

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 20185. Lease Serial No.  
NMNM143617

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
RICK VAUGHN BS FED COM  
501H9. API Well No.  
30-015-5548110. Field and Pool, or Exploratory  
RED BLUFF/BONE SPRING, SOUTH11. Sec., T. R. M. or Blk. and Survey or Area  
SEC 7/T26S/R29E/NMP1a. Type of work: ☒ DRILL ☐ REENTER  
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other  
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone2. Name of Operator  
MARATHON OIL PERMIAN LLC3a. Address  
990 TOWN & COUNTRY BLVD, HOUSTON, TX 770243b. Phone No. (include area code)  
(713) 296-2113

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

At surface LOT 4 / 88 FSL / 1394 FWL / LAT 32.0501276 / LONG -104.0276346

At proposed prod. zone LOT 1 / 100 FNL / 495 FWL / LAT 32.0786694 / LONG -104.0305242

14. Distance in miles and direction from nearest town or post office\*  
16 miles12. County or Parish  
EDDY13. State  
NM15. 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  
638.018. Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft.  
25 feet19. Proposed Depth  
8362 feet / 18611 feet20. BLM/BIA Bond No. in file  
FED: NMB00155521. Elevations (Show whether DF, KDB, RT, GL, etc.)  
2912 feet22. Approximate date work will start\*  
07/31/202423. Estimated duration  
35 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)  
NICOLE LEE / Ph: (713) 929-6600Date  
08/02/2023Title  
Regulatory Compliance RepresentativeApproved by (Signature)  
(Electronic Submission)Name (Printed/Typed)  
CODY LAYTON / Ph: (575) 234-5959Date  
09/23/2024Title  
Assistant Field Manager Lands & MineralsOffice  
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)



## INSTRUCTIONS

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

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

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

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

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

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

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

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

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

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

## Additional Operator Remarks

### Location of Well

0. SHL: LOT 4 / 88 FSL / 1394 FWL / TWSP: 26S / RANGE: 29E / SECTION: 7 / LAT: 32.0501276 / LONG: -104.0276346 ( TVD: 0 feet, MD: 0 feet )

PPP: LOT 4 / 100 FSL / 495 FWL / TWSP: 26S / RANGE: 29E / SECTION: 7 / LAT: 32.0501692 / LONG: -104.0305365 ( TVD: 7888 feet, MD: 7975 feet )

PPP: LOT 4 / 0 FSL / 492 FWL / TWSP: 26S / RANGE: 29E / SECTION: 6 / LAT: 32.0644 / LONG: -104.030053 ( TVD: 8362 feet, MD: 13155 feet )

PPP: LOT 3 / 1320 FSL / 492 FWL / TWSP: 26S / RANGE: 29E / SECTION: 6 / LAT: 32.0680163 / LONG: -104.0305288 ( TVD: 8362 feet, MD: 14475 feet )

BHL: LOT 1 / 100 FNL / 495 FWL / TWSP: 26S / RANGE: 29E / SECTION: 6 / LAT: 32.0786694 / LONG: -104.0305242 ( TVD: 8362 feet, MD: 18611 feet )

### BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

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### **Review and Appeal Rights**

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

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

*Application for Permit to Drill*

**APD Package Report**

Date Printed: 09/24/2024 05:43 AM

APD ID: 10400092270

Well Status: AAPD

APD Received Date: 08/02/2023 06:09 AM

Well Name: RICK VAUGHN BS FED COM

Operator: MARATHON OIL PERMIAN LLC

Well Number: 501H

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: 1 file(s)
  - Casing Design Assumptions and Worksheet(s): 3 file(s)
  - Hydrogen sulfide drilling operations plan: 1 file(s)
  - Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
  - Other Facets: 3 file(s)
  - Other Variances: 6 file(s)
- SUPO Report
- SUPO Attachments
  - Existing Road Map: 1 file(s)
  - Attach Well map: 1 file(s)
  - Production Facilities map: 1 file(s)
  - Water source and transportation map: 1 file(s)
  - Construction Materials source location attachment: 1 file(s)
  - Well Site Layout Diagram: 3 file(s)
- PWD Report
- PWD Attachments
  - None
- Bond Report
- Bond Attachments

-- None

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                                |                                                               |                                        |                                                                |
|------------------------------------------------|---------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------|
| <sup>1</sup> APN Number<br><b>30-015-55481</b> |                                                               | <sup>2</sup> Pool Code<br><b>51010</b> | <sup>3</sup> Pool Name<br><b>RED BLUFF; BONE SPRING, SOUTH</b> |
| <sup>4</sup> Property Code<br><b>336292</b>    | <sup>5</sup> Property Name<br><b>RICK VAUGHN BS FED COM</b>   |                                        | <sup>6</sup> Well Number<br><b>501H</b>                        |
| <sup>7</sup> OGRID No.<br><b>372098</b>        | <sup>8</sup> Operator Name<br><b>MARATHON OIL PERMIAN LLC</b> |                                        | <sup>9</sup> Elevation<br><b>2912'</b>                         |

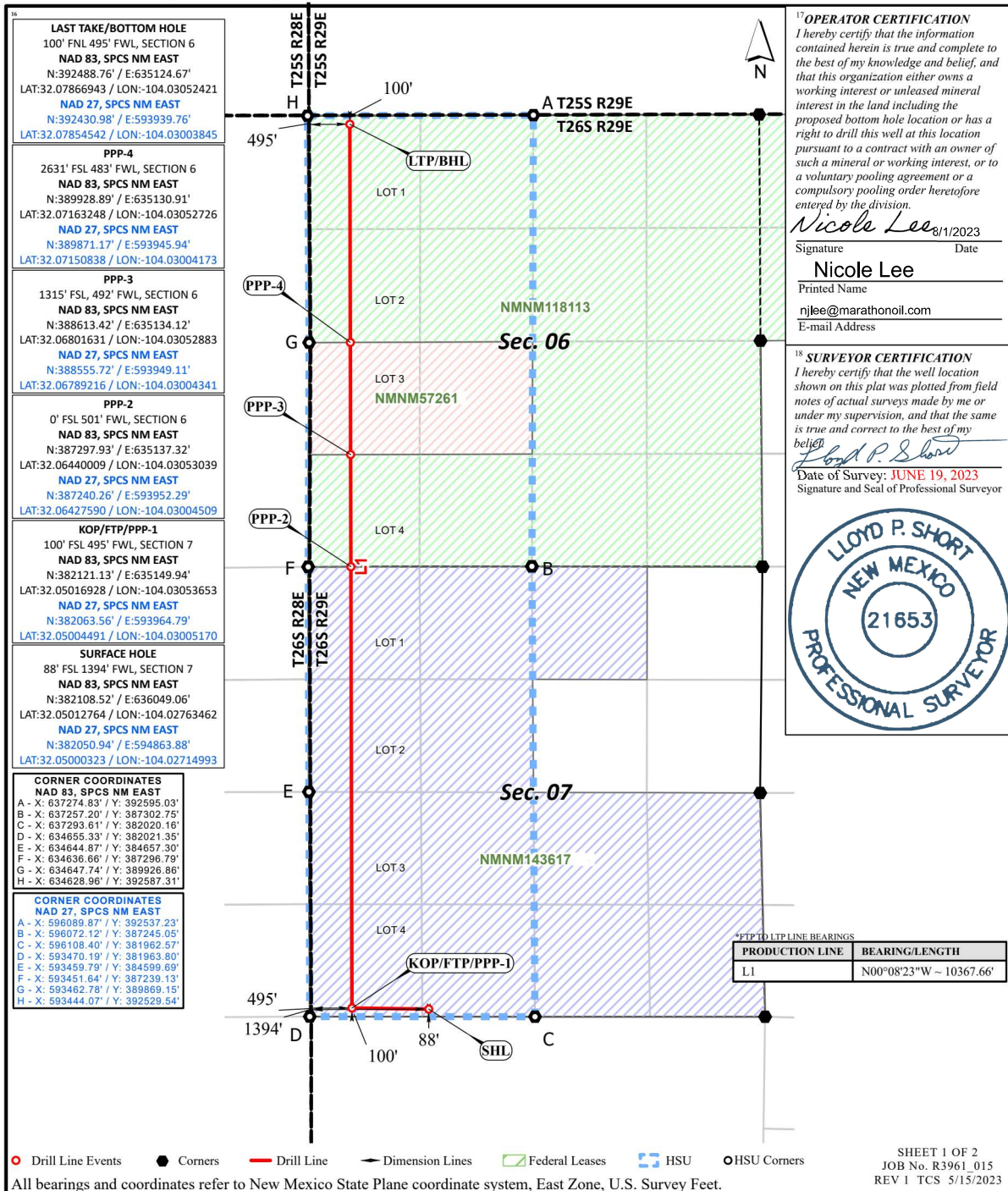
<sup>10</sup> Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| N             | 7       | 26S      | 29E   |         | 88            | FSL              | 1394          | FWL            | EDDY   |

<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no.                                  | Section | Township                      | Range | Lot Idn                          | Feet from the | North/South line        | Feet from the | East/West line | County |
|------------------------------------------------|---------|-------------------------------|-------|----------------------------------|---------------|-------------------------|---------------|----------------|--------|
| L                                              | 6       | 26S                           | 29E   |                                  | 100           | FNL                     | 495           | FWL            | EDDY   |
| <sup>12</sup> Dedicated Acres<br><b>638.40</b> |         | <sup>13</sup> Joint or Infill |       | <sup>14</sup> Consolidation Code |               | <sup>15</sup> Order No. |               |                |        |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

|                  |                         |
|------------------|-------------------------|
| OPERATOR'S NAME: | Marathon Oil Company    |
| LEASE NO.:       | NMNM 143617             |
| COUNTY:          | Eddy County, New Mexico |

**Wells:**

**Rick Vaughn BS Fed Com 501H**

Surface Hole Location: 88' FSL & 1394' FWL, Section 7, T. 26 S., R. 29 E.

Bottom Hole Location: 100' FNL & 495' FWL, Section 6, T. 26 S, R 29 E.

**Rick Vaughn BS Fed Com 502H**

Surface Hole Location: 88' FSL & 1444' FWL, Section 7, T. 26 S., R. 29 E.

Bottom Hole Location: 100' FNL & 1320' FWL, Section 6, T. 26 S, R 29 E.

**Rick Vaughn BS Fed Com 503H**

Surface Hole Location: 88' FSL & 1494' FWL, Section 7, T. 26 S., R. 29 E.

Bottom Hole Location: 100' FNL & 495' FWL, Section 6, T. 26 S, R 29 E.

**Rick Vaughn WC Fed Com 811H**

Surface Hole Location: 88' FSL & 1419' FWL, Section 7, T. 26 S., R. 29 E.

Bottom Hole Location: 330' FNL & 660' FWL, Section 6, T. 26 S, R 29 E.

**Rick Vaughn WC Fed Com 812H**

Surface Hole Location: 88' FSL & 1469' FWL, Section 7, T. 26 S., R. 29 E.

Bottom Hole Location: 330' FNL & 1980' FWL, Section 6, T. 26 S, R 29 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**
  - Cave/Karst
  - Special Status Plant Species
  - Texas Hornshell Mussel
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**

☒ **Production (Post Drilling)**

Well Structures & Facilities

☐ **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.

Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

##### **Cave/Karst:**

##### **Construction Mitigation**

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD or project:

##### **General Construction:**

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.

- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

**Pad Construction:**

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad 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 high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- 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.
- 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 access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

**Drilling Mitigation**

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required:

- Closed loop system using steel tanks - all fluids and cuttings will be hauled off-site and disposed of properly at an authorized site
- Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
- Directional drilling is only allowed at depths greater than 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
- Lost circulation zones will be logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
- Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See drilling COAs.

**Production Mitigation**

In order to mitigate the impacts from production activities and due to the nature of karst terrane, the following Conditions of Approval will apply to this APD:

- Tank battery locations and facilities will be bermed and lined with a 20 mil thick permanent liner that has a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.
- Development and implementation of a leak detection system to provide an early alert to operators when a leak has occurred.

- Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Residual and Cumulative Mitigation**

The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be taken to correct the problem to the BLM's approval.

**Plugging and Abandonment Mitigation**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Wildlife:****Texas Hornshell mussel (*Popenaias popeii*)-Federally Endangered**

Oil and Gas Zone D - CCA Boundary requirements.

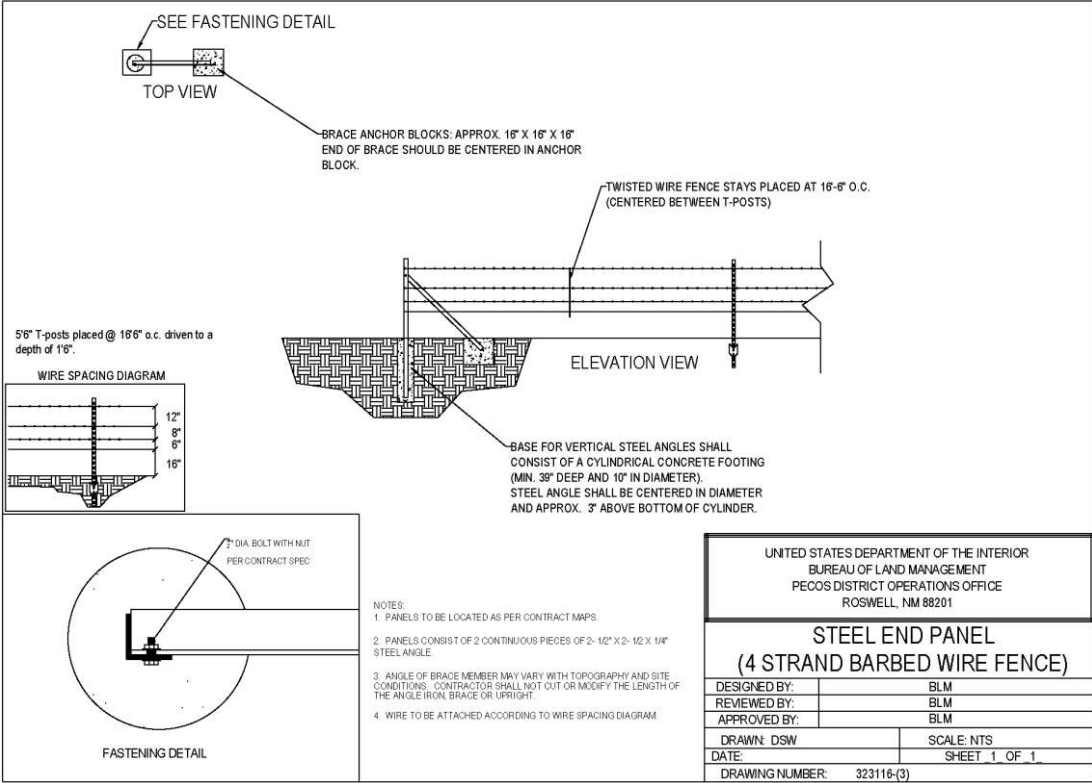
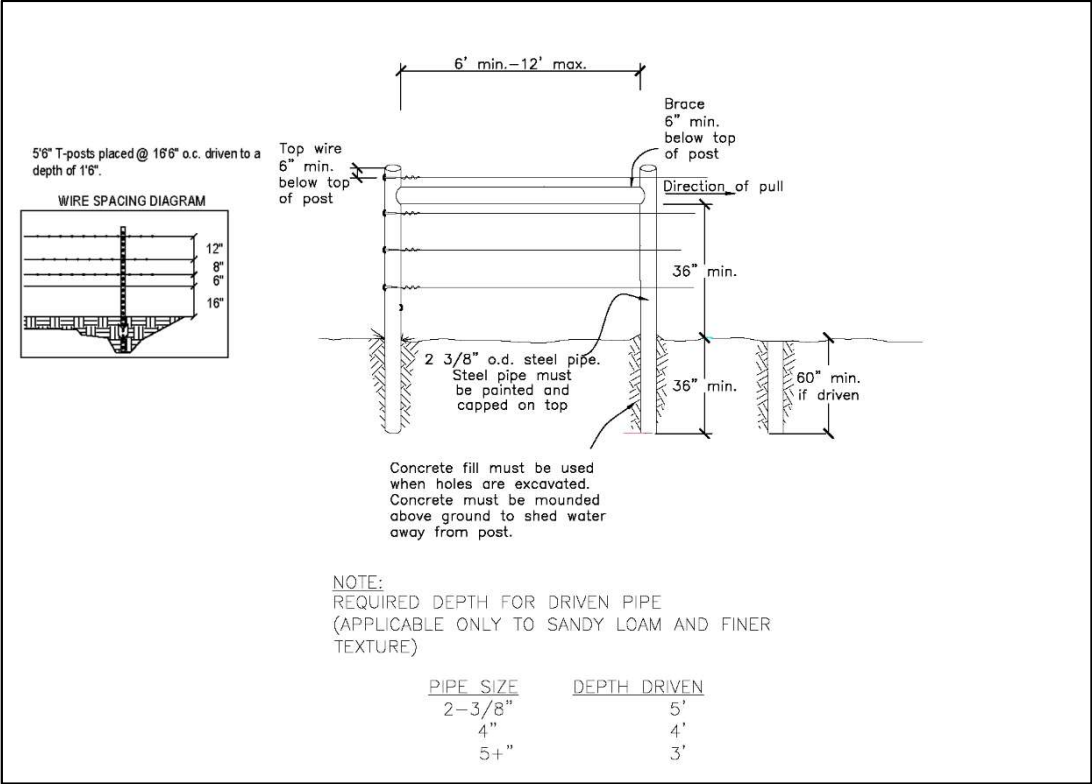
- Implement erosion control measures in accordance with the Reasonable and Prudent Practices for Stabilization ("RAPPS")
- Comply with SPCC requirements in accordance with 40 CFR Part 112;
- Comply with the United States Army Corp of Engineers (USACE) Nationwide 12 General Permit, where applicable;
- Utilize technologies (like underground borings for pipelines), where feasible;
- Educate personnel, agents, contractors, and subcontractors about the requirements of conservation measures, COAs, Stips and provide direction in accordance with the Permit.

**Range:****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.

**Texas Hornshell Mussel:**

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

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

**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).

**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**

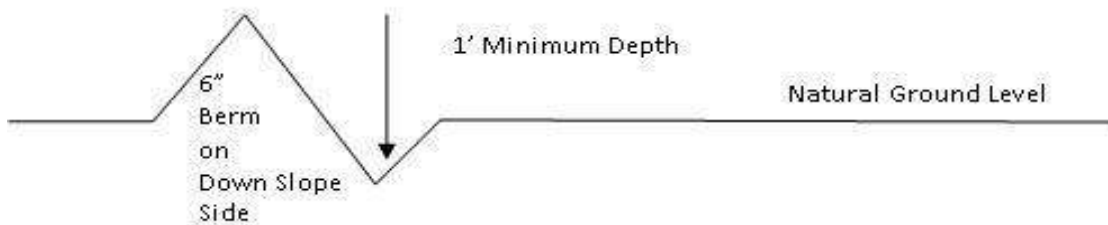
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

##### **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

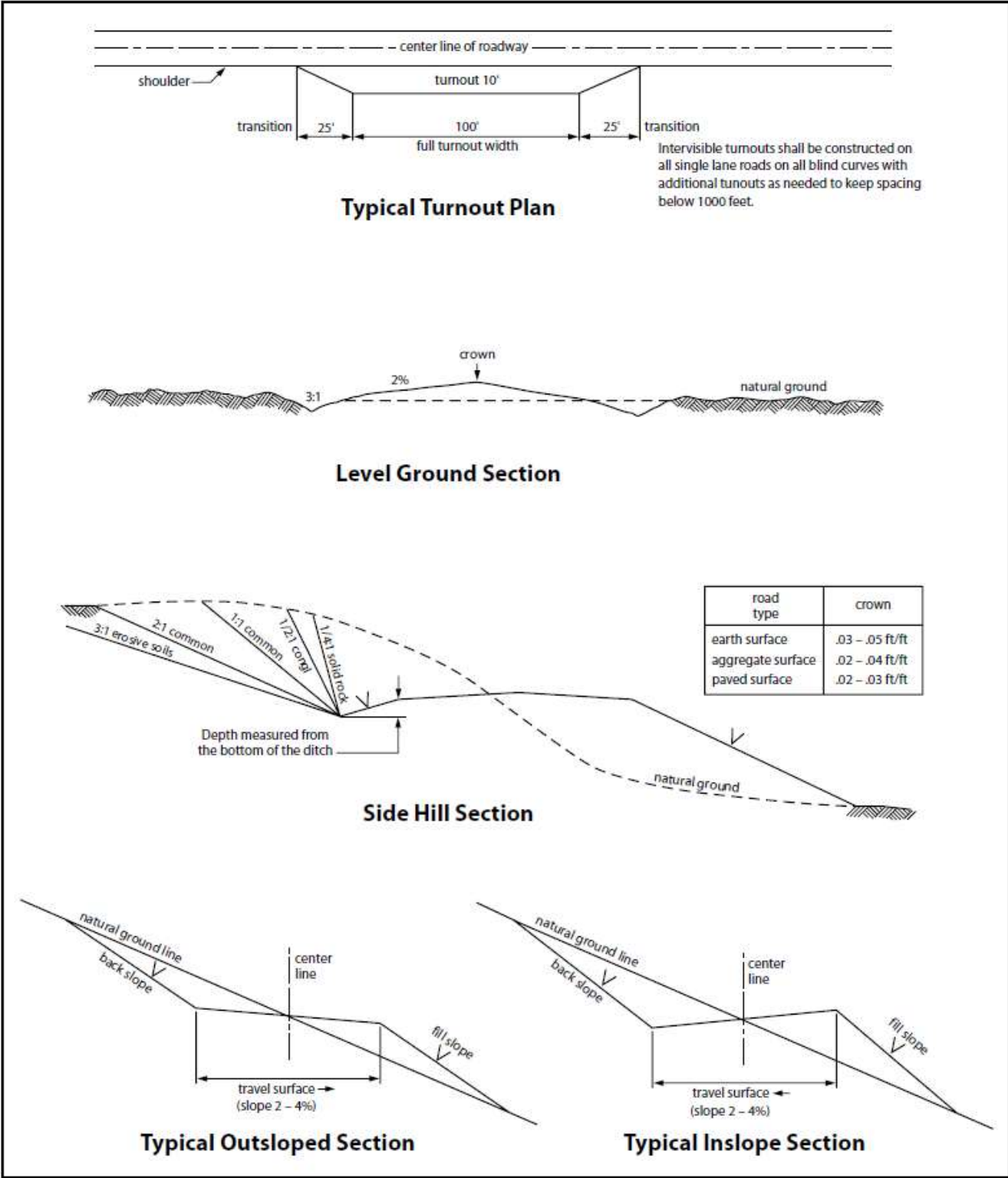


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## 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).

## 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 3, for Shallow Sites**

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

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

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

| <u>Species</u>                                      | <u>lb/acre</u> |
|-----------------------------------------------------|----------------|
| Plains Bristlegrass ( <i>Setaria macrostachya</i> ) | 1.0            |
| Green Sprangletop ( <i>Leptochloa dubia</i> )       | 2.0            |
| Sideoats Grama ( <i>Bouteloua curtipendula</i> )    | 5.0            |

\*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.: | RICK VAUGHN BS FEDERAL COM 501H |
| LOCATION:        | Section 7, T.26 S., R.29 E.     |
| COUNTY:          | Eddy County, New Mexico         |

COA

|                                  |                                                        |                                               |                                                         |
|----------------------------------|--------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------|
| H2S                              | <input checked="" type="radio"/> Yes                   | <input type="radio"/> No                      |                                                         |
| Potash                           | <input checked="" type="radio"/> None                  | <input type="radio"/> Secretary               | <input type="radio"/> R-111-P                           |
| Cave/Karst Potential             | <input type="radio"/> Low                              | <input type="radio"/> Medium                  | <input checked="" type="radio"/> High                   |
| Cave/Karst Potential             | <input type="radio"/> Critical                         |                                               |                                                         |
| Variance                         | <input type="radio"/> None                             | <input checked="" type="radio"/> Flex Hose    | <input type="radio"/> Other                             |
| Wellhead                         | <input type="radio"/> Conventional                     | <input checked="" type="radio"/> Multibowl    | <input type="radio"/> Both                              |
| Wellhead Variance                | <input type="radio"/> Diverter                         |                                               |                                                         |
| Other                            | <input type="checkbox"/> 4 String                      | <input type="checkbox"/> Capitan Reef         | <input type="checkbox"/> WIPP                           |
| Other                            | <input type="checkbox"/> Fluid Filled                  | <input type="checkbox"/> Pilot Hole           | <input type="checkbox"/> Open Annulus                   |
| Cementing                        | <input type="checkbox"/> Contingency<br>Cement Squeeze | <input type="checkbox"/> EchoMeter            | <input type="checkbox"/> Primary Cement<br>Squeeze      |
| Special Requirements             | <input type="checkbox"/> Water Disposal                | <input checked="" type="checkbox"/> COM       | <input type="checkbox"/> Unit                           |
| Special Requirements             | <input type="checkbox"/> Batch Sundry                  |                                               |                                                         |
| Special Requirements<br>Variance | <input type="checkbox"/> Break Testing                 | <input type="checkbox"/> Offline<br>Cementing | <input checked="" type="checkbox"/> Casing<br>Clearance |

### A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated AT SPUD. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

### B. CASING

#### Primary Casing Design:

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet (a minimum of 70 feet (Eddy 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 **9-5/8** inch intermediate casing shall be set at approximately **7871** feet. **Keep casing minimum half full during run for collapse SF.** The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

**Option 1:**

- Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

**Option 2:**

**The operator has not proposed a DV tool depth. DV tool needs to be below the Salado interval. Operator may adjust depth of DV tool if it remains below the Salado and cement volumes are adjusted accordingly. The DV tool may be cancelled if cement circulates to surface on the first stage.**

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
  - b. Second stage above DV tool:
    - Cement to surface. If cement does not circulate, 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 or potash.**
- ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The **5-1/2** inch production casing shall be set at approximately **18,611** feet. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst 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. This assembly will only be tested when installed on the **13-3/8** inch surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi**. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 3500 (70% Working Pressure) psi.**
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

### D. SPECIAL REQUIREMENT (S)

#### Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in Onshore Order 1 and 43 CFR part 3170 Subpart 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.

**Casing Clearance:**

Overlap clearance OK.

Operator shall clean up cycles until wellbore is clear of cuttings and any large debris, ensure cutting sizes are adequate “coffee ground or less” before cementing.

## 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 Eddy County Petroleum Engineering Inspection Staff:**

Email or call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220; [BLM NM CFO DrillingNotifications@BLM.GOV](mailto:BLM_NM_CFO_DrillingNotifications@BLM.GOV); (575) 361-2822

**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 2<sup>nd</sup> 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 2<sup>nd</sup> 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.

KPI 8/29/2024



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

# Operator Certification Data Report

09/24/2024

## 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:**

**Signed on:** 08/02/2023

**Title:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**

## Field

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**



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

## Application Data

09/24/2024

APD ID: 10400092270

Submission Date: 08/02/2023

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

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: RICK VAUGHN BS FED COM

Well Number: 501H

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - General

APD ID: 10400092270

Tie to previous NOS? N

Submission Date: 08/02/2023

BLM Office: Carlsbad

User: NICOLE LEE

Title: Regulatory Compliance  
Representative

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM143617

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 &amp; COUNTRY BLVD

Zip: 77024

Operator PO Box:

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: RICK VAUGHN BS FED COM

Well Number: 501H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: RED BLUFF

Pool Name: BONE SPRING,  
SOUTH

**Operator Name:** MARATHON OIL PERMIAN LLC**Well Name:** RICK VAUGHN BS FED COM**Well Number:** 501H**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?** Y**New surface disturbance?** Y**Type of Well Pad:** MULTIPLE WELL**Multiple Well Pad Name:** Rick  
Vaughn Fed Com**Number:** 361-1**Well Class:** HORIZONTAL**Number of Legs:** 1**Well Work Type:** Drill**Well Type:** OIL WELL**Describe Well Type:****Well sub-Type:** INFILL**Describe sub-type:****Distance to town:** 16 Miles**Distance to nearest well:** 25 FT**Distance to lease line:** 100 FT**Reservoir well spacing assigned acres Measurement:** 638 Acres**Well plat:** A2\_Rick\_Vaughn\_Pay\_receipt\_20230801132955.pdf

A2\_C102\_Rick\_Vaughn\_BS\_Fed\_Com\_501H\_20230804133715.pdf

**Well work start Date:** 07/31/2024**Duration:** 35 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 | 88      | FSL          | 1394    | FWL          | 26S  | 29E   | 7       | Lot 4             | 32.0501276 | -104.0276346 | EDD Y  | NEW MEXI CO | NEW MEXI CO | F          | NMNM 143617  | 2912      | 0    | 0    | Y                                |
| KOP Leg #1 | 100     | FSL          | 495     | FWL          | 26S  | 29E   | 7       | Lot 4             | 32.0501692 | -104.0305365 | EDD Y  | NEW MEXI CO | NEW MEXI CO | F          | NMNM 143617  | -4976     | 7975 | 7888 | Y                                |

**Operator Name:** MARATHON OIL PERMIAN LLC**Well Name:** RICK VAUGHN BS FED COM**Well Number:** 501H

| 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<br>Leg<br>#1-1 | 100      | FSL          | 495     | FW<br>L      | 26S  | 29E   | 7       | Lot<br>4          | 32.05016<br>92 | -<br>104.0305<br>365 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>143617 | -<br>497<br>6 | 797<br>5  | 788<br>8 | Y                                |
| PPP<br>Leg<br>#1-2 | 0        | FSL          | 492     | FW<br>L      | 26S  | 29E   | 6       | Lot<br>4          | 32.0644        | -<br>104.0300<br>53  | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>118113 | -<br>545<br>0 | 131<br>55 | 836<br>2 | Y                                |
| PPP<br>Leg<br>#1-3 | 132<br>0 | FSL          | 492     | FW<br>L      | 26S  | 29E   | 6       | Lot<br>3          | 32.06801<br>63 | -<br>104.0305<br>288 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>57261  | -<br>545<br>0 | 144<br>75 | 836<br>2 | Y                                |
| EXIT<br>Leg<br>#1  | 100      | FNL          | 495     | FW<br>L      | 26S  | 29E   | 6       | Lot<br>1          | 32.07866<br>94 | -<br>104.0305<br>242 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>118113 | -<br>545<br>0 | 186<br>11 | 836<br>2 | Y                                |
| BHL<br>Leg<br>#1   | 100      | FNL          | 495     | FW<br>L      | 26S  | 29E   | 6       | Lot<br>1          | 32.07866<br>94 | -<br>104.0305<br>242 | EDD<br>Y | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>118113 | -<br>545<br>0 | 186<br>11 | 836<br>2 | Y                                |





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

# Drilling Plan Data Report

09/24/2024

APD ID: 10400092270

Submission Date: 08/02/2023

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: RICK VAUGHN BS FED COM

Well Number: 501H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data  
reflects the most  
recent changes

[Show Final Text](#)

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical | Measured Depth | Lithologies                          | Mineral Resources | Producing Formatio |
|--------------|----------------|-----------|---------------|----------------|--------------------------------------|-------------------|--------------------|
| 14188455     | RUSTLER        | 2912      | 309           | 309            | ANHYDRITE                            | OTHER : brine     | N                  |
| 14188456     | SALADO         | 2406      | 506           | 506            | ANHYDRITE, SALT                      | OTHER : brine     | N                  |
| 14188457     | CASTILE        | 1950      | 962           | 962            | ANHYDRITE, SALT                      | OTHER : brine     | N                  |
| 14188458     | BASE OF SALT   | 392       | 2520          | 2520           | ANHYDRITE, SALT                      | OTHER : brine     | N                  |
| 14188459     | LAMAR          | 218       | 2694          | 2694           | SANDSTONE, SHALE                     | NONE              | N                  |
| 14188460     | BELL CANYON    | 192       | 2720          | 2720           | SANDSTONE                            | OIL               | N                  |
| 14188461     | CHERRY CANYON  | -780      | 3692          | 3692           | SANDSTONE                            | OIL               | N                  |
| 14188462     | BRUSHY CANYON  | -1896     | 4808          | 4808           | SANDSTONE                            | OIL               | N                  |
| 14188463     | BONE SPRING    | -4446     | 7358          | 7358           | SANDSTONE                            | OIL               | Y                  |
| 14188464     | WOLFCAMP       | -6634     | 9546          | 9546           | OTHER, SANDSTONE, SHALE : Carbonates | NATURAL GAS, OIL  | N                  |

## Section 2 - Blowout Prevention

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.

**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 3162 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

**Operator Name:** MARATHON OIL PERMIAN LLC**Well Name:** RICK VAUGHN BS FED COM**Well Number:** 501H

attached schematics. Formation integrity test will be performed per 43 CFR 3162. 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 3162 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:**

D2\_RV\_Choke\_Manifold\_10M\_20230801085506.pdf

D8\_MRO\_Flex\_Hose\_20240806105541.pdf

**BOP Diagram Attachment:**

D2\_RV\_BOP\_Diagram\_10M\_20230801085512.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          | 350           | 0           | 350            | 2912        | 2562           | 350                         | 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          | 7871          | 0           | 7784           | 2912        | -4872          | 7871                        | P-110 | 40     | BUTT        | 1.2         | 1.42     | BUOY          | 2.44     | BUOY         | 2.44    |
| 3         | PRODUCTION   | 8.75      | 5.5      | NEW       | API      | N              | 0          | 18611         | 0           | 8362           | 2912        | -5450          | 18611                       | P-110 | 23     | OTHER - TLW | 2.53        | 1.26     | BUOY          | 2.22     | BUOY         | 2.22    |

**Casing Attachments****Casing ID:** 1      **String** SURFACE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

D3\_RV\_501H\_Casing\_Assumption\_20230801085709.pdf

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: RICK VAUGHN BS FED COM

Well Number: 501H

## Casing Attachments

Casing ID: 2 String INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D3\_RV\_501H\_Casing\_Assumption\_20230801085809.pdf

Casing ID: 3 String PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D3\_RV\_501H\_Casing\_Assumption\_20230801085911.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                                                 |
|-------------|-----------|------------------|--------|-----------|--------------|-------|---------|-------|---------|-------------|-----------------------------------------------------------|
| PRODUCTION  | Lead      |                  | 0      | 0         | 0            | 0     | 0       | 0     |         | N/A         | N/A                                                       |
| PRODUCTION  | Tail      |                  | 7571   | 1861<br>1 | 2116         | 1.68  | 13      | 3554  | 25      | CLASS H     | RETARDER,<br>EXTENDER, FLUID<br>LOSS, SUSPENSION<br>AGENT |
| SURFACE     | Lead      |                  | 0      | 200       | 105          | 2.12  | 12.5    | 222   | 25      | CLASS C     | EXTENDER,<br>ACCELERATOR, LCM                             |
| SURFACE     | Tail      |                  | 200    | 350       | 99           | 1.32  | 14.8    | 130   | 25      | CLASS C     | ACCELERATOR                                               |

**Operator Name:** MARATHON OIL PERMIAN LLC**Well Name:** RICK VAUGHN BS FED COM**Well Number:** 501H

| String Type  | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives                  |
|--------------|-----------|------------------|--------|-----------|--------------|-------|---------|-------|---------|-------------|----------------------------|
| INTERMEDIATE | Lead      |                  | 0      | 7371      | 1334         | 2.18  | 12.4    | 2907  | 25      | CLASS C     | EXTENDER, ACCELERATOR, LCM |
| INTERMEDIATE | Tail      |                  | 7371   | 7871      | 147          | 1.33  | 14.8    | 196   | 25      | CLASS C     | RETARDER                   |

### Section 5 - Circulating Medium

**Mud System Type:** Closed**Will an air or gas system be Used?** NO**Description of the equipment for the circulating system in accordance with Onshore Order #2:****Diagram of the equipment for the circulating system in accordance with Onshore Order #2:****Describe what will be on location to control well or mitigate other conditions:** The necessary mud products for 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         | 350          | WATER-BASED MUD                | 8.4                  | 8.8                  |                     |                             |    |                |                |                 |                            |
| 350       | 7871         | OTHER : BRINE OR OIL BASED MUD | 9.2                  | 10.2                 |                     |                             |    |                |                |                 |                            |
| 7871      | 1861<br>1    | OIL-BASED MUD                  | 10.5                 | 12.5                 |                     |                             |    |                |                |                 |                            |

**Operator Name:** MARATHON OIL PERMIAN LLC**Well Name:** RICK VAUGHN BS FED COM**Well Number:** 501H

## 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,COMPENSATED NEUTRON LOG,DIRECTIONAL SURVEY,

**Coring operation description for the well:**

Run gamma-ray (GR), corrected neutron log (CNL) or analogous to surface for future development of the area, one per shared well pad not to exceed 200 radial distance.

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5435**Anticipated Surface Pressure:** 3595**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**

D6\_Rick\_Vaughn\_501H\_H2S\_Plan\_20230802131543.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

D8\_Rick\_Vaughn\_BS\_Fed\_Com\_501H\_Directional\_Plan\_20230801090739.pdf

**Other proposed operations facets description:****Other proposed operations facets attachment:**

D8\_Rick\_Vaughn\_Rig\_Layout\_20230801090750.pdf

D8\_Rick\_Vaughn\_BS\_Fed\_Com\_501H\_Drill\_Plan\_20230801090750.pdf

D8\_Rick\_Vaughn\_NGMP\_20230802131435.pdf

**Other Variance attachment:**

D8\_MRO\_Wellhead\_Diagram\_20240806113038.pdf

D8\_MRO\_Well\_Control\_Plan\_20240806113108.pdf

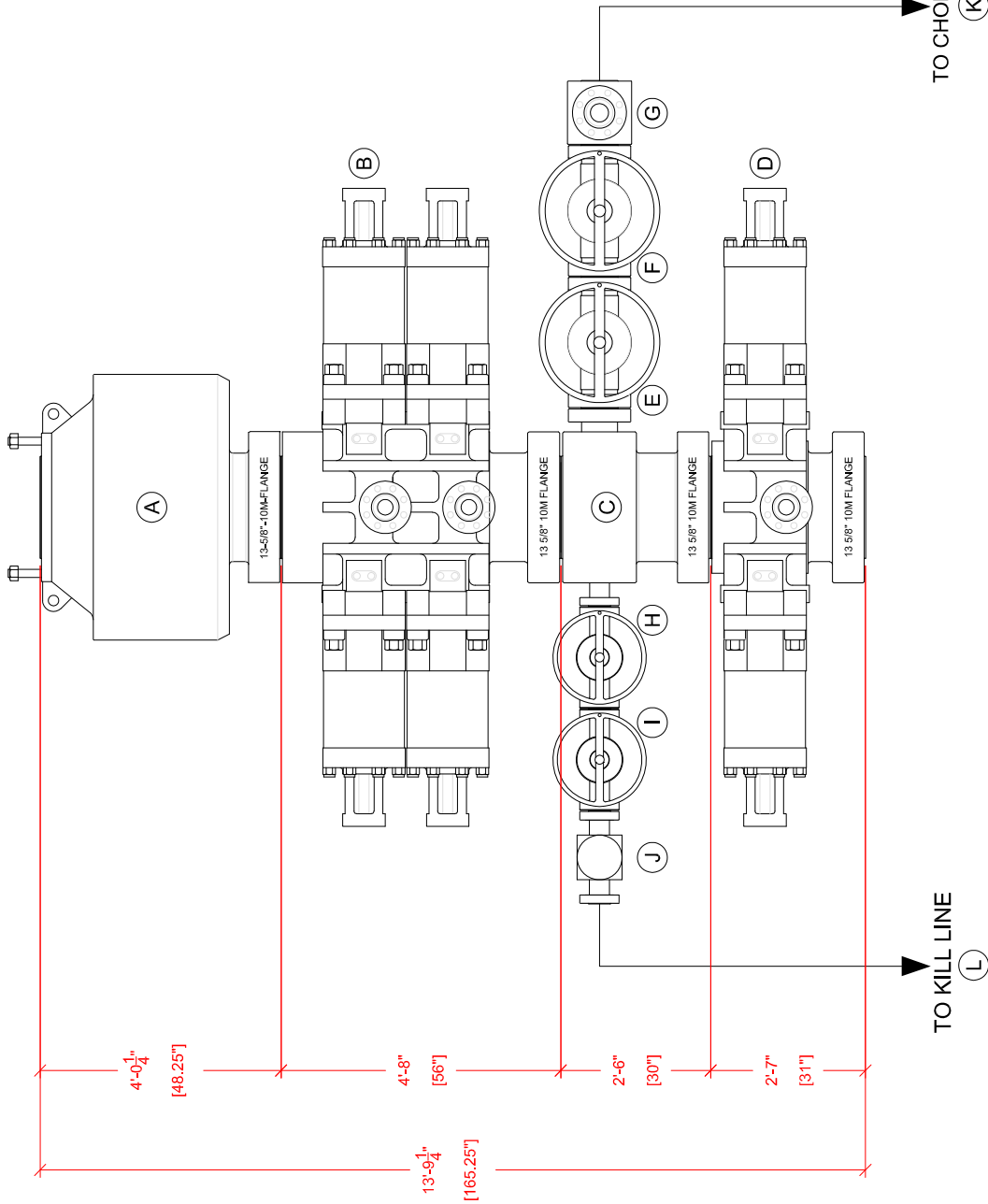
D8\_MRO\_Variance\_Request\_Batch\_Drill\_n\_Spudder\_20240806113121.pdf

D8\_MRO\_Variance\_Offline\_Cementing\_Surf\_n\_Inter\_20240806113129.pdf

D8\_MRO\_Variance\_Request\_\_Int\_Cement\_20240806113137.pdf

D8\_MRO\_Variance\_Request\_BOP\_Break\_Test\_20240806113149.pdf

| BOP INFORMATION |                |         |                       |
|-----------------|----------------|---------|-----------------------|
| ITEM            | DESCRIPTION    | MAKE    | MODEL                 |
| A               | ANNULAR BOP    | CAMERON | 13 5/8" 5M T90        |
| B               | DOUBLE RAM BOP | CAMERON | 13 5/8" 10M U         |
| C               | MUD CROSS      | CAMERON | 13 5/8" 10M           |
| D               | SINGLE RAM BOP | CAMERON | 13 5/8" 10M U         |
| E               | WING VALVE     | CAMERON | 4 1/2" 10M FLS MANUAL |
| F               | HCR VALVE      | CAMERON | 4 1/2" 10M HCR        |
| G               | CHOKE BLOCK    | CAMERON | 4 1/2" 10M            |
| H               | KILL VALVE     | CAMERON | 2 1/2" 10M FLS MANUAL |
| I               | KILL VALVE     | CAMERON | 2 1/2" 10M FLS MANUAL |
| J               | CHECK VALVE    | CAMERON | 2 1/2" 10M "R" CHECK  |
| K               | CHOKE LINE     | GATES   | 4 1/2" 10M FR         |
| L               | KILL LINE      | GATES   | 2 1/2" 10M FR         |
| M               |                |         |                       |



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**Drilling Co., L.L.C.**  
Oklahoma City, OK, U.S.A.  
Tel: 405-577-5347 Fax: 405-577-5906

TITLE:

RIG 170  
BOP STACK-UP

CUSTOMER INFO:  
FILE: R-170\_BOP\_MARATHON.dwg  
DWG BY: IJA  
CHK BY:  
APP BY:

TOLERANCE UNLESS OTHERWISE SPECIFIED  
DIMENSIONS IN INCHES

| DECIMAL       | DIMENSION    |
|---------------|--------------|
| CONCENTRICITY | ±.1          |
| XXX           | ±.06 F.I.R.  |
| XXX           | ±.06 F.I.R.  |
| XXX           | ±.010 F.I.R. |
| ANGLES        | ± .5 DEGREES |

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APP BY:

SCALE: NTS

ACAD FILE: CAC170-A-005-00-RO

BY: DATE: REVISION:

SYM: DIM: 1/8" = 1"

SIZE: B

DATE: 7/13/2021

FILE: R-170\_BOP\_MARATHON.dwg

DWG BY: IJA

CHK BY:

APP BY:

SCALE: NTS

ACAD FILE: CAC170-A-005-00-RO

BY: DATE: REVISION:

SYM: DIM: 1/8" = 1"

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BY: DATE: REVISION:

SYM: DIM: 1/8" = 1"

SIZE: B

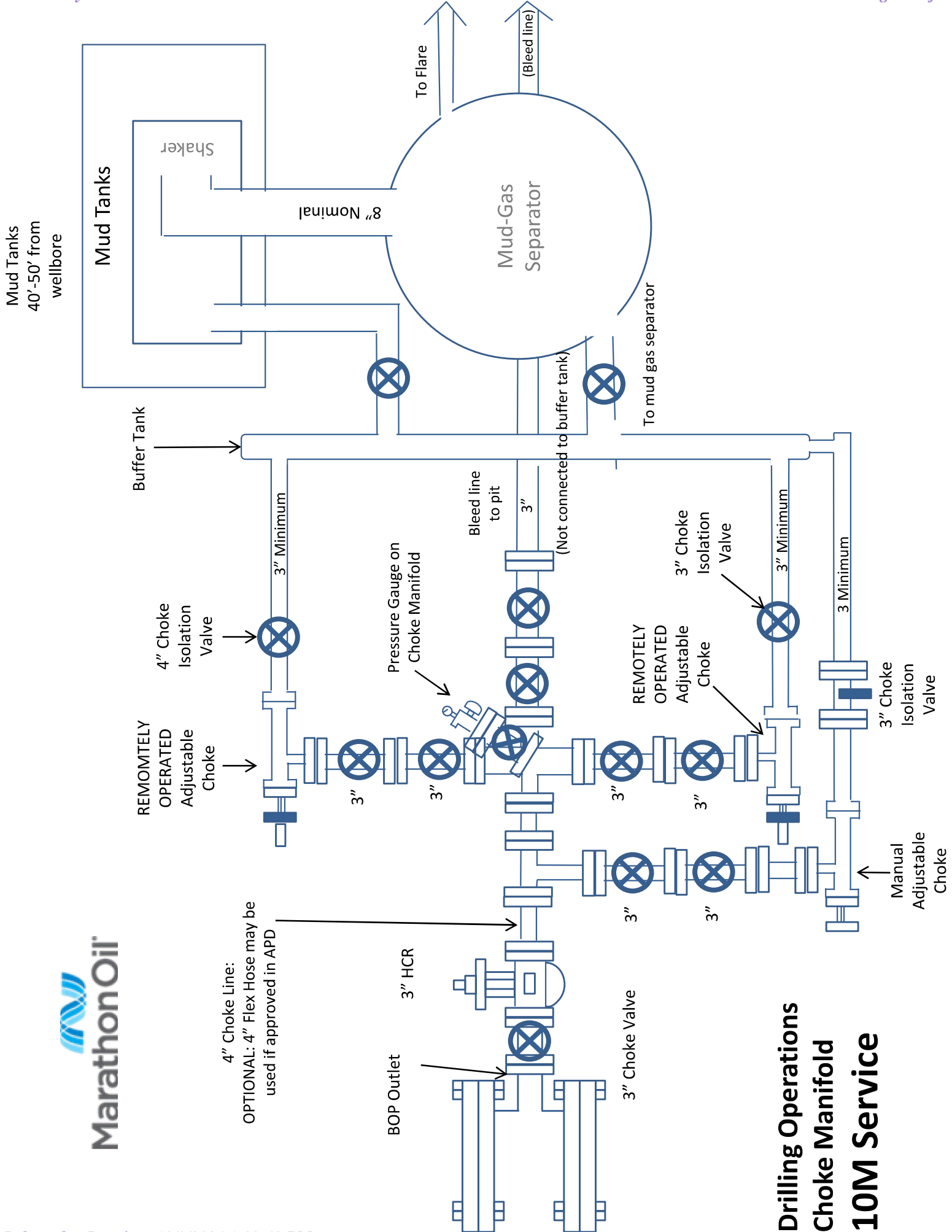
DATE: 7/13/2021

FILE: R-170\_BOP\_MARATHON.dwg

DWG BY: IJA

CHK BY:





**Drilling Operations  
Choke Manifold  
10M Service**

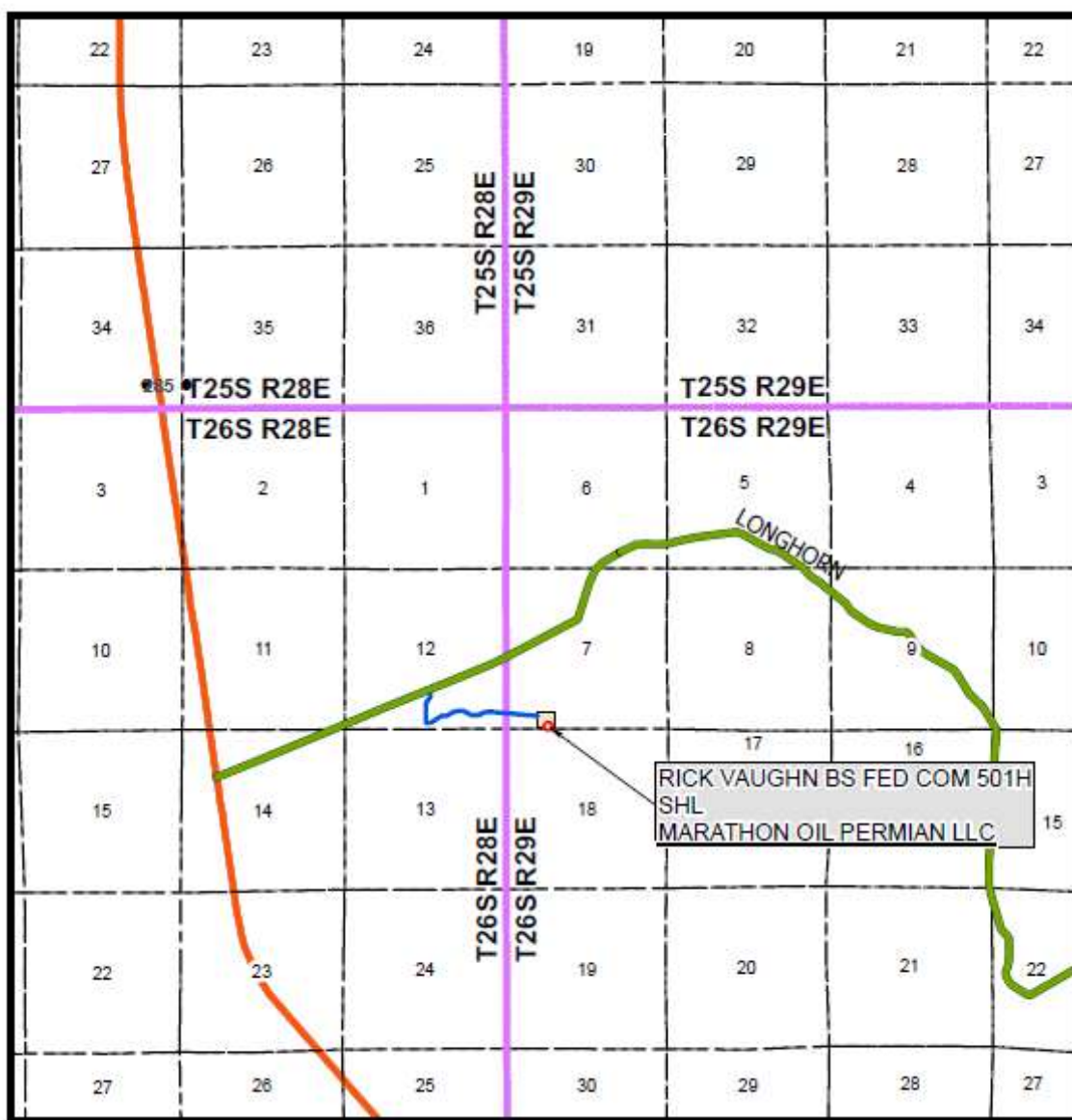


**Hydrogen Sulfide (H<sub>2</sub>S)  
Contingency Plan**

**Rick Vaughn BS Fed Com 501H  
88' FSL & 1394' FWL Sec. 7 T-26S R-29E  
Eddy County NM**

**Marathon Oil Permian, LLC**  
**Rick Vaughn BS Fed Com 501H**

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

**Emergency Procedures**

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

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

**Ignition of Gas Source**

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

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

| Common Name      | Chemical Formula | Specific Gravity | Threshold Limit | Hazardous Limit | Lethal Concentration |
|------------------|------------------|------------------|-----------------|-----------------|----------------------|
| Hydrogen Sulfide | H <sub>2</sub> S | 1.189<br>Air = 1 | 10 ppm          | 100 ppm/hr      | 600 ppm              |
| Sulfur Dioxide   | SO <sub>2</sub>  | 2.21<br>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 (H<sub>2</sub>S) 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 (H<sub>2</sub>S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S Drilling Operations Plan.
- There will be weekly H<sub>2</sub>S and well control drills for all personnel in each crew.

#### **II. HYDROGEN SULFIDE TRAINING**

Note: All H<sub>2</sub>S 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 H<sub>2</sub>S.

- 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**

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

| <b>Emergency Services Area Numbers: Or Call 911</b> |                   |                                                                                                                       |              |
|-----------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------|--------------|
| 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<br>For Life Flight 1 <sup>st</sup> dial 911, nearest helicopter will be determined | 432-561-5049 |



## **Marathon Oil**

**Eddy County, New Mexico (NAD 27)**

**Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad**

**Rick Vaughn BS Fed Com 501H**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**07 July, 2023**





# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

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

|                              |                                                |                     |                  |
|------------------------------|------------------------------------------------|---------------------|------------------|
| <b>Site</b>                  | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |                     |                  |
| <b>Site Position:</b>        |                                                | <b>Northing:</b>    | 382,050.94 usft  |
| <b>From:</b>                 | Map                                            | <b>Easting:</b>     | 594,863.88 usft  |
| <b>Position Uncertainty:</b> | 0.00 usft                                      | <b>Slot Radius:</b> | 13-3/16 "        |
|                              |                                                | <b>Latitude:</b>    | 32° 3' 0.012 N   |
|                              |                                                | <b>Longitude:</b>   | 104° 1' 37.740 W |

|                      |                             |           |                     |                 |               |                  |
|----------------------|-----------------------------|-----------|---------------------|-----------------|---------------|------------------|
| Well                 | Rick Vaughn BS Fed Com 501H |           |                     |                 |               |                  |
| Well Position        | +N/-S                       | 0.00 usft | Northing:           | 382,050.94 usft | Latitude:     | 32° 3' 0.012 N   |
|                      | +E/-W                       | 0.00 usft | Easting:            | 594,863.88 usft | Longitude:    | 104° 1' 37.740 W |
| Position Uncertainty |                             | 0.00 usft | Wellhead Elevation: | usft            | Ground Level: | 2,912.00 usft    |
| Grid Convergence:    | 0.162 °                     |           |                     |                 |               |                  |

|                 |             |  |  |
|-----------------|-------------|--|--|
| <b>Wellbore</b> | Wellbore #1 |  |  |
|-----------------|-------------|--|--|

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | HDGM2023   | 8/8/2023    | 6.483           | 59.533        | 47,356.40           |

|               |           |  |  |
|---------------|-----------|--|--|
| <b>Design</b> | Design #1 |  |  |
|---------------|-----------|--|--|

|                          |                                |                     |                     |                      |      |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| <b>Audit Notes:</b>      |                                |                     |                     |                      |      |
| <b>Version:</b>          |                                | <b>Phase:</b>       | PLAN                | <b>Tie On Depth:</b> | 0.00 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Direction (°)</b> |      |
|                          | 0.00                           | 0.00                | 0.00                | 359.86               |      |

| Plan Survey Tool Program |                 | Date 7/7/2023     |                         |                        |  |
|--------------------------|-----------------|-------------------|-------------------------|------------------------|--|
| Depth From (usft)        | Depth To (usft) | Survey (Wellbore) | Tool Name               | Remarks                |  |
| 1                        | 0.00            | 18,611.12         | Design #1 (Wellbore #1) | MWD+IFR1+FDIR          |  |
|                          |                 |                   |                         | OWSG MWD + IFR1 + FDIR |  |



MS Directional  
Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

| Plan Sections         |                 |             |                       |              |              |                         |                        |                       |         |               |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|---------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target        |  |
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.000   |               |  |
| 1,500.00              | 0.00            | 0.00        | 1,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.000   |               |  |
| 2,074.50              | 11.49           | 270.80      | 2,070.66              | 0.81         | -57.41       | 2.00                    | 2.00                   | 0.00                  | 270.804 |               |  |
| 6,012.10              | 11.49           | 270.80      | 5,929.34              | 11.81        | -841.68      | 0.00                    | 0.00                   | 0.00                  | 0.000   |               |  |
| 6,586.60              | 0.00            | 0.00        | 6,500.00              | 12.62        | -899.09      | 2.00                    | -2.00                  | 0.00                  | 180.000 |               |  |
| 7,971.13              | 0.00            | 0.00        | 7,884.54              | 12.62        | -899.09      | 0.00                    | 0.00                   | 0.00                  | 0.000   |               |  |
| 8,721.13              | 90.00           | 359.86      | 8,362.00              | 490.08       | -900.24      | 12.00                   | 12.00                  | 0.00                  | 359.862 |               |  |
| 18,611.12             | 90.00           | 359.86      | 8,362.00              | 10,380.04    | -924.12      | 0.00                    | 0.00                   | 0.00                  | 0.000   | LTP/PBHL_501H |  |



# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
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| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

| Planned Survey               |                 |             |                       |              |              |                         |                         |                        |                       |
|------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)        | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0.00                         | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 100.00                       | 0.00            | 0.00        | 100.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 200.00                       | 0.00            | 0.00        | 200.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 300.00                       | 0.00            | 0.00        | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 400.00                       | 0.00            | 0.00        | 400.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 500.00                       | 0.00            | 0.00        | 500.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 600.00                       | 0.00            | 0.00        | 600.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 700.00                       | 0.00            | 0.00        | 700.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 800.00                       | 0.00            | 0.00        | 800.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 900.00                       | 0.00            | 0.00        | 900.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,000.00                     | 0.00            | 0.00        | 1,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,100.00                     | 0.00            | 0.00        | 1,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,200.00                     | 0.00            | 0.00        | 1,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,300.00                     | 0.00            | 0.00        | 1,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,400.00                     | 0.00            | 0.00        | 1,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,500.00                     | 0.00            | 0.00        | 1,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| <b>KOP, 2.00°/100' Build</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,600.00                     | 2.00            | 270.80      | 1,599.98              | 0.02         | -1.74        | 0.03                    | 2.00                    | 2.00                   | 0.00                  |
| 1,700.00                     | 4.00            | 270.80      | 1,699.84              | 0.10         | -6.98        | 0.11                    | 2.00                    | 2.00                   | 0.00                  |
| 1,800.00                     | 6.00            | 270.80      | 1,799.45              | 0.22         | -15.69       | 0.26                    | 2.00                    | 2.00                   | 0.00                  |
| 1,900.00                     | 8.00            | 270.80      | 1,898.70              | 0.39         | -27.88       | 0.46                    | 2.00                    | 2.00                   | 0.00                  |
| 2,000.00                     | 10.00           | 270.80      | 1,997.47              | 0.61         | -43.52       | 0.72                    | 2.00                    | 2.00                   | 0.00                  |
| 2,074.50                     | 11.49           | 270.80      | 2,070.66              | 0.81         | -57.41       | 0.95                    | 2.00                    | 2.00                   | 0.00                  |
| <b>Begin 11.49° Tangent</b>  |                 |             |                       |              |              |                         |                         |                        |                       |
| 2,100.00                     | 11.49           | 270.80      | 2,095.65              | 0.88         | -62.49       | 1.03                    | 0.00                    | 0.00                   | 0.00                  |
| 2,200.00                     | 11.49           | 270.80      | 2,193.64              | 1.16         | -82.40       | 1.36                    | 0.00                    | 0.00                   | 0.00                  |
| 2,300.00                     | 11.49           | 270.80      | 2,291.64              | 1.44         | -102.32      | 1.69                    | 0.00                    | 0.00                   | 0.00                  |
| 2,400.00                     | 11.49           | 270.80      | 2,389.63              | 1.72         | -122.24      | 2.01                    | 0.00                    | 0.00                   | 0.00                  |
| 2,500.00                     | 11.49           | 270.80      | 2,487.63              | 2.00         | -142.16      | 2.34                    | 0.00                    | 0.00                   | 0.00                  |
| 2,600.00                     | 11.49           | 270.80      | 2,585.63              | 2.27         | -162.07      | 2.67                    | 0.00                    | 0.00                   | 0.00                  |
| 2,700.00                     | 11.49           | 270.80      | 2,683.62              | 2.55         | -181.99      | 3.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,800.00                     | 11.49           | 270.80      | 2,781.62              | 2.83         | -201.91      | 3.33                    | 0.00                    | 0.00                   | 0.00                  |
| 2,900.00                     | 11.49           | 270.80      | 2,879.61              | 3.11         | -221.83      | 3.66                    | 0.00                    | 0.00                   | 0.00                  |
| 3,000.00                     | 11.49           | 270.80      | 2,977.61              | 3.39         | -241.74      | 3.98                    | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00                     | 11.49           | 270.80      | 3,075.61              | 3.67         | -261.66      | 4.31                    | 0.00                    | 0.00                   | 0.00                  |
| 3,200.00                     | 11.49           | 270.80      | 3,173.60              | 3.95         | -281.58      | 4.64                    | 0.00                    | 0.00                   | 0.00                  |
| 3,300.00                     | 11.49           | 270.80      | 3,271.60              | 4.23         | -301.50      | 4.97                    | 0.00                    | 0.00                   | 0.00                  |
| 3,400.00                     | 11.49           | 270.80      | 3,369.59              | 4.51         | -321.41      | 5.30                    | 0.00                    | 0.00                   | 0.00                  |
| 3,500.00                     | 11.49           | 270.80      | 3,467.59              | 4.79         | -341.33      | 5.63                    | 0.00                    | 0.00                   | 0.00                  |
| 3,600.00                     | 11.49           | 270.80      | 3,565.59              | 5.07         | -361.25      | 5.95                    | 0.00                    | 0.00                   | 0.00                  |
| 3,700.00                     | 11.49           | 270.80      | 3,663.58              | 5.35         | -381.17      | 6.28                    | 0.00                    | 0.00                   | 0.00                  |
| 3,800.00                     | 11.49           | 270.80      | 3,761.58              | 5.63         | -401.09      | 6.61                    | 0.00                    | 0.00                   | 0.00                  |
| 3,900.00                     | 11.49           | 270.80      | 3,859.57              | 5.91         | -421.00      | 6.94                    | 0.00                    | 0.00                   | 0.00                  |
| 4,000.00                     | 11.49           | 270.80      | 3,957.57              | 6.19         | -440.92      | 7.27                    | 0.00                    | 0.00                   | 0.00                  |
| 4,100.00                     | 11.49           | 270.80      | 4,055.57              | 6.47         | -460.84      | 7.59                    | 0.00                    | 0.00                   | 0.00                  |
| 4,200.00                     | 11.49           | 270.80      | 4,153.56              | 6.75         | -480.76      | 7.92                    | 0.00                    | 0.00                   | 0.00                  |
| 4,300.00                     | 11.49           | 270.80      | 4,251.56              | 7.03         | -500.67      | 8.25                    | 0.00                    | 0.00                   | 0.00                  |
| 4,400.00                     | 11.49           | 270.80      | 4,349.55              | 7.31         | -520.59      | 8.58                    | 0.00                    | 0.00                   | 0.00                  |
| 4,500.00                     | 11.49           | 270.80      | 4,447.55              | 7.59         | -540.51      | 8.91                    | 0.00                    | 0.00                   | 0.00                  |
| 4,600.00                     | 11.49           | 270.80      | 4,545.55              | 7.87         | -560.43      | 9.24                    | 0.00                    | 0.00                   | 0.00                  |
| 4,700.00                     | 11.49           | 270.80      | 4,643.54              | 8.15         | -580.34      | 9.56                    | 0.00                    | 0.00                   | 0.00                  |
| 4,800.00                     | 11.49           | 270.80      | 4,741.54              | 8.43         | -600.26      | 9.89                    | 0.00                    | 0.00                   | 0.00                  |





# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

| Planned Survey                |                 |             |                       |              |              |                         |                         |                        |                       |
|-------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)         | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 4,900.00                      | 11.49           | 270.80      | 4,839.53              | 8.71         | -620.18      | 10.22                   | 0.00                    | 0.00                   | 0.00                  |
| 5,000.00                      | 11.49           | 270.80      | 4,937.53              | 8.98         | -640.10      | 10.55                   | 0.00                    | 0.00                   | 0.00                  |
| 5,100.00                      | 11.49           | 270.80      | 5,035.52              | 9.26         | -660.02      | 10.88                   | 0.00                    | 0.00                   | 0.00                  |
| 5,200.00                      | 11.49           | 270.80      | 5,133.52              | 9.54         | -679.93      | 11.21                   | 0.00                    | 0.00                   | 0.00                  |
| 5,300.00                      | 11.49           | 270.80      | 5,231.52              | 9.82         | -699.85      | 11.53                   | 0.00                    | 0.00                   | 0.00                  |
| 5,400.00                      | 11.49           | 270.80      | 5,329.51              | 10.10        | -719.77      | 11.86                   | 0.00                    | 0.00                   | 0.00                  |
| 5,500.00                      | 11.49           | 270.80      | 5,427.51              | 10.38        | -739.69      | 12.19                   | 0.00                    | 0.00                   | 0.00                  |
| 5,600.00                      | 11.49           | 270.80      | 5,525.50              | 10.66        | -759.60      | 12.52                   | 0.00                    | 0.00                   | 0.00                  |
| 5,700.00                      | 11.49           | 270.80      | 5,623.50              | 10.94        | -779.52      | 12.85                   | 0.00                    | 0.00                   | 0.00                  |
| 5,800.00                      | 11.49           | 270.80      | 5,721.50              | 11.22        | -799.44      | 13.17                   | 0.00                    | 0.00                   | 0.00                  |
| 5,900.00                      | 11.49           | 270.80      | 5,819.49              | 11.50        | -819.36      | 13.50                   | 0.00                    | 0.00                   | 0.00                  |
| 6,000.00                      | 11.49           | 270.80      | 5,917.49              | 11.78        | -839.27      | 13.83                   | 0.00                    | 0.00                   | 0.00                  |
| 6,012.10                      | 11.49           | 270.80      | 5,929.34              | 11.81        | -841.68      | 13.87                   | 0.00                    | 0.00                   | 0.00                  |
| <b>Begin 2.00°/100' Drop</b>  |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,100.00                      | 9.73            | 270.80      | 6,015.74              | 12.04        | -857.87      | 14.14                   | 2.00                    | -2.00                  | 0.00                  |
| 6,200.00                      | 7.73            | 270.80      | 6,114.58              | 12.25        | -873.05      | 14.39                   | 2.00                    | -2.00                  | 0.00                  |
| 6,300.00                      | 5.73            | 270.80      | 6,213.88              | 12.42        | -884.77      | 14.58                   | 2.00                    | -2.00                  | 0.00                  |
| 6,400.00                      | 3.73            | 270.80      | 6,313.54              | 12.53        | -893.02      | 14.72                   | 2.00                    | -2.00                  | 0.00                  |
| 6,500.00                      | 1.73            | 270.80      | 6,413.42              | 12.60        | -897.78      | 14.80                   | 2.00                    | -2.00                  | 0.00                  |
| 6,586.60                      | 0.00            | 0.00        | 6,500.00              | 12.62        | -899.09      | 14.82                   | 2.00                    | -2.00                  | 0.00                  |
| <b>Begin Vertical Hold</b>    |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,600.00                      | 0.00            | 0.00        | 6,513.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00                      | 0.00            | 0.00        | 6,613.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 6,800.00                      | 0.00            | 0.00        | 6,713.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 6,900.00                      | 0.00            | 0.00        | 6,813.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00                      | 0.00            | 0.00        | 6,913.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00                      | 0.00            | 0.00        | 7,013.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00                      | 0.00            | 0.00        | 7,113.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,300.00                      | 0.00            | 0.00        | 7,213.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,400.00                      | 0.00            | 0.00        | 7,313.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,500.00                      | 0.00            | 0.00        | 7,413.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,600.00                      | 0.00            | 0.00        | 7,513.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,700.00                      | 0.00            | 0.00        | 7,613.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,800.00                      | 0.00            | 0.00        | 7,713.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,900.00                      | 0.00            | 0.00        | 7,813.40              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| 7,971.13                      | 0.00            | 0.00        | 7,884.54              | 12.62        | -899.09      | 14.82                   | 0.00                    | 0.00                   | 0.00                  |
| <b>KOP, 12.00°/100' Build</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,975.00                      | 0.46            | 359.86      | 7,888.40              | 12.64        | -899.09      | 14.83                   | 12.00                   | 12.00                  | 0.00                  |
| 8,000.00                      | 3.46            | 359.86      | 7,913.39              | 13.49        | -899.09      | 15.69                   | 12.00                   | 12.00                  | 0.00                  |
| 8,025.00                      | 6.46            | 359.86      | 7,938.29              | 15.66        | -899.10      | 17.85                   | 12.00                   | 12.00                  | 0.00                  |
| 8,050.00                      | 9.46            | 359.86      | 7,963.05              | 19.12        | -899.11      | 21.32                   | 12.00                   | 12.00                  | 0.00                  |
| 8,075.00                      | 12.46           | 359.86      | 7,987.59              | 23.87        | -899.12      | 26.07                   | 12.00                   | 12.00                  | 0.00                  |
| 8,100.00                      | 15.46           | 359.86      | 8,011.84              | 29.91        | -899.13      | 32.10                   | 12.00                   | 12.00                  | 0.00                  |
| 8,125.00                      | 18.46           | 359.86      | 8,035.75              | 37.20        | -899.15      | 39.40                   | 12.00                   | 12.00                  | 0.00                  |
| 8,150.00                      | 21.46           | 359.86      | 8,059.25              | 45.73        | -899.17      | 47.93                   | 12.00                   | 12.00                  | 0.00                  |
| 8,175.00                      | 24.46           | 359.86      | 8,082.26              | 55.49        | -899.19      | 57.68                   | 12.00                   | 12.00                  | 0.00                  |
| 8,200.00                      | 27.46           | 359.86      | 8,104.74              | 66.43        | -899.22      | 68.63                   | 12.00                   | 12.00                  | 0.00                  |
| 8,225.00                      | 30.46           | 359.86      | 8,126.61              | 78.54        | -899.25      | 80.73                   | 12.00                   | 12.00                  | 0.00                  |
| 8,250.00                      | 33.46           | 359.86      | 8,147.82              | 91.77        | -899.28      | 93.97                   | 12.00                   | 12.00                  | 0.00                  |
| 8,275.00                      | 36.46           | 359.86      | 8,168.30              | 106.09       | -899.32      | 108.29                  | 12.00                   | 12.00                  | 0.00                  |
| 8,300.00                      | 39.46           | 359.86      | 8,188.01              | 121.47       | -899.35      | 123.67                  | 12.00                   | 12.00                  | 0.00                  |
| 8,325.00                      | 42.46           | 359.86      | 8,206.89              | 137.86       | -899.39      | 140.06                  | 12.00                   | 12.00                  | 0.00                  |



# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

## Planned Survey

| Measured Depth (usft)       | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,350.00                    | 45.46           | 359.86      | 8,224.88              | 155.21       | -899.43      | 157.41                  | 12.00                   | 12.00                  | 0.00                  |
| 8,375.00                    | 48.46           | 359.86      | 8,241.94              | 173.48       | -899.48      | 175.68                  | 12.00                   | 12.00                  | 0.00                  |
| 8,400.00                    | 51.46           | 359.86      | 8,258.02              | 192.62       | -899.52      | 194.82                  | 12.00                   | 12.00                  | 0.00                  |
| 8,425.00                    | 54.46           | 359.86      | 8,273.07              | 212.58       | -899.57      | 214.77                  | 12.00                   | 12.00                  | 0.00                  |
| 8,450.00                    | 57.46           | 359.86      | 8,287.06              | 233.29       | -899.62      | 235.49                  | 12.00                   | 12.00                  | 0.00                  |
| 8,475.00                    | 60.46           | 359.86      | 8,299.95              | 254.71       | -899.67      | 256.91                  | 12.00                   | 12.00                  | 0.00                  |
| 8,500.00                    | 63.46           | 359.86      | 8,311.70              | 276.77       | -899.73      | 278.97                  | 12.00                   | 12.00                  | 0.00                  |
| 8,525.00                    | 66.46           | 359.86      | 8,322.28              | 299.42       | -899.78      | 301.62                  | 12.00                   | 12.00                  | 0.00                  |
| 8,550.00                    | 69.46           | 359.86      | 8,331.66              | 322.59       | -899.84      | 324.79                  | 12.00                   | 12.00                  | 0.00                  |
| 8,575.00                    | 72.46           | 359.86      | 8,339.81              | 346.22       | -899.90      | 348.42                  | 12.00                   | 12.00                  | 0.00                  |
| 8,600.00                    | 75.46           | 359.86      | 8,346.72              | 370.25       | -899.95      | 372.44                  | 12.00                   | 12.00                  | 0.00                  |
| 8,625.00                    | 78.46           | 359.86      | 8,352.36              | 394.60       | -900.01      | 396.80                  | 12.00                   | 12.00                  | 0.00                  |
| 8,650.00                    | 81.46           | 359.86      | 8,356.71              | 419.21       | -900.07      | 421.41                  | 12.00                   | 12.00                  | 0.00                  |
| 8,675.00                    | 84.46           | 359.86      | 8,359.77              | 444.02       | -900.13      | 446.22                  | 12.00                   | 12.00                  | 0.00                  |
| 8,700.00                    | 87.46           | 359.86      | 8,361.53              | 468.96       | -900.19      | 471.16                  | 12.00                   | 12.00                  | 0.00                  |
| 8,721.13                    | 90.00           | 359.86      | 8,362.00              | 490.08       | -900.24      | 492.28                  | 12.00                   | 12.00                  | 0.00                  |
| <b>Begin 90.00° Lateral</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,800.00                    | 90.00           | 359.86      | 8,362.00              | 568.95       | -900.43      | 571.15                  | 0.00                    | 0.00                   | 0.00                  |
| 8,900.00                    | 90.00           | 359.86      | 8,362.00              | 668.95       | -900.67      | 671.15                  | 0.00                    | 0.00                   | 0.00                  |
| 9,000.00                    | 90.00           | 359.86      | 8,362.00              | 768.95       | -900.92      | 771.15                  | 0.00                    | 0.00                   | 0.00                  |
| 9,100.00                    | 90.00           | 359.86      | 8,362.00              | 868.95       | -901.16      | 871.15                  | 0.00                    | 0.00                   | 0.00                  |
| 9,200.00                    | 90.00           | 359.86      | 8,362.00              | 968.95       | -901.40      | 971.15                  | 0.00                    | 0.00                   | 0.00                  |
| 9,300.00                    | 90.00           | 359.86      | 8,362.00              | 1,068.95     | -901.64      | 1,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,400.00                    | 90.00           | 359.86      | 8,362.00              | 1,168.95     | -901.88      | 1,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,500.00                    | 90.00           | 359.86      | 8,362.00              | 1,268.95     | -902.12      | 1,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,600.00                    | 90.00           | 359.86      | 8,362.00              | 1,368.95     | -902.36      | 1,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,700.00                    | 90.00           | 359.86      | 8,362.00              | 1,468.95     | -902.61      | 1,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,800.00                    | 90.00           | 359.86      | 8,362.00              | 1,568.95     | -902.85      | 1,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,900.00                    | 90.00           | 359.86      | 8,362.00              | 1,668.95     | -903.09      | 1,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,000.00                   | 90.00           | 359.86      | 8,362.00              | 1,768.95     | -903.33      | 1,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,100.00                   | 90.00           | 359.86      | 8,362.00              | 1,868.95     | -903.57      | 1,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,200.00                   | 90.00           | 359.86      | 8,362.00              | 1,968.95     | -903.81      | 1,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,300.00                   | 90.00           | 359.86      | 8,362.00              | 2,068.95     | -904.05      | 2,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,400.00                   | 90.00           | 359.86      | 8,362.00              | 2,168.95     | -904.30      | 2,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,500.00                   | 90.00           | 359.86      | 8,362.00              | 2,268.95     | -904.54      | 2,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,600.00                   | 90.00           | 359.86      | 8,362.00              | 2,368.95     | -904.78      | 2,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,700.00                   | 90.00           | 359.86      | 8,362.00              | 2,468.95     | -905.02      | 2,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,800.00                   | 90.00           | 359.86      | 8,362.00              | 2,568.95     | -905.26      | 2,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 10,900.00                   | 90.00           | 359.86      | 8,362.00              | 2,668.95     | -905.50      | 2,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,000.00                   | 90.00           | 359.86      | 8,362.00              | 2,768.94     | -905.74      | 2,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,100.00                   | 90.00           | 359.86      | 8,362.00              | 2,868.94     | -905.99      | 2,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,200.00                   | 90.00           | 359.86      | 8,362.00              | 2,968.94     | -906.23      | 2,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,300.00                   | 90.00           | 359.86      | 8,362.00              | 3,068.94     | -906.47      | 3,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,400.00                   | 90.00           | 359.86      | 8,362.00              | 3,168.94     | -906.71      | 3,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,500.00                   | 90.00           | 359.86      | 8,362.00              | 3,268.94     | -906.95      | 3,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,600.00                   | 90.00           | 359.86      | 8,362.00              | 3,368.94     | -907.19      | 3,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,700.00                   | 90.00           | 359.86      | 8,362.00              | 3,468.94     | -907.43      | 3,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,800.00                   | 90.00           | 359.86      | 8,362.00              | 3,568.94     | -907.68      | 3,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 11,900.00                   | 90.00           | 359.86      | 8,362.00              | 3,668.94     | -907.92      | 3,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,000.00                   | 90.00           | 359.86      | 8,362.00              | 3,768.94     | -908.16      | 3,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,100.00                   | 90.00           | 359.86      | 8,362.00              | 3,868.94     | -908.40      | 3,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,200.00                   | 90.00           | 359.86      | 8,362.00              | 3,968.94     | -908.64      | 3,971.15                | 0.00                    | 0.00                   | 0.00                  |



# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

## 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) |
|----------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 12,300.00                        | 90.00           | 359.86      | 8,362.00              | 4,068.94     | -908.88      | 4,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,400.00                        | 90.00           | 359.86      | 8,362.00              | 4,168.94     | -909.12      | 4,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,500.00                        | 90.00           | 359.86      | 8,362.00              | 4,268.94     | -909.37      | 4,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,600.00                        | 90.00           | 359.86      | 8,362.00              | 4,368.94     | -909.61      | 4,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,700.00                        | 90.00           | 359.86      | 8,362.00              | 4,468.94     | -909.85      | 4,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,800.00                        | 90.00           | 359.86      | 8,362.00              | 4,568.94     | -910.09      | 4,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 12,900.00                        | 90.00           | 359.86      | 8,362.00              | 4,668.94     | -910.33      | 4,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,000.00                        | 90.00           | 359.86      | 8,362.00              | 4,768.94     | -910.57      | 4,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,100.00                        | 90.00           | 359.86      | 8,362.00              | 4,868.94     | -910.81      | 4,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,200.00                        | 90.00           | 359.86      | 8,362.00              | 4,968.94     | -911.06      | 4,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,300.00                        | 90.00           | 359.86      | 8,362.00              | 5,068.94     | -911.30      | 5,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,400.00                        | 90.00           | 359.86      | 8,362.00              | 5,168.94     | -911.54      | 5,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,420.38                        | 90.00           | 359.86      | 8,362.00              | 5,189.32     | -911.59      | 5,191.53                | 0.00                    | 0.00                   | 0.00                  |
| <b>Pass PPP-2 _ 13420.38' MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 13,500.00                        | 90.00           | 359.86      | 8,362.00              | 5,268.94     | -911.78      | 5,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,600.00                        | 90.00           | 359.86      | 8,362.00              | 5,368.94     | -912.02      | 5,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,700.00                        | 90.00           | 359.86      | 8,362.00              | 5,468.94     | -912.26      | 5,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,800.00                        | 90.00           | 359.86      | 8,362.00              | 5,568.94     | -912.50      | 5,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 13,900.00                        | 90.00           | 359.86      | 8,362.00              | 5,668.94     | -912.75      | 5,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,000.00                        | 90.00           | 359.86      | 8,362.00              | 5,768.94     | -912.99      | 5,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,100.00                        | 90.00           | 359.86      | 8,362.00              | 5,868.94     | -913.23      | 5,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,200.00                        | 90.00           | 359.86      | 8,362.00              | 5,968.94     | -913.47      | 5,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,300.00                        | 90.00           | 359.86      | 8,362.00              | 6,068.94     | -913.71      | 6,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,400.00                        | 90.00           | 359.86      | 8,362.00              | 6,168.94     | -913.95      | 6,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,500.00                        | 90.00           | 359.86      | 8,362.00              | 6,268.93     | -914.19      | 6,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,600.00                        | 90.00           | 359.86      | 8,362.00              | 6,368.93     | -914.44      | 6,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,700.00                        | 90.00           | 359.86      | 8,362.00              | 6,468.93     | -914.68      | 6,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,735.85                        | 90.00           | 359.86      | 8,362.00              | 6,504.78     | -914.76      | 6,507.00                | 0.00                    | 0.00                   | 0.00                  |
| <b>Pass PPP-3 _ 14735.85' MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 14,800.00                        | 90.00           | 359.86      | 8,362.00              | 6,568.93     | -914.92      | 6,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 14,900.00                        | 90.00           | 359.86      | 8,362.00              | 6,668.93     | -915.16      | 6,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,000.00                        | 90.00           | 359.86      | 8,362.00              | 6,768.93     | -915.40      | 6,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,100.00                        | 90.00           | 359.86      | 8,362.00              | 6,868.93     | -915.64      | 6,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,200.00                        | 90.00           | 359.86      | 8,362.00              | 6,968.93     | -915.88      | 6,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,300.00                        | 90.00           | 359.86      | 8,362.00              | 7,068.93     | -916.13      | 7,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,400.00                        | 90.00           | 359.86      | 8,362.00              | 7,168.93     | -916.37      | 7,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,500.00                        | 90.00           | 359.86      | 8,362.00              | 7,268.93     | -916.61      | 7,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,600.00                        | 90.00           | 359.86      | 8,362.00              | 7,368.93     | -916.85      | 7,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,700.00                        | 90.00           | 359.86      | 8,362.00              | 7,468.93     | -917.09      | 7,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,800.00                        | 90.00           | 359.86      | 8,362.00              | 7,568.93     | -917.33      | 7,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 15,900.00                        | 90.00           | 359.86      | 8,362.00              | 7,668.93     | -917.57      | 7,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,000.00                        | 90.00           | 359.86      | 8,362.00              | 7,768.93     | -917.82      | 7,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,051.30                        | 90.00           | 359.86      | 8,362.00              | 7,820.23     | -917.94      | 7,822.45                | 0.00                    | 0.00                   | 0.00                  |
| <b>Pass PPP-4 _ 16051.30' MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 16,100.00                        | 90.00           | 359.86      | 8,362.00              | 7,868.93     | -918.06      | 7,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,200.00                        | 90.00           | 359.86      | 8,362.00              | 7,968.93     | -918.30      | 7,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,300.00                        | 90.00           | 359.86      | 8,362.00              | 8,068.93     | -918.54      | 8,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,400.00                        | 90.00           | 359.86      | 8,362.00              | 8,168.93     | -918.78      | 8,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,500.00                        | 90.00           | 359.86      | 8,362.00              | 8,268.93     | -919.02      | 8,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,600.00                        | 90.00           | 359.86      | 8,362.00              | 8,368.93     | -919.26      | 8,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,700.00                        | 90.00           | 359.86      | 8,362.00              | 8,468.93     | -919.51      | 8,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 16,800.00                        | 90.00           | 359.86      | 8,362.00              | 8,568.93     | -919.75      | 8,571.15                | 0.00                    | 0.00                   | 0.00                  |



# MS Directional Planning Report



|                  |                                                |                                     |                                                     |
|------------------|------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| <b>Database:</b> | EDM 5000.15 Conroe DB                          | <b>Local Co-ordinate Reference:</b> | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| <b>Company:</b>  | Marathon Oil                                   | <b>TVD Reference:</b>               | WELL @ 2939.00usft (Precision 580)                  |
| <b>Project:</b>  | Eddy County, New Mexico (NAD 27)               | <b>MD Reference:</b>                | WELL @ 2939.00usft (Precision 580)                  |
| <b>Site:</b>     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | <b>North Reference:</b>             | Grid                                                |
| <b>Well:</b>     | Rick Vaughn BS Fed Com 501H                    | <b>Survey Calculation Method:</b>   | Minimum Curvature                                   |
| <b>Wellbore:</b> | Wellbore #1                                    |                                     |                                                     |
| <b>Design:</b>   | Design #1                                      |                                     |                                                     |

## Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 16,900.00             | 90.00           | 359.86      | 8,362.00              | 8,668.93     | -919.99      | 8,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,000.00             | 90.00           | 359.86      | 8,362.00              | 8,768.93     | -920.23      | 8,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,100.00             | 90.00           | 359.86      | 8,362.00              | 8,868.93     | -920.47      | 8,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,200.00             | 90.00           | 359.86      | 8,362.00              | 8,968.93     | -920.71      | 8,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,300.00             | 90.00           | 359.86      | 8,362.00              | 9,068.93     | -920.95      | 9,071.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,400.00             | 90.00           | 359.86      | 8,362.00              | 9,168.93     | -921.20      | 9,171.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,500.00             | 90.00           | 359.86      | 8,362.00              | 9,268.93     | -921.44      | 9,271.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,600.00             | 90.00           | 359.86      | 8,362.00              | 9,368.93     | -921.68      | 9,371.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,700.00             | 90.00           | 359.86      | 8,362.00              | 9,468.93     | -921.92      | 9,471.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,800.00             | 90.00           | 359.86      | 8,362.00              | 9,568.93     | -922.16      | 9,571.15                | 0.00                    | 0.00                   | 0.00                  |
| 17,900.00             | 90.00           | 359.86      | 8,362.00              | 9,668.92     | -922.40      | 9,671.15                | 0.00                    | 0.00                   | 0.00                  |
| 18,000.00             | 90.00           | 359.86      | 8,362.00              | 9,768.92     | -922.64      | 9,771.15                | 0.00                    | 0.00                   | 0.00                  |
| 18,100.00             | 90.00           | 359.86      | 8,362.00              | 9,868.92     | -922.89      | 9,871.15                | 0.00                    | 0.00                   | 0.00                  |
| 18,200.00             | 90.00           | 359.86      | 8,362.00              | 9,968.92     | -923.13      | 9,971.15                | 0.00                    | 0.00                   | 0.00                  |
| 18,300.00             | 90.00           | 359.86      | 8,362.00              | 10,068.92    | -923.37      | 10,071.15               | 0.00                    | 0.00                   | 0.00                  |
| 18,400.00             | 90.00           | 359.86      | 8,362.00              | 10,168.92    | -923.61      | 10,171.15               | 0.00                    | 0.00                   | 0.00                  |
| 18,500.00             | 90.00           | 359.86      | 8,362.00              | 10,268.92    | -923.85      | 10,271.15               | 0.00                    | 0.00                   | 0.00                  |
| 18,600.00             | 90.00           | 359.86      | 8,362.00              | 10,368.92    | -924.09      | 10,371.15               | 0.00                    | 0.00                   | 0.00                  |
| 18,611.12             | 90.00           | 359.86      | 8,362.00              | 10,380.04    | -924.12      | 10,382.27               | 0.00                    | 0.00                   | 0.00                  |
| PBHL                  |                 |             |                       |              |              |                         |                         |                        |                       |

## Design Targets

| Target Name                                                                                    | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude        | Longitude        |
|------------------------------------------------------------------------------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------------|------------------|
| - hit/miss target                                                                              |               |              |            |              |              |                 |                |                 |                  |
| - Shape                                                                                        |               |              |            |              |              |                 |                |                 |                  |
| KOP/FTP/PPP-1_501                                                                              | 0.00          | 0.00         | 0.00       | 12.62        | -899.09      | 382,063.56      | 593,964.79     | 32° 3' 0.162 N  | 104° 1' 48.186 W |
| - plan misses target center by 899.18usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)            |               |              |            |              |              |                 |                |                 |                  |
| - Point                                                                                        |               |              |            |              |              |                 |                |                 |                  |
| PPP-3_501H                                                                                     | 0.00          | 0.00         | 8,362.00   | 6,504.78     | -914.77      | 388,555.72      | 593,949.11     | 32° 4' 4.412 N  | 104° 1' 48.156 W |
| - plan misses target center by 0.01usft at 14735.85usft MD (8362.00 TVD, 6504.78 N, -914.76 E) |               |              |            |              |              |                 |                |                 |                  |
| - Point                                                                                        |               |              |            |              |              |                 |                |                 |                  |
| LTP/PBHL_501H                                                                                  | 0.00          | 0.00         | 8,362.00   | 10,380.04    | -924.12      | 392,430.98      | 593,939.76     | 32° 4' 42.763 N | 104° 1' 48.138 W |
| - plan hits target center                                                                      |               |              |            |              |              |                 |                |                 |                  |
| - Point                                                                                        |               |              |            |              |              |                 |                |                 |                  |
| PPP-2_501H                                                                                     | 0.00          | 0.00         | 8,362.00   | 5,189.32     | -911.59      | 387,240.26      | 593,952.29     | 32° 3' 51.393 N | 104° 1' 48.162 W |
| - plan hits target center                                                                      |               |              |            |              |              |                 |                |                 |                  |
| - Point                                                                                        |               |              |            |              |              |                 |                |                 |                  |
| PPP-4_501H                                                                                     | 0.00          | 0.00         | 8,362.00   | 7,820.23     | -917.94      | 389,871.17      | 593,945.94     | 32° 4' 17.430 N | 104° 1' 48.150 W |
| - plan hits target center                                                                      |               |              |            |              |              |                 |                |                 |                  |
| - Point                                                                                        |               |              |            |              |              |                 |                |                 |                  |



MS Directional  
Planning Report



|           |                                                |                              |                                                     |
|-----------|------------------------------------------------|------------------------------|-----------------------------------------------------|
| Database: | EDM 5000.15 Conroe DB                          | Local Co-ordinate Reference: | Site Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad |
| Company:  | Marathon Oil                                   | TVD Reference:               | WELL @ 2939.00usft (Precision 580)                  |
| Project:  | Eddy County, New Mexico (NAD 27)               | MD Reference:                | WELL @ 2939.00usft (Precision 580)                  |
| Site:     | Rick Vaughn (501H, 502H, 503H, 811H, 812H) Pad | North Reference:             | Grid                                                |
| Well:     | Rick Vaughn BS Fed Com 501H                    | Survey Calculation Method:   | Minimum Curvature                                   |
| Wellbore: | Wellbore #1                                    |                              |                                                     |
| Design:   | Design #1                                      |                              |                                                     |

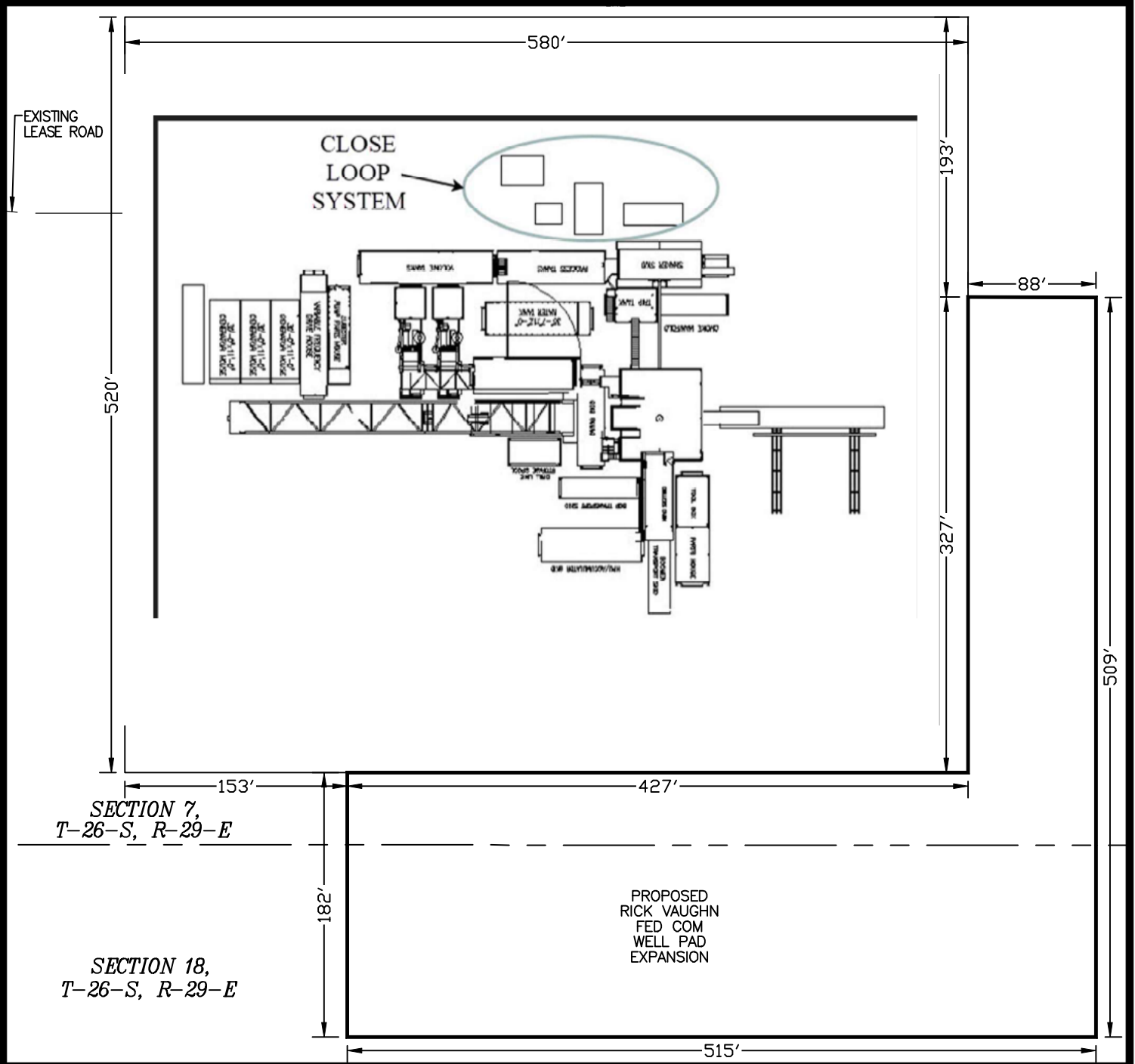
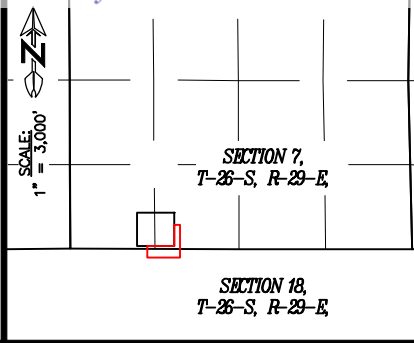
| Plan Annotations      |                       |                   |              |                           |
|-----------------------|-----------------------|-------------------|--------------|---------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                   |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                           |
| 1,500.00              | 1,500.00              | 0.00              | 0.00         | KOP, 2.00°/100' Build     |
| 2,074.50              | 2,070.66              | 0.81              | -57.41       | Begin 11.49° Tangent      |
| 6,012.10              | 5,929.34              | 11.81             | -841.68      | Begin 2.00°/100' Drop     |
| 6,586.60              | 6,500.00              | 12.62             | -899.09      | Begin Vertical Hold       |
| 7,971.13              | 7,884.54              | 12.62             | -899.09      | KOP, 12.00°/100' Build    |
| 8,721.13              | 8,362.00              | 490.08            | -900.24      | Begin 90.00° Lateral      |
| 13,420.38             | 8,362.00              | 5,189.32          | -911.59      | Pass PPP-2 _ 13420.38' MD |
| 14,735.85             | 8,362.00              | 6,504.78          | -914.76      | Pass PPP-3 _ 14735.85' MD |
| 16,051.30             | 8,362.00              | 7,820.23          | -917.94      | Pass PPP-4 _ 16051.30' MD |
| 18,611.12             | 8,362.00              | 10,380.04         | -924.12      | PBHL                      |



# RIG LAYOUT

RICK VAUGHN FED COM  
SEC. 7 & 18 TWP. 26-S RGE. 29-E  
SURVEY: N.M.P.M.  
COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC  
U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M., TX.



**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.

50' 0' 50' 100'

SCALE: 1" = 100'

REV 0 04/24/2023 ANC

JUNE 19, 2023



DAVID W. MYERS 11403

SHEET 4 OF 5

PREPARED BY:  
DELTA FIELD SERVICES, LLC  
D/B/A R-SQUARED GLOBAL, LLC  
510 TRENTON ST.  
WEST MONROE, LA 71291  
318-323-6900 OFFICE  
JOB No. R3961\_015

MARATHON OIL PERMIAN, LLC.  
**DRILLING AND OPERATIONS PLAN**



WELL NAME & NUMBER: **RICK VAUGHN BS FED COM 501H**  
LOCATION: SECTION **7** TOWNSHIP **26S** RANGE **29E**  
**EDDY** COUNTY, **NEW MEXICO**

**Section 1: GEOLOGICAL FORMATIONS**

Name of Surface Formation: Permian  
Elevation: 2912 feet

Estimated Tops of Important Geological Markers:

| Formation                 | TVD (ft) | MD (ft) | Elevation (ft SS) | Lithologies                | Mineral Resources | Producing Formation? |
|---------------------------|----------|---------|-------------------|----------------------------|-------------------|----------------------|
| Rustler                   | 309      | 309     | 2603              | Anhydrite                  | Brine             | No                   |
| Salado                    | 506      | 506     | 2406              | Salt/Anhydrite             | Brine             | No                   |
| Castile                   | 962      | 962     | 1950              | Salt/Anhydrite             | Brine             | No                   |
| Base of Salt (BX)         | 2520     | 2520    | 392               | Salt/Anhydrite             | Brine             | No                   |
| Lamar                     | 2694     | 2694    | 218               | Sandstone/Shale            | None              | No                   |
| Bell Canyon               | 2720     | 2720    | 192               | Sandstone                  | Oil               | No                   |
| Cherry Canyon             | 3692     | 3692    | -780              | Sandstone                  | Oil               | No                   |
| Brushy Canyon             | 4808     | 4808    | -1896             | Sandstone                  | Oil               | No                   |
| Bone Spring Lime          | 6352     | 6352    | -3440             | Limestone                  | None              | No                   |
| Upper Avalon Shale        | 6387     | 6387    | -3475             | Shale                      | Oil               | Yes                  |
| 1st Bone Spring Sand      | 7358     | 7358    | -4446             | Sandstone                  | Oil               | Yes                  |
| 2nd Bone Spring Carbonate | 7615     | 7615    | -4703             | Limestone/Shale            | None              | No                   |
| 2nd Bone Spring Sand      | 8166     | 8166    | -5254             | Sandstone                  | Oil               | Yes                  |
| 3rd Bone Spring Carbonate | 8512     | 8512    | -5600             | Limestone                  | Oil               | No                   |
| 3rd Bone Spring Sand      | 9183     | 9183    | -6271             | Sandstone                  | Oil               | Yes                  |
| Wolfcamp                  | 9546     | 9546    | -6634             | Sandstone/Shale/Carbonates | Natural Gas / Oil | Yes                  |
| Wolfcamp A                | 9650     | 9650    | -6738             | Sandstone/Shale/Carbonates | Natural Gas / Oil | Yes                  |
| Wolfcamp B                | 9944     | 9944    | -7032             | Sandstone/Shale/Carbonates | Natural Gas / Oil | No                   |
| Wolfcamp C                | 10241    | 10241   | -7329             | Sandstone/Shale/Carbonates | Natural Gas / Oil | No                   |
| Wolfcamp D                | 10835    | 10835   | -7923             | 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 use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.

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 hole, 10,000psi for the BOP Stacking before drilling the production hole. Testing will be conducted by an independent service company per Onshore Order 2 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 Onshore Order #2. 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 Onshore Oil and Gas Order #2 III.B.1.i. A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 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.



Marathon Oil Permian LLC.

Drilling & Operations Plan - Page 2 of 4

Section 3: CASING PROGRAM

| String Type                                                                                 | Hole Size | Casing Size | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Weight (lbs/ft) | Grade  | Joint Type | Collapse SF                        | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---------------------------------------------------------------------------------------------|-----------|-------------|------------|---------------|-------------|----------------|-------------|----------------|-----------------|--------|------------|------------------------------------|----------|---------------|----------|--------------|---------|
| Surface                                                                                     | 17.5      | 13.375      | 0          | 350           | 0           | 350            | 2912        | 2562           | 54.5            | J55    | BTC        | 5.22                               | 1.81     | BUOY          | 4.52     | BUOY         | 4.52    |
| Intermediate                                                                                | 12.25     | 9.625       | 0          | 7871          | 0           | 7784           | 2912        | -4872          | 40              | P110HC | BTC        | 1.20                               | 1.42     | BUOY          | 2.44     | BUOY         | 2.44    |
| Production                                                                                  | 8.75      | 5.5         | 0          | 18611         | 0           | 8362           | 2912        | -5450          | 23              | P110HC | TLW        | 2.53                               | 1.26     | BUOY          | 2.22     | BUOY         | 2.22    |
| All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h |           |             |            |               |             |                |             |                |                 |        |            | Safety Factors will Meet or Exceed |          |               |          |              |         |

Casing Condition: New  
Casing Standard: API  
Tapered String? No

| Yes or No                                                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Is casing new? If used, attach certification as required in Onshore Order #1.                                                                    | Yes |
| Does casing meet API specifications? If no, attach casing specification sheet.                                                                   | Yes |
| Is premium or uncommon casing planned? If yes attach casing specification sheet.                                                                 | No  |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Yes |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?                | Yes |
| Is well located within Capitan Reef?                                                                                                             | No  |
| If yes, does production casing cement tie back a minimum of 50' above the Reef?                                                                  |     |
| Is proposed well within the designated four string boundary?                                                                                     |     |
| Is well located in R-111-P and SOPA?                                                                                                             | No  |
| If yes, are the first three strings cemented to surface?                                                                                         |     |
| Is the second string set 100' to 600' below the base of salt?                                                                                    |     |
| Is well located in SOPA but not in R-111-P?                                                                                                      | No  |
| If yes, are the first 2 strings cemented to surface and third string cement tied back 500' into previous casing?                                 |     |
| Is well located in high Cave/Karst?                                                                                                              | No  |
| If yes, are there two strings cemented to surface?                                                                                               |     |
| If yes, is there a contingency casing if lost circulation occurs?                                                                                |     |
| Is well located in critical Cave/Karst?                                                                                                          | No  |
| If yes, are there three strings cemented to surface?                                                                                             |     |

Section 4: CEMENT PROGRAM

| String Type  | Lead/Tail | Top MD | Bottom MD | Quantity (sks) | Yield (ft³/sks) | Density (ppg) | Slurry Volume (ft³) | Excess (%) | Cement Type | Additives                                        |
|--------------|-----------|--------|-----------|----------------|-----------------|---------------|---------------------|------------|-------------|--------------------------------------------------|
| Surface      | Lead      | 0      | 200       | 105            | 2.12            | 12.5          | 222                 | 25         | Class C     | Extender,Accelerator,LCM                         |
| Surface      | Tail      | 200    | 350       | 99             | 1.32            | 14.8          | 130                 | 25         | Class C     | Accelerator                                      |
| Intermediate | Lead      | 0      | 7371      | 1334           | 2.18            | 12.4          | 2907                | 25         | Class C     | Extender,Accelerator,LCM                         |
| Intermediate | Tail      | 7371   | 7871      | 147            | 1.33            | 14.8          | 196                 | 25         | Class C     | Retarder                                         |
| Production   | Tail      | 7571   | 18611     | 2116           | 1.68            | 13            | 3554                | 25         | Class H     | Retarder, Extender, Fluid Loss, Suspension Agent |

Stage tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Stage tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Pilot Hole? No  
Pilot Hole Depth: N/A  
KOP Depth: N/A  
Plugging Procedure for Pilot Hole: N/A

| Plug Top | Plug Bottom | Excess (%) | Quantity (sx) | Density (ppg) | Yield (ft3/sks) | Water gal/sk | Slurry Description and Cement Type |
|----------|-------------|------------|---------------|---------------|-----------------|--------------|------------------------------------|
|          |             |            |               |               |                 |              |                                    |
|          |             |            |               |               |                 |              |                                    |

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         | 350          | Water Based Mud        | 8.4               | 8.8              |
| 350       | 7871         | Brine or Oil Based Mud | 9.2               | 10.2             |
| 7871      | 18611        | 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:  
Run gamma-ray (GR) and corrected neutron log (CNL) or analogous to surface for future development of the area, one per shared well pad not to exceed 200’ radial distance.

Section 7: ANTICIPATED PRESSURE

Anticipated Bottom Hole Pressure: 5435 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 Onshore Order #6. 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.

State of New Mexico  
Energy, Minerals and Natural Resources DepartmentSubmit Electronically  
Via E-permittingOil 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:** 372098 **Date:** 8 / 1 / 2023**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 |
|-----------------------------|-----|-----------|-----------------|-----------------------|-----------------------|----------------------------------|
| Rick Vaughn BS Fed Com 501H |     | 7-26S-29E | 88 FSL 1394 FWL | 2000                  | 5500                  | 6000                             |
| Rick Vaughn BS Fed Com 502H |     | 7-26S-29E | 88 FSL 1444 FWL | 2000                  | 5500                  | 6000                             |
| Rick Vaughn BS Fed Com 503H |     | 7-26S-29E | 88 FSL 1494 FWL | 2000                  | 5500                  | 6000                             |
| Rick Vaughn WC Fed Com 811H |     | 7-26S-29E | 88 FSL 1419 FWL | 2000                  | 5500                  | 6000                             |
| Rick Vaughn WC Fed Com 812H |     | 7-26S-29E | 88 FSL 1469 FWL | 2000                  | 5500                  | 6000                             |

**IV. Central Delivery Point Name:** Rick Vaughn 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 |
|-----------------------------|-----|-----------|-----------------|------------------------------|------------------------|-----------------------|
| Rick Vaughn BS Fed Com 501H |     | 8/1/2024  | 9/5/2024        | 10/5/2024                    | 11/5/2024              | 12/5/2024             |
| Rick Vaughn BS Fed Com 502H |     | 8/1/2024  | 9/5/2024        | 10/5/2024                    | 11/5/2024              | 12/5/2024             |
| Rick Vaughn BS Fed Com 503H |     | 8/1/2024  | 9/5/2024        | 10/5/2024                    | 11/5/2024              | 12/5/2024             |
| Rick Vaughn WC Fed Com 811H |     | 8/1/2024  | 9/5/2024        | 10/5/2024                    | 11/5/2024              | 12/5/2024             |
| Rick Vaughn WC Fed Com 812H |     | 8/1/2024  | 9/5/2024        | 10/5/2024                    | 11/5/2024              | 12/5/2024             |

**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:

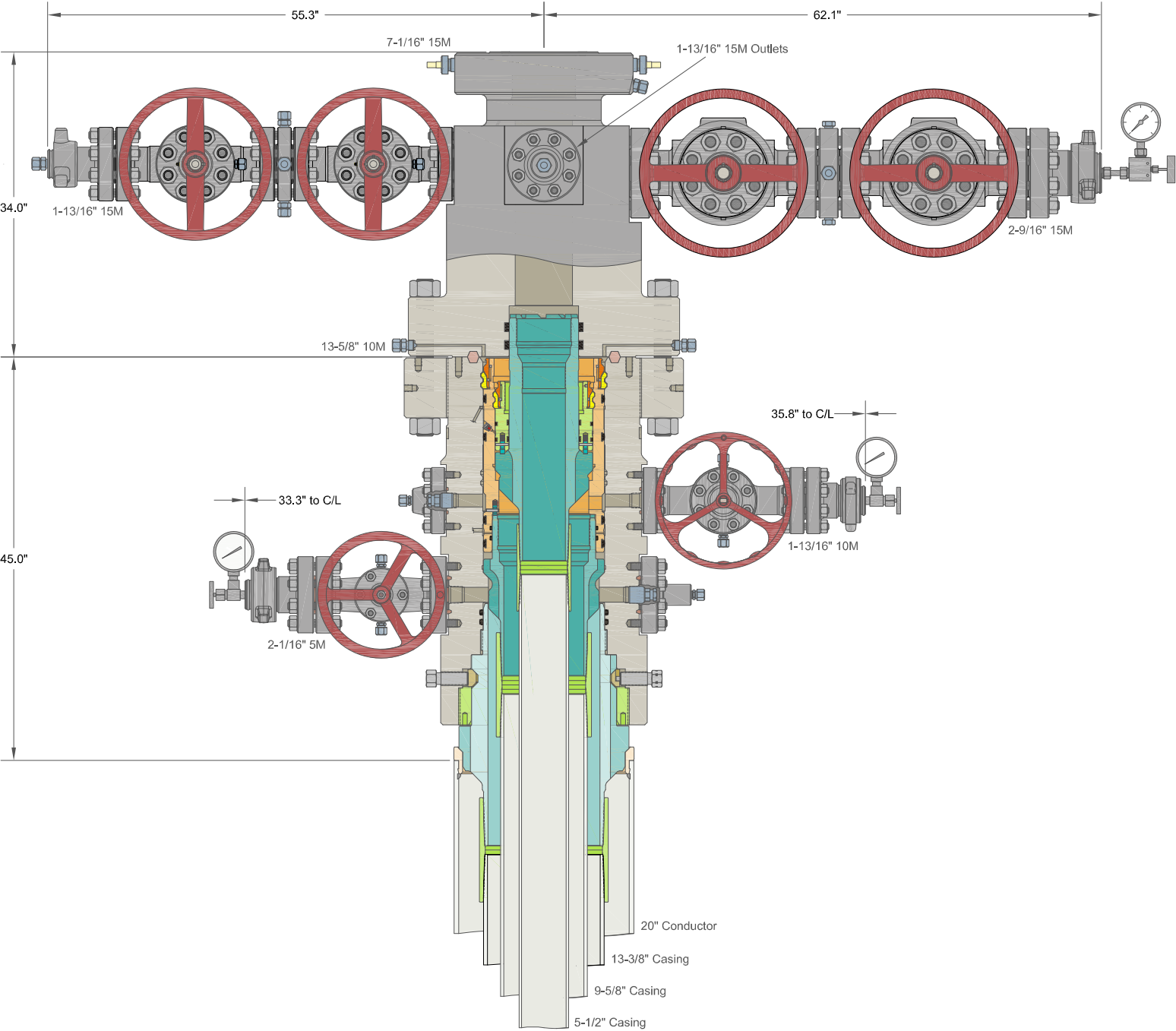
(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit 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>Nicole Lee</i>                                                                     |
| Printed Name: Nicole Lee                                                                         |
| Title: Regulatory Compliance Representative                                                      |
| E-mail Address: njlee@marathonoil.com                                                            |
| Date: 7/11/2023                                                                                  |
| Phone: 832-370-2579                                                                              |
| <b>OIL CONSERVATION DIVISION</b><br><b>(Only applicable when submitted as a standalone form)</b> |
| Approved By:                                                                                     |
| Title:                                                                                           |
| Approval Date:                                                                                   |
| Conditions of Approval:                                                                          |



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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 |         |



## 1. DRILLING WELL CONTROL PLAN

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### 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

## 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.

# OFFLINE CEMENTING



# SURFACE OFFLINE CEMENT JOB

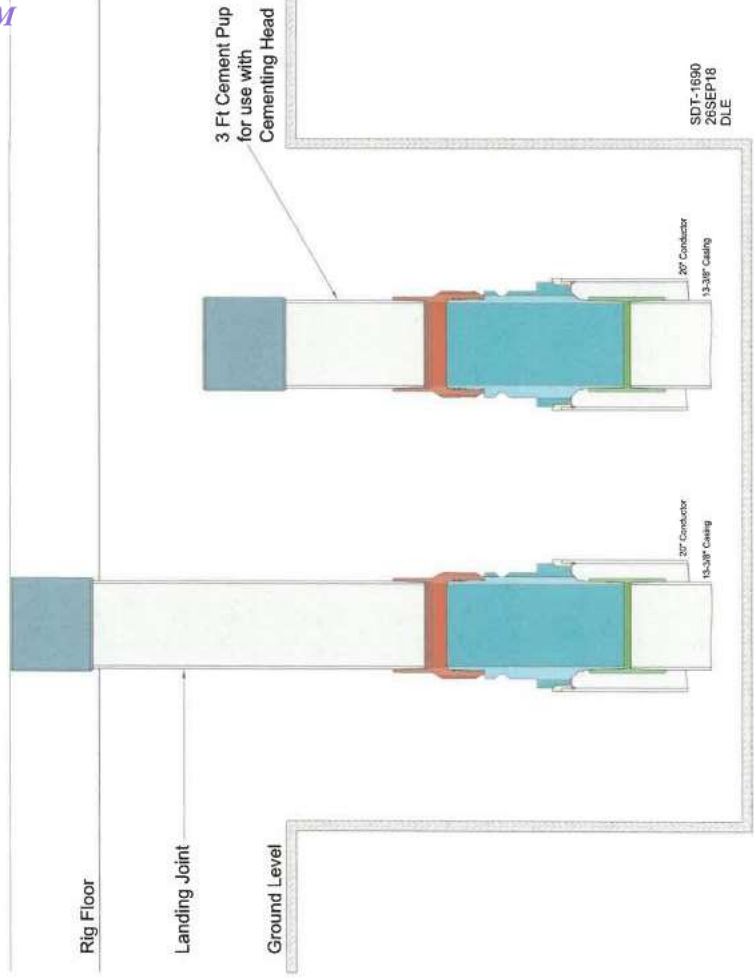


# Offline Surface Cement Job

## Procedure

1. Run casing per normal operations
  - a) Perform negative test and confirm integrity of float equipment
2. Land surface casing fluted mandrel hanger with the rig ( left on picture)
3. Fill pipe with kill weight fluid and confirm well is static
4. Remove the landing joint and skid the rig over
5. After rig has skidded over, install short pup joint (right on picture)
6. Install cement head and cement through the pup joint, taking returns in the cellar
7. After cement remove the cement head and short pup
8. Install the wellhead on to the mandrel hanger and test (not shown in picture)

## CFL Off-Line Cementing Tool

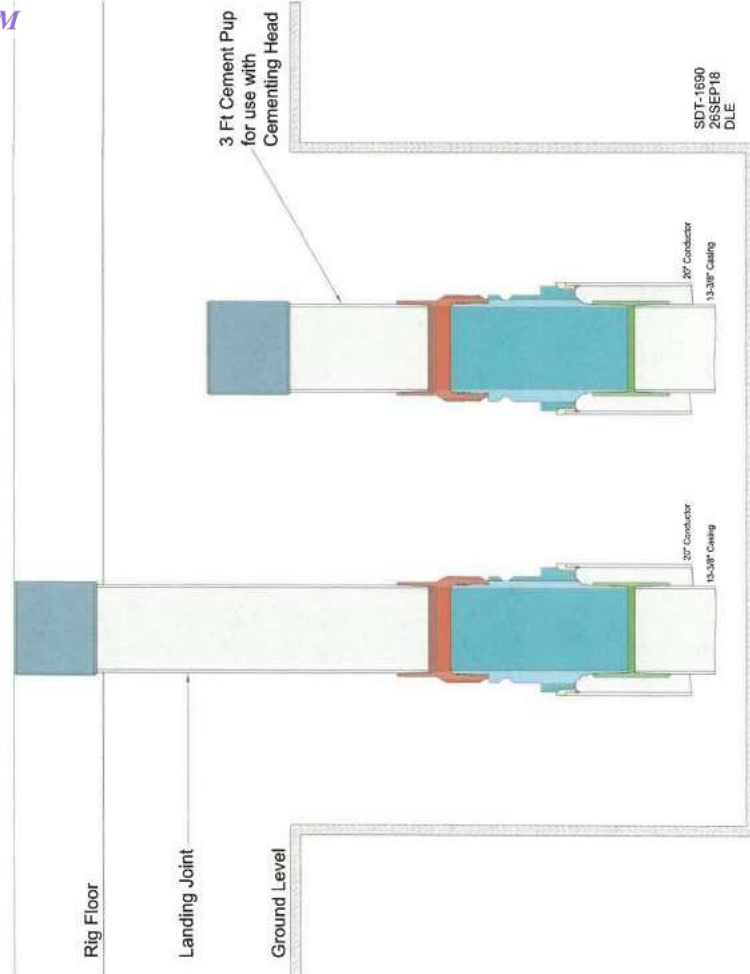


## Offline Surface Cement Job

## Requirements

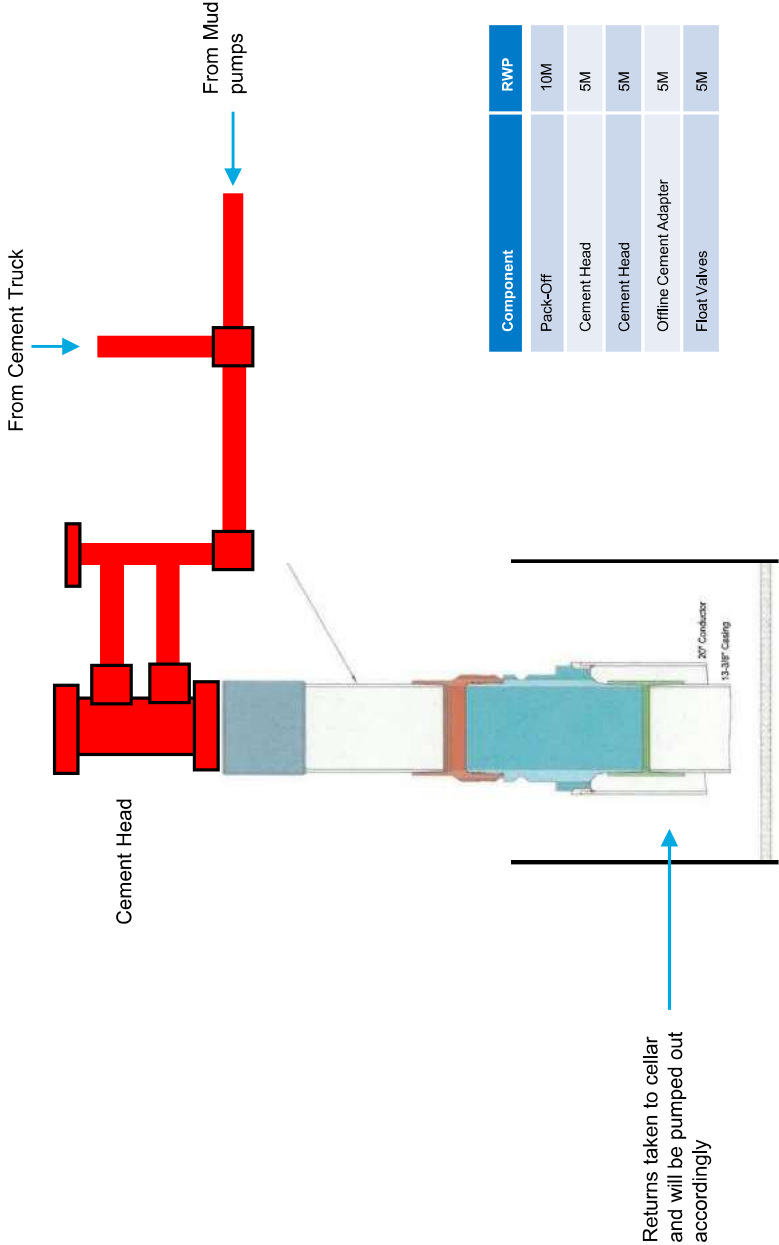
1. Confirm well is static and overbalanced
2. No wellbore instability
3. Successful casing run
4. Floats holding
5. No observed H<sub>2</sub>S during drilling
6. Cement job will be performed within 24hrs of moving off well

## CFL Off-Line Cementing Tool



# Offline Surface Cement Job

Diagram and P&ID







# INTERMEDIATE OFFLINE CEMENT JOB

# Offline Intermediate Cement Job

## Procedure

1. Run casing per normal operations
  - a) Perform negative test and confirm integrity of float equipment
2. Land out with production casing mandrel hanger; circulate
  - a) Confirm no blockage of float equipment and perform flow check to confirm well is static
3. Fill pipe with kill weight fluid and confirm well is static
4. Remove landing joint
5. Install intermediate casing Pack off and perform pressure test to confirm integrity. Wellhead components and valves are 5,000psi
  - a) Note: Both internal(floats) and external(packoff) barriers are confirmed
  - b) If any barriers fail to test then cementing operations will be performed online
6. Install circulation plug w/BPV installed to secure the well (ID and OD of the wellbore are secured)
7. Remove BOP and skid to the next well
8. After rig has skidded over, remove circulation plug w/ BPV
9. Install Offline cement tool and test
10. Circulate bottoms up with cement truck
  - a) If gas is observed, well can be shut in and returns routed through gas buster to handle gas
11. Perform cement job taking returns from annulus wellhead valve/s
12. Confirm well is static and floats are holding
13. Remove cement equipment and install a TA CAP

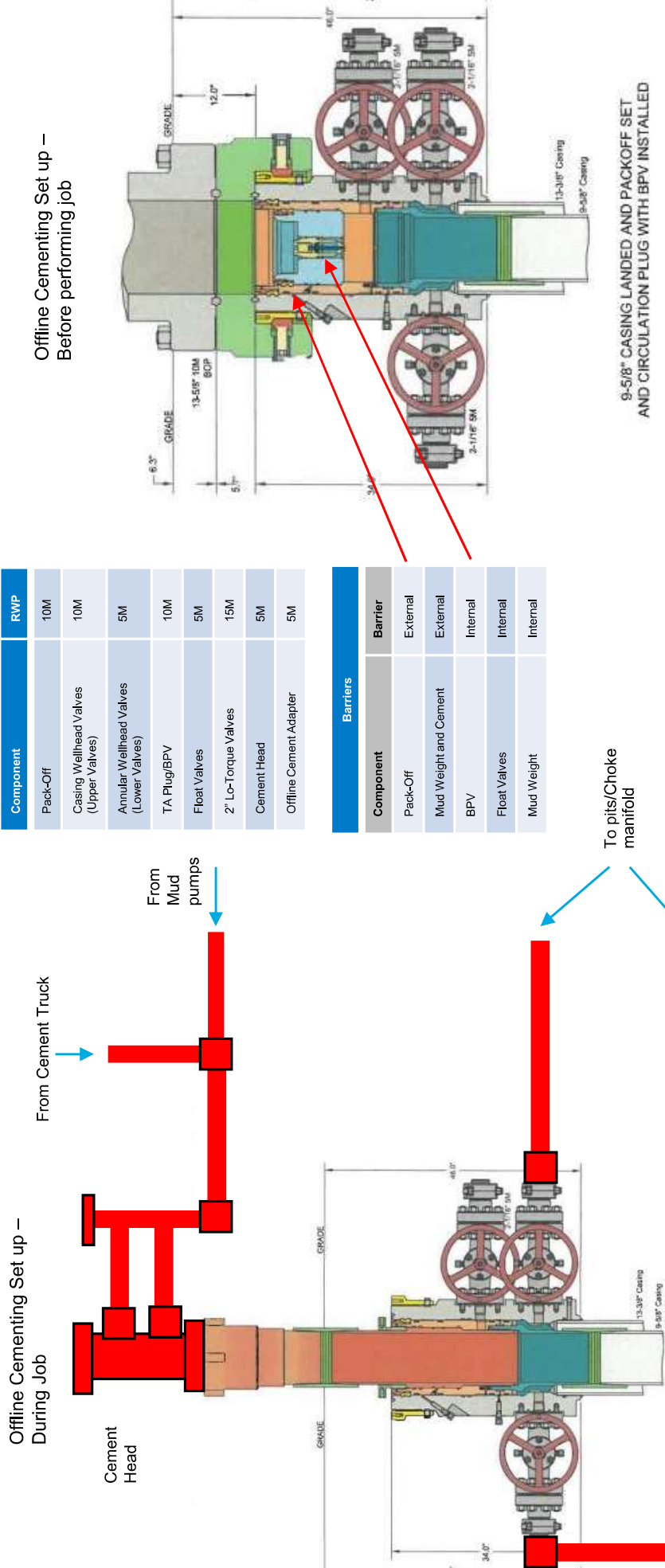
## Offline Intermediate Cement Job

### Requirements

1. Confirm well is static and overbalanced
2. No wellbore instability
3. Successful casing run
4. Floats holding
5. No observed H2S during drilling
6. Cement job will be performed with 24hrs of moving off well
7. If planning to drillout next well prior to cement job then 3<sup>rd</sup> party well control equipment and choke system must be in place for offline well
8. Have 3<sup>rd</sup> party cementing manifolds in place (3<sup>rd</sup> party well control equipment)

# Offline Intermediate Cement Job

## Diagram and P&ID





### **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.

# 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 <sup>ac</sup> psig (MPa) | Pressure Test—High Pressure <sup>ac</sup>                                  |                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                      |                                                     | Change Out of Component, Elastomer, or Ring Gasket                         | No Change Out of Component, Elastomer, or Ring Gasket |
| Annular preventer <sup>b</sup>                                                                                                                                                                                                                                                                                                                       | 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 <sup>bd</sup>                                                                                                                                                                                                                                                                                   | 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 <sup>e</sup>                                                                                                                                                                                                                                                                                                       | 250 to 350 (1.72 to 2.41)                           | RWP of ram preventers or wellhead system, whichever is lower               | ITP                                                   |
| Choke manifold—downstream of chokes <sup>e</sup>                                                                                                                                                                                                                                                                                                     | 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                                                  |                                                       |
| <sup>a</sup> Pressure test evaluation periods shall be a minimum of five minutes.<br>No visible leaks.<br>The pressure shall remain stable during the evaluation period. The pressure shall not decrease below the intended test pressure.                                                                                                           |                                                     |                                                                            |                                                       |
| <sup>b</sup> Annular(s) and VBR(s) shall be pressure tested on the largest and smallest OD drill pipe to be used in well program.                                                                                                                                                                                                                    |                                                     |                                                                            |                                                       |
| <sup>c</sup> 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.                                                                                                         |                                                     |                                                                            |                                                       |
| <sup>d</sup> 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. |                                                     |                                                                            |                                                       |
| <sup>e</sup> Adjustable chokes are not required to be full sealing devices. Pressure testing against a closed choke is not required.                                                                                                                                                                                                                 |                                                     |                                                                            |                                                       |





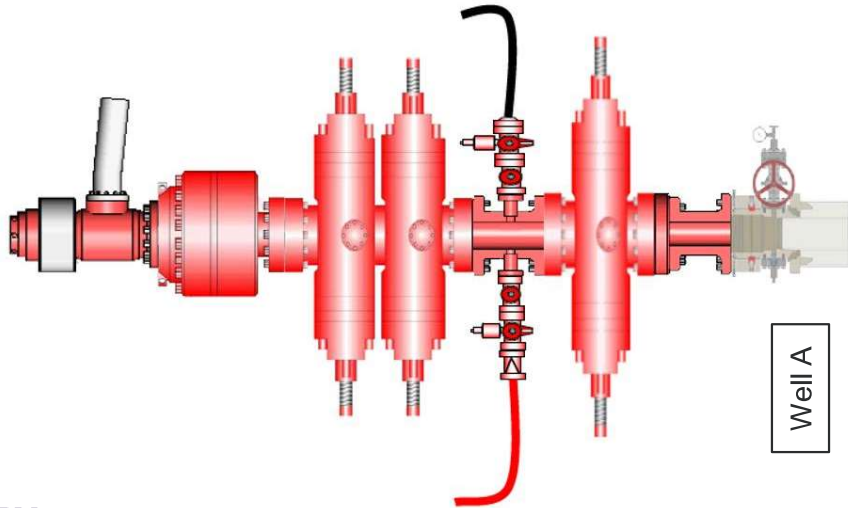
# Procedures

## Procedural Steps

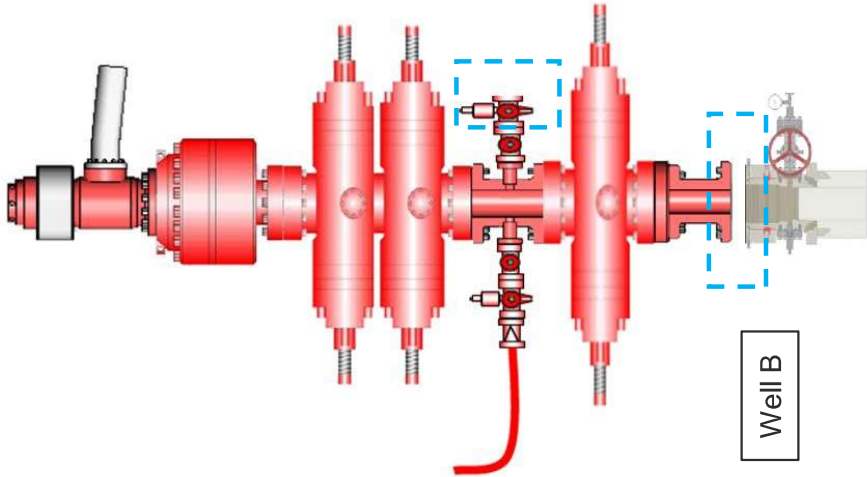
1. Marathon will use this document for break testing plan for New Mexico Delaware Basin.
2. Marathon will perform BOP break testing on well pads where multiple intermediate sections can be drilled and cased within the 21 day test window and will meet the following criteria:
  - a) A full BOP test will 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

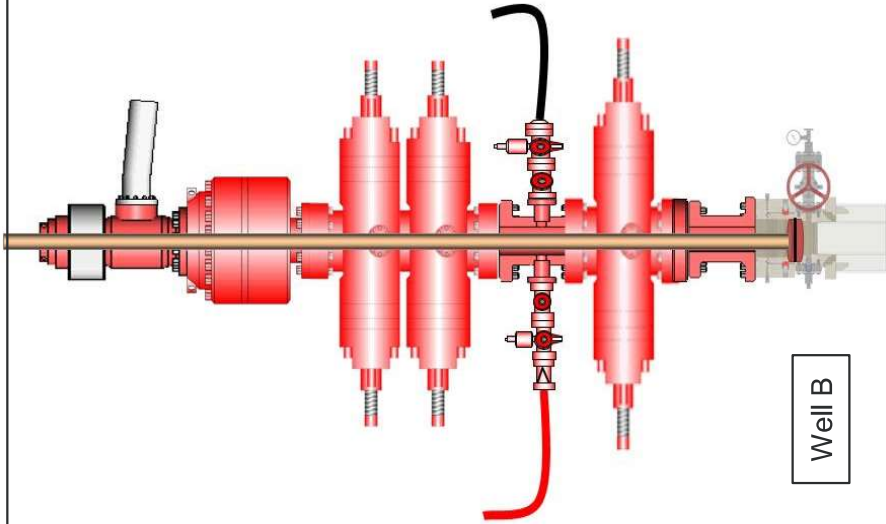
Well A: BOP installed on Well A



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

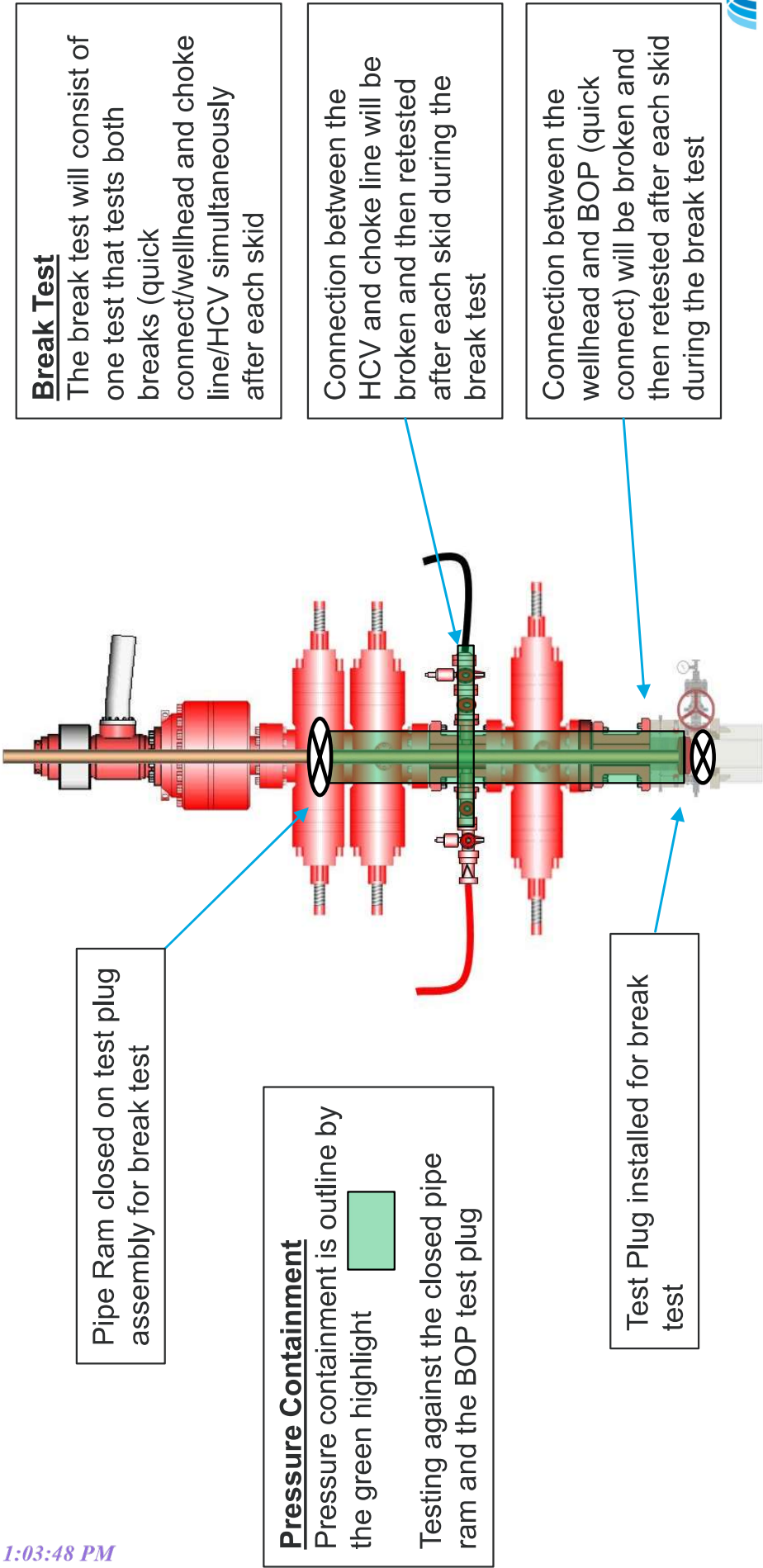


Well B: Quick connect and choke line  
reconnected. Test plug installed.



# Procedures

## Diagram



## Summary

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- 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

|                                                                                                                                                                                                                                                          |                                                                                                      |                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Santa Fe Main Office<br>Phone: (505) 476-3441 Fax: (55) 476-3462<br>General Information<br>Phone: (505) 629-6116<br><br>Online Phone Directory Visit:<br><a href="https://www.emnrd.nm.gov/ocd/contact-us/">https://www.emnrd.nm.gov/ocd/contact-us/</a> | State of New Mexico<br>Energy, Minerals & Natural Resources<br>Department<br>OIL CONSERVATION DMSION | C-102<br>Revised July 9, 2024<br>Submit Electronically<br>via OCD Permitting                                                                               |
|                                                                                                                                                                                                                                                          |                                                                                                      | Submittal Type:<br><input type="checkbox"/> Initial Submittal<br><input checked="" type="checkbox"/> Amended Report<br><input type="checkbox"/> As Drilled |

## WELL LOCATION INFORMATION

|                                                                                                                                                        |                                           |                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| API Number                                                                                                                                             | Pool Code<br>51010                        | Pool Name<br>RED BLUFF; BONE SPRING, SOUTH                                                                                                             |
| Property Code                                                                                                                                          | Property Name<br>RICK VAUGHN BS FED COM   | Well Number<br>501H                                                                                                                                    |
| OGRID No.<br>372098                                                                                                                                    | Operator Name<br>MARATHON OIL PERMIAN LLC | Ground Level Elevation<br>2912                                                                                                                         |
| 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<br>N | Section<br>7 | Township<br>26S | Range<br>29E | Lot | Ft. from N/S<br>88 S | Ft. from F/W<br>1394 W | Latitude<br>32.050128 | Longitude<br>-104.027635 | County<br>EDDY |
|---------|--------------|-----------------|--------------|-----|----------------------|------------------------|-----------------------|--------------------------|----------------|

## Bottom Hole Location

|    |              |                 |              |          |                       |                       |                        |                          |                |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|------------------------|--------------------------|----------------|
| UL | Section<br>6 | Township<br>26S | Range<br>29E | Lot<br>1 | Ft. from N/S<br>100 N | Ft. from F/W<br>495 W | Latitude<br>32.0786694 | Longitude<br>-104.030524 | County<br>EDDY |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|------------------------|--------------------------|----------------|

|                           |                                   |                           |                                                                                                               |                         |
|---------------------------|-----------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------|
| Dedicated Acres<br>638.40 | Infill or Defining Well<br>INFILL | Defining Well API<br>502H | Overlapping Spacing Unit (YIN)<br>Y                                                                           | Consolidation Code<br>C |
| Order Numbers.            |                                   |                           | Well setbacks are under Common Ownership: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |                         |

## Kick Off Point (KOP)

|    |              |                 |              |          |                       |                       |                       |                          |                |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|-----------------------|--------------------------|----------------|
| UL | Section<br>7 | Township<br>26S | Range<br>29E | Lot<br>4 | Ft. from N/S<br>100 S | Ft. from F/W<br>495 W | Latitude<br>32.050169 | Longitude<br>-104.030536 | County<br>EDDY |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|-----------------------|--------------------------|----------------|

## First Take Point (FTP)

|    |              |                 |              |          |                       |                       |                       |                          |                |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|-----------------------|--------------------------|----------------|
| UL | Section<br>7 | Township<br>26S | Range<br>29E | Lot<br>4 | Ft. from N/S<br>100 S | Ft. from F/W<br>495 W | Latitude<br>32.050169 | Longitude<br>-104.030536 | County<br>EDDY |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|-----------------------|--------------------------|----------------|

## Last Take Point (LTP)

|    |              |                 |              |          |                       |                       |                        |                          |                |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|------------------------|--------------------------|----------------|
| UL | Section<br>6 | Township<br>26S | Range<br>29E | Lot<br>1 | Ft. from N/S<br>100 N | Ft. from F/W<br>495 W | Latitude<br>32.0786694 | Longitude<br>-104.030524 | County<br>EDDY |
|----|--------------|-----------------|--------------|----------|-----------------------|-----------------------|------------------------|--------------------------|----------------|

|                                                                |                                                                                                    |                                 |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------|
| Unitized Area or Area of Uniform Interest<br>Yes Com Agreement | Spacing Unit Type <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical | Ground Floor Elevation:<br>2912 |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------|

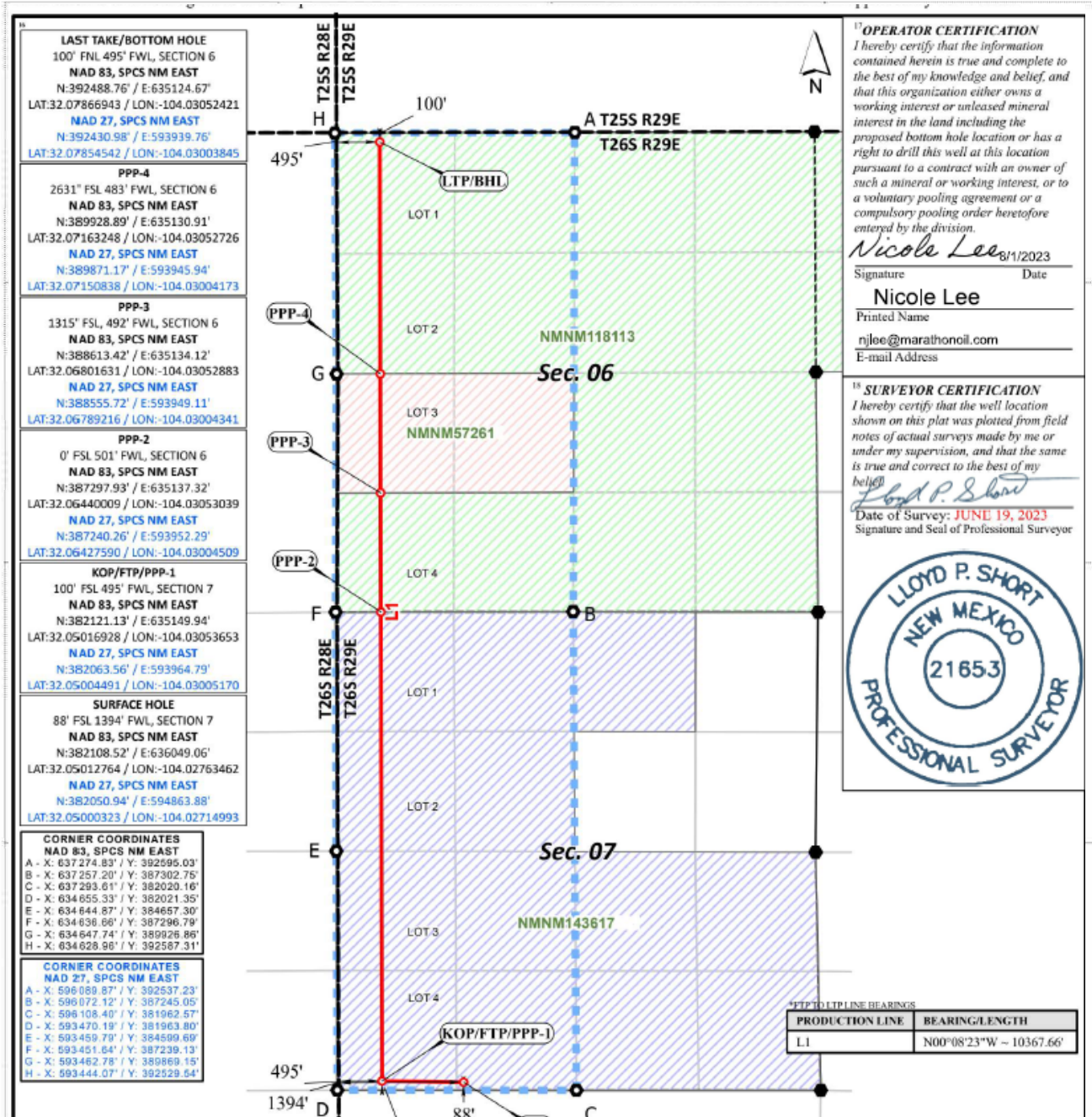
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OPERATOR CERTIFICATIONS</b><br><br><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><br><br><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><br><br><b>Terri Stathem</b><br>10/1/2024<br>Signature Date<br><br>TERRI STATHEM<br>Printed Name<br><br>TSTATHEM@MARATHON OIL.COM<br>Email Address | <b>SURVEYOR CERTIFICATIONS</b><br><br><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><br><br>Signature and Seal of Professional Smveyor<br><br>Certificate Number Date of Smvey |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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.



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.



**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS  
  
Action 386262

CONDITIONS

|                                                                                        |                                                                       |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Operator:<br>MARATHON OIL PERMIAN LLC<br>990 Town & Country Blvd.<br>Houston, TX 77024 | OGRID:<br>372098                                                      |
|                                                                                        | Action Number:<br>386262                                              |
|                                                                                        | Action Type:<br>[C-101] BLM - Federal/Indian Land Lease (Form 3160-3) |

CONDITIONS

| Created By  | Condition                                                                                                                                                                                                                                                            | Condition Date |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| ward.rikala | Notify OCD 24 hours prior to casing & cement                                                                                                                                                                                                                         | 10/2/2024      |
| ward.rikala | Will require a File As Drilled C-102 and a Directional Survey with the C-104                                                                                                                                                                                         | 10/2/2024      |
| ward.rikala | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string | 10/2/2024      |
| ward.rikala | Cement is required to circulate on both surface and intermediate1 strings of casing                                                                                                                                                                                  | 10/2/2024      |
| ward.rikala | If cement does not circulate on any string, a CBL is required for that string of casing                                                                                                                                                                              | 10/2/2024      |
| ward.rikala | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system                  | 10/2/2024      |