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.
30-015-53642

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)

Confidential

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.

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Additional Operator Remarks

Location of Well

0. SHL: NENE / 958 FNL / 435 FEL / TWSP: 22S / RANGE: 28E / SECTION: 34 / LAT: 32.353839 / LONG: -104.0683122 (TVD: 0 feet, MD: 0 feet)

PPP: NENE / 660 FNL / 0 FEL / TWSP: 22S / RANGE: 28E / SECTION: 33 / LAT: 32.3546153 / LONG: -104.0840067 (TVD: 10294 feet, MD: 15613 feet)

PPP: NENE / 660 FNL / 330 FEL / TWSP: 22S / RANGE: 28E / SECTION: 34 / LAT: 32.3546594 / LONG: -104.0679978 (TVD: 10398 feet, MD: 10668 feet)

BHL: NWNW / 660 FNL / 330 FWL / TWSP: 22S / RANGE: 28E / SECTION: 33 / LAT: 32.3546637 / LONG: -104.0997807 (TVD: 10192 feet, MD: 20484 feet)

BLM Point of Contact

Name: JORDAN NAVARRETTE
Title: LIE
Phone: (575) 234-5972
Email: jnavarrette@blm.gov

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Review and Appeal Rights

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

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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
30-015-53642	98220	PURPLE SAGE; WOLFCAMP (GAS)

[4] Property Code	[5] Property Name	[6] Well Number
333879	CHAOS 34-33 WC FED COM	10H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372098	MARATHON OIL PERMIAN LLC	3072'

[10] Surface Location

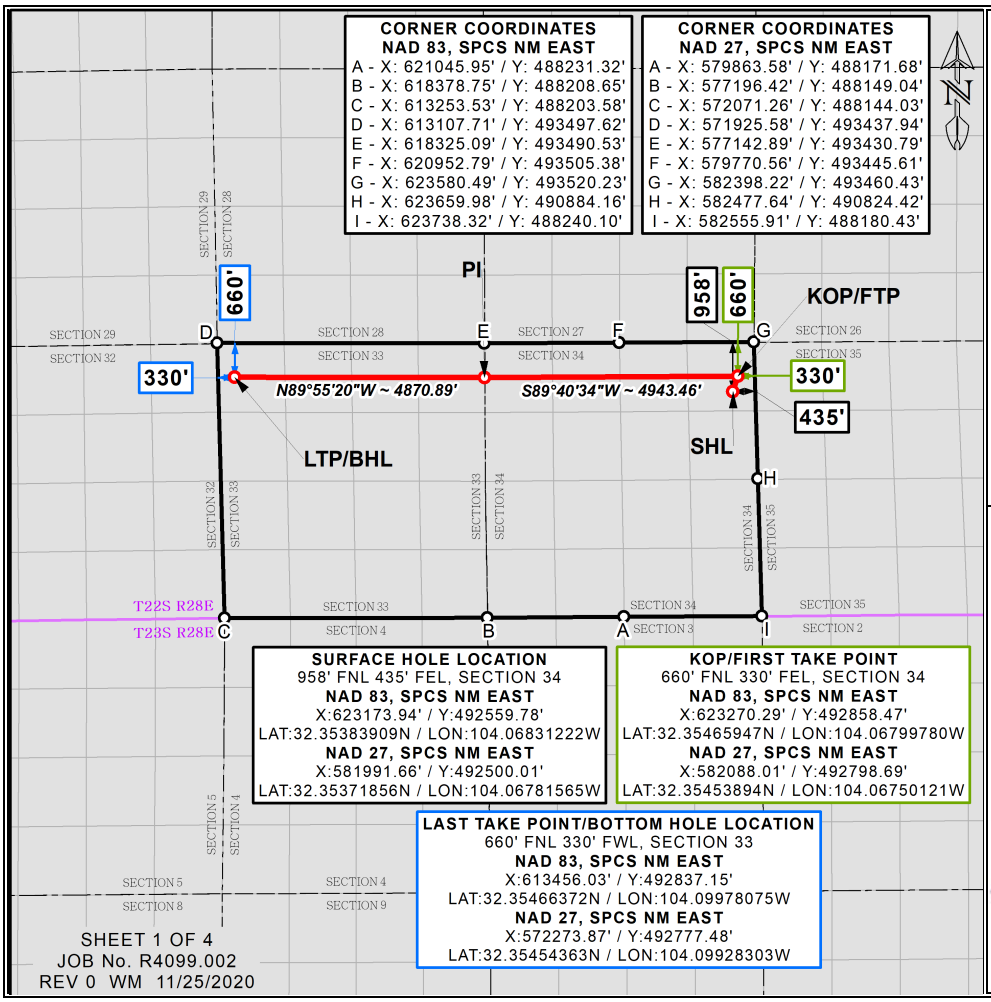
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	34	22S	28E		958	NORTH	435	EAST	EDDY

[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
D	33	22S	28E		660	NORTH	330	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
1280.0			

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.

12/01/2020
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.

DECEMBER 1, 2020
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID W. MYERS NEW MEXICO 11403 PROFESSIONAL SURVEYOR

Certificate Number
DAVID W. MYERS 11403

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99977221 Convergence Angle: 00°07'02.700012"

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: _____ **OGRID:** _____ **Date:** ____/____/_____

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

IV. Central Delivery Point Name: _____ [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

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:	Nicole Lee
Printed Name:	
Title:	
E-mail Address:	
Date:	
Phone:	

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.

DRILLING AND OPERATIONS PLAN

WELL NAME / NUMBER: **CHAOS 34-33 WC FED COM 10H**
COUNTY / STATE: **EDDY, NEW MEXICO**

Application Data Report

1. WELL LOCATION TABLE

Traverse Segment	Latitude NAD83	Longitude NAD83	Elevation (ft SS)	MD (RKB)	TVD (RKB)	Lease Serial	NS Foot	NS Indicator	EW Foot	EW Indicator	TWSP	Range	Section	Aliquot/Lot	Leasy Type
SHL	32.35383909	-104.06831222	3072	0	0	NMNM019842B	958	FNL	435	FEL	22S	28E	34	NENE	F
KOP/FTP	32.35465947	-104.06799780	-7326	10668	10398	NMNM019842B	660	FNL	330	FEL	22S	28E	34	NENE	F
PPP-2	32.35461534	-104.08400679	-7222	15613	10294	NMNM022631	660	FNL	0	FEL	22S	28E	33	NENE	F
PPP-3	32.35462843	-104.08821360	-7195	16912	10267	PRIVATE	660	FNL	1299	FEL	22S	28E	33	NWNE	P
LTP/BHL	32.35466372	-104.09978075	-7120	20484	10192	PRIVATE	660	FNL	330	FWL	22S	28E	33	NWNW	P

Drilling Plan Data Report

1. GEOLOGIC FORMATIONS

Formation	True Vertical Depth (ft)	Measured Depth (ft)	Lithologies	Mineral Resources
Rustler	252	252	Salt/Anhydrite	BRINE
Castile	1348	1348	Salt/Anhydrite	BRINE
Base of Salt	2641	2641	Limy Sands	BRINE
Lamar	2641	2641	Sand/Shales	NONE
Delaware	2674	2674	Sands/Shale	OIL
Bone Spring	6200	6214	Sands/Carbonates	OIL
Wolfcamp	9530	9558	Carbonates/Shales/Sands	OIL

2. BLOWOUT PREVENTION

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
17 1/2"	13 5/8"	5000	Annular	X	50% of working pressure
			BOP Stack	X	5000
12 1/4"	13 5/8"	5000	Annular	X	50% of working pressure
			BOP Stack	X	5000
8 3/4"	13 5/8"	5000	Annular	X	50% of working pressure
			BOP Stack	X	5000

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

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

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

3. CASING PROGRAM

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	17 1/2"	13 3/8	0	500	0	500	3072	2572	54.5	J55	STC	3.37	1.71	2.93
Intermediate	12 1/4"	9 5/8	0	2850	0	2850	3072	222	36	J55	LTC	1.26	1.2	1.96
Production	8 3/4"	5 1/2	0	20484	0	10192	3072	-7120	20	P110	BTC	1.65	1.29	2.08

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

Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

4. CEMENT

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sks)	Yield (ft3/sks)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	300	241	1.73	13.5	417	150	Class C	LCM
Surface	Tail	--	300	500	167	1.33	14.8	223	100	Class C	Accelerator
Intermediate	Lead	--	0	1800	310	2.49	11.0	773	100	Class C	Extender, Accelerator
Intermediate	Tail	--	1800	2850	229	1.28	13.8	293	30	Class H	Retarder
Production	Lead	--	350	850	47	1.29	14.5	60	30	Class H	Viscosifier, Retarder
Production	Tail	--	850	20484	1977	1.09	14.5	2155	30	Class H	Extender, Fluid Loss, Dispersant

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

Pilot hole depth: N/A TVD/MD
KOP: N/A TVD/MD

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

Attach plugging procedure for pilot hole: N/A

5. CIRCULATING MEDIUM

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max Weight (ppg)
0	500	Water Based Mud	8.4	8.8
500	2850	Brine	9.2	10.2
2850	20484	Oil Based Mud	10.5	12.5

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

6. TEST, LOGGING, CORING

List of production tests including testing procedures, equipment and safety measures:
GR from TD to surface (horizontal well - vertical portion of hole)
List of open and cased hole logs run in the well:
GR while drilling from Intermediate casing shoe to TD.
Coring operation description for the well:
No coring is planned at this time.

Mud Logger: None.
DST's: None.

7. PRESSURE

ANTICIPATED BOTTOM HOLE PRESSURE: **6,625 psi**
ANTICIPATED BOTTOM HOLE TEMPERATURE: **195 °F**
ANTICIPATED ABNORMAL PRESSURE: **N**
ANTICIPATED ABNORMAL TEMPERATURE: **N**
POTENTIAL HAZARDS:

A. H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with Onshore Order #6.

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

C. No losses are anticipated at this time.

D. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.

8. OTHER

Other Well Information

AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

A Kelly cock will be in the drill string at all times.

A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.

Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe until total depth is reached. **If Hydrogen Sulfide is encountered , measured amounts and formations will be reported to the BLM**

ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS

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

MARATHON OIL
DRILL PLAN CHANGE REGISTER
CHAOS 34-33 WC FED COM 10H

Original Document Date: January 19th, 2021
Prepared By: Luis Gonzalez

Drilling
Revised By:
Date:

Regulatory
Submitted By:
Agency Approved?

Change Summary

Section	Description

Drilling
Revised By:
Date:

Regulatory
Submitted By:
Agency Approved?

Change Summary

Section	Description

Drilling
Revised By:
Date:

Regulatory
Submitted By:
Agency Approved?

Change Summary

Section	Description

Drilling
Revised By:
Date:

Regulatory
Submitted By:
Agency Approved?

Change Summary

Section	Description

MARATHON OIL PERMIAN, LLC.

WELL NAME & NUMBER: **CHAOS 34-33 WC FED COM 10H**

LOCATION: SECTION **34** TOWNSHIP **22S** RANGE **28E**

EDDY COUNTY, **NEW MEXICO**

Section 1: GEOLOGICAL FORMATIONS

Name of Surface Formation: Permian

Elevation: 3072 *feet*

Estimated Tops of Important Geological Markers:

Formation	TVD (ft)	MD (ft)	Elevation (ft SS)	Lithologies	Mineral Resources	Producing Formation?
Rustler	252	252	2820	Anhydrite	Brine	No
Salado	364	364	2708	Salt/Anhydrite	Brine	No
Castile	1348	1348	1724	Salt/Anhydrite	Brine	No
Base of Salt (BX)	2281	2281	791	Salt/Anhydrite	Brine	No
Lamar	2641	2641	431	Sandstone/Shale	None	No
Bell Canyon	2674	2674	398	Sandstone	Oil	No
Cherry Canyon	3517	3517	-445	Sandstone	Oil	No
Brushy Canyon	4773	4773	-1701	Sandstone	Oil	No
Bone Spring Lime	6200	6200	-3128	Limestone	None	No
Upper Avalon Shale	6290	6290	-3218	Shale	Oil	No
1st Bone Spring Sand	7216	7216	-4144	Sandstone	Oil	No
2nd Bone Spring Carbonate	7520	7520	-4448	Limestone/Shale	None	No
2nd Bone Spring Sand	7972	7972	-4900	Sandstone	Oil	No
3rd Bone Spring Carbonate	8250	8250	-5178	Limestone	Oil	No
3rd Bone Spring Sand	9232	9232	-6160	Sandstone	Oil	No
Wolfcamp	9530	9530	-6458	Sandstone/Shale/Carbonates	Natural Gas/Oil	Yes
Strawn	11196	11196	-8124	Sandstone/Shale/Carbonates	Natural Gas/Oil	Yes

List of Production Tests: GR from TD to surface (horizontal well - vertical portion of hole).

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

Batch Drilling Plan

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

Request for Surface Rig

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

1. DRILLING WELL CONTROL PLAN

1.1 WELL CONTROL - CERTIFICATIONS

Required IADC/IWCF Well Control Certifications Supervisor Level:

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

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

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

Well Control-Position/Roles

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

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

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

(Well Control-Positions/Roles Continued)

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

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

1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST

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

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

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

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

1.3 WELL CONTROL-BOP TESTING

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

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

1.4 WELL CONTROL - DRILLS

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

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

1.5 WELL CONTROL – MONITORING

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

Well Control-Monitoring (Continued)

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

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

1.6 WELL CONTROL – SHUT IN

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

2. SHUT-IN PROCEDURES:

2.1 PROCEDURE WHILE DRILLING

- Sound alarm (alert crew)

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

2.2 Procedure While Tripping

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

Procedure While Tripping (Continued)

    - Time
    - Kick Volume
    - Pipe depth

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

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

2.3 PROCEDURE WHILE RUNNING CASING

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

2.4 PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

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

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

2.5 PROCEDURE WHILE PULLING BHA THRU STACK

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

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

Procedures While Pulling BHA thru Stack (Continued)

    - Time
  - Regroup and identify forward plan

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

H2S LAYOUT

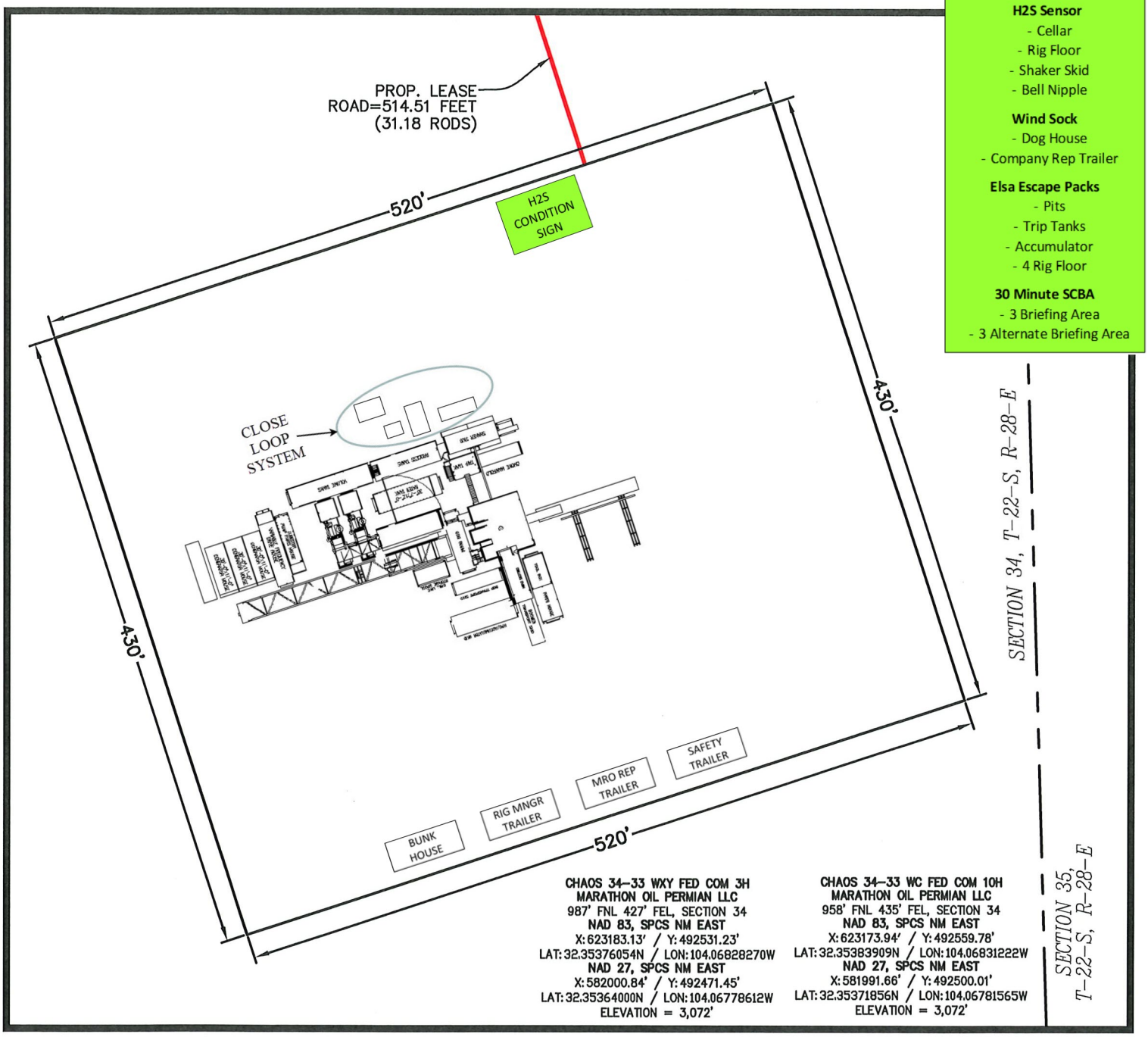
LEGEND

PROPOSED WELL PAD

PERMANENT EASEMENT

PROPOSED LEASE ROAD

CHAOS 34-33 FED COM (NORTH PAD)
SEC. 34 TWP. 22-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.



H2S Sensor
- Cellar
- Rig Floor
- Shaker Skid
- Bell Nipple

Wind Sock
- Dog House
- Company Rep Trailer

Elsa Escape Packs
- Pits
- Trip Tanks
- Accumulator
- 4 Rig Floor

30 Minute SCBA
- 3 Briefing Area
- 3 Alternate Briefing Area

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

50' 0' 50' 100'

SCALE: 1" = 100'

SHEET 7 OF 8

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE,
MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R4099_002

Released by OCD: 3/23/2023 7:13:44 AM

Sec 34, T22S, R28E
Chaos 34-33 WC FED COM 10H
Q2100 & WT2100****
Prelim #1

PROJECT DETAILS: Eddy County, New Mexico (NAD 27)

Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

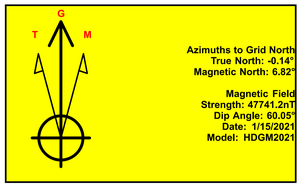
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W
Plat FTP - Chaos 34-33 10H	0.0	298.7	96.4
Plat PBHL - Chaos 34-33 10H	10191.5	277.5	-9717.8
VP - Chaos 34-33 10H - Pre #1	9488.5	299.6	514.3

QES
QUINTANA ENERGY SERVICES

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
252.0	252.0	Rustler		
639.0	639.0	Salado		
1348.0	1348.0	Castile		
2641.0	2641.0	Lamar/B of Salt		
2674.0	2674.0	Bell Canyon		
3508.0	3509.5	Cherry Canyon		
4759.0	4766.2	Brushy Canyon		
6200.0	6213.8	Bone Spring		
7249.0	7267.6	1st Bone Spring Sand		
7992.0	8014.0	2nd Bone Spring Sand		
9218.0	9245.6	3rd Bone Spring Sand		
9530.0	9558.0	Wolfcamp		
9561.0	9589.0	Wolfcamp X Sand		
9655.0	9683.0	Wolfcamp Y Sand		
9696.0	9724.0	Wolfcamp A		
9963.8	9991.8	Wolfcamp B	-1.20	269.88
10225.2	10268.9	Wolfcamp C	-1.20	269.88



Azimuths to Grid North
True North: -0.14°
Magnetic North: 6.82°

Magnetic Field
Strength: 47741.2nT
Dip Angle: 60.05°
Date: 1/15/2021
Model: HDGM2021

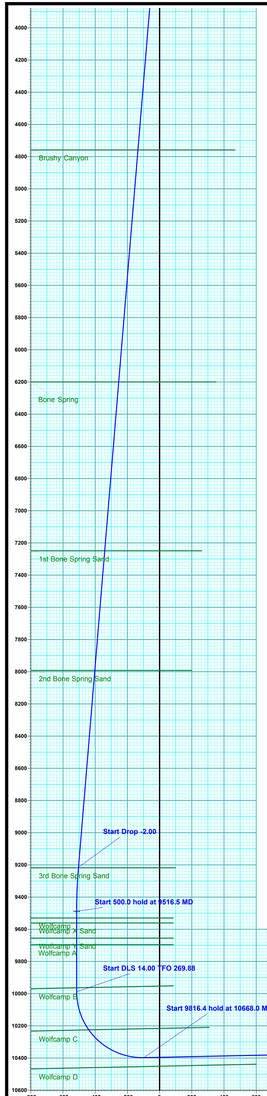
Company Name: Marathon Oil Permian LLC
Chaos 34-33 WC FED COM 10H
Eddy County, New Mexico (NAD 27)
Rig: 32.5'KB
Created by: Michael Hilliard
Date: 15:43, January 18 2021

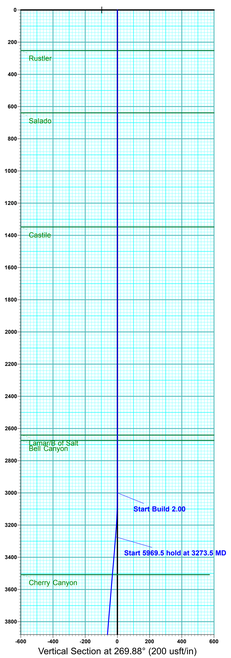
WELL DETAILS: Chaos 34-33 WC FED COM 10H

3072.0

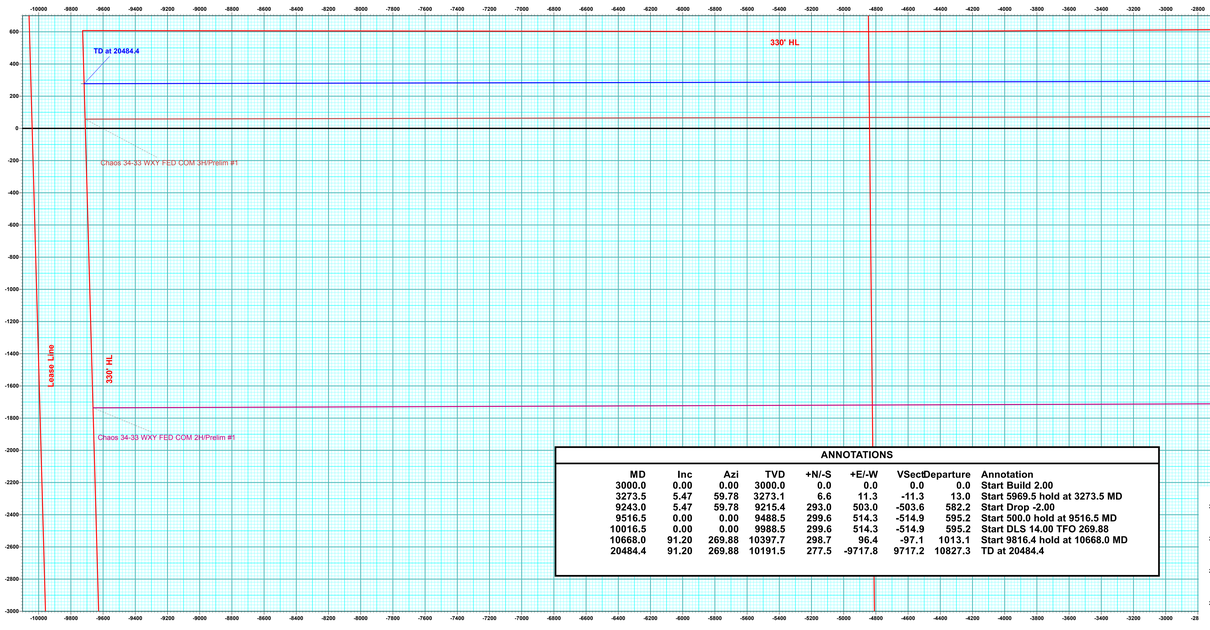
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	492500.01	581991.66	32° 21' 13.387 N	104° 4' 4.136 W

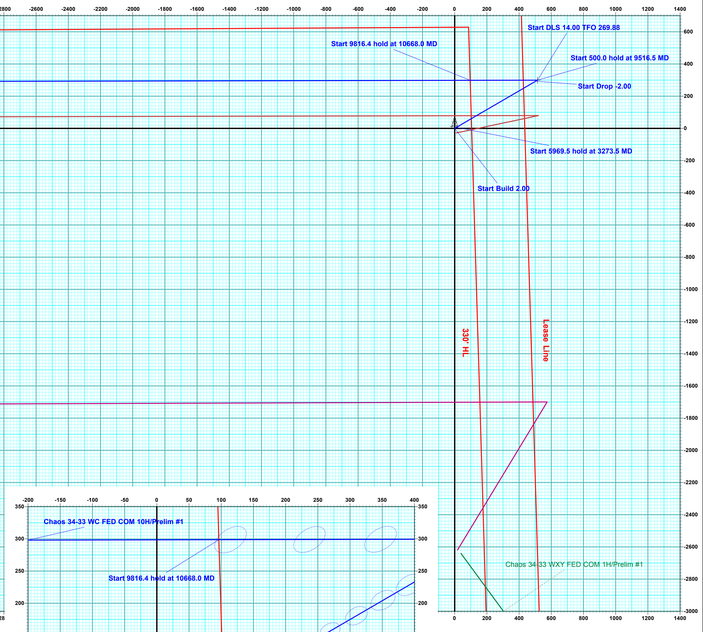
Marathon Oil





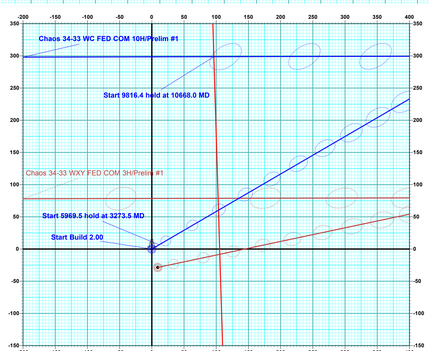
Vertical Section at 269.88° (200 usft/in)

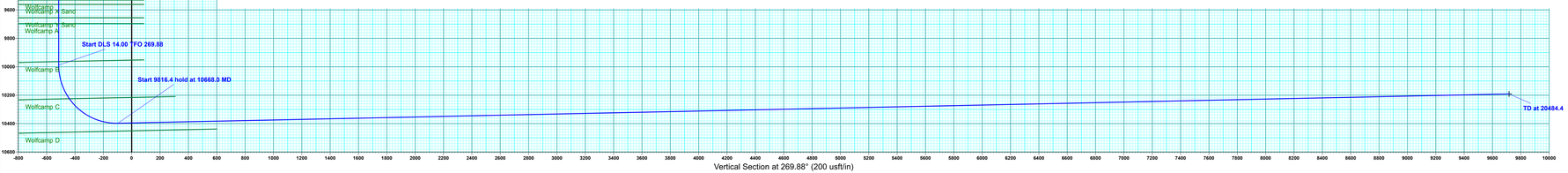




ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
3000.0	0.00	0.00	3000.0	0.0	0.0	0.0	0.0	Start Build 2.00
3273.5	5.47	59.78	3273.1	6.6	11.3	-11.3	13.0	Start 5969.5 hold at 3273.5 MD
9243.0	5.47	59.78	9215.4	293.0	503.0	-503.6	582.2	Start Drop -2.00
9516.5	0.00	0.00	9488.5	299.6	514.3	-514.9	595.2	Start 500.0 hold at 9516.5 MD
10016.5	0.00	0.00	9988.5	299.6	514.3	-514.9	595.2	Start DLS 14.00 TFO 269.88
10668.0	91.20	269.88	10397.7	298.7	96.4	-97.1	1013.1	Start 9816.4 hold at 10668.0 MD
20484.4	91.20	269.88	10191.5	277.5	-9717.8	9717.2	10827.3	TD at 20484.4





Vertical Section at 269.88° (200 usft/in)

Released to Imaging: 3/30/2023 7:42:47 AM

Marathon Oil Permian LLC

Eddy County, New Mexico (NAD 27)
Sec 34, T22S, R28E
Chaos 34-33 WC FED COM 10H

Wellbore #1

Plan: Prelim #1

QES Well Planning Report

18 January, 2021

Marathon Oil

QES

Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Project Eddy County, New Mexico (NAD 27)

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 Sec 34, T22S, R28E

Site Position:		**Northing:**	492,500.01 usft	**Latitude:**	32° 21' 13.387 N
From:	Map	**Easting:**	581,991.66 usft	**Longitude:**	104° 4' 4.136 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.14 °

Well Chaos 34-33 WC FED COM 10H

Well Position	**+N/-S**	0.0 usft	**Northing:**	492,500.01 usft	**Latitude:**	32° 21' 13.387 N
	+E/-W	0.0 usft	**Easting:**	581,991.66 usft	**Longitude:**	104° 4' 4.136 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,072.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021	1/15/2021	6.97	60.05	47,741.20000000

Design Prelim #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	269.88

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,273.5	5.47	59.78	3,273.1	6.6	11.3	2.00	2.00	0.00	59.78	
9,243.0	5.47	59.78	9,215.4	293.0	503.0	0.00	0.00	0.00	0.00	
9,516.5	0.00	0.01	9,488.5	299.6	514.3	2.00	-2.00	0.00	180.00	VP - Chaos 34-33 10H
10,016.5	0.00	0.01	9,988.5	299.6	514.3	0.00	0.00	0.00	0.01	
10,668.0	91.20	269.88	10,397.7	298.7	96.4	14.00	14.00	-13.84	269.88	
20,484.4	91.20	269.88	10,191.5	277.5	-9,717.8	0.00	0.00	0.00	0.00	Plat PBHL - Chaos 34

Marathon Oil

QES

Well Planning Report

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Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
252.0	0.00	0.00	252.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
639.0	0.00	0.00	639.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Castile									
1,348.0	0.00	0.00	1,348.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Lamar/B of Salt									
2,641.0	0.00	0.00	2,641.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
2,674.0	0.00	0.00	2,674.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	2.00	59.78	3,100.0	0.9	1.5	-1.5	2.00	2.00	0.00
3,200.0	4.00	59.78	3,199.8	3.5	6.0	-6.0	2.00	2.00	0.00
Start 5969.5 hold at 3273.5 MD									
3,273.5	5.47	59.78	3,273.1	6.6	11.3	-11.3	2.00	2.00	0.00
3,300.0	5.47	59.78	3,299.5	7.8	13.5	-13.5	0.00	0.00	0.00
3,400.0	5.47	59.78	3,399.0	12.6	21.7	-21.7	0.00	0.00	0.00
3,500.0	5.47	59.78	3,498.6	17.4	29.9	-30.0	0.00	0.00	0.00
Cherry Canyon									
3,509.5	5.47	59.78	3,508.0	17.9	30.7	-30.8	0.00	0.00	0.00
3,600.0	5.47	59.78	3,598.1	22.2	38.2	-38.2	0.00	0.00	0.00
3,700.0	5.47	59.78	3,697.6	27.0	46.4	-46.5	0.00	0.00	0.00

Marathon Oil

QES

Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,800.0	5.47	59.78	3,797.2	31.8	54.6	-54.7	0.00	0.00	0.00
3,900.0	5.47	59.78	3,896.7	36.6	62.9	-63.0	0.00	0.00	0.00
4,000.0	5.47	59.78	3,996.3	41.4	71.1	-71.2	0.00	0.00	0.00
4,100.0	5.47	59.78	4,095.8	46.2	79.4	-79.5	0.00	0.00	0.00
4,200.0	5.47	59.78	4,195.4	51.0	87.6	-87.7	0.00	0.00	0.00
4,300.0	5.47	59.78	4,294.9	55.8	95.8	-95.9	0.00	0.00	0.00
4,400.0	5.47	59.78	4,394.5	60.6	104.1	-104.2	0.00	0.00	0.00
4,500.0	5.47	59.78	4,494.0	65.4	112.3	-112.4	0.00	0.00	0.00
4,600.0	5.47	59.78	4,593.5	70.2	120.5	-120.7	0.00	0.00	0.00
4,700.0	5.47	59.78	4,693.1	75.0	128.8	-128.9	0.00	0.00	0.00
Brushy Canyon									
4,766.2	5.47	59.78	4,759.0	78.2	134.2	-134.4	0.00	0.00	0.00
4,800.0	5.47	59.78	4,792.6	79.8	137.0	-137.2	0.00	0.00	0.00
4,900.0	5.47	59.78	4,892.2	84.6	145.3	-145.4	0.00	0.00	0.00
5,000.0	5.47	59.78	4,991.7	89.4	153.5	-153.7	0.00	0.00	0.00
5,100.0	5.47	59.78	5,091.3	94.2	161.7	-161.9	0.00	0.00	0.00
5,200.0	5.47	59.78	5,190.8	99.0	170.0	-170.2	0.00	0.00	0.00
5,300.0	5.47	59.78	5,290.4	103.8	178.2	-178.4	0.00	0.00	0.00
5,400.0	5.47	59.78	5,389.9	108.6	186.4	-186.7	0.00	0.00	0.00
5,500.0	5.47	59.78	5,489.4	113.4	194.7	-194.9	0.00	0.00	0.00
5,600.0	5.47	59.78	5,589.0	118.2	202.9	-203.2	0.00	0.00	0.00
5,700.0	5.47	59.78	5,688.5	123.0	211.2	-211.4	0.00	0.00	0.00
5,800.0	5.47	59.78	5,788.1	127.8	219.4	-219.7	0.00	0.00	0.00
5,900.0	5.47	59.78	5,887.6	132.6	227.6	-227.9	0.00	0.00	0.00
6,000.0	5.47	59.78	5,987.2	137.4	235.9	-236.2	0.00	0.00	0.00
6,100.0	5.47	59.78	6,086.7	142.2	244.1	-244.4	0.00	0.00	0.00
6,200.0	5.47	59.78	6,186.3	147.0	252.4	-252.7	0.00	0.00	0.00
Bone Spring									
6,213.8	5.47	59.78	6,200.0	147.7	253.5	-253.8	0.00	0.00	0.00
6,300.0	5.47	59.78	6,285.8	151.8	260.6	-260.9	0.00	0.00	0.00
6,400.0	5.47	59.78	6,385.3	156.6	268.8	-269.2	0.00	0.00	0.00
6,500.0	5.47	59.78	6,484.9	161.4	277.1	-277.4	0.00	0.00	0.00
6,600.0	5.47	59.78	6,584.4	166.2	285.3	-285.6	0.00	0.00	0.00
6,700.0	5.47	59.78	6,684.0	171.0	293.5	-293.9	0.00	0.00	0.00
6,800.0	5.47	59.78	6,783.5	175.8	301.8	-302.1	0.00	0.00	0.00
6,900.0	5.47	59.78	6,883.1	180.6	310.0	-310.4	0.00	0.00	0.00
7,000.0	5.47	59.78	6,982.6	185.4	318.3	-318.6	0.00	0.00	0.00
7,100.0	5.47	59.78	7,082.2	190.2	326.5	-326.9	0.00	0.00	0.00
7,200.0	5.47	59.78	7,181.7	195.0	334.7	-335.1	0.00	0.00	0.00
1st Bone Spring Sand									
7,267.6	5.47	59.78	7,249.0	198.2	340.3	-340.7	0.00	0.00	0.00
7,300.0	5.47	59.78	7,281.2	199.8	343.0	-343.4	0.00	0.00	0.00
7,400.0	5.47	59.78	7,380.8	204.6	351.2	-351.6	0.00	0.00	0.00
7,500.0	5.47	59.78	7,480.3	209.4	359.4	-359.9	0.00	0.00	0.00
7,600.0	5.47	59.78	7,579.9	214.2	367.7	-368.1	0.00	0.00	0.00
7,700.0	5.47	59.78	7,679.4	219.0	375.9	-376.4	0.00	0.00	0.00
7,800.0	5.47	59.78	7,779.0	223.8	384.2	-384.6	0.00	0.00	0.00
7,900.0	5.47	59.78	7,878.5	228.6	392.4	-392.9	0.00	0.00	0.00
8,000.0	5.47	59.78	7,978.1	233.4	400.6	-401.1	0.00	0.00	0.00
2nd Bone Spring Sand									
8,014.0	5.47	59.78	7,992.0	234.1	401.8	-402.3	0.00	0.00	0.00
8,100.0	5.47	59.78	8,077.6	238.2	408.9	-409.4	0.00	0.00	0.00
8,200.0	5.47	59.78	8,177.1	243.0	417.1	-417.6	0.00	0.00	0.00
8,300.0	5.47	59.78	8,276.7	247.8	425.3	-425.9	0.00	0.00	0.00

Marathon Oil

QES

Well Planning Report

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Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,400.0	5.47	59.78	8,376.2	252.6	433.6	-434.1	0.00	0.00	0.00
8,500.0	5.47	59.78	8,475.8	257.4	441.8	-442.4	0.00	0.00	0.00
8,600.0	5.47	59.78	8,575.3	262.2	450.1	-450.6	0.00	0.00	0.00
8,700.0	5.47	59.78	8,674.9	267.0	458.3	-458.9	0.00	0.00	0.00
8,800.0	5.47	59.78	8,774.4	271.8	466.5	-467.1	0.00	0.00	0.00
8,900.0	5.47	59.78	8,874.0	276.6	474.8	-475.3	0.00	0.00	0.00
9,000.0	5.47	59.78	8,973.5	281.4	483.0	-483.6	0.00	0.00	0.00
9,100.0	5.47	59.78	9,073.0	286.2	491.2	-491.8	0.00	0.00	0.00
9,200.0	5.47	59.78	9,172.6	291.0	499.5	-500.1	0.00	0.00	0.00
Start Drop -2.00									
9,243.0	5.47	59.78	9,215.4	293.0	503.0	-503.6	0.00	0.00	0.00
3rd Bone Spring Sand									
9,245.6	5.42	59.78	9,218.0	293.2	503.2	-503.9	2.00	-2.00	0.00
9,300.0	4.33	59.78	9,272.2	295.5	507.2	-507.9	2.00	-2.00	0.00
9,400.0	2.33	59.78	9,372.0	298.4	512.3	-512.9	2.00	-2.00	0.00
9,500.0	0.33	59.78	9,472.0	299.6	514.3	-514.9	2.00	-2.00	0.00
Start 500.0 hold at 9516.5 MD									
9,516.5	0.00	0.01	9,488.5	299.6	514.3	-514.9	2.00	-2.00	0.00
Wolfcamp									
9,558.0	0.00	0.00	9,530.0	299.6	514.3	-514.9	0.00	0.00	0.00
Wolfcamp X Sand									
9,589.0	0.00	0.00	9,561.0	299.6	514.3	-514.9	0.00	0.00	0.00
9,600.0	0.00	0.00	9,572.0	299.6	514.3	-514.9	0.00	0.00	0.00
Wolfcamp Y Sand									
9,683.0	0.00	0.00	9,655.0	299.6	514.3	-514.9	0.00	0.00	0.00
9,700.0	0.00	0.00	9,672.0	299.6	514.3	-514.9	0.00	0.00	0.00
Wolfcamp A									
9,724.0	0.00	0.00	9,696.0	299.6	514.3	-514.9	0.00	0.00	0.00
9,800.0	0.00	0.00	9,772.0	299.6	514.3	-514.9	0.00	0.00	0.00
9,900.0	0.00	0.00	9,872.0	299.6	514.3	-514.9	0.00	0.00	0.00
Wolfcamp B									
9,991.8	0.00	0.00	9,963.8	299.6	514.3	-514.9	0.00	0.00	0.00
10,000.0	0.00	0.00	9,972.0	299.6	514.3	-514.9	0.00	0.00	0.00
Start DLS 14.00 TFO 269.88									
10,016.5	0.00	0.00	9,988.5	299.6	514.3	-514.9	0.00	0.00	0.00
10,025.0	1.19	269.88	9,997.0	299.6	514.2	-514.8	14.00	14.00	0.00
10,050.0	4.69	269.88	10,021.9	299.6	512.9	-513.6	14.00	14.00	0.00
10,075.0	8.19	269.88	10,046.8	299.6	510.1	-510.8	14.00	14.00	0.00
10,100.0	11.69	269.88	10,071.4	299.6	505.8	-506.4	14.00	14.00	0.00
10,125.0	15.19	269.88	10,095.7	299.6	500.0	-500.6	14.00	14.00	0.00
10,150.0	18.69	269.88	10,119.6	299.6	492.7	-493.4	14.00	14.00	0.00
10,175.0	22.19	269.88	10,143.0	299.5	484.0	-484.6	14.00	14.00	0.00
10,200.0	25.69	269.88	10,165.9	299.5	473.9	-474.5	14.00	14.00	0.00
10,225.0	29.19	269.88	10,188.1	299.5	462.3	-463.0	14.00	14.00	0.00
10,250.0	32.69	269.88	10,209.5	299.5	449.5	-450.1	14.00	14.00	0.00
Wolfcamp C									
10,268.9	35.34	269.88	10,225.2	299.4	438.9	-439.5	14.00	14.00	0.00
10,275.0	36.19	269.88	10,230.1	299.4	435.4	-436.0	14.00	14.00	0.00
10,300.0	39.69	269.88	10,249.8	299.4	420.0	-420.6	14.00	14.00	0.00
10,325.0	43.19	269.88	10,268.6	299.4	403.4	-404.1	14.00	14.00	0.00
10,350.0	46.69	269.88	10,286.3	299.3	385.8	-386.4	14.00	14.00	0.00
10,375.0	50.19	269.88	10,302.9	299.3	367.1	-367.7	14.00	14.00	0.00

Marathon Oil

QES

Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,400.0	53.69	269.88	10,318.3	299.2	347.4	-348.0	14.00	14.00	0.00
10,425.0	57.19	269.88	10,332.5	299.2	326.8	-327.4	14.00	14.00	0.00
10,450.0	60.69	269.88	10,345.4	299.1	305.4	-306.0	14.00	14.00	0.00
10,475.0	64.19	269.88	10,356.9	299.1	283.2	-283.9	14.00	14.00	0.00
10,500.0	67.69	269.88	10,367.1	299.1	260.4	-261.1	14.00	14.00	0.00
10,525.0	71.19	269.88	10,375.9	299.0	237.0	-237.6	14.00	14.00	0.00
10,550.0	74.69	269.88	10,383.2	298.9	213.1	-213.8	14.00	14.00	0.00
10,575.0	78.19	269.88	10,389.1	298.9	188.8	-189.5	14.00	14.00	0.00
10,600.0	81.69	269.88	10,393.5	298.8	164.2	-164.8	14.00	14.00	0.00
10,625.0	85.19	269.88	10,396.3	298.8	139.4	-140.0	14.00	14.00	0.00
10,650.0	88.69	269.88	10,397.6	298.7	114.4	-115.0	14.00	14.00	0.00
Start 9816.4 hold at 10668.0 MD									
10,668.0	91.20	269.88	10,397.7	298.7	96.4	-97.1	14.00	14.00	0.00
10,700.0	91.20	269.88	10,397.0	298.6	64.4	-65.1	0.00	0.00	0.00
10,800.0	91.20	269.88	10,394.9	298.4	-35.5	34.9	0.00	0.00	0.00
10,900.0	91.20	269.88	10,392.8	298.2	-135.5	134.9	0.00	0.00	0.00
11,000.0	91.20	269.88	10,390.7	298.0	-235.5	234.9	0.00	0.00	0.00
11,100.0	91.20	269.88	10,388.6	297.8	-335.5	334.9	0.00	0.00	0.00
11,200.0	91.20	269.88	10,386.5	297.5	-435.5	434.8	0.00	0.00	0.00
11,300.0	91.20	269.88	10,384.4	297.3	-535.4	534.8	0.00	0.00	0.00
11,400.0	91.20	269.88	10,382.3	297.1	-635.4	634.8	0.00	0.00	0.00
11,500.0	91.20	269.88	10,380.2	296.9	-735.4	734.8	0.00	0.00	0.00
11,600.0	91.20	269.88	10,378.1	296.7	-835.4	834.7	0.00	0.00	0.00
11,700.0	91.20	269.88	10,376.0	296.5	-935.3	934.7	0.00	0.00	0.00
11,800.0	91.20	269.88	10,373.9	296.2	-1,035.3	1,034.7	0.00	0.00	0.00
11,900.0	91.20	269.88	10,371.8	296.0	-1,135.3	1,134.7	0.00	0.00	0.00
12,000.0	91.20	269.88	10,369.7	295.8	-1,235.3	1,234.7	0.00	0.00	0.00
12,100.0	91.20	269.88	10,367.6	295.6	-1,335.3	1,334.6	0.00	0.00	0.00
12,200.0	91.20	269.88	10,365.5	295.4	-1,435.2	1,434.6	0.00	0.00	0.00
12,300.0	91.20	269.88	10,363.4	295.2	-1,535.2	1,534.6	0.00	0.00	0.00
12,400.0	91.20	269.88	10,361.3	295.0	-1,635.2	1,634.6	0.00	0.00	0.00
12,500.0	91.20	269.88	10,359.2	294.7	-1,735.2	1,734.5	0.00	0.00	0.00
12,600.0	91.20	269.88	10,357.1	294.5	-1,835.1	1,834.5	0.00	0.00	0.00
12,700.0	91.20	269.88	10,355.0	294.3	-1,935.1	1,934.5	0.00	0.00	0.00
12,800.0	91.20	269.88	10,352.9	294.1	-2,035.1	2,034.5	0.00	0.00	0.00
12,900.0	91.20	269.88	10,350.8	293.9	-2,135.1	2,134.5	0.00	0.00	0.00
13,000.0	91.20	269.88	10,348.7	293.7	-2,235.1	2,234.4	0.00	0.00	0.00
13,100.0	91.20	269.88	10,346.6	293.4	-2,335.0	2,334.4	0.00	0.00	0.00
13,200.0	91.20	269.88	10,344.5	293.2	-2,435.0	2,434.4	0.00	0.00	0.00
13,300.0	91.20	269.88	10,342.4	293.0	-2,535.0	2,534.4	0.00	0.00	0.00
13,400.0	91.20	269.88	10,340.3	292.8	-2,635.0	2,634.3	0.00	0.00	0.00
13,500.0	91.20	269.88	10,338.2	292.6	-2,734.9	2,734.3	0.00	0.00	0.00
13,600.0	91.20	269.88	10,336.1	292.4	-2,834.9	2,834.3	0.00	0.00	0.00
13,700.0	91.20	269.88	10,334.0	292.1	-2,934.9	2,934.3	0.00	0.00	0.00
13,800.0	91.20	269.88	10,331.9	291.9	-3,034.9	3,034.3	0.00	0.00	0.00
13,900.0	91.20	269.88	10,329.8	291.7	-3,134.9	3,134.2	0.00	0.00	0.00
14,000.0	91.20	269.88	10,327.7	291.5	-3,234.8	3,234.2	0.00	0.00	0.00
14,100.0	91.20	269.88	10,325.6	291.3	-3,334.8	3,334.2	0.00	0.00	0.00
14,200.0	91.20	269.88	10,323.5	291.1	-3,434.8	3,434.2	0.00	0.00	0.00
14,300.0	91.20	269.88	10,321.4	290.8	-3,534.8	3,534.1	0.00	0.00	0.00
14,400.0	91.20	269.88	10,319.3	290.6	-3,634.7	3,634.1	0.00	0.00	0.00
14,500.0	91.20	269.88	10,317.2	290.4	-3,734.7	3,734.1	0.00	0.00	0.00
14,600.0	91.20	269.88	10,315.1	290.2	-3,834.7	3,834.1	0.00	0.00	0.00
14,700.0	91.20	269.88	10,313.0	290.0	-3,934.7	3,934.1	0.00	0.00	0.00

Marathon Oil

QES

Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,800.0	91.20	269.88	10,310.9	289.8	-4,034.7	4,034.0	0.00	0.00	0.00
14,900.0	91.20	269.88	10,308.8	289.5	-4,134.6	4,134.0	0.00	0.00	0.00
15,000.0	91.20	269.88	10,306.7	289.3	-4,234.6	4,234.0	0.00	0.00	0.00
15,100.0	91.20	269.88	10,304.6	289.1	-4,334.6	4,334.0	0.00	0.00	0.00
15,200.0	91.20	269.88	10,302.5	288.9	-4,434.6	4,434.0	0.00	0.00	0.00
15,300.0	91.20	269.88	10,300.4	288.7	-4,534.5	4,533.9	0.00	0.00	0.00
15,400.0	91.20	269.88	10,298.3	288.5	-4,634.5	4,633.9	0.00	0.00	0.00
15,500.0	91.20	269.88	10,296.2	288.2	-4,734.5	4,733.9	0.00	0.00	0.00
15,600.0	91.20	269.88	10,294.1	288.0	-4,834.5	4,833.9	0.00	0.00	0.00
15,700.0	91.20	269.88	10,292.0	287.8	-4,934.5	4,933.8	0.00	0.00	0.00
15,800.0	91.20	269.88	10,289.9	287.6	-5,034.4	5,033.8	0.00	0.00	0.00
15,900.0	91.20	269.88	10,287.8	287.4	-5,134.4	5,133.8	0.00	0.00	0.00
16,000.0	91.20	269.88	10,285.7	287.2	-5,234.4	5,233.8	0.00	0.00	0.00
16,100.0	91.20	269.88	10,283.6	287.0	-5,334.4	5,333.8	0.00	0.00	0.00
16,200.0	91.20	269.88	10,281.5	286.7	-5,434.3	5,433.7	0.00	0.00	0.00
16,300.0	91.20	269.88	10,279.4	286.5	-5,534.3	5,533.7	0.00	0.00	0.00
16,400.0	91.20	269.88	10,277.3	286.3	-5,634.3	5,633.7	0.00	0.00	0.00
16,500.0	91.20	269.88	10,275.2	286.1	-5,734.3	5,733.7	0.00	0.00	0.00
16,600.0	91.20	269.88	10,273.1	285.9	-5,834.3	5,833.6	0.00	0.00	0.00
16,700.0	91.20	269.88	10,271.0	285.7	-5,934.2	5,933.6	0.00	0.00	0.00
16,800.0	91.20	269.88	10,268.9	285.4	-6,034.2	6,033.6	0.00	0.00	0.00
16,900.0	91.20	269.88	10,266.8	285.2	-6,134.2	6,133.6	0.00	0.00	0.00
17,000.0	91.20	269.88	10,264.6	285.0	-6,234.2	6,233.6	0.00	0.00	0.00
17,100.0	91.20	269.88	10,262.5	284.8	-6,334.1	6,333.5	0.00	0.00	0.00
17,200.0	91.20	269.88	10,260.4	284.6	-6,434.1	6,433.5	0.00	0.00	0.00
17,300.0	91.20	269.88	10,258.3	284.4	-6,534.1	6,533.5	0.00	0.00	0.00
17,400.0	91.20	269.88	10,256.2	284.1	-6,634.1	6,633.5	0.00	0.00	0.00
17,500.0	91.20	269.88	10,254.1	283.9	-6,734.1	6,733.4	0.00	0.00	0.00
17,600.0	91.20	269.88	10,252.0	283.7	-6,834.0	6,833.4	0.00	0.00	0.00
17,700.0	91.20	269.88	10,249.9	283.5	-6,934.0	6,933.4	0.00	0.00	0.00
17,800.0	91.20	269.88	10,247.8	283.3	-7,034.0	7,033.4	0.00	0.00	0.00
17,900.0	91.20	269.88	10,245.7	283.1	-7,134.0	7,133.4	0.00	0.00	0.00
18,000.0	91.20	269.88	10,243.6	282.8	-7,233.9	7,233.3	0.00	0.00	0.00
18,100.0	91.20	269.88	10,241.5	282.6	-7,333.9	7,333.3	0.00	0.00	0.00
18,200.0	91.20	269.88	10,239.4	282.4	-7,433.9	7,433.3	0.00	0.00	0.00
18,300.0	91.20	269.88	10,237.3	282.2	-7,533.9	7,533.3	0.00	0.00	0.00
18,400.0	91.20	269.88	10,235.2	282.0	-7,633.9	7,633.2	0.00	0.00	0.00
18,500.0	91.20	269.88	10,233.1	281.8	-7,733.8	7,733.2	0.00	0.00	0.00
18,600.0	91.20	269.88	10,231.0	281.5	-7,833.8	7,833.2	0.00	0.00	0.00
18,700.0	91.20	269.88	10,228.9	281.3	-7,933.8	7,933.2	0.00	0.00	0.00
18,800.0	91.20	269.88	10,226.8	281.1	-8,033.8	8,033.2	0.00	0.00	0.00
18,900.0	91.20	269.88	10,224.7	280.9	-8,133.7	8,133.1	0.00	0.00	0.00
19,000.0	91.20	269.88	10,222.6	280.7	-8,233.7	8,233.1	0.00	0.00	0.00
19,100.0	91.20	269.88	10,220.5	280.5	-8,333.7	8,333.1	0.00	0.00	0.00
19,200.0	91.20	269.88	10,218.4	280.2	-8,433.7	8,433.1	0.00	0.00	0.00
19,300.0	91.20	269.88	10,216.3	280.0	-8,533.7	8,533.0	0.00	0.00	0.00
19,400.0	91.20	269.88	10,214.2	279.8	-8,633.6	8,633.0	0.00	0.00	0.00
19,500.0	91.20	269.88	10,212.1	279.6	-8,733.6	8,733.0	0.00	0.00	0.00
19,600.0	91.20	269.88	10,210.0	279.4	-8,833.6	8,833.0	0.00	0.00	0.00
19,700.0	91.20	269.88	10,207.9	279.2	-8,933.6	8,933.0	0.00	0.00	0.00
19,800.0	91.20	269.88	10,205.8	278.9	-9,033.5	9,032.9	0.00	0.00	0.00
19,900.0	91.20	269.88	10,203.7	278.7	-9,133.5	9,132.9	0.00	0.00	0.00
20,000.0	91.20	269.88	10,201.6	278.5	-9,233.5	9,232.9	0.00	0.00	0.00
20,100.0	91.20	269.88	10,199.5	278.3	-9,333.5	9,332.9	0.00	0.00	0.00

Marathon Oil

QES
Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,200.0	91.20	269.88	10,197.4	278.1	-9,433.5	9,432.8	0.00	0.00	0.00
20,300.0	91.20	269.88	10,195.3	277.9	-9,533.4	9,532.8	0.00	0.00	0.00
20,400.0	91.20	269.88	10,193.2	277.7	-9,633.4	9,632.8	0.00	0.00	0.00
TD at 20484.4									
20,484.4	91.20	269.88	10,191.5	277.5	-9,717.8	9,717.2	0.00	0.00	0.00

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
Plat FTP - Chaos 34-33 - plan misses target center by 313.8usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.01	0.0	298.7	96.3	492,798.69	582,088.01	32° 21' 16.340 N	104° 4' 3.004 W
VP - Chaos 34-33 10H - - plan hits target center - Point	0.00	0.01	9,488.5	299.6	514.3	492,799.61	582,505.96	32° 21' 16.339 N	104° 3' 58.132 W
Plat PBHL - Chaos 34-3 - plan hits target center - Point	0.00	0.01	10,191.5	277.5	-9,717.8	492,777.48	572,273.87	32° 21' 16.357 N	104° 5' 57.419 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
252.0	252.0	Rustler			
639.0	639.0	Salado			
1,348.0	1,348.0	Castile			
2,641.0	2,641.0	Lamar/B of Salt			
2,674.0	2,674.0	Bell Canyon			
3,509.5	3,508.0	Cherry Canyon			
4,766.2	4,759.0	Brushy Canyon			
6,213.8	6,200.0	Bone Spring			
7,267.6	7,249.0	1st Bone Spring Sand			
8,014.0	7,992.0	2nd Bone Spring Sand			
9,245.6	9,218.0	3rd Bone Spring Sand			
9,558.0	9,530.0	Wolfcamp			
9,589.0	9,561.0	Wolfcamp X Sand			
9,683.0	9,655.0	Wolfcamp Y Sand			
9,724.0	9,696.0	Wolfcamp A			
9,991.8	9,963.8	Wolfcamp B		-1.20	269.88
10,268.9	10,225.2	Wolfcamp C		-1.20	269.88

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Marathon Oil

QES

Well Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chaos 34-33 WC FED COM 10H
Company:	Marathon Oil Permian LLC	**TVD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Project:	Eddy County, New Mexico (NAD 27)	**MD Reference:**	32.5'KB @ 3104.5usft (32.5'KB)
Site:	Sec 34, T22S, R28E	**North Reference:**	Grid
Well:	Chaos 34-33 WC FED COM 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,000.0	3,000.0	0.0	0.0	Start Build 2.00
3,273.5	3,273.1	6.6	11.3	Start 5969.5 hold at 3273.5 MD
9,243.0	9,215.4	293.0	503.0	Start Drop -2.00
9,516.5	9,488.5	299.6	514.3	Start 500.0 hold at 9516.5 MD
10,016.5	9,988.5	299.6	514.3	Start DLS 14.00 TFO 269.88
10,668.0	10,397.7	298.7	96.4	Start 9816.4 hold at 10668.0 MD
20,484.4	10,191.5	277.5	-9,717.8	TD at 20484.4

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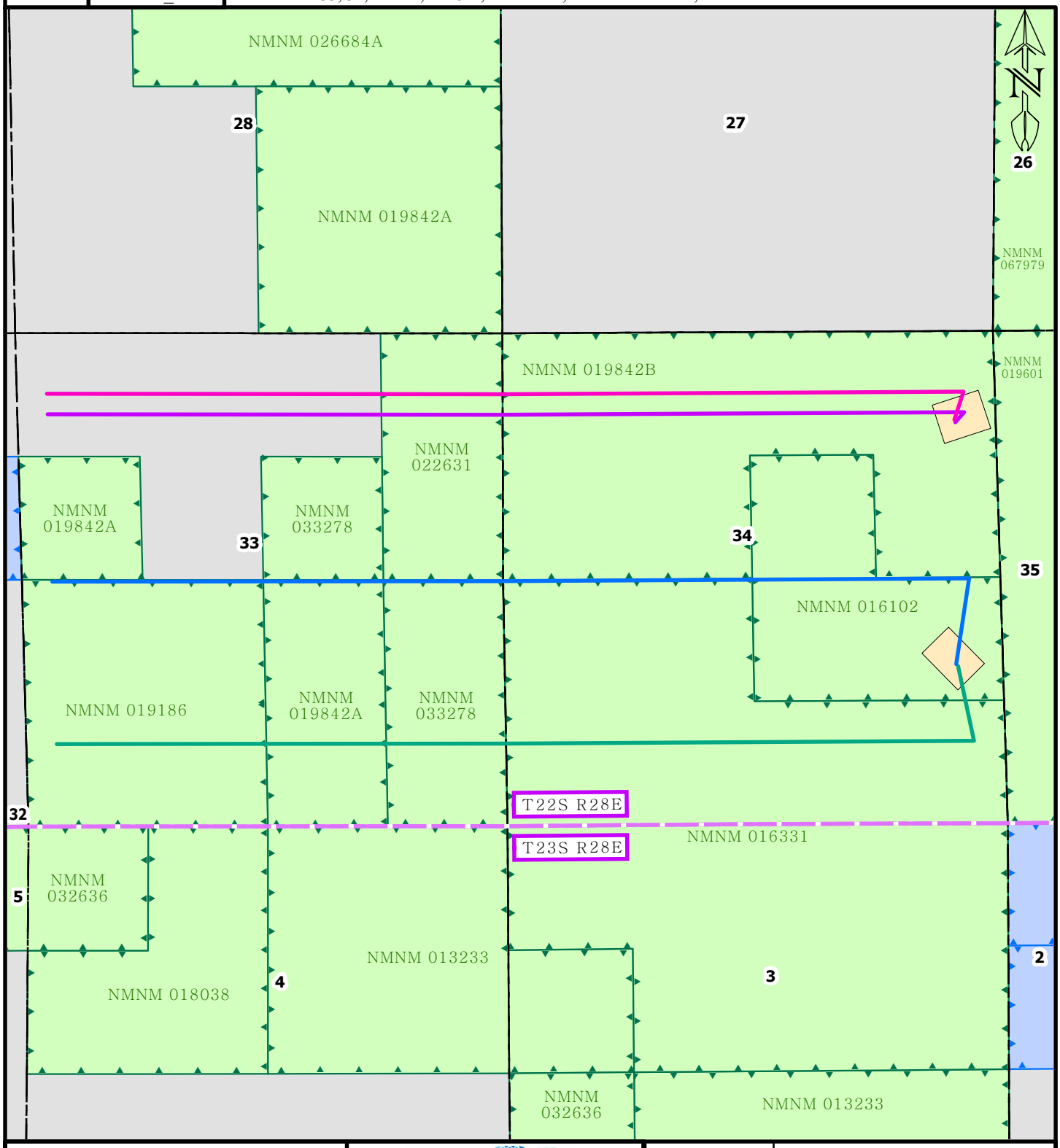
JOB No. R4090_001 SECTIONS 33, 34, T-22-S, R-28-E, N.M.P.M., EDDY COUNTY, NEW MEXICO



1,000 0 1,000

1 inch = 1,500 feet

Marathon Oil Permian LLC

R-SQUARED GLOBAL LLC

CHAOS 34-33 FED COM LEASE INTERSECT MAP

DATE SURVEYED: 10/12/20

LEGEND

- WC 10H
- WXY 2H
- WXY 1H
- WXY 3H
- Federal Lease
- NMSLO Lease

REV.	DATE	DESCRIPTION	CHKD

SHEET 1 OF 1

DRAWN BY: WHM
DATE DRAWN: 11/25/2020
CHECKED BY: MWS

1309 LOUISVILLE AVE.
MONROE, LA 71201
(318) 323-6900

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Marathon**
LEASE NO.:	**NMNM019842B**
LOCATION:	Section 34, T.22 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	Chaos 34-33 WC Fed Com 10H
SURFACE HOLE FOOTAGE:	958'/N & 435'/E
BOTTOM HOLE FOOTAGE	660'/N & 330'/W

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 **235** 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**

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

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is shall be set at **2650 ft:**
   - 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 Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
   - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification. **Excess calculates to -50%. Additional cement maybe requried.**

C. PRESSURE CONTROL

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

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- 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) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
b. When the operator proposes to set surface casing with Spudder Rig

- Notify the BLM when moving in and removing the Spudder Rig.
- Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
- BOP/BOPE test to be conducted per 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.

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

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

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to 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.
ZS011823

TOTAL SAFETY

MARATHON OIL COMPANY

CHAOS 34-33 FED COM
WXY Well # 3H
WC Well # 10H

SHL: 987' FNL & 427' FEL of Unit Letter 'A', Section 34 T-22S, R-28E
BHL: 880' FNL & 330 FWL of Unit Letter 'D', Section 33, T-22S, R-28E

EDDY County, New Mexico

Rig: TBD

01/12/21

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EMERGENCY MEDICAL PROCEDURES
DO NOT PANIC
REMAIN CALM-THINK

1. HOLD YOUR BREATH. (DO NOT INHALE, STOP BREATHING)

2. PUT ON BREATHING APPARATUS. (NOTE: DO NOT ATTEMPT RESCUE UNTIL YOU HAVE PUT ON BREATHING APPARATUS.)

3. REMOVE VICTIM (S) TO FRESH AIR AS QUICKLY AS POSSIBLE.

4. BE SURE YOU HAVE MOVED VICTIM OUT OF CONTAMINATED AREA BEFORE REMOVING YOUR RESPIRATOR.

5. APPLY MOUTH-TO-MOUTH ARTIFICIAL RESPIRATION, WHICH IS MORE EFFECTIVE, WHILE SOMEONE ELSE GETS THE OXYGEN RESUSCITATOR. RENDER OXYGEN RESUSCITATION ONLY IF PORPERLY TRAINED IN ITS USE.

6. PROVIDE FOR PROMPT TRANSPORTATION TO HOSPITAL AND CONTUNUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.

7. HOSPITAL (S) OR MEDICAL FACILITIES NEED TO BE INFORMED BEFOREHAND, OF THE POSSIBILITY OF H2S GAS POISONING, NO MATTER HOW REMOTE THE POSSIBLITY IS.

Lea Regional Medical Center	(575)492-5000
5419 N Lovington Hwy, Hobbs, NM 88240	
AMBULANCE	911
FIRE DEPARTMENT- HOBBS, NM	(575) 397-9308
POLICE - HOBBS, NM	(575) 397-9265

8. NOTIFY EMERGENCY-ROOM PERSONEL THAT THE VICTIM (S) HAVE POSSIBLY BEEN EXPOSED TO H2S GAS POISONING.

****
****

TOTAL SAFETY INC
1420 East Greene St.
Carlsbad, NM 88220

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THIS H2S DRILLING OPERATIONS PLAN WAS
PREPARED BY: Sean Chamblee
Strategic Account Manager
Cell: 713-703-6295

TOTAL SAFETY INC

1420 East Greene St
Carlsbad, NM 88220
Phone: 432-561-5049

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H2S DRILLING OPERATIONS PLAN INDEX

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A. Oil Company Address and Legal Description of Well Site
B. Directions to Well Site
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B. General & Specific Area Maps

III. SAFETY EQUIPMENT
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C. Maximum Number of People on Location at any one time

IV. OPERATING PROCEDURES
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C. Crew Training and Protection
D. Metallurgical Considerations
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- B. Hydrogen Sulfide Hazards
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- E. Characteristics of H2S
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INTRODUCTION

H2S DRILLING OPERATIONS PLAN
This Drilling Operations Plan was written specifically for:

MARATHON OIL COMPANY
4111 TIDWELL
CALRSBAD, NM 88220

Action Plan for Accidental Release of H2S

CHAOS 34-33 FED COM
WXY Well # 3H
WC Well # 10H

EDDY COUNTY, NM

Information, provisions and practices, as set forth in this plan, may be subject to revision and/or updating.

01/12/21

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MARATHON OIL COMPANY
4111 TIDWELL
CALRSBAD, NM 88220

CHAOS 34-33 FED COM
WXY Well # 3H
WC Well # 10H

EDDY COUNTY, NM

DIRECTIONS

DIRECTIONS TO LOCATION:

FROM THE INTERSECTION OF US HWY 285 & NM HWY 31, HEAD EAST ON NM HWY 31 FOR 5.3 MILES TO THE INTERSECTION WITH REFINERY RD. TURN LEFT ON TO REFINERY RD., HEADING NORTHWEST FOR 3.6 MILES TO HERRADURA BEND RD. TURN RIGHT ONTO HERRADURA BEND RD., HEADING NORTHEAST FOR 0.4 MILES TO THE PROPOSED LEASE RD. FOR THE CHAOS 34-33 FED COM WXY3H-WC10H WELL LOCATION PAD. TURN RIGHT ONTO SAID PROPOSED LEASE RD. HEADING SOUTH FOR 515 FEET AND ENTERING THE NORTHEAST CORNER OF SAID WELL LOCATION PAD.

GPS Coordinates: 32.353640000, -104.06778612
EDDY COUNTY, NEW MEXICO

PURPOSE OF PLAN: The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations that may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this Drilling Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Oil Company Representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

Definitions: For the purpose of this plan the following definitions are to be referred to:

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Controlled Release – Any release that is planned and occurs during normal operations. A controlled release is managed per the procedures outlined in this section.

Uncontrolled Release – Any release that is unplanned and not immediately contained utilizing established shut-in procedures. An uncontrolled release is normally associated with a loss of well control.

SCBA – (Self Contained Breathing Apparatus) – A full-face mask respirator with a supplied positive pressure air source.

Donned SCBA – When it is required per this plan to **"don"** a SCBA, personnel will be 100% masked up and be on supplied breathing air.

SCBA On Person – When it is required per this plan to have SCBA "on person", personnel will be required to wear the SCBA equipment - but not be masked up.

"Qualified Buddy" – Person who has been fit tested and is trained and is familiar with the requirements of donning an SCBA. This person will provide immediate assistance to another person who may be utilizing an SCBA or SkaPack in an IDLH atmosphere in the event of an emergency situation.

In Scope Personnel – Rig Personnel who will be working or otherwise present in potential H2S release areas, including the rig floor, cellar, pits, and shaker areas. This would not include 3rd party contractors who do not have a function, besides evacuating the rig, during an emergency condition such as during a well control event or H2S / LEL alarm. All qualified personnel that have a function to shut a well in during an emergency will be considered In-Scope per this plan

Out of Scope Personnel –. All personnel that are not in scope will be Out of Scope per the definition of this plan

H2S Office – Onsite office trailer space or vehicle that will be designated as the H2S office

Marathon H2S Plan Custodian – Marathon HES Advisor, Supervisor or Technician that has been specifically assigned per the authorization page of this plan to maintain this document.

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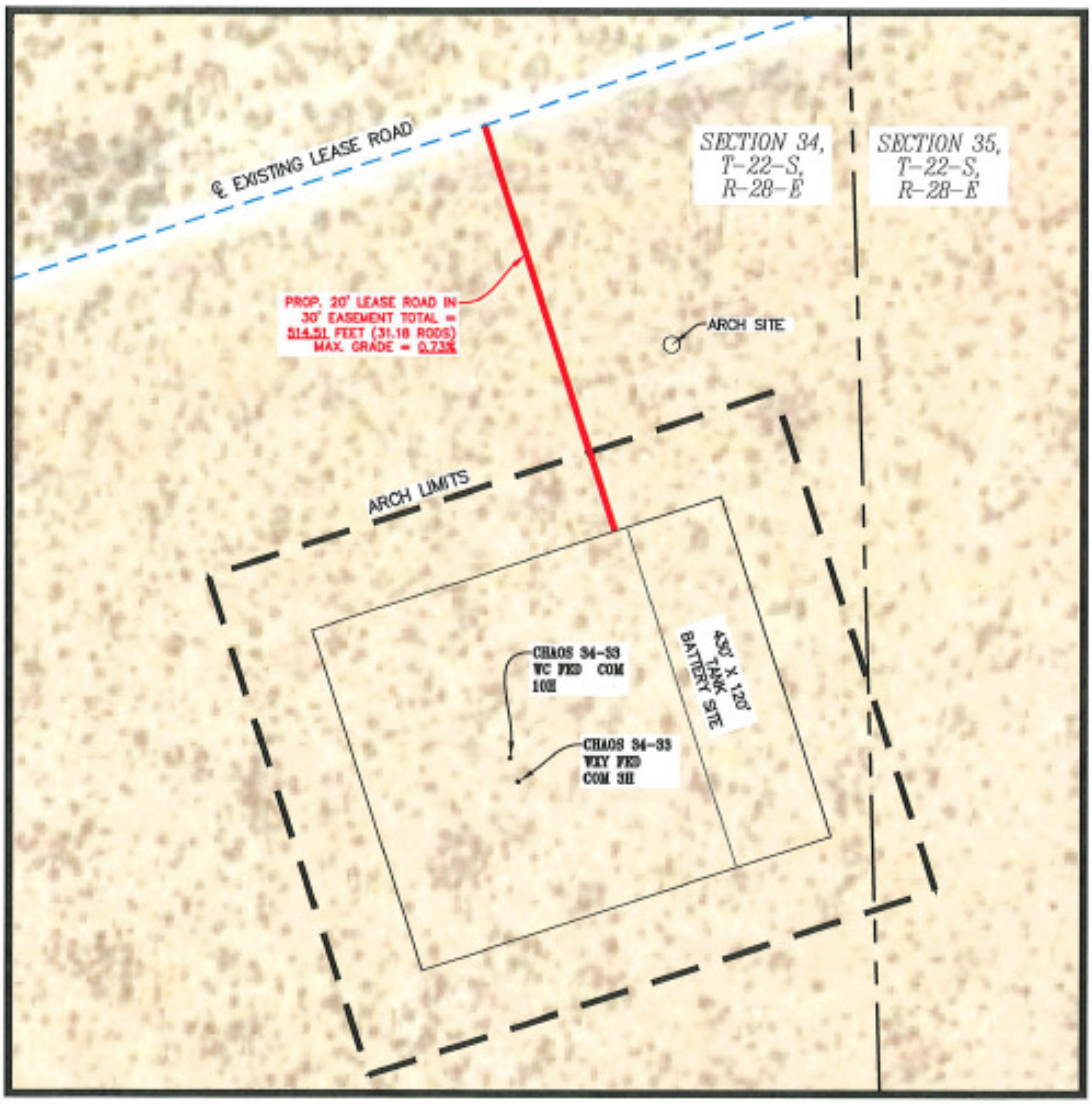
NEW OR RECONSTRUCTED ACCESS ROADS

CHAOS 34-33 FED COM (NORTH PAD)
SEC. 34 TWP. 22-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
U.S.G.S. TOPOGRAPHIC MAP: LOVING, N.M.



SCALE: 1" = 200'

LEGEND

PROPOSED WELL PAD	WATER LINE — W — W —
ARCH SURVEY LIMITS	OVERHEAD POWER LINE — OHP — OHP —
EXISTING LEASE ROAD	PROPOSED FLOWLINE
PROPOSED LEASE ROAD	EXISTING PIPELINE
SECTION LINE	FENCE — x — x —
PROPERTY LINE	WELLS
EDGE OF ROAD	FUTURE WELLS

SHEET 1 OF 8

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE,
MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R4099_002

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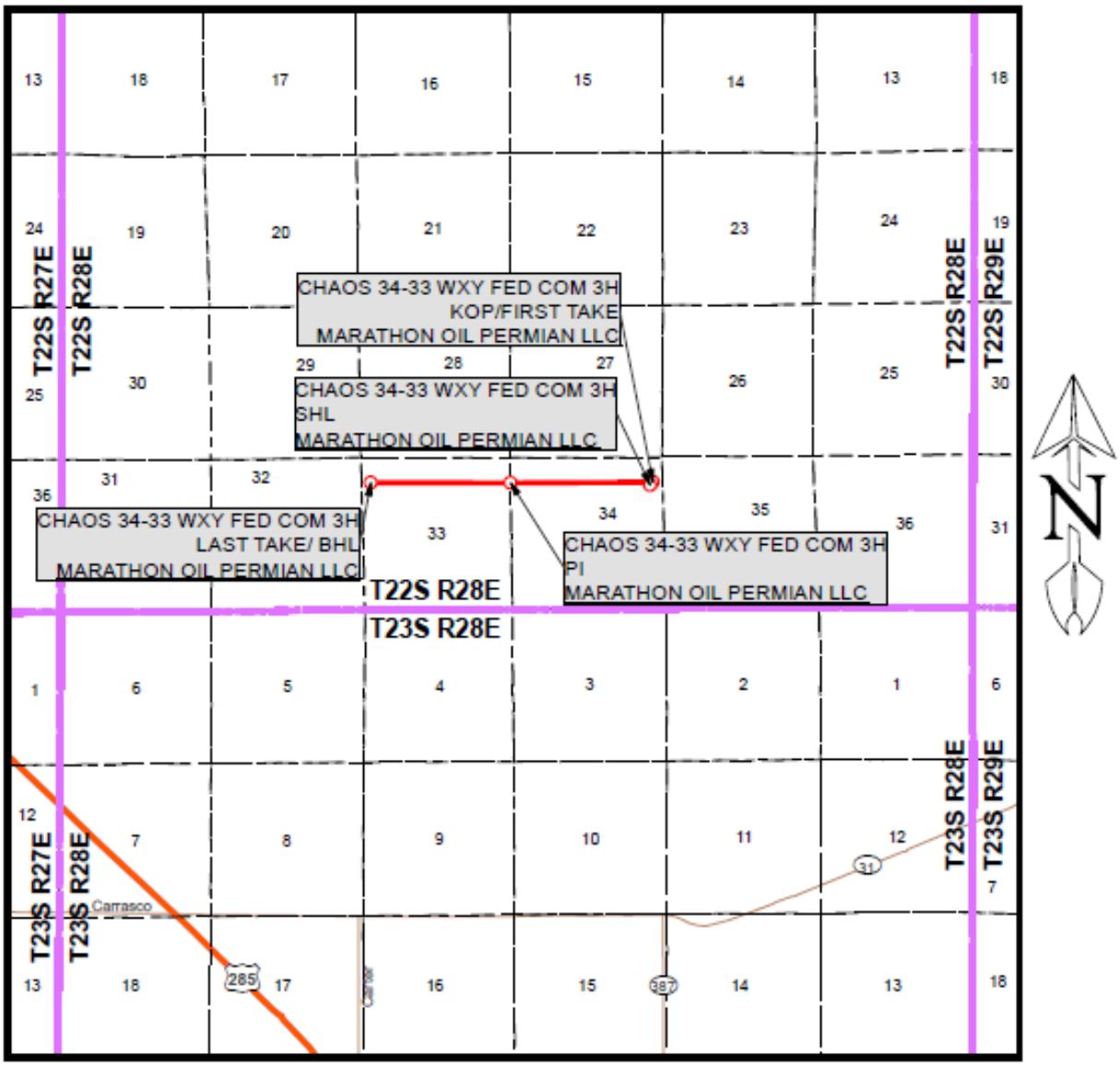
VICINITY MAP



SEC. 34 TWP. 22-S RGE. 28-E
SURVEY: N.M.P.M.
COUNTY: EDDY
OPERATOR: MARATHON OIL PERMIAN LLC
DESCRIPTION: 987' FNL & 427' FEL
ELEVATION: 3072'
LEASE: CHAOS 34-33 FED COM
U.S.G.S. TOPOGRAPHIC MAP: LOVING, NM.

1 " = 1 MILE

SHEET 3 OF 4

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R4099_002

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SAFETY EQUIPMENT

All H2S related Safety Equipment must be installed, tested and Operational at a depth of 500 fee above, or 3 days prior to penetrating the first zone expected to contain H2S.

SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

QTY	EQUIPMENT
6 each	30-minute self-contained breathing apparatus
6 each	ELSA Escape Packs
1 Lot	Sufficient low-pressure airline hose with quick connects
1	6 Channel fixed H2S monitor
4	H2S Sensors (Loc determined at rig up – General: Cellar, Shale Shaker, floor/driller area)
4	Explosion proof Alarm Station (1-Drill Floor, 1- Pits/Shakers, 1- Generators, 1 Quarters area)
10	Personal H2S Monitors
1	Gastec pump type gas detector
Set	Various range of H2s & SO2 detector tubes
2 each	Windsocks w/frames and poles
1 Set	H2S and briefing area signs
1 Set	Well condition signs and flags
1	Flare Gun & Flares

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TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six 30-minute self-contained breathing apparatus on location. They will be positioned as follows: Two at Briefing Area #1 Two at Briefing Area #2, Two at rig dog house. SCBA Facepieces will be equipped with voice amplifiers for effective means of communication when using protective breathing apparatus.

2. There will be six Escape-type packs on location. One for the Derrickman. One on the Shaker. One at the bottom of rig dog house stairway and spares.

3. A Gastec, pump type, gas detector with low and high range detector tubes for H2S and SO2 will be located in the doghouse

4. Two Briefing Areas will be designated at opposite ends of the location.

5. The Briefing Area most upwind is designated as the Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6.The H2S 'Safety" trailer provided by Total Safety, Inc. will contain a cascade system of at least 5 each -300 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. Note: This trailer will **Only** be provided if H2S conditions require the use of the Air Trailer. (If Required)

7. Two windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions. The condition signs must be at least 200' from the entrance but not more than 500' away.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Oil Company's trailer and in the "safety" trailer (if Provided).

10. The primary means of communication will be cell phones.

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11. A barricade will be available to block the entrance to location should an emergency occur. In most cases the use of a vehicle is used to block the entrance.

12. A 6-channel H2S monitor will be located in the doghouse. The 3 sensors will be installed: one on the shale shaker, one at the Cellar, one at the rig floor.

13. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

14. If H2S concentration reach 10 ppm an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

15. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor or Detector tubes will be used to determine SO2 concentrations.

16. A flare gun with flares will also be provided in the event it is necessary to ignite the well from a safe distance.

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OPERATING PROCEDURES

BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements:
   All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements:
   All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operating during all phases of this H2S Drilling Operations Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the audible and visual portion (wailing or yelping siren) of the warning system (i.e. H2S continually present at or above threshold levels) a trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach personnel H2S monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

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CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will cover, but will not be limited to, the following:

a. General information of H2S AND SO2 GAS
b. Hazards of these gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches, a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S. It must also include a review of the site specific Drilling Operations Plan and, if applicable, the Public Protections Plan.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. All training sessions and drills shall be recorded on the driller's log or its equivalent.

5. Safety Equipment:
As outlined in the Safety Equipment index, H2S safety protection equipment will be available to/or assigned each person on location.

6. One person (by job title) shall be designated and identified to all on-site personnel as the person primarily responsible for the overall operation of the on-site safety and training programs. This will be the PIC

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METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000psi or less because of potential embrittlement problems. Must conform to the current National Association of Corrosion Engineers (NACE) Standard MR-0175-90, Material Requirement, Sulfide Stress Cracking Resistant Metallica Material for Oil Field Equipment. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string. Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API RI 53.

MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operators prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2s bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping string following drill stem testing

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WELL CONTROL EQUIPMENT

1. Flare System
   a. A flare system shall be designed and installed to safely gather and burn H2S Bearing gas.
      1. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
      2. The flare line mouth shall be located not less then 150' from wellbore.
      3. Flare lines shall be straight unless targeted with running tees.
      4. Flare Gun & Flares to ignite the well

2. Remote Controlled Choke
   a. A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

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OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200' but no more than 500' from the well site which allows vehicles to turn around at a safe distance prior to reaching the site.

DEFINITION OF WARNING FLAGS

1. Condition:
   GREEN-NORMAL OPERATIONS
   Any operation where the possibility of encountering H2S exists but no H2S has been detected.

2. Condition:
   YELLOW-POTENTIAL DANGER, CAUTION
   Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10ppm)
   a. Cause of condition:
      *Circulating up drill breaks
      *Trip gas after trip
      *Circulating out gas on choke
      *Poisonous gas present, but below threshold concentrations
      *Drill stem test
   b. Safety Action:
      *Check safety equipment and keep it with you
      *Be alert for a change in condition
      *Follow instructions

3. Condition:
   RED-EXTREME DANGER
   Presence of H2S at or greater than 10ppm. Breathing apparatus must be worn.

   a. Safety action:

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*MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential Qualified Personnel, using the "Buddy System" (those necessary to maintain control of the well) will don breathing apparatus to perform operations related to well control.

The decision to ignite the well is the responsibility of the operator's on-site representative and should be made only as a last resort, when it is clear that:

*human life is endangered

*there is no hope of controlling the well under prevailing conditions

Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed.

1. Wait and Weight Method:
   a. The wait and Weight Method is:
      *increase density of mud in pits to 'kill' weight mud.
      *open choke and bring pump to initial circulating pressure by holding casing pressure at original valve until pump is up to predetermined speed.
      *when initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.
      *reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph
      *when 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

   b. If a kick has occurred, the standard blowout procedure will be followed and the wait and weight method will be used to kill the well. When the well has been put on the choke and circulation has been established, the following safety procedure must be established.
      *determine when gas is anticipated to reach surface.

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*all non-essential personnel must be moved to safe briefing area
*all remaining personnel will check out and keep with them their protective breathing apparatus.
*mud men will see that the proper amount of H2S scavenging chemical is in the mud and record times checked
*make sure ignition flare is burning and valves are open to designated flare stacks

CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked to the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API
2. Drill stem testing of H2S zone will be conducted in daylight hours
3. All non-essential personnel will be moved to an established safe area or off location
4. The "NO SMOKING" rule will be enforced
5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.
6. A yellow or red flag will be flown at entrance to location depending on present gas condition
7. If warranted, the use of Aqua Ammonia for neutralizing the toxicity of H2S from drill string
   a. During drill stem tests adequate Filming Amine for H2S corrosion and Aqua Ammonia for neutralizing H2S should be on location.
8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask

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on" conditions until such time that readings in the work area do not exceed 10ppm of H2S gas.

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EMERGENCY PROCEDURES

SOUNDING ALARM

In case of an alarm the crews will muster up at the designated area. Total Safety will be dispatched with (2) HES Techs who are to go in under protective breathing air and check the alarm readings and sniff ambient air for the presence of H2S.

By no means are the Co. Rep or HES Advisor to go in under air with the HES Tech. If there is another method in place where the Rig Manager is to go in with the Tech we need to ensure that the rig company has cleared them and that they are properly trained.

1. The fact is to be instilled in the minds of all rig personnel that the sounding alarm means only one thing: H2S IS PRESENT. Everyone is to proceed to his assigned station and the contingency plan is put into effect.

DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.
2. The Buddy system will be implemented. All personnel will act upon directions from the operator's on-site representative.
3. If there are non-essential personnel on location, they will move off location.
4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

RESPONSIBILITIES OF PERSONNEL

In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibility will be as follows:

1. The operator's on-site representative or his assistant
2. Contract Tool Pusher

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STEPS TO BE TAKEN

In the event of an accidental release of a potentially hazardous volume of H2S, the following steps will be taken:

1. Contact by the quickest means of communications: the main offices of Oil Company & Contractor as listed on the preceding page.
2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.
3. The operator's on-site representative will remain on location and attempt to regain control of the well.
4. The drilling company's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephoning, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and TOTAL SAFETY personnel will aid in further evacuation.

LEAK IGNITION

Leak Ignition procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the operator's on-site representative and the contractor's rig superintendent or TOTAL SAFETY's representative(s), wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.
2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area if the leak isn't ignited on the first attempt, move in 20 to 30 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition

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team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 degrees to 90 degrees to each side of the area where you have been firing. If still no ignition is accomplished ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to insure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:
    a. one flare gun with flares
    b. four pressure demand air packs
    c. two nylon ropes tied to the ignition team
    d. two men in a clear area equipped with air packs
    e. portable propane bottle with copper line
4. The person with the final authority to ignite the well.

GENERAL EQUIPMENT

1. Two areas on the location will be designated as Briefing Areas. The one that is upwind from the well will be designated a the "Safe Briefing Area"
2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.
3. The H2S "Safety" trailer provide by TOTAL SAFETY will contain 10 air cylinders, a resuscitator, one 30-minute air pack and will have a windsock.
4. Two other windsocks will be installed.
5. A condition warning sign will be displayed at the location entrance.
6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Oil Company's trailer.
7. Two barricades will be available to block the entrance to location.
8. An undulating high and low pitch siren will be installed.
9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

CRITICAL OPERATIONS

These guidelines will be implemented during H2S alarms on drilling locations with the intent of minimizing catastrophic damage of "**critical tasks**" ONLY and exposure of field personnel (e.g. cement in the stack). We will wait on Total Safety (or H2S Safety Company) for all other alarm events that aren't defined as "critical".

1.) H2S alarm sounds, crews secure well, and muster based off of wind direction. MOC Operation, MOC Safety, and H2S service company notification will be made and representative from the H2S Service Company is in route to location.
2.) Two qualified in scope personnel will don SCBA, utilizing the "buddy system", and respond to area of H2S alarm location to verify the presence of H2S utilizing hand held four gas analyzer or other approved and provided method.
3.) If no H2S is found, the "all clear" will be authorized by the Marathon Oil Drilling Superintendent and HES to resume operations. H2S service company will still be required to respond.

Note: Personnel will return to muster area awaiting H2S service company and additional equipment if H2S is verified.

Note: Personnel will be trained annually on H2S and the elements of this guideline. The MOC HES Advisor and Co Man will receive hands on training from a H2S service company field tech, on how to properly identify the location of the alarming sensor, and the proper method for checking the alarmed area.

APPENDICES

EMERGENCY & MEDICAL FACILITIES:

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

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

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

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RESIDENTS AND LANDOWNERS

RESIDENCE

THERE ARE NO HOUSES WITHIN THE ROE.

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ADDITIONAL INFORMATION

A. HYDROGEN SULFIDE ESSAY

A deadly enemy of those people employed in the petroleum industry, this gas can paralyze or kill quickly. At least part of the answer lies in education in the hazards, symptoms, characteristics, safe practices, treatment, and the proper use of personal protective equipment.

B. HYDROGEN SULFIDE HAZARDS

The principal hazard to personnel is asphyxiation or poisoning by inhalation. Hydrogen Sulfide is a colorless, flammable gas having an offensive odor and a sweetish taste. It is highly toxic and doubly hazardous because it is heavier than air (specific gravity = 1.19). It's offensive odor, like that of a rotten egg, has been used as an indicator by many old timers in the oil field, but is not a reliable warning of the presence of gas in a dangerous concentration because people differ greatly I their ability to detect smells. Where high concentrations are encountered, the olfactory nerves are rapidly paralyzed, diluting the sense of smell as a warning indicator. A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death-in other words there is a very narrow margin between conscious ness and unconsciousness, and between unconsciousness and death.

Where high concentrations cause respiratory paralysis, spontaneous breathing does not return unless artificial respiration is applies. Although breathing is paralyzed the heart may continue beating for ten minutes after the attack.

C. PHYSIOLOGICAL SYSTEMS

ACUTE: results in almost instantaneous asphyxia, with seeming respiratory paralysis acute poisoning, or strangulation, may occur after even a few seconds inhalation of high concentration and results in panting respiration, pallor, cramps, paralysis and almost immediate loss of consciousness with extreme rapidity from respiratory and cardiac paralysis. One breath of a sufficiently high concentration may have this result.

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SUBACUTE: RESULTS IN IRRITATION, PRINCIPALLY OF THE EYES, PERSISTENT COUGH, TIGHTENING OR BURNING IN THE CHEST AND SKIN IRRITATION FOLOWED BY DEPRESSION OF THE CENTRAL NERVOUS SYSTEM. The eye irritation ranges in severity from mild conjunctivitis to swelling and bulging of the conjunctiva photophobia (abnormal intolerance of light) and temporary blindness.

D. TREATMENT

1. Victim should be removed to fresh air immediately by rescuers wearing respiratory protective equipment. Protect yourself while rescuing.
2. If the victim is not breathing, begin immediately to apply artificial respiration. (See other chart for the chances for life after breathing has stopped.) If a resuscitator is available let another employee get it and prepare for use.
3. Treat for shock, keep victim warm and comfortable
4. Call a doctor, in all cases, victims of poisoning should be attended by a physician.

E. CHARACTERISTICS OF H2S

1. Extremely Toxic (refer to chart for toxicity of Hydrogen Sulfide).
2. Heavier than air. Specific gravity= 1.19.
3. Colorless, has odor of rotten eggs.
4. Burns with a blue flame and produces sulfur Dioxide (SO2) gas, which is very irritating to eyes and lungs. The SO2 is also toxic and can cause serious injury.
5. H2S is almost as toxic as hydrogen cyanide.
6. H2S forms explosive mixture, with air between 4.3% and 46% by volume.
7. Between 5 and 6 times as toxic as carbon monoxide.
8. Produces irritation to eyes, throat, and respiratory tract.
9. Threshold Limit Value (TLV) maximum of eight hours exposure without protective respiratory equipment-10ppm.

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F. SAFE PRACTICES

If you are faced with an H2S problem in your operations, the following safe practices are recommended:

1. Be absolutely sure all concerned are familiar with the hazards concerning H2S and how to avoid it.
2. All employees should know how to operate and maintain respiration equipment.
3. Be able to give and demonstrate artificial respiration.
4. Post areas where there is poisonous gas with suitable warning signs.
5. Be sure all new employees are thoroughly schooled before they are sent to the field-tomorrow may be too late.
6. Teach men to avoid gas whenever possible-work on the windward side, have fresh air mask available.
7. Never let bad judgment guide you-wear respiratory equipment when gauging tanks, etc. Never try to hold your breath in order to enter a contaminated atmosphere.
8. In areas of high concentration, a two-man operation is preferred.
9. Never enter a tank, cellar or other enclosed place where gas can accumulate without proper respiratory protective equipment and a safety belt secured to a lifeline held by another person outside.
10. Always check out danger areas first with H2S detectors before allowing anyone to enter. DO NOT TRY TO DETERMINE THE PRESENCE OF GAS BY its ODOR.
11. Wear proper respiratory equipment for the job at hand. Never take a chance with equipment with which you are unfamiliar. If in doubt, consult your supervisor.
12. Carry out practice drills every month with emergency and maintenance breathing air equipment. Telling or showing a group how to operate equipment is not enough-make them show you.
13. Maximum care should be taken to prevent the escape of fumes into the air of working places by leaks, etc.
14. Communication such as radio and telephones should be provided for those people employed where H2S may be present.

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TOXICITY OF HYDROGEN SULFIDE TO MEN

H2S Per Cent (PPM)**	0 - 2 Minutes	0 - 15 Minutes	15 - 30 Minutes	30 Minutes to 1 hour	1 - 4 Hours	4 - 8 Hours	4 - 48 Hours
0.005 (50) 0.010 (100)				Mild Conjunctivities; respiratory tract irritation			
0.010 (100) 0.015 (150)		Coughing; irritation of eyes; loss of sense of smell	Disturbed respiration; pain in eyes; sleepiness	Throat	Salivation & mucous discharge; sharp pain in eyes; coughing	Increased symptoms*	Hemorrhage & death*
0.015 (150) 0.020 (200)		Loss of sense of smell	Throat & eye irritation	Throat & eye irritation	Difficult breathing; blurred vision; light & shy	Serious irritating effects	Hemorrhage & death*
0.025 (250) 0.035 (350)	Irritation of eyes; loss of sense of smell	Irritation of eyes	Painful secretion of tears; weariness	Light & shy; nasal catarrh; pain in eyes; difficult breathing	Hemorrhage & death		
0.035 (350)		Irritation of eyes; loss of sense of smell	Difficult respiration coughing; irritation of eyes	Increased irritation of eyes and nasal tract; dull pain head; weariness; light shy	Dizziness weakness; increased irritation; death	Death*	
0.050 (500)	Coughing collapse & unconsciousness	Respiratory disturbances; irritation of eyes; collapse	Serious eye irritation; palpitation of heart; few cases of death*	Severe pain in eyes and head dizziness; trembling of extreities; great weakness & death*			
0.060 (600) 0.070 (700) 0.808 (800) 0.100 (1000) 0.150 (1500)	Collapse * unconsciousness; death*	Collapse* unconsciousness; death*					

*Data secured from experiments of dogs which have susceptibility similar to men. **PPM - parts per million

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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

CONDITIONS

Action 199979

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 990 Town & Country Blvd. Houston, TX 77024	OGRID: 372098
	Action Number: 199979
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Will require administrative order for non-standard spacing unit	3/24/2023
kpickford	Notify OCD 24 hours prior to casing & cement	3/24/2023
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	3/24/2023
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	3/24/2023
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	3/24/2023
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	3/24/2023