

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JAN 17 2019

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.

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 104H9. API Well No.
30-015-4483910. Field and Pool or Exploratory Area
PURPLE SAGE; WOLFCAMP11. County or Parish, State
EDDY COUNTY, NM

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
XTO ENERGY, INCContact: KELLY KARDOS
E-Mail: kelly.kardos@xtoenergy.com3a. Address
6401 HOLIDAY HILL RD BLDG 5
MIDLAND, TX 797073b. Phone No. (include area code)
432-620-4374

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

Sec 18 T25S R30E Mer NMP NESW 2310FSL 1990FWL

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

TYPE OF SUBMISSION

TYPE OF ACTION

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

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

XTO Energy, Inc. requests permission to make the following changes to the approved APD:

Change SHL fr/2310'FSL & 1990'FWL to 2310'FSL & 1205'FWL. SHL permitted on eastern most pad (Pad F) in slot 3 (west to east). Revised SHL will put the well in slot 4 on Pad E. No surface disturbance will occur with this change. See attached permitted vs proposed sheet.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Attachments:

C102 & Supplements

Revised Pad Layout

GCP

Permitted vs Proposed Sheet

Drilling Program/BOP/CK

Engineering is Good. 2S 11/14/19 Surface good 1-14-2019 BR

14. Whereby certify that the foregoing is true and correct.

Electronic Submission #444349 verified by the BLM Well Information System
For XTO ENERGY, INC, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/16/2018 ()

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

Signature (Electronic Submission)

Date 11/16/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

Date

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

Office

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

(Instructions on page 2)

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

RUP 2-21-19

Additional data for EC transaction #444349 that would not fit on the form

32. Additional remarks, continued

Directional Plan
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

RECEIVED

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

JAN 17 2019

DISTRICT II-ARTESIA O.C.D.

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

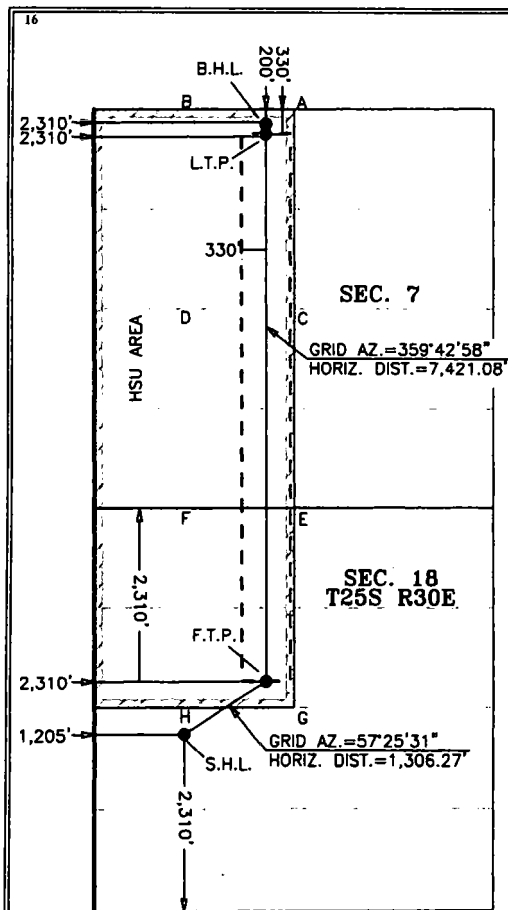
¹ API Number 30-015-44839	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP
⁴ Property Code 321151	⁵ Property Name MUY WAYNO 18 FEDERAL	⁶ Well Number 104H
⁷ OGRID No. 005380	⁸ Operator Name XTO ENERGY INC.	⁹ Elevation 3,165'

¹⁰ Surface Location									
UL or lot no. 3	Section 18	Township 25 S	Range 30 E	Lot Idn	Feet from the 2,310	North/South line SOUTH	Feet from the 1,205	East/West line WEST	County EDDY

¹¹ Bottom Hole Location If Different From Surface									
UL or lot no. C	Section 7	Township 25 S	Range 30 E	Lot Idn	Feet from the 200	North/South line NORTH	Feet from the 2,310	East/West line WEST	County EDDY

¹² Dedicated Acres 483.44	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. 281
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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.



GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y= 410,910.3
X= 626,396.1
LAT.= 32.129051°N
LONG.= 103.925026°W

FIRST TAKE POINT
NAD 27 NME
Y= 411,613.6
X= 627,496.9
LAT.= 32.130972°N
LONG.= 103.921461°W

CORNER COORDINATES TABLE
NAD 27 NME
A - Y= 419,236.3 N, X= 627,843.0 E
B - Y= 419,230.0 N, X= 626,505.6 E
C - Y= 416,584.3 N, X= 627,852.8 E
D - Y= 416,580.8 N, X= 626,517.9 E
E - Y= 413,925.0 N, X= 627,862.7 E
F - Y= 413,919.9 N, X= 626,527.4 E
G - Y= 411,266.7 N, X= 627,877.5 E
H - Y= 411,260.6 N, X= 626,542.4 E

CORNER COORDINATES TABLE
NAD 83 NME
A - Y= 419,294.7 N, X= 669,027.4 E
B - Y= 419,288.4 N, X= 667,690.0 E
C - Y= 416,642.7 N, X= 669,037.3 E
D - Y= 416,639.2 N, X= 667,702.4 E
E - Y= 413,983.3 N, X= 669,047.3 E
F - Y= 413,978.2 N, X= 667,712.0 E
G - Y= 411,325.0 N, X= 669,062.2 E
H - Y= 411,318.9 N, X= 667,727.0 E

LAST TAKE POINT
NAD 27 NME
Y= 418,904.5
X= 627,461.0
LAT.= 32.151015°N
LONG.= 103.921487°W

BOTTOM HOLE LOCATION
NAD 27 NME
Y= 419,034.5
X= 627,460.3
LAT.= 32.151372°N
LONG.= 103.921488°W

LAST TAKE POINT
NAD 83 NME
Y= 418,962.9
X= 668,645.4
LAT.= 32.151139°N
LONG.= 103.921972°W

BOTTOM HOLE LOCATION
NAD 83 NME
Y= 419,092.9
X= 668,644.7
LAT.= 32.151496°N
LONG.= 103.921973°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 11-16-19

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.

07-31-2018

Date of Survey

Signature and Seal of
Professional Surveyor:

MARK DILLON HARP 23786
Certificate Number

AW

2017060871



rev 2-21-19

JAN 17 2019

Intent ☒ As Drilled ☐

DISTRICT II-ARTESIA O.C.D.

API #
30-015-44839Operator Name:
XTO Energy Inc.Property Name:
Muy Wayno 18 FederalWell Number
104H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	18	25S	30E	3	2310	South	1205	West	Eddy
Latitude 32.129175					Longitude -103.925510			NAD NAD83	

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
F	18	25S	30E		2310	North	2310	West	Eddy
Latitude 32.131097					Longitude -103.921946			NAD NAD83	

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
C	7	25S	30E		330	North	2310	West	Eddy
Latitude 32.151139					Longitude -103.921972			NAD NAD83	

Is this well the defining well for the Horizontal Spacing Unit?

☐ N

Is this well an infill well?

☐ Y

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

API #
30-015-44838Operator Name:
XTO ENERGY INCProperty Name:
MUY WAYNO 18 FEDERALWell Number
102H

KZ 06/29/2018

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

JAN 17 2019

Submit Original
to Appropriate
District Office

DISTRICT II-ARTESIA O.C.D.

GAS CAPTURE PLAN

Date: 11/05/18

☐ Original Operator & OGRID No.: 5380
☒ Amended - Reason for Amendment: Revised SHL

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility: Muy Wayno 18 Federal CTB

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Muy Wayno 18 Fed 104H	30-015-44839	L3-18-25S-30E	2310' FSL & 1205' FWL	3960	Flared/Sold	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Enlink and will be connected to Enlink low/high pressure gathering system located in Loving County, Texas. It will require 196.30' of pipeline to connect the facility to low/high pressure gathering system. XTO provides (periodically) to Enlink a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, XTO and Enlink have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Enlink Processing Plant located in Block 27, Sec. 4, Loving County, Texas. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Enlink system at that time. Based on current information, it is XTO's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

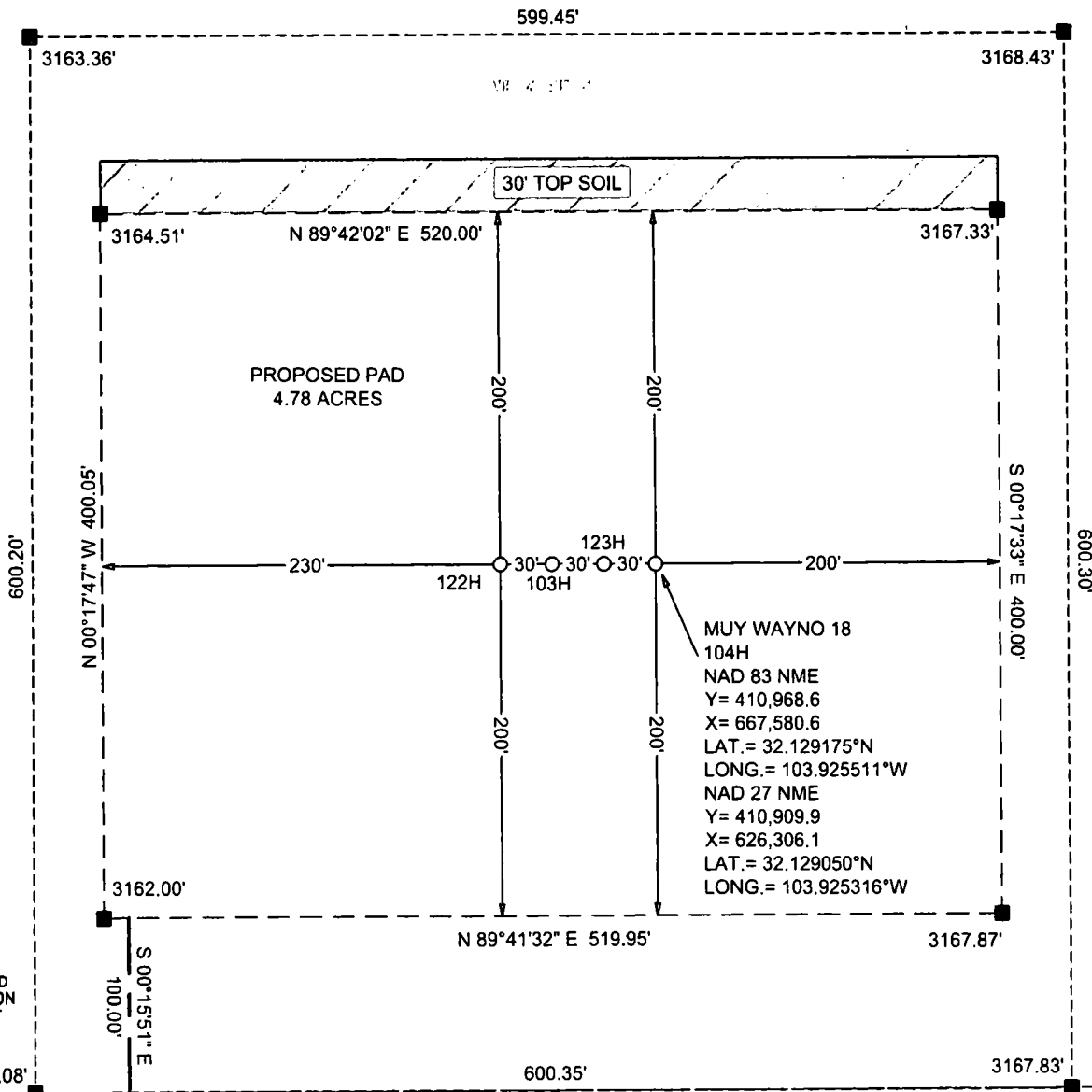
SECTION 18

TOWNSHIP 25 SOUTH, RANGE 30 EAST
NEW MEXICO PRIME MERIDIAN

SW 4 NE 4



0 50' 100'
1" = 100 FEET



PROPOSED ROAD
AS DESCRIBED ON
SEPARATE PLAT

NOTE:

- 1). SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP" FOR PROPOSED ROAD LOCATION

DIRECTIONS TO THIS LOCATION:

FROM THE INTERSECTION OF HWY 285 AND LONGHORN RD. GO NORTHEAST ON LONGHORN ROAD (PAVED). ROAD BEND SOUTHEAST AND BACK TO NORTHEAST APPROX. 4.25 MILES. TURN LEFT AND GO NORTHEAST ON PIPELINE ROAD #1 (GRAVEL) APPROX. 7.12 MILES. TURN LEFT ON ROCK DOVE RD. APPROX. 1.00 MILES. TURN LEFT ON EXISTING GRAVEL RD. APPROX. 1.00 MILE TO ANOTHER LEFT FOR APPROX. 0.35 MILES TO BEGINNING OF PROPOSED ROAD AND LOCATION IS TO THE SOUTHWEST.

LEGEND

- PROPOSED OVERHEAD ELECTRIC
- PROPOSED PAD
- PROPOSED ROAD
- PROPOSED GAS LINE

XTO ENERGY, INC.

WELL SITE PLAN

MUY WAYNO 18 104H

LOCATED 1,175 FEET FROM THE WEST LINE
AND 2,310 FEET FROM THE SOUTH LINE OF
SECTION 18, TOWNSHIP 25 SOUTH, RANGE 30
EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO

DATE:	7-16-2018	PROJECT NO:	2017060871
DRAWN BY:	JAR/AI/RS	SCALE:	1"= 100'
CHECKED BY:	DH	SHEET:	1 OF 1
FIELD CREW:	RE/RR	REVISION:	2



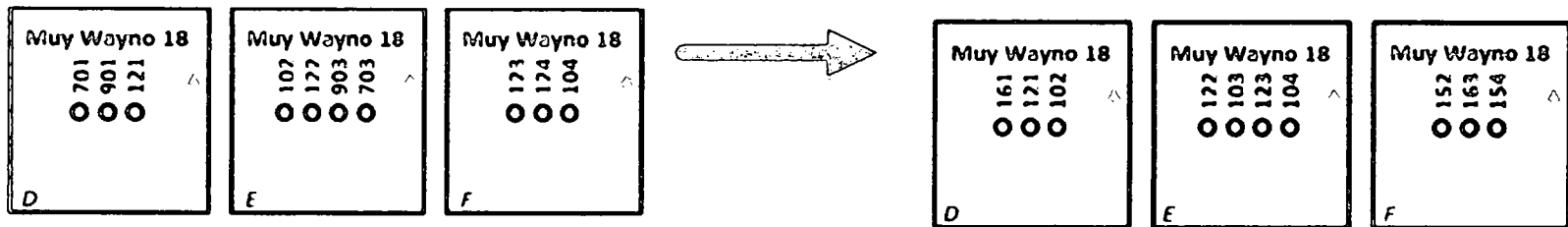
550 Bailey Ave., 205 - Fort Worth, TX 76107
Ph: 817.349.9800 - Fax: 979.732.5271
TBPE Firm 17957 | TBPLS Firm 10193887
www.fscinc.net

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PERMITTED PLAN

SUNDRY CHANGES

API Number	Current Pad & Slot	Current Well Name	Permitted SHL	Proposed Pad & Slot	Well Name Change	Updated SHL	ULSTR
3001544844	D-1	MUY WAYNO 18 FEDERAL 701H	L-18-25S-30E (2310 FSL & 350 FWL)	D-1	MUY WAYNO 18 FEDERAL 161H	2310'FSL & 350'FWL	3-18-25S-30E
3001544846	D-2	MUY WAYNO 18 FEDERAL 901H	L-18-25S-30E (2310 FSL & 380 FWL)	E-2	MUY WAYNO 18 FEDERAL 103H	2310'FSL & 1145'FWL	3-18-25S-30E
3001544840	D-3	MUY WAYNO 18 FEDERAL 121H	L-18-25S-30E (2310 FSL & 410 FWL)	D-2	MUY WAYNO 18 FEDERAL 121H	2310'FSL & 380'FWL	3-18-25S-30E
3001544838	E-1	MUY WAYNO 18 FEDERAL 102H	L-18-25S-30E (2310 FSL & 1115 FWL)	D-3	MUY WAYNO 18 FEDERAL 102H	2310'FSL & 410'FWL	3-18-25S-30E
3001544841	E-2	MUY WAYNO 18 FEDERAL 122H	L-18-25S-30E (2310 FSL & 1145 FWL)	E-1	MUY WAYNO 18 FEDERAL 122H	2310'FSL & 1115'FWL	3-18-25S-30E
3001544847	E-3	MUY WAYNO 18 FEDERAL 903H	L-18-25S-30E (2310 FSL & 1175 FWL)	F-1	MUY WAYNO 18 FEDERAL 152H	2310'FSL & 1930'FWL	K-18-25S-30E
3001544845	E-4	MUY WAYNO 18 FEDERAL 703H	L-18-25S-30E (2310 FSL & 1205 FWL)	F-2	MUY WAYNO 18 FEDERAL 163H	2310'FSL & 1960'FWL	K-18-25S-30E
3001544842	F-1	MUY WAYNO 18 FEDERAL 123H	K-18-25S-30E (2310 FSL & 1930 FWL)	E-3	MUY WAYNO 18 FEDERAL 123H	2310'FSL & 1175'FWL	3-18-25S-30E
3001544843	F-2	MUY WAYNO 18 FEDERAL 124H	K-18-25S-30E (2310 FSL & 1960 FWL)	F-3	MUY WAYNO 18 FEDERAL 154H	2310'FSL & 1990'FWL	K-18-25S-30E
3001544839	F-3	MUY WAYNO 18 FEDERAL 104H	K-18-25S-30E (2310 FSL & 1990 FWL)	E-4	MUY WAYNO 18 FEDERAL 104H	2310'FSL & 1205'FWL	3-18-25S-30E



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

XTO Energy Inc.
Muy Wayno Federal 18 104H
Projected TD: 18517' MD / 10653' TVD
SHL: 2310' FSL & 1205' FWL , Section 18, T25S, R30E
BHL: 200' FNL & 2310' 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' – 10750'	7"	32	BTC	P-110	New	1.31	2.10	2.88
6"	10146' – 18517'	4-1/2"	13.5	BTC	P-110	New	1.31	2.82	2.29

- 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 +/- 10750'

Lead: 980 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 +/- 18517'

Tail: 710 sxs VersaCem (mixed at 13.2 ppg, ^{1.33}~~10.46~~ 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 nipping 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 10750'	8-3/4"	FW / Cut Brine	8.6-9.5	29-32	NC - 20
10750' to 18517'	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.

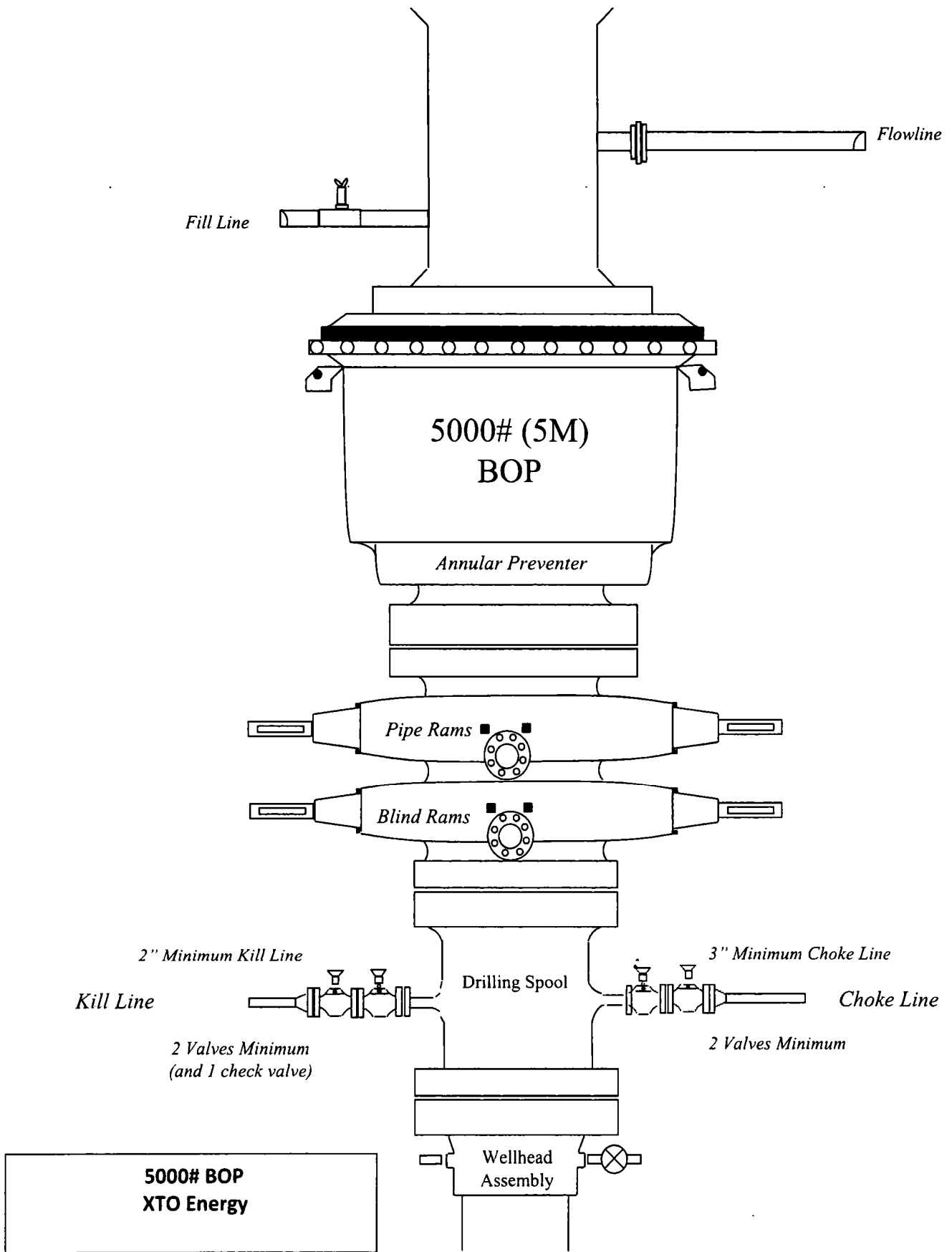
Open hole logging will not be done on this well.

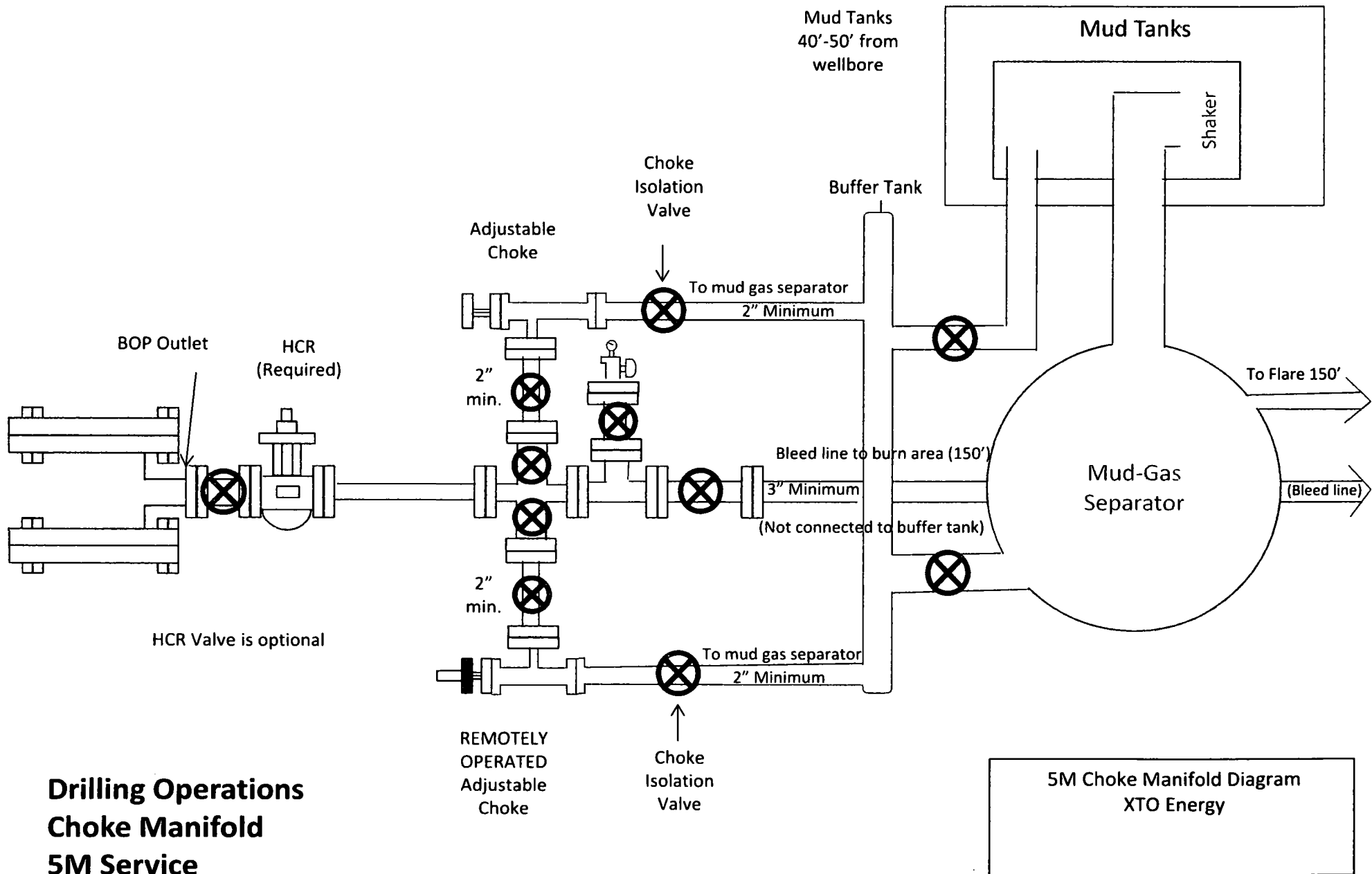
9. Abnormal Pressures and Temperatures / Potential Hazards

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.





Drilling Operations
Choke Manifold
5M Service

5M Choke Manifold Diagram
XTO Energy



Company: XTO Energy
Project: Eddy County, NM (Mid-27 / East Zone)
Site: May Wayne 18 Federal
Well: #104H
Wellbore: OH
Rig: PAT 225
Design: Plan #1 / 8-22, November 02 2018

TOTAL CORRECTION
To convert a Magnetic Direction to a Grid Direction, Add 6.75°

WELL DETAILS: #104H

RKB = 26' @ 3191.00usf (PAT 225)
3185.00

	+N-S	+E-W	Northing	Easting	Latitude	Longitude
Start Build 1.50	0.00	0.00	410910.30	626396.00	32.129050	-103.925026

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Diag	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3490.00	0.00	0.00	3490.00	0.00	0.00	0.00	0.00
3	4063.35	0.00	83.68	4063.20	4.74	42.69	1.50	4.53
4	9616.33	8.60	83.66	9551.64	96.44	867.38	0.00	92.20
5	10048.24	0.00	0.00	9980.84	100.00	900.00	2.00	95.60
6	10148.24	0.00	0.00	10080.04	100.00	900.00	0.00	95.60
7	11049.24	90.00	12.80	10653.00	858.72	1026.94	10.00	853.69
8	11700.44	90.00	358.72	10653.00	1307.61	1098.99	2.00	1302.23
9	18517.12	90.00	358.72	10653.00	8124.20	1084.38	0.00	8116.90

CASING DETAILS

TVD	MD	Name
900.00	900.00	13 3/8"
3400.00	3400.00	8 5/8"
10653.00	11048.24	7"

PROJECT DETAILS: Eddy County, NM (Mid-27 / East Zone)

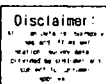
Geodetic System: US State Plane 1827 (E last solution)
Datum: NAD 1983 (NAD83) CONUS
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
MW 18 Fed #104H: SHL	0.00	0.00	0.00	410910.30	626396.00	32.129050	-103.925026
MW 18 Fed #104H: FTP	10653.00	703.30	1109.90	411613.60	627496.00	32.130972	-103.921461
MW 18 Fed #104H: LTP	10653.00	7994.20	1065.00	418904.50	627461.00	32.151015	-103.921468
MW 18 Fed #104H: PBHL	10653.00	8124.20	1084.30	419034.50	627460.30	32.151015	-103.921468

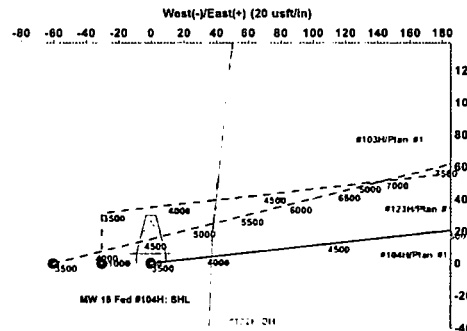
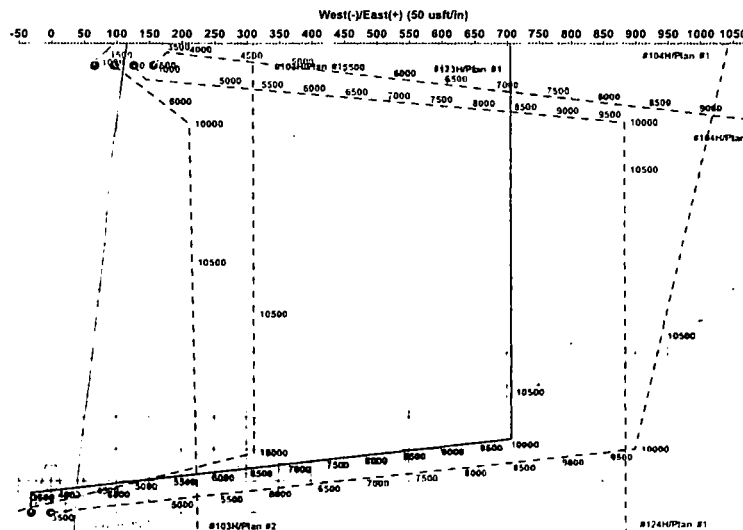


Adapted to Grid North
True North: 0.22°
Magnetic North: 6.75°
Magnetic Field
Strength: 47705.8nT
Dip Angle: 58.90°
Date: 10/30/2018
Model: IGRF2015



FORMATION TOP DETAILS

TVD (ft)	Formation
729.83	Border
1833.00	Salt (Top of Salt)
1887.50	Base of Salt
3499.00	Delaware (Old Canyon)
4371.00	Cherry Canyon
6085.00	Bonny Canyon
7218.00	Bone Spring
7221.00	Bone Spring Lime
8242.00	1st Bone Spring Sand
8621.00	2nd Bone Spring Lime
9467.00	2nd Bone Spring Sand
9713.00	3rd Bone Spring Lime
9827.00	Harkey sand
9934.00	Lower 3rd Bone Spring Lime
10090.00	Lower 3rd Bone Spring Sand
10140.00	3rd Bone Spring Sand
10478.00	3rd Bone Spring Red Hills Sand
10541.00	Wolfcamp
10562.00	Wolfcamp Y Sand
10624.00	Wolfcamp X Sand
10653.00	Landing Point



True Vertical Depth (400 usf/in)
400
800
1200
1600
2000
2400
2800
3200
3600
4000
4400
4800
5200
5600
6000
6400
6800
7200
7600
8000
8400
8800
9200
9600
10000
10400
10800
11200

True Vertical Depth (200 usf/in)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
5800
6000
6200
6400
6600
6800
7000
7200
7400
7600
7800
8000
8200

Rustler
Salado (Top of Salt)
Base of Salt
Delaware (Bell Canyon)
Cherry Canyon
Brushy Canyon
Bone Spring Lime
1st Bone Spring Sand
2nd Bone Spring Lime
2nd Bone Spring Sand
3rd Bone Spring Lime
Harkey sand
Harkey sand
Lower 3rd Bone Spring Lime
Lower 3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Red Hills Sand
Wolfcamp
Wolfcamp X Sand
Wolfcamp Y Sand
Wolfcamp A

Start Build 1.50
Start Drop -2.00
Start 100.00 hold at 10046.24 MD
Start Build 10.00
Start DLS 2.00 TFO -90.00
MW 18 Fed #104H: FTP

Vertical Section at 359.72° (400 usf/in)
Vertical Section at 359.72° (200 usf/in)

Section Line
330' Offset
MW 18 Fed #104H: PBHL
MW 18 Fed #104H: LTP
MW 18 Fed #104H: FTP
MW 18 Fed #104H: SHL

Plan: Plan #1 (#104H/OH) PAT 225
Created By: Matthew May Date: 8:37, November 02 2018



XTO Energy

Eddy County, NM (Nad-27 / East Zone)

Muy Wayno 18 Federal

#104H

OH

Plan: Plan #1

Standard Planning Report

02 November, 2018





Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM (Nad-27 / East Zone)		
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:	410,905.90 usft
From:	Map	Easting:	625,541.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32.129047
		Longitude:	-103.927788
		Grid Convergence:	0.22 °

Well	#104H		
Well Position	+N/-S	4.40 usft	Northing: 410,910.30 usft
	+E/-W	855.00 usft	Easting: 626,396.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Latitude: 32.129051
			Longitude: -103.925026
			Ground Level: 3,165.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	10/30/18	6.96
			Dip Angle (°) 59.90
			Field Strength (nT) 47,705.57498109

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

Plan Survey Tool Program	Date 11/02/18		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name
1	0.00	18,516.59 Plan #1 (OH)	WBDS_IGRF
			OWSG MWD + IGRF or WI

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,490.00	0.00	0.00	3,490.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,063.35	8.60	83.66	4,061.20	4.74	42.69	1.50	1.50	0.00	83.66	
9,616.23	8.60	83.66	9,551.64	96.44	867.98	0.00	0.00	0.00	0.00	
10,046.24	0.00	0.00	9,980.04	100.00	900.00	2.00	-2.00	0.00	180.00	
10,146.24	0.00	0.00	10,080.04	100.00	900.00	0.00	0.00	0.00	0.00	
11,046.24	90.00	12.80	10,653.00	658.72	1,026.94	10.00	10.00	0.00	12.80	
11,700.44	90.00	359.72	10,653.00	1,307.61	1,098.09	2.00	0.00	-2.00	-90.00	
18,517.12	90.00	359.72	10,653.00	8,124.20	1,064.30	0.00	0.00	0.00	0.00	0.00 MW 18 Fed #104H:



Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,490.00	0.00	0.00	3,490.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.15	83.66	3,500.00	0.00	0.01	0.00	1.50	1.50	0.00
3,600.00	1.65	83.66	3,599.98	0.17	1.57	0.17	1.50	1.50	0.00
3,700.00	3.15	83.66	3,699.89	0.64	5.74	0.61	1.50	1.50	0.00
3,800.00	4.65	83.66	3,799.66	1.39	12.50	1.33	1.50	1.50	0.00
3,900.00	6.15	83.66	3,899.21	2.43	21.85	2.32	1.50	1.50	0.00
4,000.00	7.65	83.66	3,998.49	3.75	33.79	3.59	1.50	1.50	0.00
4,063.35	8.60	83.66	4,061.20	4.74	42.69	4.53	1.50	1.50	0.00
4,100.00	8.60	83.66	4,097.44	5.35	48.13	5.11	0.00	0.00	0.00
4,200.00	8.60	83.66	4,196.31	7.00	63.00	6.69	0.00	0.00	0.00
4,300.00	8.60	83.66	4,295.19	8.65	77.86	8.27	0.00	0.00	0.00
4,400.00	8.60	83.66	4,394.06	10.30	92.72	9.85	0.00	0.00	0.00
4,500.00	8.60	83.66	4,492.94	11.95	107.58	11.43	0.00	0.00	0.00
4,600.00	8.60	83.66	4,591.82	13.61	122.45	13.01	0.00	0.00	0.00
4,700.00	8.60	83.66	4,690.69	15.26	137.31	14.59	0.00	0.00	0.00
4,800.00	8.60	83.66	4,789.57	16.91	152.17	16.16	0.00	0.00	0.00
4,900.00	8.60	83.66	4,888.44	18.56	167.03	17.74	0.00	0.00	0.00
5,000.00	8.60	83.66	4,987.32	20.21	181.90	19.32	0.00	0.00	0.00
5,100.00	8.60	83.66	5,086.19	21.86	196.76	20.90	0.00	0.00	0.00



Planning Report



Database: WBDS_SQL_2
 Company: XTO Energy
 Project: Eddy County, NM (Nad-27 / East Zone)
 Site: Muy Wayno 18 Federal
 Well: #104H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #104H
 TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
 MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.00	8.60	83.66	5,185.07	23.51	211.62	22.48	0.00	0.00	0.00
5,300.00	8.60	83.66	5,283.94	25.16	226.48	24.06	0.00	0.00	0.00
5,400.00	8.60	83.66	5,382.82	26.82	241.35	25.64	0.00	0.00	0.00
5,500.00	8.60	83.66	5,481.70	28.47	256.21	27.22	0.00	0.00	0.00
5,600.00	8.60	83.66	5,580.57	30.12	271.07	28.79	0.00	0.00	0.00
5,700.00	8.60	83.66	5,679.45	31.77	285.93	30.37	0.00	0.00	0.00
5,800.00	8.60	83.66	5,778.32	33.42	300.80	31.95	0.00	0.00	0.00
5,900.00	8.60	83.66	5,877.20	35.07	315.66	33.53	0.00	0.00	0.00
6,000.00	8.60	83.66	5,976.07	36.72	330.52	35.11	0.00	0.00	0.00
6,100.00	8.60	83.66	6,074.95	38.38	345.38	36.69	0.00	0.00	0.00
6,200.00	8.60	83.66	6,173.82	40.03	360.25	38.27	0.00	0.00	0.00
6,300.00	8.60	83.66	6,272.70	41.68	375.11	39.85	0.00	0.00	0.00
6,400.00	8.60	83.66	6,371.58	43.33	389.97	41.42	0.00	0.00	0.00
6,500.00	8.60	83.66	6,470.45	44.98	404.83	43.00	0.00	0.00	0.00
6,600.00	8.60	83.66	6,569.33	46.63	419.70	44.58	0.00	0.00	0.00
6,700.00	8.60	83.66	6,668.20	48.28	434.56	46.16	0.00	0.00	0.00
6,800.00	8.60	83.66	6,767.08	49.94	449.42	47.74	0.00	0.00	0.00
6,900.00	8.60	83.66	6,865.95	51.59	464.28	49.32	0.00	0.00	0.00
7,000.00	8.60	83.66	6,964.83	53.24	479.15	50.90	0.00	0.00	0.00
7,100.00	8.60	83.66	7,063.70	54.89	494.01	52.48	0.00	0.00	0.00
7,200.00	8.60	83.66	7,162.58	56.54	508.87	54.05	0.00	0.00	0.00
7,300.00	8.60	83.66	7,261.46	58.19	523.73	55.63	0.00	0.00	0.00
7,400.00	8.60	83.66	7,360.33	59.84	538.60	57.21	0.00	0.00	0.00
7,500.00	8.60	83.66	7,459.21	61.50	553.46	58.79	0.00	0.00	0.00
7,600.00	8.60	83.66	7,558.08	63.15	568.32	60.37	0.00	0.00	0.00
7,700.00	8.60	83.66	7,656.96	64.80	583.18	61.95	0.00	0.00	0.00
7,800.00	8.60	83.66	7,755.83	66.45	598.05	63.53	0.00	0.00	0.00
7,900.00	8.60	83.66	7,854.71	68.10	612.91	65.11	0.00	0.00	0.00
8,000.00	8.60	83.66	7,953.58	69.75	627.77	66.68	0.00	0.00	0.00
8,100.00	8.60	83.66	8,052.46	71.40	642.63	68.26	0.00	0.00	0.00
8,200.00	8.60	83.66	8,151.34	73.06	657.50	69.84	0.00	0.00	0.00
8,300.00	8.60	83.66	8,250.21	74.71	672.36	71.42	0.00	0.00	0.00
8,400.00	8.60	83.66	8,349.09	76.36	687.22	73.00	0.00	0.00	0.00
8,500.00	8.60	83.66	8,447.96	78.01	702.08	74.58	0.00	0.00	0.00
8,600.00	8.60	83.66	8,546.84	79.66	716.95	76.16	0.00	0.00	0.00
8,700.00	8.60	83.66	8,645.71	81.31	731.81	77.73	0.00	0.00	0.00
8,800.00	8.60	83.66	8,744.59	82.96	746.67	79.31	0.00	0.00	0.00
8,900.00	8.60	83.66	8,843.46	84.61	761.53	80.89	0.00	0.00	0.00
9,000.00	8.60	83.66	8,942.34	86.27	776.40	82.47	0.00	0.00	0.00
9,100.00	8.60	83.66	9,041.22	87.92	791.26	84.05	0.00	0.00	0.00
9,200.00	8.60	83.66	9,140.09	89.57	806.12	85.63	0.00	0.00	0.00
9,300.00	8.60	83.66	9,238.97	91.22	820.98	87.21	0.00	0.00	0.00
9,400.00	8.60	83.66	9,337.84	92.87	835.85	88.79	0.00	0.00	0.00
9,500.00	8.60	83.66	9,436.72	94.52	850.71	90.36	0.00	0.00	0.00
9,600.00	8.60	83.66	9,535.59	96.17	865.57	91.94	0.00	0.00	0.00
9,616.23	8.60	83.66	9,551.64	96.44	867.98	92.20	0.00	0.00	0.00
9,700.00	6.92	83.66	9,634.64	97.69	879.23	93.39	2.00	-2.00	0.00
9,800.00	4.92	83.66	9,734.10	98.83	889.49	94.48	2.00	-2.00	0.00
9,900.00	2.92	83.66	9,833.86	99.59	896.29	95.21	2.00	-2.00	0.00
10,000.00	0.92	83.66	9,933.80	99.96	899.63	95.56	2.00	-2.00	0.00
10,046.24	0.00	0.00	9,980.04	100.00	900.00	95.60	2.00	-2.00	0.00
10,100.00	0.00	0.00	10,033.80	100.00	900.00	95.60	0.00	0.00	0.00
10,146.24	0.00	0.00	10,080.04	100.00	900.00	95.60	0.00	0.00	0.00
10,150.00	0.38	12.80	10,083.80	100.01	900.00	95.61	10.00	10.00	0.00

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

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
⁴ Property Code	⁵ Property Name MUY WAYNO 18 FEDERAL	⁶ Well Number 104H
⁷ OGRID No.	⁸ Operator Name XTO ENERGY INC.	⁹ Elevation 3,165'

¹⁰ Surface Location

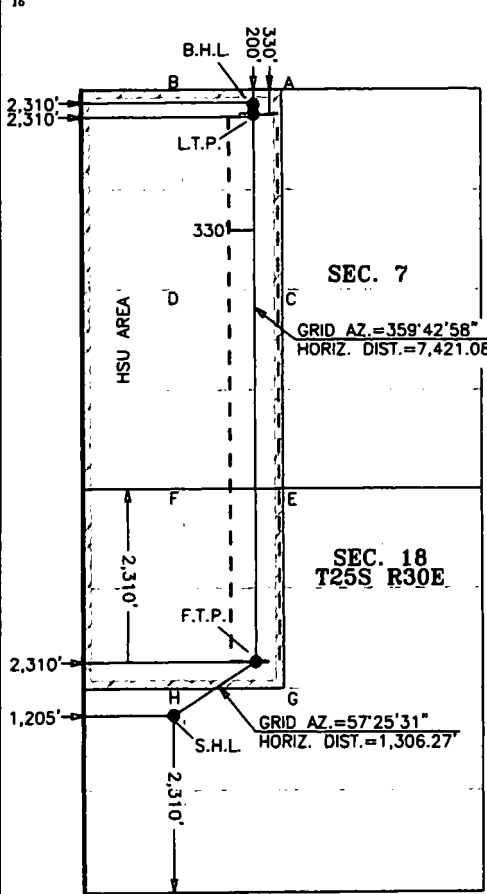
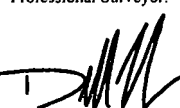
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3	18	25 S	30 E		2,310	SOUTH	1,205	WEST	EDDY

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
C	7	25 S	30 E		200	NORTH	2,310	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
-------------------------------	-------------------------------	----------------------------------	-------------------------

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.

	GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y= 410,910.3 X= 626,396.0 LAT.= 32.129051°N LONG.= 103.925026°W FIRST TAKE POINT NAD 27 NME Y= 411,613.6 X= 627,496.9 LAT.= 32.130972°N LONG.= 103.921461°W CORNER COORDINATES TABLE NAD 27 NME A - Y= 419,236.3 N, X= 627,843.0 E B - Y= 419,230.0 N, X= 626,505.6 E C - Y= 416,584.3 N, X= 627,852.8 E D - Y= 416,580.8 N, X= 626,517.9 E E - Y= 413,925.0 N, X= 627,862.7 E F - Y= 413,919.9 N, X= 626,527.4 E G - Y= 411,266.7 N, X= 627,877.5 E H - Y= 411,260.6 N, X= 626,542.4 E CORNER COORDINATES TABLE NAD 83 NME A - Y= 419,294.7 N, X= 669,027.4 E B - Y= 419,288.4 N, X= 667,690.0 E C - Y= 416,642.7 N, X= 669,037.3 E D - Y= 416,639.2 N, X= 667,702.4 E E - Y= 413,983.3 N, X= 669,047.3 E F - Y= 413,978.2 N, X= 667,712.0 E G - Y= 411,325.0 N, X= 669,062.2 E H - Y= 411,318.9 N, X= 667,727.0 E LAST TAKE POINT NAD 27 NME Y= 418,904.5 X= 627,461.0 LAT.= 32.151015°N LONG.= 103.921487°W BOTTOM HOLE LOCATION NAD 27 NME Y= 419,034.5 X= 627,460.3 LAT.= 32.151372°N LONG.= 103.921488°W	GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION Y= 410,868.6 X= 667,580.6 LAT.= 32.129175°N LONG.= 103.925511°W FIRST TAKE POINT NAD 83 NME Y= 411,671.9 X= 668,681.5 LAT.= 32.131097°N LONG.= 103.921946°W	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete in 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. Signature _____ Date _____ Printed Name _____ 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 Signature and Seal of Professional Surveyor:  MARK DILLON HARP 23786 Certificate Number AW 2017060871		
			



Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,200.00	5.38	12.80	10,133.72	102.46	900.56	98.06	10.00	10.00	0.00
10,250.00	10.38	12.80	10,183.23	109.14	902.08	104.73	10.00	10.00	0.00
10,300.00	15.38	12.80	10,231.96	120.00	904.54	115.58	10.00	10.00	0.00
10,350.00	20.38	12.80	10,279.53	134.96	907.94	130.52	10.00	10.00	0.00
10,400.00	25.38	12.80	10,325.58	153.91	912.25	149.45	10.00	10.00	0.00
10,450.00	30.38	12.80	10,369.77	176.70	917.43	172.21	10.00	10.00	0.00
10,500.00	35.38	12.80	10,411.75	203.16	923.44	198.64	10.00	10.00	0.00
10,550.00	40.38	12.80	10,451.20	233.08	930.24	228.53	10.00	10.00	0.00
10,600.00	45.38	12.80	10,487.83	266.25	937.77	261.66	10.00	10.00	0.00
10,650.00	50.38	12.80	10,521.36	302.40	945.98	297.77	10.00	10.00	0.00
10,700.00	55.38	12.80	10,551.53	341.26	954.81	336.59	10.00	10.00	0.00
10,750.00	60.38	12.80	10,578.10	382.54	964.19	377.82	10.00	10.00	0.00
10,800.00	65.38	12.80	10,600.89	425.92	974.05	421.16	10.00	10.00	0.00
10,850.00	70.38	12.80	10,619.72	471.07	984.31	466.26	10.00	10.00	0.00
10,900.00	75.38	12.80	10,634.44	517.66	994.89	512.79	10.00	10.00	0.00
10,950.00	80.38	12.80	10,644.93	565.31	1,005.72	560.39	10.00	10.00	0.00
11,000.00	85.38	12.80	10,651.13	613.68	1,016.70	608.70	10.00	10.00	0.00
11,046.24	90.00	12.80	10,653.00	658.72	1,026.94	653.69	10.00	10.00	0.00
11,100.00	90.00	11.72	10,653.00	711.25	1,038.36	706.17	2.00	0.00	-2.00
11,200.00	90.00	9.72	10,653.00	809.50	1,056.96	804.32	2.00	0.00	-2.00
11,300.00	90.00	7.72	10,653.00	908.34	1,072.13	903.09	2.00	0.00	-2.00
11,400.00	90.00	5.72	10,653.00	1,007.64	1,083.84	1,002.34	2.00	0.00	-2.00
11,500.00	90.00	3.72	10,653.00	1,107.30	1,092.08	1,101.95	2.00	0.00	-2.00
11,600.00	90.00	1.72	10,653.00	1,207.18	1,096.83	1,201.81	2.00	0.00	-2.00
11,700.44	90.00	359.72	10,653.00	1,307.61	1,098.09	1,302.23	2.00	0.00	-2.00
11,800.00	90.00	359.72	10,653.00	1,407.17	1,097.60	1,401.79	0.00	0.00	0.00
11,900.00	90.00	359.72	10,653.00	1,507.17	1,097.10	1,501.79	0.00	0.00	0.00
12,000.00	90.00	359.72	10,653.00	1,607.16	1,096.61	1,601.79	0.00	0.00	0.00
12,100.00	90.00	359.72	10,653.00	1,707.16	1,096.11	1,701.79	0.00	0.00	0.00
12,200.00	90.00	359.72	10,653.00	1,807.16	1,095.62	1,801.79	0.00	0.00	0.00
12,300.00	90.00	359.72	10,653.00	1,907.16	1,095.12	1,901.79	0.00	0.00	0.00
12,400.00	90.00	359.72	10,653.00	2,007.16	1,094.63	2,001.79	0.00	0.00	0.00
12,500.00	90.00	359.72	10,653.00	2,107.16	1,094.13	2,101.79	0.00	0.00	0.00
12,600.00	90.00	359.72	10,653.00	2,207.16	1,093.63	2,201.79	0.00	0.00	0.00
12,700.00	90.00	359.72	10,653.00	2,307.16	1,093.14	2,301.79	0.00	0.00	0.00
12,800.00	90.00	359.72	10,653.00	2,407.15	1,092.64	2,401.79	0.00	0.00	0.00
12,900.00	90.00	359.72	10,653.00	2,507.15	1,092.15	2,501.79	0.00	0.00	0.00
13,000.00	90.00	359.72	10,653.00	2,607.15	1,091.65	2,601.79	0.00	0.00	0.00
13,100.00	90.00	359.72	10,653.00	2,707.15	1,091.16	2,701.79	0.00	0.00	0.00
13,200.00	90.00	359.72	10,653.00	2,807.15	1,090.66	2,801.79	0.00	0.00	0.00
13,300.00	90.00	359.72	10,653.00	2,907.15	1,090.16	2,901.79	0.00	0.00	0.00
13,400.00	90.00	359.72	10,653.00	3,007.15	1,089.67	3,001.79	0.00	0.00	0.00
13,500.00	90.00	359.72	10,653.00	3,107.15	1,089.17	3,101.79	0.00	0.00	0.00
13,600.00	90.00	359.72	10,653.00	3,207.14	1,088.68	3,201.79	0.00	0.00	0.00
13,700.00	90.00	359.72	10,653.00	3,307.14	1,088.18	3,301.79	0.00	0.00	0.00
13,800.00	90.00	359.72	10,653.00	3,407.14	1,087.69	3,401.79	0.00	0.00	0.00
13,900.00	90.00	359.72	10,653.00	3,507.14	1,087.19	3,501.79	0.00	0.00	0.00
14,000.00	90.00	359.72	10,653.00	3,607.14	1,086.69	3,601.79	0.00	0.00	0.00
14,100.00	90.00	359.72	10,653.00	3,707.14	1,086.20	3,701.79	0.00	0.00	0.00
14,200.00	90.00	359.72	10,653.00	3,807.14	1,085.70	3,801.79	0.00	0.00	0.00
14,300.00	90.00	359.72	10,653.00	3,907.14	1,085.21	3,901.79	0.00	0.00	0.00
14,400.00	90.00	359.72	10,653.00	4,007.13	1,084.71	4,001.79	0.00	0.00	0.00
14,500.00	90.00	359.72	10,653.00	4,107.13	1,084.22	4,101.79	0.00	0.00	0.00
14,600.00	90.00	359.72	10,653.00	4,207.13	1,083.72	4,201.79	0.00	0.00	0.00



Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,700.00	90.00	359.72	10,653.00	4,307.13	1,083.22	4,301.79	0.00	0.00	0.00
14,800.00	90.00	359.72	10,653.00	4,407.13	1,082.73	4,401.79	0.00	0.00	0.00
14,900.00	90.00	359.72	10,653.00	4,507.13	1,082.23	4,501.79	0.00	0.00	0.00
15,000.00	90.00	359.72	10,653.00	4,607.13	1,081.74	4,601.79	0.00	0.00	0.00
15,100.00	90.00	359.72	10,653.00	4,707.13	1,081.24	4,701.79	0.00	0.00	0.00
15,200.00	90.00	359.72	10,653.00	4,807.13	1,080.74	4,801.79	0.00	0.00	0.00
15,300.00	90.00	359.72	10,653.00	4,907.12	1,080.25	4,901.79	0.00	0.00	0.00
15,400.00	90.00	359.72	10,653.00	5,007.12	1,079.75	5,001.79	0.00	0.00	0.00
15,500.00	90.00	359.72	10,653.00	5,107.12	1,079.26	5,101.79	0.00	0.00	0.00
15,600.00	90.00	359.72	10,653.00	5,207.12	1,078.76	5,201.79	0.00	0.00	0.00
15,700.00	90.00	359.72	10,653.00	5,307.12	1,078.27	5,301.79	0.00	0.00	0.00
15,800.00	90.00	359.72	10,653.00	5,407.12	1,077.77	5,401.79	0.00	0.00	0.00
15,900.00	90.00	359.72	10,653.00	5,507.12	1,077.27	5,501.79	0.00	0.00	0.00
16,000.00	90.00	359.72	10,653.00	5,607.12	1,076.78	5,601.79	0.00	0.00	0.00
16,100.00	90.00	359.72	10,653.00	5,707.11	1,076.28	5,701.79	0.00	0.00	0.00
16,200.00	90.00	359.72	10,653.00	5,807.11	1,075.79	5,801.79	0.00	0.00	0.00
16,300.00	90.00	359.72	10,653.00	5,907.11	1,075.29	5,901.79	0.00	0.00	0.00
16,400.00	90.00	359.72	10,653.00	6,007.11	1,074.80	6,001.79	0.00	0.00	0.00
16,500.00	90.00	359.72	10,653.00	6,107.11	1,074.30	6,101.79	0.00	0.00	0.00
16,600.00	90.00	359.72	10,653.00	6,207.11	1,073.80	6,201.79	0.00	0.00	0.00
16,700.00	90.00	359.72	10,653.00	6,307.11	1,073.31	6,301.79	0.00	0.00	0.00
16,800.00	90.00	359.72	10,653.00	6,407.11	1,072.81	6,401.79	0.00	0.00	0.00
16,900.00	90.00	359.72	10,653.00	6,507.10	1,072.32	6,501.79	0.00	0.00	0.00
17,000.00	90.00	359.72	10,653.00	6,607.10	1,071.82	6,601.79	0.00	0.00	0.00
17,100.00	90.00	359.72	10,653.00	6,707.10	1,071.33	6,701.79	0.00	0.00	0.00
17,200.00	90.00	359.72	10,653.00	6,807.10	1,070.83	6,801.79	0.00	0.00	0.00
17,300.00	90.00	359.72	10,653.00	6,907.10	1,070.33	6,901.79	0.00	0.00	0.00
17,400.00	90.00	359.72	10,653.00	7,007.10	1,069.84	7,001.79	0.00	0.00	0.00
17,500.00	90.00	359.72	10,653.00	7,107.10	1,069.34	7,101.79	0.00	0.00	0.00
17,600.00	90.00	359.72	10,653.00	7,207.10	1,068.85	7,201.79	0.00	0.00	0.00
17,700.00	90.00	359.72	10,653.00	7,307.09	1,068.35	7,301.79	0.00	0.00	0.00
17,800.00	90.00	359.72	10,653.00	7,407.09	1,067.86	7,401.79	0.00	0.00	0.00
17,900.00	90.00	359.72	10,653.00	7,507.09	1,067.36	7,501.79	0.00	0.00	0.00
18,000.00	90.00	359.72	10,653.00	7,607.09	1,066.86	7,601.79	0.00	0.00	0.00
18,100.00	90.00	359.72	10,653.00	7,707.09	1,066.37	7,701.79	0.00	0.00	0.00
18,200.00	90.00	359.72	10,653.00	7,807.09	1,065.87	7,801.79	0.00	0.00	0.00
18,300.00	90.00	359.72	10,653.00	7,907.09	1,065.38	7,901.79	0.00	0.00	0.00
18,400.00	90.00	359.72	10,653.00	8,007.09	1,064.88	8,001.79	0.00	0.00	0.00
18,500.00	90.00	359.72	10,653.00	8,107.08	1,064.38	8,101.79	0.00	0.00	0.00
18,517.12	90.00	359.72	10,653.00	8,124.20	1,064.30	8,118.90	0.00	0.00	0.00



Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
MW 18 Fed #104H: S - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	410,910.30	626,396.00	32.129051	-103.925026
MW 18 Fed #104H: F - plan misses target center by 62.87usft at 11103.83usft MD (10653.00 TVD, 715.00 N, 1039.13 E) - Point	0.00	0.00	10,653.00	703.30	1,100.90	411,613.60	627,496.90	32.130972	-103.921461
MW 18 Fed #104H: P - plan hits target center - Point	0.00	0.00	10,653.00	8,124.20	1,064.30	419,034.50	627,460.30	32.151373	-103.921488
MW 18 Fed #104H: L - plan misses target center by 0.06usft at 18387.11usft MD (10653.00 TVD, 7994.20 N, 1064.94 E) - Point	0.00	0.00	10,653.00	7,994.20	1,065.00	418,904.50	627,461.00	32.151015	-103.921487

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
900.00	900.00	13 3/8"	13.375	17.500
3,400.00	3,400.00	9 5/8"	9.625	12.250
11,046.24	10,653.00	7"	7.000	7.500

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
720.00	720.00	Rustler			
1,035.00	1,035.00	Salado (Top of Salt)			
3,307.00	3,307.00	Base of Salt			
3,490.00	3,490.00	Delaware (Bell Canyon)			
4,376.67	4,371.00	Cherry Canyon			
6,029.26	6,005.00	Brushy Canyon			
7,256.05	7,218.00	Bone Spring			
7,269.20	7,231.00	Bone Spring Lime			
8,291.70	8,242.00	1st Bone Spring Sand			
8,675.01	8,621.00	2nd Bone Spring Lime			
9,105.85	9,047.00	2nd Bone Spring Sand			
9,374.88	9,313.00	3rd Bone Spring Lime			
9,752.69	9,687.00	Harkey sand			
10,000.20	9,934.00	Lower 3rd Bone Spring Lime			
10,066.20	10,000.00	Lower 3rd Bone Spring Shale			
10,206.31	10,140.00	3rd Bone Spring Sand			
10,583.40	10,476.00	3rd Bone Spring Red Hills Sand			
10,681.89	10,541.00	Wolfcamp			
10,718.89	10,562.00	Wolfcamp X Sand			
10,863.18	10,624.00	Wolfcamp Y Sand			
11,046.24	10,653.00	Landing Point			

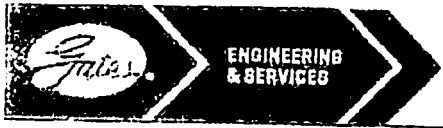


Planning Report



Database: WBDS_SQL_2
Company: XTO Energy
Project: Eddy County, NM (Nad-27 / East Zone)
Site: Muy Wayno 18 Federal
Well: #104H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #104H
TVD Reference: RKB = 26' @ 3191.00usft (PAT 225)
MD Reference: RKB = 26' @ 3191.00usft (PAT 225)
North Reference: Grid
Survey Calculation Method: Minimum Curvature



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

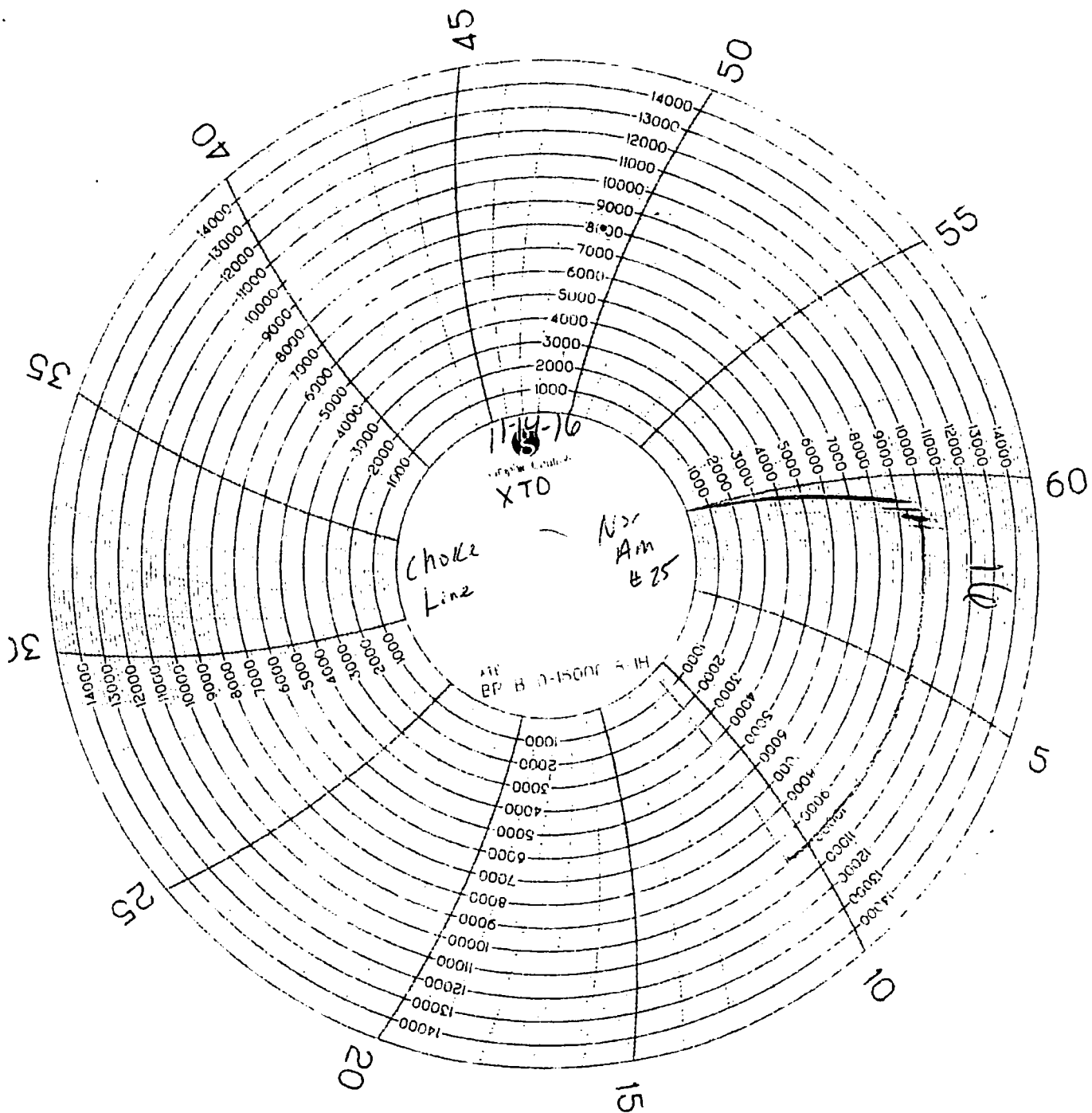
PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: crpe@s@gates.com
WEB: www.gates.com

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:	FDJ-0-12.0R-1/16.5KFLGE;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:	





MOON

HOSE I.D. 2 1/2" LENGTH 42' 1/2"

GRADE 2500

TEST PRESSURE 500 PSI

TEST DATE 12-14-74

SERIAL 638070011313-04814

ASSEMBLY DATE 12-14-74

CH 2500

MADE 12-14-74

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO ENERGY, INC
LEASE NO.:	NMLC065705B
WELL NAME & NO.:	MUY MAYNO 18 FEDERAL 104H
SURFACE HOLE FOOTAGE:	2310' FSL & 1205' FWL
BOTTOM HOLE FOOTAGE:	200' FNL & 2310' 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

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

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)
393-3612

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 integrity 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 integrity 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 011419

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

13 3/8	surface csg in a	17 1/2	inch hole.	<u>Design Factors</u>				<u>SURFACE</u>	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	54.50	J 55	BUTT	18.64	2.94	1.54	840	45,780	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Tail Cmt	does not	circ to sfc.	Totals:	840	45,780
<u>Comparison of Proposed to Minimum Required Cement Volumes</u>									
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	700	1153	638	81	8.80	1035	2M	1.56

9 5/8	casing inside the	13 3/8		<u>Design Factors</u>				<u>INTERMEDIATE</u>	
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	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1170	2073	1106	87	10.20	2893	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		<u>Design Factors</u>				<u>PRODUCTION</u>	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	32.00	P 110	BUTT	3.03	2.15	1.91	10,146	324,672	
"B"	32.00	P 110	BUTT	188.99	2.08	1.91	604	19,328	
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,232							Totals:	10,750	344,000
B would be:				74.14	2.07	if it were a vertical wellbore.			
No Pilot Hole Planned				MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°
				10750	10578	10578	10146	60	-1
The cement volume(s) are intended to achieve a top of				3140	ft from surface or a			200	overlap.
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.1503	1040	1922	1155	66	9.50	3744	5M	0.55

Class 'H' tail cmt yld > 1.20

Tail cmt	4 1/2	Liner w/top @	10146		<u>Design Factors</u>				<u>LINER</u>	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight		
"A"	13.50	P 110	BUTT	2.89	1.61	2.04	900	12,150		
"B"	13.50	P 110	BUTT	3.20	1.75	2.04	7,471	100,859		
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,344							Totals:	8,371	113,009	
A Segment Design Factors would be:				3.92	1.75	if it were a vertical wellbore.				
No Pilot Hole Planned				MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
				18517	10653	10653	10146	90	10	11046
The cement volume(s) are intended to achieve a top of				10146	ft from surface or a			604	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist	
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg	
6	0.0859	710	944	680	39	11.00			0.50	

Class 'H' tail cmt yld > 1.20

Capitan Reef est top XXXX.