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Form 3160-3  
(June 2015)

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMNM138836	
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No.	
8. Lease Name and Well No. MAZER RACKHAM-20 WA FED.COM 1H 325772	
9. API Well No. 30-015-46146	
10. Field and Pool, or Exploratory PURPLE SAGE / WOLFCAMP, (GAS)	
11. Sec., T. R. M. or Blk. and Survey or Area SEC 20 / T26S / R29E / NMP	
12. County or Parish EDDY	
13. State NM	
14. Distance in miles and direction from nearest town or post office* 27 miles	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330 feet	16. No of acres in lease 480
17. Spacing Unit dedicated to this well 320	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 2000 feet	19. Proposed Depth 9885 feet / 14517 feet
20. BLM/BIA Bond No. in file FED: NMB001555	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2872 feet	22. Approximate date work will start* 05/01/2019
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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature (Electronic Submission)	Name (Printed/Typed) Jennifer Van Curen / Ph: (713)296-2500	Date 01/23/2019
Title Sr. Regulatory Compliance Rep		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 05/30/2019
Title Assistant Field Manager Lands & Minerals 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.

**APPROVED WITH CONDITIONS**  
Approval Date: 05/30/2019

(Continued on page 2)

\*(Instructions on page 2)

RW 6-28-19

## INSTRUCTIONS

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

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

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

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

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

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

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

## NOTICES

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

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

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

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

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

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

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

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

## Additional Operator Remarks

### Location of Well

1. SHL: NENE / 966 FNL / 540 FEL / TWSP: 26S / RANGE: 29E / SECTION: 20 / LAT: 32.0329023 / LONG: -103.9999643 ( TVD: 0 feet, MD: 0 feet )  
PPP: NENE / 330 FNL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 20 / LAT: 32.0346523 / LONG: -103.9992931 ( TVD: 9758 feet, MD: 9907 feet )  
PPP: NESE / 2636 FSL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 20 / LAT: 32.0283125 / LONG: -103.9992648 ( TVD: 9878 feet, MD: 12238 feet )  
BHL: SESE / 330 FSL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 20 / LAT: 32.0220478 / LONG: -103.9990335 ( TVD: 9885 feet, MD: 14517 feet )

### BLM Point of Contact

Name: Tanja Baca  
Title: Admin Support Assistant  
Phone: 5752345940  
Email: tabaca@blm.gov

CONFIDENTIAL

## Review and Appeal Rights

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

CONFIDENTIAL

**PECOS DISTRICT  
DRILLING CONDITIONS OF APPROVAL**

<b>OPERATOR'S NAME:</b>	<b>MARATHON OIL PERMIAN LLC</b>
<b>LEASE NO.:</b>	<b>NMNM138836</b>
<b>WELL NAME &amp; NO.:</b>	<b>MAZER RACKHAM 20 WA FED COM 1H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>966' FNL &amp; 540' FEL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>330' FSL &amp; 330' FEL</b>
<b>LOCATION:</b>	<b>Section 20, T. 26 S., R 29 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

COA

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

**A. HYDROGEN SULFIDE**

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

**B. CASING**

1. The 13-3/8 inch surface casing shall be set at approximately **400 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

- include the lead cement)
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch first intermediate casing is:
- Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**
  - ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The minimum required fill of cement behind the **7** inch second intermediate casing is:
- Cement should tie-back at least **200 feet** into previous casing string If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**
  - ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
- Cement should tie-back **100 feet** into the previous casing. 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 **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 Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- 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.

**JJP05232019**

## 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)

Chaves and Roosevelt Counties  
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.  
During office hours call (575) 627-0272.  
After office hours call (575)

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 2<sup>nd</sup> 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.
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.
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: 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.
- 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.

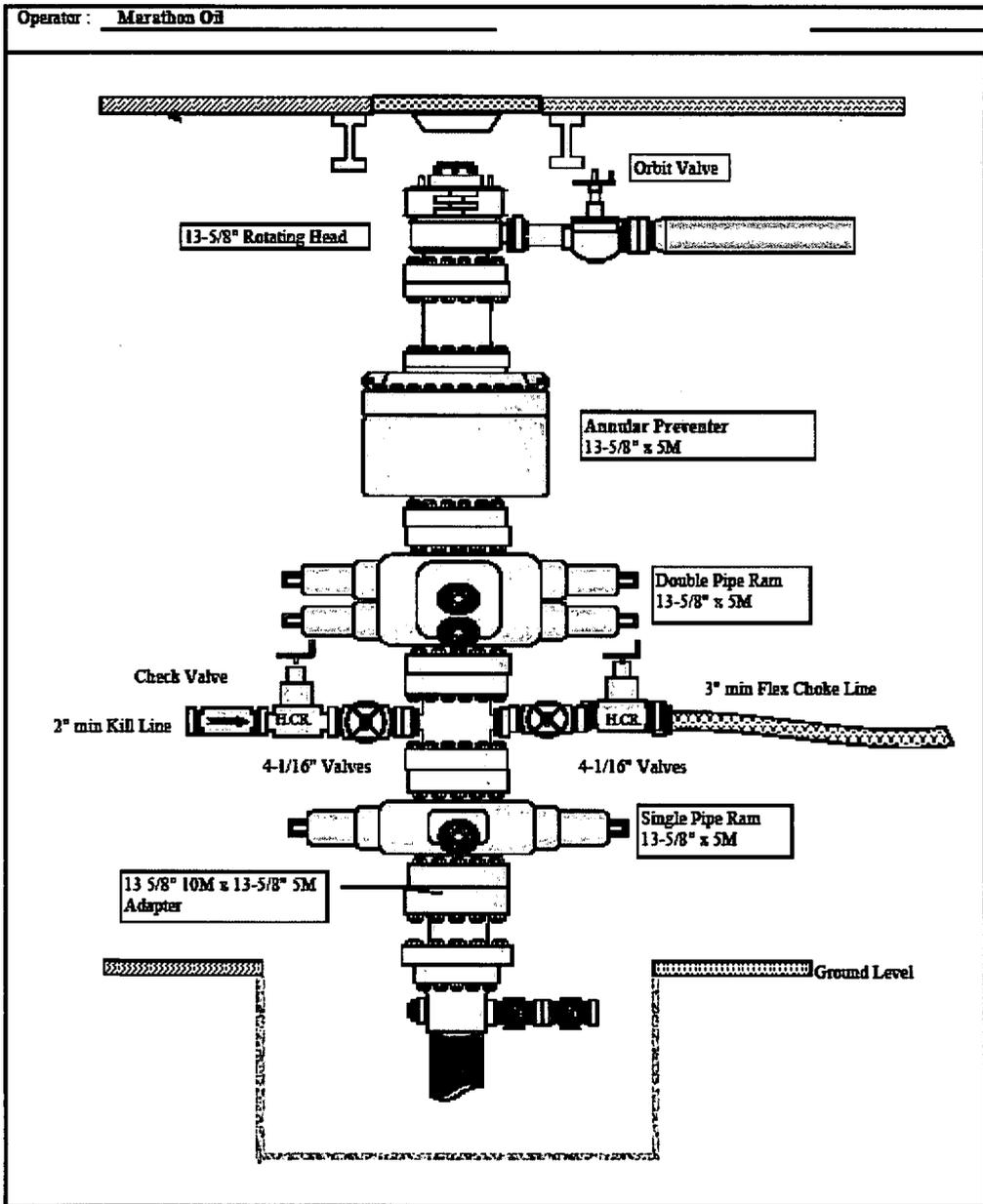
C. DRILLING MUD

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.





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

# Operator Certification Data Report

06/12/2019

## Operator Certification

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

**NAME:** Jennifer Van Curen

**Signed on:** 01/18/2019

**Title:** Sr. Regulatory Compliance Rep

**Street Address:** 5555 San Felipe St.

**City:** Houston

**State:** TX

**Zip:** 77056

**Phone:** (713)296-2500

**Email address:** [jvancuren@marathonoil.com](mailto:jvancuren@marathonoil.com)

## Field Representative

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

**Choke Diagram Attachment:**

DRILL2\_\_MAZER\_RACKHAM\_20\_5M\_10M.TWO\_CHOKE\_MANIFOLD\_1H\_6H\_8H\_9H\_\_20190121053939.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Choke\_Line\_Flex\_III\_Rig\_20190121054010.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Choke\_Line\_Test\_Chart\_SN\_63393\_20190121054020.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Contitech\_Hose\_SN\_663393\_20190121054027.pdf

**BOP Diagram Attachment:**

DRILL2\_\_MAZER\_RACKHAM\_20\_10\_5M\_Flex.BOPE.\_1H\_6H\_8H\_9H\_\_20190121054032.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_WH\_TH\_DESIGN\_\_1B\_\_5K\_10K\_7in\_\_1H\_6H\_8H\_9H\_\_20190121054052.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	400	0	400	2872	2472	400	J-55	54.5	STC	5.52	2.5	BUOY	2.5	BUOY	2.5
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2700	0	2687	2872	185	2700	J-55	40	LTC	1.74	1.15	BUOY	2.19	BUOY	2.19
3	PRODUCTION	8.75	7.0	NEW	API	N	0	9080	0	9005	2872	-6133	9080	P-110	29	BUTT	2.21	1.18	BUOY	1.9	BUOY	1.9
4	LINER	6.125	4.5	NEW	API	N	8780	14517	8705	9885	-5833	-7013	5737	P-110	13.5	BUTT	1.33	1.56	BUOY	1.88	BUOY	1.88

**Casing Attachments**



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

# Operator Certification Data Report

06/12/2019

## Operator Certification

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

**NAME:** Jennifer Van Curen

**Signed on:** 01/18/2019

**Title:** Sr. Regulatory Compliance Rep

**Street Address:** 5555 San Felipe St.

**City:** Houston

**State:** TX

**Zip:** 77056

**Phone:** (713)296-2500

**Email address:** jvancuren@marathonoil.com

## Field Representative

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**



APD ID: 10400038177

Submission Date: 01/23/2019

Highlighted data reflects the most recent changes

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

**Section 1 - General**

APD ID: 10400038177

Tie to previous NOS?

Submission Date: 01/23/2019

BLM Office: CARLSBAD

User: Jennifer Van Curen

Title: Sr. Regulatory Compliance Rep

Federal/Indian APD: FED

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

Lease number: NMNM138836

Lease Acres: 480

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: MARATHON OIL PERMIAN LLC

Operator letter of designation:

**Operator Info**

Operator Organization Name: MARATHON OIL PERMIAN LLC

Operator Address: 5555 San Felipe St.

Zip: 77056

Operator PO Box:

Operator City: Houston

State: TX

Operator Phone: (713)629-6600

Operator Internet Address:

**Section 2 - Well Information**

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE

Pool Name: WOLFCAMP, (GAS)

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

Describe other minerals:

Is the proposed well in a Helium production area? N Use Existing Well Pad? YES New surface disturbance? N

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: Number: 361-1

Well Class: HORIZONTAL

MAZER RACKHAM 20 FED COM

Number of Legs: 1

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 27 Miles

Distance to nearest well: 2000 FT

Distance to lease line: 330 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: App\_Signed\_MAZER\_RACKHAM\_20\_WA\_FED\_1H\_CERTIFIED\_C\_102\_20190117134108.pdf

Well work start Date: 05/01/2019

Duration: 30 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: R3893

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	966	FNL	540	FEL	26S	29E	20	Aliquot NENE	32.0329023	-103.9999643	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	2872	0	0
KOP Leg #1	100	FNL	330	FEL	26S	29E	20	Aliquot NENE	32.0352846	-103.9992959	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	-6426	9373	9298
PPP Leg #1	330	FNL	330	FEL	26S	29E	20	Aliquot NENE	32.0346523	-103.9992931	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	-6886	9907	9758

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	263 6	FSL	330	FEL	26S	29E	20	Aliquot NESE	32.02831 25	- 103.9992 648	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 138836	- 700 6	122 38	987 8
EXIT Leg #1	330	FSL	330	FEL	26S	29E	20	Aliquot SESE	32.02204 78	- 103.9990 335	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 138836	- 701 3	145 17	988 5
BHL Leg #1	330	FSL	330	FEL	26S	29E	20	Aliquot SESE	32.02204 78	- 103.9990 335	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 138836	- 701 3	145 17	988 5

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

**District II**  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

**District III**  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

<sup>1</sup> API Number	<sup>2</sup> Pool Code 98220	<sup>3</sup> Pool Name PURPLE SAGE; WOLFCAMP (GAS)
<sup>4</sup> Property Code	<sup>5</sup> Property Name MAZER RACKHAM 20 WA FED COM	<sup>6</sup> Well Number 1H
<sup>7</sup> OGRID No. 372098	<sup>8</sup> Operator Name MARATHON OIL PERMIAN LLC	<sup>9</sup> Elevation 2872'

<sup>10</sup> Surface Location

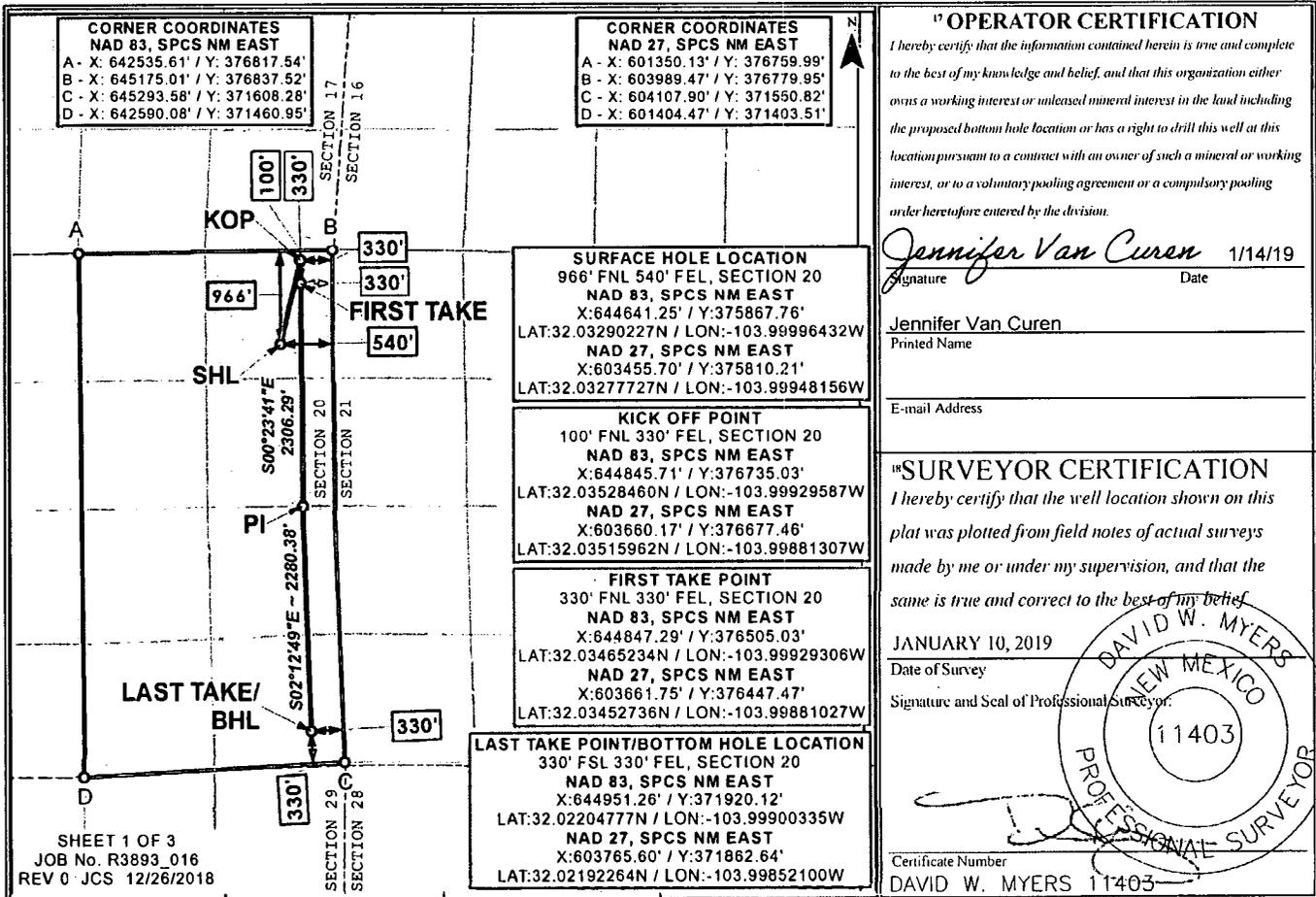
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	20	26S	29E		966	NORTH	540	EAST	EDDY

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

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	20	26S	29E		330	SOUTH	330	EAST	EDDY

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

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





APD ID: 10400038177

Submission Date: 01/23/2019

Highlighted data reflects the most recent changes

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

**Section 1 - Geologic Formations**

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	2872	358	358	DOLOMITE,SALT,ANHYDRITE	OTHER : Brine	No
2	CASTILE	2038	954	954	SALT	OTHER : Brine	No
3	BASE OF SALT	316	2556	2567	LIMESTONE,SANDSTONE,SALT	OTHER : Brine	No
4	LAMAR	214	2658	2670	SHALE,SANDSTONE	OIL	No
5	BELL CANYON	185	2687	2700	SHALE,SANDSTONE	OIL	No
6	CHERRY CANYON	-905	3777	3807	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	No
7	BRUSHY CANYON	-1974	4846	4892	OTHER : Sands/Carbonate	OIL	No
8	BONE SPRING	-3618	6490	6561	OTHER : Sands/Carbonate	OIL	No
9	WOLFCAMP	-6783	9655	9758	SHALE,SANDSTONE,OTHER : Carbonates	OIL	Yes

**Section 2 - Blowout Prevention**

Pressure Rating (PSI): 5M

Rating Depth: 15152

**Equipment:** 13 5/8 5M Annular, pipe ram, and double ram will be installed and tested for each of the 12 ¼, 8 ¾ and 6 1/8 hole sections. Choke manifold outlet destinations include a shaker and panic line. Check and kill valve will meet or exceed minimum BOP requirements.

**Requesting Variance?** YES

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

**Testing Procedure:** -BOP/BOPE will be tested to 50% of the working pressure (5,000) by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. - Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics. - Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. - A multibowl wellhead is being used.

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

**Choke Diagram Attachment:**

DRILL2\_\_MAZER\_RACKHAM\_20\_5M\_10M.TWO\_CHOKE\_MANIFOLD\_1H\_6H\_8H\_9H\_\_20190121053939.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Choke\_Line\_Flex\_III\_Rig\_20190121054010.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Choke\_Line\_Test\_Chart\_SN\_63393\_20190121054020.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_Contitech\_Hose\_SN\_663393\_20190121054027.pdf

**BOP Diagram Attachment:**

DRILL2\_\_MAZER\_RACKHAM\_20\_10\_5M\_Flex.BOPE.\_1H\_6H\_8H\_9H\_\_20190121054032.pdf

DRILL2\_\_MAZER\_RACKHAM\_20\_WH\_TH\_DESIGN\_\_1B\_5K\_10K\_7in\_\_1H\_6H\_8H\_9H\_\_20190121054052.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	400	0	400	2872	2472	400	J-55	54.5	STC	5.52	2.5	BUOY	2.5	BUOY	2.5
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2700	0	2687	2872	185	2700	J-55	40	LTC	1.74	1.15	BUOY	2.19	BUOY	2.19
3	PRODUCTION	8.75	7.0	NEW	API	N	0	9080	0	9005	2872	-6133	9080	P-110	29	BUTT	2.21	1.18	BUOY	1.9	BUOY	1.9
4	LINER	6.125	4.5	NEW	API	N	8780	14517	8705	9885	-5833	-7013	5737	P-110	13.5	BUTT	1.33	1.56	BUOY	1.88	BUOY	1.88

**Casing Attachments**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Casing Attachments**

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Surface\_20190118051257.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Intermediate\_20190118051504.pdf

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Intermediate\_II\_20190118051613.pdf

---

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

### Casing Attachments

Casing ID: 4 String Type: LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Liner\_20190118051847.pdf

### Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	no lead tail only	NA
SURFACE	Tail		0	400	407	1.33	14.8	556	100	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
LINER	Lead		0	0	0	0	0	0	0	NO LEAD	0
LINER	Tail		8780	14517	576	1.22	14.5	702	30	CLASS H	0.1% retarder + 3.5% extender + 0.3% fluid loss + 0.1% Dispersant
INTERMEDIATE	Lead		0	1700	539	2.21	12.8	932	75	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
INTERMEDIATE	Tail		1700	2700	353	1.33	14.8	470	50	Class C	0.3 % Retarder
PRODUCTION	Lead		2400	8000	530	3.21	11	1431	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
PRODUCTION	Tail		8000	9080	184	1.15	13.8	211	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

### Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

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

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

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

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

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
9080	1451 7	OIL-BASED MUD	10.5	12.5							
400	2700	SALT SATURATED	9.9	10.2							
0	400	WATER-BASED MUD	8.4	8.8							
2700	9080	OTHER : Cut Brine	8.8	9.8							

### Section 6 - Test, Logging, Coring

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

None planned

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

GR

**Coring operation description for the well:**

None Planned.

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 6682

**Anticipated Surface Pressure:** 4507.3

**Anticipated Bottom Hole Temperature(F):** 195

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

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

DRILL7\_MAZER\_RACKHAM\_20\_Pad\_Flex\_III\_Rev1\_20190121053821.pdf

DRILL7\_GCP\_\_Mazer\_Rackham\_20\_WB\_\_1H\_5H\_6H\_8H\_9H\_\_20190121053830.pdf

DRILL7\_\_MAZER\_RACKHAM\_20\_H2S\_Contiengency\_Plan\_Summary\_Rev1\_20190121053838.pdf

DRILL7\_\_MAZER\_RACKHAM\_20\_\_6h\_1h\_5h\_8h\_9h\_Contingency\_Plan\_010719\_20190121053858.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Marathon\_MazorRackham20WAFed\_1H\_PrelimA\_36x48WM\_20190118055445.pdf

Marathon\_MazorRackham20WAFed\_1H\_PrelimA\_WPReport\_20190118055455.pdf

MAZER\_RACKHAM\_20\_WA\_FED\_1H\_DRILLING\_PLAN\_20190118055652.pdf

**Other proposed operations facets description:**

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

**Potential Hazards:**

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

**Other proposed operations facets attachment:**

Batch\_Drilling\_Plan\_and\_Surface\_Rig\_Request\_20190118055521.pdf

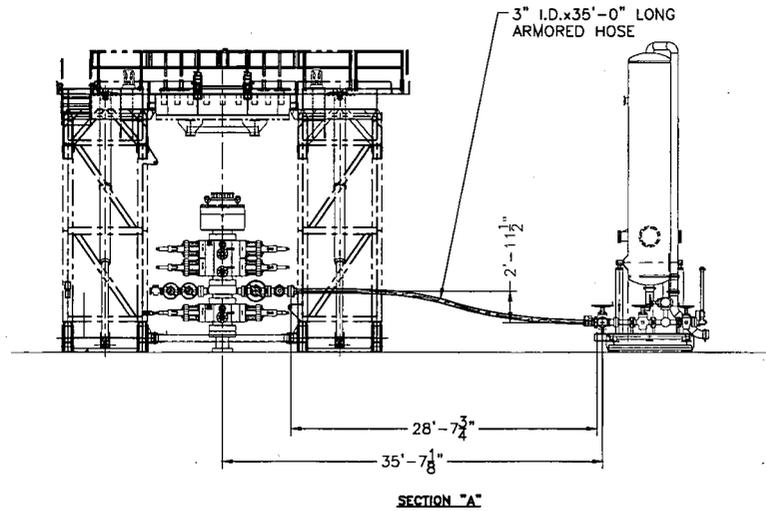
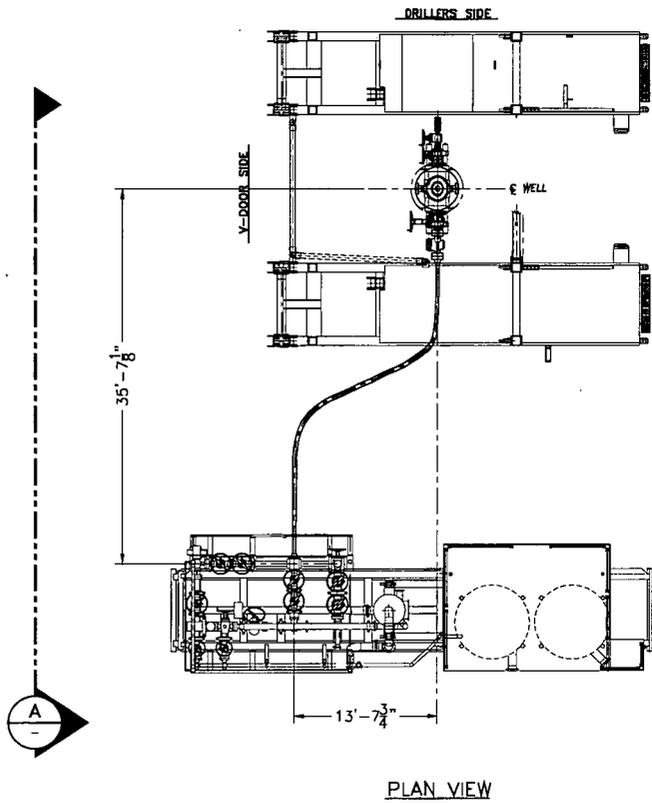
**Other Variance attachment:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H





**ISSUED FOR FABRICATION**  
 December-19-2007  
 DRAFTSMAN \_\_\_\_\_  
 ENGINEER \_\_\_\_\_

**PROPRIETARY**  
 THIS DRAWING AND THE IDEAS AND INFORMATION INCLUDED IN THIS DRAWING ARE PROPRIETARY AND ARE NOT TO BE REPRODUCED, DISTRIBUTED OR DISCLOSED IN ANY MANNER, WITHOUT THE PRIOR WRITTEN CONSENT OF A DULY AUTHORIZED OFFICER OF HELMERICH & PAYNE INT'L DRILLING CO.

**HPD HELMERICH & PAYNE INTERNATIONAL DRILLING CO.**

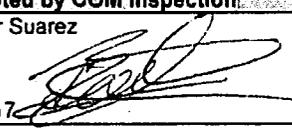
ENGINEERING APPROVAL		DATE	TITLE
▲			CHOKE LINE SYSTEM
▲			FLEXRIG3
▲			CUSTOMER:
▲			PROJECT:
▲	12/18/07	REMOVED SHEET TOTAL CALLOUT	JAV
KEY	DATE	DESCRIPTION	BY

DRAWN: JBG	DATE: 4-10-07	DWG. NO.:	REV:
SCALE: 3/16"=1'	SHEET: 2 of 8	210-P1-07	A



# Certificate of Conformity

ContiTech

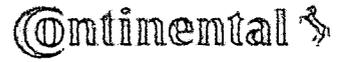
<b>Certificate Number</b> 953233-4	<b>COM Order Reference</b> 953233	<b>Customer Name &amp; Address</b> HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA
<b>Customer Purchase Order No:</b>	740053080	
<b>Project:</b>		
<b>Test Center Address</b> ContiTech Oil & Marine Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA	<b>Accepted by COM Inspection</b> Signed: Roger Suarez Date: 5/11/17 	<b>Accepted by Client Inspection</b>

We certify that the items detailed below meet the requirements of the customer's Purchase Order referenced above, and are in conformance with the specifications given below.

Item	Part No.	Description	Qty	Serial Number	Specifications
------	----------	-------------	-----	---------------	----------------

30		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	63393	ContiTech Standard
----	--	---	---	-------	--------------------

# Hydrostatic Test Certificate



ContiTech

<b>Certificate Number</b> 953233-4	<b>COM Order Reference</b> 953233	<b>Customer Name &amp; Address</b> HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA
<b>Customer Purchase Order No:</b> 740053080		
<b>Project:</b>		
<b>Test Center Address</b> ContiTech Oil & Marine Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA	<b>Accepted by COM Inspection:</b> Signed: Roger Suarez Date: 5/11/17	<b>Accepted by Client Inspection:</b>

We certify that the goods detailed hereon have been inspected as described below by our Quality Management System, and to the best of our knowledge are found to conform the requirements of the above referenced purchase order as issued to ContiTech Oil & Marine Corporation.

Item	Part No.	Description	Qty	Serial Number	Work Press.	Test Press.	Test Time (minutes)
30		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	63393	10,000 psi	15,000 psi	60

63393

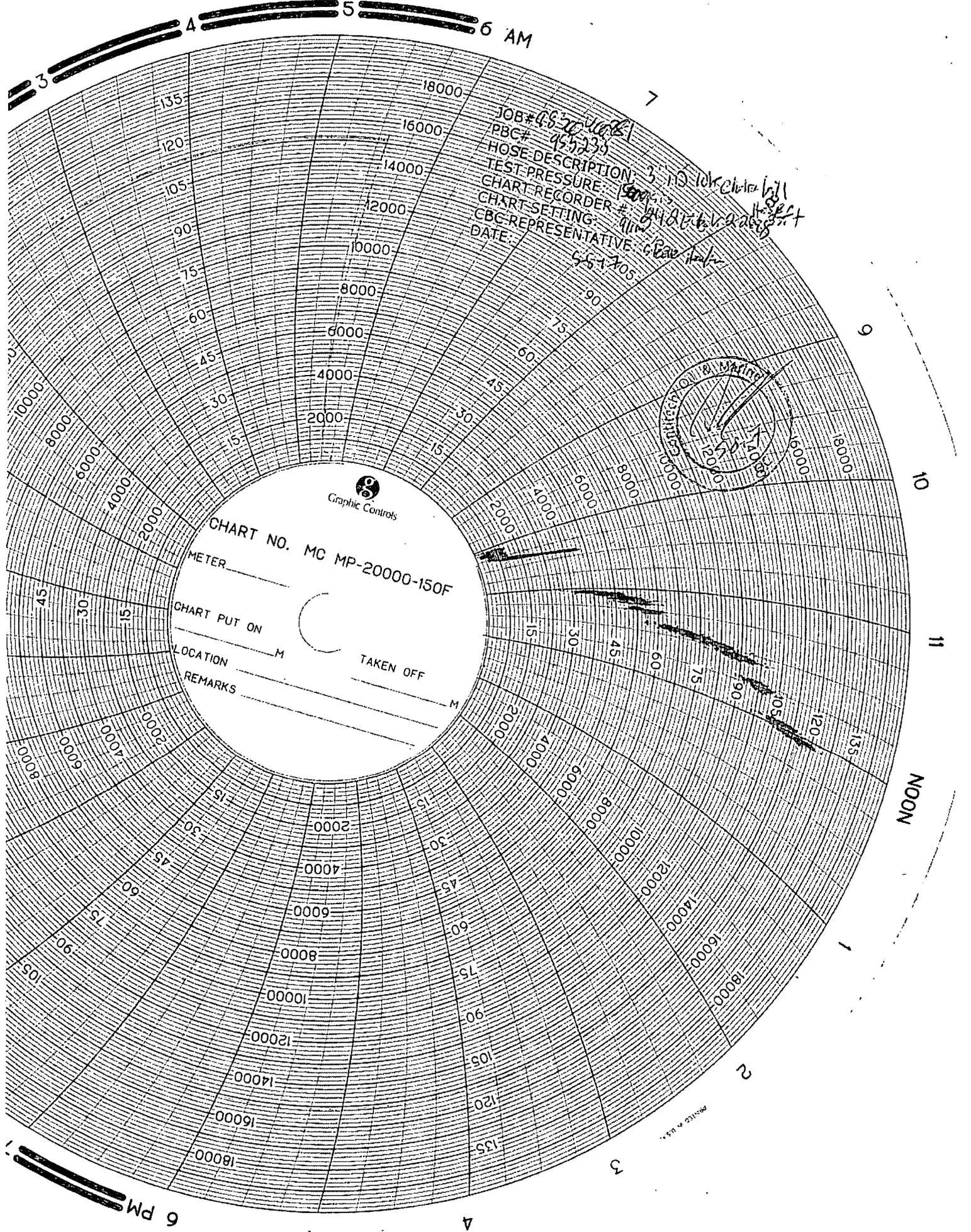
6 AM

JOB # 46-20-1001  
 PBC # 45-7233  
 HOSE DESCRIPTION 3 1/2 inch  
 TEST PRESSURE 1500  
 CHART RECORDER # 4100  
 CHART SETTING 100  
 CBC REPRESENTATIVE G. B. ...  
 DATE 5-5-70



CHART NO. MC MP-20000-150F

METER \_\_\_\_\_  
 CHART PUT ON \_\_\_\_\_ M  
 LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_  
 TAKEN OFF \_\_\_\_\_ M



NOON

6 PM

4

3

2

1

11

10

9

7

QUALITY CONTROL	No.: QC-DB- 380 / 2012
	Page : 1 / 61
Hose No.: 63389, 63390, 63391 63392, 63393	Revision : 0
	Date: 28. August 2012.
	Prepared by : <i>Szabolcs Linder</i>
	Appr. by: <i>Szabolcs Linder</i>

# CHOKER AND KILL HOSES

id.: 3" 69 MPa x 35 ft (10,67 m)

# DATA BOOK

Purchaser: H & P

Purchaser Order No.:

ContiTech Rubber Order No.: 531895

ContiTech Beattie Co. Order No.: 006227

**NOT DESIGNED FOR WELL TESTING**

## CONTENT

		<u>Page</u>
1.	API QMS Certificate (No.: 0760 )	3.
2.	American Petroleum Institute Certificate of Authority To Use the Official API Monogram (No.: 16C-0004 )	4.
3.	Quality Control Inspection and Test Certificates (No.: 1595, 1596, 1597, 1598, 1599 )	5-9.
4.	Hose Data Sheet	10.
5.	Metal Parts	
5.1.	Raw Material Quality Certificates (No.: EUR-240960, EUR-251871, 81687/12-0 )	11-14.
5.2.	Hardness Test Reports (No.: HB 2150/12, HB 2151/12, HB 2159/12 )	15-17.
5.3.	Ultrasonic Test Reports (No.: U12/124, U12/126, U12/129, U12/127 )	18-21.
5.4.	NDT Examiner Certificate (Name: Joó Imre )	22-23.
5.5.	Welding Procedure Specification (No.: 140-60 )	24-27.
5.6.	Welding Procedure Qualification Record (No.: BUD 0600014/1 )	28-29.
5.7.	Welder's Approval Test Certificates (No.: RK-1894628-A1-X2, RK-1894628-A1-X-1, RK-2096656-B, RK-1894628-A1-X3, RK1079715-A1-X )	30-41.
5.8.	Welding Log Sheets (No.: 240, 241 )	42-43.
5.9.	Visual Examination Record (No.: 696/12 )	44.
5.10.	NDT Examiner Certificate (Name: Benkő Péter )	45-46.
5.11.	Radiographic Test Certificates (No.: 1458/12, 1459/12, 1460/12, 1461/12, 1462/12 )	47-51.
5.12.	NDT Examiner Certificate (Name: Ménesi István )	52-53.
5.13.	MP Examination Record (No.: 1262/12 )	54.
5.14.	NDT Examiner Certificate (Name: Oravec Gábor )	55-56.
6.	Steel Cord	
6.1.	Inspection Certificate (No.: 437089 )	57.
7.	Outside Stripwound Tube	
7.1.	Inspection Certificate (No.: 917781/001 )	58.
8.	Certificate of Calibration (Manometer Serial No.: 0227-073 )	59-61.

ContiTech Rubber  
 Industrial Kft.  
 Quality Control Dept.  
(1)



# Certificate of Registration

APIQR REGISTRATION NUMBER  
**0760**

*This certifies that the quality management system of*  
**CONTITECH RUBBER INDUSTRIAL LTD.**  
 Budapesti ut 10  
 Szeged  
 Hungary

*has been assessed by the American Petroleum Institute Quality Registrar (APIQR®) and found it to be in conformance with the following standard:*

**ISO 9001:2008**

*The scope of this registration and the approved quality management system applies to the*  
**Design and Manufacture of High Pressure Hoses**

*APIQR® approves the organization's justification for excluding:*  
**No Exclusions Identified as Applicable**

**COPY**

Effective Date: October 15, 2010  
 Expiration Date: October 15, 2013  
 Registered Since: October 15, 2007

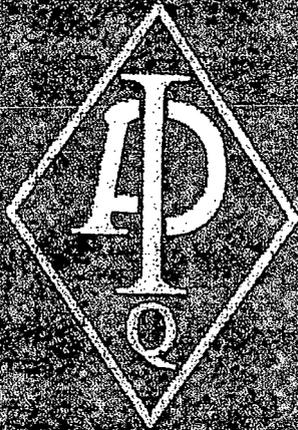
*W. Don Whittaker*  
 Manager of Operations, APIQR

Accredited by Member of  
 the International  
 Accreditation Forum  
 Multilateral Recognition  
 Arrangement for Quality  
 Management Systems



This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registrations are maintained and regularly monitored through annual full system audits. Further clarification regarding the scope of this certificate and the applicability of ISO 9001 standard requirements may be obtained by consulting the registered organization. This certificate has been issued from APIQR offices located at 1220 L Street, N.W., Washington, D.C. 20004-4070, U.S.A. It is the property of APIQR, and must be returned upon request. To verify the authenticity of this certificate, go to [www.api.org/compositelink](http://www.api.org/compositelink).





**American  
Petroleum  
Institute**



# Certificate of Authority to use the Official API Monogram

License Number: 16C-0004

ORIGINAL

The American Petroleum Institute hereby grants to

**CONTITECH RUBBER INDUSTRIAL LTD.**  
Budapesti ut 10  
Szeged  
Hungary

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and API Spec 16C and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: 16C-0004

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following product: Flexible Choke and Kill Lines

QMS Exclusions: No Exclusions Identified as Applicable

# COPY

Effective Date: OCTOBER 15, 2010

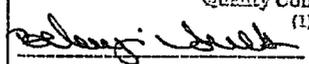
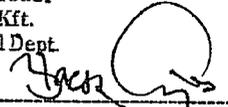
Expiration Date: OCTOBER 15, 2013

To verify the authenticity of this license, go to [www.api.org/compositelist](http://www.api.org/compositelist).

American Petroleum Institute

Director of Global Industry Services

CONTITECH RUBBER Industrial Kft.	No: QC-DB- 380 /2012
	Page: 4 /61

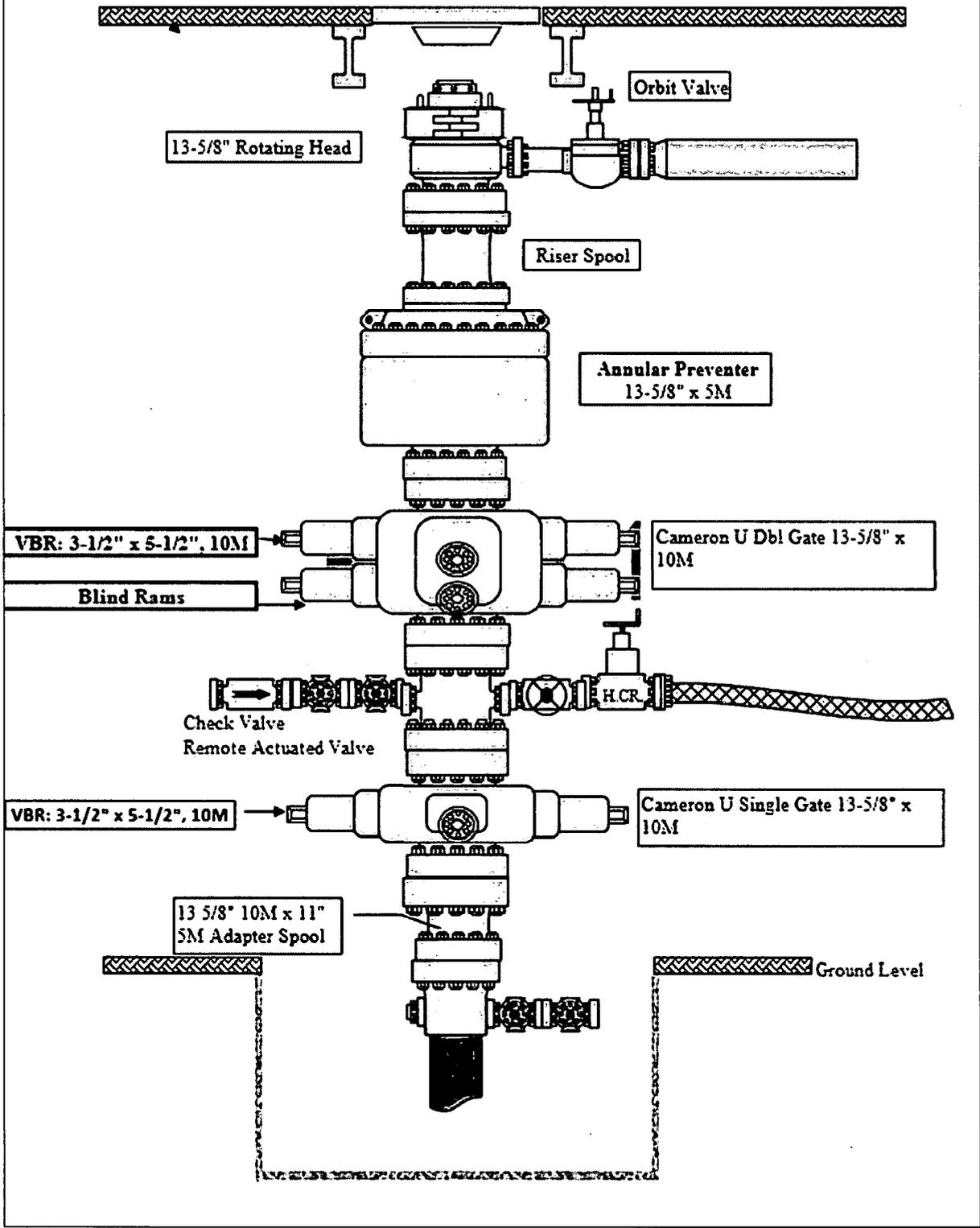
QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 1599	
PURCHASER: ContiTech Beattie Co.			P.O. N°: 006227		
CONTITECH ORDER N°: 531895		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 63393		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,72 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature					
See attachment. ( 1 page )					
↑ 10 mm = 10 Min.					
→ 10 mm = 20 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with		2156 2153		AISI 4130	
4 1/16" 10K API Flange end				AISI 4130	
<b>NOT DESIGNED FOR WELL TESTING</b>				<b>API Spec 16 C</b>	
				<b>Temperature rate:"B"</b>	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:  23. August 2012.		Inspector		Quality Control  ContiTech Rubber Industrial Kft. Quality Control Dept. (1)	
				 	



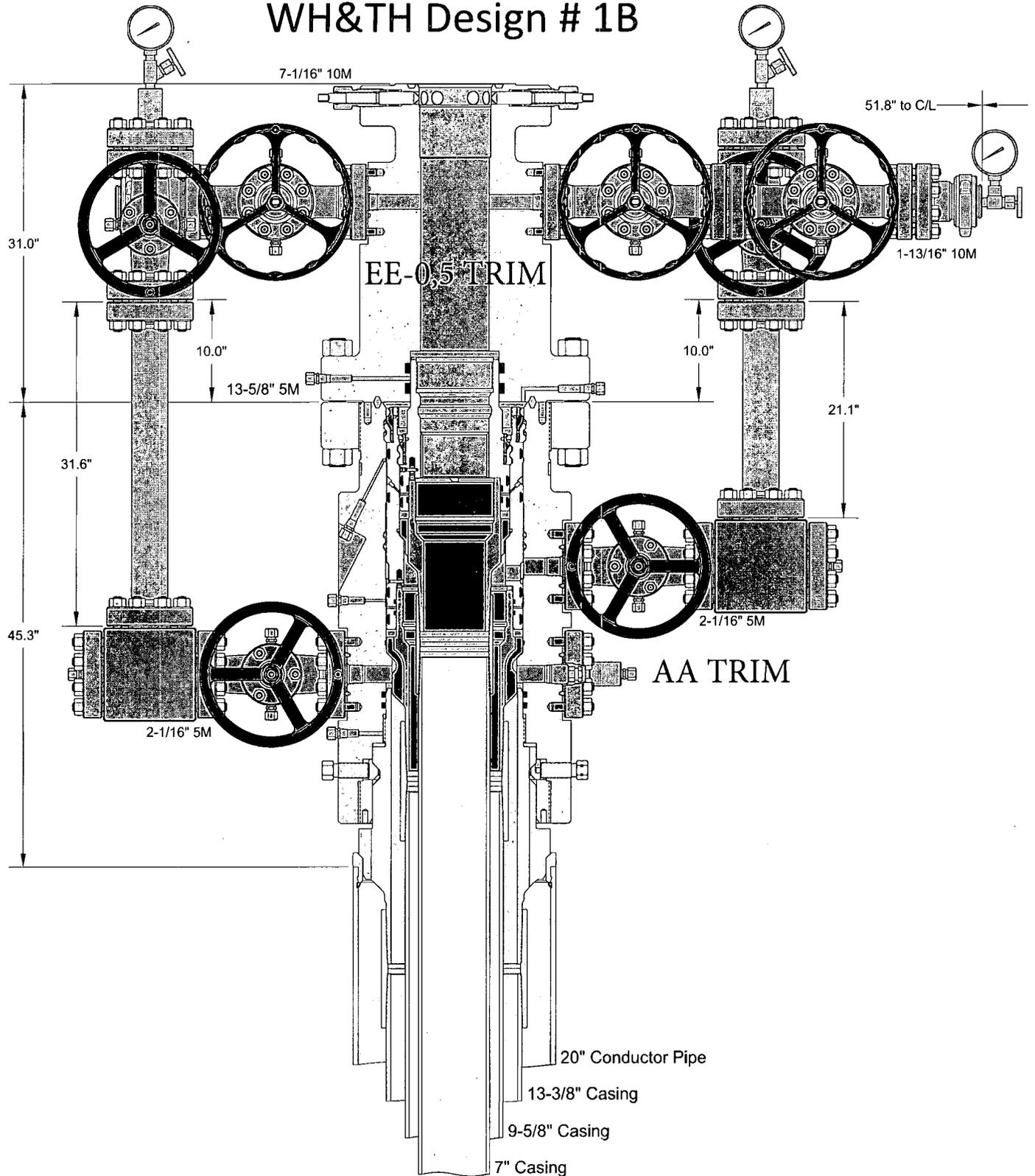
**Hose Data Sheet**

CRI Order No.	531895
Customer	ContiTech Beattie Co.
Customer Order No	PO6227 Pbc13080-H&P
Item No.	1
Hose Type	Flexible Hose
<b>Standard</b>	<b>API SPEC 16 C</b>
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSI C/W BX155RING GROOVE
Type of coupling other end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSI C/W BX155 RING GROOVE
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St. steel outer wrap
Internal stripwound tube	No
Lining	OIL RESISTANT
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max.design temperature [°C]	100
Min.design temperature [°C]	-20
MBR operating [m]	1,60
MBR storage [m]	1,40
Type of packing	WOODEN CRATE ISPM-15

Operator : Marathon Oil  
5M BOPE



# WH&TH Design # 1B



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

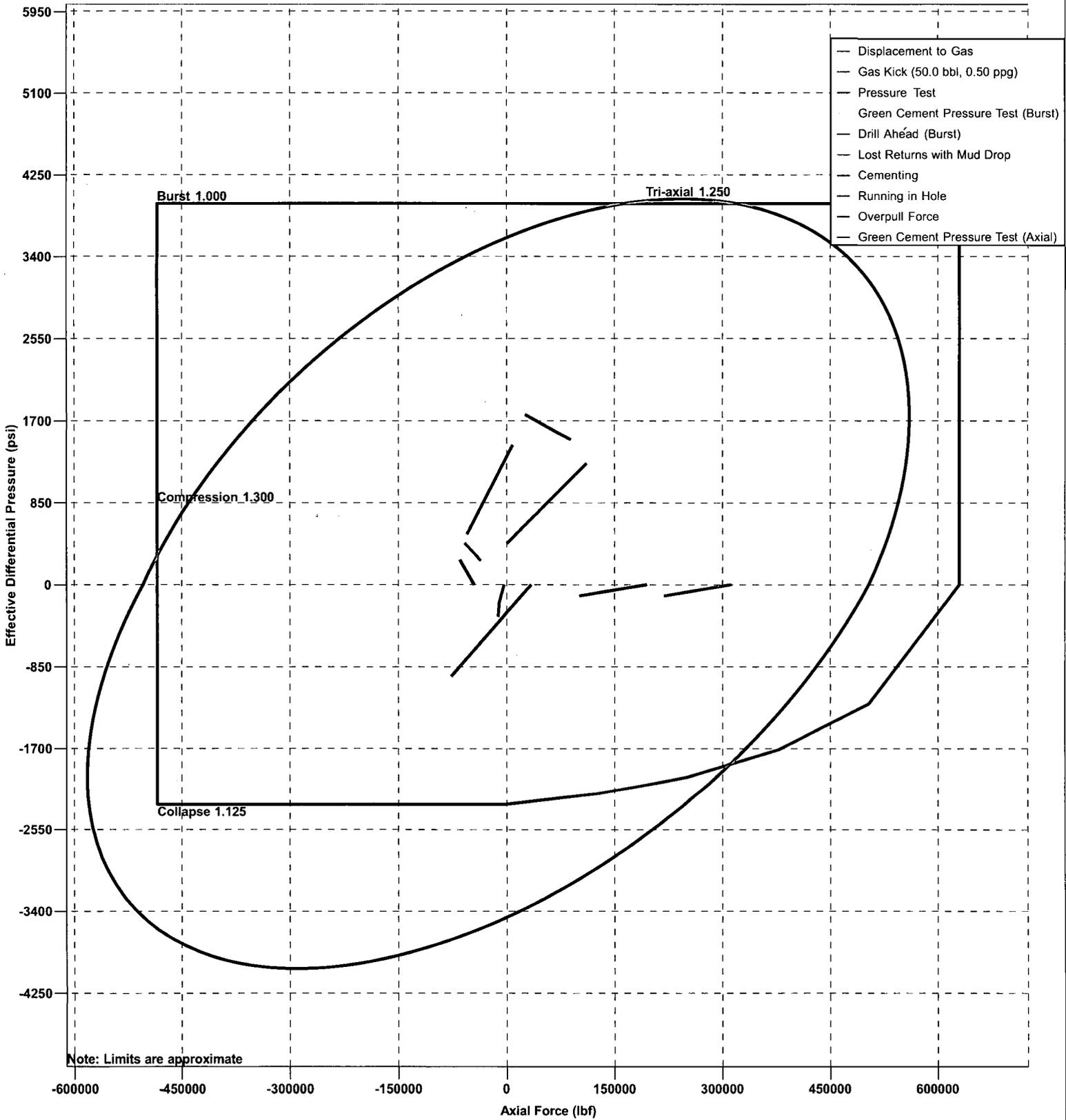
**CACTUS WELLHEAD LLC**

**MARATHON OIL COMPANY**

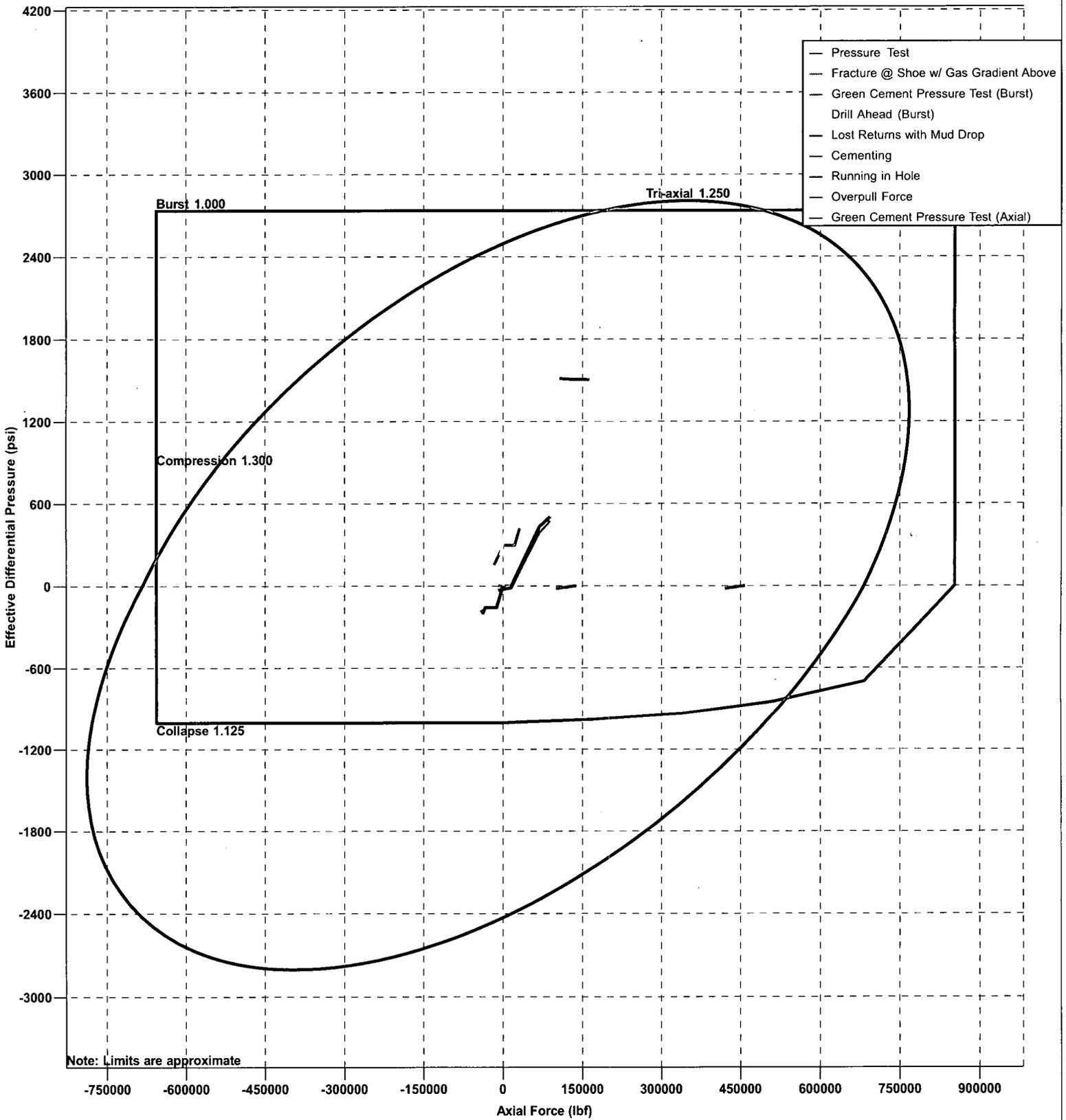
20" x 13-3/8" x 9-5/8" x 7" MBU-3T-CFL-R-DBLO Wellhead  
 With 13-5/8" 5M x 7-1/16" 10M CTH-DBLHPS Tubing Head (31" LG)  
 Utilizing Pin Down Mandrel Casing Hangers

DRAWN	DLE	24JUL17
APPRV		
DRAWING NO.	ODE0001624	

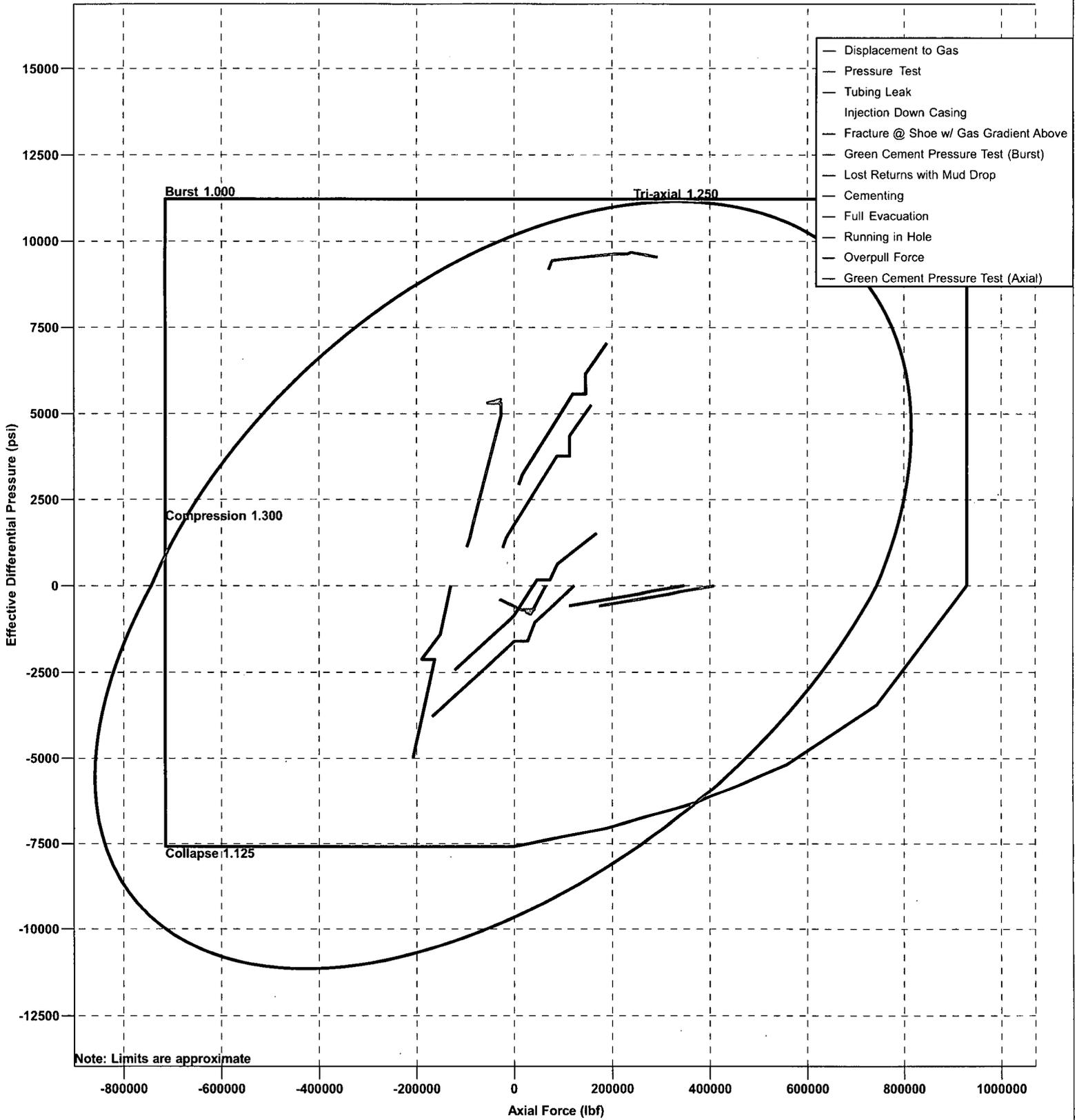
Design Limits (9 5/8" Intermediate Casing - Section 1)



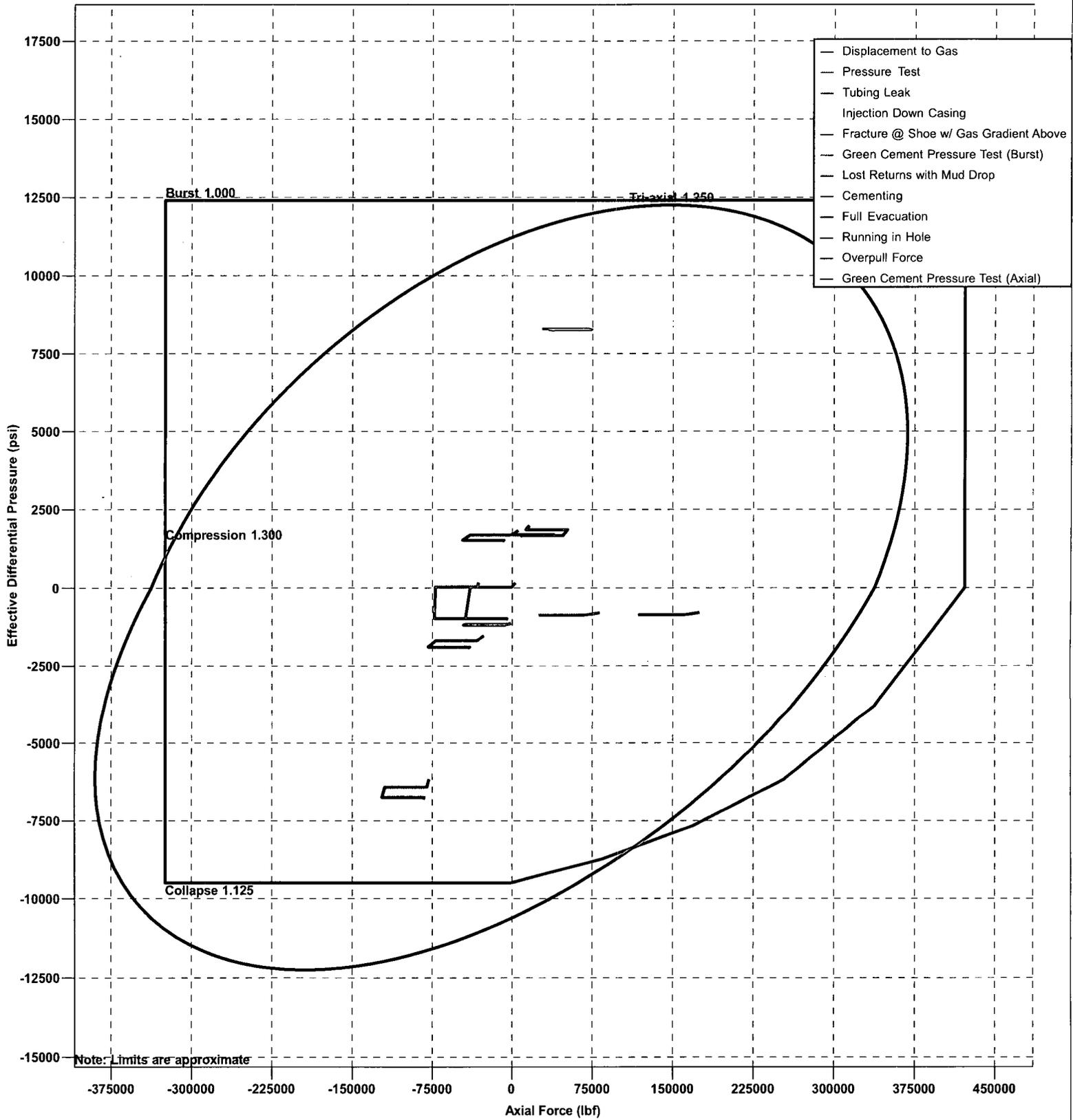
### Design Limits (13 3/8" Surface Casing - Section 1)



Design Limits (7" Production Casing - Section 1)



### Design Limits (4 1/2" Production Liner - Section 1)





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

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

Submit Original  
to Appropriate  
District Office

**GAS CAPTURE PLAN**

Date: January 18, 2019

Original Operator & OGRID No.: 372098  
 Amended - Reason for Amendment: \_\_\_\_\_

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

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

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

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Mazer Rackham 20 WA Fed Com 1H		A-20-26S-29E	966' FNL & 540' FEL	1850	Flared	
Mazer Rackham 20 WB Fed Com 5H		A-20-26S-29E	966' FNL & 570' FEL	1850	Flared	
Mazer Rackham 20 WA Fed Com 6H		A-20-26S-29E	965' FNL & 600' FEL	1850	Flared	
Mazer Rackham 20 WB Fed Com 8H		A-20-26S-29E	965' FNL & 630' FEL	1850	Flared	
Mazer Rackham 20 WA Fed Com 9H		A-20-26S-29E	965' FNL & 660' FEL	1850	Flared	

**Gathering System and Pipeline Notification**

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

**Flowback Strategy**

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

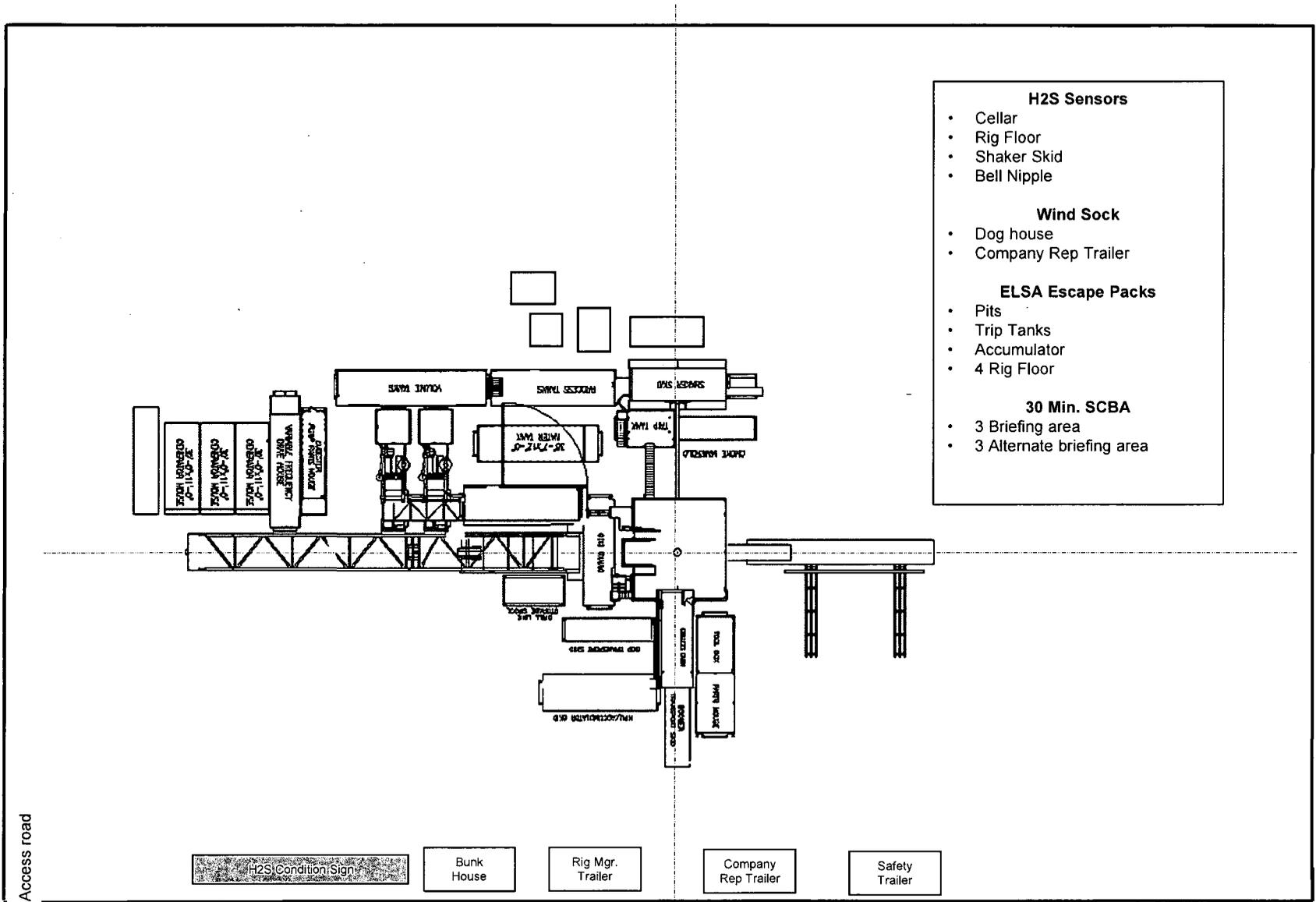
Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

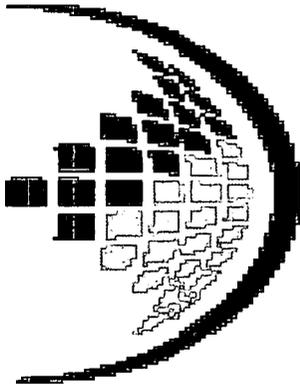
**Alternatives to Reduce Flaring**

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

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

# MARATHON OIL - H2S Preparedness and Contingency Plan Summary





**TOTAL SAFETY**

**MARATHON OIL COMPANY**

**MAZER RACKHAM 20 FED COM**

**WA Well # 1H**

**WB Well # 5H**

**WA Well # 6H**

**WB Well # 8H**

**WA Well # 9H**

**SHL: 965' FNL & 600' FEL of Lot A, Section 20, T-26S, R-29E**

**SHL: 330 FSL & 1019 FEL of Lot P, Section 20, T-26S, R-29E**

**EDDY County, New Mexico**

**Rig: PRECISION 594**

01/07/2019

**EMERGENCY MEDICAL PROCEDURES  
DO NOT PANIC  
REMAIN CALM-THINK**

1. HOLD YOUR BREATH. (DO NOT INHALE, STOP BREATHING)
2. PUT ON BREATHING APPARATUS. (NOTE: DO NOT ATTEMPT RESCUE UNTIL YOU HAVE PUT ON BREATHING APPARATUS.)
3. REMOVE VICTIM (S) TO FRESH AIR AS QUICKLY AS POSSIBLE.
4. BE SURE YOU HAVE MOVED VICTIM OUT OF CONTAMINATED AREA BEFORE REMOVING YOUR RESPIRATOR.
5. APPLY MOUTH-TO-MOUTH ARTIFICIAL RESPIRATION, WHICH IS MORE EFFECTIVE, WHILE SOMEONE ELSE GETS THE OXYGEN RESUSCITATOR. RENDER OXYGEN RESUSCITATION ONLY IF PORPERLY TRAINED IN ITS USE.
6. PROVIDE FOR PROMPT TRANSPORTATION TO HOSPITAL AND CONTUNUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
7. HOSPITAL (S) OR MEDICAL FACILITIES NEED TO BE INFORMED BEFOREHAND, OF THE POSSIBILITY OF H2S GAS POISONING, NO MATTER HOW REMOTE THE POSSIBLITY IS.

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

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

\*\*\*\*\*  
\*\*\*\*\*

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

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

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

## H2S DRILLING OPERATIONS PLAN INDEX

- I. INTRODUCTION
  - A. Oil Company Address and Legal Description of Well Site
  - B. Directions to Well Site
  - C. Purpose of Plan
  
- II. LOCATION LAYOUT
  - A. Location Map
  - B. General & Specific Area Maps
  
- III. SAFETY EQUIPMENT
  - A. Safety Equipment Provided by TOTAL SAFETY INC.
  - B. Type of Equipment and Storage Locations
  - C. Maximum Number of People on Location at any one time
  - D. Safety Equipment Layout Diagram
  
- IV. OPERATING PROCEDURES
  - A. Blowout Prevention Measures During Drilling
  - B. Gas Monitoring Equipment
  - C. Crew Training and Protection
  - D. Metallurgical Considerations
  - E. Mud Program and Treating
  - F. Well Control Equipment
  
- V. OPERATING CONDITIONS
  - A. Definition of Warning Flags
  - B. Circulating Out Kick (Wait and Weight Method)
  - C. Coring Operations in H2S Bearing Zones
  
- VI. EMERGENCY PROCEDURES
  - A. Sounding Alarm
  - B. Drilling Crew Actions
  - C. Responsibilities of Personnel
  - D. Steps to be Taken
  - E. Company and Contract Personnel
  - F. Leak Ignition
  - G. General Equipment
  - H. Critical Operations

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 H<sub>2</sub>S
- 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

## **MAZER RACKHAM 20 FED COM**

**WA Well # 1H**

**WB Well # 5H**

**WA Well # 6H**

**WB Well # 8H**

**WA Well # 9H**

**EDDY COUNTY, NM**

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

01/07/2019

MARATHON OIL COMPANY  
3122 NATIONAL PARKS HIGHWAY  
CARLSBAD, NM 88220

**MAZER RACKHAM 20 FED**

**WA Well # 1H**

**WB Well # 5H**

**WA Well # 6H**

**WB Well # 8H**

**WA Well # 9H**

EDDY COUNTY, NM

**Directions:**

FROM THE MARATHON OFFICE AT 4111 TIDWELL, CARLSBAD, NM, HEAD SOUTH ON TIDWELL RD TOWARD US HWY 285 N FOR 0.2 MILES. TURN LEFT ONTO US HWY 285 S, HEADING SOUTH, FOR 28.6 MILES TO CATFISH ROAD. TURN LEFT ONTO CATFISH ROAD ON THE NEW MEXICO / TEXAS STATE LINE, HEADING EAST, FOR 17.7 MILES TO A CALICHE ROAD. TURN LEFT ONTO THE CALICHE ROAD, HEADING NORTH, FOR 2.17 MILES TO THE PROPOSED LEASE ROAD FOR THE MAZER RACKHAM 20 FED WA 1H, 2B 5H, WA 6H, WB 8H, AND WA 9H WELL PAD LOCATION. TURN RIGHT ONTO SAID PROPOSED LEASE ROAD, HEADING NORTHEAST, FOR 0.2 MILES ENTERING THE SOUTHWEST CORNER OF SAID WELL PAD LOCATION.

**GPS Coordinates: 32.03290271 -104.00015785**  
**EDDY COUNTY, NEW MEXICO**

**PURPOSE OF PLAN:** The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations that may contain Hydrogen Sulfide Gas, H<sub>2</sub>S.

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

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

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

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

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

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

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

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

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

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

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

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

# WELL PAD PLAT

MAZER RACKHAM 20 FED COM

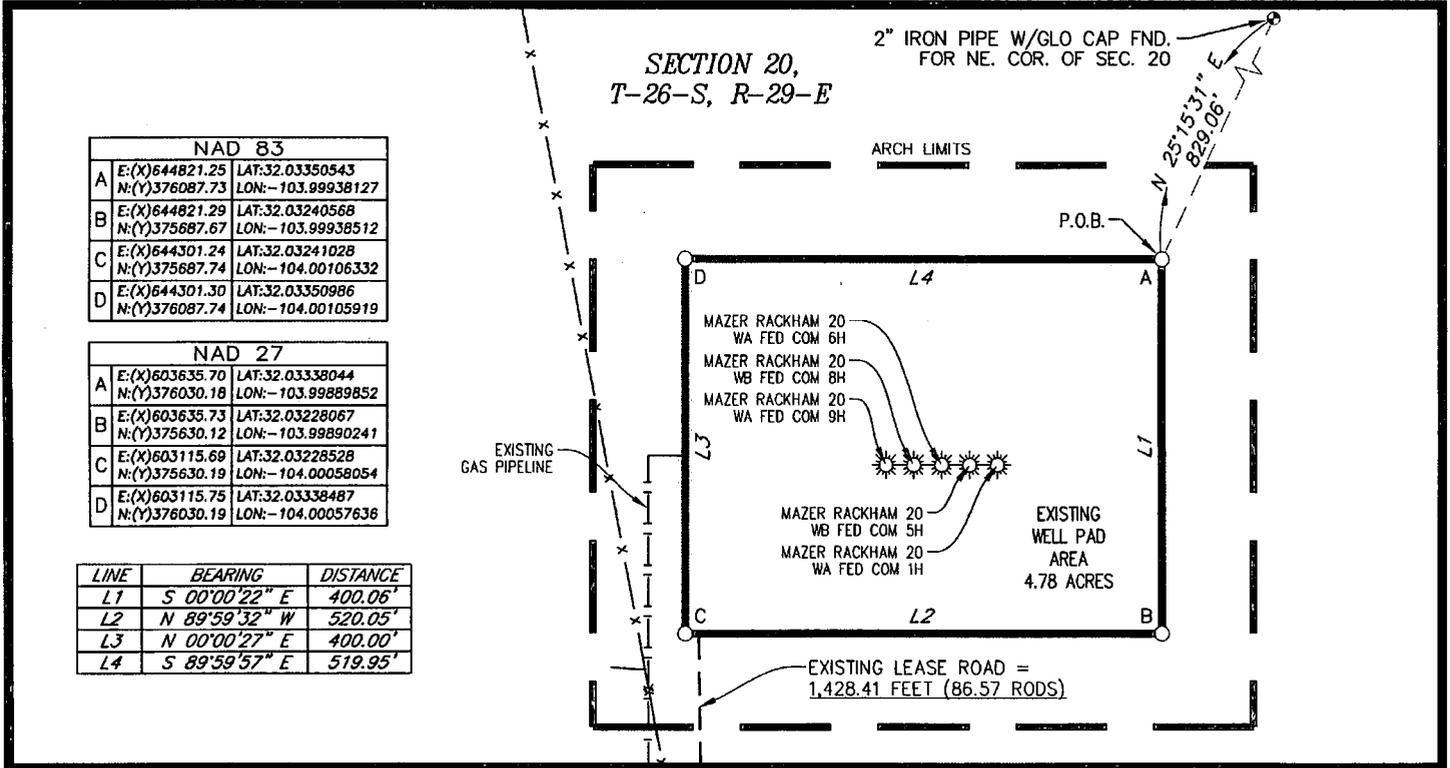
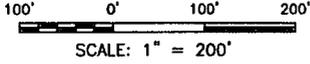
SEC. 20 TWP. 26-S RGE. 29-E

SURVEY: N.M.P.M.

COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M. & ROSS RANCH, N.M.



NAD 83			
A	E:(X)644821.25 N:(Y)376087.73	LAT:32.03350543 LON:-103.99938127	
B	E:(X)644821.29 N:(Y)375687.67	LAT:32.03240568 LON:-103.99938512	
C	E:(X)644301.24 N:(Y)375687.74	LAT:32.03241028 LON:-104.00106332	
D	E:(X)644301.30 N:(Y)376087.74	LAT:32.03350986 LON:-104.00105919	

NAD 27			
A	E:(X)603635.70 N:(Y)376030.18	LAT:32.03338044 LON:-103.99889852	
B	E:(X)603635.73 N:(Y)375630.12	LAT:32.03228067 LON:-103.99890241	
C	E:(X)603115.69 N:(Y)375630.19	LAT:32.03228528 LON:-104.00058054	
D	E:(X)603115.75 N:(Y)376030.19	LAT:32.03338487 LON:-104.00057636	

LINE	BEARING	DISTANCE
L1	S 00°00'22" E	400.06'
L2	N 89°59'32" W	520.05'
L3	N 00°00'27" E	400.00'
L4	S 89°59'57" E	519.95'

## FIELD NOTES DESCRIBING

A tract of land being 4.78 acres. Said tract being located in Section 20, Township 26 South, Range 29 East, New Mexico Principal Meridian, Eddy County, New Mexico.

Being more particularly described by metes and bounds as follows:

**BEGINNING** at a point from which a 2 inch iron pipe with GLO cap found for the Northeast corner of said Section 20 bears N 25°15'31" E a distance of 829.06 feet.

### THENCE

S 00°00'22" E a distance of 400.06 feet to the Southeast corner of said tract,  
N 89°59'32" W a distance of 520.05 feet to the Southwest corner of said tract,  
N 00°00'27" E a distance of 400.00 feet to the Northwest corner of said tract and  
S 89°59'57" E a distance of 519.95 feet to the **POINT OF BEGINNING**.

The total area of the herein described tract contains 4.78 acres of land.

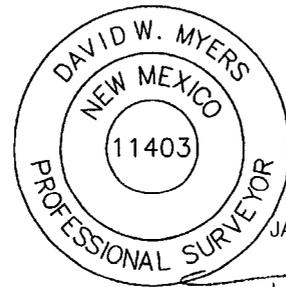
All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System; East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are based on grid measurements utilizing a combined scale factor of 0.99978647.)

Title information furnished by Marathon Oil Permian LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.

STATE OF NEW MEXICO  
COUNTY OF EDDY

I, David W. Myers, New Mexico Professional Surveyor No. 11403, do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.



JANUARY 18, 2019

DAVID W. MYERS 11403



PLAT FOR A SURFACE SITE ON THE PROPERTY OF  
MRC PERMIAN COMPANY, ET AL  
EDDY COUNTY, NEW MEXICO

**BASIS OF BEARING**  
ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. (ALL BEARINGS AND DISTANCES ARE GRID MEASUREMENTS.)

LEGEND	P.O.B. POINT OF BEGINNING	R3893_016
— — — — —	EXISTING ROAD	ARCH LIMITS
— x — x —	PROPOSED ROAD	FENCE
— — — — —	SURFACE SITE EDGE	SECTION LINE
—   —   —   —	EXIST. PIPELINE	SALT WATER DISPOSAL
⊙	MONUMENT	WATER LINE
	QUARTER SPLIT	

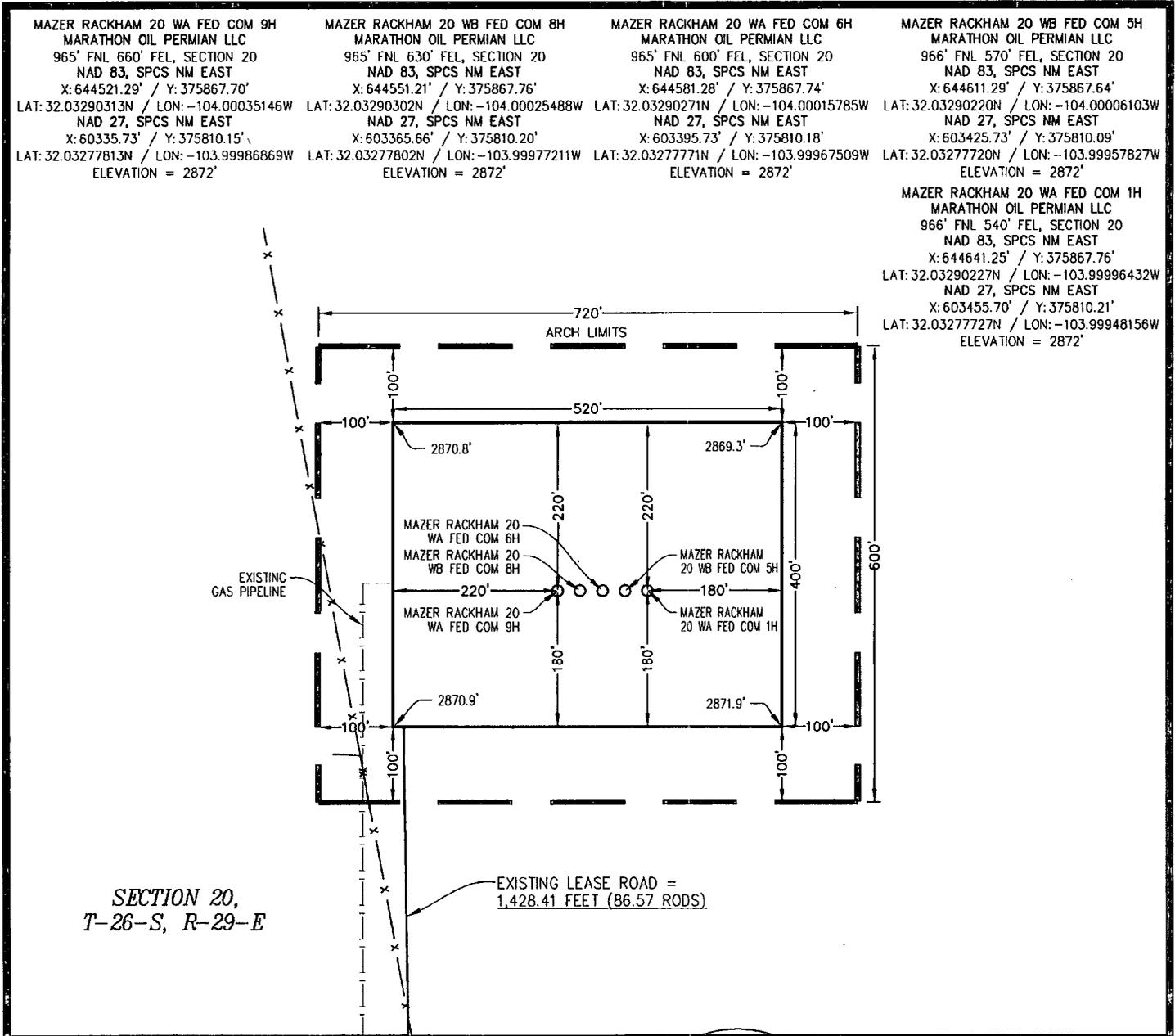
REV.	DATE	DESCRIPTION	BY	CHKD
2	01/16/2019	WELL NAME CHANGE	ANC	MWS
SHEET 2 OF 4			1309 LOUISVILLE AVE. MONROE, LA 71201 (318) 323-6900 FAX (318) 362-0064	
DRAWN BY: ANC				
DATE: 12/20/2018				
CHECKED BY: MWS				

**LEGEND**

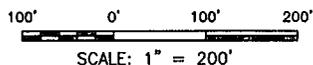
- PROPOSED WELL PAD
- ARCH SURVEY LIMITS
- PROPOSED LEASE ROAD
- EXISTING LEASE ROAD
- PIPELINE
- SECTION LINE
- FENCE

# WELL PAD TOPO

MAZER RACKHAM 20 FED COM  
 SEC. 20 TWP. 26-S RGE. 29-E  
 SURVEY: N.M.P.M.  
 COUNTY: EDDY  
 OPERATOR: MARATHON OIL PERMIAN LLC  
 U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M. &  
 ROSS RANCH, N.M.

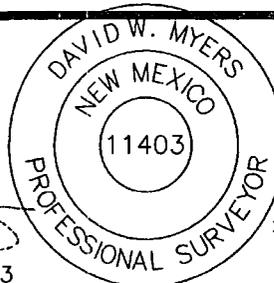


NOTE:  
 THIS IS NOT A BOUNDARY SURVEY,  
 APPARENT PROPERTY CORNERS AND  
 PROPERTY LINES ARE SHOWN FOR  
 INFORMATION ONLY. BOUNDARY DATA SHOWN  
 IS FROM STATE OF NEW MEXICO OIL  
 CONSERVATION DIVISION FORM C-102  
 INCLUDED IN THIS SUBMITTAL.



JANUARY 18, 2019

DAVID W. MYERS 11403



2	01/16/2019	ANC
REV.	DATE	BY

SHEET 3 OF 4

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R3893\_016

## SAFETY EQUIPMENT

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

### SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

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

## TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six 30-minute self-contained breathing apparatus on location. They will be positioned as follows: Two at Briefing Area #1 Two at Briefing Area #2, Two at rig dog house. SCBA Facepieces will be equipped with voice amplifiers for effective means of communication when using protective breathing apparatus.
2. There will be six Escape-type packs on location. One for the Derrickman. One on the Shaker. One at the bottom of rig dog house stairway and spares.
3. A Gastec, pump type, gas detector with low and high range detector tubes for H<sub>2</sub>S and SO<sub>2</sub> will be located in the doghouse
4. Two Briefing Areas will be designated at opposite ends of the location.
5. The Briefing Area most upwind is designated as the Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.
6. The H<sub>2</sub>S ‘Safety’ trailer provided by Total Safety, Inc. will contain a cascade system of at least 5 each -300 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. Note: This trailer will **Only** be provided if H<sub>2</sub>S conditions require the use of the Air Trailer. (If Required)
7. Two windsocks will be installed so as to be visible from all parts of the location.
8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions. The condition signs must be at least 200’ from the entrance but not more than 500’ away.
9. A list of emergency telephone numbers will be kept on rig floor, tool pusher’s trailer, the Oil Company’s trailer and in the “safety” trailer (if Provided).
10. The primary means of communication will be cell phones.

11. A barricade will be available to block the entrance to location should an emergency occur. In most cases the use of a vehicle is used to block the entrance.
12. A 6-channel H<sub>2</sub>S monitor will be located in the doghouse. The 3 sensors will be installed: one on the shale shaker, one at the Cellar, one at the rig floor.
13. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.
14. If H<sub>2</sub>S concentration reach 10 ppm an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H<sub>2</sub>S.
15. Any time it is necessary to flare gas containing H<sub>2</sub>S, a Sulfur Dioxide monitor or Detector tubes will be used to determine SO<sub>2</sub> concentrations.
16. A flare gun with flares will also be provided in the event it is necessary to ignite the well from a safe distance.



## OPERATING PROCEDURES

### BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements:

All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H<sub>2</sub>S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements:

All drill string components are to be of material that meets the American Petroleum Institute's specifications for H<sub>2</sub>S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

### GAS MONITORING EQUIPMENT

1. A continuous H<sub>2</sub>S detection system, consisting of three H<sub>2</sub>S detectors and an audible/visual warning system will be in operating during all phases of this H<sub>2</sub>S Drilling Operations Plan. The detection system will be adjusted and calibrated such that an H<sub>2</sub>S exposure of 10 ppm or higher (at any sensor) will trigger the audible and visual portion (wailing or yelping siren) of the warning system (i.e. H<sub>2</sub>S continually present at or above threshold levels) a trained operator or H<sub>2</sub>S supervisor will monitor the H<sub>2</sub>S detection system.

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

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

## CREW TRAINING AND PROTECTION

1. All personnel working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H<sub>2</sub>S. The training will cover, but will not be limited to, the following:
  - a. General information of H<sub>2</sub>S AND SO<sub>2</sub> GAS
  - b. Hazards of these gases
  - c. Safety equipment on location
  - d. Proper use and care of personal protective equipment
  - e. Operational procedures in dealing with H<sub>2</sub>S gas
  - f. Evacuation procedures
  - g. First aid, reviving an H<sub>2</sub>S victim, toxicity, etc.
  - h. Designated Safe Briefing Areas
  - i. Buddy System
  - j. Regulations
  - k. Review of Drilling Operations Plan
  
2. Initial training shall be completed when drilling reaches, a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H<sub>2</sub>S. It must also include a review of the site specific Drilling Operations Plan and, if applicable, the Public Protections Plan.
  
3. Weekly H<sub>2</sub>S and well control drills for all personnel on each working crew shall be conducted.
  
4. All training sessions and drills shall be recorded on the driller's log or its equivalent.
  
5. Safety Equipment:

As outlined in the Safety Equipment index, H<sub>2</sub>S safety protection equipment will be available to/or assigned each person on location.
  
6. One person (by job title) shall be designated and identified to all on-site personnel as the person primarily responsible for the overall operation of the on-site safety and training programs. This will be the PIC

## METALLURGICAL CONSIDERATIONS

1. Steel drill pipe used in H<sub>2</sub>S environments should have yield strength of 95,000psi or less because of potential embrittlement problems. Must conform to the current National Association of Corrosion Engineers (NACE) Standard MR-0175-90, Material Requirement, Sulfide Stress Cracking Resistant 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 H<sub>2</sub>S service as set forth in the latest edition of API RI 53.

## MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H<sub>2</sub>S and reliability of the H<sub>2</sub>S treating chemicals.
2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operators prescribed procedures.
3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H<sub>2</sub>S control prior to drilling into the H<sub>2</sub>S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H<sub>2</sub>S be encountered while tripping string following drill stem testing

## WELL CONTROL EQUIPMENT

### 1. Flare System

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

1. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.

2. The flare line mouth shall be located not less than 150' from wellbore.

3. Flare lines shall be straight unless targeted with running tees.

4. Flare Gun & Flares to ignite the well

### 2. Remote Controlled Choke

a. A remote controlled choke shall be installed for all H<sub>2</sub>S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

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

## OPERATING CONDITIONS

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

### DEFINITION OF WARNING FLAGS

1. Condition:  
**GREEN-NORMAL OPERATIONS**  
Any operation where the possibility of encountering H<sub>2</sub>S exists but no H<sub>2</sub>S has been detected.
  
2. Condition:  
**YELLOW-POTENTIAL DANGER, CAUTION**  
Any operation where the possibility of encountering H<sub>2</sub>S exists and in all situations where concentrations of H<sub>2</sub>S are detected in the air below the threshold level (10ppm)
  - a. Cause of condition:
    - \*Circulating up drill breaks
    - \*Trip gas after trip
    - \*Circulating out gas on choke
    - \*Poisonous gas present, but below threshold concentrations
    - \*Drill stem test
  - b. Safety Action:
    - \*Check safety equipment and keep it with you
    - \*Be alert for a change in condition
    - \*Follow instructions
  
3. Condition:  
**RED-EXTREME DANGER**  
Presence of H<sub>2</sub>S at or greater than 10ppm. Breathing apparatus must be worn.
  - a. Safety action:

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

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

\*human life is endangered

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

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

### CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H<sub>2</sub>S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed.

#### 1. Wait and Weight Method:

##### a. The wait and Weight Method is:

\*increase density of mud in pits to 'kill' weight mud.

\*open choke and bring pump to initial circulating pressure by holding casing pressure at original valve until pump is up to predetermined speed.

\*when initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

\*reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

\*when 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

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

\*determine when gas is anticipated to reach surface.

- \*all non-essential personnel must be moved to safe briefing area
- \*all remaining personnel will check out and keep with them their protective breathing apparatus.
- \*mud men will see that the proper amount of H<sub>2</sub>S scavenging chemical is in the mud and record times checked
- \*make sure ignition flare is burning and valves are open to designated flare stacks

### CORING OPERATIONS IN H<sub>2</sub>S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked to the presence of H<sub>2</sub>S.
  - a. Yellow Caution Flag will be flown at the well condition sign.
  - b. The “NO SMOKING” rule will be enforced

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

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

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

# **EMERGENCY PROCEDURES**

## **SOUNDING ALARM**

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

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

1. The fact is to be instilled in the minds of all rig personnel that the sounding alarm means only one thing: H<sub>2</sub>S IS PRESENT. Everyone is to proceed to his assigned station and the contingency plan is put into effect.

## **DRILLING CREW ACTIONS**

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

## RESPONSIBILITIES OF PERSONNEL

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

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

## STEPS TO BE TAKEN

In the event of an accidental release of a potentially hazardous volume of H<sub>2</sub>S, the following steps will be taken:

1. Contact by the quickest means of communications: the main offices of Oil Company & Contractor as listed on the preceding page.
2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.
3. The operator's on-site representative will remain on location and attempt to regain control of the well.
4. The drilling company's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephoning, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation 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 H<sub>2</sub>S detector and the other one using a flammable gas

- detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.
2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area if the leak isn't ignited on the first attempt, move in 20 to 30 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 degrees to 90 degrees to each side of the area where you have been firing. If still no ignition is accomplished ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to insure evacuation is completed and continue until the emergency is secure.
  3. The following equipment and man-power will be required to support the ignition team:
    - a. one flare gun with flares
    - b. four pressure demand air packs
    - c. two nylon ropes tied to the ignition team
    - d. two men in a clear area equipped with air packs
    - e. portable propane bottle with copper line
  4. The person with the final authority to ignite the well.

## GENERAL EQUIPMENT

1. Two areas on the location will be designated as Briefing Areas. The one that is upwind from the well will be designated as the "Safe Briefing Area"
2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.
3. The 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	
Precision 582	Company Man	prec582@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	
Precision 582	HES Advisor	prec582@marathonoil.com	
Precision 594	HES Advisor	Prec594hes@marathonoil.com	

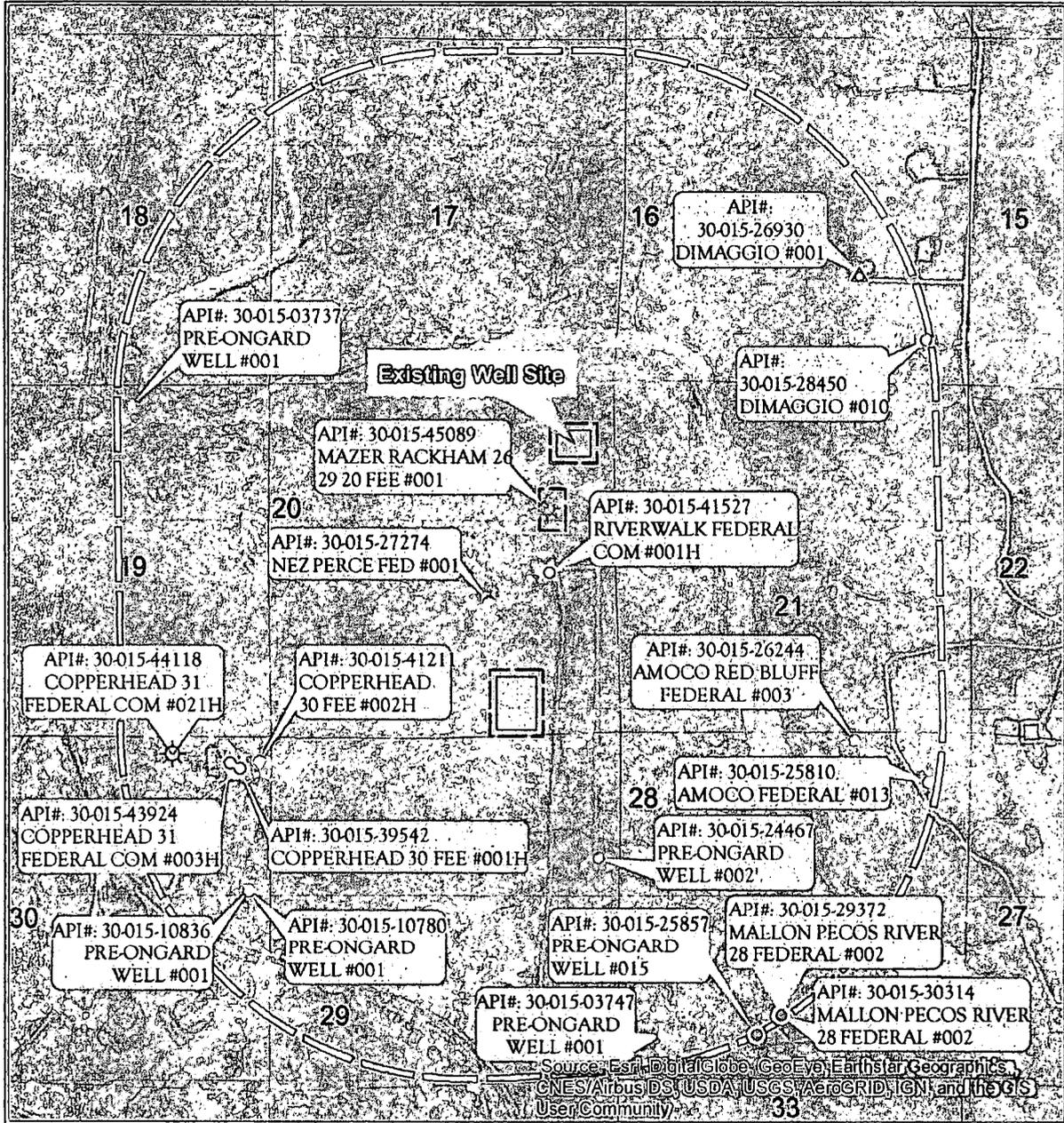
### Emergency Services Area Numbers: Or Call 911

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

# ONE-MILE RADIUS MAP

MAZER RACKHAM 20 FED COM  
 SEC. 20 TWP. 26-S RGE. 29-E  
 SURVEY: N.M.P.M.  
 COUNTY: EDDY  
 OPERATOR: MARATHON OIL PERMIAN LLC  
 U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, NM, TX.



REV 2 JCS 1/17/2019

1" = 2,500'

Proposed Well Pad		Gas, Active	Salt Water Injection, Cancelled	Salt Water Injection, New
Arch Survey Limits		Gas, Cancelled	Injection, Abandoned	Salt Water Injection, Plugged
Section Line		Gas, New	Oil, Active	Water, Active
CO2 Active	Gas, Plugged	Gas, Abandoned	Oil, Cancelled	Water, Plugged
CO2 Cancelled	Injection, Active	Injection, Active	Oil, New	
CO2, Plugged	Injection, New	Injection, Plugged	Oil, Plugged	
	Injection, Plugged	Oil, Abandoned	Salt Water Injection, Active	



SHEET 1 OF 4  
 PREPARED BY:  
 RSQUARED GLOBAL, LLC  
 1109 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 318-323-6900 CELL  
 JOB No. R3893\_016

# ADDITIONAL INFORMATION

## A. HYDROGEN SULFIDE ESSAY

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

## B. HYDROGEN SULFIDE HAZARDS

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

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

## C. PHYSIOLOGICAL SYSTEMS

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

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

#### D. TREATMENT

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

#### E. CHARACTERISTICS OF H<sub>2</sub>S

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

## F. SAFE PRACTICES

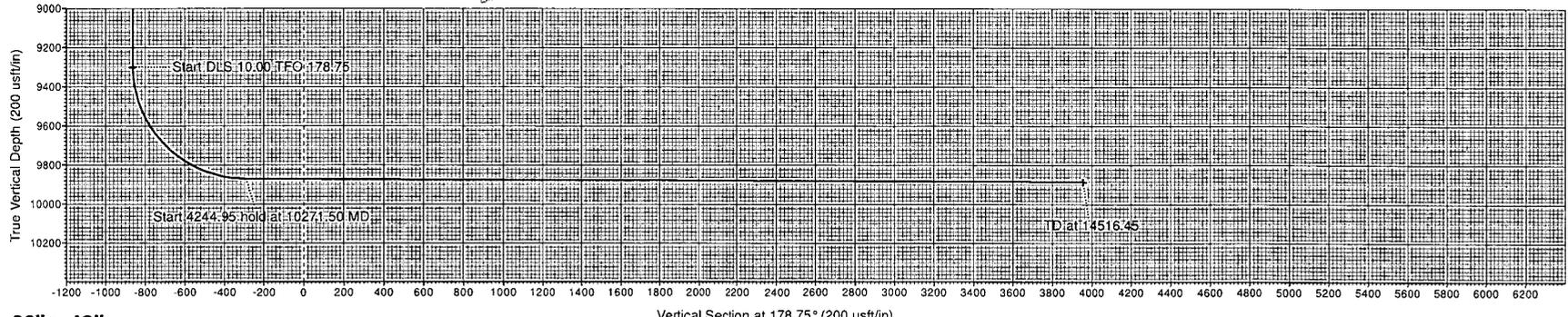
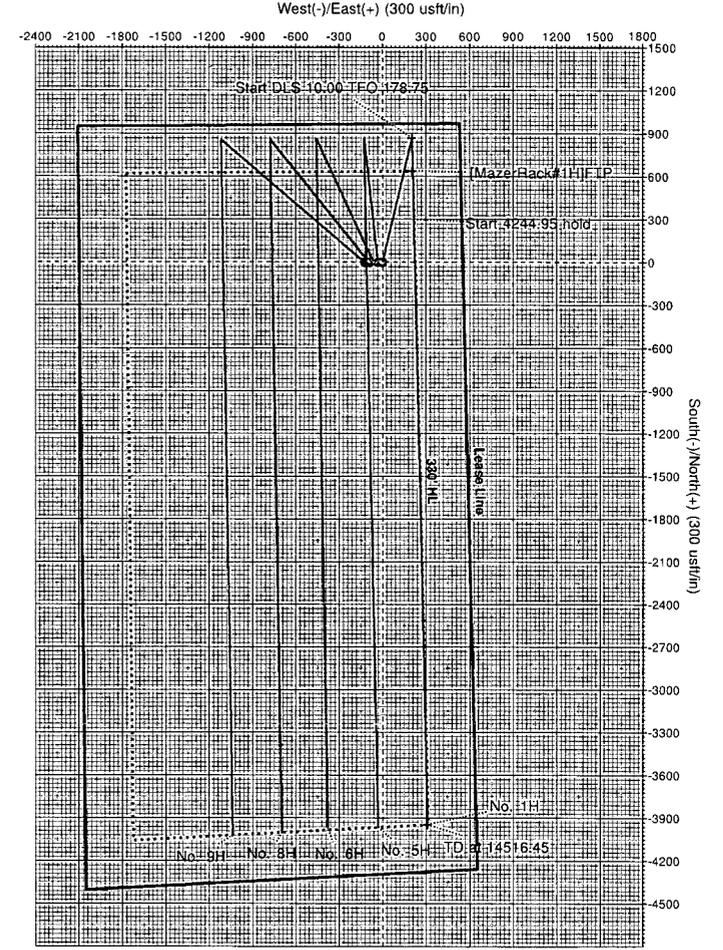
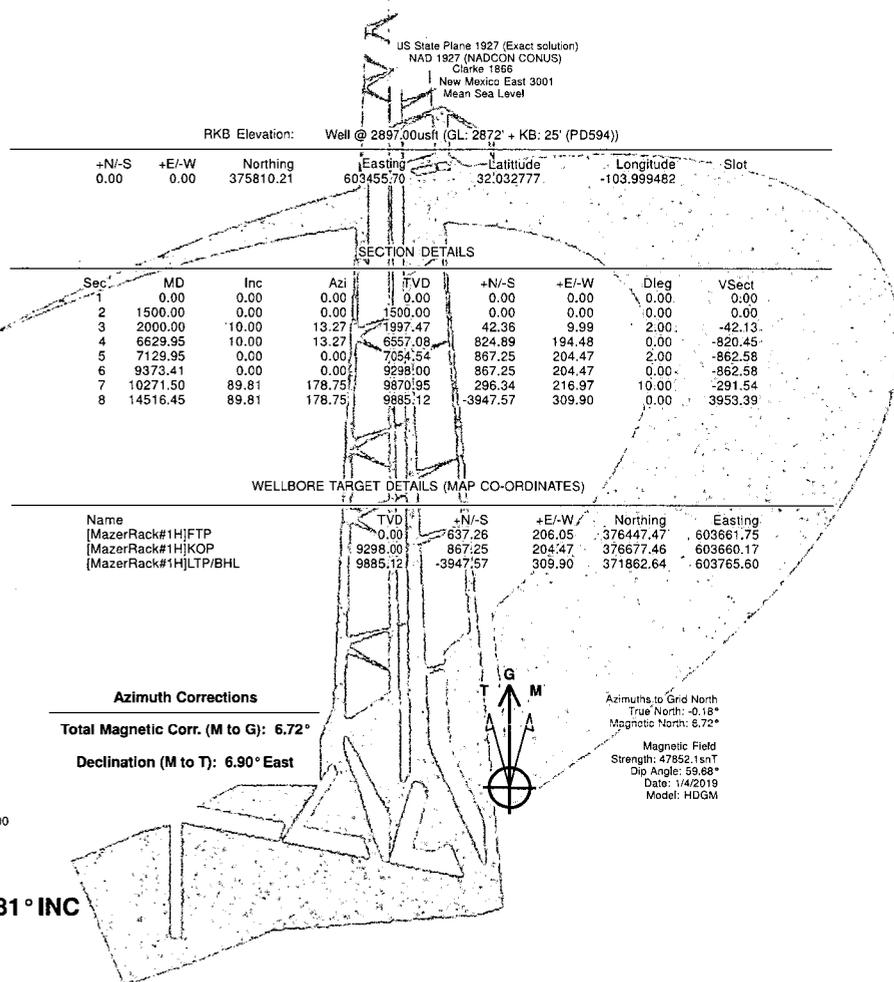
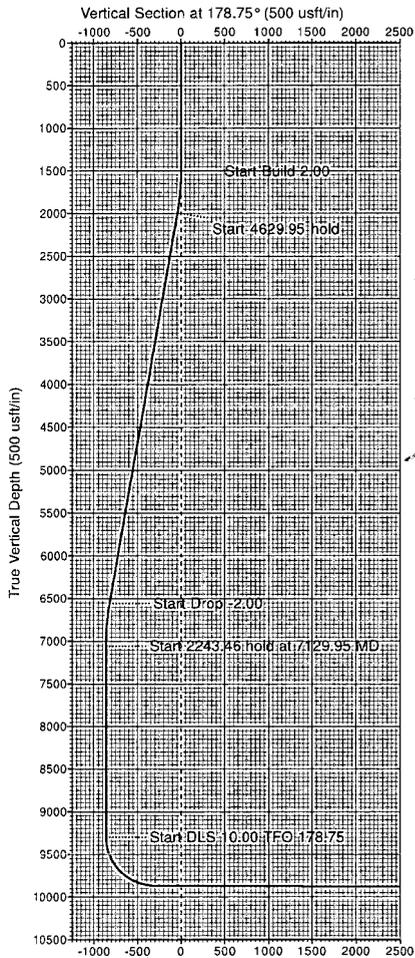
If you are faced with an H<sub>2</sub>S problem in your operations, the following safe practices are recommended:

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

TOXICITY OF HYDROGEN SULFIDE TO MEN

<u>H2S Per Cent (PPM)**</u>	<u>0 - 2 Minutes</u>	<u>0 - 15 Minutes</u>	<u>15 - 30 Minutes</u>	<u>30 Minutes to 1 hour</u>	<u>1 - 4 Hours</u>	<u>4 - 8 Hours</u>	<u>4 - 48 Hours</u>
0.005 (50) 0.010 (100)				Mild Conjunctiv- ities; 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 dis- charge; sharp pain in eyes; coughing	Increased symptoms*	Hemorrhage & death*
0.015 (150) 0.020 (200)		Loss of sense of smell	Throat & eye irritation	Throat & eye irritation	Difficult breathing; blurred vision; light & shy	Serious irritating effects	Hemorrhage & death*
0.025 (250) 0.035 (350)	Irritation of eyes; loss of sense of smell	Irritation of eyes	Painful secretion of tears; weari- ness	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 weak- ness; increased irritation; death	Death*	
0.050 (500)	Coughing collapse & unconscious- ness	Respiratory disturbances; irritation of eyes; collapse	Serious eye irritation; palpitation of heart; few cases of death*	Severe pain in eyes and head dizziness; trem- bling of extre- mities; great weakness & death*			
0.060 (600) 0.070 (700) 0.808 (800) 0.100 (1000) 0.150 (1500)	Collapse * unconscious- ness; death*	Collapse* unconscious- ness; death*					

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



**Target: 9872' TVD @ 0' VS :: 89.81° INC**

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

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

<b>Site</b>	Mazer Rackham 20 WA Fed			
<b>Site Position:</b>	<b>From:</b>	<b>Northing:</b>	<b>Easting:</b>	<b>Latitude:</b>
	Map	375,810.18 usft	603,395.73 usft	32.032778
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>
				0.18 °

<b>Well</b>	No. 1H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	375,810.21 usft	<b>Latitude:</b>	32.032777
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	603,455.70 usft	<b>Longitude:</b>	-103.999482
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	2,872.00 usft	

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	HDGM	1/4/2019	(°) 6.90	(°) 59.68	(nT) 47,852.10

<b>Design</b>	Prelim Plan A			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	178.75

<b>Survey Tool Program</b>	<b>Date</b>	1/4/2019		
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
(usft)	(usft)			
0.00	1,850.00	Prelim Plan A (OH)	MWD+IFR1	OWSG MWD + IFR1
1,850.00	5,400.00	Prelim Plan A (OH)	MWD+IFR1	OWSG MWD + IFR1
5,400.00	10,000.00	Prelim Plan A (OH)	MWD+IFR1	OWSG MWD + IFR1
10,000.00	14,516.45	Prelim Plan A (OH)	MWD+IFR1	OWSG MWD + IFR1

<b>Planned Survey</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Vertical Section</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>[MazerRack#1H]FTP</b>										
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	

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	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	0.00
900.00	0.00	0.00	900.00	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	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	13.27	1,599.98	1.70	0.40	-1.69	2.00	2.00	2.00	0.00
1,700.00	4.00	13.27	1,699.84	6.79	1.60	-6.76	2.00	2.00	2.00	0.00
1,800.00	6.00	13.27	1,799.45	15.27	3.60	-15.19	2.00	2.00	2.00	0.00
1,900.00	8.00	13.27	1,898.70	27.14	6.40	-26.99	2.00	2.00	2.00	0.00
2,000.00	10.00	13.27	1,997.47	42.36	9.99	-42.13	2.00	2.00	2.00	0.00
2,100.00	10.00	13.27	2,095.95	59.26	13.97	-58.94	0.00	0.00	0.00	0.00
2,200.00	10.00	13.27	2,194.43	76.16	17.96	-75.75	0.00	0.00	0.00	0.00
2,300.00	10.00	13.27	2,292.91	93.07	21.94	-92.56	0.00	0.00	0.00	0.00
2,400.00	10.00	13.27	2,391.39	109.97	25.93	-109.38	0.00	0.00	0.00	0.00
2,500.00	10.00	13.27	2,489.87	126.87	29.91	-126.19	0.00	0.00	0.00	0.00
2,600.00	10.00	13.27	2,588.35	143.77	33.90	-143.00	0.00	0.00	0.00	0.00
2,700.00	10.00	13.27	2,686.83	160.67	37.88	-159.81	0.00	0.00	0.00	0.00
2,800.00	10.00	13.27	2,785.31	177.57	41.87	-176.62	0.00	0.00	0.00	0.00
2,900.00	10.00	13.27	2,883.79	194.47	45.85	-193.43	0.00	0.00	0.00	0.00
3,000.00	10.00	13.27	2,982.27	211.38	49.84	-210.24	0.00	0.00	0.00	0.00
3,100.00	10.00	13.27	3,080.75	228.28	53.82	-227.05	0.00	0.00	0.00	0.00
3,200.00	10.00	13.27	3,179.23	245.18	57.81	-243.86	0.00	0.00	0.00	0.00
3,300.00	10.00	13.27	3,277.72	262.08	61.79	-260.67	0.00	0.00	0.00	0.00
3,400.00	10.00	13.27	3,376.20	278.98	65.77	-277.48	0.00	0.00	0.00	0.00
3,500.00	10.00	13.27	3,474.68	295.88	69.76	-294.29	0.00	0.00	0.00	0.00
3,600.00	10.00	13.27	3,573.16	312.78	73.74	-311.10	0.00	0.00	0.00	0.00
3,700.00	10.00	13.27	3,671.64	329.69	77.73	-327.91	0.00	0.00	0.00	0.00
3,800.00	10.00	13.27	3,770.12	346.59	81.71	-344.72	0.00	0.00	0.00	0.00
3,900.00	10.00	13.27	3,868.60	363.49	85.70	-361.53	0.00	0.00	0.00	0.00
4,000.00	10.00	13.27	3,967.08	380.39	89.68	-378.34	0.00	0.00	0.00	0.00
4,100.00	10.00	13.27	4,065.56	397.29	93.67	-395.15	0.00	0.00	0.00	0.00
4,200.00	10.00	13.27	4,164.04	414.19	97.65	-411.96	0.00	0.00	0.00	0.00
4,300.00	10.00	13.27	4,262.52	431.09	101.64	-428.77	0.00	0.00	0.00	0.00
4,400.00	10.00	13.27	4,361.00	448.00	105.62	-445.58	0.00	0.00	0.00	0.00
4,500.00	10.00	13.27	4,459.48	464.90	109.61	-462.40	0.00	0.00	0.00	0.00
4,600.00	10.00	13.27	4,557.97	481.80	113.59	-479.21	0.00	0.00	0.00	0.00

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,700.00	10.00	13.27	4,656.45	498.70	117.58	-496.02	0.00	0.00	0.00	
4,800.00	10.00	13.27	4,754.93	515.60	121.56	-512.83	0.00	0.00	0.00	
4,900.00	10.00	13.27	4,853.41	532.50	125.55	-529.64	0.00	0.00	0.00	
5,000.00	10.00	13.27	4,951.89	549.40	129.53	-546.45	0.00	0.00	0.00	
5,100.00	10.00	13.27	5,050.37	566.31	133.52	-563.26	0.00	0.00	0.00	
5,200.00	10.00	13.27	5,148.85	583.21	137.50	-580.07	0.00	0.00	0.00	
5,300.00	10.00	13.27	5,247.33	600.11	141.49	-596.88	0.00	0.00	0.00	
5,400.00	10.00	13.27	5,345.81	617.01	145.47	-613.69	0.00	0.00	0.00	
5,500.00	10.00	13.27	5,444.29	633.91	149.46	-630.50	0.00	0.00	0.00	
5,600.00	10.00	13.27	5,542.77	650.81	153.44	-647.31	0.00	0.00	0.00	
5,700.00	10.00	13.27	5,641.25	667.71	157.43	-664.12	0.00	0.00	0.00	
5,800.00	10.00	13.27	5,739.73	684.62	161.41	-680.93	0.00	0.00	0.00	
5,900.00	10.00	13.27	5,838.22	701.52	165.40	-697.74	0.00	0.00	0.00	
6,000.00	10.00	13.27	5,936.70	718.42	169.38	-714.55	0.00	0.00	0.00	
6,100.00	10.00	13.27	6,035.18	735.32	173.36	-731.36	0.00	0.00	0.00	
6,200.00	10.00	13.27	6,133.66	752.22	177.35	-748.17	0.00	0.00	0.00	
6,300.00	10.00	13.27	6,232.14	769.12	181.33	-764.98	0.00	0.00	0.00	
6,400.00	10.00	13.27	6,330.62	786.02	185.32	-781.79	0.00	0.00	0.00	
6,500.00	10.00	13.27	6,429.10	802.93	189.30	-798.60	0.00	0.00	0.00	
6,600.00	10.00	13.27	6,527.58	819.83	193.29	-815.41	0.00	0.00	0.00	
6,629.95	10.00	13.27	6,557.08	824.89	194.48	-820.45	0.00	0.00	0.00	
6,700.00	8.60	13.27	6,626.20	835.91	197.08	-831.41	2.00	-2.00	0.00	
6,800.00	6.60	13.27	6,725.32	848.78	200.11	-844.21	2.00	-2.00	0.00	
6,900.00	4.60	13.27	6,824.84	858.27	202.35	-853.65	2.00	-2.00	0.00	
7,000.00	2.60	13.27	6,924.64	864.38	203.79	-859.73	2.00	-2.00	0.00	
7,100.00	0.60	13.27	7,024.59	867.10	204.43	-862.43	2.00	-2.00	0.00	
7,129.95	0.00	0.00	7,054.54	867.25	204.47	-862.58	2.00	-2.00	0.00	
7,200.00	0.00	0.00	7,124.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,224.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,324.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,424.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,524.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,624.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,724.59	867.25	204.47	-862.58	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,824.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,924.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,100.00	0.00	0.00	8,024.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,124.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,300.00	0.00	0.00	8,224.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,324.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,424.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,524.59	867.25	204.47	-862.58	0.00	0.00	0.00	

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,700.00	0.00	0.00	8,624.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,724.59	867.25	204.47	-862.58	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,824.59	867.25	204.47	-862.58	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,924.59	867.25	204.47	-862.58	0.00	0.00	0.00	
9,100.00	0.00	0.00	9,024.59	867.25	204.47	-862.58	0.00	0.00	0.00	
9,200.00	0.00	0.00	9,124.59	867.25	204.47	-862.58	0.00	0.00	0.00	
9,300.00	0.00	0.00	9,224.59	867.25	204.47	-862.58	0.00	0.00	0.00	
9,373.41	0.00	0.00	9,298.00	867.25	204.47	-862.58	0.00	0.00	0.00	
<b>[MazerRack#1H]KOP</b>										
9,400.00	2.66	178.75	9,324.58	866.63	204.48	-861.97	10.00	10.00	0.00	
9,450.00	7.66	178.75	9,374.36	862.14	204.58	-857.47	10.00	10.00	0.00	
9,500.00	12.66	178.75	9,423.56	853.33	204.77	-848.66	10.00	10.00	0.00	
9,550.00	17.66	178.75	9,471.81	840.26	205.06	-835.58	10.00	10.00	0.00	
9,600.00	22.66	178.75	9,518.73	823.04	205.44	-818.36	10.00	10.00	0.00	
9,650.00	27.66	178.75	9,563.97	801.79	205.90	-797.11	10.00	10.00	0.00	
9,700.00	32.66	178.75	9,607.19	776.68	206.45	-772.00	10.00	10.00	0.00	
9,750.00	37.66	178.75	9,648.06	747.91	207.08	-743.21	10.00	10.00	0.00	
9,800.00	42.66	178.75	9,686.26	715.68	207.79	-710.98	10.00	10.00	0.00	
9,850.00	47.66	178.75	9,721.50	680.25	208.56	-675.54	10.00	10.00	0.00	
9,900.00	52.66	178.75	9,753.53	641.88	209.40	-637.16	10.00	10.00	0.00	
9,950.00	57.66	178.75	9,782.08	600.86	210.30	-596.13	10.00	10.00	0.00	
10,000.00	62.66	178.75	9,806.95	557.52	211.25	-552.78	10.00	10.00	0.00	
10,050.00	67.66	178.75	9,827.95	512.17	212.25	-507.42	10.00	10.00	0.00	
10,100.00	72.66	178.75	9,844.92	465.16	213.27	-460.40	10.00	10.00	0.00	
10,150.00	77.66	178.75	9,857.72	416.86	214.33	-412.08	10.00	10.00	0.00	
10,200.00	82.66	178.75	9,866.26	367.62	215.41	-362.83	10.00	10.00	0.00	
10,250.00	87.66	178.75	9,870.48	317.83	216.50	-313.03	10.00	10.00	0.00	
10,271.50	89.81	178.75	9,870.95	296.34	216.97	-291.54	10.00	10.00	0.00	
10,300.00	89.81	178.75	9,871.05	267.84	217.60	-263.03	0.00	0.00	0.00	
10,400.00	89.81	178.75	9,871.38	167.87	219.78	-163.03	0.00	0.00	0.00	
10,500.00	89.81	178.75	9,871.72	67.89	221.97	-63.04	0.00	0.00	0.00	
10,600.00	89.81	178.75	9,872.05	-32.08	224.16	36.96	0.00	0.00	0.00	
10,700.00	89.81	178.75	9,872.38	-132.06	226.35	136.96	0.00	0.00	0.00	
10,800.00	89.81	178.75	9,872.72	-232.03	228.54	236.96	0.00	0.00	0.00	
10,900.00	89.81	178.75	9,873.05	-332.01	230.73	336.96	0.00	0.00	0.00	
11,000.00	89.81	178.75	9,873.39	-431.98	232.92	436.96	0.00	0.00	0.00	
11,100.00	89.81	178.75	9,873.72	-531.96	235.11	536.96	0.00	0.00	0.00	
11,200.00	89.81	178.75	9,874.05	-631.93	237.30	636.96	0.00	0.00	0.00	
11,300.00	89.81	178.75	9,874.39	-731.91	239.49	736.96	0.00	0.00	0.00	
11,400.00	89.81	178.75	9,874.72	-831.89	241.68	836.96	0.00	0.00	0.00	
11,500.00	89.81	178.75	9,875.05	-931.86	243.87	936.96	0.00	0.00	0.00	
11,600.00	89.81	178.75	9,875.39	-1,031.84	246.05	1,036.96	0.00	0.00	0.00	

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

**Planned Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,700.00	89.81	178.75	9,875.72	-1,131.81	248.24	1,136.96	0.00	0.00	0.00
11,800.00	89.81	178.75	9,876.06	-1,231.79	250.43	1,236.96	0.00	0.00	0.00
11,900.00	89.81	178.75	9,876.39	-1,331.76	252.62	1,336.96	0.00	0.00	0.00
12,000.00	89.81	178.75	9,876.72	-1,431.74	254.81	1,436.96	0.00	0.00	0.00
12,100.00	89.81	178.75	9,877.06	-1,531.71	257.00	1,536.96	0.00	0.00	0.00
12,200.00	89.81	178.75	9,877.39	-1,631.69	259.19	1,636.96	0.00	0.00	0.00
12,300.00	89.81	178.75	9,877.72	-1,731.66	261.38	1,736.95	0.00	0.00	0.00
12,400.00	89.81	178.75	9,878.06	-1,831.64	263.57	1,836.95	0.00	0.00	0.00
12,500.00	89.81	178.75	9,878.39	-1,931.62	265.76	1,936.95	0.00	0.00	0.00
12,600.00	89.81	178.75	9,878.73	-2,031.59	267.95	2,036.95	0.00	0.00	0.00
12,700.00	89.81	178.75	9,879.06	-2,131.57	270.14	2,136.95	0.00	0.00	0.00
12,800.00	89.81	178.75	9,879.39	-2,231.54	272.32	2,236.95	0.00	0.00	0.00
12,900.00	89.81	178.75	9,879.73	-2,331.52	274.51	2,336.95	0.00	0.00	0.00
13,000.00	89.81	178.75	9,880.06	-2,431.49	276.70	2,436.95	0.00	0.00	0.00
13,100.00	89.81	178.75	9,880.39	-2,531.47	278.89	2,536.95	0.00	0.00	0.00
13,200.00	89.81	178.75	9,880.73	-2,631.44	281.08	2,636.95	0.00	0.00	0.00
13,300.00	89.81	178.75	9,881.06	-2,731.42	283.27	2,736.95	0.00	0.00	0.00
13,400.00	89.81	178.75	9,881.39	-2,831.40	285.46	2,836.95	0.00	0.00	0.00
13,500.00	89.81	178.75	9,881.73	-2,931.37	287.65	2,936.95	0.00	0.00	0.00
13,600.00	89.81	178.75	9,882.06	-3,031.35	289.84	3,036.95	0.00	0.00	0.00
13,700.00	89.81	178.75	9,882.40	-3,131.32	292.03	3,136.95	0.00	0.00	0.00
13,800.00	89.81	178.75	9,882.73	-3,231.30	294.22	3,236.95	0.00	0.00	0.00
13,900.00	89.81	178.75	9,883.06	-3,331.27	296.40	3,336.95	0.00	0.00	0.00
14,000.00	89.81	178.75	9,883.40	-3,431.25	298.59	3,436.95	0.00	0.00	0.00
14,100.00	89.81	178.75	9,883.73	-3,531.22	300.78	3,536.94	0.00	0.00	0.00
14,200.00	89.81	178.75	9,884.06	-3,631.20	302.97	3,636.94	0.00	0.00	0.00
14,300.00	89.81	178.75	9,884.40	-3,731.17	305.16	3,736.94	0.00	0.00	0.00
14,400.00	89.81	178.75	9,884.73	-3,831.15	307.35	3,836.94	0.00	0.00	0.00
14,500.00	89.81	178.75	9,885.07	-3,931.13	309.54	3,936.94	0.00	0.00	0.00
14,516.45	89.81	178.75	9,885.12	-3,947.57	309.90	3,953.39	0.00	0.00	0.00

[MazerRack#1H]LTP/BHL

<b>Company:</b>	Marathon Oil	<b>Local Co-ordinate Reference:</b>	Well No. 1H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Site:</b>	Mazer Rackham 20 WA Fed	<b>MD Reference:</b>	Well @ 2897.00usft (GL: 2872' + KB: 25' (PD594))
<b>Well:</b>	No. 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim Plan A	<b>Database:</b>	WellPlanner1

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
[MazerRack#1H]FTP - plan misses target center by 669.74usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	637.26	206.05	376,447.47	603,661.75	32.034527	-103.998811
[MazerRack#1H]KOP - plan hits target center - Point	0.00	0.01	9,298.00	867.25	204.47	376,677.46	603,660.17	32.035160	-103.998813
[MazerRack#1H]LTP/BH - plan hits target center - Point	0.00	0.00	9,885.12	-3,947.57	309.90	371,862.64	603,765.60	32.021923	-103.998521

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

# MARATHON OIL PERMIAN LLC

## DRILLING AND OPERATIONS PLAN

**WELL NAME / NUMBER:** MAZER RACKHAM 20 WA FED 1H  
**STATE:** NEW MEXICO      **COUNTY:** EDDY

	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	966	FNL	540	FEL	26S	29E	20	NENE	32.03290227	-103.99996432	EDDY	NM	NMP			2872	0	0
KOP	100	FNL	330	FEL	26S	29E	20	NENE	32.03528460	-103.99929587	EDDY	NM	NMP			6426	9373	9298
FTP	330	FNL	330	FEL	26S	29E	20	NENE	32.03465234	-103.99929306	EDDY	NM	NMP			6886	9907	9758
ENTER	2636	FSL	330	FEL	26S	29E	20	NESE	32.02831248	-103.99926480	EDDY	NM	NMP	F	NMNM138836	7006	12238	9878
BHL	330	FSL	330	FEL	26S	29E	20	SESE	32.02204777	-103.99900335	EDDY	NM	NMP	F	NMNM138836	7013	14517	9885

### 1. GEOLOGIC NAME OF SURFACE FORMATION

- a. Permian/Quaternary Alluvium

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

Formation	True Vertical Depth (ft)	Measured Depth (ft)	Lithologies	Mineral Resources	Producing Formation
Rustler	690.0	690.0	Anhydrite/Dolomite	BRINE	N
Castile	954.0	954.0	Salt/Anhydrite	BRINE	N
Base of Salt	2556.0	2567.2	Base Salt	BRINE	N
Lamar	2658.0	2670.7	Limy Sands	BRINE	N
Bell Canyon	2687.0	2700.2	Sand/Shales	OIL	Y
Cherry Canyon	3777.0	3807.0	Sands/Shale	OIL	Y
Brushy Canyon	4846.0	4892.5	Sands/Carbonates	OIL	Y
Bone Spring	6490.0	6561.8	Sands/Carbonates	OIL	Y
Wolfcamp	9655.0	9758.8	Carbonates/Shales/Sands	OIL	Y

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

**ANTICIPATED BOTTOM HOLE PRESSURE:** 6,682 psi

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

**ANTICIPATED ABNORMAL PRESSURE:** N

**ANTICIPATED ABNORMAL TEMPERATURE:** N

### 3. CASING PROGRAM

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	<u>17 1/2</u>	<u>13 3/8</u>	<u>0</u>	<u>400</u>	<u>0</u>	<u>400</u>	<u>54.5</u>	<u>J55</u>	<u>STC</u>	<u>5.52</u>	<u>2.5</u>	<u>2.5</u>
Intermediate I	<u>12 1/4</u>	<u>9 5/8</u>	<u>0</u>	<u>2700</u>	<u>0</u>	<u>2687</u>	<u>40</u>	<u>J55</u>	<u>LTC</u>	<u>1.74</u>	<u>1.15</u>	<u>2.19</u>
Intermediate II	<u>8 3/4</u>	<u>7</u>	<u>0</u>	<u>9080</u>	<u>0</u>	<u>9005</u>	<u>29</u>	<u>P110</u>	<u>BTC</u>	<u>2.21</u>	<u>1.18</u>	<u>1.9</u>
Production Liner	<u>6 1/8</u>	<u>4 1/2</u>	<u>8780</u>	<u>14517</u>	<u>8705</u>	<u>9885</u>	<u>13.5</u>	<u>P110</u>	<u>BTC</u>	<u>1.33</u>	<u>1.56</u>	<u>1.88</u>

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

### 4. CEMENT PROGRAM:

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sks)	Yield (ft3/sks)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	0	0	1.73	13.5	0	100	Class C	
Surface	Tail	--	0	400	407	1.33	14.8	556	100	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
Intermediate I	Lead	--	0	1700	539	2.21	12.8	932	75	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
Intermediate I	Tail	--	1700	2700	353	1.33	14.8	470	50	Class C	0.3 % Retarder
Intermediate II	Lead	--	2400	8000	530	3.21	11	1431	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
Intermediate II	Tail	--	8000	9080	184	1.15	13.8	211	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder
Production Liner	Tail	--	8780	14517	576	1.22	14.5	702	30	Class H	0.1% retarder + 3.5% extender + 0.3% fluid loss + 0.1% Dispersant

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

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

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

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

Attach plugging procedure for pilot hole.

N/A

## 5. PRESSURE CONTROL EQUIPMENT

BOP installed and tested before drilling	Size?	Min. Required WP	Type	✓	Tested to:

which hole?					
12 1/4"	13 5/8	5000	Annular	x	50% of working pressure  5000
			Blind Ram	x	
			Pipe Ram		
			Double Ram	x	
			Other*		
8 3/4"	13 5/8	5000	Annular	x	50% of working pressure  5000
			Blind Ram	x	
			Pipe Ram		
			Double Ram	x	
			Other*		
6 1/8"	13 5/8	5000	Annular	x	50% of working pressure  5000
			Blind Ram	x	
			Pipe Ram		
			Double Ram	x	
			Other*		

\*Specify if additional ram is utilized.

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

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

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

#### 6. MUD PROGRAM:

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max. Weight (ppg)	Additional Characteristics
0	400	Water Based Mud	8.4	8.8	

<u>400</u>	<u>2700</u>	<u>Brine</u>	<u>9.9</u>	<u>10.2</u>	
<u>2700</u>	<u>9080</u>	<u>Cut Brine</u>	<u>8.8</u>	<u>9.8</u>	
<u>9080</u>	<u>14517</u>	<u>Oil Based mud</u>	<u>10.5</u>	<u>12.5</u>	

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

## 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

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

## 8. LOGGING / CORING AND TESTING PROGRAM:

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

## 9. POTENTIAL HAZARDS:

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

## 10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS

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

## Batch Drilling Plan

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

## Request for Surface Rig

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



APD ID: 10400038177

Submission Date: 01/23/2019

Highlighted data reflects the most recent changes

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: MAZER RACKHAM 20 WA FED COM

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

SUPO\_MAZER\_RACKHAM\_20\_FED\_REV\_2\_\_CERTIFIED\_Existing\_roads\_vicinity\_20190121054306.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

### Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

### Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

SUPO\_\_MAZER\_RACKHAM\_20\_FED\_REV\_2\_\_Existing\_wells\_map\_20190121054326.pdf

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Existing Wells description:**

### Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:** Central Tank Battery (CTB) will be located on a fee well pad planned to be drilled prior to acquiring the federal lease to the south. The CTB will be located on Fee surface; 420' x 200' in size. A CA will be applied for as needed. A pool commingle will be applied for as needed - No permanent open top tanks will be used. - Open vent exhaust stacks will be modified to prevent birds or bats from entering, discourage perching, roosting, and nesting. - All chemical and fuel secondary containment's will be covered for birds, wildlife, and livestock protection. The fluids will be disposed of as needed to prevent possible overflow. - The CTB will have a secondary containment 1.5 times the holding capacity of largest storage tank plus freeboard to account for precipitation. - All above ground structures not subject to safety requirements will be painted a flat non-reflective shale green for blending with the surrounding environment. - At this time, the CTB will have oil and water truck hauled from the facility at this time. Pipelines/Flowlines: All flowlines transporting production from wells to the facility will remain on the fee surface; therefore, no ROW will be required. Powerlines: No power-lines will be needed. The power to the equipment will be provided via a natural gas generator.

**Production Facilities map:**

SUPO\_MAZER\_RACKHAM\_20\_FEE\_FACILITY\_20190121054340.pdf

SUPO\_MAZER\_RACKHAM\_20\_Facility\_Site\_Layout\_20190121054350.pdf

### Section 5 - Location and Types of Water Supply

#### Water Source Table

**Water source use type:** DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

**Describe type:**

**Source latitude:** 32.9974

**Source datum:** NAD83

**Water source permit type:** PRIVATE CONTRACT

**Source land ownership:** PRIVATE

**Water source transport method:** PIPELINE

**Source transportation land ownership:** PRIVATE

**Water source volume (barrels):** 147500

**Source volume (gal):** 6195000

**Water source use type:** DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

**Describe type:**

**Source latitude:** 32.0148

**Source datum:** NAD83

**Water source permit type:** PRIVATE CONTRACT

**Water source type:** GW WELL

**Source longitude:** -104.0127

**Source volume (acre-feet):** 19.011732

**Water source type:** GW WELL

**Source longitude:** -104.0205

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Source land ownership:** PRIVATE

**Water source transport method:** PIPELINE

**Source transportation land ownership:** PRIVATE

**Water source volume (barrels):** 147500

**Source volume (acre-feet):** 19.011732

**Source volume (gal):** 6195000

**Water source and transportation map:**

Mazer\_water\_20190118092147.pdf

**Water source comments:** One of the above choices will be utilized for the water supply for the proposed wells. Private ground water wells will supply water to existing fresh water ponds located in different locations that will be utilized for drilling operations pending demand and availability. The fresh water line will run parallel to the existing disturbance and will stay within 10' of the access road. Location and Types of Water Supply • All Fresh water will be obtained from a private water source. • 1st proposed pond(Pond in Section 30,T26S-R29E) ; will be utilized for fresh water. A temporary 10" expanding pipe transfer line will run east from pond along access rd. then turn north along proposed access road approx. 1.20 Miles. • 2nd proposed (Pond south of Section 32, T26S, R29E in TX); will be utilized for fresh water. A temporary 10" expanding pipe transfer line will run east from pond along lease rd. approx, turn north along road approx. 2.5 miles. • Fresh water line will run parallel to existing disturbance and will stay within 10' of access road. Proposed water suppliers Olli energy Black Ram MRC Permian Company

**New water well?** NO

**New Water Well Info**

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

## Section 6 - Construction Materials

**Construction Materials description:** Construction Material For Mazer Rackham 20 WA Fed 6H , WA Fed 1H , WB Fed 5H , WB Fed 8H , WA Fed 9H • Caliche will be used to construct well pad and roads. Material will be purchased from the nearest federal, state, or private permitted pit. • Source 1 - Caliche will be used to construct well pad and roads. Material will be accessed on site (flipping pad) & purchased from the private land owners ; (MRC Permian , Oil Energy LLC , Black Ram Properties ) caliche pit located in Sec 20, T26S, R29E, Eddy County, NM.GPS 32.032903"N -104.000158"W Price is \$5.00 per yard. • Source 2 - Caliche will be used to construct well pad and roads. Material will be purchased from the private land owner Draper Brantley (575-706-3269) caliche pit located in Sec 14 , T26S , R28E, Eddy County, NM. Gps 32.280335 N ; - 104.042465 W ; Price is \$5.50 per yard. • The proposed source of construction material will be located and purchased by construction contractor. Notification shall be given to BLM at (575) 234-5909 at least 3 working days prior to commencing construction of well pad or related infrastructure.

**Construction Materials source location attachment:**

Mazor\_construction\_20190118071101.pdf

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Drilling fluids and produced oil and water from the well during drilling operations.

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Lined Steel Tanks

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL FACILITY

**Disposal type description:**

**Disposal location description:** Waste will be stored safely and disposed of properly in an NMOCD approved disposal facility.

**Waste type:** GARBAGE

**Waste content description:** Garbage and trash (solid waste).

**Amount of waste:** 1200 pounds

**Waste disposal frequency :** Weekly

**Safe containment description:** All garbage will be stored in secure containers with lids.

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL FACILITY

**Disposal type description:**

**Disposal location description:** All garbage will be collected and disposed of properly at a State approved disposal facility.

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Waste type:** SEWAGE

**Waste content description:** Human waste and grey water.

**Amount of waste:** 600 barrels

**Waste disposal frequency :** Weekly

**Safe containment description:** Portable toilets and sewage tanks.

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL FACILITY

**Disposal type description:**

**Disposal location description:** All sewage waste will be managed by a third party and disposed of properly at a State approved disposal facility.

**Waste type:** COMPLETIONS/STIMULATION

**Waste content description:** Oil and water from drilling operations.

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel Tanks

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL FACILITY

**Disposal type description:**

**Disposal location description:** Waste will be stored safely and disposed of properly in an NMOCD approved disposal facility.

### Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**                      **Reserve pit width (ft.)**

**Reserve pit depth (ft.)**    **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Description of cuttings location** The well will be drilled utilizing a closed loop system. Drill cutting will be properly disposed of into steel tanks and taken to a State approved disposal facility.

**Cuttings area length (ft.)**

**Cuttings area width (ft.)**

**Cuttings area depth (ft.)**

**Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

### Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

### Section 9 - Well Site Layout

**Well Site Layout Diagram:**

SUPO\_\_MAZER\_RACKHAM\_20\_FED\_Well\_Pad\_and\_Location\_Plats\_20190329085854.pdf

**Comments:** Attached: Well Pad Plat and Well Location Plat. This is an existing well pad with no further disturbance required for the approval of this well. Exterior well pad dimensions are 400' by 520'. Note this pad will have 5 total wells, see Well Pad Surface Plat. Interior well pad dimensions from first point of entry (well head) are: From North-220', East-180', south-180', west-340'. Topsoil is on the east side 30'x400'. Disturbance area is 4.78 acres.

### Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** MAZER RACKHAM 20 FED COM

**Multiple Well Pad Number:** 361-1

**Recontouring attachment:**

**Drainage/Erosion control construction:** Construction: BMP's will be followed

**Drainage/Erosion control reclamation:** BMP's will be used to control erosion, runoff and siltation of surrounding area.

**Well pad proposed disturbance (acres):** 4.78

**Well pad interim reclamation (acres):** 0 **Well pad long term disturbance (acres):** 4.78

**Road proposed disturbance (acres):** 0

**Road interim reclamation (acres):** 0 **Road long term disturbance (acres):** 0

**Powerline proposed disturbance (acres):** 0

**Powerline interim reclamation (acres):** 0 **Powerline long term disturbance (acres):** 0

**Pipeline proposed disturbance (acres):** 0

**Pipeline interim reclamation (acres):** 0 **Pipeline long term disturbance (acres):** 0

**Other proposed disturbance (acres):** 0

**Other interim reclamation (acres):** 0 **Other long term disturbance (acres):** 0

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Total proposed disturbance:** 4.78

**Total interim reclamation:** 0

**Total long term disturbance:** 4.78

**Disturbance Comments:**

**Reconstruction method:** Interim reclamation is not planned on this fee surface pad. • The BLM will be notified at least 3 days prior to commencement of any reclamation procedures. • If circumstances allow final reclamation actions will be completed no later than 6 months from when the final well on the location has been plugged. We will gain written permission from the BLM if more time is needed. Reclamation will be performed by using the following procedures: For Final Reclamation: • Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment. • All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads. • All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be re-contoured to the contour existing prior to initial construction or a contour that blends in with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to re-contouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful re-vegetation. • After all the disturbed areas have been properly prepared; the areas will be seeded with the proper BLM seed mixture free of noxious weeds. • Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.

**Topsoil redistribution:** During final reclamation, Marathon will grab and evenly redistribute topsoil across the entire disturbed area, disc plowing if needed, and seeded accordingly.

**Soil treatment:** None

**Existing Vegetation at the well pad:** Mesquite, shinnery oak, sand dropseed, and sage.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** Mesquite, shinnery oak, sand dropseed, and sage.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** N/A

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** N/A

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Seed Management**

**Seed Table**

**Seed type:** OTHER

**Seed source:** COMMERCIAL

**Seed name:** BLM Loamy Mix

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:** Broadcast

**Seed use location:** WELL PAD

**PLS pounds per acre:** 16

**Proposed seeding season:** AUTUMN

**Seed Summary**

**Total pounds/Acre:** 16

Seed Type	Pounds/Acre
-----------	-------------

OTHER

16

**Seed reclamation attachment:**

**Operator Contact/Responsible Official Contact Info**

**First Name:**

**Last Name:**

**Phone:**

**Email:**

**Seedbed prep:** Rip native topsoil stockpiled during construction activities across the slope.

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** Marathon Oil will control weeds per Federal, County and State regulations by contracting a certified third party sprayer.

**Weed treatment plan attachment:**

**Monitoring plan description:** Marathon Oil will monitor all disturbed areas and lease roads leading to well pad monthly for weeds through routine inspections.

**Monitoring plan attachment:**

**Success standards:** Maintain all disturbed areas as per Gold Book Standards.

**Pit closure description:** N/A

**Pit closure attachment:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

### Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** PRIVATE OWNERSHIP

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Fee Owner:** multiple see attached

**Fee Owner Address:** multiple see attached

**Phone:** (432)201-8029

**Email:**

**Surface use plan certification:** YES

**Surface use plan certification document:**

BLM\_Letter\_20190118091834.pdf

**Surface access agreement or bond:** Agreement

**Surface Access Agreement Need description:** See attached

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** MAZER RACKHAM 20 WA FED COM

**Well Number:** 1H

**Section 12 - Other Information**

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

**ROW Applications**

**SUPO Additional Information:**

**Use a previously conducted onsite?** NO

**Previous Onsite information:**

**Other SUPO Attachment**

# VICINITY AND EXISTING ROADS MAP

MAZER RACKHAM 20 FED COM

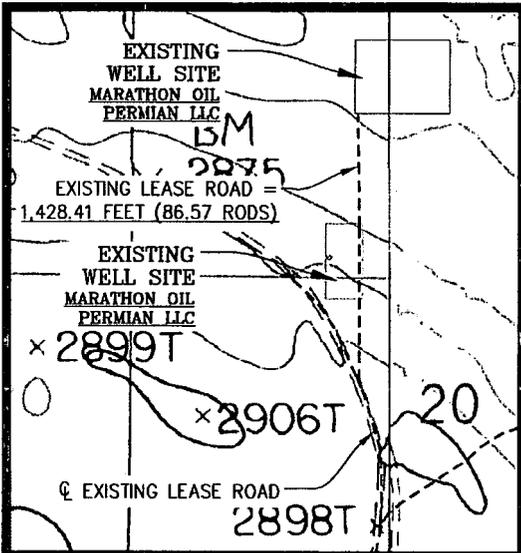
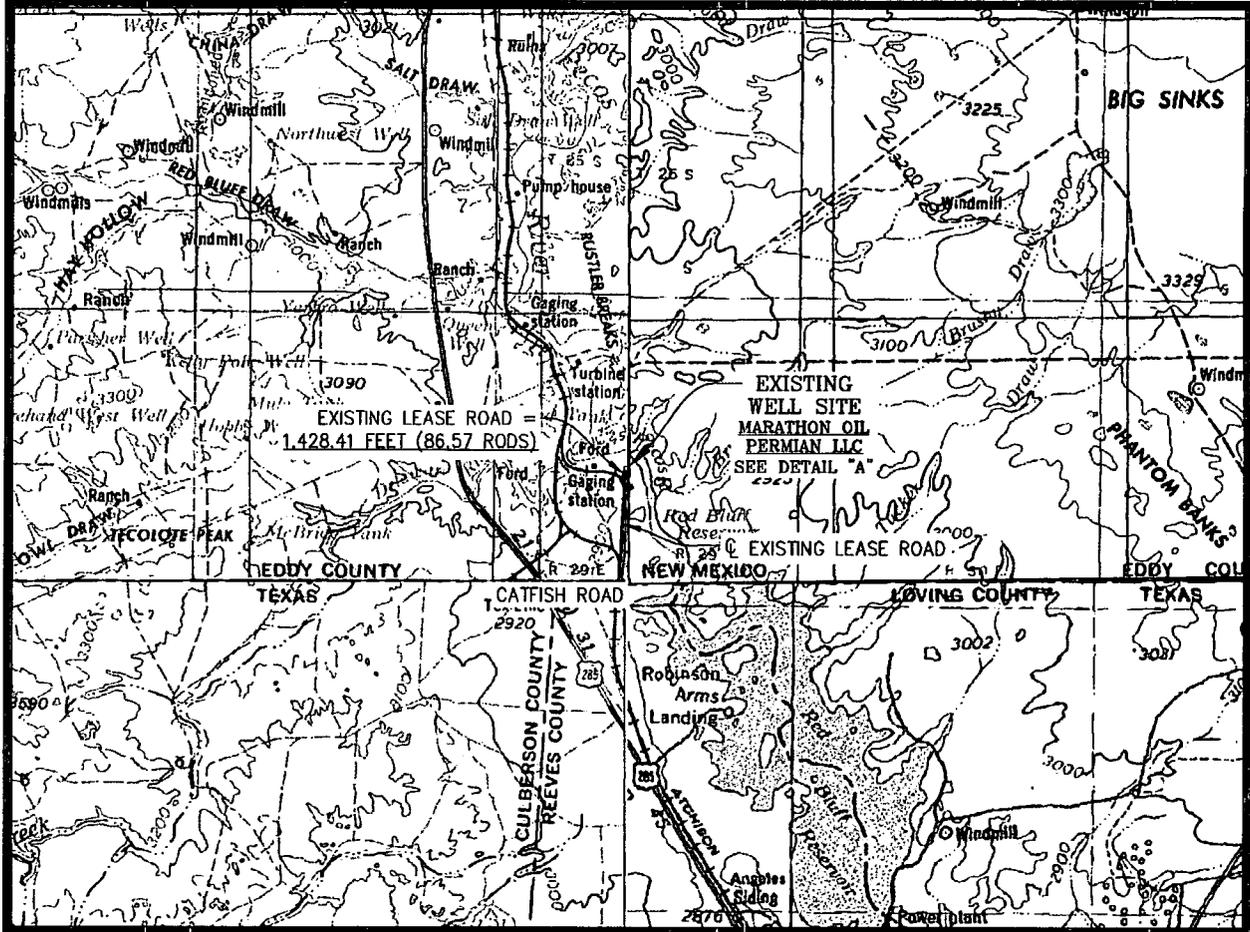
SEC. 20 TWP. 26-S RGE. 29-E

SURVEY: N.M.P.M.

COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M. & ROSS RANCH, N.M.



SCALE: 1" = 20,000'  
CONTOUR INTERVAL = 100'

### DIRECTIONS TO LOCATION:

FROM THE MARATHON OFFICE AT 4111 JIDWELL, CARLSBAD, NM, HEAD SOUTH ON JIDWELL RD TOWARD US HWY 285 N FOR 0.2 MILES. TURN LEFT ONTO US HWY 285 S, HEADING SOUTH, FOR 25.6 MILES TO CATFISH ROAD. TURN LEFT ONTO CATFISH ROAD ON THE NEW MEXICO / TEXAS STATE LINE, HEADING EAST, FOR 17.7 MILES TO A CALICHE ROAD. TURN LEFT ONTO THE CALICHE ROAD, HEADING NORTH, FOR 2.17 MILES TO THE EXISTING LEASE ROAD FOR THE MAZER RACKHAM 20 FED COM WA 1H, 2B 5H, WA 6H, WR 8H, AND WA 9H WELL PAD LOCATION. TURN RIGHT ONTO SAID EXISTING LEASE ROAD, HEADING NORTHEAST, FOR 0.2 MILES ENTERING THE SOUTHWEST CORNER OF SAID WELL PAD LOCATION.

2	01/16/2019	ANC
REV.	DATE	BY

DETAIL A  
N.T.S.

SHEET 4 OF 4

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-8900 OFFICE  
JOB No. R3893\_018

# ONE-MILE RADIUS MAP

MAZER RACKHAM 20 FED COM

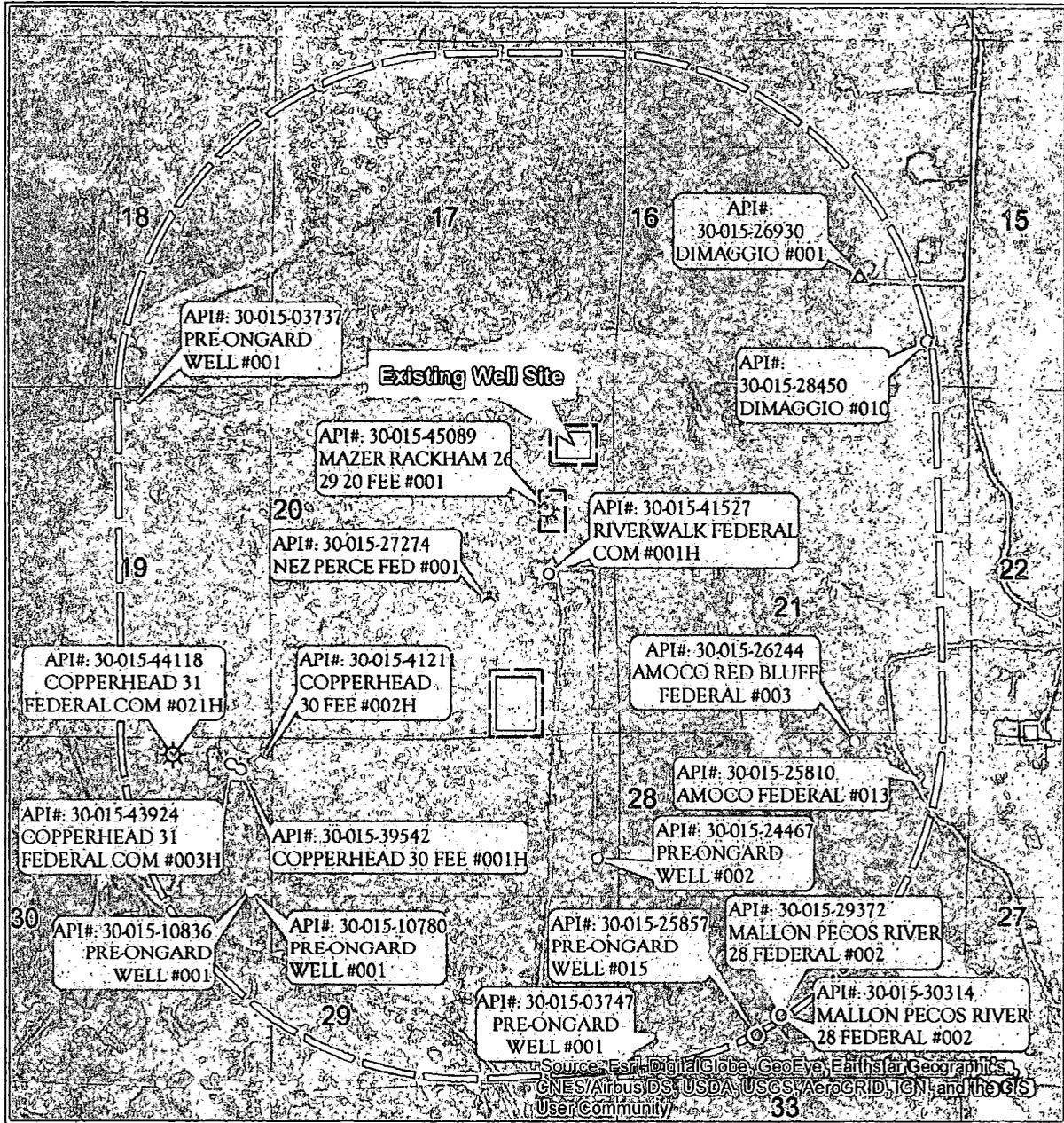
SEC. 20 TWP. 26-S RGE. 29-E

SURVEY: N.M.P.M.

COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, NM, TX.



REV 2 JCS 1/17/2019

1" = 2,500'

Proposed Well Pad			Gas, Active		Salt Water Injection, Cancelled		Salt Water Injection, New
Arch Survey Limits			Gas, Cancelled		Salt Water Injection, Abandoned		Salt Water Injection, Plugged
Section Line			Gas, New		Oil, Active		Water, Active
	CO2 Active		Gas, Plugged		Oil, Cancelled		Water, Plugged
	CO2 Cancelled		Gas, Abandoned		Oil, New		
	CO2, Plugged		Injection, Active		Oil, Plugged		
			Injection, New		Oil, Abandoned		
			Injection, Plugged		Salt Water Injection, Active		

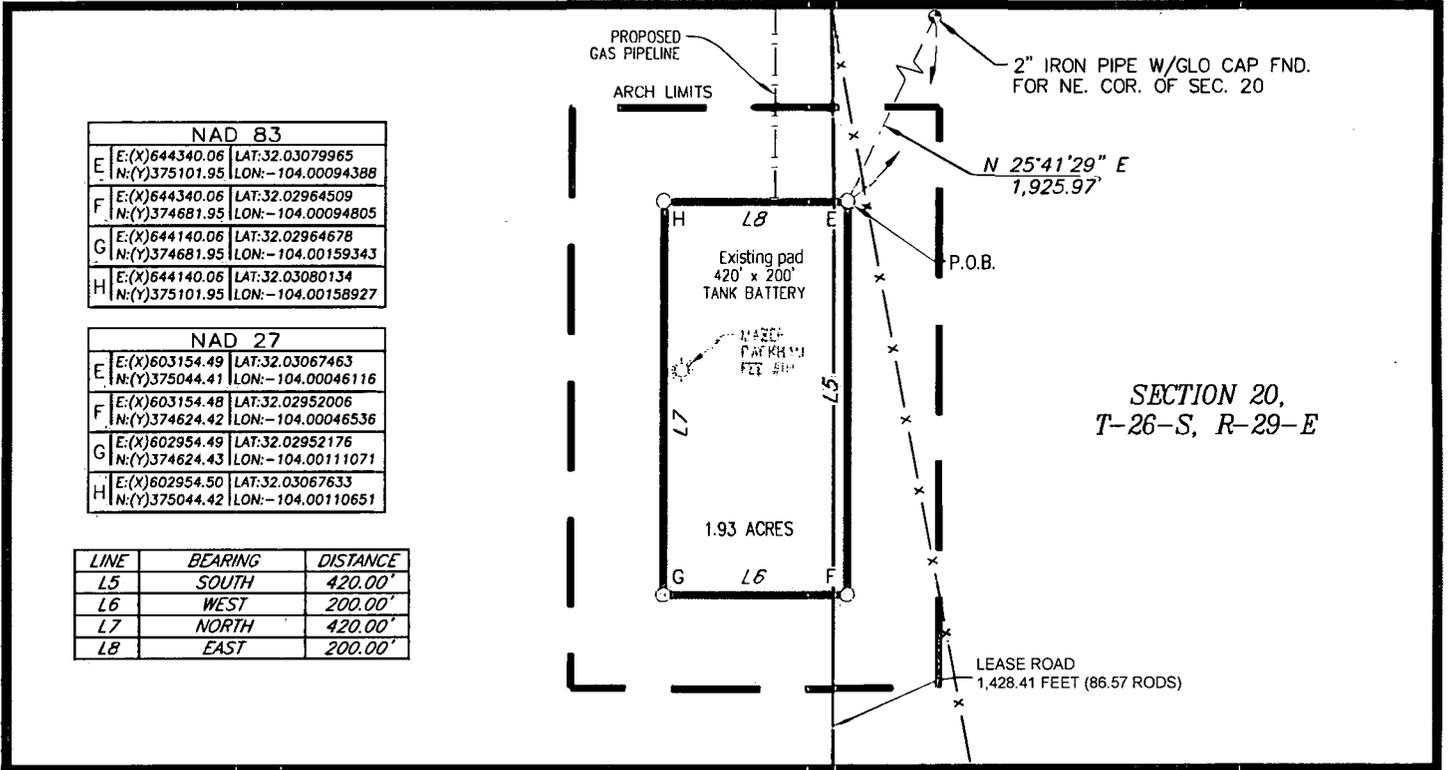
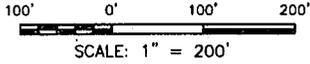


SHEET 1 OF 4  
 PREPARED BY:  
 RSQUARED GLOBAL, LLC  
 1109 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R3893\_016

# WELL PAD PLAT

MAZER RACKHAM 20 FEE  
 SEC. 20 TWP. 26-S RGE. 29-E  
 SURVEY: N.M.P.M.  
 COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC  
 U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M. & ROSS RANCH, N.M.



NAD 83			
E	(X)644340.06	LAT:32.03079965	
N	(Y)375101.95	LON:-104.00094388	
F	(X)644340.06	LAT:32.02964509	
N	(Y)374681.95	LON:-104.00094805	
G	(X)644140.06	LAT:32.02964678	
N	(Y)374681.95	LON:-104.00159343	
H	(X)644140.06	LAT:32.03080134	
N	(Y)375101.95	LON:-104.00158927	

NAD 27			
E	(X)603154.49	LAT:32.03067463	
N	(Y)375044.41	LON:-104.00046116	
F	(X)603154.48	LAT:32.02952006	
N	(Y)374624.42	LON:-104.00046536	
G	(X)602954.49	LAT:32.02952176	
N	(Y)374624.43	LON:-104.00111071	
H	(X)602954.50	LAT:32.03067633	
N	(Y)375044.42	LON:-104.00110651	

LINE	BEARING	DISTANCE
L5	SOUTH	420.00'
L6	WEST	200.00'
L7	NORTH	420.00'
L8	EAST	200.00'

## FIELD NOTES DESCRIBING

A tract of land being 1.93 acres. Said tract being located in Section 20, Township 26 South, Range 29 East, New Mexico Principal Meridian, Eddy County, New Mexico.

Being more particularly described by metes and bounds as follows:

**BEGINNING** at a point from which a 2 inch iron pipe with GLO cap found for the Northeast corner of said Section 20 bears N 25°41'29" E a distance of 1,925.97 feet.

**THENCE**

SOUTH a distance of 420.00 feet to the Southeast corner of said tract,  
 WEST a distance of 200.00 feet to the Southwest corner of said tract,  
 NORTH a distance of 420.00 feet to the Northwest corner of said tract and  
 EAST a distance of 200.00 feet to the **POINT OF BEGINNING**.

The total area of the herein described tract contains 1.93 acres of land.

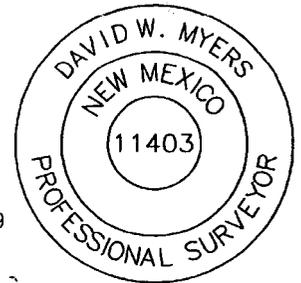
All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are based on grid measurements utilizing a combined scale factor of 0.99978647.)

Title information furnished by Marathon Oil Permian LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.

STATE OF NEW MEXICO  
 COUNTY OF EDDY

I, David W. Myers, New Mexico Professional Surveyor No. 11403, do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.



JANUARY 10, 2019

DAVID W. MYERS 11403



PLAT FOR A SURFACE SITE ON THE PROPERTY OF  
 MRC PERMIAN COMPANY, ET AL  
 EDDY COUNTY, NEW MEXICO

**BASIS OF BEARING**  
 ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. (ALL BEARINGS AND DISTANCES ARE GRID MEASUREMENTS.)

LEGEND	P.O.B. POINT OF BEGINNING	R3893_016
--- EXISTING ROAD	--- ARCH LIMITS	
--- PROPOSED ROAD	- x - FENCE	
--- SURFACE SITE EDGE	--- SECTION LINE	
--- EXIST. PIPELINE	--- SWD SALT WATER DISPOSAL	
○ MONUMENT	● QUARTER SPLIT	--- w --- WATER LINE

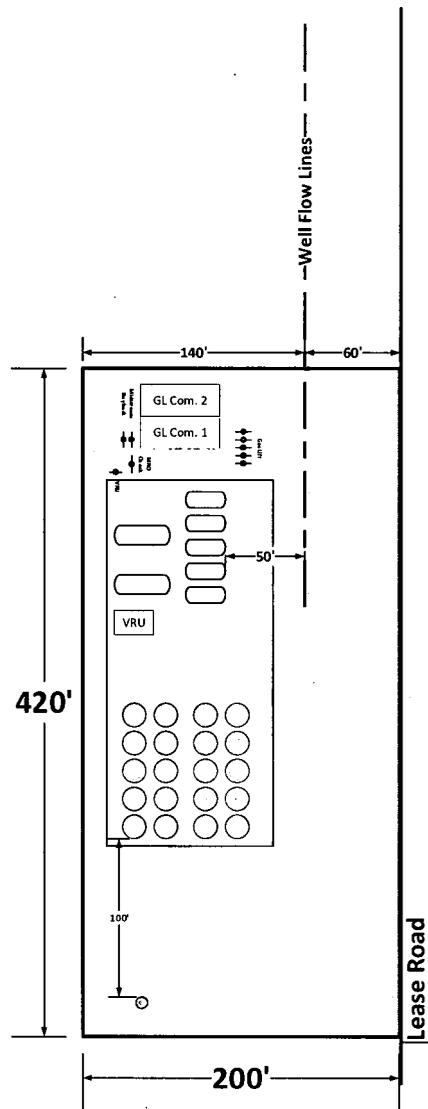
REV.	DATE	DESCRIPTION	BY	CHKD
1	01/09/2019	FACILITY REDESIGN	ANC	MWS
SHEET 3 OF 4				
DRAWN BY: JCS				
DATE: 12/07/2018				
CHECKED BY: MWS				

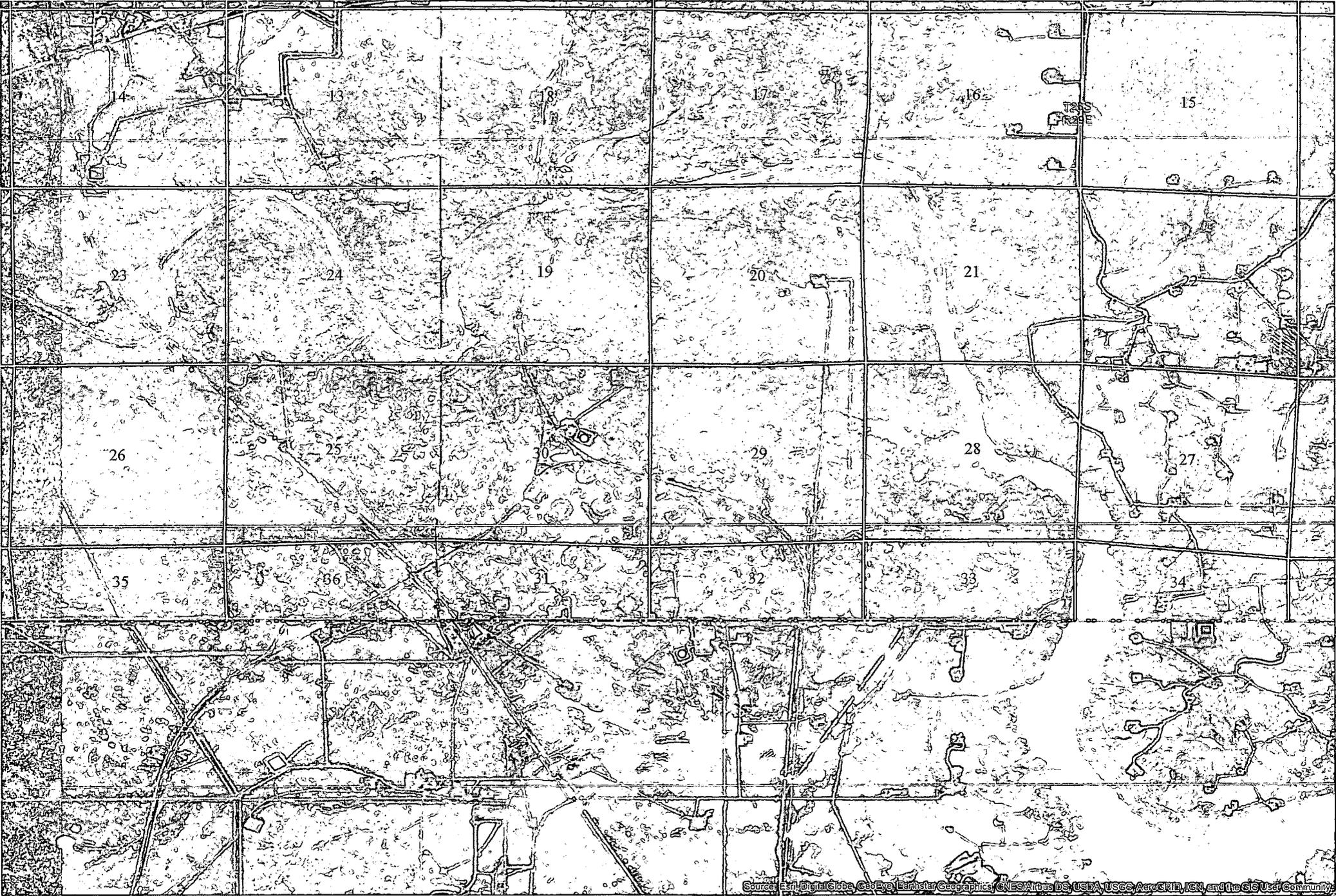


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 (318) 323-6900  
 FAX (318) 362-0064



Mazer Rackham 20 Fed  
Com (9H 8H 6H 5H 1H)





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USCG, AeroGRID, IGN, and the GIS User Community

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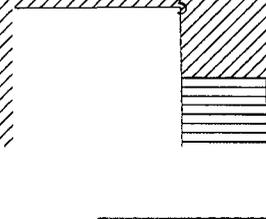
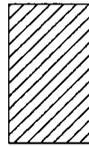
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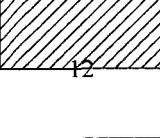
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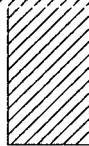
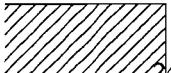
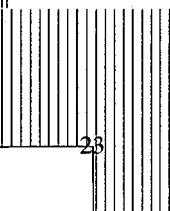
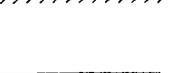
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T26S  
R29E



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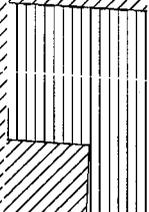
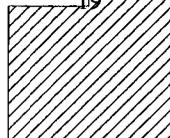
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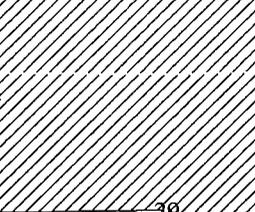
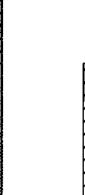
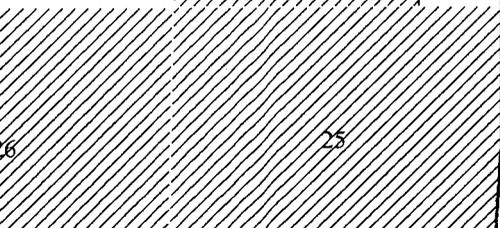
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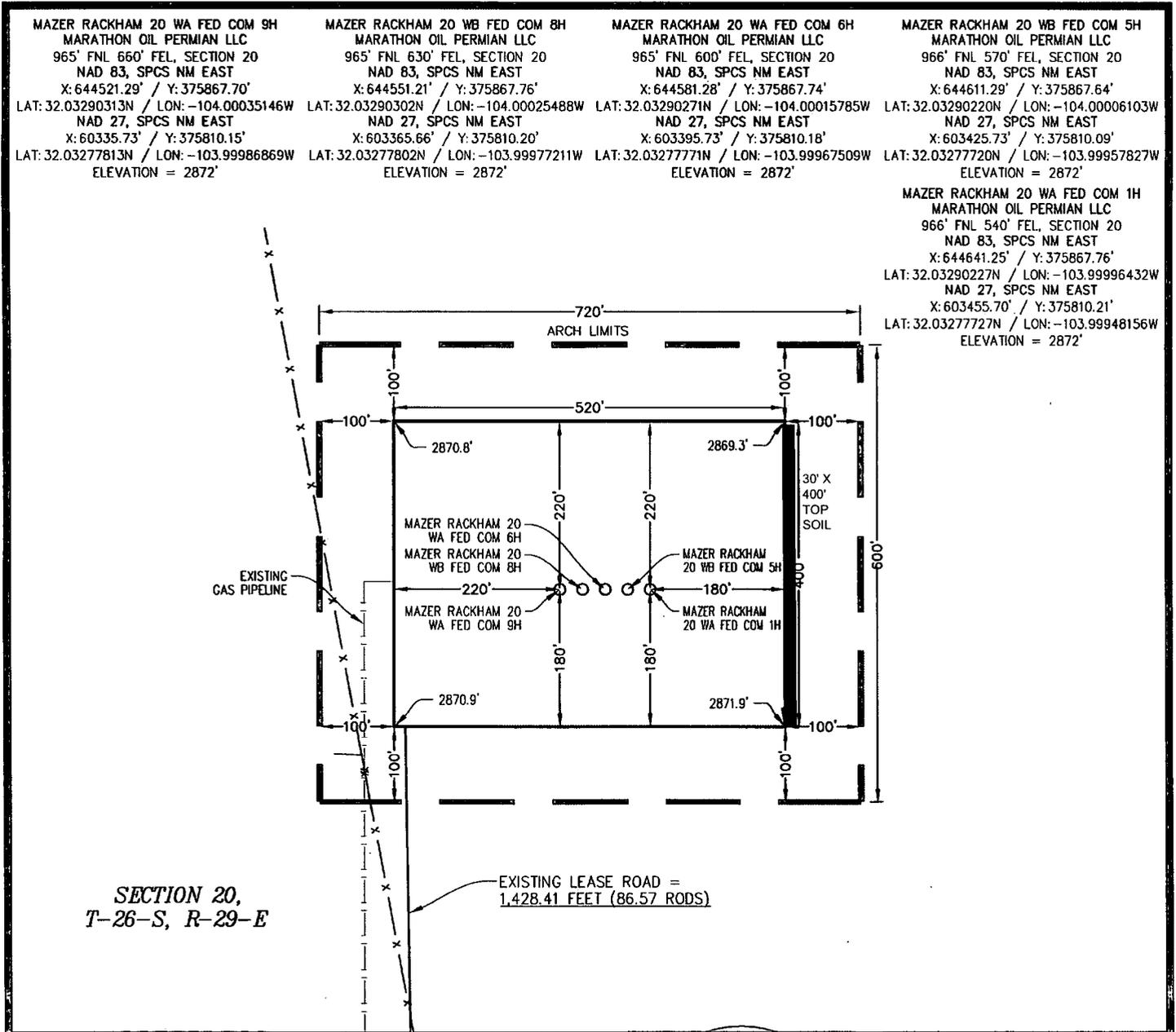


**LEGEND**

- PROPOSED WELL PAD
- ARCH SURVEY LIMITS
- PROPOSED LEASE ROAD
- EXISTING LEASE ROAD
- PIPELINE
- SECTION LINE
- FENCE

# WELL PAD TOPO

MAZER RACKHAM 20 FED COM  
 SEC. 20 TWP. 26-S RGE. 29-E  
 SURVEY: N.M.P.M.  
 COUNTY: EDDY  
 OPERATOR: MARATHON OIL PERMIAN LLC  
 U.S.G.S. TOPOGRAPHIC MAP: RED BLUFF, N.M. &  
 ROSS RANCH, N.M.



MAZER RACKHAM 20 WA FED COM 9H  
 MARATHON OIL PERMIAN LLC  
 965' FNL 660' FEL, SECTION 20  
 NAD 83, SPCS NM EAST  
 X: 644521.29' / Y: 375867.70'  
 LAT: 32.03290313N / LON: -104.00035146W  
 NAD 27, SPCS NM EAST  
 X: 60335.73' / Y: 375810.15'  
 LAT: 32.03277813N / LON: -103.99986869W  
 ELEVATION = 2872'

MAZER RACKHAM 20 WB FED COM 8H  
 MARATHON OIL PERMIAN LLC  
 965' FNL 630' FEL, SECTION 20  
 NAD 83, SPCS NM EAST  
 X: 644551.21' / Y: 375867.76'  
 LAT: 32.03290302N / LON: -104.00025488W  
 NAD 27, SPCS NM EAST  
 X: 603365.66' / Y: 375810.20'  
 LAT: 32.03277802N / LON: -103.99977211W  
 ELEVATION = 2872'

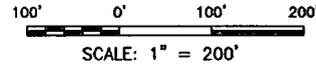
MAZER RACKHAM 20 WA FED COM 6H  
 MARATHON OIL PERMIAN LLC  
 965' FNL 600' FEL, SECTION 20  
 NAD 83, SPCS NM EAST  
 X: 644581.28' / Y: 375867.74'  
 LAT: 32.03290271N / LON: -104.00015785W  
 NAD 27, SPCS NM EAST  
 X: 603395.73' / Y: 375810.18'  
 LAT: 32.03277771N / LON: -103.99967509W  
 ELEVATION = 2872'

MAZER RACKHAM 20 WB FED COM 5H  
 MARATHON OIL PERMIAN LLC  
 966' FNL 570' FEL, SECTION 20  
 NAD 83, SPCS NM EAST  
 X: 644611.29' / Y: 375867.64'  
 LAT: 32.03290220N / LON: -104.00006103W  
 NAD 27, SPCS NM EAST  
 X: 603425.73' / Y: 375810.09'  
 LAT: 32.03277720N / LON: -103.99957827W  
 ELEVATION = 2872'

MAZER RACKHAM 20 WA FED COM 1H  
 MARATHON OIL PERMIAN LLC  
 966' FNL 540' FEL, SECTION 20  
 NAD 83, SPCS NM EAST  
 X: 644641.25' / Y: 375867.76'  
 LAT: 32.03290227N / LON: -103.99996432W  
 NAD 27, SPCS NM EAST  
 X: 603455.70' / Y: 375810.21'  
 LAT: 32.03277727N / LON: -103.99948156W  
 ELEVATION = 2872'

**SECTION 20,  
 T-26-S, R-29-E**

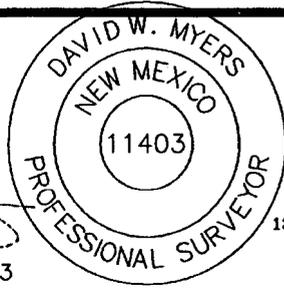
**NOTE:**  
 THIS IS NOT A BOUNDARY SURVEY,  
 APPARENT PROPERTY CORNERS AND  
 PROPERTY LINES ARE SHOWN FOR  
 INFORMATION ONLY. BOUNDARY DATA SHOWN  
 IS FROM STATE OF NEW MEXICO OIL  
 CONSERVATION DIVISION FORM C-102  
 INCLUDED IN THIS SUBMITTAL.



JANUARY 18, 2019

*(Handwritten signature)*

DAVID W. MYERS 11403



2	01/16/2019	ANC
REV.	DATE	BY

SHEET 3 OF 4

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R3893\_018

SELF-CERTIFICATION STATEMENT  
FROM LESSEE/OPERATOR  
SURFACE OWNER IDENTIFICATION

*Well Number and Locations:*

- Mazer Rackham 20 WA Fed 1H
- Mazer Rackham 20 WB Fed 5H
- Mazer Rackham 20 WA Fed 6H
- Mazer Rackham 20 WB Fed 8H
- Mazer Rackham 20 WA Fed 9H

All wells are located in the N/2NE/4 of Sec. 20, Township 26 South, Range 29 East, N.M.P.M., Eddy County, New Mexico.

I hereby certify to the Authorized Officer of the Bureau of Land Management that Operator has entered into a Surface Use, Easement, and Damage Agreement with the following surface owners. The Operator *and surface owner have finalized this agreement as of this date.*

Olli Energy, LLC 3001 W. Loop 250 Ste. C-105, PMB 320 Midland, TX 79705	Black Ram Properties, LLC P.O. Box 809 Artesia, NM 88221-0809	MRC Permian Company One Lincoln Center 5400 LBJ Freeway, Suite 1500 Dallas, TX 75240
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Signed this 7<sup>th</sup> day of January, 2019.



*Brian Hall, Advanced Land Professional*



**Section 1 - General**

Would you like to address long-term produced water disposal? NO

**Section 2 - Lined Pits**

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### **Section 3 - Unlined Pits**

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Assigned injection well API number?

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Injection well name:

Injection well API number:

### Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

### Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

**Bond Information**

Federal/Indian APD: FED

BLM Bond number: NMB001555

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: