Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM0001206A

6. If Indian, Allotee or Tribe Name

1a. Type of work: [✓] DRILL [ ] REENTER

1b. Type of Well: [✓] Oil Well [ ] Gas Well [ ] Other

1c. Type of Completion: [ ] Hydraulic Fracturing [✓] Single Zone [ ] Multiple Zone

7. If Unit or CA Agreement, Name and No.
BIG EDDY / NMNM068294X

8. Lease Name and Well No.
BIG EDDY UNIT 29W VADER 103H (326994)

2. Name of Operator
XTO PERMIAN OPERATING LLC (373075)

9. API Well No.
30-025-46794

3a. Address
6401 Holiday Hill Road, Bldg 5 Midland TX 79707

3b. Phone No. *(include area code)*
(432)682-8873

10. Field and Pool, or Exploratory
WILDCAT; BONE SPRING SALT LAKE (53560)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface SWSW / 349 FSL / 325 FWL / LAT 32.566939 / LONG -103.778785

At proposed prod. zone LOT 4 / 660 FSL / 50 FWL / LAT 32.567951 / LONG -103.813995

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 16 / T20S / R32E / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
349 feet	2075.4	319.53
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20. BLM/BIA Bond No. in file**
0 feet	9602 feet / 20483 feet	FED: COB000050
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3513 feet	01/30/2020	90 days

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Stephanie Rabadue / Ph: (432)620-6714	10/30/2019

Title
Regulatory Coordinator

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	12/13/2019
Title	**Office**	
Assistant Field Manager Lands & Minerals	CARLSBAD	

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.

GCP Rec 01/21/2020

APPROVED WITH CONDITIONS

KZ 01/21/2020

GL

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 12/13/2019

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: SWSW / 349 FSL / 325 FWL / TWSP: 20S / RANGE: 32E / SECTION: 16 / LAT: 32.566939 / LONG: -103.778785 (TVD: 0 feet, MD: 0 feet)
   PPP: NENE / 660 FSL / 100 FEL / TWSP: 20S / RANGE: 32E / SECTION: 16 / LAT: 32.567794 / LONG: -103.780165 (TVD: 9712 feet, MD: 10059 feet)
   BHL: LOT 4 / 660 FSL / 50 FWL / TWSP: 20S / RANGE: 32E / SECTION: 18 / LAT: 32.567951 / LONG: -103.813995 (TVD: 9602 feet, MD: 20483 feet)

BLM Point of Contact

Name:

Title:

Phone:

Email:

Approval Date: 12/13/2019

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**XTO Permian Operating, LLC**
LEASE NO.:	**NMNM-0001206A**
WELL NAME & NO.:	**Big Eddy Unit 29W Vader 103H**
SURFACE HOLE FOOTAGE:	**0349' FSL & 0325' FWL**
BOTTOM HOLE FOOTAGE	**0660' FSL & 0050' FWL Sec. 18, T. 20 S., R 32 E.**
LOCATION:	**Section 16, T. 20 S., R 32 E., NMPM**
COUNTY:	**Lea County, New Mexico**

Commercial Well Determination
A commercial well determination shall be submitted after production has been established for at least six months.

Unit Wells
The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

A. DRILLING OPERATIONS 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

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

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

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

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

B. CASING

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

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for 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.

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.

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

R-111-P Potash
Capitan Reef
Possibility of water flows in the Artesia Group and Salado.
Possibility of lost circulation in the Rustler, Artesia Group, and Capitan Reef.

1. The **18-5/8** inch surface casing shall be set at approximately **1080** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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 is to include the lead cement slurry.

    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.

13-3/8 1st Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the **13-3/8** inch 1st 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 potash.**

9-5/8 2nd Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

3. The minimum required fill of cement behind the **9-5/8** inch 2nd intermediate casing, which shall be set at approximaltey **4700** feet (in the Bell Canyon Formation), is:

Operator has proposed DV tool at depth of 2780', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash and Capitan Reef. Excess calculates to 0% - Additional cement will be required.**

Centralizers required through the curve and a minimum of one every other joint.

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

   ☒ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 2702'). Operator shall provide method of verification. **Excess calculates to 24% - Additional cement may be required.**

5. 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.

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

C. PRESSURE CONTROL

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

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the 13-3/8 1st intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 1st intermediate casing shoe shall be 3000 (3M) psi.**
    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Operator shall perform the 9-5/8" casing integrity tests to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

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

    a. 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.

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. 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.

JAM 120319

AFMSS

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

Operator Certification Data Report

12/18/2019

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Stephanie Rabadue **Signed on:** 06/15/2018

Title: Regulatory Coordinator

Street Address:

City: **State:** **Zip:**

Phone: (432)620-6714

Email address: stephanie_rabadue@xtoenergy.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone: (432)620-6714

Email address: stephanie_rabadue@xtoenergy.com

APD ID: 10400049102 **Submission Date:** 10/30/2019

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Show Final Text

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

APD ID: 10400049102 **Tie to previous NOS?** **Submission Date:** 10/30/2019

BLM Office: CARLSBAD **User:** Stephanie Rabadue **Title:** Regulatory Coordinator

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM0001206A **Lease Acres:** 2075.4

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? YES **Federal or Indian agreement:** FEDERAL

Agreement number: NMNM068294X

Agreement name:

Keep application confidential? NO

Permitting Agent? NO **APD Operator:** XTO PERMIAN OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: XTO PERMIAN OPERATING LLC

Operator Address: 6401 Holiday Hill Road, Bldg 5

Zip: 79707

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)682-8873

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WILDCAT; BONE SPRING **Pool Name:**

Is the proposed well in an area containing other mineral resources? USEABLE WATER,POTASH

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Is the proposed well in an area containing other mineral resources? USEABLE WATER,POTASH

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** Y **New surface disturbance?** N

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** BEU DI **Number:** 29

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: DELINEATION

Describe sub-type:

Distance to town: **Distance to nearest well:** 0 FT **Distance to lease line:** 349 FT

Reservoir well spacing assigned acres Measurement: 319.53 Acres

Well plat: BEU_DI29_Vader_103H_C102_20191030094402.pdf

Well work start Date: 01/30/2020 **Duration:** 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

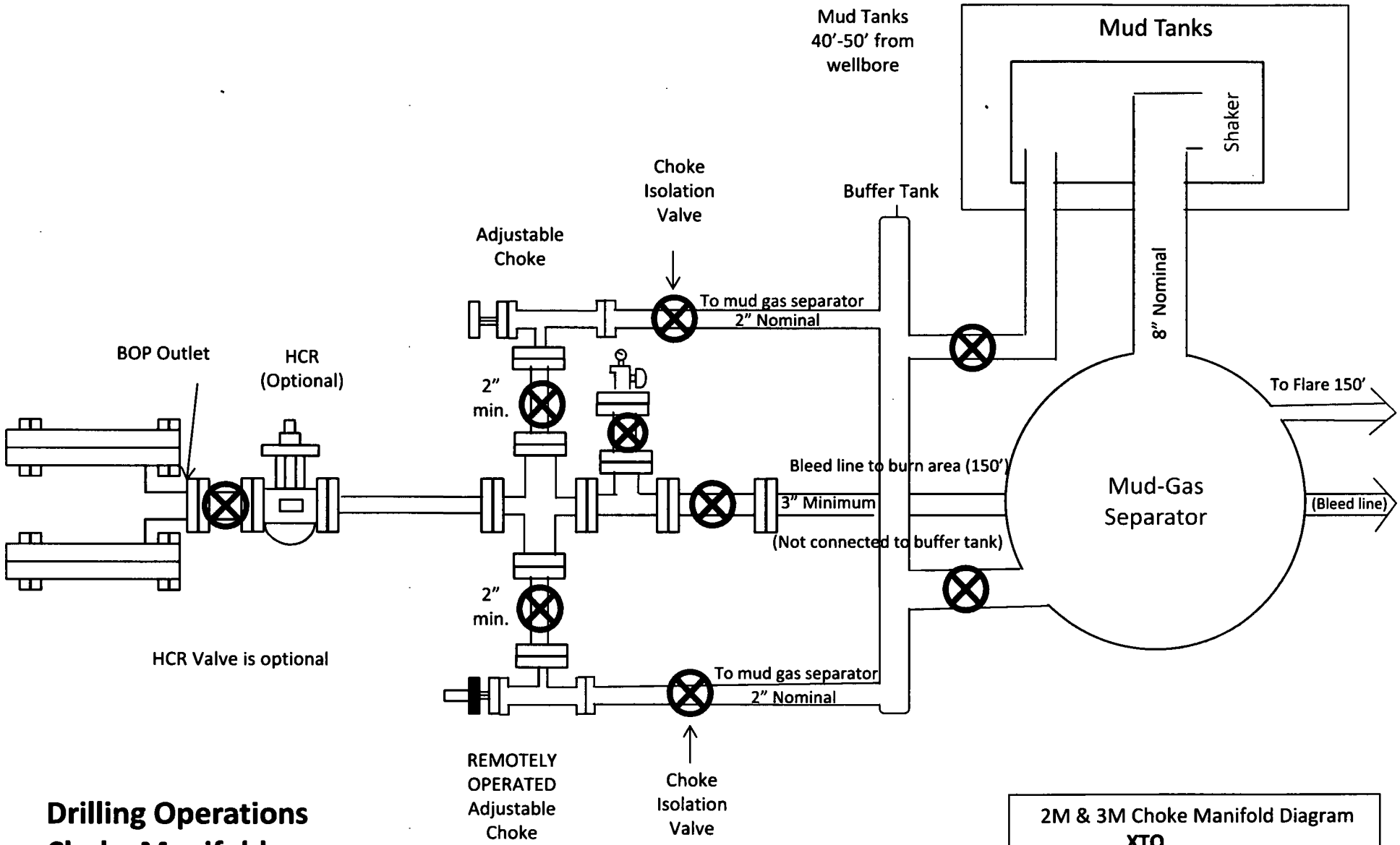
Survey number: 2019072121 **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	349	FSL	325	FWL	20S	32E	16	Aliquot SWSW	32.566939	-103.778785	LEA	NEW MEXICO	NEW MEXICO	S	STATE	3513	0	0	N
KOP Leg #1	349	FSL	325	FWL	20S	32E	16	Aliquot SWSW	32.566939	-103.778785	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-2007	5520	5520	N
PPP Leg #1-1	660	FSL	100	FEL	20S	32E	16	Aliquot NENE	32.567794	-103.780165	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0001206A	-6199	10059	9712	Y

Operator Name: XTO PERMIAN OPERATING LLC

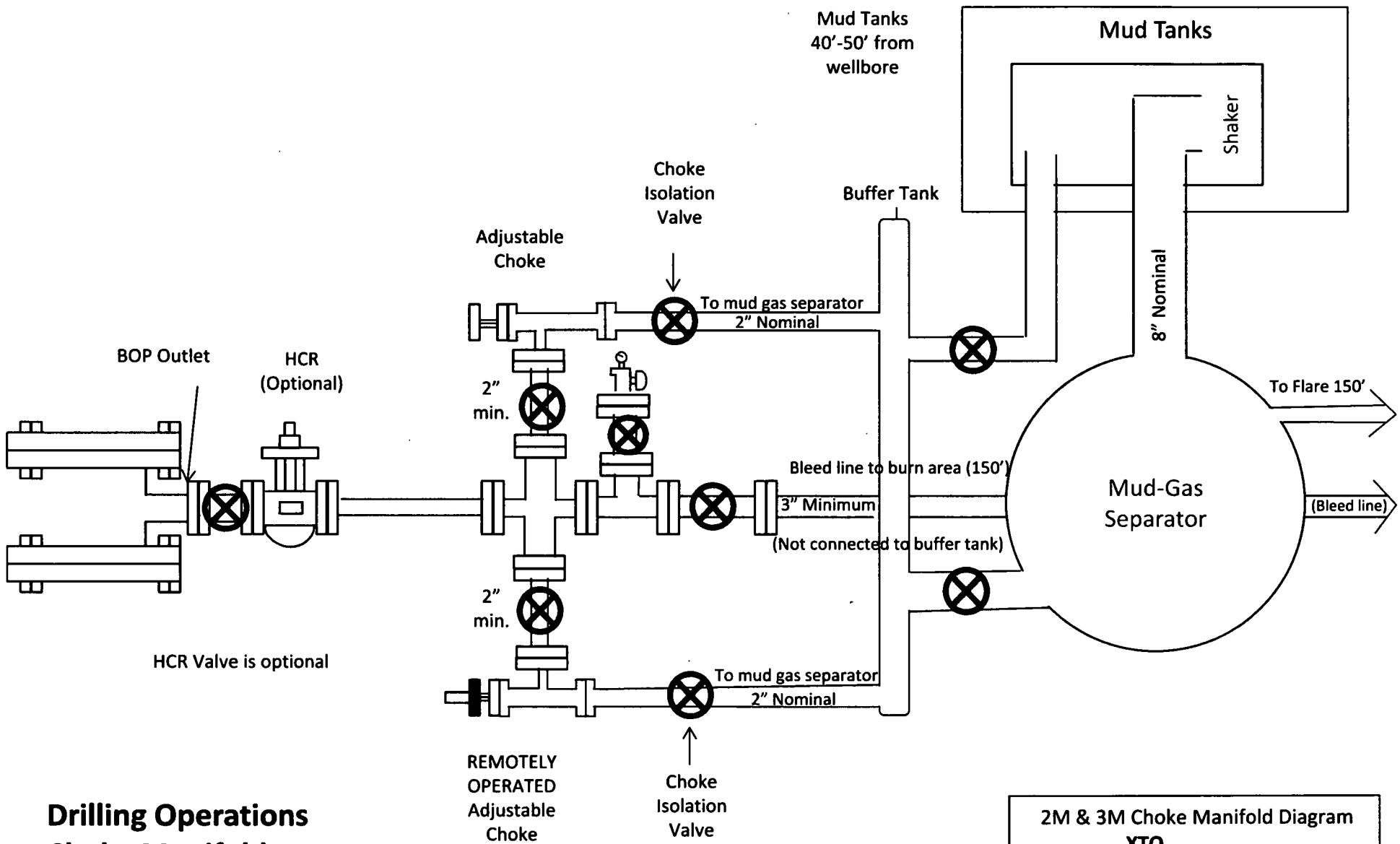
Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
EXIT Leg #1	660	FSL	100	FWL	20S	32E	18	Lot 4	32.56795	-103.813833	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 000120 6A	-6089	20433	9602	Y
BHL Leg #1	660	FSL	50	FWL	20S	32E	18	Lot 4	32.567951	-103.813995	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 000120 6A	-6089	20483	9602	Y



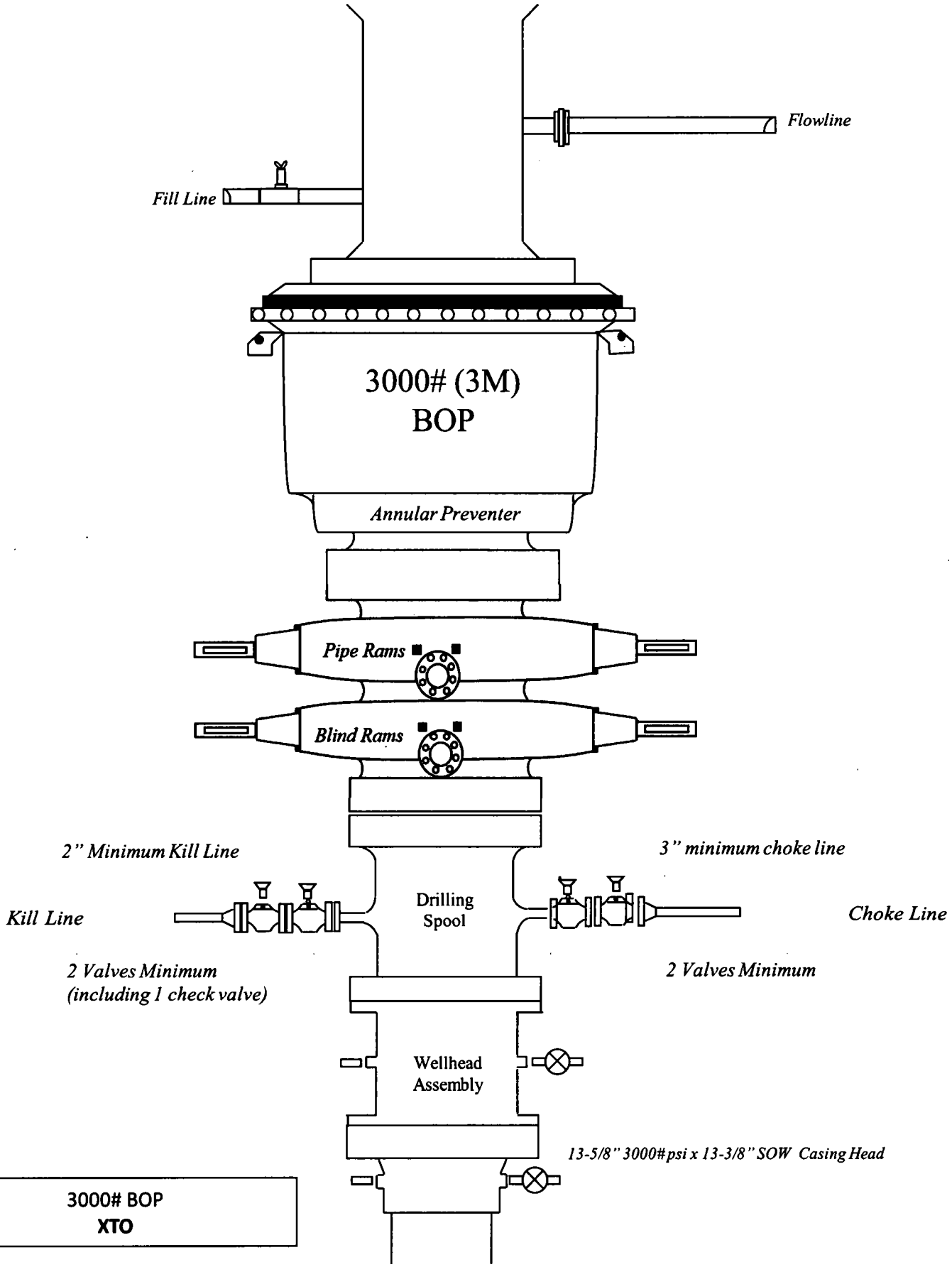
Drilling Operations
Choke Manifold
2M & 3M Service

2M & 3M Choke Manifold Diagram
XTO

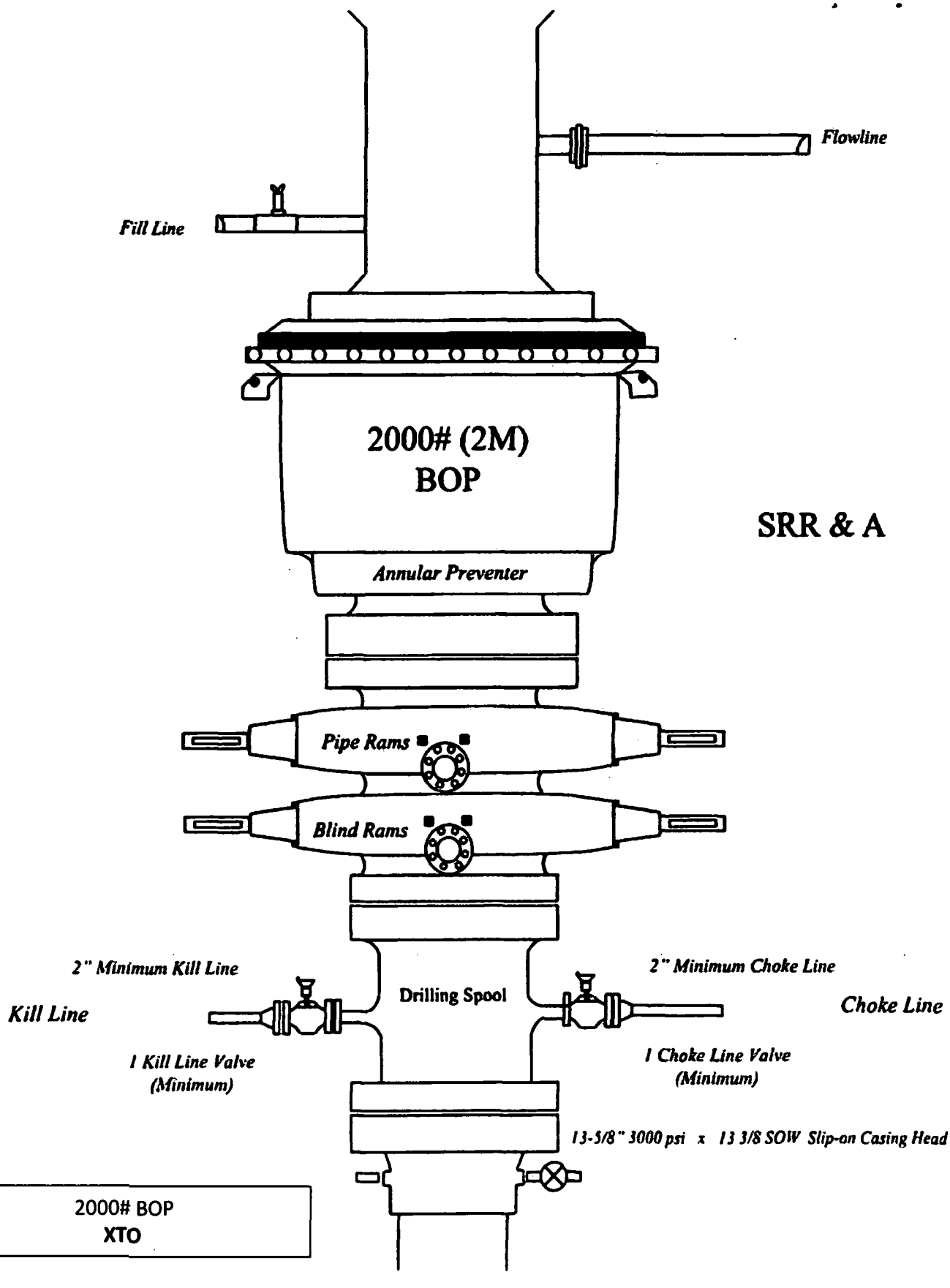


Drilling Operations
Choke Manifold
2M & 3M Service

2M & 3M Choke Manifold Diagram
XTO


Flowline
Fill Line
3000# (3M)
BOP
Annular Preventer
Pipe Rams
Blind Rams
2" Minimum Kill Line
3" minimum choke line
Kill Line
Drilling
Spool
Choke Line
2 Valves Minimum
(including 1 check valve)
2 Valves Minimum
Wellhead
Assembly
13-5/8" 3000#psi x 13-3/8" SOW Casing Head

3000# BOP
XTO


Flowline
Fill Line
2000# (2M)
BOP
SRR & A
Annular Preventer
Pipe Rams
Blind Rams
2" Minimum Kill Line
Kill Line
Drilling Spool
2" Minimum Choke Line
Choke Line
1 Kill Line Valve
(Minimum)
1 Choke Line Valve
(Minimum)
13-5/8" 3000 psi x 13 3/8 SOW Slip-on Casing Head

2000# BOP
XTO

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 1080'	18-5/8"	87.5#	STC	H-40	New	2.19	1.27	5.92
17-1/2"	0' – 2470'	13-3/8"	54.5#	STC	J-55	New	2.36	1.45	3.82
12-1/4"	0' – 4980'	9-5/8"	36#	LTC	J-55	New	1.40	1.71	2.53
8-3/4"	0' – 21477'	5-1/2"	17#	BTC	P-110	New	1.12	1.62	2.18

- XTO requests to utilize centrafizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

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

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

- 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

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 1080'	18-5/8"	87.5#	STC	H-40	New	2.13	1.27	5.92
17-1/2"	0' – 2470'	13-3/8"	54.5#	STC	J-55	New	2.36	1.45	3.82
12-1/4"	0' – 4980'	9-5/8"	36#	LTC	J-55	New	1.40	1.71	2.53
8-3/4" x 8-1/2"	0' – 20483'	5-1/2"	17#	BTC	P-110	New	1.12	1.62	2.34

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

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

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

- 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

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 1080'	18-5/8"	87.5#	STC	H-40	New	2.13	1.27	5.92
17-1/2"	0' – 2470'	13-3/8"	54.5#	STC	J-55	New	2.36	1.45	3.82
12-1/4"	0' – 4980'	9-5/8"	36#	LTC	J-55	New	1.40	1.71	2.53
8-3/4" x 8-1/2"	0' – 20483'	5-1/2"	17#	BTC	P-110	New	1.12	1.62	2.34

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

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

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

- 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

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 1080'	18-5/8"	87.5#	STC	H-40	New	2.13	1.27	5.92
17-1/2"	0' – 2470'	13-3/8"	54.5#	STC	J-55	New	2.36	1.45	3.82
12-1/4"	0' – 4980'	9-5/8"	36#	LTC	J-55	New	1.40	1.71	2.53
8-3/4" x 8-1/2"	0' – 20483'	5-1/2"	17#	BTC	P-110	New	1.12	1.62	2.34

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

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

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

- 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

Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' – 1080'	18-5/8"	87.5#	STC	H-40	New	2.13	1.27	5.92
17-1/2"	0' – 2470'	13-3/8"	54.5#	STC	J-55	New	2.36	1.45	3.82
12-1/4"	0' – 4980'	9-5/8"	36#	LTC	J-55	New	1.40	1.71	2.53
8-3/4" x 8-1/2"	0' – 20483'	5-1/2"	17#	BTC	P-110	New	1.12	1.62	2.34

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 13-3/8" & 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

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

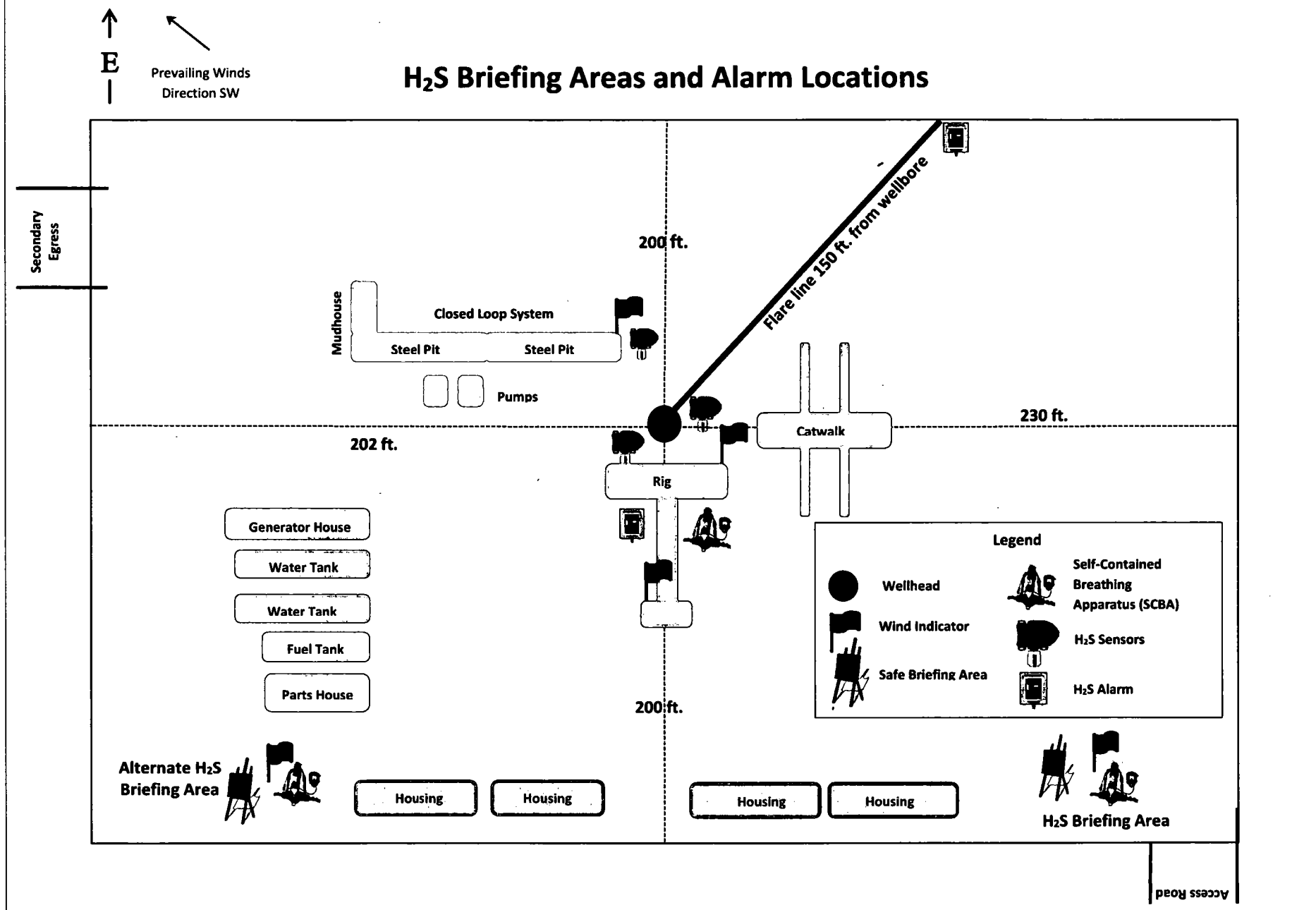
Permanent Wellhead – GE RSH Multibowl System

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

- 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

H_2S Briefing Areas and Alarm Locations



HYDROGEN SULFIDE (H2S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, 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_2S 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
  - Detection of H_2S, and
  - Measures for protection against the gas,
  - 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_2). 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_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = I	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = I	2 ppm	N/A	1000 ppm

Contacting Authorities

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

XTO Energy

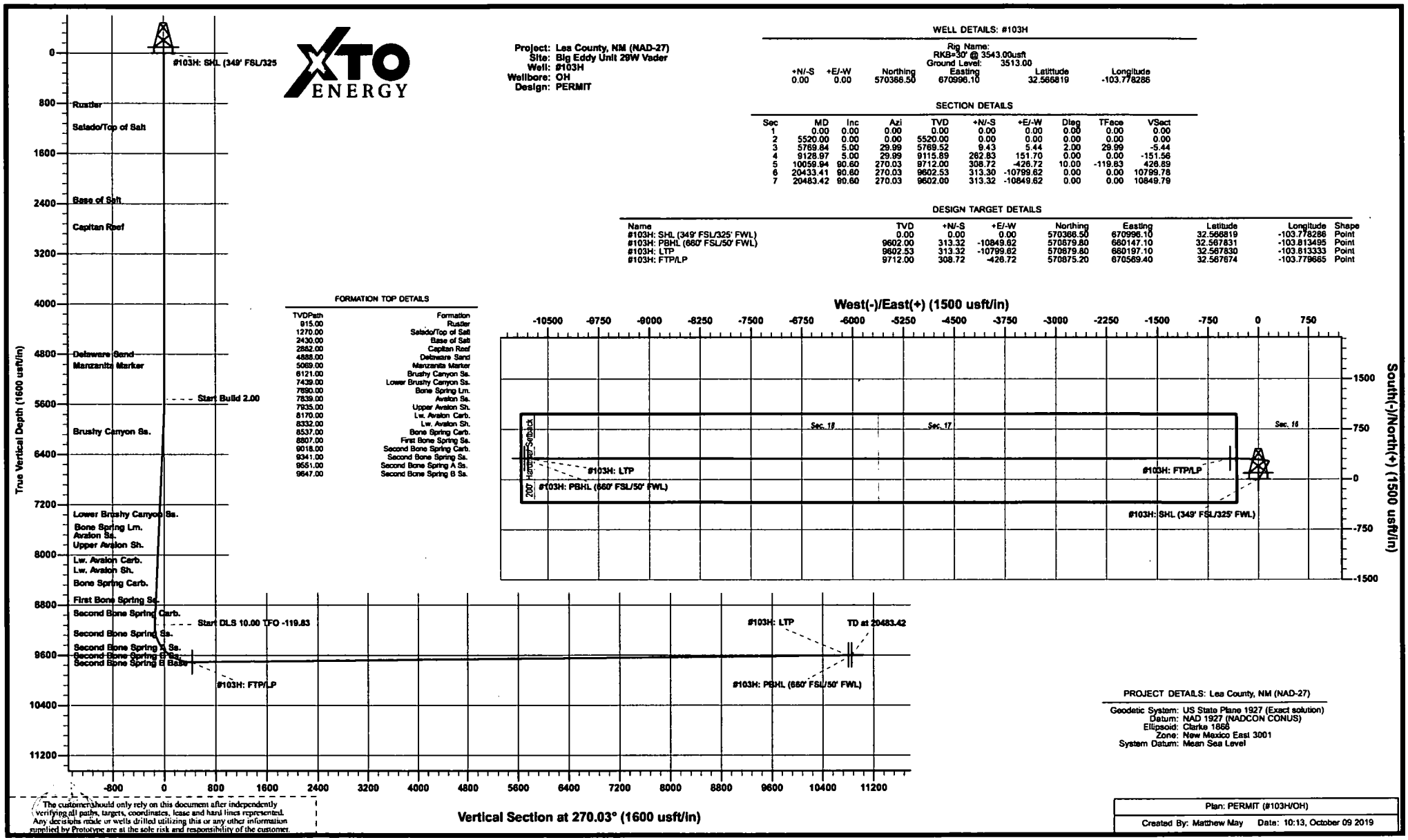
Lea County, NM (NAD-27)
Big Eddy Unit 29W Vader
#103H

OH

Plan: PERMIT

Standard Planning Report

09 October, 2019


XTO ENERGY
Project: Lea County, NM (NAD-27)
Site: Big Eddy Unit 29W Vader
Well: #103H
Wellbore: OH
Design: PERMIT
WELL DETAILS: #103H
Rig Name:
RKB=30' @ 3543.00usft
Ground Level: 3513.00
+N/-S 0.00
+E/-W 0.00
Northing 570366.50
Easting 670996.10
Latitude 32.566819
Longitude -103.778286
SECTION DETAILS
Sec MD Inc Azi TVD +N/-S +E/-W Dleg TFace VSect
1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
2 5520.00 0.00 0.00 5520.00 0.00 0.00 0.00 0.00 0.00
3 5769.84 5.00 29.99 5769.52 9.43 5.44 2.00 29.99 -5.44
4 9128.97 5.00 29.99 9115.89 262.83 151.70 0.00 0.00 -151.56
5 10059.94 90.60 270.03 9712.00 308.72 -426.72 10.00 -119.83 426.89
6 20433.41 90.60 270.03 9602.53 313.30 -10799.62 0.00 0.00 10799.78
7 20483.42 90.60 270.03 9602.00 313.32 -10849.62 0.00 0.00 10849.79
DESIGN TARGET DETAILS
Name TVD +N/-S +E/-W Northing Easting Latitude Longitude Shape
#103H: SHL (349' FSL/325' FWL) 0.00 0.00 0.00 570366.50 670996.10 32.566819 -103.778286 Point
#103H: PBHL (660' FSL/50' FWL) 9602.00 313.32 -10849.62 570679.80 660147.10 32.567831 -103.813495 Point
#103H: LTP 9602.53 313.32 -10799.62 570679.80 660197.10 32.567830 -103.813333 Point
#103H: FTP/LP 9712.00 308.72 -426.72 570675.20 670569.40 32.567674 -103.779665 Point
FORMATION TOP DETAILS
TVDPath Formation
915.00 Rustler
1270.00 Salado/Top of Salt
2430.00 Base of Salt
2862.00 Capitan Reef
4888.00 Delaware Sand
5069.00 Manzanita Marker
6121.00 Brushy Canyon Sa.
7439.00 Lower Brushy Canyon Sa.
7690.00 Bone Spring Lm.
7839.00 Avalon Sa.
7935.00 Upper Avalon Sh.
8170.00 Lw. Avalon Carb.
8332.00 Lw. Avalon Sh.
8537.00 Bone Spring Carb.
8807.00 First Bone Spring Sa.
9018.00 Second Bone Spring Carb.
9341.00 Second Bone Spring Sa.
9551.00 Second Bone Spring A Sa.
9647.00 Second Bone Spring B Sa.
#103H: SHL (349' FSL/325
Rustler
Salado/Top of Salt
Base of Salt
Capitan Reef
Delaware Sand
Manzanita Marker
Start Build 2.00
Brushy Canyon Sa.
Lower Brushy Canyon Sa.
Bone Spring Lm.
Avalon Sa.
Upper Avalon Sh.
Lw. Avalon Carb.
Lw. Avalon Sh.
Bone Spring Carb.
First Bone Spring Sa.
Second Bone Spring Carb.
Start DLS 10.00 TFO -119.83
Second Bone Spring Sa.
Second Bone Spring A Sa.
Second Bone Spring B Sa.
#103H: FTP/LP
#103H: LTP
TD at 20483.42
#103H: PBHL (660' FSL/50' FWL)
True Vertical Depth (1600 usft/in)
Vertical Section at 270.03° (1600 usft/in)
West(-)/East(+) (1500 usft/in)
South(-)/North(+) (1500 usft/in)
Sec. 18
Sec. 17
Sec. 16
200' Hanover Setback
#103H: LTP
#103H: PBHL (660' FSL/50' FWL)
#103H: FTP/LP
#103H: SHL (349' FSL/325' FWL)
PROJECT DETAILS: Lea 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
The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by Prototype are at the sole risk and responsibility of the customer.
Plan: PERMIT (#103H/OH)
Created By: Matthew May Date: 10:13, October 09 2019

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

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

Site	Big Eddy Unit 29W Vader				
Site Position:		**Northing:**	570,366.50 usft	**Latitude:**	32.566819
From:	Map	**Easting:**	670,996.10 usft	**Longitude:**	-103.778286
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.30 °

Well	#103H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	570,366.50 usft	**Latitude:**	32.566819
	+E/-W	0.00 usft	**Easting:**	670,996.10 usft	**Longitude:**	-103.778286
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	3,513.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	10/9/2019	6.83	60.31	47,880

Design	PERMIT				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	270.03	

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	
5,520.00	0.00	0.00	5,520.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,769.84	5.00	29.99	5,769.52	9.43	5.44	2.00	2.00	0.00	29.99	
9,128.97	5.00	29.99	9,115.89	262.83	151.70	0.00	0.00	0.00	0.00	
10,059.94	90.60	270.03	9,712.00	308.72	-426.72	10.00	9.20	-12.89	-119.83	#103H: FTP/LP
20,433.41	90.60	270.03	9,602.53	313.30	-10,799.62	0.00	0.00	0.00	0.00	#103H: LTP
20,483.42	90.60	270.03	9,602.00	313.32	-10,849.62	0.00	0.00	0.00	0.00	#103H: PBHL (660' F

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
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
915.00	0.00	0.00	915.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
1,270.00	0.00	0.00	1,270.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado/Top of Salt									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,430.00	0.00	0.00	2,430.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,862.00	0.00	0.00	2,862.00	0.00	0.00	0.00	0.00	0.00	0.00
Capitan Reef									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,888.00	0.00	0.00	4,888.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware Sand									
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,069.00	0.00	0.00	5,069.00	0.00	0.00	0.00	0.00	0.00	0.00
Manzanita Marker									
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,520.00	0.00	0.00	5,520.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	1.60	29.99	5,599.99	0.97	0.56	-0.56	2.00	2.00	0.00
5,700.00	3.60	29.99	5,699.88	4.90	2.83	-2.82	2.00	2.00	0.00
5,769.84	5.00	29.99	5,769.52	9.43	5.44	-5.44	2.00	2.00	0.00
5,800.00	5.00	29.99	5,799.57	11.70	6.76	-6.75	0.00	0.00	0.00
5,900.00	5.00	29.99	5,899.19	19.25	11.11	-11.10	0.00	0.00	0.00
6,000.00	5.00	29.99	5,998.81	26.79	15.46	-15.45	0.00	0.00	0.00
6,100.00	5.00	29.99	6,098.43	34.34	19.82	-19.80	0.00	0.00	0.00
6,122.66	5.00	29.99	6,121.00	36.04	20.80	-20.79	0.00	0.00	0.00
Brushy Canyon Ss.									
6,200.00	5.00	29.99	6,198.05	41.88	24.17	-24.15	0.00	0.00	0.00
6,300.00	5.00	29.99	6,297.67	49.42	28.53	-28.50	0.00	0.00	0.00
6,400.00	5.00	29.99	6,397.29	56.97	32.88	-32.85	0.00	0.00	0.00
6,500.00	5.00	29.99	6,496.91	64.51	37.23	-37.20	0.00	0.00	0.00
6,600.00	5.00	29.99	6,596.53	72.05	41.59	-41.55	0.00	0.00	0.00
6,700.00	5.00	29.99	6,696.15	79.60	45.94	-45.90	0.00	0.00	0.00
6,800.00	5.00	29.99	6,795.77	87.14	50.30	-50.25	0.00	0.00	0.00
6,900.00	5.00	29.99	6,895.39	94.68	54.65	-54.60	0.00	0.00	0.00
7,000.00	5.00	29.99	6,995.01	102.23	59.00	-58.95	0.00	0.00	0.00
7,100.00	5.00	29.99	7,094.63	109.77	63.36	-63.30	0.00	0.00	0.00
7,200.00	5.00	29.99	7,194.25	117.31	67.71	-67.65	0.00	0.00	0.00
7,300.00	5.00	29.99	7,293.87	124.86	72.07	-72.00	0.00	0.00	0.00
7,400.00	5.00	29.99	7,393.49	132.40	76.42	-76.35	0.00	0.00	0.00
7,445.69	5.00	29.99	7,439.00	135.85	78.41	-78.34	0.00	0.00	0.00
Lower Brushy Canyon Ss.									
7,500.00	5.00	29.99	7,493.11	139.95	80.77	-80.70	0.00	0.00	0.00
7,600.00	5.00	29.99	7,592.73	147.49	85.13	-85.05	0.00	0.00	0.00
7,697.64	5.00	29.99	7,690.00	154.85	89.38	-89.30	0.00	0.00	0.00
Bone Spring Lm.									
7,700.00	5.00	29.99	7,692.35	155.03	89.48	-89.40	0.00	0.00	0.00
7,800.00	5.00	29.99	7,791.97	162.58	93.84	-93.75	0.00	0.00	0.00
7,847.21	5.00	29.99	7,839.00	166.14	95.89	-95.80	0.00	0.00	0.00
Avalon Ss.									
7,900.00	5.00	29.99	7,891.59	170.12	98.19	-98.10	0.00	0.00	0.00
7,943.58	5.00	29.99	7,935.00	173.41	100.09	-100.00	0.00	0.00	0.00
Upper Avalon Sh.									
8,000.00	5.00	29.99	7,991.21	177.66	102.54	-102.45	0.00	0.00	0.00
8,100.00	5.00	29.99	8,090.83	185.21	106.90	-106.80	0.00	0.00	0.00
8,179.47	5.00	29.99	8,170.00	191.20	110.36	-110.26	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

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)
Lw. Avalon Carb.									
8,200.00	5.00	29.99	8,190.45	192.75	111.25	-111.15	0.00	0.00	0.00
8,300.00	5.00	29.99	8,290.07	200.29	115.61	-115.50	0.00	0.00	0.00
8,342.09	5.00	29.99	8,332.00	203.47	117.44	-117.33	0.00	0.00	0.00
Lw. Avalon Sh.									
8,400.00	5.00	29.99	8,389.69	207.84	119.96	-119.85	0.00	0.00	0.00
8,500.00	5.00	29.99	8,489.31	215.38	124.31	-124.20	0.00	0.00	0.00
8,547.87	5.00	29.99	8,537.00	218.99	126.40	-126.28	0.00	0.00	0.00
Bone Spring Carb.									
8,600.00	5.00	29.99	8,588.93	222.92	128.67	-128.55	0.00	0.00	0.00
8,700.00	5.00	29.99	8,688.55	230.47	133.02	-132.90	0.00	0.00	0.00
8,800.00	5.00	29.99	8,788.17	238.01	137.38	-137.25	0.00	0.00	0.00
8,818.90	5.00	29.99	8,807.00	239.44	138.20	-138.07	0.00	0.00	0.00
First Bone Spring Ss.									
8,900.00	5.00	29.99	8,887.79	245.56	141.73	-141.60	0.00	0.00	0.00
9,000.00	5.00	29.99	8,987.41	253.10	146.08	-145.95	0.00	0.00	0.00
9,030.71	5.00	29.99	9,018.00	255.42	147.42	-147.29	0.00	0.00	0.00
Second Bone Spring Carb.									
9,100.00	5.00	29.99	9,087.03	260.64	150.44	-150.30	0.00	0.00	0.00
9,128.97	5.00	29.99	9,115.89	262.83	151.70	-151.56	0.00	0.00	0.00
9,150.00	4.35	5.18	9,136.85	264.42	152.23	-152.09	10.00	-3.07	-117.98
9,200.00	6.33	313.19	9,186.66	268.19	150.39	-150.25	10.00	3.95	-103.98
9,250.00	10.54	294.11	9,236.11	271.95	144.21	-144.06	10.00	8.42	-38.16
9,300.00	15.23	286.23	9,284.85	275.65	133.72	-133.58	10.00	9.38	-15.76
9,350.00	20.07	282.04	9,332.48	279.28	119.02	-118.87	10.00	9.68	-8.38
9,359.10	20.96	281.48	9,341.00	279.93	115.90	-115.75	10.00	9.76	-6.16
Second Bone Spring Ss.									
9,400.00	24.97	279.44	9,378.66	282.80	100.21	-100.06	10.00	9.81	-5.00
9,450.00	29.90	277.64	9,423.02	286.19	77.43	-77.28	10.00	9.86	-3.59
9,500.00	34.85	276.32	9,465.24	289.43	50.87	-50.71	10.00	9.90	-2.65
9,550.00	39.81	275.29	9,504.98	292.48	20.71	-20.56	10.00	9.92	-2.06
9,600.00	44.78	274.45	9,541.96	295.32	-12.80	12.96	10.00	9.94	-1.67
9,612.89	46.06	274.26	9,551.00	296.02	-21.96	22.11	10.00	9.94	-1.49
Second Bone Spring A Ss.									
9,650.00	49.75	273.75	9,575.88	297.93	-49.42	49.58	10.00	9.95	-1.37
9,700.00	54.73	273.14	9,606.48	300.30	-88.87	89.03	10.00	9.95	-1.21
9,750.00	59.71	272.61	9,633.55	302.41	-130.84	131.00	10.00	9.96	-1.07
9,777.84	62.48	272.33	9,647.00	303.46	-155.18	155.34	10.00	9.96	-0.99
Second Bone Spring B Ss.									
9,800.00	64.69	272.12	9,656.86	304.23	-175.02	175.18	10.00	9.96	-0.94
9,850.00	69.67	271.68	9,676.24	305.75	-221.07	221.23	10.00	9.97	-0.89
9,900.00	74.66	271.26	9,691.55	306.97	-268.63	268.79	10.00	9.97	-0.83
9,950.00	79.64	270.86	9,702.67	307.87	-317.36	317.52	10.00	9.97	-0.80
10,000.00	84.63	270.48	9,709.51	308.45	-366.87	367.03	10.00	9.97	-0.77
10,050.00	89.61	270.10	9,712.02	308.71	-416.79	416.95	10.00	9.97	-0.76
10,059.94	90.60	270.03	9,712.00	308.72	-426.72	426.89	10.00	9.97	-0.76
10,100.00	90.60	270.03	9,711.58	308.74	-466.78	466.95	0.00	0.00	0.00
10,200.00	90.60	270.03	9,710.52	308.78	-566.78	566.94	0.00	0.00	0.00
10,300.00	90.60	270.03	9,709.47	308.82	-666.77	666.94	0.00	0.00	0.00
10,400.00	90.60	270.03	9,708.41	308.87	-766.77	766.93	0.00	0.00	0.00
10,500.00	90.60	270.03	9,707.36	308.91	-866.76	866.92	0.00	0.00	0.00
10,600.00	90.60	270.03	9,706.30	308.96	-966.76	966.92	0.00	0.00	0.00
10,700.00	90.60	270.03	9,705.25	309.00	-1,066.75	1,066.91	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,800.00	90.60	270.03	9,704.19	309.04	-1,166.75	1,166.91	0.00	0.00	0.00
10,900.00	90.60	270.03	9,703.13	309.09	-1,266.74	1,266.90	0.00	0.00	0.00
11,000.00	90.60	270.03	9,702.08	309.13	-1,366.73	1,366.90	0.00	0.00	0.00
11,100.00	90.60	270.03	9,701.02	309.18	-1,466.73	1,466.89	0.00	0.00	0.00
11,200.00	90.60	270.03	9,699.97	309.22	-1,566.72	1,566.88	0.00	0.00	0.00
11,300.00	90.60	270.03	9,698.91	309.27	-1,666.72	1,666.88	0.00	0.00	0.00
11,400.00	90.60	270.03	9,697.86	309.31	-1,766.71	1,766.87	0.00	0.00	0.00
11,500.00	90.60	270.03	9,696.80	309.35	-1,866.71	1,866.87	0.00	0.00	0.00
11,600.00	90.60	270.03	9,695.75	309.40	-1,966.70	1,966.86	0.00	0.00	0.00
11,700.00	90.60	270.03	9,694.69	309.44	-2,066.70	2,066.86	0.00	0.00	0.00
11,800.00	90.60	270.03	9,693.64	309.49	-2,166.69	2,166.85	0.00	0.00	0.00
11,900.00	90.60	270.03	9,692.58	309.53	-2,266.68	2,266.85	0.00	0.00	0.00
12,000.00	90.60	270.03	9,691.53	309.57	-2,366.68	2,366.84	0.00	0.00	0.00
12,100.00	90.60	270.03	9,690.47	309.62	-2,466.67	2,466.83	0.00	0.00	0.00
12,200.00	90.60	270.03	9,689.42	309.66	-2,566.67	2,566.83	0.00	0.00	0.00
12,300.00	90.60	270.03	9,688.36	309.71	-2,666.66	2,666.82	0.00	0.00	0.00
12,400.00	90.60	270.03	9,687.31	309.75	-2,766.66	2,766.82	0.00	0.00	0.00
12,500.00	90.60	270.03	9,686.25	309.79	-2,866.65	2,866.81	0.00	0.00	0.00
12,600.00	90.60	270.03	9,685.19	309.84	-2,966.65	2,966.81	0.00	0.00	0.00
12,700.00	90.60	270.03	9,684.14	309.88	-3,066.64	3,066.80	0.00	0.00	0.00
12,800.00	90.60	270.03	9,683.08	309.93	-3,166.63	3,166.80	0.00	0.00	0.00
12,900.00	90.60	270.03	9,682.03	309.97	-3,266.63	3,266.79	0.00	0.00	0.00
13,000.00	90.60	270.03	9,680.97	310.02	-3,366.62	3,366.78	0.00	0.00	0.00
13,100.00	90.60	270.03	9,679.92	310.06	-3,466.62	3,466.78	0.00	0.00	0.00
13,200.00	90.60	270.03	9,678.86	310.10	-3,566.61	3,566.77	0.00	0.00	0.00
13,300.00	90.60	270.03	9,677.81	310.15	-3,666.61	3,666.77	0.00	0.00	0.00
13,400.00	90.60	270.03	9,676.75	310.19	-3,766.60	3,766.76	0.00	0.00	0.00
13,500.00	90.60	270.03	9,675.70	310.24	-3,866.60	3,866.76	0.00	0.00	0.00
13,600.00	90.60	270.03	9,674.64	310.28	-3,966.59	3,966.75	0.00	0.00	0.00
13,700.00	90.60	270.03	9,673.59	310.32	-4,066.58	4,066.75	0.00	0.00	0.00
13,800.00	90.60	270.03	9,672.53	310.37	-4,166.58	4,166.74	0.00	0.00	0.00
13,900.00	90.60	270.03	9,671.48	310.41	-4,266.57	4,266.73	0.00	0.00	0.00
14,000.00	90.60	270.03	9,670.42	310.46	-4,366.57	4,366.73	0.00	0.00	0.00
14,100.00	90.60	270.03	9,669.37	310.50	-4,466.56	4,466.72	0.00	0.00	0.00
14,200.00	90.60	270.03	9,668.31	310.54	-4,566.56	4,566.72	0.00	0.00	0.00
14,300.00	90.60	270.03	9,667.25	310.59	-4,666.55	4,666.71	0.00	0.00	0.00
14,400.00	90.60	270.03	9,666.20	310.63	-4,766.54	4,766.71	0.00	0.00	0.00
14,500.00	90.60	270.03	9,665.14	310.68	-4,866.54	4,866.70	0.00	0.00	0.00
14,600.00	90.60	270.03	9,664.09	310.72	-4,966.53	4,966.70	0.00	0.00	0.00
14,700.00	90.60	270.03	9,663.03	310.77	-5,066.53	5,066.69	0.00	0.00	0.00
14,800.00	90.60	270.03	9,661.98	310.81	-5,166.52	5,166.68	0.00	0.00	0.00
14,900.00	90.60	270.03	9,660.92	310.85	-5,266.52	5,266.68	0.00	0.00	0.00
15,000.00	90.60	270.03	9,659.87	310.90	-5,366.51	5,366.67	0.00	0.00	0.00
15,100.00	90.60	270.03	9,658.81	310.94	-5,466.51	5,466.67	0.00	0.00	0.00
15,200.00	90.60	270.03	9,657.76	310.99	-5,566.50	5,566.66	0.00	0.00	0.00
15,300.00	90.60	270.03	9,656.70	311.03	-5,666.49	5,666.66	0.00	0.00	0.00
15,400.00	90.60	270.03	9,655.65	311.07	-5,766.49	5,766.65	0.00	0.00	0.00
15,500.00	90.60	270.03	9,654.59	311.12	-5,866.48	5,866.65	0.00	0.00	0.00
15,600.00	90.60	270.03	9,653.54	311.16	-5,966.48	5,966.64	0.00	0.00	0.00
15,700.00	90.60	270.03	9,652.48	311.21	-6,066.47	6,066.63	0.00	0.00	0.00
15,800.00	90.60	270.03	9,651.42	311.25	-6,166.47	6,166.63	0.00	0.00	0.00
15,900.00	90.60	270.03	9,650.37	311.30	-6,266.46	6,266.62	0.00	0.00	0.00
16,000.00	90.60	270.03	9,649.31	311.34	-6,366.46	6,366.62	0.00	0.00	0.00
16,100.00	90.60	270.03	9,648.26	311.38	-6,466.45	6,466.61	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,200.00	90.60	270.03	9,647.20	311.43	-6,566.44	6,566.61	0.00	0.00	0.00
16,300.00	90.60	270.03	9,646.15	311.47	-6,666.44	6,666.60	0.00	0.00	0.00
16,400.00	90.60	270.03	9,645.09	311.52	-6,766.43	6,766.60	0.00	0.00	0.00
16,500.00	90.60	270.03	9,644.04	311.56	-6,866.43	6,866.59	0.00	0.00	0.00
16,600.00	90.60	270.03	9,642.98	311.60	-6,966.42	6,966.58	0.00	0.00	0.00
16,700.00	90.60	270.03	9,641.93	311.65	-7,066.42	7,066.58	0.00	0.00	0.00
16,800.00	90.60	270.03	9,640.87	311.69	-7,166.41	7,166.57	0.00	0.00	0.00
16,900.00	90.60	270.03	9,639.82	311.74	-7,266.41	7,266.57	0.00	0.00	0.00
17,000.00	90.60	270.03	9,638.76	311.78	-7,366.40	7,366.56	0.00	0.00	0.00
17,100.00	90.60	270.03	9,637.71	311.82	-7,466.39	7,466.56	0.00	0.00	0.00
17,200.00	90.60	270.03	9,636.65	311.87	-7,566.39	7,566.55	0.00	0.00	0.00
17,300.00	90.60	270.03	9,635.60	311.91	-7,666.38	7,666.55	0.00	0.00	0.00
17,400.00	90.60	270.03	9,634.54	311.96	-7,766.38	7,766.54	0.00	0.00	0.00
17,500.00	90.60	270.03	9,633.48	312.00	-7,866.37	7,866.53	0.00	0.00	0.00
17,600.00	90.60	270.03	9,632.43	312.05	-7,966.37	7,966.53	0.00	0.00	0.00
17,700.00	90.60	270.03	9,631.37	312.09	-8,066.36	8,066.52	0.00	0.00	0.00
17,800.00	90.60	270.03	9,630.32	312.13	-8,166.36	8,166.52	0.00	0.00	0.00
17,900.00	90.60	270.03	9,629.26	312.18	-8,266.35	8,266.51	0.00	0.00	0.00
18,000.00	90.60	270.03	9,628.21	312.22	-8,366.34	8,366.51	0.00	0.00	0.00
18,100.00	90.60	270.03	9,627.15	312.27	-8,466.34	8,466.50	0.00	0.00	0.00
18,200.00	90.60	270.03	9,626.10	312.31	-8,566.33	8,566.50	0.00	0.00	0.00
18,300.00	90.60	270.03	9,625.04	312.35	-8,666.33	8,666.49	0.00	0.00	0.00
18,400.00	90.60	270.03	9,623.99	312.40	-8,766.32	8,766.48	0.00	0.00	0.00
18,500.00	90.60	270.03	9,622.93	312.44	-8,866.32	8,866.48	0.00	0.00	0.00
18,600.00	90.60	270.03	9,621.88	312.49	-8,966.31	8,966.47	0.00	0.00	0.00
18,700.00	90.60	270.03	9,620.82	312.53	-9,066.31	9,066.47	0.00	0.00	0.00
18,800.00	90.60	270.03	9,619.77	312.58	-9,166.30	9,166.46	0.00	0.00	0.00
18,900.00	90.60	270.03	9,618.71	312.62	-9,266.29	9,266.46	0.00	0.00	0.00
19,000.00	90.60	270.03	9,617.65	312.66	-9,366.29	9,366.45	0.00	0.00	0.00
19,100.00	90.60	270.03	9,616.60	312.71	-9,466.28	9,466.45	0.00	0.00	0.00
19,200.00	90.60	270.03	9,615.54	312.75	-9,566.28	9,566.44	0.00	0.00	0.00
19,300.00	90.60	270.03	9,614.49	312.80	-9,666.27	9,666.43	0.00	0.00	0.00
19,400.00	90.60	270.03	9,613.43	312.84	-9,766.27	9,766.43	0.00	0.00	0.00
19,500.00	90.60	270.03	9,612.38	312.88	-9,866.26	9,866.42	0.00	0.00	0.00
19,600.00	90.60	270.03	9,611.32	312.93	-9,966.25	9,966.42	0.00	0.00	0.00
19,700.00	90.60	270.03	9,610.27	312.97	-10,066.25	10,066.41	0.00	0.00	0.00
19,800.00	90.60	270.03	9,609.21	313.02	-10,166.24	10,166.41	0.00	0.00	0.00
19,900.00	90.60	270.03	9,608.16	313.06	-10,266.24	10,266.40	0.00	0.00	0.00
20,000.00	90.60	270.03	9,607.10	313.10	-10,366.23	10,366.40	0.00	0.00	0.00
20,100.00	90.60	270.03	9,606.05	313.15	-10,466.23	10,466.39	0.00	0.00	0.00
20,200.00	90.60	270.03	9,604.99	313.19	-10,566.22	10,566.38	0.00	0.00	0.00
20,300.00	90.60	270.03	9,603.94	313.24	-10,666.22	10,666.38	0.00	0.00	0.00
20,400.00	90.60	270.03	9,602.88	313.28	-10,766.21	10,766.37	0.00	0.00	0.00
20,433.41	90.60	270.03	9,602.53	313.30	-10,799.62	10,799.78	0.00	0.00	0.00
20,483.42	90.60	270.03	9,602.00	313.32	-10,849.62	10,849.79	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #103H
Company:	XTO Energy	**TVD Reference:**	RKB=30' @ 3543.00usft
Project:	Lea County, NM (NAD-27)	**MD Reference:**	RKB=30' @ 3543.00usft
Site:	Big Eddy Unit 29W Vader	**North Reference:**	Grid
Well:	#103H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

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
#103H: SHL (349' FSL/3 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	570,366.50	670,996.10	32.566819	-103.778286
#103H: PBHL (660' FSL - plan hits target center - Point	0.00	0.00	9,602.00	313.32	-10,849.62	570,679.80	660,147.10	32.567831	-103.813495
#103H: LTP - plan misses target center by 0.02usft at 20433.41usft MD (9602.53 TVD, 313.30 N, -10799.62 E) - Point	0.00	0.00	9,602.53	313.32	-10,799.62	570,679.80	660,197.10	32.567830	-103.813333
#103H: FTP/LP - plan hits target center - Point	0.00	0.00	9,712.00	308.72	-426.72	570,675.20	670,569.40	32.567674	-103.779666

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
915.00	915.00	Rustler			
1,270.00	1,270.00	Salado/Top of Salt			
2,430.00	2,430.00	Base of Salt			
2,862.00	2,862.00	Capitan Reef			
4,888.00	4,888.00	Delaware Sand			
5,069.00	5,069.00	Manzanita Marker			
6,122.66	6,121.00	Brushy Canyon Ss.			
7,445.69	7,439.00	Lower Brushy Canyon Ss.			
7,697.64	7,690.00	Bone Spring Lm.			
7,847.21	7,839.00	Avalon Ss.			
7,943.58	7,935.00	Upper Avalon Sh.			
8,179.47	8,170.00	Lw. Avalon Carb.			
8,342.09	8,332.00	Lw. Avalon Sh.			
8,547.87	8,537.00	Bone Spring Carb.			
8,818.90	8,807.00	First Bone Spring Ss.			
9,030.71	9,018.00	Second Bone Spring Carb.			
9,359.10	9,341.00	Second Bone Spring Ss.			
9,612.89	9,551.00	Second Bone Spring A Ss.			
9,777.84	9,647.00	Second Bone Spring B Ss.			

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

PWD Data Report

12/18/2019

APD ID: 10400049102 **Submission Date:** 10/30/2019

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER **Well Number:** 103H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

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

Bond Info Data Report

12/18/2019

APD ID: 10400049102

Submission Date: 10/30/2019

Operator Name: XTO PERMIAN OPERATING LLC

Well Name: BIG EDDY UNIT 29W VADER

Well Number: 103H

Well Type: OIL WELL

Well Work Type: Drill

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: COB000050

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: