Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.

2. Name of Operator

9. API Well No. 30 015 48711

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory

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

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

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	Name *(Printed/Typed)*	Date
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	Office	

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

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

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 05/27/2021

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 wen, 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 directionany 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 wen 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 win 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 conects this information to anow 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 Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Approval Date: 05/27/2021

Additional Operator Remarks

Location of Well

0. SHL: LOT 4 / 877 FSL / 290 FWL / TWSP: 24S / RANGE: 27E / SECTION: 7 / LAT: 32.2268962 / LONG: -104.2370363 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 1978 FSL / 2601 FEL / TWSP: 24S / RANGE: 27E / SECTION: 8 / LAT: 32.2299316 / LONG: -104.2125774 (TVD: 8972 feet, MD: 16487 feet)

PPP: NWSW / 1981 FSL / 1209 FWL / TWSP: 24S / RANGE: 27E / SECTION: 7 / LAT: 32.2299294 / LONG: -104.2340606 (TVD: 8856 feet, MD: 9844 feet)

PPP: LOT 3 / 1980 FSL / 100 FWL / TWSP: 24S / RANGE: 27E / SECTION: 7 / LAT: 32.2299287 / LONG: -104.2376459 (TVD: 8728 feet, MD: 8871 feet)

BHL: NESE / 1980 FSL / 100 FEL / TWSP: 24S / RANGE: 27E / SECTION: 8 / LAT: 32.2299314 / LONG: -104.2044883 (TVD: 9016 feet, MD: 18989 feet)

BLM Point of Contact

Name: Deborah Ham
Title: Legal Landlaw Examiner
Phone: (575) 234-5965
Email: dham@blm.gov

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.

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30 015 48711	98220	PURPLE SAGE; WOLFCAMP (GAS)

[4] Property Code	[5] Property Name	[6] Well Number
331185	FREMEN 7 WXY FED COM	5H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372098	MARATHON OIL PERMIAN LLC	3242'

[10] Surface Location

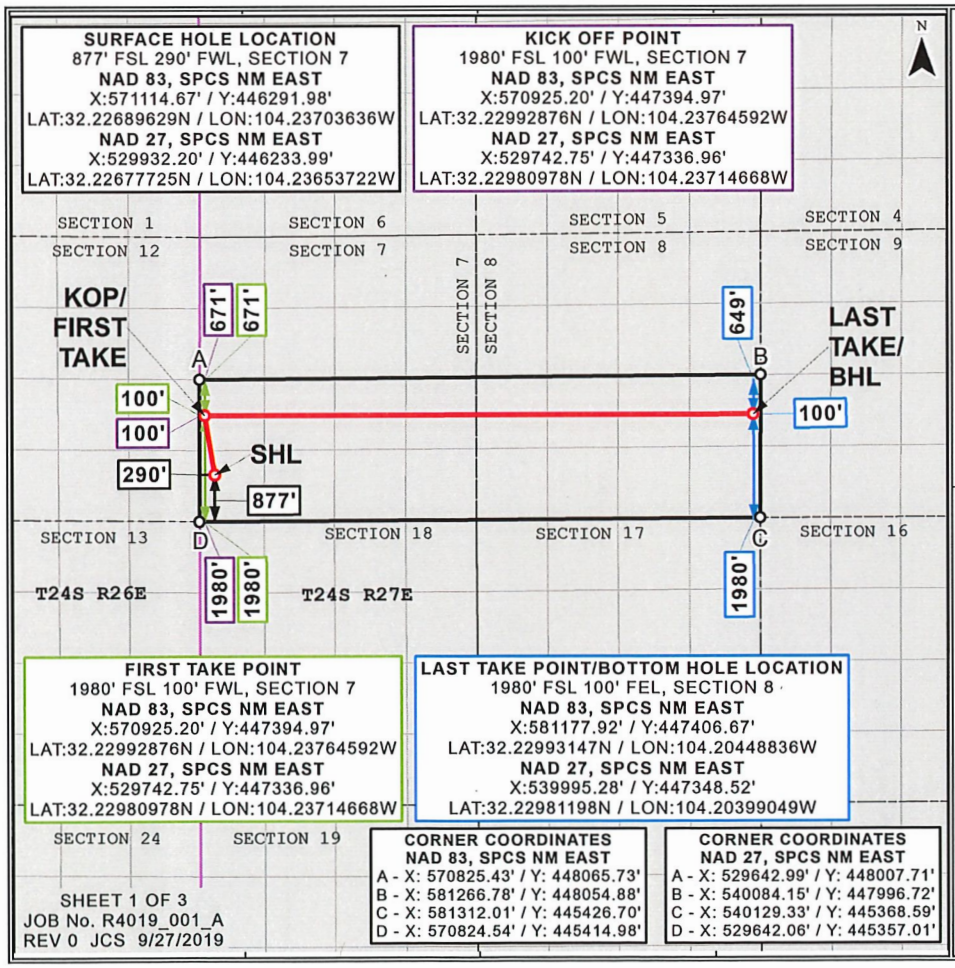
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	7	24S	27E		877	SOUTH	290	WEST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	8	24S	27E		1980	SOUTH	100	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
633.15			

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



[17] OPERATOR CERTIFICATION

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

11/12/2019
Signature Date

MELISSA SZUDERA
Printed Name

MSZUDERA@MARATHONOIL.COM
E-mail Address

[18] SURVEYOR CERTIFICATION

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

OCTOBER 15, 2019
Date of Survey

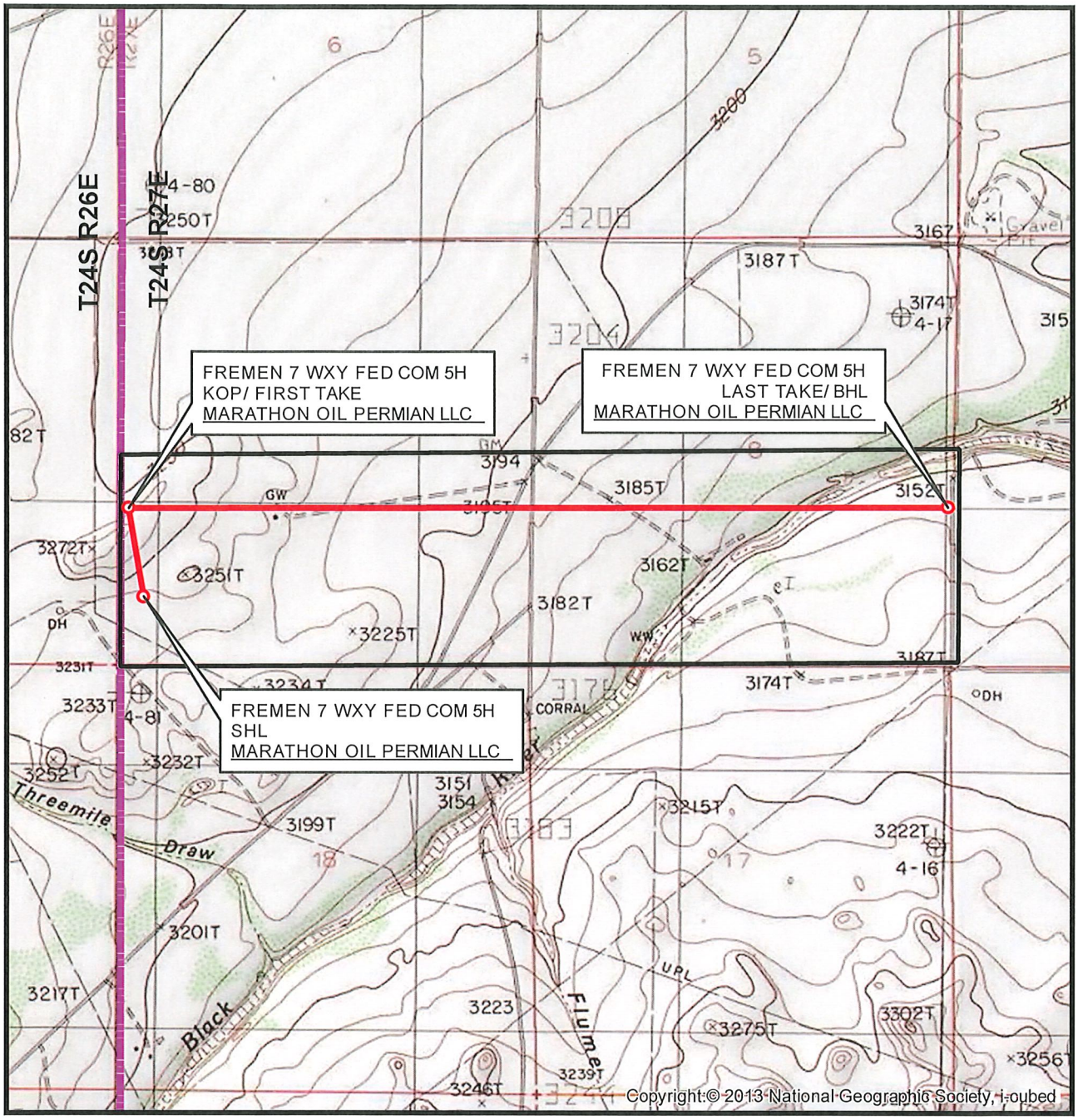
Signature and Seal of Professional Surveyor:

LLOYD P. SHORT NEW MEXICO 21653 PROFESSIONAL SURVEYOR

Certificate Number LLOYD P. SHORT 21653

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99975847 Convergence: 00°03'03.29000"

LOCATION VERIFICATION MAP



SEC. 7 TWP. 24-S RGE. 27-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
DESCRIPTION: 877' FSL & 290' FWL
ELEVATION: 3242'
LEASE: FREMEN 7 FED COM
U.S.G.S. TOPOGRAPHIC MAP: BOND DRAW, NM.

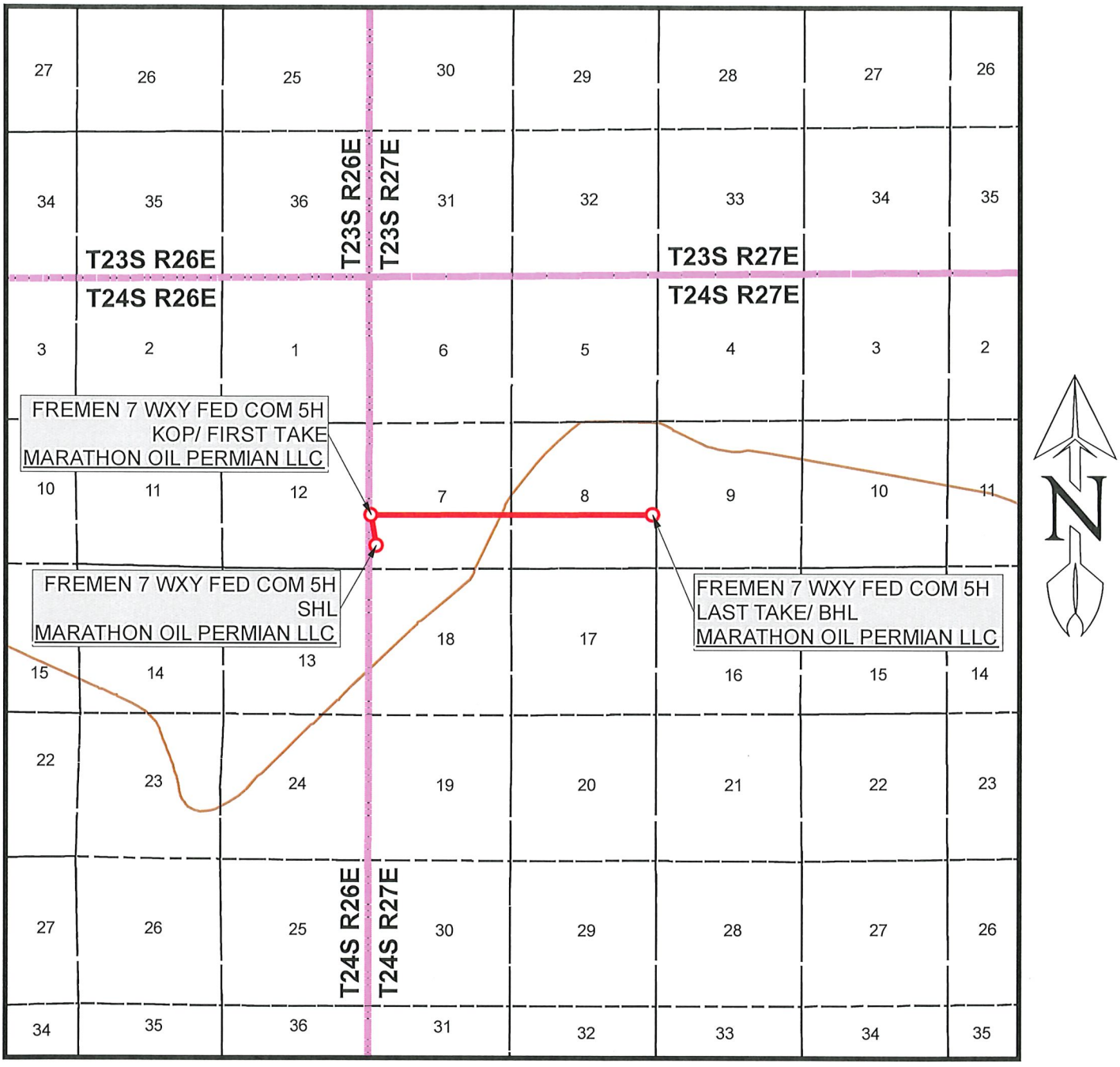
1 " = 2,000 '
CONTOUR INTERVAL = 10'

SHEET 2 OF 3

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE

JOB No. R4019_001_A

VICINITY MAP



SEC. 7 TWP. 24-S RGE. 27-E
SURVEY: N.M.P.M.
COUNTY: EDDY
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DESCRIPTION: 877' FSL & 290' FWL
ELEVATION: 3242'
LEASE: FREMEN 7 FED COM
U.S.G.S. TOPOGRAPHIC MAP: BOND DRAW, NM.

1 " = 1 MILE

SHEET 3 OF 3

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R4019_001_A

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:** 372098 **Date:** 07 / 08 / 2021

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
FREMEN 7 WXY FED COM 3H	30-015-_____	M-7-24S-27E	847' FSL 290' FWL	1800	4300	7000
FREMEN 7 WXY FED COM 5H	30-015-_____	M-7-24S-27E	877' FSL 290' FWL	1800	4300	7000

IV. Central Delivery Point Name: Fremen 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
FREMEN 7 WXY FED COM 3H	30-015-_____	09/12/2023	10/05/2023	12/17/2023	01/08/2024	01/11/2024
FREMEN 7 WXY FED COM 5H	30-015-_____	10/06/2023	10/25/2023	12/26/2023	01/08/2024	01/11/2024

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:	
Printed Name:	Melissa Szudera
Title:	Adv Regulatory Compliance Rep
E-mail Address:	mszudera@marathonoil.com
Date:	07/08/2021
Phone:	713-296-3179

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.

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

Drilling Plan Data Report
06/01/2021

APD ID: 10400051118
Submission Date: 11/13/2019
Operator Name: MARATHON OIL PERMIAN LLC
Well Name: FREMEN 7 WXY FED COM
Well Number: 5H
Well Type: CONVENTIONAL GAS WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
587075	CASTILE	2824	418	418	ANHYDRITE, SALT	OTHER : Brine	N
587077	LAMAR	855	1969	1975	LIMESTONE, SANDSTONE	OTHER : BRINE	N
587084	BELL CANYON	741	2083	2091	SANDSTONE	OIL	N
587078	CHERRY CANYON	-69	2893	2914	SANDSTONE	OIL	N
587080	BRUSHY CANYON	-1019	3843	3878	SANDSTONE	OIL	N
587081	BONE SPRING	-2632	5456	5516	SANDSTONE, SHALE	NATURAL GAS, OIL	N
730315	BONE SPRING 1ST	-3612	6436	6512	SANDSTONE	NATURAL GAS, OIL	N
730316	BONE SPRING 2ND	-4151	6975	7059	SANDSTONE	NATURAL GAS, OIL	N
730317	BONE SPRING 3RD	-5545	8369	8464	SANDSTONE	NATURAL GAS, OIL	N
730318	WOLFCAMP	-5904	8728	8871	SANDSTONE, SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M
Rating Depth: 20000

Equipment: 13 5/8 5M Annular & BOP Stack will be installed and tested for the 12 1/4", 8 3/4", and 6 1/8" sections. Min WP is 5000, annular will be tested to 50% of the WP and BOP Stack will be tested to 100% of the WP. Check and kill valve will meet or exceed minimum BOP requirements.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: BOP 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. Formation integrity test will

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: FREMEN 7 WXY FED COM **Well Number:** 5H

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

Choke Diagram Attachment:

DRILL_2_CHOKE___FREMEN_WXY_3H_5H___2_Contitech_Hose_SN_663393_20191112142054.pdf

DRILL_2_CHOKE___FREMEN_WXY_3H_5H___2_5M_10M.TWO_CHOKE_MANIFOLD.BLM_20191112142030.pdf

DRILL_2_CHOKE___FREMEN_WXY_3H_5H___2_Choke_Line_Flex_III_Rig_20191112142037.pdf

DRILL_2_CHOKE___FREMEN_WXY_3H_5H___2_Choke_Line_Test_Chart_SN_63393_20191112142044.pdf

BOP Diagram Attachment:

DRILL_2_BOP___FREMEN_WXY_3H_5H___3_10_5M_Flex.BOPE.BLM_20191112142103.pdf

DRILL_2_BOP___FREMEN_WXY_3H_5H___3_WH_TH_Design_1B__5K__10K__7in_x_4.5in__20191112142110.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	410	0	410	3242	2832	410	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	1980	0	1973	2901	1269	1980	J-55	36	LT&C	1.74	1.15	BUOY	2.19	BUOY	2.19
3	PRODUCTION	8.75	5.5	NEW	API	N	0	18989	0	9016	3241	-5774	18989	P-110	20	BUTT	1.65	1.29	BUOY	2.08	BUOY	2.08

Casing Attachments

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: FREMEN 7 WXY FED COM **Well Number:** 5H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

DRILL_3___FREMEN_WXY_3H_5H___Malaga_SB_TB_3_Csg_String___Surface_20191112142640.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

DRILL_3___FREMEN_WXY_3H_5H___Malaga_SB_TB_3_Csg_String___Intermediate_20191112142816.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

DRILL_3___FREMEN_WXY_3H_5H___Malaga_SB_TB_3_Csg_String___Production_20191113114348.pdf

Section 4 - Cement

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: FREMEN 7 WXY FED COM **Well Number:** 5H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	1.73	13.5	0	0	Class C	LCM
SURFACE	Tail		0	410	418	1.33	14.8	570	100	CLASS C	Accelerator
INTERMEDIATE	Lead		0	900	285	2.21	12.8	493	75	CLASS C	EXTENDER, ACCELERATOR.
INTERMEDIATE	Tail		900	1980	381	1.33	14.8	507	50	CLASS C	RETARDER
PRODUCTION	Lead		1680	8460	1078	3.21	11	2911	70	CLASS H	VISCOSIFIER, RETARDER.
PRODUCTION	Tail		8460	18989	2834	1.22	14.5	3457	30	CLASS H	EXTENDER, FLUID LOSS, DISPERSANT.

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

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

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

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	410	WATER-BASED MUD	8.4	8.8							
410	1970	OTHER : BRINE	9.9	10.2							
1930	18989	OIL-BASED MUD	8.8	12.5							

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: FREMEN 7 WXY FED COM **Well Number:** 5H

Section 6 - Test, Logging, Coring

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

None planned.

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

GAMMA RAY LOG,

Coring operation description for the well:

None Planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6534 **Anticipated Surface Pressure:** 4550

Anticipated Bottom Hole Temperature(F): 195

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

DRILL_7___FREMEN_WXY_3H_5H___4_H2S_Contiengency_Plan_Summary_20191112143806.pdf
DRILL_7___FREMEN_WXY_3H_5H___4_Pad_Layout_Flex_III_20191112143813.pdf
DRILL_7___FREMEN_WXY_3H_5H___H2S_Contingency_Plan_110119_20191112143823.pdf
Drill_7___GCP___FREMEN_7_WXY_3H_5H___11_13_2019_20191113094017.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

DRILL_8_PD___FREMEN_WXY_3H_5H___CASING_CONTINGENCY_PLAN__3_string___Liner__20191112144440.pdf
DRILL_8_PD___FREMEN_WXY_3H_5H___O_G_LEASE_MAP_20191112144323.pdf
DRILL_8_PD_5H___Marathon_Fremen5H_PrelimA_36x48WM_20200505120232.PDF
DRILL_8_PD_5H___Marathon_Fremen5H_PrelimA_WPReport_20200505120242.pdf
DRILL_8_PD_5H___FREMEN_WXY_5H_Federal_Drill_Plan_Rev3_20200505123956.pdf

Other proposed operations facets description:

- NOTE: A 3 Casing String program is proposed in Section 3 of this APD, a 3 string & liner casing contingency plan has also been submitted in the attached Drill Plan.
- Kelly cock will be in the drill string at all times.
- A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.
- Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: FREMEN 7 WXY FED COM **Well Number:** 5H

until total depth is reached. If Hydrogen Sulfide is encountered, measured amounts and formations will be reported to the BLM.

Potential Hazards:
- H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with Onshore Order #6.
- 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.
- No losses are anticipated at this time.
- 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.

Other proposed operations facets attachment:

Other Variance attachment:

Marathon Oil
Eddy County, NM
Fremen 7 FED COM (3-5)
WXY No. 5H
Prelim Plan A
GL: 3242' + KB: 25' (PD101)

ProDirectional

Marathon Oil Corporation

US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001
Mean Sea Level

RKB Elevation: Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))

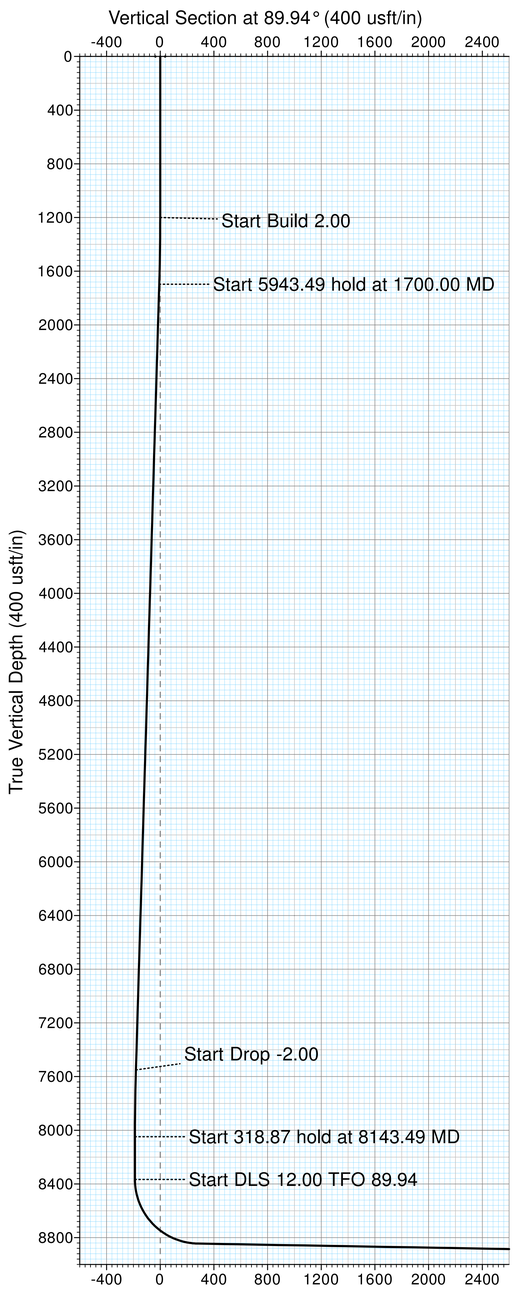
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	446233.99	529932.20	32.226777	-104.236537	

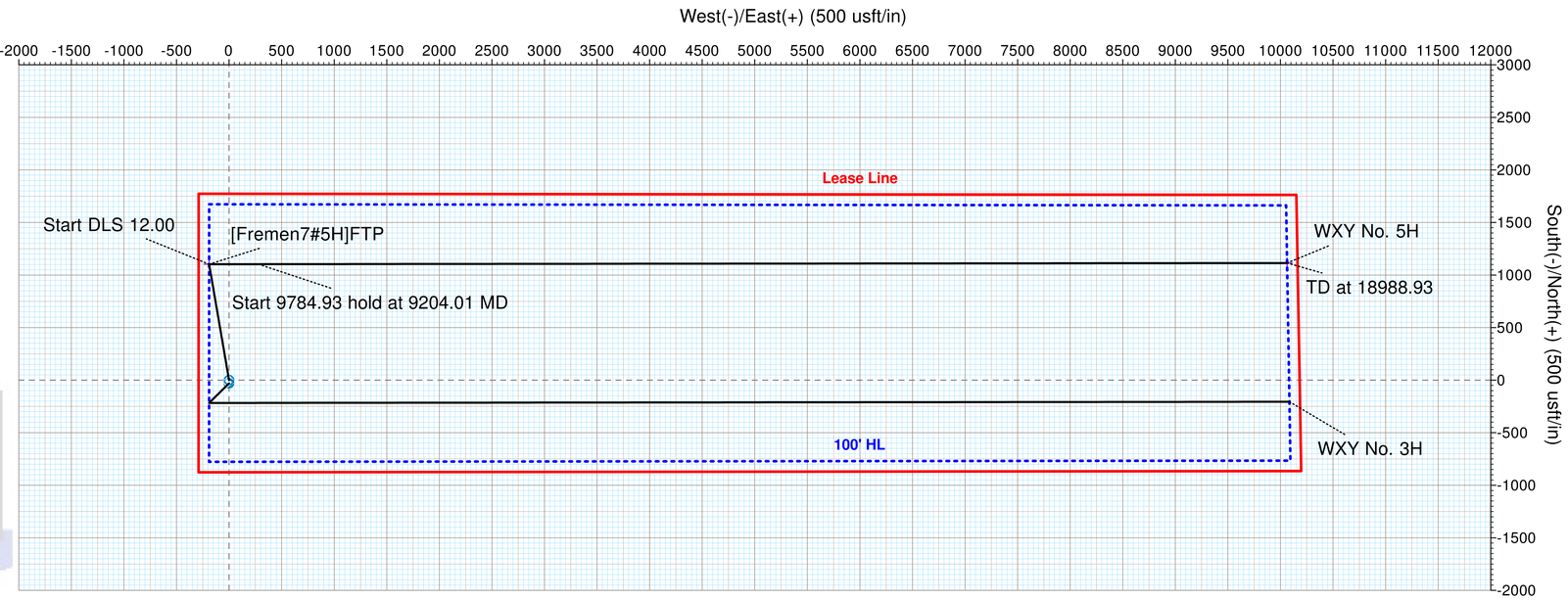
SECTION DETAILS

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	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00
3	1700.00	10.00	350.25	1697.47	42.89	-7.37	2.00	-7.32
4	7643.49	10.00	350.25	7550.66	1060.08	-182.08	0.00	-180.97
5	8143.49	0.00	0.00	8048.13	1102.97	-189.45	2.00	-188.29
6	8462.36	0.00	0.00	8367.00	1102.97	-189.45	0.00	-188.29
7	9204.01	89.00	89.94	8844.39	1103.50	279.66	12.00	280.81
8	18988.93	89.00	89.94	9015.67	1114.53	10063.08	0.00	10064.24

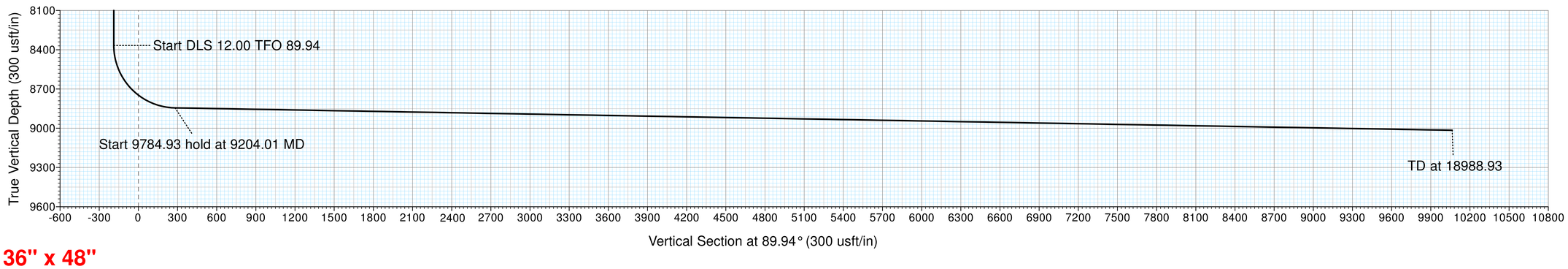
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

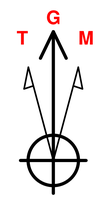
Name	TVD	+N/-S	+E/-W	Northing	Easting
[Fremen7#5H]FTP	8367.00	1102.97	-189.45	447336.96	529742.75
[Fremen7#5H]LTP/BHL	9015.67	1114.53	10063.08	447348.52	539995.28





Target Line: 8840' TVD @ 0' VS: 89° INC





Azimuths to Grid North
True North: -0.05°
Magnetic North: 7.18°

Magnetic Field
Strength: 47796.4snT
Dip Angle: 59.88°
Date: 10/17/2019
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): 7.18°

Declination (M to T): 7.23° East

36" x 48"

Marathon Oil

Pro Directional
Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**Database:**	WellPlanner1

Project Eddy 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 Fremen 7 FED COM (3-5)

Site Position:		**Northing:**	446,203.98 usft	**Latitude:**	32.226695
From:	Map	**Easting:**	529,932.08 usft	**Longitude:**	-104.236538
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.05 °

Well WXY No. 5H

Well Position	**+N/-S**	0.00 usft	**Northing:**	446,233.99 usft	**Latitude:**	32.226777
	+E/-W	0.00 usft	**Easting:**	529,932.20 usft	**Longitude:**	-104.236537
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,242.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/17/2019	7.23	59.88	47,796.40

Design Prelim Plan A

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	89.94

Survey Tool Program **Date** 10/21/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,000.00	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM
5,000.00	10,000.00	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM
10,000.00	18,988.93	Prelim Plan A (OH)	MWD+HDGM	OWSG MWD + HRGM

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
[Fremen7#5H]PPP2 - [Fremen7#5H]PPP3									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
418.00	0.00	0.00	418.00	0.00	0.00	0.00	0.00	0.00	0.00

Marathon Oil

Pro Directional
Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
Castile									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,300.00	2.00	350.25	1,299.98	1.72	-0.30	-0.29	2.00	2.00	0.00
1,400.00	4.00	350.25	1,399.84	6.88	-1.18	-1.17	2.00	2.00	0.00
1,500.00	6.00	350.25	1,499.45	15.47	-2.66	-2.64	2.00	2.00	0.00
1,600.00	8.00	350.25	1,598.70	27.48	-4.72	-4.69	2.00	2.00	0.00
1,700.00	10.00	350.25	1,697.47	42.89	-7.37	-7.32	2.00	2.00	0.00
Start 5943.49 hold at 1700.00 MD									
1,800.00	10.00	350.25	1,795.95	60.01	-10.31	-10.24	0.00	0.00	0.00
1,900.00	10.00	350.25	1,894.43	77.12	-13.25	-13.17	0.00	0.00	0.00
1,975.45	10.00	350.25	1,968.73	90.04	-15.46	-15.37	0.00	0.00	0.00
Lamar/B. Salt									
2,000.00	10.00	350.25	1,992.91	94.24	-16.19	-16.09	0.00	0.00	0.00
2,091.15	10.00	350.25	2,082.67	109.84	-18.87	-18.75	0.00	0.00	0.00
Bell Canyon									
2,100.00	10.00	350.25	2,091.39	111.35	-19.13	-19.01	0.00	0.00	0.00
2,200.00	10.00	350.25	2,189.87	128.47	-22.07	-21.93	0.00	0.00	0.00
2,300.00	10.00	350.25	2,288.35	145.58	-25.01	-24.85	0.00	0.00	0.00
2,400.00	10.00	350.25	2,386.83	162.69	-27.94	-27.77	0.00	0.00	0.00
2,500.00	10.00	350.25	2,485.31	179.81	-30.88	-30.70	0.00	0.00	0.00
2,600.00	10.00	350.25	2,583.79	196.92	-33.82	-33.62	0.00	0.00	0.00
2,700.00	10.00	350.25	2,682.27	214.04	-36.76	-36.54	0.00	0.00	0.00
2,800.00	10.00	350.25	2,780.75	231.15	-39.70	-39.46	0.00	0.00	0.00
2,900.00	10.00	350.25	2,879.23	248.26	-42.64	-42.38	0.00	0.00	0.00
2,914.23	10.00	350.25	2,893.25	250.70	-43.06	-42.80	0.00	0.00	0.00
Cherry Canyon									
3,000.00	10.00	350.25	2,977.72	265.38	-45.58	-45.30	0.00	0.00	0.00
3,100.00	10.00	350.25	3,076.20	282.49	-48.52	-48.23	0.00	0.00	0.00
3,200.00	10.00	350.25	3,174.68	299.61	-51.46	-51.15	0.00	0.00	0.00
3,300.00	10.00	350.25	3,273.16	316.72	-54.40	-54.07	0.00	0.00	0.00
3,400.00	10.00	350.25	3,371.64	333.84	-57.34	-56.99	0.00	0.00	0.00
3,500.00	10.00	350.25	3,470.12	350.95	-60.28	-59.91	0.00	0.00	0.00
3,600.00	10.00	350.25	3,568.60	368.06	-63.22	-62.83	0.00	0.00	0.00
3,700.00	10.00	350.25	3,667.08	385.18	-66.16	-65.76	0.00	0.00	0.00
3,800.00	10.00	350.25	3,765.56	402.29	-69.10	-68.68	0.00	0.00	0.00

Marathon Oil

Pro Directional
Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
3,878.39	10.00	350.25	3,842.76	415.71	-71.40	-70.97	0.00	0.00	0.00
Brushy Canyon									
3,900.00	10.00	350.25	3,864.04	419.41	-72.04	-71.60	0.00	0.00	0.00
4,000.00	10.00	350.25	3,962.52	436.52	-74.98	-74.52	0.00	0.00	0.00
4,100.00	10.00	350.25	4,061.00	453.64	-77.92	-77.44	0.00	0.00	0.00
4,200.00	10.00	350.25	4,159.48	470.75	-80.86	-80.36	0.00	0.00	0.00
4,300.00	10.00	350.25	4,257.97	487.86	-83.80	-83.29	0.00	0.00	0.00
4,400.00	10.00	350.25	4,356.45	504.98	-86.74	-86.21	0.00	0.00	0.00
4,500.00	10.00	350.25	4,454.93	522.09	-89.68	-89.13	0.00	0.00	0.00
4,600.00	10.00	350.25	4,553.41	539.21	-92.62	-92.05	0.00	0.00	0.00
4,700.00	10.00	350.25	4,651.89	556.32	-95.56	-94.97	0.00	0.00	0.00
4,800.00	10.00	350.25	4,750.37	573.43	-98.50	-97.89	0.00	0.00	0.00
4,900.00	10.00	350.25	4,848.85	590.55	-101.43	-100.82	0.00	0.00	0.00
5,000.00	10.00	350.25	4,947.33	607.66	-104.37	-103.74	0.00	0.00	0.00
5,100.00	10.00	350.25	5,045.81	624.78	-107.31	-106.66	0.00	0.00	0.00
5,200.00	10.00	350.25	5,144.29	641.89	-110.25	-109.58	0.00	0.00	0.00
5,300.00	10.00	350.25	5,242.77	659.01	-113.19	-112.50	0.00	0.00	0.00
5,400.00	10.00	350.25	5,341.25	676.12	-116.13	-115.42	0.00	0.00	0.00
5,500.00	10.00	350.25	5,439.73	693.23	-119.07	-118.35	0.00	0.00	0.00
5,516.44	10.00	350.25	5,455.93	696.05	-119.56	-118.83	0.00	0.00	0.00
Bone Spring									
5,600.00	10.00	350.25	5,538.22	710.35	-122.01	-121.27	0.00	0.00	0.00
5,700.00	10.00	350.25	5,636.70	727.46	-124.95	-124.19	0.00	0.00	0.00
5,800.00	10.00	350.25	5,735.18	744.58	-127.89	-127.11	0.00	0.00	0.00
5,900.00	10.00	350.25	5,833.66	761.69	-130.83	-130.03	0.00	0.00	0.00
6,000.00	10.00	350.25	5,932.14	778.80	-133.77	-132.95	0.00	0.00	0.00
6,100.00	10.00	350.25	6,030.62	795.92	-136.71	-135.88	0.00	0.00	0.00
6,200.00	10.00	350.25	6,129.10	813.03	-139.65	-138.80	0.00	0.00	0.00
6,300.00	10.00	350.25	6,227.58	830.15	-142.59	-141.72	0.00	0.00	0.00
6,400.00	10.00	350.25	6,326.06	847.26	-145.53	-144.64	0.00	0.00	0.00
6,500.00	10.00	350.25	6,424.54	864.38	-148.47	-147.56	0.00	0.00	0.00
6,512.06	10.00	350.25	6,436.42	866.44	-148.82	-147.92	0.00	0.00	0.00
1st BS Sd									
6,600.00	10.00	350.25	6,523.02	881.49	-151.41	-150.48	0.00	0.00	0.00
6,700.00	10.00	350.25	6,621.50	898.60	-154.35	-153.41	0.00	0.00	0.00
6,800.00	10.00	350.25	6,719.99	915.72	-157.29	-156.33	0.00	0.00	0.00
6,900.00	10.00	350.25	6,818.47	932.83	-160.23	-159.25	0.00	0.00	0.00
7,000.00	10.00	350.25	6,916.95	949.95	-163.17	-162.17	0.00	0.00	0.00
7,059.09	10.00	350.25	6,975.14	960.06	-164.90	-163.90	0.00	0.00	0.00
2nd BS Sd									
7,100.00	10.00	350.25	7,015.43	967.06	-166.11	-165.09	0.00	0.00	0.00
7,200.00	10.00	350.25	7,113.91	984.18	-169.05	-168.01	0.00	0.00	0.00

Marathon Oil

Pro Directional

Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
7,300.00	10.00	350.25	7,212.39	1,001.29	-171.98	-170.94	0.00	0.00	0.00
7,400.00	10.00	350.25	7,310.87	1,018.40	-174.92	-173.86	0.00	0.00	0.00
7,500.00	10.00	350.25	7,409.35	1,035.52	-177.86	-176.78	0.00	0.00	0.00
7,600.00	10.00	350.25	7,507.83	1,052.63	-180.80	-179.70	0.00	0.00	0.00
7,643.49	10.00	350.25	7,550.66	1,060.08	-182.08	-180.97	0.00	0.00	0.00
Start Drop -2.00									
7,700.00	8.87	350.25	7,606.41	1,069.20	-183.65	-182.53	2.00	-2.00	0.00
7,800.00	6.87	350.25	7,705.46	1,082.70	-185.97	-184.83	2.00	-2.00	0.00
7,900.00	4.87	350.25	7,804.93	1,092.78	-187.70	-186.55	2.00	-2.00	0.00
8,000.00	2.87	350.25	7,904.70	1,099.43	-188.84	-187.69	2.00	-2.00	0.00
8,100.00	0.87	350.25	8,004.64	1,102.64	-189.39	-188.24	2.00	-2.00	0.00
8,143.49	0.00	0.00	8,048.13	1,102.97	-189.45	-188.29	2.00	-2.00	0.00
Start 318.87 hold at 8143.49 MD									
8,200.00	0.00	0.00	8,104.64	1,102.97	-189.45	-188.29	0.00	0.00	0.00
8,300.00	0.00	0.00	8,204.64	1,102.97	-189.45	-188.29	0.00	0.00	0.00
8,400.00	0.00	0.00	8,304.64	1,102.97	-189.45	-188.29	0.00	0.00	0.00
8,462.36	0.00	0.00	8,367.00	1,102.97	-189.45	-188.29	0.00	0.00	0.00
Start DLS 12.00 TFO 89.94 - [Fremen7#5H]FTP									
8,464.08	0.21	89.94	8,368.71	1,102.97	-189.45	-188.29	12.00	12.00	0.00
3rd BS Sd									
8,475.00	1.52	89.94	8,379.63	1,102.97	-189.28	-188.13	12.00	12.00	0.00
8,500.00	4.52	89.94	8,404.60	1,102.97	-187.97	-186.81	12.00	12.00	0.00
8,525.00	7.52	89.94	8,429.46	1,102.97	-185.35	-184.19	12.00	12.00	0.00
8,550.00	10.52	89.94	8,454.14	1,102.98	-181.43	-180.27	12.00	12.00	0.00
8,575.00	13.52	89.94	8,478.59	1,102.98	-176.23	-175.07	12.00	12.00	0.00
8,600.00	16.52	89.94	8,502.74	1,102.99	-169.75	-168.59	12.00	12.00	0.00
8,625.00	19.52	89.94	8,526.51	1,103.00	-162.02	-160.86	12.00	12.00	0.00
8,650.00	22.52	89.94	8,549.84	1,103.01	-153.05	-151.90	12.00	12.00	0.00
8,675.00	25.52	89.94	8,572.68	1,103.02	-142.88	-141.72	12.00	12.00	0.00
8,700.00	28.52	89.94	8,594.95	1,103.04	-131.52	-130.37	12.00	12.00	0.00
8,725.00	31.52	89.94	8,616.59	1,103.05	-119.02	-117.86	12.00	12.00	0.00
8,750.00	34.52	89.94	8,637.55	1,103.06	-105.40	-104.24	12.00	12.00	0.00
8,775.00	37.52	89.94	8,657.77	1,103.08	-90.70	-89.55	12.00	12.00	0.00
8,800.00	40.52	89.94	8,677.19	1,103.10	-74.96	-73.81	12.00	12.00	0.00
8,825.00	43.52	89.94	8,695.76	1,103.12	-58.23	-57.08	12.00	12.00	0.00
8,850.00	46.52	89.94	8,713.43	1,103.14	-40.55	-39.40	12.00	12.00	0.00
8,871.06	49.04	89.94	8,727.58	1,103.16	-24.96	-23.80	12.00	12.00	0.00
Wolfcamp									
8,875.00	49.52	89.94	8,730.16	1,103.16	-21.97	-20.82	12.00	12.00	0.00
8,900.00	52.52	89.94	8,745.88	1,103.18	-2.54	-1.38	12.00	12.00	0.00
8,925.00	55.52	89.94	8,760.57	1,103.20	17.69	18.84	12.00	12.00	0.00
8,950.00	58.52	89.94	8,774.18	1,103.23	38.66	39.81	12.00	12.00	0.00
8,975.00	61.52	89.94	8,786.67	1,103.25	60.31	61.46	12.00	12.00	0.00

Marathon Oil

Pro Directional

Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
9,000.00	64.52	89.94	8,798.01	1,103.28	82.58	83.74	12.00	12.00	0.00
9,025.00	67.52	89.94	8,808.17	1,103.30	105.42	106.58	12.00	12.00	0.00
9,050.00	70.52	89.94	8,817.12	1,103.33	128.76	129.92	12.00	12.00	0.00
9,075.00	73.52	89.94	8,824.84	1,103.36	152.54	153.69	12.00	12.00	0.00
9,100.00	76.52	89.94	8,831.30	1,103.38	176.68	177.84	12.00	12.00	0.00
9,125.00	79.52	89.94	8,836.49	1,103.41	201.14	202.29	12.00	12.00	0.00
9,150.00	82.52	89.94	8,840.40	1,103.44	225.83	226.98	12.00	12.00	0.00
9,175.00	85.52	89.94	8,843.00	1,103.47	250.69	251.84	12.00	12.00	0.00
9,200.00	88.52	89.94	8,844.30	1,103.49	275.65	276.81	12.00	12.00	0.00
9,204.01	89.00	89.94	8,844.39	1,103.50	279.66	280.81	12.00	12.00	0.00
Start 9784.93 hold at 9204.01 MD									
9,300.00	89.00	89.94	8,846.07	1,103.61	375.64	376.79	0.00	0.00	0.00
9,400.00	89.00	89.94	8,847.82	1,103.72	475.62	476.78	0.00	0.00	0.00
9,500.00	89.00	89.94	8,849.57	1,103.83	575.61	576.76	0.00	0.00	0.00
9,600.00	89.00	89.94	8,851.32	1,103.95	675.59	676.75	0.00	0.00	0.00
9,700.00	89.00	89.94	8,853.07	1,104.06	775.57	776.73	0.00	0.00	0.00
9,800.00	89.00	89.94	8,854.82	1,104.17	875.56	876.71	0.00	0.00	0.00
9,844.00	89.00	89.94	8,855.59	1,104.22	919.55	920.71	0.00	0.00	0.00
PPP2									
9,900.00	89.00	89.94	8,856.57	1,104.28	975.54	976.70	0.00	0.00	0.00
10,000.00	89.00	89.94	8,858.33	1,104.40	1,075.53	1,076.68	0.00	0.00	0.00
10,100.00	89.00	89.94	8,860.08	1,104.51	1,175.51	1,176.67	0.00	0.00	0.00
10,200.00	89.00	89.94	8,861.83	1,104.62	1,275.50	1,276.65	0.00	0.00	0.00
10,300.00	89.00	89.94	8,863.58	1,104.73	1,375.48	1,376.64	0.00	0.00	0.00
10,400.00	89.00	89.94	8,865.33	1,104.85	1,475.47	1,476.62	0.00	0.00	0.00
10,500.00	89.00	89.94	8,867.08	1,104.96	1,575.45	1,576.61	0.00	0.00	0.00
10,600.00	89.00	89.94	8,868.83	1,105.07	1,675.44	1,676.59	0.00	0.00	0.00
10,700.00	89.00	89.94	8,870.58	1,105.19	1,775.42	1,776.58	0.00	0.00	0.00
10,800.00	89.00	89.94	8,872.33	1,105.30	1,875.41	1,876.56	0.00	0.00	0.00
10,900.00	89.00	89.94	8,874.08	1,105.41	1,975.39	1,976.55	0.00	0.00	0.00
11,000.00	89.00	89.94	8,875.83	1,105.52	2,075.37	2,076.53	0.00	0.00	0.00
11,100.00	89.00	89.94	8,877.58	1,105.64	2,175.36	2,176.52	0.00	0.00	0.00
11,200.00	89.00	89.94	8,879.33	1,105.75	2,275.34	2,276.50	0.00	0.00	0.00
11,300.00	89.00	89.94	8,881.08	1,105.86	2,375.33	2,376.49	0.00	0.00	0.00
11,400.00	89.00	89.94	8,882.83	1,105.97	2,475.31	2,476.47	0.00	0.00	0.00
11,500.00	89.00	89.94	8,884.58	1,106.09	2,575.30	2,576.45	0.00	0.00	0.00
11,600.00	89.00	89.94	8,886.33	1,106.20	2,675.28	2,676.44	0.00	0.00	0.00
11,700.00	89.00	89.94	8,888.08	1,106.31	2,775.27	2,776.42	0.00	0.00	0.00
11,800.00	89.00	89.94	8,889.83	1,106.43	2,875.25	2,876.41	0.00	0.00	0.00
11,900.00	89.00	89.94	8,891.58	1,106.54	2,975.24	2,976.39	0.00	0.00	0.00
12,000.00	89.00	89.94	8,893.33	1,106.65	3,075.22	3,076.38	0.00	0.00	0.00
12,100.00	89.00	89.94	8,895.08	1,106.76	3,175.21	3,176.36	0.00	0.00	0.00

Marathon Oil

Pro Directional

Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
12,200.00	89.00	89.94	8,896.83	1,106.88	3,275.19	3,276.35	0.00	0.00	0.00
12,300.00	89.00	89.94	8,898.59	1,106.99	3,375.17	3,376.33	0.00	0.00	0.00
12,400.00	89.00	89.94	8,900.34	1,107.10	3,475.16	3,476.32	0.00	0.00	0.00
12,500.00	89.00	89.94	8,902.09	1,107.21	3,575.14	3,576.30	0.00	0.00	0.00
12,600.00	89.00	89.94	8,903.84	1,107.33	3,675.13	3,676.29	0.00	0.00	0.00
12,700.00	89.00	89.94	8,905.59	1,107.44	3,775.11	3,776.27	0.00	0.00	0.00
12,800.00	89.00	89.94	8,907.34	1,107.55	3,875.10	3,876.26	0.00	0.00	0.00
12,900.00	89.00	89.94	8,909.09	1,107.67	3,975.08	3,976.24	0.00	0.00	0.00
13,000.00	89.00	89.94	8,910.84	1,107.78	4,075.07	4,076.22	0.00	0.00	0.00
13,100.00	89.00	89.94	8,912.59	1,107.89	4,175.05	4,176.21	0.00	0.00	0.00
13,200.00	89.00	89.94	8,914.34	1,108.00	4,275.04	4,276.19	0.00	0.00	0.00
13,300.00	89.00	89.94	8,916.09	1,108.12	4,375.02	4,376.18	0.00	0.00	0.00
13,400.00	89.00	89.94	8,917.84	1,108.23	4,475.01	4,476.16	0.00	0.00	0.00
13,500.00	89.00	89.94	8,919.59	1,108.34	4,574.99	4,576.15	0.00	0.00	0.00
13,600.00	89.00	89.94	8,921.34	1,108.45	4,674.97	4,676.13	0.00	0.00	0.00
13,700.00	89.00	89.94	8,923.09	1,108.57	4,774.96	4,776.12	0.00	0.00	0.00
13,800.00	89.00	89.94	8,924.84	1,108.68	4,874.94	4,876.10	0.00	0.00	0.00
13,900.00	89.00	89.94	8,926.59	1,108.79	4,974.93	4,976.09	0.00	0.00	0.00
14,000.00	89.00	89.94	8,928.34	1,108.91	5,074.91	5,076.07	0.00	0.00	0.00
14,100.00	89.00	89.94	8,930.09	1,109.02	5,174.90	5,176.06	0.00	0.00	0.00
14,200.00	89.00	89.94	8,931.84	1,109.13	5,274.88	5,276.04	0.00	0.00	0.00
14,300.00	89.00	89.94	8,933.59	1,109.24	5,374.87	5,376.03	0.00	0.00	0.00
14,400.00	89.00	89.94	8,935.34	1,109.36	5,474.85	5,476.01	0.00	0.00	0.00
14,500.00	89.00	89.94	8,937.09	1,109.47	5,574.84	5,575.99	0.00	0.00	0.00
14,600.00	89.00	89.94	8,938.84	1,109.58	5,674.82	5,675.98	0.00	0.00	0.00
14,700.00	89.00	89.94	8,940.60	1,109.69	5,774.81	5,775.96	0.00	0.00	0.00
14,800.00	89.00	89.94	8,942.35	1,109.81	5,874.79	5,875.95	0.00	0.00	0.00
14,900.00	89.00	89.94	8,944.10	1,109.92	5,974.77	5,975.93	0.00	0.00	0.00
15,000.00	89.00	89.94	8,945.85	1,110.03	6,074.76	6,075.92	0.00	0.00	0.00
15,100.00	89.00	89.94	8,947.60	1,110.15	6,174.74	6,175.90	0.00	0.00	0.00
15,200.00	89.00	89.94	8,949.35	1,110.26	6,274.73	6,275.89	0.00	0.00	0.00
15,300.00	89.00	89.94	8,951.10	1,110.37	6,374.71	6,375.87	0.00	0.00	0.00
15,400.00	89.00	89.94	8,952.85	1,110.48	6,474.70	6,475.86	0.00	0.00	0.00
15,500.00	89.00	89.94	8,954.60	1,110.60	6,574.68	6,575.84	0.00	0.00	0.00
15,600.00	89.00	89.94	8,956.35	1,110.71	6,674.67	6,675.83	0.00	0.00	0.00
15,700.00	89.00	89.94	8,958.10	1,110.82	6,774.65	6,775.81	0.00	0.00	0.00
15,800.00	89.00	89.94	8,959.85	1,110.93	6,874.64	6,875.80	0.00	0.00	0.00
15,900.00	89.00	89.94	8,961.60	1,111.05	6,974.62	6,975.78	0.00	0.00	0.00
16,000.00	89.00	89.94	8,963.35	1,111.16	7,074.61	7,075.77	0.00	0.00	0.00
16,100.00	89.00	89.94	8,965.10	1,111.27	7,174.59	7,175.75	0.00	0.00	0.00
16,200.00	89.00	89.94	8,966.85	1,111.39	7,274.57	7,275.73	0.00	0.00	0.00
16,300.00	89.00	89.94	8,968.60	1,111.50	7,374.56	7,375.72	0.00	0.00	0.00

Marathon Oil

Pro Directional
Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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)
16,400.00	89.00	89.94	8,970.35	1,111.61	7,474.54	7,475.70	0.00	0.00	0.00
16,487.00	89.00	89.94	8,971.88	1,111.71	7,561.53	7,562.69	0.00	0.00	0.00
PPP3									
16,500.00	89.00	89.94	8,972.10	1,111.72	7,574.53	7,575.69	0.00	0.00	0.00
16,600.00	89.00	89.94	8,973.85	1,111.84	7,674.51	7,675.67	0.00	0.00	0.00
16,700.00	89.00	89.94	8,975.60	1,111.95	7,774.50	7,775.66	0.00	0.00	0.00
16,800.00	89.00	89.94	8,977.35	1,112.06	7,874.48	7,875.64	0.00	0.00	0.00
16,900.00	89.00	89.94	8,979.10	1,112.18	7,974.47	7,975.63	0.00	0.00	0.00
17,000.00	89.00	89.94	8,980.86	1,112.29	8,074.45	8,075.61	0.00	0.00	0.00
17,100.00	89.00	89.94	8,982.61	1,112.40	8,174.44	8,175.60	0.00	0.00	0.00
17,200.00	89.00	89.94	8,984.36	1,112.51	8,274.42	8,275.58	0.00	0.00	0.00
17,300.00	89.00	89.94	8,986.11	1,112.63	8,374.41	8,375.57	0.00	0.00	0.00
17,400.00	89.00	89.94	8,987.86	1,112.74	8,474.39	8,475.55	0.00	0.00	0.00
17,500.00	89.00	89.94	8,989.61	1,112.85	8,574.37	8,575.54	0.00	0.00	0.00
17,600.00	89.00	89.94	8,991.36	1,112.96	8,674.36	8,675.52	0.00	0.00	0.00
17,700.00	89.00	89.94	8,993.11	1,113.08	8,774.34	8,775.50	0.00	0.00	0.00
17,800.00	89.00	89.94	8,994.86	1,113.19	8,874.33	8,875.49	0.00	0.00	0.00
17,900.00	89.00	89.94	8,996.61	1,113.30	8,974.31	8,975.47	0.00	0.00	0.00
18,000.00	89.00	89.94	8,998.36	1,113.42	9,074.30	9,075.46	0.00	0.00	0.00
18,100.00	89.00	89.94	9,000.11	1,113.53	9,174.28	9,175.44	0.00	0.00	0.00
18,200.00	89.00	89.94	9,001.86	1,113.64	9,274.27	9,275.43	0.00	0.00	0.00
18,300.00	89.00	89.94	9,003.61	1,113.75	9,374.25	9,375.41	0.00	0.00	0.00
18,400.00	89.00	89.94	9,005.36	1,113.87	9,474.24	9,475.40	0.00	0.00	0.00
18,500.00	89.00	89.94	9,007.11	1,113.98	9,574.22	9,575.38	0.00	0.00	0.00
18,600.00	89.00	89.94	9,008.86	1,114.09	9,674.21	9,675.37	0.00	0.00	0.00
18,700.00	89.00	89.94	9,010.61	1,114.20	9,774.19	9,775.35	0.00	0.00	0.00
18,800.00	89.00	89.94	9,012.36	1,114.32	9,874.17	9,875.34	0.00	0.00	0.00
18,900.00	89.00	89.94	9,014.11	1,114.43	9,974.16	9,975.32	0.00	0.00	0.00
18,988.94	89.00	89.94	9,015.67	1,114.53	10,063.08	10,064.24	0.00	0.00	0.00
TD at 18988.93 - [Fremen7#5H]LTP/BHL									

Marathon Oil

Pro Directional
Survey Report

PRODIRECTIONAL

Company:	Marathon Oil	**Local Co-ordinate Reference:**	Well WXY No. 5H
Project:	Eddy County, NM	**TVD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Site:	Fremen 7 FED COM (3-5)	**MD Reference:**	Well @ 3267.00usft (GL: 3242' + KB: 25' (PD101))
Well:	WXY No. 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Prelim Plan A	**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
[Fremen7#5H]PPP2	0.00	0.00	0.00	1,104.21	919.13	447,338.20	530,851.33	32.229810	-104.233562
- plan misses target center by 1436.69usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
[Fremen7#5H]PPP3	0.00	0.00	0.00	1,111.70	7,561.90	447,345.69	537,494.10	32.229812	-104.212079
- plan misses target center by 7643.18usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
[Fremen7#5H]FTP	0.00	0.00	8,367.00	1,102.97	-189.45	447,336.96	529,742.75	32.229810	-104.237147
- plan hits target center									
- Point									
[Fremen7#5H]LTP/BHL	0.00	0.00	9,015.67	1,114.53	10,063.08	447,348.52	539,995.28	32.229812	-104.203991
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
418.00	418.00	Castile		1.00	89.94
1,975.45	1,968.73	Lamar/B. Salt		1.00	89.94
2,091.15	2,082.67	Bell Canyon		1.00	89.94
2,914.23	2,893.25	Cherry Canyon		1.00	89.94
3,878.39	3,842.76	Brushy Canyon		1.00	89.94
5,516.44	5,455.93	Bone Spring		1.00	89.94
6,512.06	6,436.42	1st BS Sd		1.00	89.94
7,059.09	6,975.14	2nd BS Sd		1.00	89.94
8,464.08	8,368.71	3rd BS Sd		1.00	89.94
8,871.06	8,727.58	Wolfcamp		1.00	89.94

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1200	1200	0	0	Start Build 2.00
1700	1697	43	-7	Start 5943.49 hold at 1700.00 MD
7643	7551	1060	-182	Start Drop -2.00
8143	8048	1103	-189	Start 318.87 hold at 8143.49 MD
8462	8367	1103	-189	Start DLS 12.00 TFO 89.94
9204	8844	1103	280	Start 9784.93 hold at 9204.01 MD
9844	8856	1104	920	PPP2
16,487	8972	1112	7562	PPP3
18,989	9016	1115	10,063	TD at 18988.93

Checked By: _____ Approved By: _____ Date: _____

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME: Marathon Oil Permian LLC
LEASE NO.: NMNM112268; NMLC0064200
LOCATION: Section 7, T.24 S., R.27 E., NMPM
COUNTY: Eddy County, New Mexico

Atreides 8 WXY Fed Com 4H
Surface Hole Location: 1324' FNL & 300' FWL, Section 7, T. 24 S., R. 27 E.
Bottom Hole Location: 1980' FNL & 100' FEL, Section 8, T. 24 S, R 27 E.

Atreides 8 WXY Fed Com 5H
Surface Hole Location: 1294' FNL & 300' FWL, Section 7, T. 24 S., R. 27 E.
Bottom Hole Location: 1980' FNL & 100' FEL, Section 8, T. 24 S, R 27 E.

Fremen 7 WXY Fed Com 3H
Surface Hole Location: 847' FSL & 290' FWL, Section 7, T. 24 S., R. 27 E.
Bottom Hole Location: 660' FSL & 100' FEL, Section 8, T. 24 S, R 27 E.

Fremen 7 WXY Fed Com 5H
Surface Hole Location: 877' FSL & 290' FWL, Section 7, T. 24 S., R. 27 E.
Bottom Hole Location: 1980' FSL & 100' FEL, Section 8, T. 24 S, R 27 E.

TABLE OF CONTENTS

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

Approval Date: 05/27/2021

Roads
☐ **Road Section Diagram**
☐ **Production (Post Drilling)**
Well Structures & Facilities
☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

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.

I. 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.)

II. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

III. 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.

IV. SPECIAL REQUIREMENT(S)

Wildlife:

Oil and Gas Zone D - CCA Boundary requirements.

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

Hydrology:

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

TANK BATTERY:

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

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production:

Construction:

General Construction:

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

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Tank Battery Construction:

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- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Road Construction:

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

Leak Detection System:

- A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

Automatic Shut-off Systems:

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

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and groundwater concerns:

Closed Loop System:

- A closed loop system using steel tanks will be utilized during drilling – no pits
- All fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

Rotary Drilling with Fresh Water:

- Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

- The kick off point for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:

- ALL lost circulation zones between surface and the base of the cave occurrence zone will be logged and reported in the drilling report.
- If a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, regardless of the type of drilling machinery used, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

- Additional plugging conditions of approval may be required upon well abandonment in high and medium karst potential occurrence zones.
- The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:

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

Special Status Plant Species (SSPS) Occupied Habitat Stipulations

- No chemical control of vegetation is authorized unless otherwise agreed to in writing by the Authorized Officer, in coordination with a BLM biologist. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA regulations and BLM policies. BLM pesticide use compliance requires treatment designs to avoid adverse impacts to SSPS and their known occupied habitats.
- Marathon Oil Permian LLC (the Operator) must schedule BLM monitoring and salvage of Scheer's beehive cactus plants and ripe seeds from within the project footprint one month prior to initiating construction. BLM will reestablish salvaged seeds and plants in protected, adjacent suitable habitat within an appropriate timeframe using BLM CFO cactus salvage, maintenance and monitoring methods. The Operator will not be authorized to initiate construction prior to Scheer's beehive cactus individuals being salvaged from the the following locations unless otherwise agreed to in writing by the Authorized Officer, in coordination with a BLM biologist.
    - Within, PLSS L 4¼¼, S07, T24S, R27E, at approximately UTM NAD83 ZONE 13N 571890E 3565804N and approximately 0m from the edge of proposed surface disturbance (Tag # 3061).

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- Prior to initiating project construction activities, the operator must install barricades for the protection of SSPS occupied habitat according to the following standards:
    - Temporary barricades, at the locations specified below, that effectively protect SSPS individuals from vehicle, equipment, and foot trampling without introducing threats of alterations in solar exposure or suffocation due to structural materials, duration, abandonment or collapse. Barricade structures must be installed no earlier than one month prior to proposed project activities and must be removed within one month of project completion, including any interim or ROW reclamation activities. Clear, focused, date and time stamped, and geolocated images framed immediately around the SSPS individuals identified below must be submitted to the BLM within one month of barricade installation and within one month of barricade removal.
        - Within, PLSS L 4¼¼, S07, T24S, R27E, at approximately UTM NAD83 ZONE 13N 571814E 3565908N and approximately 0m from the edge of proposed surface disturbance (Tag# 2029).
        - Within, PLSS L 4¼¼, S07, T24S, R27E, at approximately UTM NAD83 ZONE 13N 571986E 3565729N and approximately 0m from the edge of proposed surface disturbance (Tag #s 2049 and 2081).
- During construction occurring within 330 feet (100 meters) of SSPS occupied habitat, the operator must staff a third-party biological monitor on site for the protection of SSPS. The biological monitor must coordinate with BLM within one month prior to construction to obtain a shapefile of known SSPS occupied habitats in the project vicinity. The biological monitor will guide project activities to avoid the SSPS occupied habitats identified in this shapefile. The biological monitor must submit clear, focused, date and time stamped, and geolocated post-construction images framed immediately around the SSPS individuals identified in this shapefile to the BLM within one month of construction completion.

V. 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.

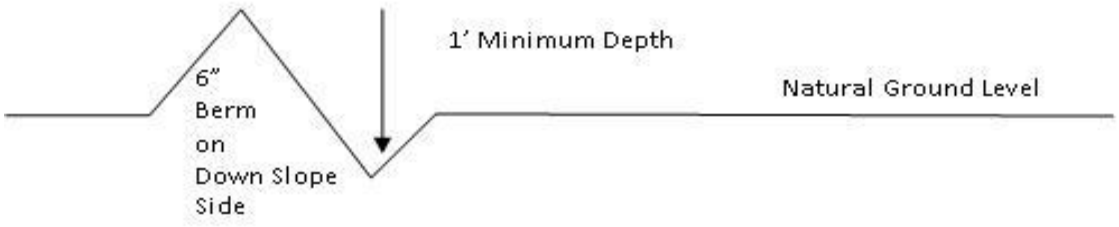
Ditching
Ditching shall be required on both sides of the road.

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

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

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

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

Approval Date: 05/27/2021

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

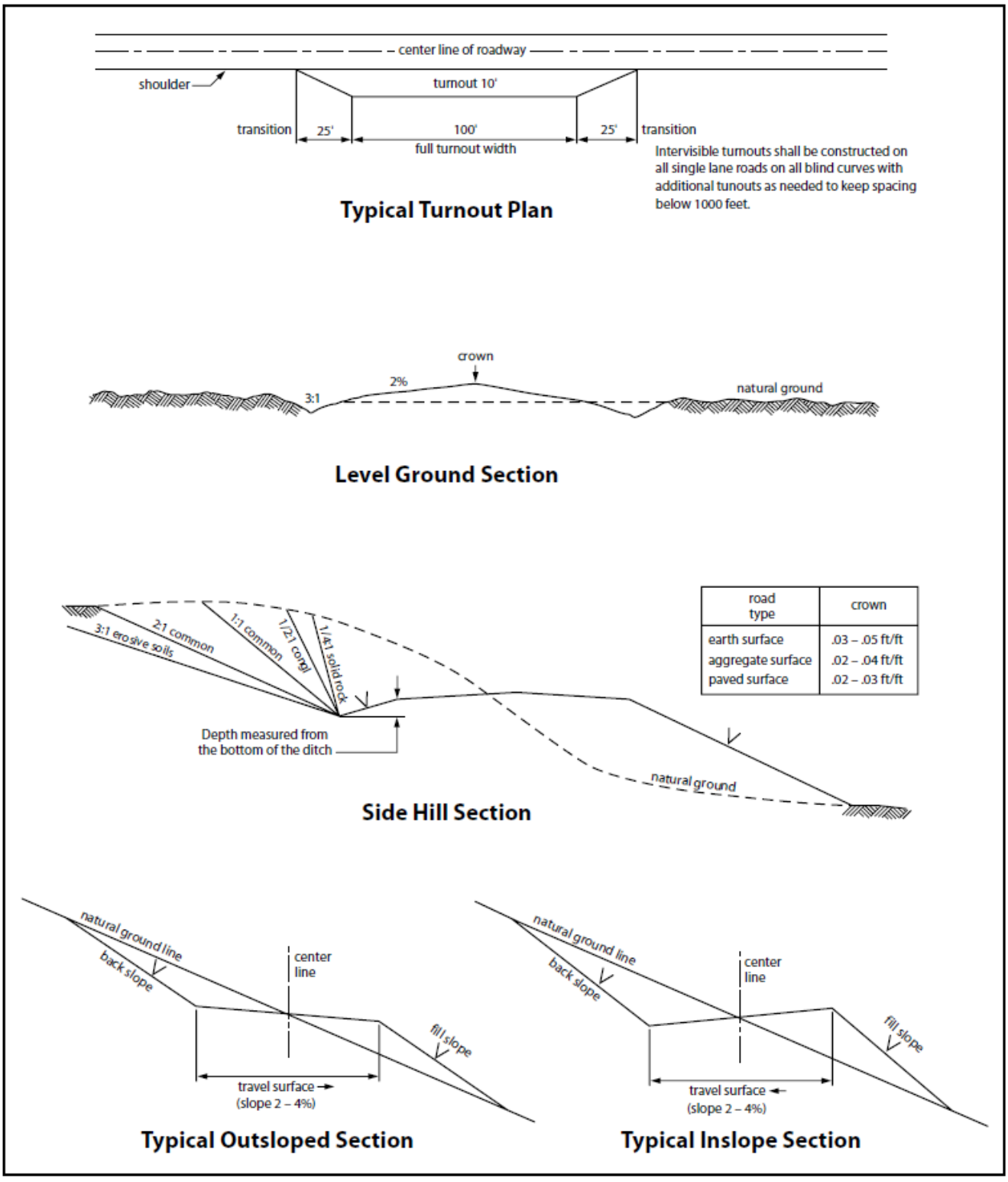


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

Approval Date: 05/27/2021

VI. 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).

VII. 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).

VIII. 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).

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Seed Mixture 1 for Loamy Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall 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 shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

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

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

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

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Seed Mixture 3, for Shallow Sites

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

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

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

Species	lb/acre
Plains Bristlegrass (Setaria macrostachya)	1.0
Green Sprangletop (Leptochloa dubia)	2.0
Sideoats Grama (Bouteloua curtipendula)	5.0

*Pounds of pure live seed:

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

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PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**MARATHON OIL PERMIAN LLC**
LEASE NO.:	**NMLC0064200**
WELL NAME & NO.:	**FREMEN 7 WXY FED COM 5H**
SURFACE HOLE FOOTAGE:	877'/S & 290'/W
BOTTOM HOLE FOOTAGE	1980'/S & 100'/E
LOCATION:	Section 7, T.24 S., R.27 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	○ Medium	◉ High
Cave/Karst Potential	○ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **650 feet** (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

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hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

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

2. The **9-5/8** inch Intermediate Casing shall be set at **1980 feet.** The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option 1 (Single Stage):

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

❖ In **High Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The **7-5/8** inch second intermediate casing shall be set at approximately **9210 feet**. The minimum required fill of cement behind the **7-5/8** inch production casing is:

Option 1 (Single Stage):

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **5-1/2** inch production liner is:

- Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification.

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C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. **BOP REQUIREMENTS**

Option 1:

a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **5000 (5M)** psi.

Option 2 :

Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New

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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.

- 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
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

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 Onshore Oil and Gas Order No. 2 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 intergrity 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 intergrity 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.

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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 Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

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 OOGO2.III.A.2.i 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 when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

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 plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 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 Onshore Order No. 2.

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.

RI10132020

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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

COMMENTS

Action 35478

COMMENTS

Operator: MARATHON OIL PERMIAN LLC 5555 San Felipe St. Houston, TX 77056	OGRID: 372098
	Action Number: 35478
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO Review 7/8/2021	7/9/2021

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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CONDITIONS

Action 35478

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Operator: MARATHON OIL PERMIAN LLC 5555 San Felipe St. Houston, TX 77056	OGRID: 372098
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CONDITIONS

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	7/9/2021
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	7/9/2021
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	7/9/2021
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	7/9/2021
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	7/9/2021
kpickford	Will require a administrative order for non-standard location prior to placing the well on production	7/9/2021