

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

General Information
Phone: (505) 629-6116

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

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

Form C-101
August 1, 2011

Permit 399907

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address Avant Operating II, LLC 1515 Wynkoop Street Denver, CO 80202		2. OGRID Number 332947
		3. API Number 30-025-55445
4. Property Code 337745	5. Property Name QUAIL 16 STATE COM	6. Well No. 501H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
C	16	20S	34E	C	250	N	1400	W	Lea

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
M	16	20S	34E	M	100	S	330	W	Lea

9. Pool Information

LEA;BONE SPRING, SOUTH	37580
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3631
16. Multiple N	17. Proposed Depth 15359	18. Formation 2nd Bone Spring Sand	19. Contractor	20. Spud Date 12/1/2025
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	14.75	10.75	40.5	1571	760	0
Int1	9.875	8.625	32	5438	920	0
Prod	7.875	5.5	20	15359	1490	0

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Pipe	10000	5000	CAMERON

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I hereby certify that no additives containing PFAS chemicals will be added to the completion or recompletion of this well. I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> if applicable. Signature:	OIL CONSERVATION DIVISION
Printed Name: Electronically filed by Sarah Ferreyros	Approved By: Jeffrey Harrison
Title: Director of Regulatory	Title: Petroleum Specialist III
Email Address: sarah@avantnr.com	Approved Date: 11/12/2025 Expiration Date: 11/12/2027
Date: 11/10/2025 Phone: 720-854-9020	Conditions of Approval Attached

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 INFORMATION									
API Number 30-025-55445		Pool Code 37580		Pool Name Lea; Bone Spring, South					
Property Code 337745		Property Name QUAIL 16 STATE COM						Well Number #501H	
OGRID No. 332947		Operator Name AVANT OPERATING II, LLC						Ground Level Elevation 3631'	
Surface Owner: <input checked="" type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal					Mineral Owner: <input checked="" type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal				

Surface Location									
UL C	Section 16	Township 20 S	Range 34 E	Lot	Ft. from N/S 250' FNL	Ft. from E/W 1400' FWL	Latitude 32.579720°	Longitude -103.569323°	County LEA

Bottom Hole Location									
UL M	Section 16	Township 20 S	Range 34 E	Lot	Ft. from N/S 100' FSL	Ft. from E/W 330' FWL	Latitude 32.566185°	Longitude -103.572787°	County LEA



Dedicated Acres 640.00	Infill or Defining Well Infill	Defining Well API n/a	Overlapping Spacing Unit (Y/N) No	Consolidation Code n/a
Order Numbers. Pending			Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Kick Off Point (KOP)									
UL C	Section 16	Township 20 S	Range 34 E	Lot	Ft. from N/S 250' FNL	Ft. from E/W 1400' FWL	Latitude 32.579720°	Longitude -103.569323°	County LEA

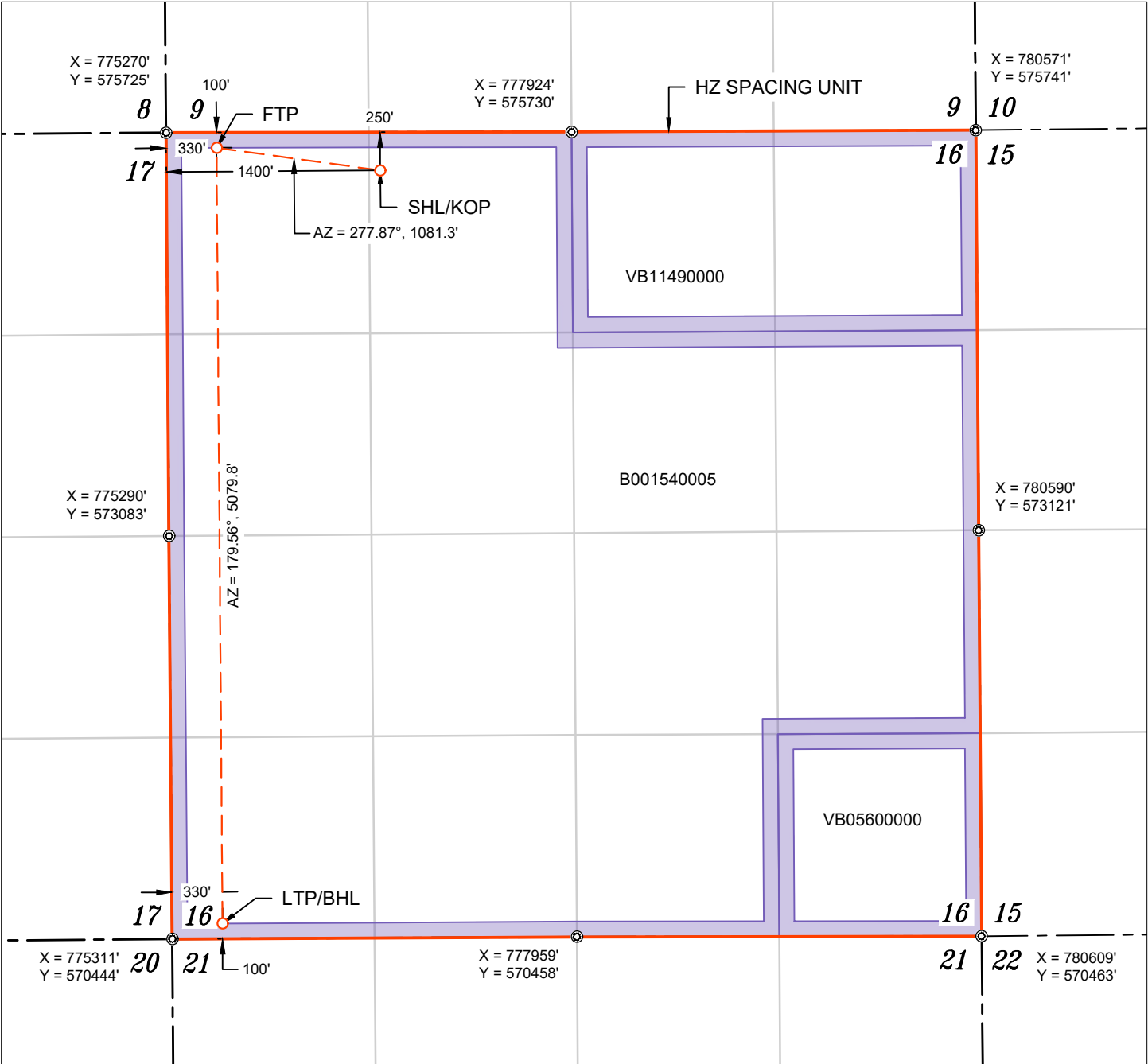
First Take Point (FTP)									
UL D	Section 16	Township 20 S	Range 34 E	Lot	Ft. from N/S 100' FNL	Ft. from E/W 330' FWL	Latitude 32.580148°	Longitude -103.572797°	County LEA

Last Take Point (LTP)									
UL M	Section 16	Township 20 S	Range 34 E	Lot	Ft. from N/S 100' FSL	Ft. from E/W 330' FWL	Latitude 32.566185°	Longitude -103.572787°	County LEA

Unitized Area or Area of Uniform Interest Yes	Spacing Unit Type <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical		Ground Floor Elevation: 3631'	
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OPERATOR CERTIFICATIONS <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>  10/20/2025		SURVEYOR CERTIFICATIONS <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>  26 Sept 2025	
Signature Sarah Ferreyros		Signature and Seal of Professional Surveyor 21209 SEPTEMBER 26, 2025	
Printed Name sarah@avantnr.com		Certificate Number 21209	
Email Address		Date of Survey SEPTEMBER 26, 2025	

Note: 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.



WELL NAME: QUAIL 16 STATE COM #501H
ELEVATION: 3631'

NAD 83 (SHL/KOP) 250' FNL & 1400' FWL
LATITUDE = 32.579720°
LONGITUDE = -103.569323°
NAD 27 (SHL/KOP)
LATITUDE = 32.579600°
LONGITUDE = -103.568832°
STATE PLANE NAD 83 (N.M. EAST)
N: 575477.70' E: 776672.23'
STATE PLANE NAD 27 (N.M. EAST)
N: 575416.35' E: 735491.48'

NAD 83 (FTP) 100' FNL & 330' FWL
LATITUDE = 32.580148°
LONGITUDE = -103.572797°
NAD 27 (FTP)
LATITUDE = 32.580028°
LONGITUDE = -103.572305°
STATE PLANE NAD 83 (N.M. EAST)
N: 575625.72' E: 775601.11'
STATE PLANE NAD 27 (N.M. EAST)
N: 575564.35' E: 734420.38'

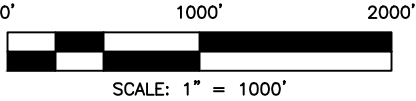
NAD 83 (LTP/BHL) 100' FSL & 330' FWL
LATITUDE = 32.566185°
LONGITUDE = -103.572787°
NAD 27 (LTP/BHL)
LATITUDE = 32.566066°
LONGITUDE = -103.572297°
STATE PLANE NAD 83 (N.M. EAST)
N: 570546.03' E: 775640.36'
STATE PLANE NAD 27 (N.M. EAST)
N: 570484.77' E: 734459.46'

APPROXIMATE WELL BORE DISTANCE FROM FTP TO LTP	
B001540005	5079.84'
TOTAL	5079.84'

NOTES

- ALL COORDINATES, BEARINGS, AND DISTANCES CONTAINED HEREIN ARE GRID, BASED UPON THE NEW MEXICO STATE PLANE COORDINATES SYSTEM, NORTH AMERICAN DATUM 83, NEW MEXICO EAST (3001).
- THIS DOCUMENT IS BASED UPON AN ON THE GROUND SURVEY PERFORMED DURING OCTOBER, 2025. CERTIFICATION OF THIS DOCUMENT IS ONLY TO THE LOCATION OF THIS INFORMATION IN RELATION TO RECORDED MONUMENT OF DEEDS PROVIDED BY THE CLIENT.
- ELEVATIONS MSL, DERIVED FROM G.N.S.S. OBSERVATION AND DERIVED FROM SAID ON-THE-GROUND SURVEY.

FOUND MONUMENT
CALC. CORNER
SHL/ KOP/ FTP / PPP/ LTP / BHL
WELLBORE
HORIZONTAL SPACING UNIT
STATE OIL & GAS LEASE
BLM OIL & GAS LEASE



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Form APD Comments
Permit 399907

PERMIT COMMENTS

Operator Name and Address: Avant Operating II, LLC [332947] 1515 Wynkoop Street Denver, CO 80202		API Number: 30-025-55445
		Well: QUAIL 16 STATE COM #501H

Created By	Comment	Comment Date
jeffrey.harrison	Please correct the Casing and Cement table data and review and correct the NGMP before resubmittal.	10/15/2025
jeffrey.harrison	Proposed well design enters into R-111-Q area at too shallow of a depth. Please re-submit with a compliant R-111-Q well design or re-plan the well's trajectory so as to not enter the R-111-Q area until after penetrating the Delaware Mountain Group below the base of the Capitan Reef.	11/6/2025
twelem	Updated directional plans to avoid potash boundary.	11/10/2025

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1220 S. St Francis Dr.
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Form APD Conditions

Permit 399907

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: Avant Operating II, LLC [332947] 1515 Wynkoop Street Denver, CO 80202	API Number: 30-025-55445
	Well: QUAIL 16 STATE COM #501H

OCD Reviewer	Condition
jeffrey.harrison	NSP required if not included in an existing order or not an infill to an appropriate defining well in the same pool and spacing unit.
jeffrey.harrison	The OCD is currently reviewing the areas containing the Capitan Reef Aquifer and may expand the designated 4-string casing area to encompass additional portions of it in the future.
jeffrey.harrison	This well is within the Capitan Reef aquifer zone. The first intermediate casing string shall be set and cemented back to surface immediately below the Capitan Reef.
jeffrey.harrison	In Capitan Reef areas if lost circulation (50% or greater) occurs below the base of the salt, the operator shall switch to freshwater mud until the intermediate casing is set.
jeffrey.harrison	No additives containing PFAS chemicals will be added to the drilling fluids or completion fluids used during drilling, completions, or recompletions operations.
jeffrey.harrison	All logs run on the well must be submitted to NMOCD.
jeffrey.harrison	Cement is required to circulate on both surface and intermediate1 strings of casing.
jeffrey.harrison	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.
jeffrey.harrison	A [C-103] Sub. Drilling (C-103N) is required within (10) days of spud.
jeffrey.harrison	Notify the OCD 24 hours prior to casing & cement.
jeffrey.harrison	File As Drilled C-102 and a directional Survey with C-104 completion packet.
jeffrey.harrison	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.
jeffrey.harrison	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.

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

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

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018



WELL DETAILS: Quail 16 State Com #501H

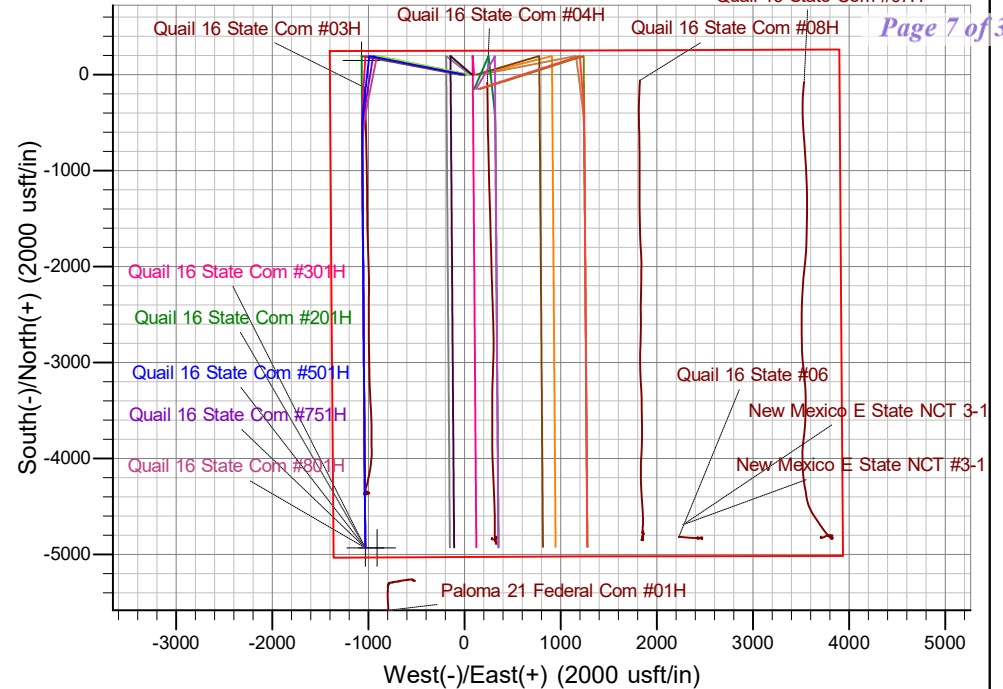
Ground Elev: 3631.0 KB: 3656

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	575477.75	776672.28	32.579720	-103.569323

PROJECT DETAILS: Lea County, NM (NAD 83)

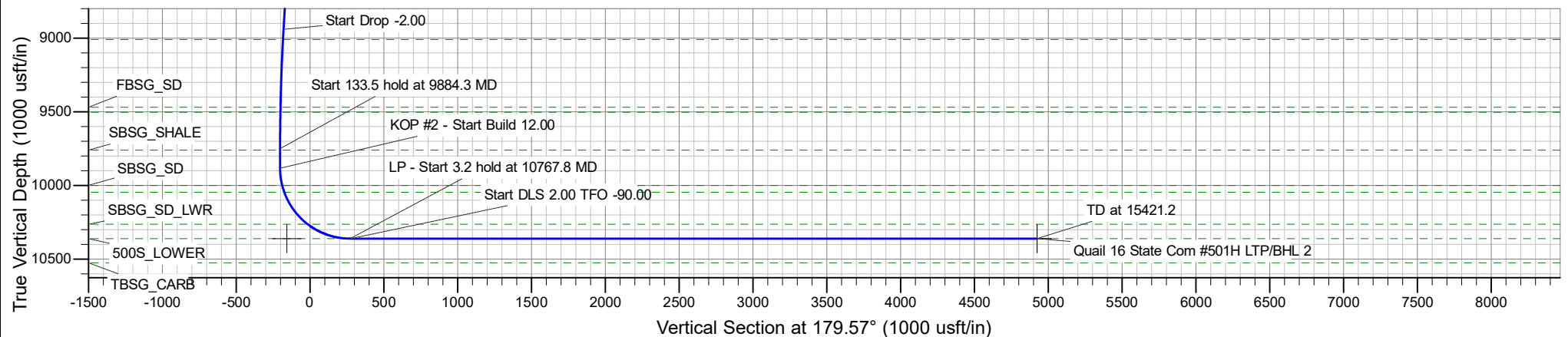
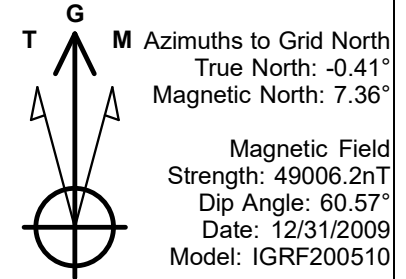
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

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	5500.0	0.00	0.00	5500.0	0.0	0.0	0.00	0.00	0.0	KOP - Start Build 2.00
3	6321.2	16.42	281.14	6310.0	22.6	-114.7	2.00	281.14	-23.4	Start 2741.9 hold at 6321.2 MD
4	9063.1	16.42	281.14	8940.0	172.4	-875.3	0.00	0.00	-179.0	Start Drop -2.00
5	9884.3	0.00	0.00	9750.0	195.0	-990.0	2.00	180.00	-202.4	Start 133.5 hold at 9884.3 MD
6	10017.8	0.00	0.00	9883.5	195.0	-990.0	0.00	0.00	-202.4	KOP #2 - Start Build 12.00
7	10767.8	90.00	186.57	10361.0	-279.3	-1044.6	12.00	186.57	271.5	LP - Start 3.2 hold at 10767.8 MD
8	10771.0	90.00	186.57	10361.0	-282.5	-1045.0	0.00	0.00	274.6	Start DLS 2.00 TFO -90.00
9	11120.8	90.00	179.57	10361.0	-631.6	-1063.7	2.00	-90.00	623.6	Start 4300.4 hold at 11120.8 MD
10	15421.2	90.00	179.57	10361.0	-4931.9	-1031.8	0.00	0.00	4924.0	TD at 15421.2



Avant Operating II, LLC

**Lea County, NM (NAD 83)
Quail 16 State Com Pad 1
Quail 16 State Com #501H**

OH

Plan: Plan 0.1

Standard Planning Report

06 November, 2025

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Project	Lea County, 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	Quail 16 State Com Pad 1			
Site Position:		Northing:	571,105.87 usft	Latitude: 32.567724
From:	Map	Easting:	775,635.79 usft	Longitude: -103.572789
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	

Well	Quail 16 State Com #501H			
Well Position	+N/-S	0.0 usft	Northing:	575,477.75 usft
	+E/-W	0.0 usft	Easting:	776,672.28 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level: 3,631.0 usft
Grid Convergence:	0.41 °			

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	7.77	60.57	49,006.23681103

Design	Plan 0.1				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.57	

Plan Survey Tool Program	Date	11/6/2025			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	15,421.2	Plan 0.1 (OH)	B001Mb_MWD+HRGM	
				OWSG MWD + HRGM	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	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	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,321.2	16.42	281.14	6,310.0	22.6	-114.7	2.00	2.00	0.00	281.14	
9,063.1	16.42	281.14	8,940.0	172.4	-875.3	0.00	0.00	0.00	0.00	
9,884.3	0.00	0.00	9,750.0	195.0	-990.0	2.00	-2.00	0.00	180.00	
10,017.8	0.00	0.00	9,883.5	195.0	-990.0	0.00	0.00	0.00	0.00	
10,767.8	90.00	186.57	10,361.0	-279.3	-1,044.6	12.00	12.00	0.00	186.57	
10,771.0	90.00	186.57	10,361.0	-282.5	-1,045.0	0.00	0.00	0.00	0.00	
11,120.8	90.00	179.57	10,361.0	-631.6	-1,063.7	2.00	0.00	-2.00	-90.00	
15,421.2	90.00	179.57	10,361.0	-4,931.9	-1,031.8	0.00	0.00	0.00	0.00	Quail 16 State Com #

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	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
1,546.0	0.00	0.00	1,546.0	0.0	0.0	0.0	0.00	0.00	0.00
RUSTLER									
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,875.0	0.00	0.00	1,875.0	0.0	0.0	0.0	0.00	0.00	0.00
SOLADO									
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,302.0	0.00	0.00	3,302.0	0.0	0.0	0.0	0.00	0.00	0.00
BASE_OF_SALT									
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,404.0	0.00	0.00	3,404.0	0.0	0.0	0.0	0.00	0.00	0.00
YATES									
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,823.0	0.00	0.00	3,823.0	0.0	0.0	0.0	0.00	0.00	0.00
SVRV									
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,991.0	0.00	0.00	3,991.0	0.0	0.0	0.0	0.00	0.00	0.00
CAPITAN_REEF									
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	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)
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
5,538.0	0.76	281.14	5,538.0	0.0	-0.2	-0.1	2.00	2.00	0.00
CHERRY_CNYN									
5,600.0	2.00	281.14	5,600.0	0.3	-1.7	-0.4	2.00	2.00	0.00
5,700.0	4.00	281.14	5,699.8	1.3	-6.8	-1.4	2.00	2.00	0.00
5,800.0	6.00	281.14	5,799.5	3.0	-15.4	-3.1	2.00	2.00	0.00
5,900.0	8.00	281.14	5,898.7	5.4	-27.4	-5.6	2.00	2.00	0.00
6,000.0	10.00	281.14	5,997.5	8.4	-42.7	-8.7	2.00	2.00	0.00
6,100.0	12.00	281.14	6,095.6	12.1	-61.4	-12.6	2.00	2.00	0.00
6,200.0	14.00	281.14	6,193.1	16.4	-83.5	-17.1	2.00	2.00	0.00
6,300.0	16.00	281.14	6,289.6	21.4	-108.9	-22.3	2.00	2.00	0.00
6,321.2	16.42	281.14	6,310.0	22.6	-114.7	-23.4	2.00	2.00	0.00
Start 2741.9 hold at 6321.2 MD									
6,400.0	16.42	281.14	6,385.6	26.9	-136.6	-27.9	0.00	0.00	0.00
6,500.0	16.42	281.14	6,481.5	32.4	-164.3	-33.6	0.00	0.00	0.00
6,600.0	16.42	281.14	6,577.4	37.8	-192.0	-39.3	0.00	0.00	0.00
6,622.5	16.42	281.14	6,599.0	39.1	-198.3	-40.5	0.00	0.00	0.00
BRUSHY_CANYON									
6,700.0	16.42	281.14	6,673.3	43.3	-219.8	-44.9	0.00	0.00	0.00
6,800.0	16.42	281.14	6,769.3	48.8	-247.5	-50.6	0.00	0.00	0.00
6,900.0	16.42	281.14	6,865.2	54.2	-275.3	-56.3	0.00	0.00	0.00
7,000.0	16.42	281.14	6,961.1	59.7	-303.0	-62.0	0.00	0.00	0.00
7,100.0	16.42	281.14	7,057.0	65.1	-330.7	-67.6	0.00	0.00	0.00
7,200.0	16.42	281.14	7,152.9	70.6	-358.5	-73.3	0.00	0.00	0.00
7,300.0	16.42	281.14	7,248.9	76.1	-386.2	-79.0	0.00	0.00	0.00
7,400.0	16.42	281.14	7,344.8	81.5	-414.0	-84.6	0.00	0.00	0.00
7,500.0	16.42	281.14	7,440.7	87.0	-441.7	-90.3	0.00	0.00	0.00
7,600.0	16.42	281.14	7,536.6	92.5	-469.4	-96.0	0.00	0.00	0.00
7,700.0	16.42	281.14	7,632.5	97.9	-497.2	-101.7	0.00	0.00	0.00
7,800.0	16.42	281.14	7,728.5	103.4	-524.9	-107.3	0.00	0.00	0.00
7,900.0	16.42	281.14	7,824.4	108.9	-552.7	-113.0	0.00	0.00	0.00
8,000.0	16.42	281.14	7,920.3	114.3	-580.4	-118.7	0.00	0.00	0.00
8,100.0	16.42	281.14	8,016.2	119.8	-608.1	-124.3	0.00	0.00	0.00
8,200.0	16.42	281.14	8,112.1	125.2	-635.9	-130.0	0.00	0.00	0.00
8,300.0	16.42	281.14	8,208.1	130.7	-663.6	-135.7	0.00	0.00	0.00
8,400.0	16.42	281.14	8,304.0	136.2	-691.4	-141.4	0.00	0.00	0.00
8,433.4	16.42	281.14	8,336.0	138.0	-700.6	-143.3	0.00	0.00	0.00
BSPG_LIME									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	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)
8,500.0	16.42	281.14	8,399.9	141.6	-719.1	-147.0	0.00	0.00	0.00
8,600.0	16.42	281.14	8,495.8	147.1	-746.8	-152.7	0.00	0.00	0.00
8,700.0	16.42	281.14	8,591.7	152.6	-774.6	-158.4	0.00	0.00	0.00
8,800.0	16.42	281.14	8,687.7	158.0	-802.3	-164.1	0.00	0.00	0.00
8,857.7	16.42	281.14	8,743.0	161.2	-818.3	-167.3	0.00	0.00	0.00
AVALON_B									
8,900.0	16.42	281.14	8,783.6	163.5	-830.1	-169.7	0.00	0.00	0.00
9,000.0	16.42	281.14	8,879.5	169.0	-857.8	-175.4	0.00	0.00	0.00
9,063.1	16.42	281.14	8,940.0	172.4	-875.3	-179.0	0.00	0.00	0.00
Start Drop -2.00									
9,100.0	15.69	281.14	8,975.5	174.4	-885.3	-181.0	2.00	-2.00	0.00
9,134.8	14.99	281.14	9,009.0	176.2	-894.3	-182.9	2.00	-2.00	0.00
200S									
9,200.0	13.69	281.14	9,072.2	179.3	-910.2	-186.1	2.00	-2.00	0.00
9,300.0	11.69	281.14	9,169.8	183.5	-931.7	-190.5	2.00	-2.00	0.00
9,400.0	9.69	281.14	9,268.0	187.1	-949.9	-194.2	2.00	-2.00	0.00
9,500.0	7.69	281.14	9,366.9	190.0	-964.8	-197.3	2.00	-2.00	0.00
9,600.0	5.69	281.14	9,466.2	192.3	-976.2	-199.6	2.00	-2.00	0.00
9,602.8	5.63	281.14	9,469.0	192.3	-976.4	-199.7	2.00	-2.00	0.00
FBSG_SD									
9,637.0	4.95	281.14	9,503.0	192.9	-979.5	-200.3	2.00	-2.00	0.00
300'S									
9,700.0	3.69	281.14	9,565.9	193.9	-984.2	-201.2	2.00	-2.00	0.00
9,800.0	1.69	281.14	9,665.7	194.8	-988.8	-202.2	2.00	-2.00	0.00
9,884.3	0.00	0.00	9,750.0	195.0	-990.0	-202.4	2.00	-2.00	0.00
Start 133.5 hold at 9884.3 MD									
9,894.3	0.00	0.00	9,760.0	195.0	-990.0	-202.4	0.00	0.00	0.00
SBSG_SHALE									
9,900.0	0.00	0.00	9,765.7	195.0	-990.0	-202.4	0.00	0.00	0.00
10,000.0	0.00	0.00	9,865.7	195.0	-990.0	-202.4	0.00	0.00	0.00
10,017.8	0.00	0.00	9,883.5	195.0	-990.0	-202.4	0.00	0.00	0.00
KOP #2 - Start Build 12.00									
10,100.0	9.86	186.57	9,965.3	188.0	-990.8	-195.4	12.00	12.00	0.00
10,134.4	13.99	186.57	9,999.0	180.9	-991.6	-188.4	12.00	12.00	0.00
SBSG_SD									
10,183.6	19.89	186.57	10,046.0	166.7	-993.3	-174.1	12.00	12.00	0.00
500S_UPPER									
10,200.0	21.86	186.57	10,061.3	160.9	-993.9	-168.3	12.00	12.00	0.00
10,300.0	33.86	186.57	10,149.6	114.5	-999.3	-122.0	12.00	12.00	0.00
10,400.0	45.86	186.57	10,226.2	51.0	-1,006.6	-58.5	12.00	12.00	0.00
10,420.6	48.33	186.57	10,240.2	36.0	-1,008.3	-43.6	12.00	12.00	0.00
Quail 16 State Com #501H FTP									
10,456.4	52.63	186.57	10,263.0	8.6	-1,011.5	-16.2	12.00	12.00	0.00
SBSG_SD_LWR									
10,500.0	57.86	186.57	10,287.8	-27.0	-1,015.6	19.4	12.00	12.00	0.00
10,600.0	69.86	186.57	10,331.8	-116.0	-1,025.8	108.3	12.00	12.00	0.00
10,700.0	81.86	186.57	10,356.2	-212.2	-1,036.9	204.4	12.00	12.00	0.00
10,767.8	90.00	186.57	10,361.0	-279.3	-1,044.6	271.5	12.00	12.00	0.00
LP - Start 3.2 hold at 10767.8 MD - 500S_LOWER									
10,771.0	90.00	186.57	10,361.0	-282.5	-1,045.0	274.6	0.00	0.00	0.00
Start DLS 2.00 TFO -90.00									
10,800.0	90.00	185.99	10,361.0	-311.3	-1,048.2	303.4	2.00	0.00	-2.00
10,900.0	90.00	183.99	10,361.0	-410.9	-1,056.9	403.0	2.00	0.00	-2.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	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)
11,000.0	90.00	181.99	10,361.0	-510.8	-1,062.1	502.8	2.00	0.00	-2.00
11,100.0	90.00	179.99	10,361.0	-610.8	-1,063.8	602.8	2.00	0.00	-2.00
11,120.8	90.00	179.57	10,361.0	-631.6	-1,063.7	623.6	2.00	0.00	-2.00
Start 4300.4 hold at 11120.8 MD									
11,200.0	90.00	179.57	10,361.0	-710.8	-1,063.2	702.8	0.00	0.00	0.00
11,300.0	90.00	179.57	10,361.0	-810.8	-1,062.4	802.8	0.00	0.00	0.00
11,400.0	90.00	179.57	10,361.0	-910.8	-1,061.7	902.8	0.00	0.00	0.00
11,500.0	90.00	179.57	10,361.0	-1,010.8	-1,060.9	1,002.8	0.00	0.00	0.00
11,600.0	90.00	179.57	10,361.0	-1,110.8	-1,060.2	1,102.8	0.00	0.00	0.00
11,700.0	90.00	179.57	10,361.0	-1,210.8	-1,059.4	1,202.8	0.00	0.00	0.00
11,800.0	90.00	179.57	10,361.0	-1,310.8	-1,058.7	1,302.8	0.00	0.00	0.00
11,900.0	90.00	179.57	10,361.0	-1,410.8	-1,058.0	1,402.8	0.00	0.00	0.00
12,000.0	90.00	179.57	10,361.0	-1,510.8	-1,057.2	1,502.8	0.00	0.00	0.00
12,100.0	90.00	179.57	10,361.0	-1,610.7	-1,056.5	1,602.8	0.00	0.00	0.00
12,200.0	90.00	179.57	10,361.0	-1,710.7	-1,055.7	1,702.8	0.00	0.00	0.00
12,300.0	90.00	179.57	10,361.0	-1,810.7	-1,055.0	1,802.8	0.00	0.00	0.00
12,400.0	90.00	179.57	10,361.0	-1,910.7	-1,054.2	1,902.8	0.00	0.00	0.00
12,500.0	90.00	179.57	10,361.0	-2,010.7	-1,053.5	2,002.8	0.00	0.00	0.00
12,600.0	90.00	179.57	10,361.0	-2,110.7	-1,052.8	2,102.8	0.00	0.00	0.00
12,700.0	90.00	179.57	10,361.0	-2,210.7	-1,052.0	2,202.8	0.00	0.00	0.00
12,800.0	90.00	179.57	10,361.0	-2,310.7	-1,051.3	2,302.8	0.00	0.00	0.00
12,900.0	90.00	179.57	10,361.0	-2,410.7	-1,050.5	2,402.8	0.00	0.00	0.00
13,000.0	90.00	179.57	10,361.0	-2,510.7	-1,049.8	2,502.8	0.00	0.00	0.00
13,100.0	90.00	179.57	10,361.0	-2,610.7	-1,049.1	2,602.8	0.00	0.00	0.00
13,200.0	90.00	179.57	10,361.0	-2,710.7	-1,048.3	2,702.8	0.00	0.00	0.00
13,300.0	90.00	179.57	10,361.0	-2,810.7	-1,047.6	2,802.8	0.00	0.00	0.00
13,400.0	90.00	179.57	10,361.0	-2,910.7	-1,046.8	2,902.8	0.00	0.00	0.00
13,500.0	90.00	179.57	10,361.0	-3,010.7	-1,046.1	3,002.8	0.00	0.00	0.00
13,600.0	90.00	179.57	10,361.0	-3,110.7	-1,045.3	3,102.8	0.00	0.00	0.00
13,700.0	90.00	179.57	10,361.0	-3,210.7	-1,044.6	3,202.8	0.00	0.00	0.00
13,800.0	90.00	179.57	10,361.0	-3,310.7	-1,043.9	3,302.8	0.00	0.00	0.00
13,900.0	90.00	179.57	10,361.0	-3,410.7	-1,043.1	3,402.8	0.00	0.00	0.00
14,000.0	90.00	179.57	10,361.0	-3,510.7	-1,042.4	3,502.8	0.00	0.00	0.00
14,100.0	90.00	179.57	10,361.0	-3,610.7	-1,041.6	3,602.8	0.00	0.00	0.00
14,200.0	90.00	179.57	10,361.0	-3,710.7	-1,040.9	3,702.8	0.00	0.00	0.00
14,300.0	90.00	179.57	10,361.0	-3,810.7	-1,040.2	3,802.8	0.00	0.00	0.00
14,400.0	90.00	179.57	10,361.0	-3,910.7	-1,039.4	3,902.8	0.00	0.00	0.00
14,500.0	90.00	179.57	10,361.0	-4,010.7	-1,038.7	4,002.8	0.00	0.00	0.00
14,600.0	90.00	179.57	10,361.0	-4,110.7	-1,037.9	4,102.8	0.00	0.00	0.00
14,700.0	90.00	179.57	10,361.0	-4,210.7	-1,037.2	4,202.8	0.00	0.00	0.00
14,800.0	90.00	179.57	10,361.0	-4,310.7	-1,036.4	4,302.8	0.00	0.00	0.00
14,900.0	90.00	179.57	10,361.0	-4,410.7	-1,035.7	4,402.8	0.00	0.00	0.00
15,000.0	90.00	179.57	10,361.0	-4,510.7	-1,035.0	4,502.8	0.00	0.00	0.00
15,100.0	90.00	179.57	10,361.0	-4,610.7	-1,034.2	4,602.8	0.00	0.00	0.00
15,200.0	90.00	179.57	10,361.0	-4,710.7	-1,033.5	4,702.8	0.00	0.00	0.00
15,300.0	90.00	179.57	10,361.0	-4,810.7	-1,032.7	4,802.8	0.00	0.00	0.00
15,400.0	90.00	179.57	10,361.0	-4,910.7	-1,032.0	4,902.8	0.00	0.00	0.00
15,421.2	90.00	179.57	10,361.0	-4,931.9	-1,031.8	4,924.0	0.00	0.00	0.00
TD at 15421.2 - Quail 16 State Com #501H LTP/BHL 2 - Quail 16 State Com #501H LTP/BHL									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Quail 16 State Com #50	0.00	0.00	10,361.0	148.0	-1,071.2	575,625.80	775,601.06	32.580148	-103.572797
- plan misses target center by 176.4usft at 10420.6usft MD (10240.2 TVD, 36.0 N, -1008.3 E)									
- Point									
Quail 16 State Com #50	0.00	0.00	10,361.0	-4,931.9	-1,031.8	570,545.87	775,640.45	32.566185	-103.572787
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(usft)	(usft)	Name	(")	(")
15,408.5	10,361.0	20" Casing	20	24

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,546.0	1,546.0	RUSTLER				
1,875.0	1,875.0	SOLADO				
3,302.0	3,302.0	BASE_OF_SALT				
3,404.0	3,404.0	YATES				
3,823.0	3,823.0	SVRV				
3,991.0	3,991.0	CAPITAN_REEF				
5,538.0	5,538.0	CHERRY_CNYN				
6,622.5	6,599.0	BRUSHY_CANYON				
8,433.4	8,336.0	BSPG_LIME				
8,857.7	8,743.0	AVALON_B				
9,134.8	9,009.0	200S				
9,602.8	9,469.0	FBSG_SD				
9,637.0	9,503.0	300'S				
9,894.3	9,760.0	SBSG_SHALE				
10,134.4	9,999.0	SBSG_SD				
10,183.6	10,046.0	500S_UPPER				
10,456.4	10,263.0	SBSG_SD_LWR				
10,767.8	10,361.0	500S_LOWER				

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Quail 16 State Com #501H
Company:	Avant Operating II, LLC	TVD Reference:	WELL @ 3656.0usft (3656)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3656.0usft (3656)
Site:	Quail 16 State Com Pad 1	North Reference:	Grid
Well:	Quail 16 State Com #501H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,500.0	5,500.0	0.0	0.0	KOP - Start Build 2.00
6,321.2	6,310.0	22.6	-114.7	Start 2741.9 hold at 6321.2 MD
9,063.1	8,940.0	172.4	-875.3	Start Drop -2.00
9,884.3	9,750.0	195.0	-990.0	Start 133.5 hold at 9884.3 MD
10,017.8	9,883.5	195.0	-990.0	KOP #2 - Start Build 12.00
10,767.8	10,361.0	-279.3	-1,044.6	LP - Start 3.2 hold at 10767.8 MD
10,771.0	10,361.0	-282.5	-1,045.0	Start DLS 2.00 TFO -90.00
11,120.8	10,361.0	-631.6	-1,063.7	Start 4300.4 hold at 11120.8 MD
15,421.2	10,361.0	-4,931.9	-1,031.8	TD at 15421.2

PROPOSAL#: 250922102434-B



CEMENT PROCEDURE & PROPOSAL

PREPARED FOR:

Mr. Braden Harris

EMAIL: braden@avantnr.com

PHONE NUMBER: 406-600-3310

Avant Operating II Quail 16 State Com #501H Lea County, NM

AFE Number: NM1368

Service Point

Odessa

1400 S JBS Parkway Odessa, TX 79766

432-701-8955

Technical Writer

Jonathan Smith

jonathan@wtcementers.com

432-701-3719

WTC Representative

Jon Reynolds

jon@wtcementers.com

432-257-1234

.Disclaimer Notice:

The ability of West Texas Cementing & Acidizing to complete this work is subject to the availability of the raw materials required to complete the job.

This information is presented in good faith, but no warranty is given by and West Texas Cementers LLC assumes no liability for advice or recommendations made concerning results to be obtained from the use of any product or service. The results given are estimates based on calculations produced by a computer model including various assumptions on the well, reservoir and treatment. The results depend on input data provided by the Operator and estimates as to unknown data and can be no more accurate than the model, the assumptions and such input data. The information presented is WTC LLC best estimate of the actual results that may be achieved and should be used for comparison purposes rather than absolute values. The quality of input data, and hence results, may be improved through the use of certain tests and procedures which West Texas Cementers LLC can assist in selecting. The Operator has superior knowledge of the well, the reservoir, the field and conditions affecting them. If the Operator is aware of any conditions whereby a neighboring well or wells might be affected by the treatment proposed herein it is the Operator's responsibility to notify the owner or owners of the well or wells accordingly. Prices quoted are estimates only and are good for 30 days from the date of issue. Actual charges may vary depending upon time, equipment, and material ultimately required to perform these services. Freedom from infringement of patents of West Texas Cementers LLC or others is not to be inferred.

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VERSION: v0.29d

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Surface



PROPOSAL#: 250922102434-B

WELL INFORMATION						
MUD	8.4# Fresh Water					
PREVIOUS PIPE	20" 94# CSG to 120					
OPEN HOLE	14.75" OH to 1571					
CASING/INJECTION	10.75" 40.5# J-55/LTC to 1571					
MD	1571					
EST BHST/BHCT	93-F / 86-F (0.8-F/100-FT)					
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	120	19.124	10.75		0.2430	29.2
Lead	1137	14.75	10.75	50%	0.1486	169.0
Tail	314	14.75	10.75	20%	0.1189	37.3
SHOE JOINT	40	10.75	10.05		0.0981	3.9
FLUIDS						
SPACER						
Fresh Water						
VOLUME	20-bbl					
Lead						
35% B_Poz+65% Class C+6% Gel+5% SALT+0.25PPS Pol-E-Flake+0.5PPS TCA100						
VOLUME	585-SX		Slurry Volume: 198-bbls			
DENSITY	12.8-ppg		Mix Water Required: 142-bbls			
YIELD	1.9-cf/sx					
MIX WATER	10.19-gps					
TOP OF CEMENT	Surface					
EXCESS	50%					

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Surface

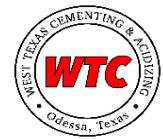


PROPOSAL#: 250922102434-B

Tail		
	100% Class C+0.5% CaCl2+0.25PPS TCA100	
VOLUME	175-SX	Slurry Volume: 41.5-bbls
DENSITY	14.8-ppg	Mix Water Required: 27-bbls
YIELD	1.33-cf/sx	
MIX WATER	6.33-gps	
TOP OF CEMENT	1257-ft	
EXCESS	20%	
DISPLACEMENT		
	Displacement	
VOLUME	150.2-bbl	

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Multi-Stage Intermediate



PROPOSAL#: 250922102434-B

WELL INFORMATION						
MUD	10# Brine					
PREVIOUS PIPE	10.75" 40.5# CSG to 1571					
OPEN HOLE	9.875" OH to 5438					
CASING/INJECTION	8.625" 32# L-80 HC BK to 5438					
MD	5438					
EST BHST/BHCT	124-F / 108-F (0.8-F/100-FT)					
DV TOOL	3800					
EST BHST/BHCT STG2	111-F / 98-F (0.8-F/100-FT)					
NOTES	Standby charges start after WTC has been on location for more than 8-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Stage 1 Lead	1571	10.05	8.625		0.0258	40.6
Stage 1 Lead	2779	9.875	8.625	20%	0.0270	74.9
Stage 1 Tail	1088	9.875	8.625	20%	0.0270	29.3
Stage 2 Lead	1571	10.05	8.625		0.0258	40.6
Stage 2 Lead	1229	9.875	8.625	106%	0.0463	56.9
Stage 2 Tail	1000	9.875	8.625	0%	0.0225	22.5
SHOE JOINT	40	8.625	7.921		0.0609	2.4
FLUIDS						
SPACER						
Fresh Water						
VOLUME	25-bbl					
Stage 1 Lead						
35% M_Poz+65% Class C+4% Gel+5% SALT+0.1% SMS+0.15% R-1300+0.25PPS Pol-E-Flake+0.5PPS TCA100						
VOLUME	370-SX		Slurry Volume: 116.6-bbls			
DENSITY	12.8-ppg		Mix Water Required: 81-bbls			
YIELD	1.77-cf/sx					
MIX WATER	9.19-gps					
TOP OF CEMENT	Surface					
EXCESS	20%					

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Multi-Stage Intermediate



PROPOSAL#: 250922102434-B

Stage 1 Tail		
100% Class C+0.005GPS NoFoam V1A		
VOLUME	135-SX	Slurry Volume: 32-bbls
DENSITY	14.8-ppg	Mix Water Required: 21-bbls
YIELD	1.33-cf/sx	
MIX WATER	6.32-gps	
TOP OF CEMENT	4350-ft	
EXCESS	20%	
DISPLACEMENT		
Displacement		
VOLUME	329-bbl	
SPACER		
Fresh Water		
VOLUME	20-bbl	
Stage 2 Lead		
35% M_Poz+65% Class C+4% Gel+5% SALT+0.1% SMS+0.25PPS Pol-E-Flake+0.5PPS TCA100		
VOLUME	315-SX	Slurry Volume: 98.7-bbls
DENSITY	12.8-ppg	Mix Water Required: 69-bbls
YIELD	1.76-cf/sx	
MIX WATER	9.18-gps	
TOP OF CEMENT	Surface	
EXCESS	106%	
Stage 2 Tail		
100% Class C+0.005GPS NoFoam V1A		
VOLUME	100-SX	Slurry Volume: 23.7-bbls
DENSITY	14.8-ppg	Mix Water Required: 16-bbls
YIELD	1.33-cf/sx	
MIX WATER	6.32-gps	
TOP OF CEMENT	2800-ft	
EXCESS	0%	
DISPLACEMENT		
Displacement		
VOLUME	231.6-bbl	

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Production



PROPOSAL#: 250922102434-B

WELL INFORMATION						
MUD	9.2# OBM					
PREVIOUS PIPE	8.625" 32# CSG to 5438					
OPEN HOLE	7.875" OH to 15359					
CASING/INJECTION	5.5" 20# P-110 HC GBCD to 15359					
MD	15359					
TVD	10361					
EST BHST/BHCT	169-F / 169-F (0.85-F/100-FT)					
KOP	10018					
NOTES	Standby charges start after WTC has been on location for more than 8-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	5438	7.921	5.5		0.0316	171.6
Lead	4580	7.875	5.5	20%	0.0370	169.6
Tail	5341	7.875	5.5	20%	0.0370	197.8
SHOE JOINT	80	5.5	4.778		0.0222	1.8
FLUIDS						
SPACER						
Wt. Spacer 37.97GPB Water+8PPB PolyScrub 4320+73.68PPB Barite+1GPB HoleScrub 4311+1PPB R-1300+1PPB TCA100						
VOLUME	40-bbl					
DENSITY	9.7-ppg					
Lead						
100% ProLite+5PPS Plexcrete STE+2% SMS+0.65% R-1300+0.2% FL-24+3PPS Gilsonite+0.5PPS TCA100						
VOLUME	565-SX				Slurry Volume: 341.1-bbls	
DENSITY	10.7-ppg				Mix Water Required: 285-bbls	
YIELD	3.39-cf/sx					
MIX WATER	21.13-gps					
TOP OF CEMENT	Surface					
EXCESS	20%					

Avant Operating II
Quail 16 State Com #501H
Lea County, NM

Production



PROPOSAL#: 250922102434-B

Tail		
50% B_Poz+50% Class H+5% SALT+0.3% SMS+0.4% CRT-201+0.5% FL-24+0.5PPS TCA100		
VOLUME	925-SX	Slurry Volume: 201-bbls
DENSITY	14.5-ppg	Mix Water Required: 117-bbls
YIELD	1.22-cf/sx	
MIX WATER	5.3-gps	
TOP OF CEMENT	10018-ft	
EXCESS	20%	
DISPLACEMENT		
Fresh Water+ 0.25GPT Plexicide 24L+1GPT Corplex		
VOLUME	338.8-bbl	
DENSITY	8.34-ppg	

CHEMICAL DESCRIPTIONS		
CHEMICAL NAME	CODE	DESCRIPTION
B_Poz	WTC228	Poz - Fly Ash, Extender
Class H	WTC101	API Cement
Class C	WTC100	API Cement
M_Poz	WTC280	Poz - Fly Ash, Extender
ProLite		Blended Based Cement
Plexcrete SFA	WTC129	Cement Strength Enhancer
Gel	WTC102	Extender
GB-52	WTC008	Microspheres, Extender
Micro Shell	WTC209	Cement Strength Enhancer
WTC1	WTC250	Extender
CS-9	WTC285	Cement Strength Enhancer
Plexcrete STE	WTC127	Cement Strength Enhancer
CSE-NP	WTC236	Cement Strength Enhancer
Gypsum	WTC111	Free Water Control, Extender
CaCl2	WTC112	Accelerator
SMS	WTC115	Free Water Control, Extender
RCKCAS-100	WTC276	Free Water Control, Anti-Settling Agent
R-1300	WTC201	Low Temperature Retarder
CR-150	WTC275	Lignosulfonate Retarder
CRT-201	WTC278	Lignosulfonate Retarder
CD-22	WTC290	Dispersant, Friction Reducer
CFL-312	WTC265	Fluid Loss and Gas Migration Control
FL-24	WTC277	Fluid Loss (polymers/copolymers - 300-F max)
FL-17	WTC130	Fluid Loss and Gas Migration Control (400-F max)
MagBond	WTC271	Expanding Agent
Gilsonite	WTC003	Premium Lost Circulation Material, Free Water Control
Pol-E-Flake	WTC106	Lost Circulation Material
Web Seal	WTC133	Premium Fiber Lost Circulation Material
TCA100	WTC284	Powdered Defoamer
NoFoam V1A	WTC105	Liquid Defoamer
Water		Fresh Water
PolyScrub 4320	WTC232	Spacer Gelling Agent
RCKCAS-100	WTC276	Free Water Control, Anti-Settling Agent
Barite	WTC116	Weighting Agent
HoleScrub 4311	WTC281	Surfactant
HoleScrub 4305	WTC213	Surfactant
Soda Ash	WTC164	pH Control
R-1300	WTC201	Low Temperature Retarder
RCKCAS-100	WTC276	Free Water Control, Anti-Settling Agent
Sugar	WTC119	Retarder
TCA100	WTC284	Powdered Defoamer
Plexcide 24L	WTC166	Biocide
Corplex	WTC134	Corrosion Inhibitor
Clay Max	WTC096	KCL Substitute
Zone Seal	WTC207	Premium Lost Circulation Material

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 II, LLC **OGRID:** 332947 **Date:** 09/29/2025

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
Quail 16 State Com 201H		C-16-T20S-R34E	250FNL/1360FWL	1200 BBL/D	3600 MCF/D	6000 BBL/D
Quail 16 State Com 202H		C-16-T20S-R34E	250FNL/1460FWL	1200 BBL/D	3600 MCF/D	6000 BBL/D
Quail 16 State Com 203H		C-16-T20S-R34E	250FNL/1540FWL	1200 BBL/D	3600 MCF/D	6000 BBL/D
Quail 16 State Com 301H		C-16-T20S-R34E	250FNL/1380FWL	950 BBL/D	2000 MCF/D	6650 BBL/D
Quail 16 State Com 302H		C-16-T20S-R34E	250FNL/1500FWL	950 BBL/D	2000 MCF/D	6650 BBL/D
Quail 16 State Com 303H		C-16-T20S-R34E	250FNL/1560FWL	950 BBL/D	2000 MCF/D	6650 BBL/D
Quail 16 State Com 501H		C-16-T20S-R34E	250FNL/1400FWL	1400 BBL/D	2400 MCF/D	7500 BBL/D
Quail 16 State Com 502H		C-16-T20S-R34E	250FNL/1480FWL	1400 BBL/D	2400 MCF/D	7500 BBL/D
Quail 16 State Com 503H		C-16-T20S-R34E	250FNL/1520FWL	1400 BBL/D	2400 MCF/D	7500 BBL/D
Quail 16 State Com 751H		C-16-T20S-R34E	250FNL/1420FWL	1250 BBL/D	2600 MCF/D	7500 BBL/D
Quail 16 State Com 752H		C-16-T20S-R34E	400FNL/1499FWL	1250 BBL/D	2600 MCF/D	7500 BBL/D
Quail 16 State Com 753H		C-16-T20S-R34E	400FNL/1559FWL	1250 BBL/D	2600 MCF/D	7500 BBL/D
Quail 16 State Com 801H		C-16-T20S-R34E	250FNL/1440FWL	1200 BBL/D	2500 MCF/D	6000 BBL/D
Quail 16 State Com 802H		C-16-T20S-R34E	400FNL/1519FWL	1200 BBL/D	2500 MCF/D	6000 BBL/D
Quail 16 State Com 803H		C-16-T20S-R34E	400FNL/1539FWL	1200 BBL/D	2500 MCF/D	6000 BBL/D

IV. Central Delivery Point Name: Quail 16 State 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
Quail 16 State Com 201H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 202H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 203H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 301H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 302H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 303H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 501H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 502H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 503H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 751H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 752H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 753H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 801H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 802H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026
Quail 16 State Com 803H		11/15/2025	12/28/2025	05/01/2026	07/01/2026	07/01/2026

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

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

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

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature:



Printed Name: John Harper

Title: SVP – Assets and Exploration

E-mail Address: John@avantnr.com

Date: 08/15/25

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 II, 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. 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
- F. Measurement meters will be in place for low- and high-pressure gas that is flared due to not being able to use for reuse or sales. Equipment will be installed off tanks to reduce vented gas and the gas will be measured with a meter.

VIII. Best Management Practices: Avant plans to communicate consistently with midstream partners to ensure sufficient takeaway capacity is available and understand planned maintenance to minimize venting. Avant will depressurize equipment and capture vented gases for reuse before any maintenance occurs. Avant will use vapor recovery units for the vented gas off the tanks to capture for reuse or sales to minimize venting during active operations. Avant will be proactive on inspections to identify and fix leaks before they escalate.