Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

Carlsbad Field Office
OCD Artesia

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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other	5. Lease Serial No. NMLC065705B 6. If Indian, Allottee or Tribe Name
	7. If Unit or CA/Agreement, Name and/or No.
	8. Well Name and No. MUY WAYNO 18 FEDERAL 102H
2. Name of Operator XTO ENERGY INC. Contact: KELLY KARDOS E-Mail: kelly_kardos@xtoenergy.com	9. API Well No. 30-015-44838
3a. Address 6401 HOLIDAY HILL RD BLDG 5 MIDLAND, TX 79707 3b. Phone No. (include area code) Ph: 432-620-4374	10. Field and Pool or Exploratory Area PURPLE SAGE; WOLFCAMP
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)* Sec 18 T25S R30E Mer NMP NWSW 2310FSL 1115FWL	11. County or Parish, State EDDY COUNTY, NM

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 20 2018
RECEIVED

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 to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 recomplete 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 Energy Inc. requests permission to make the following changes to the approved APD:

1. Add Pilot Hole
2. Change SHL fr/2310' FSL & 1115' FWL to 2310' FSL & 410' FWL. No surface disturbance will occur with this change.
3. Drilling Program
4. Directional Drill Plan

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Attachments:
1. C102 & Supplement
2. Drilling Program
3. Directional Survey

No New Disturbance
Covered under EA DOI-BLM-NM-P020-2018-0278-EA
Engineering review completed by M Hoque. OK Per BSB 9-17-2018 Same COA's Apply

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

Electronic Submission #435325 verified by the BLM Well Information System
For XTO ENERGY INC, sent to the Carlsbad
Committed to AFMSS for processing by MUSTAFA HAQUE on 09/14/2018 ()

Name *(Printed/Typed)* KELLY KARDOS	Title REGULATORY COORDINATOR
Signature (Electronic Submission)	Date 09/14/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Cody R. Layton	Title AFM-Lands	Date 09/18/2018
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 CFO	

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 ****

RWS 2-21-19

Additional data for EC transaction #435325 that would not fit on the form

32. Additional remarks, continued

4. BOP/CM/FH

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 20 2019
RECEIVED

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-15-44838	98220	PURPLE SAGE; WOLFCAMP

[4] Property Code	[5] Property Name	[6] Well Number
321151	MUY WAYNO 18 FEDERAL	102H

[7] OGRID No.	[8] Operator Name	[9] Elevation
005380	XTO ENERGY INC.	3,160'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3 L	18	25 S	30 E		2,310	SOUTH	410	WEST	EDDY

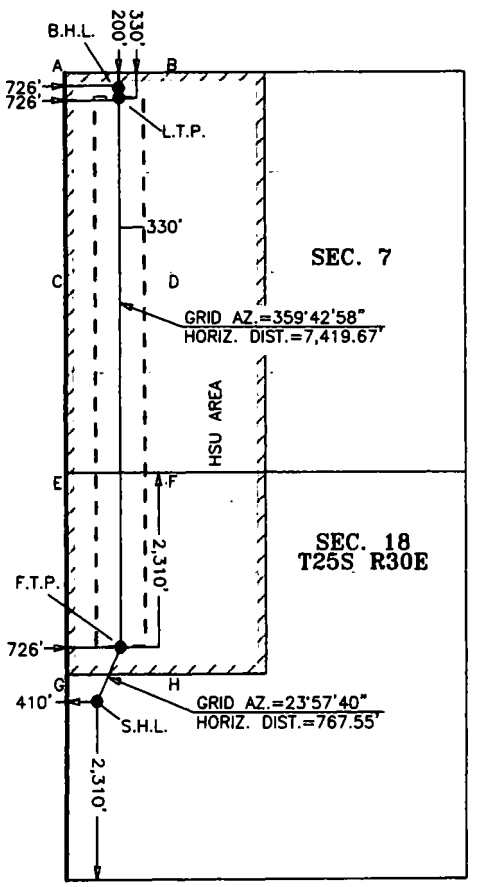
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D 1	7	25 S	30 E		200	NORTH	726	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
480 483.44			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16]



GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION	GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION
Y= 410,906.2	Y= 410,964.5
X= 625,601.1	X= 666,785.8
LAT.= 32.129048°N	LAT.= 32.129172°N
LONG.= 103.927594°W	LONG.= 103.928078°W

FIRST TAKE POINT NAD 27 NME	FIRST TAKE POINT NAD 83 NME
Y= 411,607.5	Y= 411,665.8
X= 625,912.9	X= 667,097.5
LAT.= 32.130972°N	LAT.= 32.131096°N
LONG.= 103.926578°W	LONG.= 103.927063°W

CORNER COORDINATES TABLE NAD 27 NME

A - Y= 419,223.6 N,	X= 625,149.2 E	
B - Y= 419,230.0 N,	X= 626,505.6 E	
C - Y= 416,577.1 N,	X= 625,163.9 E	
D - Y= 416,580.8 N,	X= 626,517.9 E	
E - Y= 413,914.7 N,	X= 625,173.1 E	
F - Y= 413,919.9 N,	X= 626,527.4 E	
G - Y= 411,254.3 N,	X= 625,189.0 E	
H - Y= 411,260.6 N,	X= 626,542.4 E	

CORNER COORDINATES TABLE NAD 83 NME

A - Y= 419,282.0 N,	X= 666,333.6 E	
B - Y= 419,288.4 N,	X= 667,690.0 E	
C - Y= 416,635.5 N,	X= 666,348.4 E	
D - Y= 416,639.2 N,	X= 667,702.4 E	
E - Y= 413,973.0 N,	X= 666,357.6 E	
F - Y= 413,978.2 N,	X= 667,712.0 E	
G - Y= 411,312.6 N,	X= 666,373.6 E	
H - Y= 411,318.9 N,	X= 667,727.0 E	

LAST TAKE POINT NAD 27 NME	LAST TAKE POINT NAD 83 NME
Y= 418,897.0	Y= 418,955.4
X= 625,877.0	X= 667,061.4
LAT.= 32.151011°N	LAT.= 32.151135°N
LONG.= 103.926605°W	LONG.= 103.927090°W

BOTTOM HOLE LOCATION NAD 27 NME	BOTTOM HOLE LOCATION NAD 83 NME
Y= 419,027.0	Y= 419,085.4
X= 625,876.3	X= 667,060.7
LAT.= 32.151366°N	LAT.= 32.151492°N
LONG.= 103.926606°W	LONG.= 103.927091°W

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Kelly Kardos 09/14/18
Signature Date

Kelly Kardos
Printed Name

kelly_kardos@xtoenergy.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

07-23-2018
Date of Survey

Signatue and Seal of Professional Surveyor:

MARK DILLON HARP 23786
Certificate Number

AW 2017060868

MARK DILLON HARP
NEW MEXICO
23786
PROFESSIONAL SURVEYOR

RWP 2-21-19

Intent [X] As Drilled [ ]

API #
30-015-44838

Operator Name:	Property Name:	Well Number
XTO Energy Inc.	Muy Wayno 18 Federal	102H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	18	25S	30E	3	2310	South	410	West	Eddy

Latitude	Longitude	NAD
32.129172	-103.928078	NAD83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
E	18	25S	30E		2310	North	726	West	Eddy

Latitude	Longitude	NAD
32.131096	-103.927063	NAD83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
I	7	25S	30E		330	North	726	West	Eddy

Latitude	Longitude	NAD
32.151135	-103.927090	NAD83

Is this well the defining well for the Horizontal Spacing Unit? [Y]

Is this well an infill well? [N]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

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

XTO Energy Inc.
Muy Wayno 18 Federal 102H
Projected TD: 18380' MD / 10619' TVD
SHL: 2310' FSL & 410' FWL , Section 18, T25S, R30E
BHL: 200' FNL & 726' FWL , Section 17, T25S, 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	713'	Water
Top of Salt	1026'	Water
Base of Salt	3274'	Water
Delaware	3467'	Water
Bone Spring Lm	7223'	Water/Oil/Gas
1st Bone Spring Ss	8223'	Water/Oil/Gas
2nd Bone Spring Ss	9030'	Water/Oil/Gas
3rd Bone Spring Ss	10110'	Water/Oil/Gas
Wolfcamp	10511'	Water/Oil/Gas
Target/Land Curve	10619'	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 @ 890' (136' above the salt) and circulating cement back to surface. The salt will be isolated by setting 9-5/8 inch casing at 9485' and circulating cement to surface. A pilot hole will be drilled down to 11168' with core being cut from 10,400' to 11,000' TVD. Electric logs will also be ran. Cement plugs will then be used to fill up the pilot hole. An 8-3/4 inch curve and lateral hole will then be drilled to MD/TD and 5-1/2 inch casing will be set at TD and cemented up into the 9-5/8 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' – 890'	13-3/8"	54.5	BTC	J-55	New	1.30	2.84	21.28
12-1/4"	0' – 9485'	9-5/8"	40	BTC	HCL-80	New	2.14	1.97	2.66
8-3/4" x 8-1/2"	0' – 18380'	5-1/2"	17	BTC	P-110	New	1.12	1.49	2.37

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

WELLHEAD:

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.
· Manufacturer will witness installation of test plug for initial test.
· Operator will test the 9-5/8" casing to 70% of casing burst before drilling out.

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, BTC casing to be set at +/- 890'

Lead: 460 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.75 ft3/sx, 10.13 gal/sx water)
Tail: 310 sxs Class C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.35 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Intermediate Casing: 9-5/8", 40 New L-80, BTC casing to be set at +/- 9485'

1st Stage:
Lead: 2090 sxs Class C + 2% CaCl (mixed at 12.2 ppg, 2.12 ft3/sx, 11.63 gal/sx water)

Tail: 380 sxs Class C + 2% CaCl (mixed at 14.5 ppg, 1.19 ft3/sx, 4.76 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Stage: (ECP/DV Tool set at 820', Will pump if cement does not come to surface on 1st stage)
385 sxs Class C + 2% CaCl (mixed at 14.8 ppg, 1.32 ft3/sx, 6.35 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Pilot Hole:
600' Isolation Plug: (11168' to 10568') 225 sxs Class H (mixed at 14.8 ppg, 1.32 ft3/sx, 6.35 gal/sx water)
600' Kick Off Plug: (10568' to 9968') 315 sxs Class H (mixed at 17.5 ppg, 0.95 ft3/sx, 3.44 gal/sx water)

Production Casing: 5-1/2", 17 New P-110, BTC casing to be set at +/- 18380'

Lead: 100 sxs NeoCem (mixed at 10.5 ppg, 2.69 ft3/sx, 12.26 gal/sx water)

Tail: 1670 sxs VersaCem (mixed at 13.2 ppg, 1.62 ft3/sx, 8.26 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 3M Hydril and a 13-5/8" minimum 3M Double Ram BOP. MASP should not exceed 2689 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 nippling up on the 13-5/8" 3M bradenhead and flange, the BOP test will be limited to 3000 psi. When nippling up on the 9-5/8", the BOP will be tested to a minimum of 3000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 3M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' to 890'	17-1/2"	FW/Native	8.4-8.8	32-36	NC
890' to 9485'	12-1/4"	OBM	8.4-8.9	40-50	NC
9485' to 18380'	8-3/4" x 8-1/2"	OBM	8.8 - 9.3	45-55	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 13-3/8" surface casing with an 8.4ppg-8.9ppg oil base mud which 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. 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. Auxillary 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.

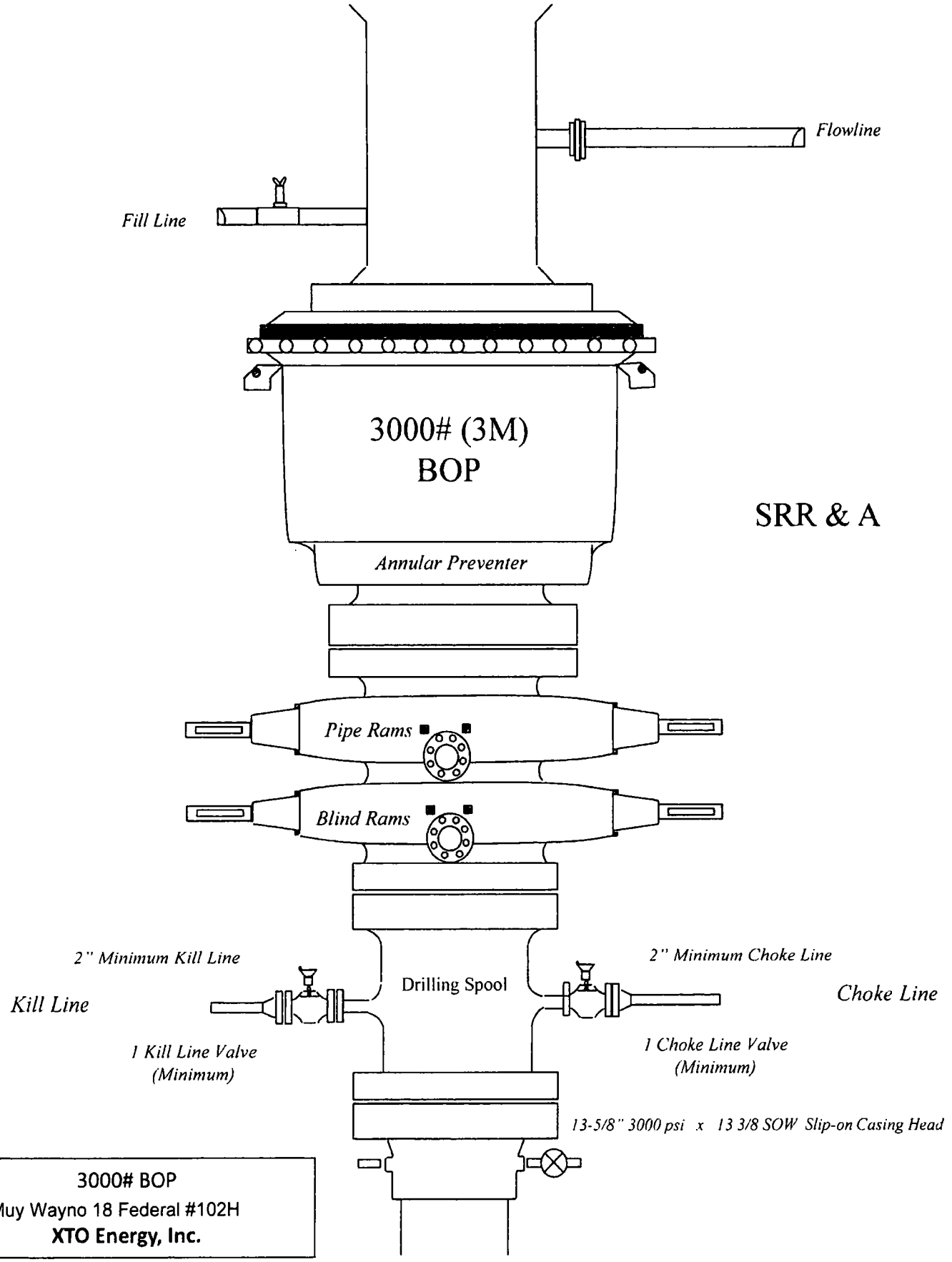
Open hole logging will include Quad combo along with Core fr/ 10,400 - 11,000'.

9. Abnormal Pressures and Temperatures / Potential Hazards

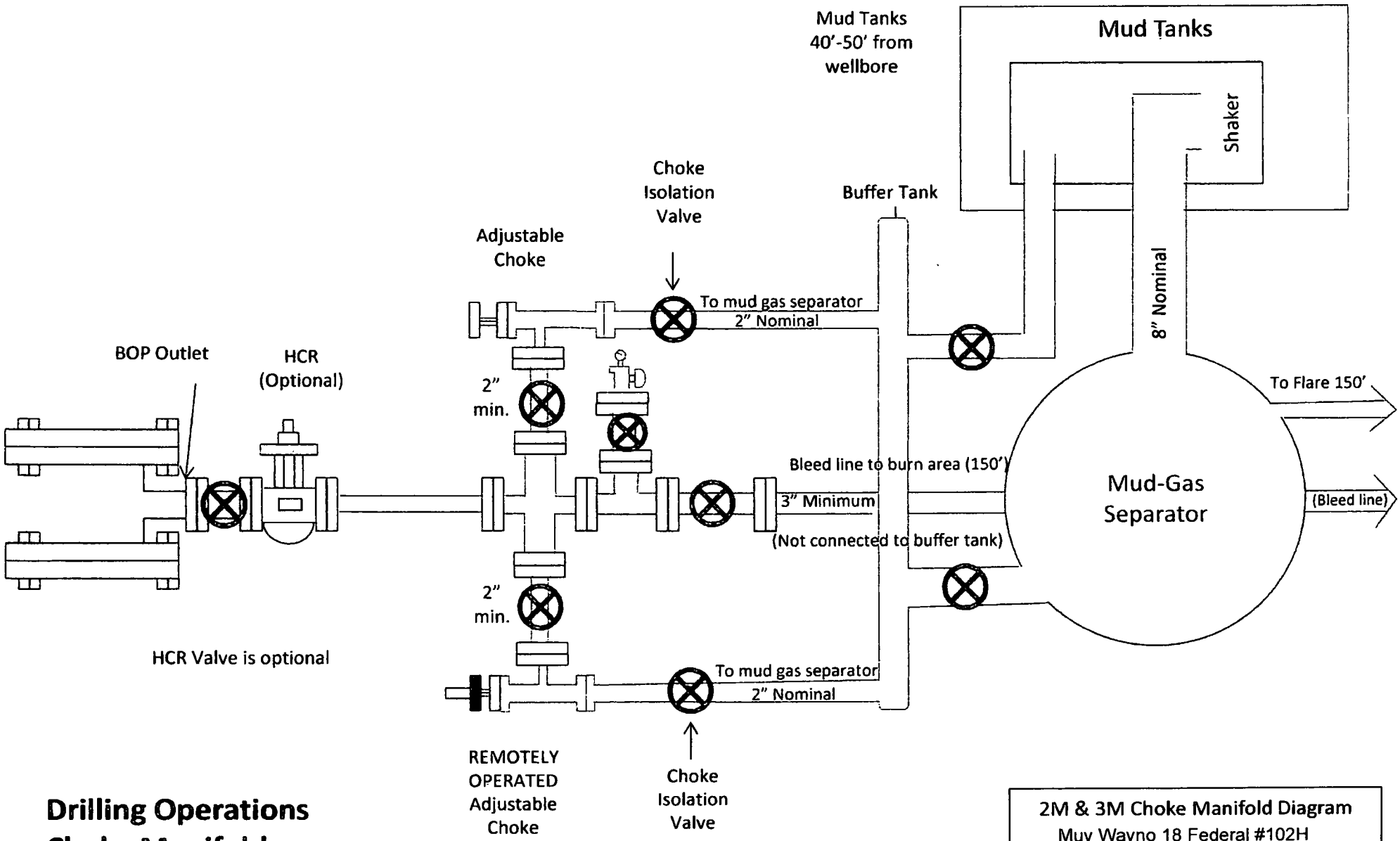
None Anticipated. BHT of 150 to 170 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. 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 5025 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.



3000# BOP
Muy Wayno 18 Federal #102H
XTO Energy, Inc.



Drilling Operations
Choke Manifold
2M & 3M Service

2M & 3M Choke Manifold Diagram
Muy Wayno 18 Federal #102H
XTO Energy, Inc

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

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

GRADE D PRESSURE TEST CERTIFICATE

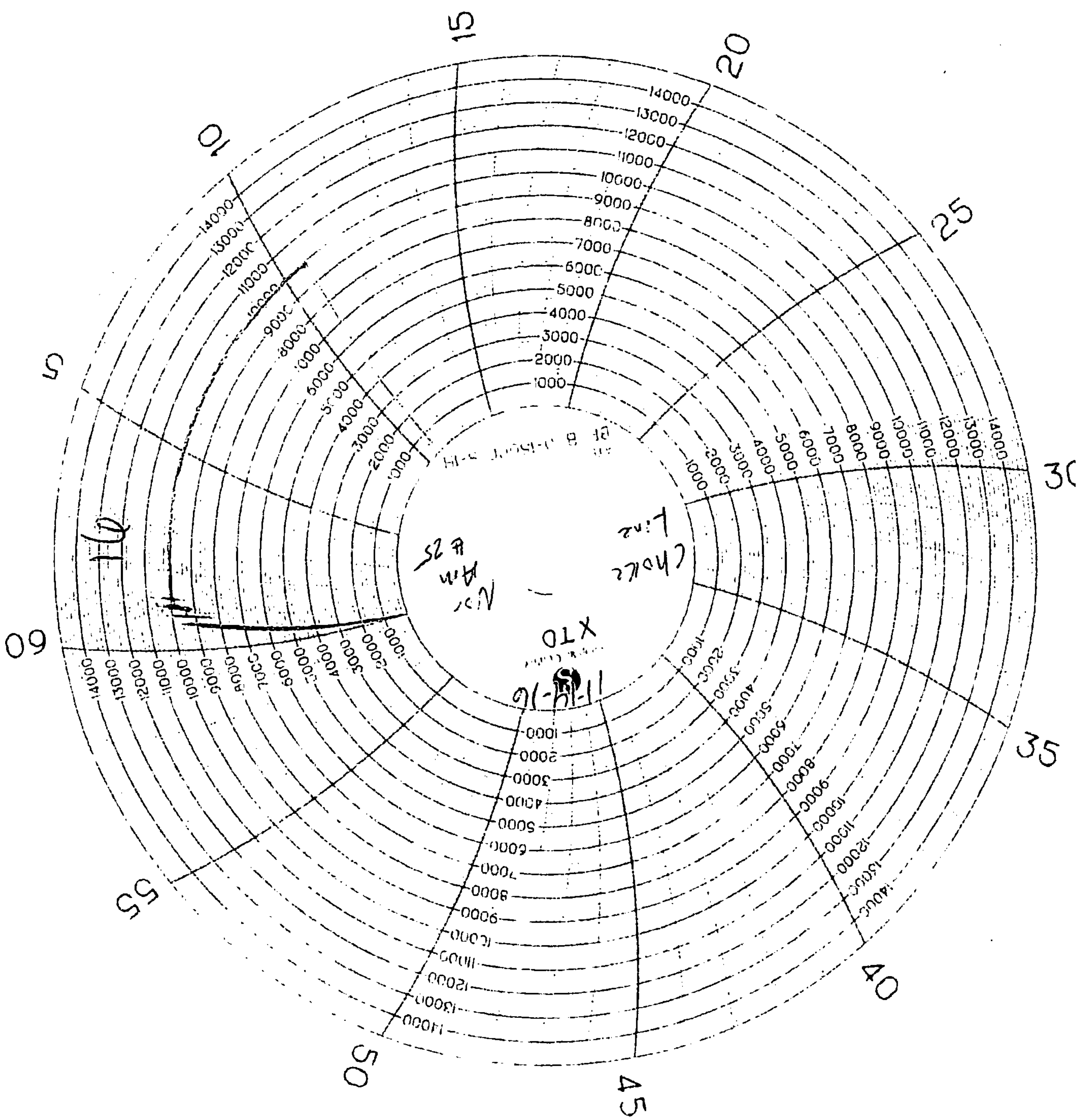
Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-060814-1
Invoice No. :	201709	Created By:	NORMA

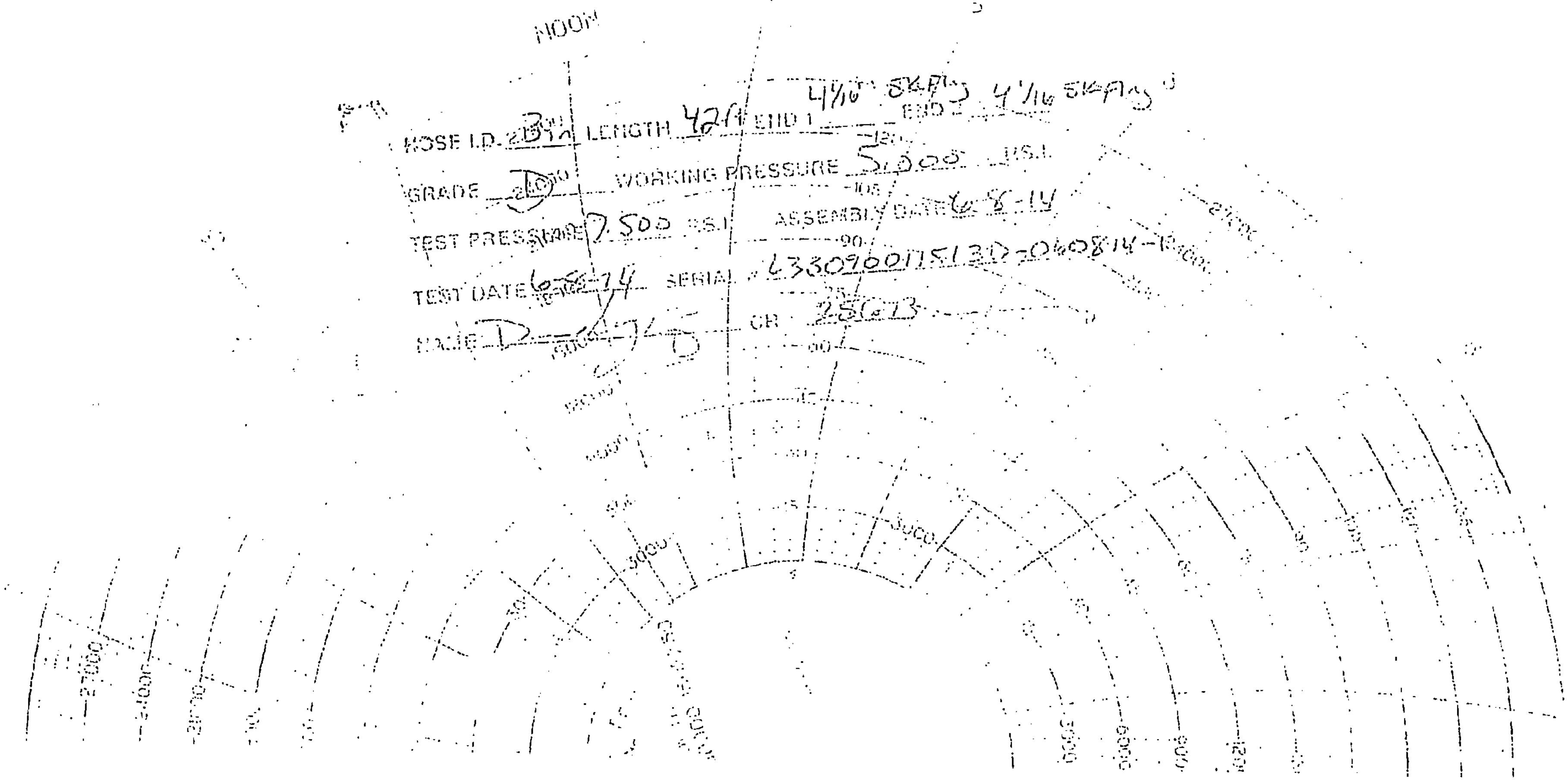
Product Description:	FD3.0-2.0R41/16.5KFLGE/E LE

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 :	


XTO
Choke Line
11-14-16
Nor Am #25



NOON
HOSE I.D. 3" LENGTH 42ft END 1 4 1/16" 5K FLG END 2 4 1/16" 5K FLG
GRADE D WORKING PRESSURE 5,000 P.S.I.
TEST PRESSURE 7,500 P.S.I. ASSEMBLY DATE 6-8-14
TEST DATE 6-8-14 SERIAL # 633090011513D-060814-1
CR 25673
3000

XTO Energy

Eddy County, NM (NAD27 NME)
Muy Wayno 18 Federal Pad
Muy Wayno 18 Federal #102H
API: 30-015-44838
OH / Pilot Hole

Plan: Plan #1 Pilot Hole 09-06-18

Standard Planning Report

06 September, 2018

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal #102H
Company:	XTO Energy	**TVD Reference:**	KB @ 3192.00usft (Patterson 793)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3192.00usft (Patterson 793)
Site:	Muy Wayno 18 Federal Pad	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal #102H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Pilot Hole		
Design:	Plan #1 Pilot Hole 09-06-18		

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

Site	Muy Wayno 18 Federal Pad				
Site Position:		**Northing:**	410,906.20 usft	**Latitude:**	32° 7' 44.571 N
From:	Map	**Easting:**	625,601.10 usft	**Longitude:**	103° 55' 39.337 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.22 °

Well	Muy Wayno 18 Federal #102H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	410,906.20 usft	**Latitude:**	32° 7' 44.571 N
	+E/-W	0.00 usft	**Easting:**	625,601.10 usft	**Longitude:**	103° 55' 39.337 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,160.00 usft

Wellbore	OH / Pilot Hole			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	09/06/18	6.98	59.90	47,720.43162153

Design	Plan #1 Pilot Hole 09-06-18				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	359.72	

Plan Survey Tool Program **Date** 09/06/18

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	11,182.46	Plan #1 Pilot Hole 09-06-18 (OH	MWD	
				MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,374.00	0.00	0.00	3,374.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,623.98	5.00	67.81	3,623.67	4.12	10.09	2.00	2.00	0.00	67.81	
7,231.15	5.00	67.81	7,217.11	122.86	301.17	0.00	0.00	0.00	0.00	
7,564.46	0.00	0.00	7,550.00	128.35	314.63	1.50	-1.50	0.00	180.00	VP(MW 18 Fed #102H
11,182.46	0.00	0.00	11,168.00	128.35	314.63	0.00	0.00	0.00	0.00	

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal #102H
Company:	XTO Energy	**TVD Reference:**	KB @ 3192.00usft (Patterson 793)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3192.00usft (Patterson 793)
Site:	Muy Wayno 18 Federal Pad	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal #102H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Pilot Hole		
Design:	Plan #1 Pilot Hole 09-06-18		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
713.00	0.00	0.00	713.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,026.00	0.00	0.00	1,026.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado (Top Salt)									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,274.00	0.00	0.00	3,274.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,374.00	0.00	0.00	3,374.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge 2°/100' Build									
3,400.00	0.52	67.81	3,400.00	0.04	0.11	0.04	2.00	2.00	0.00
3,467.02	1.86	67.81	3,467.00	0.57	1.40	0.56	2.00	2.00	0.00
Delaware (Bell Canyon)									
3,500.00	2.52	67.81	3,499.96	1.05	2.57	1.03	2.00	2.00	0.00
3,600.00	4.52	67.81	3,599.77	3.37	8.25	3.33	2.00	2.00	0.00
3,623.98	5.00	67.81	3,623.67	4.12	10.09	4.07	2.00	2.00	0.00
Begin 5° Inc Hold, 67.81° Azm									
3,700.00	5.00	67.81	3,699.39	6.62	16.23	6.54	0.00	0.00	0.00
3,800.00	5.00	67.81	3,799.01	9.91	24.30	9.79	0.00	0.00	0.00
3,900.00	5.00	67.81	3,898.63	13.20	32.37	13.04	0.00	0.00	0.00
4,000.00	5.00	67.81	3,998.25	16.50	40.43	16.30	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal #102H
Company:	XTO Energy	**TVD Reference:**	KB @ 3192.00usft (Patterson 793)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3192.00usft (Patterson 793)
Site:	Muy Wayno 18 Federal Pad	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal #102H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Pilot Hole		
Design:	Plan #1 Pilot Hole 09-06-18		

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)
4,100.00	5.00	67.81	4,097.87	19.79	48.50	19.55	0.00	0.00	0.00
4,200.00	5.00	67.81	4,197.49	23.08	56.57	22.80	0.00	0.00	0.00
4,300.00	5.00	67.81	4,297.11	26.37	64.64	26.05	0.00	0.00	0.00
4,362.13	5.00	67.81	4,359.00	28.42	69.66	28.07	0.00	0.00	0.00
Cherry Canyon									
4,400.00	5.00	67.81	4,396.73	29.66	72.71	29.31	0.00	0.00	0.00
4,500.00	5.00	67.81	4,496.35	32.95	80.78	32.56	0.00	0.00	0.00
4,600.00	5.00	67.81	4,595.97	36.25	88.85	35.81	0.00	0.00	0.00
4,700.00	5.00	67.81	4,695.59	39.54	96.92	39.06	0.00	0.00	0.00
4,800.00	5.00	67.81	4,795.21	42.83	104.99	42.32	0.00	0.00	0.00
4,900.00	5.00	67.81	4,894.83	46.12	113.06	45.57	0.00	0.00	0.00
5,000.00	5.00	67.81	4,994.45	49.41	121.13	48.82	0.00	0.00	0.00
5,100.00	5.00	67.81	5,094.07	52.71	129.20	52.07	0.00	0.00	0.00
5,200.00	5.00	67.81	5,193.69	56.00	137.27	55.33	0.00	0.00	0.00
5,300.00	5.00	67.81	5,293.31	59.29	145.34	58.58	0.00	0.00	0.00
5,400.00	5.00	67.81	5,392.93	62.58	153.41	61.83	0.00	0.00	0.00
5,500.00	5.00	67.81	5,492.55	65.87	161.48	65.08	0.00	0.00	0.00
5,600.00	5.00	67.81	5,592.16	69.16	169.55	68.34	0.00	0.00	0.00
5,700.00	5.00	67.81	5,691.78	72.46	177.61	71.59	0.00	0.00	0.00
5,800.00	5.00	67.81	5,791.40	75.75	185.68	74.84	0.00	0.00	0.00
5,900.00	5.00	67.81	5,891.02	79.04	193.75	78.09	0.00	0.00	0.00
6,000.00	5.00	67.81	5,990.64	82.33	201.82	81.34	0.00	0.00	0.00
6,002.37	5.00	67.81	5,993.00	82.41	202.01	81.42	0.00	0.00	0.00
Brushy Canyon									
6,100.00	5.00	67.81	6,090.26	85.62	209.89	84.60	0.00	0.00	0.00
6,200.00	5.00	67.81	6,189.88	88.92	217.96	87.85	0.00	0.00	0.00
6,300.00	5.00	67.81	6,289.50	92.21	226.03	91.10	0.00	0.00	0.00
6,400.00	5.00	67.81	6,389.12	95.50	234.10	94.35	0.00	0.00	0.00
6,500.00	5.00	67.81	6,488.74	98.79	242.17	97.61	0.00	0.00	0.00
6,600.00	5.00	67.81	6,588.36	102.08	250.24	100.86	0.00	0.00	0.00
6,700.00	5.00	67.81	6,687.98	105.37	258.31	104.11	0.00	0.00	0.00
6,800.00	5.00	67.81	6,787.60	108.67	266.38	107.36	0.00	0.00	0.00
6,900.00	5.00	67.81	6,887.22	111.96	274.45	110.62	0.00	0.00	0.00
7,000.00	5.00	67.81	6,986.84	115.25	282.52	113.87	0.00	0.00	0.00
7,100.00	5.00	67.81	7,086.46	118.54	290.59	117.12	0.00	0.00	0.00
7,200.00	5.00	67.81	7,186.08	121.83	298.66	120.37	0.00	0.00	0.00
7,231.15	5.00	67.81	7,217.11	122.86	301.17	121.39	0.00	0.00	0.00
Begin 1.5°/100' Drop									
7,237.06	4.91	67.81	7,223.00	123.05	301.64	121.58	1.50	-1.50	0.00
Bone Spring Lime									
7,300.00	3.97	67.81	7,285.75	124.89	306.15	123.39	1.50	-1.50	0.00
7,400.00	2.47	67.81	7,385.59	127.01	311.35	125.49	1.50	-1.50	0.00
7,500.00	0.97	67.81	7,485.54	128.14	314.12	126.61	1.50	-1.50	0.00
7,564.46	0.00	0.00	7,550.00	128.35	314.63	126.81	1.50	-1.50	0.00
Begin Vertical Hold									
7,600.00	0.00	0.00	7,585.54	128.35	314.63	126.81	0.00	0.00	0.00
7,700.00	0.00	0.00	7,685.54	128.35	314.63	126.81	0.00	0.00	0.00
7,800.00	0.00	0.00	7,785.54	128.35	314.63	126.81	0.00	0.00	0.00
7,900.00	0.00	0.00	7,885.54	128.35	314.63	126.81	0.00	0.00	0.00
8,000.00	0.00	0.00	7,985.54	128.35	314.63	126.81	0.00	0.00	0.00
8,100.00	0.00	0.00	8,085.54	128.35	314.63	126.81	0.00	0.00	0.00
8,200.00	0.00	0.00	8,185.54	128.35	314.63	126.81	0.00	0.00	0.00
8,237.46	0.00	0.00	8,223.00	128.35	314.63	126.81	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal #102H
Company:	XTO Energy	**TVD Reference:**	KB @ 3192.00usft (Patterson 793)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3192.00usft (Patterson 793)
Site:	Muy Wayno 18 Federal Pad	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal #102H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Pilot Hole		
Design:	Plan #1 Pilot Hole 09-06-18		

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)
1st Bone Spring Sand									
8,300.00	0.00	0.00	8,285.54	128.35	314.63	126.81	0.00	0.00	0.00
8,400.00	0.00	0.00	8,385.54	128.35	314.63	126.81	0.00	0.00	0.00
8,500.00	0.00	0.00	8,485.54	128.35	314.63	126.81	0.00	0.00	0.00
8,600.00	0.00	0.00	8,585.54	128.35	314.63	126.81	0.00	0.00	0.00
8,620.46	0.00	0.00	8,606.00	128.35	314.63	126.81	0.00	0.00	0.00
2nd Bone Spring Lime									
8,700.00	0.00	0.00	8,685.54	128.35	314.63	126.81	0.00	0.00	0.00
8,800.00	0.00	0.00	8,785.54	128.35	314.63	126.81	0.00	0.00	0.00
8,900.00	0.00	0.00	8,885.54	128.35	314.63	126.81	0.00	0.00	0.00
9,000.00	0.00	0.00	8,985.54	128.35	314.63	126.81	0.00	0.00	0.00
9,044.46	0.00	0.00	9,030.00	128.35	314.63	126.81	0.00	0.00	0.00
2nd Bone Spring Sand									
9,100.00	0.00	0.00	9,085.54	128.35	314.63	126.81	0.00	0.00	0.00
9,200.00	0.00	0.00	9,185.54	128.35	314.63	126.81	0.00	0.00	0.00
9,300.00	0.00	0.00	9,285.54	128.35	314.63	126.81	0.00	0.00	0.00
9,303.46	0.00	0.00	9,289.00	128.35	314.63	126.81	0.00	0.00	0.00
3rd Bone Spring Lime									
9,400.00	0.00	0.00	9,385.54	128.35	314.63	126.81	0.00	0.00	0.00
9,500.00	0.00	0.00	9,485.54	128.35	314.63	126.81	0.00	0.00	0.00
9,600.00	0.00	0.00	9,585.54	128.35	314.63	126.81	0.00	0.00	0.00
9,667.46	0.00	0.00	9,653.00	128.35	314.63	126.81	0.00	0.00	0.00
Harkey Sand									
9,700.00	0.00	0.00	9,685.54	128.35	314.63	126.81	0.00	0.00	0.00
9,800.00	0.00	0.00	9,785.54	128.35	314.63	126.81	0.00	0.00	0.00
9,900.00	0.00	0.00	9,885.54	128.35	314.63	126.81	0.00	0.00	0.00
9,923.46	0.00	0.00	9,909.00	128.35	314.63	126.81	0.00	0.00	0.00
Lower 3rd Bone Spring Lime									
9,976.46	0.00	0.00	9,962.00	128.35	314.63	126.81	0.00	0.00	0.00
Lower 3rd Bone Spring Shale									
10,000.00	0.00	0.00	9,985.54	128.35	314.63	126.81	0.00	0.00	0.00
10,100.00	0.00	0.00	10,085.54	128.35	314.63	126.81	0.00	0.00	0.00
10,124.46	0.00	0.00	10,110.00	128.35	314.63	126.81	0.00	0.00	0.00
3rd Bone Spring Sand									
10,200.00	0.00	0.00	10,185.54	128.35	314.63	126.81	0.00	0.00	0.00
10,300.00	0.00	0.00	10,285.54	128.35	314.63	126.81	0.00	0.00	0.00
10,400.00	0.00	0.00	10,385.54	128.35	314.63	126.81	0.00	0.00	0.00
10,463.46	0.00	0.00	10,449.00	128.35	314.63	126.81	0.00	0.00	0.00
3rd Bone Spring Red Hills Ss									
10,500.00	0.00	0.00	10,485.54	128.35	314.63	126.81	0.00	0.00	0.00
10,525.46	0.00	0.00	10,511.00	128.35	314.63	126.81	0.00	0.00	0.00
Wolfcamp									
10,551.46	0.00	0.00	10,537.00	128.35	314.63	126.81	0.00	0.00	0.00
Wolfcamp X									
10,600.00	0.00	0.00	10,585.54	128.35	314.63	126.81	0.00	0.00	0.00
10,611.46	0.00	0.00	10,597.00	128.35	314.63	126.81	0.00	0.00	0.00
Wolfcamp Y									
10,633.46	0.00	0.00	10,619.00	128.35	314.63	126.81	0.00	0.00	0.00
Landing Point									
10,653.46	0.00	0.00	10,639.00	128.35	314.63	126.81	0.00	0.00	0.00
Wolfcamp A									
10,700.00	0.00	0.00	10,685.54	128.35	314.63	126.81	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal #102H
Company:	XTO Energy	**TVD Reference:**	KB @ 3192.00usft (Patterson 793)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3192.00usft (Patterson 793)
Site:	Muy Wayno 18 Federal Pad	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal #102H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Pilot Hole		
Design:	Plan #1 Pilot Hole 09-06-18		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,800.00	0.00	0.00	10,785.54	128.35	314.63	126.81	0.00	0.00	0.00
10,900.00	0.00	0.00	10,885.54	128.35	314.63	126.81	0.00	0.00	0.00
11,000.00	0.00	0.00	10,985.54	128.35	314.63	126.81	0.00	0.00	0.00
11,004.46	0.00	0.00	10,990.00	128.35	314.63	126.81	0.00	0.00	0.00
Wolfcamp B									
11,100.00	0.00	0.00	11,085.54	128.35	314.63	126.81	0.00	0.00	0.00
11,182.46	0.00	0.00	11,168.00	128.35	314.63	126.81	0.00	0.00	0.00
Pilot Hole TD at 11182.46' MD, 11168' TVD									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
713.00	713.00	Rustler		0.00	359.72
1,026.00	1,026.00	Salado (Top Salt)		0.00	359.72
3,274.00	3,274.00	Base Salt		0.00	359.72
3,467.02	3,467.00	Delaware (Bell Canyon)		0.00	359.72
4,362.13	4,359.00	Cherry Canyon		0.00	359.72
6,002.37	5,993.00	Brushy Canyon		0.00	359.72
7,237.06	7,223.00	Bone Spring Lime		0.00	359.72
8,237.46	8,223.00	1st Bone Spring Sand		0.00	359.72
8,620.46	8,606.00	2nd Bone Spring Lime		0.00	359.72
9,044.46	9,030.00	2nd Bone Spring Sand		0.00	359.72
9,303.46	9,289.00	3rd Bone Spring Lime		0.00	359.72
9,667.46	9,653.00	Harkey Sand		0.00	359.72
9,923.46	9,909.00	Lower 3rd Bone Spring Lime		0.00	359.72
9,976.46	9,962.00	Lower 3rd Bone Spring Shale		0.00	359.72
10,124.46	10,110.00	3rd Bone Spring Sand		0.00	359.72
10,463.46	10,449.00	3rd Bone Spring Red Hills Ss		0.00	359.72
10,525.46	10,511.00	Wolfcamp		0.00	359.72
10,551.46	10,537.00	Wolfcamp X		0.00	359.72
10,611.46	10,597.00	Wolfcamp Y		0.00	359.72
10,633.46	10,619.00	Landing Point		0.00	359.72
10,653.46	10,639.00	Wolfcamp A		0.00	359.72
11,004.46	10,990.00	Wolfcamp B		0.00	359.72

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,374.00	3,374.00	0.00	0.00	Begin Nudge 2°/100' Build
3,623.98	3,623.67	4.12	10.09	Begin 5° Inc Hold, 67.81° Azm
7,231.15	7,217.11	122.86	301.17	Begin 1.5°/100' Drop
7,564.46	7,550.00	128.35	314.63	Begin Vertical Hold
11,182.46	11,168.00	128.35	314.63	Pilot Hole TD at 11182.46' MD, 11168' TVD

Haque, Mustafa <mhaque@blm.gov>

[EXTERNAL] FW: MUY WAYNO 18 FED 102H SUNDRY (WIS ID 435325)

Kardos, Kelly <Kelly_Kardos@xtoenergy.com> Tue, Sep 18, 2018 at 12:41 PM
To: "mhaque@blm. gov (mhaque@blm.gov)" <mhaque@blm.gov>

Haque,

Engineer confirmed that we will use HCL-80. See below ☺

Kelly K. Kardos

Regulatory Coordinator

Phone: 432-620-4374

XTO ENERGY a subsidiary of ExxonMobil

6401 Holiday Hill Road, Midland TX 79701

From: West, Terry
Sent: Tuesday, September 18, 2018 1:40 PM
To: Kardos, Kelly <Kelly_Kardos@xtoenergy.com>
Subject: RE: FW: [EXTERNAL] FW: MUY WAYNO 18 FED 102H SUNDRY (WIS ID 435325)

Kelly,

It is good to know that BLM will only use 2/3rds evacuation. I will change the worksheet for that in the future. Anyway, we will go with HCL-80.

Thanks.

Terry

From: Kardos, Kelly
Sent: Tuesday, September 18, 2018 1:28 PM
To: West, Terry <Terry_West@xtoenergy.com>
Subject: FW: FW: [EXTERNAL] FW: MUY WAYNO 18 FED 102H SUNDRY (WIS ID 435325)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Energy Inc
LEASE NO.:	NMLC065705B
WELL NAME & NO.:	Muy Wayno 18 Fed 102H
SURFACE HOLE FOOTAGE:	2310'/S & 410'/W
BOTTOM HOLE FOOTAGE	200'/N & 726'/W
LOCATION:	Section 18, T. 25 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

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

All previous COAs still apply except for the following:

A. CASING

Intermediate casing must be kept at least 1/3rd fluid filled to meet BLM minimum collapse requirements.

1. The minimum required fill of cement behind the **9 5/8** inch intermediate casing is:

   Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

   a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

   b. Second stage above DV tool:

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

Pilot hole is required to have a plug at the bottom of the hole. If two plugs are set, the BLM is to be contacted (575-361-2822) prior to tag of bottom plug, which must be a minimum of 200' in length. Operator can set one plug from bottom of pilot

hole to kick-off point and save the WOC time for tagging the first plug. Note plug tops on subsequent drilling report.

2. 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.

B. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

MHH 09172018

GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

A. CASING

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

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

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
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.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. 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.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. 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.

e. The results of the test shall be reported to the appropriate BLM office.

f. 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.

g. 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.

h. 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.