Form 3160-3
(June 2015)

OCD – HOBBS
03/23/2020
RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM122624

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
DOGIE DRAW FED COM 25 34 14 WC 20H 327332

2. Name of Operator
MARATHON OIL PERMIAN LLC 372098

9. API Well No. 30-025-47013

3a. Address
5555 San Felipe St. Houston TX 77056

3b. Phone No. *(include area code)*
(713)629-6600

10. Field and Pool, or Exploratory 76560
FAIRVIEW MILLS / WOLFCAMP, (GAS)

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

At surface NESE / 2290 FNL / 1164 FEL / LAT 32.1314369 / LONG -103.4359615

At proposed prod. zone SESE / 330 FSL / 330 FEL / LAT 32.1096282 / LONG -103.43328

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 14 / T25S / R34E / NMP

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

12. County or Parish
LEA

13. State
NM

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

16. No of acres in lease
400

17. Spacing Unit dedicated to this well
480

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
4300 feet

19. Proposed Depth
13113 feet / 21022 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3358 feet

22. Approximate date work will start*
01/01/2019

23. Estimated duration
30 days

24. Attachments

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

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

25. Signature
(Electronic Submission)

Name *(Printed/Typed)*
Adrian Covarrubias / Ph: (806)752-6153

Date
08/16/2018

Title
Environmental Engineer

Approved by *(Signature)*
(Electronic Submission)

Name *(Printed/Typed)*
Christopher Walls / Ph: (575)234-2234

Date
03/10/2020

Title
Petroleum Engineer

Office
CARLSBAD

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.

GCP REC 03/23/2020

KZ
03/26/2020

NSL

APPROVED WITH CONDITIONS

REQUIRES NSL

(Continued on page 2)

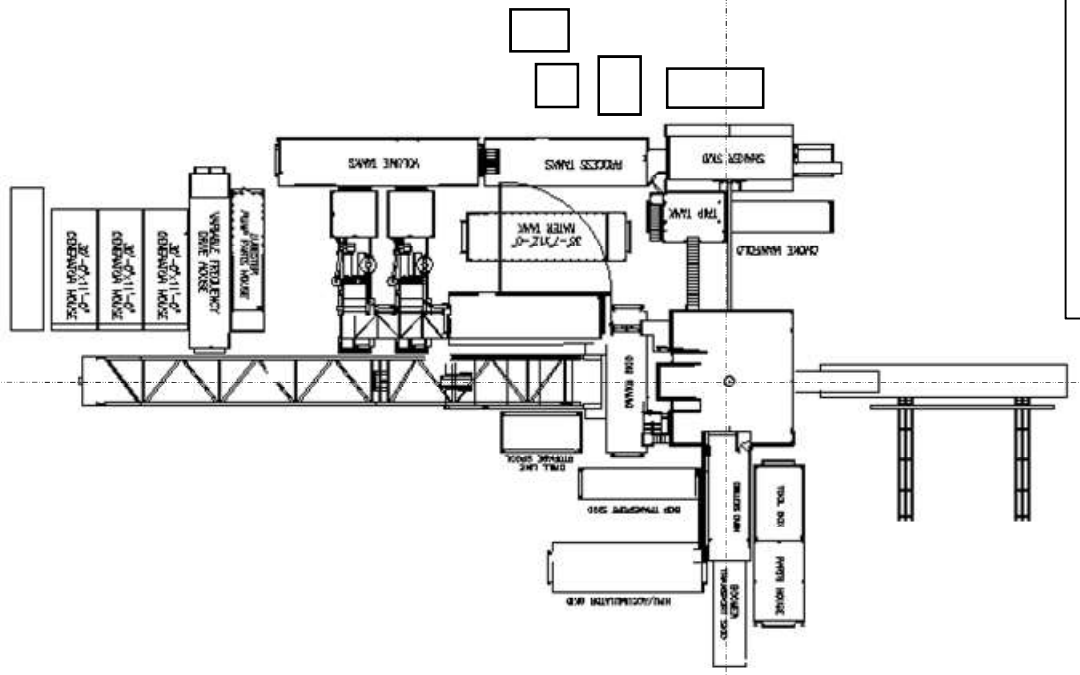
*(Instructions on page 2)

Approval Date: 03/10/2020

MARATHON OIL - H2S Preparedness and Contingency Plan Summary

490'

800'



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

H2S Condition Sign

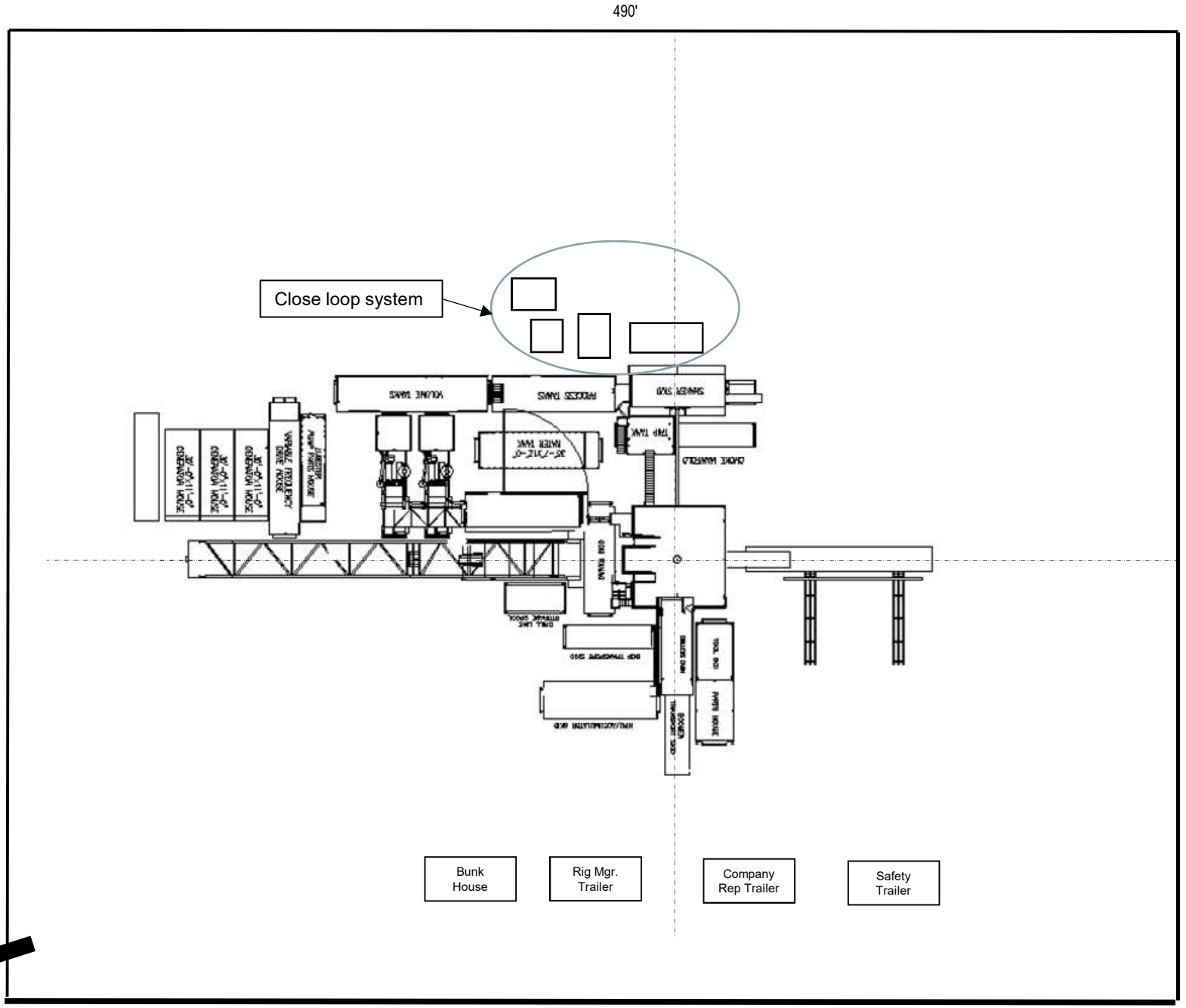
Bunk House

Rig Mgr. Trailer

Company Rep Trailer

Safety Trailer

MARATHON OIL - FLEX III PAD (Closed Loop System)



TOTAL SAFETY

MARATHON OIL COMPANY

ENDER WIGGINS FC 25-34-14

WXY Well # 14H
TB Well # 17H
WD Well # 18H
WA Well # 19H
WXY Well # 20H
WC Well # 21H

DOGIE DRAW FED COM 25-34-14

WXY Well # 14H
TB Well # 17H
WA Well # 18H
WD Well # 19
WC Well # 20
WXY Well # 21H

SHL: 2290' FNL & 1134' FEL of Unit Letter 'H', Section 14, T-25S, R-34E
BHL: 150' FNL & 330' FEL of Unit Letter 'A', Section 11, T-25S, R-34E

LEA County, New Mexico

Rig: H&P 498 or H&P 480
4/24/2018

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

H2S DRILLING OPERATIONS PLAN INDEX

VII. LIST OF APPENDICES

A. Emergency and Medical Facilities
B. Law Enforcement Agencies and Fire Fighting Facilities
C. Well Control Specialists
D. Governmental Agencies

VIII. RESIDENTS AND LANDOWNERS

A. Radius of Exposure Map with Residences Shown
B. Residents Within Radius of Exposure and Telephone Numbers

IX. ADDITIONAL INFORMATION

A. Hydrogen Sulfide Essay
B. Hydrogen Sulfide Hazards
C. Toxicity Table
D. Treatment
E. Characteristics of H2S
F. Safe Practices

INTRODUCTION

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

MARATHON OIL COMPANY
3122 NATIONAL PARKS HIGHWAY
CALRSBAD, NM 88220

Action Plan for Accidental Release of H2S

ENDER WIGGINS FC 25-34-14
WXY Well # 14H
TB Well # 17H
WD Well # 18H
WA Well # 19H
WXY Well # 20H
WC Well # 21H
DOGIE DRAW FED COM 25-34-14
WXY Well # 14H
TB Well # 17H
WA Well # 18H
WD Well # 19
WC Well # 20
WXY Well # 21H

LEA COUNTY, NM

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

4-24-2018

MARATHON OIL COMPANY
3122 NATIONAL PARKS HIGHWAY
CALRSBAD, NM 88220

ENDER WIGGINS FC 25-34-14
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LEA COUNTY, NM

Directions:

FROM CARLSBAD, NM, AT THE INTERSECTION OF W. GREENE ST. AND N. CANAL ST. HEAD EAST ON W. GREENE STREET TOWARD S. CANAL ST. FOR 2.2 MILES TO REFINERY ROAD ON THE RIGHT. TRAVEL SE ON REFINERY RD. FOR 12.5 MILES TO NEW MEXICO STATE HIGHWAY 31 ON THE LEFT. TRAVEL NE ON NEW MEXICO STATE HIGHWAY 31 FOR 2.4 MILES TO NEW MEXICO STATE HIGHWAY 128 E ON THE RIGHT. TRAVEL SE ON NEW MEXICO STATE HIGHWAY 128 E. FOR 38.7 TO BATTLE AXE ROAD ON THE RIGHT. TRAVEL ON BATTLE AXE RD. FOR 0.3 MILES. TURN RIGHT TO STAY ON BATTLE AXE ROAD AND CONTINUE FOR 2.6 MILES. TURN RIGHT TO STAY ON BATTLE AXE ROAD AND CONTINUE FOR 2.6 MILES. AGAIN, TURN RIGHT TO STAY ON BATTLE AXE ROAD AND CONTINUE FOR 2.6 MILES TO EXISTING LEASE ROAD ON THE RIGHT. TRAVEL SE ON SAID EXISTING ROAD FOR 0.8 MILES TO THE PROPOSED.

GPS Coordinates: 32.13131075, -103.43539680
LEA COUNTY, NEW MEXICO

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

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

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

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

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

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

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

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

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

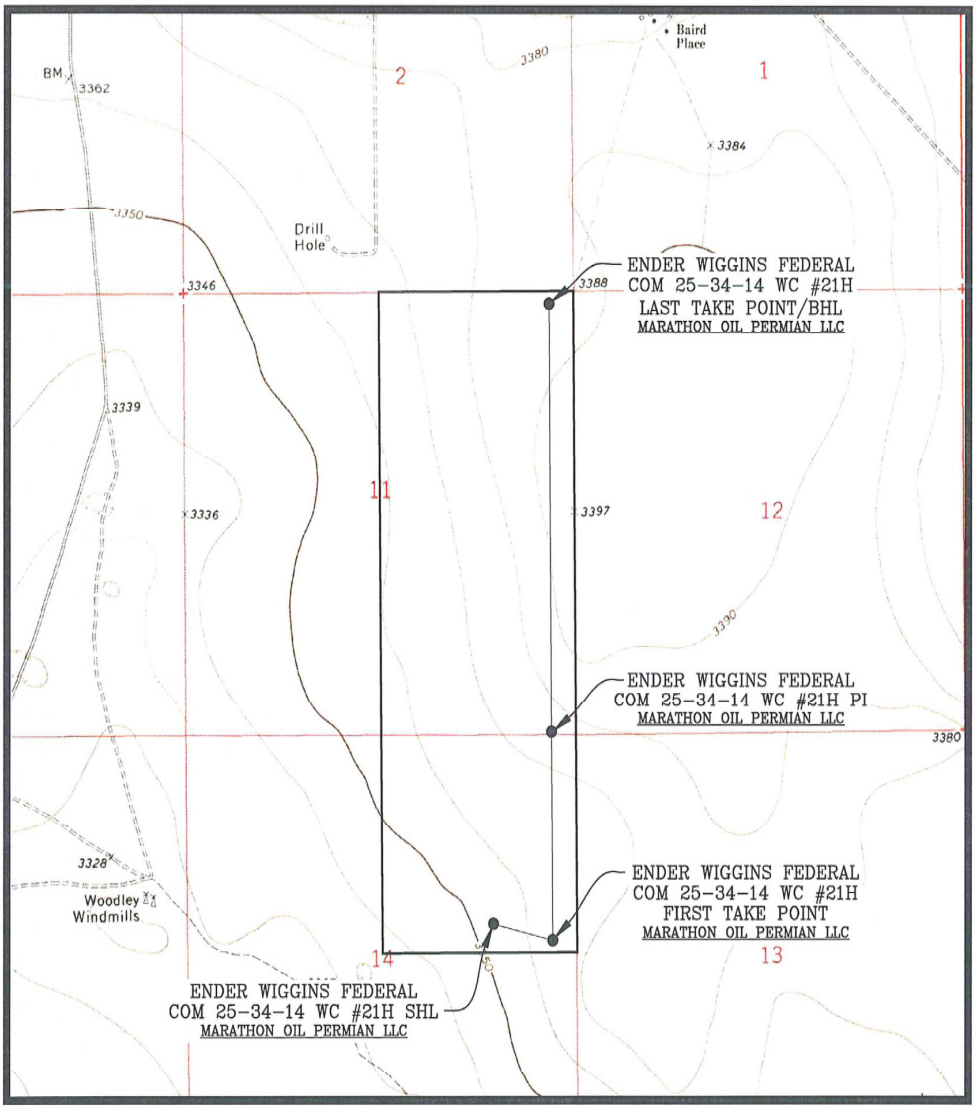
In Scope Personnel – Rig Personnel who will be working or otherwise present in potential H2S release areas, including the rig floor, cellar, pits, and shaker areas. This would not include 3rd party contractors who do not have a function, besides evacuating the rig, during an emergency condition such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

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

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

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

LOCATION VERIFICATION MAP

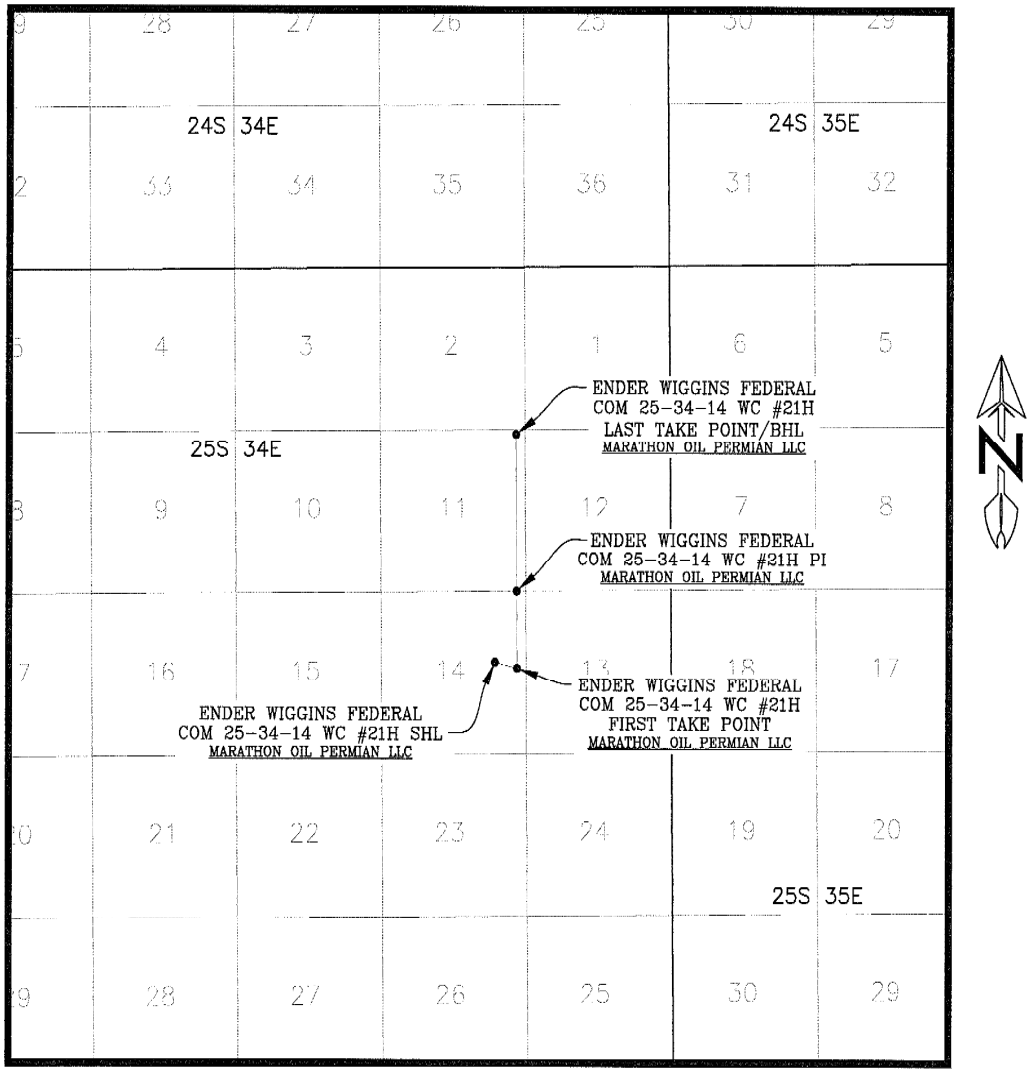


SEC. 14 TWP. 25-S RGE. 34-E
SURVEY: N.M.P.M.
COUNTY: LEA
DESCRIPTION: 2290' FNL & 1134' FEL
ELEVATION: 3360'
OPERATOR: MARATHON OIL PERMIAN LLC
LEASE: ENDER WIGGINS FEDERAL COM 25-34-14
U.S.G.S. TOPOGRAPHIC MAP: WOODLEY FLAT, N.M.

SCALE: 1" = 2000'
CONTOUR INTERVAL = 10'

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R3816_012

VICINITY MAP



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LEASE: ENDER WIGGINS FEDERAL COM 25-34-14
U.S.G.S. TOPOGRAPHIC MAP: WOODLEY FLAT, N.M.

SCALE: 1" = 1 MILE

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R3816_012

SAFETY EQUIPMENT

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

SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

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

TYPE OF EQUIPMENT AND STORAGE LOCATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

OPERATING PROCEDURES

BLOWOUT PREVENTION MEASURES DURING DRILLING

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

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

GAS MONITORING EQUIPMENT

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

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

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

CREW TRAINING AND PROTECTION

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

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

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

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

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

5. Safety Equipment:

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

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

METALLURGICAL CONSIDERATONS

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

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

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

MUD PROGRAM AND TREATING

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

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

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

WELL CONTROL EQUIPMENT

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

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

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

OPERATING CONDITIONS

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

DEFINITION OF WARNING FLAGS

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

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

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

   a. Safety action:

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

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

*human life is endangered

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

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

CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

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

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

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

        *determine when gas is anticipated to reach surface.

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

CORING OPERATIONS IN H2S BEARING ZONES

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

DRILL STEM TESTING OF H2S ZONES

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

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

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

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

DRILLING CREW ACTIONS

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

RESPONSIBILITIES OF PERSONNEL

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

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

STEPS TO BE TAKEN

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

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

LEAK IGNITION

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

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

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

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

GENERAL EQUIPMENT

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

CRITICAL OPERATIONS

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

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

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

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

APPENDICES

EMERGENCY & MEDICAL FACILITIES:

Marathon Oil Corporation Emergency Numbers			
Brent Evans	Drilling Manager	blevans@marathonoil.com	832 967-8474
Mark Bly	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Chad Butler	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Jacob Beaty	Drilling Engineer	jabeaty@marathonoil.com	713-296-1915
Noah Adams	HES Professional	njadams@marathonoil.com	713-591-4068
Nick Rogers	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
Scott Doughty	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
H&P 480	Company Man	Hp480@marathonoil.com	281-768-9946
H&P 498	Company Man	Hp498@marathonoil.com	281-745-0771
H&P 441	Company Man	Hp441@marathonoil.com	
H&P 423	Company Man	Hp423@marathonoil.com	
Precision 594	Company Man	Prec594@marathonoil.com	
H&P 480	HES Advisor	Hp480hes@marathonoil.com	
H&P 498	HES Advisor	Hp498hes@marathonoil.com	
H&P 441	HES Advisor	Hp441hes@marathonoil.com	
H&P 423	HES Advisor	Hp423hes@marathonoil.com	
Precision 594	HES Advisor	Prec594hes@marathonoil.com	

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

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

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). It's offensive odor, like that of a rotten egg, has been used as an indicator by many old timers in the oil field, but is not a reliable warning of the presence of gas in a dangerous concentration because people differ greatly I their ability to detect smells. Where high concentrations are encountered, the olfactory nerves are rapidly paralyzed, diluting the sense of smell as a warning indicator. A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death-in other words there is a very narrow margin between conscious ness and unconsciousness, and between unconsciousness and death.

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

C. PHYSIOLOGICAL SYSTEMS

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

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

D. TREATMENT

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

E. CHARACTERISTICS OF H2S

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

F. SAFE PRACTICES

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

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

TOXICITY OF HYDROGEN SULFIDE TO MEN

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

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

Marathon Oil Corporation

Lea County, NM (NAD27)
Dogie Draw Fed Com 25-34-14 WC #20H

Plan #1
Rig TBD

WELL DETAILS:

Ground Level: 3359.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	412651.49	777933.12	32° 7' 52.721 N	103° 26' 7.777 W	C

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
1100.00	1.00	0.00	1099.99	0.87	0.00	1.00	0.00	-0.87	
1130.00	1.00	0.00	1129.99	1.40	0.00	0.00	0.00	-1.40	
1524.38	8.00	80.00	1523.05	9.62	27.07	2.00	87.13	-9.62	
5939.38	8.00	80.00	5895.08	116.31	632.18	0.00	0.00	-116.31	
6339.38	0.00	0.00	6293.78	121.16	659.64	2.00	180.00	-121.16	
12585.64	0.00	0.00	12540.04	121.16	659.64	0.00	0.00	-121.16	
13485.64	90.00	169.00	13113.00	-441.28	768.97	10.00	169.00	441.28	
13600.64	90.00	169.00	13113.00	-554.16	790.91	0.00	0.00	554.16	
14129.64	90.00	179.58	13113.00	-1079.79	843.47	2.00	90.00	1079.79	
20976.81	90.00	179.58	13113.00	-7926.78	893.39	0.00	90.47	7926.78	BHL[DD\WB#20H]
21021.81	90.00	179.58	13113.00	-7971.78	893.72	0.00	0.00	7971.78	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
BHL[DD\WB#20H]	13113.00	-7926.78	893.39	404724.73	778826.51
FTP[DD\WB#20H]	13113.00	-675.21	839.71	411976.28	778772.83

Drilling Target: 13113' TVD @ 0VS // 90.0° Inc.

Target Window: 15' UP // 15' DOWN

Site Details: Dogie Draw Federal 25-34-14
Site Centre Northing: 412243.05
Easting: 774435.99

Positional Uncertainity: 0.00
Convergence: 0.47
Local North: Grid

Project Details: Lea County, NM (NAD27)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
870.00	870.00	Rustler
1373.00	1373.35	Salado
3572.00	3593.47	Castile
5096.00	5132.45	Base of Salt
5381.00	5420.25	Lamar
5412.00	5451.56	Bell Canyon
6721.00	6766.60	Cherry Canyon
8021.00	8066.60	Brushy Canyon
9316.00	9361.60	Bone Spring
10357.00	10402.60	1st Bone Spring Sand
10935.00	10980.60	2nd Bone Spring Sand
11979.00	12024.60	3rd Bone Spring Sand
12402.00	12447.60	TBSG Lower Target
12432.00	12477.60	Wolfcamp
12455.00	12500.60	Wolfcamp X
12543.00	12588.60	Wolfcamp Y
12557.00	12602.61	WC Y Target
12583.00	12628.64	Wolfcamp A
12698.00	12745.68	Wolfcamp A Target
12750.00	12800.61	Wolfcamp B

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

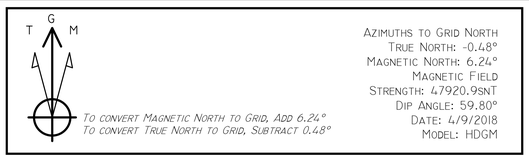
Local Origin: Well WC #20H - Slot C, Grid North

Latitude: 32° 7' 52.721 N
Longitude: 103° 26' 7.777 W

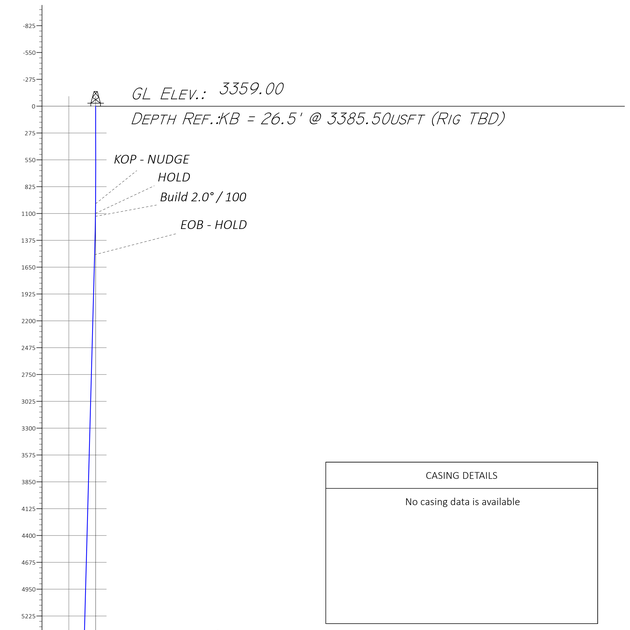
Grid East: 777933.12
Grid North: 412651.49
Scale Factor: 1.000

Geomagnetic Model: HDGM
Sample Date: 09-Apr-18
Magnetic Declination: 6.72°
Dip Angle from Horizontal: 59.80°
Magnetic Field Strength: 47921

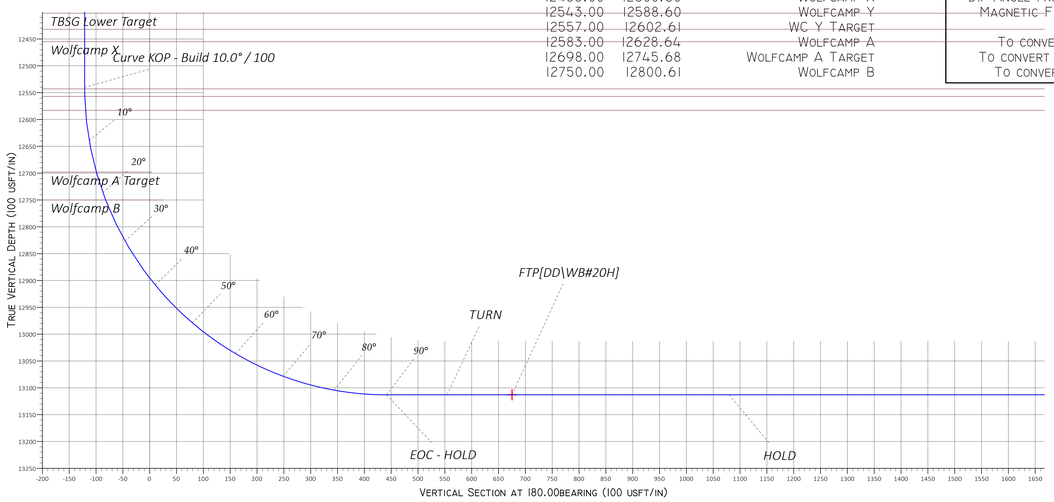
To convert Magnetic North to Grid, Add 6.24°
To convert Magnetic North to True, Add 6.72° East
To convert True North to Grid, Subtract 0.48°

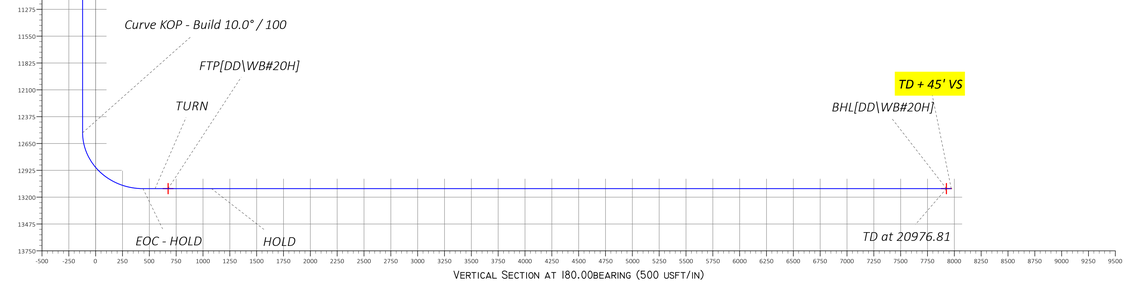


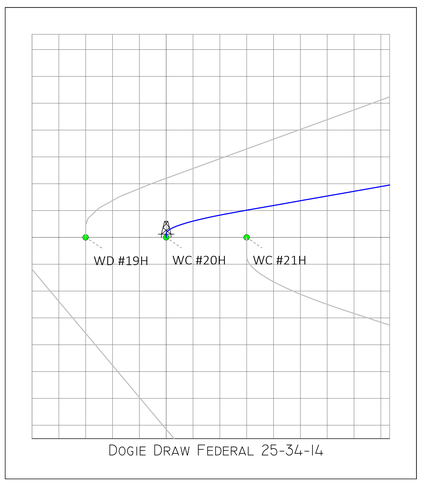
Azimuths to Grid North
True North: -0.48°
Magnetic North: 6.24°
Magnetic Field
Strength: 47920.9snT
Dip Angle: 59.80°
Date: 4/9/2018
Model: HDGM

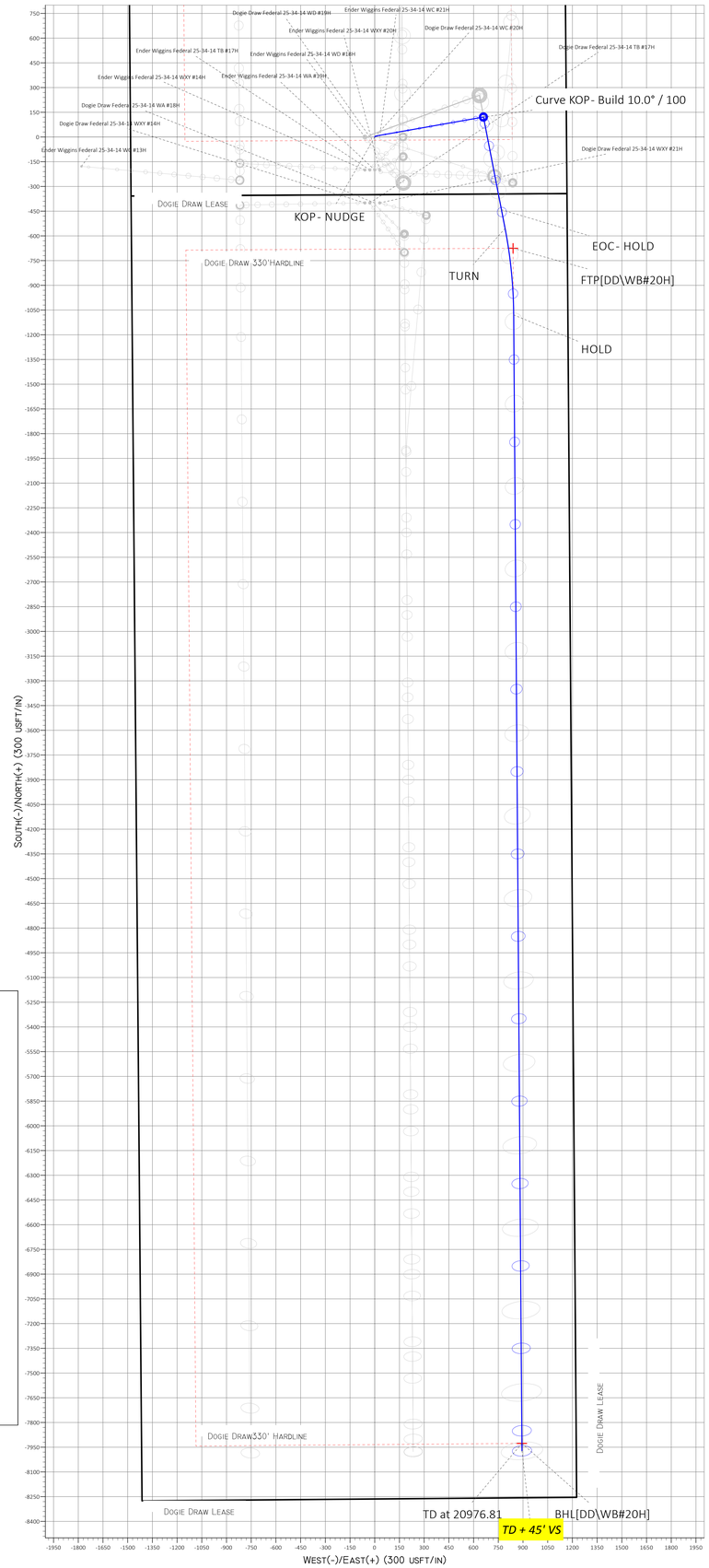


CASING DETAILS
No casing data is available









Scientific Drilling

Marathon Oil Permian, LLC

Lea County, NM (NAD27)
Dogie Draw Fed Com 25-34-14
WC #20H - Slot C

OH

Plan: Plan #1

Standard Planning Report

19 April, 2018

Scientific Drilling

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Lea County, NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		Using geodetic scale factor

Site	Dogie Draw Federal 25-34-14				
Site Position:		**Northing:**	412,243.05 usft	**Latitude:**	32° 7' 48.966 N
From:	Map	**Easting:**	774,435.99 usft	**Longitude:**	103° 26' 48.482 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.47 °

Well	WC #20H - Slot C					
Well Position	**+N/-S**	408.44 usft	**Northing:**	412,651.49 usft	**Latitude:**	32° 7' 52.721 N
	+E/-W	3,497.15 usft	**Easting:**	777,933.12 usft	**Longitude:**	103° 26' 7.777 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	3,359.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	4/9/2018	6.72	59.80	47,921

Design	Plan #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (bearing)**
	0.00	0.00	0.00	180.00

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	1.00	0.00	1,099.99	0.87	0.00	1.00	1.00	0.00	0.00	
1,130.00	1.00	0.00	1,129.99	1.40	0.00	0.00	0.00	0.00	0.00	
1,524.38	8.00	80.00	1,523.05	9.62	27.07	2.00	1.77	20.28	87.13	
5,939.38	8.00	80.00	5,895.08	116.31	632.18	0.00	0.00	0.00	0.00	
6,339.38	0.00	0.00	6,293.78	121.16	659.64	2.00	-2.00	0.00	180.00	
12,585.64	0.00	0.00	12,540.04	121.16	659.64	0.00	0.00	0.00	0.00	
13,485.64	90.00	169.00	13,113.00	-441.28	768.97	10.00	10.00	0.00	169.00	
13,600.64	90.00	169.00	13,113.00	-554.16	790.91	0.00	0.00	0.00	0.00	
14,129.64	90.00	179.58	13,113.00	-1,079.79	843.47	2.00	0.00	2.00	90.00	
20,976.81	90.00	179.58	13,113.00	-7,926.78	893.39	0.00	0.00	0.00	90.47	BHL[DD\WB#20H]
21,021.81	90.00	179.58	13,113.00	-7,971.78	893.72	0.00	0.00	0.00	0.00	

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	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
870.00	0.00	0.00	870.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
KOP - NUDGE									
1,100.00	1.00	0.00	1,099.99	0.87	0.00	-0.87	1.00	1.00	0.00
HOLD									
1,130.00	1.00	0.00	1,129.99	1.40	0.00	-1.40	0.00	0.00	0.00
Build 2.0° / 100									
1,200.00	1.76	52.58	1,199.97	2.66	0.85	-2.66	2.00	1.09	75.11
1,300.00	3.59	71.00	1,299.86	4.61	5.04	-4.61	2.00	1.83	18.42
1,373.35	5.02	75.67	1,373.00	6.16	10.32	-6.16	2.00	1.94	6.37
Salado									
1,400.00	5.54	76.77	1,399.54	6.74	12.70	-6.74	2.00	1.96	4.13
1,500.00	7.52	79.53	1,498.89	9.03	23.83	-9.03	2.00	1.98	2.76
1,524.38	8.00	80.00	1,523.05	9.62	27.07	-9.62	2.00	1.98	1.91
EOB - HOLD									
1,600.00	8.00	80.00	1,597.93	11.44	37.43	-11.44	0.00	0.00	0.00
1,700.00	8.00	80.00	1,696.95	13.86	51.14	-13.86	0.00	0.00	0.00
1,800.00	8.00	80.00	1,795.98	16.28	64.85	-16.28	0.00	0.00	0.00
1,900.00	8.00	80.00	1,895.01	18.69	78.55	-18.69	0.00	0.00	0.00
2,000.00	8.00	80.00	1,994.03	21.11	92.26	-21.11	0.00	0.00	0.00
2,100.00	8.00	80.00	2,093.06	23.53	105.96	-23.53	0.00	0.00	0.00
2,200.00	8.00	80.00	2,192.09	25.94	119.67	-25.94	0.00	0.00	0.00
2,300.00	8.00	80.00	2,291.11	28.36	133.37	-28.36	0.00	0.00	0.00
2,400.00	8.00	80.00	2,390.14	30.78	147.08	-30.78	0.00	0.00	0.00
2,500.00	8.00	80.00	2,489.17	33.19	160.79	-33.19	0.00	0.00	0.00
2,600.00	8.00	80.00	2,588.19	35.61	174.49	-35.61	0.00	0.00	0.00
2,700.00	8.00	80.00	2,687.22	38.03	188.20	-38.03	0.00	0.00	0.00
2,800.00	8.00	80.00	2,786.25	40.44	201.90	-40.44	0.00	0.00	0.00
2,900.00	8.00	80.00	2,885.27	42.86	215.61	-42.86	0.00	0.00	0.00
3,000.00	8.00	80.00	2,984.30	45.28	229.32	-45.28	0.00	0.00	0.00
3,100.00	8.00	80.00	3,083.33	47.69	243.02	-47.69	0.00	0.00	0.00
3,200.00	8.00	80.00	3,182.36	50.11	256.73	-50.11	0.00	0.00	0.00
3,300.00	8.00	80.00	3,281.38	52.53	270.43	-52.53	0.00	0.00	0.00
3,400.00	8.00	80.00	3,380.41	54.94	284.14	-54.94	0.00	0.00	0.00
3,500.00	8.00	80.00	3,479.44	57.36	297.85	-57.36	0.00	0.00	0.00
3,593.47	8.00	80.00	3,572.00	59.62	310.66	-59.62	0.00	0.00	0.00
Castile									
3,600.00	8.00	80.00	3,578.46	59.78	311.55	-59.78	0.00	0.00	0.00
3,700.00	8.00	80.00	3,677.49	62.19	325.26	-62.19	0.00	0.00	0.00
3,800.00	8.00	80.00	3,776.52	64.61	338.96	-64.61	0.00	0.00	0.00
3,900.00	8.00	80.00	3,875.54	67.03	352.67	-67.03	0.00	0.00	0.00
4,000.00	8.00	80.00	3,974.57	69.44	366.37	-69.44	0.00	0.00	0.00

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.00	8.00	80.00	4,073.60	71.86	380.08	-71.86	0.00	0.00	0.00
4,200.00	8.00	80.00	4,172.62	74.28	393.79	-74.28	0.00	0.00	0.00
4,300.00	8.00	80.00	4,271.65	76.69	407.49	-76.69	0.00	0.00	0.00
4,400.00	8.00	80.00	4,370.68	79.11	421.20	-79.11	0.00	0.00	0.00
4,500.00	8.00	80.00	4,469.70	81.53	434.90	-81.53	0.00	0.00	0.00
4,600.00	8.00	80.00	4,568.73	83.95	448.61	-83.95	0.00	0.00	0.00
4,700.00	8.00	80.00	4,667.76	86.36	462.32	-86.36	0.00	0.00	0.00
4,800.00	8.00	80.00	4,766.78	88.78	476.02	-88.78	0.00	0.00	0.00
4,900.00	8.00	80.00	4,865.81	91.20	489.73	-91.20	0.00	0.00	0.00
5,000.00	8.00	80.00	4,964.84	93.61	503.43	-93.61	0.00	0.00	0.00
5,100.00	8.00	80.00	5,063.86	96.03	517.14	-96.03	0.00	0.00	0.00
5,132.45	8.00	80.00	5,096.00	96.81	521.59	-96.81	0.00	0.00	0.00
Base of Salt									
5,200.00	8.00	80.00	5,162.89	98.45	530.85	-98.45	0.00	0.00	0.00
5,300.00	8.00	80.00	5,261.92	100.86	544.55	-100.86	0.00	0.00	0.00
5,400.00	8.00	80.00	5,360.95	103.28	558.26	-103.28	0.00	0.00	0.00
5,420.25	8.00	80.00	5,381.00	103.77	561.03	-103.77	0.00	0.00	0.00
Lamar									
5,451.56	8.00	80.00	5,412.00	104.52	565.32	-104.52	0.00	0.00	0.00
Bell Canyon									
5,500.00	8.00	80.00	5,459.97	105.70	571.96	-105.70	0.00	0.00	0.00
5,600.00	8.00	80.00	5,559.00	108.11	585.67	-108.11	0.00	0.00	0.00
5,700.00	8.00	80.00	5,658.03	110.53	599.37	-110.53	0.00	0.00	0.00
5,800.00	8.00	80.00	5,757.05	112.95	613.08	-112.95	0.00	0.00	0.00
5,900.00	8.00	80.00	5,856.08	115.36	626.79	-115.36	0.00	0.00	0.00
5,939.38	8.00	80.00	5,895.08	116.31	632.18	-116.31	0.00	0.00	0.00
DROP 2.0° / 100									
6,000.00	6.79	80.00	5,955.19	117.67	639.87	-117.67	2.00	-2.00	0.00
6,100.00	4.79	80.00	6,054.68	119.42	649.80	-119.42	2.00	-2.00	0.00
6,200.00	2.79	80.00	6,154.45	120.57	656.30	-120.57	2.00	-2.00	0.00
6,300.00	0.79	80.00	6,254.40	121.11	659.37	-121.11	2.00	-2.00	0.00
6,339.38	0.00	0.00	6,293.78	121.16	659.64	-121.16	2.00	-2.00	-203.13
EOD - HOLD									
6,400.00	0.00	0.00	6,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
6,500.00	0.00	0.00	6,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
6,600.00	0.00	0.00	6,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
6,700.00	0.00	0.00	6,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
6,766.60	0.00	0.00	6,721.00	121.16	659.64	-121.16	0.00	0.00	0.00
Cherry Canyon									
6,800.00	0.00	0.00	6,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
6,900.00	0.00	0.00	6,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,000.00	0.00	0.00	6,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,100.00	0.00	0.00	7,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,200.00	0.00	0.00	7,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,300.00	0.00	0.00	7,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,400.00	0.00	0.00	7,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,500.00	0.00	0.00	7,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,600.00	0.00	0.00	7,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,700.00	0.00	0.00	7,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,800.00	0.00	0.00	7,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
7,900.00	0.00	0.00	7,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,000.00	0.00	0.00	7,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,066.60	0.00	0.00	8,021.00	121.16	659.64	-121.16	0.00	0.00	0.00

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Brushy Canyon									
8,100.00	0.00	0.00	8,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,200.00	0.00	0.00	8,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,300.00	0.00	0.00	8,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,400.00	0.00	0.00	8,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,500.00	0.00	0.00	8,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,600.00	0.00	0.00	8,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,700.00	0.00	0.00	8,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,800.00	0.00	0.00	8,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
8,900.00	0.00	0.00	8,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,000.00	0.00	0.00	8,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,100.00	0.00	0.00	9,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,200.00	0.00	0.00	9,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,300.00	0.00	0.00	9,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,361.60	0.00	0.00	9,316.00	121.16	659.64	-121.16	0.00	0.00	0.00
Bone Spring									
9,400.00	0.00	0.00	9,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,500.00	0.00	0.00	9,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,600.00	0.00	0.00	9,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,700.00	0.00	0.00	9,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,800.00	0.00	0.00	9,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
9,900.00	0.00	0.00	9,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,000.00	0.00	0.00	9,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,100.00	0.00	0.00	10,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,200.00	0.00	0.00	10,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,300.00	0.00	0.00	10,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,400.00	0.00	0.00	10,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,402.60	0.00	0.00	10,357.00	121.16	659.64	-121.16	0.00	0.00	0.00
1st Bone Spring Sand									
10,500.00	0.00	0.00	10,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,600.00	0.00	0.00	10,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,700.00	0.00	0.00	10,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,800.00	0.00	0.00	10,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,900.00	0.00	0.00	10,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
10,980.60	0.00	0.00	10,935.00	121.16	659.64	-121.16	0.00	0.00	0.00
2nd Bone Spring Sand									
11,000.00	0.00	0.00	10,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,100.00	0.00	0.00	11,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,200.00	0.00	0.00	11,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,300.00	0.00	0.00	11,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,400.00	0.00	0.00	11,354.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,500.00	0.00	0.00	11,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,600.00	0.00	0.00	11,554.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,700.00	0.00	0.00	11,654.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,800.00	0.00	0.00	11,754.40	121.16	659.64	-121.16	0.00	0.00	0.00
11,900.00	0.00	0.00	11,854.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,000.00	0.00	0.00	11,954.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,024.60	0.00	0.00	11,979.00	121.16	659.64	-121.16	0.00	0.00	0.00
3rd Bone Spring Sand									
12,100.00	0.00	0.00	12,054.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,200.00	0.00	0.00	12,154.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,300.00	0.00	0.00	12,254.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,400.00	0.00	0.00	12,354.40	121.16	659.64	-121.16	0.00	0.00	0.00

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com	**North Reference:**	Grid
Well:	25-34-14 WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,447.60	0.00	0.00	12,402.00	121.16	659.64	-121.16	0.00	0.00	0.00
TBSG Lower Target									
12,477.60	0.00	0.00	12,432.00	121.16	659.64	-121.16	0.00	0.00	0.00
Wolfcamp									
12,500.00	0.00	0.00	12,454.40	121.16	659.64	-121.16	0.00	0.00	0.00
12,500.60	0.00	0.00	12,455.00	121.16	659.64	-121.16	0.00	0.00	0.00
Wolfcamp X									
12,585.64	0.00	0.00	12,540.04	121.16	659.64	-121.16	0.00	0.00	0.00
Curve KOP - Build 10.0° / 100									
12,588.60	0.30	169.00	12,543.00	121.15	659.64	-121.15	10.00	10.00	0.00
Wolfcamp Y									
12,600.00	1.44	169.00	12,554.40	120.98	659.67	-120.98	10.00	10.00	0.00
12,602.61	1.70	169.00	12,557.00	120.91	659.69	-120.91	10.00	10.00	0.00
WC Y Target									
12,628.64	4.30	169.00	12,583.00	119.57	659.95	-119.57	10.00	10.00	0.00
Wolfcamp A									
12,650.00	6.44	169.00	12,604.26	117.61	660.33	-117.61	10.00	10.00	0.00
12,700.00	11.44	169.00	12,653.64	109.99	661.81	-109.99	10.00	10.00	0.00
12,745.68	16.00	169.00	12,698.00	99.36	663.88	-99.36	10.00	10.00	0.00
Wolfcamp A Target									
12,750.00	16.44	169.00	12,702.15	98.17	664.11	-98.17	10.00	10.00	0.00
12,800.00	21.44	169.00	12,749.43	82.25	667.20	-82.25	10.00	10.00	0.00
12,800.61	21.50	169.00	12,750.00	82.03	667.25	-82.03	10.00	10.00	0.00
Wolfcamp B									
12,850.00	26.44	169.00	12,795.12	62.34	671.07	-62.34	10.00	10.00	0.00
12,900.00	31.44	169.00	12,838.86	38.61	675.69	-38.61	10.00	10.00	0.00
12,950.00	36.44	169.00	12,880.33	11.21	681.01	-11.21	10.00	10.00	0.00
13,000.00	41.44	169.00	12,919.21	-19.62	687.00	19.62	10.00	10.00	0.00
13,050.00	46.44	169.00	12,955.21	-53.67	693.62	53.67	10.00	10.00	0.00
13,100.00	51.44	169.00	12,988.04	-90.66	700.81	90.66	10.00	10.00	0.00
13,150.00	56.44	169.00	13,017.47	-130.32	708.52	130.32	10.00	10.00	0.00
13,200.00	61.44	169.00	13,043.26	-172.35	716.69	172.35	10.00	10.00	0.00
13,250.00	66.44	169.00	13,065.22	-216.43	725.26	216.43	10.00	10.00	0.00
13,300.00	71.44	169.00	13,083.19	-262.22	734.16	262.22	10.00	10.00	0.00
13,350.00	76.44	169.00	13,097.02	-309.37	743.33	309.37	10.00	10.00	0.00
13,400.00	81.44	169.00	13,106.61	-357.52	752.69	357.52	10.00	10.00	0.00
13,450.00	86.44	169.00	13,111.89	-406.31	762.17	406.31	10.00	10.00	0.00
13,485.64	90.00	169.00	13,113.00	-441.28	768.97	441.28	10.00	10.00	0.00
EOC - HOLD									
13,500.00	90.00	169.00	13,113.00	-455.37	771.71	455.37	0.00	0.00	0.00
13,600.64	90.00	169.00	13,113.00	-554.16	790.91	554.16	0.00	0.00	0.00
TURN									
13,700.00	90.00	170.99	13,113.00	-652.00	808.17	652.00	2.00	0.00	2.00
13,727.38	90.00	171.53	13,113.00	-679.07	812.33	679.07	2.00	0.00	2.00
FTP[DD\WB#20H]									
13,800.00	90.00	172.99	13,113.00	-751.02	822.11	751.02	2.00	0.00	2.00
13,900.00	90.00	174.99	13,113.00	-850.47	832.59	850.47	2.00	0.00	2.00
14,000.00	90.00	176.99	13,113.00	-950.22	839.58	950.22	2.00	0.00	2.00
14,100.00	90.00	178.99	13,113.00	-1,050.15	843.10	1,050.15	2.00	0.00	2.00
14,129.64	90.00	179.58	13,113.00	-1,079.79	843.47	1,079.79	2.00	0.00	2.00
HOLD									
14,200.00	90.00	179.58	13,113.00	-1,150.15	843.98	1,150.15	0.00	0.00	0.00

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,300.00	90.00	179.58	13,113.00	-1,250.14	844.71	1,250.14	0.00	0.00	0.00
14,400.00	90.00	179.58	13,113.00	-1,350.14	845.45	1,350.14	0.00	0.00	0.00
14,500.00	90.00	179.58	13,113.00	-1,450.14	846.18	1,450.14	0.00	0.00	0.00
14,600.00	90.00	179.58	13,113.00	-1,550.13	846.91	1,550.13	0.00	0.00	0.00
14,700.00	90.00	179.58	13,113.00	-1,650.13	847.65	1,650.13	0.00	0.00	0.00
14,800.00	90.00	179.58	13,113.00	-1,750.13	848.38	1,750.13	0.00	0.00	0.00
14,900.00	90.00	179.58	13,113.00	-1,850.13	849.11	1,850.13	0.00	0.00	0.00
15,000.00	90.00	179.58	13,113.00	-1,950.12	849.84	1,950.12	0.00	0.00	0.00
15,100.00	90.00	179.58	13,113.00	-2,050.12	850.57	2,050.12	0.00	0.00	0.00
15,200.00	90.00	179.58	13,113.00	-2,150.12	851.31	2,150.12	0.00	0.00	0.00
15,300.00	90.00	179.58	13,113.00	-2,250.12	852.04	2,250.12	0.00	0.00	0.00
15,400.00	90.00	179.58	13,113.00	-2,350.11	852.77	2,350.11	0.00	0.00	0.00
15,500.00	90.00	179.58	13,113.00	-2,450.11	853.50	2,450.11	0.00	0.00	0.00
15,600.00	90.00	179.58	13,113.00	-2,550.11	854.23	2,550.11	0.00	0.00	0.00
15,700.00	90.00	179.58	13,113.00	-2,650.11	854.96	2,650.11	0.00	0.00	0.00
15,800.00	90.00	179.58	13,113.00	-2,750.10	855.69	2,750.10	0.00	0.00	0.00
15,900.00	90.00	179.58	13,113.00	-2,850.10	856.43	2,850.10	0.00	0.00	0.00
16,000.00	90.00	179.58	13,113.00	-2,950.10	857.16	2,950.10	0.00	0.00	0.00
16,100.00	90.00	179.58	13,113.00	-3,050.09	857.89	3,050.09	0.00	0.00	0.00
16,200.00	90.00	179.58	13,113.00	-3,150.09	858.62	3,150.09	0.00	0.00	0.00
16,300.00	90.00	179.58	13,113.00	-3,250.09	859.35	3,250.09	0.00	0.00	0.00
16,400.00	90.00	179.58	13,113.00	-3,350.09	860.08	3,350.09	0.00	0.00	0.00
16,500.00	90.00	179.58	13,113.00	-3,450.08	860.81	3,450.08	0.00	0.00	0.00
16,600.00	90.00	179.58	13,113.00	-3,550.08	861.54	3,550.08	0.00	0.00	0.00
16,700.00	90.00	179.58	13,113.00	-3,650.08	862.27	3,650.08	0.00	0.00	0.00
16,800.00	90.00	179.58	13,113.00	-3,750.08	863.00	3,750.08	0.00	0.00	0.00
16,900.00	90.00	179.58	13,113.00	-3,850.07	863.73	3,850.07	0.00	0.00	0.00
17,000.00	90.00	179.58	13,113.00	-3,950.07	864.46	3,950.07	0.00	0.00	0.00
17,100.00	90.00	179.58	13,113.00	-4,050.07	865.19	4,050.07	0.00	0.00	0.00
17,200.00	90.00	179.58	13,113.00	-4,150.07	865.92	4,150.07	0.00	0.00	0.00
17,300.00	90.00	179.58	13,113.00	-4,250.06	866.65	4,250.06	0.00	0.00	0.00
17,400.00	90.00	179.58	13,113.00	-4,350.06	867.38	4,350.06	0.00	0.00	0.00
17,500.00	90.00	179.58	13,113.00	-4,450.06	868.11	4,450.06	0.00	0.00	0.00
17,600.00	90.00	179.58	13,113.00	-4,550.05	868.84	4,550.05	0.00	0.00	0.00
17,700.00	90.00	179.58	13,113.00	-4,650.05	869.57	4,650.05	0.00	0.00	0.00
17,800.00	90.00	179.58	13,113.00	-4,750.05	870.29	4,750.05	0.00	0.00	0.00
17,900.00	90.00	179.58	13,113.00	-4,850.05	871.02	4,850.05	0.00	0.00	0.00
18,000.00	90.00	179.58	13,113.00	-4,950.04	871.75	4,950.04	0.00	0.00	0.00
18,100.00	90.00	179.58	13,113.00	-5,050.04	872.48	5,050.04	0.00	0.00	0.00
18,200.00	90.00	179.58	13,113.00	-5,150.04	873.21	5,150.04	0.00	0.00	0.00
18,300.00	90.00	179.58	13,113.00	-5,250.04	873.94	5,250.04	0.00	0.00	0.00
18,400.00	90.00	179.58	13,113.00	-5,350.03	874.67	5,350.03	0.00	0.00	0.00
18,500.00	90.00	179.58	13,113.00	-5,450.03	875.39	5,450.03	0.00	0.00	0.00
18,600.00	90.00	179.58	13,113.00	-5,550.03	876.12	5,550.03	0.00	0.00	0.00
18,700.00	90.00	179.58	13,113.00	-5,650.03	876.85	5,650.03	0.00	0.00	0.00
18,800.00	90.00	179.58	13,113.00	-5,750.02	877.58	5,750.02	0.00	0.00	0.00
18,900.00	90.00	179.58	13,113.00	-5,850.02	878.31	5,850.02	0.00	0.00	0.00
19,000.00	90.00	179.58	13,113.00	-5,950.02	879.03	5,950.02	0.00	0.00	0.00
19,100.00	90.00	179.58	13,113.00	-6,050.02	879.76	6,050.02	0.00	0.00	0.00
19,200.00	90.00	179.58	13,113.00	-6,150.01	880.49	6,150.01	0.00	0.00	0.00
19,300.00	90.00	179.58	13,113.00	-6,250.01	881.21	6,250.01	0.00	0.00	0.00
19,400.00	90.00	179.58	13,113.00	-6,350.01	881.94	6,350.01	0.00	0.00	0.00
19,500.00	90.00	179.58	13,113.00	-6,450.00	882.67	6,450.00	0.00	0.00	0.00
19,600.00	90.00	179.58	13,113.00	-6,550.00	883.40	6,550.00	0.00	0.00	0.00

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,700.00	90.00	179.58	13,113.00	-6,650.00	884.12	6,650.00	0.00	0.00	0.00
19,800.00	90.00	179.58	13,113.00	-6,750.00	884.85	6,750.00	0.00	0.00	0.00
19,900.00	90.00	179.58	13,113.00	-6,849.99	885.58	6,849.99	0.00	0.00	0.00
20,000.00	90.00	179.58	13,113.00	-6,949.99	886.30	6,949.99	0.00	0.00	0.00
20,100.00	90.00	179.58	13,113.00	-7,049.99	887.03	7,049.99	0.00	0.00	0.00
20,200.00	90.00	179.58	13,113.00	-7,149.99	887.75	7,149.99	0.00	0.00	0.00
20,300.00	90.00	179.58	13,113.00	-7,249.98	888.48	7,249.98	0.00	0.00	0.00
20,400.00	90.00	179.58	13,113.00	-7,349.98	889.21	7,349.98	0.00	0.00	0.00
20,500.00	90.00	179.58	13,113.00	-7,449.98	889.93	7,449.98	0.00	0.00	0.00
20,600.00	90.00	179.58	13,113.00	-7,549.98	890.66	7,549.98	0.00	0.00	0.00
20,700.00	90.00	179.58	13,113.00	-7,649.97	891.38	7,649.97	0.00	0.00	0.00
20,800.00	90.00	179.58	13,113.00	-7,749.97	892.11	7,749.97	0.00	0.00	0.00
20,900.00	90.00	179.58	13,113.00	-7,849.97	892.84	7,849.97	0.00	0.00	0.00
20,976.81	90.00	179.58	13,113.00	-7,926.78	893.39	7,926.78	0.00	0.00	0.00
TD at 20976.81 - BHL[DD\WB#20H]									
21,000.00	90.00	179.58	13,113.00	-7,949.97	893.56	7,949.97	0.00	0.00	0.00
21,021.81	90.00	179.58	13,113.00	-7,971.78	893.72	7,971.78	0.00	0.00	0.00
TD + 45' VS									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (bearing	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP[DD\WB#20H]	0.00	0.00	13,113.00	-675.21	839.71	411,976.28	778,772.83	32° 7' 45.970 N	103° 25' 58.079 W
- plan misses target center by 27.65usft at 13727.38usft MD (13113.00 TVD, -679.06 N, 812.33 E)									
- Point									
BHL[DD\WB#20H]	0.00	0.00	13,113.00	-7,926.78	893.39	404,724.73	778,826.51	32° 6' 34.210 N	103° 25' 58.159 W
- plan hits target center									
- Point									

Database:	Midland District	**Local Co-ordinate Reference:**	Well WC #20H - Slot C
Company:	Marathon Oil Permian, LLC	**TVD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Project:	Lea County, NM (NAD27)	**MD Reference:**	KB = 26.5' @ 3385.50usft (Rig TBD)
Site:	Dogie Draw Fed Com 25-34-14	**North Reference:**	Grid
Well:	WC #20H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)
870.00	870.00	Rustler			
1,373.35	1,373.00	Salado			
3,593.47	3,572.00	Castile			
5,132.45	5,096.00	Base of Salt			
5,420.25	5,381.00	Lamar			
5,451.56	5,412.00	Bell Canyon			
6,766.60	6,721.00	Cherry Canyon			
8,066.60	8,021.00	Brushy Canyon			
9,361.60	9,316.00	Bone Spring			
10,402.60	10,357.00	1st Bone Spring Sand			
10,980.60	10,935.00	2nd Bone Spring Sand			
12,024.60	11,979.00	3rd Bone Spring Sand			
12,447.60	12,402.00	TBSG Lower Target			
12,477.60	12,432.00	Wolfcamp			
12,500.60	12,455.00	Wolfcamp X			
12,588.60	12,543.00	Wolfcamp Y			
12,602.61	12,557.00	WC Y Target			
12,628.64	12,583.00	Wolfcamp A			
12,745.68	12,698.00	Wolfcamp A Target			
12,800.61	12,750.00	Wolfcamp B			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,000.00	1,000.00	0.00	0.00	KOP - NUDGE
1,100.00	1,099.99	0.87	0.00	HOLD
1,130.00	1,129.99	1.40	0.00	Build 2.0° / 100
1,524.38	1,523.05	9.62	27.07	EOB - HOLD
5,939.38	5,895.08	116.31	632.18	DROP 2.0° / 100
6,339.38	6,293.78	121.16	659.64	EOD - HOLD
12,585.64	12,540.04	121.16	659.64	Curve KOP - Build 10.0° / 100
13,485.64	13,113.00	-441.28	768.97	EOC - HOLD
13,600.64	13,113.00	-554.16	790.91	TURN
14,129.64	13,113.00	-1,079.79	843.47	HOLD
20,976.81	13,113.00	-7,926.78	893.39	TD at 20976.81
21,021.81	13,113.00	-7,971.78	893.72	TD + 45' VS

Batch Drilling Plan

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

Request for Surface Rig

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

MARATHON OIL PERMIAN LLC

DRILLING AND OPERATIONS PLAN

WELL NAME/NUMBER: DOGIE DRAW FED COM 25 34 14 WC 20H_
STATE: NEW MEXICO **COUNTY:** LEA

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	TWSP	Range	Section	Aliquot/Lot/Trac	Latitude (NAD 83)	Longitude (NAD 83)	County	State	Meridian	Lease Type	Lease Number	Elevation (ft SS)	MD (RKB	TVD (RKB)
SHL	2290	FNL	1164	FEL	25S	34E	14	NESE	32.13143685 N	103.43596150 W	Lea	NM	NMP	P	FEE	3358	0	0
KOP	2169	FNL	505	FEL	25S	34E	14	NESE	32.131754210 N	103.433828806 W	Lea	NM	NMP	F	NMNM122624	-9182	12585	12540
PPP	2309	FSL	330	FEL	25S	34E	14	NESE	32.12956168 N	103.43326718 W	Lea	NM	NMP	F	NMNM122624	-9755	13485	13113
EXIT	0	FSL	330	FEL	25S	34E	14	SESE	32.123233940 N	103.433271583 W	Lea	NM	NMP	F	NMNM122624	-9755	16027	13113
PPP	0	FNL	330	FEL	25S	34E	23	NENE	32.123233940 N	103.433271583 W	Lea	NM	NMP	F	NMNM132944	-9755	16027	13113
BHL	330	FSL	330	FEL	25S	34E	23	SESE	32.10962821 N	103.433279959 W	Lea	NM	NMP	F	NMNM132944	-9755	21022	13113

1. GEOLOGIC NAME OF SURFACE FORMATION

a. Permian/Quatenary 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
Rustler	905	905	Anhydrite/Dolomite	BRINE	N
Salado	1408	1408	Salt/Anhydrite	BRINE	N
Castile	3607	3628	Base Salt	BRINE	N
Base of Salt	5131	5167	Limy Sands	BRINE	N
Lamar	5416	5455	Sand/Shales	OIL	Y
Bell Canyon	5447	5487	Sands/Shale	OIL	Y
Cherry Canyon	6756	6801	Sands/Carbonates	OIL	Y
Brushy Canyon	8056	8102	Sands/Carbonates	OIL	Y
Bone Spring	9365	9410	Sands/Carbonates	OIL	Y
1st Bone Spring Sand	10392	10437	Sands/Carbonates	OIL	Y
2nd Bone Spring Sand	10970	11015	Sands/Carbonates	OIL	Y
3rd Bone Spring Sand	12014	12060	Sands/Carbonates	OIL	Y
Wolfcamp	12467	12513	Carbonates/Shales/Sand	OIL	Y

			s		
Wolfcamp X	12490	12535	Carbonates/Shales/Sands	OIL	Y
Wolfcamp Y	12578	12623	Carbonates/Shales/Sands	OIL	Y
Wolfcamp A	12618	126664	Carbonates/Shales/Sands	OIL	Y

DEEPEST EXPECTED FRESH WATER: 400' TVD

ANTICIPATED BOTTOM HOLE PRESSURE: 9193 psi

ANTICIPATED BOTTOM HOLE TEMPERATURE: 200°F
54
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	TVDBottom Set	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	17 1/2	13 3/8	0	950	0	950	54.5	J55	STC	5.52	2.5	2.5
Intermediate I	12 1/4	9 5/8	0	5439	0	5400	40	J55	LTC	1.74	1.15	2.19
Intermediate II	8 3/4	7 5/8	0	12035	0	11990	33.7	P110	W523	3.12	1.16	2.37
Production Casing	6 1/8	5 1/2	0	12035	0	11990	23	P110	W625	1.73	1.20	2.09
Production Casing	6 1/8	4 1/2	12035	21022	11990	13113	15.1	P110	BTC	1.5	1.26	2.21

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

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 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

4. CEMENT PROGRAM:

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	Tail	--	0	950	992	1.33	14.8	1320	100	Class C	N/A
Intermediate I	Lead	--	0	4400	1394	1.75	12.8	2412	75	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
Intermediate I	Tail	--	4400	5439	367	1.33	14.8	488	50	Class C	0.3 % Retarder
Intermediate II	Lead	--	5100	11000	375	2.7	11	1014	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
Intermediate II	Tail	--	11000	12035	120	1.09	15.6	131	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder
Production Casing	Lead	--	11700	12035	13	2.94	10.8	37	30	Class H	13% extender + 0.75% Retarder + 0.02 gal/sk Defoamer + 0.1% viscosifier + 0.2% Fluid Loss
Production Casing	Tail	--	12035	21022	932	1.18	14.5	1100	30	Class H	0.3% fluid loss + 0.02% antifoam + 0.15% dispersant + 0.4% retarder

											+ 0.02% viscosifier

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

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

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

Attach plugging procedure for pilot hole.

N/A

5. 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
		10000	Blind Ram		10000
			Pipe Ram	x	
			Double Ram	x	
			Other*		
8 ¾"	13 5/8	5000	Annular	x	70% of working pressure
		10000	Blind Ram		10000
			Pipe Ram	x	
			Double Ram	x	
			Other*		

6 1/8”	13 5/8	5000	Annular	x	70% of working pressure
		10000	Blind Ram		10000
			Pipe Ram	x	
			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
0	950	Water Based Mud	8.4	8.8	
950	5439	Brine	9.9	10.2	
5439	12035	Cut Brine	8.8	9.4	
12039	21022	Oil Based mud	11.5	13.5	

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

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 nippled up on the wellhead.
- A BOP test will then be conducted according to Onshore Order #2 and drilling operations will resume on the subject well.

Request for Surface Rig

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

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Marathon Oil Permean LLC**
LEASE NO.:	**NMNM122624**
LOCATION:	Section 14, T.25 S., R.34 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Dogie Draw Fed Com 25 34 14 WD 19H
SURFACE HOLE FOOTAGE:	2290'/N & 1194'/E
BOTTOM HOLE FOOTAGE	330'/S & 990'/E

WELL NAME & NO.:	Dogie Draw Fed Com 25 34 14 WC 20H
SURFACE HOLE FOOTAGE:	2290'/N & 1164'/E
BOTTOM HOLE FOOTAGE	330'/S & 330'/E

COA

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

A. HYDROGEN SULFIDE

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **950 feet** (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature

survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing shall be set at approximately **5400 feet** is:

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

3. The minimum required fill of cement behind the **7-5/8** inch intermediate casing is:

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

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

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

C. PRESSURE CONTROL

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

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

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

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

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

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

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

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

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

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

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

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

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

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

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

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

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

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

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

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