

OCD Hobbs  
HOBBBS OCD

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DEC 12 2018

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

5. Lease Serial No.  
NMNM013647

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No.  
CAVE LION FEDERAL 26355-WXY  
18H (3727004)

9. API-Well No.  
30025-45425

10. Field and Pool, or Exploratory  
WOLFCAMP / WG-025 G-09 S263504N 98117

11. Sec., T, R, M, or Blk. and Survey or Area  
SEC 5 / T26S / R35E / NMP

1a. Type of work:  DRILL  REENTER  
1b. Type of Well:  Oil Well  Gas Well  Other  
1c. Type of Completion:  Hydraulic Fracturing  Single Zone  Multiple Zone

2. Name of Operator  
MARATHON OIL PERMIAN LLC (372098)

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

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

4. Location of Well (Report location clearly and in accordance with any State requirements. \*)  
At surface SESE / 449 FSL / 1118 FEL / LAT 32.0663102 / LONG -103.3845784  
At proposed prod. zone NENE / 150 FNL / 330 FEL / LAT 32.0791827 / LONG -103.3820505

12. County or Parish  
LEA

13. State  
NM

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

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

16. No. of acres in lease  
1281.31

17. Spacing Unit dedicated to this well  
160

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft.  
3710 feet

19. Proposed Depth  
12545 feet / 17450 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3224 feet

22. Approximate date work will start\*  
08/01/2018

23. Estimated duration  
30 days

24. Attachments

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

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

25. Signature (Electronic Submission)  
Name (Printed/Typed)  
Jennifer Van Curen / Ph: (713)296-2500  
Date  
06/06/2018

Title  
Sr. Regulatory Compliance Rep

Approved by (Signature) (Electronic Submission)  
Name (Printed/Typed)  
Cody Layton / Ph: (575)234-5959  
Date  
11/06/2018

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.

GCP Rec 12/12/18

**APPROVED WITH CONDITIONS**  
Approval Date: 11/06/2018

Double Sided

## 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: SESE / 449 FSL / 1118 FEL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.0663102 / LONG: -103.3845784 ( TVD: 0 feet, MD: 0 feet )  
PPP: SESE / 150 FSL / 330 FEL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.0654825 / LONG: -103.3820345 ( TVD: 12545 feet, MD: 12945 feet )  
BHL: NENE / 150 FNL / 330 FEL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.0791827 / LONG: -103.3820505 ( TVD: 12545 feet, MD: 17450 feet )

## BLM Point of Contact

Name: Katrina Ponder  
Title: Geologist  
Phone: 5752345969  
Email: kponder@blm.gov

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## **Review and Appeal Rights**

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

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

# Operator Certification Data Report

11/09/2018

## 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:** 06/05/2018

**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: 10400030869

Submission Date: 06/06/2018

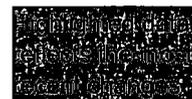
Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

**Section 1 - General**

APD ID: 10400030869

Tie to previous NOS?

Submission Date: 06/06/2018

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: NMNM013647

Lease Acres: 1281.31

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: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: WOLFCAMP

Pool Name: WC-025 G-09  
S263504N

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

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

Describe other minerals:

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: CAVE Number: 300-3

Well Class: HORIZONTAL

LION FEDERAL 26 35 5

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 12.2 Miles

Distance to nearest well: 3710 FT

Distance to lease line: 0 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: App 2 signed CAVE\_LION\_FEDERAL\_26\_35\_5\_WXY\_18H\_REV2\_CERT\_FORM\_C\_102\_20180605070222.pdf

Well work start Date: 08/01/2018

Duration: 30 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 21653

|            | 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 |         | FSL          | 1118    | FEL          | 26S  | 35E   | 5       | Aliquot SESE      | 32.0663102 |           | LEA    | NEW MEXI CO | NEW MEXI CO | F          | NMNM 013647  | 3224      | 0     | 0     |
| KOP Leg #1 |         | FSL          | 330     | FEL          | 26S  | 35E   | 5       | Aliquot SESE      | 32.0653476 |           | LEA    | NEW MEXI CO | NEW MEXI CO | F          | NMNM 013647  | -8748     | 12045 | 11972 |
| PPP Leg #1 |         | FSL          | 330     | FEL          | 26S  | 35E   | 5       | Aliquot SESE      | 32.0654825 |           | LEA    | NEW MEXI CO | NEW MEXI CO | F          | NMNM 013647  | -9321     | 12945 | 12545 |

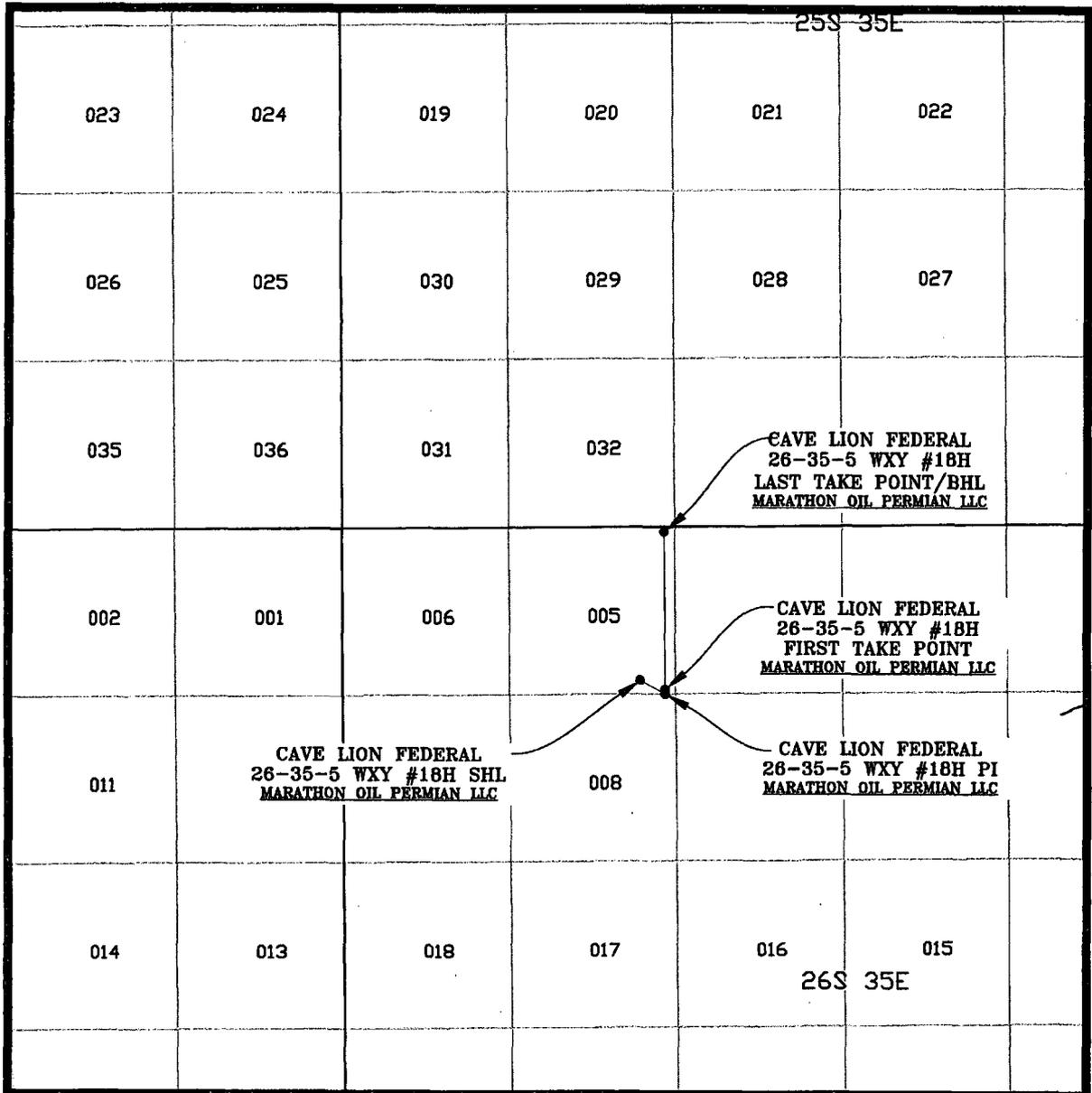
Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

|                   | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twp | Range | Section | Aliquot/Lot/Tract | Latitude       | Longitude | County | State             | Meridian          | Lease Type | Lease Number   | Elevation     | MD        | TVD       |
|-------------------|---------|--------------|---------|--------------|-----|-------|---------|-------------------|----------------|-----------|--------|-------------------|-------------------|------------|----------------|---------------|-----------|-----------|
| EXIT<br>Leg<br>#1 |         | FNL          | 330     | FEL          | 26S | 35E   | 5       | Aliquot<br>NENE   | 32.07918<br>27 |           | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>013647 | -<br>932<br>1 | 174<br>50 | 125<br>45 |
| BHL<br>Leg<br>#1  |         | FNL          | 330     | FEL          | 26S | 35E   | 5       | Aliquot<br>NENE   | 32.07918<br>27 |           | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>013647 | -<br>932<br>1 | 174<br>50 | 125<br>45 |

# VICINITY MAP



SEC. 5 TWP. 26-S RGE. 35-E  
 SURVEY: N.M.P.M.  
 COUNTY: LEA  
 DESCRIPTION: 449' FSL & 1118' FEL  
 ELEVATION: 3224'  
 OPERATOR: MARATHON OIL PERMIAN LLC  
 LEASE: CAVE LION FEDERAL 26-35-5  
 U.S.G.S. TOPOGRAPHIC MAP: ANDREWS PLACE, N.M.

SCALE: 1" = 1 MILE

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-8900 OFFICE  
 JOB No. R3757\_010



APD ID: 10400030869

Submission Date: 06/06/2018



Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

Show Final Text

Well Type: OIL 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         | 2180      | 1044                | 1044           | DOLOMITE, ANHYDRITE             | OTHER : Brine     | No                  |
| 2            | SALADO          | 701       | 1483                | 1484           | SALT, ANHYDRITE                 | OTHER : Brine     | No                  |
| 3            | CASTILE         | -1337     | 3521                | 3551           | SALT                            | OTHER : Brine     | No                  |
| 4            | BASE OF SALT    | -2894     | 5078                | 5132           | LIMESTONE, SANDSTONE            | OTHER : Brine     | No                  |
| 5            | LAMAR           | -3159     | 5343                | 5402           | OTHER : Sand/Shales             | OIL               | No                  |
| 6            | BELL CANYON     | -3187     | 5371                | 5430           | SHALE, SANDSTONE                | OIL               | No                  |
| 7            | BRUSHY CANYON   | -5796     | 7980                | 8053           | OTHER : Sands/Carbonate         | OIL               | No                  |
| 8            | BONE SPRING     | -7087     | 9271                | 9344           | OTHER : Sands/Carbonate         | OIL               | No                  |
| 9            | BONE SPRING 1ST | -8207     | 10391               | 10464          | OTHER : Sands/Carbonate         | OIL               | No                  |
| 10           | BONE SPRING 2ND | -8756     | 10940               | 11013          | OTHER : Sands/Carbonates        | OIL               | No                  |
| 11           | BONE SPRING 3RD | -9841     | 12025               | 12098          | OTHER : Sands/Carbonates        | OIL               | No                  |
| 12           | WOLFCAMP        | -10268    | 12452               | 12614          | SHALE, OTHER : Carbonates/Sands | NATURAL GAS, OIL  | Yes                 |

**Section 2 - Blowout Prevention**

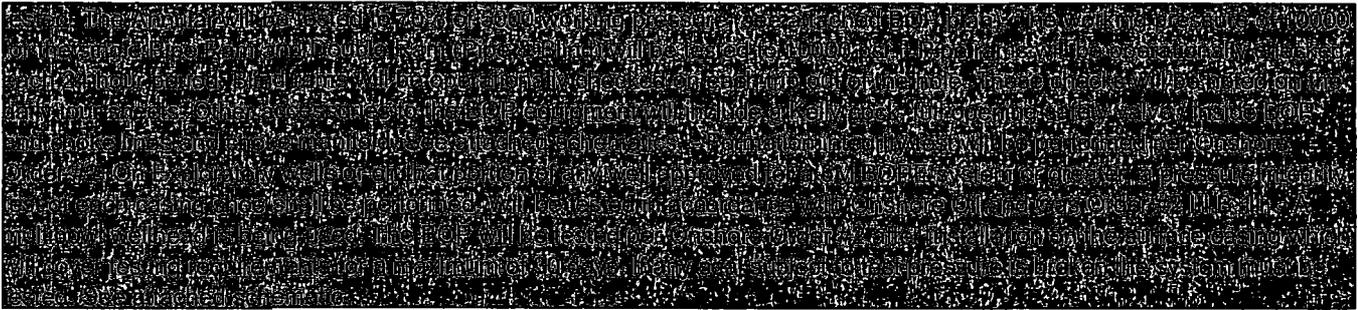
Rating Depth: 15000

Requesting Variance? YES

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H



**Choke Diagram Attachment:**

Drill\_2\_Choke\_\_\_Choke\_Line\_Test\_Chart\_SN\_63393\_20180601074819.pdf

Drill\_2\_Choke\_\_\_Contitech\_Hose\_SN\_663393\_20180601074828.pdf

Drill\_2\_Choke\_\_\_Choke\_Line\_Flex\_III\_Rig\_20180601074809.pdf

Drill\_2\_Choke\_\_\_10M.THREE\_CHOKE\_MANIFOLD.BLM\_20180601074758.pdf

**BOP Diagram Attachment:**

Drill\_2\_BOP\_\_\_10M\_Flex.BOPE\_x\_5M\_ANNULAR.BLM\_20180601074850.pdf

Drill\_2\_BOP\_\_\_Well\_Control\_Plan\_\_\_Permian\_20180601074907.pdf

Drill\_2\_BOP\_\_\_WH\_TH\_DESIGN\_2\_DRAWING\_20180604114138.pdf

PT\_10K\_DRAWING\_20181011142558.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          | 1080          | 0           | 1080           | 3224        | 2144           | 1080                        | 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          | 5440          | 0           | 5380           | 3224        | -2156          | 5440                        | J-55  | 40     | LTC        | 1.74        | 1.15     | BUOY          | 2.19     | BUOY         | 2.19    |
| 3         | INTERMEDIATE | 8.75      | 7.0      | NEW       | API      | N              | 0          | 11945         | 0           | 11872          | 3224        | -8648          | 11945                       | P-110 | 29     | BUTT       | 2.21        | 1.18     | BUOY          | 1.9      | BUOY         | 1.9     |
| 4         | PRODUCTION   | 6.125     | 4.5      | NEW       | API      | N              | 11645      | 17450         | 11572       | 12545          | -8348       | -9321          | 5805                        | 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:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

**Casing Attachments**

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Drill\_3\_\_Red\_Hills\_3\_csg\_\_liner\_\_Surface\_Csg\_20180605074900.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Drill\_3\_\_Red\_Hills\_3\_csg\_\_liner\_\_Int\_I\_Csg\_20180604114415.pdf

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**Casing ID:** 3      **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Drill\_3\_\_Red\_Hills\_3\_csg\_\_liner\_\_Int\_II\_Csg\_20180605075049.pdf

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Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

**Casing Attachments**

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Drill\_3\_\_Red\_Hills\_3\_csg\_\_liner\_\_Prod\_Liner\_20180605075214.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                                                                                |
|--------------|-----------|------------------|-----------|-----------|--------------|-------|---------|-------|---------|------------------------|------------------------------------------------------------------------------------------|
| PRODUCTION   | Lead      |                  | 0         | 0         | 0            | 0     | 0       | 0     | 0       | N/A, tail cement only. | N/A                                                                                      |
| PRODUCTION   | Tail      |                  | 1164<br>5 | 1745<br>0 | 583          | 1.22  | 14.5    | 711   | 30      | Class H                | 0.1% retarder + 3.5% extender + 0.3% fluid loss + 0.1% Dispersant                        |
| SURFACE      | Lead      |                  | 0         | 848       | 674          | 1.75  | 13.5    | 1178  | 100     | Class C                | 3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake                                       |
| SURFACE      | Tail      |                  | 848       | 1060      | 216          | 1.33  | 14.8    | 295   | 100     | Class C                | N/A                                                                                      |
| INTERMEDIATE | Lead      |                  | 0         | 4400      | 1394         | 1.75  | 12.8    | 2412  | 75      | Class C                | 0.02 Gal/Sx Defoamer + 0.5% Extender + 1% Accelerator                                    |
| INTERMEDIATE | Tail      |                  | 4400      | 5440      | 367          | 1.33  | 14.8    | 489   | 50      | Class C                | 0.03 % Retarder                                                                          |
| INTERMEDIATE | Lead      |                  | 5140      | 1090<br>0 | 545          | 2.7   | 11      | 1472  | 70      | Class C                | 0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier |
| INTERMEDIATE | Tail      |                  | 1090<br>0 | 1194<br>5 | 178          | 1.09  | 15.6    | 204   | 30      | Class H                | 3% extender + 0.15% Dispersant + 0.03 gal/sk retarder                                    |

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

### 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 |
|-----------|--------------|----------------------|----------------------|----------------------|---------------------|-----------------------------|----|----------------|----------------|-----------------|----------------------------|
| 1194<br>5 | 1745<br>0    | OIL-BASED<br>MUD     | 11.5                 | 13.5                 |                     |                             |    |                |                |                 |                            |
| 1060      | 5440         | OTHER : Brine        | 9.9                  | 10.2                 |                     |                             |    |                |                |                 |                            |
| 0         | 1060         | WATER-BASED<br>MUD   | 8.4                  | 8.8                  |                     |                             |    |                |                |                 |                            |
| 5440      | 1194<br>5    | OTHER : Cut<br>Brine | 8.8                  | 9.4                  |                     |                             |    |                |                |                 |                            |

### 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:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 8881

**Anticipated Surface Pressure:** 6121.1

**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:**

Drill\_7\_\_\_Marathon\_Carlsbad\_\_\_CAVE\_LION\_FED\_26\_35\_5\_12H\_14H\_15H\_18H\_Contingency\_Plan\_20180604120712.pdf

Drill\_7\_\_\_H2S\_Contingency\_Plan\_Summary\_20180604120703.pdf

Drill\_7\_\_\_Pad\_Flex\_III\_20180604120719.pdf

Drill\_8\_OPOF\_\_\_GasCapturePlanFormFinal\_Cave\_Lion\_26\_35\_5\_\_\_12\_\_\_14\_\_\_15\_\_\_18\_\_\_20181011142629.pdf

## Section 8 - Other Information

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

Drill\_8\_PD\_\_\_Cave\_Lion\_Federal\_Unit\_\_\_Federal\_Minerals\_20180601080729.pdf

Drill\_8\_PD\_\_\_Marathon\_CaveLionFedWXY\_18H\_PrelimA\_36x48WM\_20180605075738.PDF

Drill\_8\_PD\_\_\_Marathon\_CaveLionFedWXY\_18H\_PrelimA\_WPReport\_20180605075750.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:**

Drill\_8\_OV\_\_\_Batch\_Drilling\_Plan\_and\_Surface\_Rig\_Request\_20181011142704.pdf

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

Drill\_8\_PD\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_WXY\_18H\_DRILLING\_PLAN\_20181011142714.pdf

**Other Variance attachment:**



# Certificate of Conformity

ContiTech

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

3 4 5 6 AM

JOB# *48-20-1081*  
 PBC# *955233*  
 HOSE DESCRIPTION: *3" ID 10k Chlorine Inj*  
 TEST PRESSURE: *1500 psi*  
 CHART RECORDER #: *9110*  
 CHART SETTING: *9110*  
 CBC REPRESENTATIVE: *Gene Hader*  
 DATE: *5-5-70*

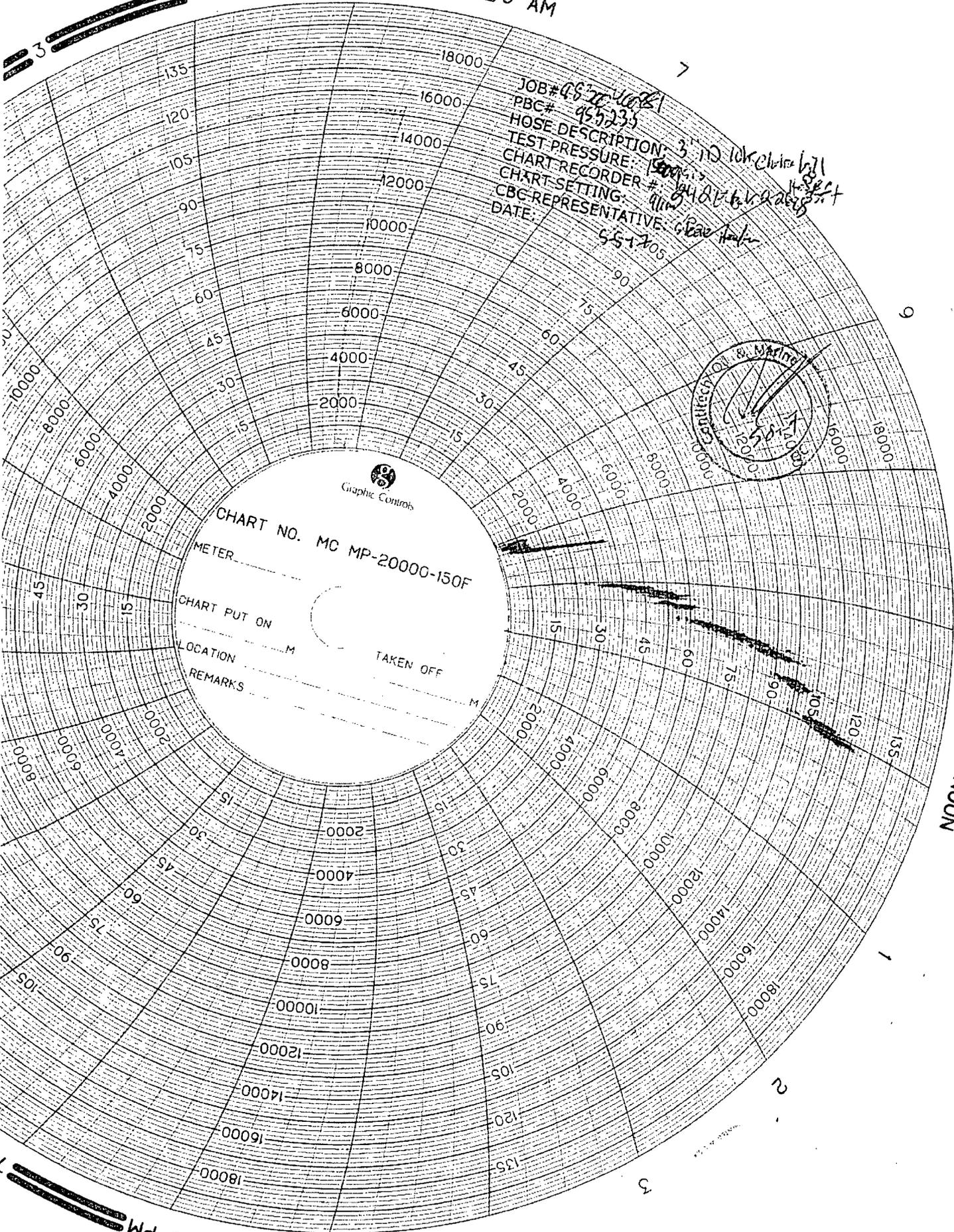


CHART NO. MC MP-20000-150F  
 METER \_\_\_\_\_  
 CHART PUT ON \_\_\_\_\_ M  
 LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_  
 TAKEN OFF \_\_\_\_\_ M

9  
 10  
 11  
 NOON

6 PM

4

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

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| 5.10. NDT Examiner Certificate (Name: Benkő Péter )                                                                                     | 45-46.      |
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| 5.12. NDT Examiner Certificate (Name: Ménesi István )                                                                                   | 52-53.      |
| 5.13. MP Examination Record (No.: 1262/12 )                                                                                             | 54.         |
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| 6. Steel Cord                                                                                                                           |             |
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| 7.1. Inspection Certificate (No.: 917781/001 )                                                                                          | 58.         |
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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. Dan Whittaker*  
 Manager of Operations, APIQR

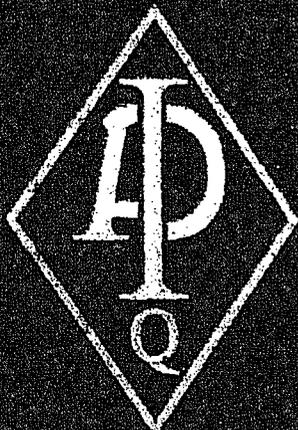
Accredited by Member of  
 the International  
 Accreditation Forum  
 Multilateral Recognition  
 Arrangement for Quality  
 Management Systems



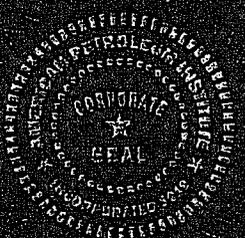
This certificate is valid for the period specified herein. The registered organization must continuously meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. Further clarifications 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 1420 I Street, N.W., Washington, D.C. 20005-4076, 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.apiqr.org/composite.html](http://www.apiqr.org/composite.html).



2007-216 (07.09) 1/1



**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

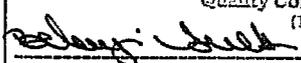
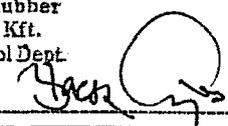
To verify the authenticity of this license, go to [www.api.org/compositelst](http://www.api.org/compositelst).

American Petroleum Institute

Director of Global Industry Services

CONTITECH RUBBER  
Industrial Kft.

No: QC-DB-380/2012  
Page: 4/61

| QUALITY CONTROL<br>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.                                                                                                                                                          |  |
| <p>Pressure test with water at ambient temperature</p> <p style="text-align: center;">See attachment. ( 1 page )</p> <p>↑ 10 mm = 10 Min.<br/>→ 10 mm = 20 MPa</p>                                                                                                                                                                                                                                 |  |                                            |                 |                                                                                                                                                                            |  |
| COUPLINGS Type                                                                                                                                                                                                                                                                                                                                                                                     |  | Serial N°                                  |                 | Quality                                                                                                                                                                    |  |
| 3" coupling with                                                                                                                                                                                                                                                                                                                                                                                   |  | 2156 2153                                  |                 | AISI 4130                                                                                                                                                                  |  |
| 4 1/16" 10K API Flange end                                                                                                                                                                                                                                                                                                                                                                         |  |                                            |                 | AISI 4130                                                                                                                                                                  |  |
| <p style="text-align: center;"><b>NOT DESIGNED FOR WELL TESTING</b></p>                                                                                                                                                                                                                                                                                                                            |  |                                            |                 | <p style="text-align: center;"><b>API Spec 16 C</b><br/><b>Temperature rate:"B"</b></p>                                                                                    |  |
| 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:<br><br>23. August 2012.                                                                                                                                                                                                                                                                                                                                                                      |  | Inspector                                  |                 | Quality Control<br>ContiTech Rubber<br>Industrial Kft.<br>Quality Control Dept.<br>(1)                                                                                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                            |                 |   |  |

CONTITECH RUBBER  
Industrial Kft.

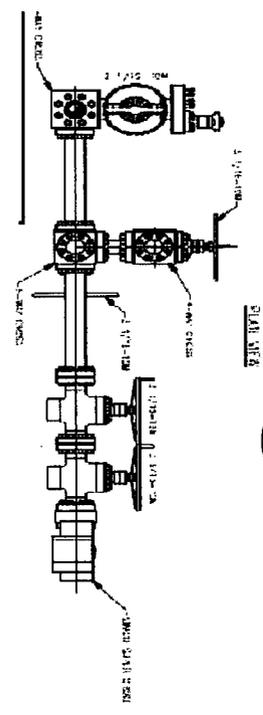
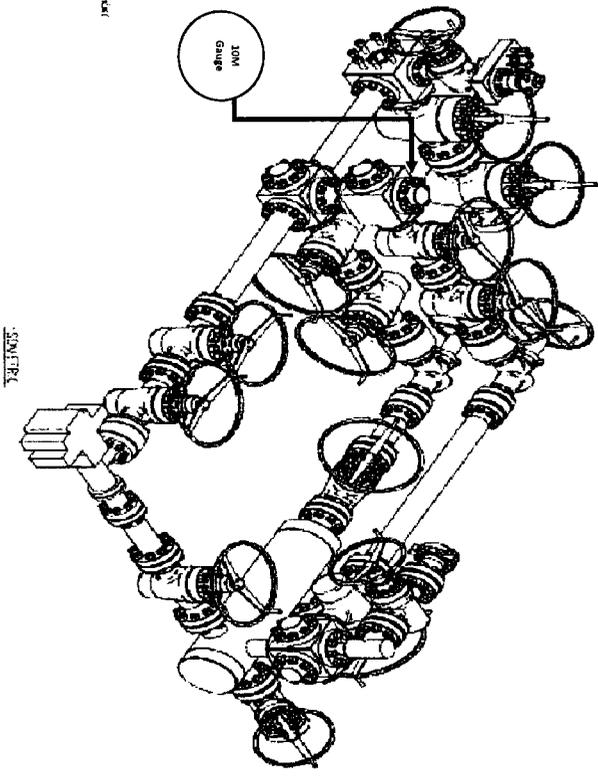
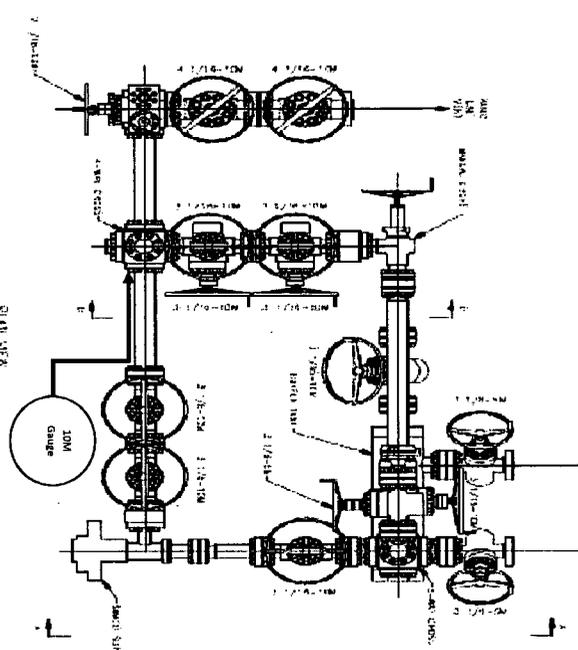
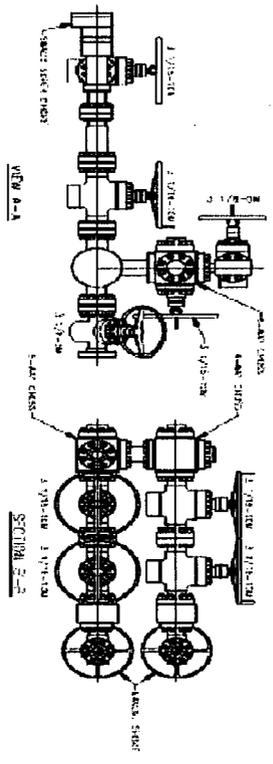
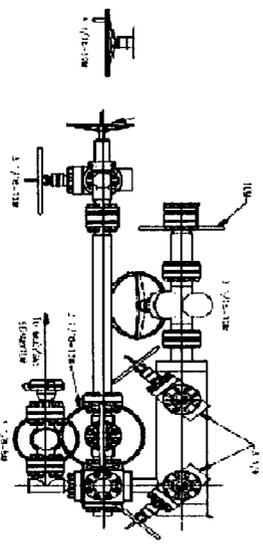
No:QC-DB- 380 /2012  
Page: 10 /61



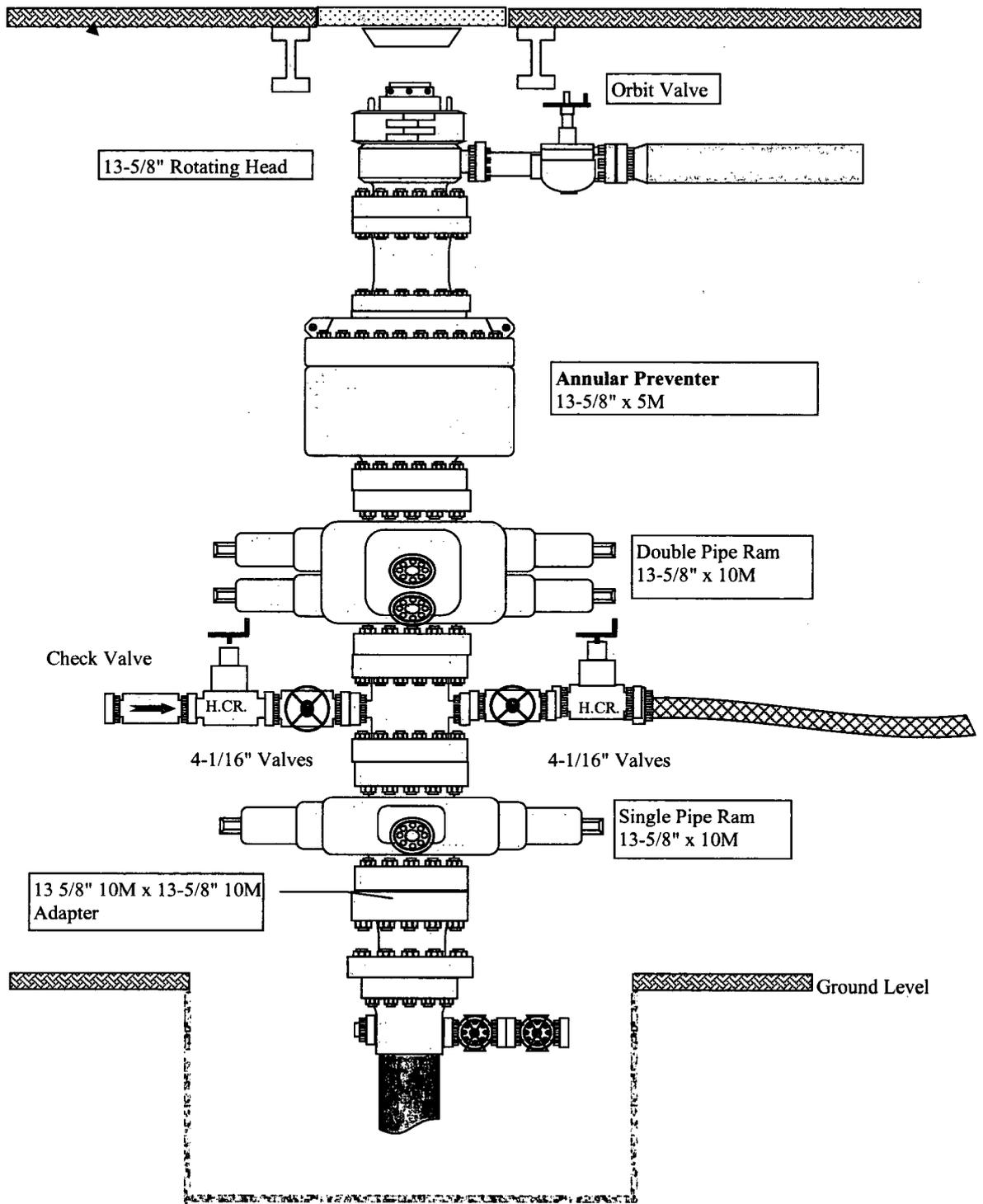
**Hose Data Sheet**

|                             |                                                                         |
|-----------------------------|-------------------------------------------------------------------------|
| CRl 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



## 1. DRILLING WELL CONTROL PLAN

---

### 1.1 WELL CONTROL - CERTIFICATIONS

#### Required IADC/IWCF Well Control Certifications Supervisor Level:

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

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

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

#### **Well Control-Position/Roles**

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

- **Supervisor Level**
  - Specifies and has oversight that the correct actions are carried out
  - Role is to supervise well control equipment, training, testing, and well control events
  - Directs the testing of BOP and other well control equipment
  - Regularly direct well control crew drills
  - Land based rigs – usually runs the choke during a well kill operation
  - Due to role on the rig, training and certification is targeted more toward management of well control and managing an influx out of the well
  
- **Driller Level**
  - Performs an action to prevent or respond to well control accident
  - Role is to monitor the well via electronic devices while drilling and detect unplanned influxes
  - Assist with the testing of BOP and other well control equipment
  - Regularly assist with well control crew drills
  - When influx is detected, responsible to close the BOP
  - Due to role on the rig, training and certification is targeted more toward monitoring and shutting the well in (closing the BOP) when an influx is detected

**(Well Control-Positions/Roles Continued)**

- **Derrick Hand, Assistant Driller Introductory Level**
  - Role is to assist Driller with kick detection by physically monitoring the well at the mixing pits/tanks
  - Regularly record mud weights/viscosity for analysis by the Supervisor level and mud engineer so pre-influx signs can be detected
  - Mix required kill fluids as directed by Supervisor or Driller
  - Due to role on the rig, training and certification is targeted more toward monitoring for influxes, either via mud samples or visual signs on the pits/tanks
  
- **Motorman, Floor Hand Introductory Level**
  - Role is to assist the Supervisor, Driller, or Derrick Hand with detecting influxes
  - Be certain all valves are aligned for proper well control as directed by Supervisor
  - Perform Supervisor or Driller assigned tasks during a well control event
  - Due to role on the rig, training and certification is targeted more toward monitoring for influxes

**1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST**

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

- **Example 8-3/4" Production hole section, 10M requirement**

| <b>Component</b>            | <b>OD</b>  | <b>Preventer</b>                   | <b>RWP</b> |
|-----------------------------|------------|------------------------------------|------------|
| Drill pipe                  | 5"         | Fixed lower 5"<br>Upper 4.5-7" VBR | 10M        |
| HWDP                        | 5"         | Fixed lower 5"<br>Upper 4.5-7" VBR | 10M        |
| Drill collars and MWD tools | 6.25-6.75" | Upper 4.5-7" VBR                   | 10M        |
| Mud Motor                   | 6.75"      | Upper 4.5-7" VBR                   | 10M        |
| Production casing           | 5.5"       | Upper 4.5-7" VBR                   | 10M        |
| ALL                         | 0-13-5/8"  | Annular                            | 5M         |
| Open-hole                   | -          | Blind Rams                         | 10M        |

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

**1.3 WELL CONTROL-BOP TESTING**

BOP Test will be completed per Onshore Oil and Gas Order #2 Well Control requirements. The 5M Annular Preventer on a required 10M BOP stack will be tested to 70 % of rated working pressure including a 10 minute low pressure test. Pressure shall be maintained at least 10 minutes.

## 1.4 WELL CONTROL - DRILLS

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

| Type                              | Frequency                                                          | Objective                                                                                   | Comments                                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shallow gas kick drill - drilling | Once per well with crew on tour                                    | Response training to a shallow gas influx                                                   | To be done prior to drilling surface hole if shallow gas is noted                                                                                           |
| Kick drill - drilling             | Once per week per crew                                             | Response training to an influx while drilling (bit on bottom)                               | Only one kick drill per week per crew is required, alternating between drilling and tripping.                                                               |
| Kick drill - tripping             | Once per week per crew                                             | Response training to an influx while tripping (bit off bottom). Practice stabbing TIW valve |                                                                                                                                                             |
| Choke drill                       | Once per well with crew on tour                                    | Practice in operating the remotely operated choke with pressure in the well                 | Before drilling out of the last casing set above a prospective reservoir<br><br>Include the scenario of flowing well with gas on drill floor as a table top |
| H <sub>2</sub> S drill            | Prior to drilling into a potential H <sub>2</sub> S zone/reservoir | Practice in use of respiratory equipment                                                    |                                                                                                                                                             |

## 1.5 WELL CONTROL – MONITORING

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

## **Well Control-Monitoring (Continued)**

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

## **1.6 WELL CONTROL – SHUT IN**

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

## 2. SHUT-IN PROCEDURES:

---

### 2.1 PROCEDURE WHILE DRILLING

- Sound alarm (alert crew)
- Space out drill string – Stop rotating, pick the drill string up off bottom, and space out to ensure no tool joint is located in the BOP element selected for initial closure.
- Shut down pumps (stop pumps and observe well.)
- Shut-in Well - If flow is suspected or confirmed, close uppermost applicable BOP element. (HCR and choke will already be in the closed position.)
  - **Note:** Either the uppermost pipe ram or annular preventer can be used.
- Confirm shut-in
- Notify toolpusher/company representative
- Gather all relevant data required:
  - SIDPP and SICP
  - Hole Depth and Hole TVD
  - Pit gain
  - Time
  - Kick Volume
  - Pipe depth
  - MW in, MW out
  - SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.
- Recheck all pressures and fluid volume on accumulator unit
- If pressure has built or is anticipated during the kill to reach 2,500 psi or greater, the annular preventer CANNOT be used as per Oil Company Well Control Policy, swap to the upper BOP pipe ram.

### 2.2 PROCEDURE WHILE TRIPPING

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

## Procedure While Tripping (Continued)

- Time
- Kick Volume
- Pipe depth
- MW in, MW out
- SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- **No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.**
- Recheck all pressures and fluid volume on accumulator unit  
If pressure has built or is anticipated during the kill to reach X,XXX psi or greater, the annular preventer CANNOT be used as per Company Well Control Policy, swap to the upper BOP pipe ram.

## 2.3 PROCEDURE WHILE RUNNING CASING

- Sound alarm (alert crew)
- Stab crossover and full opening safety valve and close
- Space out casing (ensure no coupling is located in the BOP element selected for initial closure).
- Shut down pumps (stop pumps and observe well.)
- Shut-in Well - If flow is suspected or confirmed, close uppermost applicable BOP element. (HCR and choke will already be in the closed position.)
  - **Note:** Either the uppermost pipe ram or annular preventer can be used.
- Confirm shut-in
- Notify tool pusher/company representative
- Gather all relevant data required:
  - SIDPP and SICP
  - Hole Depth and Hole TVD
  - Pit gain
  - Time
  - Kick Volume
  - Pipe depth
  - MW in, MW out
  - SPR's (Slow Pump Rate's)
- Regroup and identify forward plan (let well stabilize, update kill sheet, inventory mud additives and mud volumes on location)
- Company Representative, Drilling Superintendent, Drilling Engineer and Drilling Manager will discuss well control kill method to be utilized. A verbal Risk Assessment and preferred kill method will be finalized. Initial Risk Assessment will be finalized within 1 hour of initial shut in.
- **No well kill operation commences until there is a plan agreed by the Superintendent, On-Site Supervisor and the Drilling Contractor PIC.**
- Recheck all pressures and fluid volume on accumulator unit  
If pressure has built or is anticipated during the kill to reach 2,500 psi or greater, the annular preventer CANNOT be used, swap to the upper BOP pipe ram.

## 2.4 PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

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

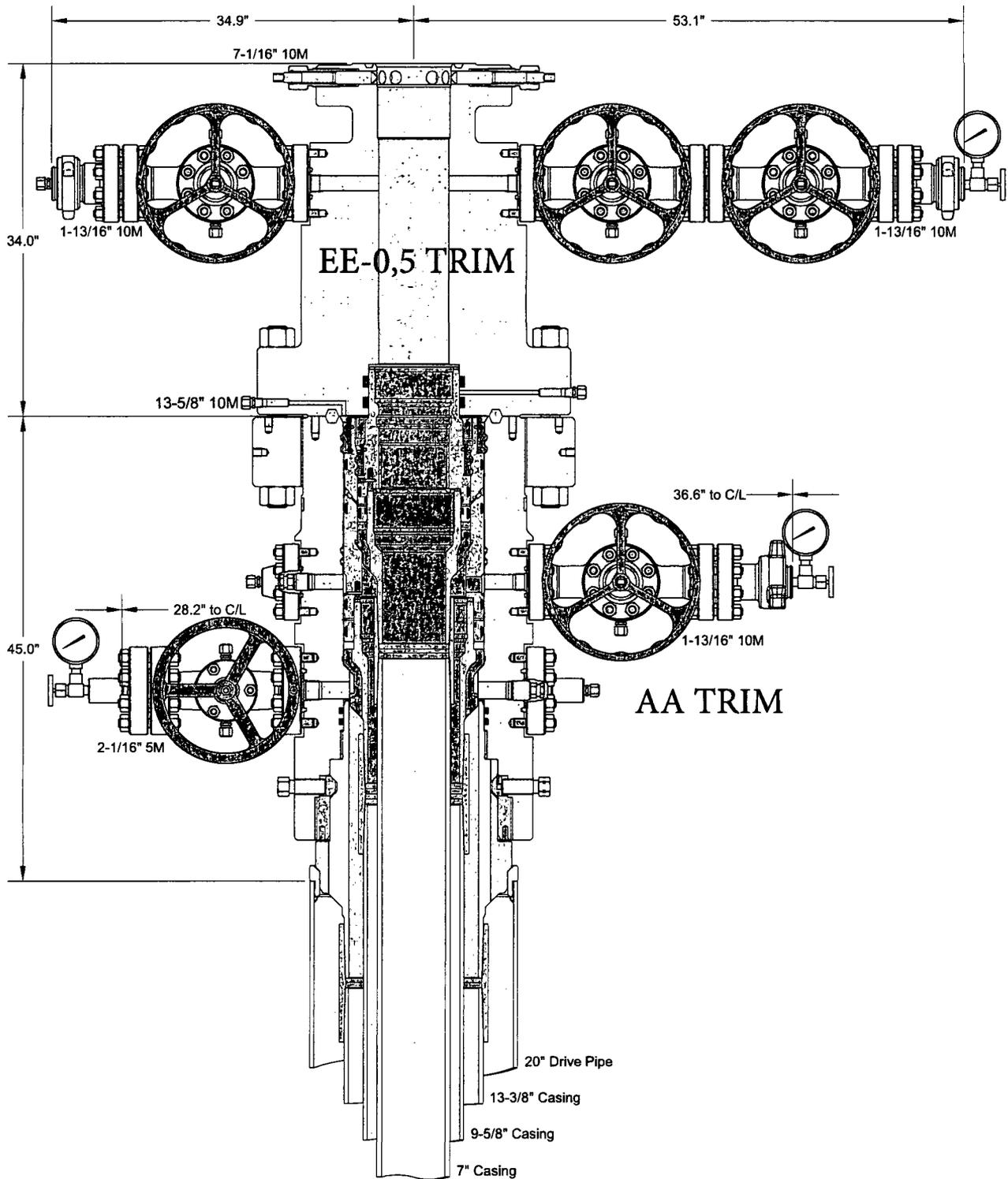
## 2.5 PROCEDURE WHILE PULLING BHA THRU STACK

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

## Procedures While Pulling BHA thru Stack (Continued)

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

# WH&TH Design # 2



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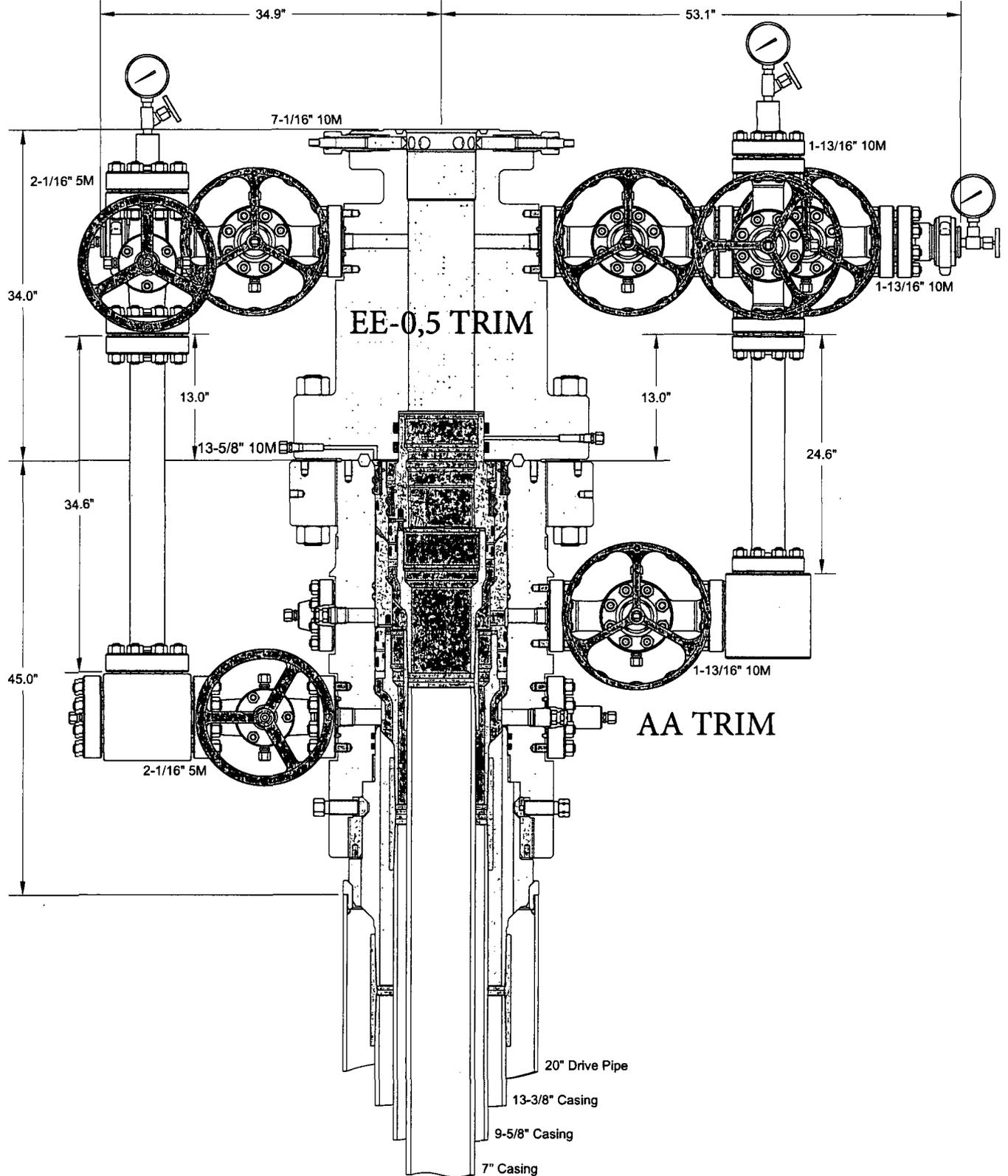
**CACTUS WELLHEAD LLC**

**MARATHON OIL COMPANY**

20" x 13-3/8" x 9-5/8" x 7" MBU-3T-CFL-R-DBLO Wellhead  
 13-5/8" 10M x 7-1/16" 10M CTH-DBLHPS Tubing Head (34" LG)  
 Utilizing Pin Down Mandrel Casing Hangers

|             |            |         |
|-------------|------------|---------|
| DRAWN       | DLE        | 23AUG17 |
| APPRV       |            |         |
| DRAWING NO. | ODE0001825 |         |

# H&TH Design # 2



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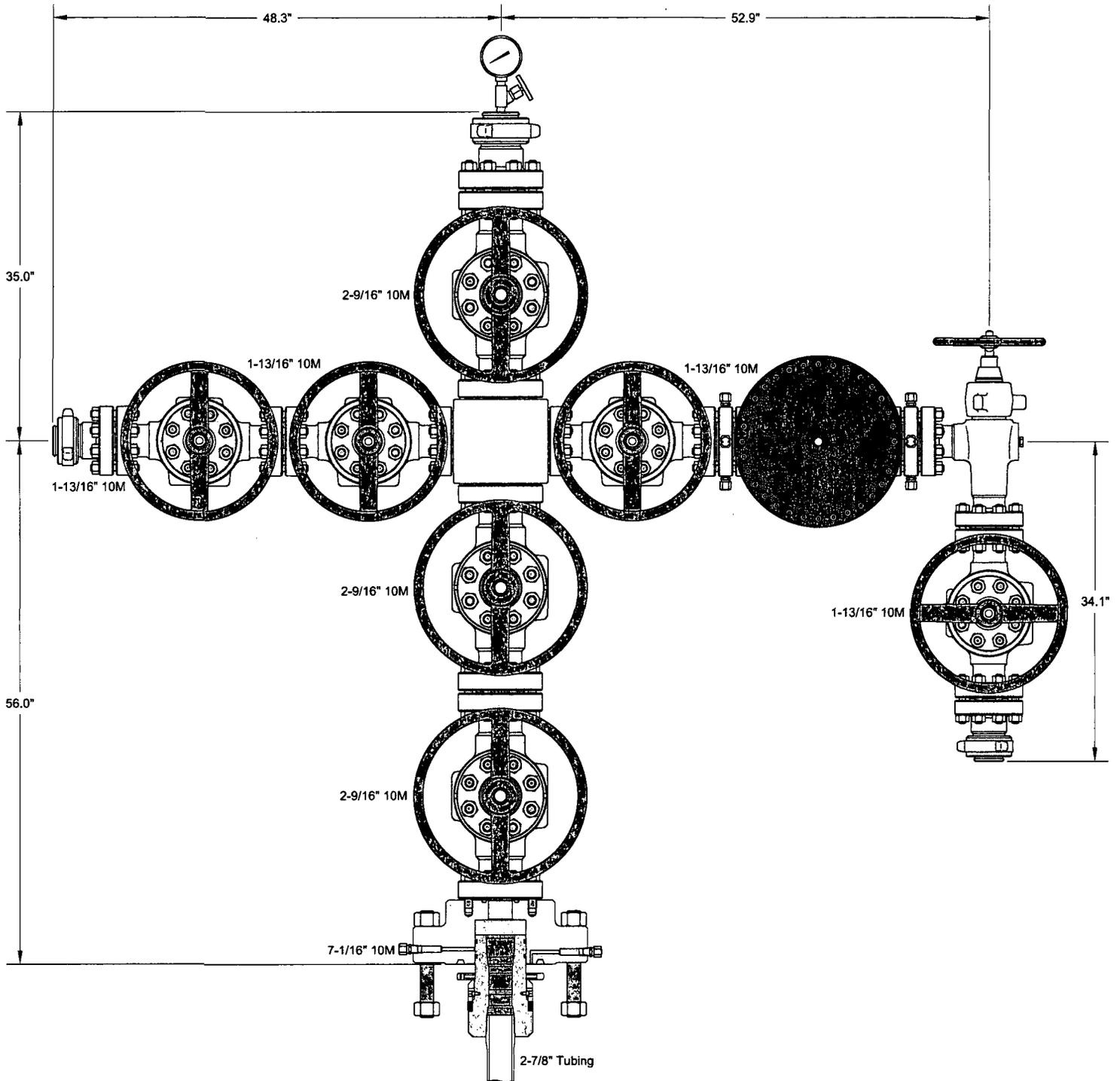
**CACTUS WELLHEAD LLC**

**MARATHON OIL COMPANY**

20" x 13-3/8" x 9-5/8" x 7" MBU-3T-CFL-R-DBLO Wellhead  
 13-5/8" 10M x 7-1/16" 10M CTH-DBLHPS Tubing Head (34" LG)  
 Utilizing Pin Down Mandrel Casing Hangers With Annulus Risers

|             |     |            |
|-------------|-----|------------|
| DRAWN       | DLE | 23AUG17    |
| APPRV       |     |            |
| DRAWING NO. |     | ODE0001825 |

# PT 10K: Natural Flow / Gas Lift



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**CACTUS WELLHEAD LLC**

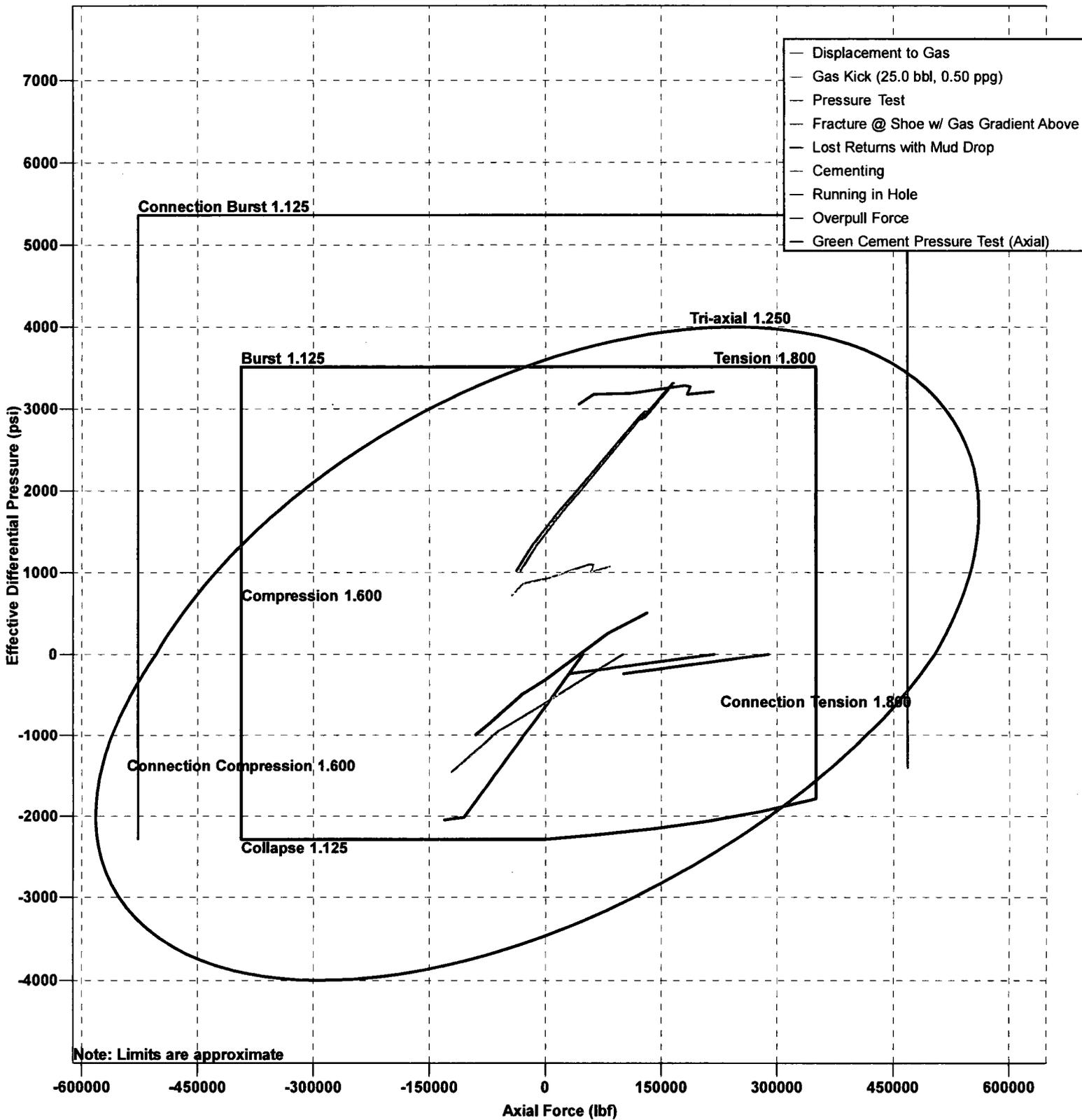
**MARATHON OIL COMPANY  
ODESSA**

7-1/16" 10M x 2-9/16" 10M x 1-13/16" 10M Production Tree  
With CW-EN-CL Adapter and Hanger

|       |     |         |
|-------|-----|---------|
| DRAWN | DLE | 12FEB18 |
| APPRV |     |         |

DRAWING NO. ODE0001831

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



# MARATHON OIL PERMIAN LLC

## DRILLING AND OPERATIONS PLAN

**WELL NAME / NUMBER:** CAVE LION FEDERAL 26 53 5 WXY 18H

**STATE:** NEW MEXICO

**COUNTY:** LEA

|     | NS-Foot | NS Indicator | EW-Foot | EW Indicator | TWSP | Range | Section | Aliquot/Lot/Trac | Latitude (NAD 83) | Longitude (NAD 83) | County | State | Meridian | Lease Type | Lease Number | Elevation (ft SS) | MD (RKB) | TVD (RKB) |
|-----|---------|--------------|---------|--------------|------|-------|---------|------------------|-------------------|--------------------|--------|-------|----------|------------|--------------|-------------------|----------|-----------|
| SHL | 450     | FSL          | 1118    | FEL          | 26S  | 35E   | 5       | SESE             | 32.06631019 N     | 103.38457840 W     | Lea    | NM    | NMP      | F          | NMNM013647   | 3224              | 0        | 0         |
| KOP | 0       | FSL          | 330     | FEL          | 26S  | 35E   | 5       | SESE             | 32.06534762 N     | 103.38203530 W     | Lea    | NM    | NMP      | F          | NMNM013647   | -8748             | 12045    | 11972     |
| PPP | 150     | FSL          | 330     | FEL          | 26S  | 35E   | 5       | SESE             | 32.06548252 N     | 103.38203450 W     | Lea    | NM    | NMP      | F          | NMNM013647   | -9321             | 12945    | 12545     |
| BHL | 150     | FNL          | 330     | FEL          | 26S  | 35E   | 5       | NENE             | 32.07918272 N     | 103.38158777 W     | Lea    | NM    | NMP      | F          | NMNM013647   | -9321             | 17450    | 12545     |

### 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                          | 1044                     | 1044                | Anhydrite/Dolomite      | BRINE             | N                   |
| Salado                           | 1483                     | 1484                | Salt/Anhydrite          | BRINE             | N                   |
| Castile                          | 3521                     | 3551                | Base Salt               | BRINE             | N                   |
| Base of Salt                     | 5078                     | 5132                | Limy Sands              | BRINE             | N                   |
| Lamar                            | 5343                     | 5402                | Sand/Shales             | OIL               | Y                   |
| Bell Canyon                      | 5371                     | 5430                | Sands/Shale             | OIL               | Y                   |
| Brushy Canyon                    | 7980                     | 8053                | Sands/Carbonates        | OIL               | Y                   |
| Bone Spring                      | 9271                     | 9344                | Sands/Carbonates        | OIL               | Y                   |
| 1 <sup>st</sup> Bone Spring Sand | 10391                    | 10464               | Sands/Carbonates        | OIL               | Y                   |
| 2 <sup>nd</sup> Bone Spring Sand | 10940                    | 11013               | Sands/Carbonates        | OIL               | Y                   |
| 3 <sup>rd</sup> Bone Spring Sand | 12025                    | 12098               | Sands/Carbonates        | OIL               | Y                   |
| Wolfcamp                         | 12452                    | 12614               | Carbonates/Shales/Sands | OIL               | Y                   |
| Wolfcamp X                       | 12473                    | 12655               | Carbonates/Shales/Sands | OIL               | Y                   |
| Wolfcamp Y                       | 12531                    | 12818               | Carbonates/Shales/Sands | OIL               | Y                   |
| Wolfcamp A                       | 12561                    | N/A                 | Carbonates/Shales/Sands | OIL               | Y                   |

**DEEPEST EXPECTED FRESH WATER:** 400' TVD

ANTICIPATED BOTTOM HOLE PRESSURE: 8,881 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>1080</u>   | <u>0</u>     | <u>1080</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>5440</u>   | <u>0</u>     | <u>5380</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>11945</u>  | <u>0</u>     | <u>11872</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>11645</u> | <u>17450</u>  | <u>11572</u> | <u>12545</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 (ft <sup>3</sup> /sks) | Density (ppg) | Slurry Volume (ft <sup>3</sup> ) | Excess (%) | Cement Type | Additives                                                                                |
|------------------|-----------|------------------|--------|-----------|----------------|------------------------------|---------------|----------------------------------|------------|-------------|------------------------------------------------------------------------------------------|
| Surface          | Lead      | --               | 0      | 848       | 674            | 1.75                         | 13.5          | 1178                             | 100        | Class C     | 3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake                                       |
| Surface          | Tail      | --               | 848    | 1060      | 216            | 1.33                         | 14.8          | 295                              | 100        | Class C     | N/A                                                                                      |
| Intermediate I   | Lead      | --               | 0      | 4400      | 1394           | 1.75                         | 12.8          | 2412                             | 75         | Class C     | 0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator                                    |
| Intermediate I   | Tail      | --               | 4400   | 5440      | 367            | 1.33                         | 14.8          | 489                              | 50         | Class C     | 0.3 % Retarder                                                                           |
| Intermediate II  | Lead      | --               | 5140   | 10900     | 545            | 2.7                          | 11            | 1472                             | 70         | Class C     | 0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier |
| Intermediate II  | Tail      | --               | 10900  | 11945     | 178            | 1.09                         | 15.6          | 204                              | 30         | Class H     | 3% extender + 0.15% Dispersant + 0.03 gal/sk retarder                                    |
| Production Liner | Tail      | --               | 11645  | 17450     | 583            | 1.22                         | 14.5          | 711                              | 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 (ft <sup>3</sup> /sx) | Water gal/sk | Slurry Description and Cement Type |
|----------|-------------|------------|---------------|---------------|-----------------------------|--------------|------------------------------------|
|          |             |            |               |               |                             |              |                                    |
|          |             |            |               |               |                             |              |                                    |

Attach plugging procedure for pilot hole.

N/A

**5. PRESSURE CONTROL EQUIPMENT**

| BOP installed and tested before drilling which hole? | Size?  | Min. Required WP | Type       | ✓ | Tested to:               |
|------------------------------------------------------|--------|------------------|------------|---|--------------------------|
| 12 ¼"                                                | 13 5/8 | 5000             | Annular    | x | 70% of working pressure  |
|                                                      |        | 10000            | Blind Ram  | x | 100% of working pressure |
|                                                      |        |                  | Pipe Ram   |   |                          |
|                                                      |        |                  | Double Ram | x |                          |
|                                                      |        |                  | Other*     |   |                          |
| 8 ¾"                                                 | 13 5/8 | 5000             | Annular    | x | 70% of working pressure  |
|                                                      |        | 10000            | Blind Ram  | x | 100% of working pressure |
|                                                      |        |                  | Pipe Ram   |   |                          |
|                                                      |        |                  | Double Ram | x |                          |
|                                                      |        |                  | Other*     |   |                          |
| 6 1/8"                                               | 13 5/8 | 5000             | Annular    | x | 70% of working pressure  |
|                                                      |        | 10000            | Blind Ram  | x | 100% of working pressure |
|                                                      |        |                  | 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.<br>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.<br><br>See attached schematic.             |

## 6. MUD PROGRAM:

| Top Depth | Bottom Depth | Mud Type        | Min. Weight (ppg) | Max. Weight (ppg) | Additional Characteristics |
|-----------|--------------|-----------------|-------------------|-------------------|----------------------------|
| 0         | 1060         | Water Based Mud | 8.4               | 8.8               |                            |
| 1060      | 5440         | Brine           | 9.9               | 10.2              |                            |
| 5440      | 11945        | Cut Brine       | 8.8               | 9.4               |                            |
| 11945     | 17450        | Oil Based mud   | 11.5              | 13.5              |                            |

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

## 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

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

## 8. LOGGING / CORING AND TESTING PROGRAM:

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

## 9. POTENTIAL HAZARDS:

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

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

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



APD ID: 10400030869

Submission Date: 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY

Well Number: 18H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

SUPO\_1\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_18H\_14H\_15H\_12H\_\_Vacinity\_\_Existing\_Roads\_Map\_20180604121243.pdf

SUPO\_1\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_18H\_14H\_15H\_12H\_\_Existing\_Access\_Road\_20180604121232.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? YES

New Road Map:

SUPO\_2\_\_Cave\_Lion\_Federal\_26\_35\_5\_12\_14\_15\_18\_\_New\_Road\_Details\_\_Section\_5\_\_20180604122407.pdf

SUPO\_2\_\_Cave\_Lion\_Federal\_26\_35\_5\_12\_14\_15\_18\_\_New\_Road\_Details\_\_Section\_8\_\_20180604124230.pdf

SUPO\_2\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_12\_14\_15\_18\_\_New\_Road\_Plat\_20180604121834.pdf

SUPO\_2\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_18H\_14H\_15H\_12H\_\_Certified\_Cut\_and\_Fill\_Road\_Plat\_20180604122019.pdf

New road type: LOCAL

Length: 654.35

Feet

Width (ft.): 30

Max slope (%): 2

Max grade (%): 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 20

New road access erosion control: The access road will have a small low water crossing at the point of leaving the existing lease road to allow for continued drainage along existing lease road. The new road will be crowned to allow proper water

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

drainage and ditching will be constructed on both sides of the access road along with proper compaction to prevent water and wind erosion. All ditching areas will be seeded with BLM approved seed mix to prevent water erosion.

**New road access plan or profile prepared?** NO

**New road access plan attachment:**

**Access road engineering design?** NO

**Access road engineering design attachment:**

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Caliche

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** The topsoil will be stripped during construction activities, spread out on edge of road, and will be seeded during the interim reclamation of the well pad.

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** OTHER

**Drainage Control comments:** Crowning and ditching (both sides) shall be constructed on the access road driving surface. The road crown shall have a grade of approximately 2%. The road shall conform to cross section and plans for typical road construction found in the BLM Gold Book.

**Road Drainage Control Structures (DCS) description:** No DCS's will be needed.

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

SUPO\_3\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_18H\_14H\_15H\_12H\_\_Existing\_Wells\_Location\_Map\_20180604122625.pdf

**Existing Wells description:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

## 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) is proposed on the south side of the proposed well pad to allow for maximum interim reclamation of the well pad. - 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 containments will be covered for birds, wildlife, and livestock protection. The fluids will be disposed of as needed to prevent possible overflow. - The proposed CTB will have a secondary containment 1.5 times the holding capacity of largest storage tank plus free-board 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 proposed CTB will have oil and water truck hauled from the facility. Pipelines/Flowlines: All flowlines transporting production from wells to the facility will remain on the pad; therefore, no further disturbance or 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\_4\_\_Cave\_Lion\_Federal\_26\_35\_5\_12H\_14H\_15H\_18H\_\_Facility\_Layout\_Plat\_20181011142854.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:** 32.1889

**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:** 32.081768

**Source datum:** NAD83

**Water source permit type:** PRIVATE CONTRACT

**Source land ownership:** PRIVATE

**Water source type:** FRESH WATER LAKE

**Source longitude:** -103.40435

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

**Water source type:** FRESH WATER LAKE

**Source longitude:** -103.35456

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

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

**Water source type:** FRESH WATER LAKE

**Describe type:**

**Source longitude:** -103.405334

**Source latitude:** 32.030895

**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 (acre-feet):** 19.011732

**Source volume (gal):** 6195000

**Water source and transportation map:**

SUPO\_5\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_Water\_Source\_Map\_20180601100227.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 in Section 34,T25S,R35E) will be utilized for fresh water. • A temporary 10" expanding pipe transfer line will run South from pond along lease rd. then turn West along proposed access road approx. 3.2 Miles. • 2nd proposed ( pond in Section 19,T26S-R35E 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. 3.4 Miles. • 3rd proposed pond(Black Mountain in Section 30,T24S-R35E will be utilized for fresh water. • A temporary 10" expanding pipe transfer line will run North from pond along access rd. then East along proposed access road approx. 4.28 Miles. Proposed water suppliers Madera Brad Beckem Rockhouse

**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.):**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

**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:**

### Section 6 - Construction Materials

**Construction Materials description:** 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 purchased from private land owner Brad Beckham ( 575-390-2076 ) caliche pit located in SEC19 , T26S , R35E , Lea County , NM.GPS Lat. 32. 0224475 N , Long. -103.40438 W • Source 2 - Caliche will be used to construct well pad and roads. Material will be purchased from BLM , caliche pit located in Sec 7 , T26S , R34E, Lea County, NM. Gps Lat. 32.059006 N Long -104.504418 W • 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:**

SUPO\_6\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_Caliche\_Source\_Map\_20180601100434.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

**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:**



**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

### Cuttings Area

**Cuttings Area being used?** NO

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

**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\_9\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_18H\_14H\_15H\_12H\_\_Certified\_Cut\_and\_Fill\_20180604123505.pdf

SUPO\_9\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_18H\_14H\_15H\_12H\_\_Well\_Location\_Plat\_Feet\_20180604123514.pdf

SUPO\_9\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_18H\_14H\_15H\_12H\_\_Well\_Pad\_Plat\_Acres\_20180604123525.pdf

SUPO\_9\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_18H\_14H\_15H\_12H\_\_Well\_Pad\_Location\_Topo\_20181011142917.pdf

**Comments:** Attached: Well Pad Plat, Well Location Plat, Well Cut and Fill Plat. Exterior well pad dimensions are 490' by 400'. Note this pad will have 4 total wells, see Well Pad Surface Plat. Interior well pad dimensions from first point of entry (well head) are: west-270', north-180', east-220', south-220'. Tank battery will be located on the south side of the pad, dimensions are 430' by 85' for tanks and separation equipment. Total disturbance area needed for construction activities will be approximately 4.5 acres for pad surface, 6.18 acres with cut and fill. Topsoil will be placed on the north side (490' by 30') of the pad to accommodate interim reclamation activities (1.91 acres of reclamation). There is more than 6' of elevation change from one corner to the other. A cut and fill diagram is attached.

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** CAVE LION FEDERAL 26 35 5

**Multiple Well Pad Number:** 300-3

### Recontouring attachment:

SUPO\_10\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_18H\_14H\_15H\_12H\_\_\_Certified\_Cut\_and\_Fill\_IR\_20180604123805.pdf

SUPO\_10\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_18H\_14H\_15H\_12H\_\_\_IR\_Plat\_20180604123815.pdf

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

**Drainage/Erosion control reclamation:** BMP's will be used to control erosion, runoff and siltation of surrounding area. All areas reclaimed will be ripped across the slope to prevent water erosion. The reclaimed areas will be will have a berm constructed against pad edge to prevent water erosion.

|                                                    |                                                   |                                                     |
|----------------------------------------------------|---------------------------------------------------|-----------------------------------------------------|
| <b>Well pad proposed disturbance (acres):</b> 6.18 | <b>Well pad interim reclamation (acres):</b> 1.91 | <b>Well pad long term disturbance (acres):</b> 4.27 |
| <b>Road proposed disturbance (acres):</b> 0.419    | <b>Road interim reclamation (acres):</b> 0.139    | <b>Road long term disturbance (acres):</b> 0.28     |
| <b>Powerline proposed disturbance (acres):</b> 0   | <b>Powerline interim reclamation (acres):</b> 0   | <b>Powerline long term disturbance (acres):</b> 0   |
| <b>Pipeline proposed disturbance (acres):</b> 0    | <b>Pipeline interim reclamation (acres):</b> 0    | <b>Pipeline long term disturbance (acres):</b> 0    |
| <b>Other proposed disturbance (acres):</b> 0       | <b>Other interim reclamation (acres):</b> 0       | <b>Other long term disturbance (acres):</b> 0       |
| <b>Total proposed disturbance:</b> 6.599           | <b>Total interim reclamation:</b> 2.049           | <b>Total long term disturbance:</b> 4.55            |

### Disturbance Comments:

**Reconstruction method:** • The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities. • The BLM will be notified at least 3 days prior to commencement of any reclamation procedures. • If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will gain written permission from the BLM if more time is needed. • Reclamation will be performed by using the following procedures: For Interim Reclamation: • Within 6 months of first production, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production. A plan will be submitted showing where interim reclamation will be completed in order to allow for safe operations, protection of the environment outside of drilled well, and following best management practices found in the BLM "Gold Book". • In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads. • The areas planned for interim reclamation will then be re-contoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be back-filled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be re-contoured to the above ratios during interim reclamation. • Topsoil will be evenly re-spread and aggressively re-vegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To seed the area, the proper BLM seed mixture (free of noxious weeds) will be used. • Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area. • The interim reclamation will be monitored periodically to ensure that vegetation has reestablished. 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

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

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:** The topsoil will be evenly distributed across all reclaimed areas, ripped across the slopes, and seeded accordingly. During final reclamation, Marathon will grab and evenly redistribute topsoil across the entire disturbed area, disc plowing if needed, and seeded accordingly.

**Soil treatment:** Topsoil will be stockpiled until interim reclamation. Topsoil and subsoil (fill) will be piled separately. The topsoil will be seeded after being spread across IR area.

**Existing Vegetation at the well pad:** Native Grasses, Cactus, Mesquite.

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

**Existing Vegetation Community at the road:** Native Grasses, Cactus, Mesquite.

**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:**

## Seed Management

### Seed Table

**Seed type:** OTHER

**Seed source:** COMMERCIAL

**Seed name:** BLM Sandy LPC Mix

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:** Broadcast

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

**Seed use location:** WELL PAD

**PLS pounds per acre:** 38

**Proposed seeding season:** AUTUMN

| Seed Summary |             |
|--------------|-------------|
| Seed Type    | Pounds/Acre |
| OTHER        | 38          |

**Total pounds/Acre:** 38

**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:**

**Section 11 - Surface Ownership**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

**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:**

**Disturbance type:** EXISTING ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**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:**

**Operator Name:** MARATHON OIL PERMIAN LLC

**Well Name:** CAVE LION FEDERAL 26 35 5 WXY

**Well Number:** 18H

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**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:**

### Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

#### ROW Applications

**SUPO Additional Information:** Pad within PA.

**Use a previously conducted onsite?** YES

**Previous Onsite information:** Performed 03/27/2018 Marathon Oil Attendees: Nancy Pohl BLM Attendee: Colleen Cepero-Rios

#### Other SUPO Attachment



**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:**

**Injection well name:**

**Assigned injection well API number?**

**Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

### **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:**