

Form 3160-3  
(June 2015)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NMNM0002887A</b>
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. <b>JAMES RANCH / NMNM 070965X</b>
2. Name of Operator <b>XTO PERMIAN OPERATING LLC</b>		8. Lease Name and Well No. <b>JAMES RANCH UNIT DI 7 SAWTOOTH 112H</b>
3a. Address <b>6401 Holiday Hill Road, Bldg 5, Midland, TX 79707</b>	3b. Phone No. (include area code) <b>(432) 682-8873</b>	9. API Well No. <b>30-015-50086</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <b>LOT 1 / 240 FNL / 400 FEL / LAT 32.340092 / LONG -103.809752</b> At proposed prod. zone <b>SWNE / 2490 FNL / 1650 FEL / LAT 32.304886 / LONG -103.813728</b>		10. Field and Pool, or Exploratory <del>CATUNA CANYON</del> ; BONE SPRING/null
11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 6/T23S/R31E/NMP</b>		
14. Distance in miles and direction from nearest town or post office*		12. County or Parish <b>EDDY</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>150 feet</b>		13. State <b>NM</b>
16. No of acres in lease <b>685.5</b>	17. Spacing Unit dedicated to this well <b>399.94</b>	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>30 feet</b>	19. Proposed Depth <b>11241 feet / 23704 feet</b>	20. BLM/BIA Bond No. in file <b>FED: COB000050</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3332 feet</b>	22. Approximate date work will start* <b>03/01/2020</b>	23. Estimated duration <b>60 days</b>
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>KELLY KARDOS / Ph: (432) 682-8873</b>	Date <b>10/17/2019</b>
Title <b>Regulatory Coordinator</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>Cody Layton / Ph: (575) 234-5959</b>	Date <b>11/06/2020</b>
Title <b>Assistant Field Manager Lands &amp; Minerals</b>		
Office <b>Carlsbad Field Office</b>		

Application approval 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.

Conditions of approval, if any, are attached.

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.

**APPROVED WITH CONDITIONS**  
Approval Date: 11/06/2020

(Continued on page 2)

\*(Instructions on page 2)

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (505) 393-6316 Fax: (505) 393-0720

**District II**  
811 S. First St., Artesia, NM 88210  
Phone: (505) 746-1283 Fax: (505) 746-0720

**District III**  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6678 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**

<sup>1</sup> API Number 30-015- 50086		<sup>2</sup> Pool Code 96336	<sup>3</sup> Pool Name Los Medanos (Wolfcamp) South
<sup>4</sup> Property Code 333473	<sup>5</sup> Property Name JAMES RANCH UNIT DI 7 SAWTOOTH		<sup>6</sup> Well Number 112H
<sup>7</sup> OGRID No. 373075	<sup>8</sup> Operator Name XTO PERMIAN OPERATING, LLC		<sup>9</sup> Elevation 3,332'

**<sup>10</sup> Surface Location**

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	6	23 S	31 E		240	NORTH	400	EAST	EDDY

**<sup>11</sup> 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
G	18	23 S	31 E		2,490	NORTH	1,650	EAST	EDDY

<sup>12</sup> Dedicated Acres 399.94	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> 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.

**SHL (NAD83 NME)**  
Y = 487,852.6  
X = 703,040.5  
LAT. = 32.340092 °N  
LONG. = 103.809752 °W

**FTP (NAD83 NME)**  
Y = 487,087.2  
X = 701,796.4  
LAT. = 32.338004 °N  
LONG. = 103.813792 °W

**LTP (NAD83 NME)**  
Y = 475,088.9  
X = 701,874.5  
LAT. = 32.305023 °N  
LONG. = 103.813728 °W

**BHL (NAD83 NME)**  
Y = 475,038.9  
X = 701,874.8  
LAT. = 32.304886 °N  
LONG. = 103.813728 °W

**CORNER COORDINATES (NAD83 NME)**

A - Y = 488,082.7 N	X = 700,798.9 E
B - Y = 485,447.3 N	X = 700,820.4 E
C - Y = 482,806.0 N	X = 700,841.9 E
D - Y = 480,163.7 N	X = 700,856.2 E
E - Y = 477,524.9 N	X = 700,870.5 E
F - Y = 474,884.2 N	X = 700,884.2 E
G - Y = 488,088.6 N	X = 702,118.7 E
H - Y = 485,450.9 N	X = 702,139.9 E
I - Y = 482,810.3 N	X = 702,161.2 E
J - Y = 480,169.2 N	X = 702,176.8 E
K - Y = 477,530.2 N	X = 702,191.0 E
L - Y = 474,890.1 N	X = 702,204.9 E

**SHL (NAD27 NME)**  
Y = 487,792.5  
X = 563,858.3  
LAT. = 32.339969 °N  
LONG. = 103.809261 °W

**FTP (NAD27 NME)**  
Y = 487,027.0  
X = 660,614.2  
LAT. = 32.337883 °N  
LONG. = 103.813308 °W

**LTP (NAD27 NME)**  
Y = 475,029.1  
X = 660,691.9  
LAT. = 32.304900 °N  
LONG. = 103.813298 °W

**BHL (NAD27 NME)**  
Y = 474,979.0  
X = 660,692.2  
LAT. = 32.304762 °N  
LONG. = 103.813278 °W

**CORNER COORDINATES (NAD27 NME)**

A - Y = 488,022.6 N	X = 659,646.8 E
B - Y = 485,387.2 N	X = 659,668.2 E
C - Y = 482,745.9 N	X = 659,689.6 E
D - Y = 480,103.7 N	X = 659,711.0 E
E - Y = 477,463.0 N	X = 659,732.4 E
F - Y = 474,821.3 N	X = 659,753.8 E
G - Y = 488,048.0 N	X = 660,976.5 E
H - Y = 485,408.0 N	X = 660,997.9 E
I - Y = 482,766.8 N	X = 661,019.3 E
J - Y = 480,125.6 N	X = 661,040.7 E
K - Y = 477,484.3 N	X = 661,062.1 E
L - Y = 474,843.0 N	X = 661,083.5 E

**<sup>17</sup> 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.

Stephanie Rabadue 10/10/2019  
Signature Date

Stephanie Rabadue  
Printed Name

stephanie\_rabadue@xtoenergy.com  
E-mail Address

**<sup>18</sup> 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.

08-23-2019  
Date of Survey

Signature and Seal of Professional Surveyor:  
Mark Dillon HARP  
NEW MEXICO  
23786  
PROFESSIONAL SURVEYOR

NEW MEXICO  
Certificate Number: 23786  
LNU 2012100409952

#\PROJECTS\2018\2018040552\XTO\_HU\_DI\_7\_SAWTOOTH\_022H EDI2V\DWG\2018040552-XTO-JAMES\_RANCH\_UNIT\_DI\_7\_SAWTOOTH\_112H C-012.dwg

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** XTO Permian Operating LLC **OGRID:** 373075 **Date:** 10 / 18 / 2022

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
James Ranch Unit DI 7 Sawtooth 110H		4-6-23S-31E	240'FNL & 1149'FEL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 111H		4-6-23S-31E	300'FNL & 1149'FWL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 112H		1-6-23S-31E	240'FNL & 400'FEL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 113H		1-6-23S-31E	300'FNL & 400'FEL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 901H		4-6-23S-31E	210'FNL & 1150'FWL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 902H		4-6-23S-31E	270'FNL & 1149' FWL	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 903H		1-6-23S-31E	210'FNL & 400'FEI	2000	3200	3500
James Ranch Unit DI 7 Sawtooth 904H		1-6-23S-31E	270'FNL & 400'FEI	2000	3200	3500

**IV. Central Delivery Point Name:** JRU DI 7 CTB [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commence ment Date	Initial Flow Back Date	First Production Date
James Ranch Unit DI 7 Sawtooth 110H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 111H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 112H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 113H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 901H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 902H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 903H		TBD	TBD	TBD	TBD	TBD
James Ranch Unit DI 7 Sawtooth 904H		TBD	TBD	TBD	TBD	TBD

**VI. Separation Equipment:** ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

## **Section 2 – Enhanced Plan**

**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

### **IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

### **X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.



**Section 3 - Certifications****Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☐ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☒ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☒ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

**Section 4 - Notices**

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:

*Jessica Dooling*

Printed Name: Jessica Dooling

Title: Lead Regulatory Coordinator

E-mail Address: Jessica.dooling@exxonmobil.com

Date: 10/18/2022

Phone: 970-769-6048

**OIL CONSERVATION DIVISION**  
**(Only applicable when submitted as a standalone form)**

Approved By:

Title:

Approval Date:

Conditions of Approval:

**VI. Separation Equipment:**

XTO Permian Operating, LLC. production tank batteries include separation equipment designed to efficiently separate gas from liquid phases to optimize gas capture based on projected and estimated volumes from the targeted pool in conjunction with the total number of wells planned to or existing within the facility. Separation equipment is upgraded prior to well being drilled or completed, if determined to be undersized or needed. The separation equipment is designed and built according to the relevant industry specifications (API Specification 12J and ASME Sec VIII Div I). Other recognized industry publications such as the Gas Processors Suppliers Association (GPSA) are referenced when designing separation equipment to optimize gas capture.

**VII. Operational Practices:****1. Subsection B.**

- During drilling, flare stacks will be located a minimum of 150 feet from the nearest surface hole location. All gas is captured or combusted. If an emergency or malfunction occurs, gas will be flared or vented for public health, safety and the environment and be properly reported to the NMOCD pursuant to 19.15.27.8.G.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

**2. Subsection C.**

- During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.

For emergencies, equipment malfunction, or if the operator decides to produce oil and gas during well completion:

- Flowlines will be routed for flowback fluids into a completion or storage tank and, if feasible under well conditions, flare rather than vent and commence operation of a separator as soon as it is technically feasible for a separator to function.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

**3. Subsection D.**

- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.
- Monitor manual liquid unloading for wells on-site or in close proximity (<30 minutes' drive time), take reasonable actions to achieve a stabilized rate and pressure at the earliest practical time, and take reasonable actions to minimize venting to the maximum extent practicable.

- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- 4. Subsection E.
  - All tanks and separation equipment are designed for maximum throughput and pressure to minimize waste.
  - Flare stack was installed prior to May 25, 2021 but has been designed for proper size and combustion efficiency. Flare currently has a continuous pilot and is located more than 100 feet from any known well and storage tanks.
  - At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.
- 5. Subsection F.
  - Measurement equipment is installed to measure the volume of natural gas flared from process piping or a flowline piped from the equipment associated with a well and facility associated with the approved application for permit to drill that has an average daily production greater than 60 mcf of natural gas.
  - Measurement equipment installed is not designed or equipped with a manifold to allow diversion of natural gas around the metering equipment, except for the sole purpose of inspecting and servicing the measurement equipment, as noted in NMAC 19.15.27.8 Subsection G.

#### **VIII. Best Management Practices:**

1. During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.
2. Operator does not flow well (well shut in) during initial production until all flowlines, tank batteries, and oil/gas takeaway are installed, tested, and determined operational.
3. Operator equips storage tanks with an automatic gauging system to reduce venting of natural gas.
4. Operator reduces the number of blowdowns by looking for opportunities to coordinate repair and maintenance activities.
5. Operator combusts natural gas that would otherwise be vented or flared, when feasible.
6. Operator has a flare stack designed in accordance with need and to handle sufficient volume to ensure proper combustion efficiency. Flare stacks are equipped with continuous pilots and securely anchored at least 100 feet (at minimum) from storage tanks and wells.
7. Operator minimizes venting (when feasible) through pump downs of vessels and reducing time required to purge equipment before returning equipment to service.
8. Operator will shut in wells (when feasible) in the event of a takeaway disruption, emergency situation, or other operations where venting or flaring may occur due to equipment failures.





U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Drilling Plan Data Report

11/06/2020

APD ID: 10400049563

Submission Date: 10/17/2019

Highlighted data  
reflects the most  
recent changes

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: JAMES RANCH UNIT DI 7 SAWTOOTH

Well Number: 112H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
563709	PERMIAN	3332	0	0	ALLUVIUM, OTHER : Quaternary	NONE	N
563700	RUSTLER	3025	307	307	SANDSTONE	USEABLE WATER	N
563701	TOP SALT	2575	757	757	SALT	POTASH	N
563702	BASE OF SALT	-404	3736	3736	SALT	POTASH	N
563704	DELAWARE	-643	3975	3975	MARL, SANDSTONE	NATURAL GAS, OIL, OTHER : Produced Water	N
563698	BONE SPRING 1ST	-5548	8880	8880	SANDSTONE	NATURAL GAS, OTHER, POTASH : Produced Water	N
563699	BONE SPRING 2ND	-6475	9807	9807	SANDSTONE	NATURAL GAS, OIL, OTHER, POTASH : Produced Water	N
563712	BONE SPRING 3RD	-7333	10665	10665	SANDSTONE	NATURAL GAS, OIL, OTHER, POTASH : Produced Water	N
563713	WOLFCAMP	-7797	11129	11129	SHALE	NATURAL GAS, OIL, OTHER, POTASH : Produced Water	Y

### Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 11241

**Equipment:** The blow out preventer equipment (BOP) on surface casing temporary wellhead will consist of a 21-1/4 minimum 2M Hydril. MASP should not exceed 1198 psi. Once the permanent WH is installed on the 13-3/8 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8 minimum 5M Hydril and a 13-5/8 minimum 5M Double Ram BOP. MASP should not exceed 3412 psi. In any instance where 10M BOP is required by BLM, XTO requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M).

**Requesting Variance?** YES

**Variance request:** · XTO requests to not utilize centralizers in the curve and lateral · 18-5/8" Collapse analyzed using 75% evacuation. Casing to be filled while running. · 13-3/8" Collapse analyzed using 50% evacuation based on regional experience. · 9-5/8" Collapse analyzed using 33% evacuation based on regional experience. · 5-1/2" Tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35 · Test on 2M Annular & Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less. Permanent Wellhead – GE RSH Multibowl System A. Starting Head: 13-5/8" 5M top flange x 13-3/8" SOW bottom B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 10M top flange 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

Page 1 of 7

**Operator Name:** XTO PERMIAN OPERATING LLC**Well Name:** JAMES RANCH UNIT DI 7 SAWTOOTH**Well Number:** 112H

certification and pressure test chart. The manufacturer does not require anchors. Permanent Wellhead – GE RSH Multibowl System A. Starting Head: 13-5/8" 5M top flange x 11-3/4" SOW bottom B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 10M top flange · Wellhead will be installed by manufacturer's representatives. · Manufacturer will monitor welding process to ensure appropriate temperature of seal. · Operator will test the 8-5/8" casing per BLM Onshore Order 2 · Wellhead Manufacturer representative will not be present for BOP test plug installation

**Testing Procedure:** All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-3/8, 5M bradenhead and flange, the BOP test will be limited to 5M psi. When nipping up on the 9-5/8, the BOP will be tested to a minimum of 5M 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.

**Choke Diagram Attachment:**

JRU\_DI\_7\_10MCM\_20191015123431.pdf

JRU\_7\_2MCM\_20191015123403.pdf

JRU\_7\_5MCM\_20191015123414.pdf

**BOP Diagram Attachment:**

JRU\_7\_2MBOP\_20191015123447.pdf

JRU\_7\_5MBOP\_20191015123500.pdf

JRU\_DI\_7\_5M10MBOP\_20191015123513.pdf

JRU\_7\_MBS5.5\_20191015123530.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	24	18.625	NEW	API	N	0	732	0	732	3332	2600	732	H-40	87.5	ST&C	1.9	1.36	DRY	8.73	DRY	8.73
2	INTERMEDIATE	17.5	13.375	NEW	API	N	0	3925	0	3925	3316	-593	3925	J-55	68	ST&C	1.61	1.59	DRY	2.53	DRY	2.53
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	8372	0	8372	3316	-5040	8372	HCL-80	40	LT&C	2.42	1.69	DRY	2.17	DRY	2.17
4	PRODUCTION	8.75	5.5	NEW	API	N	0	23704	0	11241	3316	-7909	23704	P-110	17	BUTT	1.27	1.12	DRY	2.03	DRY	2.03

**Casing Attachments**

**Operator Name:** XTO PERMIAN OPERATING LLC**Well Name:** JAMES RANCH UNIT DI 7 SAWTOOTH**Well Number:** 112H**Casing Attachments**

---

**Casing ID:** 1      **String Type:** SURFACE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**JRU\_7\_Sawtooth\_112H\_Csg\_20191016112931.pdf

---

**Casing ID:** 2      **String Type:** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**JRU\_7\_Sawtooth\_112H\_Csg\_20191016113001.pdf

---

**Casing ID:** 3      **String Type:** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**JRU\_7\_Sawtooth\_112H\_Csg\_20191016113024.pdf

---

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: JAMES RANCH UNIT DI 7 SAWTOOTH

Well Number: 112H

## Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

JRU\_7\_Sawtooth\_112H\_Csg\_20191016113054.pdf

## Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	732	570	1.87	12.9	1065.9	100	EconoCem-HLTRRC	none
SURFACE	Tail				550	1.35	14.8	742.5	100	Halcem-C	2% CaCl
INTERMEDIATE	Lead		0	3925	2690	1.87	12.9	5030.3	100	EconoCem-HLTRRC	none
INTERMEDIATE	Tail				300	1.35	14.8	405	100	HalCem-C	2% CaCl
INTERMEDIATE	Lead	3975	0	8372	1290	1.88	12.9	2425.19	100	Halcem-C	2% CaCl
INTERMEDIATE	Tail				230	1.33	14.8	305.9	100	Halcem-C	2% CaCl
INTERMEDIATE	Lead		3975	8372	1150	1.88	12.9	2162	100	Halcem-C	2% CaCl
INTERMEDIATE	Tail				230	1.33	14.8	305.9	100	Halcem-C	2% CaCl
PRODUCTION	Lead		7872	23704	2660	1.61	13.2	4282.6	30	VersaCem	none

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: JAMES RANCH UNIT DI 7 SAWTOOTH

Well Number: 112H

### Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

**Describe what will be on location to control well or mitigate other conditions:** The necessary mud products for weight addition and fluid loss control will be on location at all times.

**Describe the mud monitoring system utilized:** A Pason or Totco will be used to detect changes in loss or gain of mud volume.

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
3925	8372	OTHER : FW/Cut Brine	8.7	9.4							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
0	732	OTHER : FW/Native	8.4	8.8							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
732	3925	OTHER : Brine	9.8	10.2							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



**Operator Name:** XTO PERMIAN OPERATING LLC**Well Name:** JAMES RANCH UNIT DI 7 SAWTOOTH**Well Number:** 112H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
											as a closed loop system
8372	1124 1	OTHER : Cut Brine/Polymer	9.8	10.1							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

### Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

Open hole logging will not be done on this well. 2-man mud logging unit below intermediate casing

**List of open and cased hole logs run in the well:**

CEMENT BOND LOG,COMPENSATED NEUTRON LOG,DIRECTIONAL SURVEY,GAMMA RAY LOG,MUD LOG/GEOLOGIC LITHOLOGY LOG,

**Coring operation description for the well:**

No coring will take place on this well.

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5871

**Anticipated Surface Pressure:** 3444

**Anticipated Bottom Hole Temperature(F):** 185

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

Potential loss of circulation through the Capitan Reef.

**Contingency Plans geohazards description:**

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

**Contingency Plans geohazards attachment:**

**Operator Name:** XTO PERMIAN OPERATING LLC**Well Name:** JAMES RANCH UNIT DI 7 SAWTOOTH**Well Number:** 112H**Hydrogen Sulfide drilling operations plan required?** YES**Hydrogen sulfide drilling operations plan:**

JRU\_7\_H2S\_Dia\_20191015130223.pdf

JRU\_7\_H2S\_Plan\_20191015130210.pdf

**Section 8 - Other Information****Proposed horizontal/directional/multi-lateral plan submission:**

JRU\_7\_Sawtooth\_112H\_DD\_20191016113347.pdf

**Other proposed operations facets description:**

The surface fresh water sands will be protected by setting 18-5/8" inch casing @ 732' (25' above the salt) and circulating cement back to surface. The salt will be isolated by setting 13-3/8 inch casing at 3925' and circulating cement to surface. The second intermediate will isolate from the salt down to the next casing seat by setting 9-5/8 inch casing at 8372' and cemented back into the 13-3/8 inch casing shoe. A 8-3/4" inch curve and lateral hole will be drilled to MD/TD and 5-1/2 inch casing will be set at TD and cemented back up to 2nd intermediate (estimated TOC 7872 feet) per Potash regulations.

**Other proposed operations facets attachment:**

JRU\_7\_GCP\_20191015130302.pdf

**Other Variance attachment:**

JRU\_7\_FH\_20191015130318.pdf

JRU\_7\_WWC\_20191015130332.pdf

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' - 732'	18-5/8"	87.5	STC	H-40	New	1.36	1.90	8.73
17-1/2"	0' - 3925'	13-3/8"	68	STC	J-55	New	1.59	1.61	2.53
12-1/4"	0' - 8372'	9-5/8"	40	LTC	HCL-80	New	1.69	2.42	2.17
8-3/4"	0' - 23704'	5-1/2"	17	BTC	P-110	New	1.12	1.27	2.02

XTO requests to not utilize centralizers in the curve and lateral

18-5/8" Collapse analyzed using 75% evacuation Casing to be filled while running

13-3/8" Collapse analyzed using 50% evacuation based on regional experience

9-5/8" Collapse analyzed using 33% evacuation based on regional experience

5-1/2" Tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

Test on 2M Annular & Casing will be limited to 70% burst of the casing or 1500 psi whichever is less

Wellhead:

Temporary Wellhead

18-5/8" SOW bottom x 21-1/4" 2M top flange

Permanent Wellhead - GE RSH Multibore System

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

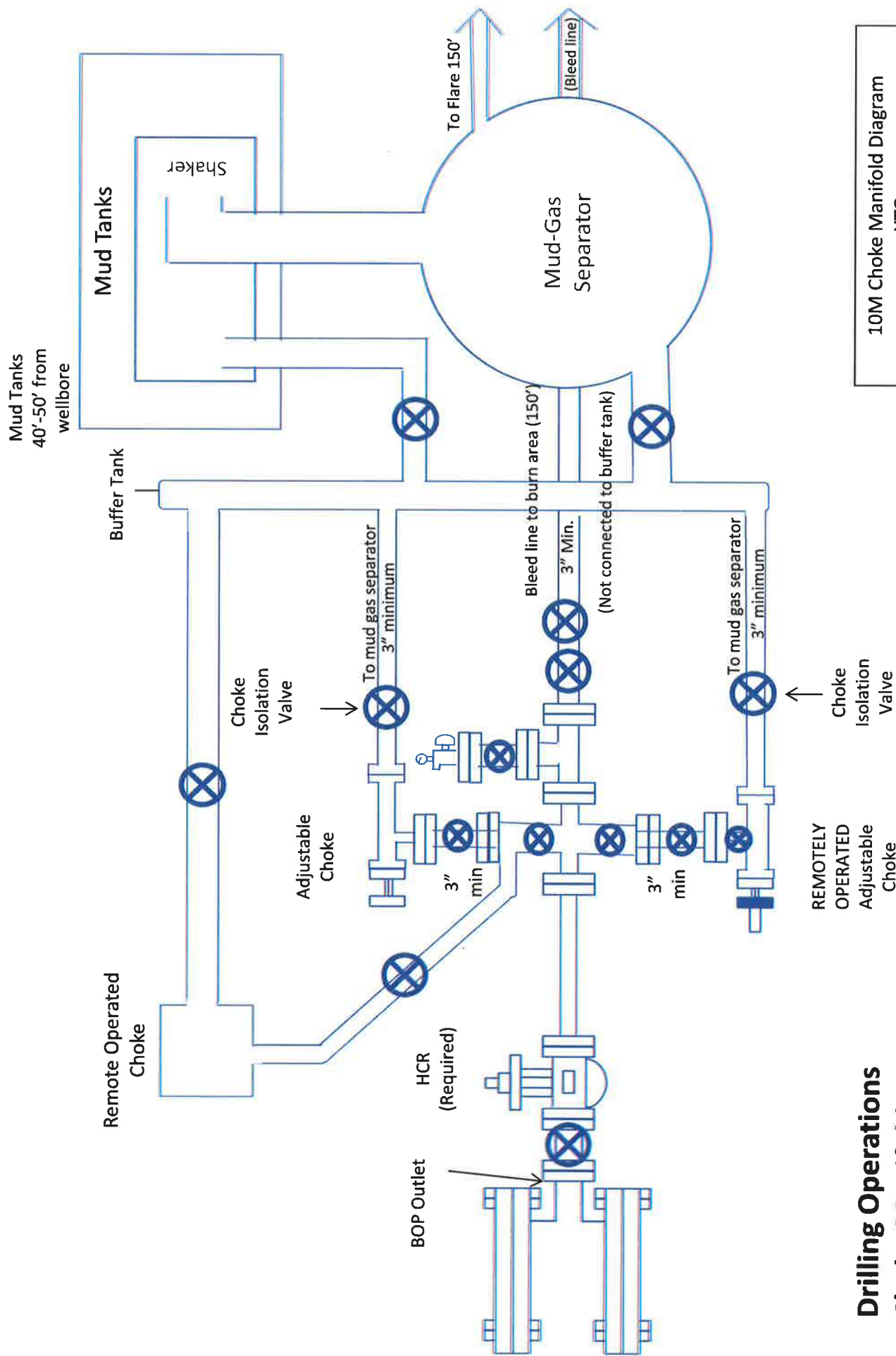
B Tubing Head 13-5/8" 5M bottom flange x 7-1/16" 10M top flange

Wellhead will be installed by manufacturer's representatives

Manufacturer will monitor welding process to ensure appropriate temperature of seal

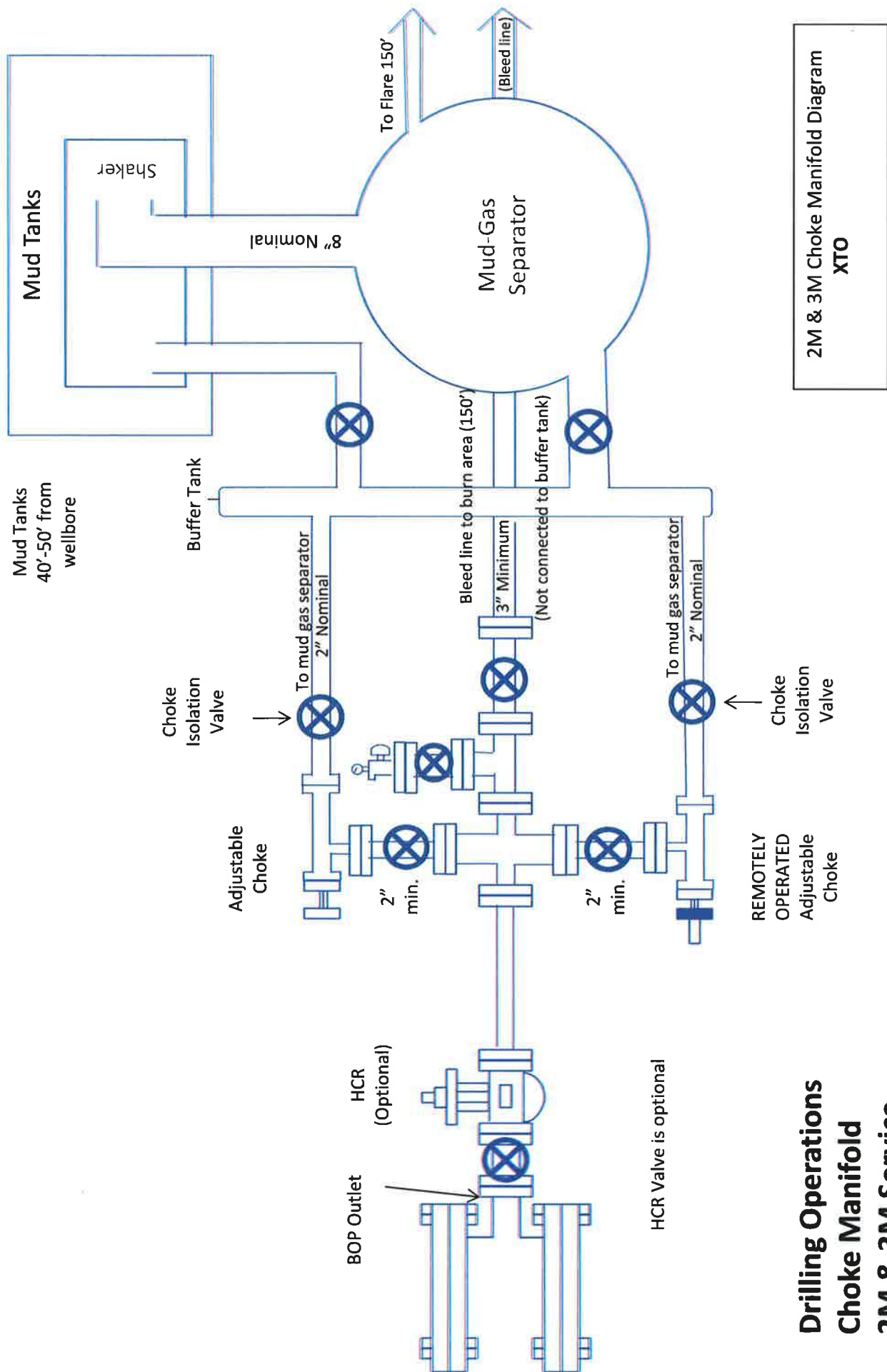
Operator will test the 9-5/8" casing per BLM Onshore Order 2

Wellhead Manufacturer representative will not be present for BOP test plug installation

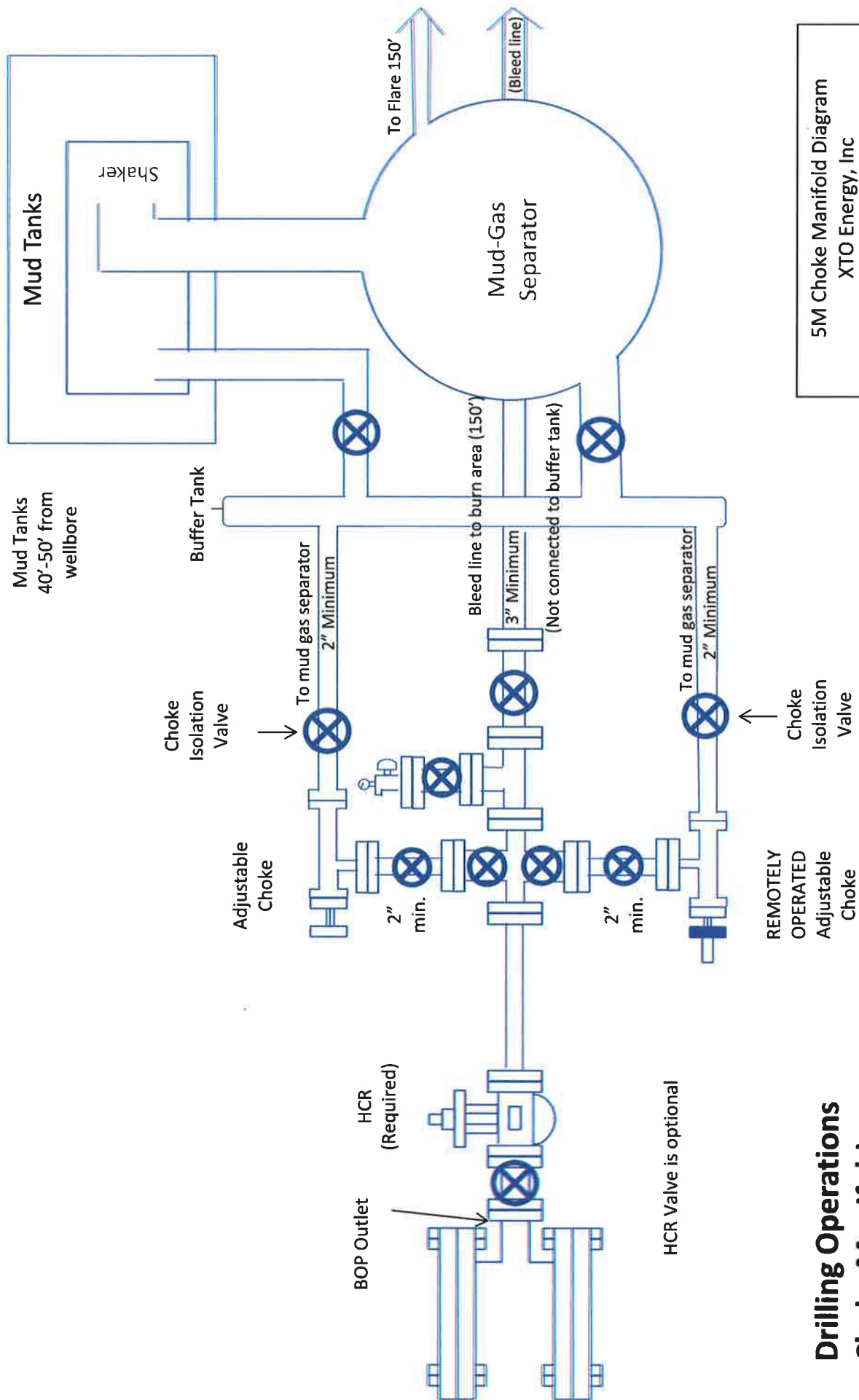


# Drilling Operations Choke Manifold 10M Service

10M Choke Manifold Diagram  
XTO

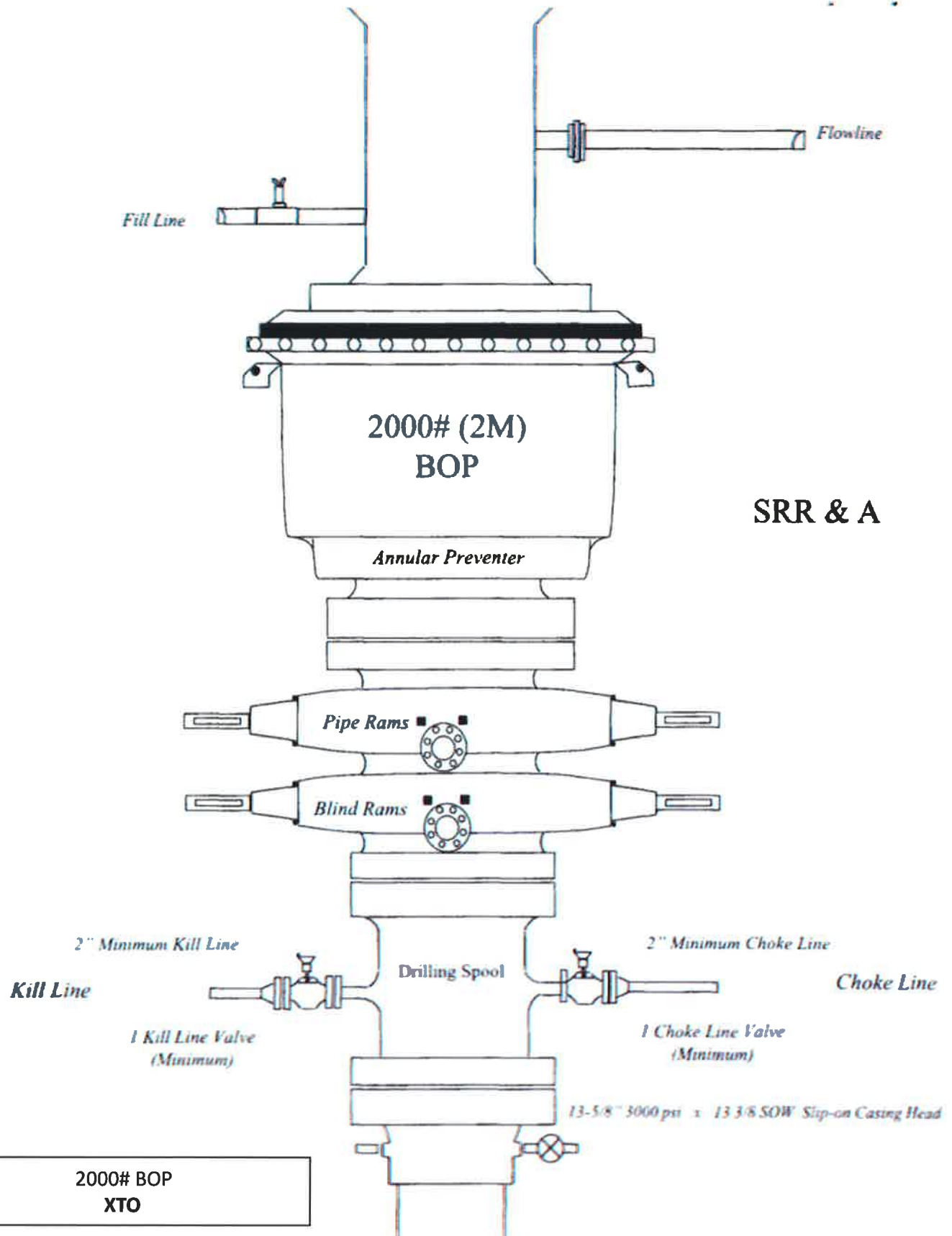


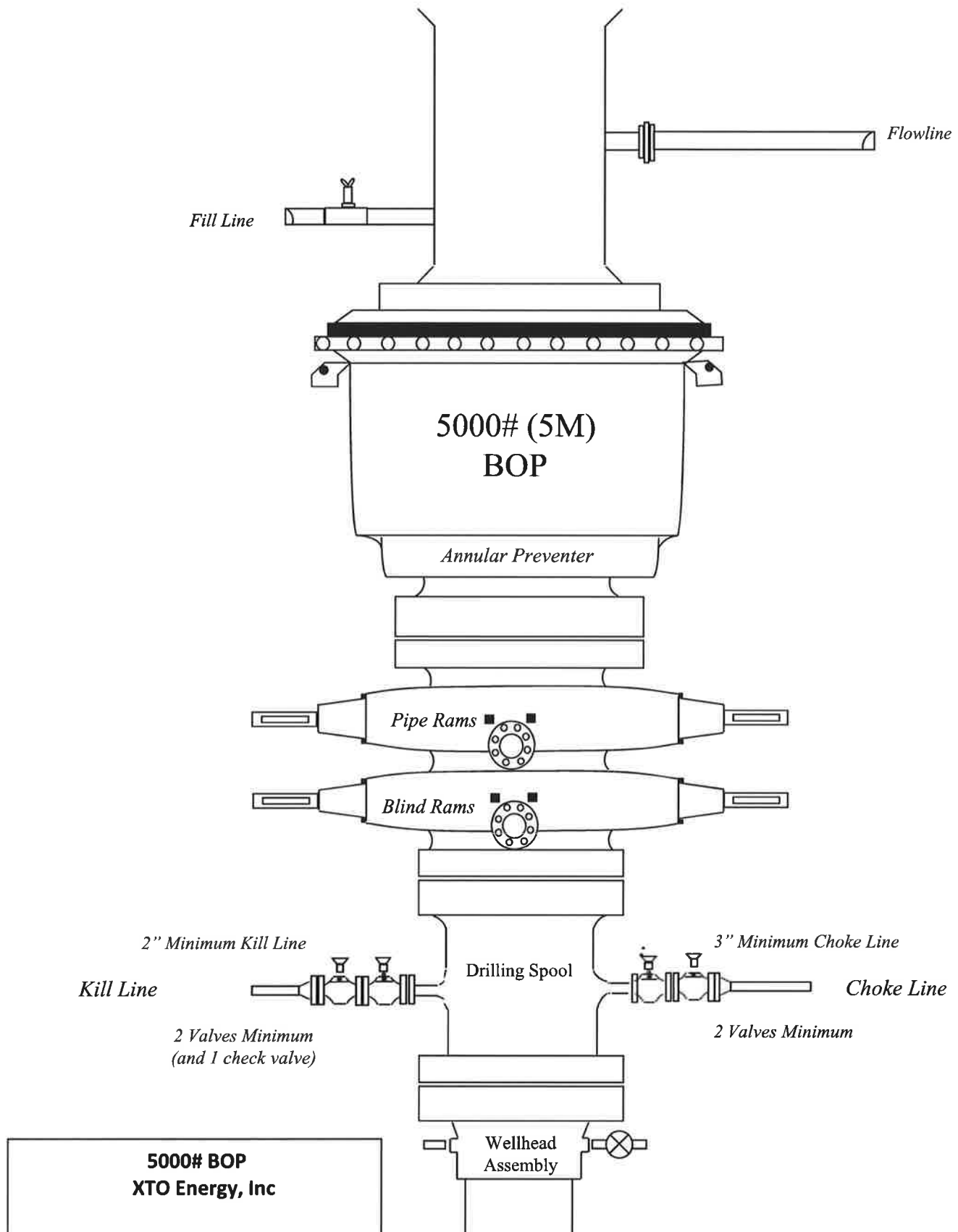


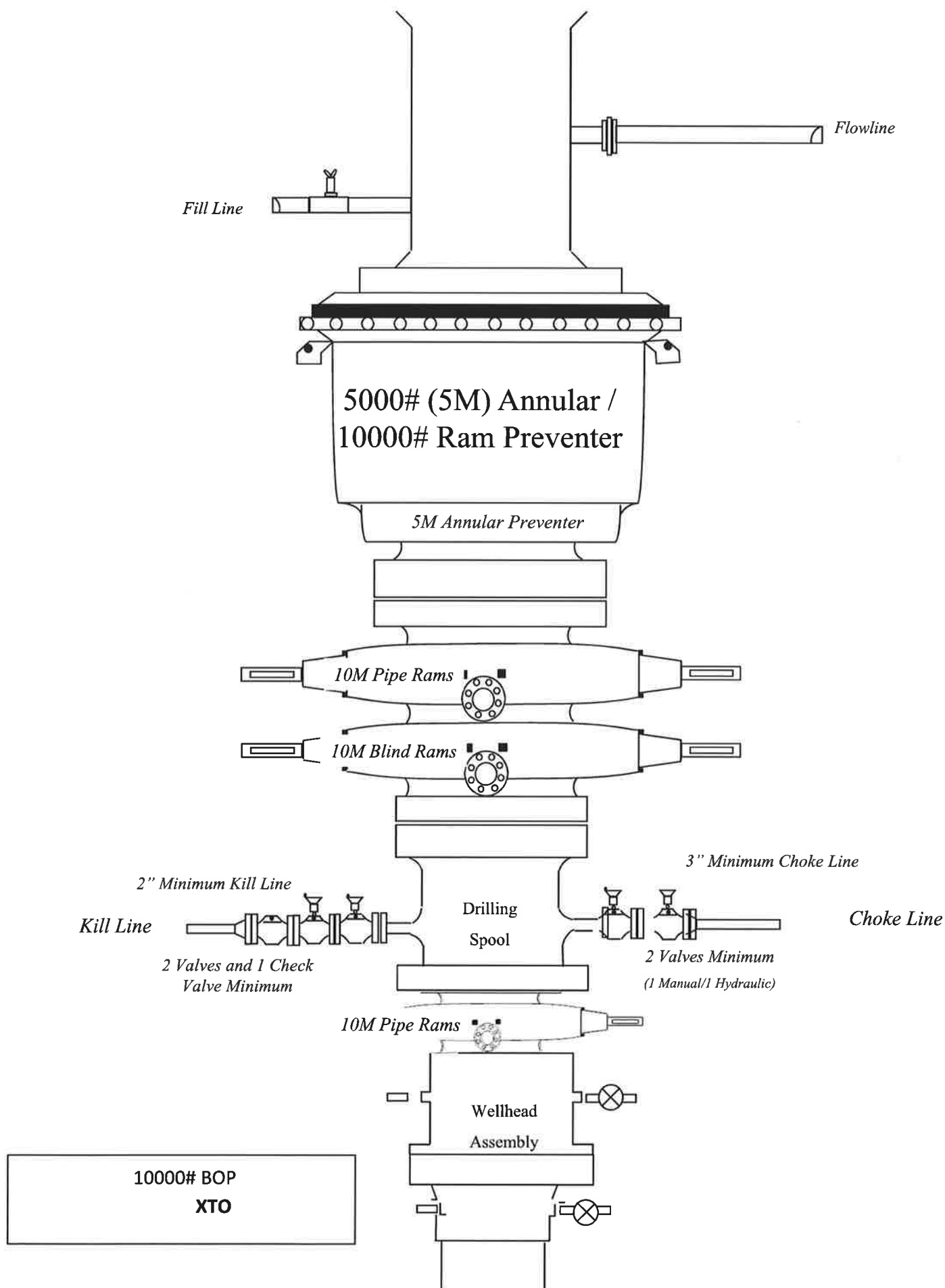


5M Choke Manifold Diagram  
XTO Energy, Inc

# Drilling Operations Choke Manifold 5M Service







## 10,000 PSI Annular BOP Variance Request

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

### 1. Component and Preventer Compatibility Tables

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

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



## 2. Well Control Procedures

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

### General Procedure While Drilling

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

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

#### General Procedure While Tripping

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

#### General Procedure While Running Production Casing

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

General Procedure With No Pipe In Hole (Open Hole)

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

General Procedures While Pulling BHA Through Stack

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

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



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

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

### GRADE D PRESSURE TEST CERTIFICATE

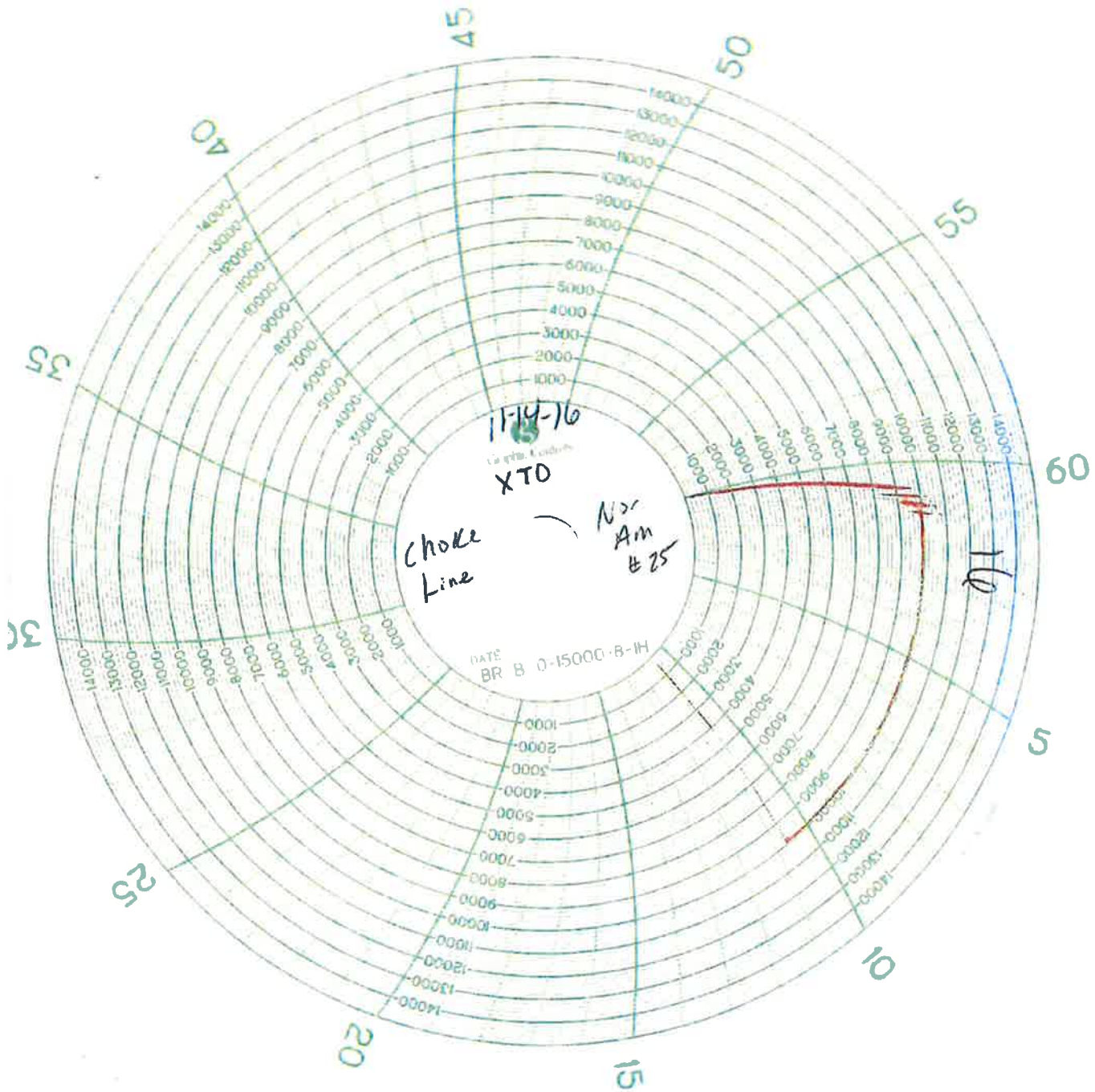
Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-060S14-1
Invoice No. :	201709	Created By:	MORI-IA
Product Description:	FD3.0-12.0R41/16.5KFLGE/E LE		
End Fitting 1 :	4 1/16 in.5K FLG	End Fitting 2 :	4 1/16 in.5K FLG
Gates Part No. :	4774-6001	Assembly Code :	L33090011513D-060814-1
Working Pressure :	5,000 PSI	Test Pressure :	7,500 PSI

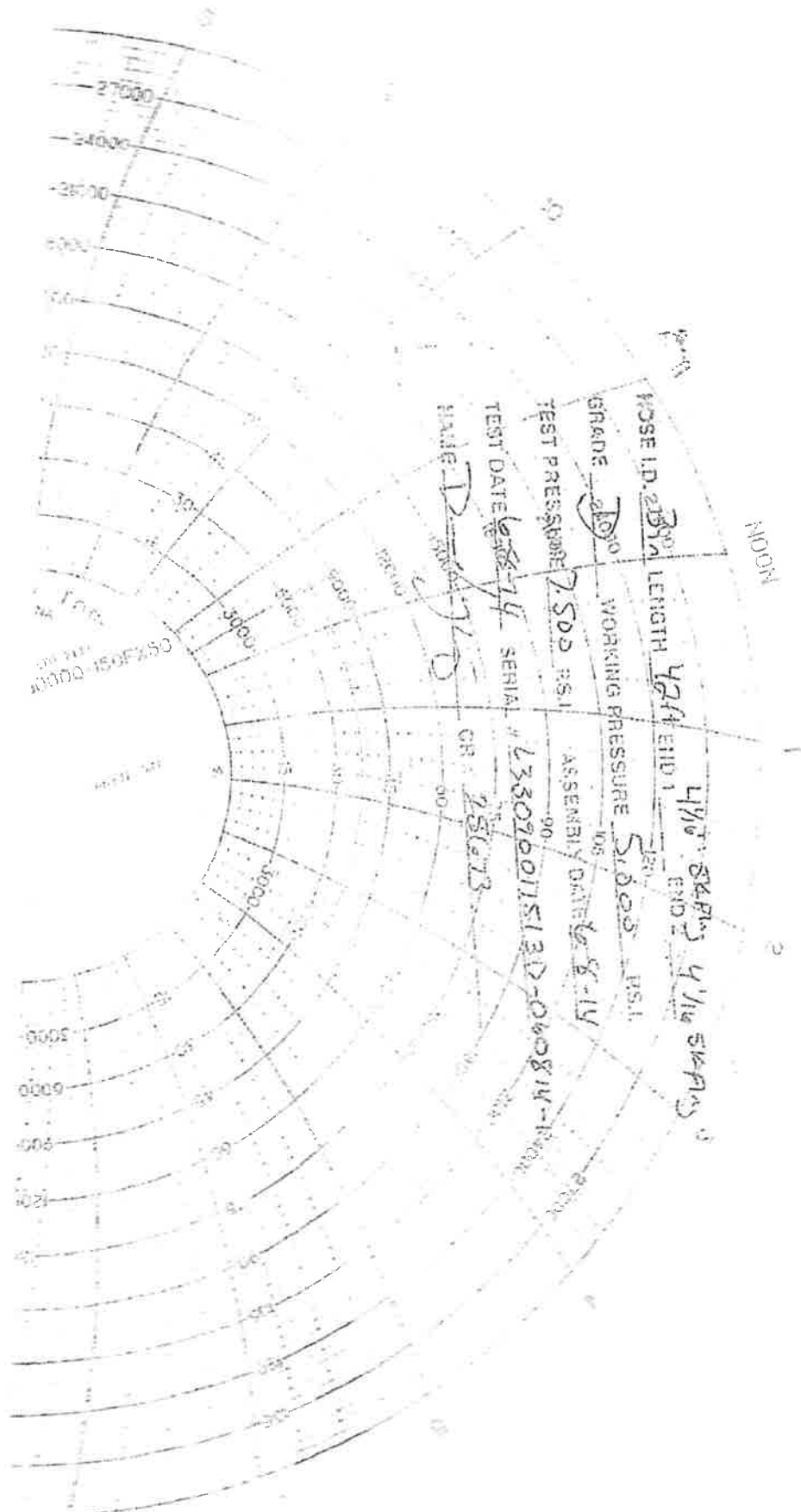
Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance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

Quality:	QUALITY	Technical Supervisor :	PRODUCTION
Date:	6/8/2014	Date:	6/8/2014
Signature:		Signature:	

Form: PTC - 01 Rev.0 2

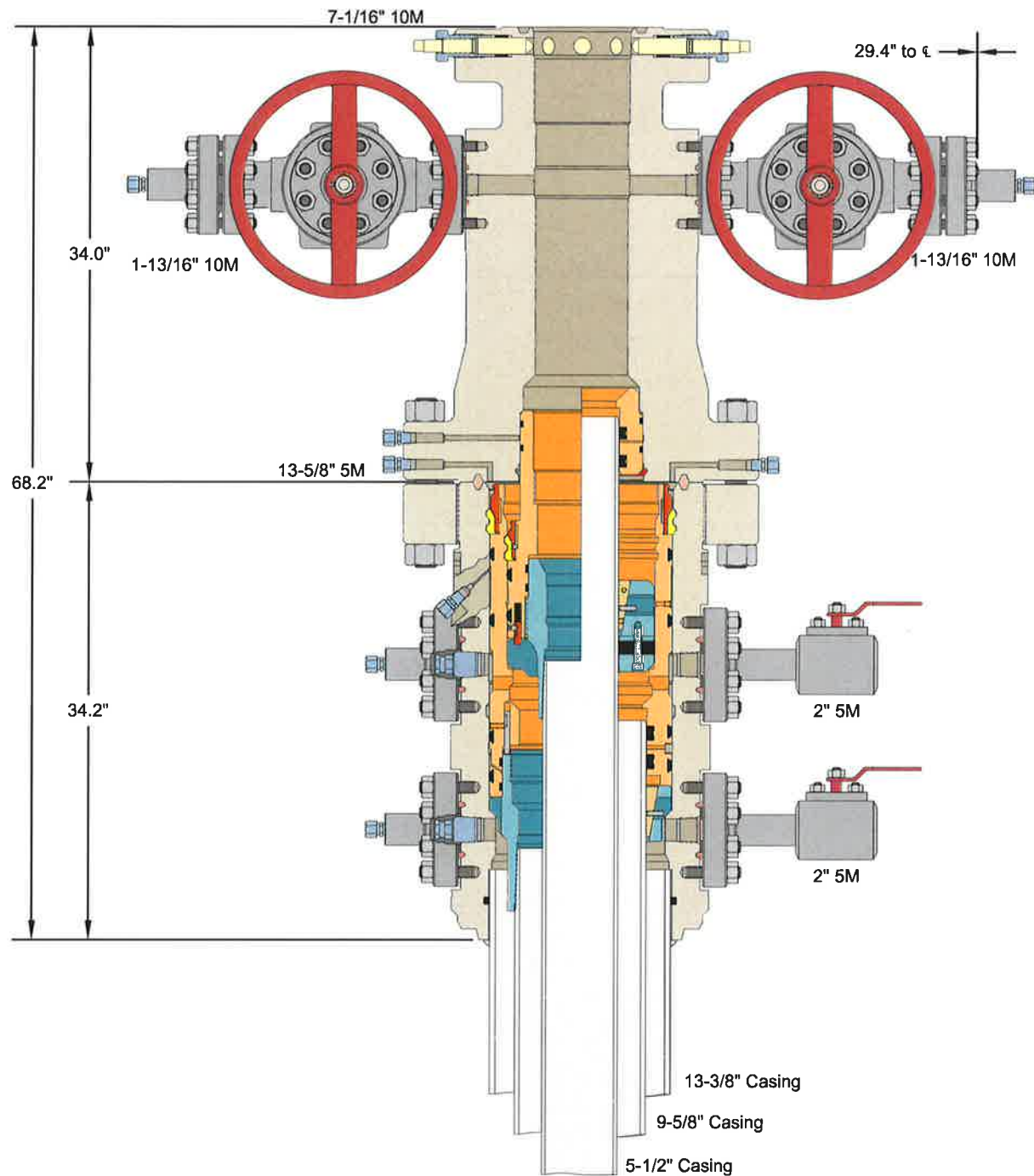








GE Oil &amp; Gas



ALL DIMENSIONS ARE APPROXIMATE

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

XTO ENERGY, INC.

13-3/8" x 9-5/8" x 5-1/2" 10M RSH-2 Wellhead  
Assembly, With T-EBS-F Tubing Head

DRAWN	VJK	16FEB17
APPRV	KN	16FEB17

FOR REFERENCE ONLY  
DRAWING NO. 10012842



## **XTO Energy**

**Eddy County, NM (NAD-27)**

**James Ranch Unit DI 7 Sawtooth**

**#112H**

**OH**

**Plan: PERMIT**

## **Standard Planning Report**

**08 October, 2019**





Project: Eddy County, NM (NAD-27)  
 Site: James Ranch Unit DI 7 Sawtooth  
 Well: #112H  
 Wellbore: OH  
 Design: PERMIT

PROJECT DETAILS: Eddy County, NM (NAD-27)  
 Geodetic System: US State Plane 1927 (Exact solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: New Mexico East 3001  
 System Datum: Mean Sea Level

## WELL DETAILS: #112H

Rig Name: RKB-25 @ 3357.00usft  
 Ground Level: 3332.00  
 Northing: 487792.50  
 Easting: 681858.30  
 Latitude: 32.339969  
 Longitude: -103.809261

## DESIGN TARGET DETAILS

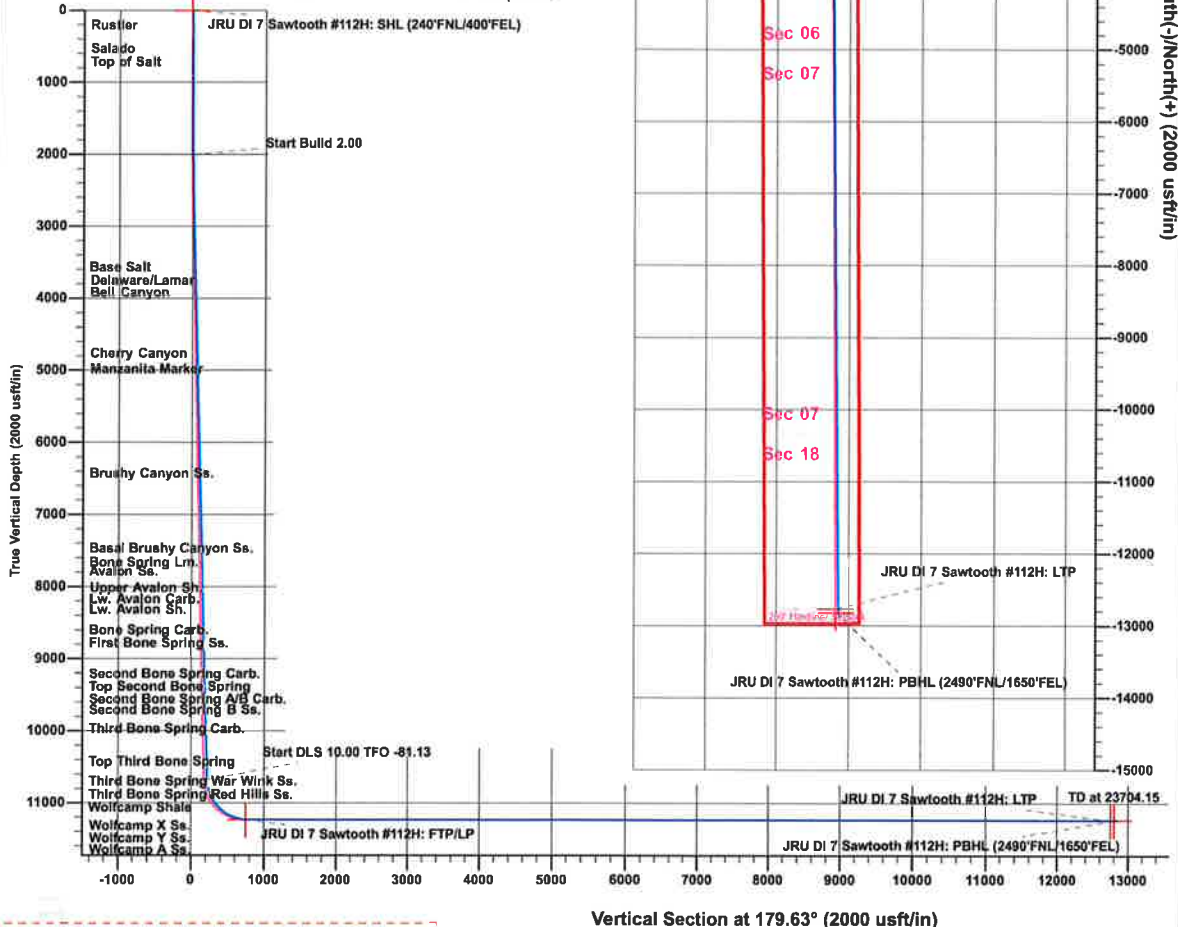
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
JRU DI 7 Sawtooth #112H: SHL (240°FNL/400°FEL)	0.00	0.00	0.00	487792.50	681858.30	32.339969	-103.809261	Point
JRU DI 7 Sawtooth #112H: FTP/LP	11241.00	-765.55	-1244.18	487027.00	680614.20	32.337881	-103.813301	Point
JRU DI 7 Sawtooth #112H: LTP	11241.00	-12764.18	-1186.47	475029.10	680891.90	32.304900	-103.813238	Point
JRU DI 7 Sawtooth #112H: PBHL (2490°FNL/1650°FEL)	11241.00	-12814.18	-1186.17	474979.10	680892.20	32.304762	-103.813238	Point

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00
3	2398.07	7.96	260.68	2398.79	-4.47	-27.25	2.00	260.68	4.30
4	10767.61	7.96	260.68	10865.66	-192.24	-1171.17	0.00	0.00	184.67
5	11655.26	90.00	179.63	11241.00	-765.55	-1244.18	10.00	-81.13	757.50
6	23654.15	90.00	179.63	11241.00	-12764.18	-1186.49	0.00	0.00	12756.38
7	23704.15	90.00	179.63	11241.00	-12814.18	-1186.17	0.00	0.00	12805.38

## FORMATION TOP DETAILS

TVDPath	Formation
311.00	Rustler
637.00	Salado
761.00	Top of Salt
3740.00	Base Salt
3979.00	Delaware/Lamar
4025.00	Bell Canyon
4931.00	Cherry Canyon
5086.00	Manzanita Marker
6533.00	Brushy Canyon Ss.
7572.00	Basal Brushy Canyon Ss.
7848.00	Bone Spring Lm.
7891.00	Avalon Ss.
8223.00	Upper Avalon Sh.
8274.00	Lw. Avalon Carb.
8421.00	Lw. Avalon Sh.
8705.00	Bone Spring Carb.
8884.00	First Bone Spring Ss.
9310.00	Second Bone Spring Carb.
9688.00	Top Second Bone Spring
9765.00	Second Bone Spring A/B Carb.
9811.00	Second Bone Spring B Ss.
9968.00	Third Bone Spring Carb.
10669.00	Top Third Bone Spring
10931.00	Third Bone Spring War Wink Ss.
11065.00	Third Bone Spring Red Hills Ss.
11133.00	Wolfcamp Shale
11153.00	Wolfcamp X Ss.
11219.00	Wolfcamp Y Ss.



Vertical Section at 179.63° (2000 usft/in)

Plan: PERMIT (#112H/OH)

Created By: Matthew May Date: 12:51, October 08 2019



## Prototype Well Planning LLC

### Planning Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well #112H
<b>Company:</b>	XTO Energy	<b>TVD Reference:</b>	RKB=25' @ 3357.00usft
<b>Project:</b>	Eddy County, NM (NAD-27)	<b>MD Reference:</b>	RKB=25' @ 3357.00usft
<b>Site:</b>	James Ranch Unit DI 7 Sawtooth	<b>North Reference:</b>	Grid
<b>Well:</b>	#112H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PERMIT		

<b>Project</b>	Eddy County, NM (NAD-27)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		Using geodetic scale factor

Site	James Ranch Unit DI 7 Sawtooth				
Site Position:		Northing:	487,779.70 usft	Latitude:	32.339984
From:	Map	Easting:	658,109.30 usft	Longitude:	-103.821400
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.27 °

Well	#112H					
Well Position	+N/-S	12.80 usft	Northing:	487,792.50 usft	Latitude:	32.339969
	+E/-W	3,749.23 usft	Easting:	661,858.30 usft	Longitude:	-103.809261
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,332.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	10/8/2019	6.82	60.10	47,745

<b>Design</b>	PERMIT			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	179.63

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,398.07	7.96	260.68	2,396.79	-4.47	-27.25	2.00	2.00	0.00	260.68	
10,767.61	7.96	260.68	10,685.66	-192.24	-1,171.17	0.00	0.00	0.00	0.00	
11,655.26	90.00	179.63	11,241.00	-765.55	-1,244.18	10.00	9.24	-9.13	-81.13	JRU DI 7 Sawtooth #
23,654.15	90.00	179.63	11,241.00	-12,764.18	-1,166.49	0.00	0.00	0.00	0.00	JRU DI 7 Sawtooth #
23,704.15	90.00	179.63	11,241.00	-12,814.18	-1,166.17	0.00	0.00	0.00	0.00	JRU DI 7 Sawtooth #





# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/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
311.00	0.00	0.00	311.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Rustler</b>									
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
637.00	0.00	0.00	637.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Salado</b>									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
761.00	0.00	0.00	761.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Top of Salt</b>									
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	2.00	260.68	2,099.98	-0.28	-1.72	0.27	2.00	2.00	0.00
2,200.00	4.00	260.68	2,199.84	-1.13	-6.89	1.09	2.00	2.00	0.00
2,300.00	6.00	260.68	2,299.45	-2.54	-15.49	2.44	2.00	2.00	0.00
2,398.07	7.96	260.68	2,396.79	-4.47	-27.25	4.30	2.00	2.00	0.00
2,400.00	7.96	260.68	2,398.70	-4.52	-27.51	4.34	0.00	0.00	0.00
2,500.00	7.96	260.68	2,497.74	-6.76	-41.18	6.49	0.00	0.00	0.00
2,600.00	7.96	260.68	2,596.77	-9.00	-54.85	8.65	0.00	0.00	0.00
2,700.00	7.96	260.68	2,695.81	-11.25	-68.51	10.80	0.00	0.00	0.00
2,800.00	7.96	260.68	2,794.85	-13.49	-82.18	12.96	0.00	0.00	0.00
2,900.00	7.96	260.68	2,893.88	-15.73	-95.85	15.11	0.00	0.00	0.00
3,000.00	7.96	260.68	2,992.92	-17.98	-109.52	17.27	0.00	0.00	0.00
3,100.00	7.96	260.68	3,091.95	-20.22	-123.18	19.42	0.00	0.00	0.00
3,200.00	7.96	260.68	3,190.99	-22.46	-136.85	21.58	0.00	0.00	0.00
3,300.00	7.96	260.68	3,290.03	-24.71	-150.52	23.73	0.00	0.00	0.00
3,400.00	7.96	260.68	3,389.06	-26.95	-164.19	25.89	0.00	0.00	0.00
3,500.00	7.96	260.68	3,488.10	-29.19	-177.86	28.04	0.00	0.00	0.00
3,600.00	7.96	260.68	3,587.14	-31.44	-191.52	30.20	0.00	0.00	0.00
3,700.00	7.96	260.68	3,686.17	-33.68	-205.19	32.35	0.00	0.00	0.00
3,754.35	7.96	260.68	3,740.00	-34.90	-212.62	33.53	0.00	0.00	0.00
<b>Base Salt</b>									
3,800.00	7.96	260.68	3,785.21	-35.92	-218.86	34.51	0.00	0.00	0.00
3,900.00	7.96	260.68	3,884.24	-38.17	-232.53	36.66	0.00	0.00	0.00
3,995.68	7.96	260.68	3,979.00	-40.31	-245.60	38.73	0.00	0.00	0.00
<b>Delaware/Lamar</b>									
4,000.00	7.96	260.68	3,983.28	-40.41	-246.19	38.82	0.00	0.00	0.00
4,042.13	7.96	260.68	4,025.00	-41.36	-251.95	39.73	0.00	0.00	0.00



# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>Bell Canyon</b>									
4,100.00	7.96	260.68	4,082.32	-42.65	-259.86	40.98	0.00	0.00	0.00
4,200.00	7.96	260.68	4,181.35	-44.90	-273.53	43.13	0.00	0.00	0.00
4,300.00	7.96	260.68	4,280.39	-47.14	-287.20	45.29	0.00	0.00	0.00
4,400.00	7.96	260.68	4,379.43	-49.38	-300.86	47.44	0.00	0.00	0.00
4,500.00	7.96	260.68	4,478.46	-51.63	-314.53	49.60	0.00	0.00	0.00
4,600.00	7.96	260.68	4,577.50	-53.87	-328.20	51.75	0.00	0.00	0.00
4,700.00	7.96	260.68	4,676.53	-56.11	-341.87	53.91	0.00	0.00	0.00
4,800.00	7.96	260.68	4,775.57	-58.36	-355.53	56.06	0.00	0.00	0.00
4,900.00	7.96	260.68	4,874.61	-60.60	-369.20	58.22	0.00	0.00	0.00
4,956.94	7.96	260.68	4,931.00	-61.88	-376.98	59.44	0.00	0.00	0.00
<b>Cherry Canyon</b>									
5,000.00	7.96	260.68	4,973.64	-62.84	-382.87	60.37	0.00	0.00	0.00
5,100.00	7.96	260.68	5,072.68	-65.09	-396.54	62.53	0.00	0.00	0.00
5,113.45	7.96	260.68	5,086.00	-65.39	-398.38	62.82	0.00	0.00	0.00
<b>Manzanita Marker</b>									
5,200.00	7.96	260.68	5,171.71	-67.33	-410.21	64.68	0.00	0.00	0.00
5,300.00	7.96	260.68	5,270.75	-69.58	-423.87	66.84	0.00	0.00	0.00
5,400.00	7.96	260.68	5,369.79	-71.82	-437.54	68.99	0.00	0.00	0.00
5,500.00	7.96	260.68	5,468.82	-74.06	-451.21	71.15	0.00	0.00	0.00
5,600.00	7.96	260.68	5,567.86	-76.31	-464.88	73.30	0.00	0.00	0.00
5,700.00	7.96	260.68	5,666.90	-78.55	-478.54	75.46	0.00	0.00	0.00
5,800.00	7.96	260.68	5,765.93	-80.79	-492.21	77.61	0.00	0.00	0.00
5,900.00	7.96	260.68	5,864.97	-83.04	-505.88	79.77	0.00	0.00	0.00
6,000.00	7.96	260.68	5,964.00	-85.28	-519.55	81.92	0.00	0.00	0.00
6,100.00	7.96	260.68	6,063.04	-87.52	-533.21	84.08	0.00	0.00	0.00
6,200.00	7.96	260.68	6,162.08	-89.77	-546.88	86.23	0.00	0.00	0.00
6,300.00	7.96	260.68	6,261.11	-92.01	-560.55	88.39	0.00	0.00	0.00
6,400.00	7.96	260.68	6,360.15	-94.25	-574.22	90.54	0.00	0.00	0.00
6,500.00	7.96	260.68	6,459.18	-96.50	-587.88	92.70	0.00	0.00	0.00
6,574.53	7.96	260.68	6,533.00	-98.17	-598.07	94.30	0.00	0.00	0.00
<b>Brushy Canyon Ss.</b>									
6,600.00	7.96	260.68	6,558.22	-98.74	-601.55	94.85	0.00	0.00	0.00
6,700.00	7.96	260.68	6,657.26	-100.98	-615.22	97.01	0.00	0.00	0.00
6,800.00	7.96	260.68	6,756.29	-103.23	-628.89	99.16	0.00	0.00	0.00
6,900.00	7.96	260.68	6,855.33	-105.47	-642.55	101.32	0.00	0.00	0.00
7,000.00	7.96	260.68	6,954.37	-107.71	-656.22	103.47	0.00	0.00	0.00
7,100.00	7.96	260.68	7,053.40	-109.96	-669.89	105.63	0.00	0.00	0.00
7,200.00	7.96	260.68	7,152.44	-112.20	-683.56	107.78	0.00	0.00	0.00
7,300.00	7.96	260.68	7,251.47	-114.44	-697.23	109.94	0.00	0.00	0.00
7,400.00	7.96	260.68	7,350.51	-116.69	-710.89	112.09	0.00	0.00	0.00
7,500.00	7.96	260.68	7,449.55	-118.93	-724.56	114.25	0.00	0.00	0.00
7,600.00	7.96	260.68	7,548.58	-121.17	-738.23	116.40	0.00	0.00	0.00
7,623.65	7.96	260.68	7,572.00	-121.70	-741.46	116.91	0.00	0.00	0.00
<b>Basal Brushy Canyon Ss.</b>									
7,700.00	7.96	260.68	7,647.62	-123.42	-751.90	118.56	0.00	0.00	0.00
7,800.00	7.96	260.68	7,746.65	-125.66	-765.56	120.71	0.00	0.00	0.00
7,900.00	7.96	260.68	7,845.69	-127.90	-779.23	122.87	0.00	0.00	0.00
7,902.33	7.96	260.68	7,848.00	-127.96	-779.55	122.92	0.00	0.00	0.00
<b>Bone Spring Lm.</b>									
7,945.75	7.96	260.68	7,891.00	-128.93	-785.48	123.86	0.00	0.00	0.00
<b>Avalon Ss.</b>									
8,000.00	7.96	260.68	7,944.73	-130.15	-792.90	125.02	0.00	0.00	0.00



# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,100.00	7.96	260.68	8,043.76	-132.39	-806.57	127.18	0.00	0.00	0.00
8,200.00	7.96	260.68	8,142.80	-134.63	-820.23	129.34	0.00	0.00	0.00
8,280.98	7.96	260.68	8,223.00	-136.45	-831.30	131.08	0.00	0.00	0.00
<b>Upper Avalon Sh.</b>									
8,300.00	7.96	260.68	8,241.84	-136.88	-833.90	131.49	0.00	0.00	0.00
8,332.48	7.96	260.68	8,274.00	-137.61	-838.34	132.19	0.00	0.00	0.00
<b>Lw. Avalon Carb.</b>									
8,400.00	7.96	260.68	8,340.87	-139.12	-847.57	133.65	0.00	0.00	0.00
8,480.91	7.96	260.68	8,421.00	-140.94	-858.63	135.39	0.00	0.00	0.00
<b>Lw. Avalon Sh.</b>									
8,500.00	7.96	260.68	8,439.91	-141.36	-861.24	135.80	0.00	0.00	0.00
8,600.00	7.96	260.68	8,538.94	-143.61	-874.90	137.96	0.00	0.00	0.00
8,700.00	7.96	260.68	8,637.98	-145.85	-888.57	140.11	0.00	0.00	0.00
8,767.67	7.96	260.68	8,705.00	-147.37	-897.82	141.57	0.00	0.00	0.00
<b>Bone Spring Carb.</b>									
8,800.00	7.96	260.68	8,737.02	-148.10	-902.24	142.27	0.00	0.00	0.00
8,900.00	7.96	260.68	8,836.05	-150.34	-915.91	144.42	0.00	0.00	0.00
8,948.41	7.96	260.68	8,884.00	-151.42	-922.52	145.46	0.00	0.00	0.00
<b>First Bone Spring Ss.</b>									
9,000.00	7.96	260.68	8,935.09	-152.58	-929.58	146.58	0.00	0.00	0.00
9,100.00	7.96	260.68	9,034.13	-154.83	-943.24	148.73	0.00	0.00	0.00
9,200.00	7.96	260.68	9,133.16	-157.07	-956.91	150.89	0.00	0.00	0.00
9,300.00	7.96	260.68	9,232.20	-159.31	-970.58	153.04	0.00	0.00	0.00
9,378.56	7.96	260.68	9,310.00	-161.07	-981.32	154.73	0.00	0.00	0.00
<b>Second Bone Spring Carb.</b>									
9,400.00	7.96	260.68	9,331.23	-161.56	-984.25	155.20	0.00	0.00	0.00
9,500.00	7.96	260.68	9,430.27	-163.80	-997.91	157.35	0.00	0.00	0.00
9,600.00	7.96	260.68	9,529.31	-166.04	-1,011.58	159.51	0.00	0.00	0.00
9,700.00	7.96	260.68	9,628.34	-168.29	-1,025.25	161.66	0.00	0.00	0.00
9,760.24	7.96	260.68	9,688.00	-169.64	-1,033.48	162.96	0.00	0.00	0.00
<b>Top Second Bone Spring</b>									
9,800.00	7.96	260.68	9,727.38	-170.53	-1,038.92	163.82	0.00	0.00	0.00
9,837.99	7.96	260.68	9,765.00	-171.38	-1,044.11	164.64	0.00	0.00	0.00
<b>Second Bone Spring A/B Carb.</b>									
9,884.44	7.96	260.68	9,811.00	-172.42	-1,050.46	165.64	0.00	0.00	0.00
<b>Second Bone Spring B Ss.</b>									
9,900.00	7.96	260.68	9,826.41	-172.77	-1,052.58	165.97	0.00	0.00	0.00
10,000.00	7.96	260.68	9,925.45	-175.02	-1,066.25	168.13	0.00	0.00	0.00
10,042.96	7.96	260.68	9,968.00	-175.98	-1,072.12	169.05	0.00	0.00	0.00
<b>Third Bone Spring Carb.</b>									
10,100.00	7.96	260.68	10,024.49	-177.26	-1,079.92	170.28	0.00	0.00	0.00
10,200.00	7.96	260.68	10,123.52	-179.50	-1,093.59	172.44	0.00	0.00	0.00
10,300.00	7.96	260.68	10,222.56	-181.75	-1,107.25	174.59	0.00	0.00	0.00
10,400.00	7.96	260.68	10,321.60	-183.99	-1,120.92	176.75	0.00	0.00	0.00
10,500.00	7.96	260.68	10,420.63	-186.23	-1,134.59	178.90	0.00	0.00	0.00
10,600.00	7.96	260.68	10,519.67	-188.48	-1,148.26	181.06	0.00	0.00	0.00
10,700.00	7.96	260.68	10,618.70	-190.72	-1,161.93	183.21	0.00	0.00	0.00
10,750.79	7.96	260.68	10,669.00	-191.86	-1,168.87	184.31	0.00	0.00	0.00
<b>Top Third Bone Spring</b>									
10,767.61	7.96	260.68	10,685.66	-192.24	-1,171.17	184.67	0.00	0.00	0.00
10,800.00	9.04	239.87	10,717.70	-193.88	-1,175.58	186.28	10.00	3.34	-64.24
10,850.00	12.29	218.98	10,766.85	-199.99	-1,182.33	192.35	10.00	6.50	-41.78



## Prototype Well Planning LLC

### Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
10,900.00	16.43	207.56	10,815.29	-210.40	-1,188.96	202.72	10.00	8.28	-22.85
10,950.00	20.94	200.79	10,862.64	-225.04	-1,195.40	217.31	10.00	9.02	-13.55
11,000.00	25.63	196.36	10,908.56	-243.78	-1,201.63	236.02	10.00	9.37	-8.85
11,025.15	28.03	194.67	10,931.00	-254.72	-1,204.66	246.93	10.00	9.53	-6.73
<b>Third Bone Spring War Wink Ss.</b>									
11,050.00	30.41	193.24	10,952.69	-266.49	-1,207.58	258.69	10.00	9.60	-5.75
11,100.00	35.25	190.90	10,994.69	-293.00	-1,213.21	285.16	10.00	9.67	-4.68
11,150.00	40.12	189.06	11,034.25	-323.10	-1,218.48	315.22	10.00	9.75	-3.68
11,191.49	44.19	187.80	11,065.00	-350.63	-1,222.55	342.73	10.00	9.79	-3.04
<b>Third Bone Spring Red Hills Ss.</b>									
11,200.00	45.02	187.56	11,071.06	-356.56	-1,223.35	348.65	10.00	9.81	-2.78
11,250.00	49.93	186.30	11,104.84	-393.13	-1,227.78	385.19	10.00	9.83	-2.53
11,295.94	54.46	185.29	11,133.00	-429.23	-1,231.43	421.27	10.00	9.85	-2.20
<b>Wolfcamp Shale</b>									
11,300.00	54.86	185.21	11,135.35	-432.53	-1,231.74	424.56	10.00	9.86	-2.06
11,331.93	58.01	184.58	11,153.00	-459.03	-1,234.00	451.05	10.00	9.86	-1.97
<b>Wolfcamp X Ss.</b>									
11,350.00	59.79	184.24	11,162.33	-474.46	-1,235.19	466.47	10.00	9.87	-1.87
11,400.00	64.73	183.37	11,185.60	-518.60	-1,238.12	510.59	10.00	9.88	-1.75
11,450.00	69.68	182.56	11,204.97	-564.62	-1,240.50	556.60	10.00	9.89	-1.61
11,495.21	74.15	181.88	11,219.00	-607.55	-1,242.16	599.52	10.00	9.90	-1.52
<b>Wolfcamp Y Ss.</b>									
11,500.00	74.62	181.81	11,220.29	-612.16	-1,242.31	604.13	10.00	9.90	-1.48
11,550.00	79.57	181.09	11,231.45	-660.87	-1,243.53	652.82	10.00	9.90	-1.44
11,600.00	84.53	180.39	11,238.36	-710.37	-1,244.17	702.32	10.00	9.90	-1.40
11,650.00	89.48	179.70	11,240.98	-760.28	-1,244.21	752.23	10.00	9.91	-1.37
11,655.26	90.00	179.63	11,241.00	-765.55	-1,244.18	757.50	10.00	9.91	-1.37
11,700.00	90.00	179.63	11,241.00	-810.28	-1,243.89	802.23	0.00	0.00	0.00
11,800.00	90.00	179.63	11,241.00	-910.28	-1,243.24	902.23	0.00	0.00	0.00
11,900.00	90.00	179.63	11,241.00	-1,010.28	-1,242.59	1,002.23	0.00	0.00	0.00
12,000.00	90.00	179.63	11,241.00	-1,110.28	-1,241.94	1,102.23	0.00	0.00	0.00
12,100.00	90.00	179.63	11,241.00	-1,210.27	-1,241.30	1,202.23	0.00	0.00	0.00
12,200.00	90.00	179.63	11,241.00	-1,310.27	-1,240.65	1,302.23	0.00	0.00	0.00
12,300.00	90.00	179.63	11,241.00	-1,410.27	-1,240.00	1,402.23	0.00	0.00	0.00
12,400.00	90.00	179.63	11,241.00	-1,510.27	-1,239.35	1,502.23	0.00	0.00	0.00
12,500.00	90.00	179.63	11,241.00	-1,610.27	-1,238.71	1,602.23	0.00	0.00	0.00
12,600.00	90.00	179.63	11,241.00	-1,710.26	-1,238.06	1,702.23	0.00	0.00	0.00
12,700.00	90.00	179.63	11,241.00	-1,810.26	-1,237.41	1,802.23	0.00	0.00	0.00
12,800.00	90.00	179.63	11,241.00	-1,910.26	-1,236.76	1,902.23	0.00	0.00	0.00
12,900.00	90.00	179.63	11,241.00	-2,010.26	-1,236.12	2,002.23	0.00	0.00	0.00
13,000.00	90.00	179.63	11,241.00	-2,110.25	-1,235.47	2,102.23	0.00	0.00	0.00
13,100.00	90.00	179.63	11,241.00	-2,210.25	-1,234.82	2,202.23	0.00	0.00	0.00
13,200.00	90.00	179.63	11,241.00	-2,310.25	-1,234.18	2,302.23	0.00	0.00	0.00
13,300.00	90.00	179.63	11,241.00	-2,410.25	-1,233.53	2,402.23	0.00	0.00	0.00
13,400.00	90.00	179.63	11,241.00	-2,510.25	-1,232.88	2,502.23	0.00	0.00	0.00
13,500.00	90.00	179.63	11,241.00	-2,610.24	-1,232.23	2,602.23	0.00	0.00	0.00
13,600.00	90.00	179.63	11,241.00	-2,710.24	-1,231.59	2,702.23	0.00	0.00	0.00
13,700.00	90.00	179.63	11,241.00	-2,810.24	-1,230.94	2,802.23	0.00	0.00	0.00
13,800.00	90.00	179.63	11,241.00	-2,910.24	-1,230.29	2,902.23	0.00	0.00	0.00
13,900.00	90.00	179.63	11,241.00	-3,010.24	-1,229.64	3,002.23	0.00	0.00	0.00
14,000.00	90.00	179.63	11,241.00	-3,110.23	-1,229.00	3,102.23	0.00	0.00	0.00
14,100.00	90.00	179.63	11,241.00	-3,210.23	-1,228.35	3,202.23	0.00	0.00	0.00
14,200.00	90.00	179.63	11,241.00	-3,310.23	-1,227.70	3,302.23	0.00	0.00	0.00
14,300.00	90.00	179.63	11,241.00	-3,410.23	-1,227.05	3,402.23	0.00	0.00	0.00





# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,400.00	90.00	179.63	11,241.00	-3,510.23	-1,226.41	3,502.23	0.00	0.00	0.00
14,500.00	90.00	179.63	11,241.00	-3,610.22	-1,225.76	3,602.23	0.00	0.00	0.00
14,600.00	90.00	179.63	11,241.00	-3,710.22	-1,225.11	3,702.23	0.00	0.00	0.00
14,700.00	90.00	179.63	11,241.00	-3,810.22	-1,224.46	3,802.23	0.00	0.00	0.00
14,800.00	90.00	179.63	11,241.00	-3,910.22	-1,223.82	3,902.23	0.00	0.00	0.00
14,900.00	90.00	179.63	11,241.00	-4,010.22	-1,223.17	4,002.23	0.00	0.00	0.00
15,000.00	90.00	179.63	11,241.00	-4,110.21	-1,222.52	4,102.23	0.00	0.00	0.00
15,100.00	90.00	179.63	11,241.00	-4,210.21	-1,221.87	4,202.23	0.00	0.00	0.00
15,200.00	90.00	179.63	11,241.00	-4,310.21	-1,221.23	4,302.23	0.00	0.00	0.00
15,300.00	90.00	179.63	11,241.00	-4,410.21	-1,220.58	4,402.23	0.00	0.00	0.00
15,400.00	90.00	179.63	11,241.00	-4,510.20	-1,219.93	4,502.23	0.00	0.00	0.00
15,500.00	90.00	179.63	11,241.00	-4,610.20	-1,219.28	4,602.23	0.00	0.00	0.00
15,600.00	90.00	179.63	11,241.00	-4,710.20	-1,218.64	4,702.23	0.00	0.00	0.00
15,700.00	90.00	179.63	11,241.00	-4,810.20	-1,217.99	4,802.23	0.00	0.00	0.00
15,800.00	90.00	179.63	11,241.00	-4,910.20	-1,217.34	4,902.23	0.00	0.00	0.00
15,900.00	90.00	179.63	11,241.00	-5,010.19	-1,216.70	5,002.23	0.00	0.00	0.00
16,000.00	90.00	179.63	11,241.00	-5,110.19	-1,216.05	5,102.23	0.00	0.00	0.00
16,100.00	90.00	179.63	11,241.00	-5,210.19	-1,215.40	5,202.23	0.00	0.00	0.00
16,200.00	90.00	179.63	11,241.00	-5,310.19	-1,214.75	5,302.23	0.00	0.00	0.00
16,300.00	90.00	179.63	11,241.00	-5,410.19	-1,214.11	5,402.23	0.00	0.00	0.00
16,400.00	90.00	179.63	11,241.00	-5,510.18	-1,213.46	5,502.23	0.00	0.00	0.00
16,500.00	90.00	179.63	11,241.00	-5,610.18	-1,212.81	5,602.23	0.00	0.00	0.00
16,600.00	90.00	179.63	11,241.00	-5,710.18	-1,212.16	5,702.23	0.00	0.00	0.00
16,700.00	90.00	179.63	11,241.00	-5,810.18	-1,211.52	5,802.23	0.00	0.00	0.00
16,800.00	90.00	179.63	11,241.00	-5,910.18	-1,210.87	5,902.23	0.00	0.00	0.00
16,900.00	90.00	179.63	11,241.00	-6,010.17	-1,210.22	6,002.23	0.00	0.00	0.00
17,000.00	90.00	179.63	11,241.00	-6,110.17	-1,209.57	6,102.23	0.00	0.00	0.00
17,100.00	90.00	179.63	11,241.00	-6,210.17	-1,208.93	6,202.23	0.00	0.00	0.00
17,200.00	90.00	179.63	11,241.00	-6,310.17	-1,208.28	6,302.23	0.00	0.00	0.00
17,300.00	90.00	179.63	11,241.00	-6,410.16	-1,207.63	6,402.23	0.00	0.00	0.00
17,400.00	90.00	179.63	11,241.00	-6,510.16	-1,206.98	6,502.23	0.00	0.00	0.00
17,500.00	90.00	179.63	11,241.00	-6,610.16	-1,206.34	6,602.23	0.00	0.00	0.00
17,600.00	90.00	179.63	11,241.00	-6,710.16	-1,205.69	6,702.23	0.00	0.00	0.00
17,700.00	90.00	179.63	11,241.00	-6,810.16	-1,205.04	6,802.23	0.00	0.00	0.00
17,800.00	90.00	179.63	11,241.00	-6,910.15	-1,204.39	6,902.23	0.00	0.00	0.00
17,900.00	90.00	179.63	11,241.00	-7,010.15	-1,203.75	7,002.23	0.00	0.00	0.00
18,000.00	90.00	179.63	11,241.00	-7,110.15	-1,203.10	7,102.23	0.00	0.00	0.00
18,100.00	90.00	179.63	11,241.00	-7,210.15	-1,202.45	7,202.23	0.00	0.00	0.00
18,200.00	90.00	179.63	11,241.00	-7,310.15	-1,201.81	7,302.23	0.00	0.00	0.00
18,300.00	90.00	179.63	11,241.00	-7,410.14	-1,201.16	7,402.23	0.00	0.00	0.00
18,400.00	90.00	179.63	11,241.00	-7,510.14	-1,200.51	7,502.23	0.00	0.00	0.00
18,500.00	90.00	179.63	11,241.00	-7,610.14	-1,199.86	7,602.23	0.00	0.00	0.00
18,600.00	90.00	179.63	11,241.00	-7,710.14	-1,199.22	7,702.23	0.00	0.00	0.00
18,700.00	90.00	179.63	11,241.00	-7,810.14	-1,198.57	7,802.23	0.00	0.00	0.00
18,800.00	90.00	179.63	11,241.00	-7,910.13	-1,197.92	7,902.23	0.00	0.00	0.00
18,900.00	90.00	179.63	11,241.00	-8,010.13	-1,197.27	8,002.23	0.00	0.00	0.00
19,000.00	90.00	179.63	11,241.00	-8,110.13	-1,196.63	8,102.23	0.00	0.00	0.00
19,100.00	90.00	179.63	11,241.00	-8,210.13	-1,195.98	8,202.23	0.00	0.00	0.00
19,200.00	90.00	179.63	11,241.00	-8,310.13	-1,195.33	8,302.23	0.00	0.00	0.00
19,300.00	90.00	179.63	11,241.00	-8,410.12	-1,194.68	8,402.23	0.00	0.00	0.00
19,400.00	90.00	179.63	11,241.00	-8,510.12	-1,194.04	8,502.23	0.00	0.00	0.00
19,500.00	90.00	179.63	11,241.00	-8,610.12	-1,193.39	8,602.23	0.00	0.00	0.00
19,600.00	90.00	179.63	11,241.00	-8,710.12	-1,192.74	8,702.23	0.00	0.00	0.00
19,700.00	90.00	179.63	11,241.00	-8,810.11	-1,192.09	8,802.23	0.00	0.00	0.00



# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,800.00	90.00	179.63	11,241.00	-8,910.11	-1,191.45	8,902.23	0.00	0.00	0.00
19,900.00	90.00	179.63	11,241.00	-9,010.11	-1,190.80	9,002.23	0.00	0.00	0.00
20,000.00	90.00	179.63	11,241.00	-9,110.11	-1,190.15	9,102.23	0.00	0.00	0.00
20,100.00	90.00	179.63	11,241.00	-9,210.11	-1,189.50	9,202.23	0.00	0.00	0.00
20,200.00	90.00	179.63	11,241.00	-9,310.10	-1,188.86	9,302.23	0.00	0.00	0.00
20,300.00	90.00	179.63	11,241.00	-9,410.10	-1,188.21	9,402.23	0.00	0.00	0.00
20,400.00	90.00	179.63	11,241.00	-9,510.10	-1,187.56	9,502.23	0.00	0.00	0.00
20,500.00	90.00	179.63	11,241.00	-9,610.10	-1,186.91	9,602.23	0.00	0.00	0.00
20,600.00	90.00	179.63	11,241.00	-9,710.10	-1,186.27	9,702.23	0.00	0.00	0.00
20,700.00	90.00	179.63	11,241.00	-9,810.09	-1,185.62	9,802.23	0.00	0.00	0.00
20,800.00	90.00	179.63	11,241.00	-9,910.09	-1,184.97	9,902.23	0.00	0.00	0.00
20,900.00	90.00	179.63	11,241.00	-10,010.09	-1,184.33	10,002.23	0.00	0.00	0.00
21,000.00	90.00	179.63	11,241.00	-10,110.09	-1,183.68	10,102.23	0.00	0.00	0.00
21,100.00	90.00	179.63	11,241.00	-10,210.09	-1,183.03	10,202.23	0.00	0.00	0.00
21,200.00	90.00	179.63	11,241.00	-10,310.08	-1,182.38	10,302.23	0.00	0.00	0.00
21,300.00	90.00	179.63	11,241.00	-10,410.08	-1,181.74	10,402.23	0.00	0.00	0.00
21,400.00	90.00	179.63	11,241.00	-10,510.08	-1,181.09	10,502.23	0.00	0.00	0.00
21,500.00	90.00	179.63	11,241.00	-10,610.08	-1,180.44	10,602.23	0.00	0.00	0.00
21,600.00	90.00	179.63	11,241.00	-10,710.07	-1,179.79	10,702.23	0.00	0.00	0.00
21,700.00	90.00	179.63	11,241.00	-10,810.07	-1,179.15	10,802.23	0.00	0.00	0.00
21,800.00	90.00	179.63	11,241.00	-10,910.07	-1,178.50	10,902.23	0.00	0.00	0.00
21,900.00	90.00	179.63	11,241.00	-11,010.07	-1,177.85	11,002.23	0.00	0.00	0.00
22,000.00	90.00	179.63	11,241.00	-11,110.07	-1,177.20	11,102.23	0.00	0.00	0.00
22,100.00	90.00	179.63	11,241.00	-11,210.06	-1,176.56	11,202.23	0.00	0.00	0.00
22,200.00	90.00	179.63	11,241.00	-11,310.06	-1,175.91	11,302.23	0.00	0.00	0.00
22,300.00	90.00	179.63	11,241.00	-11,410.06	-1,175.26	11,402.23	0.00	0.00	0.00
22,400.00	90.00	179.63	11,241.00	-11,510.06	-1,174.61	11,502.23	0.00	0.00	0.00
22,500.00	90.00	179.63	11,241.00	-11,610.06	-1,173.97	11,602.23	0.00	0.00	0.00
22,600.00	90.00	179.63	11,241.00	-11,710.05	-1,173.32	11,702.23	0.00	0.00	0.00
22,700.00	90.00	179.63	11,241.00	-11,810.05	-1,172.67	11,802.23	0.00	0.00	0.00
22,800.00	90.00	179.63	11,241.00	-11,910.05	-1,172.02	11,902.23	0.00	0.00	0.00
22,900.00	90.00	179.63	11,241.00	-12,010.05	-1,171.38	12,002.23	0.00	0.00	0.00
23,000.00	90.00	179.63	11,241.00	-12,110.05	-1,170.73	12,102.23	0.00	0.00	0.00
23,100.00	90.00	179.63	11,241.00	-12,210.04	-1,170.08	12,202.23	0.00	0.00	0.00
23,200.00	90.00	179.63	11,241.00	-12,310.04	-1,169.43	12,302.23	0.00	0.00	0.00
23,300.00	90.00	179.63	11,241.00	-12,410.04	-1,168.79	12,402.23	0.00	0.00	0.00
23,400.00	90.00	179.63	11,241.00	-12,510.04	-1,168.14	12,502.23	0.00	0.00	0.00
23,500.00	90.00	179.63	11,241.00	-12,610.04	-1,167.49	12,602.23	0.00	0.00	0.00
23,600.00	90.00	179.63	11,241.00	-12,710.03	-1,166.85	12,702.23	0.00	0.00	0.00
23,654.15	90.00	179.63	11,241.00	-12,764.18	-1,166.49	12,756.38	0.00	0.00	0.00
23,704.15	90.00	179.63	11,241.00	-12,814.18	-1,166.17	12,806.38	0.00	0.00	0.00





# Prototype Well Planning LLC Planning Report

**Database:** EDM 5000.1 Single User Db  
**Company:** XTO Energy  
**Project:** Eddy County, NM (NAD-27)  
**Site:** James Ranch Unit DI 7 Sawtooth  
**Well:** #112H  
**Wellbore:** OH  
**Design:** PERMIT

**Local Co-ordinate Reference:** Well #112H  
**TVD Reference:** RKB=25' @ 3357.00usft  
**MD Reference:** RKB=25' @ 3357.00usft  
**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
JRU DI 7 Sawtooth #112 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	487,792.50	661,858.30	32.339969	-103.809261
JRU DI 7 Sawtooth #112 - plan hits target center - Point	0.00	0.00	11,241.00	-765.55	-1,244.18	487,027.00	660,614.20	32.337881	-103.813301
JRU DI 7 Sawtooth #112 - plan misses target center by 0.02usft at 23654.15usft MD (11241.00 TVD, -12764.18 N, -1166.49 E) - Point	0.00	0.00	11,241.00	-12,764.18	-1,166.47	475,029.10	660,691.90	32.304900	-103.813238
JRU DI 7 Sawtooth #112 - plan hits target center - Point	0.00	0.00	11,241.00	-12,814.18	-1,166.17	474,979.10	660,692.20	32.304763	-103.813238

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
311.00	311.00	Rustler		0.00	
637.00	637.00	Salado		0.00	
761.00	761.00	Top of Salt		0.00	
3,754.35	3,740.00	Base Salt		0.00	
3,995.68	3,979.00	Delaware/Lamar		0.00	
4,042.13	4,025.00	Bell Canyon		0.00	
4,956.94	4,931.00	Cherry Canyon		0.00	
5,113.45	5,086.00	Manzanita Marker		0.00	
6,574.53	6,533.00	Brushy Canyon Ss.		0.00	
7,623.65	7,572.00	Basal Brushy Canyon Ss.			
7,902.33	7,848.00	Bone Spring Lm.		0.00	
7,945.75	7,891.00	Avalon Ss.		0.00	
8,280.98	8,223.00	Upper Avalon Sh.		0.00	
8,332.48	8,274.00	Lw. Avalon Carb.		0.00	
8,480.91	8,421.00	Lw. Avalon Sh.		0.00	
8,767.67	8,705.00	Bone Spring Carb.		0.00	
8,948.41	8,884.00	First Bone Spring Ss.		0.00	
9,378.56	9,310.00	Second Bone Spring Carb.		0.00	
9,760.24	9,688.00	Top Second Bone Spring		0.00	
9,837.99	9,765.00	Second Bone Spring A/B Carb.		0.00	
9,884.44	9,811.00	Second Bone Spring B Ss.		0.00	
10,042.96	9,968.00	Third Bone Spring Carb.		0.00	
10,750.79	10,669.00	Top Third Bone Spring		0.00	
11,025.15	10,931.00	Third Bone Spring War Wink Ss.		0.00	
11,191.49	11,065.00	Third Bone Spring Red Hills Ss.		0.00	
11,295.94	11,133.00	Wolfcamp Shale		0.00	
11,331.93	11,153.00	Wolfcamp X Ss.		0.00	
11,495.21	11,219.00	Wolfcamp Y Ss.		0.00	

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	XTO Permian Operating LLC
<b>WELL NAME &amp; NO.:</b>	James Ranch Unit DI 7 Sawtooth 112H
<b>LOCATION:</b>	Sec 6 / 23S / 31E / NMP
<b>COUNTY:</b>	Lea County, New Mexico

COA

H2S	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Potash	<input type="radio"/> None	<input type="radio"/> Secretary	<input checked="" type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input checked="" type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the Salado 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 18 5/8 inch surface casing shall be set at approximately 505' feet (a minimum of 70 feet (Eddy County) 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 **24 hours in the Potash Area** 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.

**Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

2. The minimum required fill of cement behind the 13-3/8 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.**
- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
- ❖ In R111 Potash Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

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

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

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
  - b. Second stage above DV tool:
    - Cement to surface. If cement does not circulate 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.**
4. The minimum required fill of cement behind the 5-1/2 inch production casing is:
- Cement should tie-back at least **500 feet** into previous casing string. Operator shall provide method of verification.

**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. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be Choose an item. psi. **Variance is approved to use a Choose an item. Annular which shall be tested to Choose an item. psi.**
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. 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.

**D. SPECIAL REQUIREMENT (S)****Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

**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)

☒ 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 2<sup>nd</sup> 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 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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, 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 not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### 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.



## HYDROGEN SULFIDE (H<sub>2</sub>S) CONTINGENCY PLAN

### Assumed 100 ppm ROE = 3000'

100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

#### Emergency Procedures

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
  - o Detection of H<sub>2</sub>S, and
  - o Measures for protection against the gas,
  - o Equipment used for protection and emergency response.

#### Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

#### **Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air = 1	2 ppm	N/A	1000 ppm

#### **Contacting Authorities**

XTO Energy, Inc. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. (Operator Name)'s response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

**CARLSBAD OFFICE – EDDY & LEA COUNTIES**

3104 E. Greene St., Carlsbad, NM 88220  
Carlsbad, NM

575-887-7329

**XTO Energy, Inc. PERSONNEL:**

Kendall Decker, Drilling Manager	903-521-6477
Milton Turman, Drilling Superintendent	817-524-5107
Jeff Raines, Construction Foreman	432-557-3159
Toady Sanders, EH & S Manager	903-520-1601
Wes McSpadden, Production Foreman	575-441-1147

**SHERIFF DEPARTMENTS:**

Eddy County	575-887-7551
Lea County	575-396-3611

**NEW MEXICO STATE POLICE:**

575-392-5588

**FIRE DEPARTMENTS:**

Carlsbad	911
Eunice	575-885-2111
Hobbs	575-394-2111
Jal	575-397-9308
Lovington	575-395-2221
	575-396-2359

**HOSPITALS:**

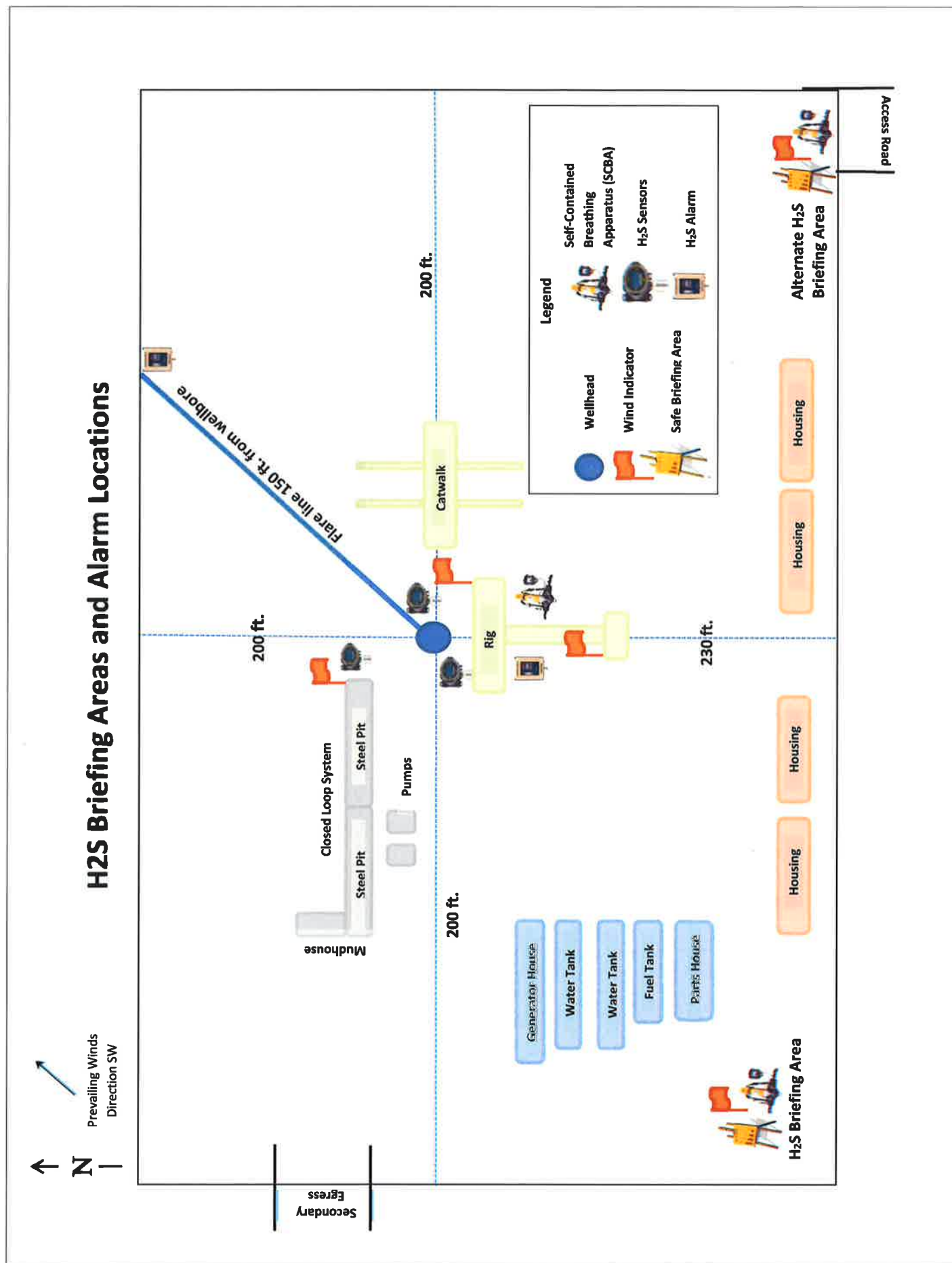
Carlsbad Medical Emergency	911
Eunice Medical Emergency	575-885-2111
Hobbs Medical Emergency	575-394-2112
Jal Medical Emergency	575-397-9308
Lovington Medical Emergency	575-395-2221
	575-396-2359

**AGENT NOTIFICATIONS:****For Lea County:**

Bureau of Land Management – Hobbs	575-393-3612
New Mexico Oil Conservation Division – Hobbs	575-393-6161

**For Eddy County:**

Bureau of Land Management - Carlsbad	575-234-5972
New Mexico Oil Conservation Division - Artesia	575-748-1283





**Operator Name:** XTO PERMIAN OPERATING LLC**Well Name:** JAMES RANCH UNIT DI 7 SAWTOOTH**Well Number:** 112H**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL**Disposal type description:****Disposal location description:** A licensed 3rd party vendor will be contracted to haul and safely dispose of garbage, junk and non-flammable waste materials.

### Reserve Pit

**Reserve Pit being used?** N**Temporary disposal of produced water into reserve pit?** NO**Reserve pit length (ft.)****Reserve pit width (ft.)****Reserve pit depth (ft.)****Reserve pit volume (cu. yd.)****Is at least 50% of the reserve pit in cut?****Reserve pit liner****Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO**Are you storing cuttings on location?** Y

**Description of cuttings location** Cuttings. The well will be drilled utilizing a closed-loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to a New Mexico Oil Conservation Division (NMOCD) approved disposal site. Drilling Fluids. These will be contained in steel mud pits and then taken to a NMOCD approved commercial disposal facility. Produced Fluids. Water produced from the well during completion will be held temporarily in steel tanks and then taken to a NMOCD approved commercial disposal facility. Oil produced during operations will be stored in tanks until sold.

**Cuttings area length (ft.)****Cuttings area width (ft.)****Cuttings area depth (ft.)****Cuttings area volume (cu. yd.)****Is at least 50% of the cuttings area in cut?****WCuttings area liner****Cuttings area liner specifications and installation description**

### Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** N**Ancillary Facilities attachment:****Comments:**

**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 Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**

1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 152011

**CONDITIONS**

Operator: XTO PERMIAN OPERATING LLC. 6401 HOLIDAY HILL ROAD MIDLAND, TX 79707	OGRID: 373075
	Action Number: 152011
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	10/24/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	10/24/2022
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	10/24/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	10/24/2022
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	10/24/2022