

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator		8. Lease Name and Well No.
3a. Address	3b. Phone No. (include area code)	9. API Well No. 30 015 46975
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		10. Field and Pool, or Exploratory
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)		12. County or Parish
16. No of acres in lease		13. State
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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 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). | 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.

Entered 04/06/2020 - Kurt Simmons NMOCD



(Continued on page 2)

\*(Instructions on page 2)

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: (505) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30 015 46975	<sup>2</sup> Pool Code 98220	<sup>3</sup> Pool Name PURPLE SAGE; WOLFCAMP (GAS)
<sup>4</sup> Property Code 328096	<sup>5</sup> Property Name HONEY MUSTARD 22 WXY FED COM	<sup>6</sup> Well Number 6H
<sup>7</sup> OGRID No. 372098	<sup>8</sup> Operator Name MARATHON OIL PERMIAN LLC	<sup>9</sup> Elevation 2998'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	24S	28E		479	SOUTH	1019	WEST	EDDY

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

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	22	24S	28E		100	NORTH	1651	WEST	EDDY

<sup>12</sup> Dedicated Acres 320.0	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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.

	<p><b>17 OPERATOR CERTIFICATION</b> 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.</p> <p>Signature: <i>[Signature]</i> Date: 08/19/2019</p> <p>Printed Name: MELISSA SZUDERA</p> <p>E-mail Address:</p>
	<p><b>18 SURVEYOR CERTIFICATION</b> 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.</p> <p>Date of Survey: JULY 30, 2019</p> <p>Signature and Seal of Professional Surveyor: <i>[Signature]</i></p> <p>Certificate Number: DAVID W. MYERS 11403</p>
	<p><b>CORNER COORDINATES NAD 83, SPCS NM EAST</b> A - X: 618403.24' / Y: 440522.49' B - X: 621044.41' / Y: 440514.29' C - X: 621117.44' / Y: 435144.26' D - X: 618435.00' / Y: 435137.87'</p> <p><b>CORNER COORDINATES NAD 27, SPCS NM EAST</b> A - X: 577219.77' / Y: 440463.98' B - X: 579860.89' / Y: 440455.75' C - X: 579933.80' / Y: 435085.82' D - X: 577251.41' / Y: 435079.46'</p>
	<p><b>LAST TAKE POINT/BOTTOM HOLE LOCATION</b> 100' FNL 1651' FWL, SECTION 22 NAD 83, SPCS NM EAST X: 620054.45' / Y: 440417.36' LAT: 32.21052800N / LON: 104.07881500W NAD 27, SPCS NM EAST X: 578870.95' / Y: 440358.83' LAT: 32.21040634N / LON: 104.07832289W</p> <p><b>FIRST TAKE POINT</b> 100' FSL 1671' FWL, SECTION 22 NAD 83, SPCS NM EAST X: 620104.90' / Y: 435241.85' LAT: 32.19630075N / LON: 104.07869151W NAD 27, SPCS NM EAST X: 578921.28' / Y: 435183.42' LAT: 32.19617891N / LON: 104.07819985W</p> <p><b>KICK OFF POINT</b> 100' FSL 1671' FWL, SECTION 22 NAD 83, SPCS NM EAST X: 620104.90' / Y: 435241.85' LAT: 32.19630075N / LON: 104.07869151W NAD 27, SPCS NM EAST X: 578921.28' / Y: 435183.42' LAT: 32.19617891N / LON: 104.07819985W</p> <p><b>SURFACE HOLE LOCATION</b> 479' FSL 1019' FWL, SECTION 22 NAD 83, SPCS NM EAST X: 619447.36' / Y: 435618.88' LAT: 32.19734145N / LON: 104.08081434W NAD 27, SPCS NM EAST X: 578263.77' / Y: 435560.45' LAT: 32.19721965N / LON: 104.08032255W</p>

Distances/areas relative to NAD 83 Combined Scale Factor: 0.999916073 Convergence: 00°08'04.17529"

District I  
1625 N. French Dr., Hobbs, NM 88240  
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811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Submit Original  
to Appropriate  
District Office

## GAS CAPTURE PLAN

Date: August 19, 2019

☒ Original Operator & OGRID No.: MARATHON OIL PERMIAN LLC. 372098  
☐ Amended - Reason for Amendment: \_\_\_\_\_

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

### Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Loc (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
HONEY MUSTARD 22 WA FED COM 2H		M-22- 24S-28E	479' FSL 989' FWL	5000	Flared	
HONEY MUSTARD 22 WA FED COM 9H		M-22- 24S-28E	478' FSL 1049' FWL	5000	Flared	
HONEY MUSTARD 22 WXY FED COM 6H		M-22- 24S-28E	479' FSL 1019' FWL	5000	Flared	
HONEY MUSTARD 22 WXY FED COM 8H		M-22- 24S-28E	279' FSL 959' FWL	5000	Flared	

### Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Sendaro Midstream and will be connected to LOW low/high pressure gathering system located in Eddy County, New Mexico. It will require 1 mile of pipeline to connect the facility to low/high pressure gathering system. Marathon provides (periodically) to Sendaro a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Marathon and Sendaro have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Sendaro Carlsbad Plant Processing Plant located in Sec. 31, Twn. 23S, Rng. 28E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Compressor/Gas Line system at that time. Based on current information, it is Marathon's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

### Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Marathon Oil Permian LLC
LEASE NO.:	NMNM020360
COUNTY:	Eddy County, NM

**Wells:**

**Honey Mustard 22 WA Fed Com 2H**

Surface Hole Location: 479' FSL & 989' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 991' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 3H**

Surface Hole Location: 259' FSL & 956' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 330' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 5H**

Surface Hole Location: 259' FSL & 986' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 993' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 6H**

Surface Hole Location: 479' FSL & 1019' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 1651' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 8H**

Surface Hole Location: 479' FSL & 959' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 330' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 9H**

Surface Hole Location: 479' FSL & 1049' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 2312' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 10H**

Surface Hole Location: 259' FSL & 1046' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 2312' FWL, Section 22, T. 24 S, R 28 E.

**Honey Mustard 22 WA Fed Com 11H**

Surface Hole Location: 259' FSL & 1016' FWL, Section 22, T. 24 S., R. 28 E.

Bottom Hole Location: 100' FNL & 1653' FWL, Section 22, T. 24 S, R 28 E.

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Watershed
  - Cave/Karst
  - VRM IV
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**



## **I. GENERAL PROVISIONS**

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

## **II. PERMIT EXPIRATION**

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

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

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

OR

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

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

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

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

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

#### **IV. NOXIOUS WEEDS**

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

## **V. SPECIAL REQUIREMENT(S)**

### **Watershed:**

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

### **VRM IV:**

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

### **Karst:**

#### **CONSTRUCTION MITIGATION**

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

#### **General Construction:**

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

#### **Pad Construction:**

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.



- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will be vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

**Road Construction:**

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

**Buried Pipeline/Cable Construction:**

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

**Powerline Construction:**

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

**Surface Flowlines Installation:**

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

**DRILLING MITIGATION**

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

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

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

**PRODUCTION MITIGATION**

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

- Tank battery locations and facilities will be bermed and lined with a 20 mil thick permanent liner that has a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.
- Development and implementation of a leak detection system to provide an early alert to operators when a leak has occurred.
- Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

## **RESIDUAL AND CUMULATIVE MITIGATION**

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

## **PLUGGING AND ABANDONMENT MITIGATION**

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

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

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

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

### **B. TOPSOIL**

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

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

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

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

**D. FEDERAL MINERAL MATERIALS PIT**

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

**E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

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

**F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

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

**G. ON LEASE ACCESS ROADS**

**Road Width**

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

**Surfacing**

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

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

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

**Crowning**

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

**Ditching**

Ditching shall be required on both sides of the road.

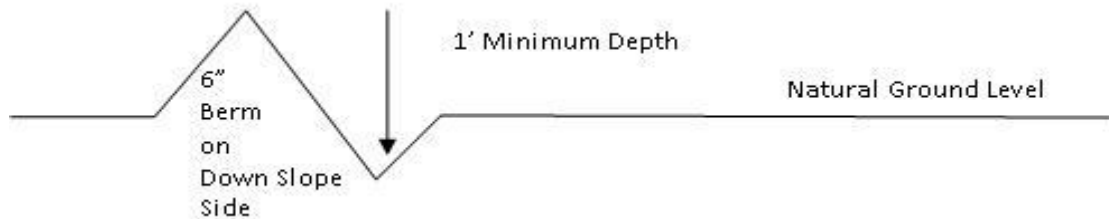
**Turnouts**

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

**Drainage**

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

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

**Cross Section of a Typical Lead-off Ditch**

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

**Formula for Spacing Interval of Lead-off Ditches**

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

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

**Cattle guards**

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

**Fence Requirement**

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

**Public Access**

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

### Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes



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

## **VII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

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

#### **Exclosure Netting (Open-top Tanks)**

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

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

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

#### **Open-Vent Exhaust Stack Exclosures**

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

#### **Containment Structures**

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

#### **Painting Requirement**

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

## **VIII. INTERIM RECLAMATION**

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

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

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

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

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

## **IX. FINAL ABANDONMENT & RECLAMATION**

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

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

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

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

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



#### Mixture 4, for Gypsum Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Alkali Sacaton ( <i>Sporobolus airoides</i> )	1.5
DWS~ Four-wing saltbush ( <i>Atriplex canescens</i> )	8.0

~DWS: DeWinged Seed

\*Pounds of pure live seed:

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

# PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Marathon Oil Permian LLC</b>
<b>LEASE NO.:</b>	<b>NMNM020360</b>
<b>WELL NAME &amp; NO.:</b>	<b>Honey Mustard 22 WXY Fed Com 6H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>479' FSL &amp; 1019' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>100' FNL &amp; 1651' FWL</b>
<b>LOCATION:</b>	<b>Section 22, T 24S, R 28E, NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> 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

- The **13-3/8"** surface casing shall be set at approximately **450'** (a minimum of 75' into the Rustler Anhydrite and above the salt) and cemented to surface.
  - If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after.
  - WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
  - If cement falls back, remedial cementing will be done prior to drilling out the shoe.
  - WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The **9-5/8"** intermediate casing shall be cemented to surface.
  - a. **If cement does not circulate to surface**, see B.1.a, c & d.
  - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
3. The **7"** intermediate casing shall be cemented to with at least 200' tie-back into the previous casing. Operator shall provide method of verification.
  - a. **If cement does not circulate to surface**, see B.1.a, c & d.
  - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
  - c. In High Cave/Karst, if cement does not circulate to surface on the first two casing strings, the cement on the 3<sup>rd</sup> casing string must come to surface.
4. The **4-1/2"** production liner shall be cemented with at least **100' tie-back** into the previous casing. Operator shall provide method of verification.

**Alternate Casing Design:**

5. The **5-1/2"** production casing shall be cemented with at least **200' tie-back** into the previous casing. Operator shall provide method of verification.
  - a. In High Cave/Karst, if cement does not circulate to surface on the first two casing strings, the cement on the 3<sup>rd</sup> casing string must come to surface.

**C. PRESSURE CONTROL**

1. 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.
2. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

**D. SPECIAL REQUIREMENTS**

1. Submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, 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.
  - a. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

**DR 3/12/2020**

## **GENERAL REQUIREMENTS**

1. The BLM is to be notified in advance for a representative to witness:
  - a. Spudding the well (minimum of 24 hours)
  - b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
  - c. BOP/BOPE tests (minimum of 4 hours)
    - ☒ Eddy County: Call the Carlsbad Field Office, (575) 361-2822
    - ☒ Lea County: Call the Hobbs Field Station, (575) 393-3612
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig:
    - i. Notify the BLM when moving in and removing the Spudder Rig.
    - ii. Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. 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.
4. 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 available upon request. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

### **A. CASING**

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

following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well-specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On the portion of 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. If the operator has proposed a multi-bowl wellhead assembly in the APD, it must meet or exceed the pressure rating of the BOP system. Additionally, 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. 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 Onshore Order 2 III.A.2.i must be followed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the BOP/BOPE tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test which can be initiated immediately after bumping the plug (only applies to single-stage cement jobs).
  - c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be made available upon request.
  - 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 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. This test shall be performed prior

to the test at full stack pressure.

- f. BOP/BOPE must be tested 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**

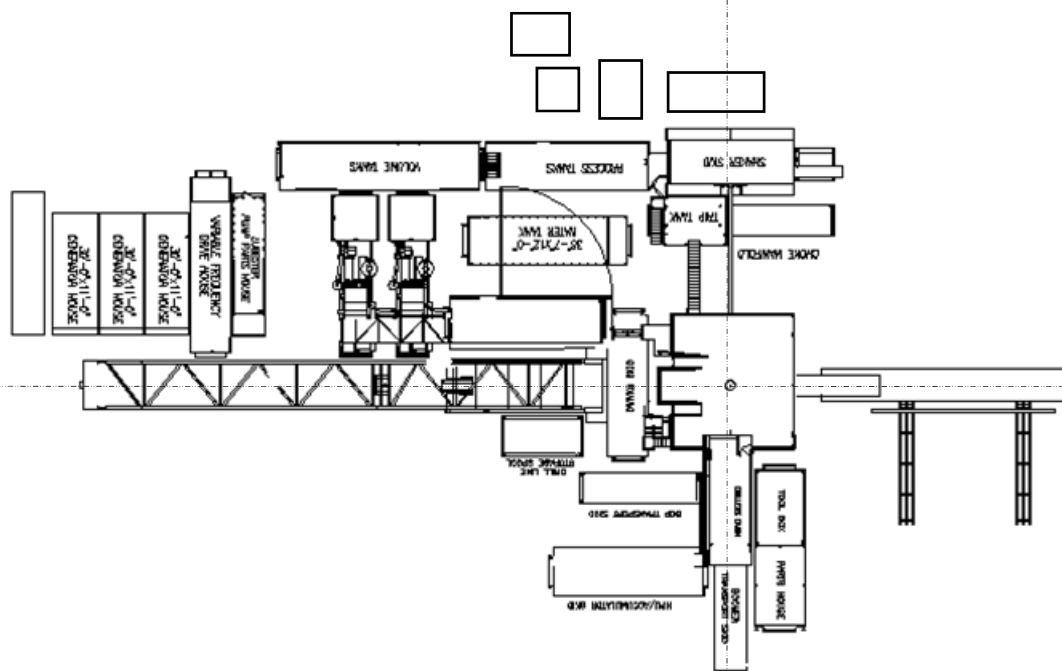
1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

**D. WASTE MATERIAL AND FLUIDS**

1. 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.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.



# MARATHON OIL - H2S Preparedness and Contingency Plan Summary



- H2S Sensors**
  - 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 Min. SCBA**
  - 3 Briefing area
  - 3 Alternate briefing area

Access road

- Bunk House
- Rig Mgr. Trailer
- Company Rep Trailer
- Safety Trailer
- H2S Condition Sign



## **MARATHON OIL COMPANY**

### **HONEY MUSTARD 22 FED COM**

**WA Well # 2H**

**WXY Well # 6H**

**WA Well # 9H**

**WXY Well # 8H**

**SHL: 479' FSL & 989' FWL of Unit Letter 'M', Section 22, T-24S, R-28E**  
**BHL: 100' FNL & 991' FWL of Unit Letter 'D', Section 22, T-24S, R-28E**

### **EDDY County, New Mexico**

**Rig: Precision "TBD"**

**7/31/2019**

**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**

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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# **INTRODUCTION**

## **H2S DRILLING OPERATIONS PLAN**

This Drilling Operations Plan was written specifically for:

MARATHON OIL COMPANY  
4111 S. TIDWELL RD,  
CALRSBAD, NM 88220

Action Plan for Accidental Release of H2S

**HONEY MUSTARD 22 FED COM**  
**WA Well # 2H**  
**WXY Well # 6H**  
**WA Well # 9H**  
**WXY Well # 8H**

EDDY COUNTY, NM

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

7/31/2019



MARATHON OIL COMPANY  
4111 S. TIDWELL RD,  
CARLSBAD, NM 88220

**HONEY MUSTARD 22  
FED COM**

**WA Well # 2H  
WXY Well # 6H  
WA Well # 9H  
WXY Well # 8H**

**Directions:**

FROM THE MARATHON OFFICE AT 4111 TIDWELL, CARLSBAD, NM HEAD SOUTH ON TIDWELL RD TOWARD US HWY 285 N FOR 0.2 MILES. TURN LEFT ONTO US HWY 285 S, HEADING SOUTH, FOR 13.8 MILES TO A CALICHE ROAD. TURN RIGHT ONTO CALICHE ROAD, HEADING WEST, FOR 0.9 MILES TO THE INTERSECTION OF CALICHE ROADS. TURN LEFT ONTO CALICHE ROAD, HEADING SOUTH, FOR 0.1 MILES TO THE INTERSECTION WITH A CALICHE ROAD. TURN LEFT ONTO CALICHE ROAD, HEADING EAST, FOR 0.2 MILES TO THE INTERSECTION WITH A CALICHE LEASE ROAD. KEEP RIGHT, HEADING SOUTH, FOR 0.1 MILES TO THE INTERSECTION WITH THE PROPOSED LEASE ROAD FOR THE HONEY MUSTARD 22 FC WXY8H-WA2H-WXY6H-WA9H-WD3H-WD5H-WD11H-WD10H WELL PAD LOCATION. TURN LEFT ONTO SAID PROPOSED LEASE ROAD, HEADING NORTH, FOR 99 FEET, ENTERING THE SOUTHWEST CORNER OF SAID WELL PAD LOCATION.

**GPS Coordinates: 32.19734173, -104.08091127**

**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, H<sub>2</sub>S.

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:

**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.

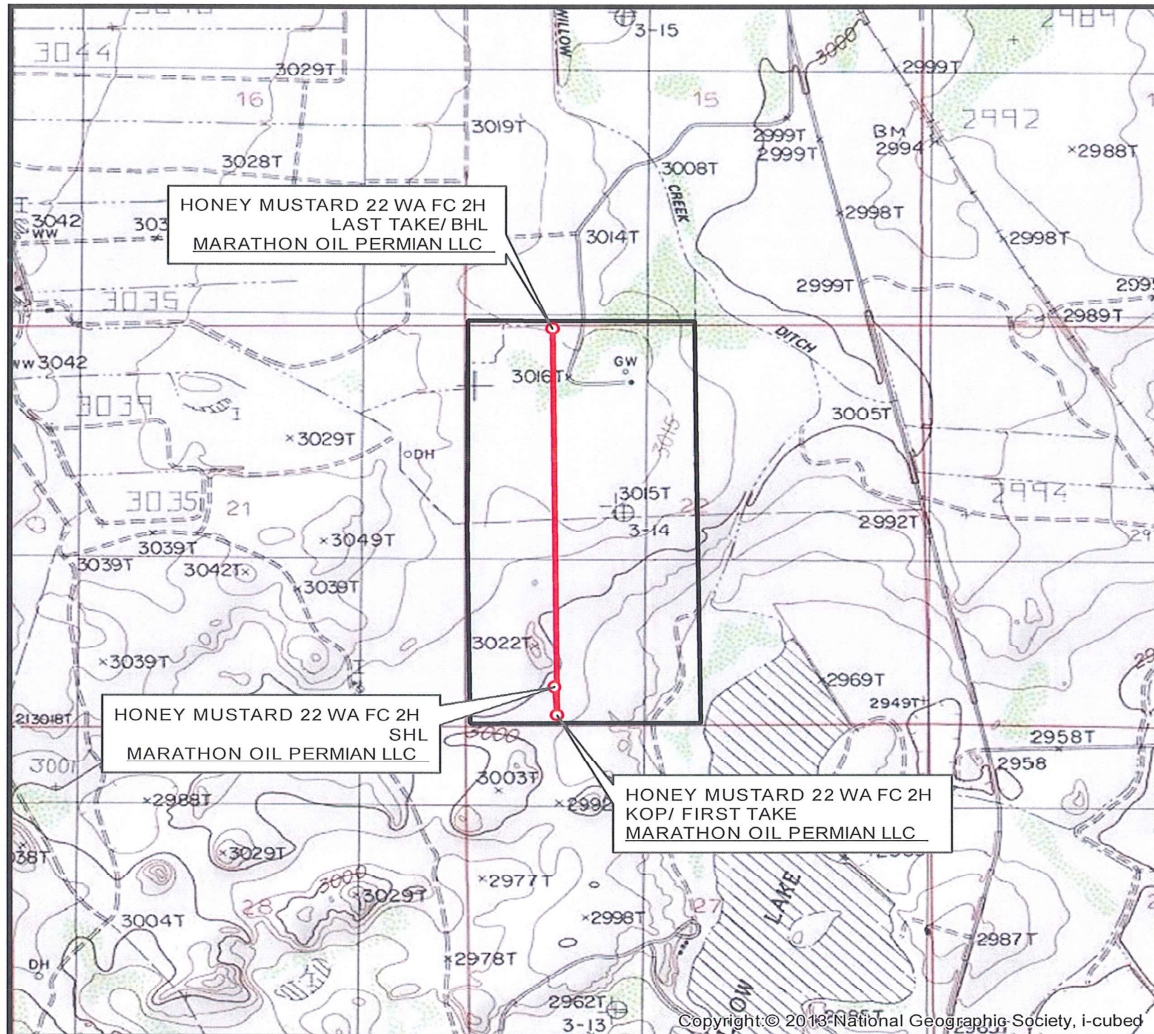
**In Scope Personnel** – Rig Personnel who will be working or otherwise present in potential H<sub>2</sub>S release areas, including the rig floor, cellar, pits, and shaker areas. This would not include 3rd party contractors who do not have a function, besides evacuating the rig, during an emergency condition such as during a well control event or H<sub>2</sub>S / 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

**H<sub>2</sub>S Office** – Onsite office trailer space or vehicle that will be designated as the H<sub>2</sub>S 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.

# LOCATION VERIFICATION MAP



SEC. 22 TWP. 24-S RGE. 28-E  
 SURVEY: N.M.P.M.  
 COUNTY: EDDY  
 OPERATOR: MARATHON OIL PERMIAN LLC  
 DESCRIPTION: 479' FSL & 989' FWL  
 ELEVATION: 2999'  
 LEASE: HONEY MUSTARD 22 FC  
 U.S.G.S. TOPOGRAPHIC MAP: MALAGA, NM.

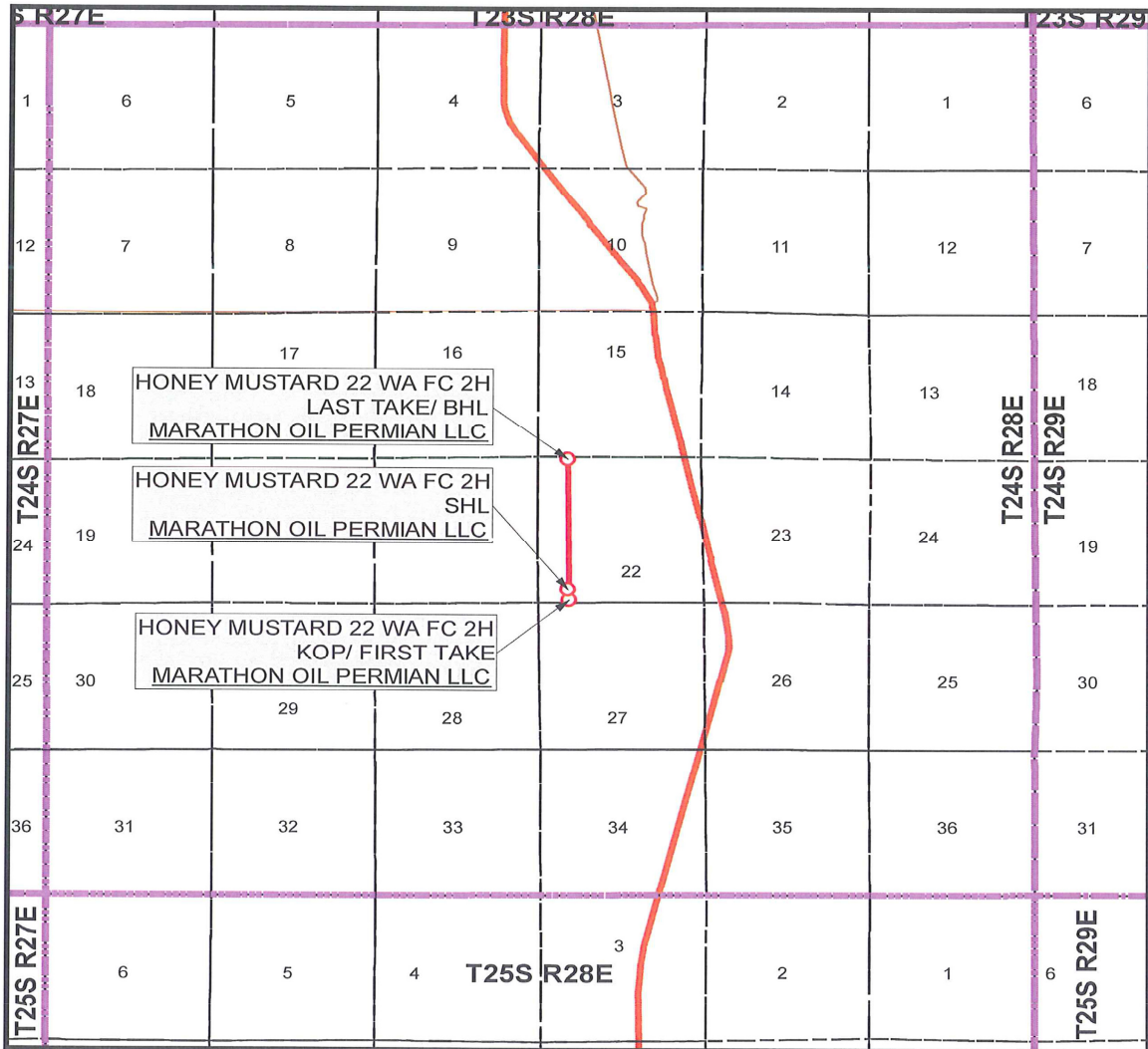
1" = 2,000'  
 CONTOUR INTERVAL = 10'



SHEET 2 OF 3

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R3935\_002

# VICINITY MAP



SEC. 22 TWP. 24-S RGE. 28-E

SURVEY: N.M.P.M.

COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC

DESCRIPTION: 479' FSL & 989' FWL

ELEVATION: 2999'

LEASE: HONEY MUSTARD 22 FC

U.S.G.S. TOPOGRAPHIC MAP: MALAGA, NM.

1" = 1 MILE



SHEET 3 OF 3

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
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## SAFETY EQUIPMENT

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

### SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

<u>QTY</u>	<u>EQUIPMENT</u>
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

## 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 H<sub>2</sub>S and SO<sub>2</sub> 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 H<sub>2</sub>S ‘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 H<sub>2</sub>S 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.



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 H<sub>2</sub>S 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 H<sub>2</sub>S concentration reach 10 ppm an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H<sub>2</sub>S.
15. Any time it is necessary to flare gas containing H<sub>2</sub>S, a Sulfur Dioxide monitor or Detector tubes will be used to determine SO<sub>2</sub> 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.

## 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 H<sub>2</sub>S 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 H<sub>2</sub>S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

### GAS MONITORING EQUIPMENT

1. A continuous H<sub>2</sub>S detection system, consisting of three H<sub>2</sub>S detectors and an audible/visual warning system will be in operating during all phases of this H<sub>2</sub>S Drilling Operations Plan. The detection system will be adjusted and calibrated such that an H<sub>2</sub>S 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. H<sub>2</sub>S continually present at or above threshold levels) a trained operator or H<sub>2</sub>S supervisor will monitor the H<sub>2</sub>S detection system.

2. When approaching or completing H<sub>2</sub>S formations, crewmembers may attach personnel H<sub>2</sub>S monitors to their person.

3. Hand held H<sub>2</sub>S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

## 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 H<sub>2</sub>S. The training will cover, but will not be limited to, the following:
  - a. General information of H<sub>2</sub>S AND SO<sub>2</sub> 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 H<sub>2</sub>S gas
  - f. Evacuation procedures
  - g. First aid, reviving an H<sub>2</sub>S 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 H<sub>2</sub>S. It must also include a review of the site specific Drilling Operations Plan and, if applicable, the Public Protections Plan.
3. Weekly H<sub>2</sub>S 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, H<sub>2</sub>S 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

## METALLURGICAL CONSIDERATIONS

1. Steel drill pipe used in H<sub>2</sub>S 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 Metallic 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 H<sub>2</sub>S 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 H<sub>2</sub>S and reliability of the H<sub>2</sub>S 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 H<sub>2</sub>S control prior to drilling into the H<sub>2</sub>S 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 H<sub>2</sub>S be encountered while tripping string following drill stem testing

## WELL CONTROL EQUIPMENT

### 1. Flare System

- a. A flare system shall be designed and installed to safely gather and burn H<sub>2</sub>S 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 than 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 H<sub>2</sub>S 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.

## 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 H<sub>2</sub>S exists but no H<sub>2</sub>S has been detected.
2. Condition:  
**YELLOW-POTENTIAL DANGER, CAUTION**  
Any operation where the possibility of encountering H<sub>2</sub>S exists and in all situations where concentrations of H<sub>2</sub>S 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 H<sub>2</sub>S at or greater than 10ppm. Breathing apparatus must be worn.
  - a. Safety action:

\*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 H<sub>2</sub>S 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.

- \*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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S.
  - a. Yellow Caution Flag will be flown at the well condition sign.
  - b. The “NO SMOKING” rule will be enforced

### DRILL STEM TESTING OF H<sub>2</sub>S ZONES

1. The DST subsurface equipment will be suitable for H<sub>2</sub>S service as recommended by the API
2. Drill stem testing of H<sub>2</sub>S 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 H<sub>2</sub>S from drill string
  - a. During drill stem tests adequate Filming Amine for H<sub>2</sub>S corrosion and Aqua Ammonia for neutralizing H<sub>2</sub>S should be on location.
8. On completion of DST, if H<sub>2</sub>S 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



on” conditions until such time that readings in the work area do not exceed 10ppm of H<sub>2</sub>S gas.

# 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 H<sub>2</sub>S.

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: H<sub>2</sub>S 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

## STEPS TO BE TAKEN

In the event of an accidental release of a potentially hazardous volume of H<sub>2</sub>S, 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 of 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 H<sub>2</sub>S 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

- 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 as 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 H<sub>2</sub>S "Safety" trailer provided 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	<a href="mailto:permiansuper@marathonoil.com">permiansuper@marathonoil.com</a>	281-840-0467
Don Eynon	Drilling Engineer	deenyon@marathonoil.com	713-296-3265
Paul Allen	Drilling Engineer	<a href="mailto:pallen@marathonoil.com">pallen@marathonoil.com</a>	713-296-3262
Chris Montan	Drilling Engineer	<a href="mailto:cmontan@marathoil.com">cmontan@marathoil.com</a>	713-296-4367
Robert Amaya	Drilling Engineer	<a href="mailto:RAmaya1@marathonoil.com">RAmaya1@marathonoil.com</a>	713-296-2371
Nick Rogers	Lead HES Advisor	<a href="mailto:permianndches@marathonoil.com">permianndches@marathonoil.com</a>	281-659-3734
Scott Doughty	Lead HES Advisor	<a href="mailto:permianndches@marathonoil.com">permianndches@marathonoil.com</a>	281-659-3734
Precision 101	Company Man	<a href="mailto:Prec101@marathonoil.com">Prec101@marathonoil.com</a>	
Precision 582	Company Man	<a href="mailto:Prec582@marathonoil.com">Prec582@marathonoil.com</a>	
Precision 594	Company Man	<a href="mailto:Prec594@marathonoil.com">Prec594@marathonoil.com</a>	
Precision 601	Company Man	<a href="mailto:Prec601@marathonoil.com">Prec601@marathonoil.com</a>	
Precision 101	HES Advisor	<a href="mailto:Prec101hes@marathonoil.com">Prec101hes@marathonoil.com</a>	
Precision 582	HES Advisor	<a href="mailto:Prec582hes@marathonoil.com">Prec582hes@marathonoil.com</a>	
Precision 594	HES Advisor	<a href="mailto:Prec5941hes@marathonoil.com">Prec5941hes@marathonoil.com</a>	
Precision 601	HES Advisor	<a href="mailto:Prec601hes@marathonoil.com">Prec601hes@marathonoil.com</a>	

### 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, 1<sup>st</sup> dial “911” They will determine nearest helicopter and confirm the need for helicopter.

# RESIDENTS AND LANDOWNERS

## AERIAL SATELLITE MAP



## RESIDENCE

- THERE ARE NO RESIDENCE WITHIN 1 MILE RADIUS OF WELL LOCATION.

# 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). Its 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 in 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 consciousness and unconsciousness, and between unconsciousness and death.

Where high concentrations cause respiratory paralysis, spontaneous breathing does not return unless artificial respiration is applied. 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.



SUBACUTE: RESULTS IN IRRITATION, PRINCIPALLY OF THE EYES, PERSISTENT COUGH, TIGHTENING OR BURNING IN THE CHEST AND SKIN IRRITATION FOLLOWED 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 H<sub>2</sub>S

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 (SO<sub>2</sub>) gas, which is very irritating to eyes and lungs. The SO<sub>2</sub> is also toxic and can cause serious injury.
5. H<sub>2</sub>S is almost as toxic as hydrogen cyanide.
6. H<sub>2</sub>S 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.

## F. SAFE PRACTICES

If you are faced with an H<sub>2</sub>S problem in your operations, the following safe practices are recommended:

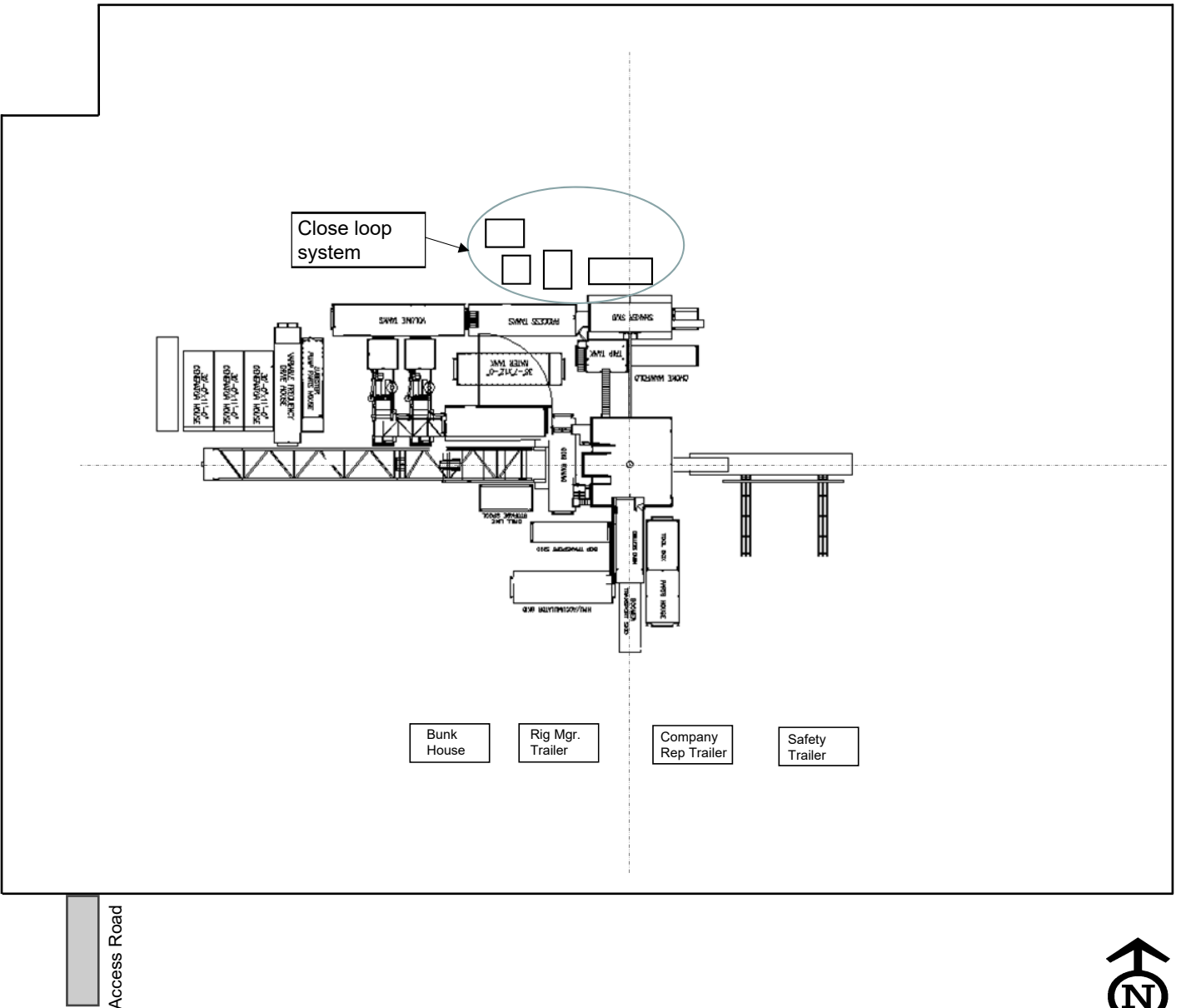
1. Be absolutely sure all concerned are familiar with the hazards concerning H<sub>2</sub>S and how to avoid it.
2. All employees should know how to operate and maintain respiration equipment.
3. Be able to give and demonstrate artificial respiration.
4. Post areas where there is poisonous gas with suitable 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 H<sub>2</sub>S 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 H<sub>2</sub>S may be present.

TOXICITY OF HYDROGEN SULFIDE TO MEN

H <sub>2</sub> S 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)				Mild Conjunctiv- ities; respiratory tract irritation			
0.010 (100)				Throat			
0.010 (100)		Coughing; irritation of respiration; eyes; loss of pain in eyes; sense of smell sleepiness	Disturbed respiration; pain in eyes; sleepiness	Throat	Salivation & mucous dis- charge; 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 smell	Difficult respiration coughing; irritation of eyes	Increased irritation of eyes and nasal tract; dull pain head; weariness; light shy	Dizziness weak- ness; increased irritation; death	Death*	
0.050 (500)	Coughing collapse & unconscious- ness	Respiratory disturbances; irritation of eyes; collapse	Serious eye irritation; palpitation of heart; few cases of death*	Severe pain in eyes and head dizziness; trem- bling of extre- mities; great weakness & death*			
0.060 (600)							
0.070 (700)	Collapse *	Collapse*					
0.808 (800)	unconscious- ness; death*	unconscious- ness; death*					
0.100 (1000)							
0.150 (1500)							

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

## MARATHON OIL - FLEX III PAD (Closed Loop System)



## HONEY MUSTARD 22 FED COM

### DRILLING RIG LAYOUT



# MARATHON OIL PERMIAN LLC

## DRILLING AND OPERATIONS PLAN

**WELL NAME / NUMBER:** HONEY MUSTARD 22 WXY FED COM 6H

**STATE:** NEW MEXICO

**COUNTY:** EDDY

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	Lease Type
SHL	32.19734145	-104.08081434	2998	0	0	NMNM020360	479	FSL	1019	FWL	24S	28E	22	SWSW	F
KOP	32.19630075	-104.07869151	-6004	9065	9002	State	100	FSL	1671	FWL	24S	28E	22	SESW	S
FTP	32.19630075	-104.07869151	-6536	9750	9534	State	100	FSL	1671	FWL	24S	28E	22	SESW	S
PPP-2	32.19971818	-104.07872117	-6597	11113	9595	NMNM0556542	1343	FSL	1675	FWL	24S	28E	22	NESW	F
PPP-3	32.20341046	-104.07875322	-6620	12456	9618	NMNM020360	2686	FSL	1680	FWL	24S	28E	22	SENW	F
BHL	32.21052800	-104.07881500	-6653	14339	9651	NMNM020360	100	FNL	1651	FWL	24S	28E	22	NENW	F

### 1. GEOLOGIC NAME OF SURFACE FORMATION

- Permian/Quaternary Alluvium

### 2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS

Formation	True Vertical Depth (ft)	Measured Depth (ft)	Lithologies	Mineral Resources	Producing Formation
Salado	649	649	Salt/Anhydrite	BRINE	N
Base of Salt	2603	2608	Limy Sands	BRINE	N
Lamar	2608	2608	Sand/Shales	OIL	Y
Bell Canyon	2639	2644	Sands/Shale	OIL	Y
Cherry Canyon	3461	3479	Sands/Shale	OIL	Y
Brushy Canyon	4678	4709	Sands/Carbonates	OIL	Y
Bone Spring	6192	6223	Sands/Carbonates	OIL	Y
Wolfcamp	9406	9447	Carbonates/Shales/Sands	OIL	Y

**DEEPEST EXPECTED FRESH WATER:** 275' TVD

**ANTICIPATED BOTTOM HOLE PRESSURE:** 6,400 psi

**ANTICIPATED BOTTOM HOLE TEMPERATURE:** 195°F

**ANTICIPATED ABNORMAL PRESSURE:** N

**ANTICIPATED ABNORMAL TEMPERATURE:** N

### 3. CASING PROGRAM

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	17 1/2	13 3/8	0	550	0	550	54.5	J55	STC	5.52	2.5	2.5
Intermediate I	12 1/4	9 5/8	0	2700	0	2694	40	J55	LTC	1.74	1.15	2.19
Intermediate II	8 3/4	7	0	9955	0	9574	29	P110	BTC	2.21	1.18	1.9
Production Liner	6 1/8	4 1/2	9950	14339	9704	9651	13.5	P110	BTC	1.33	1.56	1.88

Minimum safety factors: Burst 1.125 Collapse 1.125 Tension 1.8 Wet/1.6 Dry

OR:

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	17 1/2	13 3/8	0	550	0	550	54.5	J55	STC	5.52	2.5	2.5
Intermediate I	12 1/4	9 5/8	0	2700	0	2694	40	J55	LTC	1.74	1.15	2.19
Production	8 3/4	5.5	0	14339	0	9651	20	P110	BTC	1.65	1.29	2.08

Minimum safety factors: Burst 1.125 Collapse 1.125 Tension 1.8 Wet/1.6 Dry

Will deploy 3 string casing assuming hole conditions are favorable with cut brine and planned mud weight.

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

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> 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 2 <sup>nd</sup> 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 PROGRAM:

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.

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	0	0	1.73	13.5	0	100	Class C	LCM
Surface	Tail	--	0	550	575	1.33	14.8	764	100	Class C	N/A
Intermediate I	Lead	--	0	1700	422	2.21	12.8	932	75	Class C	Extender, Accelerator
Intermediate I	Tail	--	1700	2700	353	1.33	14.8	470	50	Class C	Retarder
Intermediate II	Lead	--	2400	8900	517	3.21	11	1661	70	Class C	Viscosifier, Retarder
Intermediate II	Tail	--	8900	9960	180	1.15	13.8	207	30	Class H	Extender, Fluid Loss, Dispersant
Production Liner	Tail	--	9660	14339	470	1.22	14.5	573	30	Class H	Retarder, Extender, Fluid Loss, Dispersant

Or:

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sx)	Yield (ft3/sx)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	0	0	1.73	13.5	0	100	Class C	LCM
Surface	Tail	--	0	550	560	1.33	14.8	764	100	Class C	Accelerator
Intermediate I	Lead	--	0	1700	539	2.21	12.8	932	75	Class C	Extender, Accelerator
Intermediate I	Tail	--	1700	2700	353	1.33	14.8	470	50	Class C	Retarder
Production	Lead	--	0	9060	1441	3.21	11	3891	70	Class H	Viscosifier, Retarder
Production	Tail	--	9060	14339	1421	1.22	14.5	1734	30	Class H	Extender, Fluid Loss, Dispersant

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

**KOP:** N/A TVD/MD

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

Attach plugging procedure for pilot hole.

N/A

## 5. PRESSURE CONTROL EQUIPMENT

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12 ¼"	13 5/8	5000	Annular	x	70% of working pressure
			Blind Ram	x	5000
			Pipe Ram		



			Double Ram		x	
			Other*			
8 ¾"	13 5/8	5000	Annular		x	70% of working pressure
			Blind Ram		x	5000
			Pipe Ram			
			Double Ram		x	
			Other *			
6 1/8"	13 5/8	5000	Annular		x	70% of working pressure
			Blind Ram		x	5000
			Pipe Ram			
			Double Ram		x	
			Other *			

\*Specify if additional ram is utilized.

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.	

## 6. MUD PROGRAM:

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max. Weight (ppg)	Additional Characteristics
<u>0</u>	<u>550</u>	<u>Water Based Mud</u>	<u>8.4</u>	<u>8.8</u>	
<u>550</u>	<u>2700</u>	<u>Brine</u>	<u>9.9</u>	<u>10.2</u>	
<u>2700</u>	<u>9955</u>	<u>Cut Brine</u>	<u>8.8</u>	<u>9.8</u>	

<u>9955</u>	<u>14339</u>	<u>Oil Based mud</u>	<u>11.0</u>	<u>12.5</u>	
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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.

Or:

<b>Top Depth</b>	<b>Bottom Depth</b>	<b>Mud Type</b>	<b>Min. Weight (ppg)</b>	<b>Max. Weight (ppg)</b>	<b>Additional Characteristics</b>
<u>0</u>	<u>550</u>	<u>Water Based Mud</u>	<u>8.4</u>	<u>8.8</u>	
<u>550</u>	<u>2700</u>	<u>Brine</u>	<u>9.9</u>	<u>10.2</u>	
<u>2700</u>	<u>14339</u>	<u>Oil Based Mud</u>	<u>9.0</u>	<u>12.5</u>	

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

## 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe until total depth is reached. **If Hydrogen Sulfide is encountered , measured amounts and formations will be reported to the BLM**

## 8. LOGGING / CORING AND TESTING PROGRAM:

- A. Mud Logger: None.
- B. DST's: None.
- C. Open Hole Logs: GR while drilling from Intermediate casing shoe to TD.

## 9. POTENTIAL HAZARDS:

- A. H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with Onshore Order #6.
- B. No abnormal temperatures or pressures are anticipated. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.
- C. No losses are anticipated at this time.

- D. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.
- E. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.

#### **10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS**

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

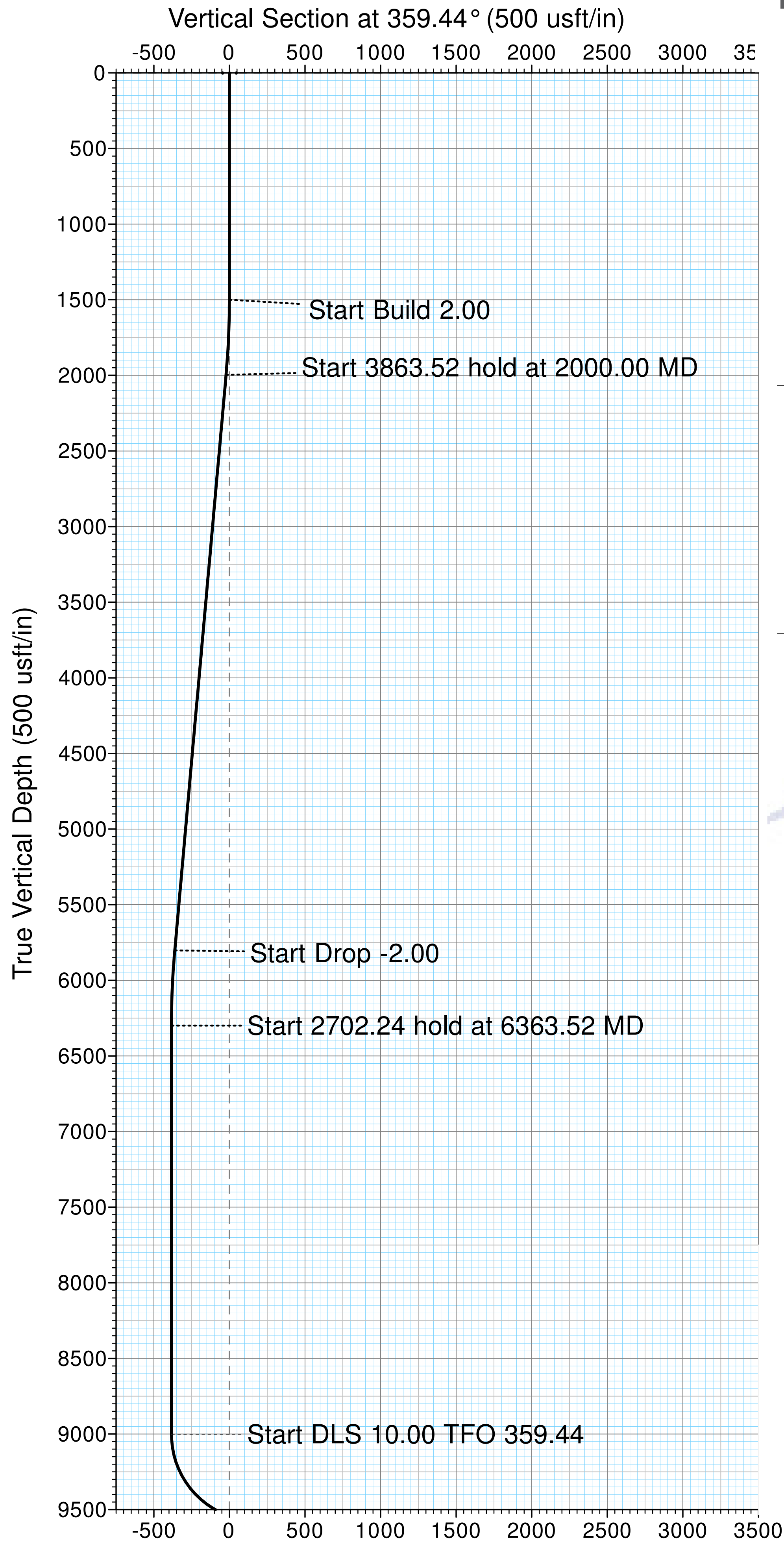
## Batch Drilling Plan

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

## Request for Surface Rig

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





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

RKB Elevation: well @ 3023.00usft

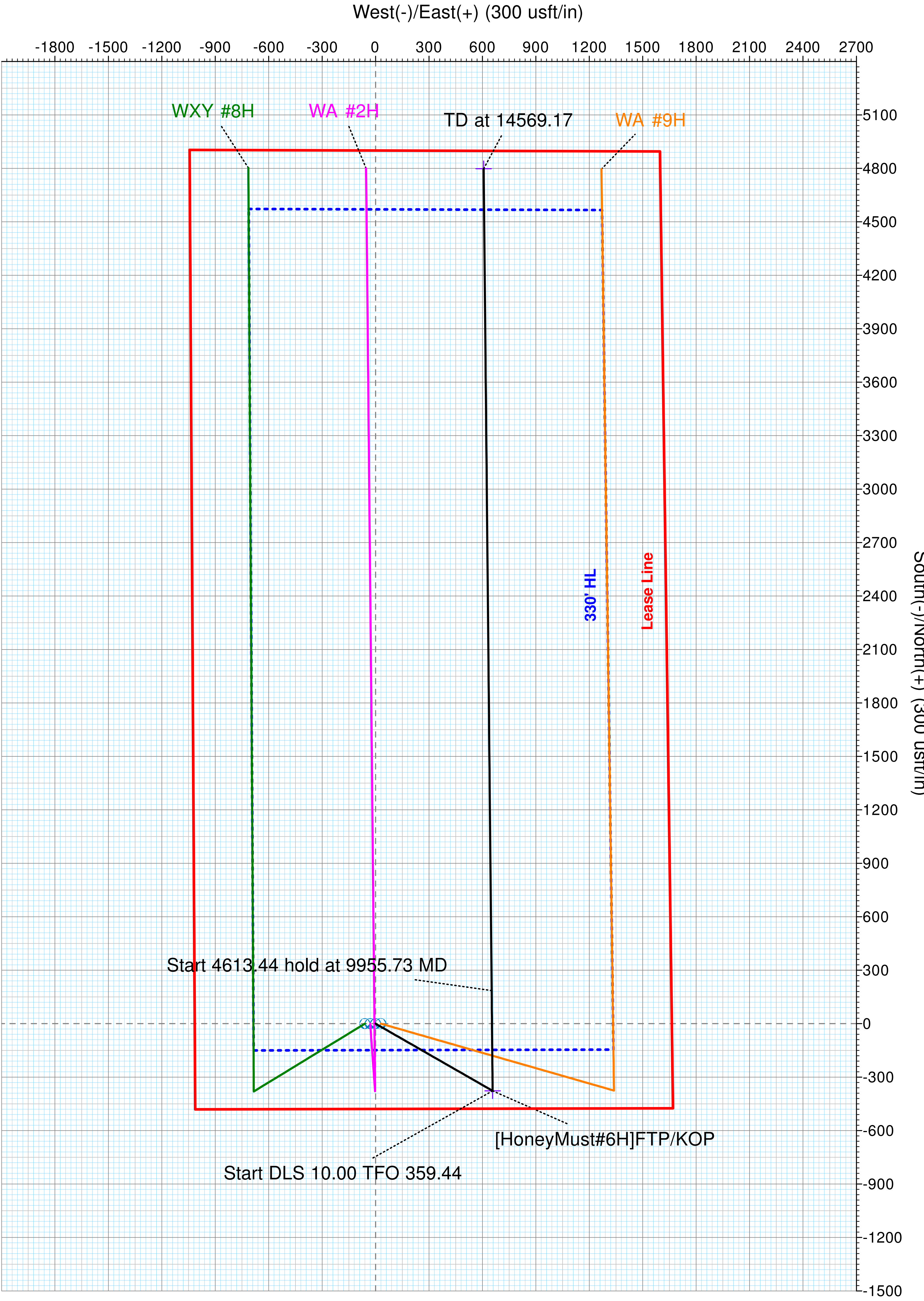
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	435560.45	578263.77	32.197220	-104.080323	

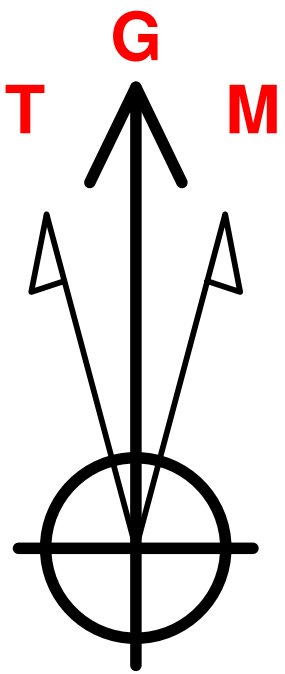
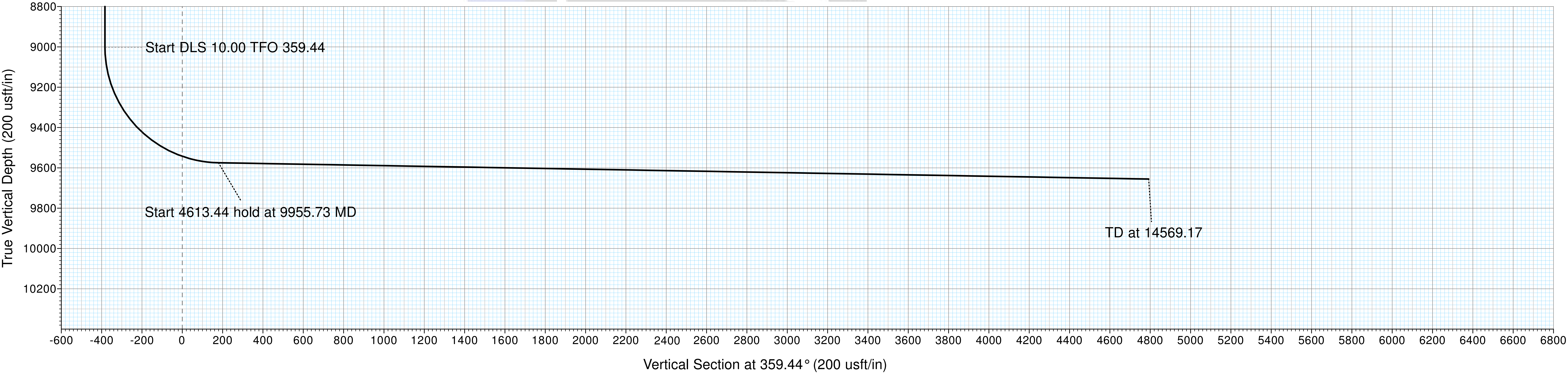
SECTION DETAILS								
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00
3	2000.00	10.00	119.83	1997.47	-21.65	37.76	2.00	-22.02
4	5863.52	10.00	119.83	5802.29	-355.38	619.75	0.00	-361.42
5	6363.52	0.00	0.00	6299.76	-377.03	657.51	2.00	-383.44
6	9065.76	0.00	0.00	9002.00	-377.03	657.51	0.00	-383.44
7	9955.73	89.00	359.44	9574.87	185.87	652.04	10.00	179.49
8	14569.17	89.00	359.44	9655.65	4798.38	607.18	0.00	4792.22

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	
[HoneyMust#6H]FTP/KOP	9002.00	-377.03	657.51	435183.42	578921.28	
[HoneyMust#6H]LTP/BHL	9655.65	4798.38	607.18	440358.83	578870.95	



Target Line: 9572' TVD @ 0' VS: 89° INC



Azimuths to Grid North  
True North: -0.14°  
Magnetic North: 6.95°  
  
Magnetic Field  
Strength: 47869.1snT  
Dip Angle: 59.92°  
Date: 7/19/2019  
Model: HDGM

**Azimuth Corrections**  
**Total Magnetic Corr. (M to G): 6.95°**  
**Declination (M to T): 7.08° East**

<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

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

Site		Honey Mustard 22 Fed Com			
Site Position:		Northing:	435,560.49 usft	Latitude:	32.197220
From:	Map	Easting:	578,233.78 usft	Longitude:	-104.080420
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.13

Well	WXY #6H					
Well Position	+N/-S	-0.04 usft	Northing:	435,560.45 usft	Latitude:	32.197220
	+E/-W	29.99 usft	Easting:	578,263.77 usft	Longitude:	-104.080323
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	2,998.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	7/19/2019	7.08	59.92	47,869.10

<b>Design</b>	Prelim Plan B			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	359.44

<b>Plan Survey Tool Program</b>	<b>Date</b>	7/30/2019		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	5,000.00	Prelim Plan B (OH)	MWD - OWSG
				MWD - OWSG
2	5,000.00	10,000.00	Prelim Plan B (OH)	MWD - OWSG
				MWD - OWSG
3	10,000.00	14,569.10	Prelim Plan B (OH)	MWD - OWSG
				MWD - OWSG



<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	10.00	119.83	1,997.47	-21.65	37.76	2.00	2.00	0.00	119.83	
5,863.52	10.00	119.83	5,802.29	-355.38	619.75	0.00	0.00	0.00	0.00	
6,363.52	0.00	0.00	6,299.76	-377.03	657.51	2.00	-2.00	0.00	180.00	
9,065.77	0.00	0.00	9,002.00	-377.03	657.51	0.00	0.00	0.00	0.00	[HoneyMust#6H]FTP/
9,955.73	89.00	359.44	9,574.87	185.87	652.04	10.00	10.00	-0.06	359.44	
14,569.17	89.00	359.44	9,655.65	4,798.38	607.18	0.00	0.00	0.00	0.00	[HoneyMust#6H]LTP/I

<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	119.83	1,599.98	-0.87	1.51	-0.88	2.00	2.00	0.00
1,700.00	4.00	119.83	1,699.84	-3.47	6.05	-3.53	2.00	2.00	0.00
1,800.00	6.00	119.83	1,799.45	-7.81	13.61	-7.94	2.00	2.00	0.00
1,900.00	8.00	119.83	1,898.70	-13.87	24.19	-14.10	2.00	2.00	0.00
2,000.00	10.00	119.83	1,997.47	-21.65	37.76	-22.02	2.00	2.00	0.00
2,100.00	10.00	119.83	2,095.95	-30.29	52.82	-30.80	0.00	0.00	0.00
2,200.00	10.00	119.83	2,194.43	-38.93	67.88	-39.59	0.00	0.00	0.00
2,300.00	10.00	119.83	2,292.91	-47.56	82.95	-48.37	0.00	0.00	0.00
2,400.00	10.00	119.83	2,391.39	-56.20	98.01	-57.16	0.00	0.00	0.00
2,500.00	10.00	119.83	2,489.87	-64.84	113.08	-65.94	0.00	0.00	0.00
2,600.00	10.00	119.83	2,588.35	-73.48	128.14	-74.73	0.00	0.00	0.00
2,700.00	10.00	119.83	2,686.83	-82.12	143.20	-83.51	0.00	0.00	0.00
2,800.00	10.00	119.83	2,785.31	-90.75	158.27	-92.30	0.00	0.00	0.00
2,900.00	10.00	119.83	2,883.79	-99.39	173.33	-101.08	0.00	0.00	0.00
3,000.00	10.00	119.83	2,982.27	-108.03	188.40	-109.87	0.00	0.00	0.00
3,100.00	10.00	119.83	3,080.75	-116.67	203.46	-118.65	0.00	0.00	0.00
3,200.00	10.00	119.83	3,179.23	-125.31	218.52	-127.44	0.00	0.00	0.00
3,300.00	10.00	119.83	3,277.72	-133.94	233.59	-136.22	0.00	0.00	0.00
3,400.00	10.00	119.83	3,376.20	-142.58	248.65	-145.01	0.00	0.00	0.00
3,500.00	10.00	119.83	3,474.68	-151.22	263.71	-153.79	0.00	0.00	0.00
3,600.00	10.00	119.83	3,573.16	-159.86	278.78	-162.57	0.00	0.00	0.00
3,700.00	10.00	119.83	3,671.64	-168.50	293.84	-171.36	0.00	0.00	0.00
3,800.00	10.00	119.83	3,770.12	-177.13	308.91	-180.14	0.00	0.00	0.00
3,900.00	10.00	119.83	3,868.60	-185.77	323.97	-188.93	0.00	0.00	0.00
4,000.00	10.00	119.83	3,967.08	-194.41	339.03	-197.71	0.00	0.00	0.00
4,100.00	10.00	119.83	4,065.56	-203.05	354.10	-206.50	0.00	0.00	0.00
4,200.00	10.00	119.83	4,164.04	-211.69	369.16	-215.28	0.00	0.00	0.00
4,300.00	10.00	119.83	4,262.52	-220.32	384.23	-224.07	0.00	0.00	0.00
4,400.00	10.00	119.83	4,361.00	-228.96	399.29	-232.85	0.00	0.00	0.00
4,500.00	10.00	119.83	4,459.48	-237.60	414.35	-241.64	0.00	0.00	0.00
4,600.00	10.00	119.83	4,557.97	-246.24	429.42	-250.42	0.00	0.00	0.00
4,700.00	10.00	119.83	4,656.45	-254.88	444.48	-259.21	0.00	0.00	0.00
4,800.00	10.00	119.83	4,754.93	-263.51	459.55	-267.99	0.00	0.00	0.00
4,900.00	10.00	119.83	4,853.41	-272.15	474.61	-276.78	0.00	0.00	0.00
5,000.00	10.00	119.83	4,951.89	-280.79	489.67	-285.56	0.00	0.00	0.00
5,100.00	10.00	119.83	5,050.37	-289.43	504.74	-294.35	0.00	0.00	0.00
5,200.00	10.00	119.83	5,148.85	-298.07	519.80	-303.13	0.00	0.00	0.00
5,300.00	10.00	119.83	5,247.33	-306.70	534.87	-311.92	0.00	0.00	0.00



<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

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)
5,400.00	10.00	119.83	5,345.81	-315.34	549.93	-320.70	0.00	0.00	0.00
5,500.00	10.00	119.83	5,444.29	-323.98	564.99	-329.49	0.00	0.00	0.00
5,600.00	10.00	119.83	5,542.77	-332.62	580.06	-338.27	0.00	0.00	0.00
5,700.00	10.00	119.83	5,641.25	-341.26	595.12	-347.06	0.00	0.00	0.00
5,800.00	10.00	119.83	5,739.73	-349.89	610.19	-355.84	0.00	0.00	0.00
5,863.52	10.00	119.83	5,802.29	-355.38	619.75	-361.42	0.00	0.00	0.00
5,900.00	9.27	119.83	5,838.26	-358.42	625.05	-364.51	2.00	-2.00	0.00
6,000.00	7.27	119.83	5,937.21	-365.57	637.53	-371.79	2.00	-2.00	0.00
6,100.00	5.27	119.83	6,036.61	-371.01	647.00	-377.31	2.00	-2.00	0.00
6,200.00	3.27	119.83	6,136.32	-374.71	653.46	-381.08	2.00	-2.00	0.00
6,300.00	1.27	119.83	6,236.24	-376.68	656.90	-383.08	2.00	-2.00	0.00
6,363.52	0.00	0.00	6,299.76	-377.03	657.51	-383.44	2.00	-2.00	0.00
6,400.00	0.00	0.00	6,336.24	-377.03	657.51	-383.44	0.00	0.00	0.00
6,500.00	0.00	0.00	6,436.24	-377.03	657.51	-383.44	0.00	0.00	0.00
6,600.00	0.00	0.00	6,536.24	-377.03	657.51	-383.44	0.00	0.00	0.00
6,700.00	0.00	0.00	6,636.24	-377.03	657.51	-383.44	0.00	0.00	0.00
6,800.00	0.00	0.00	6,736.24	-377.03	657.51	-383.44	0.00	0.00	0.00
6,900.00	0.00	0.00	6,836.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,000.00	0.00	0.00	6,936.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,100.00	0.00	0.00	7,036.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,200.00	0.00	0.00	7,136.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,300.00	0.00	0.00	7,236.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,400.00	0.00	0.00	7,336.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,500.00	0.00	0.00	7,436.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,600.00	0.00	0.00	7,536.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,700.00	0.00	0.00	7,636.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,800.00	0.00	0.00	7,736.24	-377.03	657.51	-383.44	0.00	0.00	0.00
7,900.00	0.00	0.00	7,836.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,000.00	0.00	0.00	7,936.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,100.00	0.00	0.00	8,036.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,200.00	0.00	0.00	8,136.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,300.00	0.00	0.00	8,236.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,400.00	0.00	0.00	8,336.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,500.00	0.00	0.00	8,436.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,600.00	0.00	0.00	8,536.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,700.00	0.00	0.00	8,636.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,800.00	0.00	0.00	8,736.24	-377.03	657.51	-383.44	0.00	0.00	0.00
8,900.00	0.00	0.00	8,836.24	-377.03	657.51	-383.44	0.00	0.00	0.00
9,000.00	0.00	0.00	8,936.24	-377.03	657.51	-383.44	0.00	0.00	0.00
9,065.77	0.00	0.00	9,002.00	-377.03	657.51	-383.44	0.00	0.00	0.00
[HoneyMust#6H]FTP/KOP									
9,100.00	3.42	359.44	9,036.22	-376.01	657.50	-382.42	10.00	10.00	0.00
9,150.00	8.42	359.44	9,085.93	-370.85	657.45	-377.26	10.00	10.00	0.00
9,200.00	13.42	359.44	9,135.01	-361.38	657.36	-367.79	10.00	10.00	0.00
9,250.00	18.42	359.44	9,183.08	-347.67	657.22	-354.07	10.00	10.00	0.00
9,300.00	23.42	359.44	9,229.77	-329.82	657.05	-336.22	10.00	10.00	0.00
9,350.00	28.42	359.44	9,274.72	-307.97	656.84	-314.37	10.00	10.00	0.00
9,400.00	33.42	359.44	9,317.60	-282.28	656.59	-288.68	10.00	10.00	0.00
9,450.00	38.42	359.44	9,358.08	-252.96	656.30	-259.36	10.00	10.00	0.00
9,500.00	43.42	359.44	9,395.84	-220.21	655.99	-226.62	10.00	10.00	0.00
9,550.00	48.42	359.44	9,430.61	-184.31	655.64	-190.71	10.00	10.00	0.00
9,600.00	53.42	359.44	9,462.12	-145.51	655.26	-151.90	10.00	10.00	0.00
9,650.00	58.42	359.44	9,490.13	-104.11	654.86	-110.50	10.00	10.00	0.00

<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,700.00	63.42	359.44	9,514.42	-60.42	654.43	-66.82	10.00	10.00	0.00
9,750.00	68.42	359.44	9,534.81	-14.79	653.99	-21.18	10.00	10.00	0.00
9,800.00	73.42	359.44	9,551.15	32.45	653.53	26.06	10.00	10.00	0.00
9,850.00	78.42	359.44	9,563.30	80.93	653.06	74.54	10.00	10.00	0.00
9,900.00	83.42	359.44	9,571.19	130.28	652.58	123.90	10.00	10.00	0.00
9,950.00	88.42	359.44	9,574.74	180.14	652.09	173.76	10.00	10.00	0.00
9,955.73	89.00	359.44	9,574.87	185.87	652.04	179.49	10.00	10.00	0.00
10,000.00	89.00	359.44	9,575.65	230.13	651.61	223.75	0.00	0.00	0.00
10,100.00	89.00	359.44	9,577.40	330.11	650.63	323.73	0.00	0.00	0.00
10,200.00	89.00	359.44	9,579.15	430.09	649.66	423.72	0.00	0.00	0.00
10,300.00	89.00	359.44	9,580.90	530.07	648.69	523.70	0.00	0.00	0.00
10,400.00	89.00	359.44	9,582.65	630.05	647.72	623.69	0.00	0.00	0.00
10,500.00	89.00	359.44	9,584.40	730.03	646.74	723.67	0.00	0.00	0.00
10,600.00	89.00	359.44	9,586.15	830.01	645.77	823.66	0.00	0.00	0.00
10,700.00	89.00	359.44	9,587.90	929.99	644.80	923.64	0.00	0.00	0.00
10,800.00	89.00	359.44	9,589.65	1,029.97	643.83	1,023.63	0.00	0.00	0.00
10,900.00	89.00	359.44	9,591.40	1,129.95	642.85	1,123.61	0.00	0.00	0.00
11,000.00	89.00	359.44	9,593.16	1,229.93	641.88	1,223.60	0.00	0.00	0.00
11,100.00	89.00	359.44	9,594.91	1,329.91	640.91	1,323.58	0.00	0.00	0.00
11,200.00	89.00	359.44	9,596.66	1,429.89	639.94	1,423.56	0.00	0.00	0.00
11,300.00	89.00	359.44	9,598.41	1,529.87	638.97	1,523.55	0.00	0.00	0.00
11,400.00	89.00	359.44	9,600.16	1,629.85	637.99	1,623.53	0.00	0.00	0.00
11,500.00	89.00	359.44	9,601.91	1,729.83	637.02	1,723.52	0.00	0.00	0.00
11,600.00	89.00	359.44	9,603.66	1,829.81	636.05	1,823.50	0.00	0.00	0.00
11,700.00	89.00	359.44	9,605.41	1,929.79	635.08	1,923.49	0.00	0.00	0.00
11,800.00	89.00	359.44	9,607.16	2,029.77	634.10	2,023.47	0.00	0.00	0.00
11,900.00	89.00	359.44	9,608.91	2,129.75	633.13	2,123.46	0.00	0.00	0.00
12,000.00	89.00	359.44	9,610.66	2,229.73	632.16	2,223.44	0.00	0.00	0.00
12,100.00	89.00	359.44	9,612.42	2,329.71	631.19	2,323.43	0.00	0.00	0.00
12,200.00	89.00	359.44	9,614.17	2,429.69	630.22	2,423.41	0.00	0.00	0.00
12,300.00	89.00	359.44	9,615.92	2,529.67	629.24	2,523.40	0.00	0.00	0.00
12,400.00	89.00	359.44	9,617.67	2,629.65	628.27	2,623.38	0.00	0.00	0.00
12,500.00	89.00	359.44	9,619.42	2,729.63	627.30	2,723.37	0.00	0.00	0.00
12,600.00	89.00	359.44	9,621.17	2,829.61	626.33	2,823.35	0.00	0.00	0.00
12,700.00	89.00	359.44	9,622.92	2,929.59	625.35	2,923.33	0.00	0.00	0.00
12,800.00	89.00	359.44	9,624.67	3,029.57	624.38	3,023.32	0.00	0.00	0.00
12,900.00	89.00	359.44	9,626.42	3,129.55	623.41	3,123.30	0.00	0.00	0.00
13,000.00	89.00	359.44	9,628.17	3,229.53	622.44	3,223.29	0.00	0.00	0.00
13,100.00	89.00	359.44	9,629.93	3,329.51	621.46	3,323.27	0.00	0.00	0.00
13,200.00	89.00	359.44	9,631.68	3,429.49	620.49	3,423.26	0.00	0.00	0.00
13,300.00	89.00	359.44	9,633.43	3,529.47	619.52	3,523.24	0.00	0.00	0.00
13,400.00	89.00	359.44	9,635.18	3,629.45	618.55	3,623.23	0.00	0.00	0.00
13,500.00	89.00	359.44	9,636.93	3,729.43	617.58	3,723.21	0.00	0.00	0.00
13,600.00	89.00	359.44	9,638.68	3,829.41	616.60	3,823.20	0.00	0.00	0.00
13,700.00	89.00	359.44	9,640.43	3,929.39	615.63	3,923.18	0.00	0.00	0.00
13,800.00	89.00	359.44	9,642.18	4,029.37	614.66	4,023.17	0.00	0.00	0.00
13,900.00	89.00	359.44	9,643.93	4,129.35	613.69	4,123.15	0.00	0.00	0.00
14,000.00	89.00	359.44	9,645.68	4,229.33	612.71	4,223.14	0.00	0.00	0.00
14,100.00	89.00	359.44	9,647.44	4,329.31	611.74	4,323.12	0.00	0.00	0.00
14,200.00	89.00	359.44	9,649.19	4,429.29	610.77	4,423.10	0.00	0.00	0.00
14,300.00	89.00	359.44	9,650.94	4,529.27	609.80	4,523.09	0.00	0.00	0.00
14,400.00	89.00	359.44	9,652.69	4,629.25	608.82	4,623.07	0.00	0.00	0.00
14,500.00	89.00	359.44	9,654.44	4,729.23	607.85	4,723.06	0.00	0.00	0.00
14,569.17	89.00	359.44	9,655.65	4,798.38	607.18	4,792.22	0.00	0.00	0.00

<b>Database:</b>	WellPlanner1	<b>Local Co-ordinate Reference:</b>	Well WXY #6H
<b>Company:</b>	Marathon Oil	<b>TVD Reference:</b>	well @ 3023.00usft
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	well @ 3023.00usft
<b>Site:</b>	Honey Mustard 22 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	WXY #6H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim Plan B		

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)
[HoneyMust#6H]LTP/BHL									