

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

F/E

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DEC 12 2018

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM013647
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator MARATHON OIL PERMIAN LLC (372098)		8. Lease Name and Well No. CAVE LION FEDERAL 20-35 5 WA 9H (323002)
3a. Address 5555 San Felipe St. Houston TX 77056	3b. Phone No. (include area code) (713)629-6600	9. API-Well No. 30-025-45420
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESW / 287 FSL / 1841 FWL / LAT 32.0658756 / LONG -103.3920781 At proposed prod. zone NENW / 150 FNL / 2313 FWL / LAT 32.079199 / LONG -103.3905761		10. Field and Pool, or Exploratory WOLF CAMP / WVC-025-G-09 S263504N (9818.7)
11. Sec., T. R. M. or Blk. and Survey or Area SEC 5 / T26S / R35E / NMP		
14. Distance in miles and direction from nearest town or post office* 12.2 miles		12. County or Parish LEA
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 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. 1360 feet	19. Proposed Depth 12687 feet / 17562 feet	20. BLM/BIA Bond No. in file FED: NMB001555
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3262 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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

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

K 12/17/18  
- 3m.

Double  
Signed

## 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 1:** 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 collects this information to allow 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: SESW / 287 FSL / 1841 FWL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.0658756 / LONG: -103.3920781 ( TVD: 0 feet, MD: 0 feet )  
PPP: SESW / 150 FSL / 2315 FWL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.0658756 / LONG: -103.3905461 ( TVD: 12687 feet, MD: 13056 feet )  
BHL: NENW / 150 FNL / 2313 FWL / TWSP: 26S / RANGE: 35E / SECTION: 5 / LAT: 32.079199 / LONG: -103.3905761 ( TVD: 12687 feet, MD: 17562 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:** 06/01/2018

**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:**



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

## Application Data Report

11/09/2018

APD ID: 10400030801

Submission Date: 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WA

Well Number: 9H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

### Section 1 - General

APD ID: 10400030801

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 WA

Well Number: 9H

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 FARMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WA

Well Number: 9H

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: 300-2

LION FEDERAL 26 35 5

Well Class: HORIZONTAL

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: 1360 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\_WA\_9H\_REV3\_CERT\_FORM\_C\_102\_201809251  
40301.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	287	FSL	184 1	FWL	26S	35E	5	Aliquot SESW	32.06587 56	- 103.3920 781	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	326 2	0	0
KOP Leg #1	0	FSL	231 5	FWL	26S	35E	5	Aliquot SESW	32.06536 09	- 103.3905 439	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	- 885 2	121 56	121 14
PPP Leg #1	150	FSL	231 5	FWL	26S	35E	5	Aliquot SESW	32.06587 56	- 103.3905 461	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	- 942 5	130 56	126 87

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

	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
EXIT Leg #1	150	FNL	231 3	FWL	26S	35E	5	Aliquot NENW	32.07919 9	- 103.3905 761	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	- 942 5	175 62	126 87
BHL Leg #1	150	FNL	231 3	FWL	26S	35E	5	Aliquot NENW	32.07919 9	- 103.3905 761	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 013647	- 942 5	175 62	126 87





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

# Drilling Plan Data Report

11/09/2018

APD ID: 10400030801

Submission Date: 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WA

Well Number: 9H

Well Type: OIL WELL

Well Work Type: Drill



Show Final Text

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	2199	1064	1064	DOLOMITE, ANHYDRITE	OTHER : Brine	No
2	SALADO	696	1503	1503	SALT, ANHYDRITE	OTHER : Brine	No
3	CASTILE	-1342	3541	3567	SALT	OTHER : Brine	No
4	BASE OF SALT	-2899	5098	5140	LIMESTONE, SANDSTONE	OTHER : Brine	No
5	LAMAR	-3164	5363	5405	OTHER : Sand/Shales	OIL	No
6	BELL CANYON	-3192	5391	5433	SHALE, SANDSTONE	OIL	No
7	BRUSHY CANYON	-5801	8000	8042	OTHER : Sands/Carbonate	OIL	No
8	BONE SPRING	-7092	9291	9333	OTHER : Sands/Carbonate	OIL	No
9	BONE SPRING 1ST	-8212	10411	10453	OTHER : Sands/Carbonate	OIL	No
10	BONE SPRING 2ND	-8761	10960	11002	OTHER : Sands/Carbonates	OIL	No
11	BONE SPRING 3RD	-9846	12045	12087	OTHER : Sands/Carbonates	OIL	No
12	WOLFCAMP	-10273	12472	12543	SHALE, OTHER : Carbonates/Sands	NATURAL GAS, OIL	Yes

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 15000

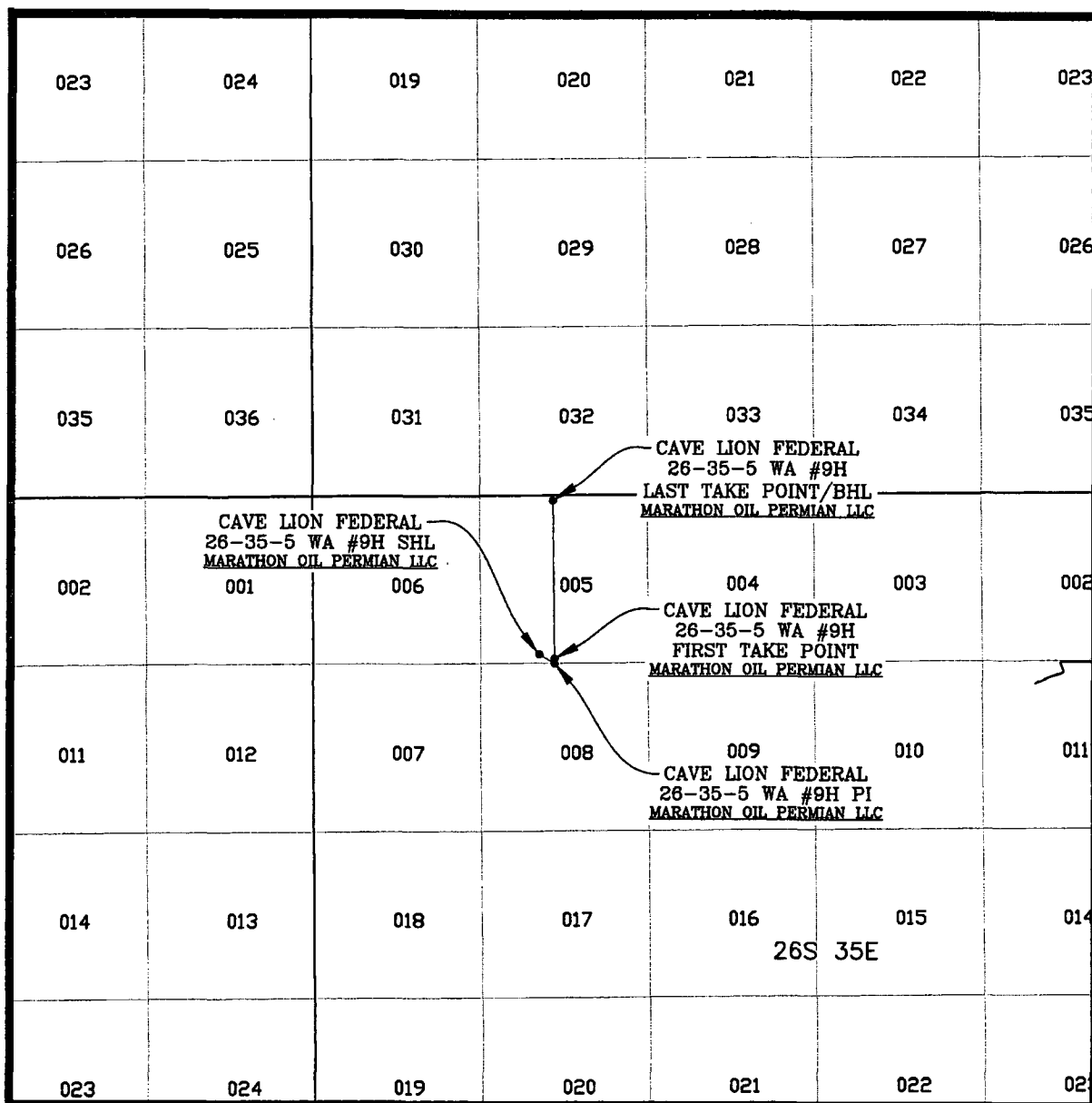
Equipment: 10M 8 1/2" Annular 10M pipe ram; and 10M double ram will be installed and tested for each of the 12 1/4, 8 1/2" and 6 1/2" hole sections.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. BOP variance is requested for the annular to be 5000 psi on 10000 psi BOP stack.

Testing: BOP/ROV will be tested by an independent service company to 260 pcf flow and the high pressure indicated above per Onshore Order 2 regulations. The system may be upgraded to a higher pressure but will tested to the working pressure indicated in the table attached. If the system is upgraded all the components installed will be upgraded and

# VICINITY MAP



SEC. 5 TWP. 26-S RGE. 35-E  
 SURVEY: N.M.P.M.  
 COUNTY: LEA  
 DESCRIPTION: 287' FSL & 1841' FWL  
 ELEVATION: 3262'  
 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\_005

Well Number: 9H

[illegible]

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

Drill\_2\_BOP\_\_\_10M\_Flex.BOPEx\_5M\_ANNULAR.BLM\_20180601074850.pdf  
Drill\_2\_BOP\_\_\_Well\_Control\_Plan\_\_\_Permian\_20180601074907.pdf  
Drill\_2\_BOP\_\_\_WH\_TH\_DESIGN\_2\_DRAWING\_\_\_6\_\_\_8\_\_\_9\_20180601074917.pdf  
PT\_10K\_DRAWING\_20181017062807.pdf

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	3263	2183	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	5442	0	5400	3263	-2137	5442	J-55	40	LTC	1.74	1.15	BUOY	2.19	BUOY	2.19
3	INTERMEDIATE	8.75	7.0	NEW	API	N	0	12056	0	12014	3263	-8751	12056	P-110	29	BUTT	2.21	1.18	BUOY	1.9	BUOY	1.9
4	PRODUCTION	6.125	4.5	NEW	API	N	11756	17562	11713	12687	-8450	-9424	5806	P-110	13.5	BUTT	1.33	1.56	BUOY	1.88	BUOY	1.88

## Page 2 of 7

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

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**Casing Attachments**

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**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\_\_6\_\_8\_\_9\_20180601132516.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\_\_6\_\_8\_\_9\_20180601075420.pdf

---

**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\_\_6\_\_8\_\_9\_20180601132641.pdf

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Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WA

Well Number: 9H

#### 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\_\_6\_8\_9\_20180601132820.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		11756	17562	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	864	687	1.75	13.5	1200	100	Class C	3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake
SURFACE	Tail		864	1080	220	1.33	14.8	300	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	5442	368	1.33	14.8	490	50	Class C	0.03 % Retarder
INTERMEDIATE	Lead		0	11000	554	2.7	11	1497	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
INTERMEDIATE	Tail		11000	12056	189	1.09	15.6	206	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 WA

**Well Number:** 9H

### 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
1205 6	1756 2	OIL-BASED MUD	11.5	13.5							
1080	5442	OTHER : Brine	9.9	10.2							
0	1080	WATER-BASED MUD	8.4	8.8							
5448	1205 6	OTHER : Cut 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 WA

**Well Number:** 9H

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 8906

**Anticipated Surface Pressure:** 6114.86

**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\_\_\_H2S\_Contiengency\_Plan\_Summary\_20180601080631.pdf

Drill\_7\_\_\_Pad\_Flex\_III\_20180601080641.pdf

Drill\_7\_\_\_Marathon\_Carlsbad\_\_CAVE\_LION\_FED\_26\_35\_5\_6H\_8H\_9H\_10H\_Contingency\_Plan\_0...\_20180601080611.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\_CaveLionWA\_9H\_PrelimB\_36x48WM\_20180601133411.PDF

Drill\_8\_PD\_\_\_Marathon\_CaveLionWA\_9H\_PrelimB\_WPReport\_20180601133418.pdf

Drill\_8\_PD\_\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_WA\_9H\_DRILLING\_PLAN\_V1\_20180925140058.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\_OPOF\_\_\_GasCapturePlanFormFinal\_Cave\_Lion\_26\_35\_5\_\_6\_\_8\_\_9\_\_10\_\_20180601080918.pdf

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

Batch\_Drilling\_Plan\_and\_Surface\_Rig\_Request\_20181017062934.pdf

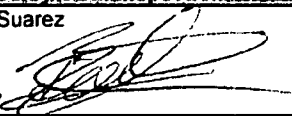
**Other Variance attachment:**



# Certificate of Conformity



ContiTech

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

am	Ring	Description	Qty	ContiTech Link	Specifications
30	7	RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	63393	ContiTech Standard

30

RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL

1

63393

ContiTech Standard

## **Batch Drilling Plan**

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

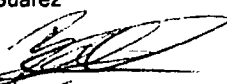
## **Request for Surface Rig**

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

# Hydrostatic Test Certificate



ContiTech

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

30

RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL

1

63393

10,000 psi 15,000 psi

60

63393

6 AM

JOB# 46-20-1021  
PBC# 955233  
HOSE DESCRIPTION: 3" ID 10k Chlor. 671  
TEST PRESSURE: 1500 PSI  
CHART RECORDER #: 9110  
CHART SETTING: 9110  
CBC REPRESENTATIVE: 6800  
DATE: 5-5-70



CHART NO. MC MP-20000-150F

METER

CHART PUT ON

LOCATION

REMARKS

TAKEN OFF

NOON

6 PM

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

# CHOKE AND KILL HOSES

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

## DATA BOOK

Purchaser: H & P

Purchaser Order No.:

ContiTech Rubber Order No.: 531895

ContiTech Beattie Co. Order No.: 006227

**NOT DESIGNED FOR WELL TESTING**

## CONTENT

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

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



# Certificate of Registration

APIQR REGISTRATION NUMBER  
0760

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

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

**ISO 9001:2008**

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

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

## COPY

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

*W. Don Whitaker*  
Manager of Operations, APIQR

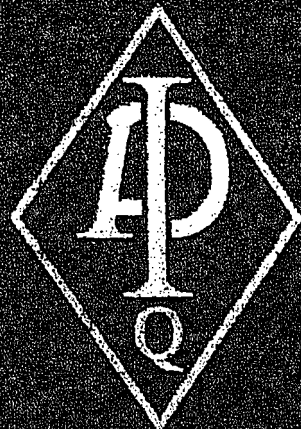
Accredited by Member of  
the International  
Accreditation Forum  
(International Recognition  
Arrangement for Quality  
Management Systems)



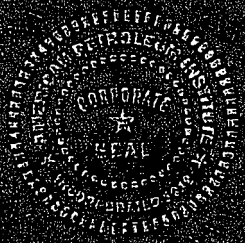
This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. Further 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 1220 I Street, N.W., Washington, D.C. 20005-4070, U.S.A. It is the property of APIQR, and must be returned upon request. To verify the authenticity of this certificate, go to [www.apiqr.org/composet.html](http://www.apiqr.org/composet.html).



2007-116 (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/compositelist](http://www.api.org/compositelist).

American Petroleum Institute

Director of Global Industry Services

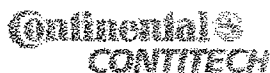
**CONTITECH RUBBER**  
Industrial Kft.

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



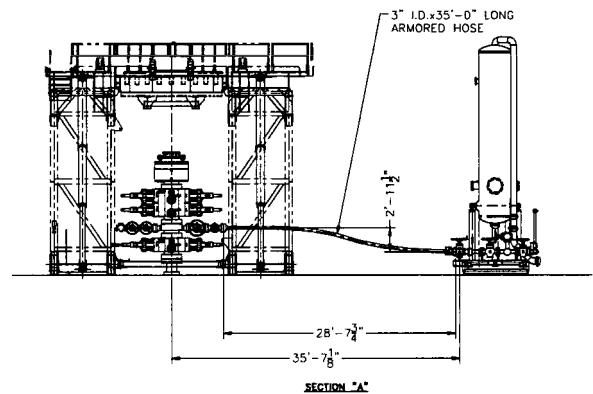
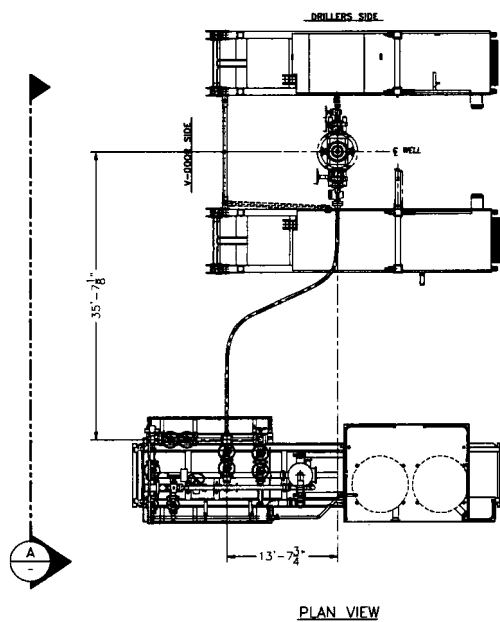
<b>QUALITY CONTROL INSPECTION AND TEST CERTIFICATE</b>				CERT. N°: 1599	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 006227	
CONTITECH ORDER N°: 531895		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 63393		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,72 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 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. → 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	
				Heat N°	
				20231	
				34031	
<b>NOT DESIGNED FOR WELL TESTING</b>				<b>API Spec 16 C</b>	
				<b>Temperature rate:"B"</b>	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:		Inspector		Quality Control	
23. August 2012.				ContiTech Rubber Industrial Kft. Quality Control Dept. (1)	

CONTITECH RUBBER Industrial Kft.	No:QC-DB- 380 /2012 Page: 10 /61
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### Hose Data Sheet

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

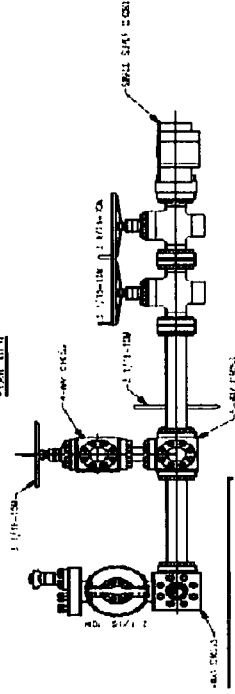
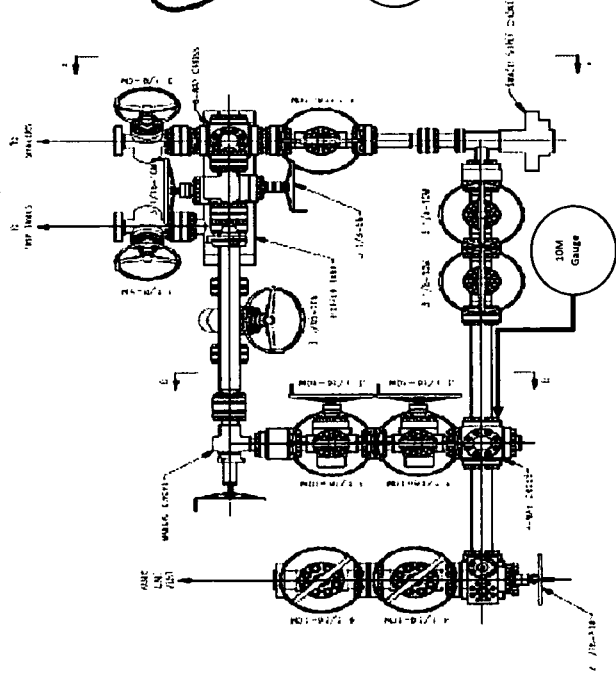
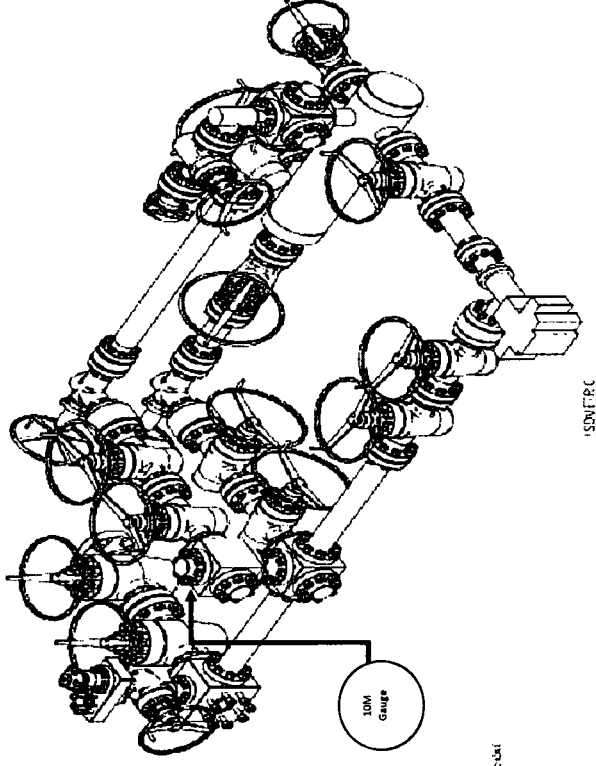
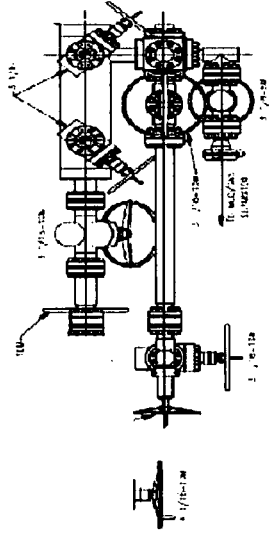


**ISSUED FOR FABRICATION**  
December-19-2007  
DRAFTSMAN \_\_\_\_\_  
ENGINEER \_\_\_\_\_

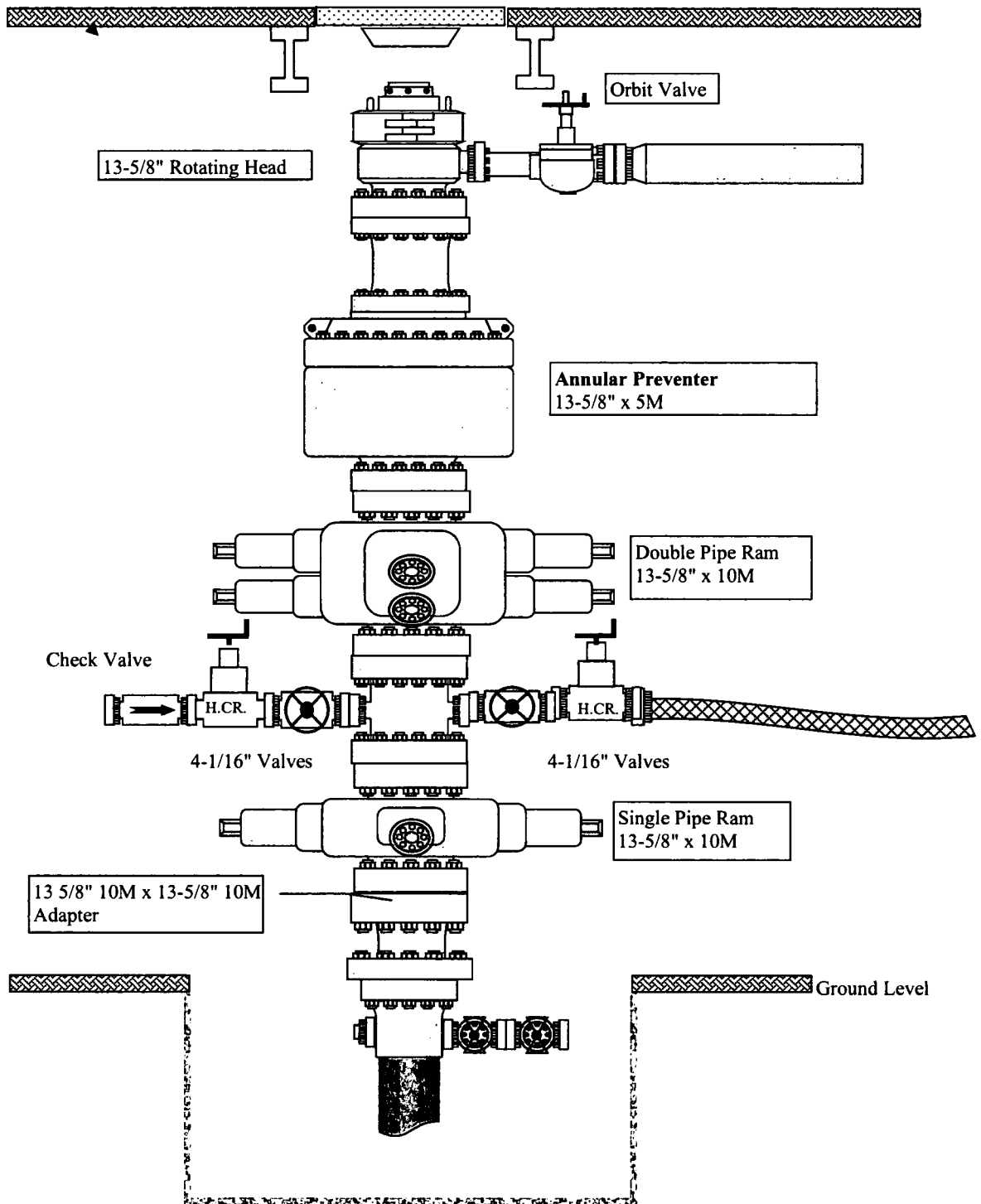
**PROPRIETARY**  
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OFFICIAL OF HELMERICH & PAYNE INTL. DRILLING CO.

ENGINEERING APPROVAL		DATE	TITLE	
△			HELMERICH & PAYNE INTERNATIONAL DRILLING CO.	
△			CHOKE LINE SYSTEM FLEXRIG3	
△			CUSTOMER	
△			PROJECT	
△	12/18/07	REMOVED SHEET TOTAL CALLOUT	BY	DATE
REV	DATE	DESCRIPTION	BY	DATE

DRAWN		JBC	DATE	4-10-07	ENG NO.	
SCALE		3/16"=1'	SHEET		2 OF 3	
210-P1-07		A				



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**

Component	OD	Preventer	RWP
Drill pipe	5"	Fixed lower 5" Upper 4.5-7" VBR	10M
HWDP	5"	Fixed lower 5" 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  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.

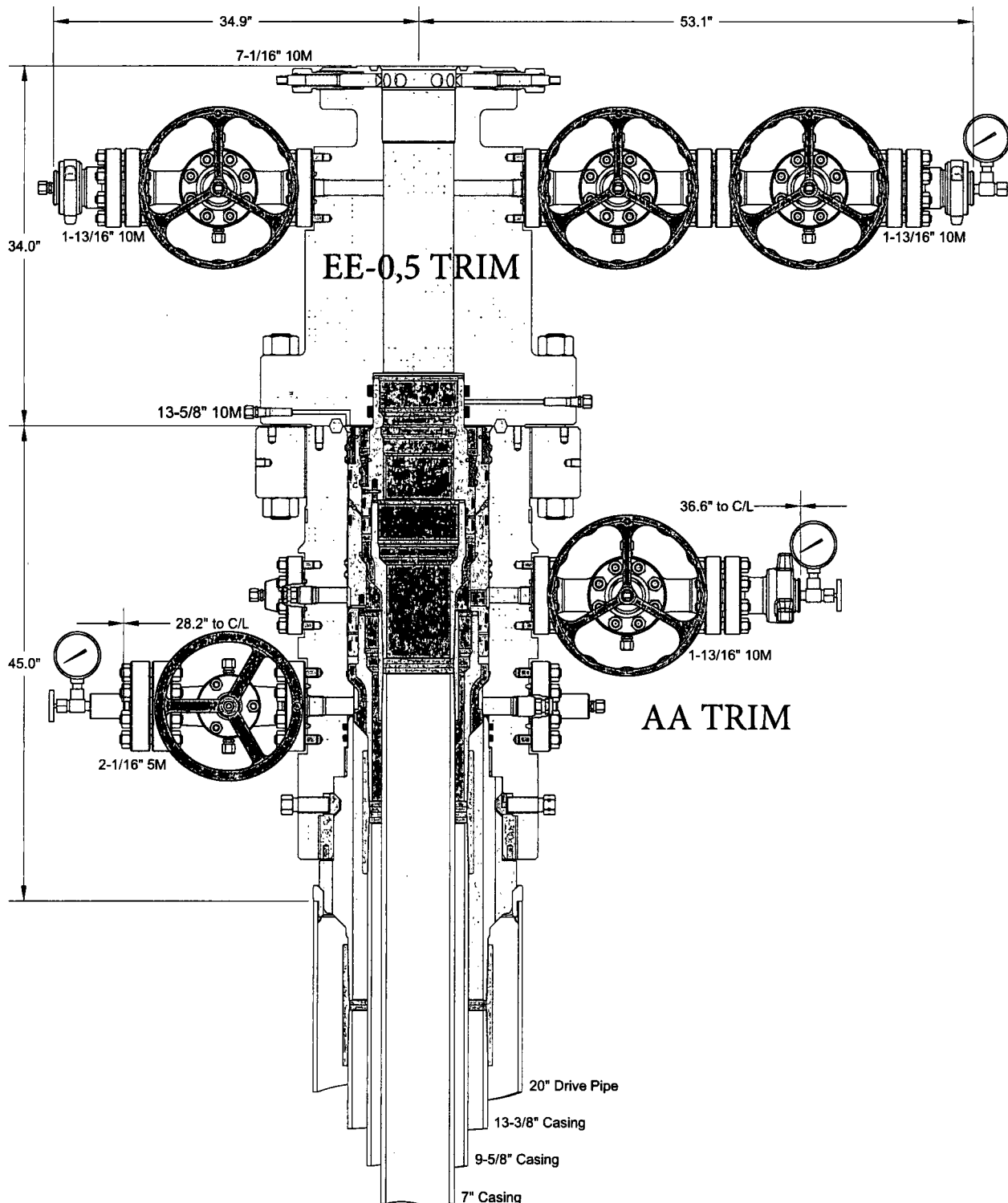
## **2.5 PROCEDURE WHILE PULLING BHA THRU STACK**

- 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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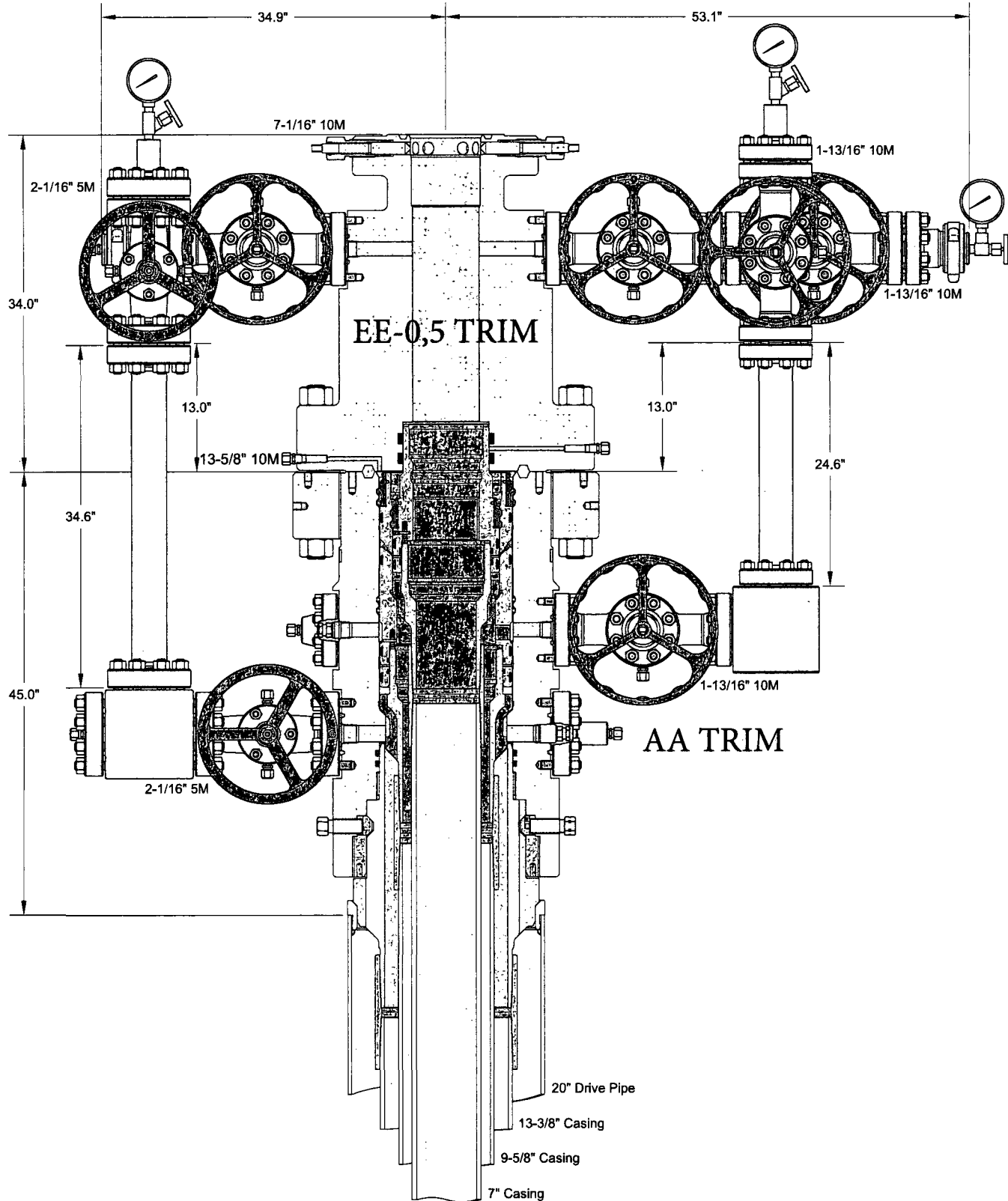
**CACTUS WELLHEAD LLC**

**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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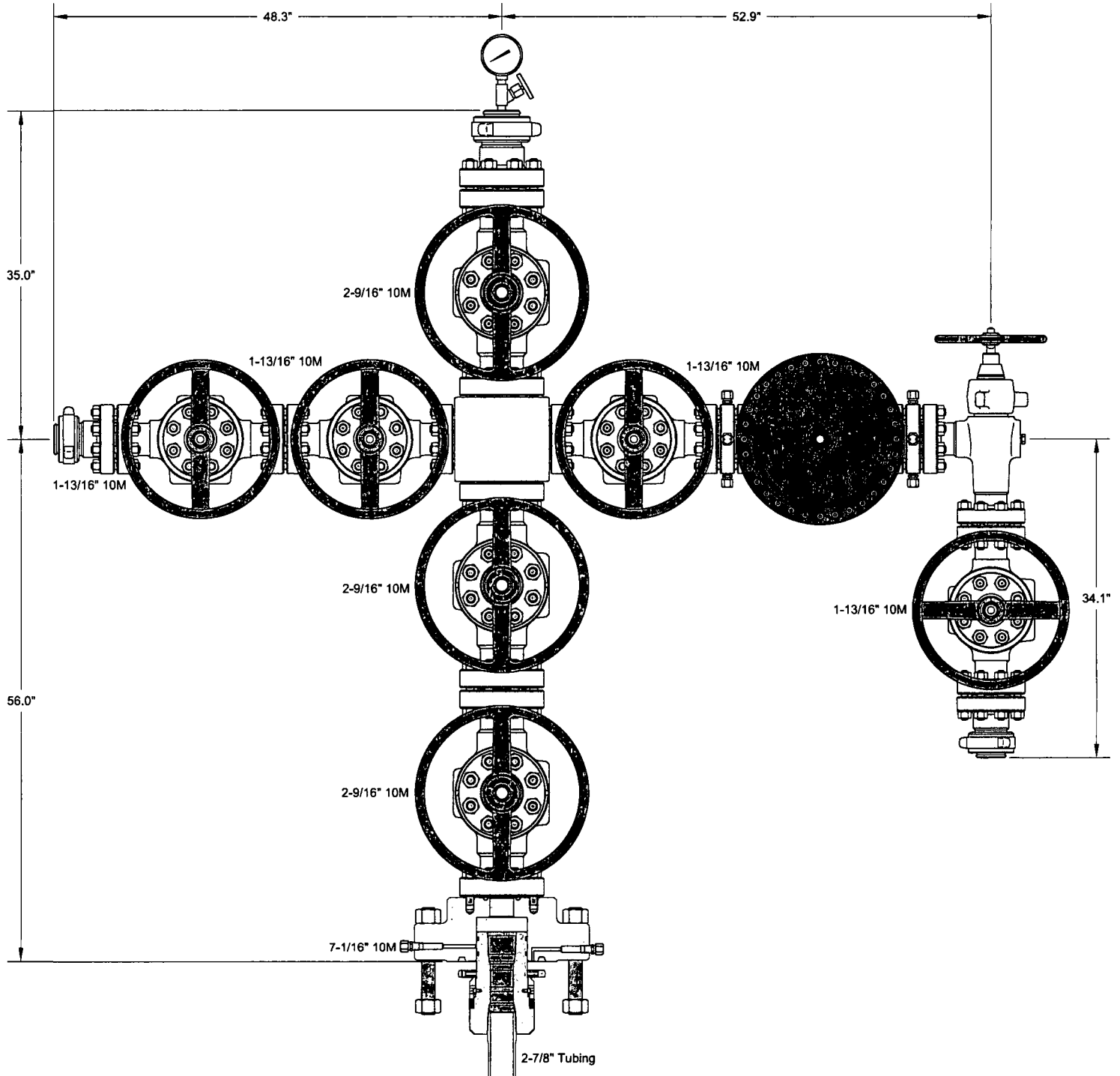
**CACTUS WELLHEAD LLC**

**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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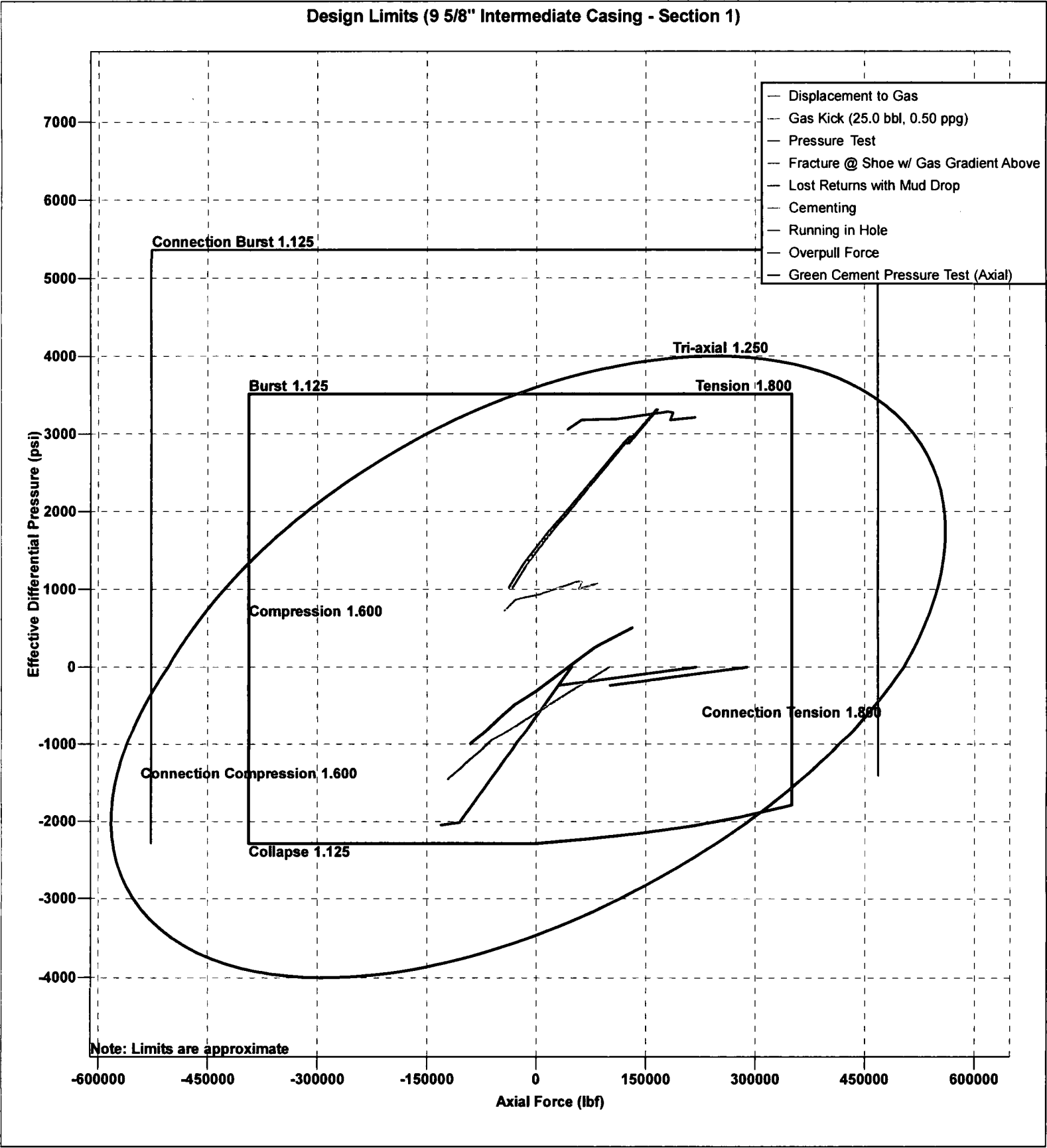
**CACTUS WELLHEAD LLC**

**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





## SAFETY EQUIPMENT

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

### SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

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

## TYPE OF EQUIPMENT AND STORAGE LOCATIONS

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

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

12. A 6-channel H<sub>2</sub>S monitor will be located in the doghouse. The 3 sensors will be installed: one on the shale shaker, one at the Cellar, one at the rig floor.

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

14. If H<sub>2</sub>S concentration reach 10 ppm an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H<sub>2</sub>S.

15. Any time it is necessary to flare gas containing H<sub>2</sub>S, a Sulfur Dioxide monitor or Detector tubes will be used to determine SO<sub>2</sub> concentrations.

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

# **OPERATING PROCEDURES**

## **BLOWOUT PREVENTION MEASURES DURING DRILLING**

### **1. Blowout Prevention Requirements:**

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

### **2. Drilling String Requirements:**

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

## **GAS MONITORING EQUIPMENT**

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

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

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

## CREW TRAINING AND PROTECTION

1. All personnel working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H<sub>2</sub>S. The training will cover, but will not be limited to, the following:

- a. General information of H<sub>2</sub>S AND SO<sub>2</sub> GAS
- b. Hazards of these gases
- c. Safety equipment on location
- d. Proper use and care of personal protective equipment
- e. Operational procedures in dealing with H<sub>2</sub>S gas
- f. Evacuation procedures
- g. First aid, reviving an H<sub>2</sub>S victim, toxicity, etc.
- h. Designated Safe Briefing Areas
- i. Buddy System
- j. Regulations
- k. Review of Drilling Operations Plan

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

3. Weekly H<sub>2</sub>S and well control drills for all personnel on each working crew shall be conducted.

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

5. Safety Equipment:

As outlined in the Safety Equipment index, H<sub>2</sub>S safety protection equipment will be available to/or assigned each person on location.

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

## METALLURGICAL CONSIDERATIONS

1. Steel drill pipe used in H<sub>2</sub>S environments should have yield strength of 95,000psi or less because of potential embrittlement problems. Must conform to the current National Association of Corrosion Engineers (NACE) Standard MR-0175-90, Material Requirement, Sulfide Stress Cracking Resistant Metallurgical Material for Oil Field Equipment. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string. Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.
2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.
3. Blowout preventors should meet or exceed the recommendations for H<sub>2</sub>S service as set forth in the latest edition of API RI 53.

## MUD PROGRAM AND TREATING

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

## WELL CONTROL EQUIPMENT

### 1. Flare System

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

### 2. Remote Controlled Choke

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

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



# OPERATING CONDITIONS

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

## DEFINITION OF WARNING FLAGS

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

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

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

- \*human life is endangered**
- \*there is no hope of controlling the well under prevailing conditions**

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

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

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

**1. Wait and Weight Method:**

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

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

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

- \*determine when gas is anticipated to reach surface.**

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

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

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

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

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

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

# **EMERGENCY PROCEDURES**

## **SOUNDING ALARM**

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

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

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

## **DRILLING CREW ACTIONS**

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

## **RESPONSIBILITIES OF PERSONNEL**

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

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

## STEPS TO BE TAKEN

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

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

## LEAK IGNITION

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

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

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

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

### GENERAL EQUIPMENT

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

## **CRITICAL OPERATIONS**

These guidelines will be implemented during H2S alarms on drilling locations with the intent of minimizing catastrophic damage of “**critical tasks**” **ONLY** and exposure of field personnel (e.g. cement in the stack).

**We will wait on Total Safety (or H2S Safety Company) for all other alarm events that aren't defined as “critical”.**

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

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

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



# APPENDICES

## EMERGENCY & MEDICAL FACILITIES:

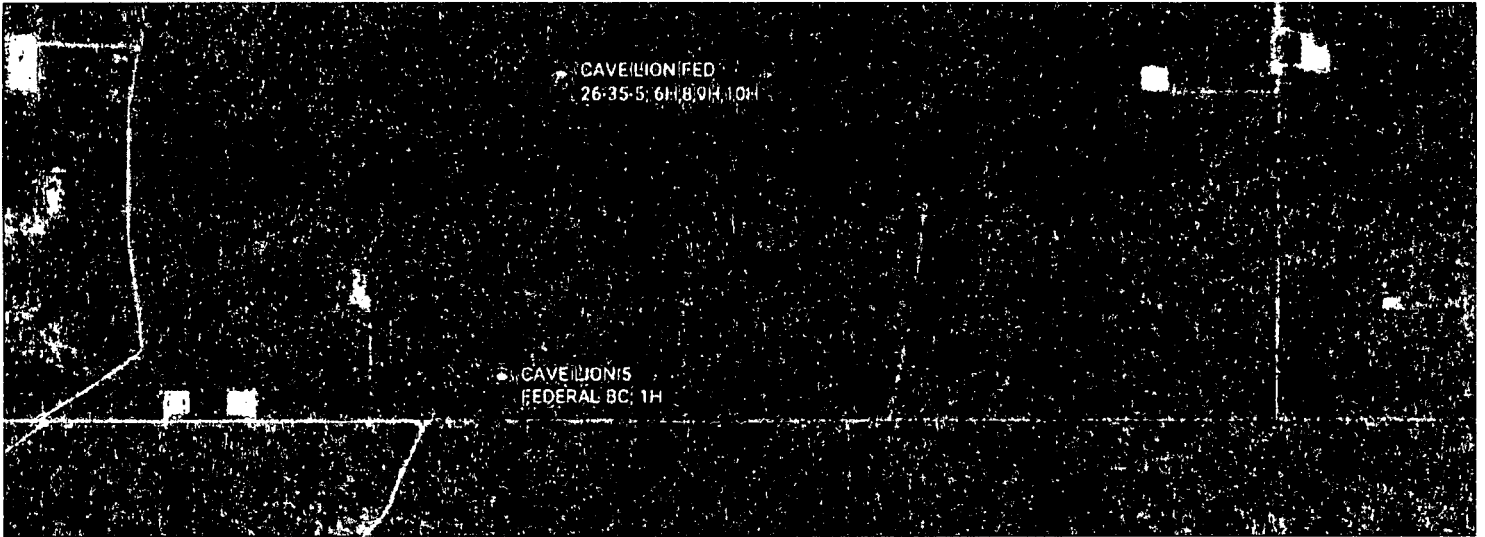
Marathon Oil Corporation Emergency Numbers			
Brent Evans	Drilling Manager	blevans@marathonoil.com	832 967-8474
Mark Bly	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Chad Butler	Drilling Superintendent	permiansuper@marathonoil.com	281-840-0467
Jacob Beaty	Drilling Engineer	jabeaty@marathonoil.com	713-296-1915
Camilo Arias	Drilling Engineer	aarias@marathonoil.com	713-296-2985
Noah Adams	HES Professional	njadams@marathonoil.com	713-591-4068
Nick Rogers	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
Scott Doughty	Lead HES Advisor	permiandches@marathonoil.com	281-659-3734
H&P 480	Company Man	Hp480@marathonoil.com	281-768-9946
H&P 498	Company Man	Hp498@marathonoil.com	281-745-0771
H&P 441	Company Man	Hp441@marathonoil.com	
H&P 423	Company Man	Hp423@marathonoil.com	
Precision 594	Company Man	PD594@marathonoil.com	
H&P 480	HES Advisor	Hp480hes@marathonoil.com	
H&P 498	HES Advisor	Hp498hes@marathonoil.com	
H&P 441	HES Advisor	HP441hes@marathonoil.com	
H&P 423	HES Advisor	Hp423hes@marathonoil.com	
Precision 594	HES Advisor	PD594hes@marathonoil.com	

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

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

# RESIDENTS AND LANDOWNERS

## AERIAL SATELLITE MAP



## RESIDENCE

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

# ADDITIONAL INFORMATION

## A. HYDROGEN SULFIDE ESSAY

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

### Hydrogen Sulfide Hazards

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

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

### Physiological Systems

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

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

### **TREATMENT**

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

### **CHARACTERISTICS OF H<sub>2</sub>S**

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

## Safe Practices

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

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

TOXICITY OF HYDROGEN SULFIDE TO MEN

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

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

# MARATHON OIL PERMIAN LLC

## DRILLING AND OPERATIONS PLAN

**WELL NAME / NUMBER:** CAVE LION FEDERAL 26 53 5 WA 9H

**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	287	FSL	1841	FWL	26S	35E	5	SESW	32.06587562 N	103.39207810 W	Lea	NM	NMP	F	NMNM013647	3262	0	0
KOP	0	FSL	2315	FWL	26S	35E	5	SESW	32.06536090 N	103.39054394 W	Lea	NM	NMP	F	NMNM013647	-8852	12156	12114
PPP	150	FSL	2315	FWL	26S	35E	5	SESW	32.06549740 N	103.39054610 W	Lea	NM	NMP	F	NMNM013647	-9425	13056	12687
BHL	150	FNL	2313	FWL	26S	35E	5	NENW	32.07919900 N	103.39057610 W	Lea	NM	NMP	F	NMNM013647	-9425	17562	12687

### 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	1064	1064	Anhydrite/Dolomite	BRINE	N
Salado	1503	1503	Salt/Anhydrite	BRINE	N
Castile	3541	3567	Base Salt	BRINE	N
Base of Salt	5098	5140	Limy Sands	BRINE	N
Lamar	5363	5405	Sand/Shales	OIL	Y
Bell Canyon	5391	5433	Sands/Shale	OIL	Y
Brushy Canyon	8000	8042	Sands/Carbonates	OIL	Y
Bone Spring	9291	9333	Sands/Carbonates	OIL	Y
1 <sup>st</sup> Bone Spring Sand	10411	10453	Sands/Carbonates	OIL	Y
2 <sup>nd</sup> Bone Spring Sand	10960	11002	Sands/Carbonates	OIL	Y
3 <sup>rd</sup> Bone Spring Sand	12045	12087	Sands/Carbonates	OIL	Y
Wolfcamp	12472	12543	Carbonates/Shales/Sands	OIL	Y
Wolfcamp X	12493	12570	Carbonates/Shales/Sands	OIL	Y
Wolfcamp Y	12551	12653	Carbonates/Shales/Sands	OIL	Y
Wolfcamp A	12581	12702	Carbonates/Shales/Sands	OIL	Y
Wolfcamp D	13721	N/A	Carbonates/Shales/Sands	OIL	Y

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

**ANTICIPATED BOTTOM HOLE PRESSURE: 8,906 psi**

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

**ANTICIPATED ABNORMAL PRESSURE: N**

**ANTICIPATED ABNORMAL TEMPERATURE: N**

### 3. CASING PROGRAM

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	17 1/2	13 3/8	0	1080	0	1080	54.5	J55	STC	5.52	2.5	2.5
Intermediate I	12 1/4	9 5/8	0	5442	0	5400	40	J55	LTC	1.74	1.15	2.19
Intermediate II	8 3/4	7	0	12056	0	12014	29	P110	BTC	2.21	1.18	1.9
Production Liner	6 1/8	4 1/2	11756	17562	11713	12687	13.5	P110	BTC	1.33	1.56	1.88

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

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

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



Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

#### 4. CEMENT PROGRAM:

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sks)	Yield (ft3/sks)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	864	687	1.75	13.5	1200	100	Class C	3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake
Surface	Tail	--	864	1080	220	1.33	14.8	300	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	5442	368	1.33	14.8	490	50	Class C	0.3 % Retarder
Intermediate II	Lead	--	5142	11000	554	2.7	11	1497	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
Intermediate II	Tail	--	11000	12056	189	1.09	15.6	206	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder
Production Liner	Tail	--	11756	17562	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 (ft3/sx)	Water gal/sk	Slurry Description and Cement Type

Attach plugging procedure for pilot hole.

N/A

## 5. PRESSURE CONTROL EQUIPMENT

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12 ¼"	13 5/8	5000	Annular	x	70% of working pressure
		10000	Blind Ram	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. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
N	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.  See attached schematic.

#### 6. MUD PROGRAM:

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max. Weight (ppg)	Additional Characteristics
<u>0</u>	<u>1080</u>	<u>Water Based Mud</u>	<u>8.4</u>	<u>8.8</u>	
<u>1080</u>	<u>5442</u>	<u>Brine</u>	<u>9.9</u>	<u>10.2</u>	
<u>5448</u>	<u>12056</u>	<u>Cut Brine</u>	<u>8.8</u>	<u>9.4</u>	
<u>12056</u>	<u>17562</u>	<u>Oil Based mud</u>	<u>11.5</u>	<u>13.5</u>	

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

#### 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT

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

#### 8. LOGGING / CORING AND TESTING PROGRAM:

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

#### 9. POTENTIAL HAZARDS:

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

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

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



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

## SUPO Data Report

11/09/2018

APD ID: 10400030801

Submission Date: 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WA

Well Number: 9H

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\_6\_8\_9\_10\_\_Vacinity\_\_Existing\_Roads\_Plat\_20180601094817.pdf

SUPO\_1\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_\_Existing\_Lease\_Road\_Map\_20180601094827.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\_6\_8\_9\_10\_\_New\_Road\_Details\_\_Section\_8\_\_20180601114701.pdf

SUPO\_2\_\_Cave\_Lion\_Federal\_26\_35\_5\_6\_8\_9\_10\_\_New\_Road\_Plat\_20180601094906.pdf

SUPO\_2\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_6H\_10H\_9H\_8H\_\_Certified\_Cut\_\_Fill\_Road\_Plat\_20180601103518.pdf

SUPO\_2\_\_Cave\_Lion\_Federal\_26\_35\_5\_6\_8\_9\_10\_\_New\_Road\_Details\_\_Section\_5\_\_20180601114652.pdf

New road type: LOCAL

Length: 491.28

Feet

Width (ft.): 30

Max slope (%): 3

Max grade (%): 3

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 drainage and ditching will be constructed on both sides of the access road along with proper compaction to prevent water

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

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\_\_6\_\_8\_\_9\_\_10\_\_Existing\_Wells\_Location\_Map\_20180601095424.pdf

**Existing Wells description:**

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

#### 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\_6H\_8H\_9H\_10H\_\_Facility\_Layout\_Plat\_20180925113646.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 type:** FRESH WATER LAKE

**Source longitude:** -103.40435

**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:** -103.35456

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

**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 WA

**Well Number:** 9H

**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 WA

**Well Number:** 9H

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

**Disposal type description:**

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

**Waste type:** SEWAGE

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

**Amount of waste:** 600 barrels

**Waste disposal frequency :** Weekly

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

**Safe containmant attachment:**

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

**Disposal type description:**

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

**Waste type:** COMPLETIONS/STIMULATION

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

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel Tanks

**Safe containmant attachment:**

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

**Disposal type description:**

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

### Reserve Pit

**Reserve Pit being used?** NO

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

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

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

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

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

**Operator Name:** MARATHON OIL PERMIAN LLC

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

**Well Number:** 9H

### 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\_6H\_10H\_9H\_8H\_Certified\_Cut\_Fill\_Plat\_20180601103235.pdf

SUPO\_9\_CAVE\_LION\_FEDERAL\_26\_35\_5\_6\_8\_9\_10\_Well\_Location\_Plat\_Feet\_20180601101044.pdf

SUPO\_9\_CAVE\_LION\_FEDERAL\_26\_35\_5\_6\_8\_9\_10\_Well\_Pad\_Plat\_Acres\_20180601101053.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-240', north-180', east-250', 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, 5.96 acres with cut and fill. Topsoil will be places on the north side (490' by 30') of the pad to accommodate interim reclamation activities (1.69 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 WA

**Well Number:** 9H

## 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:** 300-2

### Recontouring attachment:

SUPO\_10\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_6\_8\_9\_10\_\_IR\_Plat\_20180601103451.pdf

SUPO\_10\_\_CAVE\_LION\_FEDERAL\_26\_35\_5\_6H\_10H\_9H\_8H\_\_Certified\_Cut\_\_Fill\_IR\_Plat\_20180601103531.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> 5.96	<b>Well pad interim reclamation (acres):</b> 1.69	<b>Well pad long term disturbance (acres):</b> 4.27
<b>Road proposed disturbance (acres):</b> 0.338	<b>Road interim reclamation (acres):</b> 0.112	<b>Road long term disturbance (acres):</b> 0.226
<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> 6.298	<b>Total interim reclamation:</b> 1.802	<b>Total long term disturbance:</b> 4.496

### 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 WA

**Well Number:** 9H

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 WA

**Well Number:** 9H

**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 WA

**Well Number:** 9H

**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 WA

**Well Number:** 9H

**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



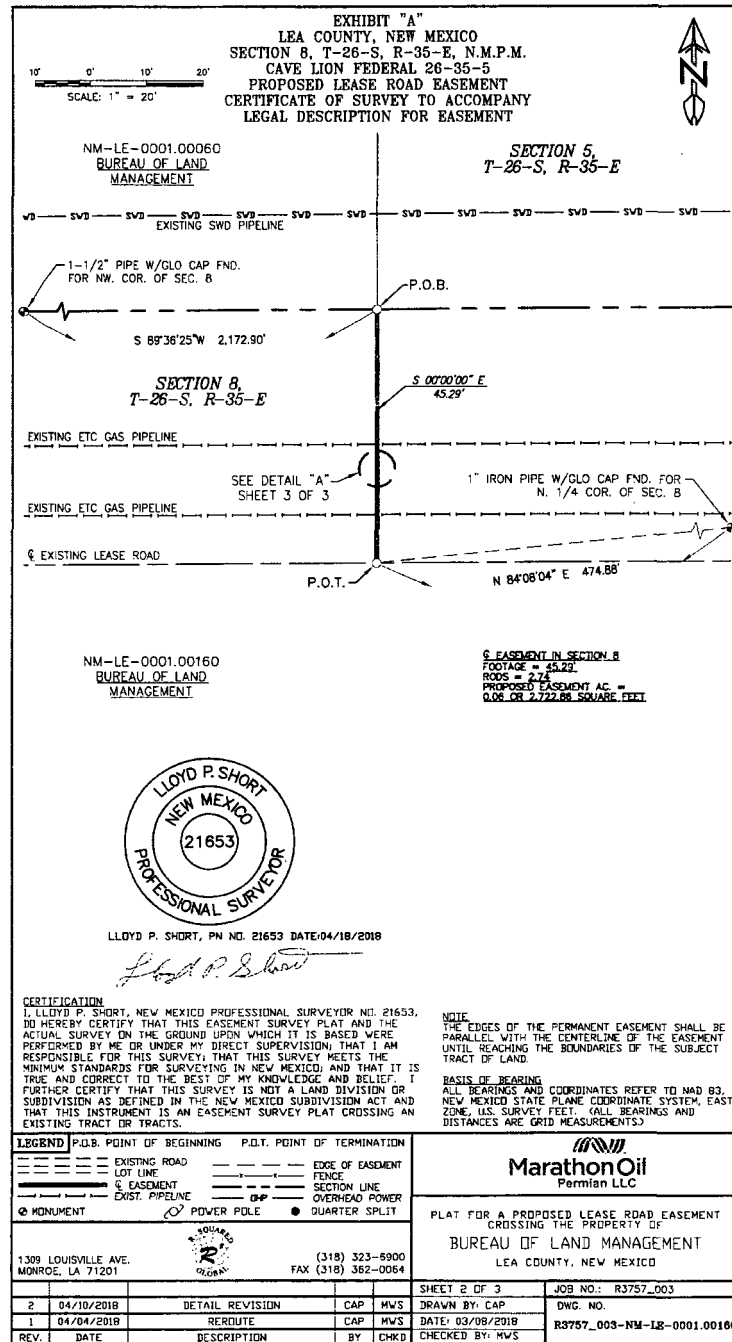
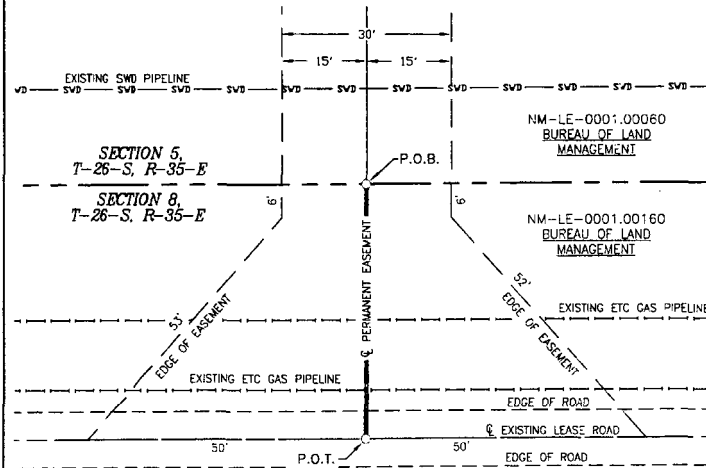


EXHIBIT "A"  
LEA COUNTY, NEW MEXICO  
SECTION 8, T-26-S, R-35-E, N.M.P.M.  
CAVE LION FEDERAL 26-35-5  
PROPOSED LEASE ROAD EASEMENT  
CERTIFICATE OF SURVEY TO ACCOMPANY  
LEGAL DESCRIPTION FOR EASEMENT



DETAIL "A"  
N.T.S.



LLOYD P. SHORT, PN NO. 21653 DATE: 04/18/2018

*Lloyd P. Short*

LEGEND	P.O.B. POINT OF BEGINNING	P.O.T. POINT OF TERMINATION	
---	EXISTING ROAD	---	EDGE OF EASEMENT
---	LOT LINE	---	FENCE
---	EASEMENT	---	SECTION LINE
---	EXIST. PIPELINE	---	OVERHEAD POWER
●	MONUMENT	●	QUARTER SPLIT
○	POWER POLE		

1309 LOUISVILLE AVE.  
MONROE, LA 71201



(318) 323-6900  
FAX (318) 362-0084

**Marathon Oil**  
Permian LLC

PLAT FOR A PROPOSED LEASE ROAD EASEMENT  
CROSSING THE PROPERTY OF  
BUREAU OF LAND MANAGEMENT  
LEA COUNTY, NEW MEXICO

2	04/19/2018	DETAIL REVISION	CAP	MWS	SHEET 3 OF 3	JOB NO.: R3757-003
1	04/04/2018	REROUTE	CAP	MWS	DRAWN BY: CAP	DWG. NO.
REV.	DATE	DESCRIPTION	BY	CHKD	DATE: 03/08/2018	R3757-003-NM-LE-0001.00160
					CHECKED BY: MWS	

# NEW OR RECONSTRUCTED ACCESS ROADS

CAVE LION FEDERAL 26-35-5 (PAD 1)

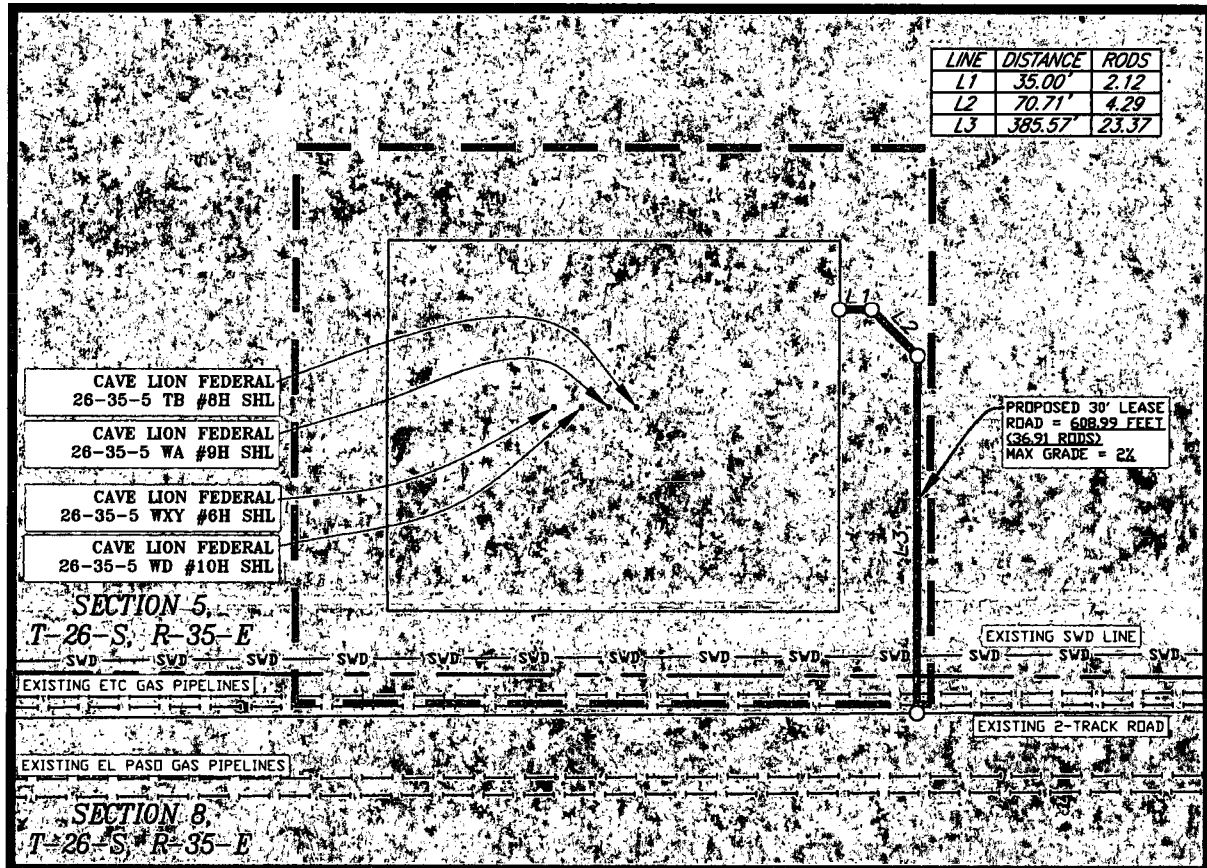
SEC. 5 TWP. 26-S RGE. 35-E

SURVEY: N.M.P.M.

COUNTY: LEA

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: ANDREW'S PLACE, N.M.



## LEGEND

SCALE: 1" = 200'

- PROPOSED WELL PAD ————
- ARCH SURVEY LIMITS - - - - -
- EXISTING LEASE ROAD ————
- PROPOSED LEASE ROAD ————
- SECTION LINE ————
- EXISTING PIPELINE ————
- SALT WATER DISPOSAL LINE ———— SVD ———— SVD ————
- PI/BEND ○
- WELLS .

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-6900 OFFICE  
JOB No. R3757\_003

# PROPOSED ACCESS ROAD CROSS SECTION

CAVE LION FEDERAL 26-35-5 (PAD 1)

MAY 18, 2018

SEC. 5 TWP. 26-S RGE. 35-E

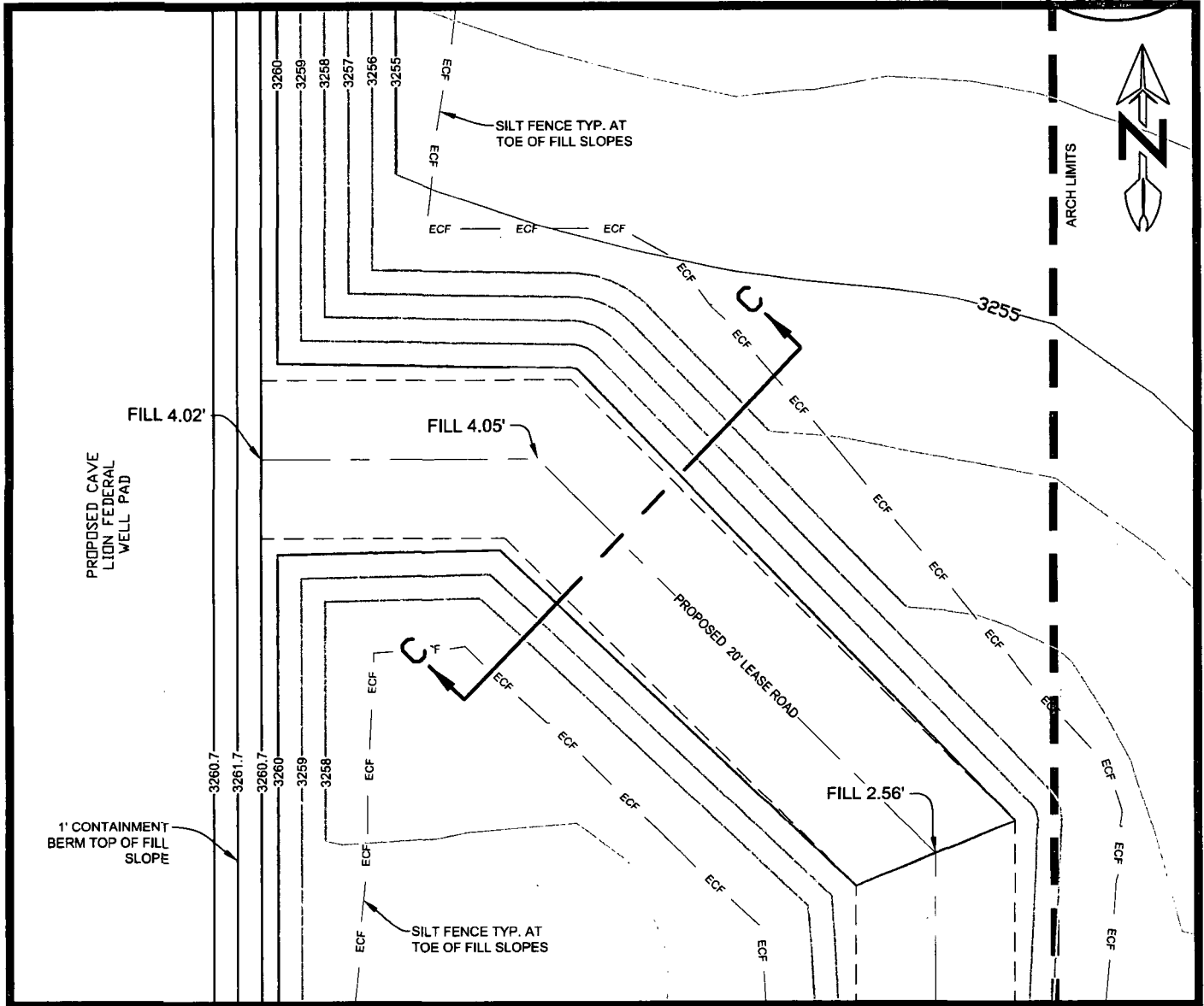
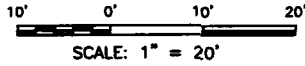
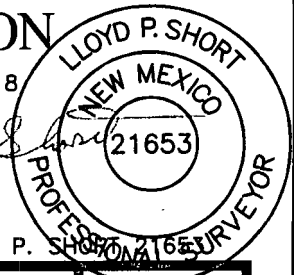
SURVEY: N.M.P.M.

COUNTY: LEA

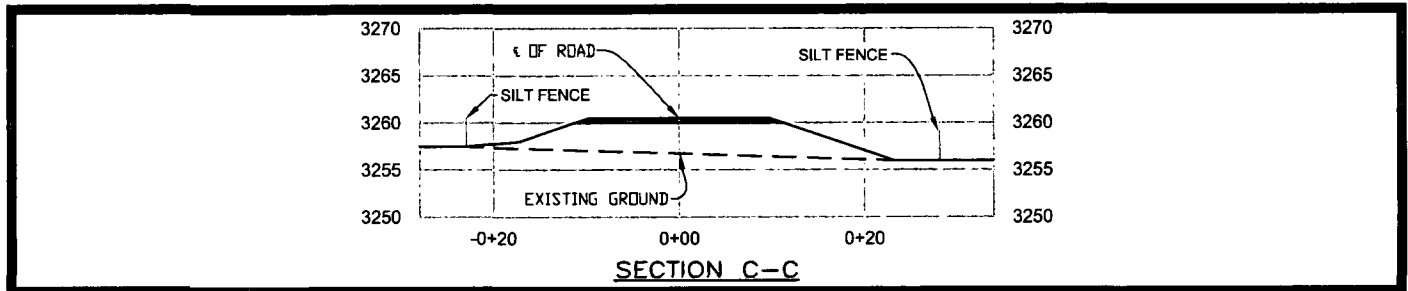
OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: ANDREW'S PLACE, N.M.

LLOYD P. SHORT



REV 4 | 05/17/2018 | BFF



LEGEND		FENCE	
PROPOSED PAD SURFACE	—————	PROPOSED 1' CONTOUR LINES	— x — x —
ARCH SURVEY LIMITS	=====	PROPOSED 5' CONTOUR LINES	-----
PROPOSED LEASE ROAD	-----	EROSION CONTROL FENCE	ECF
EXIST. 1' CONTOUR LINES	-----	STORM WATER CONTROL DIVERSION	=====
EXIST. 5' CONTOUR LINES	-----	DISTURBANCE AREA BOUNDARY	=====

HORIZONTAL: 1" = 20'  
VERTICAL: 1" = 20'

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-8900 OFFICE  
JOB No. R3757\_003

EXHIBIT "A"

NM-LE-0001.00060  
LEA COUNTY, NM  
CAVE LION FEDERAL 26-35-5  
PROPOSED LEASE ROAD EASEMENT  
MARATHON OIL PERMIAN LLC

SHEET 1 OF 2

FIELD NOTES DESCRIBING

*The centerline of a 30 foot wide proposed lease road easement, being 0.31 acres of land. Said easement being located in Section 5, Township 26 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 1-1/2 inch pipe with a GLO cap found for the Southwest corner of said Section 5 bears S 79°01'02" W a distance of 2,126.80 feet.

*THENCE* continue crossing said Section 5 the following courses and distances:

S 90°00'00" E a distance of 35.00 feet, S 45°00'00" E a distance of 70.71 feet and S 00°00'00" E a distance of 340.28 feet to the POINT OF TERMINATION from which a 1 inch iron pipe with a GLO cap found for the South quarter corner of said Section 5, bears N 89°36'25" E a distance of 472.40 feet.

The total length of the proposed easement in said Section 5 shall be 445.99 feet (27.03 rods), and shall contain 0.31 acres.

The edges of the permanent easement shall be parallel with the centerline of the easement until reaching the boundaries of the subject tract of land.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings and distances are grid measurements.)

Title information furnished by Marathon Oil Permian LLC.

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

STATE OF NEW MEXICO  
COUNTY OF LEA

I, Lloyd P. Short, New Mexico Professional Surveyor No. 21653, do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.

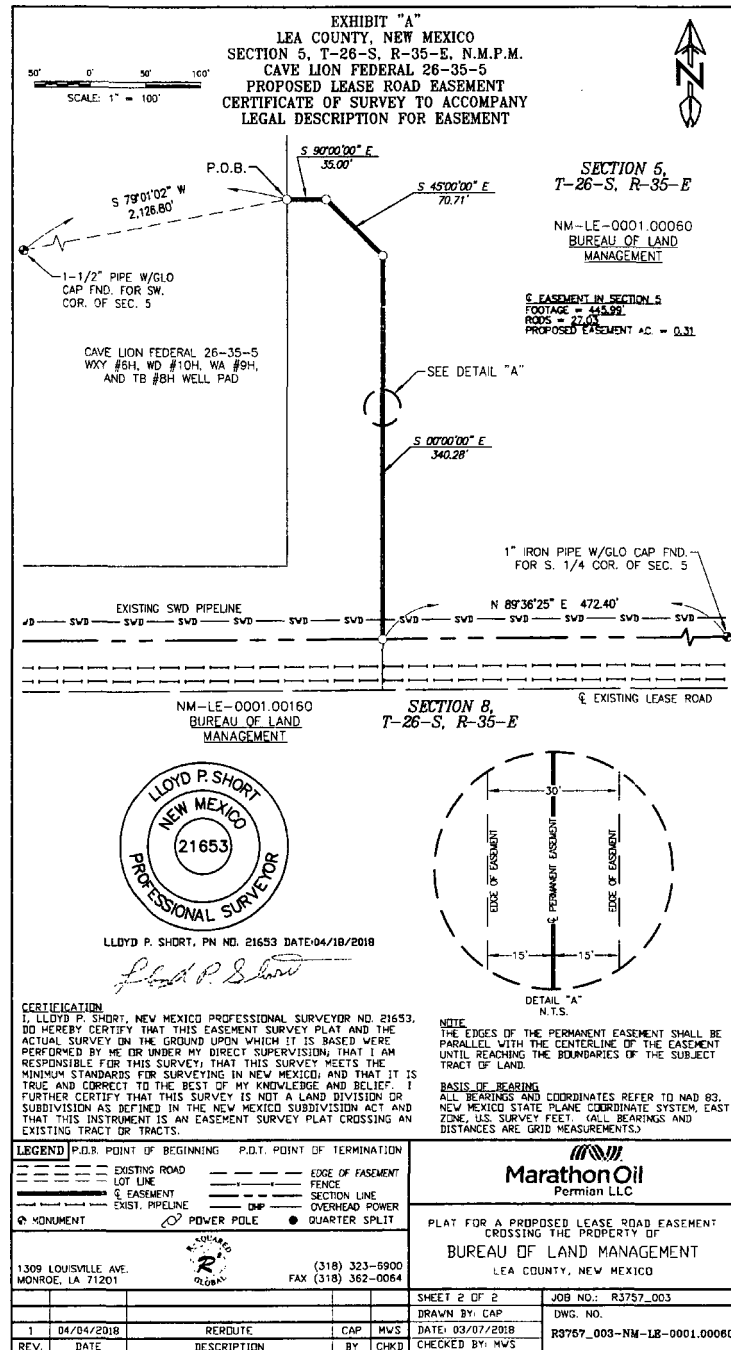


LLOYD P. SHORT, PN NO. 21653 DATE:04/18/2018

A handwritten signature of Lloyd P. Short in cursive script.

R-SQUARED GLOBAL, LLC  
PROJECT NO. R3757\_003

Modification in any way of the foregoing description terminates liability of Surveyor.





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

## PWD Data Report

11/09/2018

### 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:

# INTERIM RECLAMATION PLAT

CAVE LION FEDERAL 26-35-5 (PAD 1)

SEC. 5 TWP. 26-S RGE. 35-E

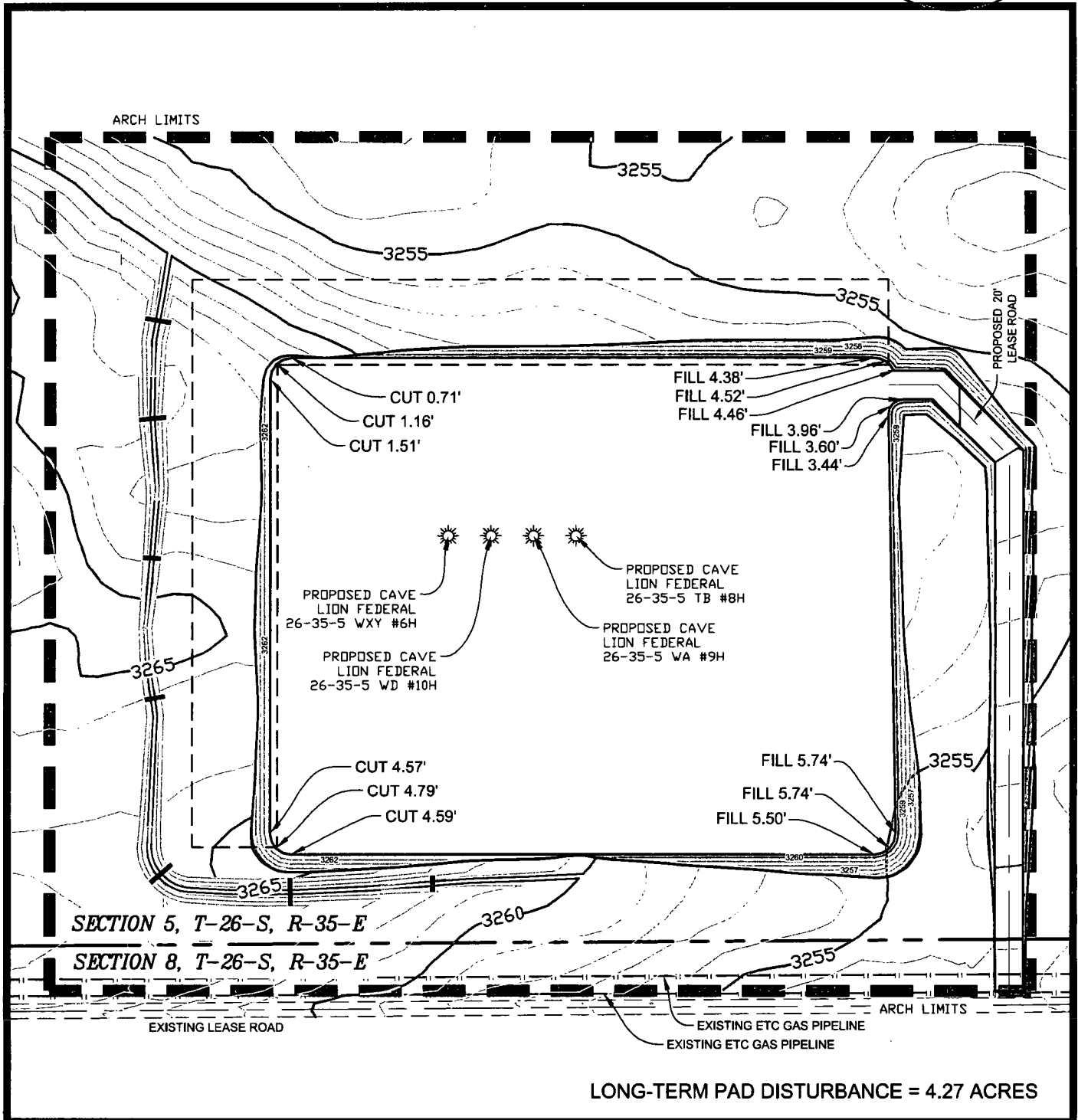
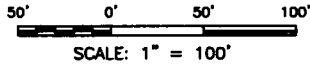
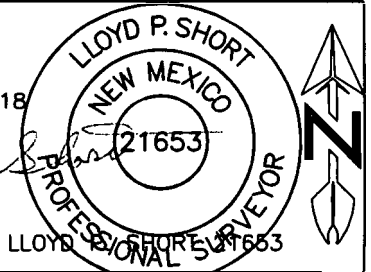
SURVEY: N.M.P.M.

COUNTY: LEA

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: ANDREW'S PLACE, N.M.

MAY 18, 2018



REV 4 | 05/17/2018 | BFF

## LEGEND

INTERIM RECLAMATION ————  
ARCH SURVEY LIMITS ————  
PROPOSED LEASE ROAD ————  
EXIST. 1' CONTOUR LINES ————  
EXIST. 5' CONTOUR LINES ————

FENCE — x — x —  
PROPOSED 1' CONTOUR LINES ————  
PROPOSED 5' CONTOUR LINES ————  
EROSION CONTROL FENCE — ECF —  
STORM WATER CONTROL DIVERSION ————  
DISTURBANCE AREA BOUNDARY ————

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-6900 OFFICE  
JOB No. R3757\_003



### **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 Info Data Report

11/09/2018

### 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: