

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**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		5. Lease Serial No. <b>NMNM14497</b> 6. If Indian, Allottee or Tribe Name  7. If Unit or CA Agreement, Name and No.  8. Lease Name and Well No.  <b>SHIPROCK 5 FED COM</b>  <b>741H</b>
2. Name of Operator <b>EOG RESOURCES INCORPORATED</b>		9. API Well No. <b>30-025-54704</b>
3a. Address <b>1111 BAGBY SKY LOBBY 2, HOUSTON, TX 77002</b>	3b. Phone No. (include area code) <b>(713) 651-7000</b>	10. Field and Pool, or Exploratory <b>BOBCAT DRAW; UPPER WOLFCAMP</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <b>TR A / 300 FNL / 993 FEL / LAT 32.1659593 / LONG -103.4864</b> At proposed prod. zone <b>TR H / 2540 FNL / 744 FEL / LAT 32.1452885 / LONG -103.4858581</b>		11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 5/T25S/R34E/NMP</b>
14. Distance in miles and direction from nearest town or post office*		12. County or Parish <b>LEA</b>
13. State <b>NM</b>		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>100 feet</b>	16. No of acres in lease	17. Spacing Unit dedicated to this well <b>480.0</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>15 feet</b>	19. Proposed Depth <b>12770 feet / 20343 feet</b>	20. BLM/BIA Bond No. in file <b>FED:</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3412 feet</b>	22. Approximate date work will start* <b>08/24/2023</b>	23. Estimated duration <b>25 days</b>
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.<br>2. A Drilling Plan.<br>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).<br>5. Operator certification.<br>6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>CRAIG RICHARDSON / Ph: (713) 651-7000</b>	Date <b>02/27/2023</b>
Title <b>Regulatory Specialist</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>CODY LAYTON / Ph: (575) 234-5959</b>	Date <b>03/05/2025</b>
Title <b>Assistant Field Manager Lands &amp; Minerals</b>		
Office <b>Carlsbad Field Office</b>		

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.

(Continued on page 2)

\*(Instructions on page 2)



Approval Date: 03/05/2025

C-102  Submit Electronically Via OCD Permitting	State of New Mexico  Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024	
		Submittal Type:	<input checked="" type="checkbox"/> Initial Submittal
			<input type="checkbox"/> Amended Report
		<input type="checkbox"/> As Drilled	

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-54704	Pool Code 98094	Pool Name BOBCAT DRAW; UPPER WOLFCAMP
Property Code 333512	Property Name SHIPROCK 5 FED COM	Well Number 741H
OGRID No. 7377	Operator Name EOG RESOURCES, INC.	Ground Level Elevation 3412'
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal		Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the N/S	Feet from the E/W	Latitude	Longitude	County
1	5	25S	34E	-	300' N	933' E	N 32.1659593	W 103.4864081	LEA

Bottom Hole Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the N/S	Feet from the E/W	Latitude	Longitude	County
H	8	25S	34E	-	2540' N	744' E	N 32.1452885	W 103.4858570	LEA

Dedicated Acres 480.04	Infill or Defining Well Infill	Defining Well API 30-025-50769	Overlapping Spacing Unit (Y/N) N	Consolidated Code C
Order Numbers NMNM105823707			Well Setbacks are under Common Ownership: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Kick Off Point (KOP)

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the N/S	Feet from the E/W	Latitude	Longitude	County
1	5	25S	34E	-	50' N	744' E	N 32.1666465	W 103.4857939	LEA


First Take Point (FTP)

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the N/S	Feet from the E/W	Latitude	Longitude	County
1	5	25S	34E	-	100' N	744' E	N 32.1665090	W 103.4857952	LEA

Last Take Point (LTP)

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the N/S	Feet from the E/W	Latitude	Longitude	County
H	8	25S	34E	-	2540' N	744' E	N 32.1452885	W 103.4858570	LEA

Unitized Area or Area of Uniform Intrest CA	Spacing Unity Type <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Ground Floor Elevation 3437'
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<b>OPERATOR CERTIFICATION</b>  <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief; and, if the well is a vertical or directional well, 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 a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i>  <i>If this well is a horizontal well, I further certify that this organization has received The consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.</i>  <i>Star L Harrell</i> 5/12/25 Signature Date Star L Harrell Print Name star_harrell@eogresources.com E-mail Address		<b>SURVEYORS CERTIFICATION</b>  <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i>   3/13/2025 4:22:44 PM Signature and Seal of Professional Surveyor Date Certificate Number Date of Survey 10/22/2020	
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C-102

Submit Electronically  
Via OCD PermittingState of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION

Revised July 9, 2024

Submittal  
Type:

- ☐ Initial Submittal
- ☐ Amended Report
- ☐ As Drilled

Property Name and Well Number

SHIPROCK 5 FED COM 741H

## SURFACE LOCATION (SHL)

NEW MEXICO EAST  
NAD 1983  
X=803404 Y=425142  
LAT.: N 32.1659593  
LONG.: W 103.4864081

NAD 1927

X=762219 Y=425084  
LAT.: N 32.1658348  
LONG.: W 103.4859361  
300' FNL 933' FEL

## KICK OFF POINT (KOP)

NEW MEXICO EAST  
NAD 1983  
X=803592 Y=425394  
LAT.: N 32.1666465  
LONG.: W 103.4857939

NAD 1927

X=762407 Y=425335  
LAT.: N 32.1665219  
LONG.: W 103.4853219  
50' FNL 744' FEL

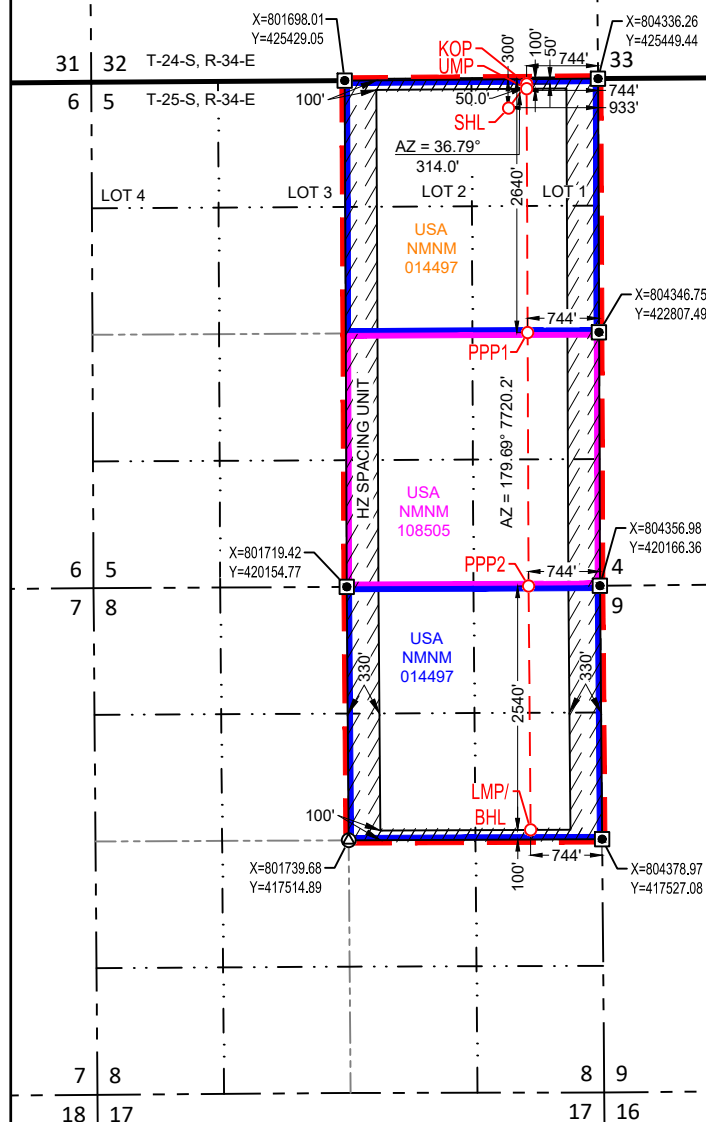
## UPPER MOST PERF. (UMP)

NEW MEXICO EAST  
NAD 1983  
X=803592 Y=425344  
LAT.: N 32.1665090  
LONG.: W 103.4857952

NAD 1927

X=762407 Y=425285  
LAT.: N 32.1663844  
LONG.: W 103.4853232  
100' FNL 744' FEL

T-25-S, R-34-E  
SECTION 5  
LOT 1 - 40.05 ACRES  
LOT 2 - 39.99 ACRES  
LOT 3 - 39.93 ACRES  
LOT 4 - 39.87 ACRES



## PROPOSED PERF. POINT (PPP1)

NEW MEXICO EAST  
NAD 1983  
X=803603 Y=422804  
LAT.: N 32.1595275  
LONG.: W 103.4858266

NAD 1927

X=762417 Y=422746  
LAT.: N 32.1594028  
LONG.: W 103.4853550  
2640' FNL 744' FEL

## PROPOSED PERF. POINT (PPP2)

NEW MEXICO EAST  
NAD 1983  
X=803613 Y=420163  
LAT.: N 32.1522690  
LONG.: W 103.4858607

NAD 1927

X=762427 Y=420105  
LAT.: N 32.1521443  
LONG.: W 103.4853896  
0' FSL 744' FEL

LOWER MOST PERF. (LMP)  
BOTTOM HOLE LOCATION (BHL)

NEW MEXICO EAST  
NAD 1983  
X=803634 Y=417624  
LAT.: N 32.1452885  
LONG.: W 103.4858570

NAD 1927

X=762448 Y=417566  
LAT.: N 32.1451638  
LONG.: W 103.4853863  
2540' FNL 744' FEL

## SURVEYORS 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.

10/22/2020

Date of Survey

Signature and Seal of Professional Surveyor:



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:** EOG Resources, Inc. **OGRID:** 7377 **Date:** 5/12/2025

**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
SHIPROCK 5 FED COM 741H		A-5-25S-34E	300' FNL & 933' FEL	+/- 1000	+/- 3500	+/- 3000

**IV. Central Delivery Point Name:** Shiprock 5 Fed Com 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
SHIPROCK 5 FED COM 741H		6/10/25	6/25/25	9/01/25	10/01/25	1/01/26

**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: <i>Star L Harrell</i>
Printed Name: Star L Harrell
Title: Regulatory Advisor
E-mail Address: Star_Harrell@eogresources.com
Date: 5/12/2025
Phone: (432) 848-9161
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:



**Natural Gas Management Plan****Items VI-VIII****VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.**

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid – Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release gas from the well.

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

- All flare stacks will be properly sized. The flare stacks 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, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

**Completions/Recompletions Operations**

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

**Production Operations**

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All plunger lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.

**Performance Standards**

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 Mcfd.

**Measurement & Estimation**

- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses will be installed.



- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

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

- During downhole well maintenance, EOG will use best management practices to vent as minimally as possible.
- Prior to the 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, the equipment 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 well maintenance, natural gas will be flared until it reaches pipeline specification.



## Shiprock 5 Fed Com 741H

**1. GEOLOGIC NAME OF SURFACE FORMATION:**

Permian

**2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:**

Rustler	1,133'
Tamarisk Anhydrite	1,616'
Top of Salt	1,991'
Base of Salt	5,020'
Lamar	5,270'
Bell Canyon	5,299'
Cherry Canyon	6,251'
Brushy Canyon	7,809'
Bone Spring Lime	9,220'
Leonard Shale	9,270'
1 <sup>st</sup> Bone Spring Sand	10,194'
2 <sup>nd</sup> Bone Spring Shale	10,418'
2 <sup>nd</sup> Bone Spring Sand	10,810'
3 <sup>rd</sup> Bone Spring Carb	11,253'
3 <sup>rd</sup> Bone Spring Sand	11,807'
Wolfcamp	12,242'
TD	12,770'

**3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:**

Upper Permian Sands	0- 400'	Fresh Water
Bell Canyon	5,299'	Oil
Cherry Canyon	6,251'	Oil
Brushy Canyon	7,809'	Oil
Leonard (Avalon) Shale	9,270'	Oil
1 <sup>st</sup> Bone Spring Sand	10,194'	Oil
2 <sup>nd</sup> Bone Spring Shale	10,418'	Oil
2 <sup>nd</sup> Bone Spring Sand	10,810'	Oil
3 <sup>rd</sup> Bone Spring Carb	11,253'	Oil
3 <sup>rd</sup> Bone Spring Sand	11,807'	Oil
Wolfcamp	12,242'	Oil

No other Formations are expected to give up oil, gas or fresh water in measurable quantities. Surface fresh water sands will be protected by setting 9-5/8" or 10-3/4" casing at 1,640' and circulating cement back to surface.



## Shiprock 5 Fed Com 741H

## 4. CASING PROGRAM - Design A

Hole Size	Interval MD		Interval TVD		Csg OD	Weight	Grade	Conn
	From (ft)	To (ft)	From (ft)	To (ft)				
12-1/4"	0	1,640	0	1,640	9-5/8"	36#	J-55	LTC
8-3/4"	0	11,358	0	11,350	7-5/8"	29.7#	HCP-110	FXL
6-3/4"	0	10,858	0	10,850	5-1/2"	20#	P110-EC	DWC/C IS MS
6-3/4"	10,858	11,358	10,850	11,350	5-1/2"	20#	P110-EC	Vam Sprint SF
6-3/4"	11,358	20,342	11,350	12,770	5-1/2"	20#	P110-EC	DWC/C IS MS

Variance is requested to waive the centralizer requirements for the 7-5/8" casing in the 8-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 8-3/4 hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 6-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 6-3/4" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive the annular clearance requirements for the 5-1/2" casing by 7-5/8" casing annulus to the proposed top of cement.

EOG requests permission to allow deviation from the 0.422" annulus clearance requirement from Onshore Order #2 under the following conditions:

- Annular clearance to meet or exceed 0.422" between intermediate casing ID and production casing coupling only on the first 500' overlap between both casing strings.
- Annular clearance less than 0.422" is acceptable for the production open hole section.

**Cementing Program:**

Depth	No. Sacks	Wt. ppg	Yld Ft <sup>3</sup> /sk	Slurry Description
1,640' 9-5/8"	430	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl <sub>2</sub> + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	80	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,440')
11,350' 7-5/8"	440	14.2	1.11	1st Stage (Tail): Class C + 0.6% Halad-9 + 0.45% HR-601 + 3% Microbond (TOC @ 7,610')
	1300	14.8	1.5	2nd Stage (Bradenhead squeeze): Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
20,342' 5-1/2"	820	14.2	1.31	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 10,850')



### Shiprock 5 Fed Com 741H

Additive	Purpose
Bentonite Gel	Lightweight/Lost circulation prevention
Calcium Chloride	Accelerator
Cello-flake	Lost circulation prevention
Sodium Metasilicate	Accelerator
MagOx	Expansive agent
Pre-Mag-M	Expansive agent
Sodium Chloride	Accelerator
FL-62	Fluid loss control
Halad-344	Fluid loss control
Halad-9	Fluid loss control
HR-601	Retarder
Microbond	Expansive Agent

EOG requests variance from minimum standards to pump a two stage cement job on the 7-5/8" intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon (7,809') and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 300 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (2.30 yld, 12.91 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

EOG will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

EOG will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

Cement integrity tests will be performed immediately following plug bump.

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

## 5. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line).

The minimum blowout preventer equipment (BOPE) shown in Exhibit #1 will consist of a single ram, mud cross and double ram-type (10,000 psi WP) preventer and an annular preventer (5,000 psi WP). Both units will be hydraulically operated and the ram-type will be equipped with blind rams on bottom and drill pipe rams on top.



### Shiprock 5 Fed Com 741H

EOG will utilize wing unions on BOPE connections that can be isolated from wellbore pressure through means of a choke. All wing unions will be rated to a pressure that meets or exceeds the pressure rating of the BOPE system.

Variance is requested to use a 5,000 psi annular BOP with the 10,000 psi BOP stack.

Pipe rams and blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe.

## 6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM:

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal.

The applicable depths and properties of the drilling fluid systems are as follows:

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0 – 1,640'	Fresh - Gel	8.6-8.8	28-34	N/c
1,640' – 11,350'	Brine	10.0-10.2	28-34	N/c
11,350' – 12,300'	Oil Base	8.7-9.4	58-68	N/c - 6
12,300' – 20,342' Lateral	Oil Base	10.0-14.0	58-68	4 - 6

The highest mud weight needed to balance formation is expected to be 11.5 ppg. In order to maintain hole stability, mud weights up to 14.0 ppg may be utilized.

An electronic pit volume totalizer (PVT) will be utilized on the circulating system, to monitor pit volume, flow rate, pump pressure and stroke rate.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times.

## 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:

(A) A kelly cock will be kept in the drill string at all times.

(B) A full opening drill pipe-stabbing valve (inside BOP) with proper drill pipe connections will be on the rig floor at all times.

(C) H<sub>2</sub>S monitoring and detection equipment will be utilized from surface casing point to TD.



## Shiprock 5 Fed Com 741H

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

Open-hole logs are not planned for this well.

GR-CCL Will be run in cased hole during completions phase of operations.

### 9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND POTENTIAL HAZARDS:

The estimated bottom-hole temperature (BHT) at TD is 198 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 9,297 psig and a maximum anticipated surface pressure of 6,487 psig (based on 14.0 ppg MW). No hydrogen sulfide or other hazardous gases or fluids have been encountered, reported or are known to exist at this depth in this area. Severe loss circulation is expected from 7,809' to intermediate casing point.

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

The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and Cement on the subject well. After WOC 8 hours or 500 psi compressive strength (whichever is greater), the Surface Rig will move off so the wellhead can be installed. A welder will cut the casing to the proper height and weld on the wellhead (both "A" and "B" sections). The weld will be tested to 1,500 psi. All valves will be closed and a wellhead cap will be installed (diagram attached). If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

### 11. WELLHEAD:

A multi-bowl wellhead system will be utilized.

After running the 9-5/8" surface casing, a 9-5/8" BOP/BOPE system with a minimum working pressure of 10,000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10,000 psi pressure test. This pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The minimum working pressure of the BOP and related BOPE required for drilling below the surface casing shoe shall be 10,000 psi.

The multi-bowl wellhead will be installed by vendor's representative(s). A copy of the installation instructions for the Cactus Multi-Bowl WH system has been sent to the NM BLM office in Carlsbad, NM.



## Shiprock 5 Fed Com 741H

The wellhead will be installed by a third party welder while being monitored by WH vendor's representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. EOG Resources reserves the option to conduct BOPE testing during wait on cement periods provided a test plug is utilized.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5,000 psi.

Casing strings will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1,500 psi, whichever is greater.

EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of Onshore Order No. 2 (item III.A.2.a.i) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

- Full BOPE test at first installation on the pad.
- Full BOPE test every 21 days per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"





## Shiprock 5 Fed Com 741H

300' FNL  
933' FEL  
Section 5  
T-25-S, R-34-E

Proposed Wellbore

KB: 3437'  
GL: 3412'

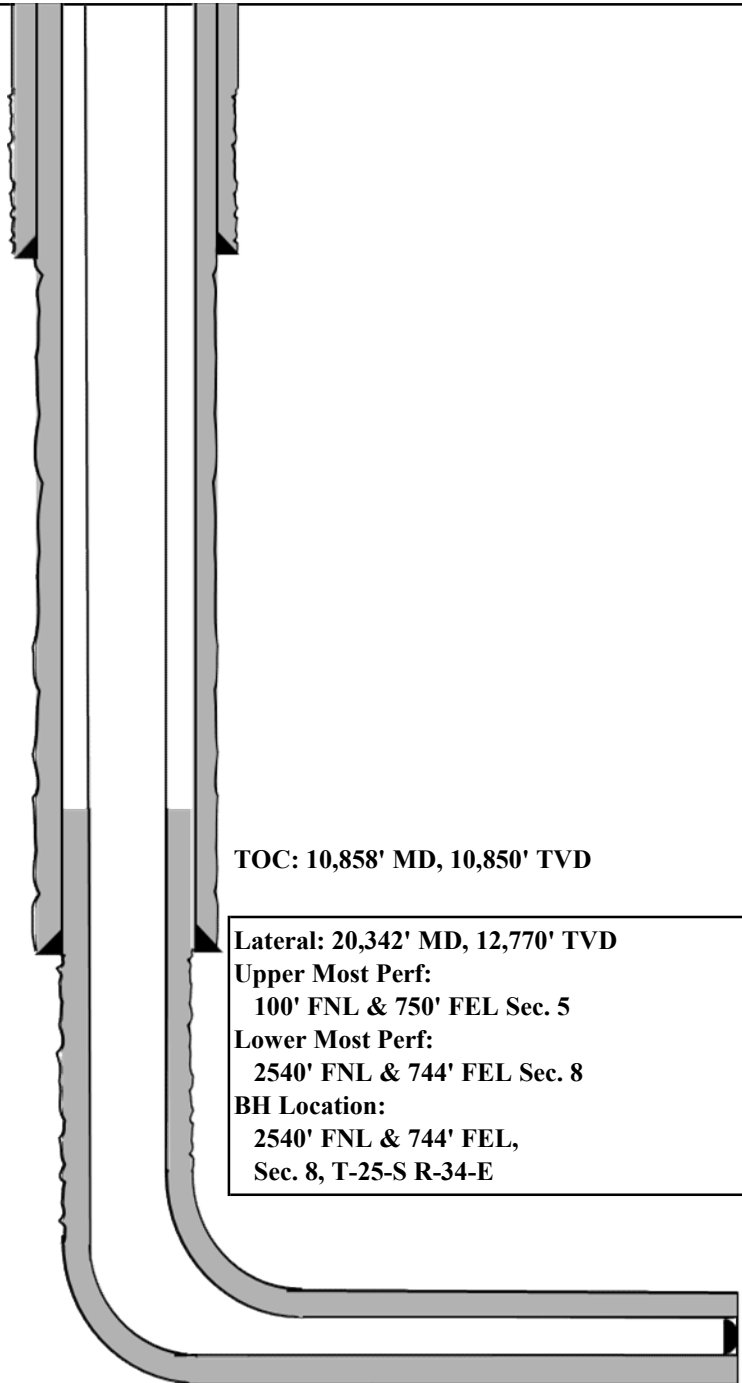
API: 30-025-\*\*\*\*\*

**Bit Size: 12-1/4"**  
9-5/8", 36#, J-55, LTC, 0' - 1,640'

**Bit Size: 8-3/4"**  
7-5/8", 29.7#, HCP-110, FXL, 0' - 11,350'

**Bit Size: 6-3/4"**  
5-1/2", 20.#, P110-EC, DWC/C IS MS  
@ 0' - 10,850'  
5-1/2", 20.#, P110-EC, Vam Sprint SF  
@ 10,850' - 11,350'  
5-1/2", 20.#, P110-EC, DWC/C IS MS  
@ 11,350' - 20,342'

KOP: 12,300' MD, 12,292' TVD  
EOC: 13,050' MD, 12,770' TVD





## Shiprock 5 Fed Com 741H

**Design B****4. CASING PROGRAM**

Hole Size	Interval MD		Interval TVD		Csg OD	Weight	Grade	Conn
	From (ft)	To (ft)	From (ft)	To (ft)				
13"	0	1,640	0	1,640	10-3/4"	40.5#	J-55	STC
9-7/8"	0	11,358	0	11,350	8-3/4"	38.5#	P110-EC	SLIJ II NA
7-7/8"	0	20,342	0	12,770	6"	22.3#	P110-EC	DWC/C IS

Variance is requested to waive the centralizer requirements for the 8-3/4" casing in the 9-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 9-7/8" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 6" casing in the 7-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 7-7/8" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive the annular clearance requirements for the 6" casing by 8-3/4" casing annulus to the proposed top of cement.

EOG requests permission to allow deviation from the 0.422" annulus clearance requirement from Onshore Order #2 under the following conditions:

- Annular clearance to meet or exceed 0.422" between intermediate casing ID and production casing coupling only on the first 500' overlap between both casing strings.
- Annular clearance less than 0.422" is acceptable for the production open hole section.

**Cementing Program:**

Depth	No. Sacks	Wt. ppg	Yld Ft <sup>3</sup> /sk	Slurry Description
1,640' 10-3/4"	400	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl <sub>2</sub> + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	70	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,440')
11,350' 8-3/4"	500	14.2	1.11	1st Stage (Tail): Class C + 0.6% Halad-9 + 0.45% HR-601 + 3% Microbond (TOC @ 7,610')
	1480	14.8	1.5	2nd Stage (Bradenhead squeeze): Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
20,342' 6"	1330	14.2	1.31	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 10,850')



## Shiprock 5 Fed Com 741H

EOG requests variance from minimum standards to pump a two stage cement job on the 8-3/4" intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon (7,809') and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 480 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (2.30 yld, 12.91 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

EOG will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

EOG will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

Cement integrity tests will be performed immediately following plug bump.

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

### **Wellhead:**

EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of Onshore Order No. 2 (item III.A.2.a.i) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

- Full BOPE test at first installation on the pad.
- Full BOPE test every 20 days per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"



Shiprock 5 Fed Com 741H

300' FNL  
933' FEL  
Section 5  
T-25-S, R-34-E

Proposed Wellbore  
  
API: 30-025-\*\*\*\*\*

KB: 3437'  
GL: 3412'

Bit Size: 13"  
10-3/4", 40.5#, J-55, STC,  
0' - 1,640'

Bit Size: 9-7/8"  
7-5/8", 29.7#, HCP-110, FXL  
@ 0' - 11,350'

Bit Size: 7-7/8"  
6", 22.3#, P110-EC, DWC/C IS,  
@ 0' - 20,342'

KOP: 12,300' MD, 12,292' TVD  
EOC: 13,050' MD, 12,770' TVD

TOC: 10,858' MD, 10,850' TVD

Lateral: 20,342' MD, 12,770' TVD  
Upper Most Perf:  
100' FNL & 750' FEL Sec. 5  
Lower Most Perf:  
2540' FNL & 744' FEL Sec. 8  
BH Location:  
2540' FNL & 744' FEL,  
Sec. 8, T-25-S R-34-E



## **Midland**

**Lea County, NM (NAD 83 NME)  
Shiprock 5 Fed Com  
#741H**

**OH**

**Plan: Plan #0.1 RT**

## **Standard Planning Report**

**14 September, 2022**



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

<b>Project</b>	Lea County, NM (NAD 83 NME)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

Site	Shiprock 5 Fed Com				
Site Position:		Northing:	425,204.00 usft	Latitude:	32° 9' 58.044 N
From:	Map	Easting:	803,674.00 usft	Longitude:	103° 29' 7.927 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "		

Well	#741H					
Well Position	+N/-S	0.0 usft	Northing:	425,142.00 usft	Latitude:	32° 9' 57.451 N
	+E/-W	0.0 usft	Easting:	803,404.00 usft	Longitude:	103° 29' 11.074 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,412.0 usft
Grid Convergence:	0.45 °					

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	5/17/2021	6.51	59.86	47,476.34817317

<b>Design</b>	Plan #0.1 RT				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	178.25	

<b>Plan Survey Tool Program</b>	<b>Date</b>	9/14/2022			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.0	20,342.6	Plan #0.1 RT (OH)	EOG MWD+IFR1	
				MWD + IFR1	



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,337.8	2.76	35.99	1,337.7	2.7	1.9	2.00	2.00	0.00	35.99	
7,678.7	2.76	35.99	7,671.3	249.3	181.1	0.00	0.00	0.00	0.00	
7,816.4	0.00	0.00	7,809.0	252.0	183.0	2.00	-2.00	0.00	180.00	
12,299.9	0.00	0.00	12,292.5	252.0	183.0	0.00	0.00	0.00	0.00	KOP(Shiprock 5 Fed )
12,520.4	26.46	180.00	12,505.2	202.0	183.0	12.00	12.00	81.65	180.00	FTP(Shiprock 5 Fed )
13,049.9	90.00	179.64	12,769.9	-225.4	184.8	12.00	12.00	-0.07	-0.40	
15,162.5	90.00	179.64	12,770.0	-2,338.0	198.0	0.00	0.00	0.00	0.00	Fed Perf 1(Shiprock 5
20,342.6	90.00	179.65	12,770.0	-7,518.0	230.0	0.00	0.00	0.00	62.75	PBHL(Shiprock 5 Fed





## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

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
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	2.00	35.99	1,300.0	1.4	1.0	-1.4	2.00	2.00	0.00
1,337.8	2.76	35.99	1,337.7	2.7	1.9	-2.6	2.00	2.00	0.00
1,400.0	2.76	35.99	1,399.9	5.1	3.7	-5.0	0.00	0.00	0.00
1,500.0	2.76	35.99	1,499.8	9.0	6.5	-8.8	0.00	0.00	0.00
1,600.0	2.76	35.99	1,599.6	12.9	9.4	-12.6	0.00	0.00	0.00
1,700.0	2.76	35.99	1,699.5	16.8	12.2	-16.4	0.00	0.00	0.00
1,800.0	2.76	35.99	1,799.4	20.7	15.0	-20.2	0.00	0.00	0.00
1,900.0	2.76	35.99	1,899.3	24.5	17.8	-24.0	0.00	0.00	0.00
2,000.0	2.76	35.99	1,999.2	28.4	20.7	-27.8	0.00	0.00	0.00
2,100.0	2.76	35.99	2,099.1	32.3	23.5	-31.6	0.00	0.00	0.00
2,200.0	2.76	35.99	2,199.0	36.2	26.3	-35.4	0.00	0.00	0.00
2,300.0	2.76	35.99	2,298.8	40.1	29.1	-39.2	0.00	0.00	0.00
2,400.0	2.76	35.99	2,398.7	44.0	32.0	-43.0	0.00	0.00	0.00
2,500.0	2.76	35.99	2,498.6	47.9	34.8	-46.8	0.00	0.00	0.00
2,600.0	2.76	35.99	2,598.5	51.8	37.6	-50.6	0.00	0.00	0.00
2,700.0	2.76	35.99	2,698.4	55.7	40.4	-54.4	0.00	0.00	0.00
2,800.0	2.76	35.99	2,798.3	59.6	43.2	-58.2	0.00	0.00	0.00
2,900.0	2.76	35.99	2,898.1	63.4	46.1	-62.0	0.00	0.00	0.00
3,000.0	2.76	35.99	2,998.0	67.3	48.9	-65.8	0.00	0.00	0.00
3,100.0	2.76	35.99	3,097.9	71.2	51.7	-69.6	0.00	0.00	0.00
3,200.0	2.76	35.99	3,197.8	75.1	54.5	-73.4	0.00	0.00	0.00
3,300.0	2.76	35.99	3,297.7	79.0	57.4	-77.2	0.00	0.00	0.00
3,400.0	2.76	35.99	3,397.6	82.9	60.2	-81.0	0.00	0.00	0.00
3,500.0	2.76	35.99	3,497.4	86.8	63.0	-84.8	0.00	0.00	0.00
3,600.0	2.76	35.99	3,597.3	90.7	65.8	-88.6	0.00	0.00	0.00
3,700.0	2.76	35.99	3,697.2	94.6	68.7	-92.4	0.00	0.00	0.00
3,800.0	2.76	35.99	3,797.1	98.5	71.5	-96.2	0.00	0.00	0.00
3,900.0	2.76	35.99	3,897.0	102.3	74.3	-100.0	0.00	0.00	0.00
4,000.0	2.76	35.99	3,996.9	106.2	77.1	-103.8	0.00	0.00	0.00
4,100.0	2.76	35.99	4,096.8	110.1	80.0	-107.6	0.00	0.00	0.00
4,200.0	2.76	35.99	4,196.6	114.0	82.8	-111.4	0.00	0.00	0.00
4,300.0	2.76	35.99	4,296.5	117.9	85.6	-115.2	0.00	0.00	0.00
4,400.0	2.76	35.99	4,396.4	121.8	88.4	-119.0	0.00	0.00	0.00
4,500.0	2.76	35.99	4,496.3	125.7	91.3	-122.8	0.00	0.00	0.00
4,600.0	2.76	35.99	4,596.2	129.6	94.1	-126.6	0.00	0.00	0.00
4,700.0	2.76	35.99	4,696.1	133.5	96.9	-130.4	0.00	0.00	0.00
4,800.0	2.76	35.99	4,795.9	137.3	99.7	-134.2	0.00	0.00	0.00
4,900.0	2.76	35.99	4,895.8	141.2	102.6	-138.0	0.00	0.00	0.00
5,000.0	2.76	35.99	4,995.7	145.1	105.4	-141.8	0.00	0.00	0.00
5,100.0	2.76	35.99	5,095.6	149.0	108.2	-145.6	0.00	0.00	0.00
5,200.0	2.76	35.99	5,195.5	152.9	111.0	-149.4	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

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	2.76	35.99	5,295.4	156.8	113.9	-153.2	0.00	0.00	0.00
5,400.0	2.76	35.99	5,395.3	160.7	116.7	-157.0	0.00	0.00	0.00
5,500.0	2.76	35.99	5,495.1	164.6	119.5	-160.8	0.00	0.00	0.00
5,600.0	2.76	35.99	5,595.0	168.5	122.3	-164.6	0.00	0.00	0.00
5,700.0	2.76	35.99	5,694.9	172.4	125.2	-168.4	0.00	0.00	0.00
5,800.0	2.76	35.99	5,794.8	176.2	128.0	-172.2	0.00	0.00	0.00
5,900.0	2.76	35.99	5,894.7	180.1	130.8	-176.1	0.00	0.00	0.00
6,000.0	2.76	35.99	5,994.6	184.0	133.6	-179.9	0.00	0.00	0.00
6,100.0	2.76	35.99	6,094.4	187.9	136.5	-183.7	0.00	0.00	0.00
6,200.0	2.76	35.99	6,194.3	191.8	139.3	-187.5	0.00	0.00	0.00
6,300.0	2.76	35.99	6,294.2	195.7	142.1	-191.3	0.00	0.00	0.00
6,400.0	2.76	35.99	6,394.1	199.6	144.9	-195.1	0.00	0.00	0.00
6,500.0	2.76	35.99	6,494.0	203.5	147.8	-198.9	0.00	0.00	0.00
6,600.0	2.76	35.99	6,593.9	207.4	150.6	-202.7	0.00	0.00	0.00
6,700.0	2.76	35.99	6,693.7	211.3	153.4	-206.5	0.00	0.00	0.00
6,800.0	2.76	35.99	6,793.6	215.1	156.2	-210.3	0.00	0.00	0.00
6,900.0	2.76	35.99	6,893.5	219.0	159.1	-214.1	0.00	0.00	0.00
7,000.0	2.76	35.99	6,993.4	222.9	161.9	-217.9	0.00	0.00	0.00
7,100.0	2.76	35.99	7,093.3	226.8	164.7	-221.7	0.00	0.00	0.00
7,200.0	2.76	35.99	7,193.2	230.7	167.5	-225.5	0.00	0.00	0.00
7,300.0	2.76	35.99	7,293.1	234.6	170.4	-229.3	0.00	0.00	0.00
7,400.0	2.76	35.99	7,392.9	238.5	173.2	-233.1	0.00	0.00	0.00
7,500.0	2.76	35.99	7,492.8	242.4	176.0	-236.9	0.00	0.00	0.00
7,600.0	2.76	35.99	7,592.7	246.3	178.8	-240.7	0.00	0.00	0.00
7,678.7	2.76	35.99	7,671.3	249.3	181.1	-243.7	0.00	0.00	0.00
7,700.0	2.33	35.99	7,692.6	250.1	181.6	-244.4	2.00	-2.00	0.00
7,800.0	0.33	35.99	7,792.6	252.0	183.0	-246.2	2.00	-2.00	0.00
7,816.4	0.00	0.00	7,809.0	252.0	183.0	-246.3	2.00	-2.00	0.00
7,900.0	0.00	0.00	7,892.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,000.0	0.00	0.00	7,992.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,100.0	0.00	0.00	8,092.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,200.0	0.00	0.00	8,192.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,300.0	0.00	0.00	8,292.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,400.0	0.00	0.00	8,392.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,500.0	0.00	0.00	8,492.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,600.0	0.00	0.00	8,592.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,700.0	0.00	0.00	8,692.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,800.0	0.00	0.00	8,792.6	252.0	183.0	-246.3	0.00	0.00	0.00
8,900.0	0.00	0.00	8,892.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,000.0	0.00	0.00	8,992.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,100.0	0.00	0.00	9,092.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,200.0	0.00	0.00	9,192.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,300.0	0.00	0.00	9,292.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,400.0	0.00	0.00	9,392.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,500.0	0.00	0.00	9,492.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,600.0	0.00	0.00	9,592.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,700.0	0.00	0.00	9,692.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,800.0	0.00	0.00	9,792.6	252.0	183.0	-246.3	0.00	0.00	0.00
9,900.0	0.00	0.00	9,892.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,000.0	0.00	0.00	9,992.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,100.0	0.00	0.00	10,092.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,200.0	0.00	0.00	10,192.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,300.0	0.00	0.00	10,292.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,400.0	0.00	0.00	10,392.6	252.0	183.0	-246.3	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

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)
10,500.0	0.00	0.00	10,492.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,600.0	0.00	0.00	10,592.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,700.0	0.00	0.00	10,692.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,800.0	0.00	0.00	10,792.6	252.0	183.0	-246.3	0.00	0.00	0.00
10,900.0	0.00	0.00	10,892.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,000.0	0.00	0.00	10,992.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,100.0	0.00	0.00	11,092.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,200.0	0.00	0.00	11,192.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,300.0	0.00	0.00	11,292.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,400.0	0.00	0.00	11,392.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,500.0	0.00	0.00	11,492.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,600.0	0.00	0.00	11,592.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,700.0	0.00	0.00	11,692.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,800.0	0.00	0.00	11,792.6	252.0	183.0	-246.3	0.00	0.00	0.00
11,900.0	0.00	0.00	11,892.6	252.0	183.0	-246.3	0.00	0.00	0.00
12,000.0	0.00	0.00	11,992.6	252.0	183.0	-246.3	0.00	0.00	0.00
12,100.0	0.00	0.00	12,092.6	252.0	183.0	-246.3	0.00	0.00	0.00
12,200.0	0.00	0.00	12,192.6	252.0	183.0	-246.3	0.00	0.00	0.00
12,299.9	0.00	0.00	12,292.5	252.0	183.0	-246.3	0.00	0.00	0.00
12,325.0	3.01	180.00	12,317.6	251.3	183.0	-245.6	12.00	12.00	0.00
12,350.0	6.01	180.00	12,342.5	249.4	183.0	-243.7	12.00	12.00	0.00
12,375.0	9.01	180.00	12,367.3	246.1	183.0	-240.4	12.00	12.00	0.00
12,400.0	12.01	180.00	12,391.8	241.6	183.0	-235.8	12.00	12.00	0.00
12,425.0	15.01	180.00	12,416.1	235.7	183.0	-230.0	12.00	12.00	0.00
12,450.0	18.01	180.00	12,440.1	228.6	183.0	-222.9	12.00	12.00	0.00
12,475.0	21.01	180.00	12,463.7	220.3	183.0	-214.6	12.00	12.00	0.00
12,500.0	24.01	180.00	12,486.8	210.7	183.0	-205.0	12.00	12.00	0.00
12,520.4	26.46	180.00	12,505.2	202.0	183.0	-196.3	12.00	12.00	0.00
12,525.0	27.01	179.99	12,509.3	199.9	183.0	-194.2	12.00	12.00	-0.18
12,550.0	30.01	179.95	12,531.3	188.0	183.0	-182.3	12.00	12.00	-0.16
12,575.0	33.01	179.92	12,552.6	174.9	183.0	-169.3	12.00	12.00	-0.14
12,600.0	36.01	179.89	12,573.2	160.8	183.0	-155.1	12.00	12.00	-0.12
12,625.0	39.01	179.86	12,593.0	145.5	183.1	-139.9	12.00	12.00	-0.10
12,650.0	42.01	179.84	12,612.0	129.3	183.1	-123.6	12.00	12.00	-0.09
12,675.0	45.01	179.82	12,630.2	112.1	183.2	-106.4	12.00	12.00	-0.08
12,700.0	48.01	179.80	12,647.4	94.0	183.2	-88.3	12.00	12.00	-0.07
12,725.0	51.01	179.79	12,663.6	75.0	183.3	-69.3	12.00	12.00	-0.06
12,750.0	54.01	179.77	12,678.8	55.1	183.4	-49.5	12.00	12.00	-0.06
12,775.0	57.01	179.76	12,693.0	34.5	183.5	-28.9	12.00	12.00	-0.05
12,800.0	60.01	179.75	12,706.0	13.2	183.6	-7.6	12.00	12.00	-0.05
12,825.0	63.01	179.73	12,717.9	-8.8	183.7	14.4	12.00	12.00	-0.05
12,850.0	66.01	179.72	12,728.7	-31.3	183.8	36.9	12.00	12.00	-0.05
12,875.0	69.01	179.71	12,738.3	-54.4	183.9	60.0	12.00	12.00	-0.04
12,900.0	72.01	179.70	12,746.6	-78.0	184.0	83.6	12.00	12.00	-0.04
12,925.0	75.01	179.69	12,753.7	-102.0	184.1	107.5	12.00	12.00	-0.04
12,950.0	78.01	179.68	12,759.5	-126.3	184.3	131.8	12.00	12.00	-0.04
12,975.0	81.01	179.67	12,764.1	-150.8	184.4	156.4	12.00	12.00	-0.04
13,000.0	84.01	179.66	12,767.3	-175.6	184.5	181.2	12.00	12.00	-0.04
13,025.0	87.01	179.65	12,769.3	-200.6	184.7	206.1	12.00	12.00	-0.04
13,049.9	90.00	179.64	12,769.9	-225.4	184.8	231.0	12.00	12.00	-0.04
13,100.0	90.00	179.64	12,769.9	-275.5	185.2	281.1	0.00	0.00	0.00
13,200.0	90.00	179.64	12,769.9	-375.5	185.8	381.0	0.00	0.00	0.00
13,300.0	90.00	179.64	12,770.0	-475.5	186.4	481.0	0.00	0.00	0.00
13,400.0	90.00	179.64	12,770.0	-575.5	187.0	581.0	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

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)
13,500.0	90.00	179.64	12,770.0	-675.5	187.6	681.0	0.00	0.00	0.00
13,600.0	90.00	179.64	12,770.0	-775.5	188.3	780.9	0.00	0.00	0.00
13,700.0	90.00	179.64	12,770.0	-875.5	188.9	880.9	0.00	0.00	0.00
13,800.0	90.00	179.64	12,770.0	-975.5	189.5	980.9	0.00	0.00	0.00
13,900.0	90.00	179.64	12,770.0	-1,075.5	190.1	1,080.8	0.00	0.00	0.00
14,000.0	90.00	179.64	12,770.0	-1,175.5	190.8	1,180.8	0.00	0.00	0.00
14,100.0	90.00	179.64	12,770.0	-1,275.5	191.4	1,280.8	0.00	0.00	0.00
14,200.0	90.00	179.64	12,770.0	-1,375.5	192.0	1,380.7	0.00	0.00	0.00
14,300.0	90.00	179.64	12,770.0	-1,475.5	192.6	1,480.7	0.00	0.00	0.00
14,400.0	90.00	179.64	12,770.0	-1,575.5	193.3	1,580.7	0.00	0.00	0.00
14,500.0	90.00	179.64	12,770.0	-1,675.5	193.9	1,680.7	0.00	0.00	0.00
14,600.0	90.00	179.64	12,770.0	-1,775.5	194.5	1,780.6	0.00	0.00	0.00
14,700.0	90.00	179.64	12,770.0	-1,875.5	195.1	1,880.6	0.00	0.00	0.00
14,800.0	90.00	179.64	12,770.0	-1,975.5	195.7	1,980.6	0.00	0.00	0.00
14,900.0	90.00	179.64	12,770.0	-2,075.5	196.4	2,080.5	0.00	0.00	0.00
15,000.0	90.00	179.64	12,770.0	-2,175.5	197.0	2,180.5	0.00	0.00	0.00
15,100.0	90.00	179.64	12,770.0	-2,275.5	197.6	2,280.5	0.00	0.00	0.00
15,162.5	90.00	179.64	12,770.0	-2,338.0	198.0	2,343.0	0.00	0.00	0.00
15,200.0	90.00	179.64	12,770.0	-2,375.5	198.2	2,380.4	0.00	0.00	0.00
15,300.0	90.00	179.64	12,770.0	-2,475.5	198.9	2,480.4	0.00	0.00	0.00
15,400.0	90.00	179.64	12,770.0	-2,575.5	199.5	2,580.4	0.00	0.00	0.00
15,500.0	90.00	179.64	12,770.0	-2,675.5	200.1	2,680.4	0.00	0.00	0.00
15,600.0	90.00	179.64	12,770.0	-2,775.5	200.7	2,780.3	0.00	0.00	0.00
15,700.0	90.00	179.64	12,770.0	-2,875.5	201.3	2,880.3	0.00	0.00	0.00
15,800.0	90.00	179.64	12,770.0	-2,975.5	202.0	2,980.3	0.00	0.00	0.00
15,900.0	90.00	179.64	12,770.0	-3,075.5	202.6	3,080.2	0.00	0.00	0.00
16,000.0	90.00	179.64	12,770.0	-3,175.5	203.2	3,180.2	0.00	0.00	0.00
16,100.0	90.00	179.64	12,770.0	-3,275.5	203.8	3,280.2	0.00	0.00	0.00
16,200.0	90.00	179.64	12,770.0	-3,375.5	204.5	3,380.2	0.00	0.00	0.00
16,300.0	90.00	179.64	12,770.0	-3,475.5	205.1	3,480.1	0.00	0.00	0.00
16,400.0	90.00	179.64	12,770.0	-3,575.5	205.7	3,580.1	0.00	0.00	0.00
16,500.0	90.00	179.64	12,770.0	-3,675.5	206.3	3,680.1	0.00	0.00	0.00
16,600.0	90.00	179.64	12,770.0	-3,775.5	206.9	3,780.0	0.00	0.00	0.00
16,700.0	90.00	179.64	12,770.0	-3,875.5	207.6	3,880.0	0.00	0.00	0.00
16,800.0	90.00	179.64	12,770.0	-3,975.5	208.2	3,980.0	0.00	0.00	0.00
16,900.0	90.00	179.65	12,770.0	-4,075.5	208.8	4,079.9	0.00	0.00	0.00
17,000.0	90.00	179.65	12,770.0	-4,175.5	209.4	4,179.9	0.00	0.00	0.00
17,100.0	90.00	179.65	12,770.0	-4,275.5	210.0	4,279.9	0.00	0.00	0.00
17,200.0	90.00	179.65	12,770.0	-4,375.5	210.6	4,379.9	0.00	0.00	0.00
17,300.0	90.00	179.65	12,770.0	-4,475.5	211.3	4,479.8	0.00	0.00	0.00
17,400.0	90.00	179.65	12,770.0	-4,575.5	211.9	4,579.8	0.00	0.00	0.00
17,500.0	90.00	179.65	12,770.0	-4,675.5	212.5	4,679.8	0.00	0.00	0.00
17,600.0	90.00	179.65	12,770.0	-4,775.5	213.1	4,779.7	0.00	0.00	0.00
17,700.0	90.00	179.65	12,770.0	-4,875.5	213.7	4,879.7	0.00	0.00	0.00
17,800.0	90.00	179.65	12,770.0	-4,975.4	214.4	4,979.7	0.00	0.00	0.00
17,900.0	90.00	179.65	12,770.0	-5,075.4	215.0	5,079.6	0.00	0.00	0.00
18,000.0	90.00	179.65	12,770.0	-5,175.4	215.6	5,179.6	0.00	0.00	0.00
18,100.0	90.00	179.65	12,770.0	-5,275.4	216.2	5,279.6	0.00	0.00	0.00
18,200.0	90.00	179.65	12,770.0	-5,375.4	216.8	5,379.6	0.00	0.00	0.00
18,300.0	90.00	179.65	12,770.0	-5,475.4	217.4	5,479.5	0.00	0.00	0.00
18,400.0	90.00	179.65	12,770.0	-5,575.4	218.1	5,579.5	0.00	0.00	0.00
18,500.0	90.00	179.65	12,770.0	-5,675.4	218.7	5,679.5	0.00	0.00	0.00
18,600.0	90.00	179.65	12,770.0	-5,775.4	219.3	5,779.4	0.00	0.00	0.00
18,700.0	90.00	179.65	12,770.0	-5,875.4	219.9	5,879.4	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	PEDM	<b>Local Co-ordinate Reference:</b>	Well #741H
<b>Company:</b>	Midland	<b>TVD Reference:</b>	kb = 25' @ 3437.0usft
<b>Project:</b>	Lea County, NM (NAD 83 NME)	<b>MD Reference:</b>	kb = 25' @ 3437.0usft
<b>Site:</b>	Shiprock 5 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	#741H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #0.1 RT		

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)	
18,800.0	90.00	179.65	12,770.0	-5,975.4	220.5	5,979.4	0.00	0.00	0.00	
18,900.0	90.00	179.65	12,770.0	-6,075.4	221.1	6,079.3	0.00	0.00	0.00	
19,000.0	90.00	179.65	12,770.0	-6,175.4	221.8	6,179.3	0.00	0.00	0.00	
19,100.0	90.00	179.65	12,770.0	-6,275.4	222.4	6,279.3	0.00	0.00	0.00	
19,200.0	90.00	179.65	12,770.0	-6,375.4	223.0	6,379.3	0.00	0.00	0.00	
19,300.0	90.00	179.65	12,770.0	-6,475.4	223.6	6,479.2	0.00	0.00	0.00	
19,400.0	90.00	179.65	12,770.0	-6,575.4	224.2	6,579.2	0.00	0.00	0.00	
19,500.0	90.00	179.65	12,770.0	-6,675.4	224.8	6,679.2	0.00	0.00	0.00	
19,600.0	90.00	179.65	12,770.0	-6,775.4	225.4	6,779.1	0.00	0.00	0.00	
19,700.0	90.00	179.65	12,770.0	-6,875.4	226.1	6,879.1	0.00	0.00	0.00	
19,800.0	90.00	179.65	12,770.0	-6,975.4	226.7	6,979.1	0.00	0.00	0.00	
19,900.0	90.00	179.65	12,770.0	-7,075.4	227.3	7,079.1	0.00	0.00	0.00	
20,000.0	90.00	179.65	12,770.0	-7,175.4	227.9	7,179.0	0.00	0.00	0.00	
20,100.0	90.00	179.65	12,770.0	-7,275.4	228.5	7,279.0	0.00	0.00	0.00	
20,200.0	90.00	179.65	12,770.0	-7,375.4	229.1	7,379.0	0.00	0.00	0.00	
20,300.0	90.00	179.65	12,770.0	-7,475.4	229.7	7,478.9	0.00	0.00	0.00	
20,342.6	90.00	179.65	12,770.0	-7,518.0	230.0	7,521.5	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
KOP(Shiprock 5 Fed Co - plan hits target center - Point	0.00	0.00	12,292.5	252.0	183.0	425,394.00	803,587.00	32° 9' 59.931 N	103° 29' 8.922 W	
FTP(Shiprock 5 Fed Cor - plan hits target center - Point	0.00	0.00	12,505.2	202.0	183.0	425,344.00	803,587.00	32° 9' 59.436 N	103° 29' 8.926 W	
Fed Perf 1(Shiprock 5 Fi - plan hits target center - Point	0.00	0.00	12,770.0	-2,338.0	198.0	422,804.00	803,602.00	32° 9' 34.301 N	103° 29' 8.985 W	
PBHL(Shiprock 5 Fed C - plan hits target center - Point	0.00	0.00	12,770.0	-7,518.0	230.0	417,624.00	803,634.00	32° 8' 43.042 N	103° 29' 9.087 W	



Lea County, NM (NAD 83 NME)

Shiprock 5 Fed Com #741H

Plan #0.1 RT



Azimuths to Grid North  
True North: -0.45°  
Magnetic North: 6.06°

Magnetic Field  
Strength: 47476.3nT  
Dip Angle: 59.86°  
Date: 5/17/2021  
Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 6.06°  
To convert a Magnetic Direction to a True Direction, Add 6.51° East  
To convert a True Direction to a Grid Direction, Subtract 0.45°

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

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

WELL DETAILS: #741H

kb = 25' @ 3437.0usft 3412.0  
Northing 425142.00 Easting 803404.00 Latitude 32° 9' 57.451 N Longitude 103° 29' 11.074 W

SECTION DETAILS

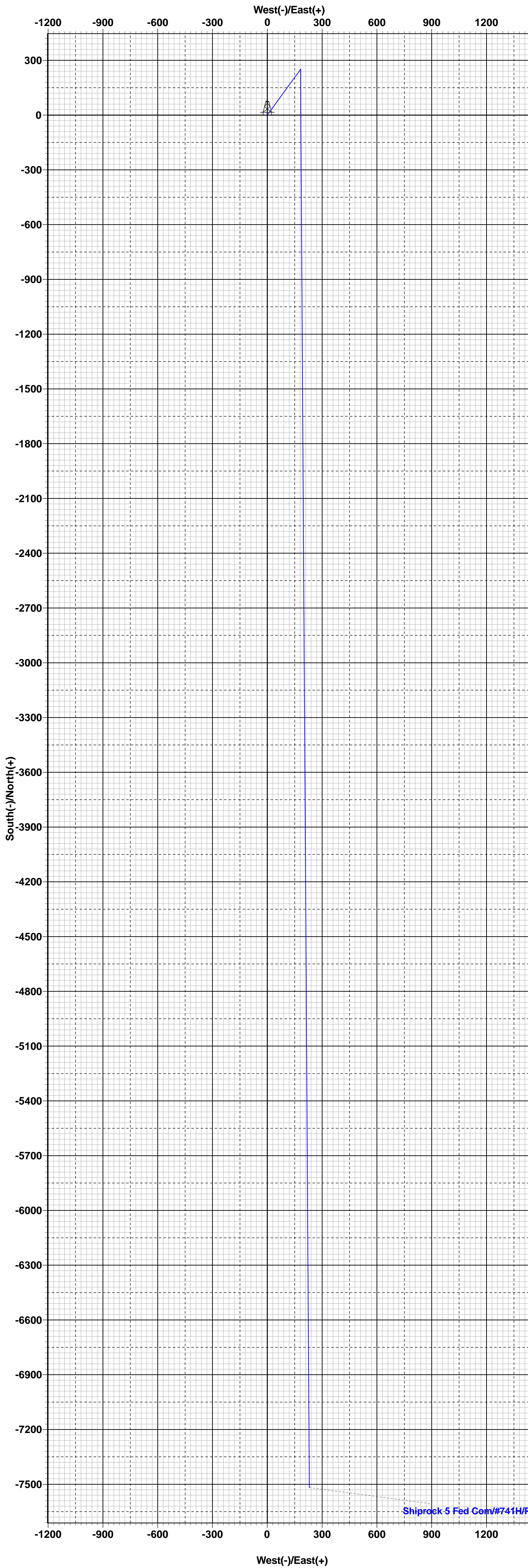
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1337.8	2.76	35.99	1337.7	2.7	1.9	2.00	35.99	-2.6	
4	7678.7	2.76	35.99	7671.3	249.3	181.1	0.00	0.00	-243.7	
5	7816.4	0.00	0.00	7809.0	252.0	183.0	2.00	180.00	-246.3	
6	12299.9	0.00	0.00	12292.5	252.0	183.0	0.00	0.00	-246.3	KOP(Shiprock 5 Fed Com #741H)
7	12520.4	26.46	180.00	12505.2	202.0	183.0	12.00	180.00	-196.3	FTP(Shiprock 5 Fed Com #741H)
8	13049.9	90.00	179.64	12769.9	-225.4	184.8	12.00	-0.40	231.0	
9	15162.5	90.00	179.64	12770.0	-2338.0	198.0	0.00	0.00	2343.0	Fed Perf 1(Shiprock 5 Fed Com #741H)
10	20342.6	90.00	179.65	12770.0	-7518.0	230.0	0.00	62.75	7521.5	PBHL(Shiprock 5 Fed Com #741H)

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
KOP(Shiprock 5 Fed Com #741H)	12292.5	252.0	183.0	425394.00	803587.00
FTP(Shiprock 5 Fed Com #741H)	12505.2	202.0	183.0	425344.00	803587.00
Fed Perf 1(Shiprock 5 Fed Com #741H)	12770.0	-2338.0	198.0	422804.00	803602.00
PBHL(Shiprock 5 Fed Com #741H)	12770.0	-7518.0	230.0	417624.00	803634.00



Shiprock 5 Fed Com #741H/Plan #0.1 RT

Vertical Section at 178.25°

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	EOG Resources Incorporated
<b>WELL NAME &amp; NO.:</b>	Shiprock 5 Fed Com 741H
<b>LOCATION:</b>	Sec 5-25S-34E-NMP
<b>COUNTY:</b>	Lea County, New Mexico <span style="float: right;">▼</span>

COA

H <sub>2</sub> S	<input checked="" type="radio"/> No		<input type="radio"/> Yes	
<b>Potash / WIPP</b>	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-Q	<input type="checkbox"/> Open Annulus <input type="checkbox"/> WIPP
<b>Cave / Karst</b>	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High	<input type="radio"/> Critical
<b>Wellhead</b>	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both	<input type="radio"/> Diverter
<b>Cementing</b>	<input type="checkbox"/> Primary Squeeze	<input checked="" type="checkbox"/> Cont. Squeeze	<input checked="" type="checkbox"/> EchoMeter	<input type="checkbox"/> DV Tool
<b>Special Req</b>	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit
<b>Waste Prev.</b>	<input type="radio"/> Self-Certification	<input type="radio"/> Waste Min. Plan	<input checked="" type="radio"/> APD Submitted prior to 06/10/2024	
<b>Additional Language</b>	<input checked="" type="checkbox"/> Flex Hose <input type="checkbox"/> Four-String	<input checked="" type="checkbox"/> Casing Clearance <input checked="" type="checkbox"/> Offline Cementing	<input type="checkbox"/> Pilot Hole <input type="checkbox"/> Fluid-Filled	<input type="checkbox"/> Break Testing

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet 43 CFR 3176 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

### B. CASING

1. The **9-5/8** inch surface casing shall be set at approximately **1,640** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite, above the salt, and below usable fresh water) 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 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 minimum required fill of cement behind the **7-5/8** inch intermediate casing is:

Operator has proposed to cement in two stages by conventionally cementing the first stage and performing a bradenhead squeeze on the second stage, contingent upon no returns to surface.

- a. **First stage:** Operator will cement with intent to reach the top of the **Brushy Canyon**
- b. **Second stage:** Operator will perform bradenhead squeeze and top-out. Cement to surface. If cement does not reach surface, the appropriate BLM office shall be notified.

**Operator has proposed to pump down Surface X Intermediate 1 annulus after primary cementing stage. Operator must run Echo-meter to verify Cement Slurry/Fluid top in the annulus OR operator shall run a CBL from TD of the Intermediate 1 casing to tieback requirements listed above after the second stage BH to verify TOC.** Submit results to the BLM. No displacement fluid/wash out shall be utilized at the top of the cement slurry between second stage BH and top out. Operator must use a limited flush fluid volume of 1 bbl following backside cementing procedures.

If cement does not reach surface, the next casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - Cement should tie-back at least **300 feet** into previous casing string (*tieback increased due to not meeting 0.422" clearance requirement.*) Operator shall provide method of verification. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, or potash.**

### Casing Clearance

String does not meet 0.422" clearance requirement per 43 CFR 3172. Cement tieback requirement increased 100' for Production casing tieback. Operator may contact approving engineer to discuss changing casing set depth or grade to meet clearance requirement.

### C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Operator has proposed a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M) psi**. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 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 43 CFR 3172 must be followed.

#### **D. SPECIAL REQUIREMENT (S)**

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in 43 CFR 3171 and 3172.
- 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.

##### **Offline Cementing**

Contact the BLM prior to the commencement of any offline cementing procedure.

## 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)

### Contact Lea County Petroleum Engineering Inspection Staff:

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - i. Notify the BLM when moving in and removing the Spudder Rig.
    - ii. Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - iii. BOP/BOPE test to be conducted per **43 CFR 3172** as soon as 2<sup>nd</sup> 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. For intervals in which cement to surface is required, cement to surface should be verified with a visual check and density or pH check to differentiate cement from spacer and drilling mud. The results should be documented in the driller's log and daily reports.

### 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 of both lead and tail cement, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
  4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
  5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
  6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
  7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
  8. Whenever a casing string is cemented in the R-111-Q 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 **43 CFR 3172**.
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:
  - i. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - ii. 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.
  - iii. Manufacturer representative shall install the test plug for the initial BOP test.
  - iv. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172.6(b)(9) must be followed.
  - v. 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.
  - 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 cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - ii. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
  - iii. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for 8 hours or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- iv. 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.
- v. The results of the test shall be reported to the appropriate BLM office.
- vi. 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.
- vii. 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.
- viii. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR 3172**.

### **C. DRILLING MUD**

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

### **D. WASTE MATERIAL AND FLUIDS**

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



Shiprock 5 Fed Com #741H

## Hydrogen Sulfide Plan Summary

**A. All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a.**

**B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.**

**C. Required Emergency Equipment:**

■ **Well control equipment**

- a. Flare line 150' from wellhead to be ignited by flare gun.
- b. Choke manifold with a remotely operated choke.
- c. Mud/gas separator

■ **Protective equipment for essential personnel:**

- a. Breathing Apparatus:
  - i. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
  - ii. Work/Escapes packs — 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
  - iii. Emergency Escape Packs — 4 packs shall be stored in the doghouse for emergency evacuation.
- b. Auxiliary Rescue Equipment:
  - i. Stretcher
  - ii. Two OSHA full body harness
  - iii. 100 ft 5/8 inch OSHA approved rope
  - iv. 1-20# class ABC fire extinguisher

■ **H2S Detection and Monitoring Equipment:**

The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged. (Gas sample tubes will be stored in the safety trailer)

■ **Visual Warning System:**

- a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
- c. Two wind socks will be placed in strategic locations, visible from all angles.





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■ **Mud Program:**

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H<sub>2</sub>S bearing zones.

■ **Metallurgy:**

All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H<sub>2</sub>S service.

■ **Communication:**

Communication will be via cell phones and land lines where available.



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## Emergency Assistance Telephone List

<b>PUBLIC SAFETY:</b>	<b>911 or</b>
<b>Lea County Sheriff's Department</b>	(575) 396-3611
Corey Helton	
<b>Fire Department</b>	
Carlsbad	(575) 885-3125
Artesia	(575) 746-5050
<b>Hospitals</b>	
Carlsbad	(575) 887-4121
Artesia	(575) 748-3333
Hobbs	(575) 392-1979
<b>Dept. of Public Safety/Carlsbad</b>	(575) 748-9718
<b>Highway Department</b>	(575) 885-3281
<b>U.S. Department of Labor</b>	(575) 887-1174
<b>Bureau of Land Management - Hobbs (Lea Co)</b>	(575) 393-3612
PET On Call - Hobbs	(575) 706-2779
<b>Bureau of Land Management - Carlsbad (Eddy Co)</b>	(575) 234-5972
PET On Call - Carlsbad	(575) 706-2779
<b>New Mexico Oil Conservation Division - Artesia</b>	(575) 748-1283
Inspection Group South - Gilbert Gordero	(575) 626-0830
<b>EOG Resources, Inc.</b>	
EOG Midland	(432) 686-3600
<b>Company Drilling Consultants:</b>	
Jett Dueitt	(432) 230-4840
Blake Burney	
<b>Drilling Engineers</b>	
Stephen Davis	(432) 235-9789
Matt Day	(210) 296-4456
<b>Drilling Managers</b>	
Branden Keener	(210) 294-3729
<b>Drilling Superintendents</b>	
Lance Hardy	(432) 215-8152
Ryan Reynolds	(432) 215-5978
Steve Kelly	(210) 416-7894
<b>H&amp;P Drilling</b>	
H&P Drilling	(432) 563-5757
<b>Nabors Drilling</b>	
Nabors Drilling	(432) 363-8180
<b>Patterson UTI</b>	
Patterson UTI	(432) 561-9382
<b>EOG Safety</b>	
Brian Chandler (HSE Manager)	(817) 239-0251



## Offline Intermediate Cementing Procedure

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**Cement Program**

1. No changes to the cement program will take place for offline cementing.

**Summarized Operational Procedure for Intermediate Casing**

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment back pressure valves.
  - a. Float equipment is equipped with two back pressure valves rated to a minimum of 5,000 psi.
2. Land production casing on mandrel hanger through BOP.
  - a. If casing is unable to be landed with a mandrel hanger, then the **casing will be cemented online**.
3. Break circulation and confirm no restrictions.
  - a. Ensure no blockage of float equipment and appropriate annular returns.
  - b. Perform flow check to confirm well is static.
4. Set pack-off
  - a. If utilizing a fluted/ported mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid, remove landing joint, and set annular packoff through BOP. Pressure test to 5,000 psi for 10 min.
  - b. If utilizing a solid mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid. Pressure test seals to 5,000 psi for 10 min. Remove landing joint through BOP.
5. After confirmation of both annular barriers and the two casing barriers, install TA plug and pressure test to 5,000 psi for 10 min. Notify the BLM with intent to proceed with nipple down and offline cementing.
  - a. Minimum 4 hrs notice.
6. With the well secured and BLM notified, nipple down BOP and secure on hydraulic carrier or cradle.
  - a. **Note, if any of the barriers fail to test, the BOP stack will not be nipped down until after the cement job has concluded and both lead and tail slurry have reached 500 psi.**
7. Skid/Walk rig off current well.
8. Confirm well is static before removing TA Plug.
  - a. Cementing operations will not proceed until well is under control. (If well is not static, notify BLM and proceed to kill)
  - b. Casing outlet valves will provide access to both the casing ID and annulus. Rig or third party pump truck will kill well prior to cementing.
  - c. Well control plan can be seen in Section B, Well Control Procedures.
  - d. If need be, rig can be moved back over well and BOP nipped back up for any further remediation.



## Offline Intermediate Cementing Procedure

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- e. Diagram for rig positioning relative to offline cementing can be seen in Figure 4.
9. Rig up return lines to take returns from wellhead to pits and rig choke.
  - a. Test all connections and lines from wellhead to choke manifold to 5,000 psi high for 10 min.
  - b. If either test fails, perform corrections and retest before proceeding.
  - c. Return line schematics can be seen in Figure 3.
10. Remove TA Plug from the casing.
11. Install offline cement tool.
  - a. Current offline cement tool schematics can be seen in Figure 1 (Cameron) and Figure 2 (Cactus).
12. Rig up cement head and cementing lines.
  - a. Pressure test cement lines against cement head to 80% of casing burst for 10 min.
13. Break circulation on well to confirm no restrictions.
  - a. If gas is present on circulation, well will be shut in and returns rerouted through gas buster.
  - b. Max anticipated time before circulating with cement truck is 6 hrs.
14. Pump cement job as per plan.
  - a. At plug bump, test casing to 0.22 psi/ft or 1500 psi, whichever is greater.
  - b. If plug does not bump on calculated, shut down and wait 8 hrs or 500 psi compressive strength, whichever is greater before testing casing.
15. Confirm well is static and floats are holding after cement job.
  - a. With floats holding and backside static:
    - i. Remove cement head.
  - b. If floats are leaking:
    - i. Shut-in well and WOC (Wait on Cement) until tail slurry reaches 500 psi compressive strength and the casing is static prior to removing cement head.
  - c. If there is flow on the backside:
    - i. Shut in well and WOC until tail slurry reaches 500 psi compressive strength. Ensure that the casing is static prior to removing cement head.
16. Remove offline cement tool.
17. Install night cap with pressure gauge for monitoring.
18. Test night cap to 5,000 psi for 10 min.



Offline Intermediate Cementing Procedure

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## Example Well Control Plan Content

### A. Well Control Component Table

The table below, which covers the cementing of the **5M MASP (Maximum Allowable Surface Pressure) portion of the well**, outlines the well control component rating in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the BOP nipped up to the wellhead.

Intermediate hole section, 5M requirement

Component	RWP
Pack-off	10M
Casing Wellhead Valves	10M
Annular Wellhead Valves	5M
TA Plug	10M
Float Valves	5M
2" 1502 Lo-Torque Valves	15M

### B. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while circulating and cementing through the Offline Cement Adapter.

#### General Procedure While Circulating

1. Sound alarm (alert crew).
2. Shut down pumps.
3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
4. Confirm shut-in.
5. Notify tool pusher/company representative.



## Offline Intermediate Cementing Procedure

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6. Read and record the following:
  - a. SICP (Shut in Casing Pressure) and AP (Annular Pressure)
  - b. Pit gain
  - c. Time
  - d. Regroup and identify forward plan to continue circulating out kick via rig choke and mud/gas separator. Circulate and adjust mud density as needed to control well.

### General Procedure While Cementing

1. Sound alarm (alert crew).
2. Shut down pumps.
3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
4. Confirm shut-in.
5. Notify tool pusher/company representative.
6. Open rig choke and begin pumping again taking returns through choke manifold and mud/gas separator.
7. Continue to place cement until plug bumps.
8. At plug bump close rig choke and cement head.
9. Read and record the following
  - a. SICP and AP
  - b. Pit gain
  - c. Time
  - d. Shut-in annulus valves on wellhead

### General Procedure After Cementing

1. Sound alarm (alert crew).
2. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
3. Confirm shut-in.
4. Notify tool pusher/company representative.
5. Read and record the following:
  - a. SICP and AP
  - b. Pit gain
  - c. Time
  - d. Shut-in annulus valves on wellhead



## Offline Intermediate Cementing Procedure

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Figure 1: Cameron TA Plug and Offline Adapter Schematic







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Figure 2: Cactus TA Plug and Offline Adapter Schematic







## Offline Intermediate Cementing Procedure

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Figure 3: Back Yard Rig Up



\*\*\* All Lines 10M rated working pressure



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Figure 4: Rig Placement Diagram



Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/oecd/contact-us>

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

CONDITIONS

Action 461100

**CONDITIONS**

Operator: EOG RESOURCES INC 5509 Champions Drive Midland, TX 79706	OGRID: 7377
	Action Number: 461100
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
sharrell1	Cement is required to circulate on both surface and intermediate1 strings of casing.	5/12/2025
sharrell1	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	5/12/2025
matthew.gomez	Notify the OCD 24 hours prior to casing & cement.	5/30/2025
matthew.gomez	A [C-103] Sub. Drilling (C-103N) is required within (10) days of spud.	5/30/2025
matthew.gomez	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.	5/30/2025
matthew.gomez	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.	5/30/2025
matthew.gomez	File As Drilled C-102 and a directional Survey with C-104 completion packet.	5/30/2025
matthew.gomez	Administrative order required for non-standard spacing unit prior to production.	5/30/2025