

Form 3160-3
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM9016

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No.
THUNDERCLOUD 29/30 B2AD FED COM
1H

9. API Well No.
30-015-54394

10. Field and Pool, or Exploratory
LUSK/BONE SPRING, NORTH

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 25/T18S/R31E/NMP

12. County or Parish
EDDY

13. State
NM

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

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

16. No of acres in lease
321.0

17. Spacing Unit dedicated to this well
321.0

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

19. Proposed Depth
9363 feet / 19841 feet

20. BLM/BIA Bond No. in file
FED: NM1693

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3695 feet

22. Approximate date work will start*
10/05/2023

23. Estimated duration
60 days

24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature
(Electronic Submission)

Name (Printed/Typed)
BRADLEY BISHOP / Ph: (575) 393-5905

Date
01/28/2022

Title
Regulatory

Approved by
Cody R. Layton

Name (Printed/Typed)
Cody R. Layton

Date
NOV 17 2023

Title
Sr Field Manager

Office
CFO

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.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-54394	² Pool Code 41450	³ Pool Name LUSK; BONE SPRING, NORTH
⁴ Property Code 335019	⁵ Property Name THUNDERCLOUD 29/30 B2AD FED COM	⁶ Well Number 1H
⁷ OGRID NO. 14744	⁸ Operator Name MEWBOURNE OIL COMPANY	⁹ Elevation 3695'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
A	25	18S	31E		1035	NORTH	135	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	29	18S	32E		500	NORTH	100	EAST	LEA

¹² Dedicated Acres 321.07	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16 <u>GEODETIC DATA</u> NAD 83 GRID — NM EAST <u>SURFACE LOCATION</u> N: 627149.5 — E: 700797.4 LAT: 32.7230013° N LONG: 103.8148196° W <u>KICK OFF POINT (KOP)</u> 500' FNL — 473' FEL SEC.25 N: 627681.7 — E: 700456.2 LAT: 32.7244688° N LON: 103.8159207° W <u>FIRST TAKE POINT (FTP)</u> 500' FNL — 100' FWL SEC.30 N: 627685.8 — E: 701029.0 LAT: 32.7244723° N LON: 103.8140580° W <u>PROPOSED PENETRATION POINT 2</u> 501' FNL — 0' FWL SEC.29 N: 627700.5 — E: 706244.9 LAT: 32.7244413° N LON: 103.7970976° W <u>PROPOSED PENETRATION POINT 3</u> 504' FNL — 1323' FWL SEC.29 N: 627704.2 — E: 707567.4 LAT: 32.7244331° N LON: 103.7927973° W <u>BOTTOM HOLE</u> N: 627715.1 — E: 711437.0 LAT: 32.7244082° N LONG: 103.7802147° W	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Ryan McDaniel</i> 10/2/23 Signature Date RYAN MCDANIEL Printed Name RYANMCDANIEL@MEWBOURNE.COM E-mail Address 18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 09/14/2023 Date of Survey Signature and Seal of Professional Surveyor 19680 Certificate Number
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Job No.: LS23090801R

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¹⁰ Surface Location

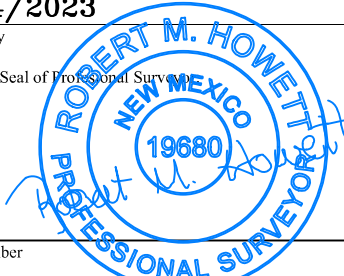
UL or lot no. A	Section 25	Township 18S	Range 31E	Lot Idn	Feet from the 1035	North/South line NORTH	Feet From the 135	East/West line EAST	County EDDY
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. A	Section 29	Township 18S	Range 32E	Lot Idn	Feet from the 500	North/South line NORTH	Feet from the 100	East/West line EAST	County LEA
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

¹⁶ <u>CORNER DATA</u> NAD 83 GRID - NM EAST <table> <tr> <td>A: FOUND BRASS CAP "1916" N: 622861.7 - E: 695676.8</td> <td>J: FOUND BRASS CAP "1913" N: 625576.7 - E: 711549.5</td> </tr> <tr> <td>B: FOUND BRASS CAP "1916" N: 625502.9 - E: 695660.5</td> <td>K: FOUND BRASS CAP "1913" N: 622933.0 - E: 711562.8</td> </tr> <tr> <td>C: FOUND BRASS CAP "1916" N: 628146.0 - E: 695610.0</td> <td>L: FOUND BRASS CAP "1913" N: 622925.8 - E: 708919.1</td> </tr> <tr> <td>D: FOUND BRASS CAP "1916" N: 628164.3 - E: 698284.7</td> <td>M: FOUND BRASS CAP "1913" N: 622919.2 - E: 706274.8</td> </tr> <tr> <td>E: FOUND BRASS CAP "1913" N: 628185.3 - E: 700925.9</td> <td>N: FOUND BRASS CAP "1913" N: 622910.9 - E: 703635.5</td> </tr> <tr> <td>F: FOUND BRASS CAP "1913" N: 628194.5 - E: 703600.1</td> <td>O: FOUND BRASS CAP "1913" N: 622903.4 - E: 700957.5</td> </tr> <tr> <td>G: FOUND BRASS CAP "1913" N: 628200.9 - E: 706241.8</td> <td>P: FOUND BRASS CAP "1916" N: 622883.6 - E: 698318.7</td> </tr> <tr> <td>H: FOUND BRASS CAP "1913" N: 628215.7 - E: 708886.8</td> <td>Q: FOUND BRASS CAP "1913" N: 625544.7 - E: 700942.5</td> </tr> <tr> <td>I: FOUND BRASS CAP "1913" N: 628214.9 - E: 711534.1</td> <td>R: FOUND BRASS CAP "1913" N: 625560.0 - E: 706258.2</td> </tr> </table>	A: FOUND BRASS CAP "1916" N: 622861.7 - E: 695676.8	J: FOUND BRASS CAP "1913" N: 625576.7 - E: 711549.5	B: FOUND BRASS CAP "1916" N: 625502.9 - E: 695660.5	K: FOUND BRASS CAP "1913" N: 622933.0 - E: 711562.8	C: FOUND BRASS CAP "1916" N: 628146.0 - E: 695610.0	L: FOUND BRASS CAP "1913" N: 622925.8 - E: 708919.1	D: FOUND BRASS CAP "1916" N: 628164.3 - E: 698284.7	M: FOUND BRASS CAP "1913" N: 622919.2 - E: 706274.8	E: FOUND BRASS CAP "1913" N: 628185.3 - E: 700925.9	N: FOUND BRASS CAP "1913" N: 622910.9 - E: 703635.5	F: FOUND BRASS CAP "1913" N: 628194.5 - E: 703600.1	O: FOUND BRASS CAP "1913" N: 622903.4 - E: 700957.5	G: FOUND BRASS CAP "1913" N: 628200.9 - E: 706241.8	P: FOUND BRASS CAP "1916" N: 622883.6 - E: 698318.7	H: FOUND BRASS CAP "1913" N: 628215.7 - E: 708886.8	Q: FOUND BRASS CAP "1913" N: 625544.7 - E: 700942.5	I: FOUND BRASS CAP "1913" N: 628214.9 - E: 711534.1	R: FOUND BRASS CAP "1913" N: 625560.0 - E: 706258.2	¹⁷ OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i> <i>Ryan McDaniel</i> 10/2/23 Signature Date RYAN MCDANIEL Printed Name RYANMCDANIEL@MEWBOURNE.COM E-mail Address ¹⁸ SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i> 09/14/2023 Date of Survey Signature and Seal of Professional Surveyor  19680 Certificate Number
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Job No.: LS23090801R

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State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description Effective May 25, 2021

I. Operator: Mewbourne Oil Co. **OGRID:** 14744 **Date:** 1/5/22

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Thundercloud 29/30 B2AD Fed Com #1H		D 28 18S 32E	1200' FNL x 205' FWL	1500	5000	1000

IV. Central Delivery Point Name: Thundercloud 29/30 B2AD Fed Com #1H [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Thundercloud 29/30 B2AD Fed Com #1H		3/5/22	4/5/22	5/5/22	5/20/22	5/20/22

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

Page 8

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	<i>Bradley Bishop</i>
Printed Name:	BRADLEY BISHOP
Title:	REGULATORY MANAGER
E-mail Address:	BBISHOP@MEWBOURNE.COM
Date:	1/5/22
Phone:	575-393-5905
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)	
Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

Mewbourne Oil Company

Natural Gas Management Plan – Attachment

- VI. Separation equipment will be sized by construction engineering staff based on stated manufacturer daily throughput capacities and anticipated daily production rates to ensure adequate capacity. Closed vent system piping, compression needs, and VRUs will be sized utilizing ProMax modelling software to ensure adequate capacity for anticipated production volumes and conditions.
- VII. Mewbourne Oil Company (MOC) will take following actions to comply with the regulations listed in 19.15.27.8 :
- A. MOC will maximize the recovery of natural gas by minimizing the waste, as defined by 19.15.2 NMAC, of natural gas through venting and flaring. MOC will ensure that well(s) will be connected to a natural gas gathering system with sufficient capacity to transport natural gas. If there is no adequate takeaway for the gas, well(s) will be shut in until the natural gas gathering system is available.
 - B. All drilling operations will be equipped with a rig flare located at least 100 ft from the nearest surface hole. Rig flare will be utilized to combust any natural gas that is brought to surface during normal drilling operations. In the case of emergency venting or flaring the volumes will be estimated and reported appropriately.
 - C. During completion operations any natural gas brought to surface will be flared. Immediately following the finish of completion operations, all well flow will be directed to permanent separation equipment. Produced natural gas from separation equipment will be sent to sales. It is not anticipated that gas will not meet pipeline standards. However, if natural gas does not meet gathering pipeline quality specifications, MOC will flare the natural gas for 60 days or until the natural gas meets the pipeline quality specifications, whichever is sooner. MOC will ensure that the flare is sized properly and is equipped with automatic igniter or continuous pilot. The gas sample will analyzed twice per week and the gas will be routed into a gathering system as soon as pipeline specifications are met.
 - D. Natural gas will not be flared with the exceptions and provisions listed in the 19.15.27.8 D.(1) through (4). If there is no adequate takeaway for the separator gas, well(s) will be shut in until the natural gas gathering system is available with exception of emergency or malfunction situations. Venting and/or flaring volumes will be estimated and reported appropriately.
 - E. MOC will comply with the performance standards requirements and provisions listed in 19.15.27.8 E.(1) through (8). All equipment will be designed and sized to handle maximum anticipated pressures and throughputs in order to minimize the waste. Production storage tanks constructed after May 25, 2021 will be equipped with automatic gauging system. Flares constructed after May 25, 2021 will be equipped with automatic igniter or continuous pilot. Flares will be located at least 100' from the well and storage tanks unless otherwise approved by the division. MOC will conduct AVO inspections as described in 19.15.27.8 E (5) (a) with frequencies specified in 19.15.27.8 E (5) (b) and (c). All emergencies will be resolved as quickly and safely as feasible to minimize waste.
 - F. The volume of natural gas that is vented or flared as the result of malfunction or emergency during drilling and completions operations will be estimated. The volume of natural gas that is vented, flared or beneficially used during production operations, will be measured or estimated. MOC will install equipment to measure

the volume of natural gas flared from existing process piping or a flowline piped from equipment such as high pressure separators, heater treaters, or vapor recovery units associated with a well or facility associated with a well authorized by an APD issued after May 25, 2021 that has an average daily production greater than 60 Mcf/day. If metering is not practicable due to circumstances such as low flow rate or low pressure venting and flaring, MOC will estimate the volume of vented or flared natural gas. Measuring equipment will conform to industry standards and will not be designed or equipped with a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment.

- VIII. For maintenance activities involving production equipment and compression, venting will be limited to the depressurization of the subject equipment to ensure safe working conditions. For maintenance of production and compression equipment the associated producing wells will be shut in to eliminate venting. For maintenance of VRUs all gas normally routed to the VRU will be routed to flare to eliminate venting.



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

Drilling Plan Data Report

11/17/2023

APD ID: 10400082980

Submission Date: 01/28/2022

Highlighted data
reflects the most
recent changes

Operator Name: MEWBOURNE OIL COMPANY

Well Name: THUNDERCLOUD 29/30 B2AD FED COM

Well Number: 1H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
8074687	UNKNOWN	3695	28	28	OTHER : Top soil	NONE	N
8074688	RUSTLER	2775	920	920	ANHYDRITE, DOLOMITE	USEABLE WATER	N
8074698	TOP SALT	2525	1170	1170	SALT	NONE	N
8074699	BOTTOM SALT	1415	2280	2280	SALT	NONE	N
8074691	YATES	1205	2490	2490	SANDSTONE	NATURAL GAS, OIL	N
8074700	SEVEN RIVERS	755	2940	2940	DOLOMITE	NATURAL GAS, OIL	N
8074692	QUEEN	105	3590	3590	DOLOMITE, SANDSTONE	NATURAL GAS, OIL	N
8074693	GRAYBURG	-205	3900	3900	ANHYDRITE, DOLOMITE, SANDSTONE	NATURAL GAS, OIL	N
8074702	SAN ANDRES	-535	4230	4230	DOLOMITE	NATURAL GAS, OIL	N
8074701	LAMAR	-1065	4760	4760	DOLOMITE, LIMESTONE	NATURAL GAS, OIL	N
8074695	BONE SPRING	-2905	6600	6600	LIMESTONE	NATURAL GAS, OIL	N
8074696	BONE SPRING 1ST	-4345	8040	8040	SANDSTONE	NATURAL GAS, OIL	N
8074697	BONE SPRING 2ND	-4985	8680	8680	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H**Pressure Rating (PSI):** 5M**Rating Depth:** 19841

Equipment: Annular Pipe Rams Blind Rams Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Requesting Variance? YES

Variance request: A variance is requested for the use of a variable choke line from the BOP to the choke manifold. See attached for hydrostatic test chart. Anchors are not required by manufacturer. Variance is requested to use a multi bowl wellhead. Variance is requested to break test BOPE according to attached procedure. Variance is requested to offline cement according to attached procedure.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per 43 CFR Part 3172 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.

Choke Diagram Attachment:

Thundercloud_29_30_B2AD_Fed_Com_1H_Flex_Line_Specs_20220127135029.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_5M_BOPE_Choke_Diagram_20220127135029.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_Flex_Line_Specs_API_16C_20220127135029.pdf

BOP Diagram Attachment:

Thundercloud_29_30_B2AD_Fed_Com_1H_5M_Mutli_Bowl_WH_20220127135108.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_5M_BOPE_Schematic_20220127135108.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_Break_Testing_Variance_20231005152422.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	1160	0	1160	3695	2535	1160	H-40	48	ST&C	1.5	3.37	DRY	5.78	DRY	9.72
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3453	0	3453		242	3453	J-55	36	LT&C	1.12	1.96	DRY	2.59	DRY	3.23
3	INTERMEDIATE	12.25	9.625	NEW	API	N	3453	4393	3453	4393	242	-698	940	J-55	40	LT&C	1.13	1.73	DRY	10.34	DRY	12.53
4	INTERMEDIATE	12.25	9.625	NEW	API	N	4393	4710	4393	4710	-698	-1015	317	N-80	40	LT&C	1.26	2.35	DRY	58.12	DRY	72.24
5	PRODUCTION	8.75	7.0	NEW	API	N	0	8479	0	8450	3695	-4755	8479	P-110	26	LT&C	1.58	2.52	DRY	3.14	DRY	3.76
6	LINER	6.125	4.5	NEW	API	N	8329	19841	8300	9363	-4605	-5668	11512	P-110	13.5	LT&C	2.19	2.55	DRY	2.17	DRY	2.72

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H**Casing Attachments**

Casing ID: 1 **String** SURFACE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAssum_20231006101909.pdf

Casing ID: 2 **String** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAssum_20231006101930.pdf

Casing ID: 3 **String** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAsmts_20231006082132.pdf

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H**Casing Attachments**

Casing ID: 4 **String** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAsmts_20231006082229.pdf

Casing ID: 5 **String** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAsmts_20231006082331.pdf

Casing ID: 6 **String** LINER**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Thundercloud2930B2ADFedCom1HCsgAsmts_20231006082540.pdf

Section 4 - Cement

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Lead		0	0	0	0	0	0		0	0

INTERMEDIATE	Lead		0	0	0	0	0	0		0	0
--------------	------	--	---	---	---	---	---	---	--	---	---

SURFACE	Lead		0	969	640	2.12	12.5	1360	100	Class C	Salt, Gel, Extender, LCM
SURFACE	Tail		969	1160	200	1.34	14.8	268	100	Class C	Retarder
INTERMEDIATE	Lead	3900	0	3555	650	2.12	12.5	1380	25	Class C	Salt, Gel, Extender, LCM
INTERMEDIATE	Tail		3555	3900	100	1.34	14.8	134	25	Class C	Retarder
INTERMEDIATE	Lead	3900	3900	4136	50	2.12	12.5	110	25	Class C	Salt, Gel, Extender, LCM, Defoamer
INTERMEDIATE	Tail		4136	4710	200	1.34	14.8	268	25	Class C	Retarder
PRODUCTION	Lead		4510	5988	130	2.12	12.5	280	25	Class C	Salt, Gel, Extender, LCM, Defoamer
PRODUCTION	Tail		5988	8479	400	1.18	15.6	472	25	Class H	Retarder, Fluid Loss, Defoamer
LINER	Lead		8329	1984 1	740	1.85	13.5	1370	25	Class H	Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H**Section 5 - Circulating Medium****Mud System Type:** Closed**Will an air or gas system be Used?** NO**Description of the equipment for the circulating system in accordance with Onshore Order #2:****Diagram of the equipment for the circulating system in accordance with Onshore Order #2:****Describe what will be on location to control well or mitigate other conditions:** Lost circulation material, sweeps, mud scavengers**Describe the mud monitoring system utilized:** Pason/PVT/visual monitoring**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
0	1160	SPUD MUD	8	8.8							
1160	4710	SALT SATURATED	10	10							
4710	8479	WATER-BASED MUD	8.6	9.7							
8479	1984 1	OIL-BASED MUD	8.6	10							

Section 6 - Test, Logging, Coring**List of production tests including testing procedures, equipment and safety measures:**

Will run GR/CNL from KOP (8529') to surface (horizontal well vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.

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

DIRECTIONAL SURVEY, GAMMA RAY LOG, MEASUREMENT WHILE DRILLING, MUD LOG/GEOLOGIC LITHOLOGY LOG, COMPENSATED NEUTRON LOG, MUD LOG/GEOLOGICAL LITHOLOGY LOG,

Coring operation description for the well:

None

Operator Name: MEWBOURNE OIL COMPANY

Well Name: THUNDERCLOUD 29/30 B2AD FED COM

Well Number: 1H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4869

Anticipated Surface Pressure: 2809

Anticipated Bottom Hole Temperature(F): 140

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

Thundercloud_29_30_B2AD_Fed_Com_1H_H2S_Plan_20220127140559.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Thundercloud_29_30_B2AD_Fed_Com_1H_MOC_Dir_Plan_20231006093802.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_MOC_Dir_Plot_20231006093802.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Thundercloud_29_30_B2AD_Fed_Com_1H_AddInfo_20231006093811.pdf

Thundercloud_29_30_B2AD_Fed_Com_1H_Drlg_Program_20231006101117.pdf

Other Variance attachment:

Thundercloud_29_30_B2AD_Fed_Com_1H_Offline_Cementing_Variance_20231006090858.pdf



GATES E & S NORTH AMERICA, INC.
134 44TH STREET
CORPUS CHRISTI, TEXAS 78405

PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: Tim.Cantu@gates.com
WEB: www.gates.com

10K CEMENTING ASSEMBLY PRESSURE TEST CERTIFICATE

Customer :	AUSTIN DISTRIBUTING	Test Date:	4/30/2015
Customer Ref. :	4060578	Hose Serial No.:	D-043015-7
Invoice No. :	500506	Created By:	JUSTIN CROPPER
Product Description:	10K3.548.0CK4.1/1610KFLGE/E LE		
End Fitting 1 :	4 1/16 10K FLG	End Fitting 2 :	4 1/16 10K FLG
Gates Part No. :	4773-6290	Assembly Code :	L36554102914D-043015-7
Working Pressure :	10,000 PSI	Test Pressure :	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality Manager :

Date :

Signature :

QUALITY
4/30/2015
<i>Justin Cropper</i>

Production:

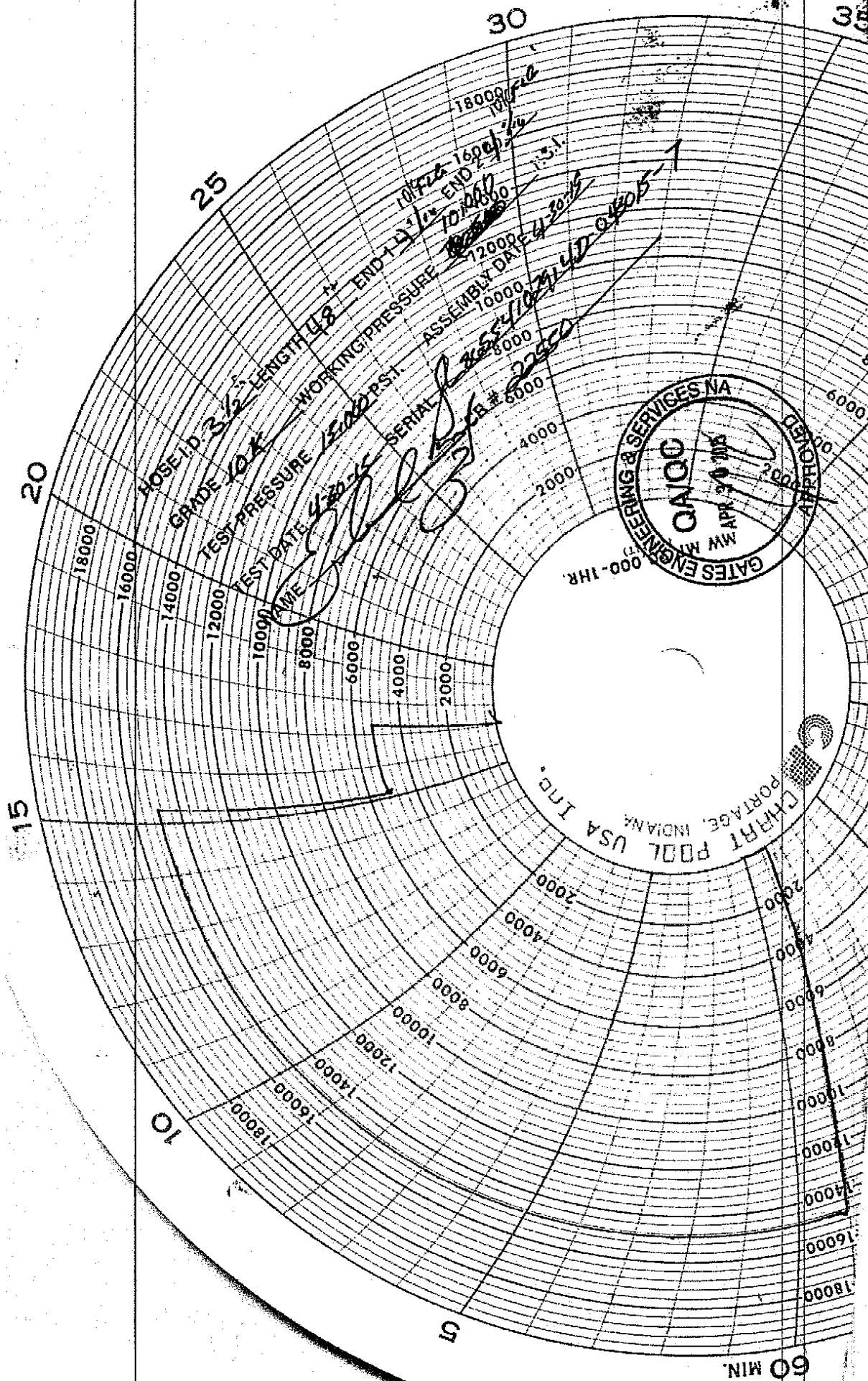
Date :

Signature :

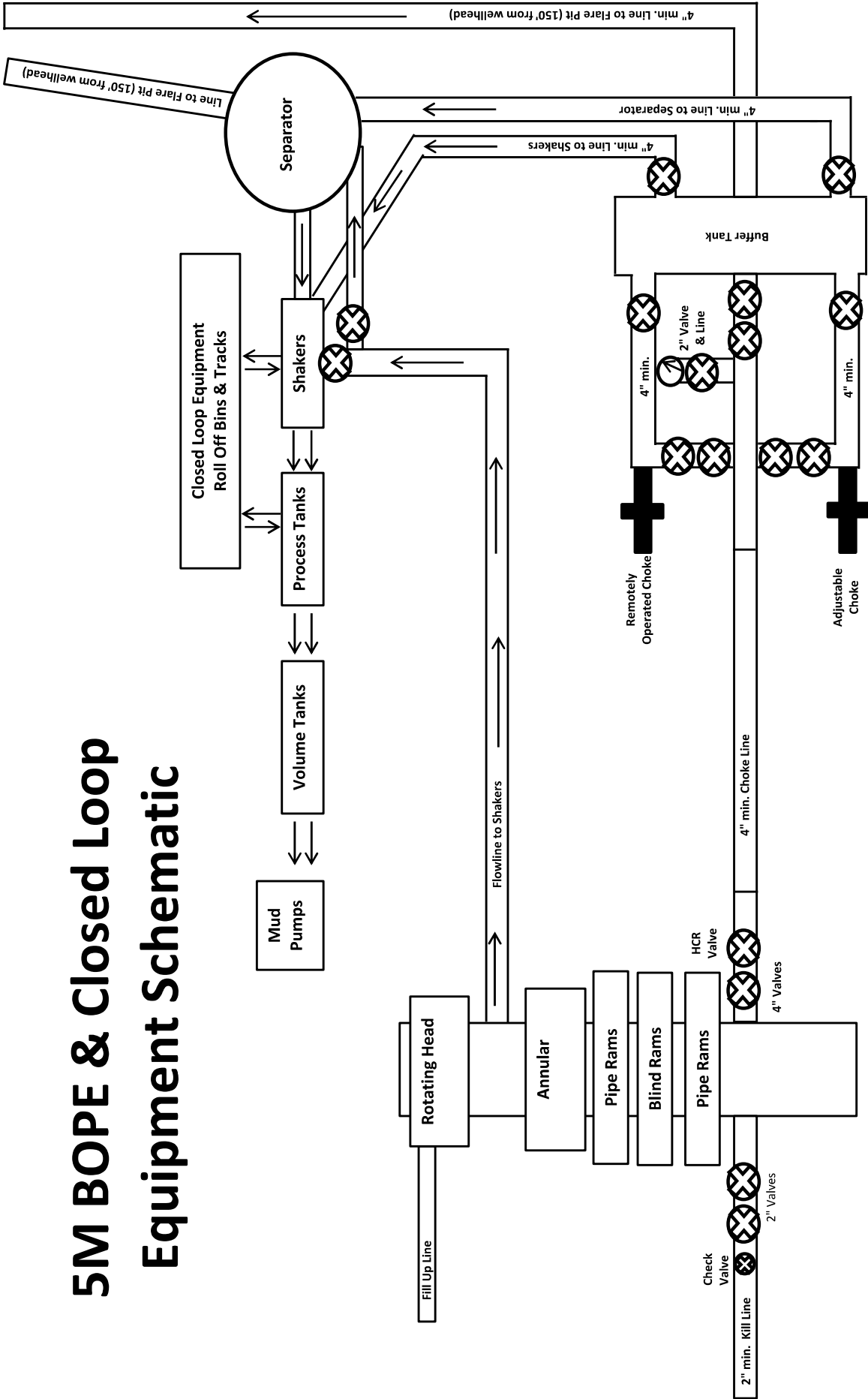
PRODUCTION
4/30/2015
<i>Justin Cropper</i>

Form PTC - 01 Rev.02





5M BOPE & Closed Loop Equipment Schematic



Note: All valves & lines on choke manifold are 4" unless otherwise noted. Exact manifold configuration may vary.

Drawing not to scale



GATES ENGINEERING & SERVICES NORTH AMERICA
7603 Prairie Oak Dr.
Houston, TX 77086

PHONE: (281) 602 - 4119
FAX:
EMAIL: Troy.Schmidt@gates.com
WEB: www.gates.com

10K CHOKE & KILL ASSEMBLY PRESSURE TEST CERTIFICATE

Customer:	A-7 AUSTIN INC DBA AUSTIN HOSE	Test Date:	8/20/2018
Customer Ref.:	4101901	Hose Serial No.:	H-082018-10
Invoice No.:	511956	Created By:	Moosa Naqvi
Product Description:	10KF3.035.0CK41/1610KFLGFXDxFLT L/E		
End Fitting 1:	4 1/16 in. Fixed Flange	End Fitting 2:	4 1/16 in. Float Flange
Gates Part No.:	68503010-9721632	Assembly Code:	L40695052218H-082018-10
Working Pressure:	10,000 psi.	Test Pressure:	15,000 psi.

Gates Engineering & Services North America certifies that the following hose assembly has successfully passed all pressure testing requirements set forth in Gates specifications: GTS-04-052 (for 5K assemblies) or GTS-04-053 (10K assemblies), which include reference to Specification API 16C (2nd Edition); sections 7.5.4, 7.5.9, and 10.8.7. A test graph will accompany this test certificate to illustrate conformity to test requirements.

Quality: QUALITY
Date : 8/20/2018
Signature : *Moosa Naqvi*

Production: PRODUCTION
Date : 8/20/2018
Signature : *[Signature]*

Form PTC - 01 Rev.0 2





13-5/8" MN-DS Wellhead System

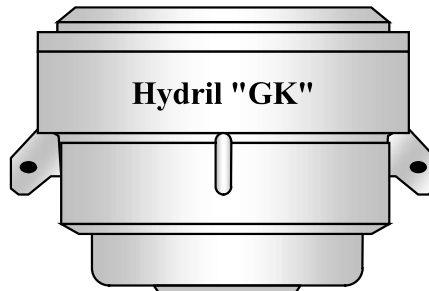
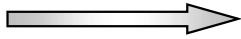


C7585
Rev. 02

NOTE: All dimensions on this drawing are estimated measurements and should be evaluated by engineering.

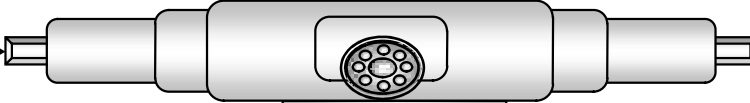
Cuffing Hanger 57" conductor cut-off

Hydril "GK"
13 5/8" 5M

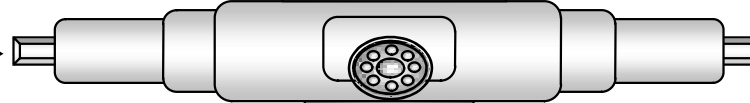


Hydril "GK"

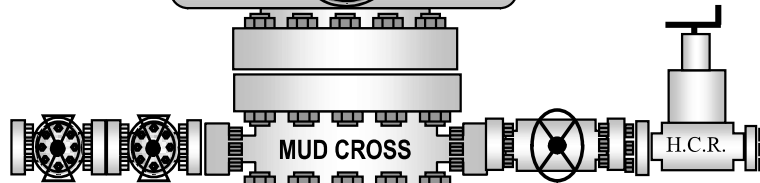
Cameron Type U
13 5/8" 5M



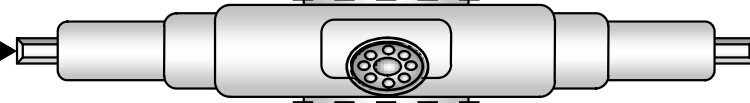
4 1/2" x 5 7/8" VBR



BLIND RAMS



MUD CROSS



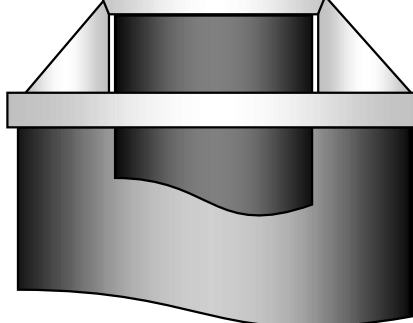
7" RAMS



13 5/8" 5M

13 5/8" 5M

13 5/8" 5M





Mewbourne Oil Co.

BOP Break Testing Variance

Mewbourne Oil Company requests a variance from the minimum standards for well control equipment testing of 43 CFR 3172 to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with batch drilling & offline cementing operations. Modern rig upgrades which facilitate pad drilling allow the BOP stack to be moved between wells on a multi-well pad without breaking any BOP stack components apart. Widespread use of these technologies has led to break testing BOPE being endorsed as safe and reliable. American Petroleum Institute (API) best practices are frequently used by regulators to develop their regulations. API Standard 53, *Well Control Equipment Systems for Drilling Wells* (5th Ed., Dec. 2018) Section 5.3.7.1 states "A pressure test of the pressure containing component shall be performed following the disconnection or repair, limited to the affected component."

Procedures

1. Full BOPE test at first installation on the pad.
 - Full BOPE test at least every 21 days.
 - Function test BOP elements per 43 CFR 3172.
 - Contact the BLM if a well control event occurs.
2. After the well section is secured and the well is confirmed to be static, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad. Two breaks on the BOPE will be made (Fig. 1).
 - Connection between the flex line and the HCR valve
 - Connection between the wellhead and the BOP quick connect (Fig. 5 & 6).
3. A capping flange will be installed after cementing per wellhead vendor procedure & casing pressure will be monitored via wellhead valve.
4. The BOP will be removed and carried by a hydraulic carrier (Fig. 3 & 4).
5. The rig will then walk to the next well.
6. Confirm that the well is static and remove the capping flange.
7. The connection between the flex line and HCR valve and the connection between the wellhead and the BOP quick connect will be reconnected.
8. Install a test plug into the wellhead.
9. A test will then be conducted against the upper pipe rams and choke, testing both breaks (Fig. 1 & 2).
10. The test will be held at 250 psi low and to the high value submitted in the APD, not to exceed 5000 psi.
11. The annular, blind rams and lower pipe rams will then be function tested.
12. If a pad consists of three or more wells, steps 4 through 11 will be repeated.



13. A break test will only be conducted if the intermediate section can be drilled and cased within 21 days of the last full BOPE test.

Barriers

Before Nipple Down:

- Floats in casing
- Kill weight fluid in casing
- Kill weight fluid in annulus
- Solid body mandrel and/or packoff

After Nipple Down:

- Floats in casing
- Kill weight fluid in casing
- Kill weight fluid in annulus
- Solid body mandrel and/or packoff
- Offline cementing tool and/or cement head
- Capping flange after cementing

Summary

A variance is requested to only test broken pressure seals on the BOPE when moving between wells on a multi-well pad if the following conditions are met:

- A full BOPE test is conducted on the first well on the pad. API Standard 53 requires testing annular BOP to 70% of RWP or 100% of MASP, whichever is greater.
- If the first well on the pad is not the well with the deepest intermediate section, a full BOPE test will also be performed when moving to a deeper well.
- The hole section being drilled has a MASP under 5000 psi.
- If a well control event occurs, Mewbourne will contact BLM for permission to continue break testing.
- If significant (>50%) losses occur, full BOPE testing will be required going forward.
- Full BOPE test will be required prior to drilling the production hole.

While walking the rig, the BOP stack will be secured via hydraulic winch or hydraulic carrier. A full BOPE test will be performed at least every 21 days.

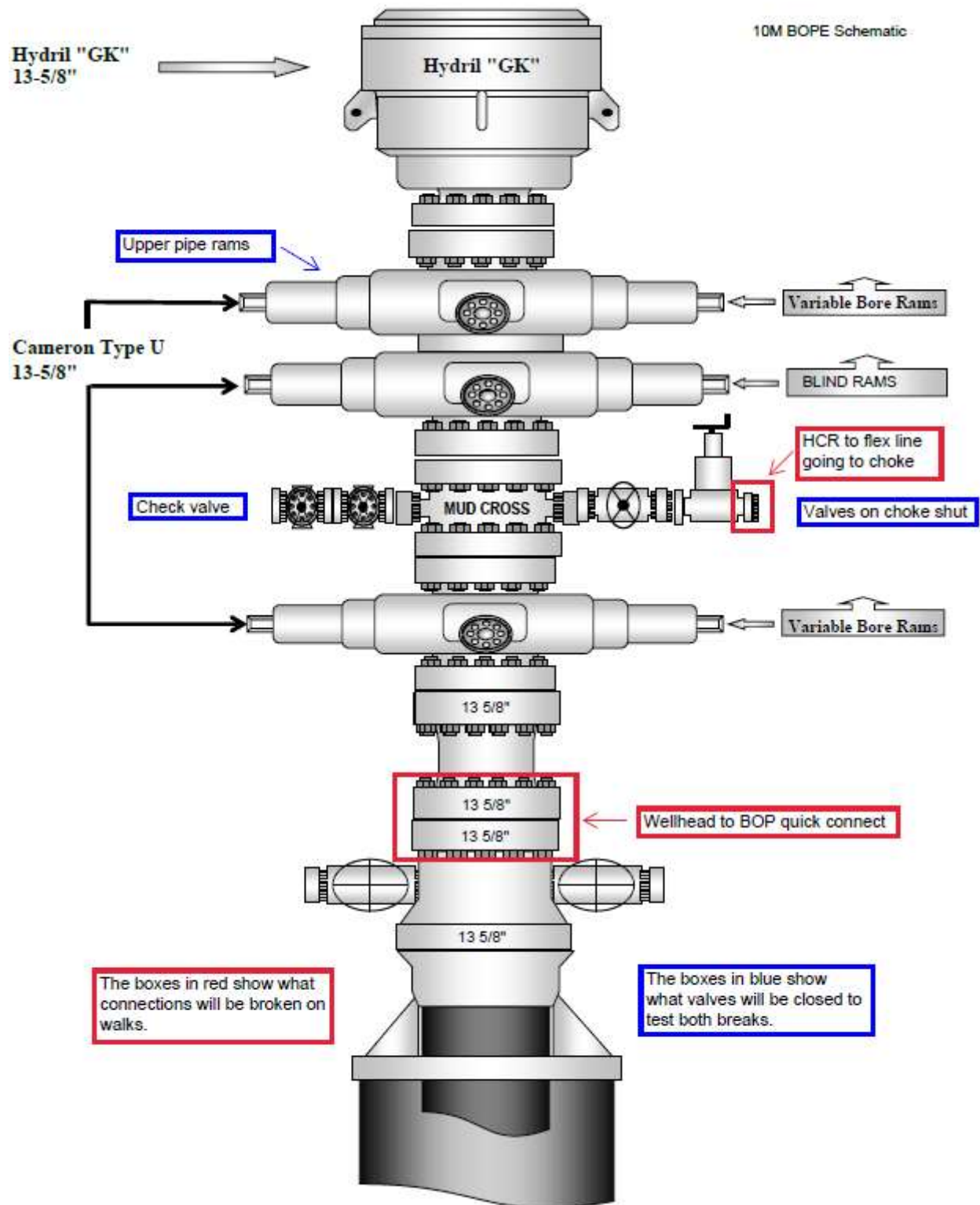


Figure 1. BOP diagram



5M BOPE & Closed Loop Equipment Schematic

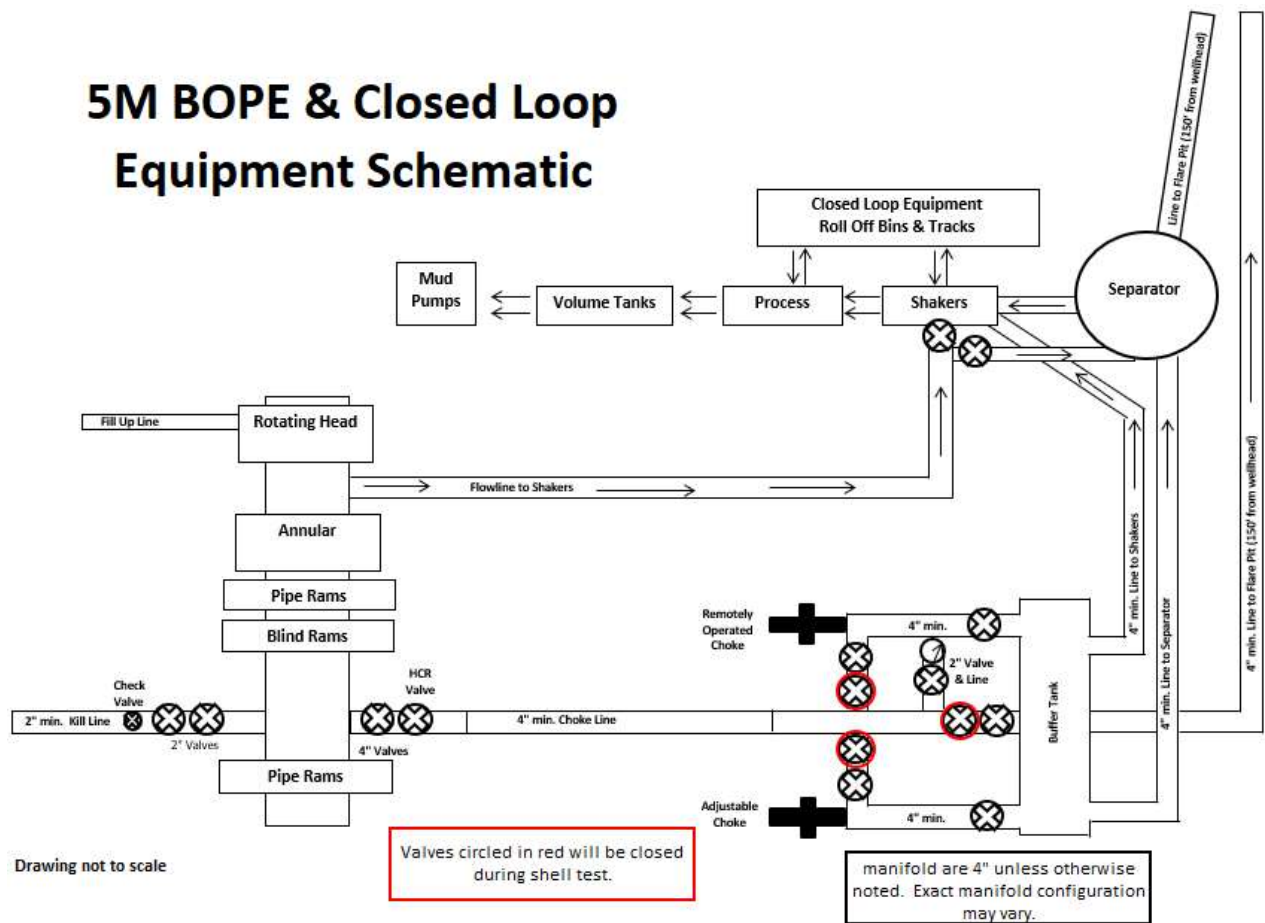


Figure 2. BOPE diagram



Figure 3. BOP handling system



Figure 4. BOP handling system

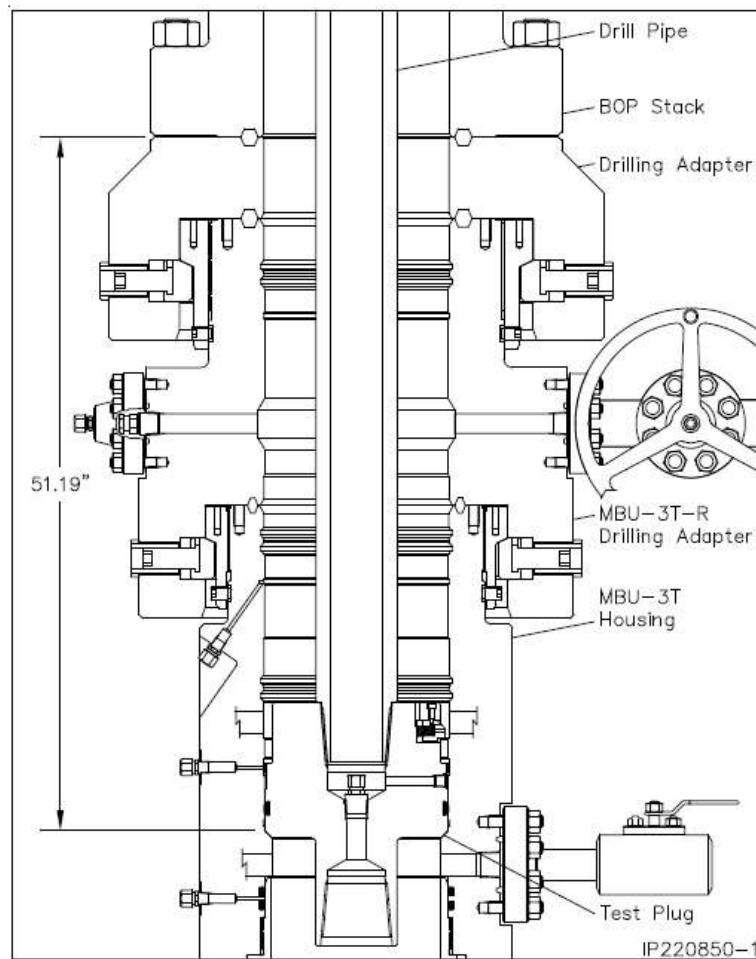


Figure 5. Cactus 5M wellhead with BOP quick connect

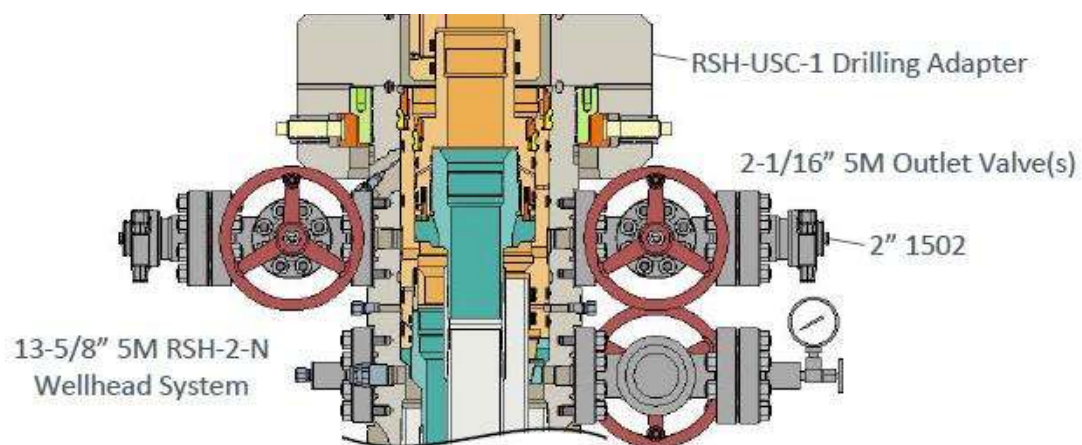


Figure 6. Vault 5M wellhead with BOP quick connect

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
Surface	17.500 in	0'	0'	1160'	1160'	13.375	48.00	H40	STC	1.50	3.37	5.78	9.72
Int	12.250 in	0'	0'	3453'	3453'	9.625	36.00	J55	LTC	1.12	1.96	2.59	3.23
Int	12.250 in	3453'	3453'	4393'	4393'	9.625	40.00	J55	LTC	1.13	1.73	10.34	12.53
Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
Liner	6.125 in	8329'	8300'	19841'	9363'	4.500	13.50	P110	LTC	2.19	2.55	2.17	2.72
BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9.5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 8479'	9	Cut-Brine
8479' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5 in	0'	1160'	13.375 in	48.0	H40	STC	1.50	3.37	5.78	9.72
12.25 in	0'	3453'	9.625 in	36.0	J55	LTC	1.13	1.96	2.59	3.23
12.25 in	3453'	4393'	9.625 in	40.0	J55	LTC	1.13	1.73	10.34	12.53
12.250 in	4393'	4710'	9.625 in	40.0	N80	LTC	1.26	2.35	58.15	72.28
8.750 in	0'	9429'	7.0 in	26.0	P110	LTC	1.47	2.34	2.83	3.39
6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
Surface	17.500 in	0'	0'	1160'	1160'	13.375	48.00	H40	STC	1.50	3.37	5.78	9.72
Int	12.250 in	0'	0'	3453'	3453'	9.625	36.00	J55	LTC	1.12	1.96	2.59	3.23
Int	12.250 in	3453'	3453'	4393'	4393'	9.625	40.00	J55	LTC	1.13	1.73	10.34	12.53
Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
Liner	6.125 in	8329'	8300'	19841'	9363'	4.500	13.50	P110	LTC	2.19	2.55	2.17	2.72
BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9 5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 8479'	9	Cut-Brine
8479' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5 in	0'	1160'	13.375 in	48.0	H40	STC	1.50	3.37	5.78	9.72
12.25 in	0'	3453'	9.625 in	36.0	J55	LTC	1.13	1.96	2.59	3.23
12.25 in	3453'	4393'	9.625 in	40.0	J55	LTC	1.13	1.73	10.34	12.53
12.250 in	4393'	4710'	9.625 in	40.0	N80	LTC	1.26	2.35	58.15	72.28
8.750 in	0'	9429'	7.0 in	26.0	P110	LTC	1.47	2.34	2.83	3.39
6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
Surface	17.500 in	0'	0'	1160'	1160'	13.375	48.00	H40	STC	1.50	3.37	5.78	9.72
Int	12.250 in	0'	0'	3453'	3453'	9.625	36.00	J55	LTC	1.12	1.96	2.59	3.23
Int	12.250 in	3453'	3453'	4393'	4393'	9.625	40.00	J55	LTC	1.13	1.73	10.34	12.53
Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
Liner	6.125 in	8329'	8300'	19841'	9363'	4.500	13.50	P110	LTC	2.19	2.55	2.17	2.72
BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9 5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 8479'	9	Cut-Brine
8479' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5 in	0'	1160'	13.375 in	48.0	H40	STC	1.50	3.37	5.78	9.72
12.25 in	0'	3453'	9.625 in	36.0	J55	LTC	1.13	1.96	2.59	3.23
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6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
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Yates	2490'	Oil/Natural Gas	Manzanita Marker		
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Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
Is well located in high Cave/Karst?	0
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?	

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
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Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
Liner	6.125 in	8329'	8300'	19841'	9363'	4.500	13.50	P110	LTC	2.19	2.55	2.17	2.72
BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9.5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 8479'	9	Cut-Brine
8479' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5 in	0'	1160'	13.375 in	48.0	H40	STC	1.50	3.37	5.78	9.72
12.25 in	0'	3453'	9.625 in	36.0	J55	LTC	1.13	1.96	2.59	3.23
12.25 in	3453'	4393'	9.625 in	40.0	J55	LTC	1.13	1.73	10.34	12.53
12.250 in	4393'	4710'	9.625 in	40.0	N80	LTC	1.26	2.35	58.15	72.28
8.750 in	0'	9429'	7.0 in	26.0	P110	LTC	1.47	2.34	2.83	3.39
6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
Is well located in high Cave/Karst?	0
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?	

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
Surface	17.500 in	0'	0'	1160'	1160'	13.375	48.00	H40	STC	1.50	3.37	5.78	9.72
Int	12.250 in	0'	0'	3453'	3453'	9.625	36.00	J55	LTC	1.12	1.96	2.59	3.23
Int	12.250 in	3453'	3453'	4393'	4393'	9.625	40.00	J55	LTC	1.13	1.73	10.34	12.53
Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
Liner	6.125 in	8329'	8300'	19841'	9363'	4.500	13.50	P110	LTC	2.19	2.55	2.17	2.72
BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9.5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 8479'	9	Cut-Brine
8479' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5 in	0'	1160'	13.375 in	48.0	H40	STC	1.50	3.37	5.78	9.72
12.25 in	0'	3453'	9.625 in	36.0	J55	LTC	1.13	1.96	2.59	3.23
12.25 in	3453'	4393'	9.625 in	40.0	J55	LTC	1.13	1.73	10.34	12.53
12.250 in	4393'	4710'	9.625 in	40.0	N80	LTC	1.26	2.35	58.15	72.28
8.750 in	0'	9429'	7.0 in	26.0	P110	LTC	1.47	2.34	2.83	3.39
6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
Is well located in high Cave/Karst?	0
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?	

Casing Program Design A

String	Hole Size	Top MD	Top TVD	Bot MD	Bot TVD	Csg. Size	Weight	Grade	Conn.	SF	SF	SF Jt	SF Body
							(lbs)			Collapse	Burst	Tension	Tension
Surface	17.500 in	0'	0'	1160'	1160'	13.375	48.00	H40	STC	1.50	3.37	5.78	9.72
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Int	12.250 in	3453'	3453'	4393'	4393'	9.625	40.00	J55	LTC	1.13	1.73	10.34	12.53
Int	12.250 in	4393'	4393'	4710'	4710'	9.625	40.00	N80	LTC	1.26	2.35	58.12	72.24
Production	8.750 in	0'	0'	8479'	8450'	7.000	26.00	P110	LTC	1.58	2.52	3.14	3.76
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BLM Minimum Safety Factors										1.125	1.0	1.6 Dry	1.6 Dry
												1.8 Wet	1.8 Wet

Cement Program

Casing		# Sacks	Wt. lb/gal	Yield ft³/sack	TOC/BOC	Volume ft³	% Excess	Slurry Description
13.375 in	LEAD	640	12.5	2.12	0' - 969'	1360	100%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	969' - 1160'	268		Class C: Retarder
1st Stg 9.625 in	LEAD	50	12.5	2.12	3900' - 4136'	110	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34	4136' - 4710'	268		Class C: Retarder
9 5/8" DV Tool @ 3900'								
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0' - 3555'	1380	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34	3555' - 3900'	134		Class C: Retarder
7 in	LEAD	130	12.5	2.12	4510' - 5988'	280	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18	5988' - 8479'	472		Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	740	13.5	1.85	8329' - 19841'	1370	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-

Design A - Mud Program

Depth	Mud Wt	Mud Type
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San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
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?	

Design B - Casing Program

Hole Size	From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
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12.250 in	4393'	4710'	9.625 in	40.0	N80	LTC	1.26	2.35	58.15	72.28
8.750 in	0'	9429'	7.0 in	26.0	P110	LTC	1.47	2.34	2.83	3.39
6.125 in	8529'	19841'	4.5 in	13.5	P110	LTC	2.19	2.55	2.21	2.76
BLM Minimum Safety Factors							1.125	1.0	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Design B - Cement Program

Casing		# Sacks	Wt. lb/gal	Yield cu.ft/sack	TOC	% Excess	Slurry Description
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1st Stg 9.625 in	LEAD	50	12.5	2.12	3900	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	200	14.8	1.34			Class C: Retarder
7" DV Tool @ 3900'							
2nd Stg 9.625 in	LEAD	650	12.5	2.12	0	25%	Class C: Salt, Gel, Extender, LCM
	TAIL	100	14.8	1.34			Class C: Retarder
7 in	LEAD	220	12.5	2.12	4510	25%	Class C: Salt, Gel, Extender, LCM, Defoamer
	TAIL	400	15.6	1.18			Class H: Retarder, Fluid Loss, Defoamer
4.5 in	LEAD	720	13.5	1.85	8529	25%	Class H: Salt, Gel, Fluid Loss, Retarder, Dispersant, Defoamer, Anti-settling Agent

Design B - Mud Program

Depth	Mud Wt	Mud Type
0' - 1160'	8.5	Fresh Water
1160' - 4710'	10	Brine
4710' - 9429'	9	Cut-Brine
9429' - 19841'	10	OBM

Geology

Formation	Est. Top (TVD)	Mineral Resources	Formation	Est. Top (TVD)	Mineral Resources
Rustler	920'	Usable Water	Yeso		
Castile			Delaware (Lamar)	4760'	Oil/Natural Gas
Salt Top	1170'	None	Bell Canyon		
Salt Base	2280'	None	Cherry Canyon		
Yates	2490'	Oil/Natural Gas	Manzanita Marker		
Seven Rivers	2940'	Oil/Natural Gas	Basal Brushy Canyon		
Queen	3590'	Oil/Natural Gas	Bone Spring	6600'	Oil/Natural Gas
Capitan			1st Bone Spring	8040'	Oil/Natural Gas
Grayburg	3900'	None	2nd Bone Spring	8680'	Oil/Natural Gas
San Andres	4230'	Oil/Natural Gas	3rd Bone Spring		
Glorieta			Wolfcamp		

All casing strings will be tested in accordance with 43 CFR Part 3170 Subpart 3172. Must have table for contingency casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 nd string set 100' to 600' below the base of salt?	
Is an open annulus used to satisfy R-111-Q? If yes, see cement design.	
Is an engineered weak point used to satisfy R-111-Q?	
If yes, at what depth is the weak point planned?	
Is well located in high Cave/Karst?	0
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?	

Mewbourne Oil Company

Eddy County, New Mexico NAD 83

Thundercloud 29/30 B2AD Fed Com #1H

Sec 25, T18S, R31E

SHL: 1035' FNL & 135' FEL (Sec 25)

BHL: 500' FNL & 100' FEL (Sec 29)

Plan: Design #1

Standard Planning Report

02 October, 2023

Planning Report

Database:	Hobbs	Local Co-ordinate Reference:	Site Thundercloud 29/30 B2AD Fed Com #1H
Company:	Mewbourne Oil Company	TVD Reference:	WELL @ 3723.0usft (Original Well Elev)
Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Project	Eddy County, New Mexico NAD 83		
Map System:	US State Plane 1983	System Datum:	Ground Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Thundercloud 29/30 B2AD Fed Com #1H			
Site Position:		Northing:	627,149.50 usft	Latitude: 32.7230015
From:	Map	Easting:	700,797.40 usft	Longitude: -103.8148197
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	

Well	Sec 25, T18S, R31E			
Well Position	+N/-S	0.0 usft	Northing:	627,149.50 usft
	+E/-W	0.0 usft	Easting:	700,797.40 usft
Position Uncertainty		0.0 usft	Wellhead Elevation:	3,723.0 usft
Grid Convergence:		0.28 °	Ground Level:	3,695.0 usft

Wellbore	BHL: 500' FNL & 100' FEL (Sec 29)				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/31/2014	7.30	60.52	48,507.72329387

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	86.96

Plan Survey Tool Program	Date	10/2/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	19,840.7	Design #1 (BHL: 500' FNL & 100'	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,350.0	0.00	0.00	1,350.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,612.2	5.24	327.34	1,611.8	10.1	-6.5	2.00	2.00	0.00	327.34	
8,266.4	5.24	327.34	8,238.2	522.1	-334.7	0.00	0.00	0.00	0.00	
8,528.6	0.00	0.00	8,500.0	532.2	-341.2	2.00	-2.00	0.00	180.00	KOP: 500' FNL & 473
9,413.1	88.41	89.83	9,073.0	533.9	216.1	10.00	10.00	0.00	89.83	
19,840.7	88.41	89.83	9,363.0	565.6	10,639.6	0.00	0.00	0.00	0.00	BHL: 500' FNL & 100'

Planning Report

Database:	Hobbs	Local Co-ordinate Reference:	Site Thundercloud 29/30 B2AD Fed Com #1H
Company:	Mewbourne Oil Company	TVD Reference:	WELL @ 3723.0usft (Original Well Elev)
Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL: 1035' FNL & 135' FEL (Sec 25)									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,350.0	0.00	0.00	1,350.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	1.00	327.34	1,400.0	0.4	-0.2	-0.2	2.00	2.00	0.00
1,500.0	3.00	327.34	1,499.9	3.3	-2.1	-1.9	2.00	2.00	0.00
1,600.0	5.00	327.34	1,599.7	9.2	-5.9	-5.4	2.00	2.00	0.00
1,612.2	5.24	327.34	1,611.8	10.1	-6.5	-5.9	2.00	2.00	0.00
1,700.0	5.24	327.34	1,699.3	16.9	-10.8	-9.9	0.00	0.00	0.00
1,800.0	5.24	327.34	1,798.8	24.5	-15.7	-14.4	0.00	0.00	0.00
1,900.0	5.24	327.34	1,898.4	32.2	-20.7	-18.9	0.00	0.00	0.00
2,000.0	5.24	327.34	1,998.0	39.9	-25.6	-23.4	0.00	0.00	0.00
2,100.0	5.24	327.34	2,097.6	47.6	-30.5	-28.0	0.00	0.00	0.00
2,200.0	5.24	327.34	2,197.2	55.3	-35.5	-32.5	0.00	0.00	0.00
2,300.0	5.24	327.34	2,296.8	63.0	-40.4	-37.0	0.00	0.00	0.00
2,400.0	5.24	327.34	2,396.3	70.7	-45.3	-41.5	0.00	0.00	0.00
2,500.0	5.24	327.34	2,495.9	78.4	-50.3	-46.0	0.00	0.00	0.00
2,600.0	5.24	327.34	2,595.5	86.1	-55.2	-50.6	0.00	0.00	0.00
2,700.0	5.24	327.34	2,695.1	93.8	-60.1	-55.1	0.00	0.00	0.00
2,800.0	5.24	327.34	2,794.7	101.5	-65.1	-59.6	0.00	0.00	0.00
2,900.0	5.24	327.34	2,894.2	109.2	-70.0	-64.1	0.00	0.00	0.00
3,000.0	5.24	327.34	2,993.8	116.9	-74.9	-68.6	0.00	0.00	0.00
3,100.0	5.24	327.34	3,093.4	124.6	-79.9	-73.1	0.00	0.00	0.00
3,200.0	5.24	327.34	3,193.0	132.3	-84.8	-77.7	0.00	0.00	0.00
3,300.0	5.24	327.34	3,292.6	140.0	-89.7	-82.2	0.00	0.00	0.00
3,400.0	5.24	327.34	3,392.2	147.7	-94.7	-86.7	0.00	0.00	0.00
3,500.0	5.24	327.34	3,491.7	155.4	-99.6	-91.2	0.00	0.00	0.00
3,600.0	5.24	327.34	3,591.3	163.0	-104.5	-95.7	0.00	0.00	0.00
3,700.0	5.24	327.34	3,690.9	170.7	-109.5	-100.2	0.00	0.00	0.00
3,800.0	5.24	327.34	3,790.5	178.4	-114.4	-104.8	0.00	0.00	0.00
3,900.0	5.24	327.34	3,890.1	186.1	-119.3	-109.3	0.00	0.00	0.00
4,000.0	5.24	327.34	3,989.6	193.8	-124.3	-113.8	0.00	0.00	0.00
4,100.0	5.24	327.34	4,089.2	201.5	-129.2	-118.3	0.00	0.00	0.00
4,200.0	5.24	327.34	4,188.8	209.2	-134.1	-122.8	0.00	0.00	0.00
4,300.0	5.24	327.34	4,288.4	216.9	-139.1	-127.4	0.00	0.00	0.00
4,400.0	5.24	327.34	4,388.0	224.6	-144.0	-131.9	0.00	0.00	0.00
4,500.0	5.24	327.34	4,487.5	232.3	-148.9	-136.4	0.00	0.00	0.00
4,600.0	5.24	327.34	4,587.1	240.0	-153.9	-140.9	0.00	0.00	0.00
4,700.0	5.24	327.34	4,686.7	247.7	-158.8	-145.4	0.00	0.00	0.00
4,800.0	5.24	327.34	4,786.3	255.4	-163.7	-149.9	0.00	0.00	0.00
4,900.0	5.24	327.34	4,885.9	263.1	-168.7	-154.5	0.00	0.00	0.00
5,000.0	5.24	327.34	4,985.5	270.8	-173.6	-159.0	0.00	0.00	0.00

Planning Report

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Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	5.24	327.34	5,085.0	278.5	-178.5	-163.5	0.00	0.00	0.00
5,200.0	5.24	327.34	5,184.6	286.2	-183.5	-168.0	0.00	0.00	0.00
5,300.0	5.24	327.34	5,284.2	293.9	-188.4	-172.5	0.00	0.00	0.00
5,400.0	5.24	327.34	5,383.8	301.5	-193.3	-177.0	0.00	0.00	0.00
5,500.0	5.24	327.34	5,483.4	309.2	-198.3	-181.6	0.00	0.00	0.00
5,600.0	5.24	327.34	5,582.9	316.9	-203.2	-186.1	0.00	0.00	0.00
5,700.0	5.24	327.34	5,682.5	324.6	-208.1	-190.6	0.00	0.00	0.00
5,800.0	5.24	327.34	5,782.1	332.3	-213.1	-195.1	0.00	0.00	0.00
5,900.0	5.24	327.34	5,881.7	340.0	-218.0	-199.6	0.00	0.00	0.00
6,000.0	5.24	327.34	5,981.3	347.7	-222.9	-204.2	0.00	0.00	0.00
6,100.0	5.24	327.34	6,080.8	355.4	-227.9	-208.7	0.00	0.00	0.00
6,200.0	5.24	327.34	6,180.4	363.1	-232.8	-213.2	0.00	0.00	0.00
6,300.0	5.24	327.34	6,280.0	370.8	-237.7	-217.7	0.00	0.00	0.00
6,400.0	5.24	327.34	6,379.6	378.5	-242.7	-222.2	0.00	0.00	0.00
6,500.0	5.24	327.34	6,479.2	386.2	-247.6	-226.7	0.00	0.00	0.00
6,600.0	5.24	327.34	6,578.8	393.9	-252.5	-231.3	0.00	0.00	0.00
6,700.0	5.24	327.34	6,678.3	401.6	-257.5	-235.8	0.00	0.00	0.00
6,800.0	5.24	327.34	6,777.9	409.3	-262.4	-240.3	0.00	0.00	0.00
6,900.0	5.24	327.34	6,877.5	417.0	-267.3	-244.8	0.00	0.00	0.00
7,000.0	5.24	327.34	6,977.1	424.7	-272.3	-249.3	0.00	0.00	0.00
7,100.0	5.24	327.34	7,076.7	432.4	-277.2	-253.8	0.00	0.00	0.00
7,200.0	5.24	327.34	7,176.2	440.1	-282.1	-258.4	0.00	0.00	0.00
7,300.0	5.24	327.34	7,275.8	447.7	-287.1	-262.9	0.00	0.00	0.00
7,400.0	5.24	327.34	7,375.4	455.4	-292.0	-267.4	0.00	0.00	0.00
7,500.0	5.24	327.34	7,475.0	463.1	-296.9	-271.9	0.00	0.00	0.00
7,600.0	5.24	327.34	7,574.6	470.8	-301.9	-276.4	0.00	0.00	0.00
7,700.0	5.24	327.34	7,674.2	478.5	-306.8	-281.0	0.00	0.00	0.00
7,800.0	5.24	327.34	7,773.7	486.2	-311.7	-285.5	0.00	0.00	0.00
7,900.0	5.24	327.34	7,873.3	493.9	-316.7	-290.0	0.00	0.00	0.00
8,000.0	5.24	327.34	7,972.9	501.6	-321.6	-294.5	0.00	0.00	0.00
8,100.0	5.24	327.34	8,072.5	509.3	-326.5	-299.0	0.00	0.00	0.00
8,200.0	5.24	327.34	8,172.1	517.0	-331.5	-303.5	0.00	0.00	0.00
8,266.4	5.24	327.34	8,238.2	522.1	-334.7	-306.5	0.00	0.00	0.00
8,300.0	4.57	327.34	8,271.7	524.5	-336.3	-308.0	2.00	-2.00	0.00
8,400.0	2.57	327.34	8,371.5	529.8	-339.6	-311.0	2.00	-2.00	0.00
8,500.0	0.57	327.34	8,471.4	532.1	-341.1	-312.4	2.00	-2.00	0.00
8,528.6	0.00	0.00	8,500.0	532.2	-341.2	-312.5	2.00	-2.00	0.00
KOP: 500' FNL & 473' FEL (Sec 25)									
8,550.0	2.14	89.83	8,521.4	532.2	-340.8	-312.1	10.00	10.00	0.00
8,600.0	7.14	89.83	8,571.2	532.2	-336.8	-308.0	10.00	10.00	0.00
8,650.0	12.14	89.83	8,620.5	532.2	-328.4	-299.7	10.00	10.00	0.00
8,700.0	17.13	89.83	8,668.9	532.3	-315.8	-287.1	10.00	10.00	0.00
8,750.0	22.13	89.83	8,715.9	532.3	-299.0	-270.3	10.00	10.00	0.00
8,800.0	27.13	89.83	8,761.4	532.4	-278.1	-249.5	10.00	10.00	0.00
8,850.0	32.13	89.83	8,804.8	532.5	-253.4	-224.8	10.00	10.00	0.00
8,900.0	37.12	89.83	8,846.0	532.6	-225.0	-196.4	10.00	10.00	0.00
8,950.0	42.12	89.83	8,884.5	532.7	-193.1	-164.6	10.00	10.00	0.00
9,000.0	47.12	89.83	8,920.0	532.8	-158.0	-129.5	10.00	10.00	0.00
9,050.0	52.12	89.83	8,952.4	532.9	-120.0	-91.5	10.00	10.00	0.00
9,100.0	57.12	89.83	8,981.4	533.0	-79.2	-50.8	10.00	10.00	0.00
9,150.0	62.11	89.83	9,006.7	533.1	-36.1	-7.7	10.00	10.00	0.00
9,200.0	67.11	89.83	9,028.1	533.3	9.1	37.4	10.00	10.00	0.00
9,250.0	72.11	89.83	9,045.5	533.4	55.9	84.2	10.00	10.00	0.00

Planning Report

Database:	Hobbs	Local Co-ordinate Reference:	Site Thundercloud 29/30 B2AD Fed Com #1H
Company:	Mewbourne Oil Company	TVD Reference:	WELL @ 3723.0usft (Original Well Elev)
Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,300.0	77.11	89.83	9,058.8	533.6	104.1	132.3	10.00	10.00	0.00
9,350.0	82.10	89.83	9,067.8	533.7	153.3	181.4	10.00	10.00	0.00
9,400.0	87.10	89.83	9,072.5	533.9	203.0	231.1	10.00	10.00	0.00
9,413.1	88.41	89.83	9,073.0	533.9	216.1	244.1	10.00	10.00	0.00
9,428.6	88.41	89.83	9,073.4	533.9	231.6	259.6	0.00	0.00	0.00
FTP/LP: 500' FNL & 100' FWL (Sec 30)									
9,500.0	88.41	89.83	9,075.4	534.2	303.0	330.9	0.00	0.00	0.00
9,600.0	88.41	89.83	9,078.2	534.5	402.9	430.8	0.00	0.00	0.00
9,700.0	88.41	89.83	9,081.0	534.8	502.9	530.6	0.00	0.00	0.00
9,800.0	88.41	89.83	9,083.8	535.1	602.9	630.4	0.00	0.00	0.00
9,900.0	88.41	89.83	9,086.5	535.4	702.8	730.3	0.00	0.00	0.00
10,000.0	88.41	89.83	9,089.3	535.7	802.8	830.1	0.00	0.00	0.00
10,100.0	88.41	89.83	9,092.1	536.0	902.8	929.9	0.00	0.00	0.00
10,200.0	88.41	89.83	9,094.9	536.3	1,002.7	1,029.8	0.00	0.00	0.00
10,300.0	88.41	89.83	9,097.7	536.6	1,102.7	1,129.6	0.00	0.00	0.00
10,400.0	88.41	89.83	9,100.4	536.9	1,202.6	1,229.4	0.00	0.00	0.00
10,500.0	88.41	89.83	9,103.2	537.2	1,302.6	1,329.3	0.00	0.00	0.00
10,600.0	88.41	89.83	9,106.0	537.5	1,402.6	1,429.1	0.00	0.00	0.00
10,700.0	88.41	89.83	9,108.8	537.8	1,502.5	1,528.9	0.00	0.00	0.00
10,800.0	88.41	89.83	9,111.6	538.1	1,602.5	1,628.8	0.00	0.00	0.00
10,900.0	88.41	89.83	9,114.4	538.4	1,702.4	1,728.6	0.00	0.00	0.00
11,000.0	88.41	89.83	9,117.1	538.7	1,802.4	1,828.5	0.00	0.00	0.00
11,100.0	88.41	89.83	9,119.9	539.0	1,902.4	1,928.3	0.00	0.00	0.00
11,200.0	88.41	89.83	9,122.7	539.3	2,002.3	2,028.1	0.00	0.00	0.00
11,300.0	88.41	89.83	9,125.5	539.6	2,102.3	2,128.0	0.00	0.00	0.00
11,400.0	88.41	89.83	9,128.3	539.9	2,202.2	2,227.8	0.00	0.00	0.00
11,500.0	88.41	89.83	9,131.0	540.2	2,302.2	2,327.6	0.00	0.00	0.00
11,600.0	88.41	89.83	9,133.8	540.5	2,402.2	2,427.5	0.00	0.00	0.00
11,700.0	88.41	89.83	9,136.6	540.8	2,502.1	2,527.3	0.00	0.00	0.00
11,800.0	88.41	89.83	9,139.4	541.2	2,602.1	2,627.1	0.00	0.00	0.00
11,900.0	88.41	89.83	9,142.2	541.5	2,702.0	2,727.0	0.00	0.00	0.00
12,000.0	88.41	89.83	9,144.9	541.8	2,802.0	2,826.8	0.00	0.00	0.00
12,100.0	88.41	89.83	9,147.7	542.1	2,902.0	2,926.7	0.00	0.00	0.00
12,200.0	88.41	89.83	9,150.5	542.4	3,001.9	3,026.5	0.00	0.00	0.00
12,300.0	88.41	89.83	9,153.3	542.7	3,101.9	3,126.3	0.00	0.00	0.00
12,400.0	88.41	89.83	9,156.1	543.0	3,201.9	3,226.2	0.00	0.00	0.00
12,500.0	88.41	89.83	9,158.9	543.3	3,301.8	3,326.0	0.00	0.00	0.00
12,600.0	88.41	89.83	9,161.6	543.6	3,401.8	3,425.8	0.00	0.00	0.00
12,700.0	88.41	89.83	9,164.4	543.9	3,501.7	3,525.7	0.00	0.00	0.00
12,800.0	88.41	89.83	9,167.2	544.2	3,601.7	3,625.5	0.00	0.00	0.00
12,900.0	88.41	89.83	9,170.0	544.5	3,701.7	3,725.3	0.00	0.00	0.00
13,000.0	88.41	89.83	9,172.8	544.8	3,801.6	3,825.2	0.00	0.00	0.00
13,100.0	88.41	89.83	9,175.5	545.1	3,901.6	3,925.0	0.00	0.00	0.00
13,200.0	88.41	89.83	9,178.3	545.4	4,001.5	4,024.8	0.00	0.00	0.00
13,300.0	88.41	89.83	9,181.1	545.7	4,101.5	4,124.7	0.00	0.00	0.00
13,400.0	88.41	89.83	9,183.9	546.0	4,201.5	4,224.5	0.00	0.00	0.00
13,500.0	88.41	89.83	9,186.7	546.3	4,301.4	4,324.4	0.00	0.00	0.00
13,600.0	88.41	89.83	9,189.4	546.6	4,401.4	4,424.2	0.00	0.00	0.00
13,700.0	88.41	89.83	9,192.2	546.9	4,501.3	4,524.0	0.00	0.00	0.00
13,800.0	88.41	89.83	9,195.0	547.2	4,601.3	4,623.9	0.00	0.00	0.00
13,900.0	88.41	89.83	9,197.8	547.5	4,701.3	4,723.7	0.00	0.00	0.00
14,000.0	88.41	89.83	9,200.6	547.8	4,801.2	4,823.5	0.00	0.00	0.00
14,100.0	88.41	89.83	9,203.3	548.1	4,901.2	4,923.4	0.00	0.00	0.00
14,200.0	88.41	89.83	9,206.1	548.4	5,001.1	5,023.2	0.00	0.00	0.00

Planning Report

Database:	Hobbs	Local Co-ordinate Reference:	Site Thundercloud 29/30 B2AD Fed Com #1H
Company:	Mewbourne Oil Company	TVD Reference:	WELL @ 3723.0usft (Original Well Elev)
Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,300.0	88.41	89.83	9,208.9	548.8	5,101.1	5,123.0	0.00	0.00	0.00
14,400.0	88.41	89.83	9,211.7	549.1	5,201.1	5,222.9	0.00	0.00	0.00
14,500.0	88.41	89.83	9,214.5	549.4	5,301.0	5,322.7	0.00	0.00	0.00
14,600.0	88.41	89.83	9,217.3	549.7	5,401.0	5,422.6	0.00	0.00	0.00
14,646.5	88.41	89.83	9,218.5	549.8	5,447.5	5,469.0	0.00	0.00	0.00
PPP2: 500' FNL & 0' FWL (Sec 29)									
14,700.0	88.41	89.83	9,220.0	550.0	5,501.0	5,522.4	0.00	0.00	0.00
14,800.0	88.41	89.83	9,222.8	550.3	5,600.9	5,622.2	0.00	0.00	0.00
14,900.0	88.41	89.83	9,225.6	550.6	5,700.9	5,722.1	0.00	0.00	0.00
15,000.0	88.41	89.83	9,228.4	550.9	5,800.8	5,821.9	0.00	0.00	0.00
15,100.0	88.41	89.83	9,231.2	551.2	5,900.8	5,921.7	0.00	0.00	0.00
15,200.0	88.41	89.83	9,233.9	551.5	6,000.8	6,021.6	0.00	0.00	0.00
15,300.0	88.41	89.83	9,236.7	551.8	6,100.7	6,121.4	0.00	0.00	0.00
15,400.0	88.41	89.83	9,239.5	552.1	6,200.7	6,221.2	0.00	0.00	0.00
15,500.0	88.41	89.83	9,242.3	552.4	6,300.6	6,321.1	0.00	0.00	0.00
15,600.0	88.41	89.83	9,245.1	552.7	6,400.6	6,420.9	0.00	0.00	0.00
15,700.0	88.41	89.83	9,247.8	553.0	6,500.6	6,520.8	0.00	0.00	0.00
15,800.0	88.41	89.83	9,250.6	553.3	6,600.5	6,620.6	0.00	0.00	0.00
15,900.0	88.41	89.83	9,253.4	553.6	6,700.5	6,720.4	0.00	0.00	0.00
15,969.5	88.41	89.83	9,255.3	553.8	6,770.0	6,789.9	0.00	0.00	0.00
PPP3: 500' FNL & 1323' FWL (Sec 29)									
16,000.0	88.41	89.83	9,256.2	553.9	6,800.4	6,820.3	0.00	0.00	0.00
16,100.0	88.41	89.83	9,259.0	554.2	6,900.4	6,920.1	0.00	0.00	0.00
16,200.0	88.41	89.83	9,261.8	554.5	7,000.4	7,019.9	0.00	0.00	0.00
16,300.0	88.41	89.83	9,264.5	554.8	7,100.3	7,119.8	0.00	0.00	0.00
16,400.0	88.41	89.83	9,267.3	555.1	7,200.3	7,219.6	0.00	0.00	0.00
16,500.0	88.41	89.83	9,270.1	555.4	7,300.2	7,319.4	0.00	0.00	0.00
16,600.0	88.41	89.83	9,272.9	555.7	7,400.2	7,419.3	0.00	0.00	0.00
16,700.0	88.41	89.83	9,275.7	556.1	7,500.2	7,519.1	0.00	0.00	0.00
16,800.0	88.41	89.83	9,278.4	556.4	7,600.1	7,618.9	0.00	0.00	0.00
16,900.0	88.41	89.83	9,281.2	556.7	7,700.1	7,718.8	0.00	0.00	0.00
17,000.0	88.41	89.83	9,284.0	557.0	7,800.1	7,818.6	0.00	0.00	0.00
17,100.0	88.41	89.83	9,286.8	557.3	7,900.0	7,918.5	0.00	0.00	0.00
17,200.0	88.41	89.83	9,289.6	557.6	8,000.0	8,018.3	0.00	0.00	0.00
17,300.0	88.41	89.83	9,292.3	557.9	8,099.9	8,118.1	0.00	0.00	0.00
17,400.0	88.41	89.83	9,295.1	558.2	8,199.9	8,218.0	0.00	0.00	0.00
17,500.0	88.41	89.83	9,297.9	558.5	8,299.9	8,317.8	0.00	0.00	0.00
17,600.0	88.41	89.83	9,300.7	558.8	8,399.8	8,417.6	0.00	0.00	0.00
17,700.0	88.41	89.83	9,303.5	559.1	8,499.8	8,517.5	0.00	0.00	0.00
17,800.0	88.41	89.83	9,306.2	559.4	8,599.7	8,617.3	0.00	0.00	0.00
17,900.0	88.41	89.83	9,309.0	559.7	8,699.7	8,717.1	0.00	0.00	0.00
18,000.0	88.41	89.83	9,311.8	560.0	8,799.7	8,817.0	0.00	0.00	0.00
18,100.0	88.41	89.83	9,314.6	560.3	8,899.6	8,916.8	0.00	0.00	0.00
18,200.0	88.41	89.83	9,317.4	560.6	8,999.6	9,016.7	0.00	0.00	0.00
18,300.0	88.41	89.83	9,320.2	560.9	9,099.5	9,116.5	0.00	0.00	0.00
18,400.0	88.41	89.83	9,322.9	561.2	9,199.5	9,216.3	0.00	0.00	0.00
18,500.0	88.41	89.83	9,325.7	561.5	9,299.5	9,316.2	0.00	0.00	0.00
18,600.0	88.41	89.83	9,328.5	561.8	9,399.4	9,416.0	0.00	0.00	0.00
18,700.0	88.41	89.83	9,331.3	562.1	9,499.4	9,515.8	0.00	0.00	0.00
18,800.0	88.41	89.83	9,334.1	562.4	9,599.3	9,615.7	0.00	0.00	0.00
18,900.0	88.41	89.83	9,336.8	562.7	9,699.3	9,715.5	0.00	0.00	0.00
19,000.0	88.41	89.83	9,339.6	563.0	9,799.3	9,815.3	0.00	0.00	0.00
19,100.0	88.41	89.83	9,342.4	563.3	9,899.2	9,915.2	0.00	0.00	0.00
19,200.0	88.41	89.83	9,345.2	563.7	9,999.2	10,015.0	0.00	0.00	0.00

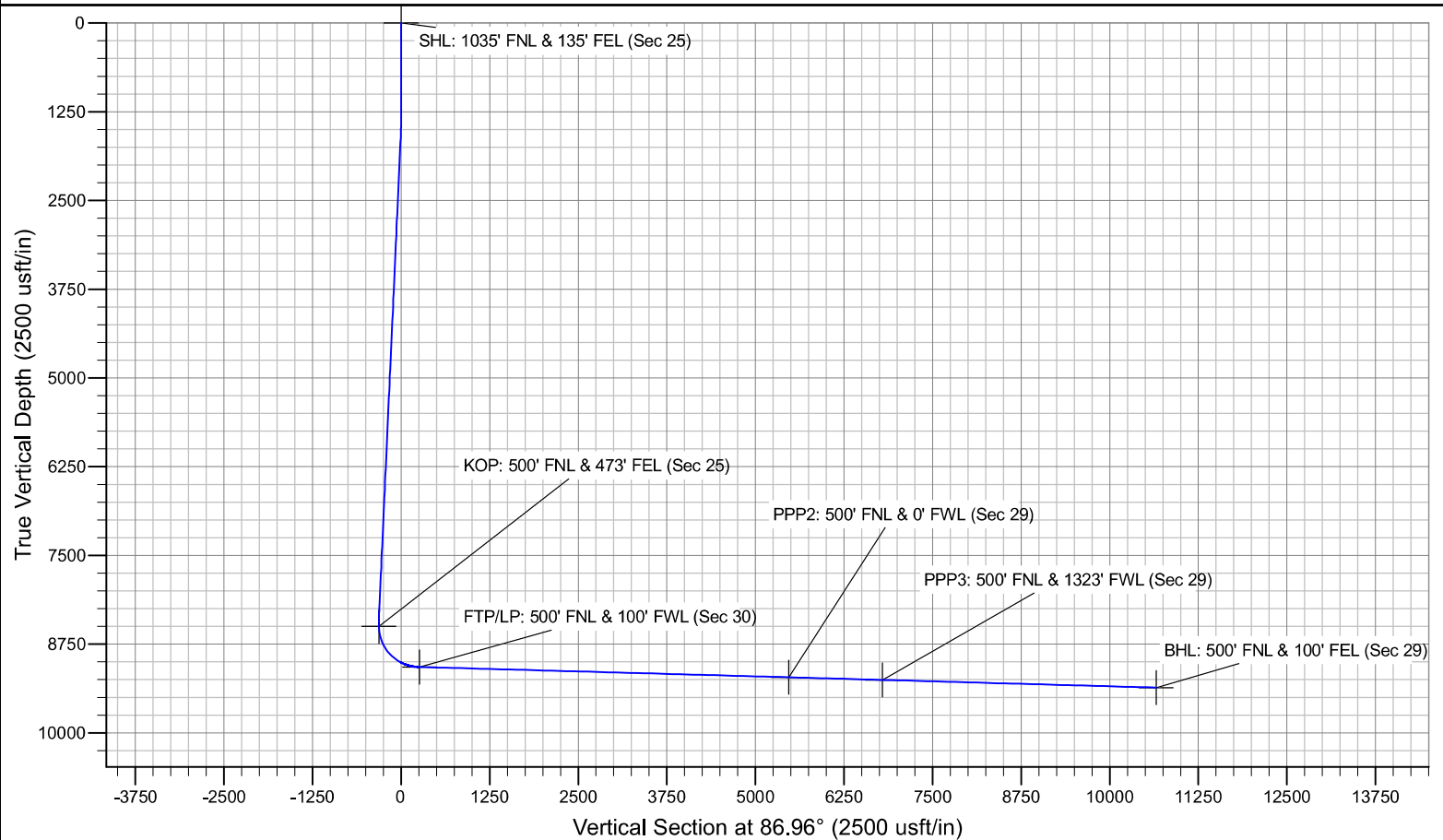
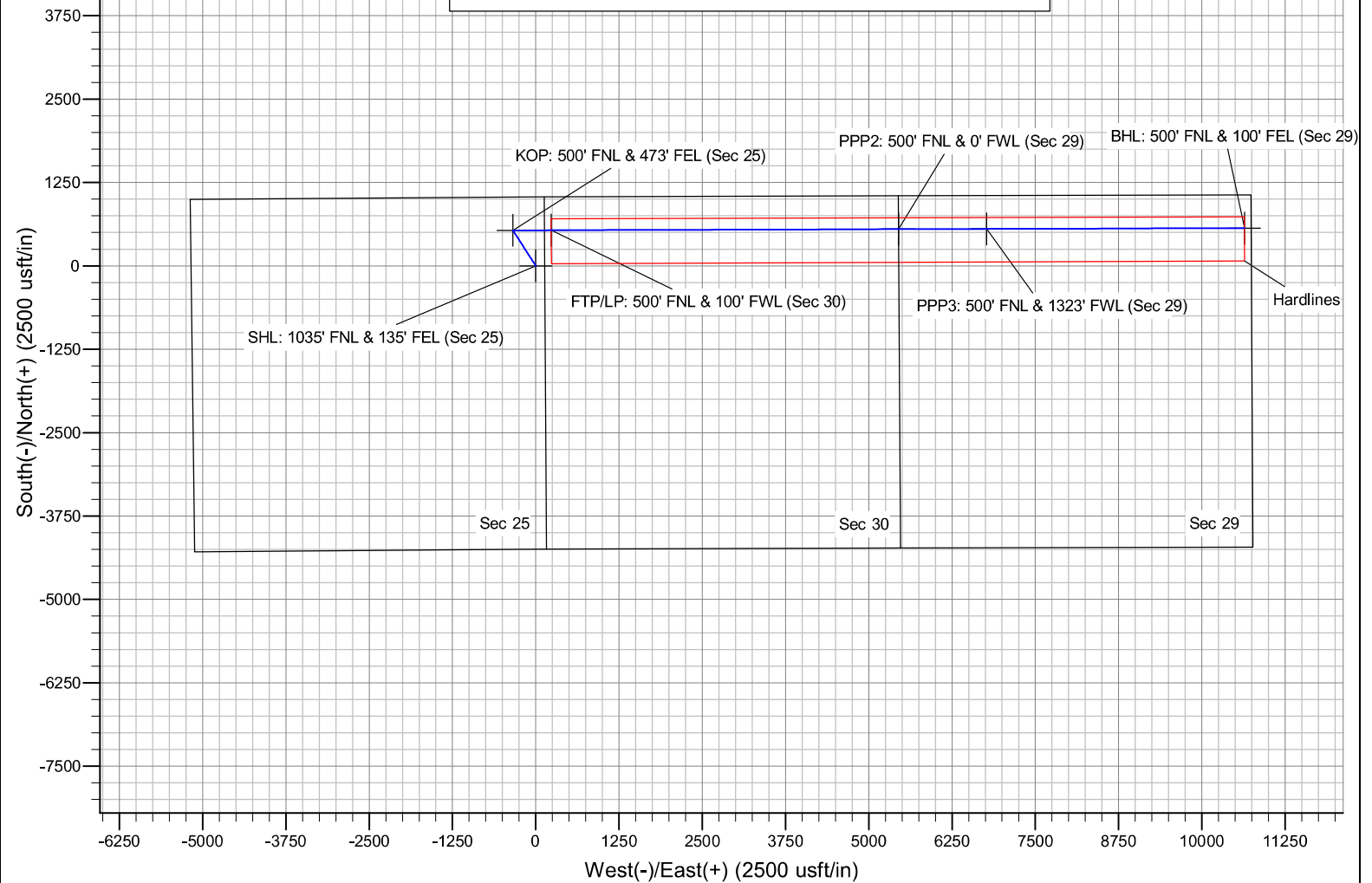
Planning Report

Database:	Hobbs	Local Co-ordinate Reference:	Site Thundercloud 29/30 B2AD Fed Com #1H
Company:	Mewbourne Oil Company	TVD Reference:	WELL @ 3723.0usft (Original Well Elev)
Project:	Eddy County, New Mexico NAD 83	MD Reference:	WELL @ 3723.0usft (Original Well Elev)
Site:	Thundercloud 29/30 B2AD Fed Com #1H	North Reference:	Grid
Well:	Sec 25, T18S, R31E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 500' FNL & 100' FEL (Sec 29)		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,300.0	88.41	89.83	9,348.0	564.0	10,099.2	10,114.8	0.00	0.00	0.00
19,400.0	88.41	89.83	9,350.7	564.3	10,199.1	10,214.7	0.00	0.00	0.00
19,500.0	88.41	89.83	9,353.5	564.6	10,299.1	10,314.5	0.00	0.00	0.00
19,600.0	88.41	89.83	9,356.3	564.9	10,399.0	10,414.4	0.00	0.00	0.00
19,700.0	88.41	89.83	9,359.1	565.2	10,499.0	10,514.2	0.00	0.00	0.00
19,800.0	88.41	89.83	9,361.9	565.5	10,599.0	10,614.0	0.00	0.00	0.00
19,840.7	88.41	89.83	9,363.0	565.6	10,639.6	10,654.6	0.00	0.00	0.00
BHL: 500' FNL & 100' FEL (Sec 29)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL: 1035' FNL & 135' F	0.00	0.00	0.0	0.0	0.0	627,149.50	700,797.40	32.7230015	-103.8148197
- plan hits target center									
- Point									
KOP: 500' FNL & 473' FI	0.00	0.00	8,500.0	532.2	-341.2	627,681.70	700,456.20	32.7244689	-103.8159207
- plan hits target center									
- Point									
FTP/LP: 500' FNL & 100	0.00	0.00	9,073.4	533.9	231.6	627,683.45	701,029.00	32.7244660	-103.8140581
- plan hits target center									
- Point									
PPP2: 500' FNL & 0' FW	0.00	0.00	9,218.5	549.8	5,447.5	627,699.31	706,244.90	32.7244382	-103.7970977
- plan hits target center									
- Point									
PPP3: 500' FNL & 1323'	0.00	0.00	9,255.3	553.8	6,770.0	627,703.33	707,567.40	32.7244308	-103.7927974
- plan hits target center									
- Point									
BHL: 500' FNL & 100' FE	0.00	0.00	9,363.0	565.6	10,639.6	627,715.10	711,437.00	32.7244082	-103.7802148
- plan hits target center									
- Point									

Thundercloud 29/30 B2AD Fed Com #1H



Mewbourne Oil Company, Thundercloud 29/30 B2AD Fed Com 1H**Sec 25, T18S, R31E****SHL: 1035' FNL 135' FEL (Sec 25)****BHL: 500' FNL 100' FEL (Sec 29)**

Operator Name:	Property Name:	Well Number
Mewbourne Oil Company	Thundercloud 29/30 B2AD Fed Com	1

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
A	25	18	31	-	500'	FNL	473'	FEL	Eddy
Latitude					Longitude				NAD
32.7244688					-103.8159207				83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
D	30	18	32	-	500'	FNL	100'	FWL	Lea
Latitude					Longitude				NAD
32.7244723					-103.8140580				83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
A	29	18	32	-	500'	FNL	100'	FEL	Lea
Latitude					Longitude				NAD
32.7244082					-103.7802147				83

Is this well the defining well for the Horizontal Spacing Unit?

Y

Is this well an infill well?

N

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	MEWBOURNE OIL COMPANY
WELL NAME & NO.:	THUNDERCLOUD 29/30 B2AD FED COM 1H
SURFACE HOLE FOOTAGE:	1035'/N & 135'/E
BOTTOM HOLE FOOTAGE	500'/N & 100'/E
SURFACE LOCATION:	Section 25, T.18 S., R.31 E. NMP.
COUNTY:	Eddy County, New Mexico

COA

H ₂ S	☒ Yes	☐ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String	☐ Capitan Reef	☐ WIPP
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated **AT SPUD**. As a result, the Hydrogen Sulfide area must meet **43 CFR 3176** requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING DESIGN

1. The **13-3/8** inch surface casing shall be set at approximately **1,145 ft.** (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 ft. above the salt.**

a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic-type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or **500 psi compressive strength**, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

- d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The 9-5/8 inch intermediate casing shall be set in a competent bed at approximately 4,710 ft. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:

Option 1 (Single Stage): Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option 2 (Two-stage): Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. **First stage to DV tool:** Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. **Second stage above DV tool: Cement to surface.** If cement does not circulate see B.1.a, c-d above.
3. Operator has proposed to set 7 in. production casing at approximately 8,479 ft. The minimum required fill of cement behind the 7 in. production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the 4-1/2 in. production liner is:
 - Cement should tie-back at least 100 feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi. Before drilling the surface casing shoe out, the BOP/BOPE and annular preventer shall be pressure-tested in accordance with title 43 CFR 3172 and API Standard 53.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one-inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in the **title 43 CFR 3172.6(b)(9)** must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

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

GENERAL REQUIREMENTS

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

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

☒ Eddy County

EMAIL or call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

BLM_NM_CFO_DrillingNotifications@BLM.GOV
(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)

689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per **title 43 CFR 3172**
 - as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in

place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in the **title 43 CFR 3172** and **API STD 53 Sec. 5.3**.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for

review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in the **title 43 CFR 3172.6(b)(9)** must be followed.
 - e. If the cement does not circulate and one-inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
 - c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester

to test without a plug (i.e. against the casing) pursuant to **43 CFR 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- d. The test shall be run on a 5000-psi chart for a 2-3M BOP/BOP, on a 10000-psi chart for a 5M BOP/BOPE and on a 15000-psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one-hour chart. A circular chart shall have a maximum 2-hour clock. If a twelve hour or twenty-four-hour chart is used, tester shall make a notation that it is run with a two-hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low-pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR 3172**.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

SA 11/17/2023

Hydrogen Sulfide Drilling Operations Plan
Mewbourne Oil Company

1. General Requirements

Rule 118 does not apply to this well because MOC has researched this area and no high concentrations of H₂S were found. MOC will have on location and working all H₂S safety equipment before the Delaware formation for purposes of safety and insurance requirements.

2. Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will have received training from a qualified instructor in the following areas prior to entering the drilling pad area of the well:

1. The hazards and characteristics of hydrogen sulfide gas.
2. The proper use of personal protective equipment and life support systems.
3. The proper use of hydrogen sulfide detectors, alarms, warning systems, briefing areas, evacuation procedures.
4. The proper techniques for first aid and rescue operations.

Additionally, supervisory personnel will be trained in the following areas:

- 1 The effects of hydrogen sulfide on metal components. If high tensile tubular systems are utilized, supervisory personnel will be trained in their special maintenance requirements.
- 2 Corrective action and shut in procedures, blowout prevention, and well control procedures while drilling a well.
- 3 The contents of the Hydrogen Sulfide Drilling Operations Plan.

There will be an initial training session prior to encountering a known hydrogen sulfide source. The initial training session shall include a review of the site specific Hydrogen Sulfide Drilling Operations Plan.

3. Hydrogen Sulfide Safety Equipment and Systems

All hydrogen sulfide safety equipment and systems will be installed, tested, and operational prior to drilling below the 9 5/8" intermediate casing.

1. Well Control Equipment
 - A. Choke manifold with minimum of one adjustable choke/remote choke.
 - B. Blowout preventers equipped with blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
 - C. Auxiliary equipment including annular type blowout preventer.
2. Protective Equipment for Essential Personnel

Thirty minute self contained work unit located in the dog house and at briefing areas.

Additionally: If H₂S is encountered in concentrations less than 10 ppm, fans will be placed in work areas to prevent the accumulation of hazardous amounts of poisonous gas. If higher concentrations of H₂S are detected the well will be shut in and a rotating head, mud/gas separator, remote choke and flare line with igniter will be installed.

3. Hydrogen Sulfide Protection and Monitoring Equipment
Two portable hydrogen sulfide monitors positioned on location for optimum coverage and detection. The units shall have audible sirens to notify personnel when hydrogen sulfide levels exceed 20 PPM.
4. Visual Warning Systems
 - A. Wind direction indicators as indicated on the wellsite diagram.
 - B. Caution signs shall be posted on roads providing access to location. Signs shall be painted a high visibility color with lettering of sufficient size to be readable at reasonable distances from potentially contaminated areas.

4. **Mud Program**

The mud program has been designed to minimize the amount of hydrogen sulfide entrained in the mud system. Proper mud weight, safe drilling practices, and the use of hydrogen sulfide scavengers will minimize hazards while drilling the well.

5. **Metallurgy**

All tubular systems, wellheads, blowout preventers, drilling spools, kill lines, choke manifolds, and valves shall be suitable for service in a hydrogen sulfide environment when chemically treated.

6. **Communications**

State & County Officials phone numbers are posted on rig floor and supervisors trailer. Communications in company vehicles and toolpushers are either two way radios or cellular phones.

7. **Well Testing**

Drill stem testing is not an anticipated requirement for evaluation of this well. If a drill stem test is required, it will be conducted with a minimum number of personnel in the immediate vicinity. The test will be conducted during daylight hours only.

8. **Emergency Phone Numbers**

Eddy County Sheriff's Office	911 or 575-887-7551
Ambulance Service	911 or 575-885-2111
Carlsbad Fire Dept	911 or 575-885-2111
Loco Hills Volunteer Fire Dept.	911 or 575-677-3266
Closest Medical Facility - Columbia Medical Center of Carlsbad	575-492-5000

Mewbourne Oil Company	Hobbs District Office	575-393-5905
	Fax	575-397-6252
	2nd Fax	575-393-7259

District Manager	Robin Terrell	575-390-4816
Drilling Superintendent	Frosty Lathan	575-390-4103
	Bradley Bishop	575-390-6838
Drilling Foreman	Wesley Noseff	575-441-0729

Operator Name: MEWBOURNE OIL COMPANY**Well Name:** THUNDERCLOUD 29/30 B2AD FED COM**Well Number:** 1H**Disposal location description:** City of Carlsbad Water Treatment facility**Waste type:** GARBAGE**Waste content description:** Garbage & Trash**Amount of waste:** 1500 pounds**Waste disposal frequency :** One Time Only**Safe containment description:** Enclosed trash trailer**Safe containmant attachment:****Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE**Disposal type description:****Disposal location description:** Waste Management facility in Carlsbad.

Reserve Pit

Reserve Pit being used? NO**Temporary disposal of produced water into reserve pit?** NO**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?** N**Description of cuttings location****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**

Operator Name: MEWBOURNE OIL COMPANY

Well Name: THUNDERCLOUD 29/30 B2AD FED COM

Well Number: 1H

Section 8 - Ancillary

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments:

Section 9 - Well Site

Well Site Layout Diagram:

Thundercloud29_30B2ADFedCom1H_wellsitelayout_20220127103522.pdf

Comments:

Section 10 - Plans for Surface

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: Thundercloud 29/30 B2AD and B2HE Fed com wells

Multiple Well Pad Number: 2

Recontouring

Drainage/Erosion control construction: NONE

Drainage/Erosion control reclamation: NONE

Well pad proposed disturbance (acres): 5.9

Well pad interim reclamation (acres): 1.13

Well pad long term disturbance (acres): 4.77

Road proposed disturbance (acres): 0.45

Road interim reclamation (acres): 0

Road long term disturbance (acres): 0

Powerline proposed disturbance (acres): 0

Powerline interim reclamation (acres): 0

Powerline long term disturbance (acres): 0

Pipeline proposed disturbance (acres): 0

Pipeline interim reclamation (acres): 0

Pipeline long term disturbance (acres): 0

Other proposed disturbance (acres): 0 Other interim reclamation (acres): 0

Other long term disturbance (acres): 0

Total proposed disturbance: 6.3500000000000005

Total interim reclamation: 1.13

Total long term disturbance: 4.77

Disturbance Comments: In areas to be heavily disturbed, the top 6 inches of soil material, will be stripped and stockpiled on the perimeter of the well location to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils. Contaminated soil will not be stockpiled, but properly treated and handled prior to topsoil salvaging.

Reconstruction method: The areas planned for interim reclamation will then be recontoured 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 backfilled 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 ration, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

Topsoil redistribution: Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To see the area, the proper BLM seed mixture, free of noxious weeds, will be used.

District I

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

District II

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

District III

1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 287137

CONDITIONS

Operator: MEWBOURNE OIL CO P.O. Box 5270 Hobbs, NM 88241	OGRID:
	14744
	Action Number: 287137
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	11/29/2023
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	11/29/2023
ward.rikala	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	11/29/2023
ward.rikala	Cement is required to circulate on both surface and intermediate1 strings of casing	11/29/2023
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	11/29/2023
ward.rikala	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	11/29/2023
ward.rikala	This well can not be produced until the well name is changed per NM OCD naming convention.	11/29/2023