

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 checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone			5. Lease Serial No. NMNM0245247 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. ROYAL OAK 25 FED COM 502H	
2. Name of Operator AVANT OPERATING LLC			9. API Well No. 30-025-52845	
3a. Address 1515 WYNKOOP STREET, SUITE 700, DENVER, CO 802		3b. Phone No. (include area code) (720) 746-5045		
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWNW / 160 FNL / 1300 FWL / LAT 32.7254868 / LONG -103.6209 At proposed prod. zone SESW / 100 FSL / 1650 FWL / LAT 32.6971829 / LONG -103.6197523			10. Field and Pool, or Exploratory E-K/BONE SPRING 11. Sec., T. R. M. or Blk. and Survey or Area SEC 25/T18S/R33E/NMP	
14. Distance in miles and direction from nearest town or post office* 11 miles			12. County or Parish LEA	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 160 feet			16. No of acres in lease 17. Spacing Unit dedicated to this well 640.0	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet			19. Proposed Depth 9600 feet / 19805 feet 20. BLM/BIA Bond No. in file FED:	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3866 feet			22. Approximate date work will start* 06/01/2023 23. Estimated duration 60 days	
24. Attachments				

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

- | | |
|---|---|
| 1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature (Electronic Submission)		Name (Printed/Typed) BRIAN WOOD / Ph: (720) 746-5045	Date 02/16/2023
Title Permitting Agent			
Approved by (Signature) (Electronic Submission)		Name (Printed/Typed) CHRISTOPHER WALLS / Ph: (575) 234-2234	Date 04/12/2024
Title Petroleum Engineer		Office Carlsbad Field Office	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
 Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)



DISTRICT I1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720**DISTRICT II**811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720**DISTRICT III**1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170**DISTRICT IV**1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 476-3460 Fax: (505) 476-3462State of New Mexico
Energy, Minerals & Natural Resources Department**OIL CONSERVATION DIVISION**1220 South St. Francis Dr.
Santa Fe, N.M. 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate
District Office☐ AMENDED REPORT**WELL LOCATION AND ACREAGE DEDICATION PLAT**

¹ API Number 30-025- 30-025-52845		² Pool Code 21650	³ Pool Name E-K; BONE SPRING
⁴ Property Code 335845	⁵ Property Name ROYAL OAK 25 FED COM		⁶ Well Number 502H
⁷ GRID No. 330396	⁸ Operator Name AVANT OPERATING, LLC		⁹ Elevation 3866

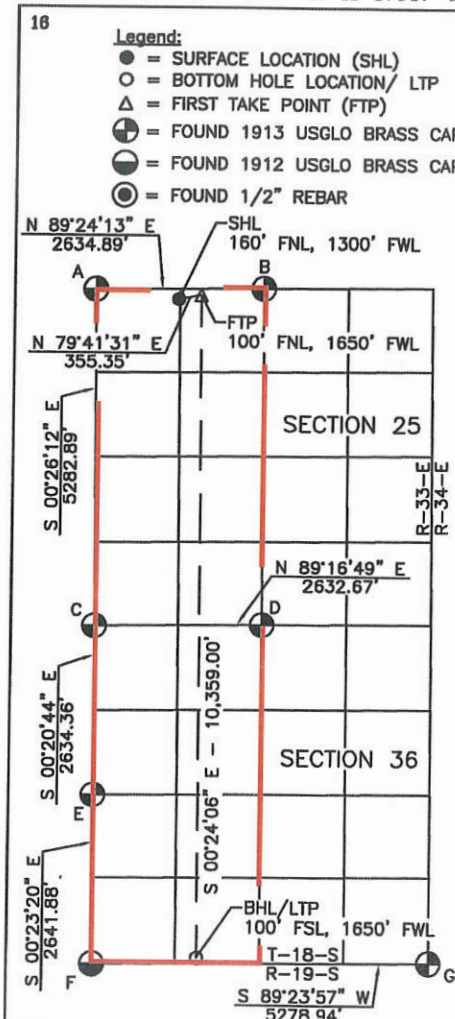
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	25	18 S	33 E		160	NORTH	1300	WEST	LEA

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	36	18 S	33 E		100	SOUTH	1650	WEST	LEA

¹² Dedicated Acres 640.00	¹³ Joint or Infill	¹⁴ Consolidation Code C	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SCALE: 1"=3000'

SURFACE LOCATIONNAD 83 NME, NMSPC ZONE 3001
Y= 628400.03 N
X= 760429.08 E
LAT: 32.7254868° N
LONG: 103.6209000° W**FIRST TAKE POINT**NAD 83 NME, NMSPC ZONE 3001
100' FNL, 1650' FWL
SEC. 25, T18S, R33E
Y= 628463.62 N
X= 760778.70 E
LAT: 32.7256551° N
LONG: 103.6197618° W**LAST TAKE POINT/****BOTTOM HOLE LOCATION**NAD 83 NME, NMSPC ZONE 3001
Y= 618104.88 N
X= 760851.33 E
LAT: 32.6971829° N
LONG: 103.6197523° W**CORNER COORDINATES TABLE**

NAD 83 NME, NMSPC ZONE 3001

A - Y= 628546.44 N, X= 759128.02 E
B - Y= 628573.87 N, X= 761762.76 E
C - Y= 623263.71 N, X= 759168.27 E
D - Y= 623296.78 N, X= 761800.73 E
E - Y= 620629.40 N, X= 759184.16 E
F - Y= 617987.58 N, X= 759202.09 E
G - Y= 618042.94 N, X= 764480.74 E

CORNER COORDINATES TABLE

NAD 83 NME, NMSPC ZONE 3001

A - LAT.=32.7259132° N, LONG.=103.6251273° W
B - LAT.=32.7259398° N, LONG.=103.6165596° W
C - LAT.=32.7113929° N, LONG.=103.6251112° W
D - LAT.=32.7114352° N, LONG.=103.6165522° W
E - LAT.=32.7041523° N, LONG.=103.6251167° W
F - LAT.=32.6968909° N, LONG.=103.6251158° W
G - LAT.=32.6969450° N, LONG.=103.6079563° W

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Brian Wood 2-9-23
Signature Date

BRIAN WOOD
Printed Name
brian@permitswest.com

E-mail Address 505 466-8120

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

10/28/22
Date of Survey

Signature and Seal of Professional Surveyor

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State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

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

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: Avant Operating, LLC **OGRID:** 330396 **Date:** 04/15/2024

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
Royal Oak 25 Fed Com 006H		D-25-T18S-R33E	320FNL/1280FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 007H		D-25-T18S-R33E	160FNL/1280FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 301H		C-25-T18S-R33E	320FNL/1340FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 302H		C-25-T18S-R33E	160FNL/1340FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 501H		D-25-T18S-R33E	320FNL/1300FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 502H		D-25-T18S-R33E	160FNL/1300FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 601H		C-25-T18S-R33E	320FNL/1320FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D
Royal Oak 25 Fed Com 602H		C-25-T18S-R33E	160FNL/1320FWL	1300 BBL/D	2100 MCF/D	4800 BBL/D

IV. Central Delivery Point Name: Royal Oak 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
Royal Oak 25 Fed Com 006H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 007H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 301H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 302H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 501H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 502H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 601H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024
Royal Oak 25 Fed Com 602H		10/11/2024	11/23/2024	11/27/2024	12/28/2024	12/28/2024

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 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:



Printed Name: John Harper

Title: SVP Assets and Exploration

E-mail Address: John@avantnr.com

Date: 04/15/24

Phone: 678-988-6644

OIL CONSERVATION DIVISION**(Only applicable when submitted as a standalone form)**

Approved By:

Title:

Approval Date:

Conditions of Approval:

Avant Operating, LLC Natural Gas Management Plan

- VI. Separation equipment will be sized by construction engineering staff based on stated manufacturer daily throughput capacities and anticipated daily production rates to ensure adequate capacity. Closed vent system piping, compression needs, and VRUs will be sized utilizing ProMax modelling software to ensure adequate capacity for anticipated production volumes and conditions.
- VII. Avant Operating, LLC (Avant) will take the following actions to comply with the regulations listed in 19.15.27.8:
- A. Avant will maximize the recovery of natural gas by minimizing the waste, as defined by 19.15.2 NMAC, of natural gas through venting and flaring. Avant will ensure that well(s) will be connected to a natural gas gathering system with sufficient capacity to transport natural gas.
 - B. All drilling operations will be equipped with a rig flare located at least 100' from the nearest surface hole. Rig flare will be utilized to combust any natural gas that is brought to surface during normal drilling operations. In the case of emergency venting or flaring the volumes will be estimated and reported appropriately.
 - C. During completion operations any natural gas brought to surface will be flared. Immediately following the finish of completion operations, all well flowback will be directed to permanent separation equipment. Produced natural gas from separation equipment will be sent to sales. It is not anticipated that gas will not meet pipeline standards. However, if natural gas does not meet gathering pipeline quality specifications, Avant will flare the natural gas for 60 days or until the natural gas meets the pipeline quality specifications. Avant will ensure that the flare is sized properly and is equipped with automatic igniter or continuous pilot. The gas sample will be analyzed twice per week and the gas will be routed into a gathering system as soon as pipeline specifications are met.
 - D. Avant will comply with the performance standards requirements and provisions listed in 19.15.27.8 (1) through (8). All equipment will be designed and sized to handle maximum anticipated pressures and throughputs to minimize the waste. Production storage tanks constructed after May 25, 2021, will be equipped with automatic gauging system. Flares constructed after May 25, 2021, will be equipped with automatic igniter or continuous pilot. Flares will be located at least 100' from the well and storage tanks unless otherwise approved by the division. Avant will conduct AVO inspections as described in 19.15.27.8 E (5) (a) with frequencies specified in 19.15.27.8 E (5) (b) and (c). All emergencies will be resolved as quickly and safely as feasible to minimize waste.
 - E. The volume of natural gas that is vented or flared as the result of malfunction or emergency during drilling and completions operations will be estimated. The volume of natural gas that is vented, flared, or beneficially used during production operations, will be measured, or estimated. Avant will install equipment to measure



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

Drilling Plan Data Report

04/15/2024

APD ID: 10400090664

Submission Date: 02/16/2023

Highlighted data
reflects the most
recent changes

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COM

Well Number: 502H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
13246055	QUATERNARY	3866	0	0	OTHER : Caliche	USEABLE WATER	N
13246056	RUSTLER ANHYDRITE	2180	1686	1686	ANHYDRITE	NONE	N
13246057	TOP SALT	1866	2000	2000	SALT	NONE	N
13246058	BASE OF SALT	924	2942	2943	SALT	NONE	N
13246059	YATES	706	3160	3161	DOLOMITE	NATURAL GAS, OIL	N
13246060	SEVEN RIVERS	218	3648	3651	LIMESTONE	NATURAL GAS, OIL	N
13246061	QUEEN	-496	4362	4366	SANDSTONE	NATURAL GAS, OIL	N
13246062	PENROSE	-739	4605	4609	SANDSTONE	NATURAL GAS, OIL	N
13246063	SAN ANDRES	-1204	5070	5075	DOLOMITE	NATURAL GAS, OIL	N
13246064	CHERRY CANYON	-1556	5422	5428	SANDSTONE	NATURAL GAS, OIL	N
13246065	BRUSHY CANYON	-2226	6092	6099	SANDSTONE	NATURAL GAS, OIL	N
13246066	BONE SPRING LIME	-3455	7321	7331	LIMESTONE	NATURAL GAS, OIL	N
13246068	AVALON SAND	-3712	7578	7588	SHALE	NATURAL GAS, OIL	N
13246067	BONE SPRING 1ST	-4826	8692	8705	SANDSTONE	NATURAL GAS, OIL	N
13246069	BONE SPRING 2ND	-5420	9286	9302	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COM

Well Number: 502H

Pressure Rating (PSI): 5M

Rating Depth: 15000

Equipment: A minimum 5M system will be used. The minimum blowout preventer equipment (BOPE) shown in the BOP Diagram will consist of a single ram, mud cross and double ram-type (10,000 psi WP) preventer, and an annular preventer (5000-psi WP). Both units will be hydraulically operated, and the ram-type will be equipped with blind rams on top and drill pipe rams on bottom. All BOPE will be tested in accordance with Onshore Oil & Gas Order 2.

Requesting Variance? YES

Variance request: Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line). Co-flex line will be tested in accordance with highest BOP test pressures (5000 psi) before drilling out of surface casing and (5000 psi) before drilling out of intermediate casing. Pressure tests will be charted for records. The manufacturers hydrostatic test report will be kept on location for inspection.

Testing Procedure: Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 5000 (high) / 250 (low) psig and the annular preventer to 3500 (high) / 250 (low) psig by an independent service company. Test charts will always be kept on location. Surface casing will be tested to 1500 psi for 30 minutes. Before drilling out of the intermediate casing, the ram-type BOP and accessory equipment will be tested to 5000 (high) / 250 (low) psig and the annular preventer to 3500 (high) / 250 (low) psig by an independent service company. Test charts will always be kept on location. Intermediate casing will be tested to 2000 psi for 30 minutes. A solid steel body pack-off will be used after running and cementing the intermediate casing. After installation, pack-off and lower flange will be pressure tested to 5000 psi. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe. This pressure test will be repeated at least once every 30 days, as per Onshore Order 2. Kelly cock will always be in the drill string. Full opening drill pipe stabbing valve (inside BOP) with proper drill pipe connections will always be on the rig floor. The multi-bowl wellhead will be installed by a third-party welder while being monitored by the vendors representative. All BOP equipment will be tested using a conventional test plug - not a cup or J-packer type. Both the surface and intermediate casing strings will be tested as per Onshore Order 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

Choke Diagram Attachment:

Royal_Choke_20230212091538.pdf

BOP Diagram Attachment:

Royal_BOP_20230212091620.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1711	0	1711	3866	2155	1711	J-55	54.5	LT&C	1.125	1.125	DRY	1.6	DRY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4000	0	3997	3866	-131	4000	J-55	40	LT&C	1.125	1.125	DRY	1.6	DRY	1.6

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COM

Well Number: 502H

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
3	INTERMEDIATE	12.25	9.625	NEW	API	N	4000	5105	3997	5100	-131	-1234	1105	OTHER	40	LT&C	1.125	1.125	DRY	1.6	DRY	1.6
4	PRODUCTION	8.75	5.5	NEW	NON API	N	0	19805	0	9600	3869	-5734	19805	P-110	20	OTHER - HC GBCD	1.125	1.125	DRY	1.6	DRY	1.6

Casing Attachments

Casing ID: 1StringSURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Royal_502H_Casing_Design_Assumptions_Rev_20230519140451.pdf

Casing ID: 2StringINTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Royal_502H_Casing_Design_Assumptions_Rev_20230519140543.pdf

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COMWell Number: 502H

Casing Attachments

Casing ID: 3StringINTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Royal_502H_Casing_Design_Assumptions_Rev_20230519140642.pdf

Casing ID: 4StringPRODUCTION

Inspection Document:

Spec Document:

5.5in_Casing_Spec_20230212091841.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Royal_502H_Casing_Design_Assumptions_Rev_20230519140711.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1711	755	1.9	12.8	1434	40	35% Class B Poz + 65% Class C	6% gel + 5% salt + ¼ #/sack poly flake + 0.005 gal/sack No Foam V1A
SURFACE	Tail		0	1711	240	1.33	14.8	319	40	Class C	1% CaCl2 + 0.005 gal/sack No Foam V1A
INTERMEDIATE	Lead		0	4000	800	1.9	12.8	1520	20	35% Class B Poz + 65% Class C	6% gel + 5% salt + 0.2% R-1300 + 1/4 #/sack poly flake + 0.005 gal/sack No Foam V1A

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COM

Well Number: 502H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		4000	5105	320	1.27	14.2	406	20	50% Class B Poz + 50% Class C	5% salt + 0.05% FR-5 + 0.005 gal/sack No Foam V1A
PRODUCTION	Lead		0	1980 5	850	3.38	10.7	2873	20	100% Class H	5 #/sack Plexcrete STE + 2% SMS + + 0.65% R-1300 + 0.2% FL-24 + 3 #/sack gilsonite + 0.005 gal/sack No Foam V1A
PRODUCTION	Tail		0	1980 5	2685	1.21	14.5	3248	20	50% Class B Poz + 50% Class H	5% salt + 0.05% SuspendaCem 6302 + 0.2% FR-5 + 0.5% FL-24 + 0.005% gal/sack No Foam V1A

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials (e. g., barite, bentonite, LCM) to maintain mud properties and meet minimum lost circulation and weight increase requirements will always be kept on site.

Describe the mud monitoring system utilized: An electronic pit volume totalizer (PVT) mud system will monitor pit volumes for gains or losses, flow rate, pump pressures, and stroke rate.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1711	OTHER : Fresh Water	8.4	9.9							
1711	9136	OTHER : Cut Brine	9.2	9.5							

Operator Name: AVANT OPERATING LLC

Well Name: ROYAL OAK 25 FED COMWell Number: 502H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
9136	9886	OTHER : Cut Brine	9.2	9.5							
9886	19805	OIL-BASED MUD	9	9.2							

Section 6 - Test, Logging, Coring

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

GR log will be acquired by MWD tools throughout the well.

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

GAMMA RAY LOG,

Coring operation description for the well:

No core or open hole or cased hole log is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4493

Anticipated Surface Pressure: 2380

Anticipated Bottom Hole Temperature(F): 161

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

Royal_Pad2_H2S_Plan_20230212092555.pdf

Operator Name: AVANT OPERATING LLC**Well Name:** ROYAL OAK 25 FED COM**Well Number:** 502H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Royal_502H_Horizontal_Plan_20230212092622.pdf

Other proposed operations facets description:

All casing strings below the conductor will be pressure tested to 0.22 psi/ft x casing string length, or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield. If pressure declines more than 10% in 30 minutes, then corrective action will be taken.

Other proposed operations facets attachment:

Royal_CoFlex_Certs_20230212092835.pdf

Royal_502H_Drill_Plan_Rev_20230519141032.pdf

Royal_502H_Speedhead_Specs_Rev_20230519141049.pdf

Royal_502H_Anti_Collision_Report_20230809092141.pdf

Other Variance attachment:

Casing_Cementing_Variance_Request_20230212092915.pdf

WELL DETAILS: Royal Oak 25 Fed Com #502H

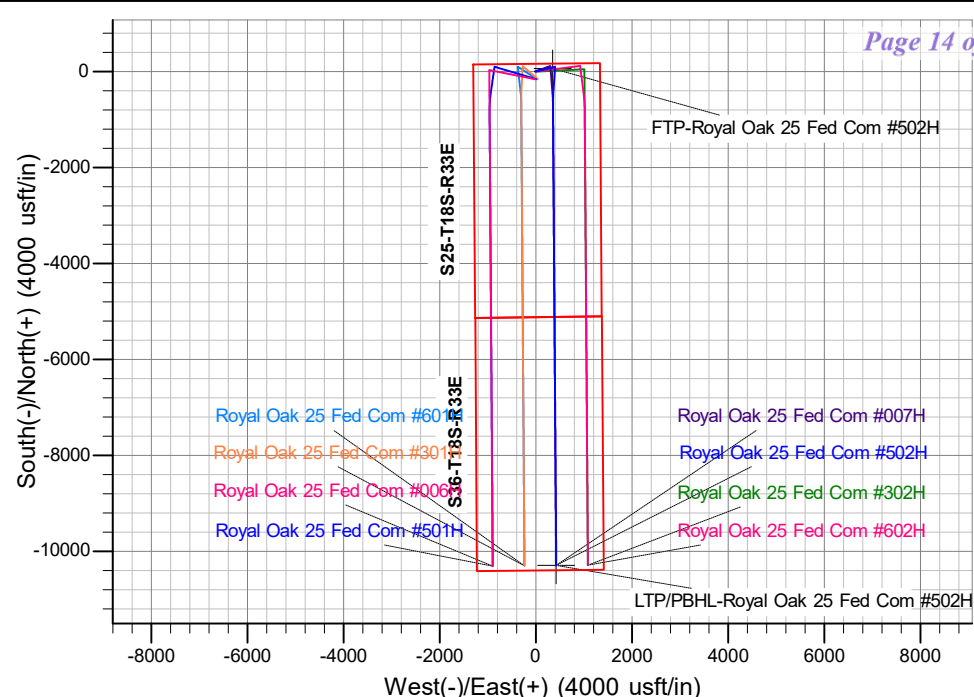
Ground Elev: 3866.0 KB: 3892.5

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	628400.04	760429.08	32.725487°N	103.620900°W

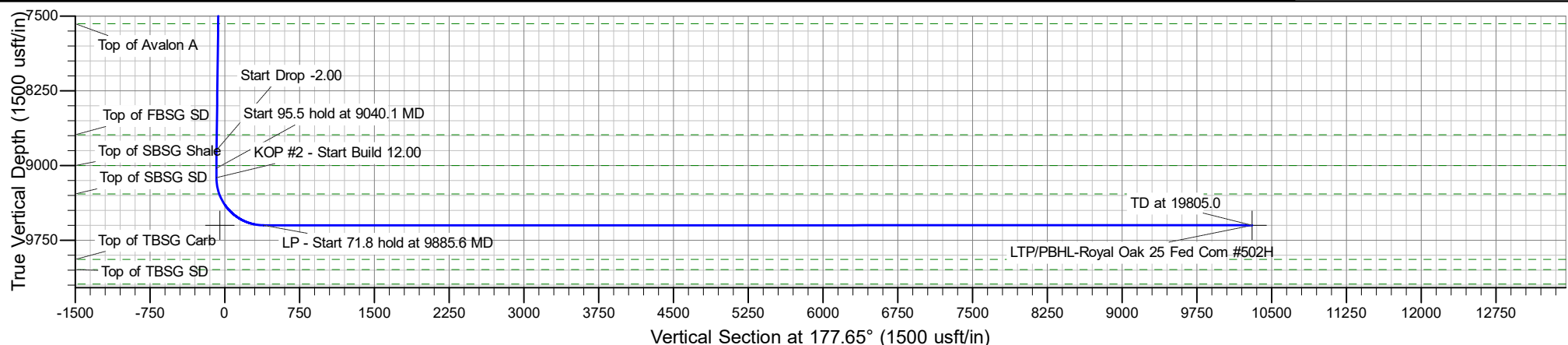
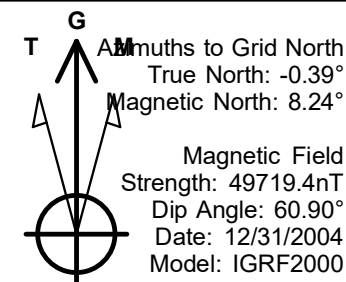
PROJECT DETAILS: Lea Co., NM (NAD 83)

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

System Datum: Mean Sea Level

**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2400.0	0.00	0.00	2400.0	0.0	0.0	0.00	0.00	0.0	KOP - Start Build 2.00
3	2583.1	3.66	75.96	2582.9	1.4	5.7	2.00	75.96	-1.2	Start 6273.9 hold at 2583.1 MD
4	8857.0	3.66	75.96	8844.1	98.6	394.3	0.00	0.00	-82.3	Start Drop -2.00
5	9040.1	0.00	0.00	9027.0	100.0	400.0	2.00	180.00	-83.5	Start 95.5 hold at 9040.1 MD
6	9135.6	0.00	0.00	9122.5	100.0	400.0	0.00	0.00	-83.5	KOP #2 - Start Build 12.00
7	9885.6	90.00	183.97	9600.0	-376.3	367.0	12.00	183.97	391.0	LP - Start 71.8 hold at 9885.6 MD
8	9957.3	90.00	183.97	9600.0	-447.9	362.0	0.00	0.00	462.4	Start DLS 2.00 TFO -90.00
9	10175.7	90.00	179.60	9600.0	-666.1	355.2	2.00	-90.00	680.1	Start 9629.3 hold at 10175.7 MD
10	19805.0	90.00	179.60	9600.0	-10295.2	422.3	0.00	0.00	10303.8	TD at 19805.0





Ameredev Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Royal Oak 25 Fed Com #502H
Company:	Avant Operating, LLC	TVD Reference:	WELL @ 3892.5usft (3892.5)
Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Project	Lea Co., NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Royal Oak 25 Fed Com Pad 2		
Site Position:		Northing:	628,331.07 usft
From:	Map	Easting:	760,434.75 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32.725297°N
		Longitude:	103.620883°W

Well	Royal Oak 25 Fed Com #502H		
Well Position	+N/-S	0.0 usft	Northing: 628,400.05 usft
	+E/-W	0.0 usft	Easting: 760,429.08 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
Grid Convergence:	0.39 °	Ground Level:	3,866.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	8.62	60.90	49,719.42235615

Design	Plan 0.1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	177.65	

Plan Survey Tool Program	Date	1/18/2023			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	19,805.0 Plan 0.1 (OH)	B001Mb_MWD+HRGM		
			OWSG MWD + HRGM		



Ameredev

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Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

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	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,583.1	3.66	75.96	2,582.9	1.4	5.7	2.00	2.00	0.00	75.96	
8,857.0	3.66	75.96	8,844.1	98.6	394.3	0.00	0.00	0.00	0.00	
9,040.1	0.00	0.00	9,027.0	100.0	400.0	2.00	-2.00	0.00	180.00	
9,135.6	0.00	0.00	9,122.5	100.0	400.0	0.00	0.00	0.00	0.00	
9,885.6	90.00	183.97	9,600.0	-376.3	367.0	12.00	12.00	0.00	183.97	
9,957.3	90.00	183.97	9,600.0	-447.9	362.0	0.00	0.00	0.00	0.00	
10,175.7	90.00	179.60	9,600.0	-666.1	355.2	2.00	0.00	-2.00	-90.00	
19,805.0	90.00	179.60	9,600.0	-10,295.2	422.3	0.00	0.00	0.00	0.00	LTP/PBHL-Royal Oak



Ameredev
Planning Report

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Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,686.0	0.00	0.00	1,686.0	0.0	0.0	0.0	0.00	0.00	0.00
RUSTLER									
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
2,500.0	2.00	75.96	2,500.0	0.4	1.7	-0.4	2.00	2.00	0.00
2,583.1	3.66	75.96	2,582.9	1.4	5.7	-1.2	2.00	2.00	0.00
Start 6273.9 hold at 2583.1 MD									
2,600.0	3.66	75.96	2,599.8	1.7	6.7	-1.4	0.00	0.00	0.00
2,700.0	3.66	75.96	2,699.6	3.2	12.9	-2.7	0.00	0.00	0.00
2,800.0	3.66	75.96	2,799.4	4.8	19.1	-4.0	0.00	0.00	0.00
2,900.0	3.66	75.96	2,899.2	6.3	25.3	-5.3	0.00	0.00	0.00
3,000.0	3.66	75.96	2,999.0	7.9	31.5	-6.6	0.00	0.00	0.00
3,100.0	3.66	75.96	3,098.8	9.4	37.7	-7.9	0.00	0.00	0.00
3,161.3	3.66	75.96	3,160.0	10.4	41.5	-8.7	0.00	0.00	0.00
YATES									
3,200.0	3.66	75.96	3,198.6	11.0	43.9	-9.2	0.00	0.00	0.00
3,300.0	3.66	75.96	3,298.4	12.5	50.1	-10.5	0.00	0.00	0.00
3,400.0	3.66	75.96	3,398.2	14.1	56.3	-11.8	0.00	0.00	0.00
3,500.0	3.66	75.96	3,498.0	15.6	62.5	-13.0	0.00	0.00	0.00
3,600.0	3.66	75.96	3,597.8	17.2	68.7	-14.3	0.00	0.00	0.00
3,650.3	3.66	75.96	3,648.0	17.9	71.8	-15.0	0.00	0.00	0.00
SEVEN RIVERS									
3,700.0	3.66	75.96	3,697.6	18.7	74.9	-15.6	0.00	0.00	0.00
3,800.0	3.66	75.96	3,797.4	20.3	81.1	-16.9	0.00	0.00	0.00
3,900.0	3.66	75.96	3,897.2	21.8	87.3	-18.2	0.00	0.00	0.00
4,000.0	3.66	75.96	3,997.0	23.4	93.4	-19.5	0.00	0.00	0.00
4,100.0	3.66	75.96	4,096.8	24.9	99.6	-20.8	0.00	0.00	0.00
4,200.0	3.66	75.96	4,196.6	26.5	105.8	-22.1	0.00	0.00	0.00
4,300.0	3.66	75.96	4,296.4	28.0	112.0	-23.4	0.00	0.00	0.00
4,365.8	3.66	75.96	4,362.0	29.0	116.1	-24.2	0.00	0.00	0.00



Ameredev
Planning Report

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Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
QUEEN									
4,400.0	3.66	75.96	4,396.2	29.6	118.2	-24.7	0.00	0.00	0.00
4,500.0	3.66	75.96	4,496.0	31.1	124.4	-26.0	0.00	0.00	0.00
4,600.0	3.66	75.96	4,595.8	32.7	130.6	-27.3	0.00	0.00	0.00
4,700.0	3.66	75.96	4,695.6	34.2	136.8	-28.6	0.00	0.00	0.00
4,800.0	3.66	75.96	4,795.4	35.8	143.0	-29.9	0.00	0.00	0.00
4,900.0	3.66	75.96	4,895.1	37.3	149.2	-31.2	0.00	0.00	0.00
5,000.0	3.66	75.96	4,994.9	38.8	155.4	-32.4	0.00	0.00	0.00
5,100.0	3.66	75.96	5,094.7	40.4	161.6	-33.7	0.00	0.00	0.00
5,200.0	3.66	75.96	5,194.5	41.9	167.8	-35.0	0.00	0.00	0.00
5,300.0	3.66	75.96	5,294.3	43.5	174.0	-36.3	0.00	0.00	0.00
5,400.0	3.66	75.96	5,394.1	45.0	180.2	-37.6	0.00	0.00	0.00
5,427.9	3.66	75.96	5,422.0	45.5	181.9	-38.0	0.00	0.00	0.00
CHERRY CANYON									
5,500.0	3.66	75.96	5,493.9	46.6	186.4	-38.9	0.00	0.00	0.00
5,600.0	3.66	75.96	5,593.7	48.1	192.6	-40.2	0.00	0.00	0.00
5,700.0	3.66	75.96	5,693.5	49.7	198.8	-41.5	0.00	0.00	0.00
5,800.0	3.66	75.96	5,793.3	51.2	205.0	-42.8	0.00	0.00	0.00
5,900.0	3.66	75.96	5,893.1	52.8	211.1	-44.1	0.00	0.00	0.00
6,000.0	3.66	75.96	5,992.9	54.3	217.3	-45.4	0.00	0.00	0.00
6,099.3	3.66	75.96	6,092.0	55.9	223.5	-46.7	0.00	0.00	0.00
BRUSHY CANYON									
6,100.0	3.66	75.96	6,092.7	55.9	223.5	-46.7	0.00	0.00	0.00
6,200.0	3.66	75.96	6,192.5	57.4	229.7	-48.0	0.00	0.00	0.00
6,300.0	3.66	75.96	6,292.3	59.0	235.9	-49.3	0.00	0.00	0.00
6,400.0	3.66	75.96	6,392.1	60.5	242.1	-50.6	0.00	0.00	0.00
6,500.0	3.66	75.96	6,491.9	62.1	248.3	-51.9	0.00	0.00	0.00
6,600.0	3.66	75.96	6,591.7	63.6	254.5	-53.1	0.00	0.00	0.00
6,700.0	3.66	75.96	6,691.5	65.2	260.7	-54.4	0.00	0.00	0.00
6,800.0	3.66	75.96	6,791.3	66.7	266.9	-55.7	0.00	0.00	0.00
6,900.0	3.66	75.96	6,891.1	68.3	273.1	-57.0	0.00	0.00	0.00
7,000.0	3.66	75.96	6,990.9	69.8	279.3	-58.3	0.00	0.00	0.00
7,100.0	3.66	75.96	7,090.7	71.4	285.5	-59.6	0.00	0.00	0.00
7,200.0	3.66	75.96	7,190.5	72.9	291.7	-60.9	0.00	0.00	0.00
7,300.0	3.66	75.96	7,290.2	74.5	297.9	-62.2	0.00	0.00	0.00
7,330.8	3.66	75.96	7,321.0	74.9	299.8	-62.6	0.00	0.00	0.00
Top of BSGI									
7,400.0	3.66	75.96	7,390.0	76.0	304.1	-63.5	0.00	0.00	0.00
7,500.0	3.66	75.96	7,489.8	77.6	310.3	-64.8	0.00	0.00	0.00
7,588.3	3.66	75.96	7,578.0	78.9	315.7	-65.9	0.00	0.00	0.00
Top of Avalon A									
7,600.0	3.66	75.96	7,589.6	79.1	316.5	-66.1	0.00	0.00	0.00
7,700.0	3.66	75.96	7,689.4	80.7	322.7	-67.4	0.00	0.00	0.00
7,800.0	3.66	75.96	7,789.2	82.2	328.8	-68.7	0.00	0.00	0.00
7,900.0	3.66	75.96	7,889.0	83.8	335.0	-70.0	0.00	0.00	0.00
8,000.0	3.66	75.96	7,988.8	85.3	341.2	-71.3	0.00	0.00	0.00
8,100.0	3.66	75.96	8,088.6	86.9	347.4	-72.5	0.00	0.00	0.00
8,200.0	3.66	75.96	8,188.4	88.4	353.6	-73.8	0.00	0.00	0.00
8,300.0	3.66	75.96	8,288.2	90.0	359.8	-75.1	0.00	0.00	0.00
8,400.0	3.66	75.96	8,388.0	91.5	366.0	-76.4	0.00	0.00	0.00
8,500.0	3.66	75.96	8,487.8	93.1	372.2	-77.7	0.00	0.00	0.00
8,600.0	3.66	75.96	8,587.6	94.6	378.4	-79.0	0.00	0.00	0.00
8,700.0	3.66	75.96	8,687.4	96.2	384.6	-80.3	0.00	0.00	0.00



Ameredev
Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Royal Oak 25 Fed Com #502H
Company:	Avant Operating, LLC	TVD Reference:	WELL @ 3892.5usft (3892.5)
Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,704.6	3.66	75.96	8,692.0	96.2	384.9	-80.4	0.00	0.00	0.00
Top of FBSG SD									
8,800.0	3.66	75.96	8,787.2	97.7	390.8	-81.6	0.00	0.00	0.00
8,857.0	3.66	75.96	8,844.1	98.6	394.3	-82.3	0.00	0.00	0.00
Start Drop -2.00									
8,900.0	2.80	75.96	8,887.0	99.2	396.7	-82.8	2.00	-2.00	0.00
9,000.0	0.80	75.96	8,986.9	99.9	399.7	-83.5	2.00	-2.00	0.00
9,014.1	0.52	75.96	9,001.0	100.0	399.9	-83.5	2.00	-2.00	0.00
Top of SBSG Shale									
9,040.1	0.00	0.00	9,027.0	100.0	400.0	-83.5	2.00	-2.00	0.00
Start 95.5 hold at 9040.1 MD									
9,100.0	0.00	0.00	9,086.9	100.0	400.0	-83.5	0.00	0.00	0.00
9,135.6	0.00	0.00	9,122.5	100.0	400.0	-83.5	0.00	0.00	0.00
KOP #2 - Start Build 12.00									
9,200.0	7.73	183.97	9,186.8	95.7	399.7	-79.2	12.00	12.00	0.00
9,300.0	19.73	183.97	9,283.7	72.0	398.1	-55.7	12.00	12.00	0.00
9,302.4	20.02	183.97	9,286.0	71.2	398.0	-54.8	12.00	12.00	0.00
Top of SBSG SD									
9,400.0	31.73	183.97	9,373.6	28.8	395.1	-12.6	12.00	12.00	0.00
9,500.0	43.73	183.97	9,452.6	-32.1	390.8	48.1	12.00	12.00	0.00
9,524.7	46.69	183.97	9,470.0	-49.6	389.6	65.5	12.00	12.00	0.00
FTP-Royal Oak 25 Fed Com #502H									
9,600.0	55.73	183.97	9,517.1	-108.1	385.6	123.8	12.00	12.00	0.00
9,700.0	67.73	183.97	9,564.4	-195.8	379.5	211.2	12.00	12.00	0.00
9,800.0	79.73	183.97	9,592.3	-291.4	372.9	306.4	12.00	12.00	0.00
9,885.6	90.00	183.97	9,600.0	-376.3	367.0	391.0	12.00	12.00	0.00
LP - Start 71.8 hold at 9885.6 MD									
9,900.0	90.00	183.97	9,600.0	-390.7	366.0	405.4	0.00	0.00	0.00
9,957.3	90.00	183.97	9,600.0	-447.9	362.0	462.4	0.00	0.00	0.00
Start DLS 2.00 TFO -90.00									
10,000.0	90.00	183.11	9,600.0	-490.5	359.4	504.8	2.00	0.00	-2.00
10,100.0	90.00	181.11	9,600.0	-590.4	355.7	604.5	2.00	0.00	-2.00
10,175.7	90.00	179.60	9,600.0	-666.1	355.2	680.1	2.00	0.00	-2.00
Start 9629.3 hold at 10175.7 MD									
10,200.0	90.00	179.60	9,600.0	-690.4	355.4	704.4	0.00	0.00	0.00
10,300.0	90.00	179.60	9,600.0	-790.4	356.1	804.3	0.00	0.00	0.00
10,400.0	90.00	179.60	9,600.0	-890.4	356.8	904.3	0.00	0.00	0.00
10,500.0	90.00	179.60	9,600.0	-990.4	357.5	1,004.2	0.00	0.00	0.00
10,600.0	90.00	179.60	9,600.0	-1,090.4	358.2	1,104.2	0.00	0.00	0.00
10,700.0	90.00	179.60	9,600.0	-1,190.4	358.9	1,204.1	0.00	0.00	0.00
10,800.0	90.00	179.60	9,600.0	-1,290.4	359.6	1,304.0	0.00	0.00	0.00
10,900.0	90.00	179.60	9,600.0	-1,390.4	360.2	1,404.0	0.00	0.00	0.00
11,000.0	90.00	179.60	9,600.0	-1,490.4	360.9	1,503.9	0.00	0.00	0.00
11,100.0	90.00	179.60	9,600.0	-1,590.4	361.6	1,603.9	0.00	0.00	0.00
11,200.0	90.00	179.60	9,600.0	-1,690.4	362.3	1,703.8	0.00	0.00	0.00
11,300.0	90.00	179.60	9,600.0	-1,790.4	363.0	1,803.7	0.00	0.00	0.00
11,400.0	90.00	179.60	9,600.0	-1,890.4	363.7	1,903.7	0.00	0.00	0.00
11,500.0	90.00	179.60	9,600.0	-1,990.4	364.4	2,003.6	0.00	0.00	0.00
11,600.0	90.00	179.60	9,600.0	-2,090.4	365.1	2,103.6	0.00	0.00	0.00
11,700.0	90.00	179.60	9,600.0	-2,190.4	365.8	2,203.5	0.00	0.00	0.00
11,800.0	90.00	179.60	9,600.0	-2,290.4	366.5	2,303.5	0.00	0.00	0.00
11,900.0	90.00	179.60	9,600.0	-2,390.4	367.2	2,403.4	0.00	0.00	0.00
12,000.0	90.00	179.60	9,600.0	-2,490.4	367.9	2,503.3	0.00	0.00	0.00



Ameredev
Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Royal Oak 25 Fed Com #502H
Company:	Avant Operating, LLC	TVD Reference:	WELL @ 3892.5usft (3892.5)
Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,100.0	90.00	179.60	9,600.0	-2,590.4	368.6	2,603.3	0.00	0.00	0.00
12,200.0	90.00	179.60	9,600.0	-2,690.4	369.3	2,703.2	0.00	0.00	0.00
12,300.0	90.00	179.60	9,600.0	-2,790.4	370.0	2,803.2	0.00	0.00	0.00
12,400.0	90.00	179.60	9,600.0	-2,890.3	370.7	2,903.1	0.00	0.00	0.00
12,500.0	90.00	179.60	9,600.0	-2,990.3	371.4	3,003.1	0.00	0.00	0.00
12,600.0	90.00	179.60	9,600.0	-3,090.3	372.1	3,103.0	0.00	0.00	0.00
12,700.0	90.00	179.60	9,600.0	-3,190.3	372.8	3,202.9	0.00	0.00	0.00
12,800.0	90.00	179.60	9,600.0	-3,290.3	373.5	3,302.9	0.00	0.00	0.00
12,900.0	90.00	179.60	9,600.0	-3,390.3	374.2	3,402.8	0.00	0.00	0.00
13,000.0	90.00	179.60	9,600.0	-3,490.3	374.9	3,502.8	0.00	0.00	0.00
13,100.0	90.00	179.60	9,600.0	-3,590.3	375.6	3,602.7	0.00	0.00	0.00
13,200.0	90.00	179.60	9,600.0	-3,690.3	376.3	3,702.6	0.00	0.00	0.00
13,300.0	90.00	179.60	9,600.0	-3,790.3	377.0	3,802.6	0.00	0.00	0.00
13,400.0	90.00	179.60	9,600.0	-3,890.3	377.7	3,902.5	0.00	0.00	0.00
13,500.0	90.00	179.60	9,600.0	-3,990.3	378.4	4,002.5	0.00	0.00	0.00
13,600.0	90.00	179.60	9,600.0	-4,090.3	379.1	4,102.4	0.00	0.00	0.00
13,700.0	90.00	179.60	9,600.0	-4,190.3	379.7	4,202.4	0.00	0.00	0.00
13,800.0	90.00	179.60	9,600.0	-4,290.3	380.4	4,302.3	0.00	0.00	0.00
13,900.0	90.00	179.60	9,600.0	-4,390.3	381.1	4,402.2	0.00	0.00	0.00
14,000.0	90.00	179.60	9,600.0	-4,490.3	381.8	4,502.2	0.00	0.00	0.00
14,100.0	90.00	179.60	9,600.0	-4,590.3	382.5	4,602.1	0.00	0.00	0.00
14,200.0	90.00	179.60	9,600.0	-4,690.3	383.2	4,702.1	0.00	0.00	0.00
14,300.0	90.00	179.60	9,600.0	-4,790.3	383.9	4,802.0	0.00	0.00	0.00
14,400.0	90.00	179.60	9,600.0	-4,890.3	384.6	4,902.0	0.00	0.00	0.00
14,500.0	90.00	179.60	9,600.0	-4,990.3	385.3	5,001.9	0.00	0.00	0.00
14,600.0	90.00	179.60	9,600.0	-5,090.3	386.0	5,101.8	0.00	0.00	0.00
14,700.0	90.00	179.60	9,600.0	-5,190.3	386.7	5,201.8	0.00	0.00	0.00
14,800.0	90.00	179.60	9,600.0	-5,290.3	387.4	5,301.7	0.00	0.00	0.00
14,900.0	90.00	179.60	9,600.0	-5,390.3	388.1	5,401.7	0.00	0.00	0.00
15,000.0	90.00	179.60	9,600.0	-5,490.3	388.8	5,501.6	0.00	0.00	0.00
15,100.0	90.00	179.60	9,600.0	-5,590.3	389.5	5,601.5	0.00	0.00	0.00
15,200.0	90.00	179.60	9,600.0	-5,690.3	390.2	5,701.5	0.00	0.00	0.00
15,300.0	90.00	179.60	9,600.0	-5,790.3	390.9	5,801.4	0.00	0.00	0.00
15,400.0	90.00	179.60	9,600.0	-5,890.3	391.6	5,901.4	0.00	0.00	0.00
15,500.0	90.00	179.60	9,600.0	-5,990.3	392.3	6,001.3	0.00	0.00	0.00
15,600.0	90.00	179.60	9,600.0	-6,090.3	393.0	6,101.3	0.00	0.00	0.00
15,700.0	90.00	179.60	9,600.0	-6,190.3	393.7	6,201.2	0.00	0.00	0.00
15,800.0	90.00	179.60	9,600.0	-6,290.3	394.4	6,301.1	0.00	0.00	0.00
15,900.0	90.00	179.60	9,600.0	-6,390.3	395.1	6,401.1	0.00	0.00	0.00
16,000.0	90.00	179.60	9,600.0	-6,490.3	395.8	6,501.0	0.00	0.00	0.00
16,100.0	90.00	179.60	9,600.0	-6,590.3	396.5	6,601.0	0.00	0.00	0.00
16,200.0	90.00	179.60	9,600.0	-6,690.3	397.2	6,700.9	0.00	0.00	0.00
16,300.0	90.00	179.60	9,600.0	-6,790.3	397.9	6,800.9	0.00	0.00	0.00
16,400.0	90.00	179.60	9,600.0	-6,890.3	398.6	6,900.8	0.00	0.00	0.00
16,500.0	90.00	179.60	9,600.0	-6,990.2	399.2	7,000.7	0.00	0.00	0.00
16,600.0	90.00	179.60	9,600.0	-7,090.2	399.9	7,100.7	0.00	0.00	0.00
16,700.0	90.00	179.60	9,600.0	-7,190.2	400.6	7,200.6	0.00	0.00	0.00
16,800.0	90.00	179.60	9,600.0	-7,290.2	401.3	7,300.6	0.00	0.00	0.00
16,900.0	90.00	179.60	9,600.0	-7,390.2	402.0	7,400.5	0.00	0.00	0.00
17,000.0	90.00	179.60	9,600.0	-7,490.2	402.7	7,500.4	0.00	0.00	0.00
17,100.0	90.00	179.60	9,600.0	-7,590.2	403.4	7,600.4	0.00	0.00	0.00
17,200.0	90.00	179.60	9,600.0	-7,690.2	404.1	7,700.3	0.00	0.00	0.00
17,300.0	90.00	179.60	9,600.0	-7,790.2	404.8	7,800.3	0.00	0.00	0.00
17,400.0	90.00	179.60	9,600.0	-7,890.2	405.5	7,900.2	0.00	0.00	0.00



Ameredev
Planning Report

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Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
17,500.0	90.00	179.60	9,600.0	-7,990.2	406.2	8,000.2	0.00	0.00	0.00	
17,600.0	90.00	179.60	9,600.0	-8,090.2	406.9	8,100.1	0.00	0.00	0.00	
17,700.0	90.00	179.60	9,600.0	-8,190.2	407.6	8,200.0	0.00	0.00	0.00	
17,800.0	90.00	179.60	9,600.0	-8,290.2	408.3	8,300.0	0.00	0.00	0.00	
17,900.0	90.00	179.60	9,600.0	-8,390.2	409.0	8,399.9	0.00	0.00	0.00	
18,000.0	90.00	179.60	9,600.0	-8,490.2	409.7	8,499.9	0.00	0.00	0.00	
18,100.0	90.00	179.60	9,600.0	-8,590.2	410.4	8,599.8	0.00	0.00	0.00	
18,200.0	90.00	179.60	9,600.0	-8,690.2	411.1	8,699.8	0.00	0.00	0.00	
18,300.0	90.00	179.60	9,600.0	-8,790.2	411.8	8,799.7	0.00	0.00	0.00	
18,400.0	90.00	179.60	9,600.0	-8,890.2	412.5	8,899.6	0.00	0.00	0.00	
18,500.0	90.00	179.60	9,600.0	-8,990.2	413.2	8,999.6	0.00	0.00	0.00	
18,600.0	90.00	179.60	9,600.0	-9,090.2	413.9	9,099.5	0.00	0.00	0.00	
18,700.0	90.00	179.60	9,600.0	-9,190.2	414.6	9,199.5	0.00	0.00	0.00	
18,800.0	90.00	179.60	9,600.0	-9,290.2	415.3	9,299.4	0.00	0.00	0.00	
18,900.0	90.00	179.60	9,600.0	-9,390.2	416.0	9,399.3	0.00	0.00	0.00	
19,000.0	90.00	179.60	9,600.0	-9,490.2	416.7	9,499.3	0.00	0.00	0.00	
19,100.0	90.00	179.60	9,600.0	-9,590.2	417.4	9,599.2	0.00	0.00	0.00	
19,200.0	90.00	179.60	9,600.0	-9,690.2	418.1	9,699.2	0.00	0.00	0.00	
19,300.0	90.00	179.60	9,600.0	-9,790.2	418.7	9,799.1	0.00	0.00	0.00	
19,400.0	90.00	179.60	9,600.0	-9,890.2	419.4	9,899.1	0.00	0.00	0.00	
19,500.0	90.00	179.60	9,600.0	-9,990.2	420.1	9,999.0	0.00	0.00	0.00	
19,600.0	90.00	179.60	9,600.0	-10,090.2	420.8	10,098.9	0.00	0.00	0.00	
19,700.0	90.00	179.60	9,600.0	-10,190.2	421.5	10,198.9	0.00	0.00	0.00	
19,800.0	90.00	179.60	9,600.0	-10,290.2	422.2	10,298.8	0.00	0.00	0.00	
19,805.0	90.00	179.60	9,600.0	-10,295.2	422.3	10,303.8	0.00	0.00	0.00	
TD at 19805.0 - LTP/PBHL-Royal Oak 25 Fed Com #502H										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP-Royal Oak 25 Fed (0.00	0.00	9,600.0	63.6	349.6	628,463.63	760,778.70	32.725655°N	103.619762°W
- plan misses target center by 177.0usft at 9524.7usft MD (9470.0 TVD, -49.6 N, 389.6 E)									
- Point									
LTP/PBHL-Royal Oak 25	0.00	0.00	9,600.0	-10,295.2	422.3	618,104.87	760,851.34	32.697183°N	103.619753°W
- plan hits target center									
- Point									



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Project:	Lea Co., NM (NAD 83)	MD Reference:	WELL @ 3892.5usft (3892.5)
Site:	Royal Oak 25 Fed Com Pad 2	North Reference:	Grid
Well:	Royal Oak 25 Fed Com #502H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,686.0	1,686.0	RUSTLER				
3,161.3	3,160.0	YATES				
3,650.3	3,648.0	SEVEN RIVERS				
4,365.8	4,362.0	QUEEN				
5,427.9	5,422.0	CHERRY CANYON				
6,099.3	6,092.0	BRUSHY CANYON				
7,330.8	7,321.0	Top of BSGL				
7,588.3	7,578.0	Top of Avalon A				
8,704.6	8,692.0	Top of FBSG SD				
9,014.1	9,001.0	Top of SBSG Shale				
9,302.4	9,286.0	Top of SBSG SD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2,400.0	2,400.0	0.0	0.0	KOP - Start Build 2.00	
2,583.1	2,582.9	1.4	5.7	Start 6273.9 hold at 2583.1 MD	
8,857.0	8,844.1	98.6	394.3	Start Drop -2.00	
9,040.1	9,027.0	100.0	400.0	Start 95.5 hold at 9040.1 MD	
9,135.6	9,122.5	100.0	400.0	KOP #2 - Start Build 12.00	
9,885.6	9,600.0	-376.3	367.0	LP - Start 71.8 hold at 9885.6 MD	
9,957.3	9,600.0	-447.9	362.0	Start DLS 2.00 TFO -90.00	
10,175.7	9,600.0	-666.1	355.2	Start 9629.3 hold at 10175.7 MD	
19,805.0	9,600.0	-10,295.2	422.3	TD at 19805.0	

**PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Avant Operating LLC
LEASE NO.:	NMNM245247
LOCATION:	Section 25, T.18 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Royal Oak 25 Fed Com 301H
SURFACE HOLE FOOTAGE:	320'/N & 1340'/W
BOTTOM HOLE FOOTAGE:	100'/S & 990'/W
ATS/API ID:	ATS-23-800
APD ID:	10400090643
Sundry ID:	N/a

WELL NAME & NO.:	Royal Oak 25 Fed Com 302H
SURFACE HOLE FOOTAGE:	160'/N & 1340'/W
BOTTOM HOLE FOOTAGE:	100'/S & 2310'/W
ATS/API ID:	ATS-23-1521
APD ID:	10400090663
Sundry ID:	N/a

WELL NAME & NO.:	Royal Oak 25 Fed Com 502H
SURFACE HOLE FOOTAGE:	160'/N & 1300'/W
BOTTOM HOLE FOOTAGE:	100'/S & 1650'/W
ATS/API ID:	ATS-23-1522
APD ID:	10400090664
Sundry ID:	N/a

WELL NAME & NO.:	Royal Oak 25 Fed Com 601H
SURFACE HOLE FOOTAGE:	320'/N & 1320'/W
BOTTOM HOLE FOOTAGE:	100'/S & 990'/W
ATS/API ID:	ATS-23-801
APD ID:	10400090662
Sundry ID:	N/a

WELL NAME & NO.:	Royal Oak 25 Fed Com 602H
SURFACE HOLE FOOTAGE:	160'/N & 1320'/W
BOTTOM HOLE FOOTAGE:	100'/S & 2310'/W
ATS/API ID:	ATS-23-1523
APD ID:	10400090665
Sundry ID:	N/a

COA

H2S	Yes		
Potash	None		
Cave/Karst Potential	Low		
Cave/Karst Potential	<input type="checkbox"/> Critical		
Variance	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Flex Hose	<input checked="" type="checkbox"/> Other
Wellhead	Conventional and Multibowl		
Other	<input type="checkbox"/> 4 String	Capitan Reef None	<input type="checkbox"/> WIPP
Other	Pilot Hole None	<input type="checkbox"/> Open Annulus	
Cementing	Contingency Squeeze None	Echo-Meter None	Primary Cement Squeeze None
Special Requirements	<input type="checkbox"/> Water Disposal/Injection	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit
Special Requirements	<input type="checkbox"/> Batch Sundry		
Special Requirements Variance	<input type="checkbox"/> Break Testing	<input type="checkbox"/> Offline Cementing	<input type="checkbox"/> Casing Clearance

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates** formation. As a result, the Hydrogen Sulfide area must meet **43 CFR part 3170 Subpart 3176** requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1711 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. The surface hole shall be **17 1/2** inch in diameter.
 - 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 **9-5/8** inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Cement excess is less than 25%, more cement is required if washout occurs. Adjust cement volume and excess based on a fluid caliper or similar method that reflects the as-drilled size of the wellbore.**
 3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
- 2.

Option 1:

- a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
- b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **5000 (5M)** psi.

Option 2:

Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **13-3/8** inch surface casing. Minimum working

pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

- a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

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 part 3170 Subpart 3171**
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

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

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

☒ Eddy County

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

BLM_NM_CFO_DrillingNotifications@BLM.GOV

(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,

(575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per **43 CFR part 3170 Subpart 3172** as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a

digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR part 3170 Subpart 3172** and **API STD 53 Sec. 5.3**.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after

installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR part 3170 Subpart 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR**

part 3170 Subpart 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.

LVO 8/16/2023

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.

Breathing apparatus:

- a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- b. Work/Escape packs — 4 packs shall be stored on the rig floor th sufficient air hose not to restrict work activity.
- c. Emergency Escape Packs — 4 packs shall be stored in the doghouse for emergency evacuation.

Auxiliary Rescue Equipment:

- a. Stretcher
- b. Two OSHA full body harness
- c. 100 ft 5/8 inch OSHA approved rope
- d. 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 systems.
 - 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.



- **Mud program:**
The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S 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 H2S service.
- **Communication:**
Communication will be via cell phones and land lines where available.

Company Personnel to be Notified

John Harper, Vice President of Geoscience	Office: (720) 746-5045
	Mobile: (678) 988-6644
Braden Harris, Engineer	Mobile: (406) 600-3310

Local & County Agencies

Maljamar Volunter Fire Department	911 or (575) 676-4100
Lea County Sheriff (Lovington)	911 or (575) 396-3611
Lea County Emergency Management (Lovington)	(575) 396-8602
Lea Regional Medical Center Hopital (Hobbs)	(575) 492-5000

State Agencies

NM State Police (Hobbs)	(575) 392-5588
NM Oil Conservation (Hobbs)	(575) 370-3186
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201



Federal Agencies

BLM (Carlsbad)	(575) 234-5972
BLM (Hobbs)	(575) 393-3612
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063
	(214) 665-6444

Veterinarians

Lovington Veterinary Clinic	(575) 396-7387
Hobbs Animal Clinic	(575) 392-5563
Dal Paso Animal Hospital (Hobbs)	(575) 397-2286

Residents within 2 miles

None

Air Evacuation

AeroCare (Lubbock)	(800) 627-2376
Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256



AVANT OPERATING, LLC

ROYAL OAK 25 FED COM PAD 2
SEC. 25, T-18-S, R-33-E, N.M.P.M.,
LEA COUNTY, N.M.

Before digging
call for utility
line location!

HIGHEST GROUND TO NORTH

SECTION 24

SECTION 25

ELEVATION: 3863'

N 89°

TOPSOIL

610.15'

ELEVATION: 3875'

S 89°24'03" W
984.84'N 1/4
Fd. Bc.
USGLO
1913FLARE >150'
FROM WELLWARNING SIGN
& WINDSOCK

PROPOSED ACCESS

v-door

WINDSOCK ON
RIG FLOOR &
@ MUD TANKSCENTER OF PAD
260' FNL
1341' FWL
LAT: 32.7252119° N
LONG: 103.6207672° W
NAD 83

v-door

PRIMARY SAFETY
BRIEFING AREA
>150' FROM WELL

EXIT

007H WELL FLAG
502H WELL FLAG302H WELL FLAG
602H WELL FLAG006H WELL FLAG
501H WELL FLAG301H WELL FLAG
601H WELL FLAGWARNING SIGN
& WINDSOCKPROPOSED
ALTERNATE ACCESS

SECONDARY SAFETY BRIEFING AREA >150' FROM WELL

ELEVATION: 3867'

TOPSOIL

S 89°24'10" W - 610.14'

EXIT

ELEVATION: 3872'

0 50 100
SCALE: 1"=100'PREVAILING WINDS
BLOW FROM SOUTH

OVERALL DIMENSIONS: 610' X 520'

ALL DIMENSIONS SHOWN ARE BASED UPON THE NEW MEXICO
TIME ZONE, NAD 83, IN U.S. SURVEY FEET.
1" FOR LOCATION OF ANY MARKED OR UNMARKED
WELL PAD AND/OR ACCESS ROAD AT LEAST TWO (2)
WORKING DAYS PRIOR TO CONSTRUCTION.

3. UNITED FIELD SERVICES, INC. IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES.

I, MARSHALL W. LINDEEN, NEW MEXICO PROFESSIONAL SURVEYOR NO. 17078, DO HEREBY
CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH
IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM
RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR
SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION
OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT.


MARSHALL W. LINDEEN P.S. #17078

DATE

11-21-22

WELL FLAG	FNL	FWL
007H	160'	1280'
502H	160'	1300'
602H	160'	1320'
302H	160'	1340'
006H	320'	1280'
501H	320'	1300'
601H	320'	1320'
301H	320'	1340'

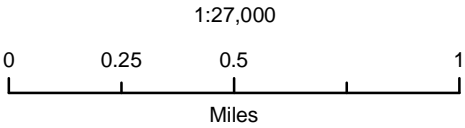
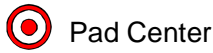
OWNER	SQ. FT.	ACRES
BUREAU OF LAND MANAGEMENT	317,283	7.284

		P.O. Box 3651 Farmington, NM 87499 Office: (505) 334-0408
DWG. No. : 11722-Pad	Revision:	
Drawn by: K.S.	Date Drawn: 11/10/22	Rev. Date:
Surveyed: 10/28/22	App by: M.W.L.	Sheet: 1

Avant Operating, LLC

Royal Oak 25 Federal Com
Pad 2
H2S Contingency Plan:
Radius Map

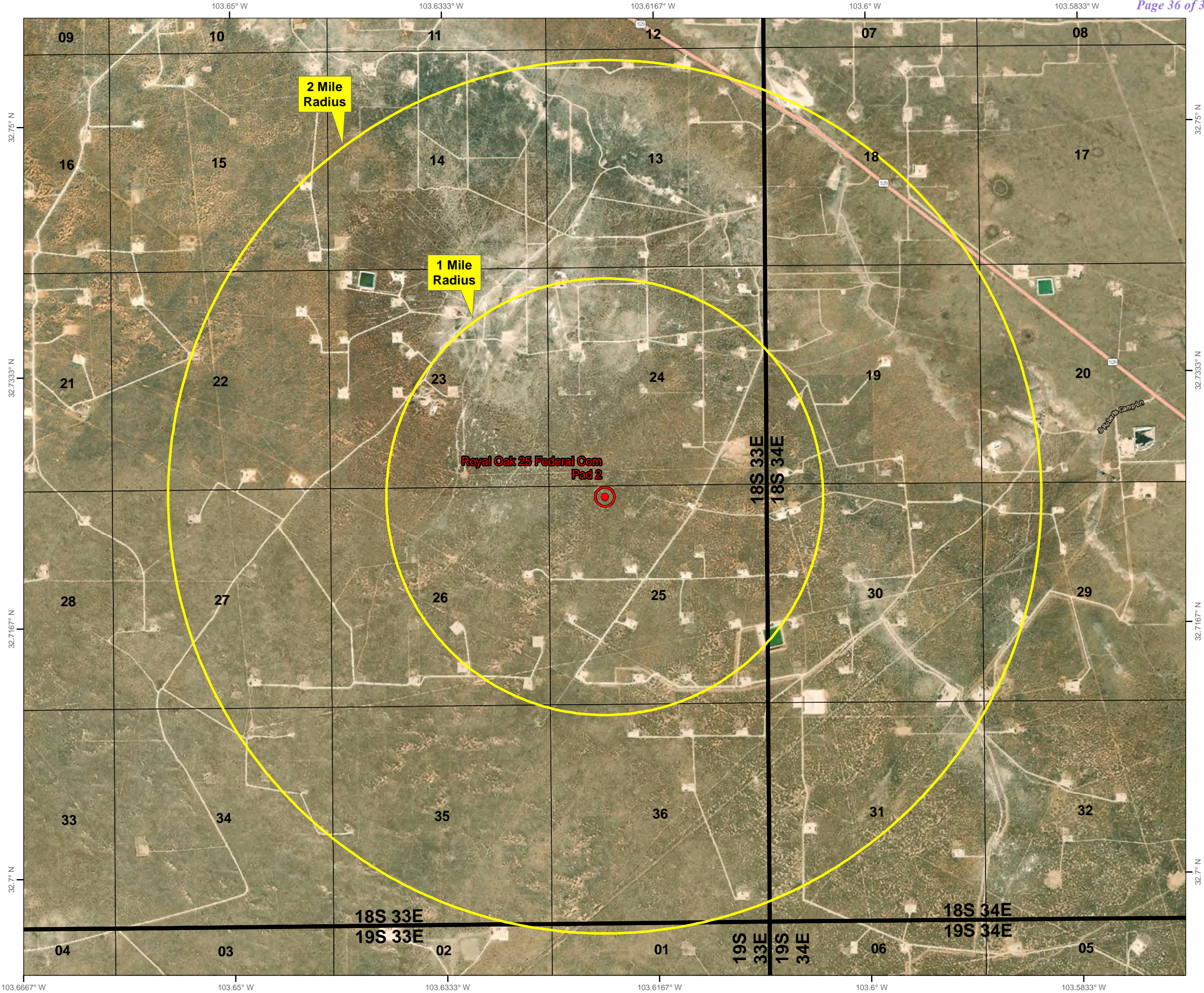
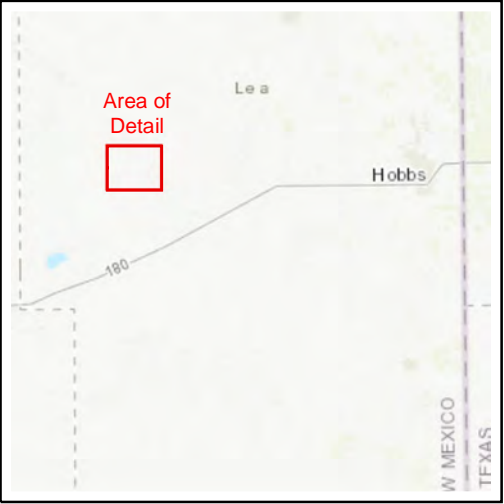
Section 25, Township 18S, Range 33E
Lea County, New Mexico



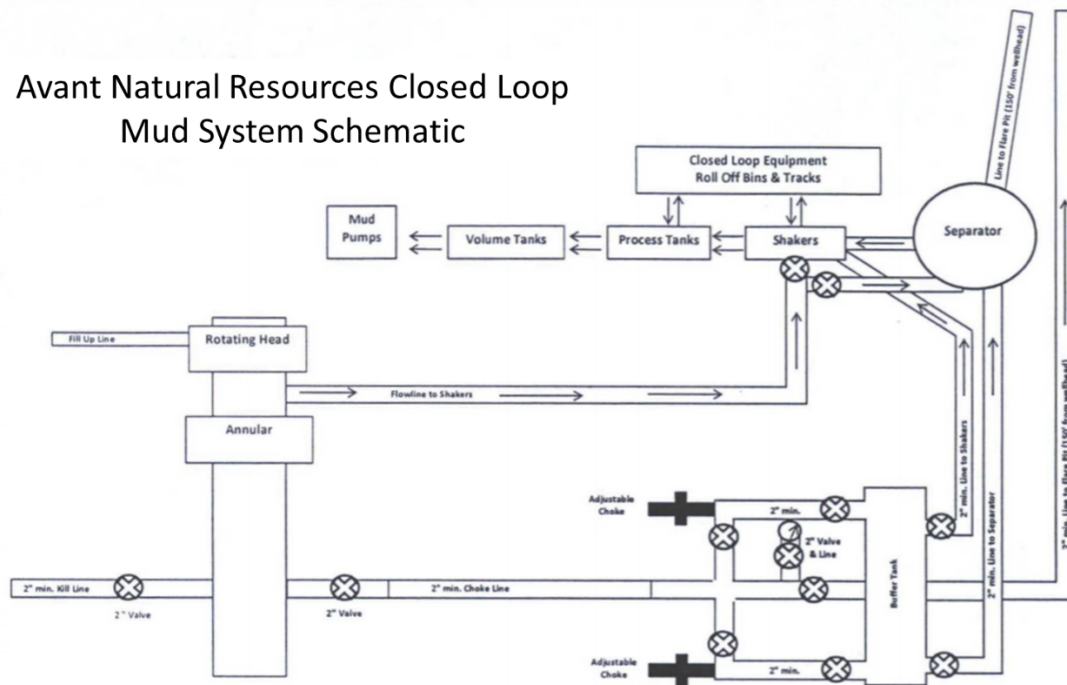
NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., February 3, 2023
for Avant Operating, LLC



Avant Natural Resources Closed Loop Mud System Schematic



District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 333383

CONDITIONS

Operator: Avant Operating, LLC 1515 Wynkoop Street Denver, CO 80202	OGRID:
	330396
	Action Number:
	333383
Action Type:	
[C-101] BLM - Federal/Indian Land Lease (Form 3160-3)	

CONDITIONS

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	4/25/2024
pkautz	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	4/25/2024
pkautz	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	4/25/2024
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	4/25/2024
pkautz	If cement does not circulate on any string, a CBL is required for that string of casing	4/25/2024