Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
NM OIL CONS
Artesia

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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065705B

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

321151
8. Well Name and No.
MUY WAYNO 18 FEDERAL 901H

2. Name of Operator
XTO ENERGY INC
Contact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com

9. API Well No.
30-015-44846

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
BONE SPRING

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 18 T25S R30E Mer NMP NWSW 2310FSL 380FWL

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	
	☐ 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. Change name from Muy Wayno 18 Federal 901H to Muy Wayno 18 Federal 103H. 321151
2. Change target from Pierce Crossing; Bone Spring, East to Purple Sage; Wolfcamp.
3. Change SHL fr/2310'FSL & 380'FWL to 2310'FSL & 1145'FWL. No surface disturbance will occur with this change
4. Change BHL fr/200'FNL & 330'FWL to 200'FNL & 1518'FWL
5. Drilling Program
6. Directional Program

Surface good 11-5-2018 BR

Attachments:
C102 & Supplement

Engineering Cond. See attached COA. ZS 11/5/18

NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 14 2018
RECEIVED

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #441721 verified by the BLM Well Information System
For XTO ENERGY INC, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 10/30/2018 ()

Name *(Printed/Typed)* KELLY KARDOS — Title REGULATORY COORDINATOR

Signature (Electronic Submission) — Date 10/30/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Cody Layton — Title PETM-C&M — Date 11/05/2018

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 ****

RVP 11-16-18

Additional data for EC transaction #441721 that would not fit on the form

32. Additional remarks, continued

GCP
Drilling Program
Directional Survey
BOP/CM/FH

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

XTO Energy Inc.
Muy Wayno Federal 18 103H
Projected TD: 18408' MD / 10653' TVD
SHL: 2310' FSL & 1145' FWL , Section 18, T25S, R30E
BHL: 200' FNL & 1518' FWL , Section 7, T25S, R30E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Permian

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	720'	Water
Top of Salt	1035'	Water
Base of Salt	3307'	Water
Delaware	3490'	Water
Bone Spring	7218'	Water/Oil/Gas
1st Bone Spring Ss	8242'	Water/Oil/Gas
2nd Bone Spring Ss	9048'	Water/Oil/Gas
3rd Bone Spring Ss	10140'	Water/Oil/Gas
Wolfcamp	10542'	Water/Oil/Gas
Target/Land Curve	10653'	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 @ 840' (195' above the salt) and circulating cement back to surface. The salt will be isolated by setting 9-5/8 inch casing at 3340' and circulating cement to surface. An 8-3/4 inch vertical and curve hole will be drilled and 7 inch casing run and cemented 500' into the 9-5/8 inch casing. A 6 inch curve and lateral hole will be drilled to MD/TD and 4-1/2 inch liner will be set at TD and cemented back 250' into the 7 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' – 840'	13-3/8"	54.5	BTC	J-55	New	2.63	2.94	21.16
12-1/4"	0' – 3340'	9-5/8"	40	BTC	J-55	New	1.42	2.45	5.24
8-3/4"	0' – 10700'	7"	32	BTC	P-110	New	1.31	2.10	2.89
6"	10096' – 18408'	4-1/2"	13.5	BTC	P-110	New	1.31	2.82	2.30

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 9-5/8" & 4-1/2" Collapse analyzed using 50% evacuation based on regional experience.
- 4-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

A. Starting Head (RSH System): 13-3/8" SOW bottom x 13-5/8" 3M top flange
B. Tubing Head: 13-5/8" 5M 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 to per Onshore Order 2.
   - Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, BTC casing to be set at +/- 840'

Lead: 400 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

Intermediate Casing: 9-5/8", 40 New J-55, BTC casing to be set at +/- 3340'

Lead: 940 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 230 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Intermediate Casing: 7", 32 New P-110, BTC casing to be set at +/- 10700'

Lead: 970 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 60 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Production Casing: 4-1/2", 13.5 New P-110, BTC casing to be set at +/- 18408'

Tail: 700 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft3/sx, 8.38 gal/sx water)
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M Double Ram BOP. MASP should not exceed 3750 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" 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When the 9-5/8" and 7" casing is set, the packoff seals will be tested to a minimum of 5000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 5M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

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

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' to 840'	17-1/2"	FW/Native	8.4-8.8	35-40	NC
840' to 3340'	12-1/4"	Brine/Gel Sweeps	9.8-10.2	30-32	NC
3340' to 10700'	8-3/4"	FW / Cut Brine	8.6-9.5	29-32	NC - 20
10700' to 18408'	6-1/8"	FW / Cut Brine / Polymer	10.7-11	32-50	20-Aug

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 brine solution. A 9.8ppg-10.2ppg brine mud will be used while drilling through the salt formation. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

7. Auxiliary Well Control and Monitoring Equipment

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

8. Logging, Coring and Testing Program

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

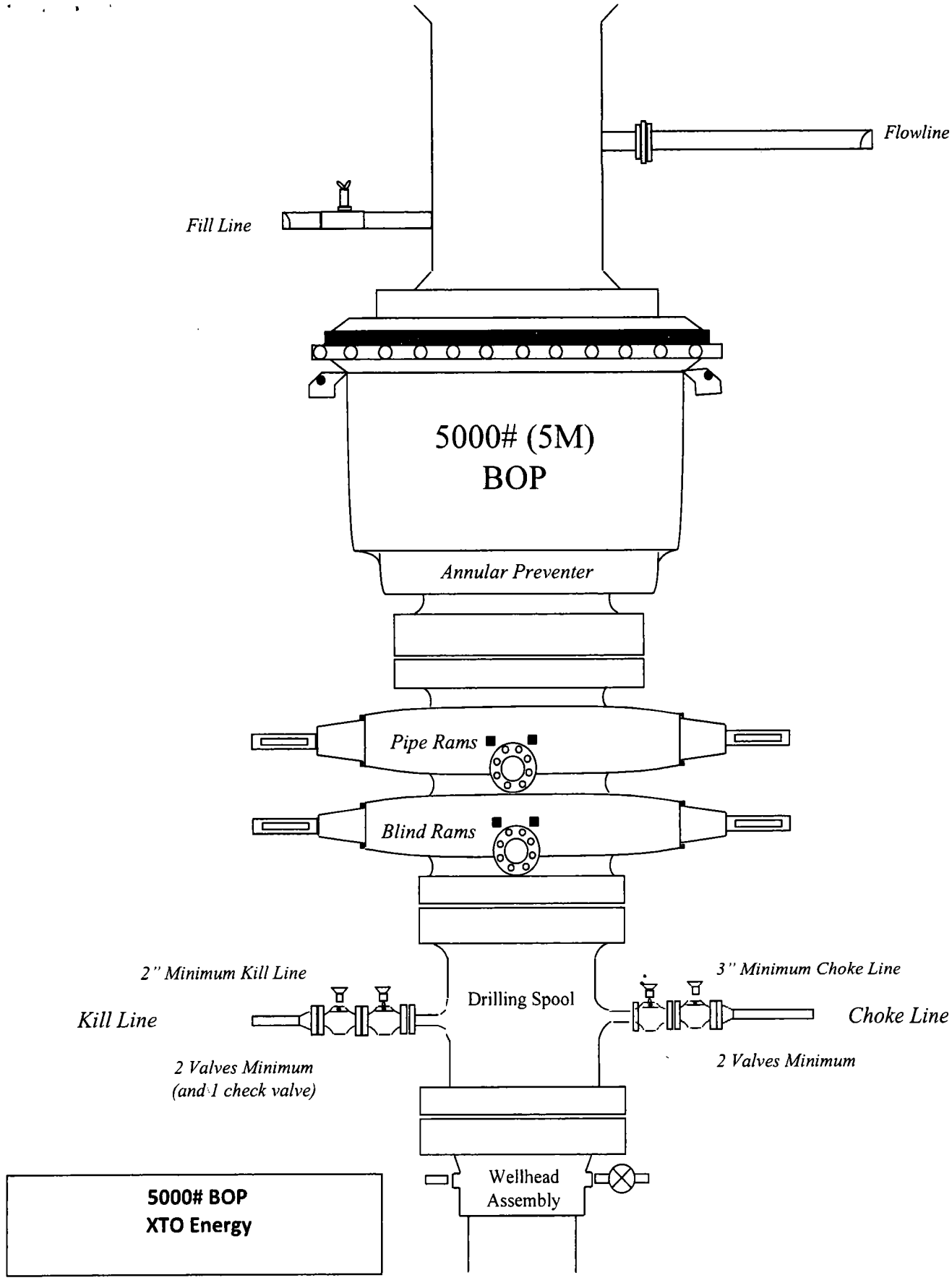
Open hole logging will not be done on this well.

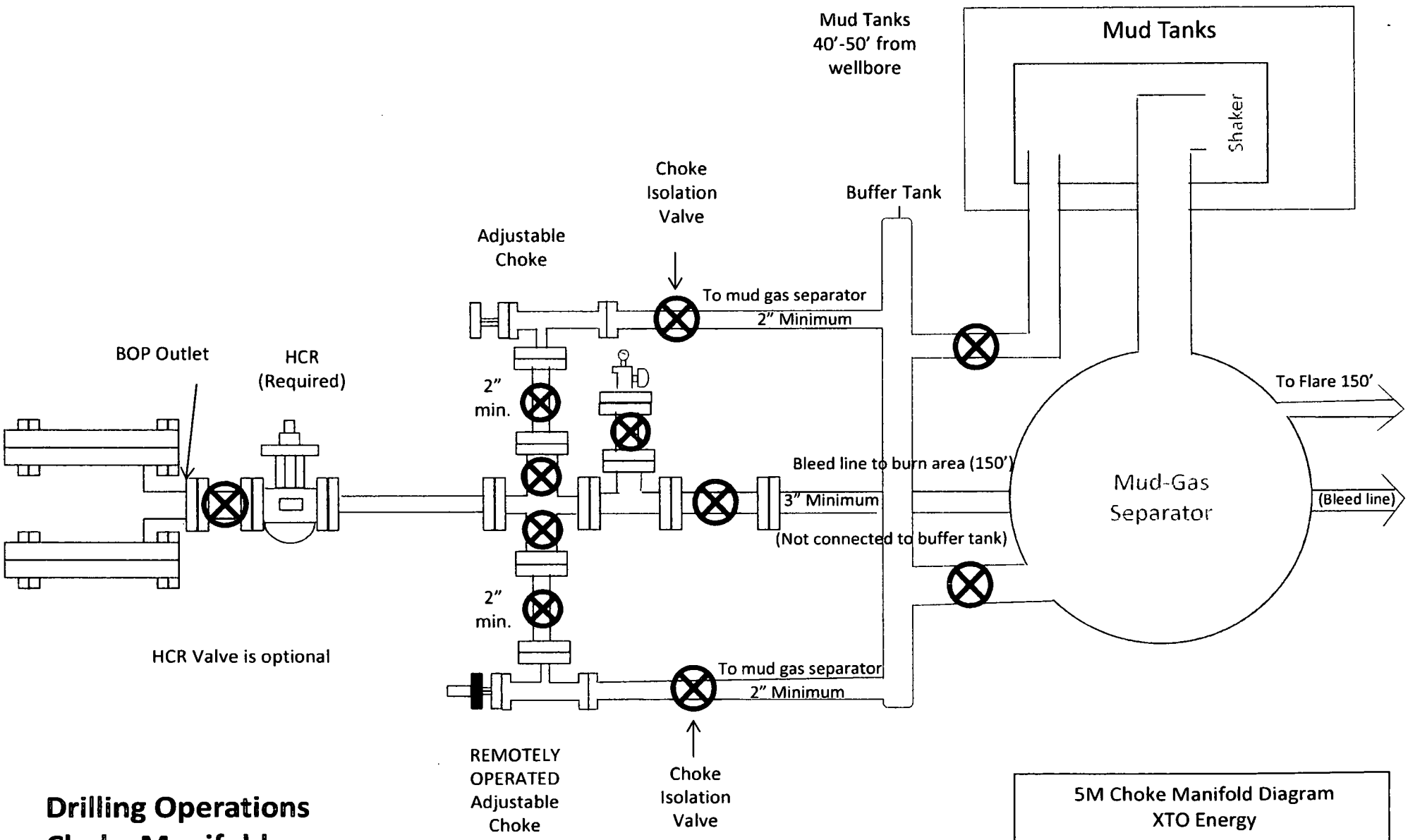
9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 145 to 165 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 6094 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.


Flowline
Fill Line
5000# (5M)
BOP
Annular Preventer
Pipe Rams
Blind Rams
2" Minimum Kill Line
3" Minimum Choke Line
Kill Line
Drilling Spool
Choke Line
2 Valves Minimum
(and 1 check valve)
2 Valves Minimum
Wellhead
Assembly
5000# BOP
XTO Energy



Drilling Operations
Choke Manifold
5M Service

5M Choke Manifold Diagram
XTO Energy

Company: XTO Energy
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 103H
Project: Eddy County, New Mexico (NAD 27)
Rig: Patterson 225

MS Directional

T G M

Azimuths to Grid North
True North: -0.22°
Magnetic North: 6.82°

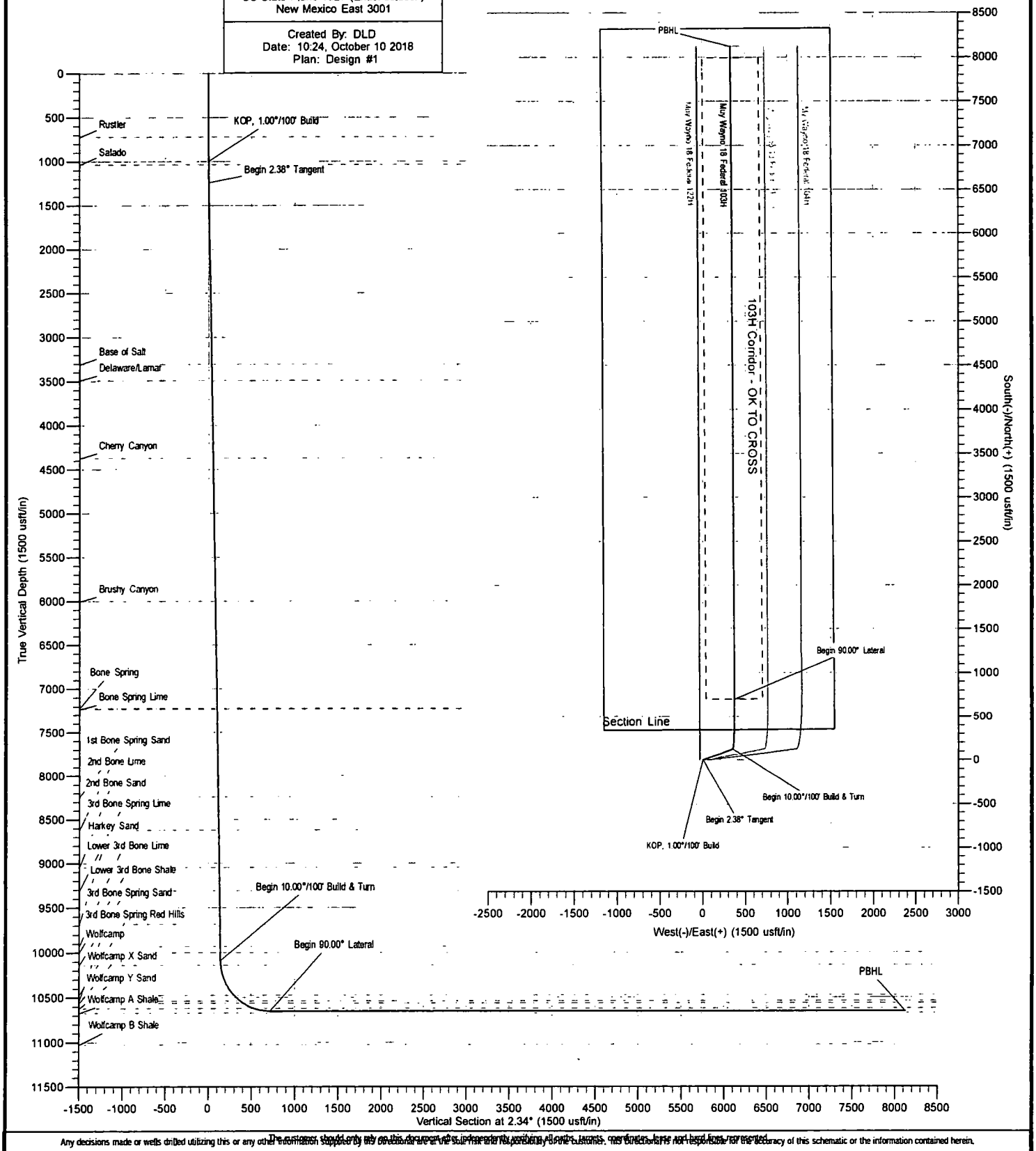
Magnetic Field
Strength: 47741.3nT
Dip Angle: 59.84°
Date: 11/16/2018
Model: BGGM2018

US State Plane 1927 (Exact solution)
New Mexico East 3001

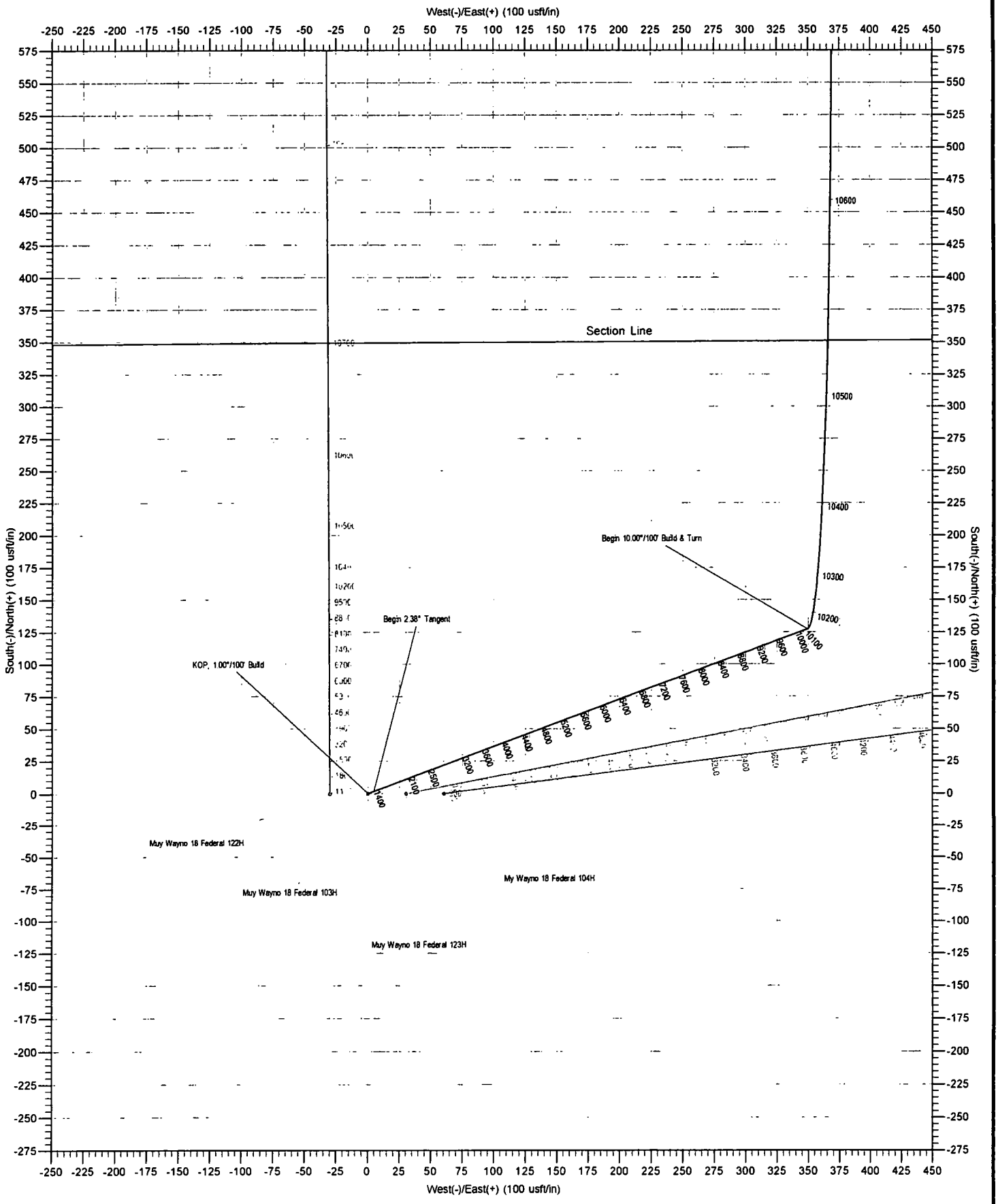
Created By: DLD
Date: 10:24, October 10 2018
Plan: Design #1

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	KOP, 1.00°/100' Build
1237.65	2.38	69.98	1237.58	1.69	4.63	1.88	4.93	Begin 2.38° Tangent
10096.18	2.38	69.98	10088.49	127.47	349.74	141.66	372.25	Begin 10.00°/100' Build & Turn
10988.16	90.00	359.72	10653.00	700.47	368.97	714.98	946.86	Begin 90.00° Lateral
18408.37	90.00	359.72	10653.00	8120.59	332.41	8127.39	8367.07	PBHL



Company: XTO Energy
Site: Muy Wayno 18 Federal
Well: Muy Wayno 18 Federal 103H
Project: Eddy County, New Mexico (NAD 27)
Rig: Patterson 225



XTO Energy

Eddy County, New Mexico (NAD 27)
Muy Wayno 18 Federal
Muy Wayno 18 Federal 103H

Wellbore #1

Plan: Design #1

Standard Planning Report

10 October, 2018

MS Directional

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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

Site	Muy Wayno 18 Federal				
Site Position:		**Northing:**	410,909.90 usft	**Latitude:**	32° 7' 44.581 N
From:	Map	**Easting:**	626,306.10 usft	**Longitude:**	103° 55' 31.139 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "		

Well	Muy Wayno 18 Federal 103H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	410,910.17 usft	**Latitude:**	32° 7' 44.583 N
	+E/-W	0.00 usft	**Easting:**	626,335.58 usft	**Longitude:**	103° 55' 30.796 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,165.00 usft
Grid Convergence:		0.217 °				

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	BGGM2018	11/16/2018	7.036	59.840	47,741.34

Design	Design #1				
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	2.34	

Plan Survey Tool Program **Date** 10/10/2018

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,408.37	Design #1 (Wellbore #1)	MWD OWSG 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	0.000	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,237.65	2.38	69.98	1,237.58	1.69	4.63	1.00	1.00	0.00	69.975	
10,096.18	2.38	69.98	10,088.50	127.47	349.74	0.00	0.00	0.00	0.000	
10,988.16	90.00	359.72	10,653.00	700.47	368.97	10.00	9.82	-7.88	-70.273	FTP - Muy Wayno 1
18,408.37	90.00	359.72	10,653.00	8,120.59	332.41	0.00	0.00	0.00	0.000	PBHL - Muy Wayno

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
720.00	0.00	0.00	720.00	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
KOP, 1.00°/100' Build									
1,035.00	0.35	69.98	1,035.00	0.04	0.10	0.04	1.00	1.00	0.00
Salado									
1,100.00	1.00	69.98	1,099.99	0.30	0.82	0.33	1.00	1.00	0.00
1,200.00	2.00	69.98	1,199.96	1.20	3.28	1.33	1.00	1.00	0.00
1,237.65	2.38	69.98	1,237.58	1.69	4.63	1.88	1.00	1.00	0.00
Begin 2.38° Tangent									
1,300.00	2.38	69.98	1,299.88	2.57	7.06	2.86	0.00	0.00	0.00
1,400.00	2.38	69.98	1,399.79	3.99	10.95	4.44	0.00	0.00	0.00
1,500.00	2.38	69.98	1,499.71	5.41	14.85	6.02	0.00	0.00	0.00
1,600.00	2.38	69.98	1,599.62	6.83	18.75	7.59	0.00	0.00	0.00
1,700.00	2.38	69.98	1,699.53	8.25	22.64	9.17	0.00	0.00	0.00
1,800.00	2.38	69.98	1,799.45	9.67	26.54	10.75	0.00	0.00	0.00
1,900.00	2.38	69.98	1,899.36	11.09	30.43	12.33	0.00	0.00	0.00
2,000.00	2.38	69.98	1,999.28	12.51	34.33	13.91	0.00	0.00	0.00
2,100.00	2.38	69.98	2,099.19	13.93	38.23	15.48	0.00	0.00	0.00
2,200.00	2.38	69.98	2,199.10	15.35	42.12	17.06	0.00	0.00	0.00
2,300.00	2.38	69.98	2,299.02	16.77	46.02	18.64	0.00	0.00	0.00
2,400.00	2.38	69.98	2,398.93	18.19	49.91	20.22	0.00	0.00	0.00
2,500.00	2.38	69.98	2,498.85	19.61	53.81	21.80	0.00	0.00	0.00
2,600.00	2.38	69.98	2,598.76	21.03	57.70	23.37	0.00	0.00	0.00
2,700.00	2.38	69.98	2,698.67	22.45	61.60	24.95	0.00	0.00	0.00
2,800.00	2.38	69.98	2,798.59	23.87	65.50	26.53	0.00	0.00	0.00
2,900.00	2.38	69.98	2,898.50	25.29	69.39	28.11	0.00	0.00	0.00
3,000.00	2.38	69.98	2,998.42	26.71	73.29	29.69	0.00	0.00	0.00
3,100.00	2.38	69.98	3,098.33	28.13	77.18	31.26	0.00	0.00	0.00
3,200.00	2.38	69.98	3,198.24	29.55	81.08	32.84	0.00	0.00	0.00
3,300.00	2.38	69.98	3,298.16	30.97	84.98	34.42	0.00	0.00	0.00
3,308.85	2.38	69.98	3,307.00	31.10	85.32	34.56	0.00	0.00	0.00
Base of Salt									
3,400.00	2.38	69.98	3,398.07	32.39	88.87	36.00	0.00	0.00	0.00
3,492.01	2.38	69.98	3,490.00	33.70	92.46	37.45	0.00	0.00	0.00
Delaware/Lamar									
3,500.00	2.38	69.98	3,497.99	33.81	92.77	37.58	0.00	0.00	0.00
3,600.00	2.38	69.98	3,597.90	35.23	96.66	39.15	0.00	0.00	0.00
3,700.00	2.38	69.98	3,697.81	36.65	100.56	40.73	0.00	0.00	0.00
3,800.00	2.38	69.98	3,797.73	38.07	104.45	42.31	0.00	0.00	0.00
3,900.00	2.38	69.98	3,897.64	39.49	108.35	43.89	0.00	0.00	0.00
4,000.00	2.38	69.98	3,997.56	40.91	112.25	45.47	0.00	0.00	0.00
4,100.00	2.38	69.98	4,097.47	42.33	116.14	47.04	0.00	0.00	0.00

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,200.00	2.38	69.98	4,197.38	43.75	120.04	48.62	0.00	0.00	0.00
4,300.00	2.38	69.98	4,297.30	45.17	123.93	50.20	0.00	0.00	0.00
4,373.77	2.38	69.98	4,371.00	46.22	126.81	51.36	0.00	0.00	0.00
Cherry Canyon									
4,400.00	2.38	69.98	4,397.21	46.59	127.83	51.78	0.00	0.00	0.00
4,500.00	2.38	69.98	4,497.13	48.01	131.73	53.36	0.00	0.00	0.00
4,600.00	2.38	69.98	4,597.04	49.43	135.62	54.93	0.00	0.00	0.00
4,700.00	2.38	69.98	4,696.95	50.85	139.52	56.51	0.00	0.00	0.00
4,800.00	2.38	69.98	4,796.87	52.27	143.41	58.09	0.00	0.00	0.00
4,900.00	2.38	69.98	4,896.78	53.69	147.31	59.67	0.00	0.00	0.00
5,000.00	2.38	69.98	4,996.70	55.11	151.20	61.25	0.00	0.00	0.00
5,100.00	2.38	69.98	5,096.61	56.53	155.10	62.82	0.00	0.00	0.00
5,200.00	2.38	69.98	5,196.52	57.95	159.00	64.40	0.00	0.00	0.00
5,300.00	2.38	69.98	5,296.44	59.37	162.89	65.98	0.00	0.00	0.00
5,400.00	2.38	69.98	5,396.35	60.79	166.79	67.56	0.00	0.00	0.00
5,500.00	2.38	69.98	5,496.27	62.21	170.68	69.14	0.00	0.00	0.00
5,600.00	2.38	69.98	5,596.18	63.63	174.58	70.71	0.00	0.00	0.00
5,700.00	2.38	69.98	5,696.09	65.05	178.48	72.29	0.00	0.00	0.00
5,800.00	2.38	69.98	5,796.01	66.47	182.37	73.87	0.00	0.00	0.00
5,900.00	2.38	69.98	5,895.92	67.89	186.27	75.45	0.00	0.00	0.00
6,000.00	2.38	69.98	5,995.84	69.31	190.16	77.03	0.00	0.00	0.00
6,009.17	2.38	69.98	6,005.00	69.44	190.52	77.17	0.00	0.00	0.00
Brushy Canyon									
6,100.00	2.38	69.98	6,095.75	70.73	194.06	78.60	0.00	0.00	0.00
6,200.00	2.38	69.98	6,195.66	72.15	197.95	80.18	0.00	0.00	0.00
6,300.00	2.38	69.98	6,295.58	73.57	201.85	81.76	0.00	0.00	0.00
6,400.00	2.38	69.98	6,395.49	74.99	205.75	83.34	0.00	0.00	0.00
6,500.00	2.38	69.98	6,495.41	76.41	209.64	84.92	0.00	0.00	0.00
6,600.00	2.38	69.98	6,595.32	77.83	213.54	86.49	0.00	0.00	0.00
6,700.00	2.38	69.98	6,695.23	79.25	217.43	88.07	0.00	0.00	0.00
6,800.00	2.38	69.98	6,795.15	80.67	221.33	89.65	0.00	0.00	0.00
6,900.00	2.38	69.98	6,895.06	82.09	225.23	91.23	0.00	0.00	0.00
7,000.00	2.38	69.98	6,994.98	83.51	229.12	92.81	0.00	0.00	0.00
7,100.00	2.38	69.98	7,094.89	84.92	233.02	94.38	0.00	0.00	0.00
7,200.00	2.38	69.98	7,194.80	86.34	236.91	95.96	0.00	0.00	0.00
7,223.22	2.38	69.98	7,218.00	86.67	237.82	96.33	0.00	0.00	0.00
Bone Spring									
7,236.23	2.38	69.98	7,231.00	86.86	238.32	96.53	0.00	0.00	0.00
Bone Spring Lime									
7,300.00	2.38	69.98	7,294.72	87.76	240.81	97.54	0.00	0.00	0.00
7,400.00	2.38	69.98	7,394.63	89.18	244.70	99.12	0.00	0.00	0.00
7,500.00	2.38	69.98	7,494.55	90.60	248.60	100.70	0.00	0.00	0.00
7,600.00	2.38	69.98	7,594.46	92.02	252.50	102.27	0.00	0.00	0.00
7,700.00	2.38	69.98	7,694.37	93.44	256.39	103.85	0.00	0.00	0.00
7,800.00	2.38	69.98	7,794.29	94.86	260.29	105.43	0.00	0.00	0.00
7,900.00	2.38	69.98	7,894.20	96.28	264.18	107.01	0.00	0.00	0.00
8,000.00	2.38	69.98	7,994.12	97.70	268.08	108.59	0.00	0.00	0.00
8,100.00	2.38	69.98	8,094.03	99.12	271.97	110.16	0.00	0.00	0.00
8,200.00	2.38	69.98	8,193.94	100.54	275.87	111.74	0.00	0.00	0.00
8,248.10	2.38	69.98	8,242.00	101.23	277.74	112.50	0.00	0.00	0.00
1st Bone Spring Sand									
8,300.00	2.38	69.98	8,293.86	101.96	279.77	113.32	0.00	0.00	0.00
8,400.00	2.38	69.98	8,393.77	103.38	283.66	114.90	0.00	0.00	0.00

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,500.00	2.38	69.98	8,493.69	104.80	287.56	116.48	0.00	0.00	0.00
8,600.00	2.38	69.98	8,593.60	106.22	291.45	118.05	0.00	0.00	0.00
8,627.42	2.38	69.98	8,621.00	106.61	292.52	118.49	0.00	0.00	0.00
2nd Bone Lime									
8,700.00	2.38	69.98	8,693.51	107.64	295.35	119.63	0.00	0.00	0.00
8,800.00	2.38	69.98	8,793.43	109.06	299.25	121.21	0.00	0.00	0.00
8,900.00	2.38	69.98	8,893.34	110.48	303.14	122.79	0.00	0.00	0.00
9,000.00	2.38	69.98	8,993.26	111.90	307.04	124.37	0.00	0.00	0.00
9,053.79	2.38	69.98	9,047.00	112.67	309.13	125.22	0.00	0.00	0.00
2nd Bone Sand									
9,100.00	2.38	69.98	9,093.17	113.32	310.93	125.94	0.00	0.00	0.00
9,200.00	2.38	69.98	9,193.08	114.74	314.83	127.52	0.00	0.00	0.00
9,300.00	2.38	69.98	9,293.00	116.16	318.72	129.10	0.00	0.00	0.00
9,320.02	2.38	69.98	9,313.00	116.45	319.50	129.42	0.00	0.00	0.00
3rd Bone Spring Lime									
9,400.00	2.38	69.98	9,392.91	117.58	322.62	130.68	0.00	0.00	0.00
9,500.00	2.38	69.98	9,492.83	119.00	326.52	132.26	0.00	0.00	0.00
9,600.00	2.38	69.98	9,592.74	120.42	330.41	133.83	0.00	0.00	0.00
9,694.34	2.38	69.98	9,687.00	121.76	334.09	135.32	0.00	0.00	0.00
Harkey Sand									
9,700.00	2.38	69.98	9,692.65	121.84	334.31	135.41	0.00	0.00	0.00
9,800.00	2.38	69.98	9,792.57	123.26	338.20	136.99	0.00	0.00	0.00
9,900.00	2.38	69.98	9,892.48	124.68	342.10	138.57	0.00	0.00	0.00
9,941.55	2.38	69.98	9,934.00	125.27	343.72	139.22	0.00	0.00	0.00
Lower 3rd Bone Lime									
10,000.00	2.38	69.98	9,992.40	126.10	346.00	140.15	0.00	0.00	0.00
10,007.61	2.38	69.98	10,000.00	126.21	346.29	140.27	0.00	0.00	0.00
Lower 3rd Bone Shale									
10,096.18	2.38	69.98	10,088.49	127.47	349.74	141.66	0.00	0.00	0.00
Begin 10.00°/100' Build & Turn									
10,100.00	2.53	61.81	10,092.31	127.53	349.89	141.74	9.99	4.04	-213.64
10,147.83	6.37	20.19	10,140.00	130.53	351.74	144.80	10.00	8.03	-87.01
3rd Bone Spring Sand									
10,200.00	11.40	10.88	10,191.53	138.31	353.71	152.66	10.00	9.64	-17.84
10,300.00	21.30	5.47	10,287.37	166.17	357.32	180.64	10.00	9.89	-5.42
10,400.00	31.26	3.41	10,376.92	210.25	360.60	224.83	10.00	9.96	-2.06
10,500.00	41.23	2.27	10,457.47	269.23	363.46	283.87	10.00	9.98	-1.14
10,525.13	43.74	2.06	10,476.00	286.19	364.10	300.84	10.00	9.98	-0.86
3rd Bone Spring Red Hills									
10,600.00	51.22	1.52	10,526.57	341.31	365.80	355.98	10.00	9.99	-0.72
10,623.66	53.58	1.37	10,541.00	360.05	366.27	374.72	10.00	9.99	-0.62
Wolfcamp									
10,660.68	57.28	1.16	10,562.00	390.51	366.94	405.20	10.00	9.99	-0.58
Wolfcamp X Sand									
10,700.00	61.21	0.95	10,582.11	424.30	367.56	438.97	10.00	9.99	-0.53
10,800.00	71.20	0.48	10,622.40	515.67	368.69	530.32	10.00	9.99	-0.47
10,805.02	71.70	0.46	10,624.00	520.43	368.72	535.07	10.00	9.99	-0.43
Wolfcamp Y Sand									
10,900.00	81.19	0.06	10,646.24	612.66	369.14	627.24	10.00	9.99	-0.41
10,988.16	90.00	359.72	10,653.00	700.47	368.97	714.98	10.00	9.99	-0.39
Begin 90.00° Lateral									
11,000.00	90.00	359.72	10,653.00	712.31	368.91	726.80	0.00	0.00	0.00
11,100.00	90.00	359.72	10,653.00	812.31	368.42	826.70	0.00	0.00	0.00

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,200.00	90.00	359.72	10,653.00	912.31	367.93	926.59	0.00	0.00	0.00
11,300.00	90.00	359.72	10,653.00	1,012.31	367.43	1,026.49	0.00	0.00	0.00
11,400.00	90.00	359.72	10,653.00	1,112.31	366.94	1,126.38	0.00	0.00	0.00
11,500.00	90.00	359.72	10,653.00	1,212.30	366.45	1,226.28	0.00	0.00	0.00
11,600.00	90.00	359.72	10,653.00	1,312.30	365.96	1,326.17	0.00	0.00	0.00
11,700.00	90.00	359.72	10,653.00	1,412.30	365.46	1,426.07	0.00	0.00	0.00
11,800.00	90.00	359.72	10,653.00	1,512.30	364.97	1,525.96	0.00	0.00	0.00
11,900.00	90.00	359.72	10,653.00	1,612.30	364.48	1,625.86	0.00	0.00	0.00
12,000.00	90.00	359.72	10,653.00	1,712.30	363.98	1,725.75	0.00	0.00	0.00
12,100.00	90.00	359.72	10,653.00	1,812.30	363.49	1,825.65	0.00	0.00	0.00
12,200.00	90.00	359.72	10,653.00	1,912.30	363.00	1,925.54	0.00	0.00	0.00
12,300.00	90.00	359.72	10,653.00	2,012.29	362.51	2,025.44	0.00	0.00	0.00
12,400.00	90.00	359.72	10,653.00	2,112.29	362.01	2,125.33	0.00	0.00	0.00
12,500.00	90.00	359.72	10,653.00	2,212.29	361.52	2,225.23	0.00	0.00	0.00
12,600.00	90.00	359.72	10,653.00	2,312.29	361.03	2,325.12	0.00	0.00	0.00
12,700.00	90.00	359.72	10,653.00	2,412.29	360.54	2,425.02	0.00	0.00	0.00
12,800.00	90.00	359.72	10,653.00	2,512.29	360.04	2,524.91	0.00	0.00	0.00
12,900.00	90.00	359.72	10,653.00	2,612.29	359.55	2,624.81	0.00	0.00	0.00
13,000.00	90.00	359.72	10,653.00	2,712.29	359.06	2,724.70	0.00	0.00	0.00
13,100.00	90.00	359.72	10,653.00	2,812.29	358.56	2,824.60	0.00	0.00	0.00
13,200.00	90.00	359.72	10,653.00	2,912.28	358.07	2,924.49	0.00	0.00	0.00
13,300.00	90.00	359.72	10,653.00	3,012.28	357.58	3,024.39	0.00	0.00	0.00
13,400.00	90.00	359.72	10,653.00	3,112.28	357.09	3,124.28	0.00	0.00	0.00
13,500.00	90.00	359.72	10,653.00	3,212.28	356.59	3,224.18	0.00	0.00	0.00
13,600.00	90.00	359.72	10,653.00	3,312.28	356.10	3,324.07	0.00	0.00	0.00
13,700.00	90.00	359.72	10,653.00	3,412.28	355.61	3,423.97	0.00	0.00	0.00
13,800.00	90.00	359.72	10,653.00	3,512.28	355.12	3,523.86	0.00	0.00	0.00
13,900.00	90.00	359.72	10,653.00	3,612.28	354.62	3,623.76	0.00	0.00	0.00
14,000.00	90.00	359.72	10,653.00	3,712.27	354.13	3,723.65	0.00	0.00	0.00
14,100.00	90.00	359.72	10,653.00	3,812.27	353.64	3,823.55	0.00	0.00	0.00
14,200.00	90.00	359.72	10,653.00	3,912.27	353.14	3,923.44	0.00	0.00	0.00
14,300.00	90.00	359.72	10,653.00	4,012.27	352.65	4,023.34	0.00	0.00	0.00
14,400.00	90.00	359.72	10,653.00	4,112.27	352.16	4,123.23	0.00	0.00	0.00
14,500.00	90.00	359.72	10,653.00	4,212.27	351.67	4,223.13	0.00	0.00	0.00
14,600.00	90.00	359.72	10,653.00	4,312.27	351.17	4,323.02	0.00	0.00	0.00
14,700.00	90.00	359.72	10,653.00	4,412.27	350.68	4,422.92	0.00	0.00	0.00
14,800.00	90.00	359.72	10,653.00	4,512.26	350.19	4,522.81	0.00	0.00	0.00
14,900.00	90.00	359.72	10,653.00	4,612.26	349.70	4,622.71	0.00	0.00	0.00
15,000.00	90.00	359.72	10,653.00	4,712.26	349.20	4,722.60	0.00	0.00	0.00
15,100.00	90.00	359.72	10,653.00	4,812.26	348.71	4,822.50	0.00	0.00	0.00
15,200.00	90.00	359.72	10,653.00	4,912.26	348.22	4,922.39	0.00	0.00	0.00
15,300.00	90.00	359.72	10,653.00	5,012.26	347.73	5,022.29	0.00	0.00	0.00
15,400.00	90.00	359.72	10,653.00	5,112.26	347.23	5,122.18	0.00	0.00	0.00
15,500.00	90.00	359.72	10,653.00	5,212.26	346.74	5,222.08	0.00	0.00	0.00
15,600.00	90.00	359.72	10,653.00	5,312.25	346.25	5,321.97	0.00	0.00	0.00
15,700.00	90.00	359.72	10,653.00	5,412.25	345.75	5,421.87	0.00	0.00	0.00
15,800.00	90.00	359.72	10,653.00	5,512.25	345.26	5,521.76	0.00	0.00	0.00
15,900.00	90.00	359.72	10,653.00	5,612.25	344.77	5,621.66	0.00	0.00	0.00
16,000.00	90.00	359.72	10,653.00	5,712.25	344.28	5,721.55	0.00	0.00	0.00
16,100.00	90.00	359.72	10,653.00	5,812.25	343.78	5,821.45	0.00	0.00	0.00
16,200.00	90.00	359.72	10,653.00	5,912.25	343.29	5,921.34	0.00	0.00	0.00
16,300.00	90.00	359.72	10,653.00	6,012.25	342.80	6,021.24	0.00	0.00	0.00
16,400.00	90.00	359.72	10,653.00	6,112.25	342.31	6,121.13	0.00	0.00	0.00
16,500.00	90.00	359.72	10,653.00	6,212.24	341.81	6,221.03	0.00	0.00	0.00

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,600.00	90.00	359.72	10,653.00	6,312.24	341.32	6,320.92	0.00	0.00	0.00
16,700.00	90.00	359.72	10,653.00	6,412.24	340.83	6,420.82	0.00	0.00	0.00
16,800.00	90.00	359.72	10,653.00	6,512.24	340.33	6,520.71	0.00	0.00	0.00
16,900.00	90.00	359.72	10,653.00	6,612.24	339.84	6,620.61	0.00	0.00	0.00
17,000.00	90.00	359.72	10,653.00	6,712.24	339.35	6,720.50	0.00	0.00	0.00
17,100.00	90.00	359.72	10,653.00	6,812.24	338.86	6,820.40	0.00	0.00	0.00
17,200.00	90.00	359.72	10,653.00	6,912.24	338.36	6,920.29	0.00	0.00	0.00
17,300.00	90.00	359.72	10,653.00	7,012.23	337.87	7,020.19	0.00	0.00	0.00
17,400.00	90.00	359.72	10,653.00	7,112.23	337.38	7,120.08	0.00	0.00	0.00
17,500.00	90.00	359.72	10,653.00	7,212.23	336.89	7,219.98	0.00	0.00	0.00
17,600.00	90.00	359.72	10,653.00	7,312.23	336.39	7,319.87	0.00	0.00	0.00
17,700.00	90.00	359.72	10,653.00	7,412.23	335.90	7,419.77	0.00	0.00	0.00
17,800.00	90.00	359.72	10,653.00	7,512.23	335.41	7,519.66	0.00	0.00	0.00
17,900.00	90.00	359.72	10,653.00	7,612.23	334.91	7,619.56	0.00	0.00	0.00
18,000.00	90.00	359.72	10,653.00	7,712.23	334.42	7,719.45	0.00	0.00	0.00
18,100.00	90.00	359.72	10,653.00	7,812.22	333.93	7,819.35	0.00	0.00	0.00
18,200.00	90.00	359.72	10,653.00	7,912.22	333.44	7,919.24	0.00	0.00	0.00
18,300.00	90.00	359.72	10,653.00	8,012.22	332.94	8,019.14	0.00	0.00	0.00
18,400.00	90.00	359.72	10,653.00	8,112.22	332.45	8,119.03	0.00	0.00	0.00
18,408.37	90.00	359.72	10,653.00	8,120.59	332.41	8,127.39	0.00	0.00	0.00
PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LTP - Muy Wayno 18 I	0.00	0.00	10,653.00	7,990.60	333.13	418,900.77	626,668.71	32° 9' 3.647 N	103° 55' 26.569 W
- plan misses target center by 0.08usft at 18278.38usft MD (10653.00 TVD, 7990.60 N, 333.05 E)									
- Point									
PBHL - Muy Wayno 1i	0.00	0.00	10,653.00	8,120.59	332.41	419,030.76	626,667.99	32° 9' 4.934 N	103° 55' 26.571 W
- plan hits target center									
- Point									
FTP - Muy Wayno 18	0.00	0.00	10,653.00	700.47	368.97	411,610.64	626,704.55	32° 7' 51.501 N	103° 55' 26.474 W
- plan hits target center									
- Point									

Database:	EDM 5000.15 Conroe DB	**Local Co-ordinate Reference:**	Well Muy Wayno 18 Federal 103H
Company:	XTO Energy	**TVD Reference:**	WELL @ 3191.00usft (Patterson 225)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	WELL @ 3191.00usft (Patterson 225)
Site:	Muy Wayno 18 Federal	**North Reference:**	Grid
Well:	Muy Wayno 18 Federal 103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
720.00	720.00	Rustler		0.000	359.76
1,035.00	1,035.00	Salado		0.000	359.76
3,308.85	3,307.00	Base of Salt		0.000	359.76
3,492.01	3,490.00	Delaware/Lamar		0.000	359.76
4,373.77	4,371.00	Cherry Canyon		0.000	359.76
6,009.17	6,005.00	Brushy Canyon		0.000	359.76
7,223.22	7,218.00	Bone Spring		0.000	359.76
7,236.23	7,231.00	Bone Spring Lime		0.000	359.76
8,248.10	8,242.00	1st Bone Spring Sand		0.000	359.76
8,627.42	8,621.00	2nd Bone Lime		0.000	359.76
9,053.79	9,047.00	2nd Bone Sand		0.000	359.76
9,320.02	9,313.00	3rd Bone Spring Lime		0.000	359.76
9,694.34	9,687.00	Harkey Sand		0.000	359.76
9,941.55	9,934.00	Lower 3rd Bone Lime		0.000	359.76
10,007.61	10,000.00	Lower 3rd Bone Shale		0.000	359.76
10,147.83	10,140.00	3rd Bone Spring Sand		0.000	359.76
10,525.13	10,476.00	3rd Bone Spring Red Hills		0.000	359.76
10,623.66	10,541.00	Wolfcamp		0.000	359.76
10,660.68	10,562.00	Wolfcamp X Sand		0.000	359.76
10,805.02	10,624.00	Wolfcamp Y Sand		0.000	359.76

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,000.00	1,000.00	0.00	0.00	KOP, 1.00°/100' Build
1,237.65	1,237.58	1.69	4.63	Begin 2.38° Tangent
10,096.18	10,088.49	127.47	349.74	Begin 10.00°/100' Build & Turn
10,988.16	10,653.00	700.47	368.97	Begin 90.00° Lateral
18,408.37	10,653.00	8,120.59	332.41	PBHL

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

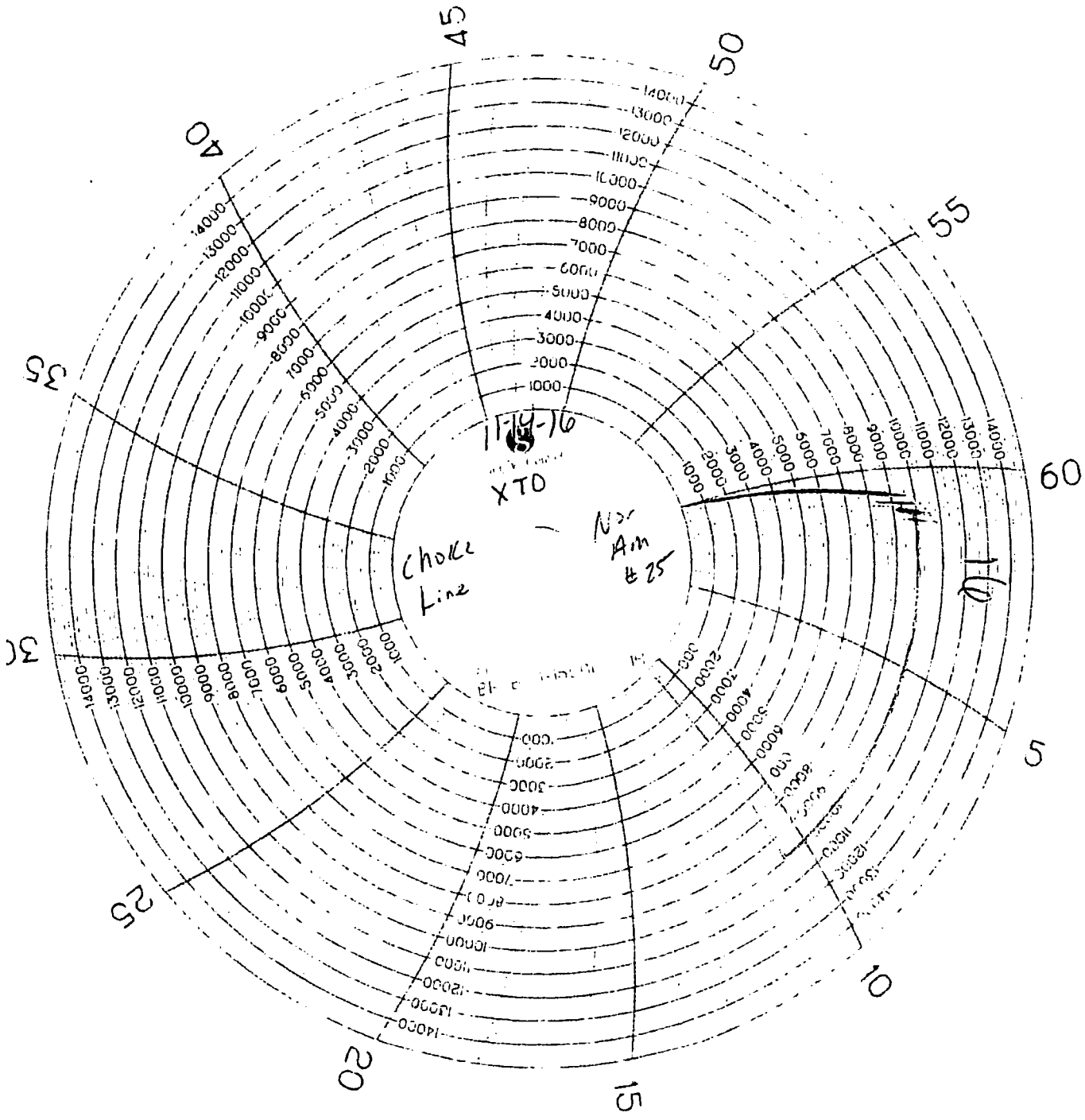
Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No..	D-060814-1
Invoice No. :	201709	Created By.	NORMA

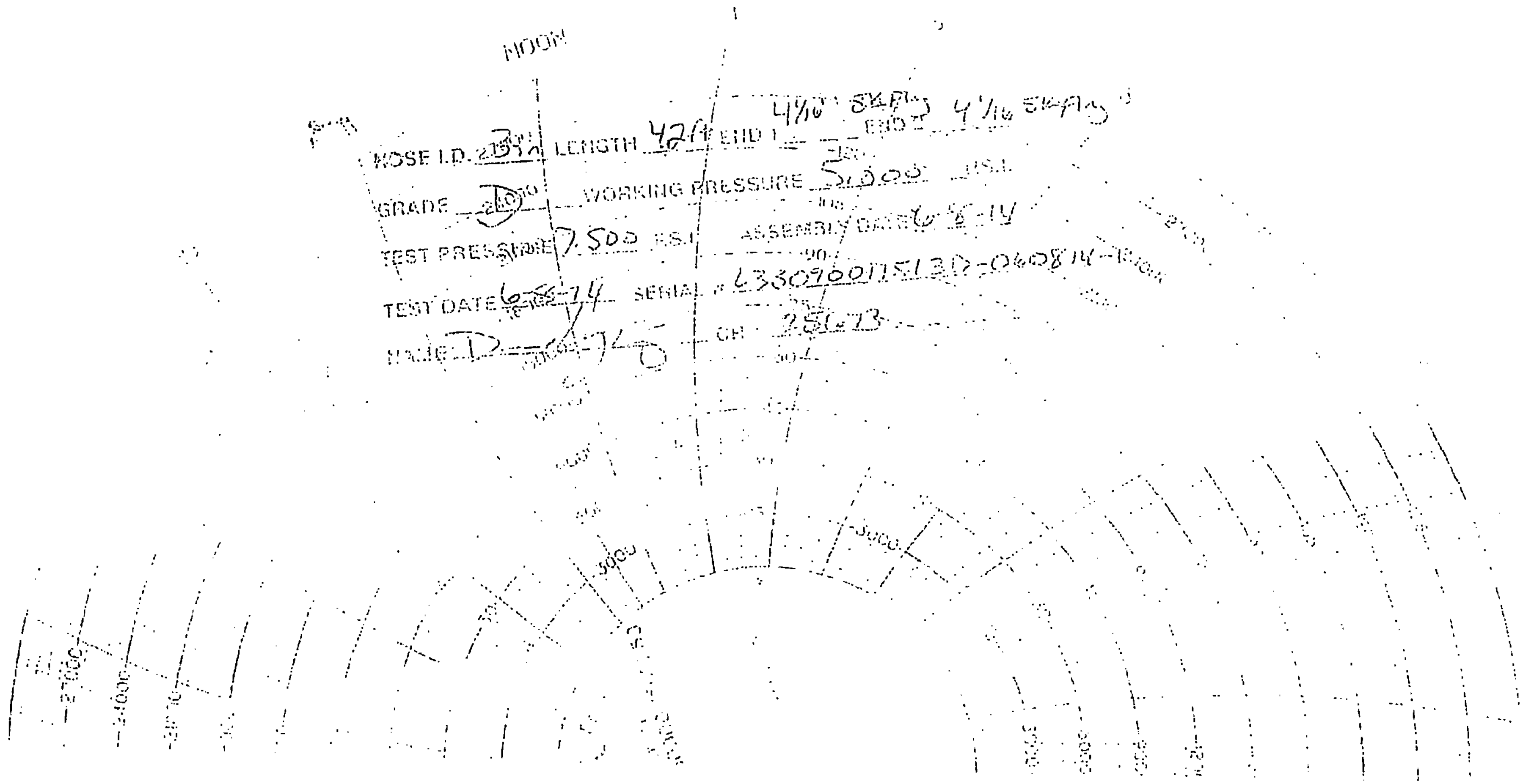
Product Description:	FD3.0-2.0R41/16.5KFLGE/E LE

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 :	L330900115130-060814-1
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 :	


45
50
55
60
5
10
15
20
25
30
35
40
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
11-14-16
XTO
Choke Line
Nov Am #25



NOON
HOSE I.D. 3"
LENGTH 42ft
END I 4 1/16" 5K Flg
END II 4 1/16 5K Flg
WORKING PRESSURE 5,000 P.S.I.
GRADE
TEST PRESSURE 7,500 P.S.I.
ASSEMBLY DATE 6-5-14
TEST DATE 6-5-14
SERIAL # 63309001151312-060814
25673

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**XTO ENERGY**
LEASE NO.:	**NMLC065705B**
WELL NAME & NO.:	**MUY WAYNO 18 FEDERAL 103H**
SURFACE HOLE FOOTAGE:	**2310' FSL & 1145' FWL**
BOTTOM HOLE FOOTAGE	**200' FNL & 1518' FWL**
LOCATION:	**Section 18, T. 25 S., R 30 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

COA

All previous COAs still apply expect the following:

H2S	◉ Yes	○ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **840** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours

after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

3. The minimum required fill of cement behind the **7** inch production casing is:
   - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
   - Cement should tie-back 100' into the previous casing. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

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)

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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

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

A. CASING

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

2. Wait on cement (WOC) for 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification

matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

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

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. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

    c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

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. 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. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

ZS 110518

253018L NWSW SUNDRY-441721 MUY WAYNO 18 FEDERAL 103H 30015 NMLC065705B
XTO ENERGY v12.52 ZS 11.5.2018

Medium Cave Karst: two casing strings, both to circulate cement to surface.

13 3/8 surface csg in a 17 1/2 inch hole. **Design Factors** SURFACE

Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	48.00	H 40	BUTT	13.42	2.01	0.98	840	40,320
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig: 844			Tail Cmt	does not	circ to sfc.	Totals:	840	40,320

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	**700**	1153	**638**	81	**8.80**	1035	**2M**	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

9 5/8 casing inside the 13 3/8 **Design Factors** INTERMEDIATE

Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	40.00	J 55	BUTT	4.72	1.45	0.76	3,340	133,600
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	3,340	133,600

The cement volume(s) are intended to achieve a top of **0** ft from surface or a **840** overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	**1170**	2073	**1118**	85	**10.20**	2894	**3M**	0.81

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.18, b, c, d All >

7 casing inside the 9 5/8 **Design Factors** PRODUCTION

Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	32.00	P 110	BUTT	3.03	2.16	1.91	10,096	323,072
"B"	**32.00**	**P 110**	**BUTT**	146.49	**2.08**	**1.91**	**604**	**19,328**
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,221						Totals:	10,700	342,400
B would be:				65.90	2.06	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	10700	10582	10582	10096	61	-1	0

The cement volume(s) are intended to achieve a top of **3140** ft from surface or a **200** overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.1503	**1030**	1903	**1147**	66	**9.50**	3744	**5M**	0.55

Class 'H' tail cmt yld > 1.20

Tail cmt

4 1/2 Liner w/top @ 10096 **Design Factors** LINER

Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	13.50	P 110	BUTT	2.88	1.6	2.04	892	12,042
"B"	**13.50**	**P 110**	**BUTT**	3.20	**1.75**	**2.04**	**7,420**	**100,170**
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,344						Totals:	8,312	112,212
A Segment Design Factors would be:				3.95	1.75	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	18408	10653	10653	10096	90	10	10988

The cement volume(s) are intended to achieve a top of **10096** ft from surface or a **604** overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
6	0.0859	**700**	931	**675**	38	**11.00**			0.50

Class 'H' tail cmt yld > 1.20 Capitan Reef est top XXXX.