89	296.25	15.46	10.00	10.00	0.00	
11,900.00	44.35	179.89	11,843.51	-48.23	296.31	48.80	10.00	10.00	0.00	
11,950.00	49.35	179.89	11,877.70	-84.70	296.38	85.27	10.00	10.00	0.00	
12,000.00	54.35	179.89	11,908.57	-124.01	296.46	124.58	10.00	10.00	0.00	
12,050.00	59.35	179.89	11,935.91	-165.85	296.54	166.42	10.00	10.00	0.00	
12,100.00	64.35	179.89	11,959.49	-209.93	296.62	210.49	10.00	10.00	0.00	
12,150.00	69.35	179.89	11,979.14	-255.88	296.71	256.45	10.00	10.00	0.00	
12,200.00	74.35	179.89	11,994.71	-303.38	296.80	303.95	10.00	10.00	0.00	
12,250.00	79.35	179.89	12,006.09	-352.05	296.90	352.62	10.00	10.00	0.00	
12,300.00	84.35	179.89	12,013.17	-401.53	296.99	402.10	10.00	10.00	0.00	
12,350.00	89.35	179.89	12,015.92	-451.44	297.09	452.01	10.00	10.00	0.00	
12,356.55	90.00	179.89	12,015.96	-457.99	297.10	458.56	10.00	10.00	0.00	
12,400.00	90.00	179.89	12,015.96	-501.44	297.19	502.01	0.00	0.00	0.00	
12,403.06	90.00	179.89	12,015.96	-504.50	297.19	505.07	0.00	0.00	0.00	
PLU 27 BD 154H - FTP										
12,500.00	90.00	179.89	12,015.95	-601.44	297.38	602.01	0.00	0.00	0.00	
12,600.00	90.00	179.89	12,015.94	-701.44	297.57	702.01	0.00	0.00	0.00	
12,700.00	90.00	179.89	12,015.94	-801.44	297.76	802.01	0.00	0.00	0.00	
12,800.00	90.00	179.89	12,015.93	-901.44	297.95	902.01	0.00	0.00	0.00	
12,900.00	90.00	179.89	12,015.92	-1,001.44	298.15	1,002.01	0.00	0.00	0.00	
13,000.00	90.00	179.89	12,015.92	-1,101.44	298.34	1,102.01	0.00	0.00	0.00	
13,100.00	90.00	179.89	12,015.91	-1,201.44	298.53	1,202.01	0.00	0.00	0.00	
13,200.00	90.00	179.89	12,015.91	-1,301.44	298.72	1,302.01	0.00	0.00	0.00	
13,300.00	90.00	179.89	12,015.90	-1,401.44	298.92	1,402.01	0.00	0.00	0.00	
13,400.00	90.00	179.89	12,015.89	-1,501.44	299.11	1,502.01	0.00	0.00	0.00	
13,500.00	90.00	179.89	12,015.89	-1,601.44	299.30	1,602.01	0.00	0.00	0.00	
13,600.00	90.00	179.89	12,015.88	-1,701.44	299.49	1,702.01	0.00	0.00	0.00	
13,700.00	90.00	179.89	12,015.87	-1,801.44	299.69	1,802.01	0.00	0.00	0.00	
13,800.00	90.00	179.89	12,015.87	-1,901.44	299.88	1,902.01	0.00	0.00	0.00	
13,900.00	90.00	179.89	12,015.86	-2,001.44	300.07	2,002.01	0.00	0.00	0.00	
14,000.00	90.00	179.89	12,015.86	-2,101.44	300.26	2,102.01	0.00	0.00	0.00	



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,100.00	90.00	179.89	12,015.85	-2,201.44	300.45	2,202.01	0.00	0.00	0.00
14,200.00	90.00	179.89	12,015.84	-2,301.44	300.65	2,302.01	0.00	0.00	0.00
14,300.00	90.00	179.89	12,015.84	-2,401.44	300.84	2,402.01	0.00	0.00	0.00
14,400.00	90.00	179.89	12,015.83	-2,501.44	301.03	2,502.01	0.00	0.00	0.00
14,500.00	90.00	179.89	12,015.83	-2,601.44	301.22	2,602.01	0.00	0.00	0.00
14,600.00	90.00	179.89	12,015.82	-2,701.44	301.42	2,702.01	0.00	0.00	0.00
14,700.00	90.00	179.89	12,015.81	-2,801.44	301.61	2,802.01	0.00	0.00	0.00
14,800.00	90.00	179.89	12,015.81	-2,901.44	301.80	2,902.01	0.00	0.00	0.00
14,900.00	90.00	179.89	12,015.80	-3,001.44	301.99	3,002.01	0.00	0.00	0.00
15,000.00	90.00	179.89	12,015.79	-3,101.44	302.19	3,102.01	0.00	0.00	0.00
15,100.00	90.00	179.89	12,015.79	-3,201.44	302.38	3,202.01	0.00	0.00	0.00
15,200.00	90.00	179.89	12,015.78	-3,301.44	302.57	3,302.01	0.00	0.00	0.00
15,300.00	90.00	179.89	12,015.78	-3,401.44	302.76	3,402.01	0.00	0.00	0.00
15,400.00	90.00	179.89	12,015.77	-3,501.44	302.95	3,502.01	0.00	0.00	0.00
15,500.00	90.00	179.89	12,015.76	-3,601.44	303.15	3,602.01	0.00	0.00	0.00
15,600.00	90.00	179.89	12,015.76	-3,701.44	303.34	3,702.01	0.00	0.00	0.00
15,700.00	90.00	179.89	12,015.75	-3,801.44	303.53	3,802.01	0.00	0.00	0.00
15,800.00	90.00	179.89	12,015.74	-3,901.44	303.72	3,902.01	0.00	0.00	0.00
15,900.00	90.00	179.89	12,015.74	-4,001.43	303.92	4,002.01	0.00	0.00	0.00
16,000.00	90.00	179.89	12,015.73	-4,101.43	304.11	4,102.01	0.00	0.00	0.00
16,100.00	90.00	179.89	12,015.73	-4,201.43	304.30	4,202.01	0.00	0.00	0.00
16,200.00	90.00	179.89	12,015.72	-4,301.43	304.49	4,302.01	0.00	0.00	0.00
16,300.00	90.00	179.89	12,015.71	-4,401.43	304.68	4,402.01	0.00	0.00	0.00
16,400.00	90.00	179.89	12,015.71	-4,501.43	304.88	4,502.01	0.00	0.00	0.00
16,500.00	90.00	179.89	12,015.70	-4,601.43	305.07	4,602.01	0.00	0.00	0.00
16,600.00	90.00	179.89	12,015.69	-4,701.43	305.26	4,702.01	0.00	0.00	0.00
16,700.00	90.00	179.89	12,015.69	-4,801.43	305.45	4,802.01	0.00	0.00	0.00
16,800.00	90.00	179.89	12,015.68	-4,901.43	305.65	4,902.01	0.00	0.00	0.00
16,900.00	90.00	179.89	12,015.68	-5,001.43	305.84	5,002.01	0.00	0.00	0.00
17,000.00	90.00	179.89	12,015.67	-5,101.43	306.03	5,102.01	0.00	0.00	0.00
17,100.00	90.00	179.89	12,015.66	-5,201.43	306.22	5,202.01	0.00	0.00	0.00
17,200.00	90.00	179.89	12,015.66	-5,301.43	306.42	5,302.01	0.00	0.00	0.00
17,300.00	90.00	179.89	12,015.65	-5,401.43	306.61	5,402.01	0.00	0.00	0.00
17,400.00	90.00	179.89	12,015.65	-5,501.43	306.80	5,502.01	0.00	0.00	0.00
17,500.00	90.00	179.89	12,015.64	-5,601.43	306.99	5,602.01	0.00	0.00	0.00
17,600.00	90.00	179.89	12,015.63	-5,701.43	307.18	5,702.01	0.00	0.00	0.00
17,700.00	90.00	179.89	12,015.63	-5,801.43	307.38	5,802.01	0.00	0.00	0.00
17,800.00	90.00	179.89	12,015.62	-5,901.43	307.57	5,902.01	0.00	0.00	0.00
17,900.00	90.00	179.89	12,015.61	-6,001.43	307.76	6,002.01	0.00	0.00	0.00
18,000.00	90.00	179.89	12,015.61	-6,101.43	307.95	6,102.01	0.00	0.00	0.00
18,100.00	90.00	179.89	12,015.60	-6,201.43	308.15	6,202.01	0.00	0.00	0.00
18,200.00	90.00	179.89	12,015.60	-6,301.43	308.34	6,302.01	0.00	0.00	0.00
18,300.00	90.00	179.89	12,015.59	-6,401.43	308.53	6,402.01	0.00	0.00	0.00
18,400.00	90.00	179.89	12,015.58	-6,501.43	308.72	6,502.01	0.00	0.00	0.00
18,500.00	90.00	179.89	12,015.58	-6,601.43	308.92	6,602.01	0.00	0.00	0.00
18,600.00	90.00	179.89	12,015.57	-6,701.43	309.11	6,702.01	0.00	0.00	0.00
18,700.00	90.00	179.89	12,015.56	-6,801.43	309.30	6,802.01	0.00	0.00	0.00
18,800.00	90.00	179.89	12,015.56	-6,901.43	309.49	6,902.01	0.00	0.00	0.00
18,900.00	90.00	179.89	12,015.55	-7,001.43	309.68	7,002.01	0.00	0.00	0.00
19,000.00	90.00	179.89	12,015.55	-7,101.43	309.88	7,102.01	0.00	0.00	0.00
19,100.00	90.00	179.89	12,015.54	-7,201.43	310.07	7,202.01	0.00	0.00	0.00
19,200.00	90.00	179.89	12,015.53	-7,301.43	310.26	7,302.01	0.00	0.00	0.00



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
19,300.00	90.00	179.89	12,015.53	-7,401.43	310.45	7,402.01	0.00	0.00	0.00	
19,400.00	90.00	179.89	12,015.52	-7,501.43	310.65	7,502.01	0.00	0.00	0.00	
19,500.00	90.00	179.89	12,015.52	-7,601.43	310.84	7,602.01	0.00	0.00	0.00	
19,600.00	90.00	179.89	12,015.51	-7,701.43	311.03	7,702.01	0.00	0.00	0.00	
19,700.00	90.00	179.89	12,015.50	-7,801.43	311.22	7,802.01	0.00	0.00	0.00	
19,800.00	90.00	179.89	12,015.50	-7,901.43	311.42	7,902.01	0.00	0.00	0.00	
19,900.00	90.00	179.89	12,015.49	-8,001.43	311.61	8,002.01	0.00	0.00	0.00	
20,000.00	90.00	179.89	12,015.48	-8,101.43	311.80	8,102.01	0.00	0.00	0.00	
20,100.00	90.00	179.89	12,015.48	-8,201.43	311.99	8,202.01	0.00	0.00	0.00	
20,200.00	90.00	179.89	12,015.47	-8,301.43	312.18	8,302.01	0.00	0.00	0.00	
20,300.00	90.00	179.89	12,015.47	-8,401.43	312.38	8,402.01	0.00	0.00	0.00	
20,400.00	90.00	179.89	12,015.46	-8,501.43	312.57	8,502.01	0.00	0.00	0.00	
20,500.00	90.00	179.89	12,015.45	-8,601.43	312.76	8,602.01	0.00	0.00	0.00	
20,600.00	90.00	179.89	12,015.45	-8,701.43	312.95	8,702.01	0.00	0.00	0.00	
20,700.00	90.00	179.89	12,015.44	-8,801.43	313.15	8,802.01	0.00	0.00	0.00	
20,800.00	90.00	179.89	12,015.43	-8,901.43	313.34	8,902.01	0.00	0.00	0.00	
20,900.00	90.00	179.89	12,015.43	-9,001.43	313.53	9,002.01	0.00	0.00	0.00	
21,000.00	90.00	179.89	12,015.42	-9,101.43	313.72	9,102.01	0.00	0.00	0.00	
21,100.00	90.00	179.89	12,015.42	-9,201.43	313.91	9,202.01	0.00	0.00	0.00	
21,200.00	90.00	179.89	12,015.41	-9,301.43	314.11	9,302.01	0.00	0.00	0.00	
21,300.00	90.00	179.89	12,015.40	-9,401.42	314.30	9,402.01	0.00	0.00	0.00	
21,400.00	90.00	179.89	12,015.40	-9,501.42	314.49	9,502.01	0.00	0.00	0.00	
21,500.00	90.00	179.89	12,015.39	-9,601.42	314.68	9,602.01	0.00	0.00	0.00	
21,600.00	90.00	179.89	12,015.38	-9,701.42	314.88	9,702.01	0.00	0.00	0.00	
21,700.00	90.00	179.89	12,015.38	-9,801.42	315.07	9,802.01	0.00	0.00	0.00	
21,800.00	90.00	179.89	12,015.37	-9,901.42	315.26	9,902.01	0.00	0.00	0.00	
21,900.00	90.00	179.89	12,015.37	-10,001.42	315.45	10,002.01	0.00	0.00	0.00	
22,000.00	90.00	179.89	12,015.36	-10,101.42	315.65	10,102.01	0.00	0.00	0.00	
22,100.00	90.00	179.89	12,015.35	-10,201.42	315.84	10,202.01	0.00	0.00	0.00	
22,200.00	90.00	179.89	12,015.35	-10,301.42	316.03	10,302.01	0.00	0.00	0.00	
22,300.00	90.00	179.89	12,015.34	-10,401.42	316.22	10,402.01	0.00	0.00	0.00	
22,400.00	90.00	179.89	12,015.34	-10,501.42	316.41	10,502.01	0.00	0.00	0.00	
22,500.00	90.00	179.89	12,015.33	-10,601.42	316.61	10,602.01	0.00	0.00	0.00	
22,600.00	90.00	179.89	12,015.32	-10,701.42	316.80	10,702.01	0.00	0.00	0.00	
22,700.00	90.00	179.89	12,015.32	-10,801.42	316.99	10,802.01	0.00	0.00	0.00	
22,800.00	90.00	179.89	12,015.31	-10,901.42	317.18	10,902.01	0.00	0.00	0.00	
22,900.00	90.00	179.89	12,015.30	-11,001.42	317.38	11,002.01	0.00	0.00	0.00	
23,000.00	90.00	179.89	12,015.30	-11,101.42	317.57	11,102.01	0.00	0.00	0.00	
23,100.00	90.00	179.89	12,015.29	-11,201.42	317.76	11,202.01	0.00	0.00	0.00	
23,200.00	90.00	179.89	12,015.29	-11,301.42	317.95	11,302.01	0.00	0.00	0.00	
23,300.00	90.00	179.89	12,015.28	-11,401.42	318.15	11,402.01	0.00	0.00	0.00	
23,400.00	90.00	179.89	12,015.27	-11,501.42	318.34	11,502.01	0.00	0.00	0.00	
23,500.00	90.00	179.89	12,015.27	-11,601.42	318.53	11,602.01	0.00	0.00	0.00	
23,600.00	90.00	179.89	12,015.26	-11,701.42	318.72	11,702.01	0.00	0.00	0.00	
23,700.00	90.00	179.89	12,015.25	-11,801.42	318.91	11,802.01	0.00	0.00	0.00	
23,800.00	90.00	179.89	12,015.25	-11,901.42	319.11	11,902.01	0.00	0.00	0.00	
23,900.00	90.00	179.89	12,015.24	-12,001.42	319.30	12,002.01	0.00	0.00	0.00	
24,000.00	90.00	179.89	12,015.24	-12,101.42	319.49	12,102.01	0.00	0.00	0.00	
24,100.00	90.00	179.89	12,015.23	-12,201.42	319.68	12,202.01	0.00	0.00	0.00	
24,200.00	90.00	179.89	12,015.22	-12,301.42	319.88	12,302.01	0.00	0.00	0.00	
24,300.00	90.00	179.89	12,015.22	-12,401.42	320.07	12,402.01	0.00	0.00	0.00	
24,400.00	90.00	179.89	12,015.21	-12,501.42	320.26	12,502.01	0.00	0.00	0.00	



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors.M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors.M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
24,500.00	90.00	179.89	12,015.20	-12,601.42	320.45	12,602.01	0.00	0.00	0.00	
24,600.00	90.00	179.89	12,015.20	-12,701.42	320.65	12,702.01	0.00	0.00	0.00	
24,700.00	90.00	179.89	12,015.19	-12,801.42	320.84	12,802.01	0.00	0.00	0.00	
24,800.00	90.00	179.89	12,015.19	-12,901.42	321.03	12,902.01	0.00	0.00	0.00	
24,900.00	90.00	179.89	12,015.18	-13,001.42	321.22	13,002.01	0.00	0.00	0.00	
25,000.00	90.00	179.89	12,015.17	-13,101.42	321.41	13,102.01	0.00	0.00	0.00	
25,100.00	90.00	179.89	12,015.17	-13,201.42	321.61	13,202.01	0.00	0.00	0.00	
25,200.00	90.00	179.89	12,015.16	-13,301.42	321.80	13,302.01	0.00	0.00	0.00	
25,300.00	90.00	179.89	12,015.16	-13,401.42	321.99	13,402.01	0.00	0.00	0.00	
25,400.00	90.00	179.89	12,015.15	-13,501.42	322.18	13,502.01	0.00	0.00	0.00	
25,500.00	90.00	179.89	12,015.14	-13,601.42	322.38	13,602.01	0.00	0.00	0.00	
25,600.00	90.00	179.89	12,015.14	-13,701.42	322.57	13,702.01	0.00	0.00	0.00	
25,700.00	90.00	179.89	12,015.13	-13,801.42	322.76	13,802.01	0.00	0.00	0.00	
25,800.00	90.00	179.89	12,015.12	-13,901.42	322.95	13,902.01	0.00	0.00	0.00	
25,900.00	90.00	179.89	12,015.12	-14,001.42	323.15	14,002.01	0.00	0.00	0.00	
26,000.00	90.00	179.89	12,015.11	-14,101.42	323.34	14,102.01	0.00	0.00	0.00	
26,100.00	90.00	179.89	12,015.11	-14,201.42	323.53	14,202.01	0.00	0.00	0.00	
26,200.00	90.00	179.89	12,015.10	-14,301.42	323.72	14,302.01	0.00	0.00	0.00	
26,300.00	90.00	179.89	12,015.09	-14,401.42	323.91	14,402.01	0.00	0.00	0.00	
26,400.00	90.00	179.89	12,015.09	-14,501.42	324.11	14,502.01	0.00	0.00	0.00	
26,500.00	90.00	179.89	12,015.08	-14,601.42	324.30	14,602.01	0.00	0.00	0.00	
26,600.00	90.00	179.89	12,015.07	-14,701.42	324.49	14,702.01	0.00	0.00	0.00	
26,700.00	90.00	179.89	12,015.07	-14,801.42	324.68	14,802.01	0.00	0.00	0.00	
26,800.00	90.00	179.89	12,015.06	-14,901.41	324.88	14,902.01	0.00	0.00	0.00	
26,900.00	90.00	179.89	12,015.06	-15,001.41	325.07	15,002.01	0.00	0.00	0.00	
27,000.00	90.00	179.89	12,015.05	-15,101.41	325.26	15,102.01	0.00	0.00	0.00	
27,100.00	90.00	179.89	12,015.04	-15,201.41	325.45	15,202.01	0.00	0.00	0.00	
27,200.00	90.00	179.89	12,015.04	-15,301.41	325.64	15,302.01	0.00	0.00	0.00	
27,300.00	90.00	179.89	12,015.03	-15,401.41	325.84	15,402.01	0.00	0.00	0.00	
27,400.00	90.00	179.89	12,015.03	-15,501.41	326.03	15,502.01	0.00	0.00	0.00	
27,500.00	90.00	179.89	12,015.02	-15,601.41	326.22	15,602.01	0.00	0.00	0.00	
27,600.00	90.00	179.89	12,015.01	-15,701.41	326.41	15,702.01	0.00	0.00	0.00	
27,671.02	90.00	179.89	12,015.01	-15,772.43	326.55	15,773.03	0.00	0.00	0.00	
PLU 27 BD 154H - LTP										
27,700.00	90.00	179.89	12,015.01	-15,801.41	326.61	15,802.01	0.00	0.00	0.00	
27,801.02	90.00	179.89	12,015.00	-15,902.43	326.80	15,903.03	0.00	0.00	0.00	
PLU 27 BD 154H - BHL										



Nabors Drilling Solutions
Planning Report



Database:	RyanUSA_32Bit	Local Co-ordinate Reference:	Well 154H
Company:	XTO Permian Operating, LLC	TVD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Project:	Eddy Co., NM	MD Reference:	RT=23 (Nabors M7505) @ 3300.00ft (Nabors M7505)
Site:	Poker Lake Unit 27 BD	North Reference:	Grid
Well:	154H	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		(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)	Latitude Longitude
PLU 27 BD 154H - LTP		0.00	0.00	12,015.00	-15,772.43	326.10	385,158.800	643,617.300	32° 3' 29.048205 N 103° 52' 11.112958 W
- plan misses target center by 0.45ft at 27671.02ft MD (12015.01 TVD, -15772.43 N, 326.55 E)									
- Point									
PLU 27 BD 154H - FTP		0.00	0.00	12,015.00	-504.50	297.00	400,426.700	643,588.200	32° 6' 0.144974 N 103° 52' 10.688537 W
- plan misses target center by 0.97ft at 12403.06ft MD (12015.95 TVD, -504.50 N, 297.19 E)									
- Point									
PLU 27 BD 154H - BHL		0.00	0.00	12,015.00	-15,902.43	326.80	385,028.800	643,618.000	32° 3' 27.761654 N 103° 52' 11.111311 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
1,065.00	1,065.00	RSLR				
1,350.00	1,350.00	Top Salt				
2,350.00	2,350.00	CSTL				
3,671.75	3,670.00	Salt_B				
3,885.59	3,883.00	DLWR				
4,811.21	4,805.00	CRCN				
6,357.27	6,345.00	BYCN				
7,695.52	7,682.00	BSPG				
7,819.52	7,806.00	BSPG_AVLN_SS				
7,834.52	7,821.00	BSPG_U_AVLN_SH				
8,231.52	8,218.00	BSPG_L_AVLN_SH				
8,635.52	8,622.00	BSPG1				
9,070.52	9,057.00	BSPG2_LM				
9,438.52	9,425.00	BSPG2				
9,817.52	9,804.00	BSPG3_LM				
10,186.52	10,173.00	BSPG_HRKY				
10,608.52	10,595.00	BSPG3				
11,003.52	10,990.00	WFMP				
11,031.52	11,018.00	WFMP_X				
11,123.52	11,110.00	WFMP_Y				
11,143.52	11,130.00	WFMP_A				
11,320.52	11,307.00	WFMP_A_LOWER				
11,550.94	11,537.00	WFMP_B				
12,011.18	11,915.00	WFMP_D				
12,323.38	12,015.00	LP (WFMP_D)				

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 well.
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.

9-5/8" 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 9-5/8 inch intermediate casing is:

Operator has proposed DV tool at depth of 6000', 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 through the curve and a minimum of one every other joint.

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

- ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 21% - Additional cement may be required.**

4. 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. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 10,000 (10M) psi.**
 - 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 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.**

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.

4. 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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