3160-5
(2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Hobbs

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

HOBBS OCD
MAY 30 2017
REC

5. Lease Serial No.
NMNM 107392

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
RED HILLS WEST 21 A2DM FED COM 2H

2. Name of Operator
MEWBOURNE OIL COMPANY
Contact: JACKIE LATHAN
E-Mail: jlathan@mewbourne.com

9. API Well No.
30-025-43427

3a. Address
PO BOX 5270
HOBBS, NM 88241

3b. Phone No. (include area code)
Ph: 575-393-5905

10. Field and Pool or Exploratory Area
97838

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 21 T26S R32E Mer NMP NWNW 200FNL 990FWL

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Mewbourne Oil Company has an approved APD for the above well. Mewbourne requests approval to make the following changes:

1 - Change name to Red Hills 21 W1DM Fed Com #2H → PROP ID 317796
2 - Change target zone to Wolfcamp. Pool: Upper Wolfcamp (98065)
3 - Change surface location to 185' FNL & 550' FWL, Sec 21 T26S R32E
4 - Change TVD to 12,097'
~~5 - Use a multi-bowl wellhead~~

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Engineering OK. See COA - 7

Please see attachments for updated C-102 and drilling plans.

DOI-BLM-NM-P020-2016-0097EA

OK Per Bob Ballard 5-25-2017 No new surface disturbance original COA's apply

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #371145 verified by the BLM Well Information System
For MEWBOURNE OIL COMPANY, sent to the Hobbs

Name *(Printed/Typed)* ANDREW TAYLOR — Title ENGINEER

Signature (Electronic Submission) — Date 03/27/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Cheryl Lytle — Title AFM-L&M — Date 5/25/17

Conditions of approval, if any, are attached. Approval of this notice 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.

Office CFO

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.

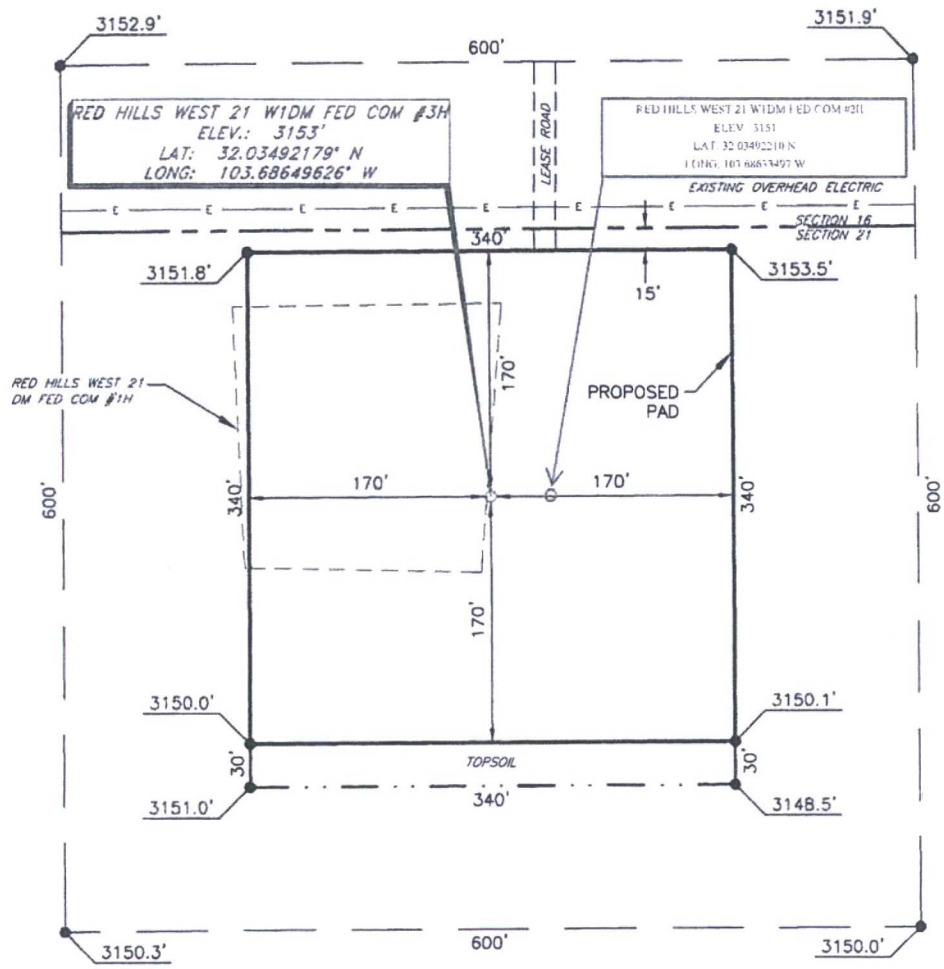
(Instructions on page 2)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

KZ

MEWBOURNE OIL COMPANY

RED HILLS WEST 21 W1DM FED COM #2H &
RED HILLS WEST 21 W1DM FED COM #3H
(185' FNL & 500' FWL)
SECTION 21, T26S, R32E
N. M. P. M., LEA COUNTY, NEW MEXICO
#2H (185' FNL & 550' FWL)



DIRECTIONS TO LOCATION

From the intersection of CR–1 (Orla Hwy.) and CR–2 (Battle Axe Rd.)
Go Northeast on CR–1 approx. 1.0 mile to a lease road on the right;
Turn right and and go Southeast on lease road approx. 0.1 miles to a "Y";
Stay left at "Y" and go East approx. 0.3 miles to lease road on the right;
Turn right and go South approx 0.2 miles to location on the right.

NO.	REVISION	DATE

JOB NO.: LS1506295
DWG. NO.: 1506295PAD

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 6-25-2015
SURVEYED BY: ML/AA
DRAWN BY: PDJ
APPROVED BY: RMH
SHEET : 1 OF 1

Mewbourne Oil Company

Lea County, New Mexico
Red Hills West 21 W1DM Fed Com #2H
Sec 21, T26S, R32E
SL: 185' FNL & 550' FWL
BHL: 330' FSL & 990' FWL

Plan: Design #1

Standard Planning Report

23 March, 2017

Database:	Hobbs	**Local Co-ordinate Reference:**	Site Red Hills West 21 W1DM Fed Com #2H
Company:	Mewbourne Oil Company	**TVD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Site:	Red Hills West 21 W1DM Fed Com #2H	**North Reference:**	Grid
Well:	Sec 21, T26S, R32E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 330' FSL & 990' FWL		
Design:	Design #1		

Project	Lea County, New Mexico		
Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Red Hills West 21 W1DM Fed Com #2H				
Site Position:		**Northing:**	377,031.00 usft	**Latitude:**	32° 2' 5.719 N
From:	Map	**Easting:**	700,492.00 usft	**Longitude:**	103° 41' 10.804 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.34 °

Well	Sec 21, T26S, R32E					
Well Position	**+N/-S**	0.0 usft	**Northing:**	377,031.00 usft	**Latitude:**	32° 2' 5.719 N
	+E/-W	0.0 usft	**Easting:**	700,492.00 usft	**Longitude:**	103° 41' 10.804 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	3,177.0 usft	**Ground Level:**	3,150.0 usft

Wellbore	BHL: 330' FSL & 990' FWL			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/23/2017	6.91	59.85	47,916

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	174.56	

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	
11,524.0	0.00	0.00	11,524.0	0.0	0.0	0.00	0.00	0.00	0.00	KOP @ 11524'
12,071.1	62.91	123.01	11,967.6	-147.8	227.6	11.50	11.50	0.00	123.01	
12,587.6	90.13	179.76	12,097.0	-572.0	442.0	11.78	5.27	10.99	73.24	LP: 760' FNL & 990' F
16,842.7	90.13	179.76	12,087.0	-4,827.0	460.0	0.00	0.00	0.00	0.00	BHL: 330' FSL & 990'

Database:	Hobbs	**Local Co-ordinate Reference:**	Site Red Hills West 21 W1DM Fed Com #2H
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Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Site:	Red Hills West 21 W1DM Fed Com #2H	**North Reference:**	Grid
Well:	Sec 21, T26S, R32E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 330' FSL & 990' FWL		
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
SL: 185' FNL & 550' FWL									
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
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00

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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)
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Hobbs	**Local Co-ordinate Reference:**	Site Red Hills West 21 W1DM Fed Com #2H
Company:	Mewbourne Oil Company	**TVD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Site:	Red Hills West 21 W1DM Fed Com #2H	**North Reference:**	Grid
Well:	Sec 21, T26S, R32E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 330' FSL & 990' FWL		
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)
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00
11,000.0	0.00	0.00	11,000.0	0.0	0.0	0.0	0.00	0.00	0.00
11,100.0	0.00	0.00	11,100.0	0.0	0.0	0.0	0.00	0.00	0.00
11,200.0	0.00	0.00	11,200.0	0.0	0.0	0.0	0.00	0.00	0.00
11,300.0	0.00	0.00	11,300.0	0.0	0.0	0.0	0.00	0.00	0.00
11,400.0	0.00	0.00	11,400.0	0.0	0.0	0.0	0.00	0.00	0.00
11,500.0	0.00	0.00	11,500.0	0.0	0.0	0.0	0.00	0.00	0.00
11,524.0	0.00	0.00	11,524.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP @ 11524'									
11,600.0	8.74	123.01	11,599.7	-3.1	4.8	3.6	11.50	11.50	0.00
11,700.0	20.24	123.01	11,696.4	-16.8	25.8	19.1	11.50	11.50	0.00
11,800.0	31.74	123.01	11,786.1	-40.6	62.5	46.3	11.50	11.50	0.00
11,900.0	43.24	123.01	11,865.3	-73.7	113.4	84.1	11.50	11.50	0.00
12,000.0	54.74	123.01	11,930.8	-114.7	176.6	131.0	11.50	11.50	0.00
12,065.2	62.24	123.01	11,964.9	-145.0	223.2	165.5	11.50	11.50	0.00
FTP: 330' FNL & 775' FWL									
12,071.1	62.91	123.01	11,967.6	-147.8	227.6	168.8	11.50	11.50	0.00
12,100.0	63.94	126.64	11,980.5	-162.6	248.8	185.5	11.78	3.56	12.56
12,200.0	68.15	138.69	12,021.3	-224.5	315.7	253.4	11.78	4.21	12.05
12,300.0	73.17	149.99	12,054.5	-301.0	370.4	334.8	11.78	5.03	11.30
12,400.0	78.78	160.67	12,078.7	-389.1	410.8	426.3	11.78	5.61	10.68
12,500.0	84.76	170.93	12,093.1	-484.9	434.9	523.9	11.78	5.97	10.26
12,587.6	90.13	179.76	12,097.0	-572.0	442.0	611.4	11.78	6.14	10.07
LP: 760' FNL & 990' FWL									
12,600.0	90.13	179.76	12,097.0	-584.4	442.1	623.7	0.00	0.00	0.00
12,700.0	90.13	179.76	12,096.7	-684.4	442.5	723.3	0.00	0.00	0.00
12,800.0	90.13	179.76	12,096.5	-784.4	442.9	822.9	0.00	0.00	0.00
12,900.0	90.13	179.76	12,096.3	-884.4	443.3	922.4	0.00	0.00	0.00
13,000.0	90.13	179.76	12,096.0	-984.4	443.7	1,022.0	0.00	0.00	0.00
13,100.0	90.13	179.76	12,095.8	-1,084.4	444.2	1,121.6	0.00	0.00	0.00
13,200.0	90.13	179.76	12,095.6	-1,184.4	444.6	1,221.2	0.00	0.00	0.00
13,300.0	90.13	179.76	12,095.3	-1,284.4	445.0	1,320.8	0.00	0.00	0.00
13,400.0	90.13	179.76	12,095.1	-1,384.4	445.4	1,420.4	0.00	0.00	0.00
13,500.0	90.13	179.76	12,094.9	-1,484.4	445.9	1,520.0	0.00	0.00	0.00
13,600.0	90.13	179.76	12,094.6	-1,584.4	446.3	1,619.6	0.00	0.00	0.00
13,700.0	90.13	179.76	12,094.4	-1,684.4	446.7	1,719.1	0.00	0.00	0.00
13,800.0	90.13	179.76	12,094.2	-1,784.4	447.1	1,818.7	0.00	0.00	0.00
13,900.0	90.13	179.76	12,093.9	-1,884.4	447.6	1,918.3	0.00	0.00	0.00
14,000.0	90.13	179.76	12,093.7	-1,984.4	448.0	2,017.9	0.00	0.00	0.00
14,100.0	90.13	179.76	12,093.4	-2,084.4	448.4	2,117.5	0.00	0.00	0.00
14,200.0	90.13	179.76	12,093.2	-2,184.4	448.8	2,217.1	0.00	0.00	0.00
14,300.0	90.13	179.76	12,093.0	-2,284.4	449.2	2,316.7	0.00	0.00	0.00
14,400.0	90.13	179.76	12,092.7	-2,384.4	449.7	2,416.3	0.00	0.00	0.00
14,500.0	90.13	179.76	12,092.5	-2,484.4	450.1	2,515.8	0.00	0.00	0.00
14,600.0	90.13	179.76	12,092.3	-2,584.4	450.5	2,615.4	0.00	0.00	0.00
14,700.0	90.13	179.76	12,092.0	-2,684.3	450.9	2,715.0	0.00	0.00	0.00
14,800.0	90.13	179.76	12,091.8	-2,784.3	451.4	2,814.6	0.00	0.00	0.00
14,900.0	90.13	179.76	12,091.6	-2,884.3	451.8	2,914.2	0.00	0.00	0.00
15,000.0	90.13	179.76	12,091.3	-2,984.3	452.2	3,013.8	0.00	0.00	0.00
15,100.0	90.13	179.76	12,091.1	-3,084.3	452.6	3,113.4	0.00	0.00	0.00
15,200.0	90.13	179.76	12,090.9	-3,184.3	453.1	3,213.0	0.00	0.00	0.00

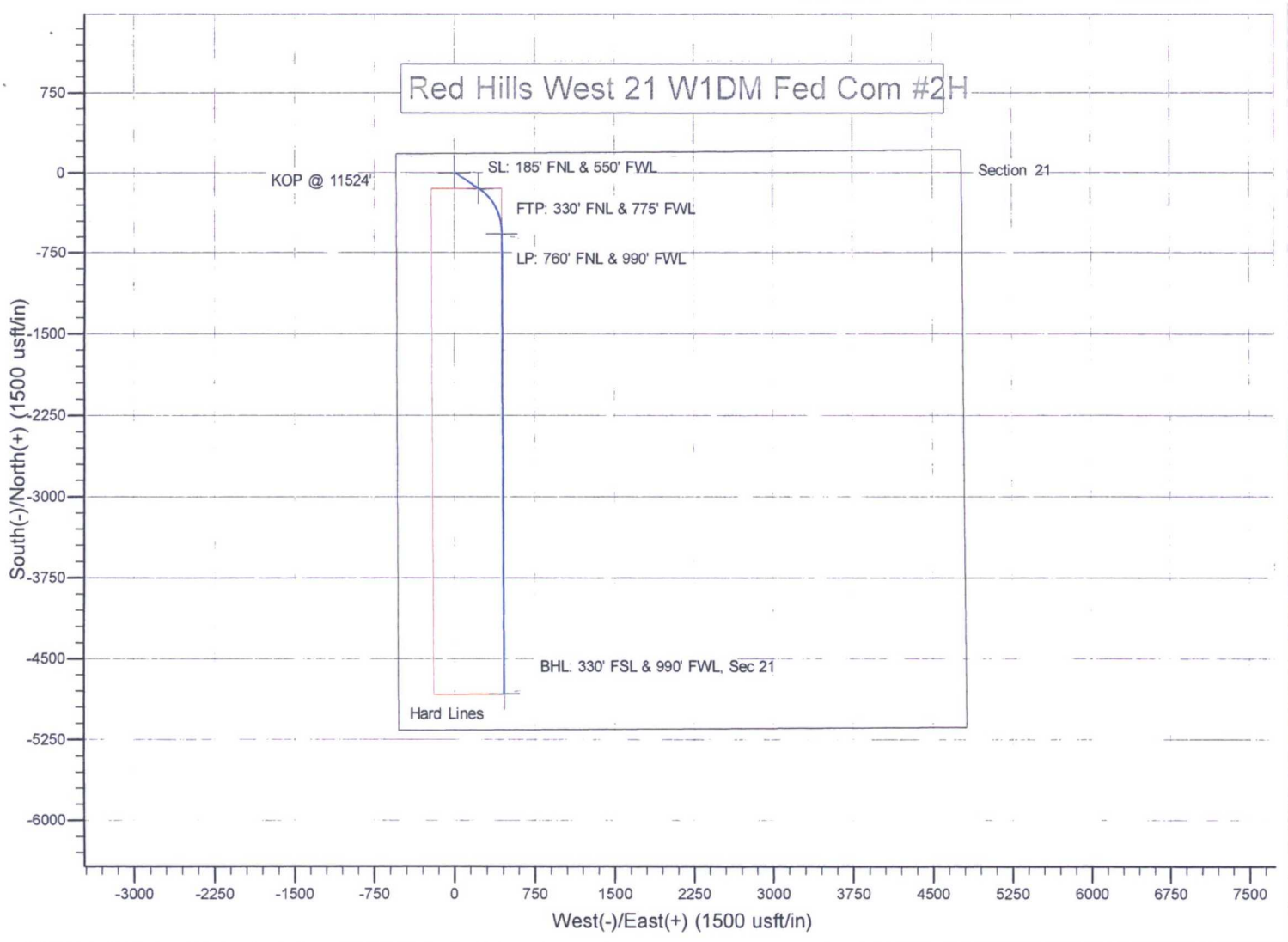
Database:	Hobbs	**Local Co-ordinate Reference:**	Site Red Hills West 21 W1DM Fed Com #2H
Company:	Mewbourne Oil Company	**TVD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3177.0usft (Original Well Elev)
Site:	Red Hills West 21 W1DM Fed Com #2H	**North Reference:**	Grid
Well:	Sec 21, T26S, R32E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 330' FSL & 990' FWL		
Design:	Design #1		

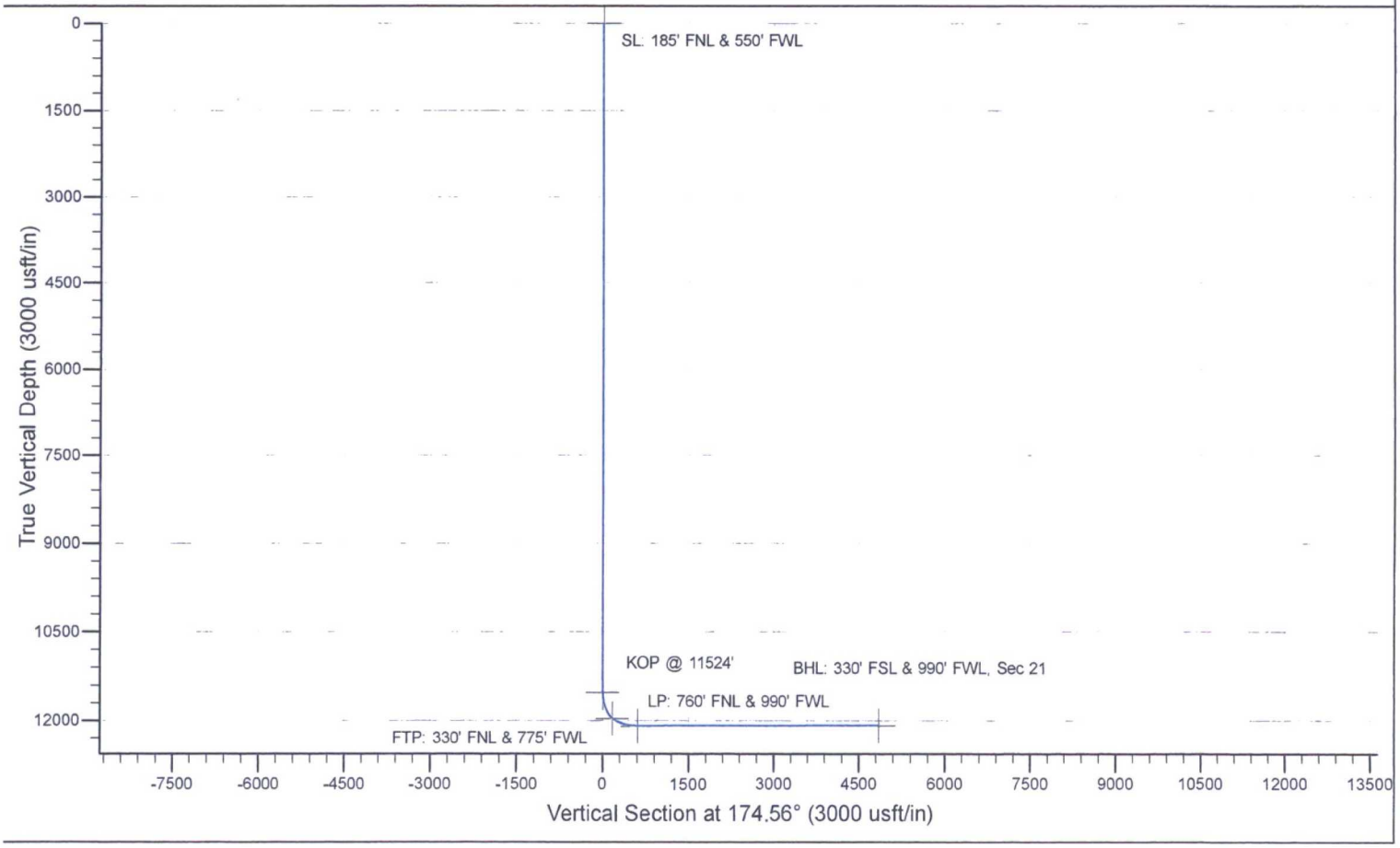
Planned Survey

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)
15,300.0	90.13	179.76	12,090.6	-3,284.3	453.5	3,312.6	0.00	0.00	0.00
15,400.0	90.13	179.76	12,090.4	-3,384.3	453.9	3,412.1	0.00	0.00	0.00
15,500.0	90.13	179.76	12,090.2	-3,484.3	454.3	3,511.7	0.00	0.00	0.00
15,600.0	90.13	179.76	12,089.9	-3,584.3	454.7	3,611.3	0.00	0.00	0.00
15,700.0	90.13	179.76	12,089.7	-3,684.3	455.2	3,710.9	0.00	0.00	0.00
15,800.0	90.13	179.76	12,089.5	-3,784.3	455.6	3,810.5	0.00	0.00	0.00
15,900.0	90.13	179.76	12,089.2	-3,884.3	456.0	3,910.1	0.00	0.00	0.00
16,000.0	90.13	179.76	12,089.0	-3,984.3	456.4	4,009.7	0.00	0.00	0.00
16,100.0	90.13	179.76	12,088.7	-4,084.3	456.9	4,109.3	0.00	0.00	0.00
16,200.0	90.13	179.76	12,088.5	-4,184.3	457.3	4,208.8	0.00	0.00	0.00
16,300.0	90.13	179.76	12,088.3	-4,284.3	457.7	4,308.4	0.00	0.00	0.00
16,400.0	90.13	179.76	12,088.0	-4,384.3	458.1	4,408.0	0.00	0.00	0.00
16,500.0	90.13	179.76	12,087.8	-4,484.3	458.6	4,507.6	0.00	0.00	0.00
16,600.0	90.13	179.76	12,087.6	-4,584.3	459.0	4,607.2	0.00	0.00	0.00
16,700.0	90.13	179.76	12,087.3	-4,684.3	459.4	4,706.8	0.00	0.00	0.00
16,800.0	90.13	179.76	12,087.1	-4,784.3	459.8	4,806.4	0.00	0.00	0.00
16,842.7	90.13	179.76	12,087.0	-4,827.0	460.0	4,848.9	0.00	0.00	0.00
BHL: 330' FSL & 990' FWL, Sec 21									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SL: 185' FNL & 550' FW - plan hits target center - Point	0.00	0.00	0.0	0.0	0.0	377,031.00	700,492.00	32° 2' 5.719 N	103° 41' 10.804 W
KOP @ 11524' - plan hits target center - Point	0.00	0.00	11,524.0	0.0	0.0	377,031.00	700,492.00	32° 2' 5.719 N	103° 41' 10.804 W
FTP: 330' FNL & 775' FV - plan hits target center - Point	0.00	0.00	11,964.9	-145.0	223.2	376,886.00	700,715.17	32° 2' 4.271 N	103° 41' 8.222 W
BHL: 330' FSL & 990' FV - plan hits target center - Point	0.00	0.00	12,087.0	-4,827.0	460.0	372,204.00	700,952.00	32° 1' 17.924 N	103° 41' 5.797 W
LP: 760' FNL & 990' FW - plan hits target center - Point	0.00	0.00	12,097.0	-572.0	442.0	376,459.00	700,934.00	32° 2' 0.033 N	103° 41' 5.710 W


Red Hills West 21 W1DM Fed Com #2H
SL: 185' FNL & 550' FWL
Section 21
KOP @ 11524'
FTP: 330' FNL & 775' FWL
LP: 760' FNL & 990' FWL
BHL: 330' FSL & 990' FWL, Sec 21
Hard Lines
South(-)/North(+) (1500 usft/in)
West(-)/East(+) (1500 usft/in)


SL: 185' FNL & 550' FWL
KOP @ 11524'
BHL: 330' FSL & 990' FWL, Sec 21
LP: 760' FNL & 990' FWL
FTP: 330' FNL & 775' FWL
True Vertical Depth (3000 usft/in)
Vertical Section at 174.56° (3000 usft/in)

Mewbourne Oil Company, Red Hills West 21 W1DM Fed Com #2H
Sec 21, T26S, R32E
SL: 185' FNL & 550' FWL
BHL: 330' FSL & 990' FWL

1. **Geologic Formations**

TVD of target	12097'	Pilot hole depth	NA
MD at TD:	16850'	Deepest expected fresh water:	225'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface		
Rustler	708	Water	
Top Salt	1021		
Castile			
Base Salt	4128		
Lamar	4361	Oil/Gas	
Bell Canyon	4398	Oil/Gas	
Cherry Canyon	5383	Oil/Gas	
Manzanita Marker	5553		
Brushy Canyon	7016	Oil/Gas	
Bone Spring	8438	Oil/Gas	
1st Bone Spring Sand	9378		
2nd Bone Spring Sand	10030		
3rd Bone Spring Sand	11520		
Abo			
Wolfcamp	11614	Target Zone	
Devonian			
Fusselman			
Ellenburger			
Granite Wash			

*H2S, water flows, loss of circulation, abnormal pressures, etc.

Mewbourne Oil Company, Red Hills West 21 W1DM Fed Com #2H
Sec 21, T26S, R32E
SL: 185' FNL & 550' FWL
BHL: 330' FSL & 990' FWL

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Jt Tension	SF Body Tension
17.5"	0'	~~875'~~ 850'	13.375"	48	H40	STC	1.69	3.80	7.67	12.88
12.25"	0'	3453'	9.625"	36	J55	LTC	1.13	1.96	2.87	4.54
12.25"	3453'	4285'	9.625"	40	J55	LTC	1.15	1.77	15.62	18.93
8.75"	0'	12250'	7"	26	HCP110	LTC	1.30	1.66	2.05	2.61
6.125"	11524'	16850'	4.5"	13.5	P110	LTC	1.30	1.52	4.70	5.87
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
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.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	Y
If yes, are there two strings cemented to surface?	Y
(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?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/ sk	500# Comp. Strength (hours)	Slurry Description
Surf.	455	12.5	2.12	11	10	Lead: Class C + Salt + Gel + Extender + LCM
	200	14.8	1.34	6.3	8	Tail: Class C + Retarder
Inter.	705	12.5	2.12	11	10	Lead: Class C + Salt + Gel + Extender + LCM
	200	14.8	1.34	6.3	8	Tail: Class C + Retarder
Prod. Stg 1	375	12.5	2.12	11	9	Lead: Class C + Gel + Retarder + Defoamer + Extender
	400	15.6	1.18	5.2	10	Tail: Class H + Retarder + Fluid Loss + Defoamer
ECP/DV Tool @ 5553'						
Prod. Stg 2	75	12.5	2.12	11	9	Lead: Class C + Gel + Retarder + Defoamer + Extender
	100	14.8	1.34	6.3	8	Tail: Class C + Retarder
Liner	220	11.2	2.97	17	16	Class C + Salt + Gel + Fluid Loss + Retarder + Dispersant + Defoamer + Anti-Settling Agent

A copy of cement test will be available on location at time of cement job providing pump times, compressive strengths, etc.

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	25%
Production	4085'	25%
Liner	11524'	25%

4. Pressure Control Equipment

	Variance: None

BOP installed and tested before drilling which hole?	Size?	System Rated WP	Type	✓	Tested to:
12-1/4"	13-5/8"	~~5M~~ 2M	Annular	X	2000#
			Blind Ram	X	
			Pipe Ram	X	2000#
			Double Ram		
			Other*		
8-3/4"	13-5/8"	10M	Annular	X	5000#
			Blind Ram	X	
			Pipe Ram	X	10000#
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

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

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

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	N	Are anchors required by manufacturer?

N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. • Provide description here: See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0'	~~875'~~ 850	Spud Mud	8.6-8.8	28-34	N/C
~~875'~~	4285'	Brine	10.0	28-34	N/C
4285'	11524'	Cut Brine	8.6-9.7	28-34	N/C
11524'	16850'	OBM	10.0-13.0	30-40	<10cc

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. MW up to 13.0 ppg may be required for shale control. The highest mud weight needed to balance formation pressure is expected to be 12.0 ppg.

What will be used to monitor the loss or gain of fluid?	Pason/PVT/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL from KOP (11524') to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
X	Gamma Ray	11524' (KOP) to TD
	Density	
	CBL	
	Mud log	
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7549 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers in surface hole. Weighted mud for possible over-pressure in Wolfcamp formation.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
	H2S is present
X	H2S Plan attached

8. Water & Waste Volumes

Fresh Water Required: 3410 bbl

Waste Water: 3410 bbl
Waste Solids: 2410 bbl

9. Other facets of operation

Is this a walking operation? If yes, describe.
Will be pre-setting casing? If yes, describe.

Attachments
___ Directional Plan
___ Other, describe

10M BOPE & Closed Loop Equipment Schematic

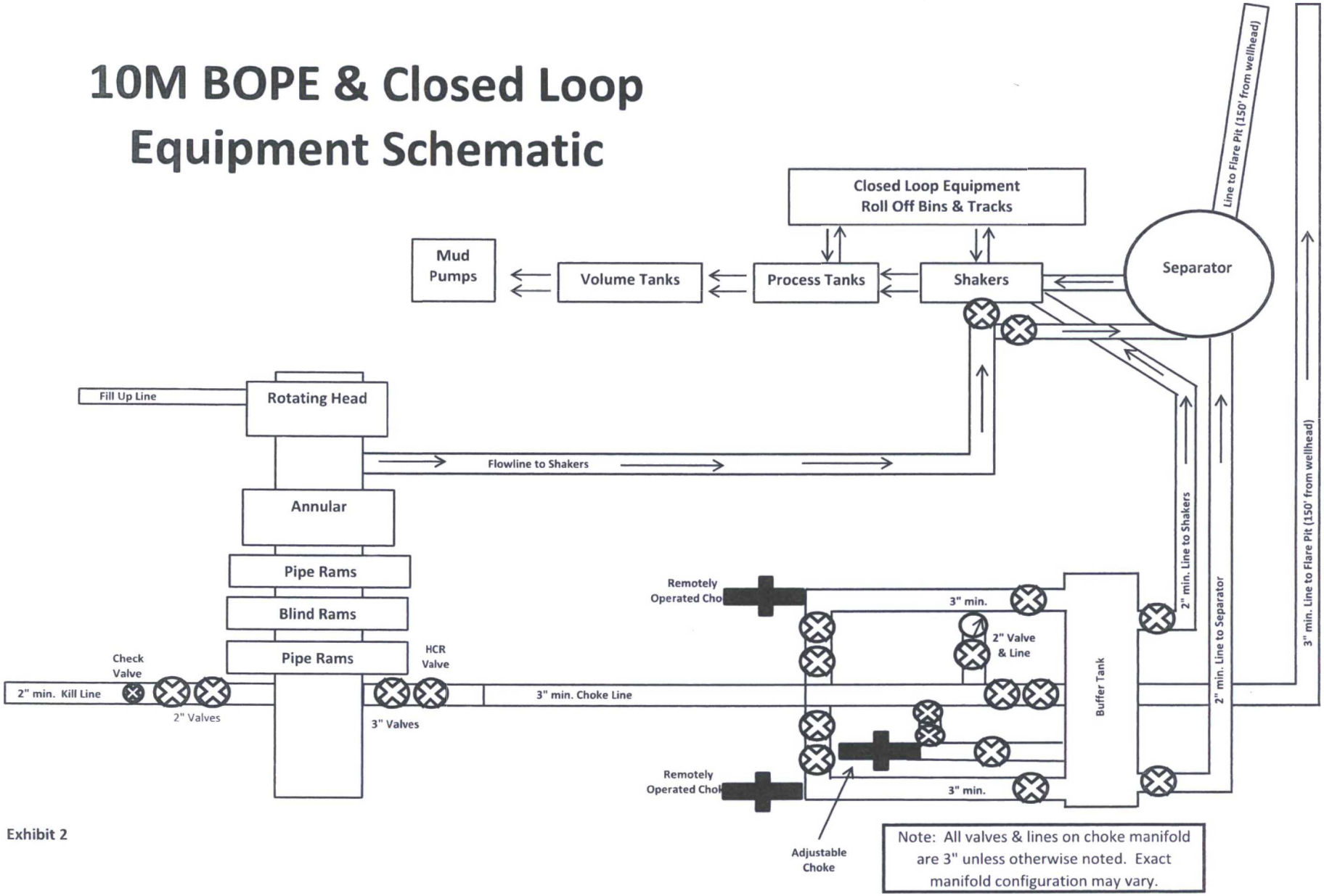
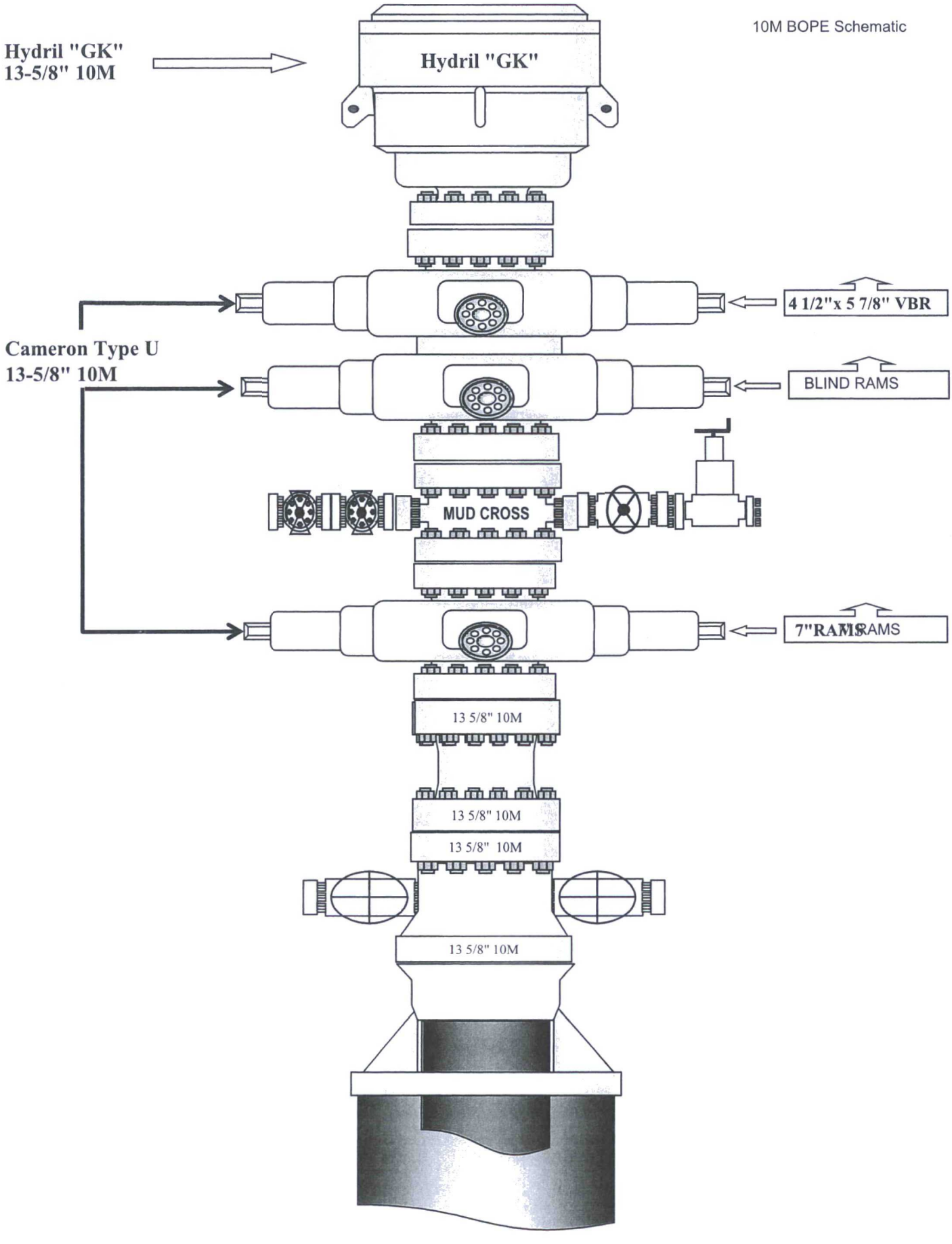


Exhibit 2

10M BOPE Schematic



All previous COA still apply except the following:

A. DRILLING OPERATIONS 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)

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. 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 is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst
Possibility of water flows in the Salado and Castile.
Possibility of lost circulation in the Salado, Red Beds, Rustler, and Delaware.

1. The **13-3/8** inch surface casing shall be set at approximately **850** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ **Operator has proposed DV tool at depth of 5553', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.**

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement as proposed. Operator shall provide method of verification.

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

Formation below the 9 5/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required through the curve and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7** inch 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** inch production Liner is:
   ☒ Cement as proposed by operator. Operator shall provide method of verification.

5. 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.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **10,000 (10M)** psi. **10M 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.**

6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
    c. 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.
    d. The results of the test shall be reported to the appropriate BLM office.
    e. 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.**
    f. 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.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. 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.

TMAK 05252017

13 3/8	surface csg in a		17 1/2	inch hole.		Design Factors		SURFACE	
Segment	#/ft	Grade		Coupling	Joint	Collapse	Burst	Length	Weight
"A"	48.00	H 40		ST&C	7.89	1.98	0.78	850	40,800
"B"								**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:	840			Tail Cmt	does not	circ to sfc.		Totals:	850	40,800

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	**655**	1233	**645**	91	**8.80**	1283	**2M**	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

9 5/8	casing inside the		13 3/8			Design Factors		INTERMEDIATE	
Segment	#/ft	Grade		Coupling	Joint	Collapse	Burst	Length	Weight
"A"	36.00	J 55		LT&C	2.87	1.13	0.58	3,453	124,308
"B"	**40.00**	**J 55**		**LT&C**	15.63	**1.15**	**0.65**	**832**	**33,280**
"C"								**0**	**0**
"D"								**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	4,285	157,588
The cement volume(s) are intended to achieve a top of					0	ft from surface or a		850	overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	**905**	1763	**1415**	25	**10.00**	3434	**5M**	0.81

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.02, 0.92, c, d

7	casing inside the		9 5/8			Design Factors		PRODUCTION	
Segment	#/ft	Grade		Coupling	Joint	Collapse	Burst	Length	Weight
"A"	26.00	HCP 110		LT&C	2.20	1.34	1.63	11,524	299,624
"B"	**26.00**	**HCP 110**		**BUTT**	7.41	**1.20**	**1.63**	**726**	**18,876**
w/8.4#/g mud, 30min Sfc Csg Test psig:	2,535						Totals:	12,250	318,500
B would be:					55.74	1.28	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	12250	12097	12097	11524	90	8	12587.6

The cement volume(s) are intended to achieve a top of **4085** ft from surface or a **200** overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.1503	**look ↘**	0	**1240**		**9.70**	5508	**10M**	0.55
Setting Depths for D V Tool(s):			5553				sum of sx	Σ CuFt	Σ%excess
% excess cmt by stage:		25	31				950	1560	26

MASP is within 10% of 5000psig, need exrta equip?

Tail cmt

4 1/2	Liner w/top @		8320			Design Factors		LINER	
Segment	#/ft	Grade		Coupling	Joint	Collapse	Burst	Length	Weight
"A"	13.50	P 110		LT&C	2.40	1.24	1.52	4,268	57,613
"B"	**13.50**	**P 110**		**LT&C**	3.20	**1.31**	**1.52**	**4,255**	**57,448**
w/8.4#/g mud, 30min Sfc Csg Test psig:	2,661						Totals:	8,523	115,061
A egment Design Factors would be:					2.07	1.31	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	16843	12097	12097	11524	90	8	12587.6

The cement volume(s) are intended to achieve a top of **8320** ft from surface or a **3930** overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
6 1/8	0.0942	**220**	653	**512**	28	**13.00**			0.56

Class 'H' tail cmt yld > 1.20 Capitan Reef est top XXXX. MASP is within 10% of 5000psig, need exrta equip?