

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No. NMNM87274 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. TOPAZ FED COM 601H
2. Name of Operator MARATHON OIL PERMIAN LLC		9. API Well No. 30-025-56009
3a. Address 990 TOWN & COUNTRY BLVD, HOUSTON, TX 77024	3b. Phone No. (include area code) (713) 296-2113	10. Field and Pool, or Exploratory WC-025 G-08 S213304D/BONE SPRING
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface LOT 1 / 536 FNL / 1165 FWL / LAT 32.5353861 / LONG -103.604402 At proposed prod. zone SWSE / 100 FSL / 1980 FEL / LAT 32.5371521 / LONG -103.5974444		11. Sec., T. R. M. or Blk. and Survey or Area SEC 31/T20S/R34E/1PM
14. Distance in miles and direction from nearest town or post office* 40 miles		12. County or Parish LEA
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 100 feet		16. No of acres in lease 17. Spacing Unit dedicated to this well 640.56
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 25 feet		20. BLM/BIA Bond No. in file FED: NMB001555
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3692 feet		22. Approximate date work will start* 03/11/2025
		23. Estimated duration 30 days
24. Attachments		

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

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

25. Signature (Electronic Submission)	Name (Printed/Typed) TERRI STATHEM / Ph: (713) 929-6600	Date 02/29/2024
Title Regulatory Compliance Manager		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) CODY LAYTON / Ph: (575) 234-5959	Date 04/25/2025
Title Assistant Field Manager Lands & Minerals		
Office Carlsbad Field Office		

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.



(Continued on page 2)

*(Instructions on page 2)

Additional Operator Remarks

Location of Well

0. SHL: LOT 1 / 536 FNL / 1165 FWL / TWSP: 20S / RANGE: 34E / SECTION: 31 / LAT: 32.5353861 / LONG: -103.604402 (TVD: 0 feet, MD: 0 feet)
PPP: SWSW / 100 FSL / 660 FWL / TWSP: 20S / RANGE: 34E / SECTION: 30 / LAT: 32.5371315 / LONG: -103.6060409 (TVD: 9853 feet, MD: 9969 feet)
PPP: NWNE / 278 FNL / 2640 FEL / TWSP: 20S / RANGE: 34E / SECTION: 30 / LAT: 32.5519777 / LONG: -103.5996029 (TVD: 10000 feet, MD: 16490 feet)
PPP: NWNW / 1319 FNL / 664 FWL / TWSP: 20S / RANGE: 34E / SECTION: 30 / LAT: 32.5477344 / LONG: -103.6060288 (TVD: 10000 feet, MD: 14904 feet)
BHL: SWSE / 100 FSL / 1980 FEL / TWSP: 20S / RANGE: 34E / SECTION: 30 / LAT: 32.5371521 / LONG: -103.5974444 (TVD: 10000 feet, MD: 21529 feet)

BLM Point of Contact

Name: PAMELLA HERNANDEZ
Title: LIE
Phone: (575) 234-5954
Email: PHERNANDEZ@BLM.GOV

CONFIDENTIAL

Santa Fe Main Office Phone: (505) 476-3441 General Information Phone: (505) 629-6116 Online Phone Directory Visit: https://www.emnrd.nm.gov/ocd/contact-us/	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	C-102 Revised July 9, 2024 Submit Electronically via OCD Permitting
	Submittal Type:	<input checked="" type="checkbox"/> Initial Submittal <input type="checkbox"/> Amended Report <input type="checkbox"/> As Drilled

WELL LOCATION INFORMATION

API Number	30-025-56009	Pool Code	97895	Pool Name	WC-025 G-08 S213304D; BONE SPRING	
Property Code	338337	Property Name	TOPAZ FEDERAL COM		Well Number	601H
OGRID No.	372098	Operator Name	MARATHON OIL PERMIAN LLC		Ground Level Elevation	3693'
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal				Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal		

Surface Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
L1	31	20S	34E	1	536' NORTH	1165' WEST	32.5353861N	103.604402W	LEA

Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
O	30	20S	34E		100' SOUTH	1980' EAST	32.53715218N	103.59744440W	LEA

Dedicated Acres	640.56	Infill or Defining Well	DEFINING	Defining Well API	N/A	Overlapping Spacing Unit (Y/N)	Y	Consolidation Code	C
Order Numbers.	N/A	Well setbacks are under Common Ownership: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
M	30	20S	34E		100' SOUTH	660' WEST	32.53713159N	103.60604094W	LEA

First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
M	30	20S	34E		100' SOUTH	660' WEST	32.53713159N	103.60604094W	LEA

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
O	30	20S	34E		100' SOUTH	1980' EAST	32.53715218N	103.59744440W	LEA

Unitized Area or Area of Uniform Interest	COM	Spacing Unit Type <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Ground Floor Elevation:	3693'
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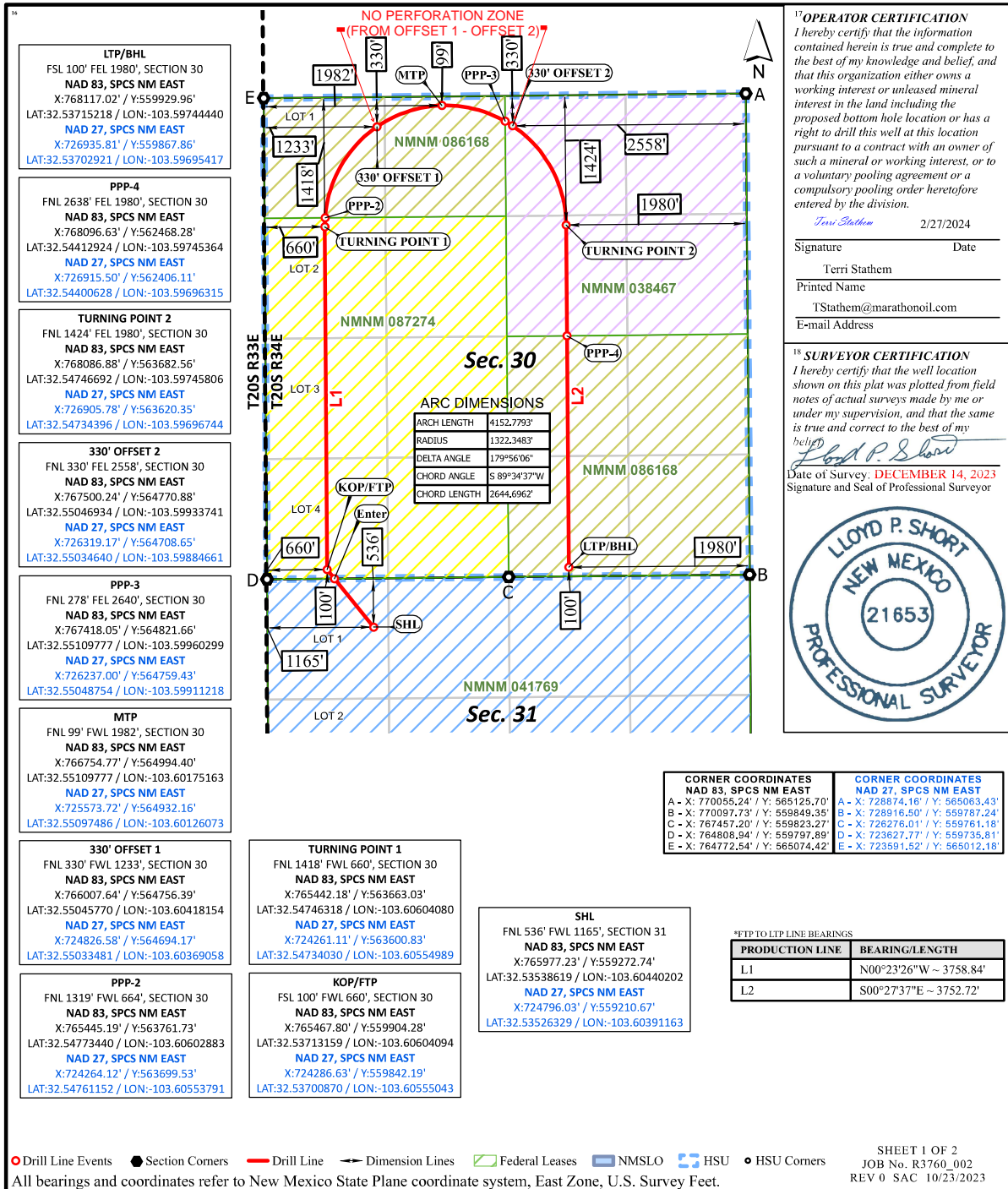
<p>OPERATOR CERTIFICATIONS</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p><i>If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.</i></p> <div style="border-bottom: 1px solid black; margin-top: 10px;"> 09/16/2025 </div> <p style="font-size: small;">Signature Date</p> <p style="font-size: small; margin-top: 5px;">Robyn Russell</p> <p style="font-size: small; margin-top: 5px;">Printed Name</p> <p style="font-size: small; margin-top: 5px;">Robyn.M.Russell@conocophillips.com</p> <p style="font-size: small; margin-top: 5px;">Email Address</p>	<p>SURVEYOR CERTIFICATIONS</p> <p><i>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.</i></p> <p style="text-align: center; font-size: large; font-weight: bold; margin: 20px 0;">SEE PAGE 2</p> <div style="border-bottom: 1px solid black; margin-top: 10px;"></div> <p style="font-size: small;">Signature and Seal of Professional Surveyor</p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="border-bottom: 1px solid black; width: 45%;"></div> <div style="border-bottom: 1px solid black; width: 45%;"></div> </div> <p style="font-size: small;">Certificate Number Date of Survey</p>
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Note: 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.

ACREAGE DEDICATION PLATS

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.





U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 04/29/2025 06:25 AM

APD ID: 10400097335

Well Status: AAPD

APD Received Date: 02/29/2024 05:51 PM

Well Name: TOPAZ FED COM

Operator: MARATHON OIL PERMIAN LLC

Well Number: 601H

APD Package Report Contents

- Form 3160-3
- Operator Certification Report
- Application Report
- Application Attachments
 - Well Plat: 2 file(s)
- Drilling Plan Report
- Drilling Plan Attachments
 - Blowout Prevention Choke Diagram Attachment: 2 file(s)
 - Blowout Prevention BOP Diagram Attachment: 2 file(s)
 - Casing Spec Documents: 1 file(s)
 - Casing Design Assumptions and Worksheet(s): 4 file(s)
 - Hydrogen sulfide drilling operations plan: 1 file(s)
 - Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
 - Other Facets: 4 file(s)
 - Other Variances: 4 file(s)
- SUPO Report
- SUPO Attachments
 - Existing Road Map: 1 file(s)
 - New Road Map: 2 file(s)
 - Attach Well map: 1 file(s)
 - Production Facilities map: 4 file(s)
 - Water source and transportation map: 1 file(s)
 - Well Site Layout Diagram: 1 file(s)
 - Recontouring attachment: 1 file(s)
- PWD Report
- PWD Attachments
 - None

- Bond Report
- Bond Attachments
 - None

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Marathon Oil Company
LEASE NO.:	NMNM 041769
COUNTY:	Lea County

Wells:

Legal Description:

Topaz WC Fed Com 301H
 Surface Hole Location: 558' FNL & 1252' FWL, Section 31, T. 20 S., R. 34 E.
 Bottom Hole Location: 100' FSL & 660' FEL, Section 30, T. 20 S, R 34 E.

Topaz WC Fed Com 501H
 Surface Hole Location: 543' FNL & 1194' FWL, Section 31, T. 20 S., R. 34 E.
 Bottom Hole Location: 100' FSL & 1980' FEL, Section 30, T. 20 S, R 34 E.

Topaz BS Fed Com 601H
 Surface Hole Location: 536' FNL & 1165' FWL, Section 31, T. 20 S., R. 34 E.
 Bottom Hole Location: 100' FSL & 1980' FEL, Section 30, T. 20 S, R 34 E.

Topaz BS Fed Com 701H
 Surface Hole Location: 551' FNL & 1223' FWL, Section 31, T. 20 S., R. 34 E.
 Bottom Hole Location: 100' FSL & 660' FEL, Section 30, T. 20 S, R 34 E.

TABLE OF CONTENTS

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.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Range
 - Lesser Prairie Chicken
 - Potash Resources
- 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 resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 6 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or

any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

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)

Watershed:

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 topsoil 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:

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.

BURIED/SURFACE LINE(S):

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, siting 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.

ELECTRIC LINE(S):

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.

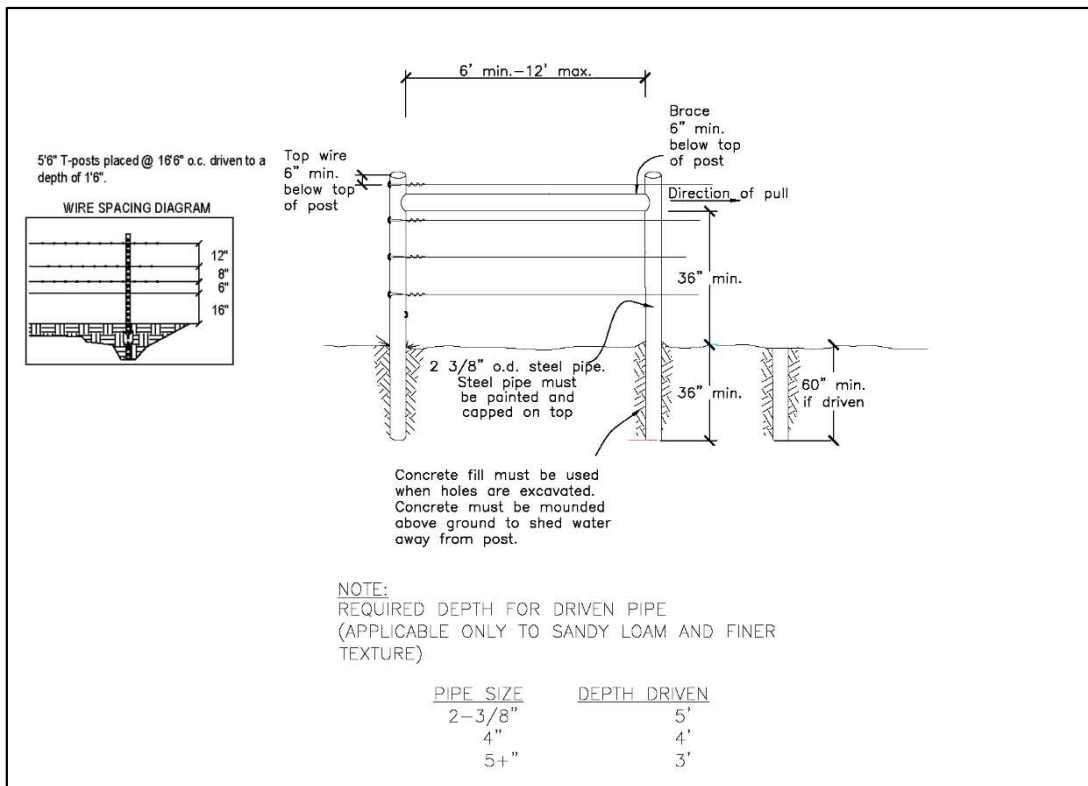
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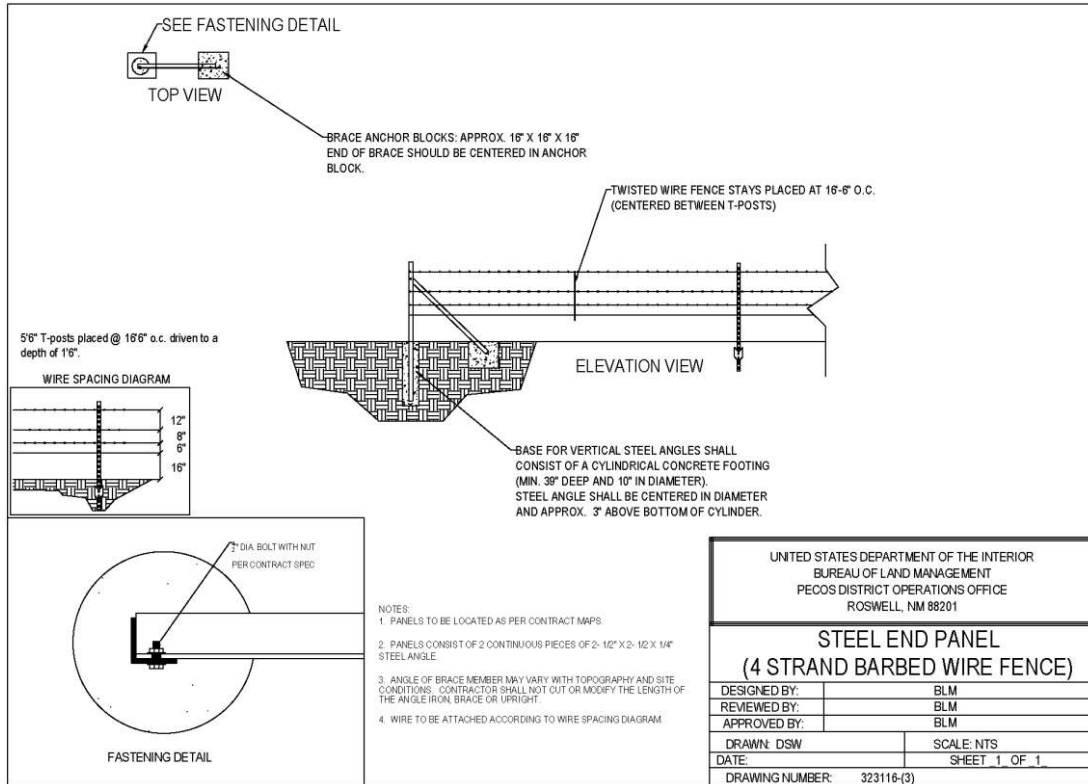
Cattleguards

Where a permanent cattleguard is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

Fence Requirement

Where entry granted across a fence line, the fence must be H-braced or angle iron braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall consult the private surface landowner or the grazing allotment holder prior to cutting any fence(s).





Livestock Watering Requirement

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

Timing Limitation Exceptions:

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for

exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

Ground-level Abandoned Well Marker to avoid raptor perching:

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

VRM IV:

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

Potash Resources

Lessees must comply with the 2012 Secretarial Potash Order. The Order is designed to manage the efficient development of oil, gas, and potash resources. Section 6 of the Order provides general provisions which must be followed to minimize conflict between the industries and ensure the safety of operations.

To minimize impacts to potash resources, the proposed well is confined within the boundaries of the established Topaz Drill Island within approved Topaz Development Area.

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 twenty (20) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) 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

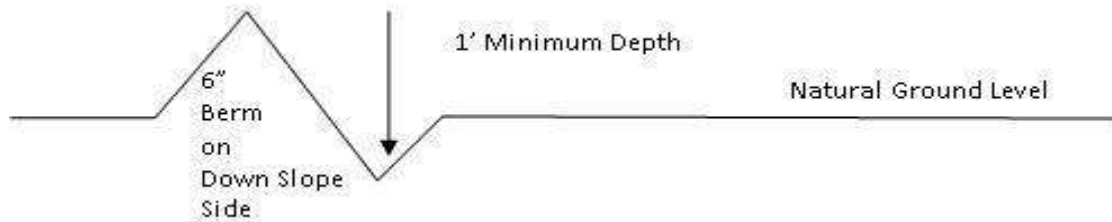
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

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

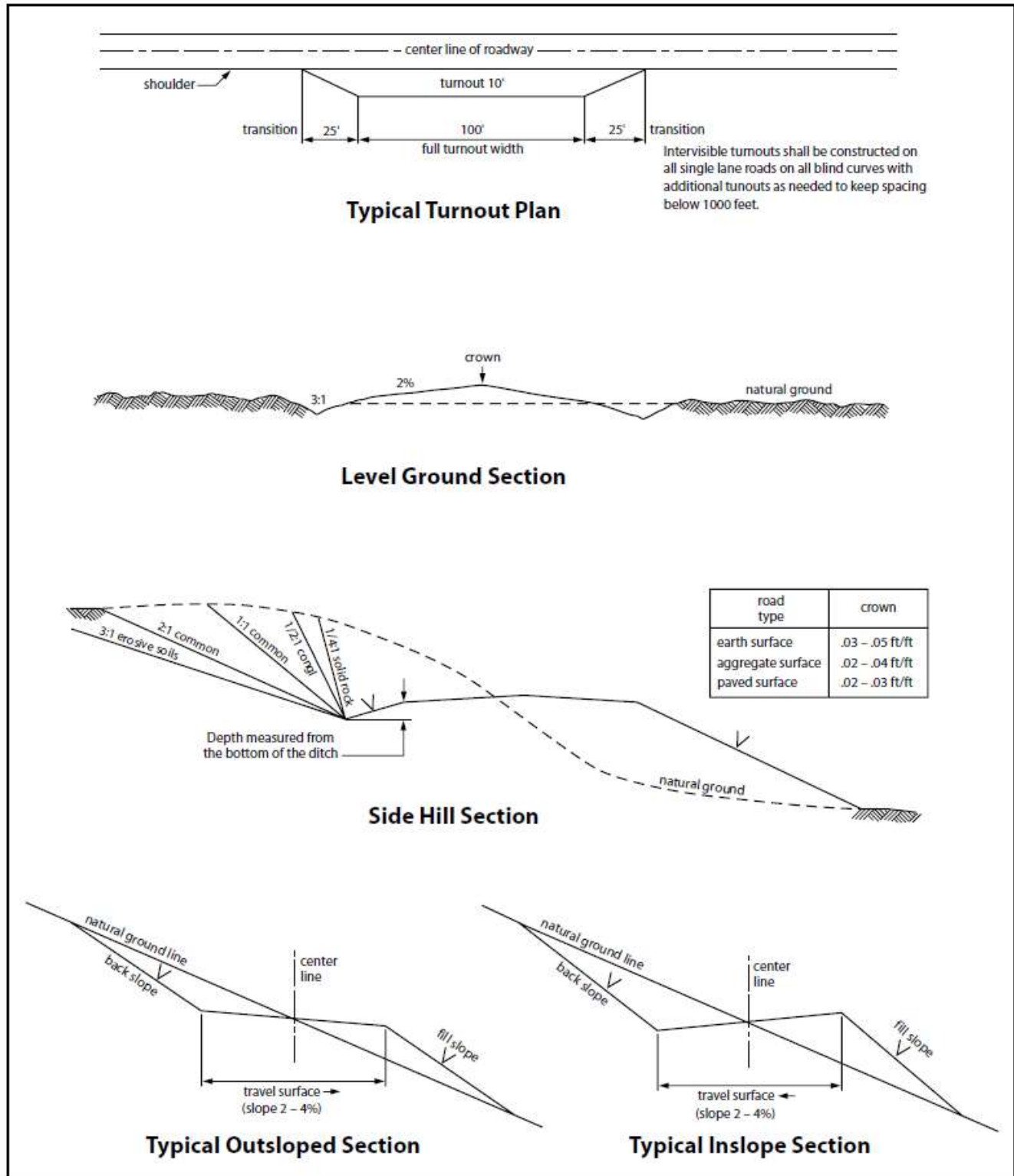


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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

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.

- Seed Mixture 1
- Seed Mixture 2
- Seed Mixture 2/LPC
- Seed Mixture 3
- Seed Mixture 4
- Seed Mixture 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 resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting,

excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. 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.

20. 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

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
- No further construction will be done until clearance has been issued by the Authorized Officer.
- Special restoration stipulations or realignment may be required.

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 deterrence 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 resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 11 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

11. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

12. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

13. 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).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

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 shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall 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). 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME: Marathon Oil Permian LLC
WELL NAME & NO.: Topaz Fed Com 601H
LOCATION: Sec 31-20S-34E-NMP
COUNTY: Lea County, New Mexico ▼

COA

H ₂ S	<input type="radio"/> No	<input checked="" type="radio"/> Yes		
Potash / WIPP	<input type="radio"/> None	<input type="radio"/> Secretary	<input checked="" type="radio"/> R-111-Q	<input type="checkbox"/> Open Annulus
	4-String Design: Open 2nd Int x Production Casing (ICP 2 above Relief Zone)			<input type="checkbox"/> WIPP
Cave / Karst	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High	<input type="radio"/> Critical
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both	<input type="radio"/> Diverter
Cementing	<input type="checkbox"/> Primary Squeeze	<input type="checkbox"/> Cont. Squeeze	<input type="checkbox"/> EchoMeter	<input type="checkbox"/> DV Tool
Special Req	<input checked="" type="checkbox"/> Capitan Reef	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit
Waste Prev.	<input type="radio"/> Self-Certification	<input type="radio"/> Waste Min. Plan	<input checked="" type="radio"/> APD Submitted prior to 06/10/2024	
Additional Language	<input checked="" type="checkbox"/> Flex Hose	<input type="checkbox"/> Casing Clearance	<input type="checkbox"/> Pilot Hole	<input type="checkbox"/> Break Testing
	<input checked="" type="checkbox"/> Four-String	<input type="checkbox"/> Offline Cementing	<input type="checkbox"/> Fluid-Filled	

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated 500 feet prior to drilling into the **Cherry Canyon and Brushy Canyon** formations. As a result, the Hydrogen Sulfide area must meet all requirements from 43 CFR 3176, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

APD is within the R-111-Q defined boundary. Operator must follow all procedures and requirements listed within the updated order.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1558** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite, above the salt, and below usable fresh water) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic-type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or **500 pounds compressive strength**, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, or potash.**
- ❖ **Special Capitan Reef Requirements:** Ensure freshwater-based mud is used across the Capitan interval.
3. The minimum required fill of cement behind the **7-5/8** inch intermediate casing is:
 - Cement should tie-back **500 feet or 50 feet on top of the Capitan Reef, whichever is closer to surface** into the previous casing but not higher than USGS Marker Bed No. 126. **Operator must verify top of cement per R-111-Q requirements.** Submit results to the BLM. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, or potash.**
 4. The minimum required fill of cement behind the **5-1/2** inch production casing is:
 - Cement should tie-back **500 feet or 50 feet on top of the Capitan Reef, whichever is closer to surface** into the previous casing but not higher than USGS Marker Bed No. 126. **Operator must verify top of cement per R-111-Q requirements.** Submit results to the BLM. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, or potash.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Operator has proposed a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M) psi. Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.

- d. If the cement does not circulate and one-inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172 must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in 43 CFR 3171 and 3172.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Contact Lea County Petroleum Engineering Inspection Staff:

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - i. Notify the BLM when moving in and removing the Spudder Rig.
 - ii. Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - iii. BOP/BOPE test to be conducted per **43 CFR 3172** as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. For intervals in which cement to surface is required, cement to surface should be verified with a visual check and density or pH check to differentiate cement from spacer and drilling mud. The results should be documented in the driller's log and daily reports.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following

- conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends of both lead and tail cement, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
 4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
 5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
 6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
 7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
 8. Whenever a casing string is cemented in the R-111-Q potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR 3172**.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - i. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - ii. 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.
 - iii. Manufacturer representative shall install the test plug for the initial BOP test.
 - iv. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172.6(b)(9) must be followed.
 - v. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - i. 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 cement), 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).
 - ii. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
 - iii. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for 8 hours or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- iv. 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.
- v. The results of the test shall be reported to the appropriate BLM office.
- vi. 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.
- vii. 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.
- viii. 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 **43 CFR 3172**.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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



Operator Certification Data Report

04/29/2025

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

Operator

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: TERRI STATHEM

Signed on: 02/28/2024

Title: Regulatory Compliance Manager

Street Address: 600 W ILLINOIS AVE

City: MIDLAND

State: TX

Zip: 79701

Phone: (713)296-2113

Email address: TSTATHEM@MARATHONOIL.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



Application Data

04/29/2025

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

APD ID: 10400097335	Submission Date: 02/29/2024	Highlighted data reflects the most recent changes Show Final Text
Operator Name: MARATHON OIL PERMIAN LLC		
Well Name: TOPAZ FED COM	Well Number: 601H	
Well Type: OIL WELL	Well Work Type: Drill	

Section 1 - General

APD ID: 10400097335	Tie to previous NOS? N	Submission Date: 02/29/2024
BLM Office: Carlsbad	User: TERRI STATHEM	Title: Regulatory Compliance Manager
Federal/Indian APD: FED	Is the first lease penetrated for production Federal or Indian? FED	
Lease number: NMNM87274	Lease Acres:	
Surface access agreement in place?	Allotted?	Reservation:
Agreement in place? NO	Federal or Indian agreement:	
Agreement number:		
Agreement name:		
Keep application confidential? Y		
Permitting Agent? NO	APD Operator: MARATHON OIL PERMIAN LLC	
Operator letter of		

Operator Info

Operator Organization Name: MARATHON OIL PERMIAN LLC		
Operator Address: 990 TOWN & COUNTRY BLVD		
Operator PO Box:	Zip: 77024	
Operator City: HOUSTON	State: TX	
Operator Phone: (713)929-6600		
Operator Internet Address:		

Section 2 - Well Information

Well in Master Development Plan? NO	Master Development Plan name:	
Well in Master SUPO? NO	Master SUPO name:	
Well in Master Drilling Plan? NO	Master Drilling Plan name:	
Well Name: TOPAZ FED COM	Well Number: 601H	Well API Number:
Field/Pool or Exploratory? Field and Pool	Field Name: WC-025 G-08 S213304D	Pool Name: BONE SPRING

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

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

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: Topaz **Number:** 1
Fed Com

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 40 Miles

Distance to nearest well: 25 FT

Distance to lease line: 100 FT

Reservoir well spacing assigned acres Measurement: 640.56 Acres

Well plat: A2_Topaz_Fed_com_601H_C102_20240228062045.pdf

A2_Pay.gov_Topaz_601H_Receipt_20240228062053.pdf

Well work start Date: 03/11/2025

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 21653

Reference Datum: GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
SHL Leg #1	536	FNL	1165	FWL	20S	34E	31	Lot 1	32.5353861	-103.604402	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 41769	3692	0	0	N
KOP Leg #1	100	FSL	660	FWL	20S	34E	30	Aliquot SWS W	32.5371315	-103.6060409	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 87274	-6162	9969	9854	Y

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

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
PPP Leg #1-1	100	FSL	660	FWL	20S	34E	30	Aliquot SWSW	32.5371315	-103.6060409	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 87274	-6161	9969	9853	Y
PPP Leg #1-2	1319	FNL	664	FWL	20S	34E	30	Aliquot NWNW	32.5477344	-103.6060288	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 86168	-6308	14904	10000	Y
PPP Leg #1-3	278	FNL	2640	FEL	20S	34E	30	Aliquot NWNE	32.5519777	-103.5996029	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 38467	-6308	16490	10000	Y
EXIT Leg #1	100	FSL	1980	FEL	20S	34E	30	Aliquot SWSE	32.5371521	-103.5974444	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 86168	-6308	21529	10000	Y
BHL Leg #1	100	FSL	1980	FEL	20S	34E	30	Aliquot SWSE	32.5371521	-103.5974444	LEA	NEW MEXICO	FIRST PRIN	F	NMNM 86168	-6308	21529	10000	Y

CONFIDENTIAL



Drilling Plan Data Report

04/29/2025

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

APD ID: 10400097335

Submission Date: 02/29/2024

Highlighted data reflects the most recent changes

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
15502158	RUSTLER	1483	1496	1496	ANHYDRITE	USEABLE WATER	N
15502170	SALADO	-381	1864	1864	SALT	NONE	N
15502171	BASE OF SALT	-1586	3069	3069	SALT	NONE	N
15502159	YATES	-1815	3298	3298	ANHYDRITE, SALT	NONE	N
15502172	SEVEN RIVERS	-2031	3514	3514	ANHYDRITE, SALT	NONE	N
15502160	CAPITAN REEF	-2084	3567	3567	ANHYDRITE, SALT	NONE	N
15502161	LAMAR	-2417	3900	3900	SANDSTONE, SHALE	NONE	N
15502169	BELL CANYON	-4184	5667	5667	SANDSTONE	OIL	N
15502162	CHERRY CANYON	-4221	5704	5704	SANDSTONE	OIL	N
15502163	BRUSHY CANYON	-5452	6935	6935	SANDSTONE	OIL	N
15502175	BONE SPRING LIME	-7129	8612	8612	LIMESTONE	NONE	N
15502176	BONE SPRING 1ST	-8157	9640	9640	SANDSTONE	NATURAL GAS, OIL	N
15502177	BONE SPRING 2ND	-8401	9884	9884	LIMESTONE, SHALE	OIL	Y
15502178	BONE SPRING 3RD	-9181	10664	10664	LIMESTONE	OIL	N
15502173	WOLFCAMP	-9759	11242	11242	SANDSTONE, SHALE	NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Pressure Rating (PSI): 10M

Rating Depth: 10000

Equipment: 13 5/8 BOP Annular (5,000 psi WP) and BOP Stack (10,000 psi WP) will be installed and tested before drilling all holes.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. Marathon requests a 5M annular variance for the 10M BOP system. Please see attached procedure.

Testing Procedure: BOP/BOPE will be tested to 250 psi low and 50% WP for Annular and 10,000 psi for BOP Stack. Testing will be conducted by an independent service company per 43 CFR 3172 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the Equipment Description above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics. Formation integrity test will be performed per 43 CFR 3172. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. A multibowl wellhead is being used. The BOP will be tested per 43 CFR 3172 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Choke Diagram Attachment:

D8_MRO_Choke_Manifold_20240228070455.pdf

D8_MRO_Flex_Hose_20250102152802.pdf

BOP Diagram Attachment:

D8_MRO_10M_BOP_20240228070519.pdf

D8_MRO_BOP_Break_Test_Variance_20240228073536.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	17.5	13.375	NEW	API	N	0	1558	0	1558	3692	2134	1558	J-55	54.5	BUTT	5.22	1.81	BUOY	4.52	BUOY	4.52
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3603	0	3603	0	89	3603	P-110	40	BUTT	1.2	1.42	BUOY	2.44	BUOY	2.44
3	INTERMEDIATE	8.75	7.625	NEW	NON API	N	0	9388	0	9327	3692	-5635	9388	P-110	29.7	OTHER - fjm	2	1.24	BUOY	2.83	BUOY	2.83
4	PRODUCTION	6.75	5.5	NEW	API	N	0	21529	0	21529	2919	-17837	21529	P-110	23	OTHER - TLW	2.53	1.26	BUOY	2.22	BUOY	2.22

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D8_Topaz_FC_601H_Csg_Assump_20240228070630.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D8_Topaz_FC_601H_Csg_Assump_20240228071006.pdf

Casing ID: 3 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Specs_7.6250_29.7000_P110_HP_20240228071417.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D8_Topaz_FC_601H_Csg_Assump_20240228071957.pdf

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Casing Attachments

Casing ID: 4 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D8_Topaz_FC_601H_Csg_Assump_20240228070819.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	1408	600	2.12	12.5	1271	25	Class C	Extender, Accelerator, LCM
SURFACE	Tail		1408	1558	99	1.32	14.8	130	25	Class C	Accelerator
INTERMEDIATE	Lead		0	3103	601	2.18	12.4	1311	25	ClassC	Extender, Accelerator LCM
INTERMEDIATE	Tail		3103	3603	147	1.33	14.8	196	25	Class C	retarder
INTERMEDIATE	Lead		0	8888	282	4.09	10.5	1153	25	Class C	Extender
INTERMEDIATE	Tail		8888	9388	45	1.4	14.5	63	25	Class H	Viscosifier fluid loss
PRODUCTION	Lead		8562	2152 9	1188	1.68	13	1997	25	Class H	Retarder, exender, fluid loss, suspension agent

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

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 43 CFR 3172:

Diagram of the equipment for the circulating system in accordance with 43 CFR 3172:

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

Describe the mud monitoring system utilized: Losses or gains in the mud system will be monitored visually/manually as well as with an electronic PVT.

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
0	1558	WATER-BASED MUD	8.4	8.8							
1558	3603	BRINE-BASED MUD	9.2	10.2							
3603	2152 9	OIL-BASED MUD	10.5	12.5							

Section 6 - Test, Logging, Coring

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

GR from TD to Surface (horizontal well - vertical portion of well)

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

GAMMA RAY LOG, MEASUREMENT WHILE DRILLING, DIRECTIONAL SURVEY,

Coring operation description for the well:

NA

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5964

Anticipated Surface Pressure: 3763

Anticipated Bottom Hole Temperature(F): 195

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

D7_Topaz_FC_H2S_Plan_20240228072639.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

D8_Topaz_FC_601H_Dir_Plan_R_20250327145900.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

D8_MRO_Well_Control_Plan_20240228073651.pdf

D8_MRO_Wellhead_Diagram_20240228073659.pdf

D8_Topaz_FC_Rig_Layout_Diagram_20240228073726.pdf

D8_Topaz_FC_601H_Drill_Plan_R_20250102152843.pdf

Other Variance attachment:

D8_MRO_BOP_Break_Test_Variance_20240228073601.pdf

D8_MRO_Variance_Request_20240228073610.pdf

D8_MRO_Cement_Variance_Request_20240228073617.pdf

D8_Topaz__Drill_Plan_WBS_20250102152911.pdf

BOP Break Test Variance Request

Executive Summary

- Request for a Variance allowing break testing of the blowout preventer equipment. Marathon requests to only test broken pressure seals on the BOP and function test BOP when skidding between wells on a pad
- Currently CFR Title 43 Part 3170 states that a test shall be performed “whenever any seal subject to test pressure is broken” and BLM interprets this as requiring a full BOP test
- API 53 states that for pad drilling operations, ONLY the connections that have a pressure seal broken are required to be tested
- Marathon feels break testing meets and or exceeds CFR Title 43 and API 53 required standards and is good drilling practice. It also may reduce wear and tear on BOP components.

BOP Break Test Variance Request

Background

- API Standard 53, “Well Control Equipment Systems for Drilling Wells 5th addition, Dec 2018, Annex C Table C.4) states “ For pad drilling operations, moving from one wellhead to another within the 21days, pressure testing is required for pressure – containing and pressure controlling connection when the integrity of a pressure seal is broken.
- Marathon’s rigs utilize quick connects to allow the release of the BOP from wellhead to wellhead without breaking any BOP stack components. This technology allows for break testing
- BLM has previously approved this variance of break testing for other operators in the area

Table C.4—Initial Pressure Testing, Surface BOP Stacks

Component to be Pressure Tested	Pressure Test—Low Pressure ^{ac} (psig (MPa))	Pressure Test—High Pressure ^{ac}	
		Change Out of Component, Elastomer, or Ring Gasket	No Change Out of Component, Elastomer, or Ring Gasket
Annular preventer ^b	250 to 350 (1.72 to 2.41)	RWP of annular preventer	MASP or 70% annular RWP, whichever is lower.
Fixed pipe, variable bore, blind, and BSR preventers ^{bd}	250 to 350 (1.72 to 2.41)	RWP of ram preventer or wellhead system, whichever is lower	ITP
Choke and kill line and BOP side outlet valves below ram preventers (both sides)	250 to 350 (1.72 to 2.41)	RWP of side outlet valve or wellhead system, whichever is lower	ITP
Choke manifold—upstream of chokes ^e	250 to 350 (1.72 to 2.41)	RWP of ram preventers or wellhead system, whichever is lower	ITP
Choke manifold—downstream of chokes ^e	250 to 350 (1.72 to 2.41)	RWP of valve(s), line(s), or MASP for the well program, whichever is lower	
Kelly, kelly valves, drill pipe safety valves, IBOPs	250 to 350 (1.72 to 2.41)	MASP for the well program	

^a Pressure test evaluation periods shall be a minimum of five minutes.
^b No visible leaks.
^c The pressure shall remain stable during the evaluation period. The pressure shall not decrease below the intended test pressure.
^d Annular(s) and VBR(s) shall be pressure tested on the largest and smallest OD drill pipe to be used in well program.
^e For pad drilling operations, moving from one wellhead to another within the 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken.
^f For surface offshore operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented during the initial test. For land operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented at commissioning and annually.
^g Adjustable chokes are not required to be full sealing devices. Pressure testing against a closed choke is not required.



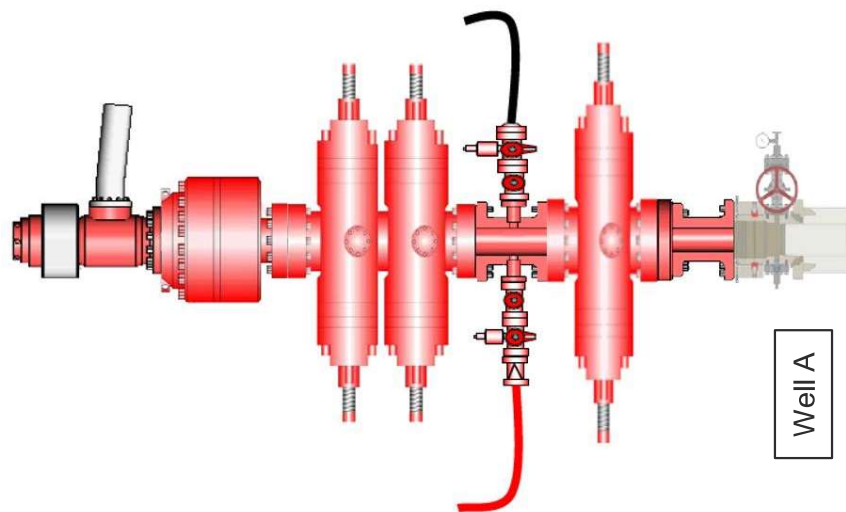
Procedures

Procedural Steps

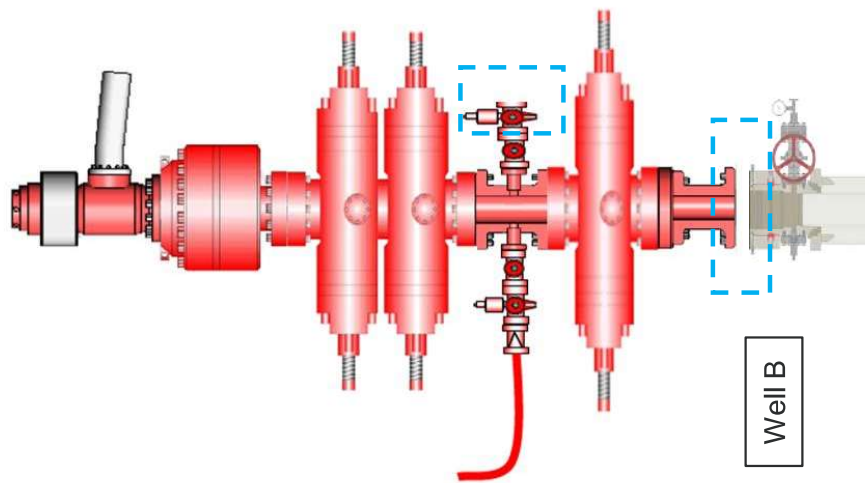
1. Marathon will use this document for break testing plan for New Mexico Delaware Basin.
2. Marathon will perform BOP break testing on well pads where multiple intermediate sections can be drilled and cased within the 21 day test window and will meet the following criteria:
 - a) A full BOP test will be conducted on the first well on the pad
 - b) The deepest intermediate well on the pad will be drilled first
 - c) A Full BOP test will be required prior to drilling any production hole
3. After completing the first full BOP test and drilling the intermediate section, two breaks will be performed on the BOP.
 - a) BOP quick connect and wellhead
 - b) HCV and Choke line connection
4. The BOP will be lifted from well A to well B
5. The two connections stated above will be reconnected
6. Test plug will be installed into wellhead utilizing drillpipe or test joint
7. Shell test will be performed against the upper pipe rams and testing the two breaks consisting of the following tests
 - a) 250psi low test and high test performed to 5,000 (well and sundry specific)
8. Function test will then be performed on the lower pipe rams, blind rams, and annular (performed each trip or every 7 days - whichever is more frequent)
9. This process will be repeated for other wells on the pad while being in the 21 day BOP test window

Sequence Diagram

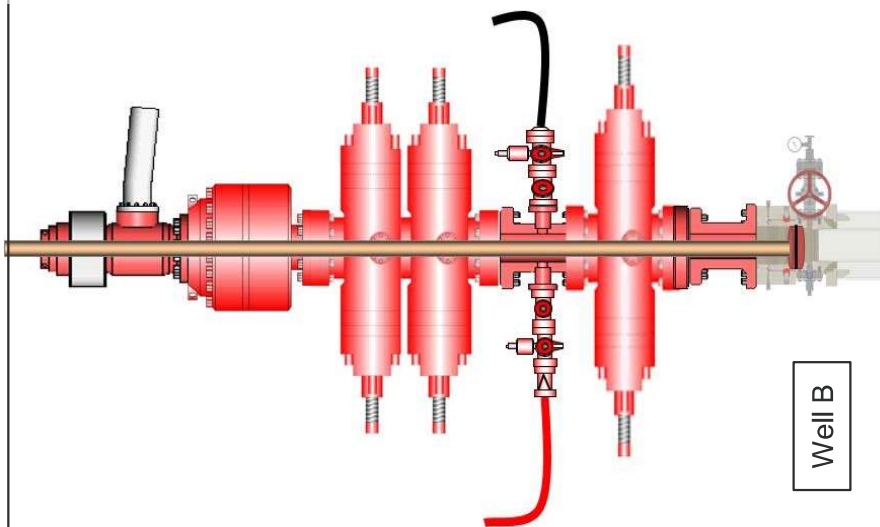
Well A: BOP installed on Well A



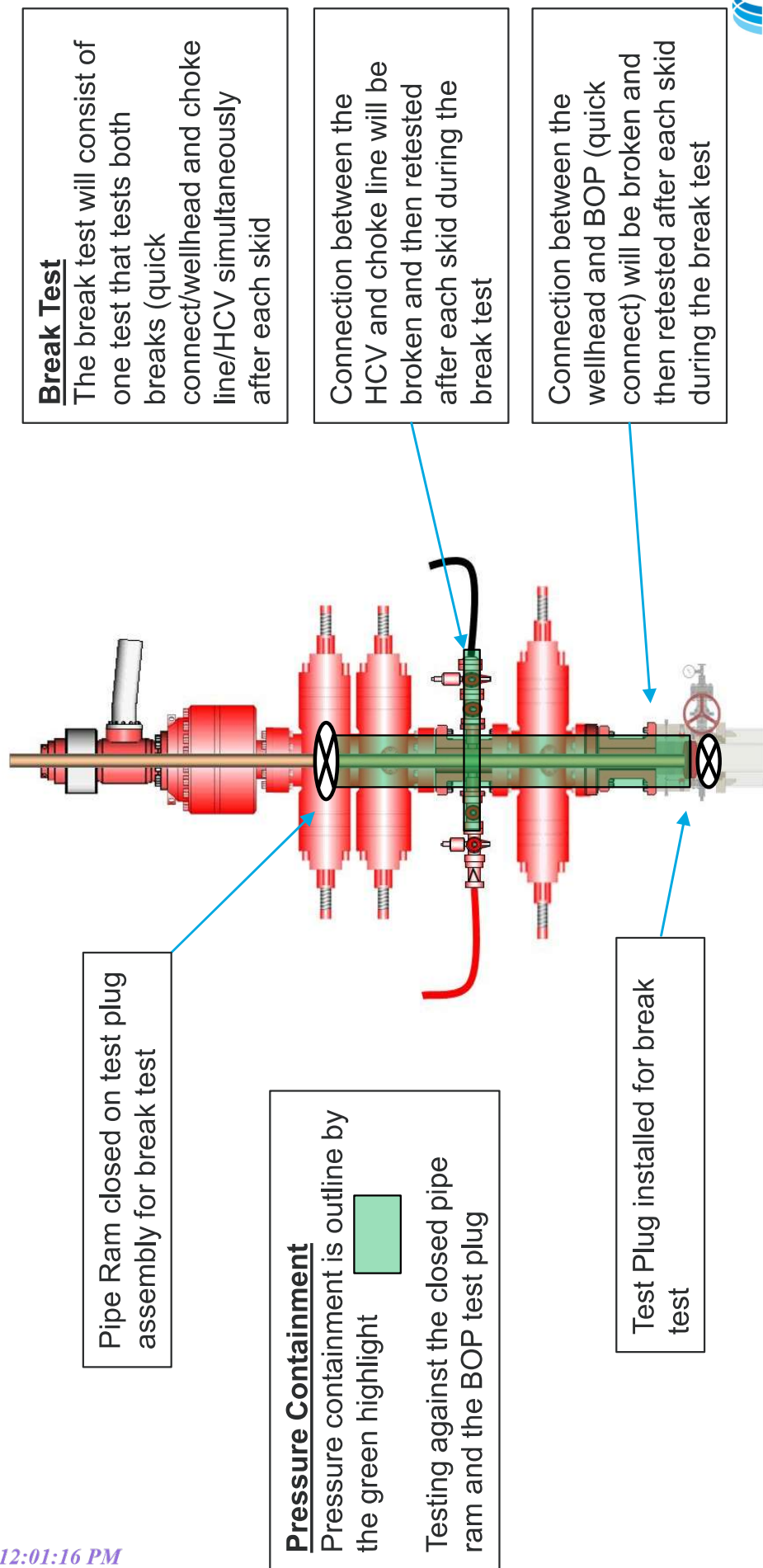
BOP picked up and moved from Well A to Well B. Disconnected at the quick connect and the choke line valve



Well B: Quick connect and choke line reconnected. Test plug installed.



Procedures Diagram



Summary

- A variance is requested to only test the broken pressure seals on the BOP equipment when moving from wellhead to wellhead. This is in full compliance with API Standard 53
- Marathon will meet the following criteria when break testing:
 - Time of last BOP test was less than 21 days
 - A full BOP test was conducted on the first well on the pad
 - The first intermediate hole section on the pad will be the deepest intermediate hole section.
 - Break testing will not occur on intermediate sections of over 5000 psi MASP



U. S. Steel Tubular Products

8/19/2021 11:07:53 AM

7.625" 29.70lb/ft (0.375" Wall) P110 HP USS-LIBERTY FJM®



MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM®		--
Minimum Yield Strength	125,000	--	psi	--
Maximum Yield Strength	140,000	--	psi	--
Minimum Tensile Strength	130,000	--	psi	--
DIMENSIONS	Pipe	USS-LIBERTY FJM®		--
Outside Diameter	7.625	7.625	in.	--
Wall Thickness	0.375	--	in.	--
Inside Diameter	6.875	6.789	in.	--
Standard Drift	6.750	6.750	in.	--
Alternate Drift	--	--	in.	--
Nominal Linear Weight, T&C	29.70	--	lb/ft	--
Plain End Weight	29.06	--	lb/ft	--
SECTION AREA	Pipe	USS-LIBERTY FJM®		--
Critical Area	8.541	5.074	sq. in.	--
Joint Efficiency	--	59.4	%	--
PERFORMANCE	Pipe	USS-LIBERTY FJM®		--
Minimum Collapse Pressure	7,260	7,260	psi	--
Minimum Internal Yield Pressure	10,750	10,750	psi	--
Minimum Pipe Body Yield Strength	1,068,000	--	lb	--
Joint Strength	--	634,000	lb	--
Compression Rating	--	634,000	lb	--
Reference Length	--	14,555	ft	--
Maximum Uniaxial Bend Rating	--	44.6	deg/100 ft	--
MAKE-UP DATA	Pipe	USS-LIBERTY FJM®		--
Make-Up Loss	--	3.92	in.	--
Minimum Make-Up Torque	--	11,600	ft-lb	--
Maximum Make-Up Torque	--	16,700	ft-lb	--

UNCONTROLLED

Notes

- Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
- Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
- Uniaxial bending rating shown is structural only, and equal to compression efficiency.
- USS-LIBERTY FJM™ connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
- Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
- Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
- Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

Legal Notice

USS-LIBERTY FJM® is a trademark of U. S. Steel Corporation. All material contained in this publication is for general information only. This material should not therefore be used or relied upon for any specific application without independent competent professional examination and verification of accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use. U.S. Steel disclaims any and all expressed or implied warranties of fitness for any general or particular application.

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 www.usstubular.com



**Hydrogen Sulfide (H₂S)
Contingency Plan**

**Topaz Federal Com 301H
558' FNL & 1252' FWL Sec. 31 T-20S R-34E**

**Topaz Federal Com 501H
543' FNL & 1194' FWL Sec. 31 T-20S R-34E**

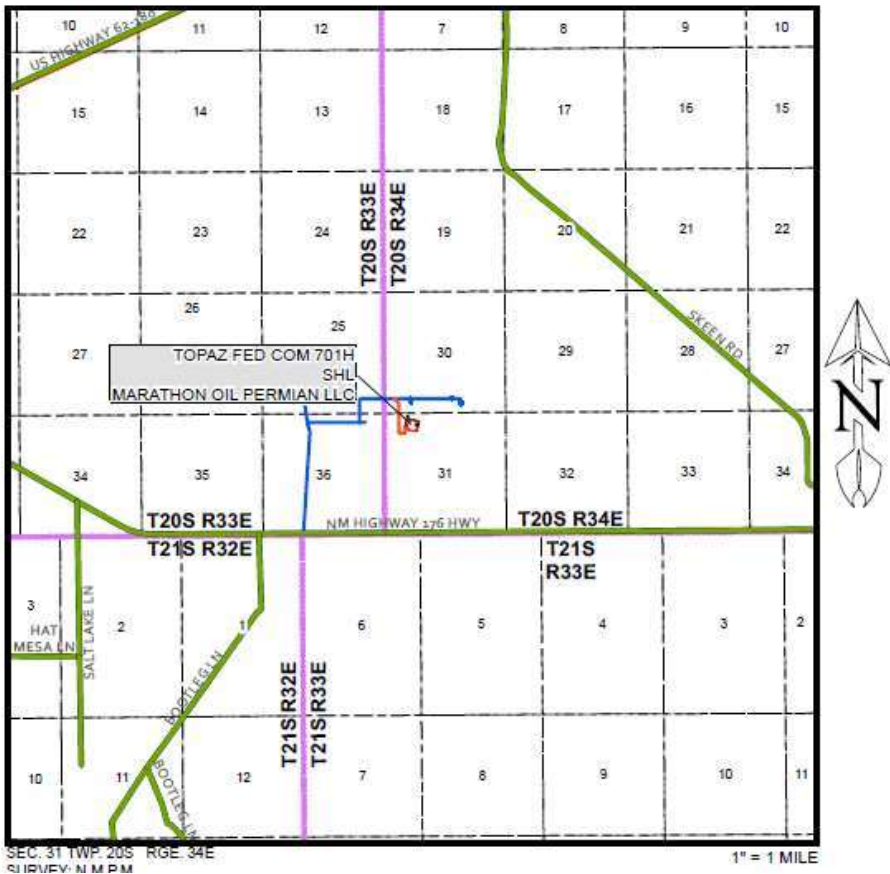
**Topaz Federal Com 601H
536' FNL & 1165' FWL Sec. 31 T-20S R-34E**

**Topaz Federal Com 701H
551' FNL & 1223' FWL Sec. 3T-20S R-34E**

Lea County NM

**Marathon Oil Permian, LLC
Topaz Federal Com 301H, 501H, 601H, 701H**

This is an open drilling site. H2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H2S, including warning signs, wind indicators and H2S monitor.



Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

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
 - Detection of H₂S, and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (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 there is an ignition of the gas

Characteristics of H₂ S 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

Marathon Oil Permian, LLC 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. The following call list of essential and potential responders has been prepared for use during a release. Marathon Oil Permian LLC response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

Marathon Oil Permian, LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H₂S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- The hazards and characteristics of hydrogen sulfide (H₂S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

- The effects of H₂S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- The contents and requirements of the H₂S Drilling Operations Plan.
- There will be weekly H₂S and well control drills for all personnel in each crew.

II. HYDROGEN SULFIDE TRAINING

Note: All H₂S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H₂S.

- Well Control Equipment
 - Flare line
 - Choke manifold - Remotely Operated
 - Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

- Auxiliary equipment may include if applicable: annular preventer and rotating head.
 - Mud/Gas Separator
- Protective equipment for essential personnel:
 - 30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.
 - Fire extinguishers are located at various locations around the rig. First Aid supplies are located in the top doghouse and the rig manger's office.
- H2S detection and monitoring equipment:
 - Portable H2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H2S levels reach 10 ppm and audible sirens which activate at 15 ppm.
Sensor locations:
 - Bell nipple
 - Rig floor
 - Cellar
 - Possum Belly/Shale shaker
 - Choke manifold
- Visual warning systems:
 - Wind direction indicators as shown on well site diagram
 - Caution/Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.
- Mud program:
 - The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

- Metallurgy:
 - All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H₂S trim.
 - All elastomers used for packing and seals shall be H₂S trim.
- Communication:
 - Company personnel have/use cellular telephones in the field.
 - Land line (telephone) communications at Office
- Well testing:
 - Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H₂S environment will use the closed chamber method of testing.
 - There will be no drill stem testing.

EMERGENCY & MEDICAL FACILITIES

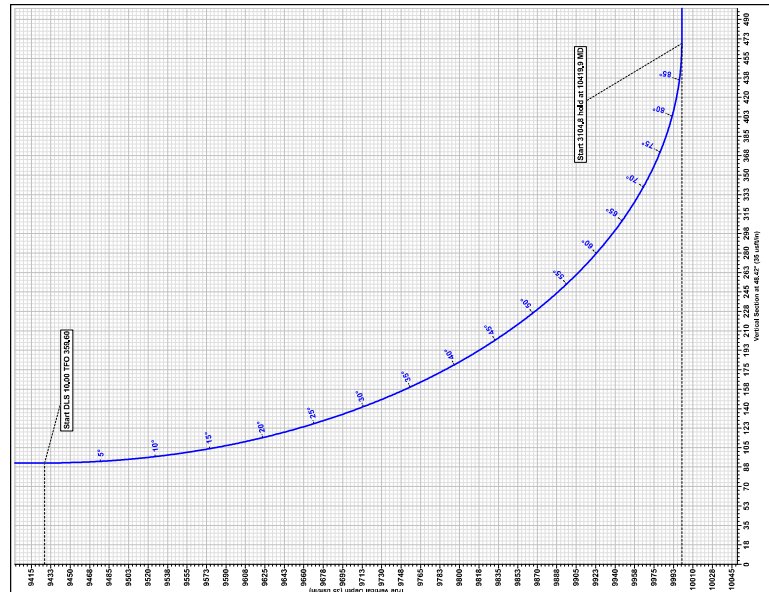
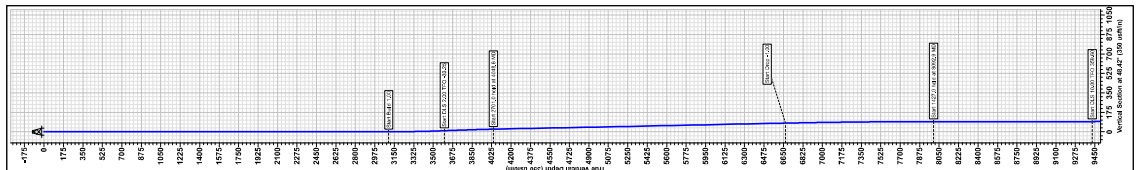
Marathon Oil Corporation Emergency Numbers			
Anders Storaune	Drilling Manager	astoraune@marathonoil.com	713-296-2985
Allen Livingston	Drilling Superintendent	alivingston@marathonoil.com	832-680-2348
Joshua Love	Drilling Superintendent	jlove@marathonoil.com	405-657-6126
Steve Donley	Drilling Engineer	sdonley@marathonoil.com	405-593-4331
Court Nelson	Drilling Engineer	cnelson1@marathonoil.com	406-565-0604
Scott Schmidt	Drilling Engineer	sschmidt1@marathonoil.com	405-249-6843
John Burt	HES Supervisor	jburt@marathonoil.com	713-296-2903
Unit Rig 409	Company Man	unit409@marathonoil.com	
Precision Rig 580	Company Man	precision580@marathonoil.com	
Cactus Rig 169	Company Man	cactus169@marathonoil.com	
Cactus Rig 170	Company Man	cactus170@marathonoil.com	
Cactus Rig 171	Company Man	cactus171@marathonoil.com	

Emergency Services Area Numbers: Or Call 911			
Sheriff (Eddy County, NM)	575-887-7551	New Mexico Poison Control	800-222-1222
Sheriff (Lea County, NM)	575-396-3611	Border Patrol (Las Cruces, NM)	575-528-6600
New Mexico State Police	575-392-5580/5588	Energy Minerals & Natural Resources Dept.	575-748-1283
Carlsbad Medical Center	575-887-4100	Environmental Health Dept.	505-476-8600
Lea Regional Medical Center	575-492-5000	OSHA (Santa Fe, NM)	505-827-2855
Police (Carlsbad, NM)	575-885-2111		
Police (Hobbs, NM)	575-392-9265		
Fire (Carlsbad, NM)	575-885-3124		
Fire (Hobbs, NM)	575-397-9308		
Ambulance Service	911	TOTAL SAFETY H2S - SAFETY SERVICES For Life Flight 1 st dial 911, nearest helicopter will be determined	432-561-5049



Project: ZELUS NME
 Site: TOPAZ FED.COM
 Wellbore: OVB
 Design: PWPB

MD	Inc	Adj	TVD	+/-50'	+150'	Min	Trk	Veloc
3000.0	0.00	0.00	3100.0	0.0	0.0	0.00	0.00	0.0
4000.0	0.00	0.00	4100.0	0.0	0.0	0.00	0.00	0.0
5000.0	0.00	0.00	5100.0	0.0	0.0	0.00	0.00	0.0
6000.0	0.00	0.00	6100.0	0.0	0.0	0.00	0.00	0.0
7000.0	0.00	0.00	7100.0	0.0	0.0	0.00	0.00	0.0
8000.0	0.00	0.00	8100.0	0.0	0.0	0.00	0.00	0.0
9000.0	0.00	0.00	9100.0	0.0	0.0	0.00	0.00	0.0
10000.0	0.00	0.00	10100.0	0.0	0.0	0.00	0.00	0.0
11000.0	0.00	0.00	11100.0	0.0	0.0	0.00	0.00	0.0
12000.0	0.00	0.00	12100.0	0.0	0.0	0.00	0.00	0.0
13000.0	0.00	0.00	13100.0	0.0	0.0	0.00	0.00	0.0
14000.0	0.00	0.00	14100.0	0.0	0.0	0.00	0.00	0.0
15000.0	0.00	0.00	15100.0	0.0	0.0	0.00	0.00	0.0
16000.0	0.00	0.00	16100.0	0.0	0.0	0.00	0.00	0.0
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37000.0	0.00	0.00	37100.0	0.0	0.0	0.00	0.00	0.0
38000.0	0.00	0.00	38100.0	0.0	0.0	0.00	0.00	0.0
39000.0	0.00	0.00	39100.0	0.0	0.0	0.00	0.00	0.0
40000.0	0.00	0.00	40100.0	0.0	0.0	0.00	0.00	0.0
41000.0	0.00	0.00	41100.0	0.0	0.0	0.00	0.00	0.0
42000.0	0.00	0.00	42100.0	0.0	0.0	0.00	0.00	0.0
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53000.0	0.00	0.00	53100.0	0.0	0.0	0.00	0.00	0.0
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57000.0	0.00	0.00	57100.0	0.0	0.0	0.00	0.00	0.0
58000.0	0.00	0.00	58100.0	0.0	0.0	0.00	0.00	0.0
59000.0	0.00	0.00	59100.0	0.0	0.0	0.00	0.00	0.0
60000.0	0.00	0.00	60100.0	0.0	0.0	0.00	0.00	0.0
61000.0	0.00	0.00	61100.0	0.0	0.0	0.00	0.00	0.0
62000.0	0.00	0.00	62100.0	0.0	0.0	0.00	0.00	0.0
63000.0	0.00	0.00	63100.0	0.0	0.0	0.00	0.00	0.0
64000.0	0.00	0.00	64100.0	0.0	0.0	0.00	0.00	0.0
65000.0	0.00	0.00	65100.0	0.0	0.0	0.00	0.00	0.0
66000.0	0.00	0.00	66100.0	0.0	0.0	0.00	0.00	0.0
67000.0	0.00	0.00	67100.0	0.0	0.0	0.00	0.00	0.0
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73000.0	0.00	0.00	73100.0	0.0	0.0	0.00	0.00	0.0
74000.0	0.00	0.00	74100.0	0.0	0.0	0.00	0.00	0.0
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78000.0	0.00	0.00	78100.0	0.0	0.0	0.00	0.00	0.0
79000.0	0.00	0.00	79100.0	0.0	0.0	0.00	0.00	0.0
80000.0	0.00	0.00	80100.0	0.0	0.0	0.00	0.00	0.0
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82000.0	0.00	0.00	82100.0	0.0	0.0	0.00	0.00	0.0
83000.0	0.00	0.00	83100.0	0.0	0.0	0.00	0.00	0.0
84000.0	0.00	0.00	84100.0	0.0	0.0	0.00	0.00	0.0
85000.0	0.00	0.00	85100.0	0.0	0.0	0.00	0.00	0.0
86000.0	0.00	0.00	86100.0	0.0	0.0	0.00	0.00	0.0
87000.0	0.00	0.00	87100.0	0.0	0.0	0.00	0.00	0.0
88000.0	0.00	0.00	88100.0	0.0	0.0	0.00	0.00	0.0
89000.0	0.00	0.00	89100.0	0.0	0.0	0.00	0.00	0.0
90000.0	0.00	0.00	90100.0	0.0	0.0	0.00	0.00	0.0
91000.0	0.00	0.00	91100.0	0.0	0.0	0.00	0.00	0.0
92000.0	0.00	0.00	92100.0	0.0	0.0	0.00	0.00	0.0
93000.0	0.00	0.00	93100.0	0.0	0.0	0.00	0.00	0.0
94000.0	0.00	0.00	94100.0	0.0	0.0	0.00	0.00	0.0
95000.0	0.00	0.00	95100.0	0.0	0.0	0.00	0.00	0.0
96000.0	0.00	0.00	96100.0	0.0	0.0	0.00	0.00	0.0
97000.0	0.00	0.00	97100.0	0.0	0.0	0.00	0.00	0.0
98000.0	0.00	0.00	98100.0	0.0	0.0	0.00	0.00	0.0
99000.0	0.00	0.00	99100.0	0.0	0.0	0.00	0.00	0.0
100000.0	0.00	0.00	100100.0	0.0	0.0	0.00	0.00	0.0



DELAWARE BASIN EAST

ZEUS_NME

TOPAZ FED COM

_TOPAZ FED COM 601H

OWB

Plan: PWP0

Standard Planning Report

27 March, 2025

ConocoPhillips Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP0		

Project	ZEUS_NME		
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	TOPAZ FED COM				
Site Position:		Northing:	559,867.86 usft	Latitude:	32° 32' 13.305 N
From:	Map	Easting:	726,935.81 usft	Longitude:	103° 35' 49.035 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "		

Well	_TOPAZ FED COM 601H					
Well Position	+N/-S	0.0 usft	Northing:	559,210.67 usft	Latitude:	32° 32' 6.948 N
	+E/-W	0.0 usft	Easting:	724,796.03 usft	Longitude:	103° 36' 14.082 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,692.0 usft
Grid Convergence:	0.39 °					

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2024	3/10/2025	6.38	60.29	47,443.91657793

Design	PWP0				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	72.93	

Plan Survey Tool Program	Date	3/27/2025			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	21,432.2 PWP0 (OWB)	r.5 MWD+IFR1 OWSG MWD + IFR1 rev.5		

ConocoPhillips

Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPO		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,600.0	5.00	345.00	3,599.4	21.1	-5.6	1.00	1.00	0.00	345.00	
4,048.6	13.43	323.40	4,041.9	81.9	-41.8	2.00	1.88	-4.81	-33.25	
6,749.6	13.43	323.40	6,668.9	585.7	-415.9	0.00	0.00	0.00	0.00	
8,092.9	0.00	0.00	8,000.0	711.5	-509.4	1.00	-1.00	0.00	180.00	
9,519.9	0.00	0.00	9,427.0	711.5	-509.4	0.00	0.00	0.00	0.00	
10,419.9	90.00	359.60	10,000.0	1,284.4	-513.4	10.00	10.00	-0.04	359.60	
13,524.7	90.00	359.60	10,000.0	4,389.2	-534.9	0.00	0.00	0.00	0.00	
17,681.0	90.00	179.57	10,000.1	4,408.4	2,111.5	4.33	0.00	4.33	90.00	
21,432.2	90.00	179.57	10,000.0	657.2	2,139.8	0.00	0.00	0.00	0.00	PBHL_TOPAZ FED C

ConocoPhillips

Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPO		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	1.00	345.00	3,200.0	0.8	-0.2	0.0	1.00	1.00	0.00
3,300.0	2.00	345.00	3,300.0	3.4	-0.9	0.1	1.00	1.00	0.00
3,400.0	3.00	345.00	3,399.9	7.6	-2.0	0.3	1.00	1.00	0.00
3,500.0	4.00	345.00	3,499.7	13.5	-3.6	0.5	1.00	1.00	0.00
3,600.0	5.00	345.00	3,599.4	21.1	-5.6	0.8	1.00	1.00	0.00
3,700.0	6.76	335.65	3,698.8	30.6	-9.2	0.2	2.00	1.76	-9.35
3,800.0	8.63	330.23	3,797.9	42.5	-15.4	-2.2	2.00	1.87	-5.42
3,900.0	10.54	326.74	3,896.5	56.7	-24.1	-6.4	2.00	1.91	-3.48
4,000.0	12.48	324.33	3,994.5	73.1	-35.4	-12.4	2.00	1.94	-2.42
4,048.6	13.43	323.40	4,041.9	81.9	-41.8	-16.0	2.00	1.95	-1.90
4,100.0	13.43	323.40	4,091.9	91.5	-49.0	-19.9	0.00	0.00	0.00
4,200.0	13.43	323.40	4,189.1	110.1	-62.8	-27.7	0.00	0.00	0.00
4,300.0	13.43	323.40	4,286.4	128.8	-76.7	-35.5	0.00	0.00	0.00
4,400.0	13.43	323.40	4,383.7	147.4	-90.5	-43.2	0.00	0.00	0.00
4,500.0	13.43	323.40	4,480.9	166.1	-104.4	-51.0	0.00	0.00	0.00
4,600.0	13.43	323.40	4,578.2	184.7	-118.2	-58.8	0.00	0.00	0.00
4,700.0	13.43	323.40	4,675.5	203.4	-132.1	-66.5	0.00	0.00	0.00
4,800.0	13.43	323.40	4,772.7	222.0	-145.9	-74.3	0.00	0.00	0.00
4,900.0	13.43	323.40	4,870.0	240.7	-159.8	-82.1	0.00	0.00	0.00
5,000.0	13.43	323.40	4,967.3	259.3	-173.6	-89.8	0.00	0.00	0.00
5,100.0	13.43	323.40	5,064.5	278.0	-187.5	-97.6	0.00	0.00	0.00
5,200.0	13.43	323.40	5,161.8	296.6	-201.3	-105.4	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPO		

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)
5,300.0	13.43	323.40	5,259.0	315.3	-215.2	-113.1	0.00	0.00	0.00
5,400.0	13.43	323.40	5,356.3	333.9	-229.0	-120.9	0.00	0.00	0.00
5,500.0	13.43	323.40	5,453.6	352.6	-242.9	-128.6	0.00	0.00	0.00
5,600.0	13.43	323.40	5,550.8	371.3	-256.7	-136.4	0.00	0.00	0.00
5,700.0	13.43	323.40	5,648.1	389.9	-270.6	-144.2	0.00	0.00	0.00
5,800.0	13.43	323.40	5,745.4	408.6	-284.4	-151.9	0.00	0.00	0.00
5,900.0	13.43	323.40	5,842.6	427.2	-298.3	-159.7	0.00	0.00	0.00
6,000.0	13.43	323.40	5,939.9	445.9	-312.1	-167.5	0.00	0.00	0.00
6,100.0	13.43	323.40	6,037.2	464.5	-326.0	-175.2	0.00	0.00	0.00
6,200.0	13.43	323.40	6,134.4	483.2	-339.8	-183.0	0.00	0.00	0.00
6,300.0	13.43	323.40	6,231.7	501.8	-353.7	-190.8	0.00	0.00	0.00
6,400.0	13.43	323.40	6,328.9	520.5	-367.5	-198.5	0.00	0.00	0.00
6,500.0	13.43	323.40	6,426.2	539.1	-381.4	-206.3	0.00	0.00	0.00
6,600.0	13.43	323.40	6,523.5	557.8	-395.2	-214.1	0.00	0.00	0.00
6,700.0	13.43	323.40	6,620.7	576.4	-409.1	-221.8	0.00	0.00	0.00
6,749.6	13.43	323.40	6,668.9	585.7	-415.9	-225.7	0.00	0.00	0.00
6,800.0	12.93	323.40	6,718.1	594.9	-422.8	-229.5	1.00	-1.00	0.00
6,900.0	11.93	323.40	6,815.7	612.2	-435.6	-236.7	1.00	-1.00	0.00
7,000.0	10.93	323.40	6,913.7	628.1	-447.4	-243.3	1.00	-1.00	0.00
7,100.0	9.93	323.40	7,012.1	642.6	-458.2	-249.4	1.00	-1.00	0.00
7,200.0	8.93	323.40	7,110.7	655.8	-468.0	-254.9	1.00	-1.00	0.00
7,300.0	7.93	323.40	7,209.6	667.5	-476.7	-259.8	1.00	-1.00	0.00
7,400.0	6.93	323.40	7,308.8	677.9	-484.5	-264.1	1.00	-1.00	0.00
7,500.0	5.93	323.40	7,408.2	686.9	-491.1	-267.8	1.00	-1.00	0.00
7,600.0	4.93	323.40	7,507.7	694.5	-496.8	-271.0	1.00	-1.00	0.00
7,700.0	3.93	323.40	7,607.4	700.7	-501.4	-273.6	1.00	-1.00	0.00
7,800.0	2.93	323.40	7,707.2	705.5	-504.9	-275.6	1.00	-1.00	0.00
7,900.0	1.93	323.40	7,807.1	708.9	-507.5	-277.0	1.00	-1.00	0.00
8,000.0	0.93	323.40	7,907.1	710.9	-509.0	-277.8	1.00	-1.00	0.00
8,092.9	0.00	0.00	8,000.0	711.5	-509.4	-278.1	1.00	-1.00	0.00
8,100.0	0.00	0.00	8,007.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,200.0	0.00	0.00	8,107.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,300.0	0.00	0.00	8,207.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,400.0	0.00	0.00	8,307.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,500.0	0.00	0.00	8,407.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,600.0	0.00	0.00	8,507.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,700.0	0.00	0.00	8,607.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,800.0	0.00	0.00	8,707.1	711.5	-509.4	-278.1	0.00	0.00	0.00
8,900.0	0.00	0.00	8,807.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,000.0	0.00	0.00	8,907.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,100.0	0.00	0.00	9,007.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,200.0	0.00	0.00	9,107.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,300.0	0.00	0.00	9,207.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,400.0	0.00	0.00	9,307.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,500.0	0.00	0.00	9,407.1	711.5	-509.4	-278.1	0.00	0.00	0.00
9,519.9	0.00	0.00	9,427.0	711.5	-509.4	-278.1	0.00	0.00	0.00
9,550.0	3.01	359.60	9,457.1	712.3	-509.4	-277.8	10.00	10.00	0.00
9,600.0	8.01	359.60	9,506.9	717.1	-509.4	-276.5	10.00	10.00	0.00
9,650.0	13.01	359.60	9,556.0	726.2	-509.5	-273.8	10.00	10.00	0.00
9,700.0	18.01	359.60	9,604.2	739.6	-509.6	-270.0	10.00	10.00	0.00
9,750.0	23.01	359.60	9,651.0	757.1	-509.7	-265.0	10.00	10.00	0.00
9,800.0	28.01	359.60	9,696.1	778.6	-509.9	-258.8	10.00	10.00	0.00
9,850.0	33.01	359.60	9,739.1	804.0	-510.0	-251.5	10.00	10.00	0.00
9,900.0	38.01	359.60	9,779.8	833.0	-510.2	-243.2	10.00	10.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPO		

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)
9,950.0	43.01	359.60	9,817.8	865.5	-510.5	-233.9	10.00	10.00	0.00
10,000.0	48.01	359.60	9,852.9	901.2	-510.7	-223.6	10.00	10.00	0.00
10,050.0	53.01	359.60	9,884.7	939.7	-511.0	-212.6	10.00	10.00	0.00
10,100.0	58.01	359.60	9,913.0	980.9	-511.3	-200.7	10.00	10.00	0.00
10,150.0	63.01	359.60	9,937.6	1,024.4	-511.6	-188.3	10.00	10.00	0.00
10,200.0	68.01	359.60	9,958.3	1,069.9	-511.9	-175.2	10.00	10.00	0.00
10,250.0	73.01	359.60	9,975.0	1,117.0	-512.2	-161.7	10.00	10.00	0.00
10,300.0	78.01	359.60	9,987.5	1,165.4	-512.5	-147.8	10.00	10.00	0.00
10,350.0	83.01	359.60	9,995.7	1,214.7	-512.9	-133.7	10.00	10.00	0.00
10,400.0	88.01	359.60	9,999.6	1,264.6	-513.2	-119.4	10.00	10.00	0.00
10,419.9	90.00	359.60	10,000.0	1,284.4	-513.4	-113.6	10.00	10.00	0.00
10,500.0	90.00	359.60	10,000.0	1,364.6	-513.9	-90.7	0.00	0.00	0.00
10,600.0	90.00	359.60	10,000.0	1,464.6	-514.6	-62.0	0.00	0.00	0.00
10,700.0	90.00	359.60	10,000.0	1,564.5	-515.3	-33.3	0.00	0.00	0.00
10,800.0	90.00	359.60	10,000.0	1,664.5	-516.0	-4.6	0.00	0.00	0.00
10,900.0	90.00	359.60	10,000.0	1,764.5	-516.7	24.1	0.00	0.00	0.00
11,000.0	90.00	359.60	10,000.0	1,864.5	-517.4	52.8	0.00	0.00	0.00
11,100.0	90.00	359.60	10,000.0	1,964.5	-518.1	81.5	0.00	0.00	0.00
11,200.0	90.00	359.60	10,000.0	2,064.5	-518.8	110.2	0.00	0.00	0.00
11,300.0	90.00	359.60	10,000.0	2,164.5	-519.5	138.9	0.00	0.00	0.00
11,400.0	90.00	359.60	10,000.0	2,264.5	-520.2	167.6	0.00	0.00	0.00
11,500.0	90.00	359.60	10,000.0	2,364.5	-520.9	196.3	0.00	0.00	0.00
11,600.0	90.00	359.60	10,000.0	2,464.5	-521.6	225.0	0.00	0.00	0.00
11,700.0	90.00	359.60	10,000.0	2,564.5	-522.3	253.7	0.00	0.00	0.00
11,800.0	90.00	359.60	10,000.0	2,664.5	-523.0	282.4	0.00	0.00	0.00
11,900.0	90.00	359.60	10,000.0	2,764.5	-523.6	311.1	0.00	0.00	0.00
12,000.0	90.00	359.60	10,000.0	2,864.5	-524.3	339.8	0.00	0.00	0.00
12,100.0	90.00	359.60	10,000.0	2,964.5	-525.0	368.5	0.00	0.00	0.00
12,200.0	90.00	359.60	10,000.0	3,064.5	-525.7	397.2	0.00	0.00	0.00
12,300.0	90.00	359.60	10,000.0	3,164.5	-526.4	425.9	0.00	0.00	0.00
12,400.0	90.00	359.60	10,000.0	3,264.5	-527.1	454.6	0.00	0.00	0.00
12,500.0	90.00	359.60	10,000.0	3,364.5	-527.8	483.3	0.00	0.00	0.00
12,600.0	90.00	359.60	10,000.0	3,464.5	-528.5	511.9	0.00	0.00	0.00
12,700.0	90.00	359.60	10,000.0	3,564.5	-529.2	540.6	0.00	0.00	0.00
12,800.0	90.00	359.60	10,000.0	3,664.5	-529.9	569.3	0.00	0.00	0.00
12,900.0	90.00	359.60	10,000.0	3,764.5	-530.6	598.0	0.00	0.00	0.00
13,000.0	90.00	359.60	10,000.0	3,864.5	-531.3	626.7	0.00	0.00	0.00
13,100.0	90.00	359.60	10,000.0	3,964.5	-532.0	655.4	0.00	0.00	0.00
13,200.0	90.00	359.60	10,000.0	4,064.5	-532.7	684.1	0.00	0.00	0.00
13,300.0	90.00	359.60	10,000.0	4,164.5	-533.4	712.8	0.00	0.00	0.00
13,400.0	90.00	359.60	10,000.0	4,264.5	-534.1	741.5	0.00	0.00	0.00
13,500.0	90.00	359.60	10,000.0	4,364.5	-534.7	770.2	0.00	0.00	0.00
13,524.7	90.00	359.60	10,000.0	4,389.2	-534.9	777.3	0.00	0.00	0.00
13,600.0	90.00	2.86	10,000.0	4,464.5	-533.3	800.9	4.33	0.00	4.33
13,700.0	90.00	7.19	10,000.0	4,564.0	-524.5	838.6	4.33	0.00	4.33
13,800.0	90.00	11.52	10,000.0	4,662.7	-508.3	883.1	4.33	0.00	4.33
13,900.0	90.00	15.85	10,000.0	4,759.8	-484.6	934.2	4.33	0.00	4.33
14,000.0	90.00	20.18	10,000.0	4,854.9	-453.7	991.7	4.33	0.00	4.33
14,100.0	90.00	24.51	10,000.0	4,947.4	-415.7	1,055.1	4.33	0.00	4.33
14,200.0	90.00	28.84	10,000.0	5,036.7	-370.8	1,124.3	4.33	0.00	4.33
14,300.0	90.00	33.17	10,000.0	5,122.4	-319.3	1,198.7	4.33	0.00	4.33
14,400.0	90.00	37.50	10,000.0	5,204.0	-261.5	1,277.9	4.33	0.00	4.33
14,500.0	90.00	41.83	10,000.0	5,280.9	-197.7	1,361.5	4.33	0.00	4.33
14,600.0	90.00	46.16	10,000.0	5,352.8	-128.2	1,449.0	4.33	0.00	4.33

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Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
14,700.0	90.00	50.49	10,000.0	5,419.3	-53.5	1,539.9	4.33	0.00	4.33	
14,800.0	90.00	54.82	10,000.0	5,479.9	25.9	1,633.7	4.33	0.00	4.33	
14,900.0	90.00	59.15	10,000.0	5,534.4	109.8	1,729.8	4.33	0.00	4.33	
15,000.0	90.00	63.48	10,000.0	5,582.4	197.5	1,827.7	4.33	0.00	4.33	
15,100.0	90.00	67.81	10,000.0	5,623.6	288.6	1,926.9	4.33	0.00	4.33	
15,200.0	90.00	72.14	10,000.0	5,657.9	382.5	2,026.8	4.33	0.00	4.33	
15,300.0	90.00	76.47	10,000.0	5,684.9	478.7	2,126.7	4.33	0.00	4.33	
15,400.0	90.00	80.80	10,000.0	5,704.6	576.8	2,226.2	4.33	0.00	4.33	
15,500.0	90.00	85.13	10,000.0	5,716.8	676.0	2,324.6	4.33	0.00	4.33	
15,600.0	90.00	89.46	10,000.0	5,721.6	775.9	2,421.5	4.33	0.00	4.33	
15,700.0	90.00	93.79	10,000.0	5,718.7	875.8	2,516.2	4.33	0.00	4.33	
15,800.0	90.00	98.12	10,000.0	5,708.3	975.2	2,608.2	4.33	0.00	4.33	
15,900.0	90.00	102.45	10,000.0	5,690.5	1,073.6	2,697.0	4.33	0.00	4.33	
16,000.0	90.00	106.78	10,000.1	5,665.3	1,170.3	2,782.0	4.33	0.00	4.33	
16,100.0	90.00	111.11	10,000.1	5,632.8	1,264.9	2,862.9	4.33	0.00	4.33	
16,200.0	90.00	115.44	10,000.1	5,593.3	1,356.7	2,939.1	4.33	0.00	4.33	
16,300.0	90.00	119.77	10,000.1	5,547.0	1,445.3	3,010.2	4.33	0.00	4.33	
16,400.0	90.00	124.10	10,000.1	5,494.1	1,530.2	3,075.8	4.33	0.00	4.33	
16,500.0	90.00	128.43	10,000.1	5,434.9	1,610.8	3,135.5	4.33	0.00	4.33	
16,600.0	90.00	132.76	10,000.1	5,369.9	1,686.7	3,188.9	4.33	0.00	4.33	
16,700.0	90.00	137.09	10,000.1	5,299.3	1,757.5	3,235.9	4.33	0.00	4.33	
16,800.0	90.00	141.42	10,000.1	5,223.5	1,822.7	3,276.0	4.33	0.00	4.33	
16,900.0	90.00	145.75	10,000.1	5,143.1	1,882.1	3,309.1	4.33	0.00	4.33	
17,000.0	90.00	150.08	10,000.1	5,058.4	1,935.2	3,335.0	4.33	0.00	4.33	
17,100.0	90.00	154.41	10,000.1	4,969.9	1,981.7	3,353.5	4.33	0.00	4.33	
17,200.0	90.00	158.74	10,000.1	4,878.1	2,021.5	3,364.6	4.33	0.00	4.33	
17,300.0	90.00	163.07	10,000.1	4,783.7	2,054.2	3,368.1	4.33	0.00	4.33	
17,400.0	90.00	167.40	10,000.1	4,687.0	2,079.6	3,364.1	4.33	0.00	4.33	
17,500.0	90.00	171.73	10,000.1	4,588.7	2,097.8	3,352.5	4.33	0.00	4.33	
17,600.0	90.00	176.06	10,000.1	4,489.3	2,108.4	3,333.5	4.33	0.00	4.33	
17,681.0	90.00	179.57	10,000.1	4,408.4	2,111.5	3,312.7	4.33	0.00	4.33	
17,700.0	90.00	179.57	10,000.1	4,389.3	2,111.6	3,307.2	0.00	0.00	0.00	
17,800.0	90.00	179.57	10,000.0	4,289.3	2,112.4	3,278.6	0.00	0.00	0.00	
17,900.0	90.00	179.57	10,000.0	4,189.3	2,113.1	3,250.0	0.00	0.00	0.00	
18,000.0	90.00	179.57	10,000.0	4,089.3	2,113.9	3,221.3	0.00	0.00	0.00	
18,100.0	90.00	179.57	10,000.0	3,989.3	2,114.6	3,192.7	0.00	0.00	0.00	
18,200.0	90.00	179.57	10,000.0	3,889.3	2,115.4	3,164.0	0.00	0.00	0.00	
18,300.0	90.00	179.57	10,000.0	3,789.3	2,116.1	3,135.4	0.00	0.00	0.00	
18,400.0	90.00	179.57	10,000.0	3,689.3	2,116.9	3,106.8	0.00	0.00	0.00	
18,500.0	90.00	179.57	10,000.0	3,589.3	2,117.6	3,078.1	0.00	0.00	0.00	
18,600.0	90.00	179.57	10,000.0	3,489.4	2,118.4	3,049.5	0.00	0.00	0.00	
18,700.0	90.00	179.57	10,000.0	3,389.4	2,119.2	3,020.9	0.00	0.00	0.00	
18,800.0	90.00	179.57	10,000.0	3,289.4	2,119.9	2,992.2	0.00	0.00	0.00	
18,900.0	90.00	179.57	10,000.0	3,189.4	2,120.7	2,963.6	0.00	0.00	0.00	
19,000.0	90.00	179.57	10,000.0	3,089.4	2,121.4	2,935.0	0.00	0.00	0.00	
19,100.0	90.00	179.57	10,000.0	2,989.4	2,122.2	2,906.3	0.00	0.00	0.00	
19,200.0	90.00	179.57	10,000.0	2,889.4	2,122.9	2,877.7	0.00	0.00	0.00	
19,300.0	90.00	179.57	10,000.0	2,789.4	2,123.7	2,849.0	0.00	0.00	0.00	
19,400.0	90.00	179.57	10,000.0	2,689.4	2,124.4	2,820.4	0.00	0.00	0.00	
19,500.0	90.00	179.57	10,000.0	2,589.4	2,125.2	2,791.8	0.00	0.00	0.00	
19,600.0	90.00	179.57	10,000.0	2,489.4	2,126.0	2,763.1	0.00	0.00	0.00	
19,700.0	90.00	179.57	10,000.0	2,389.4	2,126.7	2,734.5	0.00	0.00	0.00	
19,800.0	90.00	179.57	10,000.0	2,289.4	2,127.5	2,705.9	0.00	0.00	0.00	
19,900.0	90.00	179.57	10,000.0	2,189.4	2,128.2	2,677.2	0.00	0.00	0.00	

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Planning Report

Database:	EDT 17 Permian Prod	Local Co-ordinate Reference:	Well _TOPAZ FED COM 601H
Company:	DELAWARE BASIN EAST	TVD Reference:	GL @ 3692.0usft
Project:	ZEUS_NME	MD Reference:	GL @ 3692.0usft
Site:	TOPAZ FED COM	North Reference:	Grid
Well:	_TOPAZ FED COM 601H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP0		

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)	
20,000.0	90.00	179.57	10,000.0	2,089.4	2,129.0	2,648.6	0.00	0.00	0.00	
20,100.0	90.00	179.57	10,000.0	1,989.4	2,129.7	2,619.9	0.00	0.00	0.00	
20,200.0	90.00	179.57	10,000.0	1,889.4	2,130.5	2,591.3	0.00	0.00	0.00	
20,300.0	90.00	179.57	10,000.0	1,789.4	2,131.2	2,562.7	0.00	0.00	0.00	
20,400.0	90.00	179.57	10,000.0	1,689.4	2,132.0	2,534.0	0.00	0.00	0.00	
20,500.0	90.00	179.57	10,000.0	1,589.4	2,132.7	2,505.4	0.00	0.00	0.00	
20,600.0	90.00	179.57	10,000.0	1,489.4	2,133.5	2,476.8	0.00	0.00	0.00	
20,700.0	90.00	179.57	10,000.0	1,389.4	2,134.3	2,448.1	0.00	0.00	0.00	
20,800.0	90.00	179.57	10,000.0	1,289.4	2,135.0	2,419.5	0.00	0.00	0.00	
20,900.0	90.00	179.57	10,000.0	1,189.4	2,135.8	2,390.8	0.00	0.00	0.00	
21,000.0	90.00	179.57	10,000.0	1,089.4	2,136.5	2,362.2	0.00	0.00	0.00	
21,100.0	90.00	179.57	10,000.0	989.4	2,137.3	2,333.6	0.00	0.00	0.00	
21,200.0	90.00	179.57	10,000.0	889.4	2,138.0	2,304.9	0.00	0.00	0.00	
21,300.0	90.00	179.57	10,000.0	789.4	2,138.8	2,276.3	0.00	0.00	0.00	
21,400.0	90.00	179.57	10,000.0	689.4	2,139.5	2,247.7	0.00	0.00	0.00	
21,432.2	90.00	179.57	10,000.0	657.2	2,139.8	2,238.4	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	
FTP_TOPAZ FED COM - hit/miss target - Shape - Point	0.00	0.00	10,000.0	631.5	-509.4	559,842.19	724,286.63	32° 32' 13.231 N	103° 36' 19.982 W	- plan misses target center by 295.8usft at 9936.5usft MD (9807.9 TVD, 856.4 N, -510.4 E)
POI_3_TOPAZ FED COM - Point	0.00	0.00	10,000.0	4,409.7	2,109.7	563,620.35	726,905.78	32° 32' 50.438 N	103° 35' 49.083 W	- plan misses target center by 1.7usft at 17679.6usft MD (10000.1 TVD, 4409.7 N, 2111.5 E)
POI_2_TOPAZ FED COM - Point	0.00	0.00	10,000.0	5,721.5	777.7	564,932.16	725,573.72	32° 33' 3.510 N	103° 36' 4.539 W	- plan misses target center by 0.1usft at 15601.8usft MD (10000.0 TVD, 5721.6 N, 777.7 E)
PBHL_TOPAZ FED COM - Point	0.00	0.01	10,000.0	657.2	2,139.8	559,867.86	726,935.81	32° 32' 13.305 N	103° 35' 49.035 W	- plan hits target center
POI_1_TOPAZ FED COM - Point	0.00	0.00	10,000.0	4,390.2	-534.9	563,600.83	724,261.11	32° 32' 50.425 N	103° 36' 19.980 W	- plan hits target center

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
21,432.3	10,000.0	5-1/2" Production Casing	5-1/2	6	

1. DRILLING WELL CONTROL PLAN

1.1 WELL CONTROL - CERTIFICATIONS

Required IADC/IWCF Well Control Certifications Supervisor Level:

Any personnel who supervises or operates the BOP must possess a valid current IADC training certification and photo identification. This would include the onsite drilling supervisor, tool pusher/rig manager, driller, and any personnel that will be acting in these capacities. Another example of this may be a wireline or snubbing crew rigged up on the rig to assist the rig, the operator of each system must also have a valid control certification for their level of operation.

BLM recognizes IADC training as the industry approved accredited training. Online self-certifications will not be acceptable. Enforcement actions for the lack of a valid Supervisory Level certificate shall be prompt action to correct the deficiency. **Enforcement actions include but are not limited to immediate replacement of personnel lacking certifications, drilling operations being shut down or installment of a 10M annular.**

IADC Driller Level for all Drillers and general knowledge for the Assistant Driller, Derrick Hands, Floor Hands and Motor Hands is recognized by the BLM; however, a Driller Level certification will need to be presented only if acting in a temporary Driller Level certification capacity.

Well Control-Position/Roles

IADC Well control training and certification is targeted toward each role, e.g., Supervisor Level toward those who direct, Driller Level to those who act, Introductory to those who need to know.

- **Supervisor Level**
 - Specifies and has oversight that the correct actions are carried out
 - Role is to supervise well control equipment, training, testing, and well control events
 - Directs the testing of BOP and other well control equipment
 - Regularly direct well control crew drills
 - Land based rigs – usually runs the choke during a well kill operation
 - Due to role on the rig, training and certification is targeted more toward management of well control and managing an influx out of the well

- **Driller Level**
 - Performs an action to prevent or respond to well control accident
 - Role is to monitor the well via electronic devices while drilling and detect unplanned influxes
 - Assist with the testing of BOP and other well control equipment
 - Regularly assist with well control crew drills
 - When influx is detected, responsible to close the BOP
 - Due to role on the rig, training and certification is targeted more toward monitoring and shutting the well in (closing the BOP) when an influx is detected

(Well Control-Positions/Roles Continued)

- **Derrick Hand, Assistant Driller Introductory Level**
 - Role is to assist Driller with kick detection by physically monitoring the well at the mixing pits/tanks
 - Regularly record mud weights/viscosity for analysis by the Supervisor level and mud engineer so pre-influx signs can be detected
 - Mix required kill fluids as directed by Supervisor or Driller
 - Due to role on the rig, training and certification is targeted more toward monitoring for influxes, either via mud samples or visual signs on the pits/tanks

- **Motorman, Floor Hand Introductory Level**
 - Role is to assist the Supervisor, Driller, or Derrick Hand with detecting influxes
 - Be certain all valves are aligned for proper well control as directed by Supervisor
 - Perform Supervisor or Driller assigned tasks during a well control event
 - Due to role on the rig, training and certification is targeted more toward monitoring for influxes

1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST

The table below, which covers the drilling and casing of the 10M Stack portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

- Example 6-1/8” Production hole section, 10M requirement

Component	OD	Preventer	RWP
Drill pipe	4”	Upper and Lower 3.5-5.5” VBRs	10M
HWDP	4”	Upper and Lower 3.5-5.5” VBRs	10M
Drill collars and MWD tools	4.75-5”	Upper and Lower 3.5-5.5” VBRs	10M
Mud Motor	4.75-5.25”	Upper and Lower 3.5-5.5” VBRs	10M
Production casing	4.5”	Upper and Lower 3.5-5.5” VBRs	10M
ALL	0-13-5/8”	Annular	5M
Open-hole	-	Blind Rams	10M

- VBR = Variable Bore Ram. Compatible range listed in chart.

1.3 WELL CONTROL-BOP TESTING

BOP Test will be completed per Onshore Oil and Gas Order #2 Well Control requirements. The 5M Annular Preventer on a required 10M BOP stack will be tested to 70 % of rated working

pressure including a 10 minute low pressure test. Pressure shall be maintained at least 10 minutes.

1.4 WELL CONTROL - DRILLS

The following drills are conducted and recorded in the Daily Drilling Report and the Contractor’s reporting system while engaged in drilling operations:

Type	Frequency	Objective	Comments
Shallow gas kick drill - drilling	Once per well with crew on tour	Response training to a shallow gas influx	To be done prior to drilling surface hole if shallow gas is noted
Kick drill - drilling	Once per week per crew	Response training to an influx while drilling (bit on bottom)	Only one kick drill per week per crew is required, alternating between drilling and tripping.
Kick drill - tripping	Once per week per crew	Response training to an influx while tripping (bit off bottom). Practice stabbing TIW valve	

1.5 WELL CONTROL – MONITORING

- Drilling operations which utilize static fluid levels in the wellbore as the active barrier element, a means of accurately monitoring fill-up and displacement volumes during trips are available to the driller and operator. A recirculating trip tank is installed and equipped with a volume indicator easily read from the driller’s / operator’s position. This data is recorded on a calibrated chart recorder or digitally. The actual volumes are compared to the calculated volumes.
- The On-Site Supervisor ensures hole-filling and pit monitoring procedures are established and documented for every rig operation.
- The well is kept full of fluid with a known density and monitored at all times even when out of the hole.
- Flow checks are a minimum of 15 minutes.
- A flow check is made:
 - In the event of a drilling break.
 - After indications of down hole gains or losses.
 - Prior to all trips out of the hole.
 - After pulling into the casing shoe.
 - Before the BHA enters the BOP stack.
 - If trip displacement is incorrect.

Well Control-Monitoring (Continued)

- Prior to dropping a survey instrument.
- Prior to dropping a core ball.

- After a well kill operation.
- When the mud density is reduced in the well.
- Flow checks may be made at any time at the sole discretion of the driller or his designate. The Onsite Supervisor ensures that personnel are aware of this authority and the authority to close the well in immediately without further consultation.
- Record slow circulating rates (SCR) after each crew change, bit trip, and 500' of new hole drilled and after any variance greater than 0.2 ppg in MW. Slow pump rate recordings should include return flow percent, TVD, MD & pressure. SCR's will be done on all pumps at 30, 40 & 50 SPM. Pressures will be recorded at the choke panel. SCR will be recorded in the IADC daily report and ORB Wellview daily report
- Drilling blind (i.e. without returns) is permissible only in known lithology where the absence of hydrocarbons has been predetermined and written approval of the Drilling Manager.
- All open hole logs to be run with pack-off or lubricator.
- The Drilling Contractor has a fully working pit level totalizer / monitoring system with read out for the driller and an audible alarm set to 10 BBL gain / loss volume. Systems are selectable to enable monitoring of all pits in use. Pit volumes are monitored at all times, especially when transferring fluids. Both systems data is recorded on a calibrated chart recorder or electronically.
- The Drilling Contractor has a fully working return mud flow indicator with drillers display and an audible alarm, and is adjustable to record any variance in return volumes.

1.6 WELL CONTROL – SHUT IN

- The “hard shut in” method (i.e. against a closed choke using either an annular or ram type preventer) is the Company standard.
- The HCR(s) or failsafe valves are left closed during drilling to prevent any erosion and buildup of solids. The adjustable choke should also be left closed.
- The rig specific shut in procedure, the BOP configuration along with space-out position for the tool joints is posted in the Driller’s control cabin or doghouse.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Manager.
- During a well kill by circulation, constant bottom hole pressure is maintained throughout.
- Kill sheets are maintained by the Driller and posted in the Driller’s control cabin or doghouse. The sheet is updated at a minimum every 500 feet.

2. SHUT-IN PROCEDURES:

2.1 PROCEDURE WHILE DRILLING

- Sound alarm (alert crew)

- Space out drill string – Stop rotating, pick the drill string up off bottom, and space out to ensure no tool joint is located in the BOP element selected for initial closure.
- Shut down pumps (stop pumps and observe well.)
- Shut-in Well - If flow is suspected or confirmed, close uppermost applicable BOP element. (HCR and choke will already be in the closed position.)
 - **Note:** Either the uppermost pipe ram or annular preventer can be used.
- Confirm shut-in
- Notify toolpusher/company representative
- Gather all relevant data required:
 - SIDPP and SICP
 - Hole Depth and Hole TVD
 - Pit gain
 - Time
 - Kick Volume
 - Pipe depth
 - MW in, MW out
 - SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.
- Recheck all pressures and fluid volume on accumulator unit
- If pressure has built or is anticipated during the kill to reach 1,000 psi or greater, the annular preventer will not be used as the primary pressure control device and operations will swap to the upper BOP pipe ram.

2.2 PROCEDURE WHILE TRIPPING

- Sound alarm (alert crew)
- Stab full opening safety valve in the drill string and close.
- Space out drill string (ensure no tool joint is located in the BOP element selected for initial closure).
- Shut down pumps (stop pumps and observe well.)
- Shut-in Well - If flow is suspected or confirmed, close uppermost applicable BOP element. (HCR and choke will already be in the closed position.)
 - **Note:** Either the uppermost pipe ram or annular preventer can be used.
- Confirm shut-in
- Notify tool pusher/company representative
- Gather all relevant data required:
 - SIDPP and SICP
 - Hole Depth and Hole TVD
 - Pit gain

Procedure While Tripping (Continued)

- Time
- Kick Volume
- Pipe depth

- MW in, MW out
- SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.
- Recheck all pressures and fluid volume on accumulator unit
- If pressure has built or is anticipated during the kill to reach 1,000 psi or greater, the annular preventer will not be used as the primary pressure control device and operations will swap to the upper BOP pipe ram.

2.3 PROCEDURE WHILE RUNNING CASING

- Sound alarm (alert crew)
- Stab crossover and full opening safety valve and close
- Space out casing (ensure no coupling is located in the BOP element selected for initial closure).
- Shut down pumps (stop pumps and observe well.)
- Shut-in Well - If flow is suspected or confirmed, close uppermost applicable BOP element. (HCR and choke will already be in the closed position.)
 - **Note:** Either the uppermost pipe ram or annular preventer can be used.
- Confirm shut-in
- Notify tool pusher/company representative
- Gather all relevant data required:
 - SIDPP and SICP
 - Hole Depth and Hole TVD
 - Pit gain
 - Time
 - Kick Volume
 - Pipe depth
 - MW in, MW out
 - SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.
- Recheck all pressures and fluid volume on accumulator unit
- If pressure has built or is anticipated during the kill to reach 1,000 psi or greater, the annular preventer will not be used as the primary pressure control device and operations will swap to the upper BOP pipe ram.

2.4 PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

- Sound alarm (alert crew)
- Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
- Confirm shut-in

- Notify toolpusher/company representative
- Gather all relevant data required:
 - Shut-In Pressure
 - Hole Depth and Hole TVD
 - Pit gain
 - Time
 - Kick Volume
 - MW in, MW out
 - SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.
- Recheck all pressures and fluid volume on accumulator unit.

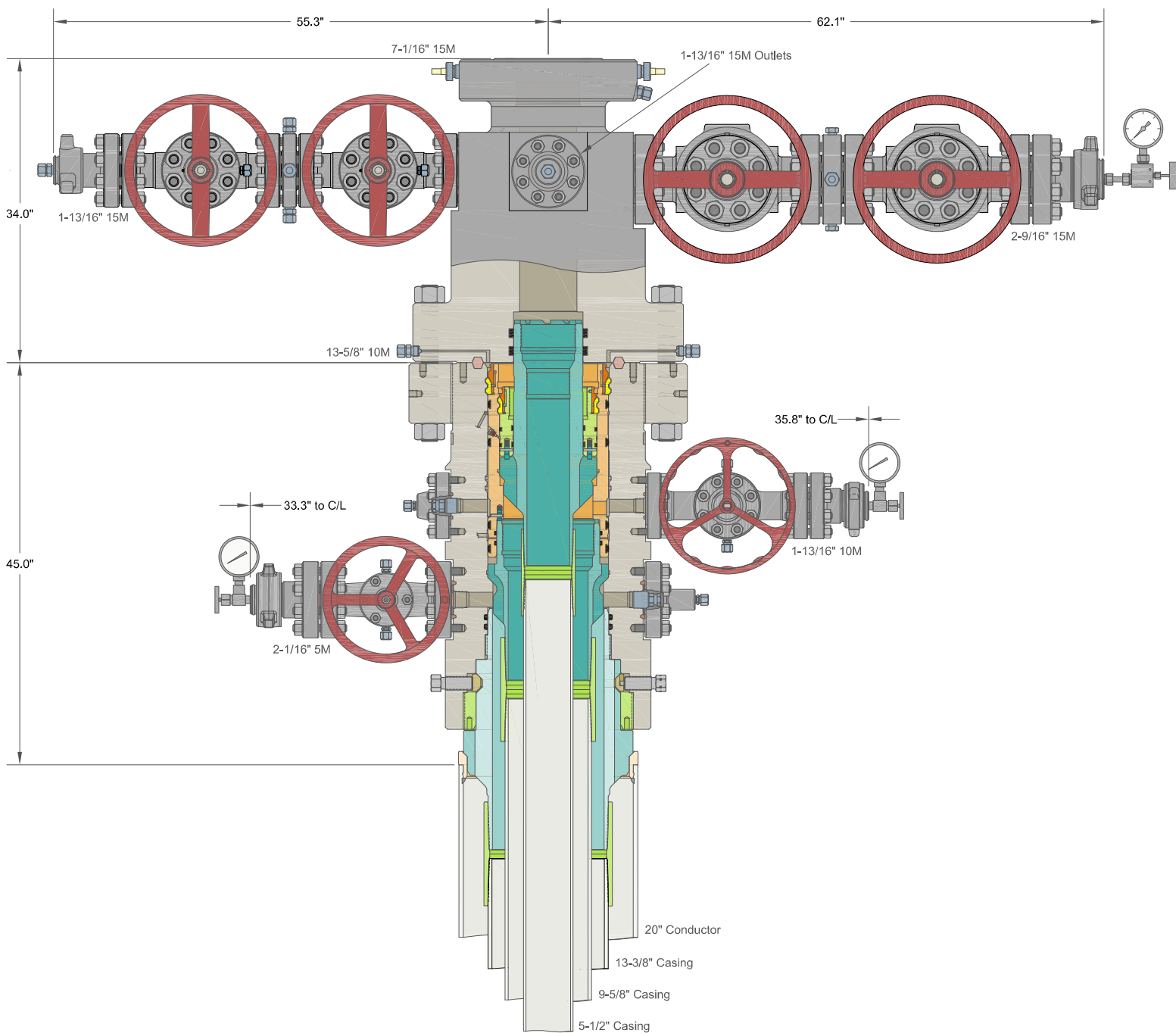
2.5 PROCEDURE WHILE PULLING BHA THRU STACK

- PRIOR to pulling last joint of drill pipe thru the stack.
 - Perform flow check, if flowing.
 - Sound alarm (alert crew).
 - Stab full opening safety valve and close
 - Space out drill string with tool joint just beneath the upper pipe ram.
 - Shut-in using upper pipe ram. (HCR and choke will already be in the closed position).
 - Confirm shut-in.
 - Notify toolpusher/company representative
 - Read and record the following:
 - SIDPP and SICP
 - Pit gain
 - Time
 - Regroup and identify forward plan
- **With BHA in the stack and compatible ram preventer and pipe combo immediately available.**
 - Sound alarm (alert crew)
 - Stab crossover and full opening safety valve and close
 - Space out drill string with upset just beneath the compatible pipe ram.
 - Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
 - Confirm shut-in
 - Notify toolpusher/company representative
 - Read and record the following:
 - SIDPP and SICP
 - Pit gain

Procedures While Pulling BHA thru Stack (Continued)

- Time
- Regroup and identify forward plan

- **With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.**
 - Sound alarm (alert crew)
 - If possible to pick up high enough, pull string clear of the stack and follow “Open Hole” scenario.
 - If impossible to pick up high enough to pull the string clear of the stack:
 - Stab crossover, make up one joint/stand of drill pipe, and full opening safety valve and close
 - Space out drill string with tool joint just beneath the upper pipe ram.
 - Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
 - Confirm shut-in
 - Notify toolpusher/company representative
 - Read and record the following:
 - SIDPP and SICP
 - Pit gain
 - Time



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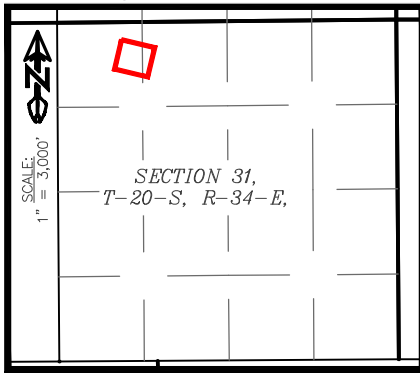
ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

MARATHON OIL & GAS

20" x 13-3/8" x 9-5/8" x 5-1/2" MBU-3T-CFL-R-DBLO System
 With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS-SB Tubing Head
 And 9-5/8" & 5-1/2" Mandrel Casing Hangers

DRAWN	DLE	20OCT21
APPRV		
DRAWING NO.	HBE0000621	



RIG LAYOUT

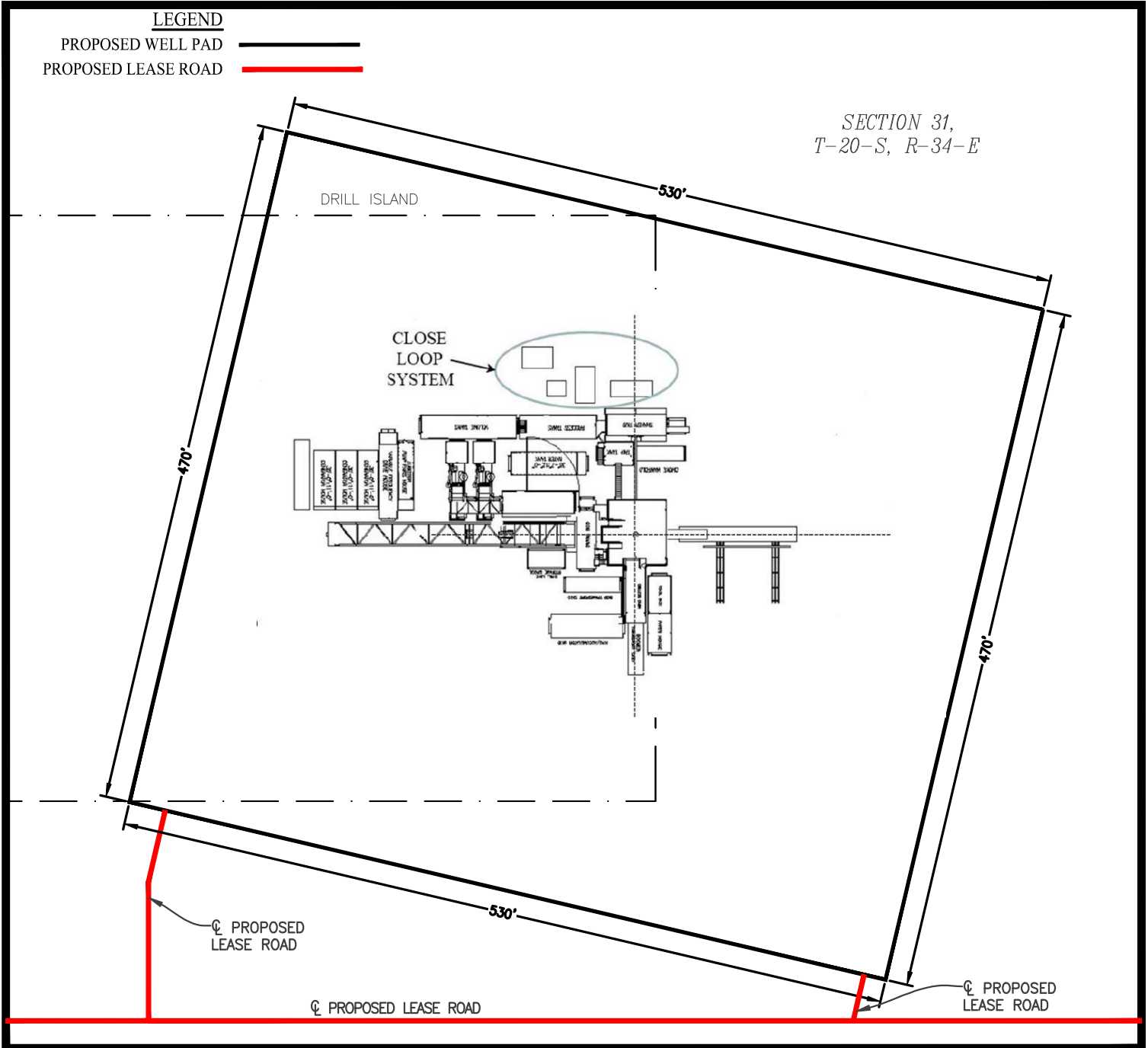
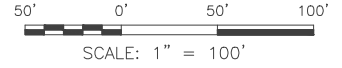
TOPAZ FED COM
SEC. 31, TWP. 20-S, RGE. 34-E

SURVEY: N.M.P.M.

COUNTY: LEA

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: LEA, N.M.



NOTE:
THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY. BOUNDARY DATA SHOWN IS FROM STATE OF NEW MEXICO OIL CONSERVATION DIVISION FORM C-102 INCLUDED IN THIS SUBMITTAL.

2	10/27/2023	DEF
REV.	DATE	BY

SHEET 4 OF 5

PREPARED BY:
DELTA FIELD SERVICES, LLC
510 TRENTON ST.
WEST MONROE, LA 71291
318-323-6900 OFFICE
JOB No. R3760_002

MARATHON OIL PERMIAN, LLC.
DRILLING AND OPERATIONS PLAN



WELL NAME & NUMBER:

TOPAZ FED COM 601H

LOCATION:

SECTION **31** TOWNSHIP **20S** RANGE **34E**
LEA COUNTY, **NEW MEXICO**

Section 1:**GEOLOGICAL FORMATIONS**

Name of Surface Formation: Permian
Elevation: 3692 feet

Estimated Tops of Important Geological Markers:

Formation	TVD (ft)	MD (ft)	Elevation (ft SS)	Lithologies	Mineral Resources	Producing Formation?
Rustler	1496	1496	2196	Anhydrite	Brine	No
Salado (Top Salt)	1864	1864	1828	Salt/Anhydrite	Brine	No
Base of Salt	3069	3069	623	Salt/Anhydrite	Brine	No
Yates	3298	3298	394	Salt/Anhydrite	Brine	No
Seven Rivers	3514	3514	178	Salt/Anhydrite	Brine	No
Capitan Reef	3567	3567	125	Salt/Anhydrite	Brine	No
Lamar	3900	3900	-208	Sandstone/Shale	None	No
Bell Canyon	5667	5667	-1975	Sandstone	Oil	No
Cherry Canyon	5704	5704	-2012	Sandstone	Oil	No
Brushy Canyon	6935	6935	-3243	Sandstone	Oil	No
Bone Spring Lime	8612	8612	-4920	Limestone	None	No
Upper Avalon Shale	9091	9091	-5399	Shale	Oil	Yes
1st Bone Spring Sand	9640	9640	-5948	Sandstone	Oil	Yes
2nd Bone Spring Carbonate	9884	9884	-6192	Limestone/Shale	None	No
2nd Bone Spring Sand	10152	10152	-6460	Sandstone	Oil	Yes
3rd Bone Spring Carbonate	10664	10664	-6972	Limestone	Oil	No
3rd Bone Spring Sand	10979	10979	-7287	Sandstone	Oil	Yes
Wolfcamp	11242	11242	-7550	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp A	11351	11351	-7659	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp B	11462	11462	-7770	Sandstone/Shale/Carbonates	Natural Gas / Oil	No
Wolfcamp C	11682	11682	-7990	Sandstone/Shale/Carbonates	Natural Gas / Oil	No
Wolfcamp D	11802	11802	-8110	Sandstone/Shale/Carbonates	Natural Gas / Oil	No

Section 2:**BLOWOUT PREVENTER TESTING PROCEDURE**

Pressure Rating (PSI): 10M
Rating Depth: 10000
Equipment: 13 5/8 BOP Annular (5,000 psi WP) and BOP Stack (10,000 psi WP) will be installed and tested before drilling all holes.

Requesting Variance? Yes
Variance Request: A variance is requested for the following: 1) Flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. 2) Cement variance request is attached for review & approval. 3) BOP break test variance is attached for review and approval.

Testing Procedure: BOP/BOPE will be tested to 250 psi low and a high of 100% WP for the Annular and 5,000psi for the BOP Stack before drilling the intermediate holes, 10,000psi for the BOP Stacking before drilling the production hole. Testing will be conducted by an independent service company per 43 CFR 3172 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the Equipment Description above. If the system is upgraded all the components installed will be functional and tested.
Pipe rams and Blind rams will be operationally checked on each trip out of the hole, but not to exceed more than once per day. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics.
Formation integrity test will be performed per 43 CFR 3172. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with 43 CFR 3172. A multibowl wellhead is being used. The BOP will be tested per 43 CFR 3172 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Section 5: CIRCULATING MEDIUM

Mud System Type: Closed
Will an air or gas system be used? No

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

Describe the mud monitoring system utilized:
 Losses or gains in the mud system will be monitored visually/manually as well as with an electronic PVT.

Circulating Medium Table:

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max Weight (ppg)
0	1588	Water Based Mud	8.4	8.8
1588	3603	Brine Based Mud	9.2	10.2
3603	21529	Oil Based Mud	10.5	12.5

Section 6: TESTING, LOGGING, CORING

List of production tests including testing procedures, equipment and safety measures:
 GR from TD to surface (horizontal well - vertical portion of hole)

List of open and cased hole logs run in the well:
 GR while drilling from Intermediate casing shoe to TD.

Coring operation description for the well:
 None

Section 7: ANTICIPATED PRESSURE

Anticipated Bottom Hole Pressure: 6500 PSI
Anticipated Bottom Hole Temperature: 195 °F
Anticipated Abnormal Pressure? No
Anticipated Abnormal Temperature? No

Potential Hazards:
 H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with 43 CFR 3176. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. See attached H2S Contingency Plan.

Section 8: OTHER INFORMATION

Auxiliary Well Control and Monitoring Equipment:
 A Kelly cock will be in the drill string at all times. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.
 Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe until total depth is reached. If Hydrogen Sulfide is encountered, measured amounts and formations will be reported to the BLM.

Anticipated Starting Date and Duration of Operations:
 Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.

BOP Break Test Variance Request

Executive Summary

- Request for a Variance allowing break testing of the blowout preventer equipment. Marathon requests to only test broken pressure seals on the BOP and function test BOP when skidding between wells on a pad
- Currently CFR Title 43 Part 3170 states that a test shall be performed “whenever any seal subject to test pressure is broken” and BLM interprets this as requiring a full BOP test
- API 53 states that for pad drilling operations, ONLY the connections that have a pressure seal broken are required to be tested
- Marathon feels break testing meets and or exceeds CFR Title 43 and API 53 required standards and is good drilling practice. It also may reduce wear and tear on BOP components.

BOP Break Test Variance Request

Background

- API Standard 53, “Well Control Equipment Systems for Drilling Wells 5th addition, Dec 2018, Annex C Table C.4) states “ For pad drilling operations, moving from one wellhead to another within the 21days, pressure testing is required for pressure – containing and pressure controlling connection when the integrity of a pressure seal is broken.
- Marathon’s rigs utilize quick connects to allow the release of the BOP from wellhead to wellhead without breaking any BOP stack components. This technology allows for break testing
- BLM has previously approved this variance of break testing for other operators in the area

Table C.4—Initial Pressure Testing, Surface BOP Stacks

Component to be Pressure Tested	Pressure Test—Low Pressure ^{ac} (psig (MPa))	Pressure Test—High Pressure ^{ac}	
		Change Out of Component, Elastomer, or Ring Gasket	No Change Out of Component, Elastomer, or Ring Gasket
Annular preventer ^b	250 to 350 (1.72 to 2.41)	RWP of annular preventer	MASP or 70% annular RWP, whichever is lower.
Fixed pipe, variable bore, blind, and BSR preventers ^{bd}	250 to 350 (1.72 to 2.41)	RWP of ram preventer or wellhead system, whichever is lower	ITP
Choke and kill line and BOP side outlet valves below ram preventers (both sides)	250 to 350 (1.72 to 2.41)	RWP of side outlet valve or wellhead system, whichever is lower	ITP
Choke manifold—upstream of chokes ^e	250 to 350 (1.72 to 2.41)	RWP of ram preventers or wellhead system, whichever is lower	ITP
Choke manifold—downstream of chokes ^e	250 to 350 (1.72 to 2.41)	RWP of valve(s), line(s), or MASP for the well program, whichever is lower	
Kelly, kelly valves, drill pipe safety valves, IBOPs	250 to 350 (1.72 to 2.41)	MASP for the well program	

^a Pressure test evaluation periods shall be a minimum of five minutes.
^b No visible leaks.
^c The pressure shall remain stable during the evaluation period. The pressure shall not decrease below the intended test pressure.
^d Annular(s) and VBR(s) shall be pressure tested on the largest and smallest OD drill pipe to be used in well program.
^e For pad drilling operations, moving from one wellhead to another within the 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken.
^f For surface offshore operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented during the initial test. For land operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented at commissioning and annually.
^g Adjustable chokes are not required to be full sealing devices. Pressure testing against a closed choke is not required.



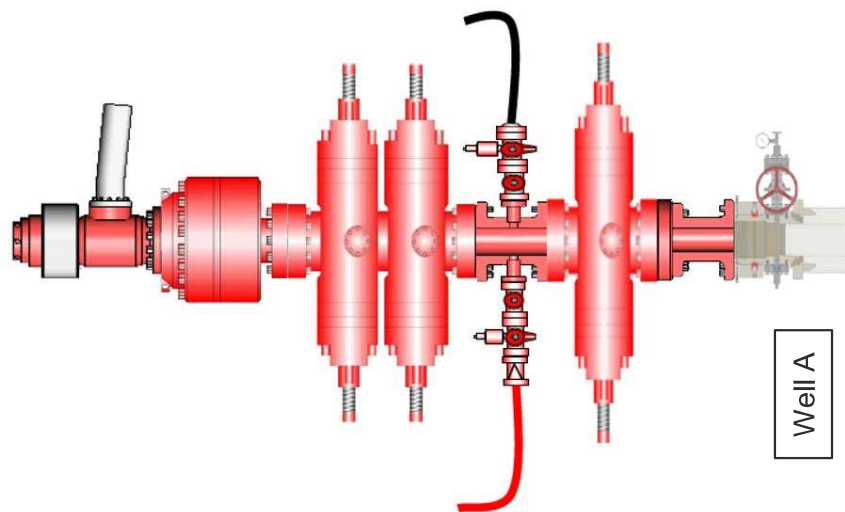
Procedures

Procedural Steps

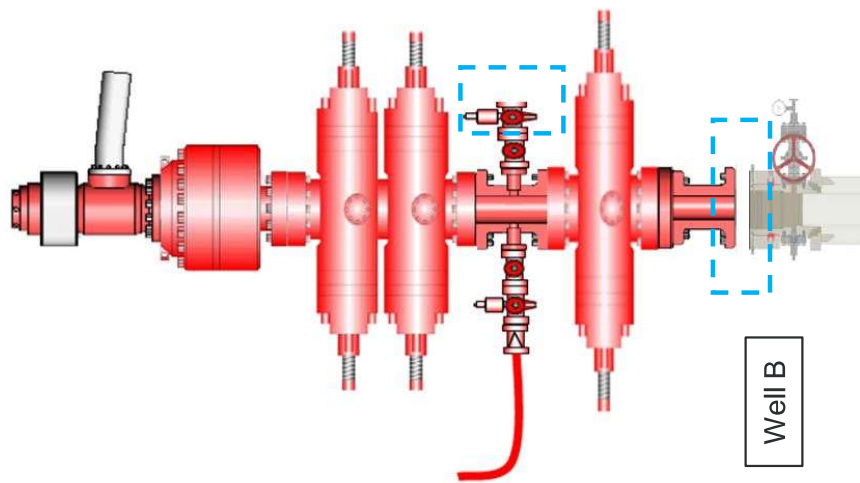
1. Marathon will use this document for break testing plan for New Mexico Delaware Basin.
2. Marathon will perform BOP break testing on well pads where multiple intermediate sections can be drilled and cased within the 21 day test window and will meet the following criteria:
 - a) A full BOP test will be conducted on the first well on the pad
 - b) The deepest intermediate well on the pad will be drilled first
 - c) A Full BOP test will be required prior to drilling any production hole
3. After completing the first full BOP test and drilling the intermediate section, two breaks will be performed on the BOP.
 - a) BOP quick connect and wellhead
 - b) HCV and Choke line connection
4. The BOP will be lifted from well A to well B
5. The two connections stated above will be reconnected
6. Test plug will be installed into wellhead utilizing drillpipe or test joint
7. Shell test will be performed against the upper pipe rams and testing the two breaks consisting of the following tests
 - a) 250psi low test and high test performed to 5,000 (well and sundry specific)
8. Function test will then be performed on the lower pipe rams, blind rams, and annular (performed each trip or every 7 days - whichever is more frequent)
9. This process will be repeated for other wells on the pad while being in the 21 day BOP test window

Sequence Diagram

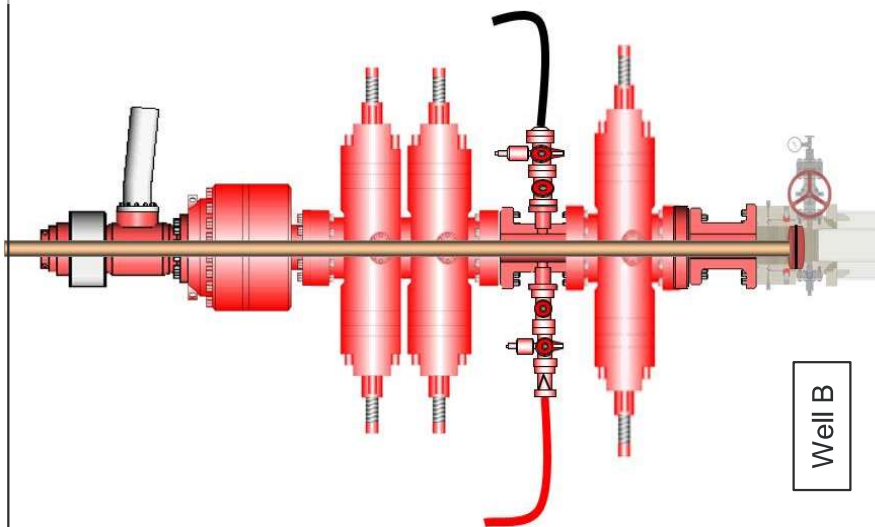
Well A: BOP installed on Well A



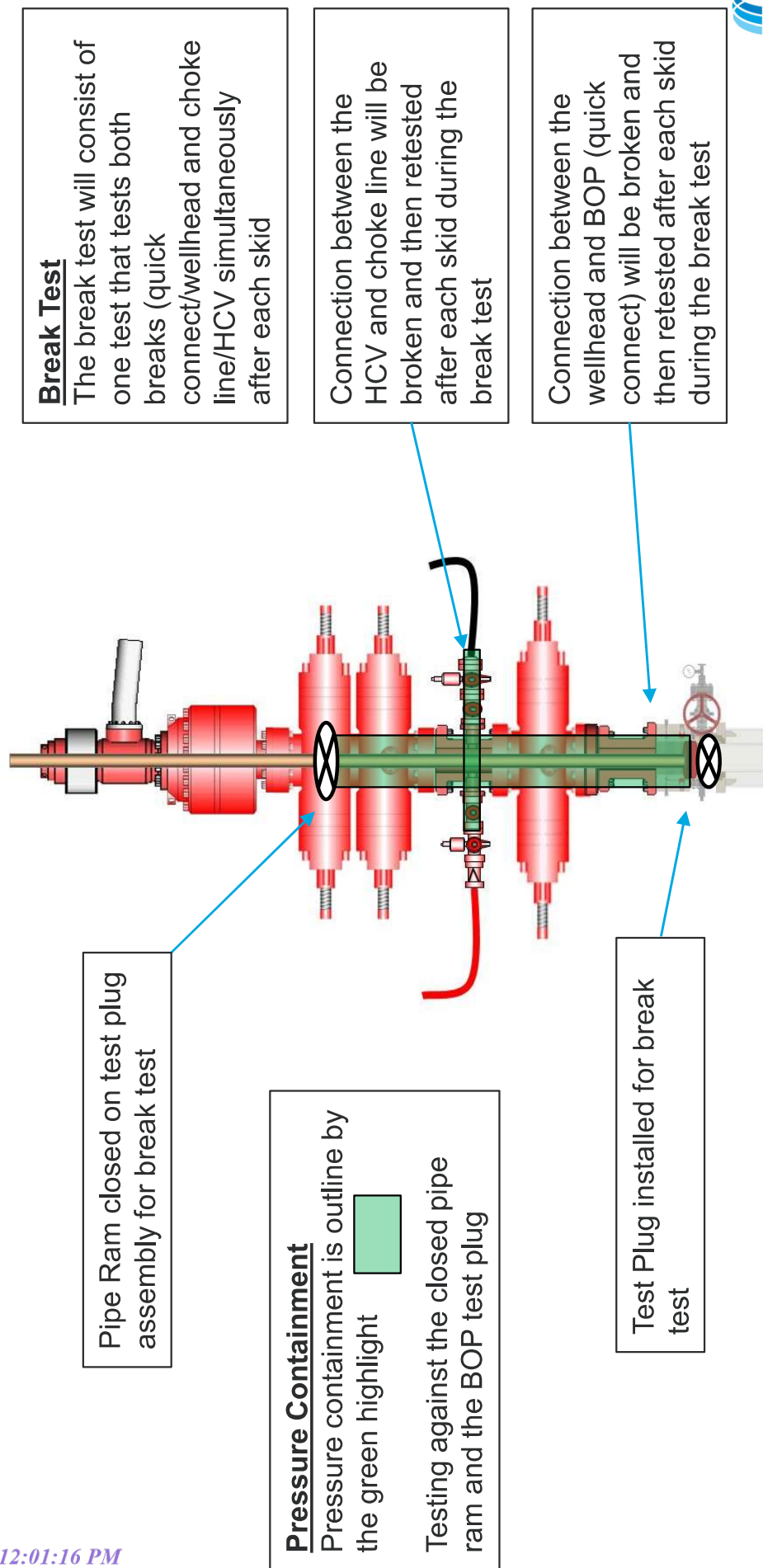
BOP picked up and moved from Well A to Well B. Disconnected at the quick connect and the choke line valve



Well B: Quick connect and choke line reconnected. Test plug installed.



Procedures Diagram



Summary

- A variance is requested to only test the broken pressure seals on the BOP equipment when moving from wellhead to wellhead. This is in full compliance with API Standard 53
- Marathon will meet the following criteria when break testing:
 - Time of last BOP test was less than 21 days
 - A full BOP test was conducted on the first well on the pad
 - The first intermediate hole section on the pad will be the deepest intermediate hole section.
 - Break testing will not occur on intermediate sections of over 5000 psi MASP

Batch Drilling Plan

- Marathon Oil Permian LLC. respectfully requests the option to “batch” drill sections of a well with intentions of returning to the well for later completion.
- When it is determined that the use of a “batch” drilling process to increase overall efficiency and reduce rig time on location, the following steps will be utilized to ensure compliant well control before releasing drilling rig during the batch process.
- Succeeding a successful cement job, fluid levels will be monitored in both the annulus and casing string to be verified static.
- A mandrel hanger packoff will be ran and installed in the multi-bowl wellhead isolating and creating a barrier on the annulus. This packoff will be tested to 5,000 PSI validating the seals.
- At this point the well is secure and the drilling adapter will be removed from the wellhead.
- A 13-5/8” 5M temporary abandonment cap will be installed on the wellhead by stud and nut flange. The seals of the TA cap will then be pressure tested to 5,000 PSI.
- The drilling rig will skid to the next well on the pad to continue the batch drilling process.
- When returning to the well with the TA cap, the TA cap will be removed and the BOP will be nipped up on the wellhead.
- A BOP test will then be conducted according to Onshore Order #2 and drilling operations will resume on the subject well.

Request for Surface Rig

- Marathon Oil Permian LLC. Requests the option to contract a surface rig to drill, set surface casing and cement on the subject well. If the timing between rigs is such that Marathon Oil Permian LLC. would not be able to preset the surface section, the primary drilling rig will drill the well in its entirety per the APD.



Cement Variance Request

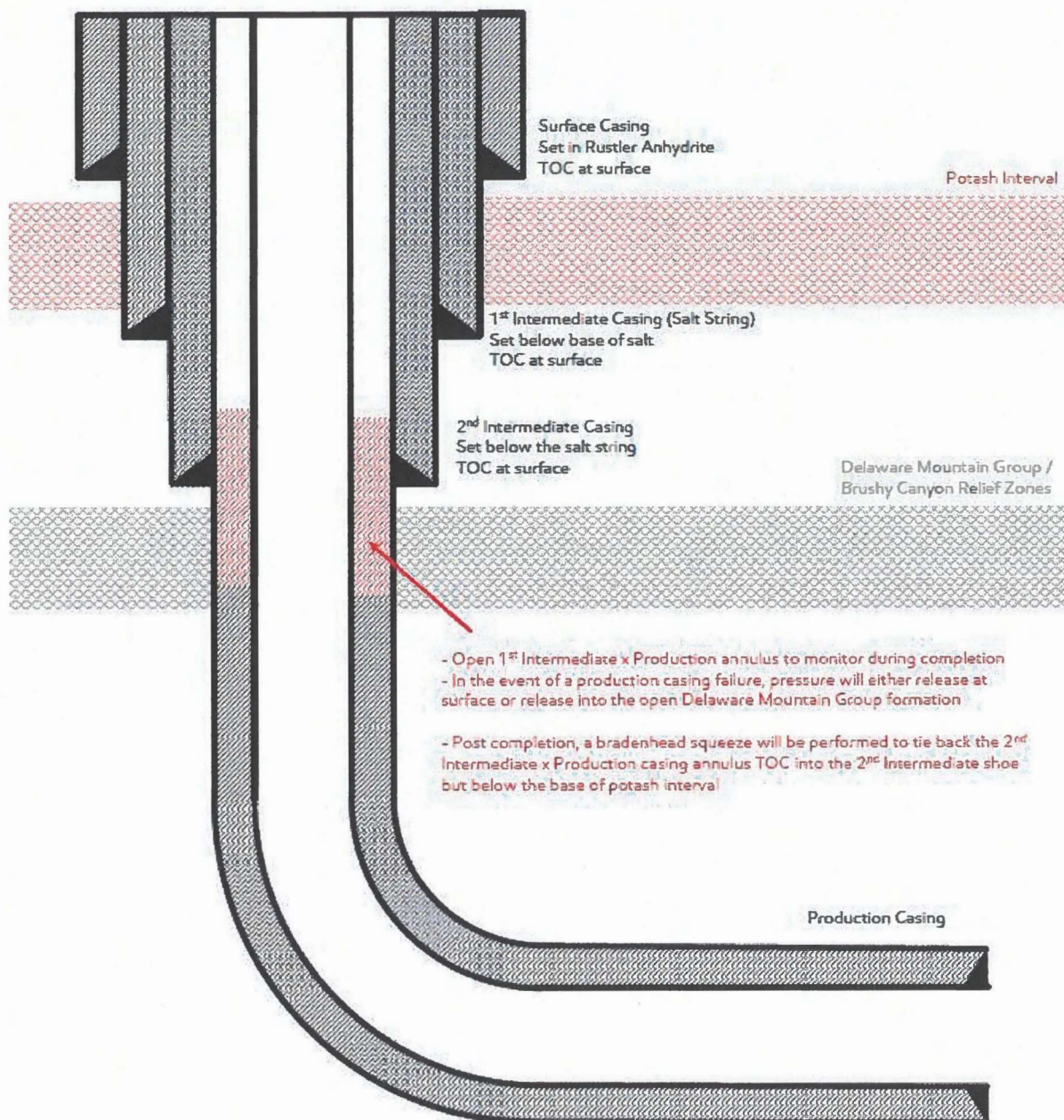
Marathon Oil Permian requests to pump a two stage cement job on the 9 5/8" intermediate casing in the event the primary stage is not circulated to surface.

If cement is not circulated to surface on the primary cement job, the second stage will be performed as a bradenhead squeeze until cement reaches surface.

Following the first stage, we will ensure the cement job was cemented properly and the well is static with floats holding. We will also ensure there is no pressure on the csg annulus as with all other casing strings where batch drilling operations occur. Before moving off the rig the TA cap will be installed as per standard batch drilling ops.

If there are indications that there are gaps in cement coverage after the bradenhead squeeze, a CBL will be run to identify where the gaps are. After the bradenhead squeeze, the lines will NOT be washed into the annulus. The annulus will be topped off approximately an hour after the bradenhead job with cement and verified circulated to surface. If confidence is lacking on the TOC, an echo meter or CBL will be run to verify TOC. BLM Engineer will be notified of such issues.

4-String Design – Open 1st Int x Production Casing (ICP 2 above relief zone)



[Figure E] 4 String – Uncemented Annulus between 2nd Intermediate and Production Casing Strings

Marathon Oil Permian LLC is aware of the R111-Q update and will comply with the requirements including (but not limited to):

- 1) Alignment with KPLA requirements per schematic above, leaving open annulus for pressure monitoring during frac and utilizing new casing that meets API standards.
- 2) Contingency plans in place to divert formation fluids away from the salt interval in event of production casing failure
- 3) Bradenhead squeeze to be completed within 180 days to tie back TOC to salt string at least 500 ft but with top below Marker Bed 126
- 4) Production cement to be tied back no less than 500 ft inside previous casing shoe
- 5) While drilling salt interval, separation distance to any active/inactive producing offset well will be ensured such that SF > 1.0; Anti Collision reports will be provided in the APD packages for review where SF < 1.5 against any applicable offset well, or where center to center separation against a blind or inclination only surveyed offset well is less than 500 ft.



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

Bond Info Data

04/29/2025

APD ID: 10400097335

Submission Date: 02/29/2024

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: TOPAZ FED COM

Well Number: 601H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data
reflects the most
recent changes
[Show Final Text](#)

Bond

Federal/Indian APD: FED

BLM Bond number: NMB001555

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

State of New Mexico
 Energy, Minerals and Natural Resources Department

Submit Electronically
 Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

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

Section 1 – Plan Description Effective May 25, 2021

I. Operator: Marathon Oil Permian LLC **OGRID:** 972098 **Date:** 02 / 27 / 2024

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

If Other, please describe: _____

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

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Please see attached						

IV. Central Delivery Point Name: Topaz CTB [See 19.15.27.9(D)(1) NMAC]

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

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Please see attached						

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

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

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

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:	<i>Terri Stathem</i>
Printed Name:	Terri Stathem
Title:	Manager Regulatory Compliance
E-mail Address:	tstathem@marathonoil.com
Date:	2/27/2024
Phone:	713-817-0224
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)	
Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

III. Wells

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Topaz Fed Com 301H		L1-31-20S-34E	558' NFL 1252' FWL	2300	4200	3500
Topaz Fed Com 501H		L1-31-20S-34E	543' FNL 1194' FWL	2300	3400	3500
Topaz Fed Com 601H		L1-31-20S-34E	536' FNL 1165' FWL	2300	3400	3500
Topaz Fed Com 701H		L1-31-20S-34E	551' FNL 1223' FEL	2300	3400	2300

V. Anticipated Schedule

Well Name	API	Spud Date	TD Reached Date	Completion Commence ment Date	Initial Flow Back Date	First Production Date
Topaz Fed Com 301H		10/1/2025	11/1/2025	11/15/2025	12/1/2025	12/1/2025
Topaz Fed Com 501H		10/1/2025	11/1/2025	11/15/2025	12/1/2025	12/1/2025
Topaz Fed Com 601H		10/1/2025	11/1/2025	11/15/2025	12/1/2025	12/1/2025
Topaz Fed Com 701H		10/1/2025	11/1/2025	11/15/2025	12/1/2025	12/1/2025

APPENDIX

Section 1 - Parts VI, VII, and VIII

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

- Separation equipment is sized to allow for retention time and velocity to adequately separate oil, gas, and water at anticipated peak rates.
- All central tank battery equipment is designed to efficiently capture the remaining gas from the liquid phase.
- Valves and meters are designed to service without flow interruption or venting of gas.

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

◆ **19.15.27.8 (A) – Venting and Flaring Of Natural Gas**

- Marathon Oil Permian's field operations are designed with the goal of minimizing flaring and preventing venting of natural gas. If capturing the gas is not possible then the gas is combusted/flared using properly sized flares or combustors in accordance with state air permit rules.

◆ **19.15.27.8 (B) – Venting and Flaring During Drilling Operations**

- A properly-sized flare stack will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared. Venting will only occur if there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety, public health, or the environment.

◆ **19.15.27.8 (C) – Venting and Flaring During Completion or Recompletion Operations**

- During all phases of flowback, wells will flow through a sand separator, or other appropriate flowback separation equipment, and the well stream will be directed to a central tank battery (CTB) through properly sized flowlines.
- The CTB will have properly sized separation equipment for maximum anticipated flow rates.
- Multiple stages of separation will be used to separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a closed loop system that will recover any residual gas from the tanks and route such gas to a sales outlet.

◆ **19.15.27.8 (D) – Venting and Flaring During Production Operations**

- During production, the well stream will be routed to the CTB where multiple stages of separation will separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a closed loop system that will recover any residual gas from the tanks and route such gas to a sales outlet, minimizing tank emissions.
- Flares are equipped with auto-ignition systems and continuous pilot operations.
- Automatic gauging equipment is installed on all tanks.

◆ **19.15.27.8 (E) – Performance Standards**

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- Automatic gauging equipment is installed on all tanks to minimize venting.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Flares are equipped with continuous pilots and auto-ignitors along with remote monitoring of the pilot status.
- Weekly AVOs and monthly LDAR inspections will be performed on all wells and facilities that produce more than 60 MCFD.
- Gas/H₂S detectors will be installed throughout the facilities and wellheads to detect leaks and enable timely repairs.

◆ **19.15.27.8 (F) – Measurement or Estimation of Vented and Flared Natural Gas**

- All high pressure flared gas is measured by equipment conforming to API 14.10.
- No meter bypasses are installed.
- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated through flare flow curves with the assistance of air emissions consultants, as necessary.

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

- Marathon Oil Permian will use best management practices to vent as minimally as possible during well intervention operations and downhole well maintenance.
- All natural gas is routed into the gas gathering system and directed to one of Marathon Oil Permian's multiple gas sales outlets.
- All venting events will be recorded and all start-up, shutdown, maintenance logs will be kept for control equipment.
- All control equipment will be maintained to provide highest run-time possible.
- All procedures are drafted to keep venting and flaring to the absolute minimum.

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

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

ACKNOWLEDGMENTS

Action 552799

ACKNOWLEDGMENTS

Operator: MARATHON OIL PERMIAN LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 372098
	Action Number: 552799
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

ACKNOWLEDGMENTS

<input checked="" type="checkbox"/>	I hereby certify that no additives containing PFAS chemicals will be added to the completion or recompletion of this well.
-------------------------------------	--

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Phone: (505) 476-3441

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

CONDITIONS

Action 552799

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 372098
	Action Number: 552799
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
rrussell01	Cement is required to circulate on both surface and intermediate1 strings of casing.	2/11/2026
matthew.gomez	If cement does not circulate to surface on any string, a Cement Bond Log (CBL) is required for that string of casing. If strata isolation is not achieved, remediation will be required before further operations may commence.	3/4/2026
matthew.gomez	All conducted logs must be submitted to the OCD.	3/4/2026
matthew.gomez	Cement must be in place for at least eight hours AND achieve a minimum compressive strength of 500 PSI before performing any further operations on the well.	3/4/2026
matthew.gomez	Administrative order required for non-standard spacing unit prior to production.	3/4/2026
matthew.gomez	Notify the OCD 24 hours prior to casing & cement.	3/5/2026
matthew.gomez	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.	3/5/2026
matthew.gomez	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.	3/5/2026
matthew.gomez	File As Drilled C-102 and a directional Survey with C-104 completion packet.	3/5/2026
matthew.gomez	Only freshwater based mud shall be utilized across the Capitan interval.	3/5/2026
matthew.gomez	This well is proposed to be within the R-111-Q defined boundary. Operator must follow all procedures and requirements listed within the order.	3/5/2026