

Form 3160-3
(June 2015)

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

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No. NMNM112275 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. QUEENIE 15-10 FEDERAL COM 2H 9. API Well No.
2. Name of Operator MARATHON OIL PERMIAN LLC		10. Field and Pool, or Exploratory SALT LAKE/Bone Spring 11. Sec., T. R. M. or Blk. and Survey or Area SEC 22/T20S/R32E/NMP
3a. Address 990 TOWN & COUNTRY BLVD, HOUSTON, TX 77024	3b. Phone No. (include area code) (713) 296-2113	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NENE / 108 FNL / 421 FEL / LAT 32.5656453 / LONG -103.7468359 At proposed prod. zone NENE / 100 FNL / 661 FEL / LAT 32.5946898 / LONG -103.7476131		12. County or Parish LEA 13. State NM
14. Distance in miles and direction from nearest town or post office* 12 miles		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 100 feet	16. No of acres in lease 17. Spacing Unit dedicated to this well 320.0	20. BLM/BIA Bond No. in file FED: NMB001555
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1330 feet	19. Proposed Depth 9728 feet / 19978 feet	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3529 feet	22. Approximate date work will start* 04/04/2024	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) NICOLE LEE / Ph: (713) 929-6600	Date 04/10/2023
Title Regulatory Compliance Representative		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) CODY LAYTON / Ph: (575) 234-5959	Date 12/14/2023
Title Assistant Field Manager Lands & Minerals Office Carlsbad Field Office		

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

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



(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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

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

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

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

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

Additional Operator Remarks

Location of Well

0. SHL: NENE / 108 FNL / 421 FEL / TWSP: 20S / RANGE: 32E / SECTION: 22 / LAT: 32.5656453 / LONG: -103.7468359 (TVD: 0 feet, MD: 0 feet)

PPP: NENE / 100 FSL / 663 FEL / TWSP: 20S / RANGE: 32E / SECTION: 15 / LAT: 32.5662189 / LONG: -103.7476193 (TVD: 4323 feet, MD: 4335 feet)

PPP: SESE / 0 FSL / 660 FEL / TWSP: 20S / RANGE: 32E / SECTION: 10 / LAT: 32.5804484 / LONG: -103.7476209 (TVD: 4323 feet, MD: 4335 feet)

BHL: NENE / 100 FNL / 661 FEL / TWSP: 20S / RANGE: 32E / SECTION: 10 / LAT: 32.5946898 / LONG: -103.7476131 (TVD: 9728 feet, MD: 19978 feet)

BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

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Review and Appeal Rights

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

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

Application for Permit to Drill

APD Package Report

Date Printed: 12/14/2023 11:48 AM

APD ID: 10400091503

Well Status: AAPD

APD Received Date: 04/10/2023 12:02 PM

Well Name: QUEENIE 15-10 FEDERAL C

Operator: MARATHON OIL PERMIAN LLC

Well Number: 2H

APD Package Report Contents

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

-- None

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:** 12 / 14 / 2023

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

If Other, please describe: _____

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

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Queenie 15-10 Fed Com 2		A 22 T20S 32E	108 FNL 421 F	2000	2200	2000
Queenie 15-10 Fed Com 3		A 22 T20S 32E	100 FNL 450'	2000	2200	2000

IV. Central Delivery Point Name: Queenie Fed 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
Queenie 15-10 Fed Com 2		2/21/2024	3/25/2024	6/1/2024	6/15/2024	6/15/2024
Queenie 15-10 Fed Com 3		2/23/2024	3/25/2024	6/1/2024	6/16/2024	6/16/2024

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

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

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

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:	<i>Terri Stathem</i>
Printed Name:	Terri Stathem
Title:	Manager Regulatory Compliance
E-mail Address:	tstathem@marathonoil.com
Date:	12/14/2023
Phone:	713-817-0224

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

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

APPENDIX

Section 1 - Parts VI, VII, and VIII

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

Application Data

12/14/2023

APD ID: 10400091503

Submission Date: 04/10/2023

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

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400091503

Tie to previous NOS? N

Submission Date: 04/10/2023

BLM Office: Carlsbad

User: NICOLE LEE

Title: Regulatory Compliance
Representative

Federal/Indian APD: FED

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

Lease number: NMNM112275

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: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: SALT LAKE

Pool Name: Bone Spring

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

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

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:
QUEENIE FEDERAL COM DI

Number: 15-10

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: 12 Miles

Distance to nearest well: 1330 FT

Distance to lease line: 100 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: QUEENIE_15_10_FEDERAL_COM_2H__CERTIFIED_C_102__11_12_2018__APD_Original__20230405120710.pdf
Queenie_15_10_Federal_Com_2H_Payment_Credit_Card_4.5.2023_20230405141630.pdf

Well work start Date: 04/04/2024

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 3887

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	108	FNL	421	FEL	20S	32E	22	Aliquot NENE	32.5656453	-103.7468359	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 33955	3529	0	0	N
KOP Leg #1	100	FSL	663	FEL	20S	32E	15	Aliquot NENE	32.5662189	-103.7476193	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 112275	-7945	4335	4323	Y

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
PPP Leg #1-1	100	FSL	663	FEL	20S	32E	15	Aliquot NENE	32.5662189	-103.7476193	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 112275	-7945	4335	4323	Y
PPP Leg #1-2	0	FSL	660	FEL	20S	32E	10	Aliquot SESE	32.5804484	-103.7476209	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 43734	-7945	4335	4323	Y
EXIT Leg #1	100	FNL	661	FEL	20S	32E	10	Aliquot NENE	32.5946898	-103.7476131	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 43734	-6199	19978	9728	Y
BHL Leg #1	100	FNL	661	FEL	20S	32E	10	Aliquot NENE	32.5946898	-103.7476131	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 43734	-6199	19978	9728	Y

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Drilling Plan Data Report

12/14/2023

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

APD ID: 10400091503

Submission Date: 04/10/2023

Operator Name: MARATHON OIL PERMIAN LLC

Highlighted data
reflects the most
recent changes

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
12608324	RUSTLER	3529	1025	1025	ANHYDRITE, DOLOMITE	OTHER : Brine	N
12608336	SALADO	2329	1200	1200	SALT	NONE	N
12608330	YATES	381	3148	3148	ANHYDRITE, SALT	NONE	N
12608331	CAPITAN REEF	33	3496	3496	ANHYDRITE	USEABLE WATER	N
12608332	BELL CANYON	-1077	4606	4606	LIMESTONE	NONE	N
12608333	CHERRY CANYON	-1225	4754	4754	LIMESTONE	NONE	N
12608334	BONE SPRING	-5211	8740	8740	SANDSTONE	NATURAL GAS, OIL	Y
12608335	WOLFCAMP	-7227	10756	10756	LIMESTONE, SANDSTONE	OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 15000

Equipment: 13 5/8 BOP Annular, (5000 psi) and BOP Stack (10000 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 specs and hydrostatic test chart. In the event the specific hose is not available, one of equal or higher rating will be used. Marathon requests a 5M annular variance for the 10M BOP system. 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 12.25" intermediate hole, 10,000psi for the BOP Stacking before drilling the 8.75" production hole. Testing will be conducted by an independent service company per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the Equipment Description above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics. Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Choke Diagram Attachment:

Choke_Manifold_10M_20230406080509.pdf

BOP Diagram Attachment:

BOP_Diagram_10M_20230406080549.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	1040	0	1040	3529	2489	1040	J-55	54.5	ST&C	3.37	1.71	BUOY	2.93	BUOY	2.93
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5400	0	5374	3529	-1845	5400	J-55	36	BUTT	1.39	1.42	BUOY	1.8	BUOY	1.8
3	PRODUCTION	8.75	5.5	NEW	API	N	0	19978	0	9740	3529	-6211	19978	P-110	20	BUTT	1.66	1.29	BUOY	2.08	BUOY	2.08

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Ranger_SB_TB__3_csg_string__Surface_Casing_20230405111734.pdf

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Casing Attachments

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Ranger_SB_TB__3_csg_string__Intermediate_casing_20230405111855.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	832	668	1.73	13.5	1156	100	class c	3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-EFlake
SURFACE	Tail		832	1040	217	1.33	14.8	289	100	CLASS C	none
INTERMEDIATE	Lead		0	4400	1091	2.21	12.8	2412	75	CLASS C	0.02 Gal/Sx Defoamer + 0.5% Extender + 1% Accelerator
INTERMEDIATE	Tail		4400	5400	306	1.33	14.8	407	30	CLASS C	0.03 % Retarder

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		5100	10800	454	3.21	11	1457	70	CLASS C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
PRODUCTION	Tail		10800	11800	170	1.15	13.8	195	30	CLASS H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

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

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

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1180	22826	OIL-BASED MUD	11.5	13							
1040	5400	OTHER : BRINE	9.9	10.2							
0	1040	WATER-BASED MUD	8.4	8.8							
5400	11800	OTHER : CUT BRINE	8.8	9.4							

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: QUEENIE 15-10 FEDERAL COM

Well Number: 2H

Section 6 - Test, Logging, Coring

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

Run gamma-ray (GR, directional survey, MWD survey)

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:

NONE PLANNED

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6534

Anticipated Surface Pressure: 4393

Anticipated Bottom Hole Temperature(F): 195

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

H2S_Contingency_Plan_Summary_Rev1_20230405112824.pdf

Drill_7_updated_Queenie_15_10_Fed_Com_H2S_Contingency_Plan_20230405112914.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Drill_8_Marathon_Queenie15_10FedCom2H_PrelimB_WPReport_20230405121229.pdf

Drill_8_Marathon_Queenie15_10FedCom2H_PrelimB_36x48WM_20230405121229.pdf

Drill_8_QUEENIE_15_10_FED_COM_2H_APD_Drill_Plan_UPD2_01.12.21_20230405121229.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Rig_Layout_20230406082839.pdf

Other Variance attachment:

Hose_Testing_Info_20230406082641.pdf

Well_Control_Plan_20230406082725.pdf

WH_Schematic_20230406082729.pdf

Variance_Request_20230406081057.pdf

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

WELL NAME & NUMBER:
COUNTY, STATE:

**QUEENIE 15-10 FEDERAL COM 2H
LEA COUNTY, NEW MEXICO**

Application Data Report

3. WELL LOCATION TABLE

Traverse Segment	Latitude NAD83	Longitude NAD83	MD (RKB)	TVD (RKB)	Lease Serial	NS Foot	NS Indicator	EW Foot	EW Indicator	TWSP	Range	Section	Aliquot/Lot	Lease Type
SHL	32.56564533	-103.7468359	0	0	NMNM033955	108	FNL	421	FEL	20S	32E	22	NENE	F
FTP	32.56621894	-103.7476193	10100	9833	NMNM112275	100	FSL	663	FEL	20S	32E	15	SESE	F
EXIT	32.58044835	-103.7476209	19977	9727	NMNM043734	0	FSL	660	FEL	20S	32E	15	NENE	F
BHL	32.59468975	-103.7476131	19978	9728	NMNM043734	100	FNL	661	FEL	20S	32E	10	NENE	F

Drilling Plan Data Report

1. GEOLOGIC FORMATIONS

Formation	TVD (ft)	MD (ft)	Lithologies	Mineral Resources	Producing Formation
Rustler	1,025	1,025	Anhydrite/Dolomite	BRINE	N
Salado	1,200	1,200	Salt/Anhydrite	BRINE	N
Yates	3,025	3,025	Sal/Anhydrite	OIL/ WATER	N
Bell Canyon	4,650	4,633	Sands/Shale	OIL	Y
Cherry Canyon	4,850	4,830	Sands/Shale	OIL	Y
Brushy Canyon	5,900	5,874	Sands/Carbonates	OIL	Y
Bone Spring	7,800	7,774	Sands/Carbonates	OIL	Y
1st Bone Spring Sand	8,800	8,774	Sands/Carbonates	OIL	Y
2nd Bone Spring Sand	9,350	9,324	Sands/Carbonates	OIL	Y

2. BLOWOUT PREVENTION

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
17 1/2"	13 5/8	10000	Annular	x	100% of working pressure 10000
			BOP Stack	x	
12 1/4"	13 5/8	10000	Annular	x	100% of working pressure 10000
			BOP Stack	x	
8 3/4"	13 5/8	10000	Annular	x	100% of working pressure 10000
			BOP Stack	x	
6 3/4"	13 5/8	10000	Annular	x	100% of working pressure 10000
			BOP Stack	x	

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	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.
N	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

3. CASING PROGRAM

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	<u>17 1/2</u>	<u>13 3/8</u>	<u>0</u>	<u>1040</u>	<u>0</u>	<u>1040</u>	<u>3529</u>	<u>2489</u>	<u>54.5</u>	<u>J55</u>	<u>STC</u>	<u>3.37</u>	<u>1.71</u>	<u>2.93</u>
Intermediate I	<u>12 1/4</u>	<u>9 5/8</u>	<u>0</u>	<u>3025</u>	<u>0</u>	<u>3025</u>	<u>3529</u>	<u>504</u>	<u>36</u>	<u>J55</u>	<u>BTC</u>	<u>1.39</u>	<u>1.42</u>	<u>1.8</u>
Intermediate II	<u>8 3/4</u>	<u>7 5/8</u>	<u>0</u>	<u>9290</u>	<u>0</u>	<u>9268</u>	<u>3529</u>	<u>-5739</u>	<u>29</u>	<u>P110HC</u>	<u>FM3</u>	<u>1.65</u>	<u>1.29</u>	<u>2.08</u>
Production	<u>6 3/4</u>	<u>5 1/2</u>	<u>0</u>	<u>19979</u>	<u>0</u>	<u>9728</u>	<u>3529</u>	<u>-6199</u>	<u>20</u>	<u>P110CY</u>	<u>TLW</u>	<u>1.69</u>	<u>1.65</u>	<u>1.82</u>

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM’s minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50’ above the Reef?	
Is well within the designated 4 string boundary.	

Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	Y
If yes, are the first three strings cemented to surface?	Y
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

4. CEMENT

String Type	Lead/Tail I	Stage Tool Depth	Top MD	Bottom MD	Quantity (sx)	Yield (ft3/sx)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	832	668	1.73	13.5	1156	100	Class C	LCM
Surface	Tail	--	832	1040	217	1.33	14.8	289	100	Class C	Accelerator
Intermediate I	Lead	--	0	2030	503	2.21	12.8	1113	75	Class C	Extender, Accelerator
Intermediate I	Tail	--	2030	3030	353	1.33	14.8	470	50	Class C	Retarder
Intermediate II	Lead	--	0	8290	441	3.21	11	1416	70	Class C	Viscosifier, Retarder
Intermediate II	Tail	--	8290	9290	114	1.15	13.8	131	30	Class H	Extender, Fluid Loss, Dispersant
Production	Lead	--	7290	9290	68	3.21	11	217	30	Class H	Ext., Ret., Defoamer, Viscosifier, FL
Production	Tail	--	9290	19978	951	1.22	14.5	1161	30	Class H	Ret., Ext., Fluid Loss, Dispersant

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 depth: N/A TVD/MD

KOP: N/A TVD/MD

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

Attach plugging procedure for pilot hole: N/A

5. CIRCULATING MEDIUM

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max. Weight (ppg)
<u>0</u>	<u>1040</u>	<u>Water Based Mud</u>	<u>8.4</u>	<u>8.8</u>
<u>1040</u>	<u>3025</u>	<u>Brine</u>	<u>9.9</u>	<u>10.2</u>
<u>3025</u>	<u>9290</u>	<u>Oil Based mud</u>	<u>10.5</u>	<u>12.5</u>
<u>9290</u>	<u>19979</u>	<u>Oil Based mud</u>	<u>10.5</u>	<u>12.5</u>

Losses or gains in the mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times.

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 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:

No coring is planned at this time.

Mud Logger: None.

DST's: None.

Open Hole Logs: GR while drilling from Intermediate casing shoe to TD.

7. PRESSURE

ANTICIPATED BOTTOM HOLE PRESSURE: 6,324 psi

ANTICIPATED BOTTOM HOLE TEMPERATURE: 195°F

ANTICIPATED ABNORMAL PRESSURE: N

ANTICIPATED ABNORMAL TEMPERATURE: N

POTENTIAL HAZARDS:

- A. 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.
- B. No abnormal temperatures or pressures are anticipated. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.
- C. No losses are anticipated at this time.
- D. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.
- E. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.

8. OTHER WELL INFORMATION

AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.
- c. 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.

Batch Drilling Plan

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

Request for Surface Rig

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

Marathon Oil Corporation
 Marathon Oil
 Lea County, NM
 Queenie 15-10 FED COM
 No. 2H
 Prelim Plan B
 GL: 3529' + KB: 25' (PD594)

US State Plane 1927 (Exact solution)
 NAD 1983 (FIPS 496 CONUS)
 Clarke 1888
 New Mexico East 3001
 Mean Sea Level

RKB Elevation: Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))

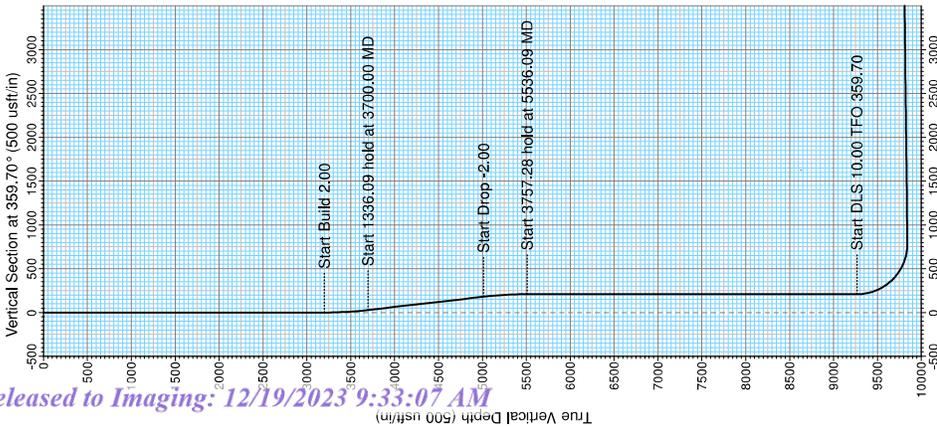
+N-S	+E-W	Northing	Longitude	Slot
0.00	0.00	569948.12	32.565524	-103.746340
Easting				
680840.82				

SECTION DETAILS

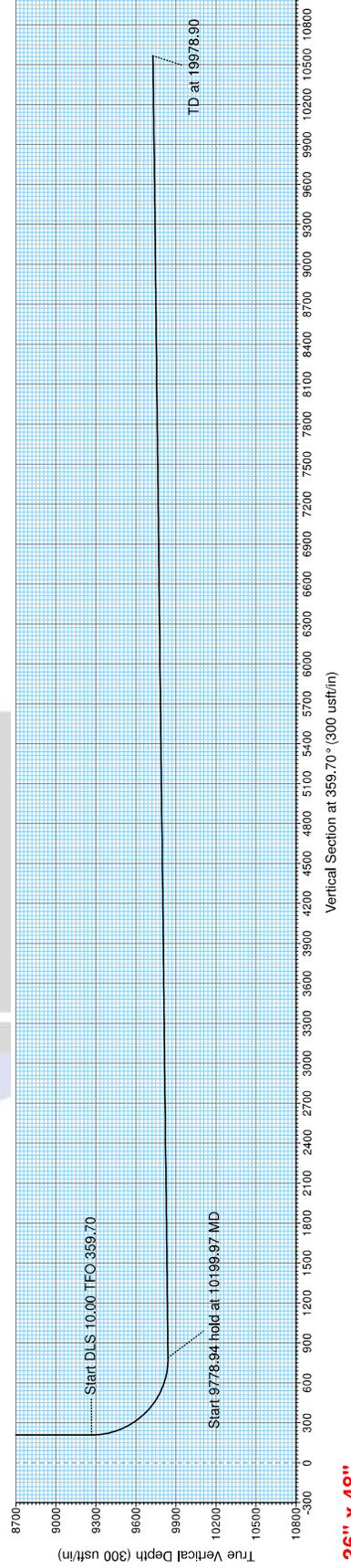
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3200.00	0.00	0.00	3200.00	0.00	0.00	0.00	0.00
3	3700.00	10.00	310.53	3697.47	28.28	-33.08	2.00	28.46
4	5036.09	10.00	310.53	5013.25	179.07	-209.41	0.00	180.16
5	5536.09	0.00	0.00	5510.72	207.35	-242.49	2.00	208.62
6	9293.37	0.00	0.00	9268.00	207.35	-242.49	0.00	208.62
7	10199.97	90.66	359.70	9840.92	786.90	-245.56	10.00	788.17
8	19978.90	90.66	359.70	9728.28	10565.05	-297.29	0.00	10566.46

WELLBORE TARGET DETAILS (MAP COORDINATES)

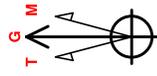
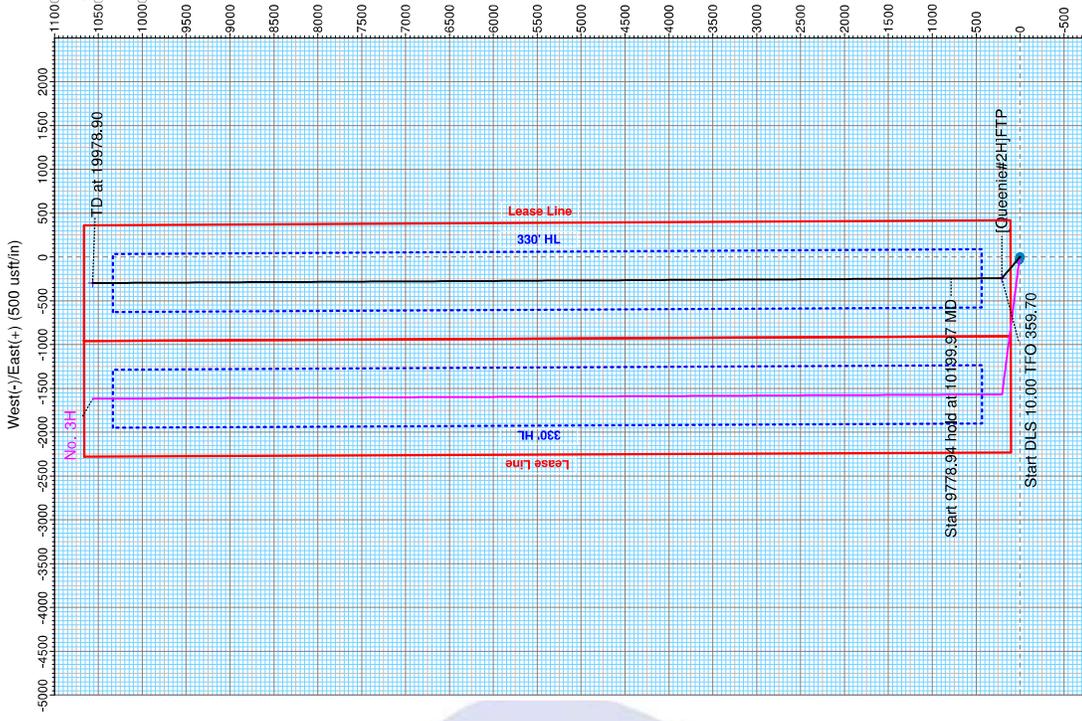
Name	MD	Inc	Azi	TVD	+N-S	+E-W	Northing	Easting
[Queenie#2H]FTP				9268.00	207.35	-242.49	570155.47	680598.13
[Queenie#2H]FTP				9728.28	10565.05	-297.29	560513.17	680543.33



Target Line: 9650' TVD @ 0' VS: 90.66° INC



36" x 48"



Azimuths to Grid North
 True North: -0.72°
 Magnetic North: 0.72°
 Magnetic Field
 Strength: 43290.0nT
 Dip Angle: 66.11°
 Date: 6/27/2018
 Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 6.72°
 Declination (M to T): 7.03° East



Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

Project	Lea County, NM		
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	Queenie 15-10 FED COM				
Site Position:	Northing:	569,948.11 usft	Latitude:	32.565524	
From: Map	Easting:	680,840.62 usft	Longitude:	-103.746340	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.32 °

Well	No. 2H					
Well Position	+N/-S	0.00 usft	Northing:	569,948.12 usft	Latitude:	32.565524
	+E/-W	0.00 usft	Easting:	680,840.62 usft	Longitude:	-103.746340
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,529.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/27/2018	7.03	60.47	48,280.90

Design	Prelim Plan B				
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		359.70

Survey Tool Program	Date	6/27/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,850.00	Prelim Plan B (OH)	MWD+IFR1	OWSG MWD + IFR1	
1,850.00	5,400.00	Prelim Plan B (OH)	MWD+IFR1	OWSG MWD + IFR1	
5,400.00	10,000.00	Prelim Plan B (OH)	MWD+IFR1	OWSG MWD + IFR1	
10,000.00	19,978.90	Prelim Plan B (OH)	MWD+IFR1	OWSG MWD + IFR1	

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	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

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)	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,300.00	2.00	310.53	3,299.98	1.13	-1.33	1.14	2.00	2.00	0.00	
3,400.00	4.00	310.53	3,399.84	4.54	-5.30	4.56	2.00	2.00	0.00	
3,500.00	6.00	310.53	3,499.45	10.20	-11.93	10.26	2.00	2.00	0.00	
3,600.00	8.00	310.53	3,598.70	18.12	-21.19	18.23	2.00	2.00	0.00	
3,700.00	10.00	310.53	3,697.47	28.28	-33.08	28.46	2.00	2.00	0.00	
3,800.00	10.00	310.53	3,795.95	39.57	-46.28	39.81	0.00	0.00	0.00	
3,900.00	10.00	310.53	3,894.43	50.86	-59.47	51.17	0.00	0.00	0.00	
4,000.00	10.00	310.53	3,992.91	62.14	-72.67	62.52	0.00	0.00	0.00	
4,100.00	10.00	310.53	4,091.39	73.43	-85.87	73.87	0.00	0.00	0.00	
4,200.00	10.00	310.53	4,189.87	84.71	-99.07	85.23	0.00	0.00	0.00	
4,300.00	10.00	310.53	4,288.35	96.00	-112.26	96.58	0.00	0.00	0.00	
4,400.00	10.00	310.53	4,386.83	107.28	-125.46	107.94	0.00	0.00	0.00	
4,500.00	10.00	310.53	4,485.31	118.57	-138.66	119.29	0.00	0.00	0.00	
4,600.00	10.00	310.53	4,583.79	129.85	-151.86	130.65	0.00	0.00	0.00	
4,700.00	10.00	310.53	4,682.27	141.14	-165.06	142.00	0.00	0.00	0.00	



Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,800.00	10.00	310.53	4,780.75	152.42	-178.25	153.35	0.00	0.00	0.00	
4,900.00	10.00	310.53	4,879.23	163.71	-191.45	164.71	0.00	0.00	0.00	
5,000.00	10.00	310.53	4,977.72	174.99	-204.65	176.06	0.00	0.00	0.00	
5,036.09	10.00	310.53	5,013.25	179.07	-209.41	180.16	0.00	0.00	0.00	
5,100.00	8.72	310.53	5,076.31	185.82	-217.31	186.96	2.00	-2.00	0.00	
5,200.00	6.72	310.53	5,175.40	194.55	-227.52	195.74	2.00	-2.00	0.00	
5,300.00	4.72	310.53	5,274.90	201.03	-235.10	202.26	2.00	-2.00	0.00	
5,400.00	2.72	310.53	5,374.68	205.25	-240.03	206.50	2.00	-2.00	0.00	
5,500.00	0.72	310.53	5,474.63	207.20	-242.32	208.47	2.00	-2.00	0.00	
5,536.09	0.00	0.00	5,510.72	207.35	-242.49	208.62	2.00	-2.00	0.00	
5,600.00	0.00	0.00	5,574.63	207.35	-242.49	208.62	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,674.63	207.35	-242.49	208.62	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,774.63	207.35	-242.49	208.62	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,874.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,974.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,074.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,174.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,274.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,374.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,474.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,574.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,674.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,774.63	207.35	-242.49	208.62	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,874.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,974.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,074.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,174.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,274.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,374.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,474.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,574.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,674.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,774.63	207.35	-242.49	208.62	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,874.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,974.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,100.00	0.00	0.00	8,074.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,174.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,300.00	0.00	0.00	8,274.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,374.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,474.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,574.63	207.35	-242.49	208.62	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,674.63	207.35	-242.49	208.62	0.00	0.00	0.00	



Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,800.00	0.00	0.00	8,774.63	207.35	-242.49	208.62	0.00	0.00	0.00
8,900.00	0.00	0.00	8,874.63	207.35	-242.49	208.62	0.00	0.00	0.00
9,000.00	0.00	0.00	8,974.63	207.35	-242.49	208.62	0.00	0.00	0.00
9,100.00	0.00	0.00	9,074.63	207.35	-242.49	208.62	0.00	0.00	0.00
9,200.00	0.00	0.00	9,174.63	207.35	-242.49	208.62	0.00	0.00	0.00
9,293.37	0.00	0.00	9,268.00	207.35	-242.49	208.62	0.00	0.00	0.00
[Queenie#2H]FTP									
9,300.00	0.66	359.70	9,274.63	207.39	-242.49	208.66	10.00	10.00	0.00
9,350.00	5.66	359.70	9,324.54	210.15	-242.50	211.41	10.00	10.00	0.00
9,400.00	10.66	359.70	9,374.02	217.24	-242.54	218.51	10.00	10.00	0.00
9,450.00	15.66	359.70	9,422.69	228.63	-242.60	229.89	10.00	10.00	0.00
9,500.00	20.66	359.70	9,470.18	244.21	-242.69	245.47	10.00	10.00	0.00
9,550.00	25.66	359.70	9,516.14	263.87	-242.79	265.14	10.00	10.00	0.00
9,600.00	30.66	359.70	9,560.20	287.46	-242.91	288.73	10.00	10.00	0.00
9,650.00	35.66	359.70	9,602.05	314.80	-243.06	316.07	10.00	10.00	0.00
9,700.00	40.66	359.70	9,641.35	345.69	-243.22	346.96	10.00	10.00	0.00
9,750.00	45.66	359.70	9,677.81	379.88	-243.40	381.15	10.00	10.00	0.00
9,800.00	50.66	359.70	9,711.15	417.12	-243.60	418.39	10.00	10.00	0.00
9,850.00	55.66	359.70	9,741.11	457.12	-243.81	458.39	10.00	10.00	0.00
9,900.00	60.66	359.70	9,767.48	499.59	-244.04	500.86	10.00	10.00	0.00
9,950.00	65.66	359.70	9,790.04	544.19	-244.27	545.46	10.00	10.00	0.00
10,000.00	70.66	359.70	9,808.64	590.58	-244.52	591.86	10.00	10.00	0.00
10,050.00	75.66	359.70	9,823.11	638.43	-244.77	639.70	10.00	10.00	0.00
10,100.00	80.66	359.70	9,833.37	687.35	-245.03	688.62	10.00	10.00	0.00
10,150.00	85.66	359.70	9,839.32	736.97	-245.29	738.25	10.00	10.00	0.00
10,199.97	90.66	359.70	9,840.92	786.90	-245.56	788.17	10.00	10.00	0.00
10,300.00	90.66	359.70	9,839.77	886.92	-246.09	888.20	0.00	0.00	0.00
10,400.00	90.66	359.70	9,838.62	986.92	-246.61	988.19	0.00	0.00	0.00
10,500.00	90.66	359.70	9,837.46	1,086.91	-247.14	1,088.19	0.00	0.00	0.00
10,600.00	90.66	359.70	9,836.31	1,186.90	-247.67	1,188.18	0.00	0.00	0.00
10,700.00	90.66	359.70	9,835.16	1,286.89	-248.20	1,288.17	0.00	0.00	0.00
10,800.00	90.66	359.70	9,834.01	1,386.88	-248.73	1,388.17	0.00	0.00	0.00
10,900.00	90.66	359.70	9,832.86	1,486.88	-249.26	1,488.16	0.00	0.00	0.00
11,000.00	90.66	359.70	9,831.70	1,586.87	-249.79	1,588.15	0.00	0.00	0.00
11,100.00	90.66	359.70	9,830.55	1,686.86	-250.32	1,688.15	0.00	0.00	0.00
11,200.00	90.66	359.70	9,829.40	1,786.85	-250.85	1,788.14	0.00	0.00	0.00
11,300.00	90.66	359.70	9,828.25	1,886.84	-251.38	1,888.13	0.00	0.00	0.00
11,400.00	90.66	359.70	9,827.10	1,986.84	-251.90	1,988.13	0.00	0.00	0.00
11,500.00	90.66	359.70	9,825.95	2,086.83	-252.43	2,088.12	0.00	0.00	0.00
11,600.00	90.66	359.70	9,824.79	2,186.82	-252.96	2,188.11	0.00	0.00	0.00
11,700.00	90.66	359.70	9,823.64	2,286.81	-253.49	2,288.11	0.00	0.00	0.00
11,800.00	90.66	359.70	9,822.49	2,386.80	-254.02	2,388.10	0.00	0.00	0.00



Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

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)	
11,900.00	90.66	359.70	9,821.34	2,486.80	-254.55	2,488.09	0.00	0.00	0.00	
12,000.00	90.66	359.70	9,820.19	2,586.79	-255.08	2,588.09	0.00	0.00	0.00	
12,100.00	90.66	359.70	9,819.03	2,686.78	-255.61	2,688.08	0.00	0.00	0.00	
12,200.00	90.66	359.70	9,817.88	2,786.77	-256.14	2,788.07	0.00	0.00	0.00	
12,300.00	90.66	359.70	9,816.73	2,886.76	-256.67	2,888.07	0.00	0.00	0.00	
12,400.00	90.66	359.70	9,815.58	2,986.76	-257.20	2,988.06	0.00	0.00	0.00	
12,500.00	90.66	359.70	9,814.43	3,086.75	-257.72	3,088.05	0.00	0.00	0.00	
12,600.00	90.66	359.70	9,813.27	3,186.74	-258.25	3,188.05	0.00	0.00	0.00	
12,700.00	90.66	359.70	9,812.12	3,286.73	-258.78	3,288.04	0.00	0.00	0.00	
12,800.00	90.66	359.70	9,810.97	3,386.72	-259.31	3,388.03	0.00	0.00	0.00	
12,900.00	90.66	359.70	9,809.82	3,486.72	-259.84	3,488.03	0.00	0.00	0.00	
13,000.00	90.66	359.70	9,808.67	3,586.71	-260.37	3,588.02	0.00	0.00	0.00	
13,100.00	90.66	359.70	9,807.52	3,686.70	-260.90	3,688.01	0.00	0.00	0.00	
13,200.00	90.66	359.70	9,806.36	3,786.69	-261.43	3,788.01	0.00	0.00	0.00	
13,300.00	90.66	359.70	9,805.21	3,886.68	-261.96	3,888.00	0.00	0.00	0.00	
13,400.00	90.66	359.70	9,804.06	3,986.68	-262.49	3,987.99	0.00	0.00	0.00	
13,500.00	90.66	359.70	9,802.91	4,086.67	-263.01	4,087.99	0.00	0.00	0.00	
13,600.00	90.66	359.70	9,801.76	4,186.66	-263.54	4,187.98	0.00	0.00	0.00	
13,700.00	90.66	359.70	9,800.60	4,286.65	-264.07	4,287.97	0.00	0.00	0.00	
13,800.00	90.66	359.70	9,799.45	4,386.64	-264.60	4,387.97	0.00	0.00	0.00	
13,900.00	90.66	359.70	9,798.30	4,486.64	-265.13	4,487.96	0.00	0.00	0.00	
14,000.00	90.66	359.70	9,797.15	4,586.63	-265.66	4,587.96	0.00	0.00	0.00	
14,100.00	90.66	359.70	9,796.00	4,686.62	-266.19	4,687.95	0.00	0.00	0.00	
14,200.00	90.66	359.70	9,794.85	4,786.61	-266.72	4,787.94	0.00	0.00	0.00	
14,300.00	90.66	359.70	9,793.69	4,886.60	-267.25	4,887.94	0.00	0.00	0.00	
14,400.00	90.66	359.70	9,792.54	4,986.59	-267.78	4,987.93	0.00	0.00	0.00	
14,500.00	90.66	359.70	9,791.39	5,086.59	-268.30	5,087.92	0.00	0.00	0.00	
14,600.00	90.66	359.70	9,790.24	5,186.58	-268.83	5,187.92	0.00	0.00	0.00	
14,700.00	90.66	359.70	9,789.09	5,286.57	-269.36	5,287.91	0.00	0.00	0.00	
14,800.00	90.66	359.70	9,787.93	5,386.56	-269.89	5,387.90	0.00	0.00	0.00	
14,900.00	90.66	359.70	9,786.78	5,486.55	-270.42	5,487.90	0.00	0.00	0.00	
15,000.00	90.66	359.70	9,785.63	5,586.55	-270.95	5,587.89	0.00	0.00	0.00	
15,100.00	90.66	359.70	9,784.48	5,686.54	-271.48	5,687.88	0.00	0.00	0.00	
15,200.00	90.66	359.70	9,783.33	5,786.53	-272.01	5,787.88	0.00	0.00	0.00	
15,300.00	90.66	359.70	9,782.17	5,886.52	-272.54	5,887.87	0.00	0.00	0.00	
15,400.00	90.66	359.70	9,781.02	5,986.51	-273.07	5,987.86	0.00	0.00	0.00	
15,500.00	90.66	359.70	9,779.87	6,086.51	-273.60	6,087.86	0.00	0.00	0.00	
15,600.00	90.66	359.70	9,778.72	6,186.50	-274.12	6,187.85	0.00	0.00	0.00	
15,700.00	90.66	359.70	9,777.57	6,286.49	-274.65	6,287.84	0.00	0.00	0.00	
15,800.00	90.66	359.70	9,776.42	6,386.48	-275.18	6,387.84	0.00	0.00	0.00	
15,900.00	90.66	359.70	9,775.26	6,486.47	-275.71	6,487.83	0.00	0.00	0.00	
16,000.00	90.66	359.70	9,774.11	6,586.47	-276.24	6,587.82	0.00	0.00	0.00	



Pro Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
16,100.00	90.66	359.70	9,772.96	6,686.46	-276.77	6,687.82	0.00	0.00	0.00	
16,200.00	90.66	359.70	9,771.81	6,786.45	-277.30	6,787.81	0.00	0.00	0.00	
16,300.00	90.66	359.70	9,770.66	6,886.44	-277.83	6,887.80	0.00	0.00	0.00	
16,400.00	90.66	359.70	9,769.50	6,986.43	-278.36	6,987.80	0.00	0.00	0.00	
16,500.00	90.66	359.70	9,768.35	7,086.43	-278.89	7,087.79	0.00	0.00	0.00	
16,600.00	90.66	359.70	9,767.20	7,186.42	-279.41	7,187.78	0.00	0.00	0.00	
16,700.00	90.66	359.70	9,766.05	7,286.41	-279.94	7,287.78	0.00	0.00	0.00	
16,800.00	90.66	359.70	9,764.90	7,386.40	-280.47	7,387.77	0.00	0.00	0.00	
16,900.00	90.66	359.70	9,763.74	7,486.39	-281.00	7,487.76	0.00	0.00	0.00	
17,000.00	90.66	359.70	9,762.59	7,586.39	-281.53	7,587.76	0.00	0.00	0.00	
17,100.00	90.66	359.70	9,761.44	7,686.38	-282.06	7,687.75	0.00	0.00	0.00	
17,200.00	90.66	359.70	9,760.29	7,786.37	-282.59	7,787.74	0.00	0.00	0.00	
17,300.00	90.66	359.70	9,759.14	7,886.36	-283.12	7,887.74	0.00	0.00	0.00	
17,400.00	90.66	359.70	9,757.99	7,986.35	-283.65	7,987.73	0.00	0.00	0.00	
17,500.00	90.66	359.70	9,756.83	8,086.35	-284.18	8,087.72	0.00	0.00	0.00	
17,600.00	90.66	359.70	9,755.68	8,186.34	-284.70	8,187.72	0.00	0.00	0.00	
17,700.00	90.66	359.70	9,754.53	8,286.33	-285.23	8,287.71	0.00	0.00	0.00	
17,800.00	90.66	359.70	9,753.38	8,386.32	-285.76	8,387.70	0.00	0.00	0.00	
17,900.00	90.66	359.70	9,752.23	8,486.31	-286.29	8,487.70	0.00	0.00	0.00	
18,000.00	90.66	359.70	9,751.07	8,586.31	-286.82	8,587.69	0.00	0.00	0.00	
18,100.00	90.66	359.70	9,749.92	8,686.30	-287.35	8,687.68	0.00	0.00	0.00	
18,200.00	90.66	359.70	9,748.77	8,786.29	-287.88	8,787.68	0.00	0.00	0.00	
18,300.00	90.66	359.70	9,747.62	8,886.28	-288.41	8,887.67	0.00	0.00	0.00	
18,400.00	90.66	359.70	9,746.47	8,986.27	-288.94	8,987.66	0.00	0.00	0.00	
18,500.00	90.66	359.70	9,745.32	9,086.27	-289.47	9,087.66	0.00	0.00	0.00	
18,600.00	90.66	359.70	9,744.16	9,186.26	-290.00	9,187.65	0.00	0.00	0.00	
18,700.00	90.66	359.70	9,743.01	9,286.25	-290.52	9,287.64	0.00	0.00	0.00	
18,800.00	90.66	359.70	9,741.86	9,386.24	-291.05	9,387.64	0.00	0.00	0.00	
18,900.00	90.66	359.70	9,740.71	9,486.23	-291.58	9,487.63	0.00	0.00	0.00	
19,000.00	90.66	359.70	9,739.56	9,586.23	-292.11	9,587.62	0.00	0.00	0.00	
19,100.00	90.66	359.70	9,738.40	9,686.22	-292.64	9,687.62	0.00	0.00	0.00	
19,200.00	90.66	359.70	9,737.25	9,786.21	-293.17	9,787.61	0.00	0.00	0.00	
19,300.00	90.66	359.70	9,736.10	9,886.20	-293.70	9,887.60	0.00	0.00	0.00	
19,400.00	90.66	359.70	9,734.95	9,986.19	-294.23	9,987.60	0.00	0.00	0.00	
19,500.00	90.66	359.70	9,733.80	10,086.19	-294.76	10,087.59	0.00	0.00	0.00	
19,600.00	90.66	359.70	9,732.64	10,186.18	-295.29	10,187.58	0.00	0.00	0.00	
19,700.00	90.66	359.70	9,731.49	10,286.17	-295.81	10,287.58	0.00	0.00	0.00	
19,800.00	90.66	359.70	9,730.34	10,386.16	-296.34	10,387.57	0.00	0.00	0.00	
19,900.00	90.66	359.70	9,729.19	10,486.15	-296.87	10,487.56	0.00	0.00	0.00	
19,978.90	90.66	359.70	9,728.28	10,565.05	-297.29	10,566.46	0.00	0.00	0.00	
[Queenie#2H]LTP/BHL										



Pro Directional
Survey Report



Marathon Oil

Company:	Marathon Oil	Local Co-ordinate Reference:	Well No. 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Site:	Queenie 15-10 FED COM	MD Reference:	Well @ 3554.00usft (GL: 3529' + KB: 25' (PD594))
Well:	No. 2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Prelim Plan B	Database:	WellPlanner1

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
[Queenie#2H]FTP - plan hits target center - Point	0.00	0.00	9,268.00	207.35	-242.49	570,155.47	680,598.13	32.566097	-103.747123
[Queenie#2H]LTP/BHL - plan hits target center - Point	0.00	0.00	9,728.28	10,565.05	-297.29	580,513.17	680,543.33	32.594568	-103.747116

Checked By: _____	Approved By: _____	Date: _____
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1. DRILLING WELL CONTROL PLAN

1.1 WELL CONTROL - CERTIFICATIONS

Required IADC/IWCF Well Control Certifications Supervisor Level:

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

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

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

Well Control-Position/Roles

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

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

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

(Well Control-Positions/Roles Continued)

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

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

1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST

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

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

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

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

1.3 WELL CONTROL-BOP TESTING

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

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

1.4 WELL CONTROL - DRILLS

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

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

1.5 WELL CONTROL – MONITORING

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

Well Control-Monitoring (Continued)

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

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

1.6 WELL CONTROL – SHUT IN

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

2. SHUT-IN PROCEDURES:

2.1 PROCEDURE WHILE DRILLING

- Sound alarm (alert crew)

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

2.2 PROCEDURE WHILE TRIPPING

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

Procedure While Tripping (Continued)

- Time
- Kick Volume
- Pipe depth

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

2.3 PROCEDURE WHILE RUNNING CASING

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

2.4 PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

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

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

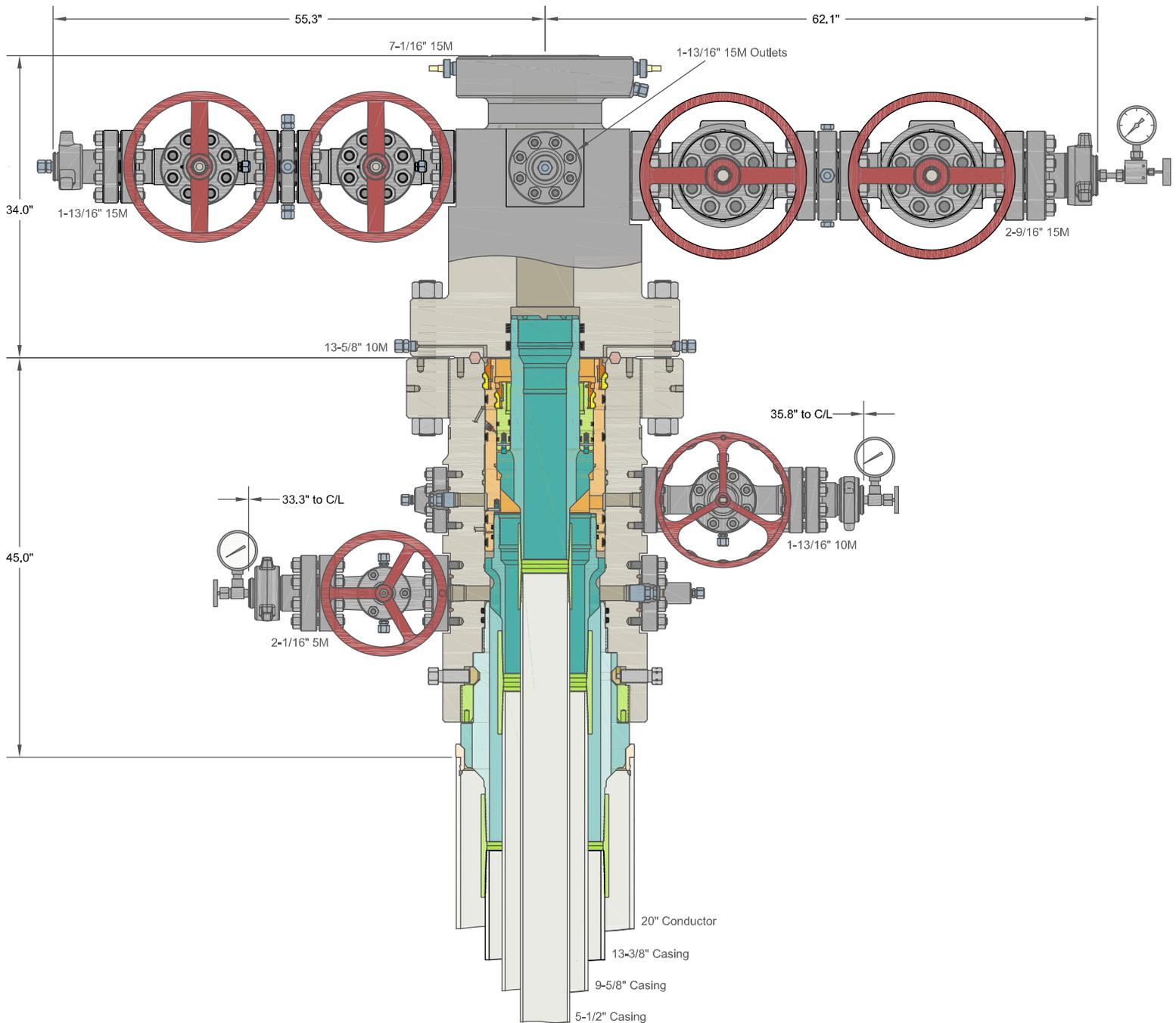
2.5 PROCEDURE WHILE PULLING BHA THRU STACK

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

Procedures While Pulling BHA thru Stack (Continued)

- Time
- Regroup and identify forward plan

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



INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CACTUS WELLHEAD, LLC. REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACT OR AS EXPRESSLY AUTHORIZED BY CACTUS WELLHEAD, LLC.

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	

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Marathon Oil Permian, LLC
LEASE NO.:	NMNM 112275, NMNM 043734, NMNM 033955
COUNTY:	Lea County

Wells:

Queenie 15-10 Federal Com 2H

Surface Hole Location: 108' FNL & 421' FEL, Section 22, T. 20 S., R. 32 E.

Bottom Hole Location: 100' FNL & 330' FEL, Section 10, T. 20 S., R. 32 E.

Queenie 15-10 Federal Com 3H

Surface Hole Location: 100' FNL & 450' FEL, Section 22, T. 20 S., R. 32 E.

Bottom Hole Location: 100' FNL & 1650' FEL, Section 10, T. 20 S., R. 32 E.

Application for Permit to Drill, Well Pad, Access Road

TABLE OF CONTENTS

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Watershed
 - Range
 - Lesser Prairie Chicken
 - Potash
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Production (Post Drilling)**
 - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

OR

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

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

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

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

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

any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Watershed:

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

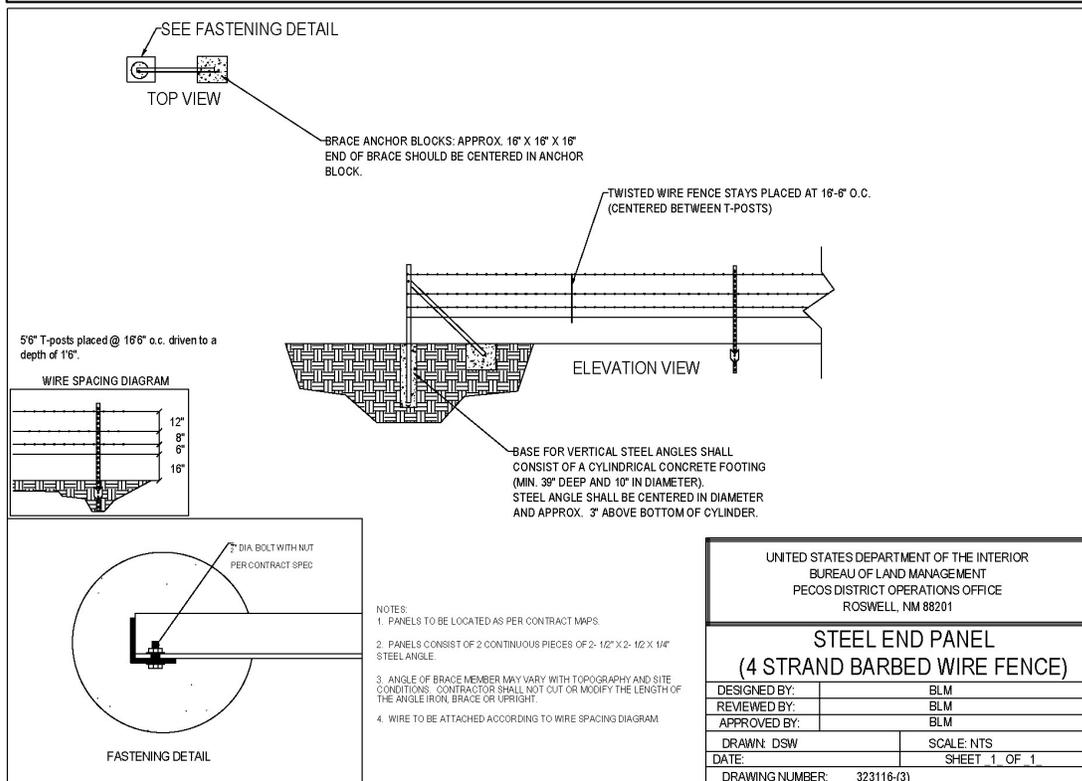
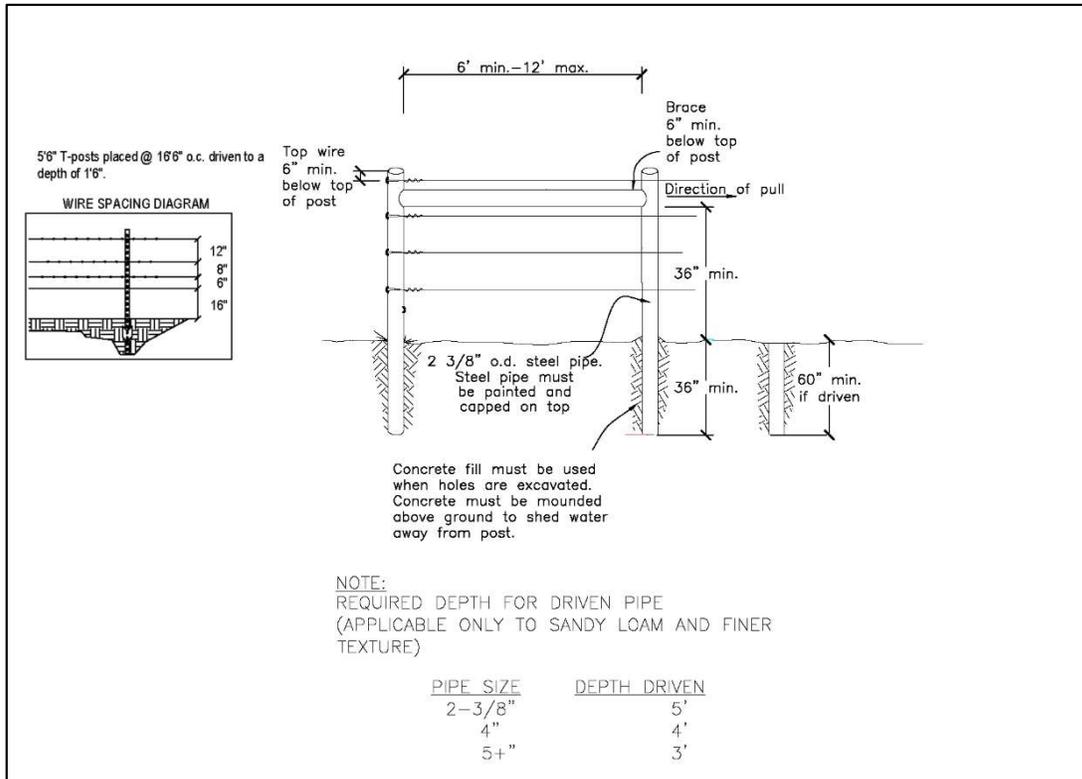
Range:

Cattleguards

Where a permanent cattleguard is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

Fence Requirement

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



Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must

notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

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

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

Timing Limitation Exceptions:

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

Ground-level Abandoned Well Marker to avoid raptor perching:

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

Potash Resources

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

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

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

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

G. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

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

Ditching

Ditching shall be required on both sides of the road.

Turnouts

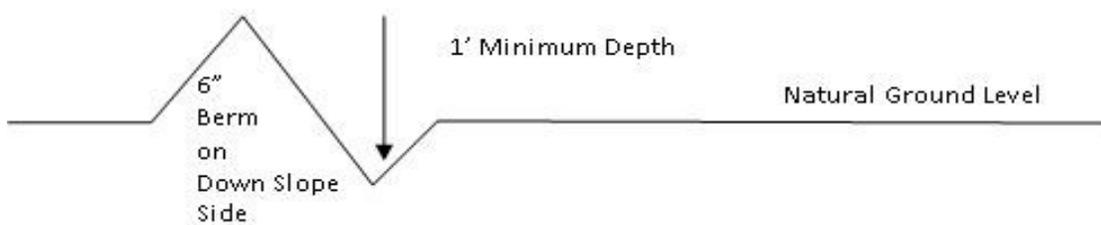
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

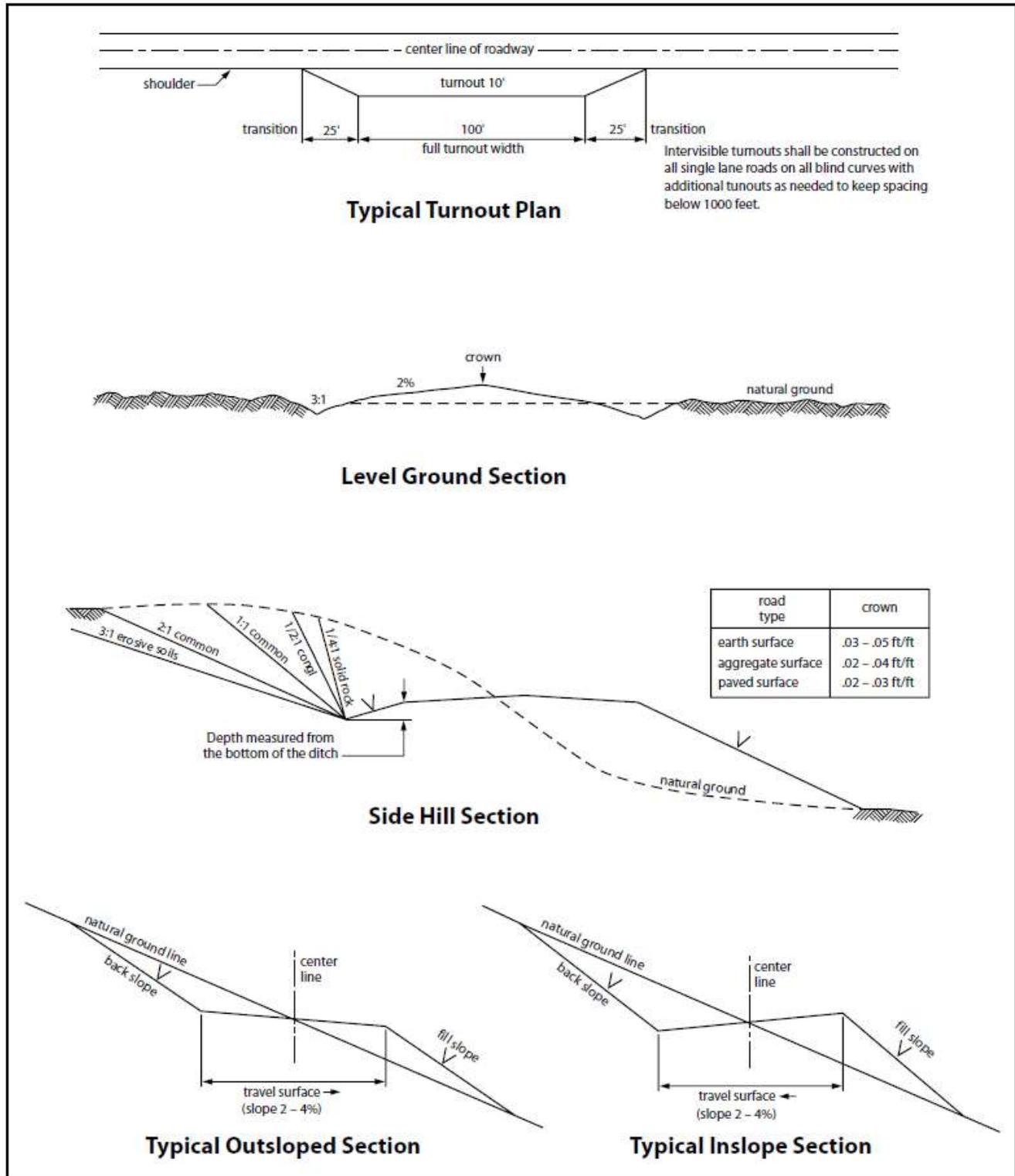


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

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

Painting Requirement

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

21. Special Stipulations:

Potash Minerals:

Lessees must comply with the 2012 Secretarial Potash Order. The Order is designed to manage the efficient development of oil, gas, and potash resources. Section 6 of the Order provides general provisions which must be followed to minimize conflict between the industries and ensure the safety of operations. Three exceptions to this policy will be permitted if the drilling will occur under the following conditions from:

- (a) A Drilling Island associated with a Development Area established under this Order or a Drilling Island established under a prior Order;
- (b) A Barren Area and the Authorized Officer determines that such operations will not adversely affect active or planned potash mining operations in the immediate vicinity of the proposed drill-site; or
- (c) A Drilling Island, not covered by (a) above or single well site established under this Order by the approval and in the sole discretion of the Authorized Officer, provided that such site was jointly recommended to the Authorized Officer by the oil and gas lessee(s) and the nearest potash lessee(s).

When the Authorized Officer determines that unitization is necessary for orderly oil and gas development and proper protection of potash deposits, no well shall be drilled for oil or gas except pursuant to a unit plan approved by the authorized officer.

The drilling or the abandonment of any well on said lease shall be done in accordance with applicable oil and gas operating regulations including such requirements as the Authorized Officer may prescribe as necessary to prevent the infiltration of oil, gas or water into formations containing potash deposits or into mines or working being utilized in the extraction of such deposits.

To minimize impacts to potash resources, the proposed well is confined within the boundaries of the established Belcos Tetris Drill Island (See Potash Memo and Map in attached file for Drill Island description).

VIII. INTERIM RECLAMATION

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

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

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

revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture 2, for Sandy Sites

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

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

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

Species

	<u>lb/acre</u>
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
LEASE NO.:	NMNM112275
LOCATION:	Section 22, T.20 S, R.32 E., NMPM
COUNTY:	Lea County, New Mexico
WELL NAME & NO.:	Queenie 15-10 Fed Com 2H
SURFACE HOLE FOOTAGE:	108'N & 421'E
BOTTOM HOLE FOOTAGE:	100'N & 661'E

COA

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

A. HYDROGEN SULFIDE

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1095** feet (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite, above the salt, and below usable fresh water) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of

- 24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **9-5/8** inch 1st intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, and potash.

❖ In R111 Potash Areas if cement does not circulate to surface on the first two salt protection casing strings, the cement on the 3rd casing salt string must come to surface.

❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:

(Use this for 3 string wells in the Capitan Reef, if 4 string well ensure FW based mud used across the Capitan interval)

- Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
- Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.

3. The minimum required fill of cement behind the **7-5/8** inch 2nd intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, and potash.

4. The minimum required fill of cement behind the **5-1/2** inch production casing is:
 - Cement should tie-back at least **50 feet (3260 ft)** on top of Capitan Reef top or **500 feet** into the previous casing, whichever is greater. Operator shall provide method of verification. **Excess calculates to -5%. Additional cement maybe required.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
 1. Operator has proposed a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172 must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

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

- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

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

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

Eddy County

Email **or** call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, BLM_NM_CFO_DrillingNotifications@BLM.GOV (575) 361-2822

Lea County

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
 - Notify the BLM when moving in and removing the Spudder Rig.
 - 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.
 - BOP/BOPE test to be conducted per **43 CFR part 3170 Subpart 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. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

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, 2) until cement has been in place at least 24 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-P 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 part 3170 Subpart 3172** and **API STD 53 Sec. 5.3**.
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:
 - 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. Whenever any seal subject to test pressure is broken, all the tests in **43 CFR part 3170 Subpart 3172** must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

- a. In 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).
- b. 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.)
- c. 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 part 3170 Subpart 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 water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. 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.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. 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 part 3170 Subpart 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.

ZS 11/13/2023



Operator Certification Data Report

12/14/2023

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

Operator

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

NAME:

Signed on: 04/05/2023

Title:

Street Address:

City:

State:

Zip:

Phone:

Email address:

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

**Hydrogen Sulfide Drilling Operations Plan
Queenie 15-10 Federal Com #2H Surface:
108' FNL & 421' FEL,
Sec. 22-T20S-R32E,
BHL: 240' FNL & 960' FEL,
Sec. 10-T20S-R32E
Lea County, New Mexico**

1. Company and contract personnel admitted on location should be trained by a qualified H₂S safety instructor to the recognize and handle following:
 - A. Characteristics of H₂S gas
 - B. Physical effects and hazards
 - C. Proper use of safety equipment and life support systems
 - D. Principle and operation of H₂S detectors, warning system and briefing knowledge
 - E. Evacuation procedure, routes and first aid support
 - F. Proper use of 30 minutes Pressure-on-Demand Air Pack

2. Supervisory personnel will be trained in the following areas:
 - A. Effects of H₂S on metal components.
 - B. Corrective action and shut in procedures, blowout prevention, and well control procedure.
 - C. Contents of Hydrogen Sulfide Drilling Operations Plan.

3. H₂S Detection and Alarm Systems (will be in place after setting surface casing and will not drill ahead without alarm system working)
 - A. H₂S detectors and audio alarm system to be located at bell nipple, shale shaker and on derrick floor or doghouse installed and maintained by a third party safety company.
 - B. Thirty minute self-contained work unit located in dog house and at briefing areas.

3. Windssock and/or Wind Streamers
 - A. Windssock at mud pit area (high enough to be visible)
 - B. Windssock on dog house (high enough to be visible)

4. Condition Flags and Signs
 - A. H₂S warning signs on lease access road into location
 - B. Flags displayed on sign at location entrance
 1. Green flag indicates "Normal Safe Conditions"
 2. Yellow Flag indicates "Potential Pressure and Danger"
 3. Red Flag indicates "Danger - H₂S Present in High Concentrations" *admit only emergency personnel*

5. Well Control Equipment
 - A. See BOP, Choke, and Mud/Gas Separator exhibit.
 - B. Blow out preventers will be equipped with blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit. Annular type blowout preventer will also be in place. Supplemental fuel will be provided for flaring noncombustible gas.

6. Communication
 - A. While working under masks chalkboards will be used for communication
 - B. Hand signals will be used where chalk board is inappropriate
 - C. Two -way radios or cell phones used to communicate off location or minimally in Drilling Foreman's trailer or living quarters

7. Drillstem Testing (**not planned**)

- A. Exhausts watered
- B. Flare line equipped with electric igniter/propane pilot light in case gas reaches surface
- C. If location near dwelling closed DST will be performed

9. If H₂S encountered, mud system shall be addressed to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers, if necessary. pH will be maintained at 10, to minimize h₂S in the system. Hydrogen sulfide scavengers will also be used to minimize hazards while drilling the well.
10. Mud program: pH of 10 will be maintained with additives to minimize hazards of H₂S. H₂S scavengers will also be used to minimize effects on tubulars and well control equipment and control effects of H₂S on metallurgy.

APPENDICES

EMERGENCY & MEDICAL FACILITIES:

Marathon Oil Corporation Emergency Numbers

Matt Rugaard	Drilling Manager	mprugaard@marathonoil.com	281-513-5163
Mark Bly	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Chris Shields	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Don Eynon	Drilling Engineer	deenyon@marathonoil.com	713-296-3265
Paul Allen	Drilling Engineer	pallen@marathonoil.com	713-296-3262
Chris Montan	Drilling Engineer	cmontan@marathoil.com	713-296-4367
Robert Amaya	Drilling Engineer	RAmaya1@marathonoil.com	713-296-2371
Jeremy Wilson	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
Scott Doughty	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
Precision 101	Company Man	Prec101@marathonoil.com	
Precision 582	Company Man	Prec582@marathonoil.com	
Precision 594	Company Man	Prec594@marathonoil.com	
Precision 601	Company Man	Prec601@marathonoil.com	
Precision 101	HES Advisor	Prec101hes@marathonoil.com	
Precision 582	HES Advisor	Prec582hes@marathonoil.com	
Precision 594	HES Advisor	Prec5941hes@marathonoil.com	
Precision 601	HES Advisor	Prec601hes@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	432-561-5049

1. For Life Flight, 1st dial “911” They will determine nearest helicopter and confirm the need for helicopter.

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

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

CONDITIONS

Action 294941

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 990 Town & Country Blvd. Houston, TX 77024	OGRID: 372098
	Action Number: 294941
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	12/19/2023
pkautz	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	12/19/2023
pkautz	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	12/19/2023
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	12/19/2023
pkautz	If cement does not circulate on any string, a CBL is required for that string of casing	12/19/2023