F/F

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM013647

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
CAVE LION FEDERAL ~~26-35~~ 5 WXY
6H (323004)

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

9. API Well No.
30-025-45426

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

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

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

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SESW / 287 FSL / 1781 FWL / LAT 32.0658771 / LONG -103.3922717
At proposed prod. zone NENW / 150 FNL / 1322 FWL / LAT 32.0792037 / LONG -103.3937774

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

14. 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
320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
1300 feet

19. Proposed Depth
12565 feet / 17439 feet

20. BLM/BIA
FED: NMB001555

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3263 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. W
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the
Item 20 above).
BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Melissa Szudera / Ph: (713)296-3179	06/06/2018

Title
REGULATORY COMPLIANCE REPRESENTATIVE

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

Title	
Assistant Field Manager Lands & Minerals	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

GCP Rec 11/1/18

KA 12/17/18

(Double sided)

APPROVED WITH CONDITIONS

Approval Date: 11/06/2018

(Continued on page 2)

*(Instructions on page 2)

AFMSS

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

Operator Certification Data Report

11/07/2018

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: Melissa Szudera **Signed on:** 06/01/2018

Title: REGULATORY COMPLIANCE REPRESENTATIVE

Street Address: 5555 San Felipe St.

City: Houston **State:** TX **Zip:** 77057

Phone: (713)296-3179

Email address: mszudera@marathonoil.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

APD ID: 10400030787 **Submission Date:** 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400030787 **Tie to previous NOS?** **Submission Date:** 06/06/2018

BLM Office: CARLSBAD **User:** Melissa Szudera **Title:** REGULATORY COMPLIANCE REPRESENTATIVE

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 **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WOLFCAMP **Pool Name:** WC-025 G-09 S263504N

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

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

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 LION FEDERAL 26 35 5 **Number:** 300-2

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:** 1300 FT **Distance to lease line:** 0 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: App_2___signed_CAVE_LION_FEDERAL_26_35_5_WXY__6H_REV2_CERT__FORM_C_102__20180927071020.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	1781	FWL	26S	35E	5	Aliquot SESW	32.0658771	-103.3922717	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 013647	3263	0	0
KOP Leg #1	0	FSL	1323	FWL	26S	35E	5	Aliquot SESW	32.0653609	-103.3905439	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 013647	-8729	12033	11992
PPP Leg #1	150	FSL	1323	FWL	26S	35E	5	Aliquot SESW	32.0655025	-103.3937502	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 013647	-9302	12933	12565

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

	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	1322	FWL	26S	35E	5	Aliquot NENW	32.0792037	-103.3937774	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 013647	-9302	17439	12565
BHL Leg #1	150	FNL	1322	FWL	26S	35E	5	Aliquot NENW	32.0792037	-103.3937774	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 013647	-9302	17439	12565

APD ID: 10400030787 **Submission Date:** 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

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	1504	SALT,ANHYDRITE	OTHER : Brine	No
3	CASTILE	-1342	3541	3572	SALT	OTHER : Brine	No
4	BASE OF SALT	-2899	5098	5139	LIMESTONE,SANDSTONE	OTHER : Brine	No
5	LAMAR	-3164	5363	5404	OTHER : Sand/Shales	OIL	No
6	BELL CANYON	-3192	5391	5432	SHALE,SANDSTONE	OIL	No
7	BRUSHY CANYON	-5801	8000	8041	OTHER : Sands/Carbonate	OIL	No
8	BONE SPRING	-7092	9291	9332	OTHER : Sands/Carbonate	OIL	No
9	BONE SPRING 1ST	-8212	10411	10452	OTHER : Sands/Carbonate	OIL	No
10	BONE SPRING 2ND	-8761	10960	11001	OTHER : Sands/Carbonates	OIL	No
11	BONE SPRING 3RD	-9846	12045	12086	OTHER : Sands/Carbonates	OIL	No
12	WOLFCAMP	-10273	12472	12602	SHALE,OTHER : Carbonates/Sands	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 15000

Equipment: 13 5/8 Annular, Double Ram and Blind Ram will be tested and installed before the 12 1/4", 8 3/4" and 6 1/8" holes. Minimum required WP for Annular is 5,000 for all casing strings and minimum required WP for Blind Ram and Double Ram is 10,000 for all casing strings.

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 10,000 PSI BOP stack. **Testing Procedure:** - BOP/BOPE will be tested by an independent service company to 250 PSI low and the high pressure indicated on drill plan attachment 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 attached. If the system is upgraded all the components installed will be functional and tested. The Annular will be tested to 70% of 5,000 working pressure (see attached BOP plan). The working pressure of 10,000 for the Blind Ram and Double Ram will be tested to 10,000 PSI. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve, inside BOP, and choke lines and choke manifold. See attached schematics. Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. A multi bowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirement for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Choke Diagram Attachment:

Drill_2_Choke___10M.THREE_CHOKE_MANIFOLD.BLM_20180601074758.pdf

Drill_2_Choke___Choke_Line_Flex_III_Rig_20180601074809.pdf

Drill_2_Choke___Choke_Line_Test_Chart_SN_63393_20180601074819.pdf

Drill_2_Choke___Contitech_Hose_SN_663393_20180601074828.pdf

BOP Diagram Attachment:

Drill_2_BOP___10M_Flex.BOPE_x_5M_ANNULAR.BLM_20180601074850.pdf

Drill_2_BOP___Well_Control_Plan___Permian_20180601074907.pdf

Drill_2_BOP___WH_TH_DESIGN__2_DRAWING___6__8___9_20180601074917.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1080	0	1080	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	5441	0	5400	3263	-2137	5441	J-55	40	LTC	1.74	1.15	BUOY	2.19	BUOY	2.19
3	INTERMEDIATE	8.75	7.0	NEW	API	N	0	11930	0	11890	3263	-8627	11930	P-110	29	BUTT	2.21	1.18	BUOY	1.9	BUOY	1.9
4	PRODUCTION	6.125	4.5	NEW	API	N	11630	17439	11690	12465	-8427	-9202	5809	P-110	13.5	BUTT	1.33	1.56	BUOY	1.88	BUOY	1.88

Casing Attachments

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Drill_3___Red_Hills_3_csg___liner__Surface_Csg___6__8___9_20180601075247.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

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Drill_3___Red_Hills_3_csg___liner__Int_II_Csg___6__8___9_20180601075603.pdf

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Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

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_20180601075751.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		11630	17439	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	1030	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	5441	368	1.33	14.8	489	50	Class C	0.03 % Retarder
INTERMEDIATE	Lead		0	10900	545	2.7	11	1472	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
INTERMEDIATE	Tail		10900	11930	185	1.09	15.6	201	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

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
11930	17439	OIL-BASED MUD	11.5	13.5							
1080	5441	OTHER : Brine	9.9	10.2							
0	1080	WATER-BASED MUD	8.4	8.8							
5441	11930	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 WXY **Well Number:** 6H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8750 **Anticipated Surface Pressure:** 5985.7

Anticipated Bottom Hole Temperature(F): 195

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Drill_7___Marathon_Carlsbad__CAVE_LION_FED_26_35_5_6H_8H_9H_10H_Contingency_Plan_0..._20180601080611.pdf

Drill_7___H2S_Contiengency_Plan_Summary_20180601080631.pdf

Drill_7___Pad_Flex_III_20180601080641.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_CaveLionWXY_6H_PrelimB_36x48WM_20180601080803.PDF

Drill_8_PD___Marathon_CaveLionWXY_6H_PrelimB_WPReport_20180601080811.pdf

Drill_8_PD___CAVE_LION_FEDERAL_26_35_5_WXY_6H_DRILLING_PLAN_V1_20180927071555.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 WXY **Well Number:** 6H

Other Variance attachment:

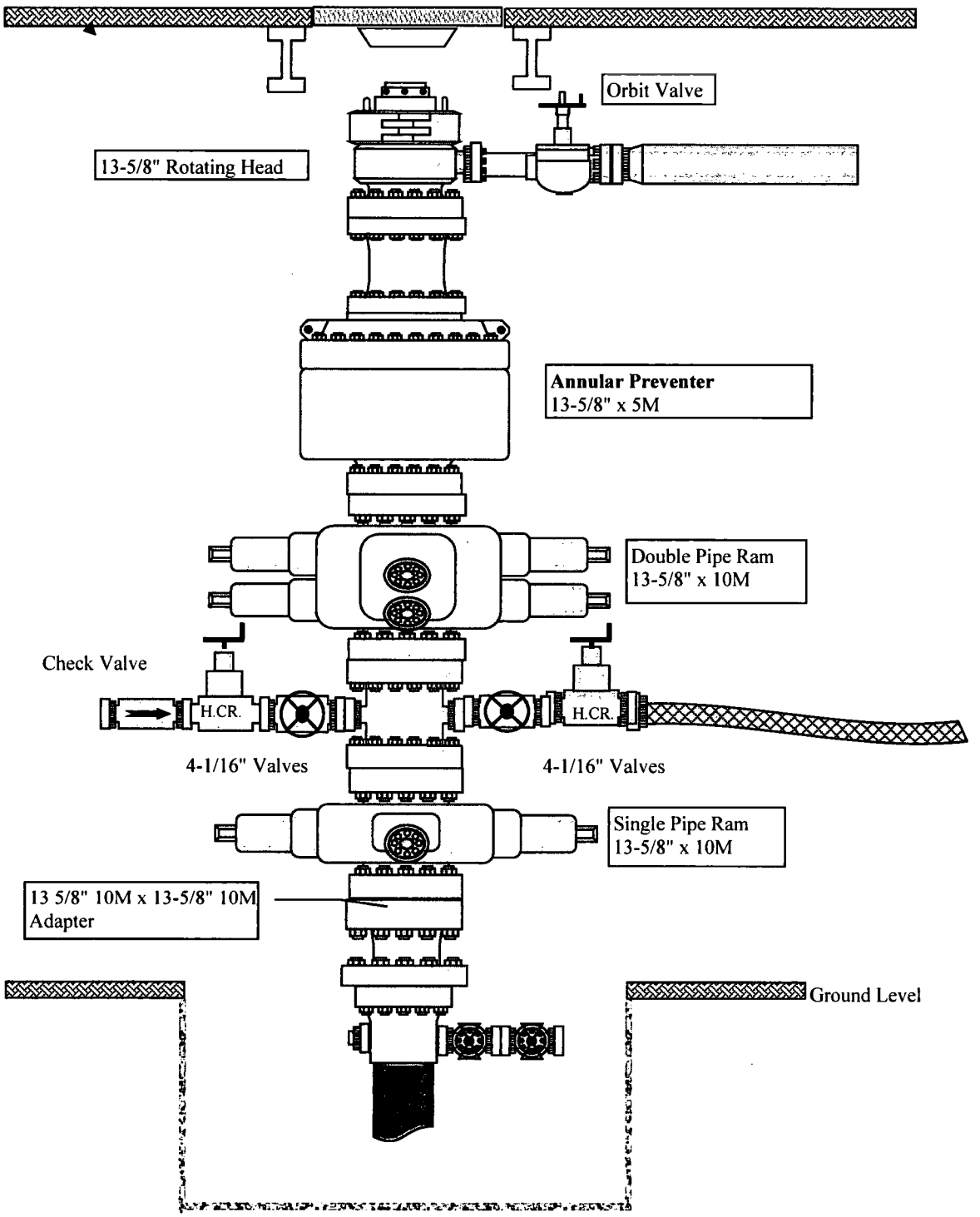
Drill_8_OV___Batch_Drilling_Plan_and_Surface_Rig_Request_20180601080946.pdf

Continental CONTITECH

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

Operator : **Marathon Oil**



1. DRILLING WELL CONTROL PLAN

1.1 WELL CONTROL - CERTIFICATIONS

Required IADC/IWCF Well Control Certifications Supervisor Level:

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

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

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

Well Control-Position/Roles

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

- **Supervisor Level**
  - Specifies and has oversight that the correct actions are carried out
  - Role is to supervise well control equipment, training, testing, and well control events
  - Directs the testing of BOP and other well control equipment
  - Regularly direct well control crew drills
  - Land based rigs – usually runs the choke during a well kill operation
  - Due to role on the rig, training and certification is targeted more toward management of well control and managing an influx out of the well

- **Driller Level**
  - Performs an action to prevent or respond to well control accident
  - Role is to monitor the well via electronic devices while drilling and detect unplanned influxes
  - Assist with the testing of BOP and other well control equipment
  - Regularly assist with well control crew drills
  - When influx is detected, responsible to close the BOP
  - Due to role on the rig, training and certification is targeted more toward monitoring and shutting the well in (closing the BOP) when an influx is detected

(Well Control-Positions/Roles Continued)

- **Derrick Hand, Assistant Driller Introductory Level**
  - Role is to assist Driller with kick detection by physically monitoring the well at the mixing pits/tanks
  - Regularly record mud weights/viscosity for analysis by the Supervisor level and mud engineer so pre-influx signs can be detected
  - Mix required kill fluids as directed by Supervisor or Driller
  - Due to role on the rig, training and certification is targeted more toward monitoring for influxes, either via mud samples or visual signs on the pits/tanks

- **Motorman, Floor Hand Introductory Level**
  - Role is to assist the Supervisor, Driller, or Derrick Hand with detecting influxes
  - Be certain all valves are aligned for proper well control as directed by Supervisor
  - Perform Supervisor or Driller assigned tasks during a well control event
  - Due to role on the rig, training and certification is targeted more toward monitoring for influxes

1.2 WELL CONTROL-COMPONENT AND PREVENTER COMPATIBILITY CHECKLIST

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

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

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_2S drill	Prior to drilling into a potential H_2S 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

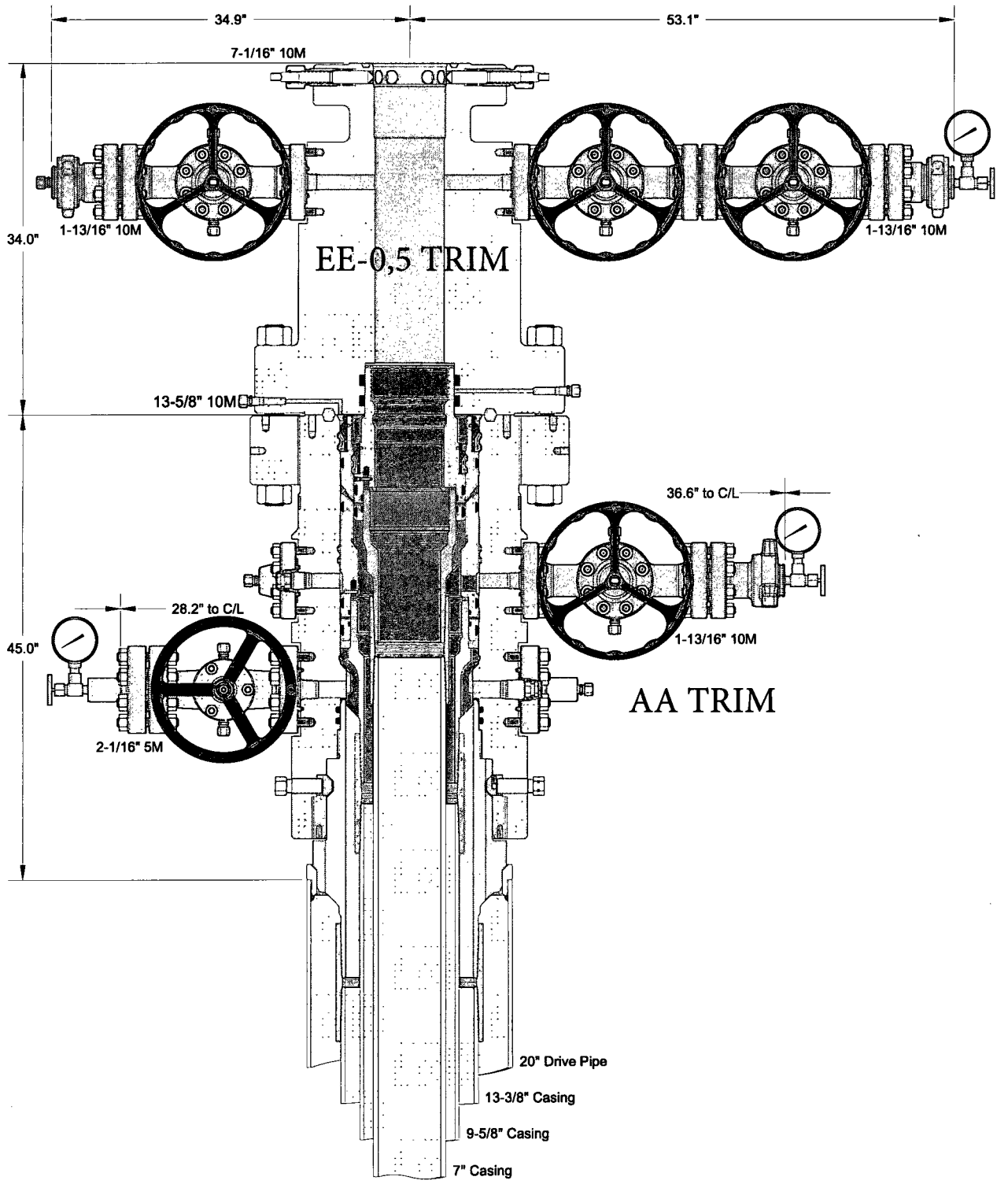
- **With BHA in the stack and compatible ram preventer and pipe combo immediately available.**
    - Sound alarm (alert crew)
    - Stab crossover and full opening safety valve and close
    - Space out drill string with upset just beneath the compatible pipe ram.
    - Shut-in using compatible pipe 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

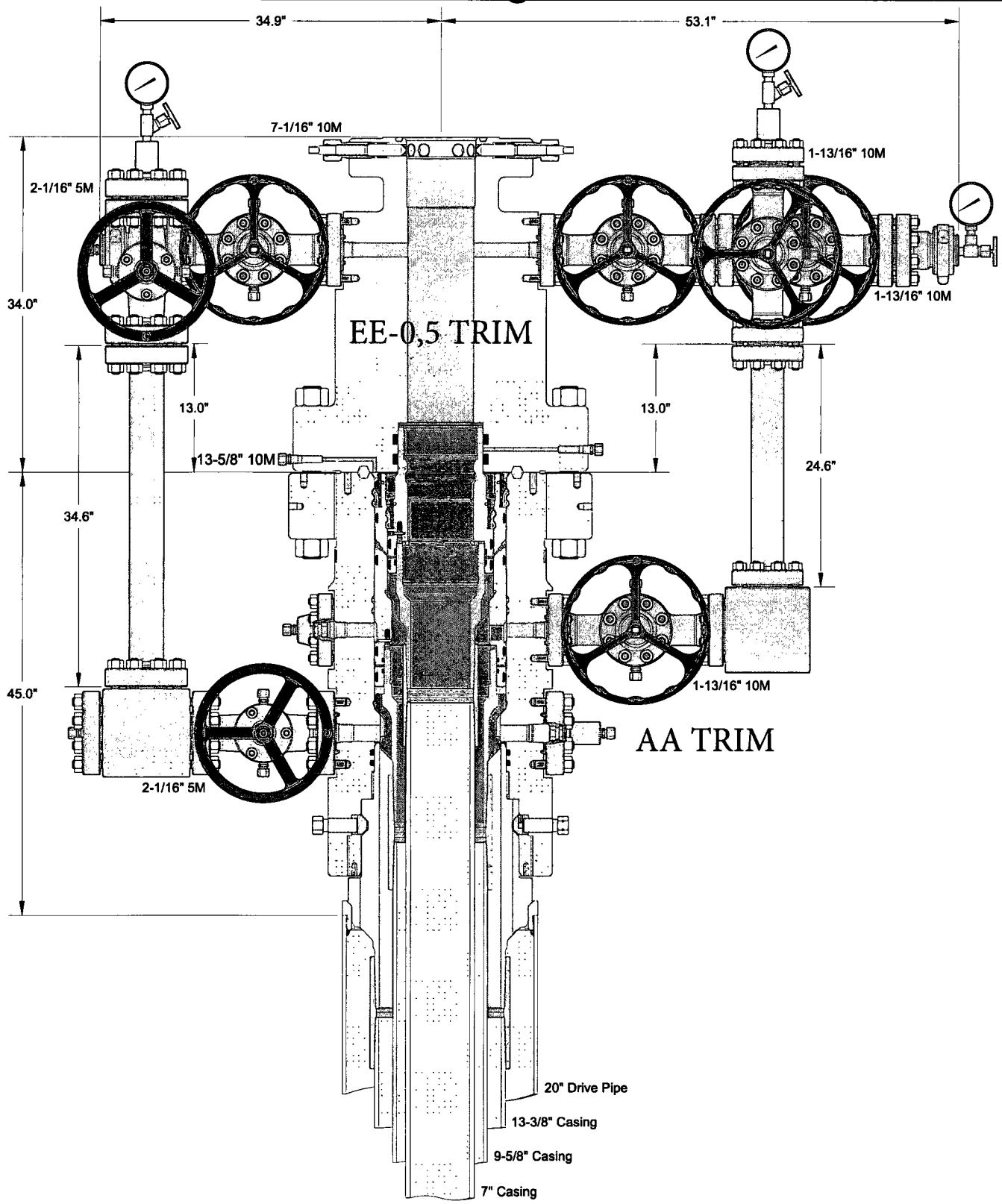
- **With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.**
  - Sound alarm (alert crew)
  - If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
  - If impossible to pick up high enough to pull the string clear of the 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



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	

WH&TH Design # 2



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	

MARATHON OIL PERMIAN LLC

DRILLING AND OPERATIONS PLAN

WELL NAME / NUMBER: CAVE LION FEDERAL 26 53 5 WXY 6H
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	1781	FWL	26S	35E	5	SESW	32.06587713 N	103.39227170 W	Lea	NM	NMP	F	NMNM013647	3263	0	0
KOP	0	FSL	1323	FWL	26S	35E	5	SESW	32.06536090 N	103.39054393 W	Lea	NM	NMP	F	NMNM013647	-8729	12033	11992
PPP	150	FSL	1323	FWL	26S	35E	5	SESW	32.06550248 N	103.39375020 W	Lea	NM	NMP	F	NMNM013647	-9302	12933	12565
BHL	150	FNL	1322	FWL	26S	35E	5	NENW	32.07920366 N	103.39377740 W	Lea	NM	NMP	F	NMNM013647	-9302	17439	12565

1. **GEOLOGIC NAME OF SURFACE FORMATION**
   a. Permian/Quatenary Alluvium

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

Formation	True Vertical Depth (ft)	Measured Depth (ft)	Lithologies	Mineral Resources	Producing Formation
Rustler	1064	1064	Anhydrite/Dolomite	BRINE	N
Salado	1503	1504	Salt/Anhydrite	BRINE	N
Castile	3541	3572	Base Salt	BRINE	N
Base of Salt	5098	5139	Limy Sands	BRINE	N
Lamar	5363	5404	Sand/Shales	OIL	Y
Bell Canyon	5391	5432	Sands/Shale	OIL	Y
Brushy Canyon	8000	8041	Sands/Carbonates	OIL	Y
Bone Spring	9291	9332	Sands/Carbonates	OIL	Y
1st Bone Spring Sand	10411	10452	Sands/Carbonates	OIL	Y
2nd Bone Spring Sand	10960	11001	Sands/Carbonates	OIL	Y
3rd Bone Spring Sand	12045	12086	Sands/Carbonates	OIL	Y
Wolfcamp	12472	12602	Carbonates/Shales/Sands	OIL	Y
Wolfcamp X	12493	12643	Carbonates/Shales/Sands	OIL	Y
Wolfcamp Y	12551	12806	Carbonates/Shales/Sands	OIL	Y
Wolfcamp A	12581	N/A	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: 8,750 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	5441	0	5400	40	J55	LTC	1.74	1.15	2.19
Intermediate II	8 3/4	7	0	11930	0	11890	29	P110	BTC	2.21	1.18	1.9
Production Liner	6 1/8	4 1/2	11630	17439	11690	12465	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 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	

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

4. CEMENT PROGRAM:

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sks)	Yield (ft3/sks)	Density (ppg)	Slurry Volume (ft3)	Excess (%)	Cement Type	Additives
Surface	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	5441	368	1.33	14.8	489	50	Class C	0.3 % Retarder
Intermediate II	Lead	--	5141	10900	545	2.7	11	1472	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
Intermediate II	Tail	--	10900	11930	185	1.09	15.6	201	30	Class H	3% extender + 0.15% Dispersant + 0.03 gal/sk retarder
Production Liner	Tail	--	11630	17439	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
0	1080	Water Based Mud	8.4	8.8	
1080	5441	Brine	9.9	10.2	
5441	11930	Cut Brine	8.8	9.4	
11930	17439	Oil Based mud	11.5	13.5	

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

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

   a. A Kelly cock will be in the drill string at all times.

   b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.

   c. Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe until total depth is reached. **If Hydrogen Sulfide is encountered , measured amounts and formations will be reported to the BLM**

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

   A. Mud Logger: None.

   B. DST's: None.

   C. Open Hole Logs: GR while drilling from Intermediate casing shoe to TD.

9. **POTENTIAL HAZARDS:**

A. H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with Onshore Order #6.

B. No abnormal temperatures or pressures are anticipated. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.

C. No losses are anticipated at this time.

D. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.

E. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS

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

Batch Drilling Plan

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

Request for Surface Rig

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

APD ID: 10400030787 **Submission Date:** 06/06/2018

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

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_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
SUPO_2___Cave_Lion_Federal_26_35_5__6__8__9__10____New_Road_Details__Section_8__20180601114701.pdf

New road type: LOCAL

Length: 401.28 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

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:

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_20180925113208.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING
Water source type: FRESH WATER LAKE
Describe type:
Source longitude: -103.40435
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 (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: -103.35456
Source latitude: 32.081768
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 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 Mountian in Section 30,T24S-R35E will be utilized for fresh water. • A temporary 10" expanding pipe transfer line will run North from pond along access rd. then East along proposed access road approx. 4.28 Miles. Proposed water suppliers Madera Brad Beckem Rockhouse
New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

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

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

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

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

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:

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

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__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

SUPO_9___CAVE_LION_FEDERAL_26_35_5__6H_10H_9H_8H____Certified_Cut___Fill_Plat_20180601103235.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-180', north-180', east-310', 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 WXY **Well Number:** 6H

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.

Well pad proposed disturbance (acres): 5.96	**Well pad interim reclamation (acres):** 1.69	**Well pad long term disturbance (acres):** 4.27
Road proposed disturbance (acres): 0.338	**Road interim reclamation (acres):** 0.112	**Road long term disturbance (acres):** 0.226
Powerline proposed disturbance (acres): 0	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0
Pipeline proposed disturbance (acres): 0	**Pipeline interim reclamation (acres):** 0	**Pipeline long term disturbance (acres):** 0
Other proposed disturbance (acres): 0	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0
Total proposed disturbance: 6.298	**Total interim reclamation:** 1.802	**Total long term disturbance:** 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

areas will be seeded with the proper BLM seed mixture free of noxious weeds. • Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.
Topsoil redistribution: The topsoil will be evenly distributed across all reclaimed areas, ripped across the slopes, and seeded accordingly. During final reclamation, Marathon will grab and evenly redistribute topsoil across the entire disturbed area, disc plowing if needed, and seeded accordingly.
Soil treatment: Topsoil will be stockpiled until interim reclamation. Topsoil and subsoil (fill) will be piled separately. The topsoil will be seeded after being spread across IR area.
Existing Vegetation at the well pad: Native Grasses, Cactus, Mesquite.

Existing Vegetation at the well pad attachment:

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

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: N/A

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: OTHER

Seed source: COMMERCIAL

Seed name: BLM Sandy LPC Mix

Source name:

Source address:

Source phone:

Seed cultivar: Broadcast

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Seed use location: WELL PAD

PLS pounds per acre: 38 **Proposed seeding season:** AUTUMN

Total pounds/Acre: 38

Seed Summary

Seed Type	Pounds/Acre
OTHER	38

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

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

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

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

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

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

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: MARATHON OIL PERMIAN LLC

Well Name: CAVE LION FEDERAL 26 35 5 WXY **Well Number:** 6H

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Pad within PA.

Use a previously conducted onsite? YES

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

Other SUPO Attachment

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe 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:

AFMSS

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

Bond Info Data Report

11/07/2018

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: