Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM32636

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

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

8. Lease Name and Well No.: VALKYRIE BS FED COM 302H

2. Name of Operator: MARATHON OIL PERMIAN LLC

9. API Well No.: 30-015-57021

3a. Address: 990 TOWN & COUNTRY BLVD, HOUSTON, TX 77024

3b. Phone No. *(include area code)*: (713) 296-2113

10. Field and Pool, or Exploratory: CULEBRA BLUFF/BONE SPRING SOUTH

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

At surface: NESE / 2406 FSL / 547 FEL / LAT 32.3194617 / LONG -104.0512045

At proposed prod. zone: NESE / 1650 FSL / 100 FEL / LAT 32.3169285 / LONG -104.0157805

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 11/T23S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*: 4 miles

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 547 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 635.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 30 feet

19. Proposed Depth: 7686 feet / 17698 feet

20. BLM/BIA Bond No. in file: FED: NMB001555

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 2991 feet

22. Approximate date work will start*: 12/17/2025

23. Estimated duration: 30 days

24. Attachments

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

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

25. Signature: (Electronic Submission)

Name *(Printed/Typed)*: ADRIAN COVARRUBIAS / Ph: (713) 929-6600

Date: 11/21/2024

Title: regulatory Compliance Representative

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: CODY LAYTON / Ph: (575) 234-5959

Date: 06/10/2025

Title: Assistant Field Manager Lands & Minerals

Office: Carlsbad Field Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

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Additional Operator Remarks

Location of Well

0. SHL: NESE / 2406 FSL / 547 FEL / TWSP: 23S / RANGE: 28E / SECTION: 11 / LAT: 32.3194617 / LONG: -104.0512045 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 1650 FSL / 100 FWL / TWSP: 23S / RANGE: 28E / SECTION: 12 / LAT: 32.3173954 / LONG: -104.0491344 (TVD: 6891 feet, MD: 7012 feet)

BHL: NESE / 1650 FSL / 100 FEL / TWSP: 23S / RANGE: 29E / SECTION: 7 / LAT: 32.3169285 / LONG: -104.0157805 (TVD: 7686 feet, MD: 17698 feet)

BLM Point of Contact

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

PECOS DISTRICT

SURFACE USE

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Marathon Oil Permian LLC
LEASE NO.:	NMNM32636, NMNM90527
COUNTY:	Eddy County, New Mexico

Wells:

Valkyrie BS Fed Com 502H

Valkyrie BS Fed Com 552H

Valkyrie BS Fed Com 302H

Valkyrie BS Fed Com 501H

Valkyrie BS Fed Com 551H

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1. GENERAL PROVISIONS

The failure of the operator to comply with these requirements may result in the assessment of liquidated damages or penalties pursuant to 43 CFR 3163.1 or 3163.2. A copy of these conditions of approval shall be present on the location during construction, drilling and reclamation activity. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

1.1. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural resource (historic or prehistoric site or object) discovered by the operator, or any person working on the operator's behalf, on the public or federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area (within 100ft) 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, in conjunction with a BLM Cultural Resource Specialist, to determine appropriate actions to prevent the loss of significant scientific values. The operator shall 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 operator.

Traditional Cultural Properties (TCPs) are protected by NHPA as codified in 36 CFR 800 for possessing traditional, religious, and cultural significance tied to a certain group of individuals. Though there are currently no designated TCPs within the project area or within a mile of the project area, but it is possible for a TCP to be designated after the approval of this project. **If a TCP is designated in the project area after the project's approval, the BLM Authorized Officer will notify the operator of the following conditions and the duration for which these conditions are required.**

1. Temporary halting of all construction, drilling, and production activities to lower noise.
2. Temporary shut-off of all artificial lights at night.

The operator is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA), specifically NAGPRA Subpart B regarding discoveries, to protect human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered during project work. 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 a BLM-CFO Authorized Officer will be notified immediately. The BLM will then be required to be notified, in writing, within 24 hours of the discovery. The written notification should include the geographic location by county and state, the contents of the discovery, and the steps taken to protect said discovery. You must also include any potential threats to the discovery and a conformation that all activity within 100ft of the discovery has ceased and work will not resume until written certification is issued. All work on the entire project must halt for a minimum of 3 days and work cannot resume until an Authorized Officer grants permission to do so.

Any paleontological resource discovered by the operator, or any person working on the operator's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. The operator 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 operator.

1.2. RANGELAND RESOURCES

1.2.1. **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.

1.2.2. **Fence Requirement**

Where entry granted across a fence line, the fence must be 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 notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

1.2.3. **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.

1.3. 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, New Mexico Department of Agriculture, and BLM requirements and policies.

1.3.1 African Rue (Peganum harmala)

Spraying: The spraying of African Rue must be completed by a licensed or certified applicator. In order to attempt to kill or remove African Rue the proper mix of chemical is needed. The mix consists of 2% Arsenal (Imazapyr) and 2% Roundup (Glyphosate) along with a nonionic surfactant. Any other chemicals or combinations shall be approved by the BLM Noxious Weeds Coordinator prior to treatment. African Rue shall be sprayed in connection to any dirt working activities or disturbances to the site being sprayed. Spraying of African Rue shall be done on immature plants at initial growth through flowering and mature plants between budding and flowering stages. Spraying shall not be conducted after flowering when plant is fruiting. This will ensure optimal intake of chemical and decrease chances of developing herbicide resistance. After spraying, the operator or necessary parties must contact the Carlsbad Field Office to inspect the effectiveness of the application treatment to the plant species. No ground disturbing activities can take place until the inspection by the authorized officer is complete. The operator may contact the Environmental Protection Department or the BLM Noxious Weed Coordinator at (575) 234-5972 or BLM_NM_CFO_NoxiousWeeds@blm.gov.

Management Practices: In addition to spraying for African Rue, good management practices should be followed. All equipment should be washed off using a power washer in a designated containment area. The containment area shall be bermed to allow for containment of the seed to prevent it from entering any open areas of the nearby landscape. The containment area shall be excavated near or adjacent to the well pad at a depth of three feet and just large enough to get equipment inside it to be washed off. This will allow all seeds to be in a centrally located area that can be treated at a later date if the need arises.

1.4. LIGHT POLLUTION

1.4.1. **Downfacing**

All permanent lighting will be pointed straight down at the ground in order to prevent light spill beyond the edge of approved surface disturbance.

1.4.2. **Shielding**

All permanent lighting will use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source).

1.4.3. **Lighting Color**

Lighting shall be 3,500 Kelvin or less (Warm White) except during drilling, completion, and workover operations. No bluish-white lighting shall be used in permanent outdoor lighting.

2. SPECIAL REQUIREMENTS

2.1. 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.

2.1.1. **Electric Line(s)**

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

2.1.2. **Tank Battery**

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

2.2. CAVE/KARST

2.2.1. **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.
- This is a sensitive area and all spills or leaks will be reported to the BLM immediately for their immediate and proper treatment, as defined in NTL 3A for Major Undesirable Events.

2.2.2. **Pad Construction**

- The pad will be constructed and leveled by adding the necessary fill and caliche. No blasting will be used for any construction or leveling activities.
- 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 be vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

2.2.3. **Road Construction**

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

2.2.4. **Powerline Construction**

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

2.2.5. **Production Mitigation**

- 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. Secondary containment holding capacity must be large enough to contain 1 ½ times the content of the largest tank or 24-hour production, whichever is greater (displaced volume from all tanks within the berms MUST be subtracted from total volume of containment in calculating holding capacity).
- Implementation of a leak detection system to provide an early alert to operators when a leak has occurred.
- Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

2.2.6. **Residual and Cumulative Mitigation**

The operator will perform annual pressure monitoring on all casing annuli. If the test results indicate a casing failure has occurred, contact a BLM Engineer immediately, and take remedial action to correct the problem.

2.2.7. **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.

2.3 VISUAL RESOURCE MANAGEMENT

2.3.1 **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).

3. CONSTRUCTION REQUIREMENTS

3.1 CONSTRUCTION NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at BLM_NM_CFO_Construction_Reclamation@blm.gov 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 COAs on the well site and they shall be made available upon request by the Authorized Officer.

3.2 TOPSOIL

The operator shall strip the topsoil (the A horizon) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. No more than the top 6 inches of topsoil shall be removed. 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 (the B horizon and below) 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.

3.3 CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No reserve pits will be used for drill cuttings. The operator shall properly dispose of drilling contents at an authorized disposal site.

3.4 FEDERAL MINERAL 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.

3.5 WELL PAD & SURFACING

Any surfacing material used to surface the well pad will be removed at the time of interim and final reclamation.

3.6 EXCLOSURE FENCING (CELLARS & PITS)

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 well cellar 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.)

The operator will also install and maintain mesh netting for all open well cellars to prevent access to smaller wildlife before and after drilling operations until the well cellar is free of fluids and the operator. Use a maximum netting mesh size of 1 ½ inches. The netting must not have holes or gaps.

3.7 ON LEASE ACESS ROAD

3.7.1 **Road Width**

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

3.7.2 **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 will 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.

3.7.3 **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.

3.7.4 **Ditching**

Ditching shall be required on both sides of the road.

3.7.5 **Turnouts**

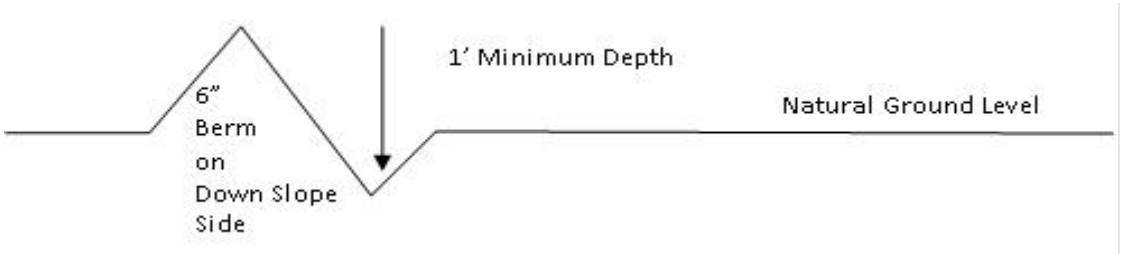
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

3.7.6 **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, leadoff 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:

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

3.7.7 **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

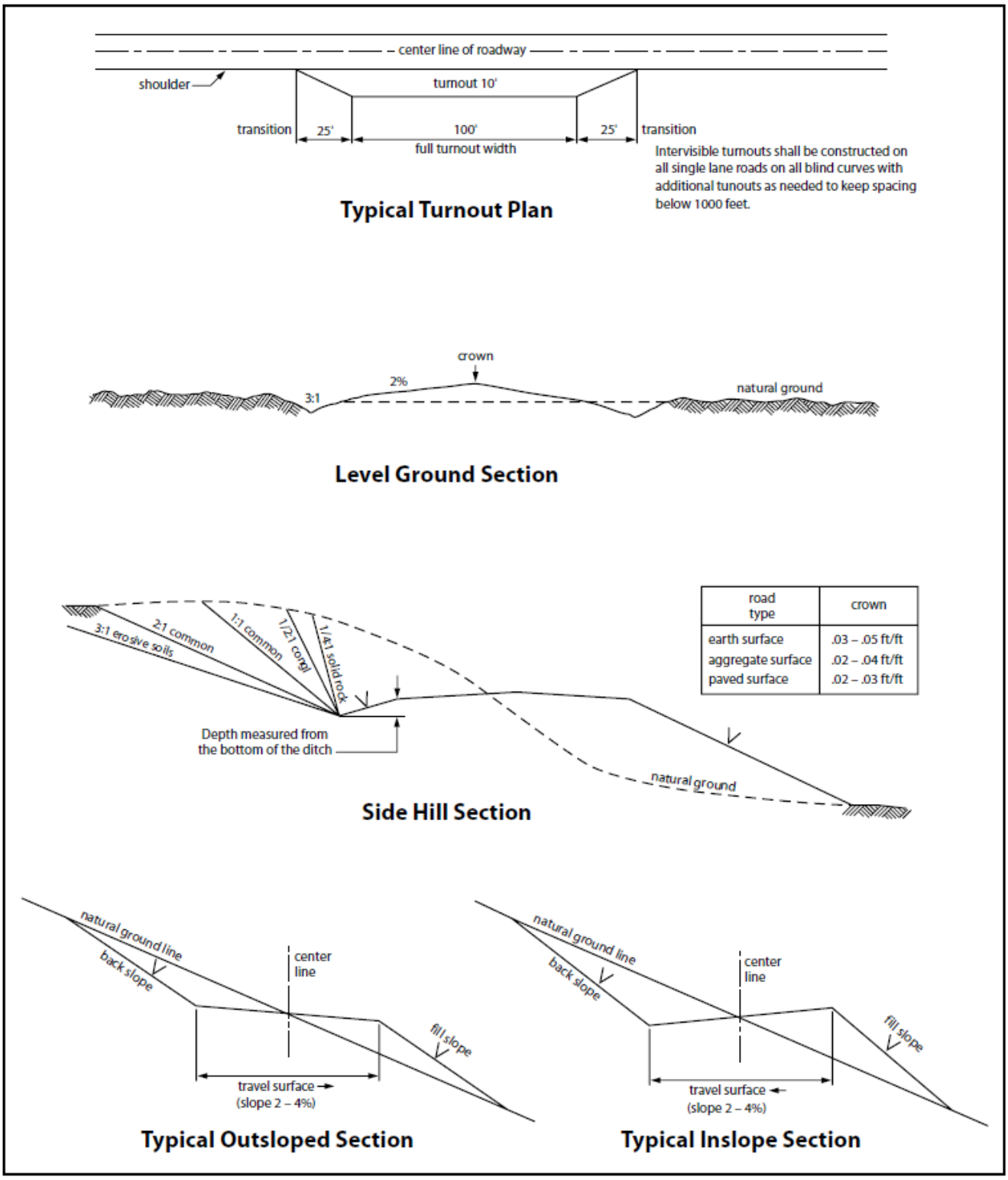


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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4. OVERHEAD ELECTRIC LINES

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

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

1. The operator shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this APD.
2. The operator shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the operator shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the powerline corridor or on facilities authorized under this powerline corridor. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The operator agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Powerline corridor(unless the release or threatened release is wholly unrelated to the operator's activity on the powerline corridor), or resulting from the activity of the Operator on the powerline corridor. This agreement applies without regard to whether a release is caused by the operator, its agent, or unrelated third parties.
4. There will be no clearing or blading of the powerline corridor unless otherwise agreed to in writing by the Authorized Officer.
5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The operator shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this powerline corridor, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the operator without liability or expense to the United States.
6. Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.
7. The operator shall minimize disturbance to existing fences and other improvements on public lands. The operator is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The operator will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
8. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

9. Upon cancellation, relinquishment, or expiration of this APD, the operator shall comply with those abandonment procedures as prescribed by the Authorized Officer.
10. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this APD, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.
11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly. Fill in any holes from the poles removed.
12. Karst stipulations for overhead electric lines
    - Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.
    - The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
    - No further construction will be done until clearance has been issued by the Authorized Officer.
    - Special restoration stipulations or realignment may be required.

5. PRODUCTION (POST DRILLING)

5.1 WELL STRUCTURES & FACILITIES

5.1.1 **Placement of Production Facilities**

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

5.1.2 **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.

5.1.3. 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.

5.1.4. 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.

5.1.5. 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.

6. RECLAMATION

Stipulations required by the Authorized Officer on specific actions may differ from the following general guidelines

6.1 ROAD AND SITE RECLAMATION

Any roads constructed during the life of the well will have the caliche removed or linear burial. If contaminants are indicated then testing will be required for chlorides and applicable contaminate anomalies for final disposal determination (disposed of in a manner approved by the Authorized Officer within Federal, State and Local statutes, regulations, and ordinances) and seeded to the specifications in sections 6.5 and 6.6.

6.2 EROSION CONTROL

Install erosion control berms, windrows, and hummocks. Windrows must be level and constructed perpendicular to down-slope drainage; steeper slopes will require greater windrow density. Topsoil between windrows must be ripped to a depth of at least 12”, unless bedrock is encountered. Any large boulders pulled up during ripping must be deep-buried on location. Ripping must be perpendicular to down-slope. The surface must be left rough in order to catch and contain rainfall on-site. Any trenches resulting from erosion cause by run-off shall be addressed immediately.

6.3 INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations must 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 must work with BLM surface protection specialists (BLM_NM_CFO_Construction_Reclamation@blm.gov) to devise the best strategies to reduce the size of the location. Interim reclamation must allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche and any other surface material is required. 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 in section 6.6.

Upon completion of interim reclamation, the operator shall submit a Sundry Notice, Subsequent Report of Reclamation (Form 3160-5).

6.4 FINAL ABANDONMENT & RECLAMATION

Prior to surface abandonment, the operator shall submit a Notice of Intent Sundry Notice and reclamation plan.

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 will 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. After earthwork and seeding is completed, the operator is required to submit a Sundry Notice, Subsequent Report of Reclamation.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (BLM_NM_CFO_Construction_Reclamation@blm.gov).

6.5 SEEDING TECHNIQUES

Seeds shall be hydro-seeded, mechanically drilled, or broadcast, with the broadcast-seeded area raked, ripped or dragged to aid in covering the seed. The seed mixture shall be evenly and uniformly planted over the disturbed area.

6.6 SOIL SPECIFIC SEED MIXTURE

The lessee/permitee 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 land application will be accomplished by mechanical planting 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 tend to drop the bottom of the drill and are planted first; the operator 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 BLM or Soil Conservation

District 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 or until several months of precipitation have occurred, enabling a full four months of growth, with one or more seed generations being established.

Seed Mixture 2, for Sandy Site

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

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

*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 COMPANY
WELL NAME & NO.:	VALKYRIE BS FED COM 302H
LOCATION:	Section 11, T.23 S., R.28 E.
COUNTY:	Eddy County, New Mexico

COA

H2S	(•) Yes	( ) No	
Potash	(•) None	( ) Secretary	( ) R-111-P
Cave/Karst Potential	( ) Low	(•) Medium	( ) High
Cave/Karst Potential	( ) Critical		
Variance	( ) None	(•) Flex Hose	( ) Other
Wellhead	( ) Conventional	(•) Multibowl	( ) Both
Wellhead Variance	( ) Diverter		
Other	[ ] 4 String	[ ] Capitan Reef	[ ] WIPP
Other	[ ] Fluid Filled	[ ] Pilot Hole	[ ] Open Annulus
Cementing	[x] Contingency Cement Squeeze	[ ] EchoMeter	[ ] Primary Cement Squeeze
Special Requirements	[ ] Water Disposal	[x] COM	[ ] Unit
Special Requirements	[ ] Batch Sundry		
Special Requirements Variance	[x] Break Testing	[x] Offline Cementing	[ ] Casing Clearance

A. CASING

Primary Casing Design:

1. The **13-3/8** inch surface casing shall be set at approximately **450** feet. TVD and MD should be the same. Operator has mis-stated TVD in Drill Plans on AFMSS. (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

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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.

MEDIUM CAVE KARST. CONTINGENCIES SHOULD BE IN PLACE IN THE EVENT OF SEVERE LOSSES.

2. The **9-5/8** inch intermediate casing shall be set at approximately **6912** feet. **Keep casing full during run for collapse SF.** Review cement volumes for possible salt washout. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option 1 (Single Stage):

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

Option 2 (DV Tool):

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

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

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

Bradenhead (Contingency:)

Operator has proposed to perform a bradenhead squeeze if the primary cementing attempt fails to reach surface.

Operator will perform bradenhead squeeze and top-out. Cement to surface. If cement does not reach surface, the appropriate BLM office shall be notified.

Operator has proposed to pump down 9-5/8" X 13-3/8" annulus. Operator must top out cement after the bradenhead squeeze and verify cement to surface. Operator can also check TOC with Echo-meter. CBL must be run from TD of the 9-5/8" casing to surface if confidence is lacking on the quality of the bradenhead squeeze cement job. Submit results to BLM.

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If cement does not tie-back into the previous casing shoe, a third stage remediation BH may be performed. The appropriate BLM office shall be notified.

Bradenhead squeeze in the production interval is only as an edge case remediation measure and is NOT approved in this COA. If production cement job experiences losses and a bradenhead squeeze is needed for tie-back, BLM Engineering should be notified prior to job with volumes and planned wellbore schematic. CBL will be needed when this occurs.

3. The **5-1/2** inch production casing shall be set at approximately **17,698** 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.
    - In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface. Contact BLM Engineer if this happens to discuss.

B. 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.

(Note: For a minimum 5M BOPE or less (Utilizing a 10M BOPE system)
BOPE Break Testing Variance

- BOPE Break Testing is ONLY permitted for 5M BOPE or less. **(Annular preventer**

must be tested to a minimum of 70% of BOPE working pressure and shall be higher than the MASP)

- BOPE Break Testing is NOT permitted to drilling the production hole section.
- Variance only pertains to the intermediate hole-sections and no deeper than the Bone Springs formation.
- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer **(575-706-2779)** prior to the commencement of any BOPE Break Testing operations.
- A full BOPE test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOPE test will be required. (200' TVD tolerance between intermediate shoes is allowable).
- The BLM is to be contacted (575-689-5981 Lea County) 4 hours prior to BOPE tests.
- As a minimum, a full BOPE test shall be performed at 21-day intervals.
- In the event any repairs or replacement of the BOPE is required, the BOPE shall test as per 43 CFR part 3170 Subpart 3172.
- If in the event break testing is not utilized, then a full BOPE test would be conducted.

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.

Offline Cementing

Operator is approved for offline cementing for surface and intermediate intervals. Notify the BLM prior to the commencement of any offline cementing procedure.

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**; (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 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      iii. BOP/BOPE test to be conducted per **43 CFR 3172** as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. For intervals in which cement to surface is required, cement to surface should be verified with a visual check and density or pH check to differentiate cement from spacer and drilling mud. The results should be documented in the driller's log and daily reports.

A. **CASING**

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

both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends of both lead and tail cement, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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

B. **PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR 3172**.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
    i. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    ii. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    iii. Manufacturer representative shall install the test plug for the initial BOP test.

iv. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172.6(b)(9) must be followed.

v. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

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

i. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

ii. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)

iii. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for 8 hours or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

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

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

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

viii. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR 3172**.

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

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

KPI 2/16/2025

Approval Date: 06/10/2025

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

Operator Certification Data Report

06/12/2025

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: ADRIAN COVARRUBIAS **Signed on:** 11/05/2024

Title: regulatory Compliance Representative

Street Address: 990 TOWN & COUNTRY BLVD

City: HOUSTON **State:** TX **Zip:** 77024

Phone: (713)296-3368

Email address: ADRIAN.COVARRUBIAS@CONOCOPHILLIPS.COM

Field

Representative Name:

Street Address:

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

Phone:

Email address:

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

Application Data
06/12/2025

APD ID: 10400101802
Submission Date: 11/21/2024
Operator Name: MARATHON OIL PERMIAN LLC
Well Name: VALKYRIE BS FED COM
Well Number: 302H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes
Show Final Text

Section 1 - General

APD ID: 10400101802
Tie to previous NOS? N
Submission Date: 11/21/2024
BLM Office: Carlsbad
User: ADRIAN COVARRUBIAS
Title: regulatory Compliance Representative
Federal/Indian APD: FED
Is the first lease penetrated for production Federal or Indian? FED
Lease number: NMNM32636
Lease Acres:
Surface access agreement in place?
Allotted?
Reservation:
Agreement in place? NO
Federal or Indian agreement:
Agreement number:
Agreement name:
Keep application confidential? Y
Permitting Agent? NO
APD Operator: MARATHON OIL PERMIAN LLC
Operator letter of

Operator Info

Operator Organization Name: MARATHON OIL PERMIAN LLC
Operator Address: 990 TOWN & COUNTRY BLVD
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: VALKYRIE BS FED COM
Well Number: 302H
Well API Number:
Field/Pool or Exploratory? Field and Pool
Field Name: CULEBRA BLUFF
Pool Name: BONE SPRING SOUTH

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

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

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** VALKYRIE FED COM **Number:** 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: 4 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 547 FT

Reservoir well spacing assigned acres Measurement: 635 Acres

Well plat: A2_C102_VALKYRIE_BS_FED_COM_302H_20241105083040.pdf

A2_VALKYRIE_BS_FED_COM_302H_PAY.GOV_RECEIPT_20241106123734.pdf

Well work start Date: 12/17/2025 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 21653 **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
SHL Leg #1	2406	FSL	547	FEL	23S	28E	11	Aliquot NESE	32.3194617	-104.0512045	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 32636	2991			Y
KOP Leg #1	1650	FSL	100	FWL	23S	28E	12	Aliquot NWSW	32.3173954	-104.0491344	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 32636	-3900	7012	6891	Y

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
PPP Leg #1-1	1650	FSL	100	FWL	23S	28E	12	Aliquot NWSW	32.3173954	-104.0491344	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 32636	-3900	7012	6891	Y
EXIT Leg #1	1650	FSL	100	FEL	23S	29E	7	Aliquot NESE	32.3169285	-104.0157805	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 90527	-4695	17698	7686	Y
BHL Leg #1	1650	FSL	100	FEL	23S	29E	7	Aliquot NESE	32.3169285	-104.0157805	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 90527	-4695	17698	7686	Y

C-102

Submit Electronically
Via OCD Permitting

State of New Mexico
Energy, Minerals, & Natural Resources Department
OIL CONSERVATION DIVISION

Revised July 9, 2024

Submittal Type: [X] Initial Submittal [ ] Amended Report [ ] As Drilled

WELL LOCATION INFORMATION

API Number	Pool Code	Pool Name
30-015-57021	15011	CULEBRA BLUFF; BONE SPRING, SOUTH

Property Code	Property Name	Well Number
337450	VALKYRIE BS FED COM	302H

OGRID No.	Operator Name	Ground Level Elevation
372098	MARATHON OIL PERMIAN LLC	2991'

Surface Owner: [ ] State [ ] Fee [ ] Tribal [X] Federal
Mineral Owner: [ ] State [ ] Fee [ ] Tribal [X] Federal

Surface Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude (NAD83)	Longitude (NAD83)	County
I	11	23S	28E		2406' FSL	547' FEL	32.31946175	-104.05120450	EDDY

Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude (NAD83)	Longitude (NAD83)	County
I	7	23S	29E		1650' FSL	100' FEL	32.31692859	-104.01578053	EDDY

Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code
634.72	Infill	Pending API# Valkyrie BS Fed Com 501H	N	P

Order Numbers:
Well setbacks are under Common Ownership: [✓] Yes [ ] No

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude (NAD83)	Longitude (NAD83)	County
L	12	23S	28E		1650' FSL	100' FWL	32.31739547	-104.04913446	EDDY

First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude (NAD83)	Longitude (NAD83)	County
L	12	23S	28E		1650' FSL	100' FWL	32.31739547	-104.04913446	EDDY

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude (NAD83)	Longitude (NAD83)	County
I	7	23S	29E		1650' FSL	100' FEL	32.31692859	-104.01578053	EDDY

Unitized Area or Area of Uniform Interest	Spacing Unit Type: [X] Horizontal [ ] Vertical	Ground Floor Elevation
		2990'

OPERATOR CERTIFICATIONS

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.

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.

Adrian Covarrubias 10/30/2024
Signature Date

Adrian Covarrubias
Printed Name

acovarrubias@marathonoil.com
Email Address

SURVEYOR CERTIFICATIONS

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.

LLOYD P. SHORT NEW MEXICO 21653 PROFESSIONAL SURVEYOR

Signature and Seal of Professional Surveyor

Certificate Number	Date of Survey
21653	SEPTEMBER 10, 2024

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

ACREAGE DEDICATION PLATS

VALKYRIE BS FED COM 302H

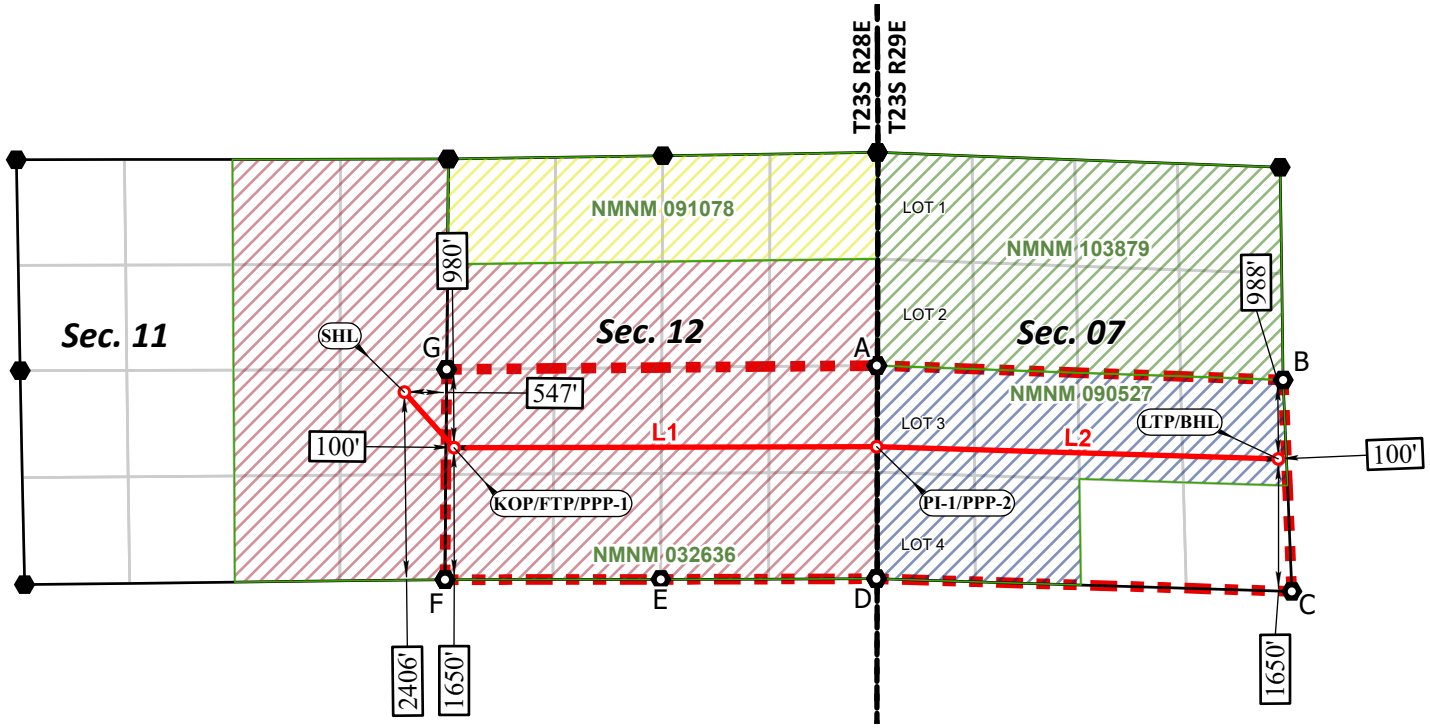
SHL
FSL 2406' FEL 547', SECTION 11
NAD 83, SPCS NM EAST
X:628489.63' / Y:480067.17'
LAT:32.31946175 / LON:-104.05120450
NAD 27, SPCS NM EAST
X:587306.95' / Y:480007.64'
LAT:32.31934071 / LON:-104.05070978

KOP/FTP/PPP-1
FSL 1650' FWL 100', SECTION 12
NAD 83, SPCS NM EAST
X:629131.08' / Y:479317.17'
LAT:32.31739547 / LON:-104.04913446
NAD 27, SPCS NM EAST
X:587948.37' / Y:479257.65'
LAT:32.31727438 / LON:-104.04863989

PI-1/PPP-2
FSL 1650' FEL 0', SECTION 12
NAD 83, SPCS NM EAST
X:634413.72' / Y:479328.49'
LAT:32.31738692 / LON:-104.03203398
NAD 27, SPCS NM EAST
X:593230.93' / Y:479268.90'
LAT:32.31726559 / LON:-104.03154006

LTP/BHL
FSL 1650' FEL 100', SECTION 07
NAD 83, SPCS NM EAST
X:639435.19' / Y:479176.25'
LAT:32.31692859 / LON:-104.01578053
NAD 27, SPCS NM EAST
X:598252.33' / Y:479116.60'
LAT:32.31680702 / LON:-104.01528722

N



*FTP TO LTP LINE BEARINGS

PRODUCTION LINE	BEARING/LENGTH
L1	N 89°52'38" E ~ 5282.66'
L2	S 88°15'49" E ~ 5023.77'

CORNER COORDINATES NAD 83, SPCS NM EAST	CORNER COORDINATES NAD 27, SPCS NM EAST
A - X: 634415.36' / Y: 480343.15'	A - X: 593232.60' / Y: 480283.54'
B - X: 639494.87' / Y: 480162.85'	B - X: 598312.03' / Y: 480103.18'
C - X: 639603.08' / Y: 477520.38'	C - X: 598420.17' / Y: 477460.77'
D - X: 634411.06' / Y: 477678.47'	D - X: 593228.23' / Y: 477618.92'
E - X: 631715.38' / Y: 477670.09'	E - X: 590532.59' / Y: 477610.57'
F - X: 629017.97' / Y: 477667.05'	F - X: 587835.22' / Y: 477607.57'
G - X: 629038.85' / Y: 480296.05'	G - X: 587856.17' / Y: 480236.50'

DELTA FIELD SERVICES

Drill Line Events | Section Corners | Drill Line | Dimension Lines | Federal Leases | NMSLO | HSU | HSU Corners

All bearings and coordinates refer to New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet.

Distances/areas relative to NAD 83 grid measurements. Combined Scale Factor: 0.99977479 and a Convergence Angle: 0.151792308°

JOB No. R4000_008
REV 0 NDS 8/21/2024

Receipt

Tracking Information

Pay.gov Tracking ID: 27J3A56S

Agency Tracking ID: 76876701274

Form Name: Bureau of Land Management (BLM) Application for Permit to Drill (APD) Fee

Application Name: BLM Oil and Gas Online Payment

Payment Information

Payment Type: Debit or credit card

Payment Amount: $12,515.00

Transaction Date: 11/06/2024 02:35:26 PM EST

Payment Date: 11/06/2024

Company: MARATHON OIL PERMIAN LLC

APD IDs: 10400101802

Lease Numbers: NMNM32636

Well Numbers: 302H

Note: You will need your Pay.gov Tracking ID to complete your APD transaction in AFMSS II. Please ensure you write this number down upon completion of payment.

Account Information

Cardholder Name: ADRIAN COVARRUBIAS

Card Type: Visa

Card Number: **********4229

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

Drilling Plan Data Report
06/12/2025

APD ID: 10400101802
Submission Date: 11/21/2024
Operator Name: MARATHON OIL PERMIAN LLC
Well Name: VALKYRIE BS FED COM
Well Number: 302H
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
15798312	PERMIAN	2991	0	0	ALLUVIUM, SANDSTONE	NONE	N
15798300	RUSTLER	2485	506	533	ANHYDRITE	USEABLE WATER	N
15798301	SALADO	2485	506	533	ANHYDRITE, SALT	NONE	N
15798302	CASTILE	1958	1033	1060	ANHYDRITE, SALT	NONE	N
15798303	LAMAR	327	2664	2691	SANDSTONE, SHALE	NONE	N
15798311	BELL CANYON	301	2690	2717	SANDSTONE	OIL	N
15798304	CHERRY CANYON	-517	3508	3535	SANDSTONE	OIL	N
15798305	BRUSHY CANYON	-1824	4815	4842	SANDSTONE	OIL	N
15798298	BONE SPRING LIME	-3265	6256	6283	LIMESTONE	NONE	N
15798299	UPPER AVALON SHALE	-3316	6307	6334	SANDSTONE	OIL	Y
15798307	BONE SPRING 1ST	-4306	7297	7324	SANDSTONE	OIL	Y

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. Marathon requests a 5M annular variance for the 10M BOP system. Please see attached procedure.
Testing Procedure: BOP/BOPE will be tested to 250 psi low and a high of 100% WP for the Annular and 5,000psi for the BOP Stacking 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 43 CFR 3172

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

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

Choke Diagram Attachment:

D2_MRO_Choke_Manifold_20241105100730.pdf

D2_MRO_Flex_Hose_20241105100730.pdf

BOP Diagram Attachment:

D2_MRO_10M_BOP_20241105100736.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	450	0	477	2991	2514	450	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	6912	0	6791	2997	-3800	6912	P-110	40	BUTT	1.2	1.42	BUOY	2.44	BUOY	2.44
3	PRODUCTION	8.75	5.5	NEW	API	N	0	17698	0	7686	2919	-4695	17698	P-110	23	OTHER - TLW	2.53	1.26	BUOY	2.22	BUOY	2.22

Casing Attachments

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D3_VALKYRIE_BS_FED_COM_302H_Casing_Assumptions_20241105111628.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D3_VALKYRIE_BS_FED_COM_302H_Casing_Assumptions_20241105111737.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

D3_VALKYRIE_BS_FED_COM_302H_Casing_Assumptions_20241105111814.pdf

Section 4 - Cement

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	300	146	2.12	12.5	309	25	Class C	Extender, Accelerator, LCM
SURFACE	Tail		300	450	99	1.32	14.8	130	25	Class C	Accelerator
INTERMEDIATE	Lead		0	6412	1164	2.18	12.4	2538	25	Class C	Extender, Accelerator LCM
INTERMEDIATE	Tail		6412	6912	147	1.33	14.8	196	25	Class C	Retarder
PRODUCTION	Lead		6612	17698	2124	1.68	13	3569	25	Class H	Retarder, exender, fluid loss, suspension agent

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

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

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

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	450	WATER-BASED MUD	8.4	8.8							
450	6912	OIL-BASED MUD	9.2	10.2							

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

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
6912	17698	OIL-BASED MUD	10.5	12.5							

Section 6 - Test, Logging, Coring

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

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

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

GAMMA RAY LOG,MEASUREMENT WHILE DRILLING,DIRECTIONAL SURVEY,

Coring operation description for the well:

NA

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4996 **Anticipated Surface Pressure:** 3305

Anticipated Bottom Hole Temperature(F): 195

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

D7_Valkyrie_Fed_Com_H2S_Plan_20241105112235.pdf

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

D8_Valkyrie_BS_Fed_Com_302H_Directional_Plan_20241105112255.pdf

Other proposed operations facets description:

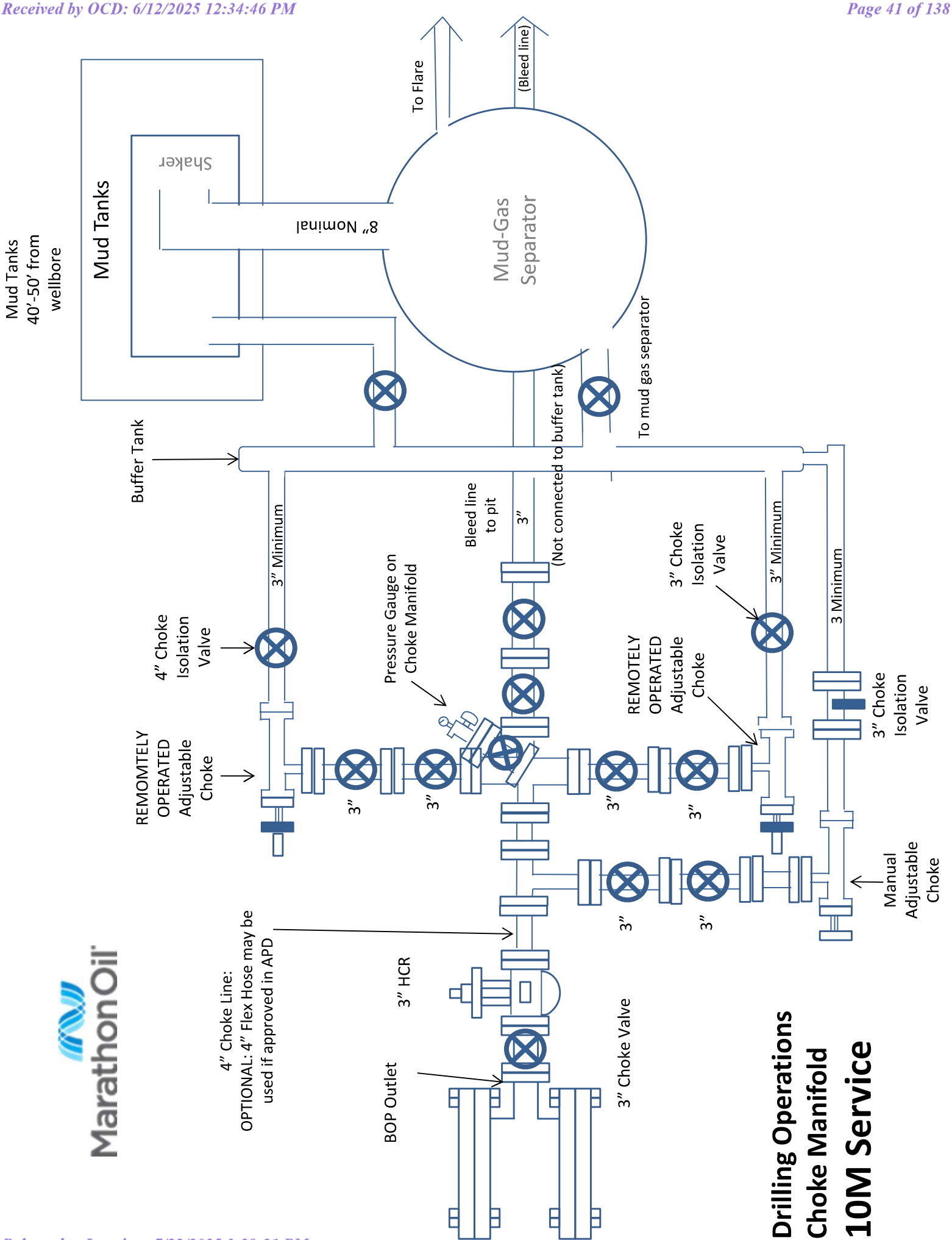
Other proposed operations facets attachment:

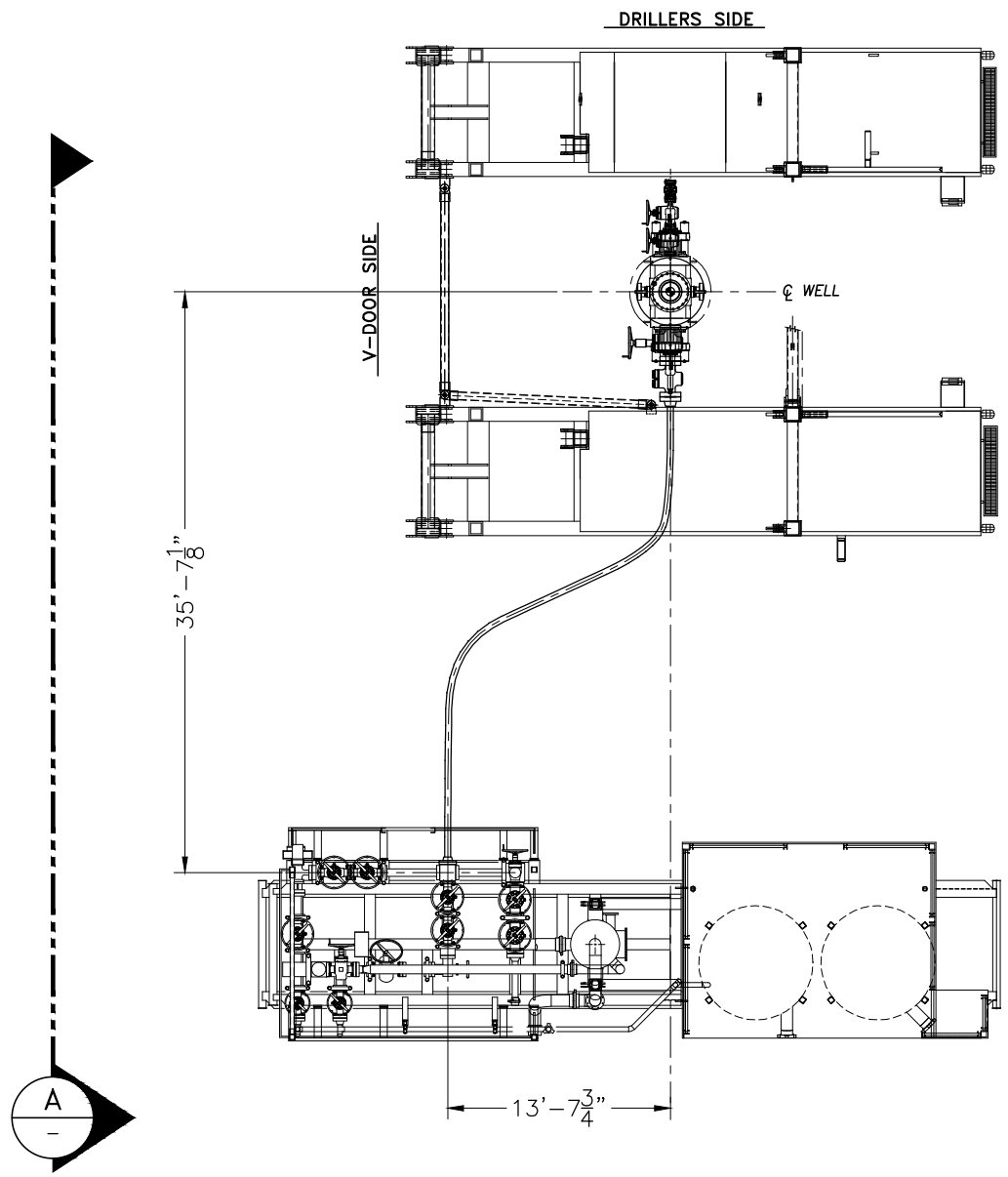
D8_Valkyrie_BS_FED_COM_302H_Drill_Plan_20241105112303.pdf
D8_Valkyrie_Fed_Com_Rig_Layout_20241105112311.pdf
D8_Valkyrie_Fed_Com_NGMP_20241105112330.pdf

Other Variance request(s)?: Y

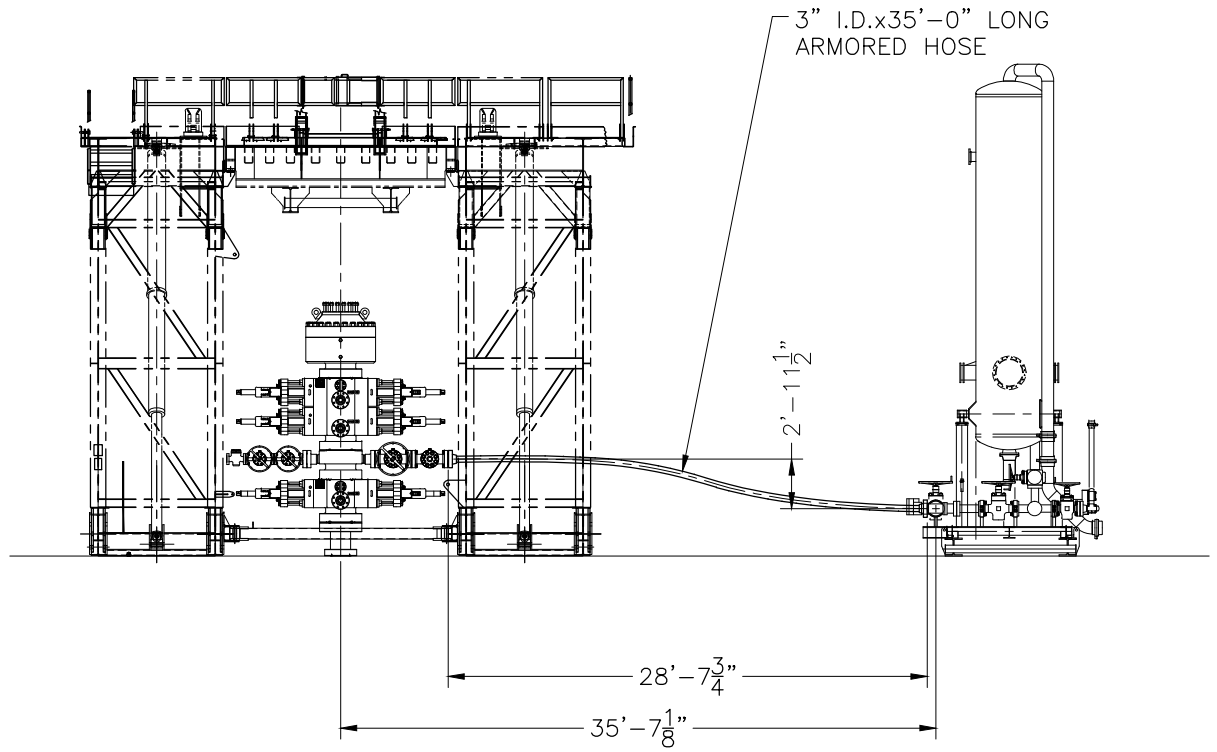
Other Variance attachment:

D8_MRO_Variance_Request__Int_Cement_20241105112547.pdf
D8_MRO_Variance_Offline_Cementing_Surf_n_Inter_20241105112548.pdf
D8_MRO_Variance_Request_BOP_Break_Test_20241105112550.pdf
D8_MRO_Well_Control_Plan_20241105112550.pdf
D8_MRO_Variance_Request_Batch_Drill_n_Spudder_20241105112550.pdf
D8_MRO_Wellhead_Diagram_20241105112550.pdf


Mud Tanks
40'-50' from wellbore
Mud Tanks
Shaker
8" Nominal
Mud-Gas Separator
To Flare
(Bleed line)
To mud gas separator
Buffer Tank
(Not connected to buffer tank)
Bleed line to pit
3"
3" Minimum
4" Choke Isolation Valve
Pressure Gauge on Choke Manifold
REMOMTELY OPERATED Adjustable Choke
3" Choke Isolation Valve
3" Minimum
3 Minimum
REMOTELY OPERATED Adjustable Choke
3" Choke Isolation Valve
Manual Adjustable Choke
4" Choke Line:
OPTIONAL: 4" Flex Hose may be used if approved in APD
3" HCR
BOP Outlet
3" Choke Valve
MarathonOil
Drilling Operations
Choke Manifold
10M Service



PLAN VIEW



SECTION "A"

ISSUED FOR FABRICATION
December-19-2007
DRAFTSMAN
ENGINEER

REV	DATE	DESCRIPTION	BY
A	12/18/07	REMOVED SHEET TOTAL CALLOUT	JAV

ENGINEERING APPROVAL	DATE

HELMERICH & PAYNE
INTERNATIONAL DRILLING CO.

TITLE: CHOKE LINE SYSTEM FLEXRIG3

CUSTOMER:

PROJECT:

DRAWN:	DATE:	DWG. NO.:	REV:
JBG	4-10-07	210-P1-07	A

SCALE: 3/16"=1' SHEET: 2 OF 8

LETONE

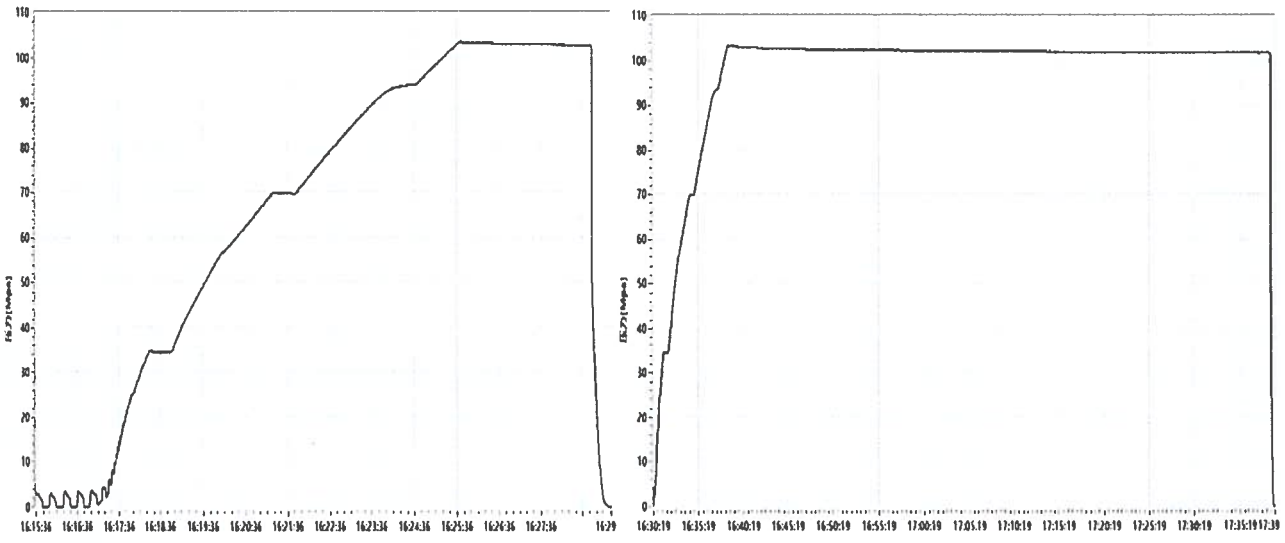
LUOHE LETONE HYDRAULICS TECHNOLOGY CO.,LTD

HYDROSTATIC TESTING REPORT

LTYY/QR-5.7.1-28 №: 230826004

Product Name	Choke And Kill Hose	Standard	API Spec 16C 3rd edition
Product Specification	3″×10000psi×35ft (10.67m)	Serial Number	7660134
Inspection Equipment	MTU-BS-1600-3200-E	Test medium	Water
Inspection Department	Q.C. Department	Inspection Date	2023.08.17
Rate of length change			
Standard requirements	At working pressure ,the rate of length change should not more than ±2%		
Testing result	10000psi (69.0MPa) ,Rate of length change 0.9%		
Hydrostatic testing			
Standard requirements	At 1.5 times working pressure, the initial pressure-holding period of not less than three minutes, the second pressure-holding period of not less than one hour, no leaks.		
Testing result	15000psi (103.5MPa), 3 min for the first time, 60 min for the second time, no leakage		

Graph of pressure testing:



Conclusion	The inspected items meet standard requirements of API Spec 16C 3rd edition				
Approver	Jiaolong Chen	Auditor	Hliqing Dong	Inspector	Zhansheng Wang

LUOHE LETONE HYDRAULICS TECHNOLOGY CO.,LTD

CERTIFICATE OF QUALITY

LTYY/QR-5.7.1-19B №: LT2023-126-001

Customer Name	Austin Hose		
Product Name	Choke And Kill Hose		
Product Specification	3″×10000psi×35ft (10.67m)	Quantity	12PCS
Serial Number	7660131~7660142	FSL	FSL3
Temperature Range	-29℃～+121℃	Standard	API Spec 16C 3rd edition
Inspection Department	Q.C. Department	Inspection date	2023.08.26

Inspection Items	Inspection results
Appearance Checking	In accordance with API Spec 16C 3rd edition
Size and Lengths	In accordance with API Spec 16C 3rd edition
Dimensions and Tolerances	In accordance with API Spec 16C 3rd edition
End Connections: 4-1/16″×10000psi Integral flange for sour gas service	In accordance with API Spec 6A 21st edition
End Connections: 4-1/16″×10000psi Integral flange for sour gas service	In accordance with API Spec 17D 3rd edition
Hydrostatic Testing	In accordance with API Spec 16C 3rd edition
product Marking	In accordance with API Spec 16C 3rd edition
Inspection conclusion	The inspected items meet standard requirements of API Spec 16C 3rd edition
Remarks	

Approver	Jiawang Chen	Auditor	Hliqing Dong	Inspector	Zhansheng Wang

LETONE

LUOHE LETONE HYDRAULICS TECHNOLOGY CO.,LTD

CERTIFICATE OF CONFORMANCE

№:LT230826013

Product Name: Choke And Kill Hose

Product Specification: 3″×10000psi×35ft(10.67m)

Serial Number: 7660131~7660142

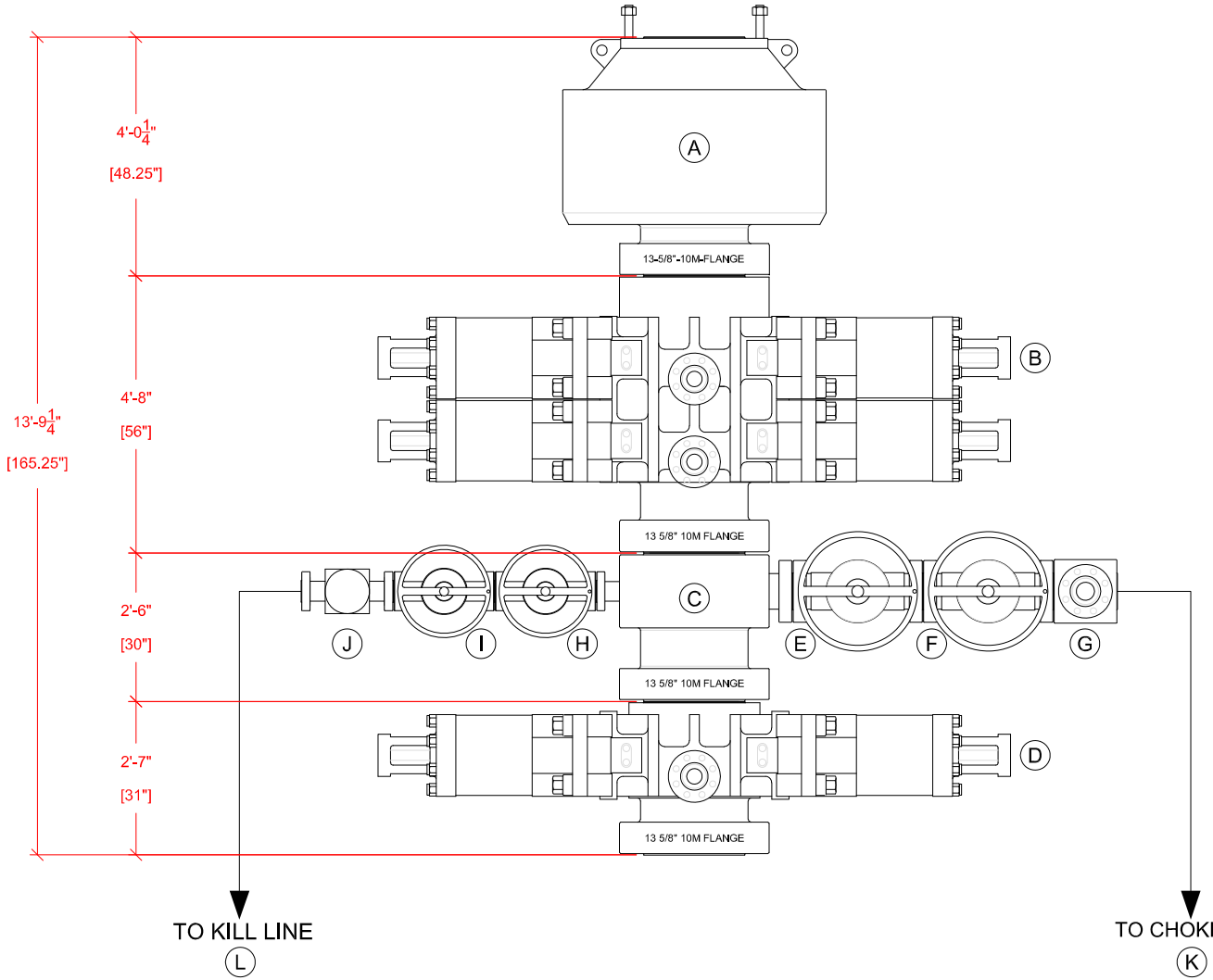
End Connections: 4-1/16″×10000psi Integral flange for sour gas service

The Choke And Kill Hose assembly was produced by LUOHE LETONE HYDRAULICS TECHNOLOGY CO.,LTD . in Aug 2023, and inspected by LUOHE LETONE HYDRAULICS TECHNOLOGY CO.,LTD. according to API Spec 16C 3rd edition on Aug 26, 2023. The overall condition is good. This is to certify that the Choke And Kill Hose complies with all current standards and specifications for API Spec 16C 3rd edition .

QC Manager: Jiaolong Chen Date:Aug 26, 2023

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 1/16" 10M FLS MANUAL
F	HCR VALVE	CAMERON	4 1/16" 10M HCR
G	CHOKE BLOCK	CAMERON	4 1/16" 10M
H	KILL VALVE	CAMERON	2 1/16" 10M FLS MANUAL
I	KILL VALVE	CAMERON	2 1/16" 10M FLS MANUAL
J	CHECK VALVE	CAMERON	2 1/16" 10M "R" CHECK
K	CHOKE LINE	GATES	4 1/16" 10M FR
L	KILL LINE	GATES	2 1/16" 10M FR
M			



SYM	DATE	REVISION	BY

TOLERANCE UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES
DECIMAL DIMENSION — CONCENTRICITY
X.X ± .1 .1 F.I.R.
X.XX ± .06 .06 F.I.R.
X.XXX ± .010 .010 F.I.R.
ANGLES ± .5 DEGREES

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

CUSTOMER INFO:

FILE: R-170_BOP_MARATHON.dwg

DWG BY	IJA	7/13/2021
CHK BY		
APP BY		

SCALE: NTS

CACTUS Drilling Co., L.L.C.
Oklahoma City, OK, U.S.A.
Tel: 405-577-5347 Fax: 405-577-9306

TITLE:
RIG 170
BOP STACK-UP

SIZE B | CAC170-A005 | SHEET 1

Marathon Oil

VALKYRIE BS FED COM 302H

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	450	0	477	2991	2514	54.5	J55	BTC	5.22	1.81	BUOY	4.52	BUOY	4.52
Intermediate	12.25	9.625	0	6912	0	6791	2991	-3800	40	P110HC	BTC	1.20	1.42	BUOY	2.44	BUOY	2.44
Production	8.75	5.5	0	17698	0	7686	2991	-4695	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					

Marathon Oil

VALKYRIE BS FED COM 302H

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	450	0	477	2991	2514	54.5	J55	BTC	5.22	1.81	BUOY	4.52	BUOY	4.52
Intermediate	12.25	9.625	0	6912	0	6791	2991	-3800	40	P110HC	BTC	1.20	1.42	BUOY	2.44	BUOY	2.44
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Marathon Oil

VALKYRIE BS FED COM 302H

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	450	0	477	2991	2514	54.5	J55	BTC	5.22	1.81	BUOY	4.52	BUOY	4.52
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Production	8.75	5.5	0	17698	0	7686	2991	-4695	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					

990 Town & Country Boulevard
Houston, TX 77024

Hydrogen Sulfide (H_2S)
Contingency Plan

Valkyrie BS Fed Com 502H
2463' FSL 569' FEL Sec. 11-23S-28E, Eddy County, NM

Valkyrie BS Fed Com 552H
2434' FSL 558' FEL Sec. 11-23S-28E, Eddy County, NM

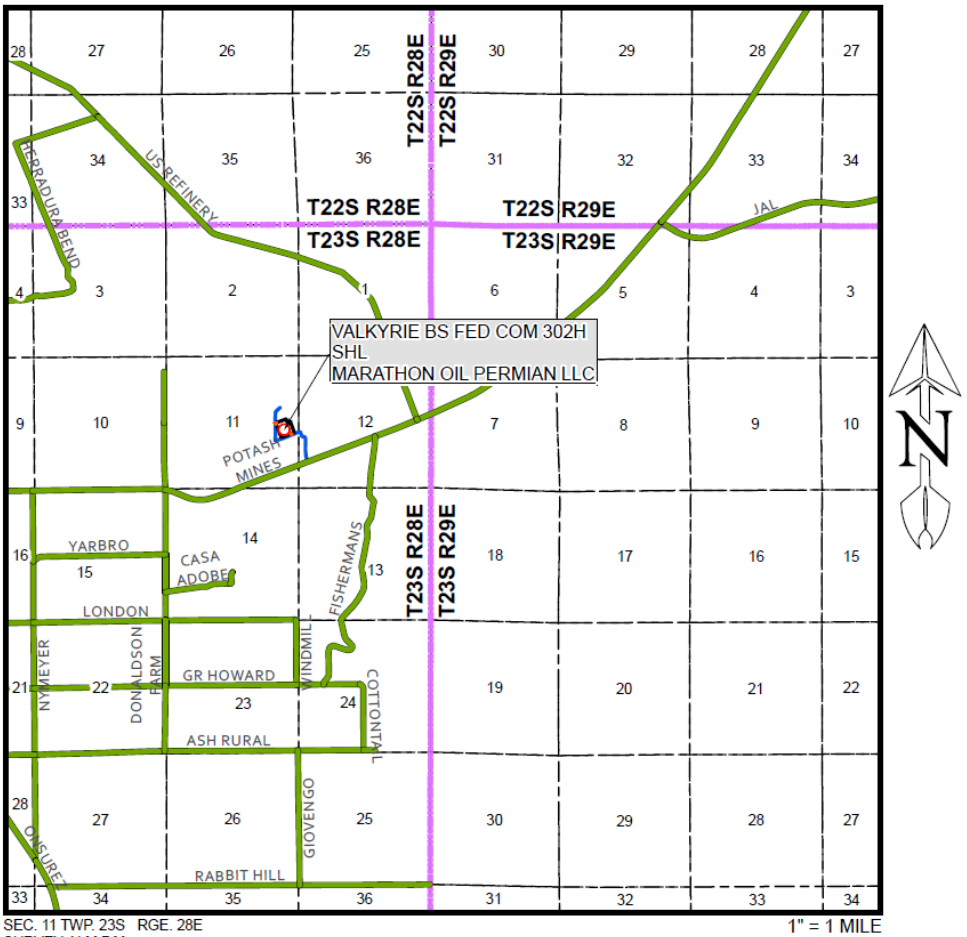
Valkyrie BS Fed Com 302H
2406' FSL 547' FEL Sec. 11-23S-28E, Eddy County, NM

Valkyrie BS Fed Com 501H
2378' FSL 537' FEL Sec. 11-23S-28E, Eddy County, NM

Valkyrie BS Fed Com 551H
2350' FSL 526' FEL Sec. 11-23S-28E, Eddy County, NM

Marathon Oil Permian, LLC
Valkyrie Fed Com

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



Escape

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

Assumed 100 ppm ROE = 3000'
100 ppm H2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H2S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H2S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
    - Detection of H2S, and
    - Measures for protection against the gas,
    - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H2 S and SO2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

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

Marathon Oil Permian, LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H2S) TRAINING

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

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

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

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

II. HYDROGEN SULFIDE TRAINING

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

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

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

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

EMERGENCY & MEDICAL FACILITIES

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

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

Marathon Oil Corporation

Project: Eddy County, NM (NAD27-NME)
Site: Valkyrie BS Fed Com
Well: Valkyrie BS Fed Com 302H
Wellbore: OH
Design: Permit Plan 1
Rig: TBD

PHOENIX TECHNOLOGY SERVICES

T G M

Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.49°

Magnetic Field
Strength: 47319.1nT
Dip Angle: 59.89°
Date: 11/17/2024
Model: MVHD

RKB @ 2934.60usft (TBD)

Ground Level: 2911.00

WELL DETAILS

Ground Level: 2911.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	480007.64	587306.95	32° 19' 9.626615 N	104° 3' 2.555198 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00		
2	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.000	0.00		KOP, Begin 2.00°/100' Build
3	2184.50	15.69	141.75	2174.73	-83.82	66.09	2.00	141.745	67.23		Hold 15.69° Inc at 141.75° Azm
4	4927.23	15.69	141.75	4815.27	-666.27	525.34	0.00	0.000	534.36		Begin 2.00°/100' Drop
5	5711.73	0.00	0.00	5590.00	-750.10	591.43	2.00	180.000	601.59		Begin Vertical Hold
6	7012.27	0.00	0.00	6890.53	-750.10	591.43	0.00	0.000	601.59		KOP2, Begin 10.00°/100' Build
7	7899.27	88.70	89.88	7463.34	-748.90	1151.39	10.00	89.878	1161.48		LP, Hold 88.70° Inc at 89.88° Azm
8	12673.10	88.70	89.88	7571.65	-738.74	5923.98	0.00	0.000	5933.49	PI-1PPP-2 - Valkyrie BS FC 302H	Begin 2.00°/100' Turn
9	12766.91	88.70	91.75	7573.78	-740.08	6017.76	2.00	90.016	6027.27		Hold 91.75° Azm
10	17698.12	88.70	91.75	7685.64	-891.04	10945.38	0.00	0.000	10956.50	LTP/BHL - Valkyrie BS FC 302H	TD at 17698.12

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP/PPP-1 - Valkyrie BS FC 302H	7451.78	-749.99	641.42	479257.65	587948.37	32° 19' 2.187829 N	104° 2' 55.103609 W
PI-1PPP-2 - Valkyrie BS FC 302H	7571.65	-738.74	5923.98	479268.90	593230.93	32° 19' 2.156122 N	104° 1' 53.544237 W
LTP/BHL - Valkyrie BS FC 302H	7685.64	-891.04	10945.38	479116.60	598252.33	32° 19' 0.505249 N	104° 0' 55.033960 W

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

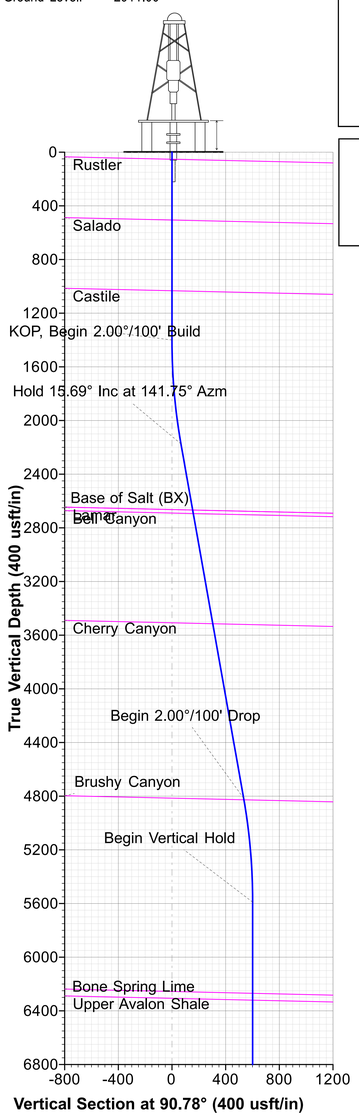
Local Origin: Well Valkyrie BS Fed Com 302H, Grid North

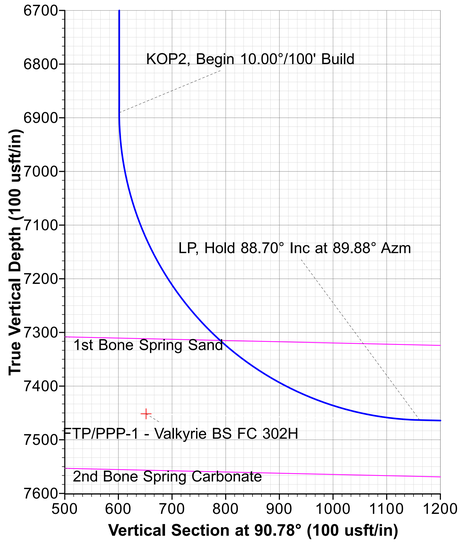
Latitude: 32° 19' 9.626615 N
Longitude: 104° 3' 2.555198 W

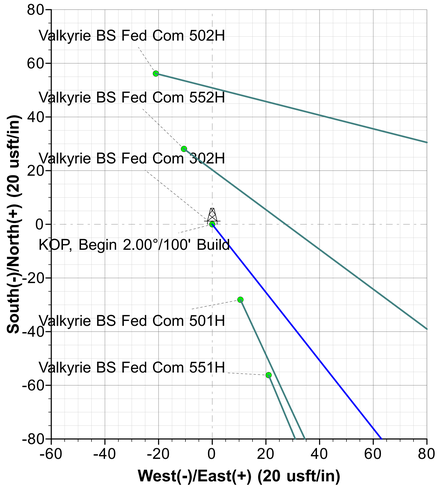
Grid East: 587306.95
Grid North: 480007.64
Scale Factor: 1.000

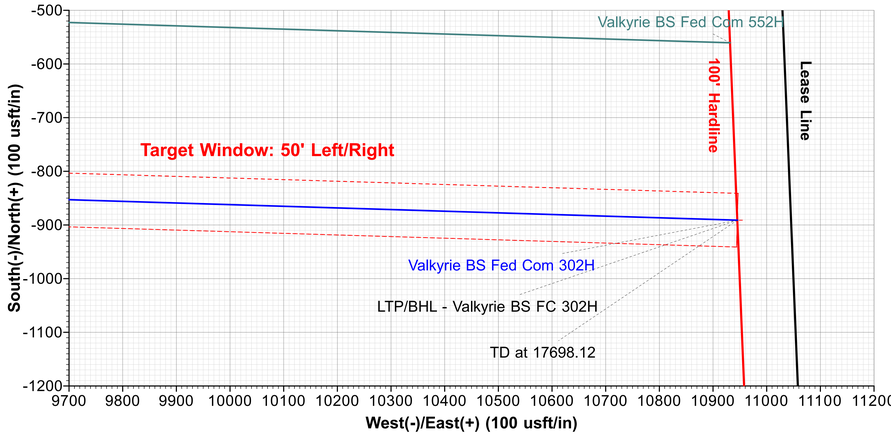
Geomagnetic Model: MVHD
Sample Date: 17-Nov-24
Magnetic Declination: 6.637°
Dip Angle from Horizontal: 59.892°
Magnetic Field Strength: 47319.11914150nT

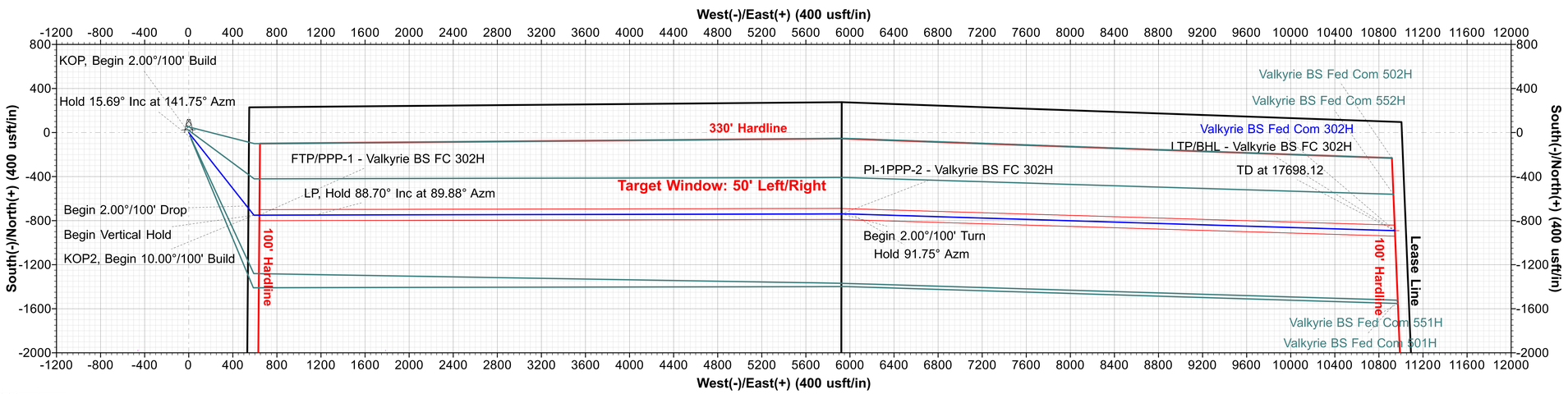
To convert a Magnetic Direction to a Grid Direction, Add 6.486°
To convert a Magnetic Direction to a True Direction, Add 6.637° East
To convert a True Direction to a Grid Direction, Subtract 0.151°

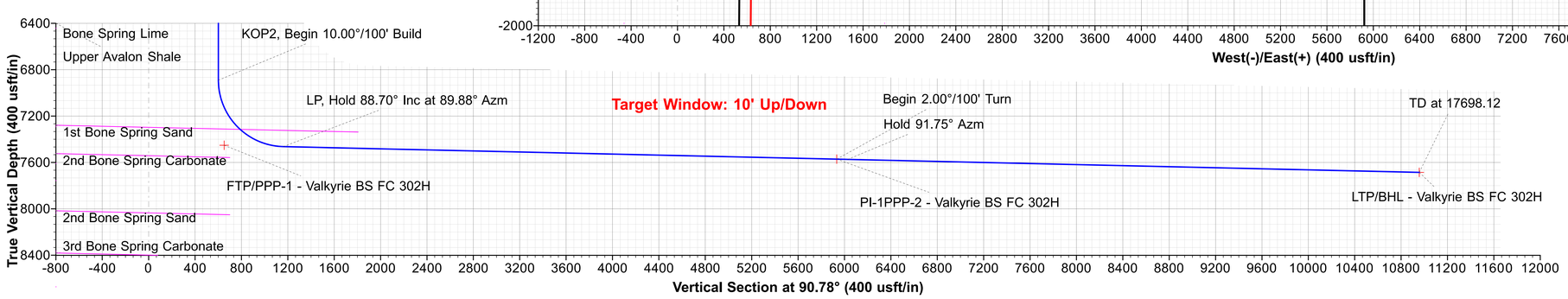












Date: 10:22, September 18 2024

PHOENIX
TECHNOLOGY SERVICES

Marathon Oil Permian LLC

Eddy County, NM (NAD27-NME)
Valkyrie BS Fed Com
Valkyrie BS Fed Com 302H

OH

Plan: Permit Plan 1

Standard Planning Report

18 September, 2024

Marathon Oil Corporation

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 1		

Project Eddy County, NM (NAD27-NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Valkyrie BS Fed Com

Site Position:		**Northing:**	480,007.64 usft	**Latitude:**	32° 19' 9.626615 N
From:	Map	**Easting:**	587,306.95 usft	**Longitude:**	104° 3' 2.555198 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.151 °

Well Valkyrie BS Fed Com 302H

Well Position	**+N/-S**	0.00 usft	**Northing:**	480,007.64 usft	**Latitude:**	32° 19' 9.626615 N
	+E/-W	0.00 usft	**Easting:**	587,306.95 usft	**Longitude:**	104° 3' 2.555198 W
Position Uncertainty		1.00 usft	**Wellhead Elevation:**		**Ground Level:**	2,911.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	11/17/24	6.637	59.892	47,319.11914150

Design Permit Plan 1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	90.78

Plan Survey Tool Program **Date** 9/17/24

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,698.12	Permit Plan 1 (OH)	A008Mc_MWD+IFR1+MS_MWD+IFR1+MSA	

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

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Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,184.50	15.69	141.75	2,174.73	-83.82	66.09	2.00	2.00	0.00	141.745	
4,927.23	15.69	141.75	4,815.27	-666.27	525.34	0.00	0.00	0.00	0.000	
5,711.73	0.00	0.00	5,590.00	-750.10	591.43	2.00	-2.00	0.00	180.000	
7,012.27	0.00	0.00	6,890.53	-750.10	591.43	0.00	0.00	0.00	0.000	
7,899.27	88.70	89.88	7,463.34	-748.90	1,151.39	10.00	10.00	0.00	89.878	
12,673.10	88.70	89.88	7,571.65	-738.74	5,923.98	0.00	0.00	0.00	0.000	PI-1PPP-2 - Valkyri
12,766.91	88.70	91.75	7,573.78	-740.08	6,017.76	2.00	0.00	2.00	90.016	
17,698.12	88.70	91.75	7,685.64	-891.04	10,945.38	0.00	0.00	0.00	0.000	LTP/BHL - Valkyrie

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
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Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 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
53.00	0.00	0.00	53.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
506.00	0.00	0.00	506.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,033.00	0.00	0.00	1,033.00	0.00	0.00	0.00	0.00	0.00	0.00
Castile									
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 2.00°/100' Build									
1,500.00	2.00	141.75	1,499.98	-1.37	1.08	1.10	2.00	2.00	0.00
1,600.00	4.00	141.75	1,599.84	-5.48	4.32	4.40	2.00	2.00	0.00
1,700.00	6.00	141.75	1,699.45	-12.32	9.72	9.88	2.00	2.00	0.00
1,800.00	8.00	141.75	1,798.70	-21.89	17.26	17.56	2.00	2.00	0.00
1,900.00	10.00	141.75	1,897.47	-34.18	26.95	27.41	2.00	2.00	0.00
2,000.00	12.00	141.75	1,995.62	-49.16	38.76	39.43	2.00	2.00	0.00
2,100.00	14.00	141.75	2,093.06	-66.82	52.69	53.59	2.00	2.00	0.00
2,184.50	15.69	141.75	2,174.73	-83.82	66.09	67.23	2.00	2.00	0.00
Hold 15.69° Inc at 141.75° Azm									
2,200.00	15.69	141.75	2,189.65	-87.11	68.69	69.87	0.00	0.00	0.00
2,300.00	15.69	141.75	2,285.93	-108.35	85.43	86.90	0.00	0.00	0.00
2,400.00	15.69	141.75	2,382.20	-129.59	102.18	103.93	0.00	0.00	0.00
2,500.00	15.69	141.75	2,478.48	-150.82	118.92	120.96	0.00	0.00	0.00
2,600.00	15.69	141.75	2,574.75	-172.06	135.66	137.99	0.00	0.00	0.00
2,696.34	15.69	141.75	2,667.50	-192.52	151.80	154.40	0.00	0.00	0.00
Base of Salt (BX) - Lamar									
2,700.00	15.69	141.75	2,671.02	-193.30	152.41	155.03	0.00	0.00	0.00
2,723.46	15.69	141.75	2,693.61	-198.28	156.34	159.02	0.00	0.00	0.00
Bell Canyon									
2,800.00	15.69	141.75	2,767.30	-214.53	169.15	172.06	0.00	0.00	0.00
2,900.00	15.69	141.75	2,863.57	-235.77	185.90	189.09	0.00	0.00	0.00
3,000.00	15.69	141.75	2,959.85	-257.00	202.64	206.12	0.00	0.00	0.00
3,100.00	15.69	141.75	3,056.12	-278.24	219.39	223.15	0.00	0.00	0.00
3,200.00	15.69	141.75	3,152.39	-299.48	236.13	240.18	0.00	0.00	0.00
3,300.00	15.69	141.75	3,248.67	-320.71	252.87	257.22	0.00	0.00	0.00
3,400.00	15.69	141.75	3,344.94	-341.95	269.62	274.25	0.00	0.00	0.00
3,500.00	15.69	141.75	3,441.21	-363.18	286.36	291.28	0.00	0.00	0.00
3,576.54	15.69	141.75	3,514.91	-379.44	299.18	304.32	0.00	0.00	0.00
Cherry Canyon									
3,600.00	15.69	141.75	3,537.49	-384.42	303.11	308.31	0.00	0.00	0.00
3,700.00	15.69	141.75	3,633.76	-405.66	319.85	325.34	0.00	0.00	0.00
3,800.00	15.69	141.75	3,730.04	-426.89	336.59	342.37	0.00	0.00	0.00
3,900.00	15.69	141.75	3,826.31	-448.13	353.34	359.41	0.00	0.00	0.00
4,000.00	15.69	141.75	3,922.58	-469.36	370.08	376.44	0.00	0.00	0.00
4,100.00	15.69	141.75	4,018.86	-490.60	386.83	393.47	0.00	0.00	0.00
4,200.00	15.69	141.75	4,115.13	-511.84	403.57	410.50	0.00	0.00	0.00
4,300.00	15.69	141.75	4,211.41	-533.07	420.32	427.53	0.00	0.00	0.00
4,400.00	15.69	141.75	4,307.68	-554.31	437.06	444.56	0.00	0.00	0.00
4,500.00	15.69	141.75	4,403.95	-575.55	453.80	461.60	0.00	0.00	0.00
4,600.00	15.69	141.75	4,500.23	-596.78	470.55	478.63	0.00	0.00	0.00
4,700.00	15.69	141.75	4,596.50	-618.02	487.29	495.66	0.00	0.00	0.00
4,800.00	15.69	141.75	4,692.78	-639.25	504.04	512.69	0.00	0.00	0.00
4,900.00	15.69	141.75	4,789.05	-660.49	520.78	529.72	0.00	0.00	0.00
4,927.23	15.69	141.75	4,815.27	-666.27	525.34	534.36	0.00	0.00	0.00

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 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)
Begin 2.00°/100' Drop									
4,939.59	15.44	141.75	4,827.17	-668.88	527.39	536.45	2.00	-2.00	0.00
Brushy Canyon									
5,000.00	14.23	141.75	4,885.57	-681.03	536.97	546.19	2.00	-2.00	0.00
5,100.00	12.23	141.75	4,982.90	-699.00	551.15	560.61	2.00	-2.00	0.00
5,200.00	10.23	141.75	5,080.98	-714.30	563.21	572.88	2.00	-2.00	0.00
5,300.00	8.23	141.75	5,179.68	-726.90	573.14	582.99	2.00	-2.00	0.00
5,400.00	6.23	141.75	5,278.88	-736.79	580.94	590.92	2.00	-2.00	0.00
5,500.00	4.23	141.75	5,378.46	-743.95	586.59	596.66	2.00	-2.00	0.00
5,600.00	2.23	141.75	5,478.29	-748.39	590.08	600.22	2.00	-2.00	0.00
5,700.00	0.23	141.75	5,578.27	-750.08	591.42	601.57	2.00	-2.00	0.00
5,711.73	0.00	0.00	5,590.00	-750.10	591.43	601.59	2.00	-2.00	0.00
Begin Vertical Hold									
6,391.39	0.00	0.00	6,269.65	-750.10	591.43	601.59	0.00	0.00	0.00
Bone Spring Lime									
6,442.39	0.00	0.00	6,320.65	-750.10	591.43	601.59	0.00	0.00	0.00
Upper Avalon Shale									
7,012.27	0.00	0.00	6,890.53	-750.10	591.43	601.59	0.00	0.00	0.00
KOP2, Begin 10.00°/100' Build									
7,100.00	8.77	89.88	6,977.92	-750.08	598.14	608.29	10.00	10.00	0.00
7,200.00	18.77	89.88	7,074.93	-750.03	621.91	632.07	10.00	10.00	0.00
7,300.00	28.77	89.88	7,166.32	-749.95	662.17	672.32	10.00	10.00	0.00
7,400.00	38.77	89.88	7,249.34	-749.83	717.69	727.84	10.00	10.00	0.00
7,490.17	47.79	89.88	7,314.92	-749.70	779.45	789.58	10.00	10.00	0.00
1st Bone Spring Sand									
7,500.00	48.77	89.88	7,321.46	-749.68	786.79	796.92	10.00	10.00	0.00
7,600.00	58.77	89.88	7,380.48	-749.51	867.35	877.48	10.00	10.00	0.00
7,700.00	68.77	89.88	7,424.62	-749.32	956.94	967.06	10.00	10.00	0.00
7,800.00	78.77	89.88	7,452.53	-749.11	1,052.84	1,062.94	10.00	10.00	0.00
7,899.27	88.70	89.88	7,463.34	-748.90	1,151.39	1,161.48	10.00	10.00	0.00
LP, Hold 88.70° Inc at 89.88° Azm									
7,900.00	88.70	89.88	7,463.36	-748.90	1,152.12	1,162.21	0.00	0.00	0.00
8,000.00	88.70	89.88	7,465.63	-748.69	1,252.10	1,262.17	0.00	0.00	0.00
8,100.00	88.70	89.88	7,467.90	-748.48	1,352.07	1,362.13	0.00	0.00	0.00
8,200.00	88.70	89.88	7,470.17	-748.26	1,452.04	1,462.10	0.00	0.00	0.00
8,300.00	88.70	89.88	7,472.44	-748.05	1,552.02	1,562.06	0.00	0.00	0.00
8,400.00	88.70	89.88	7,474.70	-747.84	1,651.99	1,662.02	0.00	0.00	0.00
8,500.00	88.70	89.88	7,476.97	-747.62	1,751.97	1,761.98	0.00	0.00	0.00
8,600.00	88.70	89.88	7,479.24	-747.41	1,851.94	1,861.94	0.00	0.00	0.00
8,700.00	88.70	89.88	7,481.51	-747.20	1,951.91	1,961.91	0.00	0.00	0.00
8,800.00	88.70	89.88	7,483.78	-746.99	2,051.89	2,061.87	0.00	0.00	0.00
8,900.00	88.70	89.88	7,486.05	-746.77	2,151.86	2,161.83	0.00	0.00	0.00
9,000.00	88.70	89.88	7,488.32	-746.56	2,251.84	2,261.79	0.00	0.00	0.00
9,100.00	88.70	89.88	7,490.59	-746.35	2,351.81	2,361.75	0.00	0.00	0.00
9,200.00	88.70	89.88	7,492.85	-746.13	2,451.78	2,461.71	0.00	0.00	0.00
9,300.00	88.70	89.88	7,495.12	-745.92	2,551.76	2,561.68	0.00	0.00	0.00
9,400.00	88.70	89.88	7,497.39	-745.71	2,651.73	2,661.64	0.00	0.00	0.00
9,500.00	88.70	89.88	7,499.66	-745.50	2,751.71	2,761.60	0.00	0.00	0.00
9,600.00	88.70	89.88	7,501.93	-745.28	2,851.68	2,861.56	0.00	0.00	0.00
9,700.00	88.70	89.88	7,504.20	-745.07	2,951.65	2,961.52	0.00	0.00	0.00
9,800.00	88.70	89.88	7,506.47	-744.86	3,051.63	3,061.49	0.00	0.00	0.00
9,900.00	88.70	89.88	7,508.74	-744.64	3,151.60	3,161.45	0.00	0.00	0.00
10,000.00	88.70	89.88	7,511.00	-744.43	3,251.58	3,261.41	0.00	0.00	0.00

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 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)
10,100.00	88.70	89.88	7,513.27	-744.22	3,351.55	3,361.37	0.00	0.00	0.00
10,200.00	88.70	89.88	7,515.54	-744.01	3,451.52	3,461.33	0.00	0.00	0.00
10,300.00	88.70	89.88	7,517.81	-743.79	3,551.50	3,561.30	0.00	0.00	0.00
10,400.00	88.70	89.88	7,520.08	-743.58	3,651.47	3,661.26	0.00	0.00	0.00
10,500.00	88.70	89.88	7,522.35	-743.37	3,751.45	3,761.22	0.00	0.00	0.00
10,600.00	88.70	89.88	7,524.62	-743.15	3,851.42	3,861.18	0.00	0.00	0.00
10,700.00	88.70	89.88	7,526.89	-742.94	3,951.40	3,961.14	0.00	0.00	0.00
10,800.00	88.70	89.88	7,529.15	-742.73	4,051.37	4,061.10	0.00	0.00	0.00
10,900.00	88.70	89.88	7,531.42	-742.52	4,151.34	4,161.07	0.00	0.00	0.00
11,000.00	88.70	89.88	7,533.69	-742.30	4,251.32	4,261.03	0.00	0.00	0.00
11,100.00	88.70	89.88	7,535.96	-742.09	4,351.29	4,360.99	0.00	0.00	0.00
11,200.00	88.70	89.88	7,538.23	-741.88	4,451.27	4,460.95	0.00	0.00	0.00
11,300.00	88.70	89.88	7,540.50	-741.66	4,551.24	4,560.91	0.00	0.00	0.00
11,400.00	88.70	89.88	7,542.77	-741.45	4,651.21	4,660.88	0.00	0.00	0.00
11,500.00	88.70	89.88	7,545.04	-741.24	4,751.19	4,760.84	0.00	0.00	0.00
11,600.00	88.70	89.88	7,547.30	-741.02	4,851.16	4,860.80	0.00	0.00	0.00
11,700.00	88.70	89.88	7,549.57	-740.81	4,951.14	4,960.76	0.00	0.00	0.00
11,800.00	88.70	89.88	7,551.84	-740.60	5,051.11	5,060.72	0.00	0.00	0.00
11,900.00	88.70	89.88	7,554.11	-740.39	5,151.08	5,160.69	0.00	0.00	0.00
12,000.00	88.70	89.88	7,556.38	-740.17	5,251.06	5,260.65	0.00	0.00	0.00
12,100.00	88.70	89.88	7,558.65	-739.96	5,351.03	5,360.61	0.00	0.00	0.00
12,200.00	88.70	89.88	7,560.92	-739.75	5,451.01	5,460.57	0.00	0.00	0.00
12,300.00	88.70	89.88	7,563.19	-739.53	5,550.98	5,560.53	0.00	0.00	0.00
12,400.00	88.70	89.88	7,565.45	-739.32	5,650.95	5,660.49	0.00	0.00	0.00
12,500.00	88.70	89.88	7,567.72	-739.11	5,750.93	5,760.46	0.00	0.00	0.00
12,600.00	88.70	89.88	7,569.99	-738.90	5,850.90	5,860.42	0.00	0.00	0.00
12,673.10	88.70	89.88	7,571.65	-738.74	5,923.98	5,933.49	0.00	0.00	0.00
Begin 2.00°/100' Turn									
12,700.00	88.70	90.42	7,572.26	-738.81	5,950.88	5,960.38	2.00	0.00	2.00
12,766.91	88.70	91.75	7,573.78	-740.08	6,017.76	6,027.28	2.00	0.00	2.00
Hold 91.75° Azm									
12,800.00	88.70	91.75	7,574.53	-741.09	6,050.82	6,060.35	0.00	0.00	0.00
12,900.00	88.70	91.75	7,576.80	-744.15	6,150.75	6,160.31	0.00	0.00	0.00
13,000.00	88.70	91.75	7,579.07	-747.21	6,250.68	6,260.27	0.00	0.00	0.00
13,100.00	88.70	91.75	7,581.33	-750.27	6,350.60	6,360.23	0.00	0.00	0.00
13,200.00	88.70	91.75	7,583.60	-753.33	6,450.53	6,460.19	0.00	0.00	0.00
13,300.00	88.70	91.75	7,585.87	-756.40	6,550.46	6,560.15	0.00	0.00	0.00
13,400.00	88.70	91.75	7,588.14	-759.46	6,650.39	6,660.11	0.00	0.00	0.00
13,500.00	88.70	91.75	7,590.41	-762.52	6,750.31	6,760.07	0.00	0.00	0.00
13,600.00	88.70	91.75	7,592.68	-765.58	6,850.24	6,860.03	0.00	0.00	0.00
13,700.00	88.70	91.75	7,594.95	-768.64	6,950.17	6,959.99	0.00	0.00	0.00
13,800.00	88.70	91.75	7,597.21	-771.70	7,050.09	7,059.95	0.00	0.00	0.00
13,900.00	88.70	91.75	7,599.48	-774.76	7,150.02	7,159.91	0.00	0.00	0.00
14,000.00	88.70	91.75	7,601.75	-777.83	7,249.95	7,259.87	0.00	0.00	0.00
14,100.00	88.70	91.75	7,604.02	-780.89	7,349.88	7,359.83	0.00	0.00	0.00
14,200.00	88.70	91.75	7,606.29	-783.95	7,449.80	7,459.79	0.00	0.00	0.00
14,300.00	88.70	91.75	7,608.56	-787.01	7,549.73	7,559.75	0.00	0.00	0.00
14,400.00	88.70	91.75	7,610.82	-790.07	7,649.66	7,659.71	0.00	0.00	0.00
14,500.00	88.70	91.75	7,613.09	-793.13	7,749.59	7,759.67	0.00	0.00	0.00
14,600.00	88.70	91.75	7,615.36	-796.19	7,849.51	7,859.63	0.00	0.00	0.00
14,700.00	88.70	91.75	7,617.63	-799.26	7,949.44	7,959.59	0.00	0.00	0.00
14,800.00	88.70	91.75	7,619.90	-802.32	8,049.37	8,059.54	0.00	0.00	0.00
14,900.00	88.70	91.75	7,622.17	-805.38	8,149.30	8,159.50	0.00	0.00	0.00

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 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)
15,000.00	88.70	91.75	7,624.43	-808.44	8,249.22	8,259.46	0.00	0.00	0.00
15,100.00	88.70	91.75	7,626.70	-811.50	8,349.15	8,359.42	0.00	0.00	0.00
15,200.00	88.70	91.75	7,628.97	-814.56	8,449.08	8,459.38	0.00	0.00	0.00
15,300.00	88.70	91.75	7,631.24	-817.62	8,549.01	8,559.34	0.00	0.00	0.00
15,400.00	88.70	91.75	7,633.51	-820.69	8,648.93	8,659.30	0.00	0.00	0.00
15,500.00	88.70	91.75	7,635.78	-823.75	8,748.86	8,759.26	0.00	0.00	0.00
15,600.00	88.70	91.75	7,638.05	-826.81	8,848.79	8,859.22	0.00	0.00	0.00
15,700.00	88.70	91.75	7,640.31	-829.87	8,948.72	8,959.18	0.00	0.00	0.00
15,800.00	88.70	91.75	7,642.58	-832.93	9,048.64	9,059.14	0.00	0.00	0.00
15,900.00	88.70	91.75	7,644.85	-835.99	9,148.57	9,159.10	0.00	0.00	0.00
16,000.00	88.70	91.75	7,647.12	-839.05	9,248.50	9,259.06	0.00	0.00	0.00
16,100.00	88.70	91.75	7,649.39	-842.12	9,348.42	9,359.02	0.00	0.00	0.00
16,200.00	88.70	91.75	7,651.66	-845.18	9,448.35	9,458.98	0.00	0.00	0.00
16,300.00	88.70	91.75	7,653.92	-848.24	9,548.28	9,558.94	0.00	0.00	0.00
16,400.00	88.70	91.75	7,656.19	-851.30	9,648.21	9,658.90	0.00	0.00	0.00
16,500.00	88.70	91.75	7,658.46	-854.36	9,748.13	9,758.86	0.00	0.00	0.00
16,600.00	88.70	91.75	7,660.73	-857.42	9,848.06	9,858.82	0.00	0.00	0.00
16,700.00	88.70	91.75	7,663.00	-860.48	9,947.99	9,958.78	0.00	0.00	0.00
16,800.00	88.70	91.75	7,665.27	-863.55	10,047.92	10,058.74	0.00	0.00	0.00
16,900.00	88.70	91.75	7,667.54	-866.61	10,147.84	10,158.70	0.00	0.00	0.00
17,000.00	88.70	91.75	7,669.80	-869.67	10,247.77	10,258.66	0.00	0.00	0.00
17,100.00	88.70	91.75	7,672.07	-872.73	10,347.70	10,358.62	0.00	0.00	0.00
17,200.00	88.70	91.75	7,674.34	-875.79	10,447.63	10,458.58	0.00	0.00	0.00
17,300.00	88.70	91.75	7,676.61	-878.85	10,547.55	10,558.54	0.00	0.00	0.00
17,400.00	88.70	91.75	7,678.88	-881.91	10,647.48	10,658.50	0.00	0.00	0.00
17,500.00	88.70	91.75	7,681.15	-884.97	10,747.41	10,758.46	0.00	0.00	0.00
17,600.00	88.70	91.75	7,683.41	-888.04	10,847.34	10,858.42	0.00	0.00	0.00
17,698.12	88.70	91.75	7,685.64	-891.04	10,945.38	10,956.50	0.00	0.00	0.00
TD at 17698.12									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP/PPP-1 - Valkyrie - plan misses target center by 194.38usft at 7490.17usft MD (7314.92 TVD, -749.70 N, 779.45 E) - Point	0.00	0.00	7,451.78	-749.99	641.42	479,257.65	587,948.37	32° 19' 2.187829 N	04° 2' 55.103609 W
PI-1PPP-2 - Valkyrie E - plan hits target center - Rectangle (sides W100.00 H5,281.92 D0.00)	1.30	89.88	7,571.65	-738.74	5,923.98	479,268.90	593,230.93	32° 19' 2.156122 N	04° 1' 53.544237 W
LTP/BHL - Valkyrie BS - plan hits target center - Rectangle (sides W100.00 H5,025.02 D0.00)	1.30	91.73	7,685.64	-891.04	10,945.38	479,116.60	598,252.33	32° 19' 0.505249 N	04° 0' 55.033960 W

PHOENIX TECHNOLOGY SERVICES

Phoenix
Planning Report

Marathon Oil Corporation

Database:	USAEDMDB	**Local Co-ordinate Reference:**	Well Valkyrie BS Fed Com 302H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	RKB @ 2934.60usft (TBD)
Project:	Eddy County, NM (NAD27-NME)	**MD Reference:**	RKB @ 2934.60usft (TBD)
Site:	Valkyrie BS Fed Com	**North Reference:**	Grid
Well:	Valkyrie BS Fed Com 302H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Permit Plan 1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
53.00	53.00	Rustler		1.300	90.78
506.00	506.00	Salado		1.300	90.78
1,033.00	1,033.00	Castile		1.300	90.78
2,696.34	2,667.50	Base of Salt (BX)		1.300	90.78
2,696.34	2,667.50	Lamar		1.300	90.78
2,723.46	2,693.61	Bell Canyon		1.300	90.78
3,576.54	3,514.91	Cherry Canyon		1.300	90.78
4,939.59	4,827.17	Brushy Canyon		1.300	90.78
6,391.39	6,269.65	Bone Spring Lime		1.300	90.78
6,442.39	6,320.65	Upper Avalon Shale		1.300	90.78
7,490.17	7,314.92	1st Bone Spring Sand		1.300	90.78

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,400.00	1,400.00	0.00	0.00	KOP, Begin 2.00°/100' Build
2,184.50	2,174.73	-83.82	66.09	Hold 15.69° Inc at 141.75° Azm
4,927.23	4,815.27	-666.27	525.34	Begin 2.00°/100' Drop
5,711.73	5,590.00	-750.10	591.43	Begin Vertical Hold
7,012.27	6,890.53	-750.10	591.43	KOP2, Begin 10.00°/100' Build
7,899.27	7,463.34	-748.90	1,151.39	LP, Hold 88.70° Inc at 89.88° Azm
12,673.10	7,571.65	-738.74	5,923.98	Begin 2.00°/100' Turn
12,766.91	7,573.78	-740.08	6,017.76	Hold 91.75° Azm
17,698.12	7,685.64	-891.04	10,945.38	TD at 17698.12

MARATHON OIL PERMIAN, LLC.

DRILLING AND OPERATIONS PLAN

WELL NAME & NUMBER: **VALKYRIE BS FEDERAL COM 302H**

LOCATION: SECTION **11** TOWNSHIP **23S** RANGE **28E**

EDDY COUNTY, **NEW MEXICO**

Section 1: GEOLOGICAL FORMATIONS

Name of Surface Formation: Permian

Elevation: 2991 *feet*

Estimated Tops of Important Geological Markers:

Formation	TVD (ft)	MD (ft)	Elevation (ft SS)	Lithologies	Mineral Resources	Producing Formation?
Rustler	53	80	2938	Anhydrite	Brine	No
Salado	506	533	2485	Salt/Anhydrite	Brine	No
Castile	1033	1060	1958	Salt/Anhydrite	Brine	No
Base of Salt (BX)	2664	2691	327	Salt/Anhydrite	Brine	No
Lamar	2664	2691	327	Sandstone/Shale	None	No
Bell Canyon	2690	2717	301	Sandstone	Oil	No
Cherry Canyon	3508	3535	-517	Sandstone	Oil	No
Brushy Canyon	4815	4842	-1824	Sandstone	Oil	No
Bone Spring Lime	6256	6283	-3265	Limestone	None	No
Upper Avalon Shale	6307	6334	-3316	Shale	Oil	Yes
1st Bone Spring Sand	7297	7324	-4306	Sandstone	Oil	Yes
2nd Bone Spring Carbonate	7542	7569	-4551	Limestone/Shale	None	No
2nd Bone Spring Sand	8035	8062	-5044	Sandstone	Oil	Yes
3rd Bone Spring Carbonate	8399	8426	-5408	Limestone	Oil	No
3rd Bone Spring Sand	9249	9276	-6258	Sandstone	Oil	Yes
Wolfcamp	9565	9592	-6574	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp A	9714	9741	-6723	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp B	9993	10020	-7002	Sandstone/Shale/Carbonates	Natural Gas / Oil	No
Wolfcamp C	10323	10350	-7332	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp D	10630	10657	-7639	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Strawn	11395	11422	-8404	Carbonates/Sands/Clays	Natural Gas	Possible

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 43 CFR 3172 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the Equipment Description above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams and Blind rams will be operationally checked on each trip out of the hole, but not to exceed more than once per day. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics.

Formation integrity test will be performed per 43 CFR 3172. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with 43 CFR 3172 III.B.1.i. A multibowl wellhead is being used. The BOP will be tested per 43 CFR 3172 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Section 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	450	0	477	2991	2514	54.5	J55	BTC	5.22	1.81	BUOY	4.52	BUOY	4.52
Intermediate	12.25	9.625	0	6912	0	6791	2991	-3800	40	P110HC	BTC	1.20	1.42	BUOY	2.44	BUOY	2.44
Production	8.75	5.5	0	17698	0	7686	2991	-4695	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	300	146	2.12	12.5	309	25	Class C	Extender,Accelerator,LCM
Surface	Tail	300	450	99	1.32	14.8	130	25	Class C	Accelerator
Intermediate	Lead	0	6412	1164	2.18	12.4	2538	25	Class C	Extender,Accelerator,LCM
Intermediate	Tail	6412	6912	147	1.33	14.8	196	25	Class C	Retarder
Production	Tail	6612	17698	2124	1.68	13	3569	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	450	Water Based Mud	8.4	8.8
450	6912	Brine or Oil Based Mud	9.2	10.2
6912	17698	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

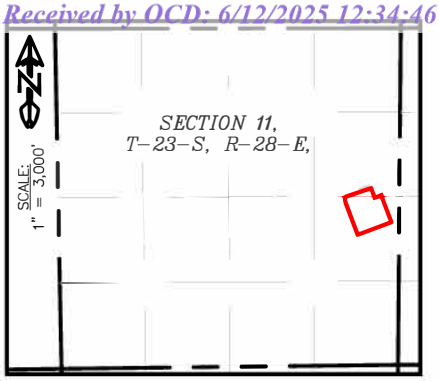
Anticipated Bottom Hole Pressure: **4996** PSI
Anticipated Bottom Hole Temperature: **195** ˚F
Anticipated Abnormal Pressure? **No**
Anticipated Abnormal Temperature? **No**

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.

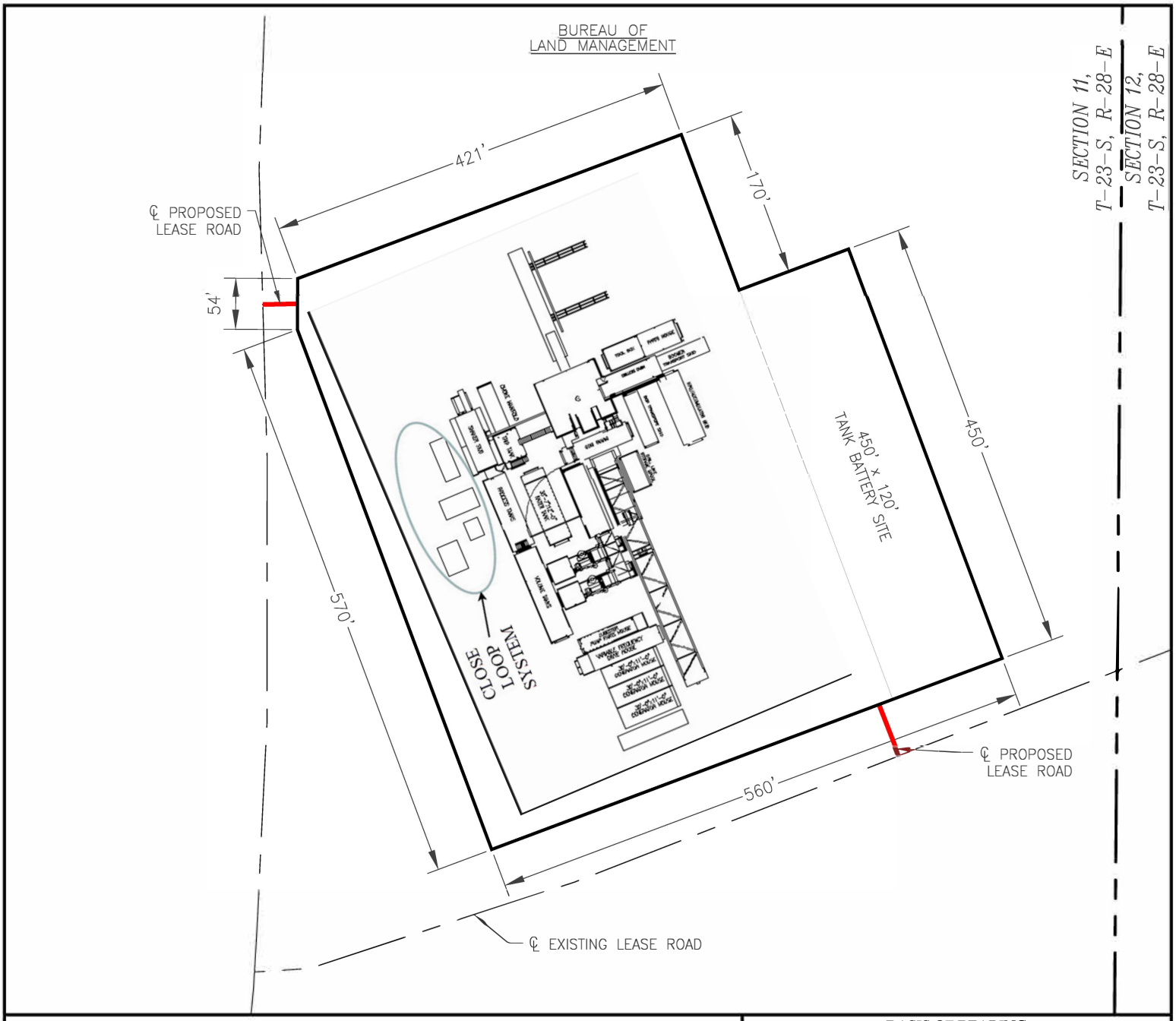
Anticipated Starting Date and Duration of Operations:
Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



RIG LAYOUT

VALKYRIE 12 FED COM
SEC. 11 TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.

75' 0' 75' 150'
SCALE: 1" = 150'



LEGEND

PROPOSED WELL PAD
PROPOSED LEASE ROAD
PROPOSED WELL

BASIS OF BEARING

ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE BASED GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999774785 AND A CONVERGENCE ANGLE OF 0.151792308".

JOB NUMBER	REV.	DATE	BY
R4000_008			

NOTES

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY.

SHEET 5 OF 6
DRAWN BY: ERR
DATE DRAWN: 07/16/2024
CHECKED BY: DEF

DELTA FIELD SERVICES
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

CONFIDENTIAL

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

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

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: Marathon Oil Permian LLC **OGRID:** 972098 **Date:** 10 / 31 / 2024

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

If Other, please describe: _____

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

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
See attached list						

IV. Central Delivery Point Name: Valkyrie Fed Com 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
See attached.						

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

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

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

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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

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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.

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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:	Adrian Covarrubias
Printed Name:	Adrian Covarrubias
Title:	Adv. Regulatory Compliance Rep
E-mail Address:	acovarrubas@marathonoil.com
Date:	10/31/2024
Phone:	713-296-3368

OIL CONSERVATION DIVISION

(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

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APPENDIX

Section 1 - Parts VI, VII, and VIII

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

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

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

- **19.15.27.8 (A) – Venting and Flaring Of Natural Gas**
  - Marathon Oil Permian's field operations are designed with the goal of minimizing flaring and preventing venting of natural gas. If capturing the gas is not possible then the gas is combusted/flared using properly sized flares or combustors in accordance with state air permit rules.
- **19.15.27.8 (B) – Venting and Flaring During Drilling Operations**
  - A properly-sized flare stack will be located at a minimum 100' from the nearest surface hole location on the pad.
  - All natural gas produced during drilling operations will be flared. Venting will only occur if there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety, public health, or the environment.
- **19.15.27.8 (C) – Venting and Flaring During Completion or Recompletion Operations**
  - During all phases of flowback, wells will flow through a sand separator, or other appropriate flowback separation equipment, and the well stream will be directed to a central tank battery (CTB) through properly sized flowlines.
  - The CTB will have properly sized separation equipment for maximum anticipated flow rates.
  - Multiple stages of separation will be used to separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a closed loop system that will recover any residual gas from the tanks and route such gas to a sales outlet.
- **19.15.27.8 (D) – Venting and Flaring During Production Operations**
  - During production, the well stream will be routed to the CTB where multiple stages of separation will separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a closed loop system that will recover any residual gas from the tanks and route such gas to a sales outlet, minimizing tank emissions.
  - Flares are equipped with auto-ignition systems and continuous pilot operations.
  - Automatic gauging equipment is installed on all tanks.
- **19.15.27.8 (E) – Performance Standards**
  - Production equipment will be designed to handle maximum anticipated rates and pressure.
  - Automatic gauging equipment is installed on all tanks to minimize venting.
  - All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
  - Flares are equipped with continuous pilots and auto-ignitors along with remote monitoring of the pilot status.
  - Weekly AVOs and monthly LDAR inspections will be performed on all wells and facilities that produce more than 60 MCFD.
  - Gas/H2S detectors will be installed throughout the facilities and wellheads to detect leaks and enable timely repairs.

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- **19.15.27.8 (F) – Measurement or Estimation of Vented and Flared Natural Gas**
  - All high pressure flared gas is measured by equipment conforming to API 14.10.
  - No meter bypasses are installed.
  - When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated through flare flow curves with the assistance of air emissions consultants, as necessary.

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

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

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III. Wells

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Valkyrie BS Fed Com 502H		I-11-23S-28E	2463' FSL & 569' FEL	2300	4200	3500
Valkyrie BS Fed Com 552H		I-11-23S-28E	2434' FSL & 558' FEL	2300	4200	3500
Valkyrie BS Fed Com 302H		I-11-23S-28E	2406' FSL & 547' FEL	2300	4200	3500
Valkyrie BS Fed Com 501H		I-11-23S-28E	2378' FSL & 537' FEL	2300	4200	3500
Valkyrie BS Fed Com 551H		I-11-23S-28E	2350' FSL & 526' FEL	2300	4200	3500

V. Anticipated Schedule

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Valkyrie BS Fed Com 502H		12/17/2025	3/14/2026	5/15/2026	6/30/2026	6/30/2026
Valkyrie BS Fed Com 552H		12/17/2025	3/14/2026	5/15/2026	6/30/2026	6/30/2026
Valkyrie BS Fed Com 302H		12/17/2025	3/14/2026	5/15/2026	6/30/2026	6/30/2026
Valkyrie BS Fed Com 501H		12/17/2025	3/14/2026	5/15/2026	6/30/2026	6/30/2026
Valkyrie BS Fed Com 551H		12/17/2025	3/14/2026	5/15/2026	6/30/2026	6/30/2026

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE BS FED COM 301H	1	3,014	-	6,028
VALKYRIE BS FED COM 301H	2	46,405	63,424	92,810
VALKYRIE BS FED COM 301H	3	29,282	56,451	58,564
VALKYRIE BS FED COM 301H	4	23,866	58,258	47,731
VALKYRIE BS FED COM 301H	5	20,846	61,795	41,693
VALKYRIE BS FED COM 301H	6	17,005	59,259	34,011
VALKYRIE BS FED COM 301H	7	15,192	60,622	30,384
VALKYRIE BS FED COM 301H	8	12,946	58,038	25,892
VALKYRIE BS FED COM 301H	9	11,953	59,297	23,905
VALKYRIE BS FED COM 301H	10	10,784	58,591	21,569
VALKYRIE BS FED COM 301H	11	9,521	56,022	19,042
VALKYRIE BS FED COM 301H	12	9,045	57,179	18,091
VALKYRIE BS FED COM 301H	13	8,100	54,643	16,201
VALKYRIE BS FED COM 301H	14	7,789	55,748	15,579
VALKYRIE BS FED COM 301H	15	7,276	55,019	14,552
VALKYRIE BS FED COM 301H	16	6,184	49,074	12,368
VALKYRIE BS FED COM 301H	17	6,465	53,643	12,930
VALKYRIE BS FED COM 301H	18	5,916	51,224	11,832
VALKYRIE BS FED COM 301H	19	5,797	52,228	11,595
VALKYRIE BS FED COM 301H	20	5,335	49,867	10,669
VALKYRIE BS FED COM 301H	21	5,254	50,835	10,509
VALKYRIE BS FED COM 301H	22	5,016	50,136	10,032
VALKYRIE BS FED COM 301H	23	4,646	47,860	9,293
VALKYRIE BS FED COM 301H	24	4,604	48,780	9,209
VALKYRIE BS FED COM 301H	25	3,437	37,301	6,875
VALKYRIE BS FED COM 301H	26	4,287	47,584	8,574
VALKYRIE BS FED COM 301H	27	4,127	46,913	8,254
VALKYRIE BS FED COM 301H	28	3,599	41,808	7,199
VALKYRIE BS FED COM 301H	29	3,853	45,667	7,706
VALKYRIE BS FED COM 301H	30	3,605	43,579	7,210
VALKYRIE BS FED COM 301H	31	3,605	44,405	7,211
VALKYRIE BS FED COM 301H	32	3,380	42,373	6,761
VALKYRIE BS FED COM 301H	33	3,388	43,174	6,776
VALKYRIE BS FED COM 301H	34	3,287	42,559	6,574
VALKYRIE BS FED COM 301H	35	3,090	40,609	6,181
VALKYRIE BS FED COM 301H	36	3,105	41,373	6,210

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE BS FED COM 302H	1	43,706	-	87,412
VALKYRIE BS FED COM 302H	2	31,258	56,592	62,516
VALKYRIE BS FED COM 302H	3	25,360	60,257	50,719
VALKYRIE BS FED COM 302H	4	21,235	61,838	42,471
VALKYRIE BS FED COM 302H	5	17,272	59,314	34,544
VALKYRIE BS FED COM 302H	6	15,397	60,684	30,794
VALKYRIE BS FED COM 302H	7	13,511	60,023	27,022
VALKYRIE BS FED COM 302H	8	10,928	53,635	21,855
VALKYRIE BS FED COM 302H	9	10,957	58,713	21,914
VALKYRIE BS FED COM 302H	10	9,660	56,134	19,319
VALKYRIE BS FED COM 302H	11	9,167	57,296	18,333
VALKYRIE BS FED COM 302H	12	8,201	54,756	16,401
VALKYRIE BS FED COM 302H	13	7,879	55,866	15,758
VALKYRIE BS FED COM 302H	14	7,354	55,136	14,709
VALKYRIE BS FED COM 302H	15	6,679	52,667	13,358
VALKYRIE BS FED COM 302H	16	6,502	53,710	13,004
VALKYRIE BS FED COM 302H	17	3,014	25,738	6,028
VALKYRIE BS FED COM 302H	18	5,980	52,659	11,959
VALKYRIE BS FED COM 302H	19	5,672	51,928	11,345
VALKYRIE BS FED COM 302H	20	5,055	47,939	10,110
VALKYRIE BS FED COM 302H	21	5,159	50,565	10,319
VALKYRIE BS FED COM 302H	22	4,773	48,270	9,547
VALKYRIE BS FED COM 302H	23	4,725	49,200	9,450
VALKYRIE BS FED COM 302H	24	4,388	46,962	8,776
VALKYRIE BS FED COM 302H	25	4,358	47,862	8,716
VALKYRIE BS FED COM 302H	26	4,193	47,192	8,385
VALKYRIE BS FED COM 302H	27	3,911	45,040	7,823
VALKYRIE BS FED COM 302H	28	3,901	45,897	7,802
VALKYRIE BS FED COM 302H	29	3,649	43,800	7,297
VALKYRIE BS FED COM 302H	30	3,648	44,631	7,295
VALKYRIE BS FED COM 302H	31	3,531	43,998	7,062
VALKYRIE BS FED COM 302H	32	3,095	39,204	6,190
VALKYRIE BS FED COM 302H	33	3,328	42,817	6,657
VALKYRIE BS FED COM 302H	34	3,128	40,854	6,257
VALKYRIE BS FED COM 302H	35	3,142	41,623	6,284
VALKYRIE BS FED COM 302H	36	2,958	39,714	5,916

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE BS FED COM 501H	1	32,395	53,220	74,045
VALKYRIE BS FED COM 501H	2	30,587	49,095	65,317
VALKYRIE BS FED COM 501H	3	24,528	47,144	56,904
VALKYRIE BS FED COM 501H	4	19,944	43,986	49,239
VALKYRIE BS FED COM 501H	5	15,968	38,862	41,073
VALKYRIE BS FED COM 501H	6	14,112	36,996	37,366
VALKYRIE BS FED COM 501H	7	12,325	34,294	33,357
VALKYRIE BS FED COM 501H	8	9,946	28,987	27,361
VALKYRIE BS FED COM 501H	9	9,966	30,185	27,773
VALKYRIE BS FED COM 501H	10	8,788	27,536	24,762
VALKYRIE BS FED COM 501H	11	8,347	26,928	23,735
VALKYRIE BS FED COM 501H	12	7,477	24,746	21,429
VALKYRIE BS FED COM 501H	13	7,196	24,357	20,761
VALKYRIE BS FED COM 501H	14	6,730	23,245	19,529
VALKYRIE BS FED COM 501H	15	6,125	21,536	17,862
VALKYRIE BS FED COM 501H	16	5,975	21,352	17,503
VALKYRIE BS FED COM 501H	17	2,774	10,026	8,151
VALKYRIE BS FED COM 501H	18	5,514	20,134	16,244
VALKYRIE BS FED COM 501H	19	5,243	19,395	15,497
VALKYRIE BS FED COM 501H	20	4,682	17,525	13,883
VALKYRIE BS FED COM 501H	21	4,790	18,121	14,239
VALKYRIE BS FED COM 501H	22	4,442	16,976	13,237
VALKYRIE BS FED COM 501H	23	4,406	17,001	13,161
VALKYRIE BS FED COM 501H	24	4,101	15,964	12,275
VALKYRIE BS FED COM 501H	25	4,082	16,023	12,242
VALKYRIE BS FED COM 501H	26	3,936	15,572	11,824
VALKYRIE BS FED COM 501H	27	3,679	14,665	11,072
VALKYRIE BS FED COM 501H	28	3,678	14,760	11,084
VALKYRIE BS FED COM 501H	29	3,447	13,924	10,402
VALKYRIE BS FED COM 501H	30	3,453	14,036	10,435
VALKYRIE BS FED COM 501H	31	3,349	13,697	10,134
VALKYRIE BS FED COM 501H	32	2,941	12,095	8,910
VALKYRIE BS FED COM 501H	33	3,169	13,100	9,610
VALKYRIE BS FED COM 501H	34	2,984	12,399	9,059
VALKYRIE BS FED COM 501H	35	3,003	12,539	9,125
VALKYRIE BS FED COM 501H	36	2,832	11,882	8,614

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE BS FED COM 502H	1	38,111	62,611	87,111
VALKYRIE BS FED COM 502H	2	35,984	57,758	76,843
VALKYRIE BS FED COM 502H	3	28,857	55,464	66,946
VALKYRIE BS FED COM 502H	4	23,464	51,748	57,928
VALKYRIE BS FED COM 502H	5	18,786	45,720	48,321
VALKYRIE BS FED COM 502H	6	16,603	43,525	43,960
VALKYRIE BS FED COM 502H	7	14,500	40,346	39,244
VALKYRIE BS FED COM 502H	8	11,702	34,103	32,190
VALKYRIE BS FED COM 502H	9	11,725	35,512	32,674
VALKYRIE BS FED COM 502H	10	10,338	32,395	29,131
VALKYRIE BS FED COM 502H	11	9,820	31,680	27,924
VALKYRIE BS FED COM 502H	12	8,797	29,113	25,210
VALKYRIE BS FED COM 502H	13	8,466	28,655	24,424
VALKYRIE BS FED COM 502H	14	7,918	27,347	22,975
VALKYRIE BS FED COM 502H	15	7,206	25,337	21,014
VALKYRIE BS FED COM 502H	16	7,030	25,120	20,592
VALKYRIE BS FED COM 502H	17	3,264	11,796	9,590
VALKYRIE BS FED COM 502H	18	6,487	23,687	19,111
VALKYRIE BS FED COM 502H	19	6,168	22,817	18,232
VALKYRIE BS FED COM 502H	20	5,509	20,618	16,332
VALKYRIE BS FED COM 502H	21	5,635	21,319	16,752
VALKYRIE BS FED COM 502H	22	5,225	19,971	15,572
VALKYRIE BS FED COM 502H	23	5,184	20,001	15,484
VALKYRIE BS FED COM 502H	24	4,825	18,781	14,441
VALKYRIE BS FED COM 502H	25	4,802	18,851	14,402
VALKYRIE BS FED COM 502H	26	4,630	18,320	13,911
VALKYRIE BS FED COM 502H	27	4,329	17,253	13,026
VALKYRIE BS FED COM 502H	28	4,327	17,365	13,040
VALKYRIE BS FED COM 502H	29	4,055	16,381	12,238
VALKYRIE BS FED COM 502H	30	4,062	16,513	12,276
VALKYRIE BS FED COM 502H	31	3,940	16,115	11,923
VALKYRIE BS FED COM 502H	32	3,460	14,230	10,483
VALKYRIE BS FED COM 502H	33	3,728	15,411	11,306
VALKYRIE BS FED COM 502H	34	3,511	14,587	10,658
VALKYRIE BS FED COM 502H	35	3,533	14,752	10,735
VALKYRIE BS FED COM 502H	36	3,332	13,979	10,134

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE FED COM 551H	1	47,639	54,445	65,334
VALKYRIE FED COM 551H	2	36,536	49,668	59,297
VALKYRIE FED COM 551H	3	30,745	46,532	54,561
VALKYRIE FED COM 551H	4	26,134	42,565	48,706
VALKYRIE FED COM 551H	5	21,419	37,034	41,235
VALKYRIE FED COM 551H	6	19,159	34,827	37,683
VALKYRIE FED COM 551H	7	16,829	31,957	33,568
VALKYRIE FED COM 551H	8	13,604	26,795	27,362
VALKYRIE FED COM 551H	9	13,622	27,711	27,522
VALKYRIE FED COM 551H	10	11,983	25,126	24,258
VALKYRIE FED COM 551H	11	11,343	24,443	22,954
VALKYRIE FED COM 551H	12	10,119	22,359	20,438
VALKYRIE FED COM 551H	13	9,694	21,918	19,515
VALKYRIE FED COM 551H	14	9,020	20,841	18,081
VALKYRIE FED COM 551H	15	8,166	19,247	16,288
VALKYRIE FED COM 551H	16	7,925	19,027	15,719
VALKYRIE FED COM 551H	17	3,664	8,917	7,236
VALKYRIE FED COM 551H	18	7,253	17,872	14,255
VALKYRIE FED COM 551H	19	6,859	17,177	13,391
VALKYRIE FED COM 551H	20	6,094	15,489	11,819
VALKYRIE FED COM 551H	21	6,201	15,986	11,946
VALKYRIE FED COM 551H	22	5,720	14,949	10,942
VALKYRIE FED COM 551H	23	5,645	14,947	10,722
VALKYRIE FED COM 551H	24	5,227	14,014	9,857
VALKYRIE FED COM 551H	25	5,177	14,046	9,693
VALKYRIE FED COM 551H	26	4,967	13,632	9,230
VALKYRIE FED COM 551H	27	4,621	12,823	8,526
VALKYRIE FED COM 551H	28	4,596	12,891	8,420
VALKYRIE FED COM 551H	29	4,287	12,148	7,798
VALKYRIE FED COM 551H	30	4,275	12,234	7,721
VALKYRIE FED COM 551H	31	4,128	11,927	7,402
VALKYRIE FED COM 551H	32	3,610	10,523	6,429
VALKYRIE FED COM 551H	33	3,873	11,387	6,851
VALKYRIE FED COM 551H	34	3,631	10,770	6,379
VALKYRIE FED COM 551H	35	3,639	10,883	6,349
VALKYRIE FED COM 551H	36	3,418	10,305	5,923

NAME	MONTH	MONTHLY_OIL	MONTHLY_GAS	MONTHLY_WATER
VALKYRIE FED COM 552H	1	47,639	54,445	65,334
VALKYRIE FED COM 552H	2	36,536	49,668	59,297
VALKYRIE FED COM 552H	3	30,745	46,532	54,561
VALKYRIE FED COM 552H	4	26,134	42,565	48,706
VALKYRIE FED COM 552H	5	21,419	37,034	41,235
VALKYRIE FED COM 552H	6	19,159	34,827	37,683
VALKYRIE FED COM 552H	7	16,829	31,957	33,568
VALKYRIE FED COM 552H	8	13,604	26,795	27,362
VALKYRIE FED COM 552H	9	13,622	27,711	27,522
VALKYRIE FED COM 552H	10	11,983	25,126	24,258
VALKYRIE FED COM 552H	11	11,343	24,443	22,954
VALKYRIE FED COM 552H	12	10,119	22,359	20,438
VALKYRIE FED COM 552H	13	9,694	21,918	19,515
VALKYRIE FED COM 552H	14	9,020	20,841	18,081
VALKYRIE FED COM 552H	15	8,166	19,247	16,288
VALKYRIE FED COM 552H	16	7,925	19,027	15,719
VALKYRIE FED COM 552H	17	3,664	8,917	7,236
VALKYRIE FED COM 552H	18	7,253	17,872	14,255
VALKYRIE FED COM 552H	19	6,859	17,177	13,391
VALKYRIE FED COM 552H	20	6,094	15,489	11,819
VALKYRIE FED COM 552H	21	6,201	15,986	11,946
VALKYRIE FED COM 552H	22	5,720	14,949	10,942
VALKYRIE FED COM 552H	23	5,645	14,947	10,722
VALKYRIE FED COM 552H	24	5,227	14,014	9,857
VALKYRIE FED COM 552H	25	5,177	14,046	9,693
VALKYRIE FED COM 552H	26	4,967	13,632	9,230
VALKYRIE FED COM 552H	27	4,621	12,823	8,526
VALKYRIE FED COM 552H	28	4,596	12,891	8,420
VALKYRIE FED COM 552H	29	4,287	12,148	7,798
VALKYRIE FED COM 552H	30	4,275	12,234	7,721
VALKYRIE FED COM 552H	31	4,128	11,927	7,402
VALKYRIE FED COM 552H	32	3,610	10,523	6,429
VALKYRIE FED COM 552H	33	3,873	11,387	6,851
VALKYRIE FED COM 552H	34	3,631	10,770	6,379
VALKYRIE FED COM 552H	35	3,639	10,883	6,349
VALKYRIE FED COM 552H	36	3,418	10,305	5,923

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.

OFFLINE CEMENTING

Marathon Oil

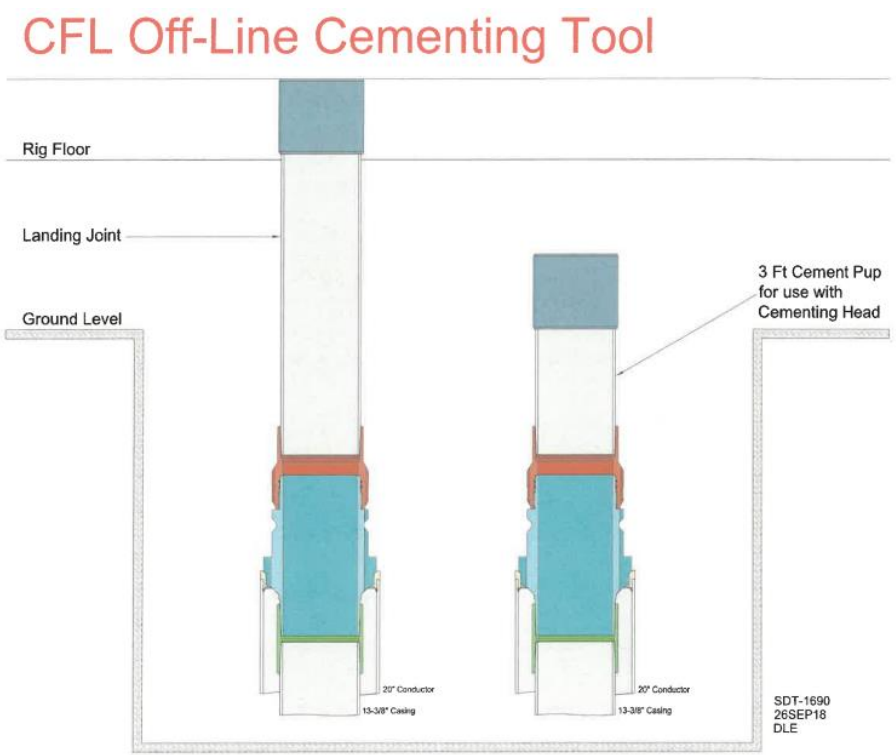
SURFACE OFFLINE CEMENT JOB

MarathonOil

Offline Surface Cement Job

Procedure

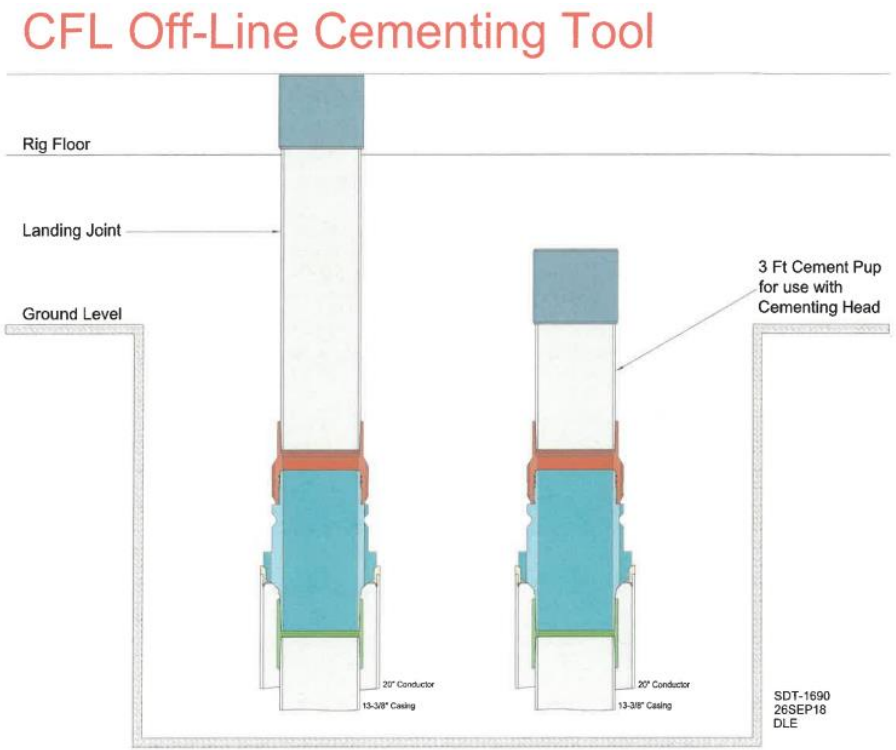
1. Run casing per normal operations
   a) Perform negative test and confirm integrity of float equipment
2. Land surface casing fluted mandrel hanger with the rig (left on picture)
3. Fill pipe with kill weight fluid and confirm well is static
4. Remove the landing joint and skid the rig over
5. After 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)



Offline Surface Cement Job

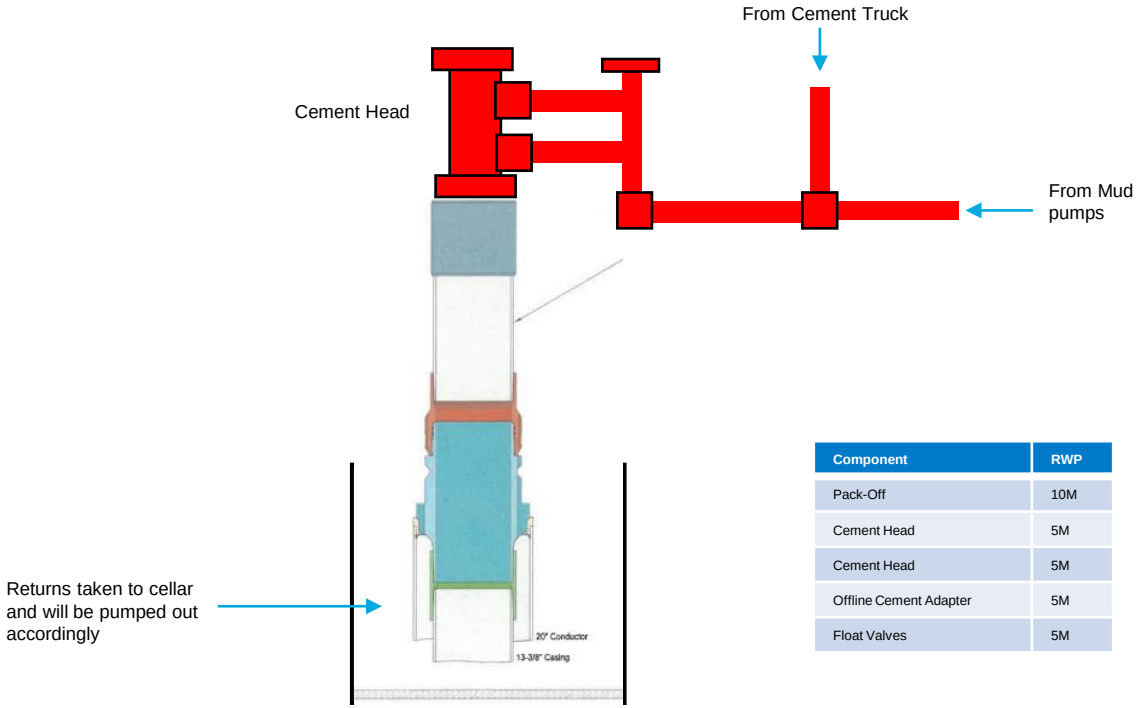
Requirements

1. Confirm well is static and overbalanced
2. No wellbore instability
3. Successful casing run
4. Floats holding
5. No observed H2S during drilling
6. Cement job will be performed within 24hrs of moving off well



Offline Surface Cement Job

Diagram and P&ID



Component	RWP
Pack-Off	10M
Cement Head	5M
Cement Head	5M
Offline Cement Adapter	5M
Float Valves	5M

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

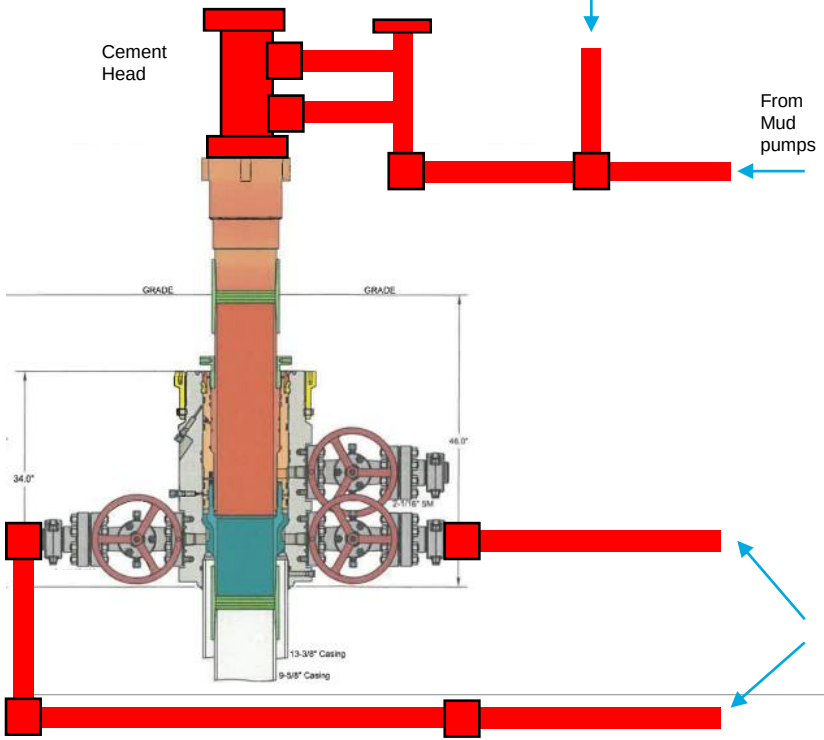
Requirements

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 3rd party well control equipment and choke system must be in place for offline well
8. Have 3rd party offline cementing manifolds in place (3rd party well control equipment)

Offline Intermediate Cement Job

Diagram and P&ID

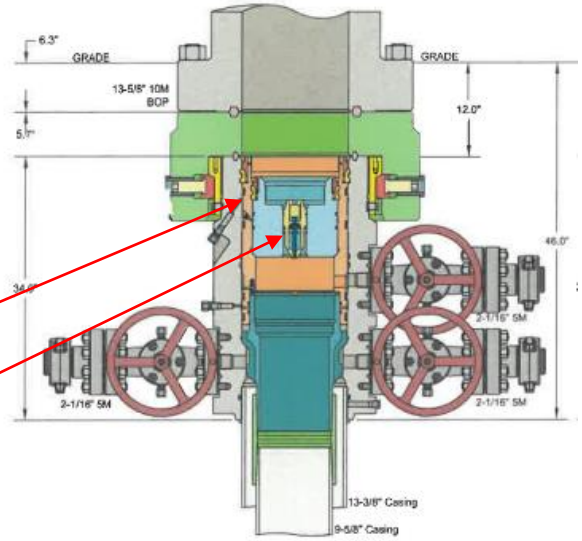
Offline Cementing Set up – During Job



Component	RWP
Pack-Off	10M
Casing Wellhead Valves (Upper Valves)	10M
Annular Wellhead Valves (Lower Valves)	5M
TA Plug/BPV	10M
Float Valves	5M
2" Lo-Torque Valves	15M
Cement Head	5M
Offline Cement Adapter	5M

Barriers	
Component	**Barrier**
Pack-Off	External
Mud Weight and Cement	External
BPV	Internal
Float Valves	Internal
Mud Weight	Internal

Offline Cementing Set up – Before performing job



9-5/8" CASING LANDED AND PACKOFF SET AND CIRCULATION PLUG WITH BPV INSTALLED

Marathon Oil

BOP Break Test Variance Request

Executive Summary

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

BOP Break Test Variance Request

Background

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

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

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

[a] Pressure test evaluation periods shall be a minimum of five minutes.
No visible leaks.
The pressure shall remain stable during the evaluation period. The pressure shall not decrease below the intended test pressure.

[b] Annular(s) and VBR(s) shall be pressure tested on the largest and smallest OD drill pipe to be used in well program.

[c] 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.

[d] 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.

[e] Adjustable chokes are not required to be full sealing devices. Pressure testing against a closed choke is not required.

Procedures

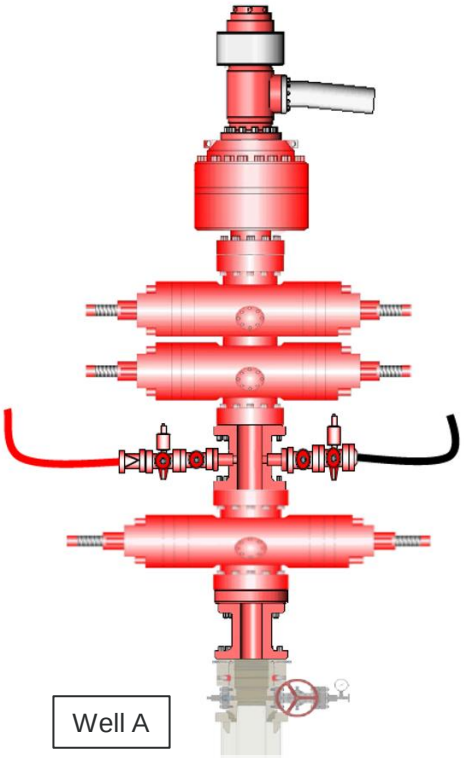
Procedural Steps

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

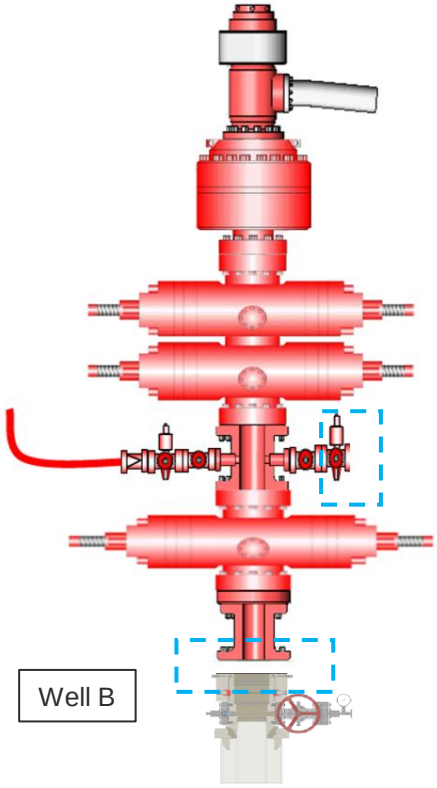
Diagram

Well A: BOP installed on Well A



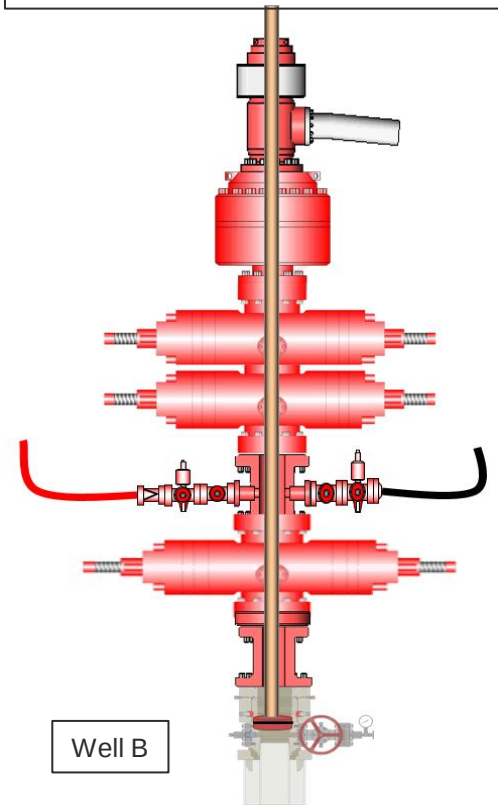
Well A

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



Well B

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



Well B

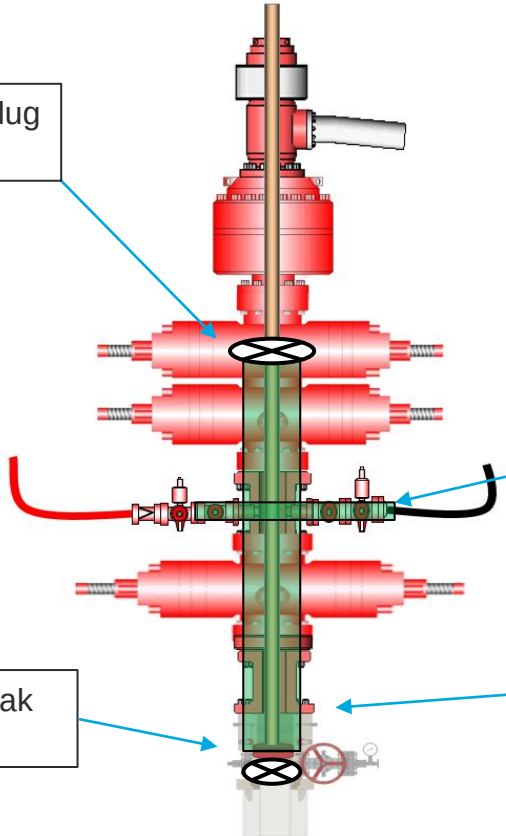
Procedures

Diagram

Pipe Ram closed on test plug assembly for break test

Pressure Containment
Pressure containment is outline by the green highlight

Testing against the closed pipe ram and the BOP test plug



Break Test
The break test will consist of one test that tests both breaks (quick connect/wellhead and choke line/HCV simultaneously after each skid

Connection between the HCV and choke line will be broken and then retested after each skid during the break test

Connection between the wellhead and BOP (quick connect) will be broken and then retested after each skid during the break test

Test Plug installed for break test

Marathon Oil

Summary

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

1. Drilling Well Control Plan

1.1 Well Control - CERTIFICATIONS

Required IADC/IWCF Well Control Certifications Supervisor Level:

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

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

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

Well Control-Position/Roles

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

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

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

(Well Control-Positions/Roles Continued)

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

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

1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST

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

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

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

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

1.3 WELL CONTROL-BOP TESTING

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

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

1.4 WELL CONTROL - DRILLS

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

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

1.5 WELL CONTROL – MONITORING

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

Well Control-Monitoring (Continued)

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

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

1.6 WELL CONTROL – SHUT IN

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

2. SHUT-IN PROCEDURES:

2.1 PROCEDURE WHILE DRILLING

- Sound alarm (alert crew)

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

2.2 Procedure While Tripping

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

Procedure While Tripping (Continued)

    - Time
    - Kick Volume
    - Pipe depth

- MW in, MW out
- SPR's (Slow Pump Rate's)

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

2.3 PROCEDURE WHILE RUNNING CASING

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

2.4 PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

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

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

2.5 PROCEDURE WHILE PULLING BHA THRU STACK

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

- **With BHA in the stack and compatible ram preventer and pipe combo immediately available**.
  - Sound alarm (alert crew)
  - Stab crossover and full opening safety valve and close
  - Space out drill string with upset just beneath the compatible pipe ram.
  - Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
  - Confirm shut-in
  - Notify toolpusher/company representative
  - Read and record the following:
    - SIDPP and SICP
    - Pit gain

Procedures While Pulling BHA thru Stack (Continued)

    - Time
  - Regroup and identify forward plan

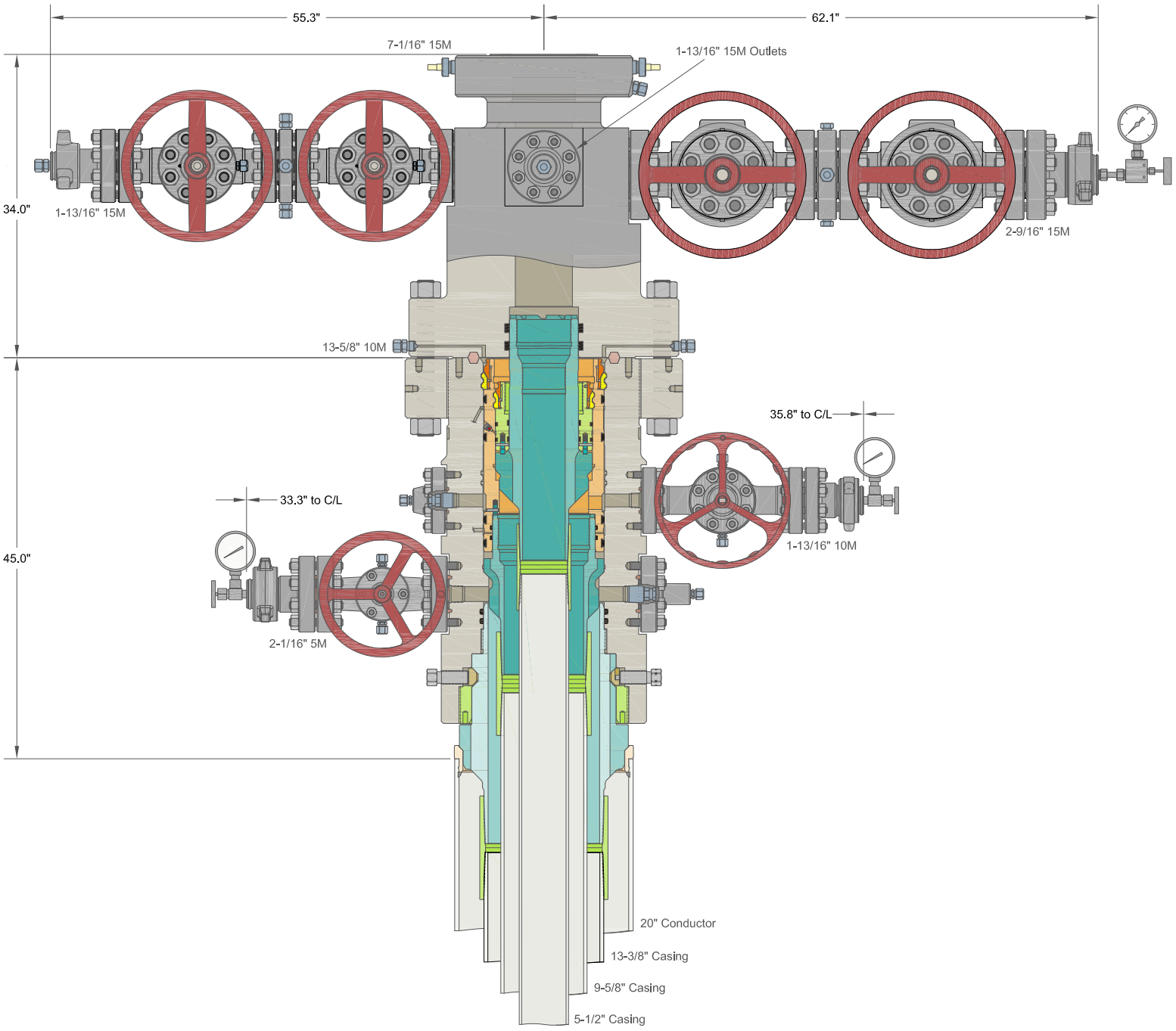
- **With BHA in the stack and <u>NO</u> compatible ram preventer and pipe combo immediately available**.
    - Sound alarm (alert crew)
    - If possible to pick up high enough, pull string clear of the stack and follow “Open Hole” scenario.
    - If impossible to pick up high enough to pull the string 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 nippled 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.



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	

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

SUPO Data Report
06/12/2025

APD ID: 10400101802
Submission Date: 11/21/2024
Operator Name: MARATHON OIL PERMIAN LLC
Well Name: VALKYRIE BS FED COM
Well Number: 302H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes
Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

S1_Valkyrie_Fed_Com_Existing_Road_20241105112615.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

S2_Valkyrie_Fed_Com_New_Road_Plat_20241105112653.pdf

New road type: LOCAL

Length: 98.09 Feet

Width (ft.): 30

Max slope (%): 2

Max grade (%): 0.64

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 30

New road access erosion control: Road will be crowned to allow proper water drainage and BMP will be used to control erosion.

New road access plan or profile prepared? N

New road access plan

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Access road engineering design? N

Access road engineering design

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Strip a minimum of 6" topsoil and temporarily pile while road is being constructed. After the road has been constructed, the topsoil will be spread and seeded along the road ditch in Marathon's ROW.

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Other Description: Crowning & Ditching

Drainage Control comments: The access road driving surface will be crowned with a max grade of 0.64% and ditching alongside the road will be created to direct and control storm water. The road shall conform to cross section and plans for typical road construction found in the BLM Gold Book.
Road Drainage Control Structures (DCS) description: NA

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Existing Well map Attachment:

S3_Valkyrie_Fed_Com_1_Mile_Radius_Plat_20241105112908.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Production Facility - will be located on the east side of the pad (450' x 120') OHP: 1686 ft, 3-phase, 12.47kV, approximately 6 poles.
Production Facilities map:

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

S4_Valkyrie_Fed_Com_1_Facility_Layout_Plat_20241105112928.pdf

S4_Valkyrie_North_Pad___OHP_20241120064458.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: GW WELL

Water source use type: DUST CONTROL

SURFACE CASING

INTERMEDIATE/PRODUCTION CASING

STIMULATION

Source latitude: **Source longitude:**

Source datum:

City:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 147000 **Source volume (acre-feet):** 18.94728516

Source volume (gal): 6174000

Water source and transportation

S5_Valkyrie_Fed_Com_Water_Source_20241105113100.pdf

Water source comments:

New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be used to construct well pad and roads. Material will be purchased from the nearest federal, state, or private permitted pit. The proposed source of construction material will be located and purchased by construction contractor.

Construction Materials source location

S6_Valkyrie_Fed_Com_Material_Source_20241105113312.pdf

Section 7 - Methods for Handling

Waste type: GARBAGE

Waste content description: Garbage and Trash (solid waste).

Amount of waste: 1200 pounds

Waste disposal frequency : Weekly

Safe containment description: All garbage will be stored in secure containers with lids.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: All garbage will be collected and disposed of properly at a State approved disposal facility.

Waste type: SEWAGE

Waste content description: Human waste and grey water

Amount of waste: 600 barrels

Waste disposal frequency : Weekly

Safe containment description: Portable toilets and sewage tanks.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Disposal type description:

Disposal location description: All sewage waste will be managed by a third party and disposed of properly at a state approved disposal facility.

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water from the well during drilling operations.

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Lined Steel Tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Waste will be stored safely and disposed of properly in an NMOCD approved disposal facility.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? N

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

Cuttings area liner

Cuttings area liner specifications and installation description

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Section 8 - Ancillary

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments:

Section 9 - Well Site

Well Site Layout Diagram:

S9_Valkyrie_Fed_Com_Well_List_20241105113351.pdf

S9_Valkyrie_Fed_Com_Well_Pad_Location_Plat_20241105113351.pdf

Comments: Proposed well pad dimension for the proposed well pad area are 620' x 460'. And facility dimensions located east of pad with an area of 450' x 120'. Topsoil will be stored on the north (421' x 30') and southwest (310' x 30') sides of the pad.

Section 10 - Plans for Surface

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: VALKYRIE FED COM

Multiple Well Pad Number: 1

Recontouring

S10_Valkyrie_Fed_Com_Cut___Fill_Plat_20241105113734.pdf

S10_Valkyrie_Fed_Com_IR_Plat_20241105113734.pdf

Drainage/Erosion control construction: To control and prevent precipitation from leaving the pad site, a perimeter berm will be installed around the reclamation. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

Drainage/Erosion control reclamation: Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the stockpile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards. All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be removed or disked and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Well pad proposed disturbance (acres): 8.12	**Well pad interim reclamation (acres):** 2.93	**Well pad long term disturbance (acres):** 5.06
Road proposed disturbance (acres): 0.06	**Road interim reclamation (acres):** 0	**Road long term disturbance (acres):** 0.06
Powerline proposed disturbance (acres): 0.2	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0.2
Pipeline proposed disturbance (acres): 0	**Pipeline interim reclamation (acres):** 0	**Pipeline long term disturbance (acres):** 0
Other proposed disturbance (acres): 0	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0
Total proposed disturbance: 8.379999999999999	**Total interim reclamation:** 2.93	**Total long term disturbance:** 5.319999999999999

Disturbance Comments:

Reconstruction method: The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities. Earthwork for interim and final reclamation must be completed within 6 months of well completion or well plugging (weather permitting). Written permission from the BLM is required if more time is needed. Reclamation will be performed using the following procedures: INTERIM RECLAMATION Earthwork for interim reclamation must be completed within 6 months of well completion. The well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production. A plan, that was previously submitted to the BLM, shows where interim reclamation will be completed to allow for safe operations, protection of the environment outside of drilled well, and following best management practices found in the BLM Gold Book. In areas planned for interim reclamation, all the surface material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads. They will then be re-contoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling but will be re-contoured to the above ratios during interim reclamation. Topsoil will be evenly re-spread and re-vegetated over the entire disturbed area not needed for all weather operations, including cuts & fills. To seed the area, the proper BLM seed mixture (free of noxious weeds) will be used. Proper erosion control methods will be applied to the area to mitigate runoff, and siltation of the surrounding area. The interim reclamation will be monitored periodically to ensure that vegetation has been reestablished. FINAL RECLAMATION Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment. All surface material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads. All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be re-contoured to the contour existing prior to initial construction or a contour that blends in distinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to re-contouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture free of noxious weeds. Proper erosion control methods will be used on the entire area to mitigate runoff and siltation.

Topsoil redistribution: The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture free of noxious weeds.

Soil treatment: Topsoil will be stockpiled until interim reclamation. Topsoil and subsoil (fill) will be piled separately and applied in the interim and final reclamations as detailed in Reconstruction Method.

Existing Vegetation at the well pad: Mesquite, Shinnery Oak, Sand Dropseed, and Sage.

Existing Vegetation at the well pad

Existing Vegetation Community at the road: Mesquite, Shinnery Oak, Sand Dropseed, and Sage.

Existing Vegetation Community at the road

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Existing Vegetation Community at the pipeline: Mesquite, Shinnery Oak, Sand Dropseed, and Sage.

Existing Vegetation Community at the pipeline

Existing Vegetation Community at other disturbances: Mesquite, Shinnery Oak, Sand Dropseed, and Sage.

Existing Vegetation Community at other disturbances

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation

Operator Contact/Responsible Official

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Weed treatment plan description: Marathon Oil will control weeds per Federal, County and State regulations by contracting a certified third party sprayer.
Weed treatment plan

Monitoring plan description: Monitor & Maintain all disturbed areas per Gold Book Standards.

Monitoring plan

Success standards: Marathon Oil will monitor all disturbed areas monthly for noxious weeds & erosion through routine inspections. All necessary maintenance will be taken care of promptly.
Pit closure description: No Pits in NM

Pit closure attachment:

Section 11 - Surface

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT,PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT,PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT,PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Disturbance type: OTHER

Describe: Facility

Surface Owner: BUREAU OF LAND MANAGEMENT,PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: OTHER

Describe: Power

Surface Owner: BUREAU OF LAND MANAGEMENT,PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Section 12 - Other

Right of Way needed? Y **Use APD as ROW?** Y

ROW Type(s): 281001 ROW - ROADS,285003 ROW – POWER TRANS

ROW

SUPO Additional Information: Road ROW will be obtained from BLM and/or NM SLO.

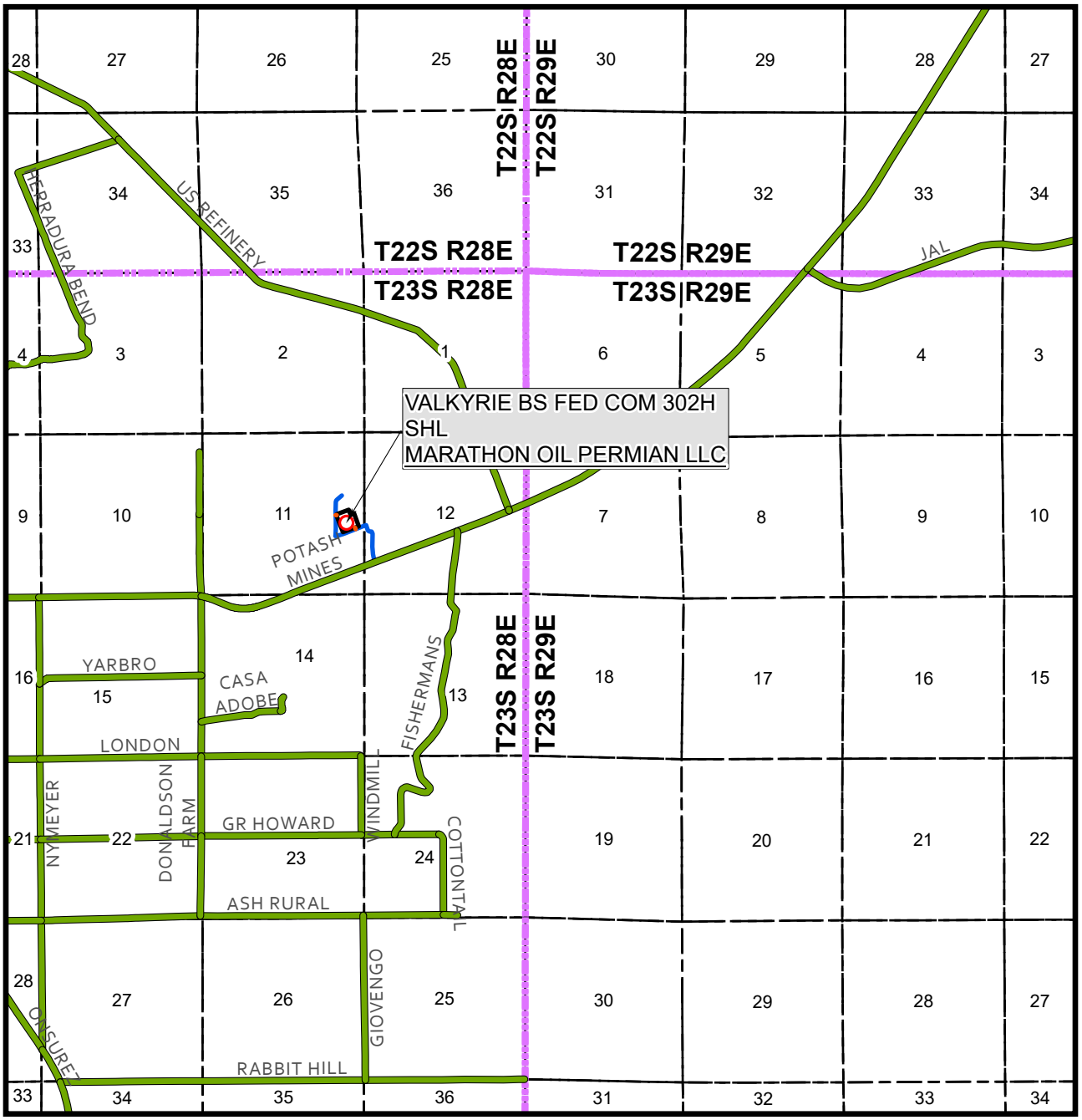
Use a previously conducted onsite? Y

Previous Onsite information: Onsite: 8/6/2024 Chaz Sartain, Harvey Waller, Dwaine Moore, Terri Stathem on location.

Other SUPO

VICINITY MAP

VALKYRIE BS FED COM 302H



1" = 1 MILE

SEC. 11 TWP. 23S RGE. 28E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
DESCRIPTION: 2406' FSL & 547' FEL
ELEVATION: 2991'
LEASE: VALKYRIE FED COM
U.S.G.S. TOPOGRAPHIC MAP: LOVING, NM.

FROM THE MARATHON OFFICE AT 4111 TIDWELL, CARLSBAD, NM, HEAD SOUTH ON TIDWELL ROAD TOWARD US HIGHWAY 285 NORTH FOR 0.2 MILES. TURN LEFT ONTO US HIGHWAY 285 SOUTH, HEADING SOUTEAST FOR 5.1 MILES TO NM HIGHWAY 31. TURN LEFT ONTO A CALICHE ROAD AND HEAD NORTH FOR 0.25 OF A MILE TO WHERE IT MEETS ANOTHER CALICHE ROAD. TURN LEFT ON THE CALICHE ROAD AND CONTINUE 0.15 OF A MILE TO THE PROPOSED LEASE ROAD ON THE RIGHT. TURN RIGHT ONTO THE PROPOSED LEASE ROAD AND CONTINUE FOR 60 FEET INTO THE SOUTHWEST OF THE PROPOSED WELL PAD.

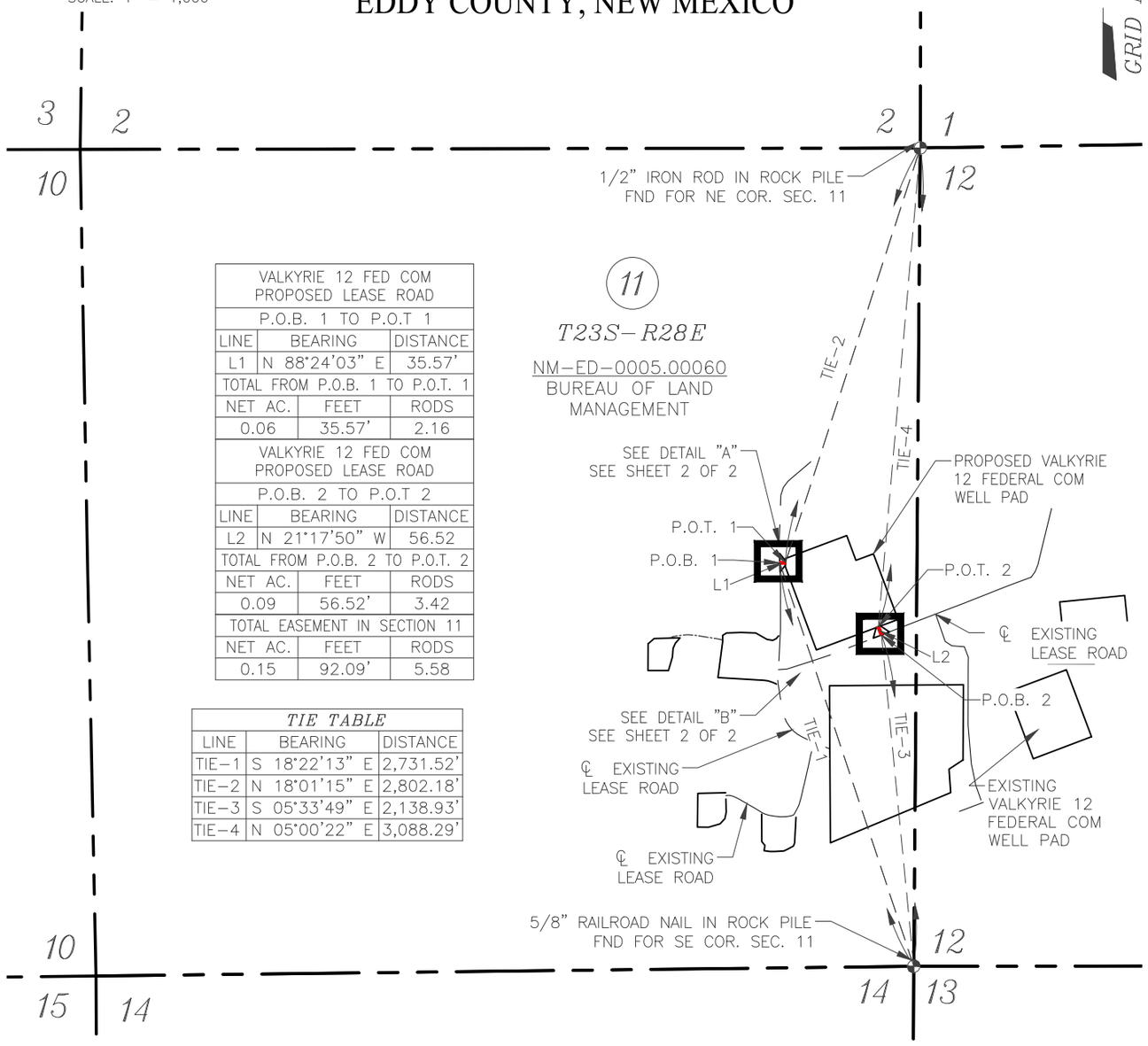
PREPARED BY:
DELTA FIELD SERVICES, LLC
510 TRENTON STREET, WEST MONROE, LA 71291
318-323-6900 OFFICE
JOB No. R4000_008

TRACT No.	NM-ED-0005.00060
JOB No.	R4000_008

VALKYRIE 12 FED COM
PROPOSED LEASE ROAD EASEMENT
SECTION 11, T-23-S, R-28-E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

500' 0' 500' 1,000'
SCALE: 1" = 1,000'

N GRID NORTH



VALKYRIE 12 FED COM PROPOSED LEASE ROAD		
P.O.B. 1 TO P.O.T 1		
LINE	BEARING	DISTANCE
L1	N 88°24'03" E	35.57'
TOTAL FROM P.O.B. 1 TO P.O.T. 1		
NET AC.	FEET	RODS
0.06	35.57'	2.16

VALKYRIE 12 FED COM PROPOSED LEASE ROAD		
P.O.B. 2 TO P.O.T 2		
LINE	BEARING	DISTANCE
L2	N 21°17'50" W	56.52
TOTAL FROM P.O.B. 2 TO P.O.T. 2		
NET AC.	FEET	RODS
0.09	56.52'	3.42
TOTAL EASEMENT IN SECTION 11		
NET AC.	FEET	RODS
0.15	92.09'	5.58

TIE TABLE		
LINE	BEARING	DISTANCE
TIE-1	S 18°22'13" E	2,731.52'
TIE-2	N 18°01'15" E	2,802.18'
TIE-3	S 05°33'49" E	2,138.93'
TIE-4	N 05°00'22" E	3,088.29'

EASEMENT DESCRIPTION

THE LENGTH OF THE HEREIN DESCRIBED VARIABLE WIDTH PROPOSED LEASE ROAD EASEMENT CROSSING SAID SECTION 11
P.O.B. 1 TO P.O.T. 1: BEING 35.57 FEET (2.16 RODS) AND CONTAINS 0.06 NET ACRE OF LAND;
P.O.B. 2 TO P.O.T. 2: BEING 56.52 FEET (3.42 RODS) AND CONTAINS 0.09 NET ACRE OF LAND;
SECTION 11, TOWNSHIP 23 SOUTH, RANGE 28 EAST, NEW MEXICO PRINCIPAL MERIDIAN,
EDDY COUNTY, NEW MEXICO.

Marathon Oil Permian LLC

CENTERLINE EASEMENT TOTALS AS SHOWN IN PLAN ABOVE	
PERMANENT EASEMENT NET ACREAGE	0.15
CENTERLINE FOOTAGE	92.09'
CENTERLINE RODS	5.58

LEGEND

- PERMANENT EASEMENT
- W W W — EXISTING WATER LINE
- CENTERLINE OF LEASE ROAD
- x x x — FENCE
- PAD LINE
- G G G — EXISTING GAS PIPELINE
- PROPOSED CENTERLINE
- EXISTING PIPELINES
- OHP OHP — OVERHEAD POWERLINE
- SURVEY/SECTION LINE
- TOWNSHIP/RANGE LINE
- FOUND MONUMENT

STAMP

LLOYD P. SHORT
NEW MEXICO
21653
PROFESSIONAL SURVEYOR

SEPTEMBER 12, 2024

CERTIFICATION

I, LLOYD P. SHORT, NEW MEXICO PROFESSIONAL SURVEYOR NO. 21653, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT CROSSING AN EXISTING TRACT OR TRACTS.

PLAT FOR A PROPOSED LEASE ROAD EASEMENT
CROSSING THE PROPERTY OF

BUREAU OF LAND MANAGEMENT

EDDY COUNTY, NEW MEXICO

DATE SURVEYED: 07/07/2024

NOTES

BASIS OF BEARING
ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999774785 AND A CONVERGENCE ANGLE OF 0.151792308°.

REV.	DATE	DESCRIPTION	BY	CHKD

SHEET 1 OF 2
DRAWN BY: JMW
DATE DRAWN: 07/12/2024
CHECKED BY: MWS

DELTA FIELD SERVICES

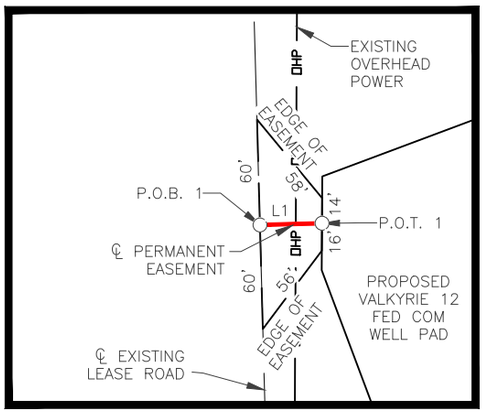
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

TRACT No.	NM-ED-0005.00060
JOB No.	R4000_008

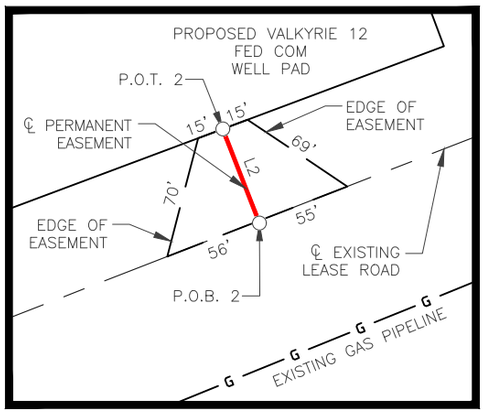
VALKYRIE 12 FED COM
PROPOSED LEASE ROAD EASEMENT
SECTION 11, T-23-S, R-28-E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

N GRID NORTH

DETAIL "A"
N.T.S.



DETAIL "B"
N.T.S.



Marathon Oil Permian LLC

LEGEND

- PERMANENT EASEMENT
- EXISTING WATER LINE
- CENTERLINE OF LEASE ROAD
- FENCE
- PAD LINE
- EXISTING GAS PIPELINE
- PROPOSED CENTERLINE
- EXISTING PIPELINES
- OVERHEAD POWERLINE
- SURVEY/SECTION LINE
- TOWNSHIP/RANGE LINE
- FOUND MONUMENT

STAMP

LLOYD P. SHORT
NEW MEXICO
21653
PROFESSIONAL SURVEYOR

SEPTEMBER 12, 2024

CERTIFICATION

I, LLOYD P. SHORT, NEW MEXICO PROFESSIONAL SURVEYOR NO. 21653, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT CROSSING AN EXISTING TRACT OR TRACTS.

NOTES

BASIS OF BEARING

ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999774785 AND A CONVERGENCE ANGLE OF 0.151792308°.

PLAT FOR A PROPOSED LEASE ROAD EASEMENT
CROSSING THE PROPERTY OF

BUREAU OF LAND MANAGEMENT

DATE SURVEYED: 07/07/2024

REV.	DATE	DESCRIPTION	BY	CHKD

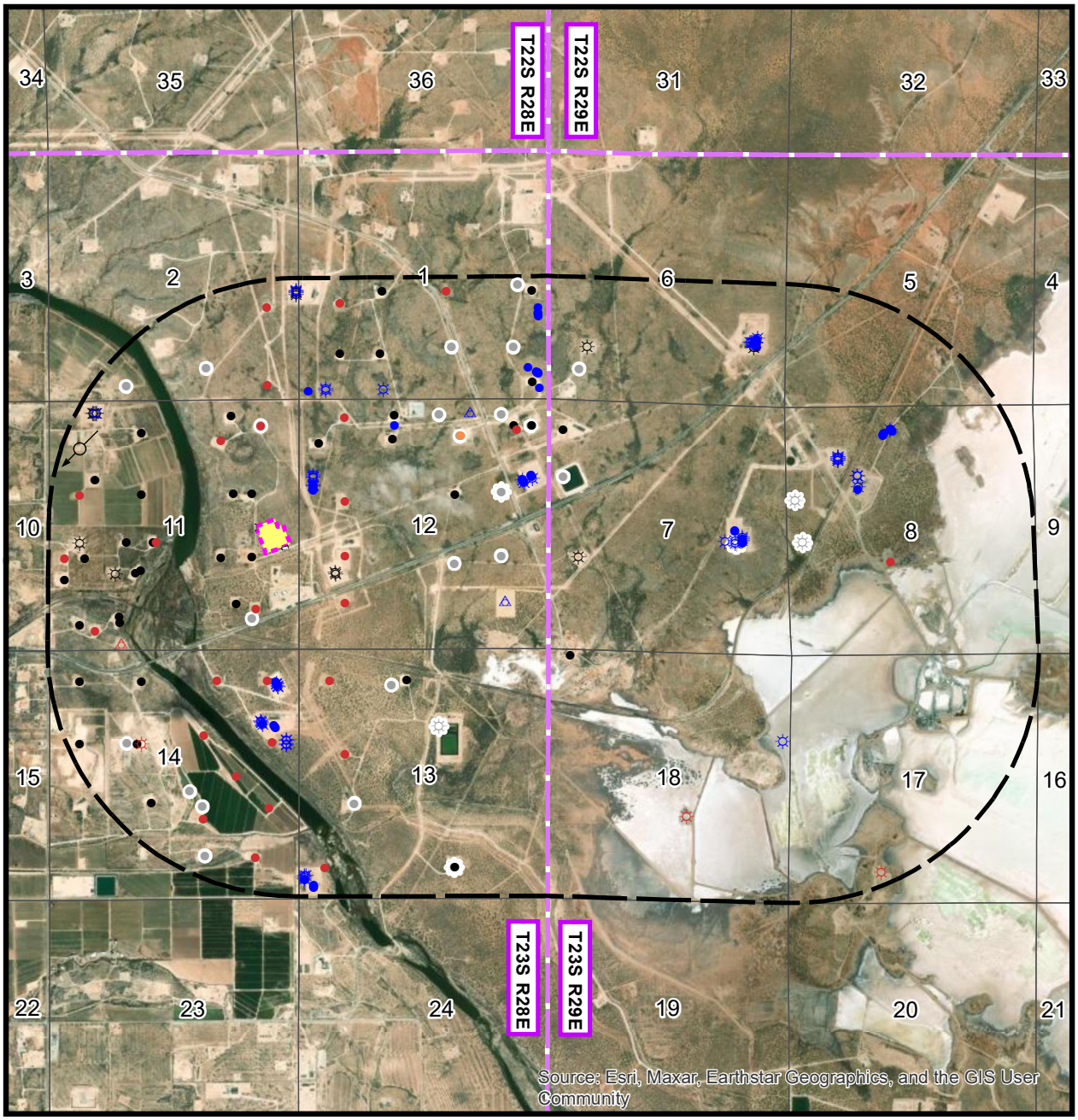
SHEET 2 OF 2
DRAWN BY: JMW
DATE DRAWN: 07/12/2024
CHECKED BY: MWS

DELTA FIELD SERVICES

510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

ONE-MILE RADIUS MAP

VALKYRIE 12 FED COM
SEC. 11, TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
MARATHON OIL PERMIAN, LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, NM.



REV 0 SPT 8/15/2024

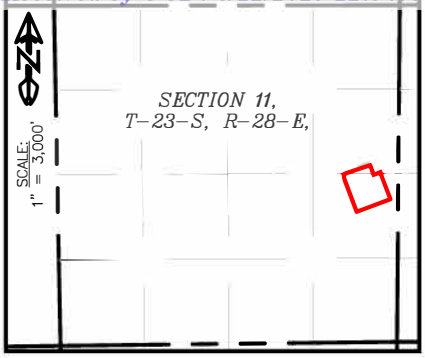
1 " = 3,500 '

- PROPOSED ROAD
- 1_MILE_RADIUS
- VALKYRIE NORTH WELL PAD
- Gas, Active
- Gas, Cancelled
- Gas, New
- Gas, Plugged
- Injection, Active
- Oil, Active
- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abondoned
- Salt Water Injection, New
- Salt Water Injection, Plugged

DELTA FIELD SERVICES

SHEET 1 OF 6

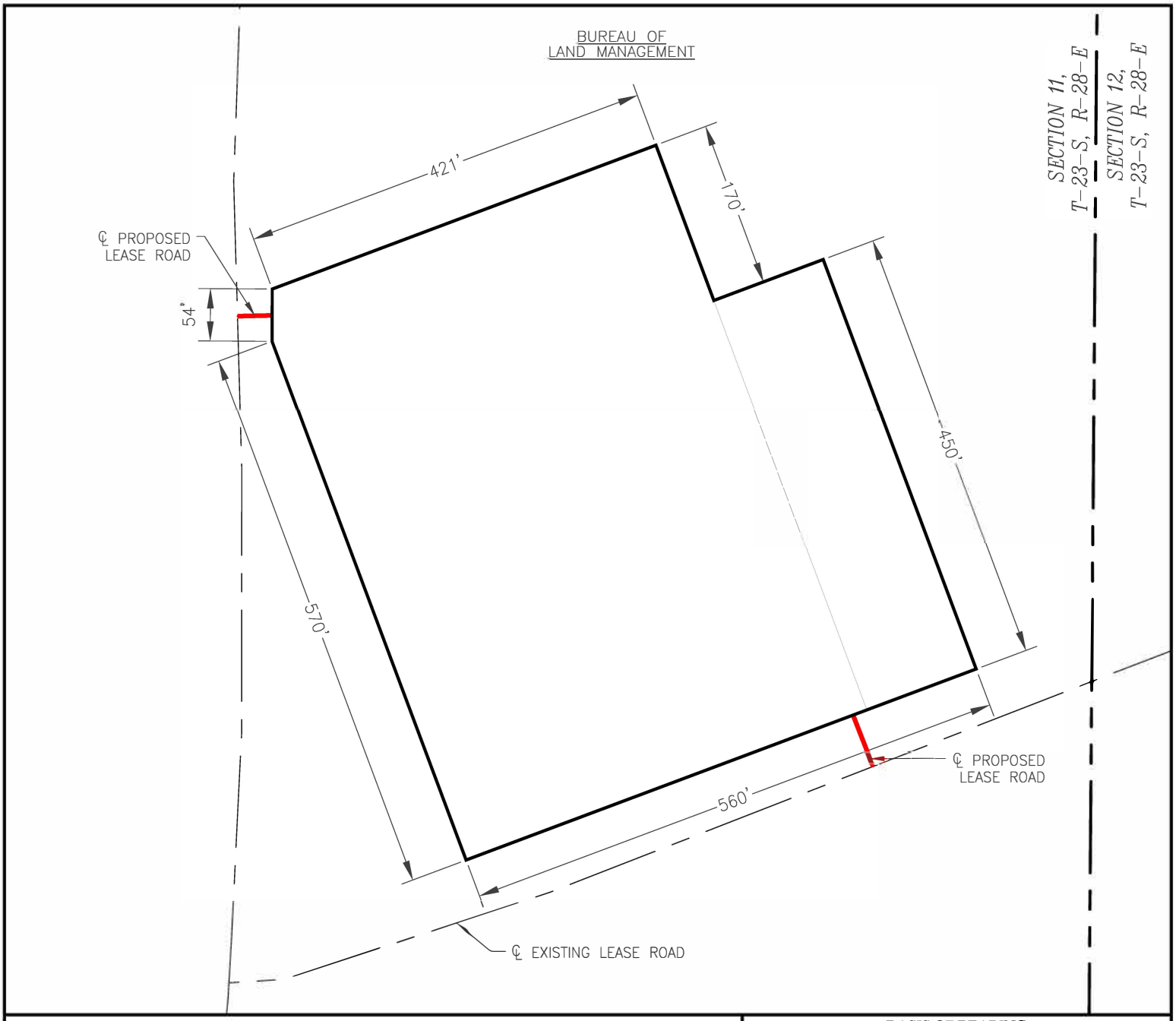
PREPARED BY:
DELTA FIELD SERVICES, LLC
510 TRENTON STREET, WEST MONROE, LA 71291
318-323-6900 OFFICE
JOB No. R4000_008



FACILITY LAYOUT

VALKYRIE 12 FED COM
SEC. 11 TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.

75' 0' 75' 150'
SCALE: 1" = 150'



LEGEND
PROPOSED WELL PAD
PROPOSED LEASE ROAD

BASIS OF BEARING

ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE BASED GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999774785 AND A CONVERGENCE ANGLE OF 0.151792308".

JOB NUMBER	REV.	DATE	BY
R4000_008			

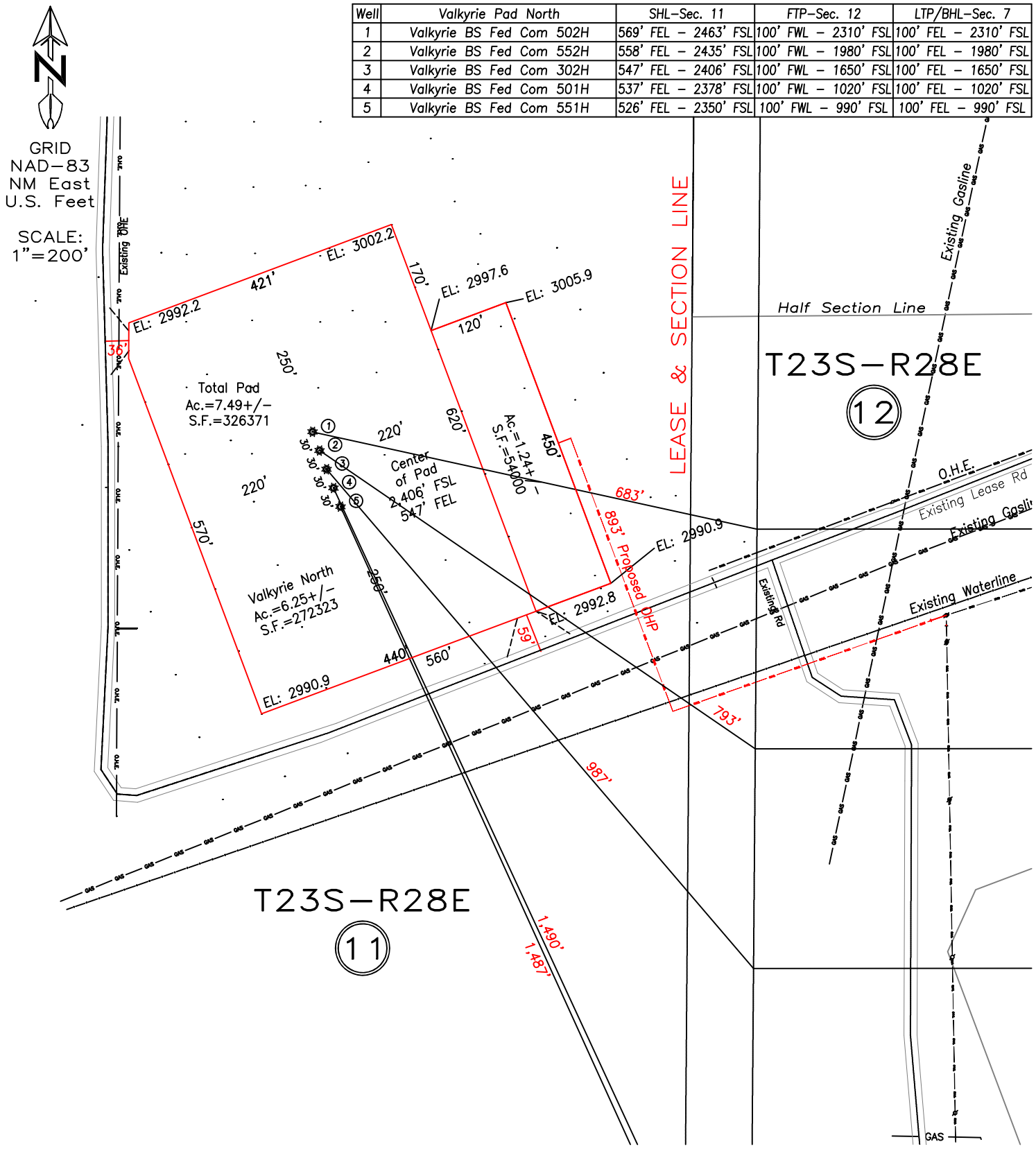
NOTES

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY.

SHEET 6 OF 6
DRAWN BY: ERR
DATE DRAWN: 07/16/2024
CHECKED BY: DEF

DELTA FIELD SERVICES
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

Well	Valkyrie Pad North	SHL–Sec. 11	FTP–Sec. 12	LTP/BHL–Sec. 7
1	Valkyrie BS Fed Com 502H	569' FEL – 2463' FSL	100' FWL – 2310' FSL	100' FEL – 2310' FSL
2	Valkyrie BS Fed Com 552H	558' FEL – 2435' FSL	100' FWL – 1980' FSL	100' FEL – 1980' FSL
3	Valkyrie BS Fed Com 302H	547' FEL – 2406' FSL	100' FWL – 1650' FSL	100' FEL – 1650' FSL
4	Valkyrie BS Fed Com 501H	537' FEL – 2378' FSL	100' FWL – 1020' FSL	100' FEL – 1020' FSL
5	Valkyrie BS Fed Com 551H	526' FEL – 2350' FSL	100' FWL – 990' FSL	100' FEL – 990' FSL



Proposed Pad Area	Acres	7.49
	Sq. Ft.	326371
Proposed 20' Lease Road	Feet	95
	Rods	5.75

AS–STAKED SKETCH FOR
MARATHON OIL

VALKYRIE PAD NORTH

SECTION 12
TOWNSHIP 23 SOUTH – RANGE 28 EAST
SECTION 7
TOWNSHIP 23 SOUTH – RANGE 29 EAST
EDDY COUNTY, NEW MEXICO

NOTE:
This sketch is intended for Marathon Oil Company purposes only and is NOT to be relied upon as a boundary survey and is NOT to be used to convey or establish real propoerty interests.

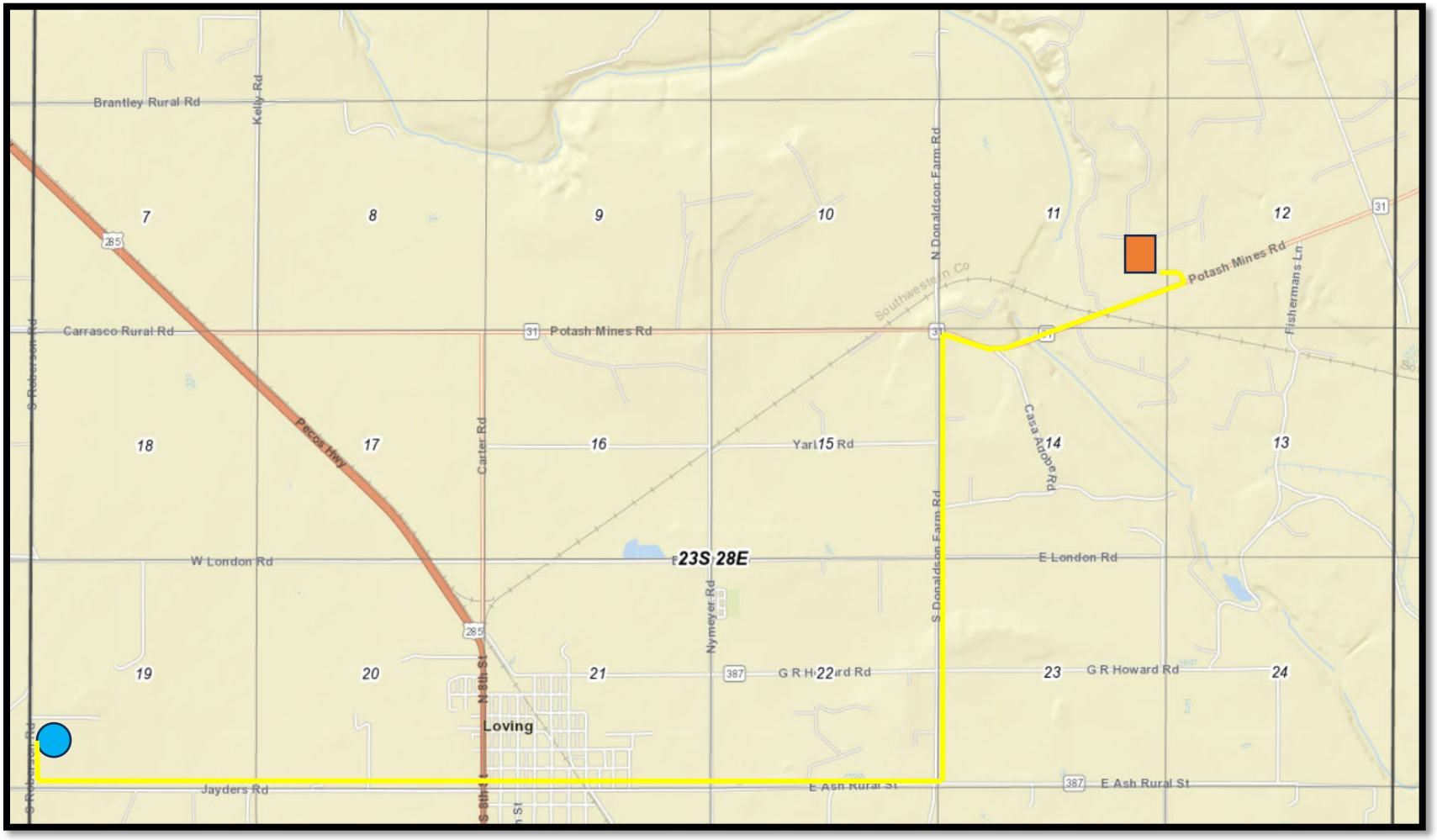
This information was gathered with GPS RTK methods using OPUS Solutions.

STAKED:	RH
DATE:	2024.04.13
DRAWN:	CRW
DATE:	2023.09.14
JOB#:	R4000.008
REV#:1	2024.08.14

Marathon Oil

VALKYRIE BS FED COM WATER SOURCE

WATER SOURCE LOCATED SWSW QTR OF SECTION 19, TWN 23S RGE 28E



Construction Material for Valkyrie Fed Com Pad

- Caliche will be used to construct well pad and roads. Material will be purchased from the nearest federal, state, or private permitted pit.
- Source 1- BLM Caliche Pit #222809 locaed in QTR/QTR SENE, Sec 9, T22S, R28E, Edy County, NM. LAT 32.408423; LONG -104.086529.
- Source 2 – BLM Caliche Pit #212835 located in QTR/QTR SWSE, Sec 35, T21S, R28E, Eddy County, NM. LAT 32.430823; LONG -104.055168.
- The proposed source of construction material will be located and purchased by construction contractor.

Valkyrie Fed Com Pad

Valkyrie BS Fed Com 502H
SHL: 2463' FSL & 569' FEL T23S, R28E, Sec. 11
BHL: 2308' FSL & 100' FEL T23S, R29E, Sec. 7

Valkyrie BS Fed Com 552H
SHL: 2434' FSL & 558' FEL T23S, R28E, Sec. 11
BHL: 1980' FSL & 10' FEL T23S, R29E, Sec. 7

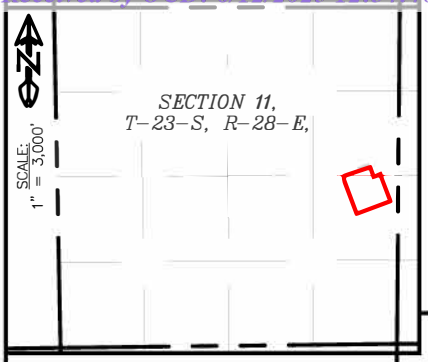
Valkyrie BS Fed Com 302H
SHL: 2406' FSL & 547' FEL T23S, R28E, Sec. 11
BHL: 1650' FSL & 100' FEL T23S, R29E, Sec. 7

Valkyrie BS Fed Com 501H
SHL: 2378' FSL & 537' FEL T23S, R28E, Sec. 11
BHL: 1020' FSL & 100' FEL T23S, R29E, Sec. 7

Valkyrie BS Fed Com 551H
SHL: 2350' FSL & 526' FEL T23S, R28E, Sec. 11
BHL: 990' FSL & 100' FEL T23S, R29E, Sec. 7

WELL PAD LOCATION PLAT

VALKYRIE 12 FED COM
SEC. 11 TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.



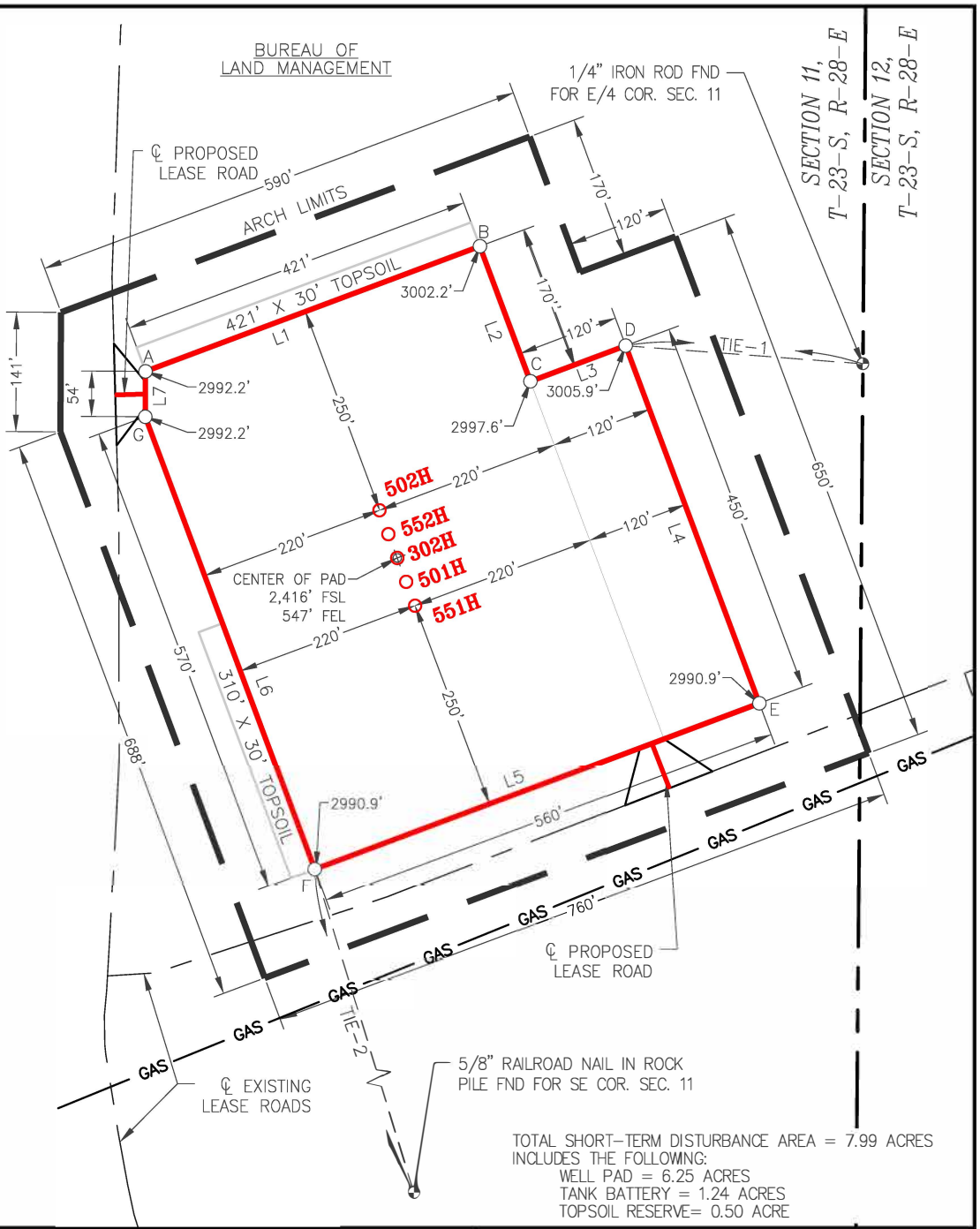
SCALE: 1" = 200'

PROPOSED PAD		
LINE	BEARING	DISTANCE
SECTION 11		
L1	N 69°29'46" E	420.97'
L2	S 20°30'14" E	170.00'
L3	N 69°29'46" E	120.00'
L4	S 20°30'14" E	450.00'
L5	S 69°29'46" W	560.00'
L6	N 20°30'14" W	569.93'
L7	N 00°18'23" E	53.57'

TIE TABLE		
TIE	BEARING	DISTANCE
TIE-1	S 85°38'15" E	280.61'
TIE-2	S 17°06'44" E	2,126.86'

NAD 83		
A	X:628192.81 Y:480287.14	LAT:32.32006856 LON:-104.05216349
B	X:628587.11 Y:480434.59	LAT:32.32047104 LON:-104.05088581
C	X:628646.65 Y:480275.36	LAT:32.32003291 LON:-104.05069441
D	X:628759.05 Y:480317.40	LAT:32.32014763 LON:-104.05033020
E	X:628916.67 Y:479895.91	LAT:32.31898788 LON:-104.04982355
F	X:628392.15 Y:479699.75	LAT:32.31845249 LON:-104.05152318
G	X:628192.52 Y:480233.57	LAT:32.31992131 LON:-104.05216487

NAD 27		
A	X:587010.14 Y:480227.60	LAT:32.31994754 LON:-104.05166871
B	X:587404.43 Y:480375.05	LAT:32.32035000 LON:-104.05039107
C	X:587463.98 Y:480215.82	LAT:32.31991186 LON:-104.05019969
D	X:587576.37 Y:480257.85	LAT:32.32002659 LON:-104.04983549
E	X:587733.98 Y:479836.37	LAT:32.31886681 LON:-104.04932890
F	X:587209.46 Y:479640.23	LAT:32.31833145 LON:-104.05102849
G	X:587009.85 Y:480174.04	LAT:32.31980029 LON:-104.05167010



TOTAL SHORT-TERM DISTURBANCE AREA = 7.99 ACRES
INCLUDES THE FOLLOWING:
WELL PAD = 6.25 ACRES
TANK BATTERY = 1.24 ACRES
TOPSOIL RESERVE= 0.50 ACRE

NOTES

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY.

SEPTEMBER 12, 2024

CERTIFICATION

I, LLOYD P. SHORT, NEW MEXICO PROFESSIONAL SURVEYOR NO. 21653, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FUTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT CROSSING AN EXISTING TRACT OR TRACTS.

BASIS OF BEARING

ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE BASED GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999774785 AND A CONVERGENCE ANGLE OF 0.151792308°.

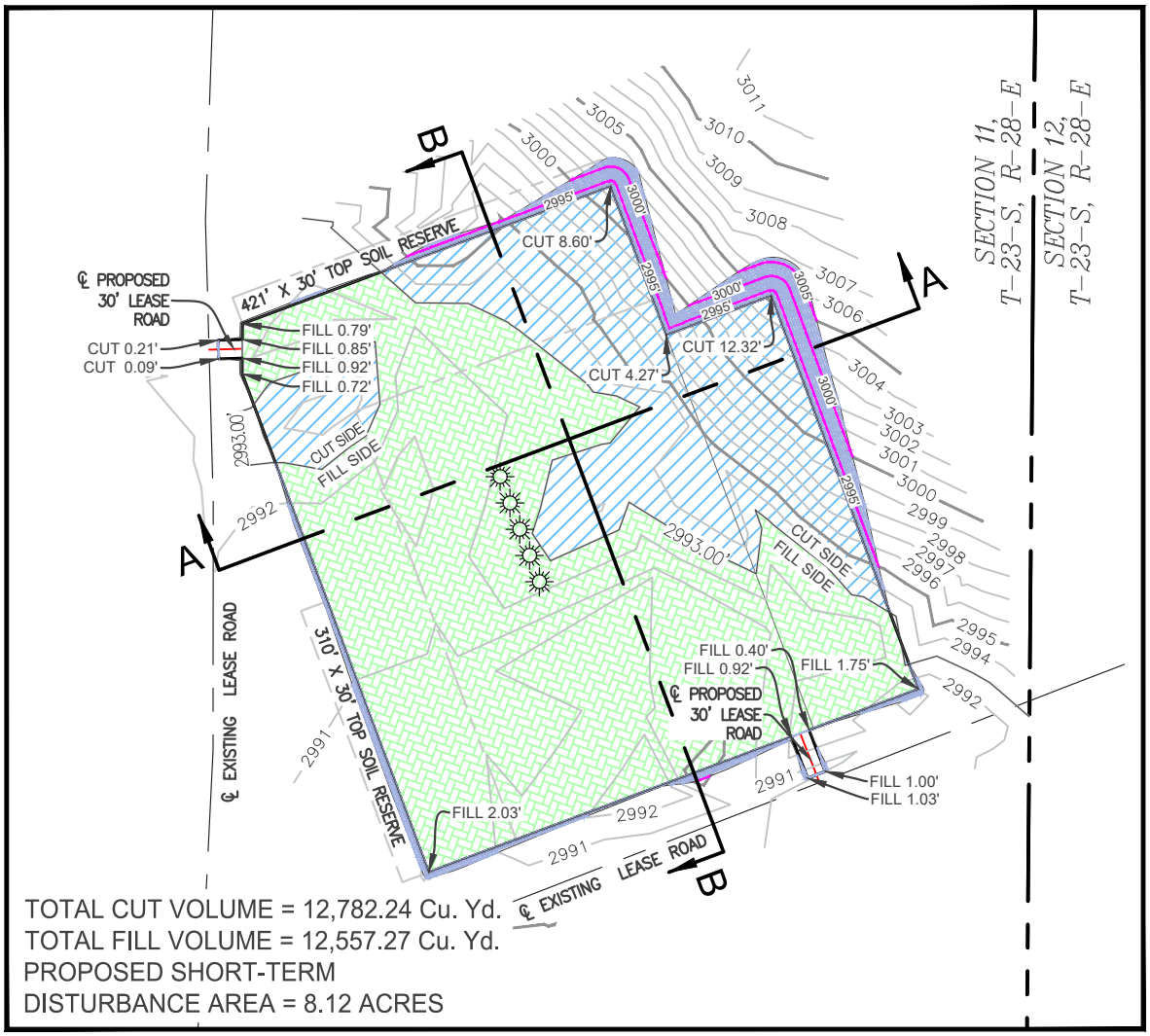
JOB NUMBER	REV.	DATE	BY
R4000_008			
SHEET 2 OF 6			
DRAWN BY: ERR			
DATE DRAWN: 07/16/2024			
CHECKED BY: DEF			

DELTA FIELD SERVICES
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

CUT & FILL CROSS SECTIONS

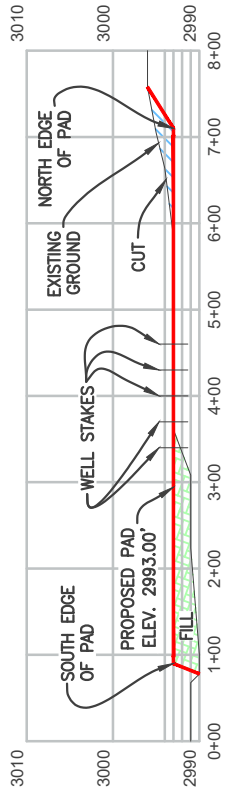
VALKYRIE 12 FED COM
SEC. 11 TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.

100' 0' 100' 200'
SCALE: 1" = 200'



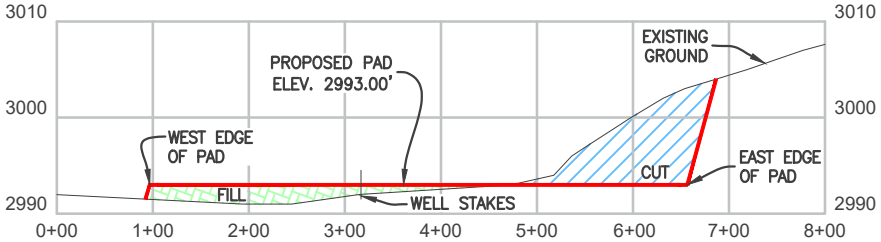
TOTAL CUT VOLUME = 12,782.24 Cu. Yd.
TOTAL FILL VOLUME = 12,557.27 Cu. Yd.
PROPOSED SHORT-TERM
DISTURBANCE AREA = 8.12 ACRES

B - B CUT SECTION VIEW



HORIZONTAL: 1" = 100'
VERTICAL: 1" = 10'

A - A CUT SECTION VIEW



HORIZONTAL: 1" = 100'
VERTICAL: 1" = 10'

CUT AREA
FILL AREA

LEGEND

PROPOSED PAD SURFACE	PROP. 1' CONTOUR LINES
PROPOSED LEASE ROAD	PROP. 5' CONTOUR LINES
EXIST. 1' CONTOUR LINES	EROSION CONTROL FENCE ECF ECF
EXIST. 5' CONTOUR LINES	

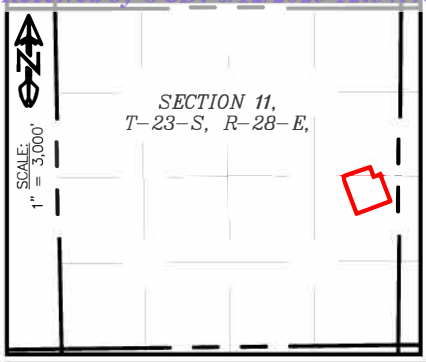
LLOYD P. SHORT NEW MEXICO 19499 PROFESSIONAL ENGINEER

SEPTEMBER 12, 2024

Lloyd P. Short

JOB NUMBER			
R4000_008	REV.	DATE	BY
SHEET 1 OF 1			
DRAWN BY: ANC			
DATE DRAWN: 08/14/2024			
CHECKED BY: MWS			

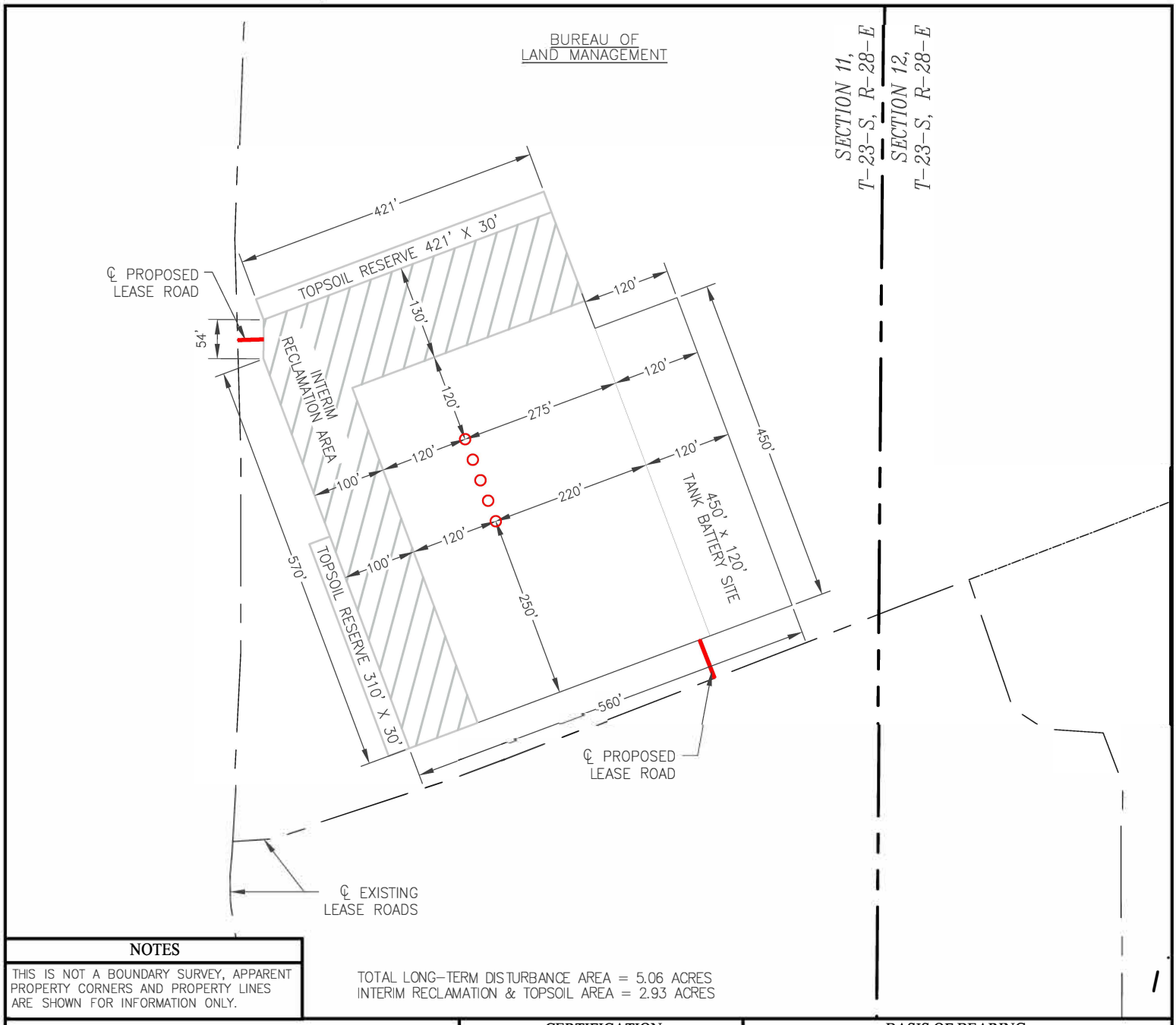
DELTA FIELD SERVICES
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900



INTERIM RECLAMATION DIAGRAM

VALKYRIE 12 FED COM
SEC. 11 TWP. 23-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.

100' 0' 100' 200'
SCALE: 1" = 200'



NOTES

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TOTAL LONG-TERM DISTURBANCE AREA = 5.06 ACRES
INTERIM RECLAMATION & TOPSOIL AREA = 2.93 ACRES

LLOYD P. SHORT
NEW MEXICO
21653
PROFESSIONAL SURVEYOR

SEPTEMBER 12, 2024

CERTIFICATION

I, LLOYD P. SHORT, NEW MEXICO PROFESSIONAL SURVEYOR NO. 21653, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FUTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT CROSSING AN EXISTING TRACT OR TRACTS.

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JOB NUMBER	REV.	DATE	BY
R4000_008			

SHEET 4 OF 6
DRAWN BY: ERR
DATE DRAWN: 07/16/2024
CHECKED BY: DEF

DELTA FIELD SERVICES
510 TRENTON STREET
WEST MONROE, LA 71291
(318) 323-6900

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

PWD Data Report
06/12/2025

APD ID: 10400101802 **Submission Date:** 11/21/2024

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

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

Section 1 - General

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

Section 2 - Lined

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

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

Other PWD Surface Owner Description:

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit

Pit liner description:

Pit liner manufacturers

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule

Lined pit reclamation description:

Lined pit reclamation

Leak detection system description:

Leak detection system

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Lined pit Monitor description:

Lined pit Monitor

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information

Section 3 - Unlined

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

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

Other PWD Surface Owner Description:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule

Unlined pit reclamation description:

Unlined pit reclamation

Unlined pit Monitor description:

Unlined pit Monitor

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

Beneficial use user

Estimated depth of the shallowest aquifer (feet):

Precipitated Solids Permit

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

TDS lab results:

Geologic and hydrologic

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

State

Unlined Produced Water Pit Estimated

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information

Section 4 -

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

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

Other PWD Surface Owner Description:

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection

Underground Injection Control (UIC) Permit?

UIC Permit

Section 5 - Surface

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

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

Other PWD Surface Owner Description :

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM **Well Number:** 302H

Section 6 -

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

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

PWD Surface Owner Description:

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type

Have other regulatory requirements been met?

Other regulatory requirements

AFMSS

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

Bond Info Data

06/12/2025

APD ID: 10400101802

Submission Date: 11/21/2024

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: VALKYRIE BS FED COM

Well Number: 302H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond

Federal/Indian APD: FED

BLM Bond number: NMB001555

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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

General Information
Phone: (505) 629-6116

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

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

CONDITIONS

Operator:	OGRID:
MARATHON OIL PERMIAN LLC 600 W Illinois Ave Midland, TX 79701	372098
	Action Number: 473736
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
rrussell01	Cement is required to circulate on both surface and intermediate1 strings of casing.	6/12/2025
rrussell01	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	6/12/2025
ward.rikala	Notify the OCD 24 hours prior to casing & cement.	7/22/2025
ward.rikala	File As Drilled C-102 and a directional Survey with C-104 completion packet.	7/22/2025
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.	7/22/2025
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.	7/22/2025