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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

EMNRD-OCD ARTESIA

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM120895
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 327062
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. CHAIN-BLUE LIGHTNING 26 FED 164H
2. Name of Operator XTO ENERGY INCORPORATED		8. Lease Name and Well No. CHAIN-BLUE LIGHTNING 26 FED 164H
3a. Address 2277 Springwoods Village Parkway Spring TX 77389	3b. Phone No. (include area code) (432)620-6700	9. API Well No. 30 019 46715
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESW / 366 FSL / 2275 FWL / LAT 32.10917 / LONG -103.956338 At proposed prod. zone SESW / 200 FSL / 2310 FWL / LAT 32.094115 / LONG -103.956153		10. Field and Pool, or Exploratory PIERCE CROSSING BONE SPRING, EA
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area SEC 23 / T25S / R29E / NMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 366 feet		12. County or Parish EDDY
16. No of acres in lease 1280		13. State NM
17. Spacing Unit dedicated to this well 320		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 35 feet
19. Proposed Depth 11259 feet / 16368 feet		20. BLM/BIA Bond No. in file FED: UTB000138
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3073 feet		22. Approximate date work will start* 09/01/2019
		23. Estimated duration 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.	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) Stephanie Rabadue / Ph: (432)620-6714	Date 06/26/2019
Title Regulatory Coordinator		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 10/11/2019
Title Assistant Field Manager Lands & Minerals Office 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.

APPROVED WITH CONDITIONS

Approval Date: 10/11/2019

(Continued on page 2).

*(Instructions on page 2)

K5 2-11-20

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	XTO Energy, Inc.
LEASE NO.:	NMNM-100554
WELL NAME & NO.:	Chain-Blue Lightning 26 Fed 164H
SURFACE HOLE FOOTAGE:	0366' FSL & 2275' FWL
BOTTOM HOLE FOOTAGE:	0200' FSL & 2310' FWL Sec. 26, T. 25 S., R 29 E.
LOCATION:	Section 23, T. 25 S., R 29 E., NMPM
COUNTY:	County, New Mexico

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 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.

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.

Possibility of water and brine flows in the Salado and Castile.

Possibility of lost circulation in the Rustler, Red Beds, and Delaware.

1. The 18-5/8 inch surface casing shall be set at approximately 690 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet 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 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.
2. The minimum required fill of cement behind the **13-3/8** inch 1st intermediate casing, which shall be set at approximately **3200** feet in the **Lamar Limestone**, is:

Cement to surface. If cement does not circulate see B.1.a, c-d above.

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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 is:

Operator has proposed DV tool at depth of 4200', 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 approved top of cement on the next stage.
- b. Second stage above DV tool:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

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 200 feet into previous casing string. Operator shall provide method of verification.
- 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.

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 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 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'' 2nd intermediate casing integrity test 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.**

10M 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.

5. The appropriate BLM office shall be notified a minimum of 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).
- a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
- b. 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.
- c. The results of the test shall be reported to the appropriate BLM office.
- d. 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.**
- e. 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.
- f. 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.

D. **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.

E. DRILL STEM TEST

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

F. 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 093019

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	XTO ENERGY INCORPORATED
WELL NAME & NO.:	CHAIN-BLUE LIGHTNING 26 FED
SURFACE HOLE FOOTAGE:	366'S & 2275'W
BOTTOM HOLE FOOTAGE:	200'S & 2310'W
LOCATION:	Section 23, T.25 S., R.29 E., NMP
COUNTY:	Eddy County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Hydrology
 - Texas Hornshell
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- Interim Reclamation**
- Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Hydrology:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be

taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

Texas Hornshell

Oil and Gas and Associated Infrastructure Mitigation Measures for Zone D – CCA
Boundary Requirements:

- Provide CEHMM with the permit, lease grant, or other authorization form BLM, if applicable.
- Provide CEHMM with plats or other electronic media describing the new surface disturbance for the project.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS**Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

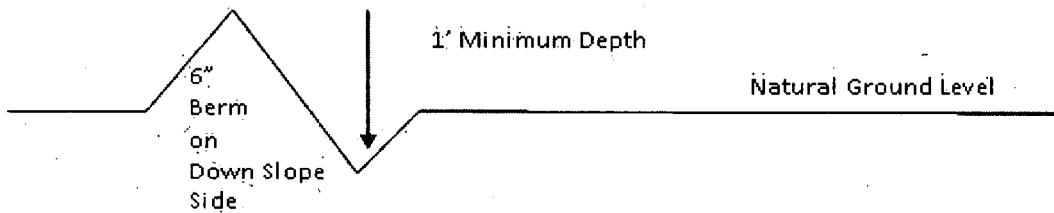
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

- Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

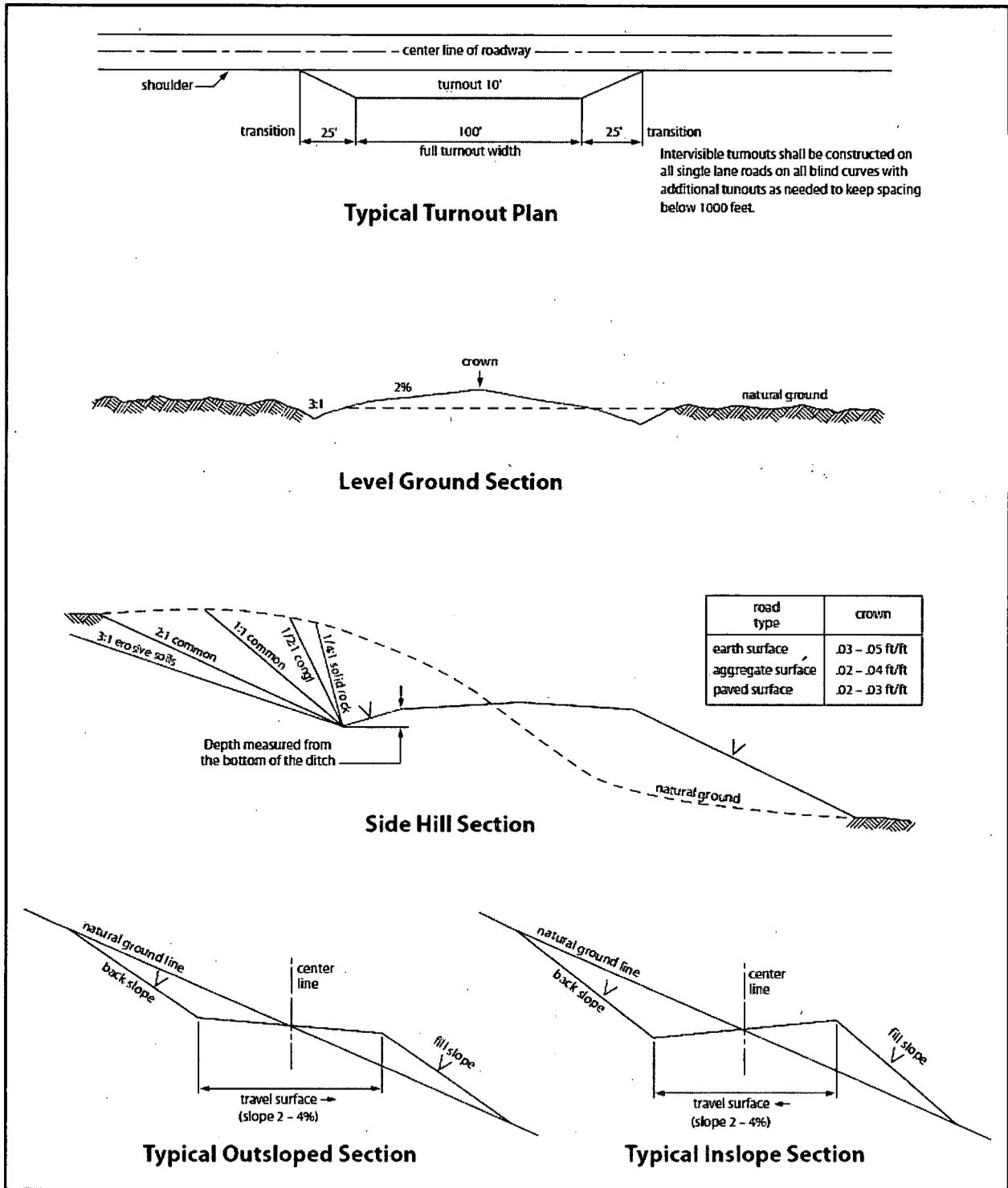


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 *et seq.* (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third

parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing

by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the

authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 *et seq.* (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the

Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- | | |
|--|--|
| <input type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3 |
| <input checked="" type="checkbox"/> seed mixture 2 | <input type="checkbox"/> seed mixture 4 |
| <input type="checkbox"/> seed mixture 2/LPC | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information

thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 *et seq.* (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.
5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to

the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrent shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed



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

Operator Certification Data Report

12/31/2019

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

Title: Regulatory Coordinator

Street Address:

City:

State:

Phone: (432)620-6714

Email address: stephanie_rabadue@xtoenergy.com

Signed on: 05/25/2019

Zip:

Field Representative

Representative Name:

Street Address:

City:

State:

Phone:

Email address:

Zip:



APD ID: 10400042199

Submission Date: 06/26/2019

Highlighted data
reflects the most
recent changes

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400042199

Tie to previous NOS?

Submission Date: 06/26/2019

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: NMNM120895

Lease Acres: 1280

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? NO

APD Operator: XTO ENERGY INCORPORATED

Operator letter of designation:

Operator Info

Operator Organization Name: XTO ENERGY INCORPORATED

Operator Address: 2277 Springwoods Village Parkway

Zip: 77389

Operator PO Box:

Operator City: Spring

State: TX

Operator Phone: (432)620-6700

Operator Internet Address: Richard_redus@xtoenergy.com

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: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PIERCE
CROSSING BONE SPRING,
EAST

Pool Name:

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

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

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: CHAIN Number: 1

Well Class: HORIZONTAL

BLUE

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: 35 FT

Distance to lease line: 366 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Chain_26_Fed_164H_C102_20190528053901.pdf

Well work start Date: 09/01/2019

Duration: 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum:

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	366	FSL	2275	FW L	25S	29E	23	Aliquot SESW	32.10917	-103.956338	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 120895	3073	0	0	
KOP Leg #1	366	FSL	2275	FW L	25S	29E	23	Aliquot SESW	32.10917	-103.956338	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 120895	1073	2000	2000	
PPP Leg #1-1	330	FNL	2310	FW L	25S	29E	26	Aliquot NENW	32.107257	-103.956216	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 100554	-8186	11550	11259	

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

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	330	FSL	2310	FWL	25S	29E	26	Aliquot SESW 2	32.094472	-103.956154	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 100554	-8186	16300	11259	
BHL Leg #1	200	FSL	2310	FWL	25S	29E	26	Aliquot SESW 5	32.094115	-103.956153	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 100554	-8186	16368	11259	



APD ID: 10400042199

Submission Date: 06/26/2019

Highlighted data reflects the most recent changes

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

[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
464992	PERMIAN	3073	0	0	OTHER : Quaternary	NONE	Y
464983	RUSTLER	2516	556	556	SILTSTONE	USEABLE WATER	N
464984	TOP SALT	2354	718	718	SALT	NONE	N
464985	BASE OF SALT	106	2966	2966	SALT	NONE	N
464981	DELAWARE	-111	3183	3183	SANDSTONE	NATURAL GAS, OIL, OTHER : Produced Water	N
464982	BONE SPRING	-3858	6930	6930	SANDSTONE	NATURAL GAS, OIL, OTHER : Produced Water	N
464980	BONE SPRING 1ST	-4801	7873	7873	SANDSTONE	NATURAL GAS, OIL, OTHER : Produced Water	N
464979	BONE SPRING 2ND	-5108	8180	8180	SANDSTONE	NATURAL GAS, OIL, OTHER : Produced Water	Y
464995	BONE SPRING 3RD	-5920	8992	8992	SANDSTONE	NATURAL GAS, OIL, OTHER, USEABLE WATER : Produced Water	N
464996	WOLFCAMP	-7079	10151	10151	LIMESTONE, SANDSTONE	NATURAL GAS, OIL, OTHER, USEABLE WATER : produced water	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 11259

Equipment: 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 10M 3-Ram BOP. MASP should not exceed 5176 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). Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi.

Requesting Variance? YES

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

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

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

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, the BOP test will be limited to 10,000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 10M BOP diagram is attached. Blind rams will be function tested each trip, pipe rams will be function tested each day.

Choke Diagram Attachment:

Chain_26_Fed_10MCM_20190919132720.pdf

BOP Diagram Attachment:

Chain_26_Fed_5M10MBOP_20190919132731.pdf

Pressure Rating (PSI): 2M

Rating Depth: 520

Equipment: The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 2M Hydril and a 13-5/8" minimum 2M Double Ram BOP.

Requesting Variance? YES

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

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, the BOP test will be limited to 2,000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 2M BOP diagram is attached. Blind rams will be function tested each trip, pipe rams will be function tested each day.

Choke Diagram Attachment:

Chain_26_Fed_2MCM_20190919132820.pdf

BOP Diagram Attachment:

Chain_26_Fed_2MBOP_20190919132831.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	520	0	520			520	J-55	87.5	BUTT	2.68	1.81	DRY	30.2 1	DRY	30.2 1
2	INTERMEDIATE	17.5	13.375	NEW	API	N	0	4150	0	4150			4150	HCL-80	68	BUTT	2.31	2.12	DRY	10.4 1	DRY	10.4 1
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	8991	0	8991			8991	HCL-80	40	BUTT	1.61	1.03	DRY	3.51	DRY	3.51

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

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
4	PRODUCTI ON	8.75	5.5	NEW	API	N	0	16368	0	11259			16368	P- 110	17	BUTT	1.49	1.01	DRY	2.52	DRY	2.52

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Chain_26_Fed_164H_Csg_20190528053509.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Chain_26_Fed_164H_Csg_20190528053542.pdf

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

Casing Attachments

Casing ID: 3 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Chain_26_Fed_164H_Csg_20190528053630.pdf

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Chain_26_Fed_164H_Csg_20190528053750.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	520	290	1.87	12.8	542.3	100	EconoCem-HLTRRC	None
SURFACE	Tail				550	1.35	14.8	742.5	100	Halcem-C	2% CaCl
INTERMEDIATE	Lead		0	4150	2450	1.88	12.8	4606	100	Halcem-C	2% CaCl
INTERMEDIATE	Tail				850	1.35	14.8	1147.5	100	HalCem-C	2% CaCl
INTERMEDIATE	Lead	4200	8991	4200	1130	1.87	12.8	2113.1	100	Halcem-C	2% CaCl

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail				390	1.35	14.8	526.5	100	Halcem-C	2% CaCl
INTERMEDIATE	Lead	4200	0	4200	2050	1.88	12.8	3854	100	Halcem-C	2% CaCl
INTERMEDIATE	Tail				470	1.33	14.8	625.1	100	Halcem-C	2% CaCl
PRODUCTION	Lead		0	1636 8	970	1.88	11.5	1823. 6	30	Halcem-C	2% CaCl
PRODUCTION	Tail				2350	1.33	13.2	3125. 5	30	VersaCem	None

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
4150	8991	OTHER : FW / Cut Brine / Polymer	9.1	9.5							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

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

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
0	520	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
520	4150	OTHER : Brine/Gel Sweeps	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 as a closed loop system
8991	1125 9	OTHER : FW / Cut Brine / Polymer / OBM	12.2	12.8							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

Section 6 - Test, Logging, Coring

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

Open hole logging to include Density/Neutron/PE/Dual Laterlog/Spectral Gamma from kick-off point to intermediate casing shoe.

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

CBL,CNL,DS,GR,MUDLOG

Coring operation description for the well:

No coring will take place on this well.

Operator Name: XTO ENERGY INCORPORATED

Well Name: CHAIN-BLUE LIGHTNING 26 FED

Well Number: 164H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 7493

Anticipated Surface Pressure: 5016.02

Anticipated Bottom Hole Temperature(F): 170

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:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Chain_26_Fed_H2S_Plan_20190525080701.pdf

Chain_26_Fed_H2S_Dia_Pad_2W_20190919090558.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Chain_26_Fed_164H_DD_20190528053835.pdf

Other proposed operations facets description:

XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.

Other proposed operations facets attachment:

Chain_26_Fed_GCPS_20190525080755.pdf

Chain_26_Fed_GCPN_20190525080746.pdf

Chain_26_Fed_MBS_20190527102220.pdf

Other Variance attachment:

Chain_26_Fed_FH_20190525080740.pdf



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 H₂S, 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 H₂S 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 H₂S, 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 (SO₂). 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 H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = 1	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
Milton Turman, Drilling Superintendent
Jeff Raines, Construction Foreman
Toady Sanders, EH & S Manager
Wes McSpadden, Production Foreman

903-521-6477
817-524-5107
432-557-3159
903-520-1601
575-441-1147

SHERIFF DEPARTMENTS:

Eddy County
Lea County

575-887-7551
575-396-3611

NEW MEXICO STATE POLICE:

575-392-5588

FIRE DEPARTMENTS:

Carlsbad
Eunice
Hobbs
Jal
Lovington

911
575-885-2111
575-394-2111
575-397-9308
575-395-2221
575-396-2359

HOSPITALS:

Carlsbad Medical Emergency
Eunice Medical Emergency
Hobbs Medical Emergency
Jal Medical Emergency
Lovington Medical Emergency

911
575-885-2111
575-394-2112
575-397-9308
575-395-2221
575-396-2359

AGENT NOTIFICATIONS:

For Lea County:

Bureau of Land Management – Hobbs
New Mexico Oil Conservation Division – Hobbs

575-393-3612
575-393-6161

For Eddy County:

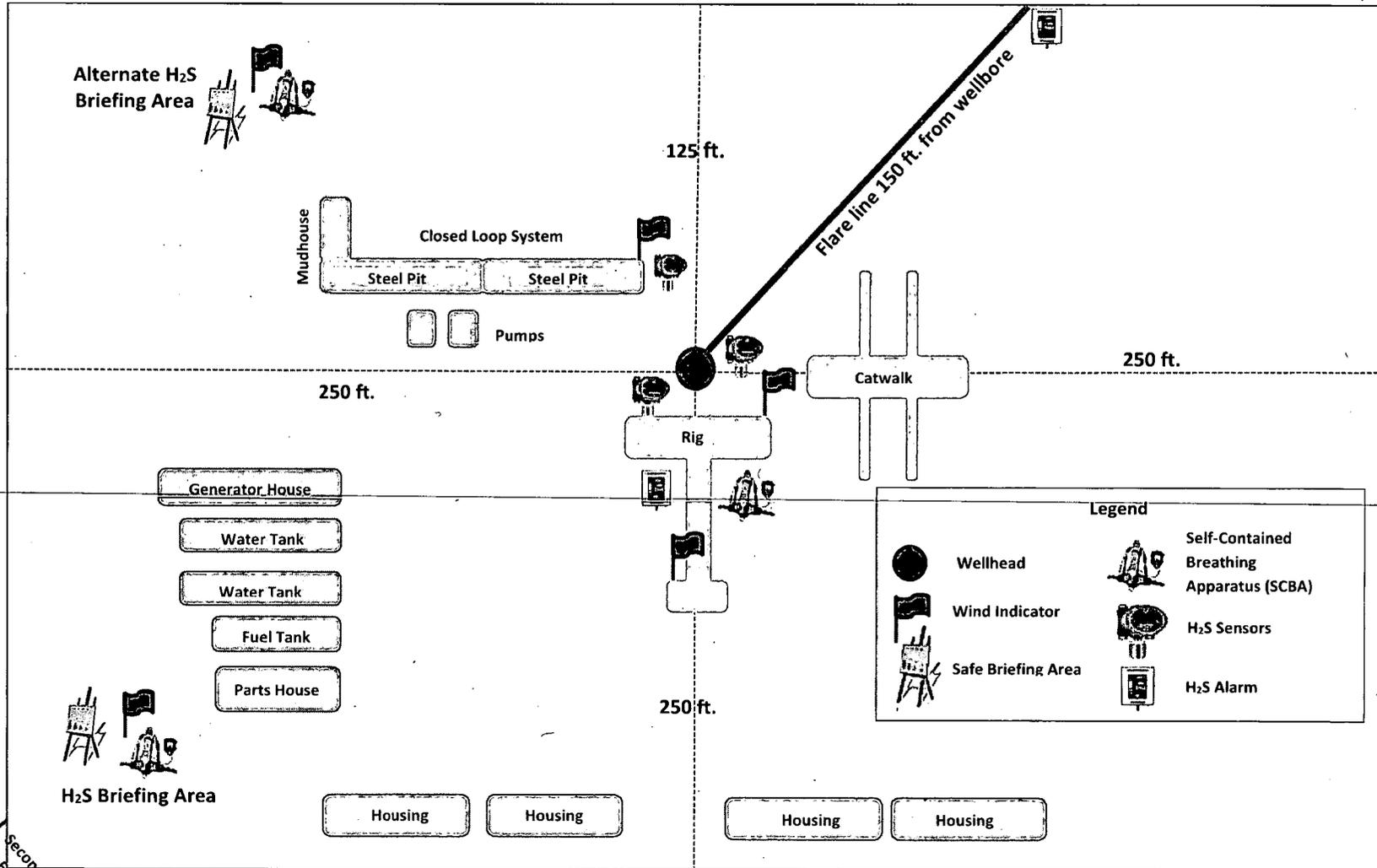
Bureau of Land Management - Carlsbad
New Mexico Oil Conservation Division - Artesia

575-234-5972
575-748-1283



Prevailing Winds
Direction SW

H₂S Briefing Areas and Alarm Locations





XTO Energy

**Eddy County, NM (NAD-27)
Chain-Blue Lightning 26 Fed
#164H**

OH

Plan: PERMIT

Standard Planning Report

26 April, 2019



Project: Eddy County, NM (NAD-27)
 Site: Chain-Blue Lightning 26 Fed
 Well: #164H
 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: #164H

Rig Name:		Ref GL @ 3073.00usft		Ground Level: 3073.00	
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	403598.30	616878.60	32.1090454	-103.9558529

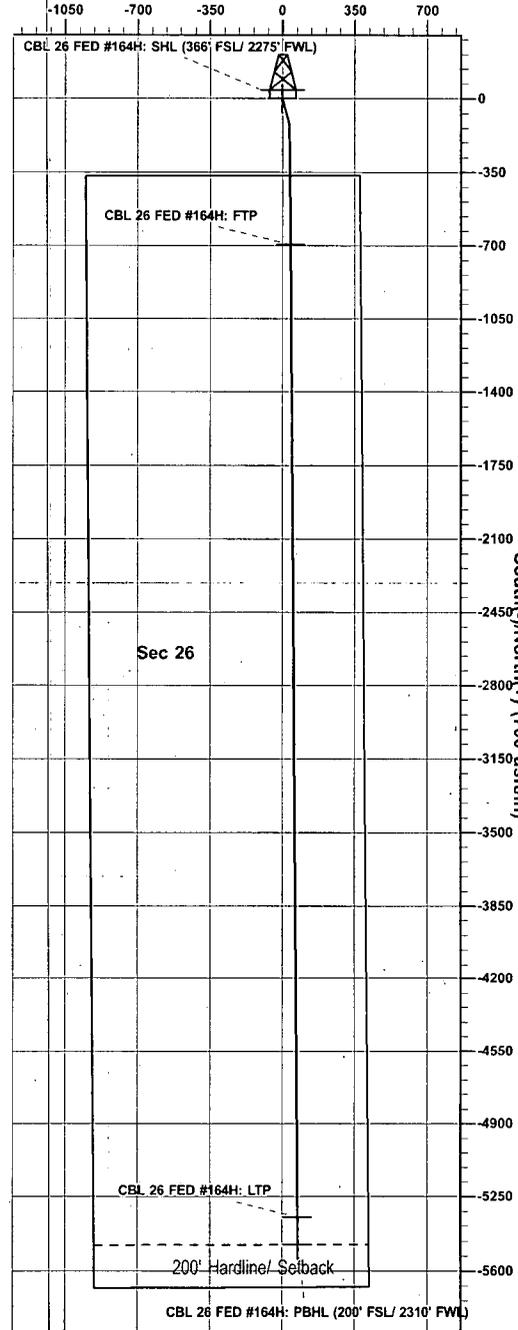
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
CBL 26 FED #164H: SHL (366' FSL/ 2275' FWL)	0.00	0.00	0.00	403598.30	616878.60	32.1090454	-103.9558529	Point
CBL 26 FED #164H: FTP	11259.00	-695.50	40.00	402902.80	616918.60	32.1071331	-103.9557316	Point
CBL 26 FED #164H: LTP	11259.00	-5346.20	75.30	398252.10	616953.90	32.0943480	-103.9556702	Point
CBL 26 FED #164H: PBHL (200' FSL/ 2310' FWL)	11259.00	-5476.20	76.30	398122.10	616954.90	32.0939906	-103.9556684	Point

SECTION DETAILS

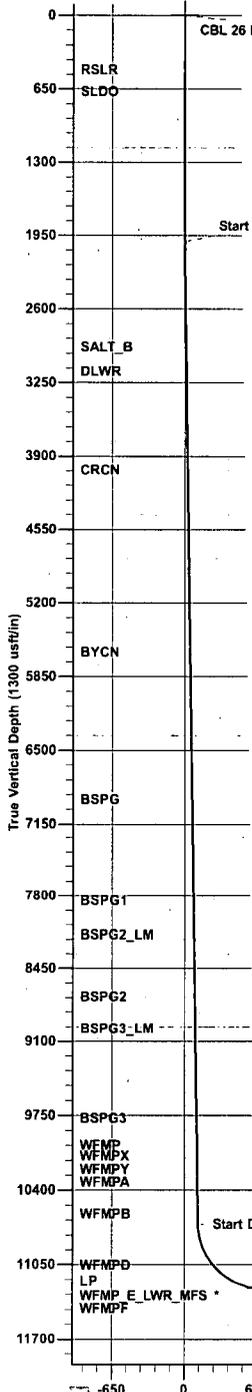
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00
3	2041.99	0.84	164.71	2041.99	-0.30	0.08	2.00	164.71	0.30
4	1069.09	0.84	164.71	1069.16	-122.83	33.53	0.00	122.89	
5	11586.98	90.00	179.56	11259.00	-695.50	40.00	10.00	14.86	695.79
6	16237.81	90.00	179.56	11259.00	-5346.20	75.31	0.00	0.00	5346.62
7	16367.81	90.00	179.56	11259.00	-5476.20	76.30	0.00	0.00	5476.62

West(-)/East(+) (700 usft/in)



FORMATION TOP DETAILS

TVDPATH	FORMATION
546.00	RSLR
738.00	SLDO
3000.00	SALT_B
3214.00	DLWR
4088.00	CRCN
5700.00	BYCN
6999.00	BSPG
7907.00	BSPG1
8213.00	BSPG2_LM
8767.00	BSPG2
9025.00	BSPG3_LM
9838.00	BSPG3
10191.00	WFMP
10220.00	WFMPX
10282.00	WFMPY
10327.00	WFMPA
10671.00	WFMPB
11119.00	WFMPD
11259.00	LP



Vertical Section at 179.56° (1300 usft/in)

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 user.

Plan: PERMIT (#164H/OH)

Created By: Prototype Well Planning, LLC Date: 11:20, April 26 2019

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

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-		² Pool Code		³ Pool Name	
⁴ Property Code		⁵ Property Name CHAIN-BLUE LIGHTNING 26 FED			⁶ Well Number 164H
⁷ OGRID No. 005380		⁸ Operator Name XTO ENERGY, INC.			⁹ Elevation 3,073'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	23	25 S	29 E		366	SOUTH	2,275	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	26	25 S	29 E		200	SOUTH	2,310	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

GEODETTIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y = 403,598.3
X = 616,878.6
LAT. = 32.109045°N
LONG. = 103.955853°W

FIRST TAKE POINT
NAD 27 NME
Y = 402,902.8
X = 616,918.6
LAT. = 32.107133°N
LONG. = 103.955731°W

CORNER COORDINATES TABLE
NAD 27 NME
A - Y = 403,230.4 N, X = 615,930.4 E
B - Y = 403,233.6 N, X = 617,254.7 E
C - Y = 400,575.3 N, X = 615,952.2 E
D - Y = 400,578.6 N, X = 617,278.1 E
E - Y = 397,919.3 N, X = 615,973.9 E
F - Y = 397,923.1 N, X = 617,301.4 E

CORNER COORDINATES TABLE
NAD 83 NME
A - Y = 403,288.5 N, X = 657,115.1 E
B - Y = 403,291.7 N, X = 658,439.5 E
C - Y = 400,633.4 N, X = 657,137.0 E
D - Y = 400,636.7 N, X = 658,462.9 E
E - Y = 397,977.3 N, X = 657,158.8 E
F - Y = 397,981.1 N, X = 658,486.3 E

LAST TAKE POINT
NAD 27 NME
Y = 398,252.1
X = 616,953.9
LAT. = 32.094348°N
LONG. = 103.955670°W

LAST TAKE POINT
NAD 83 NME
Y = 398,310.1
X = 658,138.8
LAT. = 32.094472°N
LONG. = 103.956154°W

BOTTOM HOLE LOCATION
NAD 27 NME
Y = 398,122.1
X = 616,954.9
LAT. = 32.093991°N
LONG. = 103.955668°W

BOTTOM HOLE LOCATION
NAD 83 NME
Y = 398,180.1
X = 658,139.8
LAT. = 32.094115°N
LONG. = 103.956153°W

¹⁷ OPERATOR CERTIFICATION

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

Signature _____ Date _____

Printed Name _____

E-mail Address _____

¹⁸ SURVEYOR CERTIFICATION

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

4-22-2019
Date of Survey

Signature and Seal of Professional Surveyor:

MARK DILLON HARP 23786
Certificate Number JC 2018020626



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well #164H
Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Project	Eddy 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		

Site	Chain-Blue Lightning 26 Fed				
Site Position:	Northing:	403,525.10 usft	Latitude:	32.1088568	
From:	Map	Easting:	615,559.00 usft	Longitude:	-103.9601155
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	#164H					
Well Position	+N/-S	73.20 usft	Northing:	403,598.30 usft	Latitude:	32.1090454
	+E/-W	1,319.60 usft	Easting:	616,878.60 usft	Longitude:	-103.9558529
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,073.00 usft	

Wellbore	OH		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	04/26/19	6.92	59.87	47,641

Design	PERMIT		
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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	179.56	

Plan Sections										
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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	
2,041.99	0.84	164.71	2,041.99	-0.30	0.08	2.00	2.00	0.00	164.71	
10,695.09	0.84	164.71	10,694.16	-122.63	33.53	0.00	0.00	0.00	0.00	
11,586.98	90.00	179.56	11,259.00	-695.50	40.00	10.00	10.00	1.67	14.86	CBL 26 FED #164H
16,237.81	90.00	179.56	11,259.00	-5,346.20	75.31	0.00	0.00	0.00	0.00	CBL 26 FED #164H
16,367.81	90.00	179.56	11,259.00	-5,476.20	76.30	0.00	0.00	0.00	0.00	CBL 26 FED #164H



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well #164H
Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	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
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
2,041.99	0.84	164.71	2,041.99	-0.30	0.08	0.30	2.00	2.00	0.00
2,100.00	0.84	164.71	2,099.99	-1.12	0.31	1.12	0.00	0.00	0.00
2,200.00	0.84	164.71	2,199.98	-2.53	0.69	2.54	0.00	0.00	0.00
2,300.00	0.84	164.71	2,299.97	-3.94	1.08	3.95	0.00	0.00	0.00
2,400.00	0.84	164.71	2,399.96	-5.36	1.46	5.37	0.00	0.00	0.00
2,500.00	0.84	164.71	2,499.95	-6.77	1.85	6.79	0.00	0.00	0.00
2,600.00	0.84	164.71	2,599.94	-8.19	2.24	8.20	0.00	0.00	0.00
2,700.00	0.84	164.71	2,699.93	-9.60	2.62	9.62	0.00	0.00	0.00
2,800.00	0.84	164.71	2,799.92	-11.01	3.01	11.04	0.00	0.00	0.00
2,900.00	0.84	164.71	2,899.91	-12.43	3.40	12.45	0.00	0.00	0.00
3,000.00	0.84	164.71	2,999.90	-13.84	3.78	13.87	0.00	0.00	0.00
3,100.00	0.84	164.71	3,099.88	-15.25	4.17	15.29	0.00	0.00	0.00
3,200.00	0.84	164.71	3,199.87	-16.67	4.56	16.70	0.00	0.00	0.00
3,300.00	0.84	164.71	3,299.86	-18.08	4.94	18.12	0.00	0.00	0.00
3,400.00	0.84	164.71	3,399.85	-19.50	5.33	19.54	0.00	0.00	0.00
3,500.00	0.84	164.71	3,499.84	-20.91	5.72	20.95	0.00	0.00	0.00
3,600.00	0.84	164.71	3,599.83	-22.32	6.10	22.37	0.00	0.00	0.00
3,700.00	0.84	164.71	3,699.82	-23.74	6.49	23.79	0.00	0.00	0.00
3,800.00	0.84	164.71	3,799.81	-25.15	6.88	25.20	0.00	0.00	0.00
3,900.00	0.84	164.71	3,899.80	-26.56	7.26	26.62	0.00	0.00	0.00
4,000.00	0.84	164.71	3,999.79	-27.98	7.65	28.04	0.00	0.00	0.00
4,100.00	0.84	164.71	4,099.78	-29.39	8.04	29.45	0.00	0.00	0.00
4,200.00	0.84	164.71	4,199.77	-30.81	8.42	30.87	0.00	0.00	0.00
4,300.00	0.84	164.71	4,299.76	-32.22	8.81	32.29	0.00	0.00	0.00
4,400.00	0.84	164.71	4,399.75	-33.63	9.20	33.70	0.00	0.00	0.00
4,500.00	0.84	164.71	4,499.73	-35.05	9.58	35.12	0.00	0.00	0.00
4,600.00	0.84	164.71	4,599.72	-36.46	9.97	36.54	0.00	0.00	0.00
4,700.00	0.84	164.71	4,699.71	-37.88	10.35	37.95	0.00	0.00	0.00
4,800.00	0.84	164.71	4,799.70	-39.29	10.74	39.37	0.00	0.00	0.00
4,900.00	0.84	164.71	4,899.69	-40.70	11.13	40.79	0.00	0.00	0.00
5,000.00	0.84	164.71	4,999.68	-42.12	11.51	42.20	0.00	0.00	0.00
5,100.00	0.84	164.71	5,099.67	-43.53	11.90	43.62	0.00	0.00	0.00
5,200.00	0.84	164.71	5,199.66	-44.94	12.29	45.04	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well #164H
Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	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)	
5,300.00	0.84	164.71	5,299.65	-46.36	12.67	46.45	0.00	0.00	0.00	
5,400.00	0.84	164.71	5,399.64	-47.77	13.06	47.87	0.00	0.00	0.00	
5,500.00	0.84	164.71	5,499.63	-49.19	13.45	49.29	0.00	0.00	0.00	
5,600.00	0.84	164.71	5,599.62	-50.60	13.83	50.70	0.00	0.00	0.00	
5,700.00	0.84	164.71	5,699.61	-52.01	14.22	52.12	0.00	0.00	0.00	
5,800.00	0.84	164.71	5,799.59	-53.43	14.61	53.54	0.00	0.00	0.00	
5,900.00	0.84	164.71	5,899.58	-54.84	14.99	54.95	0.00	0.00	0.00	
6,000.00	0.84	164.71	5,999.57	-56.25	15.38	56.37	0.00	0.00	0.00	
6,100.00	0.84	164.71	6,099.56	-57.67	15.77	57.79	0.00	0.00	0.00	
6,200.00	0.84	164.71	6,199.55	-59.08	16.15	59.20	0.00	0.00	0.00	
6,300.00	0.84	164.71	6,299.54	-60.50	16.54	60.62	0.00	0.00	0.00	
6,400.00	0.84	164.71	6,399.53	-61.91	16.93	62.04	0.00	0.00	0.00	
6,500.00	0.84	164.71	6,499.52	-63.32	17.31	63.45	0.00	0.00	0.00	
6,600.00	0.84	164.71	6,599.51	-64.74	17.70	64.87	0.00	0.00	0.00	
6,700.00	0.84	164.71	6,699.50	-66.15	18.09	66.29	0.00	0.00	0.00	
6,800.00	0.84	164.71	6,799.49	-67.56	18.47	67.70	0.00	0.00	0.00	
6,900.00	0.84	164.71	6,899.48	-68.98	18.86	69.12	0.00	0.00	0.00	
7,000.00	0.84	164.71	6,999.47	-70.39	19.24	70.54	0.00	0.00	0.00	
7,100.00	0.84	164.71	7,099.46	-71.81	19.63	71.95	0.00	0.00	0.00	
7,200.00	0.84	164.71	7,199.44	-73.22	20.02	73.37	0.00	0.00	0.00	
7,300.00	0.84	164.71	7,299.43	-74.63	20.40	74.79	0.00	0.00	0.00	
7,400.00	0.84	164.71	7,399.42	-76.05	20.79	76.20	0.00	0.00	0.00	
7,500.00	0.84	164.71	7,499.41	-77.46	21.18	77.62	0.00	0.00	0.00	
7,600.00	0.84	164.71	7,599.40	-78.87	21.56	79.04	0.00	0.00	0.00	
7,700.00	0.84	164.71	7,699.39	-80.29	21.95	80.45	0.00	0.00	0.00	
7,800.00	0.84	164.71	7,799.38	-81.70	22.34	81.87	0.00	0.00	0.00	
7,900.00	0.84	164.71	7,899.37	-83.12	22.72	83.29	0.00	0.00	0.00	
8,000.00	0.84	164.71	7,999.36	-84.53	23.11	84.70	0.00	0.00	0.00	
8,100.00	0.84	164.71	8,099.35	-85.94	23.50	86.12	0.00	0.00	0.00	
8,200.00	0.84	164.71	8,199.34	-87.36	23.88	87.54	0.00	0.00	0.00	
8,300.00	0.84	164.71	8,299.33	-88.77	24.27	88.95	0.00	0.00	0.00	
8,400.00	0.84	164.71	8,399.32	-90.18	24.66	90.37	0.00	0.00	0.00	
8,500.00	0.84	164.71	8,499.31	-91.60	25.04	91.79	0.00	0.00	0.00	
8,600.00	0.84	164.71	8,599.29	-93.01	25.43	93.20	0.00	0.00	0.00	
8,700.00	0.84	164.71	8,699.28	-94.43	25.82	94.62	0.00	0.00	0.00	
8,800.00	0.84	164.71	8,799.27	-95.84	26.20	96.04	0.00	0.00	0.00	
8,900.00	0.84	164.71	8,899.26	-97.25	26.59	97.46	0.00	0.00	0.00	
9,000.00	0.84	164.71	8,999.25	-98.67	26.98	98.87	0.00	0.00	0.00	
9,100.00	0.84	164.71	9,099.24	-100.08	27.36	100.29	0.00	0.00	0.00	
9,200.00	0.84	164.71	9,199.23	-101.50	27.75	101.71	0.00	0.00	0.00	
9,300.00	0.84	164.71	9,299.22	-102.91	28.14	103.12	0.00	0.00	0.00	
9,400.00	0.84	164.71	9,399.21	-104.32	28.52	104.54	0.00	0.00	0.00	
9,500.00	0.84	164.71	9,499.20	-105.74	28.91	105.96	0.00	0.00	0.00	
9,600.00	0.84	164.71	9,599.19	-107.15	29.29	107.37	0.00	0.00	0.00	
9,700.00	0.84	164.71	9,699.18	-108.56	29.68	108.79	0.00	0.00	0.00	
9,800.00	0.84	164.71	9,799.17	-109.98	30.07	110.21	0.00	0.00	0.00	
9,900.00	0.84	164.71	9,899.15	-111.39	30.45	111.62	0.00	0.00	0.00	
10,000.00	0.84	164.71	9,999.14	-112.81	30.84	113.04	0.00	0.00	0.00	
10,100.00	0.84	164.71	10,099.13	-114.22	31.23	114.46	0.00	0.00	0.00	
10,200.00	0.84	164.71	10,199.12	-115.63	31.61	115.87	0.00	0.00	0.00	
10,300.00	0.84	164.71	10,299.11	-117.05	32.00	117.29	0.00	0.00	0.00	
10,400.00	0.84	164.71	10,399.10	-118.46	32.39	118.71	0.00	0.00	0.00	
10,500.00	0.84	164.71	10,499.09	-119.87	32.77	120.12	0.00	0.00	0.00	
10,600.00	0.84	164.71	10,599.08	-121.29	33.16	121.54	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well #164H
Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	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)	
10,695.09	0.84	164.71	10,694.16	-122.63	33.53	122.89	0.00	0.00	0.00	
10,700.00	1.32	170.18	10,699.07	-122.72	33.55	122.98	10.00	9.79	111.48	
10,750.00	6.31	177.62	10,748.94	-126.04	33.76	126.29	10.00	9.97	14.88	
10,800.00	11.30	178.49	10,798.34	-133.68	34.00	133.94	10.00	10.00	1.74	
10,850.00	16.30	178.83	10,846.88	-145.61	34.28	145.87	10.00	10.00	0.68	
10,900.00	21.30	179.01	10,894.19	-161.71	34.58	161.98	10.00	10.00	0.37	
10,950.00	26.30	179.13	10,939.93	-181.89	34.90	182.15	10.00	10.00	0.23	
11,000.00	31.30	179.21	10,983.73	-205.97	35.25	206.23	10.00	10.00	0.16	
11,050.00	36.30	179.27	11,025.26	-233.77	35.62	234.04	10.00	10.00	0.12	
11,100.00	41.30	179.32	11,064.21	-265.09	36.00	265.36	10.00	10.00	0.10	
11,150.00	46.30	179.36	11,100.29	-299.69	36.40	299.96	10.00	10.00	0.08	
11,200.00	51.30	179.39	11,133.21	-337.29	36.81	337.57	10.00	10.00	0.07	
11,250.00	56.30	179.42	11,162.73	-377.63	37.22	377.90	10.00	10.00	0.06	
11,300.00	61.30	179.45	11,188.62	-420.38	37.65	420.66	10.00	10.00	0.05	
11,350.00	66.30	179.47	11,210.69	-465.23	38.07	465.51	10.00	10.00	0.05	
11,400.00	71.30	179.49	11,228.76	-511.83	38.49	512.11	10.00	10.00	0.04	
11,450.00	76.30	179.51	11,242.70	-559.83	38.91	560.11	10.00	10.00	0.04	
11,500.00	81.30	179.53	11,252.41	-608.86	39.32	609.14	10.00	10.00	0.04	
11,550.00	86.30	179.55	11,257.81	-658.55	39.71	658.84	10.00	10.00	0.04	
11,586.98	90.00	179.56	11,259.00	-695.50	40.00	695.79	10.00	10.00	0.04	
11,600.00	90.00	179.56	11,259.00	-708.52	40.10	708.81	0.00	0.00	0.00	
11,700.00	90.00	179.56	11,259.00	-808.52	40.86	808.81	0.00	0.00	0.00	
11,800.00	90.00	179.56	11,259.00	-908.52	41.62	908.81	0.00	0.00	0.00	
11,900.00	90.00	179.56	11,259.00	-1,008.51	42.38	1,008.81	0.00	0.00	0.00	
12,000.00	90.00	179.56	11,259.00	-1,108.51	43.14	1,108.81	0.00	0.00	0.00	
12,100.00	90.00	179.56	11,259.00	-1,208.51	43.90	1,208.81	0.00	0.00	0.00	
12,200.00	90.00	179.56	11,259.00	-1,308.51	44.65	1,308.81	0.00	0.00	0.00	
12,300.00	90.00	179.56	11,259.00	-1,408.50	45.41	1,408.81	0.00	0.00	0.00	
12,400.00	90.00	179.56	11,259.00	-1,508.50	46.17	1,508.81	0.00	0.00	0.00	
12,500.00	90.00	179.56	11,259.00	-1,608.50	46.93	1,608.81	0.00	0.00	0.00	
12,600.00	90.00	179.56	11,259.00	-1,708.49	47.69	1,708.81	0.00	0.00	0.00	
12,700.00	90.00	179.56	11,259.00	-1,808.49	48.45	1,808.81	0.00	0.00	0.00	
12,800.00	90.00	179.56	11,259.00	-1,908.49	49.21	1,908.81	0.00	0.00	0.00	
12,900.00	90.00	179.56	11,259.00	-2,008.49	49.97	2,008.81	0.00	0.00	0.00	
13,000.00	90.00	179.56	11,259.00	-2,108.48	50.73	2,108.81	0.00	0.00	0.00	
13,100.00	90.00	179.56	11,259.00	-2,208.48	51.49	2,208.81	0.00	0.00	0.00	
13,200.00	90.00	179.56	11,259.00	-2,308.48	52.25	2,308.81	0.00	0.00	0.00	
13,300.00	90.00	179.56	11,259.00	-2,408.47	53.01	2,408.81	0.00	0.00	0.00	
13,400.00	90.00	179.56	11,259.00	-2,508.47	53.77	2,508.81	0.00	0.00	0.00	
13,500.00	90.00	179.56	11,259.00	-2,608.47	54.53	2,608.81	0.00	0.00	0.00	
13,600.00	90.00	179.56	11,259.00	-2,708.47	55.28	2,708.81	0.00	0.00	0.00	
13,700.00	90.00	179.56	11,259.00	-2,808.46	56.04	2,808.81	0.00	0.00	0.00	
13,800.00	90.00	179.56	11,259.00	-2,908.46	56.80	2,908.81	0.00	0.00	0.00	
13,900.00	90.00	179.56	11,259.00	-3,008.46	57.56	3,008.81	0.00	0.00	0.00	
14,000.00	90.00	179.56	11,259.00	-3,108.45	58.32	3,108.81	0.00	0.00	0.00	
14,100.00	90.00	179.56	11,259.00	-3,208.45	59.08	3,208.81	0.00	0.00	0.00	
14,200.00	90.00	179.56	11,259.00	-3,308.45	59.84	3,308.81	0.00	0.00	0.00	
14,300.00	90.00	179.56	11,259.00	-3,408.45	60.60	3,408.81	0.00	0.00	0.00	
14,400.00	90.00	179.56	11,259.00	-3,508.44	61.36	3,508.81	0.00	0.00	0.00	
14,500.00	90.00	179.56	11,259.00	-3,608.44	62.12	3,608.81	0.00	0.00	0.00	
14,600.00	90.00	179.56	11,259.00	-3,708.44	62.88	3,708.81	0.00	0.00	0.00	
14,700.00	90.00	179.56	11,259.00	-3,808.43	63.64	3,808.81	0.00	0.00	0.00	
14,800.00	90.00	179.56	11,259.00	-3,908.43	64.40	3,908.81	0.00	0.00	0.00	
14,900.00	90.00	179.56	11,259.00	-4,008.43	65.16	4,008.81	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.1.13 Single User Db	Local Co-ordinate Reference:	Well #164H
Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	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)	
15,000.00	90.00	179.56	11,259.00	-4,108.42	65.91	4,108.81	0.00	0.00	0.00	
15,100.00	90.00	179.56	11,259.00	-4,208.42	66.67	4,208.81	0.00	0.00	0.00	
15,200.00	90.00	179.56	11,259.00	-4,308.42	67.43	4,308.81	0.00	0.00	0.00	
15,300.00	90.00	179.56	11,259.00	-4,408.42	68.19	4,408.81	0.00	0.00	0.00	
15,400.00	90.00	179.56	11,259.00	-4,508.41	68.95	4,508.81	0.00	0.00	0.00	
15,500.00	90.00	179.56	11,259.00	-4,608.41	69.71	4,608.81	0.00	0.00	0.00	
15,600.00	90.00	179.56	11,259.00	-4,708.41	70.47	4,708.81	0.00	0.00	0.00	
15,700.00	90.00	179.56	11,259.00	-4,808.40	71.23	4,808.81	0.00	0.00	0.00	
15,800.00	90.00	179.56	11,259.00	-4,908.40	71.99	4,908.81	0.00	0.00	0.00	
15,900.00	90.00	179.56	11,259.00	-5,008.40	72.75	5,008.81	0.00	0.00	0.00	
16,000.00	90.00	179.56	11,259.00	-5,108.40	73.51	5,108.81	0.00	0.00	0.00	
16,100.00	90.00	179.56	11,259.00	-5,208.39	74.27	5,208.81	0.00	0.00	0.00	
16,200.00	90.00	179.56	11,259.00	-5,308.39	75.03	5,308.81	0.00	0.00	0.00	
16,237.81	90.00	179.56	11,259.00	-5,346.20	75.31	5,346.62	0.00	0.00	0.00	
16,300.00	90.00	179.56	11,259.00	-5,408.39	75.79	5,408.81	0.00	0.00	0.00	
16,367.81	90.00	179.56	11,259.00	-5,476.20	76.30	5,476.62	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
CBL 26 FED #164H: S - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	403,598.30	616,878.60	32.1090454	-103.9558529	
CBL 26 FED #164H: F - plan hits target center - Point	0.00	0.01	11,259.00	-695.50	40.00	402,902.80	616,918.60	32.1071331	-103.9557316	
CBL 26 FED #164H: I - plan misses target center by 0.01usft at 16237.81usft MD (11259.00 TVD, -5346.20 N, 75.31 E) - Point	0.00	0.00	11,259.00	-5,346.20	75.30	398,252.10	616,953.90	32.0943480	-103.9556702	
CBL 26 FED #164H: F - plan hits target center - Point	0.00	0.00	11,259.00	-5,476.20	76.30	398,122.10	616,954.90	32.0939906	-103.9556684	



Planning Report

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Company:	XTO Energy	TVD Reference:	Ref GL @ 3073.00usft
Project:	Eddy County, NM (NAD-27)	MD Reference:	Ref GL @ 3073.00usft
Site:	Chain-Blue Lightning 26 Fed	North Reference:	Grid
Well:	#164H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PERMIT		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
546.00	546.00	RSLR			
738.00	738.00	SLDO			
3,000.10	3,000.00	SALT_B			
3,214.13	3,214.00	DLWR			
4,088.22	4,088.00	CRCN			
5,700.39	5,700.00	BYCN			
6,999.53	6,999.00	BSPG			
7,907.63	7,907.00	BSPG1			
8,213.66	8,213.00	BSPG2_LM			
8,767.72	8,767.00	BSPG2			
9,025.75	9,025.00	BSPG3_LM			
9,838.84	9,838.00	BSPG3			
10,191.88	10,191.00	WFMP			
10,220.88	10,220.00	WFMPX			
10,282.89	10,282.00	WFMPY			
10,327.89	10,327.00	WFMPA			
10,671.93	10,671.00	WFMPB			
11,177.80	11,119.00	WFMPD			
11,586.98	11,259.00	LP			