Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM0441951

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.: JAWBONE FED COM XYA 10H

2. Name of Operator: MURCHISON OIL & GAS LLC

9. API Well No.: 30-015-49663

3a. Address: 7250 Dallas Parkway, Ste. 1400, Plano, TX 75024

3b. Phone No. *(include area code)*: (972) 931-0700

10. Field and Pool, or Exploratory: Purple Sage/WOLFCAMP

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SWSW / 200 FSL / 215 FWL / LAT 32.1521077 / LONG -104.2718902

At proposed prod. zone: NWNW / 330 FNL / 350 FWL / LAT 32.1801825 / LONG -104.2709636

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 2/T25S/R26E/NMP

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

12. County or Parish: EDDY

13. State:

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 200 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 320.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 728 feet

19. Proposed Depth: 8883 feet / 18882 feet

20. BLM/BIA Bond No. in file: FED: NMB001412

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3373 feet

22. Approximate date work will start*: 01/14/2022

23. Estimated duration: 90 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)*: CINDY COTTRELL / Ph: (972) 931-0700

Date: 05/19/2021

Title: Regulatory Coordinator

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: CHRISTOPHER WALLS / Ph: (575) 234-2234

Date: 06/22/2022

Title: Petroleum Engineer

Office: Carlsbad Field Office

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 06/22/2022

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	[2] Pool Code	[3] Pool Name
30-015-49663	98220	PURPLE SAGE WOLFCAMP, GAS

[4] Property Code	[5] Property Name	[6] Well Number
332751	JAWBONE FED COM XYA	10H

[7] OGRID No.	[8] Operator Name	[9] Elevation
15363	MURCHISON OIL AND GAS, LLC	3372.9

[10] Surface Location

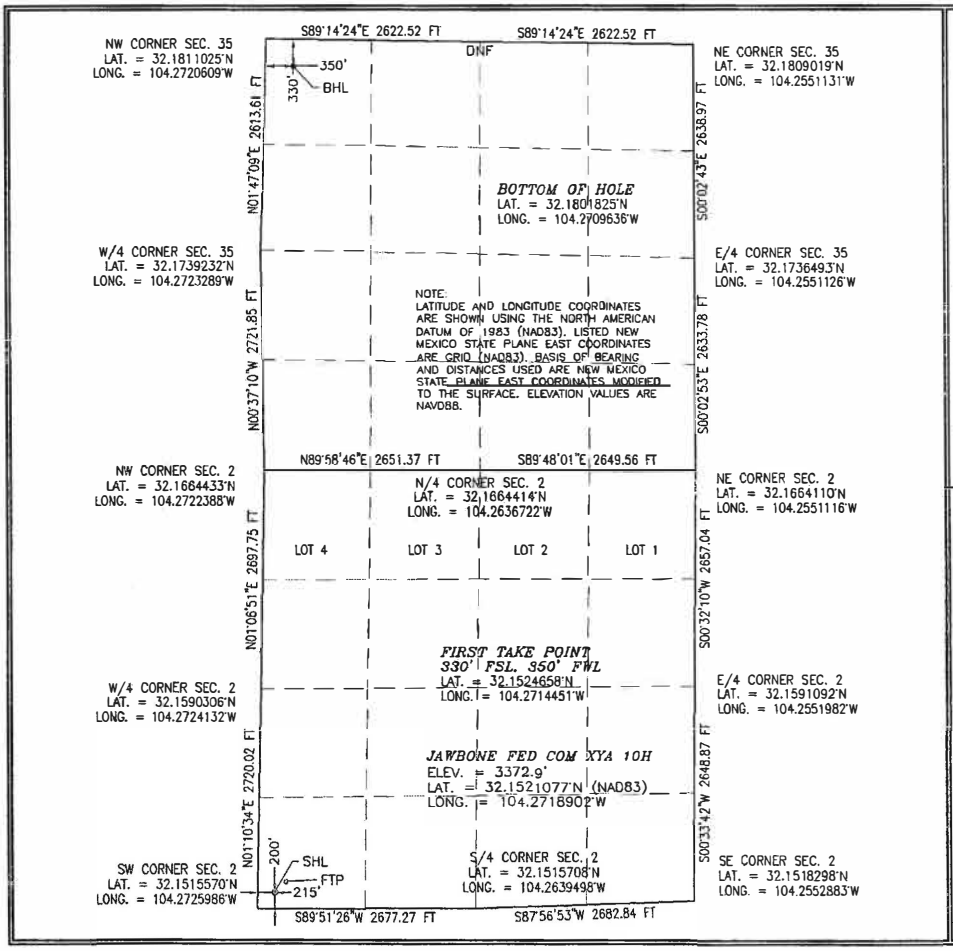
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	2	25 S	26 E		200	SOUTH	215	WEST	EDDY

[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
D	35	24 S	26 E		330	NORTH	350	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[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.

05/05/2021
Signature Date

GARY R. COOPER
Printed Name

rcooper@jdmii.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.

JANUARY 20, 2021
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: LS 12797

Intent [ ] As Drilled [ ]

API #

Operator Name:	Property Name:	Well Number
MURCHISON OIL AND GAS, LLC	**JAWBONE FED COM XYA**	**10H**

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
M	**2**	**25S**	**26E**		**200**	**SOUTH**	**215**	**WEST**	**EDDY**

Latitude	Longitude	NAD
32.1521077	**104.2718902**	**83**

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
M	**2**	**25S**	**26E**		**330**	**SOUTH**	**350**	**WEST**	**EDDY**

Latitude	Longitude	NAD
32.1524658	**104.2714451**	**83**

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
D	**35**	**24S**	**26E**		**330**	**NORTH**	**350**	**WEST**	**EDDY**

Latitude	Longitude	NAD
32.1801825	**104.2709636**	**83**

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

Is this well an infill well? [ ]

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

KZ 06/29/2018

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: Murchison Oil and Gas, LLC **OGRID:** 15363 **Date:** 06/23/2022

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
Jawbone Fed Com XYA 8H	30-015-_____	M-2-25S-26E	200 FSL 255 FWL	870	2,500	2,000
Jawbone Fed Com XYA 9H	30-015-_____	M-2-25S-26E	200 FSL 235 FWL	870	2,500	2,000
Jawbone Fed Com XYA 10H	30-015-_____	M-2-25S-26E	200 FSL 215 FEL	870	2,500	2,000

IV. Central Delivery Point Name: Jawbone Pad 3 CTB [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
Jawbone Fed Com XYA 8H	30-015-	7/1/2023	10/2/2023	10/16/2023	11/13/2023	11/13/2023
Jawbone Fed Com XYA 9H	30-015-	7/14/2023	9/22/2023	10/16/2023	11/13/2023	11/13/2023
Jawbone Fed Com XYA 10H	30-015-	7/27/2023	8/11/2023	10/16/2023	11/13/2023	11/13/2023

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.

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:
Printed Name: Gary R. Cooper
Title: Vice President Operations
E-mail Address: rcooper@jdmii.com
Date: 06/23/2022
Phone: 972-931-0700

OIL CONSERVATION DIVISION **(Only applicable when submitted as a standalone form)**
Approved By:
Title:
Approval Date:
Conditions of Approval:

Natural Gas Management Plan
Section 1 – Parts VI, VII and VIII

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

- Separation equipment is sized to allow for retention time and velocity to adequately separate oil, gas, and water at anticipated peak rates.
- Collection systems are appropriately sized to handle facility production rates on all three phases.
- Ancillary equipment and metering are designed to service without flow interruption of venting of gas.

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.

- **19.15.27.8 (A): Venting and Flaring of Natural Gas**
  - The tank battery is designed with the goal of minimizing flaring and preventing venting of natural gas. If gas capture is not possible, gas will be flared using properly sized flares or combustors in accordance with state air permit rules.
- **19.15.27.8 (B): Venting and Flaring During Drilling Operations**
  - A properly sized flare stack will be located at a minimum 100' from the nearest surface hole location on the pad.
  - All natural gas produced during drilling operations will be flared. Venting will only occur if there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety, public health, or the environment.
- **19.15.27.8 (C): Venting and Flaring During Completion or Recompletion Operations**
  - During all phases of flowback, wells will flow through a sand separator, or other appropriate flowback separation equipment, and the production stream will be directed to a central tank battery (CTB) through properly sized flowlines.
  - In certain situations, during frac or drill out, conditions may prevent gas from being sent to the tank battery. In such cases, gas will go through a gas buster and to flare on location. These are typically short term events.
  - The CTB will have properly sized separation equipment for maximum anticipated flow rates.
  - Multiple stages of separation will be used to separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a vapor recovery system that will recover any residual gas from the tanks and route it to a sales outlet.
- **19.15.27.8 (D): Venting and Flaring During Production Operations**
  - During production, the well stream will be routed to the CTB where multiple sages of separation will separate gas from liquids. All gas will be routed to a sales outlet. Fluids will be routed to tanks equipped with a closed loop system that will recover any residual gas from the tanks and route it to a sales outlet, minimizing tank emissions.
  - Flares are equipped with auto-ignition systems and continuous pilot operations.
  - Automatic gauging equipment is installed on all tanks.
- **19.15.27.8 (E): Performance Standards**
  - Production equipment will be designed to handle maximum anticipated rates and pressure.
  - Automatic gauging equipment is installed on all tanks to minimize venting.
  - All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
  - Flares are equipped with continuous pilots and auto-ignitors.

- Weekly AVO inspections will be performed on all wells and facilities that produce more than 60 MCFD.
- Gas/H2S detectors will be installed throughout the CTB to detect leaks and enable timely repairs.

- **19.15.27.8 (F): Measurement or Estimation of Vented and Flared Natural Gas**
  - All high pressure flared gas is measured by equipment conforming to API 14.10.
  - No meter bypasses are installed.
  - When metering is not practicable due to low pressure/low rate, the vented or flared volume will be estimated through flare flow curves with the assistance of air emissions consultants, as necessary.

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

- Best management practices for minimal venting will be used during well intervention operations and downhole maintenance.
- Prior to commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
- All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, it will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole maintenance, natural gas will be flared until it reaches pipeline specification.

AFMSS

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

Drilling Plan Data Report
06/22/2022

APD ID: 10400074818
Submission Date: 05/19/2021

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA
Well Number: 10H

Well Type: CONVENTIONAL GAS WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
4121629	QUATERNARY	2924	0	0	ALLUVIUM	USEABLE WATER	N
4121630	RUSTLER	2644	280	280	DOLOMITE, GYPSUM, SILTSTONE	NONE	N
4121631	TOP SALT	1892	1032	1032	SALT	OTHER : SALT	N
4121640	LAMAR	956	1968	1968	LIMESTONE	NONE	N
4121641	BELL CANYON	901	2023	2023	LIMESTONE, SANDSTONE, SHALE	NONE	N
4121642	CHERRY CANYON	-49	2973	2973	SANDSTONE	NATURAL GAS, OIL	N
4121643	BRUSHY CANYON	-1296	4220	4220	SANDSTONE	NATURAL GAS, OIL	N
4121644	BONE SPRING	-2544	5468	5468	LIMESTONE	NATURAL GAS, OIL	N
4121645	BONE SPRING 1ST	-3447	6371	6371	SANDSTONE	NATURAL GAS, OIL	Y
4121646	BONE SPRING 2ND	-3852	6776	6776	SANDSTONE	NATURAL GAS, OIL	Y
4121647	BONE SPRING 3RD	-5255	8179	8179	SANDSTONE	NATURAL GAS, OIL	Y
4121648	WOLFCAMP	-5584	8508	8525	LIMESTONE, SANDSTONE, SHALE	NATURAL GAS, OIL	Y
4121628		0					

Section 2 - Blowout Prevention

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA **Well Number:** 10H

Pressure Rating (PSI): 5M **Rating Depth:** 11000

Equipment: A 5M BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram and 1 annular preventer will be installed. The BOP will be used below surface casing to TD. An accumulator complying with Onshore Order 2 requirements for the BOP stack pressure rating will be present. Rotating head will be installed as needed.
Requesting Variance? YES

Variance request: A variance is requested for the use of a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.
Testing Procedure: A third party will test the BOPs. After surface casing is set and the BOP is nippled up, the BOP will be test to 250 psi low and 5000 psi high. Intermediate test will be made to 250 psi low and 5000 psi high. Annular preventor will be tested to 250 psi low and 2500 psi high on surface casing and 250 low and 2500 psi high on the intermediate casing.

Choke Diagram Attachment:

5M_choke_manifold_20210510142630.pdf

BOP Diagram Attachment:

Flex_Hose_Pressure_Graph_20210415083122.PDF

Flex_Hose_Certification_20210415083108.PDF

5M_BOP_20210510142642.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	16	13.375	NEW	API	N	0	300	0	300	3373	3073	300	J-55	48	ST&C	5.58	10.13	DRY	30.06	DRY	30.06
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1949	0	1949	2925	1424	1949	H-40	36	ST&C	1.69	2.79	DRY	4.19	DRY	4.19
3	PRODUCTION	8.5	5.5	NEW	API	N	0	18882	0	8883	2925	-5510	18882	P-110	17	BUTT	1.61	1.33	DRY	1.76	DRY	1.76

Casing Attachments

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA **Well Number:** 10H

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jawbone_Fed_Com_XYA_10H___Casing_Assumptions_20210518143028.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jawbone_Fed_Com_XYA_10H___Casing_Assumptions_20210518143341.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Jawbone_Fed_Com_XYA_10H___Casing_Assumptions_20210518142947.pdf

Section 4 - Cement

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA **Well Number:** 10H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	300	231	1.34	14.8	310	100	Class C	LCM, 2% CaCl
INTERMEDIATE	Lead		0	1449	418	1.82	12.9	761	80	Class C	CaCl2, Defoamer, LCM, Gel, Extender
INTERMEDIATE	Tail		1449	1949	214	1.32	14.8	282	80	Class C	Retarder
PRODUCTION	Lead		1649	8167	700	2.76	11.5	1932	30	Class H	Gel, Defoamer, Retarder, Extender, Salt, LCM
PRODUCTION	Tail		8167	18882	2455	1.3	14.2	3192	30	Class H	Retarder, Defoamer, Extender, Fluid Loss, Salt, Gel

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: All necessary mud products for weight addition and fluid loss control.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring will be used to monitor loss or gain of fluid.

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	300	SPUD MUD	8.4	8.7							
300	1949	SALT SATURATED	10	10							

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA **Well Number:** 10H

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
1949	18882	OTHER : Cut Brine or oil based mud	9	10							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

2 person mud logging program will be used from intermediate shoe to TD. GR/MWD from from surface to TD.

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

GAMMA RAY LOG,MEASUREMENT WHILE DRILLING,DIRECTIONAL SURVEY,MUD LOG/GEOLOGICAL LITHOLOGY LOG,CEMENT BOND LOG,

Coring operation description for the well:

None

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4086 **Anticipated Surface Pressure:** 2131

Anticipated Bottom Hole Temperature(F): 161

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

H2S_Plan___Jawbone_20210512131134.pdf

Operator Name: MURCHISON OIL & GAS LLC

Well Name: JAWBONE FED COM XYA **Well Number:** 10H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Jawbone_Fed_Com_XYA_10H___Well_Plan_v1_20210518143912.pdf

Other proposed operations facets description:

Casing running and BOP testing procedure with speed wellhead assembly as described in attachment.
Three wells will be drilled on this pad using batch drilling operations and a walking rig.

Other proposed operations facets attachment:

Jawbone_XYA_Casing___BOP_Procedure_for_Speed_Well_Head_Assembly_20210510152354.pdf

Speed_Wellhead_Diagram_20210415100956.pdf

Other Variance attachment:

MURCHISON OIL AND GAS, LLC

Company: Murchison Oil and Gas, LLC
Well: Jawbone Fed Com XYA 10H
County: Eddy County, New Mexico (NAD 83)
Rig: Latshaw 7
Wellbore: Wellbore #1
Design: Design #1
Created By: AAT
Date: 15:03, April 29 2021

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

To convert a Magnetic Direction to a Grid Direction, Add 7.051°
To convert a Magnetic Direction to a True Direction, Add 7.083° East
To convert a True Direction to a Grid Direction, Subtract 0.033°

Azimuths to Grid North
True North: -0.03°
Magnetic North: 7.05°

Magnetic Field
Strength: 47601.0nT
Dip Angle: 59.75°
Date: 7/1/2021
Model: HDGM2021

CASING DETAILS

TVD	MD	Name	Size
300.00	300.00	13 3/8"	13-3/8
1945.00	1945.00	9 5/8"	9-5/8

WELL DETAILS: Jawbone Fed Com XYA 10H

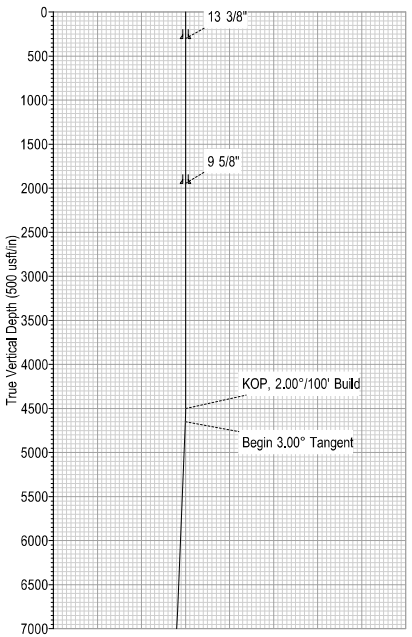
+N/-S	+E/-W	GL @ 3372.90 Northing	WELL @ 3397.90usft (Latshaw 7) Easting	Latitude	Longitude
0.00	0.00	419077.55	560352.63	32.152108	-104.271890

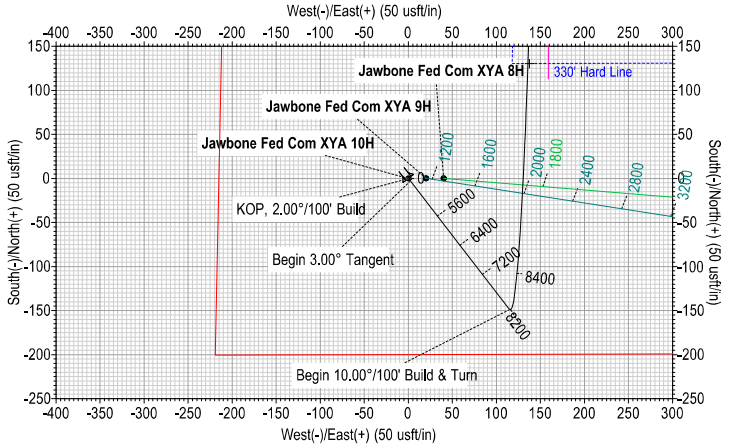
DESIGN TARGET DETAILS

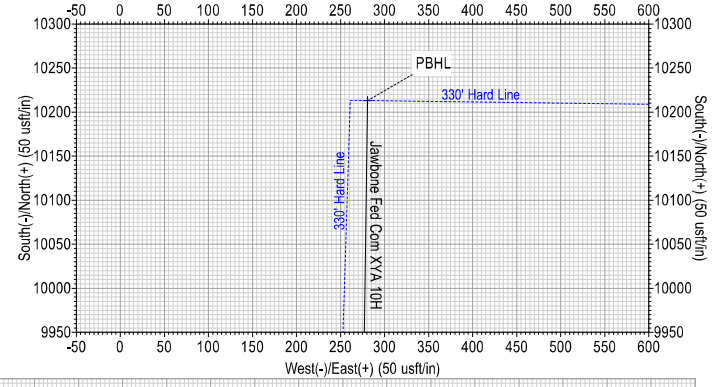
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP	8758.00	130.35	137.67	419207.89	560490.30	32.152466	-104.271445
PBHL	8883.00	10213.15	280.84	429290.70	560633.47	32.180183	-104.270964

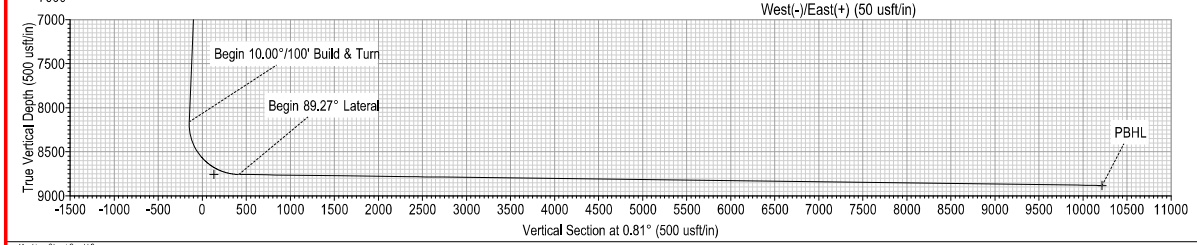
SECTION DETAILS

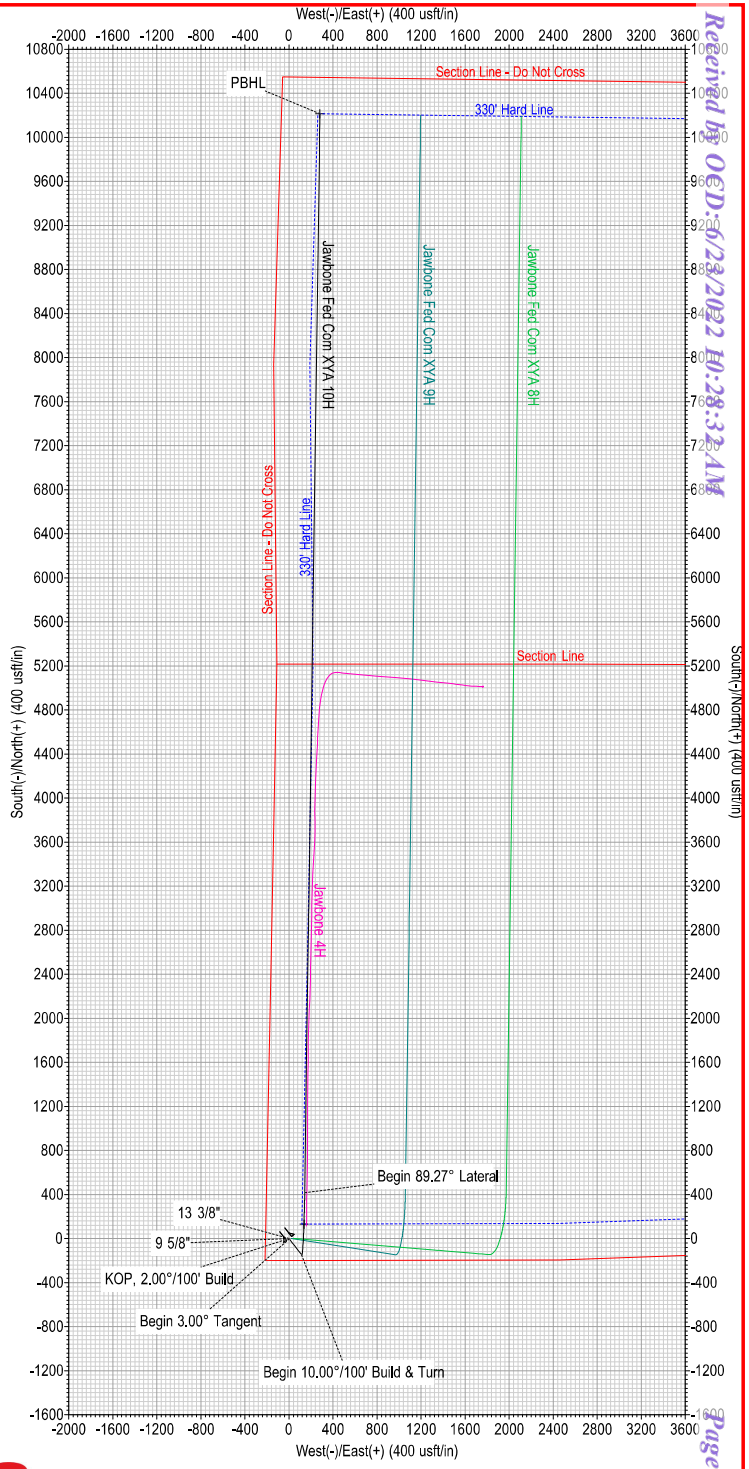
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
4500.00	0.00	0.00	4500.00	0.00	0.00	0.00	0.000	0.00	KOP, 2.00°/100' Build
4650.19	3.00	142.30	4650.12	-3.11	2.41	2.00	142.297	-3.08	Begin 3.00° Tangent
8166.81	3.00	142.30	8161.91	-148.91	115.11	0.00	0.000	-147.27	Begin 10.00°/100' Build & Turn
9083.00	89.27	0.81	8758.00	415.93	142.33	10.00	-141.472	417.90	Begin 89.27° Lateral
18882.00	89.27	0.81	8883.00	10213.15	280.84	0.00	0.000	10216.10	PBHL











MS Directional

MURCHISON OIL AND GAS, LLC

Murchison Oil and Gas, LLC

Eddy County, New Mexico (NAD 83)
Jawbone Fed Com XYA 8H-10H
Jawbone Fed Com XYA 10H

Wellbore #1

Plan: Design #1

Standard Planning Report

29 April, 2021

MS Directional

MURCHISON OIL AND GAS, LLC

MS Directional
Planning Report

MS Directional

Database:	EDM 5000.15 Conroe Db	**Local Co-ordinate Reference:**	Well Jawbone Fed Com XYA 10H
Company:	Murchison Oil and Gas, LLC	**TVD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Site:	Jawbone Fed Com XYA 8H-10H	**North Reference:**	Grid
Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Eddy County, New Mexico (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Jawbone Fed Com XYA 8H-10H

Site Position:		**Northing:**	419,077.64 usft	**Latitude:**	32.152108
From:	Lat/Long	**Easting:**	560,392.68 usft	**Longitude:**	-104.271761
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "		

Well Jawbone Fed Com XYA 10H

Well Position	**+N/-S**	0.00 usft	**Northing:**	419,077.55 usft	**Latitude:**	32.152108
	+E/-W	0.00 usft	**Easting:**	560,352.63 usft	**Longitude:**	-104.271890
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,372.90 usft
Grid Convergence:		0.033 °				

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021	7/1/2021	7.083	59.750	47,601.00

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.81

Plan Survey Tool Program **Date** 4/29/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,882.00	Design #1 (Wellbore #1)	MWD+HRGM	
				OWSG MWD + HRGM	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.000	
4,650.19	3.00	142.30	4,650.12	-3.11	2.41	2.00	2.00	0.00	142.297	
8,166.81	3.00	142.30	8,161.91	-148.91	115.11	0.00	0.00	0.00	0.000	
9,083.00	89.27	0.81	8,758.00	415.93	142.33	10.00	9.42	-15.44	-141.472	
18,882.00	89.27	0.81	8,883.00	10,213.15	280.84	0.00	0.00	0.00	0.000	PBHL - Jawbone Fe

MURCHISON OIL AND GAS, LLC

MS Directional
Planning Report

MS Directional

Database:	EDM 5000.15 Conroe Db	**Local Co-ordinate Reference:**	Well Jawbone Fed Com XYA 10H
Company:	Murchison Oil and Gas, LLC	**TVD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Site:	Jawbone Fed Com XYA 8H-10H	**North Reference:**	Grid
Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
13 3/8"									
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,945.00	0.00	0.00	1,945.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 2.00°/100' Build									
4,600.00	2.00	142.30	4,599.98	-1.38	1.07	-1.37	2.00	2.00	0.00
4,650.19	3.00	142.30	4,650.12	-3.11	2.41	-3.08	2.00	2.00	0.00
Begin 3.00° Tangent									
4,700.00	3.00	142.30	4,699.86	-5.18	4.00	-5.12	0.00	0.00	0.00

MURCHISON OIL AND GAS, LLC

MS Directional
Planning Report

MS Directional

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Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
4,800.00	3.00	142.30	4,799.73	-9.33	7.21	-9.22	0.00	0.00	0.00
4,900.00	3.00	142.30	4,899.59	-13.47	10.41	-13.32	0.00	0.00	0.00
5,000.00	3.00	142.30	4,999.45	-17.62	13.62	-17.42	0.00	0.00	0.00
5,100.00	3.00	142.30	5,099.31	-21.76	16.82	-21.52	0.00	0.00	0.00
5,200.00	3.00	142.30	5,199.18	-25.91	20.03	-25.62	0.00	0.00	0.00
5,300.00	3.00	142.30	5,299.04	-30.06	23.23	-29.72	0.00	0.00	0.00
5,400.00	3.00	142.30	5,398.90	-34.20	26.44	-33.82	0.00	0.00	0.00
5,500.00	3.00	142.30	5,498.76	-38.35	29.64	-37.92	0.00	0.00	0.00
5,600.00	3.00	142.30	5,598.63	-42.49	32.85	-42.03	0.00	0.00	0.00
5,700.00	3.00	142.30	5,698.49	-46.64	36.05	-46.13	0.00	0.00	0.00
5,800.00	3.00	142.30	5,798.35	-50.79	39.26	-50.23	0.00	0.00	0.00
5,900.00	3.00	142.30	5,898.21	-54.93	42.46	-54.33	0.00	0.00	0.00
6,000.00	3.00	142.30	5,998.08	-59.08	45.67	-58.43	0.00	0.00	0.00
6,100.00	3.00	142.30	6,097.94	-63.22	48.87	-62.53	0.00	0.00	0.00
6,200.00	3.00	142.30	6,197.80	-67.37	52.08	-66.63	0.00	0.00	0.00
6,300.00	3.00	142.30	6,297.66	-71.52	55.28	-70.73	0.00	0.00	0.00
6,400.00	3.00	142.30	6,397.53	-75.66	58.48	-74.83	0.00	0.00	0.00
6,500.00	3.00	142.30	6,497.39	-79.81	61.69	-78.93	0.00	0.00	0.00
6,600.00	3.00	142.30	6,597.25	-83.95	64.89	-83.03	0.00	0.00	0.00
6,700.00	3.00	142.30	6,697.12	-88.10	68.10	-87.13	0.00	0.00	0.00
6,800.00	3.00	142.30	6,796.98	-92.25	71.30	-91.23	0.00	0.00	0.00
6,900.00	3.00	142.30	6,896.84	-96.39	74.51	-95.33	0.00	0.00	0.00
7,000.00	3.00	142.30	6,996.70	-100.54	77.71	-99.43	0.00	0.00	0.00
7,100.00	3.00	142.30	7,096.57	-104.68	80.92	-103.53	0.00	0.00	0.00
7,200.00	3.00	142.30	7,196.43	-108.83	84.12	-107.63	0.00	0.00	0.00
7,300.00	3.00	142.30	7,296.29	-112.98	87.33	-111.73	0.00	0.00	0.00
7,400.00	3.00	142.30	7,396.15	-117.12	90.53	-115.83	0.00	0.00	0.00
7,500.00	3.00	142.30	7,496.02	-121.27	93.74	-119.93	0.00	0.00	0.00
7,600.00	3.00	142.30	7,595.88	-125.41	96.94	-124.03	0.00	0.00	0.00
7,700.00	3.00	142.30	7,695.74	-129.56	100.15	-128.13	0.00	0.00	0.00
7,800.00	3.00	142.30	7,795.60	-133.71	103.35	-132.23	0.00	0.00	0.00
7,900.00	3.00	142.30	7,895.47	-137.85	106.56	-136.33	0.00	0.00	0.00
8,000.00	3.00	142.30	7,995.33	-142.00	109.76	-140.43	0.00	0.00	0.00
8,100.00	3.00	142.30	8,095.19	-146.14	112.97	-144.53	0.00	0.00	0.00
8,166.81	3.00	142.30	8,161.91	-148.91	115.11	-147.27	0.00	0.00	0.00
Begin 10.00°/100' Build & Turn									
8,200.00	2.11	63.41	8,195.07	-149.33	116.18	-147.67	10.00	-2.70	-237.68
8,250.00	6.25	18.13	8,244.94	-146.33	117.85	-144.65	10.00	8.29	-90.56
8,300.00	11.12	10.35	8,294.35	-138.99	119.57	-137.29	10.00	9.74	-15.56
8,350.00	16.07	7.29	8,342.94	-127.37	121.32	-125.64	10.00	9.90	-6.10
8,400.00	21.05	5.65	8,390.32	-111.56	123.08	-109.81	10.00	9.95	-3.28
8,450.00	26.03	4.62	8,436.15	-91.68	124.85	-89.90	10.00	9.97	-2.07
8,500.00	31.02	3.90	8,480.06	-67.87	126.61	-66.08	10.00	9.98	-1.44
8,550.00	36.01	3.36	8,521.74	-40.33	128.35	-38.51	10.00	9.98	-1.08
8,600.00	41.00	2.94	8,560.85	-9.25	130.05	-7.42	10.00	9.99	-0.85
8,650.00	46.00	2.59	8,597.11	25.11	131.71	26.97	10.00	9.99	-0.69
8,700.00	50.99	2.30	8,630.23	62.51	133.30	64.39	10.00	9.99	-0.58
8,750.00	55.99	2.05	8,659.97	102.66	134.83	104.55	10.00	9.99	-0.51
8,800.00	60.99	1.82	8,686.10	145.25	136.26	147.16	10.00	9.99	-0.45
8,850.00	65.98	1.62	8,708.41	189.95	137.61	191.88	10.00	9.99	-0.41
8,900.00	70.98	1.43	8,726.75	236.44	138.84	238.38	10.00	9.99	-0.38
8,950.00	75.98	1.25	8,740.96	284.34	139.96	286.29	10.00	9.99	-0.36
9,000.00	80.97	1.08	8,750.95	333.31	140.96	335.27	10.00	9.99	-0.34

MURCHISON OIL AND GAS, LLC

MS Directional
Planning Report

MS Directional

Database:	EDM 5000.15 Conroe Db	**Local Co-ordinate Reference:**	Well Jawbone Fed Com XYA 10H
Company:	Murchison Oil and Gas, LLC	**TVD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Site:	Jawbone Fed Com XYA 8H-10H	**North Reference:**	Grid
Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
9,050.00	85.97	0.92	8,756.63	382.96	141.83	384.93	10.00	9.99	-0.33
9,083.00	89.27	0.81	8,758.00	415.93	142.33	417.90	10.00	9.99	-0.33
Begin 89.27° Lateral									
9,100.00	89.27	0.81	8,758.22	432.92	142.57	434.89	0.00	0.00	0.00
9,200.00	89.27	0.81	8,759.49	532.90	143.98	534.89	0.00	0.00	0.00
9,300.00	89.27	0.81	8,760.77	632.89	145.39	634.88	0.00	0.00	0.00
9,400.00	89.27	0.81	8,762.05	732.87	146.81	734.87	0.00	0.00	0.00
9,500.00	89.27	0.81	8,763.32	832.85	148.22	834.86	0.00	0.00	0.00
9,600.00	89.27	0.81	8,764.60	932.83	149.63	934.85	0.00	0.00	0.00
9,700.00	89.27	0.81	8,765.87	1,032.81	151.05	1,034.85	0.00	0.00	0.00
9,800.00	89.27	0.81	8,767.15	1,132.80	152.46	1,134.84	0.00	0.00	0.00
9,900.00	89.27	0.81	8,768.42	1,232.78	153.88	1,234.83	0.00	0.00	0.00
10,000.00	89.27	0.81	8,769.70	1,332.76	155.29	1,334.82	0.00	0.00	0.00
10,100.00	89.27	0.81	8,770.97	1,432.74	156.70	1,434.81	0.00	0.00	0.00
10,200.00	89.27	0.81	8,772.25	1,532.72	158.12	1,534.81	0.00	0.00	0.00
10,300.00	89.27	0.81	8,773.53	1,632.71	159.53	1,634.80	0.00	0.00	0.00
10,400.00	89.27	0.81	8,774.80	1,732.69	160.94	1,734.79	0.00	0.00	0.00
10,500.00	89.27	0.81	8,776.08	1,832.67	162.36	1,834.78	0.00	0.00	0.00
10,600.00	89.27	0.81	8,777.35	1,932.65	163.77	1,934.77	0.00	0.00	0.00
10,700.00	89.27	0.81	8,778.63	2,032.63	165.18	2,034.76	0.00	0.00	0.00
10,800.00	89.27	0.81	8,779.90	2,132.61	166.60	2,134.76	0.00	0.00	0.00
10,900.00	89.27	0.81	8,781.18	2,232.60	168.01	2,234.75	0.00	0.00	0.00
11,000.00	89.27	0.81	8,782.46	2,332.58	169.42	2,334.74	0.00	0.00	0.00
11,100.00	89.27	0.81	8,783.73	2,432.56	170.84	2,434.73	0.00	0.00	0.00
11,200.00	89.27	0.81	8,785.01	2,532.54	172.25	2,534.72	0.00	0.00	0.00
11,300.00	89.27	0.81	8,786.28	2,632.52	173.67	2,634.72	0.00	0.00	0.00
11,400.00	89.27	0.81	8,787.56	2,732.51	175.08	2,734.71	0.00	0.00	0.00
11,500.00	89.27	0.81	8,788.83	2,832.49	176.49	2,834.70	0.00	0.00	0.00
11,600.00	89.27	0.81	8,790.11	2,932.47	177.91	2,934.69	0.00	0.00	0.00
11,700.00	89.27	0.81	8,791.38	3,032.45	179.32	3,034.68	0.00	0.00	0.00
11,800.00	89.27	0.81	8,792.66	3,132.43	180.73	3,134.68	0.00	0.00	0.00
11,900.00	89.27	0.81	8,793.94	3,232.41	182.15	3,234.67	0.00	0.00	0.00
12,000.00	89.27	0.81	8,795.21	3,332.40	183.56	3,334.66	0.00	0.00	0.00
12,100.00	89.27	0.81	8,796.49	3,432.38	184.97	3,434.65	0.00	0.00	0.00
12,200.00	89.27	0.81	8,797.76	3,532.36	186.39	3,534.64	0.00	0.00	0.00
12,300.00	89.27	0.81	8,799.04	3,632.34	187.80	3,634.63	0.00	0.00	0.00
12,400.00	89.27	0.81	8,800.31	3,732.32	189.21	3,734.63	0.00	0.00	0.00
12,500.00	89.27	0.81	8,801.59	3,832.31	190.63	3,834.62	0.00	0.00	0.00
12,600.00	89.27	0.81	8,802.87	3,932.29	192.04	3,934.61	0.00	0.00	0.00
12,700.00	89.27	0.81	8,804.14	4,032.27	193.46	4,034.60	0.00	0.00	0.00
12,800.00	89.27	0.81	8,805.42	4,132.25	194.87	4,134.59	0.00	0.00	0.00
12,900.00	89.27	0.81	8,806.69	4,232.23	196.28	4,234.59	0.00	0.00	0.00
13,000.00	89.27	0.81	8,807.97	4,332.22	197.70	4,334.58	0.00	0.00	0.00
13,100.00	89.27	0.81	8,809.24	4,432.20	199.11	4,434.57	0.00	0.00	0.00
13,200.00	89.27	0.81	8,810.52	4,532.18	200.52	4,534.56	0.00	0.00	0.00
13,300.00	89.27	0.81	8,811.79	4,632.16	201.94	4,634.55	0.00	0.00	0.00
13,400.00	89.27	0.81	8,813.07	4,732.14	203.35	4,734.54	0.00	0.00	0.00
13,500.00	89.27	0.81	8,814.35	4,832.12	204.76	4,834.54	0.00	0.00	0.00
13,600.00	89.27	0.81	8,815.62	4,932.11	206.18	4,934.53	0.00	0.00	0.00
13,700.00	89.27	0.81	8,816.90	5,032.09	207.59	5,034.52	0.00	0.00	0.00
13,800.00	89.27	0.81	8,818.17	5,132.07	209.00	5,134.51	0.00	0.00	0.00
13,900.00	89.27	0.81	8,819.45	5,232.05	210.42	5,234.50	0.00	0.00	0.00
14,000.00	89.27	0.81	8,820.72	5,332.03	211.83	5,334.50	0.00	0.00	0.00
14,100.00	89.27	0.81	8,822.00	5,432.02	213.24	5,434.49	0.00	0.00	0.00

MURCHISON OIL AND GAS, LLC

MS Directional
Planning Report

MS Directional

Database:	EDM 5000.15 Conroe Db	**Local Co-ordinate Reference:**	Well Jawbone Fed Com XYA 10H
Company:	Murchison Oil and Gas, LLC	**TVD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Site:	Jawbone Fed Com XYA 8H-10H	**North Reference:**	Grid
Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
14,200.00	89.27	0.81	8,823.28	5,532.00	214.66	5,534.48	0.00	0.00	0.00
14,300.00	89.27	0.81	8,824.55	5,631.98	216.07	5,634.47	0.00	0.00	0.00
14,400.00	89.27	0.81	8,825.83	5,731.96	217.49	5,734.46	0.00	0.00	0.00
14,500.00	89.27	0.81	8,827.10	5,831.94	218.90	5,834.46	0.00	0.00	0.00
14,600.00	89.27	0.81	8,828.38	5,931.93	220.31	5,934.45	0.00	0.00	0.00
14,700.00	89.27	0.81	8,829.65	6,031.91	221.73	6,034.44	0.00	0.00	0.00
14,800.00	89.27	0.81	8,830.93	6,131.89	223.14	6,134.43	0.00	0.00	0.00
14,900.00	89.27	0.81	8,832.20	6,231.87	224.55	6,234.42	0.00	0.00	0.00
15,000.00	89.27	0.81	8,833.48	6,331.85	225.97	6,334.41	0.00	0.00	0.00
15,100.00	89.27	0.81	8,834.76	6,431.83	227.38	6,434.41	0.00	0.00	0.00
15,200.00	89.27	0.81	8,836.03	6,531.82	228.79	6,534.40	0.00	0.00	0.00
15,300.00	89.27	0.81	8,837.31	6,631.80	230.21	6,634.39	0.00	0.00	0.00
15,400.00	89.27	0.81	8,838.58	6,731.78	231.62	6,734.38	0.00	0.00	0.00
15,500.00	89.27	0.81	8,839.86	6,831.76	233.03	6,834.37	0.00	0.00	0.00
15,600.00	89.27	0.81	8,841.13	6,931.74	234.45	6,934.37	0.00	0.00	0.00
15,700.00	89.27	0.81	8,842.41	7,031.73	235.86	7,034.36	0.00	0.00	0.00
15,800.00	89.27	0.81	8,843.69	7,131.71	237.28	7,134.35	0.00	0.00	0.00
15,900.00	89.27	0.81	8,844.96	7,231.69	238.69	7,234.34	0.00	0.00	0.00
16,000.00	89.27	0.81	8,846.24	7,331.67	240.10	7,334.33	0.00	0.00	0.00
16,100.00	89.27	0.81	8,847.51	7,431.65	241.52	7,434.33	0.00	0.00	0.00
16,200.00	89.27	0.81	8,848.79	7,531.64	242.93	7,534.32	0.00	0.00	0.00
16,300.00	89.27	0.81	8,850.06	7,631.62	244.34	7,634.31	0.00	0.00	0.00
16,400.00	89.27	0.81	8,851.34	7,731.60	245.76	7,734.30	0.00	0.00	0.00
16,500.00	89.27	0.81	8,852.61	7,831.58	247.17	7,834.29	0.00	0.00	0.00
16,600.00	89.27	0.81	8,853.89	7,931.56	248.58	7,934.28	0.00	0.00	0.00
16,700.00	89.27	0.81	8,855.17	8,031.54	250.00	8,034.28	0.00	0.00	0.00
16,800.00	89.27	0.81	8,856.44	8,131.53	251.41	8,134.27	0.00	0.00	0.00
16,900.00	89.27	0.81	8,857.72	8,231.51	252.82	8,234.26	0.00	0.00	0.00
17,000.00	89.27	0.81	8,858.99	8,331.49	254.24	8,334.25	0.00	0.00	0.00
17,100.00	89.27	0.81	8,860.27	8,431.47	255.65	8,434.24	0.00	0.00	0.00
17,200.00	89.27	0.81	8,861.54	8,531.45	257.07	8,534.24	0.00	0.00	0.00
17,300.00	89.27	0.81	8,862.82	8,631.44	258.48	8,634.23	0.00	0.00	0.00
17,400.00	89.27	0.81	8,864.10	8,731.42	259.89	8,734.22	0.00	0.00	0.00
17,500.00	89.27	0.81	8,865.37	8,831.40	261.31	8,834.21	0.00	0.00	0.00
17,600.00	89.27	0.81	8,866.65	8,931.38	262.72	8,934.20	0.00	0.00	0.00
17,700.00	89.27	0.81	8,867.92	9,031.36	264.13	9,034.20	0.00	0.00	0.00
17,800.00	89.27	0.81	8,869.20	9,131.35	265.55	9,134.19	0.00	0.00	0.00
17,900.00	89.27	0.81	8,870.47	9,231.33	266.96	9,234.18	0.00	0.00	0.00
18,000.00	89.27	0.81	8,871.75	9,331.31	268.37	9,334.17	0.00	0.00	0.00
18,100.00	89.27	0.81	8,873.02	9,431.29	269.79	9,434.16	0.00	0.00	0.00
18,200.00	89.27	0.81	8,874.30	9,531.27	271.20	9,534.15	0.00	0.00	0.00
18,300.00	89.27	0.81	8,875.58	9,631.25	272.61	9,634.15	0.00	0.00	0.00
18,400.00	89.27	0.81	8,876.85	9,731.24	274.03	9,734.14	0.00	0.00	0.00
18,500.00	89.27	0.81	8,878.13	9,831.22	275.44	9,834.13	0.00	0.00	0.00
18,600.00	89.27	0.81	8,879.40	9,931.20	276.85	9,934.12	0.00	0.00	0.00
18,700.00	89.27	0.81	8,880.68	10,031.18	278.27	10,034.11	0.00	0.00	0.00
18,800.00	89.27	0.81	8,881.95	10,131.16	279.68	10,134.11	0.00	0.00	0.00
18,882.00	89.27	0.81	8,883.00	10,213.15	280.84	10,216.10	0.00	0.00	0.00
PBHL									

MURCHISON OIL AND GAS, LLC

MS Directional
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Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3397.90usft (Latshaw 7)
Site:	Jawbone Fed Com XYA 8H-10H	**North Reference:**	Grid
Well:	Jawbone Fed Com XYA 10H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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
FTP - Jawbone Fed C - plan misses target center by 70.48usft at 8818.82usft MD (8694.95 TVD, 161.84 N, 136.78 E) - Point	0.00	0.00	8,758.00	130.35	137.67	419,207.89	560,490.30	32.152466	-104.271445
PBHL - Jawbone Fed - plan hits target center - Point	0.00	0.00	8,883.00	10,213.15	280.84	429,290.70	560,633.47	32.180183	-104.270964

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
300.00	300.00	13 3/8"	13-3/8	17-1/2
1,945.00	1,945.00	9 5/8"	9-5/8	12-1/4

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,500.00	4,500.00	0.00	0.00	KOP, 2.00°/100' Build
4,650.19	4,650.12	-3.11	2.41	Begin 3.00° Tangent
8,166.81	8,161.91	-148.91	115.11	Begin 10.00°/100' Build & Turn
9,083.00	8,758.00	415.93	142.33	Begin 89.27° Lateral
18,882.00	8,883.00	10,213.15	280.84	PBHL

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**MURCHISON OIL AND GAS LLC**
LEASE NO.:	**NMNM0441951**
WELL NAME & NO.:	**JAWBONE FED COM XYA 10H**
SURFACE HOLE FOOTAGE:	200'/S & 215'/W
BOTTOM HOLE FOOTAGE	330'/N & 350'/W
LOCATION:	Section 02, T.25 S., R.26 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	○ 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 Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

Primary Casing Design/Alternate Casing Design:

1. The **13-3/8** inch surface casing shall be set at approximately **300** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and 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

 Approval Date: 06/22/2022

completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds 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 pounds 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 at **1949** feet. 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

Option 1 (Single Stage):

- Cement should tie-back at least **200 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. **BOP REQUIREMENTS**

Option 1:

a. 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.

b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **3000 (3M)** psi.

Option 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.

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 OOGO2.III.A.2.i must be followed.

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
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

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

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 Onshore Oil and Gas Order No. 2 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 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 intergrity 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 intergrity 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 Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

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 OOGO2.III.A.2.i 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 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. 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 plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

    c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 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 Onshore Order No. 2.

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.

GENERAL REQUIREMENTS

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

d. Spudding well (minimum of 24 hours)
e. Setting and/or Cementing of all casing strings (minimum of 4 hours)
f. BOPE tests (minimum of 4 hours)

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      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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E. CASING

9. 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.

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11. 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 intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

12. 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.

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

14. 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.

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16. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

F. PRESSURE CONTROL

 Approval Date: 06/22/2022

5. 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 RP 53 Sec. 17.

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    f. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    g. 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.
    h. Manufacturer representative shall install the test plug for the initial BOP test.
    i. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    j. 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.

6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    i. 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

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j. 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 plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

k. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 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).

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m. The results of the test shall be reported to the appropriate BLM office.

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o. 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.

p. 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 Onshore Order No. 2.

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Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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:

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20. 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.

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22. 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.

23. 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.
24. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

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u. The results of the test shall be reported to the appropriate BLM office.

v. 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.

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RI06162022.

 Approval Date: 06/22/2022

Murchison Oil and Gas, LLC

Hydrogen Sulfide Drilling Operations Plan

H2S Safety Instructions for Employees and Contractors

1. Physical and chemical properties of H2S.
2. Health hazards of H2S.
3. Principal and operation of H2S detectors, warning system, and briefing areas.
4. Evacuation procedures, routes, and first aid.
5. Proper use of safety equipment and life support systems.
6. Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30-minute pressure demand air packs.

H2S Detection and Alarm Systems

1. H2S sensor/detectors will be located on the drilling rig floor, in the base of the sub structure/cellar area, and on the mud pits in the shale shaker area. Additional H2S detectors may be placed as deemed necessary.
2. An audio alarm system will be installed on the derrick floor and in the dog house.

Windsocks and Wind Streamers

1. Windsocks at the mud pit area should be high enough to be visible.
2. Windsock on the rig floor and on top of the dog house should be high enough to be visible.

Condition Flags and Signs

1. Warning sign on access road to location.
2. Flags to be displayed on sign at entrance to location:
    a. Green Flag: Normal Safe Operation Condition
    b. Yellow Flag: Potential Pressure and Danger
    c. Red Flag: Danger
        i. H2S present in dangerous concentrations
        ii. Only H2S trained personnel admitted to location

Well Control Equipment

1. Flare line 150' from wellhead with igniter.
2. Choke manifold with a remotely operated choke.
3. Mud/gas separator.

Mud Program

1. In the event of H2S concentrations of 100 ppm or greater, the following will be considered:
    a. Use of a degasser.
    b. Use of a zinc based mud treatment.
    c. Increasing mud weight.

Communication

1. While working under masks, chalkboards will be used for communications.
2. Hand signals will be used where chalkboard is inappropriate.
3. A two way radio will be used to communicate off location in case emergency help is required. Cellular telephones will be available at most drilling foreman's trailer or living quarters.

Drill Stem Testing

1. No DST or cores are planned at this time.

Drilling Equipment

1. Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment.

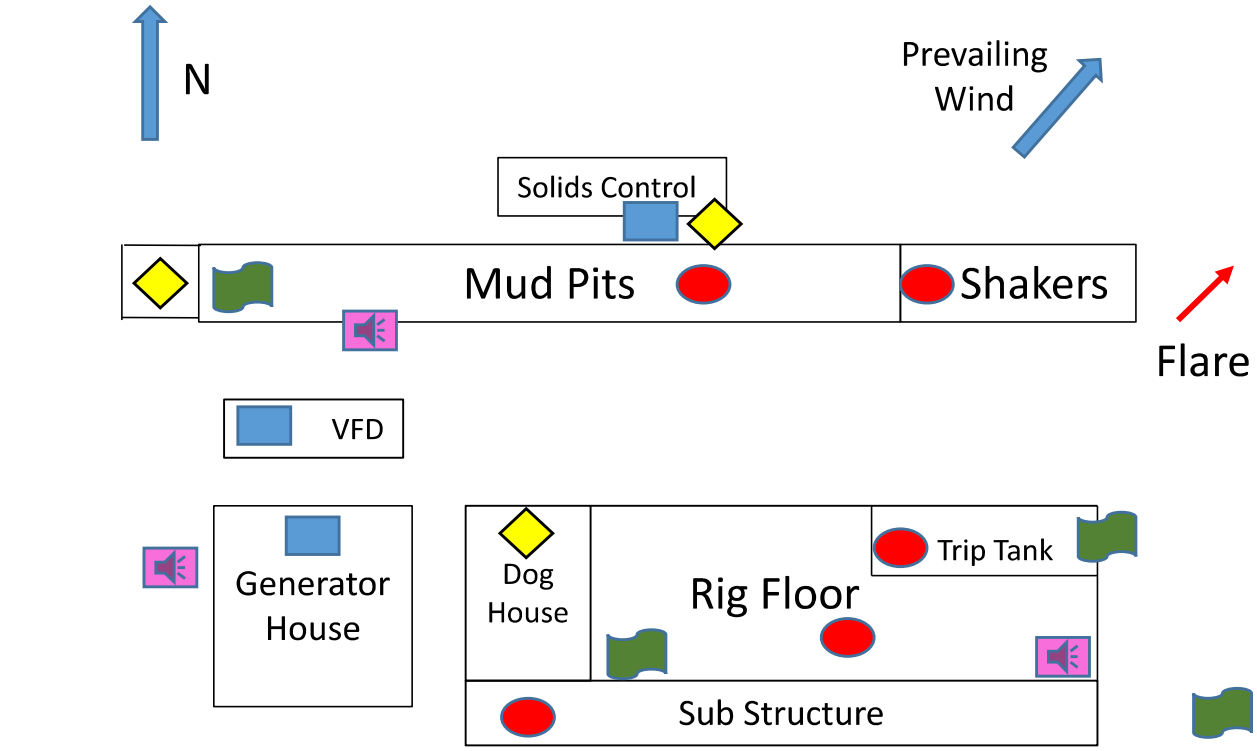
Public Safety - Emergency Contacts

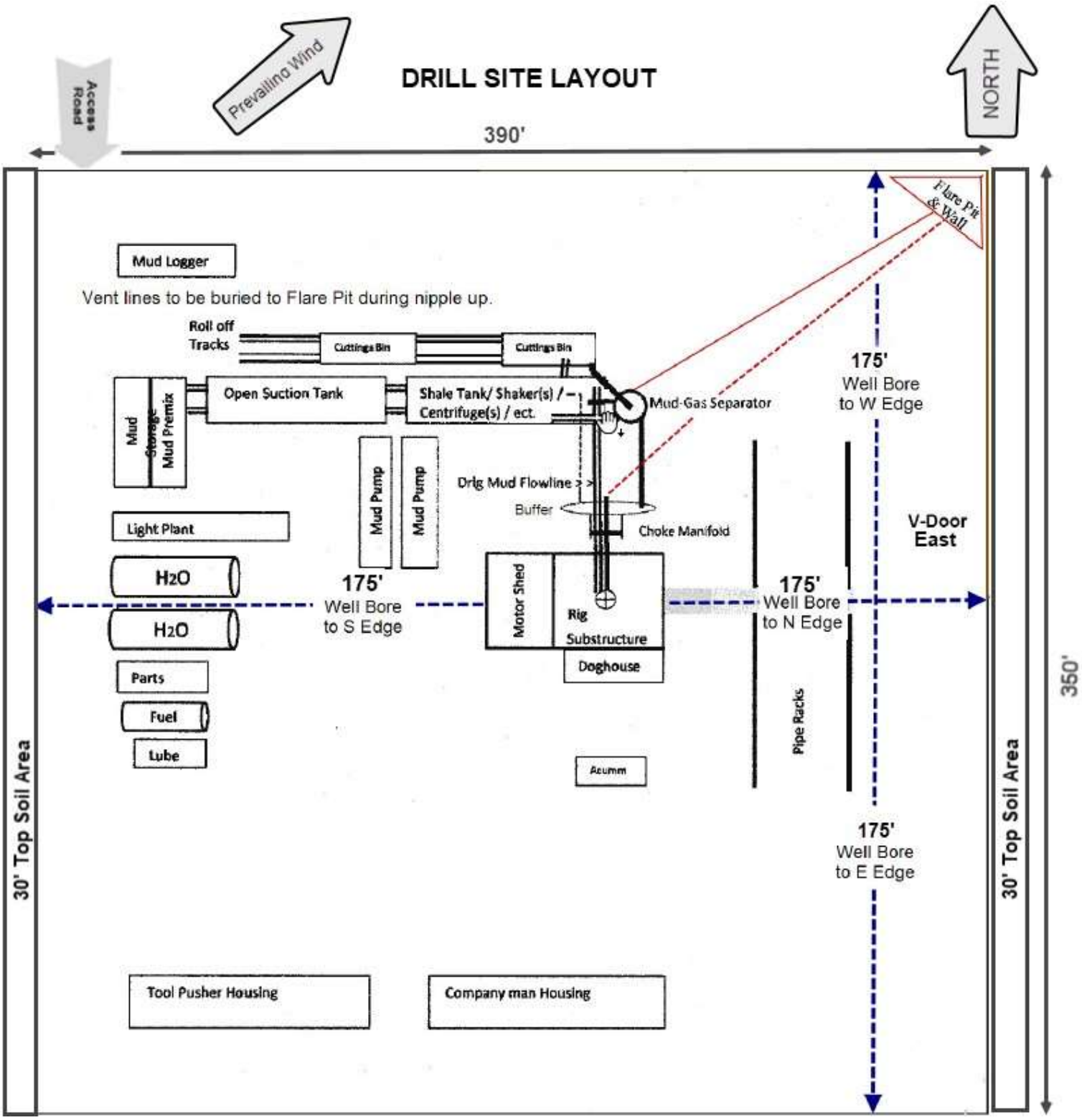
Agency	Telephone Number
Eddy County Sheriff's Department	575-887-7551
Carlsbad Medical Center	575-887-4100
Carlsbad Fire Department	575-885-3125
Carlsbad Police	575-885-2111
Artesia Fire Department	575-746-5050
Eddy County Emergency Management	575-628-5450
Poison Control Center	575-272-3115
LEPC (Local Emergency Planning Com.)	575-887-3798
National Emergency Response Commission	505-476-9600
US Bureau of Land Management	575-887-6544

Murchison – Emergency Contacts

Name	Title	Office Number	Cell Number
Rusty Cooper	VP Operations	972-931-0700	972-322-7466
Greg Boans	Production Manager	575-628-3932	575-706-0667

H2S Drilling Rig Diagram




DRILL SITE LAYOUT
Access Road
Prevailing Wind
NORTH
390'
350'
Flare Pit & Wall
Mud Logger
Vent lines to be buried to Flare Pit during nipple up.
Roll off Tracks
Cuttings Bin
Cuttings Bin
Open Suction Tank
Shale Tank/ Shaker(s) / Centrifuge(s) / ect.
Mud-Gas Separator
Mud Storage
Mud Premix
Mud Pump
Mud Pump
Drlg Mud Flowline
Buffer
Choke Manifold
Light Plant
H2O
H2O
Parts
Fuel
Lube
175' Well Bore to S Edge
Motor Shed
Rig Substructure
Doghouse
175' Well Bore to N Edge
175' Well Bore to W Edge
V-Door East
Pipe Racks
Acumm
175' Well Bore to E Edge
30' Top Soil Area
30' Top Soil Area
Tool Pusher Housing
Company man Housing

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 119852

CONDITIONS

Operator:	OGRID:
Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	15363
	Action Number: 119852
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water	6/29/2022
kpickford	Notify OCD 24 hours prior to casing & cement	6/29/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	6/29/2022
kpickford	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	6/29/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	6/29/2022
kpickford	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	6/29/2022