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

Sundry Print Report

02/12/2025

Well Name: ROYAL OAK 25 FED COM

Well Location: T18S / R33E / SEC 24 / SWSE / 32.728046 / -103.613684

County or Parish/State: LEA / NM

Well Number: 504H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM51842

Unit or CA Name:

Unit or CA Number:

US Well Number: 3002554156

Operator: AVANT OPERATING LLC

Notice of Intent

Sundry ID: 2835879

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 02/07/2025

Time Sundry Submitted: 10:58

Date proposed operation will begin: 02/07/2025

Procedure Description: Avant Operating, LLC would like to make the following changes to the Royal Oak 504H well (API # 30-25-54156). Name change from the Royal Oak 25 Fed Com 504H to the Royal Oak 25 Fed Com 513H. SHL change from 763' FSL & 1751' FEL to 603' FSL & 1690' FEL. BHL change from 100' FSL & 990' FEL to 100' FSL & 330' FEL. Target change from 9720’ to 9300’. Please see attached updated drilling info to reflect these changes.

NOI Attachments

Procedure Description

Royal_Oak_24_Fed_Com_513H_APD_Change_Attachments_20250207104308.pdf

Well Name: ROYAL OAK 25 FED COM | **Well Location:** T18S / R33E / SEC 24 / SWSE / 32.728046 / -103.613684 | **County or Parish/State:** LEA / NM

Well Number: 504H | **Type of Well:** OIL WELL | **Allottee or Tribe Name:**

Lease Number: NMNM51842 | **Unit or CA Name:** | **Unit or CA Number:**

US Well Number: 3002554156 | **Operator:** AVANT OPERATING LLC

Conditions of Approval

Additional

25_18_33_B_Sundry_ID_2835879_Royal_Oak_25_Fed_Com_504H_Lea_NM51842_AVANT_OPERATING_LLC_13_22g_2_27_2024_LV_20250211105347.pdf

Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: MEGHAN TWELE **Signed on:** FEB 07, 2025 10:58 AM

Name: AVANT OPERATING LLC

Title: Contract Regulatory Analyst

Street Address: 1515 WYNKOOP ST SUITE 700

City: DENVER **State:** CO

Phone: (720) 339-6880

Email address: MTWELE@OUTLOOK.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS **BLM POC Title:** Petroleum Engineer

BLM POC Phone: 5752342234 **BLM POC Email Address:** cwalls@blm.gov

Disposition: Approved **Disposition Date:** 02/12/2025

Signature: Chris Walls

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No.

2. Name of Operator

9. API Well No.

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool or Exploratory Area

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*

11. Country or Parish, State

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

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

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

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*

Title

Signature

Date

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by

Title

Date

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

Office

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

(Instructions on page 2)

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.
PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c)and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.
ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.
EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.
Response to this request is mandatory.
The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect ofthis form to U.S. Department ofthe Interior, Bureau ofLand Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Additional Information

Location of Well

0. SHL: SWSE / 763 FSL / 1751 FEL / TWSP: 18S / RANGE: 33E / SECTION: 24 / LAT: 32.728046 / LONG: -103.613684 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 2639 FNL / 991 FEL / TWSP: 18S / RANGE: 33E / SECTION: 25 / LAT: 32.718705 / LONG: -103.611198 (TVD: 9720 feet, MD: 12624 feet)

PPP: NENE / 100 FNL / 990 FEL / TWSP: 18S / RANGE: 33E / SECTION: 25 / LAT: 32.725684 / LONG: -103.611207 (TVD: 9720 feet, MD: 10085 feet)

BHL: SESE / 100 FSL / 990 FEL / TWSP: 18S / RANGE: 33E / SECTION: 36 / LAT: 32.69721 / LONG: -103.611175 (TVD: 9720 feet, MD: 20018 feet)

Royal Oak 25 Fed Com 504H

13 3/8	surface csg in a	17 1/2	inch hole.		Design Factors				Surface			
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	54.50	j 55	ltc	5.48	1.28	0.95	1,720	4	1.65	2.23	93,740
"B"			ltc				0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 1,167		Tail Cmt	does not	circ to sfc.	Totals:	1,720				93,740

Comparison of Proposed to Minimum Required Cement Volumes

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	965	1745	1195	46	9.90	1663	2M	2.06

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

9 5/8	casing inside the	13 3/8			Design Factors				Int 1			
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	40.00	j 55	ltc	2.30	1.24	0.86	4,000	1	1.55	2.15	160,000
"B"	40.00	hcl 80	ltc	12.70	1.47	1.25	1,648	2	2.26	2.54	65,920
	w/8.4#/g mud, 30min Sfc Csg Test psig: 1,020					Totals:	5,648				225,920
	The cement volume(s) are intended to achieve a top of			0	ft from surface or a		1720				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1122	2142	1854	16	10.00	2544	3M	0.81
D V Tool(s):							sum of sx	Σ CuFt	Σ%excess
by stage % :		#VALUE!	#VALUE!				1122	2142	16

Class 'H' tail cmt yld > 1.20

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.99, b, c, d All > 0.70, OK.

5 1/2	casing inside the	9 5/8			Design Factors				Prod 1			
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	20.00	p 110	gbcd	3.45	2.42	2.75	19,678	3	4.97	4.36	393,560
"B"							0				0
"C"							0				0
"D"							0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 2,046					Totals:	19,678				393,560
	The cement volume(s) are intended to achieve a top of			3800	ft from surface or a		1848				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.2526	3509	6002	4026	49	9.50			1.23

Class 'C' tail cmt yld > 1.35

#N/A

0		5 1/2			Design Factors				<Choose Casing>			
Segment	#/ft	Grade	Coupling	#N/A	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"			0.00				0				0
"B"			0.00				0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig:					Totals:	0				0
	Cmt vol calc below includes this csg, TOC intended			#N/A	ft from surface or a		#N/A				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
0		#N/A	#N/A	0	#N/A				

#N/A Capitan Reef est top XXXX.

C-102	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024
Submit Electronically Via OCD Permitting		Submittal Type: ☒ Initial Submittal ☐ Amended Report ☐ As Drilled

WELL LOCATION INFORMATION

API Number	Pool Code	Pool Name
30-025-54156	21650	E-K; BONE SPRING

Property Code	Property Name	Well Number
335845	ROYAL OAK 24 FED COM	513H

OGRID No.	Operator Name	Ground Level Elevation
330396	AVANT OPERATING, LLC	3910.5

Surface Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal
Mineral Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal

Surface Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
O	24	18 S	33 E		603 FSL	1690 FEL	32.7276082° N	103.6134848° W	LEA

Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
P	36	18 S	33 E		100 FSL	330 FEL	32.6972166° N	103.6090292° W	LEA

Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code
1280			No	

Order Numbers. R-23452
Well setbacks are under Common Ownership: ☐ Yes ☒ No

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	25	18 S	33 E		50 FNL	330 FEL	32.7258285° N	103.6090606° W	LEA

First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
A	25	18 S	33 E		100 FNL	330 FEL	32.7256911° N	103.6090604° W	LEA

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
P	36	18 S	33 E		100 FSL	330 FEL	32.6972166° N	103.6090292° W	LEA

Unitized Area or Area of Uniform Interest	Spacing Unit Type ☒ Horizontal ☐ Vertical	Ground Floor Elevation:

OPERATOR CERTIFICATIONS

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 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.

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

Signature — Date: 2/7/2025

Printed Name: Meghan Twele

E-mail Address: mtwele@outlook.com

SURVEYOR CERTIFICATIONS

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 further certify that United Field Services, Inc., located at 21 Road 3520 in Flora Vista, New Mexico is the company providing this information.

JOHN A VUKONICH NEW MEXICO 14831 PROFESSIONAL SURVEYOR

Signature and Seal of Professional Surveyor

Certificate Number	Date of Field Survey	Date of Certification
14831	1/29/25	2/5/2025

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.

ACREAGE DEDICATION PLATS

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.

United Field Services, Inc., located at 21 Road 3520, Flora Vista, New Mexico, is the company providing this plat.

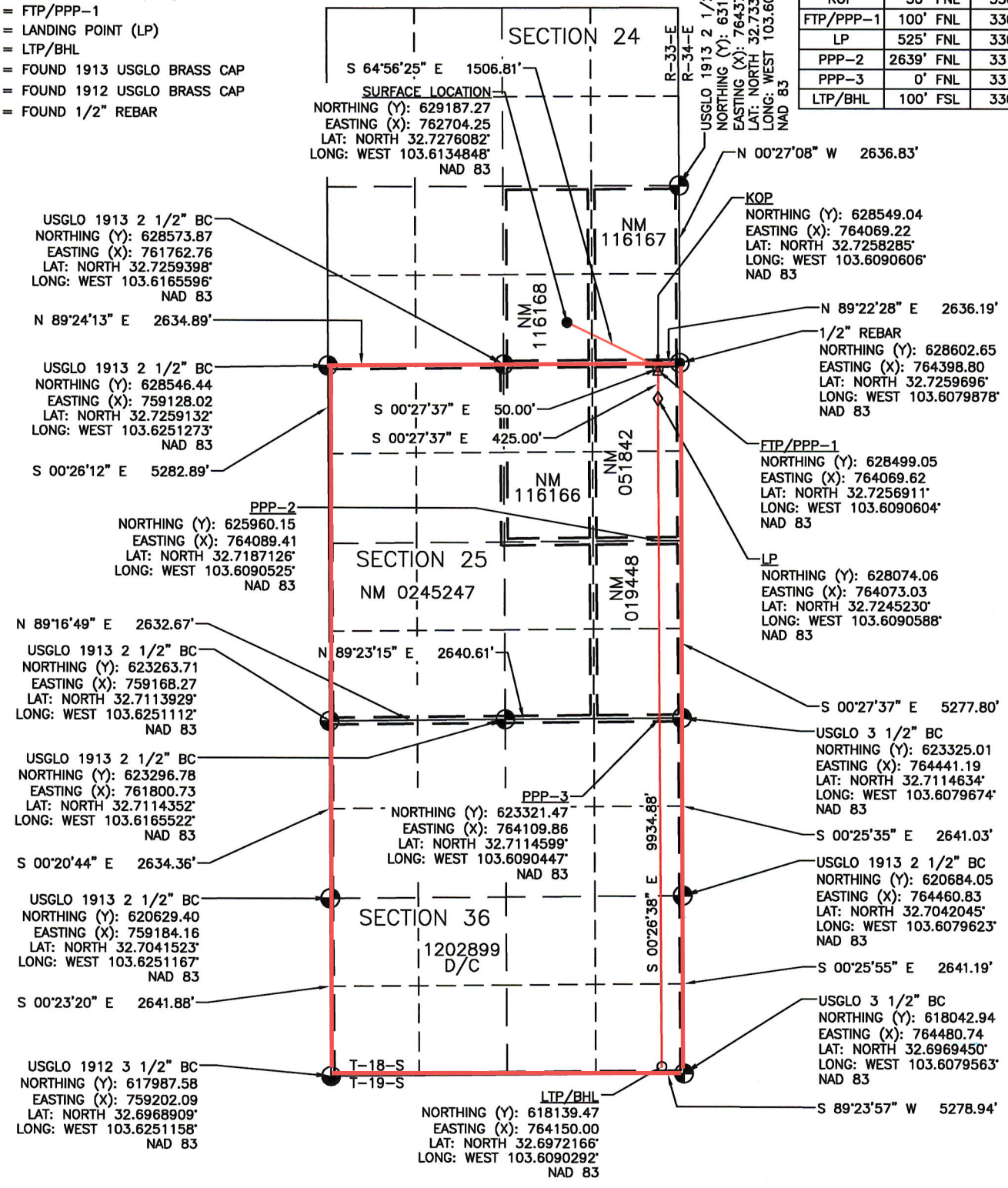
Plat Revised: 2/3/25

UFSI PROJECT NO. 11721

LEGEND:
- ● = SURFACE LOCATION (SHL)
- □ = KICK OFF POINT (KOP)
- △ = FTP/PPP-1
- ◇ = LANDING POINT (LP)
- ○ = LTP/BHL
- ◓ = FOUND 1913 USGLO BRASS CAP
- ◒ = FOUND 1912 USGLO BRASS CAP
- ◉ = FOUND 1/2" REBAR

NOTE: BEARINGS AND DISTANCES SHOWN ARE REFERENCED TO THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE, NAD 83, UNLESS OTHERWISE NOTED

AVANT OPERATING, LLC			
ROYAL OAK 24 FED COM 513H			
FOOTAGES			SEC.
SHL	603' FSL	1690' FEL	24
KOP	50' FNL	330' FEL	25
FTP/PPP-1	100' FNL	330' FEL	25
LP	525' FNL	330' FEL	25
PPP-2	2639' FNL	331' FEL	25
PPP-3	0' FNL	331' FEL	36
LTP/BHL	100' FSL	330' FEL	36



AFE:

API:

REGULATORY:

PERMIT #

RIG: H&P 460

KB: 3937.5 (26.5')

GL: 3911'

AVANT NATURAL RESOURCES

Royal Oak 24 Fed Com #513H

Bone Springs

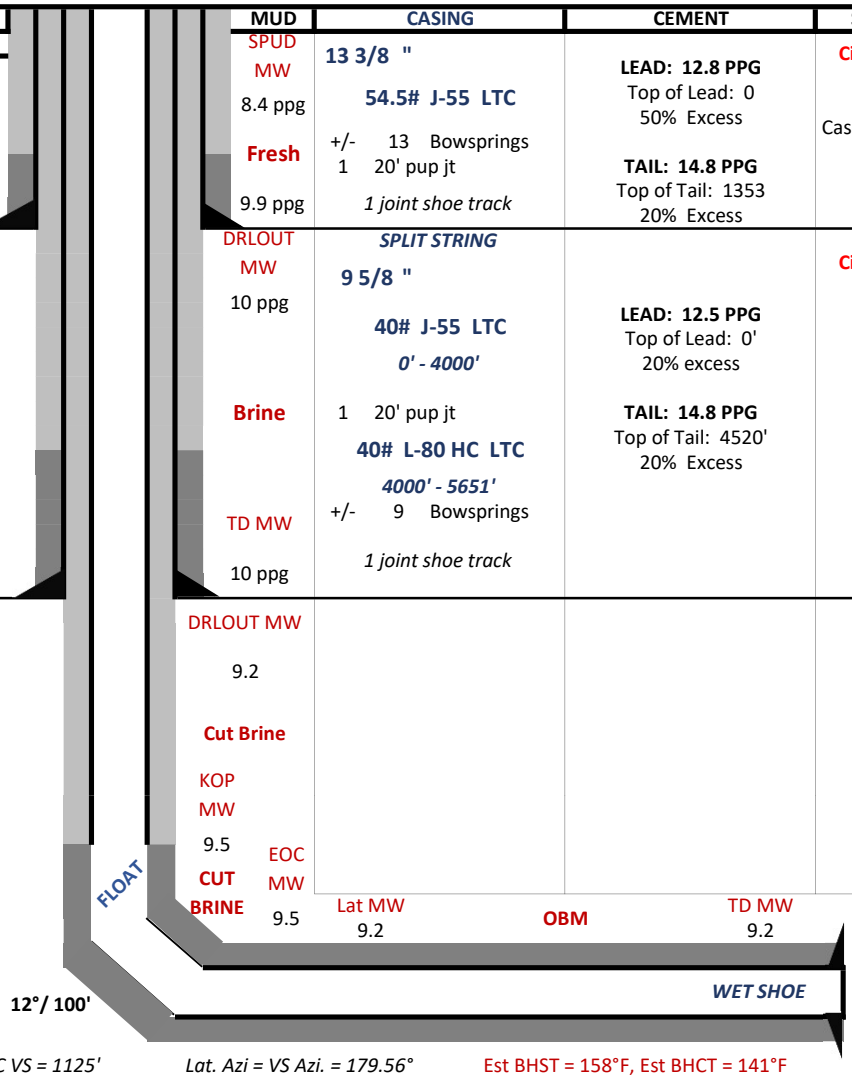
Lea County, NM

CAMERON WELLHEAD
9-5/8" x 7"11"
5K SSD-II

SHL: *Sec. 24, T-18S, R-33E; 603 FSL, 1690 FEL*

Lat: 32.7276082, Long: -103.6134848 (NAD83)

HOLE SIZE	MD	FORMATION	TVD	MUD	CASING	CEMENT	SPECIAL INSTRUCTIONS
	120	20" Conductor	120	SPUD MW 8.4 ppg	**13 3/8 "** **54.5# J-55 LTC** +/- 13 Bowsprings 1 20' pup jt *1 joint shoe track*	**LEAD: 12.8 PPG** Top of Lead: 0 50% Excess **TAIL: 14.8 PPG** Top of Tail: 1353 20% Excess	**Circ cement to surface is a NMOCD requirement** Casing must be set 25' into the Rustler MUD: Fresh water only
17 1/2 "	1,628	Rustler	1,628	Fresh			
	1,653	SURF CSG PT	1,653	9.9 ppg			
	1,951	Solado	1,951	DRLOUT MW 10 ppg	***SPLIT STRING*** **9 5/8 "** **40# J-55 LTC** ***0' - 4000'*** 1 20' pup jt **40# L-80 HC LTC** ***4000' - 5651'*** +/- 9 Bowsprings *1 joint shoe track*	**LEAD: 12.5 PPG** Top of Lead: 0' 20% excess **TAIL: 14.8 PPG** Top of Tail: 4520' 20% Excess	**Circ cement to surface is a NMOCD requirement**
	3,675	Yates	3,641	Brine			
12 1/4 "	5,648	INTRM CSG PT	5,554	TD MW 10 ppg			
	5,748	Cherry Canyon	5,654	DRLOUT MW 9.2			
	7,377	Brushy Canyon	7,236	Cut Brine			
	7,657	Bone Springs	7,508	KOP MW 9.5			
	8,483	Avalon	8,313	EOC MW 9.5			
	8,964	1st BS Sand	8,792	CUT BRINE			
8 3/4 " VERTICAL							
	8,994	**KOP**	**8,823**				
8 3/4 " CURVE	9,294	2nd BS Carb	9,432				
	9,744	**EOC**	**9,300**				
8 3/4 " LATERAL					**5 1/2 "** **20# P-110 HC GBCD** 1 20' pup jt 2 20' Marker Jts +/- 27 Bowsprings +/- 27 Doublebows +/- 236 Solid Bodies	**LEAD: 10.7 PPG** Top of Lead: 0 50% Excess **TAIL: 14.8 PPG** Top of Tail: 8994 20% Excess All aqueous fluids (spacer and disp) left inside or outside of pipe must have biocide & corrision inhibitor	Expected BH Pressure 4464 psi



EOC VS = 1125' *Lat. Azi = VS Azi. = 179.56°* Est BHST = 158°F, Est BHCT = 141°F

DIRECTIONAL PLAN

MD	INC	INC	TVD	ANNOTATION

PRELIMINARY

DIRECTIONS TO LOCAITON:

Drilling Engineer: Ryan Harris

Royal Oak 24 Fed Com #513H (H&P 460)

Date: 2/5/2025

Coterra Energy Inc.
CEMENT PROPOSAL #81441

Surface Proposal

Royal Oak 24 Fed Com #513H 30-025-54156
S:24 T:18S R:33E Lea NM

February 06, 2025

AMERICAN CEMENTING

Surface Proposal

CEMENT PROPOSAL

Attention: Kyle Adamek | (660) 247-2024 | kyle@deepenergyllc.com
Coterra Energy Inc.
202 S. Cheyenne Ave Suite 1000 | Tulsa, OK 74103
February 06, 2025

Dear Kyle Adamek,

Thank you for the opportunity to submit pricing for cementing services on the attached wellbore. American Cementing's priority is to provide premium customer service while operating in a safe, efficient manner. If you have any questions regarding the proposal or services offered, please contact American Cementing at any time.

Sincerely,

Will Bautista
Sales | (432) 254-0261 | will.bautista@americancementing.com

Prepared By
Meseret Belayneh
Field Engineer III | (801) 513-8231 | meseret.belayneh@americancementing.com

Field Office 6165 W Murphy St, Odessa, TX 79763
Phone: (432) 208-6452

Disclaimer

1. Proposal is valid for 30 days
2. Proposal is for pricing purposes only; actual job procedure to be confirmed prior to job
3. American Cementing recommends proper hole conditioning prior to initiating cementing; please discuss procedures with your American Cementing representative
4. Applicable sales tax will be added to the final invoice
5. American Cementing's general terms and conditions are hereby incorporated into this Proposal

Well Information

Well Name: **Royal Oak 24 Fed Com #513H**
Well API: **30-025-54156**
Latitude: **32.728046**
Longitude: **-103.613684**
Section: **24**
Township: **18S**
Range: **33E**
County: **Lea, NM**

Job: Surface (Surface) - Well Information

Drilling Fluid Density: **8.40 lb/gal**
Drilling Fluid: **Water**
Total Measured Depth: **1653 ft**
Total Vertical Depth: **1653 ft**
BHCT: **86 °F**
BHST: **95 °F**
Temperature Gradient: **0.90 °F/100ft**
Surface Temp: **80 °F**

Geometry

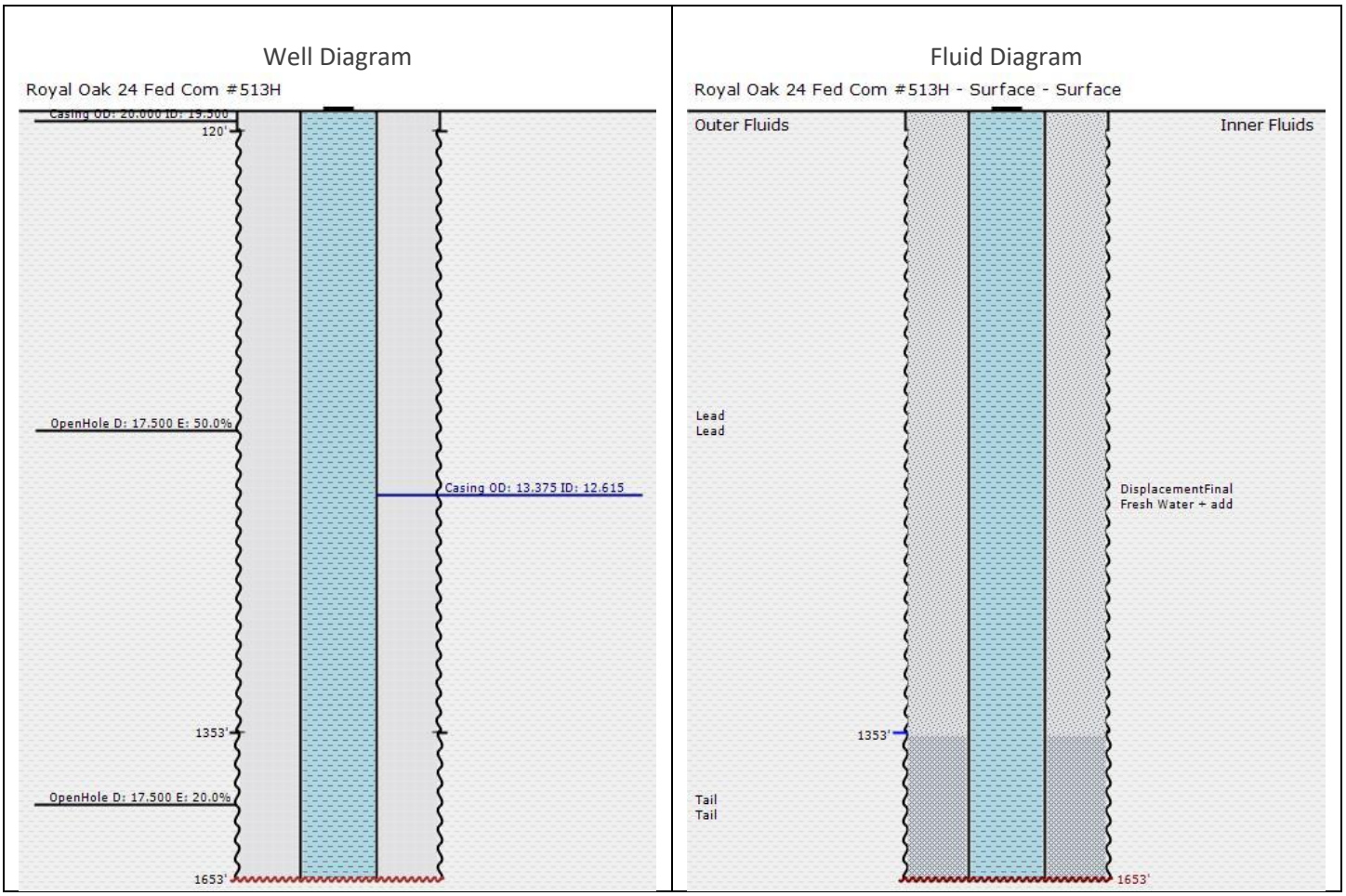
#	Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Grade	Thread	Top	Bottom	Excess (%)
1	Casing	Outer	20.000	19.500	53.00		n/a	0	120	0.0
2	OpenHole	Outer		17.500			n/a	120	1353	50.0
3	OpenHole	Outer		17.500			n/a	1353	1653	20.0
1	Casing	Inner	13.375	12.615	54.50		n/a	0	1653	0.0

Capacities

Excess added to Capacity Factor

Type	TopDepth (ft)	Length (ft)	OD (in)	ID (in)	Capacity (bbl/ft)	Capacity ($ft^{3/ft}$)	Fill (ft/bbl)	Fill (ft/ft^{3})
DisplacementFinal	0	1568	12.615	0.000	0.1546	0.8679	6.47	1.15
ShoeJoint	1568	85	12.615	0.000	0.1546	0.8679	6.47	1.15
Casing to OpenHole	1353	300	17.500	13.375	0.1485	0.8335	6.74	1.20
Casing to OpenHole	120	1233	17.500	13.375	0.1856	1.0419	5.39	0.96
Casing to Casing	0	120	19.500	13.375	0.1956	1.0982	5.11	0.91

Job: Surface (Surface) - Well & Fluid Diagrams



Job: Surface (Surface) - Material Information

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
1	Flush	FW with dye	0.00	8.34	42.0	n/a		20.00
DYE, LIQUID, BLUE - Other - 0.050 gal/bbl								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
2	Lead	Lead	0.00	12.80	10.8	1.97	721	252.57
CEMENT, CLASS C, HSR - Cement - 100.000 %								
Cement Additive, Sodium Metasilicate A-2 - Accelerator - 1.200 %BWOB								
ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS - Accelerator - 0.500 %BWOB								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
IntegraSeal CELLO - LostCirculation - 0.250 lb/sk								
IntegraSeal KOL - LostCirculation - 2.500 lb/sk								
RETARDER, R-7C - Retarder - 0.170 %BWOB								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
3	Tail	Tail	1353.00	14.80	6.3	1.33	244	57.82
CEMENT, CLASS C, HSR - Cement - 100.000 %								
ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS - Accelerator - 0.500 %BWOB								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
ANTI STATIC ADDITIVE, STATIC FREE - Other - 0.005 lb/sk								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
4	DisplacementFinal	Fresh Water + add	0.00	8.34	42.0	n/a		243.00

Job: Surface (Surface) - Pump Schedule

Sequence	Type	Fluid	Density (lb/gal)	Pump Rate (bpm)	Volume (bbls)	Volume (sks)	Cum. Vol. (bbls)	Stage Time (min)	Cum. Time (min)
1	Flush	FW with dye	8.34	5.00	20.00		20.00	4.00	4.00
2	Lead	Lead	12.80	5.00	252.57	721	272.57	50.51	54.51
3	Tail	Tail	14.80	5.00	57.82	244	330.39	11.56	66.07
4	DisplacementFinal	Fresh Water + add	8.34	5.00	243.00		573.39	48.60	114.67

General Terms and Conditions

AMERICAN CEMENTING, LLC TERMS AND CONDITIONS

These Terms and Conditions (these "T&Cs") contain INDEMNIFICATION, LIMITATION OF LIABILITY AND RISK SHIFTING PROVISIONS. The provision of Work by American Cementing, LLC or its affiliated companies ("Contractor" or "American") to any person or entity placing an Order for such Work ("Company" or "Customer") is subject to these T&Cs. By requesting the Work, Company voluntarily elects to enter into and be bound by these T&Cs, and any Order for Work shall constitute acceptance of these T&Cs, *unless* Contractor and Company have entered into a Master Service Agreement or other agreement expressly accepted in writing by Contractor's authorized representative, in which case the terms and conditions of such agreements shall govern the provision of the Work and completely supersede these T&Cs in all respects.

1. DEFINITIONS. "Claims" means all claims, lawsuits, demands, causes of action, liabilities, damages (including punitive damages), judgments, awards, fines, penalties, losses, costs, expenses (including, without limitation, reasonable attorneys' fees, expert fees, and costs of litigation) of any kind or character, without limit, which arise out of or are related to the Work. "COMPANY GROUP" means (i) COMPANY, and any of its parent, subsidiary and affiliated or related entities; (ii) the working interest owners, co-owners, co-lessees, co-lessors, partners and joint venturers of (i); (iii) any person or entity with an economic interest or property rights in the well, premises or the property in relation to or upon which Work is performed; and (iv) the officers, directors, employees, shareholders, agents, representatives, contractors (except CONTRACTOR), subcontractors, consultants, and invitees of (i), (ii) and (iii) above. "CONTRACTOR GROUP" means (i) CONTRACTOR and any of its subsidiary and affiliated or related entities; and (ii) the officers, directors, employees, shareholders, agents, representatives, contractors, subcontractors, consultants, and invitees of all of the foregoing. "Order" means a written or verbal request for specific Work, including by way of a purchase order, work order, service order, work authorization, or similar instrument issued by COMPANY to CONTRACTOR, and which shall incorporate the pricing proposal submitted by CONTRACTOR for such Work. A request will be considered written if exchanges, whether by correspondence, letter, fax, or email include all material terms and conditions and they have been accepted or ratified by both COMPANY and CONTRACTOR; *provided, however*, if verbal, such request shall be confirmed in writing as soon as practicable, and the terms of the written Order shall control. "Work" means any cementing services and other related services provided by CONTRACTOR, along with all related personnel, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items used in connection with such services.

2. INDEPENDENT CONTRACTOR. This Agreement does not create any agency, partnership, joint venture, or similar business relationship between parties. COMPANY will have the right generally to oversee and inspect the performance of the Work to ensure the reasonable satisfactory completion thereof; it being understood and agreed that CONTRACTOR shall have exclusive control over the operational details of the Work.

3. PRICING AND PAYMENT. 3.1 COMPANY will pay CONTRACTOR for the Work according to the prices and rates contained the applicable Order; *provided, however*, that if there are no such prices and rates, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for the Work shall apply. The pricing proposals submitted by CONTRACTOR are generally valid sixty (60) days from submission of such proposal, unless otherwise set forth in such pricing proposal. Notwithstanding the foregoing, before commencing the Work and until an agreement is reached between the parties regarding such prices and rates, CONTRACTOR has the right to revise and shall advise COMPANY of any changes in the pricing proposal, and COMPANY may either accept or reject such changes, and proceed with the Work or not. **3.2** COMPANY shall pay CONTRACTOR's invoices within thirty (30) days of receipt of invoice. In the event COMPANY disputes any amount, it shall do so in good faith and shall notify CONTRACTOR of such dispute within thirty (30) days of receipt of invoice; *provided, however*, that COMPANY shall pay any undisputed portion of the invoice within the time for payment noted above and shall endeavor to expeditiously resolve such disputes. Any undisputed invoices, remaining unpaid for sixty (60) days after receipt by COMPANY, shall accrue interest at the rate of 1.5% per month or the maximum interest rate allowed by applicable law, whichever is less, through the time of collection. **3.3** Prices quoted by CONTRACTOR do not include sales, VAT, use or similar taxes, and such taxes, where applicable, shall be added to the quoted prices and invoiced accordingly. Each party shall pay all taxes levied or assessed by any governmental authority in connection with or incident to its performance under an Order; *provided, however,* that CONTRACTOR shall pay any assessments or taxes upon wages of CONTRACTOR, social security, unemployment insurance, old age benefits, or any other employment taxes, contributions or withholdings.

4. ORDERS; STANDARD OF PERFORMANCE; WARRANTIES. 4.1 COMPANY may from time to time place an Order for Work, and CONTRACTOR may provide such Work to COMPANY, subject to these T&Cs. Orders shall become binding only after signed or acknowledged by an authorized representative of each party. **4.2** CONTRACTOR shall provide all labor, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items required for the execution and completion of the Work, as more fully described in the applicable Order. **4.3** CONTRACTOR shall perform the Work with due diligence and care, in a good and workmanlike manner, using skilled, competent, experienced, and, where applicable, licensed personnel in accordance with the specifications represented by CONTRACTOR and with generally accepted oilfield practices. **4.4** CONTRACTOR shall conduct its Work, in all material respects, in accordance with all applicable laws, rules, regulations, decrees, and/or official government orders of any governing body having jurisdiction over the Work. **4.5** CONTRACTOR's Work is designed to operate under conditions normally encountered in a wellbore. COMPANY shall notify CONTRACTOR in advance and make special arrangements for Work in which hazardous or unusual conditions exist. COMPANY has complete care, custody, and control of the well, the premises around the well, and the drilling and production equipment of the well (other than such equipment provided by CONTRACTOR hereunder), and Company shall furnish directions and requirements for Work performed hereunder. CONTRACTOR is relying on COMPANY to provide such directions and requirements without further investigation by CONTRACTOR. CONTRACTOR agrees to observe and abide by COMPANY's safety policies and procedures communicated to and acknowledged by CONTRACTOR. CONTRACTOR shall as promptly as possible under the circumstances report to COMPANY's representative all accidents or occurrences resulting in injuries, illness or death to person(s) or damage to property, arising out of or occurring during the Work. **4.6** CONTRACTOR's sole liability, and COMPANY's exclusive remedy, for any Claims for breach of warranty under this Section 4 are limited to, at CONTRACTOR's sole option, (i) if practical, the re-performance of the defective Work or portion thereof, at no additional cost to COMPANY; or (ii) a refund or credit to COMPANY of any amount paid to CONTRACTOR for such defective Work or portion thereof. In the event that CONTRACTOR materially fails to perform the Work or if CONTRACTOR provides defective Work for reasons solely within CONTRACTOR's control, COMPANY shall give notice to CONTRACTOR of such non-performance or defective performance immediately upon discovery and prior to CONTRACTOR's departure from the worksite, otherwise such warranty Claim is waived. **4.7** Due to the nature of the Work to be performed in unpredictable wellbore conditions, CONTRACTOR does not warrant the accuracy, correctness, or completeness of any interpretations, analysis, recommendations, or advice, nor that COMPANY's or any third party's reliance on such interpretations, analysis, recommendations, or advice will accomplish any particular results, and which in any event are opinions only. Accordingly, it is COMPANY's responsibility, and sole risk, to determine the completion, well treatment, production, or financial decision involving any risk. Any outcomes that are less than expected will not relieve COMPANY of its responsibility to pay for the Work in accordance with these T&Cs. **4.8** THE WARRANTIES PROVIDED IN THIS SECTION 4 ARE THE SOLE AND EXCLUSIVE WARRANTIES RELATING TO THE WORK AND ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

5. ORDER CHANGES; PROJECT ADMINISTRATION. 5.1 COMPANY may ask for and CONTRACTOR may agree to variations in the Work, whether by way of addition, modification or omission, which variations shall be in writing and signed by authorized representatives of both parties. The value of any such variations shall be ascertained by reference to the prices and rates specified in the applicable Order for like or analogous Work; *provided, however,* that if there are no such prices and rates or if they are otherwise inapplicable, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for such additional Work shall apply. **5.2** To acknowledge or document various events during the provision of the Work, a party may from time to time sign the other party's forms, such as Orders, delivery tickets, job tickets, invoices, or similar instruments used by the parties in the normal course of business. In the event of a conflict between these T&Cs and any such documents, these T&Cs shall control, *unless* specific reference is made that these T&Cs are modified and the intention to modify is explicitly stated in such documents. **5.3** It is understood and agreed between the parties that COMPANY's representative (appointed in accordance with Section 5.4 below) shall have the authority to approve any job tickets, delivery tickets, or similar forms attesting to the completion of the Work by CONTRACTOR ("Job Tickets"). A COMPANY representative's signature on such Tickets shall indicate acceptance of the Work. If the Job Tickets are not acknowledged within forty-eight (48) hours of receipt through no fault of CONTRACTOR, CONTRACTOR may submit invoices for payment as if such Tickets had been acknowledged. **5.4** COMPANY will appoint a representative who will be responsible for the supervision of the Work, and who shall have full authority to represent and make decisions on behalf of COMPANY with respect to the Work, or otherwise to resolve the day-to-day issues which may arise related to the Work. Likewise, CONTRACTOR shall designate a representative with similar responsibilities and authority to liaise with COMPANY's representative.

6. CONTRACTOR'S EQUIPMENT. 6.1 Title to CONTRACTOR's equipment, including any lost, damaged, or confiscated equipment, shall remain in CONTRACTOR, and COMPANY shall have no right to assign, transfer, hypothecate, or remove such equipment from the place of its intended use without CONTRACTOR's prior written consent. **6.2** COMPANY shall be responsible for and agrees to compensate CONTRACTOR for all damages, losses, or any abnormal wear to CONTRACTOR GROUP's equipment: (i) while in COMPANY GROUP's care, custody or control, including while being transported by any member of COMPANY GROUP; (ii) as a result of operations conducted out of specifications at COMPANY GROUP's request, or in corrosive, abnormal temperatures or other

unusual conditions; (iii) due to fishing operations (if any); or (iv) if lost in the hole or damaged beyond repair while in the hole or used in the hole. COMPANY will replace such equipment or reimburse CONTRACTOR with the current replacement price of such equipment.

7. INDEMNITY.

7.1 Application of Indemnities. 7.1.1 In those matters in which a party is required by these T&Cs to RELEASE, DEFEND, PROTECT, INDEMNIFY, AND HOLD HARMLESS the other party and/or members of its respective Group, SUCH OBLIGATIONS SHALL, EXCEPT TO THE EXTENT EXPRESSLY PROVIDED OTHERWISE IN THESE T&CS, APPLY TO INDEMNITOR REGARDLESS OF THE CAUSE OR REASON, OR WHO MAY BE AT FAULT OR OTHERWISE RESPONSIBLE UNDER ANY CONTRACT, STATUTE, RULE, OR THEORY OF LAW, INCLUDING WITHOUT LIMITATION STRICT LIABILITY, TORT, BREACH OF DUTY (STATUTORY OR OTHERWISE), BREACH OF CONTRACT, BREACH OF REPRESENTATION OR WARRANTY, BREACH OF ANY SAFETY REQUIREMENT OR REGULATION, DUE TO ANY LATENT, PATENT, OR PRE-EXISTING DEFECTS OR CONDITIONS, IMPERFECTION OF MATERIAL, FAILURE OF EQUIPMENT, OR ANY LEGAL FAULT OR RESPONSIBILITY OF EITHER PARTY, INCLUDING THE SOLE, JOINT, AND/OR CONCURRENT NEGLIGENCE OR FAULT, WHETHER ACTIVE OR PASSIVE, OF THE INDEMNIFIED PARTY, OR OTHER PERSONS OR ENTITIES. **7.1.2** In the event these T&Cs are subject to the indemnity limitations in Chapter 127 of the Texas Civil Practice and Remedies Code (or any successor statute), and so long as such limitations are in force, each party covenants and agrees to support the mutual indemnity and release obligations contained herein by carrying insurance in an amount and of a type sufficient to cover their indemnity obligations**. 7.1.3** Notwithstanding any provisions in these T&Cs to the contrary, the following provision applies where Work is to be performed in New Mexico or Wyoming, as applicable: to the extent this Section 7 is governed by New Mexico or Wyoming law, then the provisions herein shall be read not to include indemnification for the indemnified party's own negligence. **7.1.4** If any defense, indemnity, or insurance provision contained in these T&Cs conflicts with, is prohibited by or violates public policy under any federal, state or other law determined to be applicable to a particular situation arising or involving these T&Cs, it is understood and agreed that the conflicting, prohibited or violating provision shall be deemed automatically amended in that situation to the extent—but only to the extent—necessary to conform with, not be prohibited by, and avoid violating public policy under such applicable law. The parties agree that the exculpatory, indemnification, and hold harmless provisions herein shall be modified or altered only insofar as required by a jurisdiction purporting to limit such provisions, it being the intention of both parties to enforce to the fullest extent, all terms and conditions herein agreed to.

7.2 CONTRACTOR's Indemnification. CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of CONTRACTOR GROUP, and any and all Claims for damage to or loss of any property of CONTRACTOR GROUP.

7.3 COMPANY's Indemnification. COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of COMPANY GROUP, and any and all Claims for damage to or loss of any property of COMPANY GROUP.

7.4 Pollution and Contamination; Catastrophic Damages or Losses. Notwithstanding each party's obligations pursuant to Sections 7.2 and 7.3 hereof, it is understood and agreed between the parties that the following additional terms shall apply: 7.4.1 (a) CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims arising from pollution or contamination, which originates above the surface of the land or water, and which shall directly result from or be caused by CONTRACTOR GROUP's equipment, vehicles, or other tools and instruments while in CONTRACTOR GROUP's sole care, custody or control, and shall assume all responsibility for control and removal of same; and (b) COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all pollution or contamination other than that described under Section 7.4.1 (a) above, and including but not limited to, that which may result from cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, and shall assume all responsibility for control and removal of same. 7.4.2 COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all catastrophic damages or losses, including but not limited to those on account of injury, destruction of, loss or impairment (i) of any formation, strata, or reservoir beneath the surface of the earth; (ii) of any property rights in or to oil, gas, or other mineral substance or water, or the quiet enjoyment thereof, including subsurface trespass; (iii) to the well or the hole, including its casing; (iv) from radioactive sources; and (v) from fire, explosion, blowout, or any other uncontrolled well conditions, and the cost of controlling or regaining control of a wild well or out of control well.

7.5 Incidental or Consequential Damages. Notwithstanding any provisions to the contrary in these T&Cs, neither party shall be liable to the other party for, and parties shall RELEASE, PROTECT, DEFEND, INDEMNIFY AND HOLD EACH OTHER HARMLESS from and against any special, punitive, indirect, incidental or consequential damages or losses suffered by the other party and its Group resulting from or arising, directly or indirectly, out of or in connection with the Work, including, without limitation, loss and/or deferral of production, loss of product, loss of use, loss of bargain, contract expectations, or opportunity to contract with others, loss of revenue, profit, or anticipated profit, loss of business, business interruption, or downtime, whether direct or indirect, and whether or not such loss was foreseeable at the time of placing of an Order.

8. INSURANCE. **8.1** CONTRACTOR and COMPANY agree, at their sole cost and expense, to procure and continuously maintain in full force and effect throughout the term of this Agreement the following insurance coverage which may be met by a combination of primary and excess/umbrella insurance: A. Statutory Workers' Compensation Insurance and Employer's Liability in the amount of $1,000,000 per occurrence and in the aggregate; B. Commercial General Liability insurance providing for third party property damage and personal injury, including broad form contractual liability for any agreement and broad form property damage in the amount of $1,000,000 per occurrence and $2,000,000 in the aggregate; C. Owned and Non-Owned Automobile Liability Insurance for bodily injury and property damage combined single limit in the amount of $1,000,000 per occurrence and in the aggregate; D. Excess/Umbrella Liability Insurance providing coverage in excess of the foregoing insurances in the amount of $5,000,000 per occurrence and in the aggregate, excluding statutory insurance coverage. **8.2** Each party agrees that, to the extent it assumes liability herein, it shall endorse the above coverages to name the indemnified parties as additional insureds (except for Workers' Compensation), shall waive its right of subrogation against the indemnified parties and their insurers, and agrees that its insurance shall be primary to that carried by the indemnified parties and non-contributory as per negligence for third party Claims, and shall not contribute in case of any Claim of exhaustion of horizontal limits. **8.3** Each party shall furnish an insurance certificate to the other to evidence the insurance required herein, and such certificates shall contain an endorsement stating that the insurer will endeavor to provide a thirty (30) days prior written notice of alteration or material change to such coverage. All deductible amounts, premiums, franchise amounts, or other charges due with respect to each party's required insurance should be the sole obligation of the insured party.

9. CONFIDENTIALITY. Each party contemplates that the other party may be provided and exposed to confidential and proprietary information ("Confidential Information"), which includes information relating to specifications of its tools, designs, inventions, component parts, parts list, software, firmware, hardware, processes, computer interfaces, operational parameters, and terms and pricing of Work. All Confidential Information shall remain the property of the party disclosing the same and no license is granted to the receiving party by virtue of the provision of such information. Confidential Information shall (i) be used by the recipient solely for the purpose of the provision of the Work and (ii) kept confidential and not disclosed to any person, except authorized representatives of the receiving Party, without written permission of the disclosing party. The receiving party shall take all reasonable steps to require its authorized representatives to keep such information confidential during and after the Work. Confidential Information shall not include information which: (i) at the time of placement of the Order is in the public domain or subsequently comes into the public domain through no fault of the receiving party and not in breach of these T&Cs; (ii) was already known to the receiving party on the date of disclosure, provided that such prior knowledge can be substantiated and proved by documentation; or (iii) properly and lawfully available to the receiving party from sources independent of the disclosing party.

10. INTELLECTUAL PROPERTY. While performing the Work, CONTRACTOR may utilize CONTRACTOR's intellectual property (including, without limitation, copyrights, registered marks, trademarks, service marks, patents, know-how, trade secrets, inventions, discoveries, techniques. technical information, technologies, designs, software, computer programs, formulae, calculations, computations, expertise, ideas, concepts, improvements, sketches, drawings, models, methods, practices, and/or processes, whether patentable or not) and/or develop, conceive, create, acquire, obtain, collect, generate, or make such additional intellectual property, which is and shall be CONTRACTOR's exclusive property. *Except if* expressly and specifically agreed in writing in a separate development agreement executed by the parties, and in exchange for appropriate payment, CONTRACTOR shall not develop any intellectual property for ownership by COMPANY in association with Work performed under a specific Order. Notwithstanding the foregoing, COMPANY or COMPANY GROUP shall own any intellectual property solely developed by COMPANY or COMPANY GROUP, respectively.

11. FORCE MAJEURE. 11.1 "Force Majeure" means (to the extent and only to the extent that any of the following are not reasonably within the control of the party claiming a Force Majeure and by the exercise of due diligence such party could not have mitigated, avoided, or overcome such condition) acts of God, fire, floods, lightning, blizzards, tornadoes, earthquakes, ice storms, named tropical storms and hurricanes, pandemics, terrorism, insurrection, revolution, war, strikes, lockouts, federal or state laws, rules and regulations of any governmental or public authorities having or asserting jurisdiction over the premises of either or both parties, inability to procure material due to industry wide shortages or soaring commodity costs, equipment, or necessary labor despite reasonable efforts, or similar causes. 11.2 If a party is rendered unable, wholly or in part, by a Force Majeure event to perform, that party will give written notice detailing such Force Majeure event to the other party as soon as reasonably possible. If a Force Majeure event continues without interruption for ten (10) days, either Party may cancel the applicable Order by giving prompt, written cancellation notice to the other party. Nothing in this Section 14.2 shall excuse COMPANY from its payment obligations of any invoices due and owing for Work performed under a specific Order.

12. LIMITATION OF LIABILITY. Notwithstanding anything to the contrary in these T&Cs, CONTRACTOR's liability arising from or in connection with its performance of the Work shall be limited to the value of the consideration paid to CONTRACTOR under the applicable Order.

13. GOVERNING LAW; VENUE. 13.1 For Work performed on a worksite within the **United States,** these T&Cs shall be exclusively governed by the laws of the **State of Texas**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction. Venue shall lie exclusively in the state or federal courts of Harris County, Texas, and the parties consent to personal

jurisdiction therein. **13.2** For Work performed on a worksite within **Canada,** these T&Cs shall be exclusively governed by the laws of **Province of Alberta**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction.

14. MISCELLANEOUS. 14.1 Notices. Notices shall be sent by registered post, or delivered in person, to the address for notices communicated by the other party. Said notices shall be deemed received (i) upon delivery if hand delivered, (ii) upon delivery if sent by registered post, and (iii) upon recipient's confirmation of receipt if faxed. **14.2 Waiver.** No benefit or right accruing to either party under these T&Cs shall be deemed to be waived unless the waiver is in writing, expressly refers to these T&Cs, and is signed by a duly authorized representative of both parties. A waiver in any one or more instances shall not constitute a continuing waiver, unless specifically so stated in the written waiver. **14.3 Severability.** In the event one or more of the provisions contained in these T&Cs shall be held, for any reason, to be invalid, void, illegal, contrary to law and/or unenforceable in any respect, these T&Cs shall be deemed to be amended to partially or completely modify such provision or portion thereof to the extent necessary to make it enforceable. If necessary, these T&Cs shall be deemed to be amended to delete the unenforceable provision or portion thereof, in which event such invalidity, illegality or unenforceability shall not affect the remaining provisions hereof, and these T&Cs shall remain unaffected and shall be construed as if such invalid, void, illegal or unenforceable provision never had been contained herein. **14.4 Independent Representation.** COMPANY AND CONTRACTOR ACKNOWLEDGE THAT THEY HAVE CONSULTED AN ATTORNEY CONCERNING THESE T&Cs OR HAVE ELECTED NOT TO DO SO, BUT REPRESENT THAT THEY FULLY UNDERSTAND THEIR RIGHTS AND OBLIGATIONS HEREUNDER

Company: _____

Signature: _____
Name: _____
Title:_____
Date: _____

Coterra Energy Inc.
CEMENT PROPOSAL #81462

Intermediate Proposal

Royal Oak 24 Fed Com #513H 30-025-54156
S:24 T:18S R:33E Lea NM

February 06, 2025

AMERICAN CEMENTING

Intermediate Proposal

CEMENT PROPOSAL

Attention: Kyle Adamek | (660) 247-2024 | kyle@deepenergyllc.com
Coterra Energy Inc.
202 S. Cheyenne Ave Suite 1000 | Tulsa, OK 74103
February 06, 2025

Dear Kyle Adamek,

Thank you for the opportunity to submit pricing for cementing services on the attached wellbore. American Cementing's priority is to provide premium customer service while operating in a safe, efficient manner. If you have any questions regarding the proposal or services offered, please contact American Cementing at any time.

Sincerely,

Will Bautista
Sales | (432) 254-0261 | will.bautista@americancementing.com

Prepared By
Meseret Belayneh
Field Engineer III | (801) 513-8231 | meseret.belayneh@americancementing.com

Field Office 6165 W Murphy St, Odessa, TX 79763
Phone: (432) 208-6452

Disclaimer

1. Proposal is valid for 30 days
2. Proposal is for pricing purposes only; actual job procedure to be confirmed prior to job
3. American Cementing recommends proper hole conditioning prior to initiating cementing; please discuss procedures with your American Cementing representative
4. Applicable sales tax will be added to the final invoice
5. American Cementing's general terms and conditions are hereby incorporated into this Proposal

Well Information

Well Name: **Royal Oak 24 Fed Com #513H**
Well API: **30-025-54156**
Latitude: **32.728046**
Longitude: **-103.613684**
Section: **24**
Township: **18S**
Range: **33E**
County: **Lea, NM**

Job: Intermediate (Intermediate) - Well Information

Drilling Fluid Density: **10.00 lb/gal**
Drilling Fluid: **WBM**
Total Measured Depth: **5651 ft**
Total Vertical Depth: **5651 ft**
BHCT: **109 °F**
BHST: **130 °F**
Temperature Gradient: **0.90 °F/100ft**
Surface Temp: **80 °F**

Geometry

#	Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Grade	Thread	Top	Bottom	Excess (%)
1	Casing	Outer	13.375	12.615	54.50		n/a	0	1653	0.0
2	OpenHole	Outer		12.250			n/a	1653	4520	20.0
3	OpenHole	Outer		12.250			n/a	4520	5651	20.0
1	Casing	Inner	9.625	8.835	40.00		n/a	0	5651	0.0

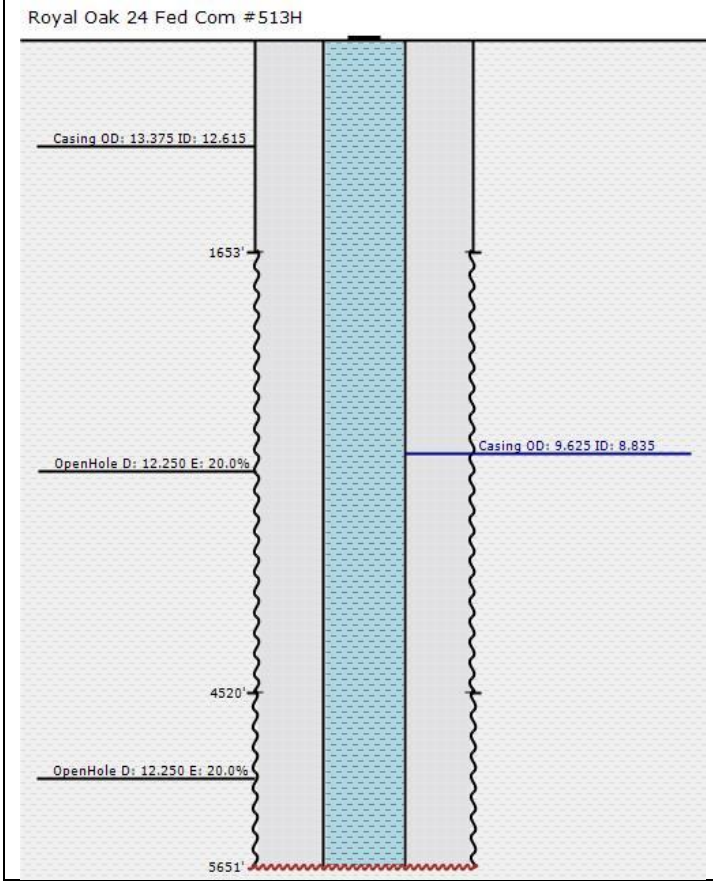
Capacities

Excess added to Capacity Factor

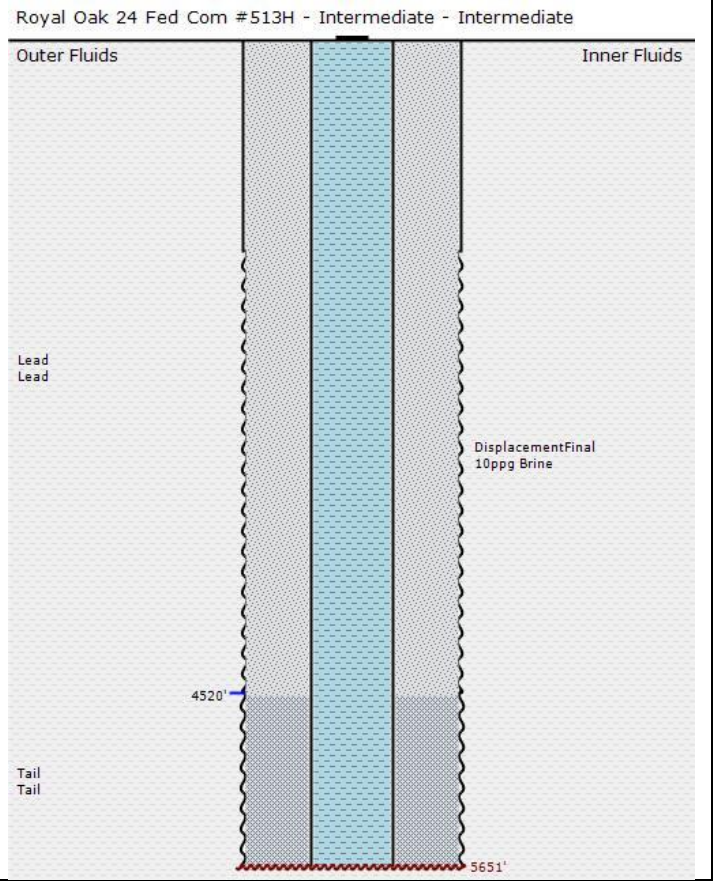
Type	TopDepth (ft)	Length (ft)	OD (in)	ID (in)	Capacity (bbl/ft)	Capacity ($ft^{3/ft}$)	Fill (ft/bbl)	Fill (ft/ft^{3})
DisplacementFinal	0	5566	8.835	0.000	0.0758	0.4257	13.19	2.35
ShoeJoint	5566	85	8.835	0.000	0.0758	0.4257	13.19	2.35
Casing to OpenHole	4520	1131	12.250	9.625	0.0669	0.3758	14.94	2.66
Casing to OpenHole	1653	2867	12.250	9.625	0.0669	0.3758	14.94	2.66
Casing to Casing	0	1653	12.615	9.625	0.0646	0.3627	15.48	2.76

Job: Intermediate (Intermediate) - Well & Fluid Diagrams

Well Diagram



Fluid Diagram



Job: Intermediate (Intermediate) - Material Information

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
1	Flush	Fresh Water	0.00	8.34	42.0	n/a		20.00

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
2	Lead	Lead	0.00	12.50	12.4	2.17	774	298.90
CEMENT, CLASS C, HSR - Cement - 100.000 %								
Cement Additive, Sodium Metasilicate A-2 - Accelerator - 2.000 %BWOB								
SALT,SODIUM CHLORIDE, A-5 - Accelerator - 3.000 %BWOW								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
RETARDER, R-7C - Retarder - 0.430 %BWOB								
ANTI STATIC ADDITIVE, STATIC FREE - Other - 0.005 lb/sk								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
3	Tail	Tail	4520.00	14.80	6.3	1.33	348	82.35
CEMENT, CLASS C, HSR - Cement - 100.000 %								
Cement Additive, Sodium Metasilicate A-2 - Accelerator - 0.250 %BWOB								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
RETARDER, R-7C - Retarder - 0.050 %BWOB								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
4	DisplacementFinal	10ppg Brine	0.00	8.34	42.0	n/a		423.00

Job: Intermediate (Intermediate) - Pump Schedule

Sequence	Type	Fluid	Density (lb/gal)	Pump Rate (bpm)	Volume (bbls)	Volume (sks)	Cum. Vol. (bbls)	Stage Time (min)	Cum. Time (min)
1	Flush	Fresh Water	8.34	5.00	20.00		20.00	4.00	4.00
2	Lead	Lead	12.50	5.00	298.90	774	318.90	59.78	63.78
3	Tail	Tail	14.80	5.00	82.35	348	401.25	16.47	80.25
4	DisplacementFinal	10ppg Brine	8.34	5.00	423.00		824.25	84.60	164.85

General Terms and Conditions

AMERICAN CEMENTING, LLC TERMS AND CONDITIONS

These Terms and Conditions (these "T&Cs") contain INDEMNIFICATION, LIMITATION OF LIABILITY AND RISK SHIFTING PROVISIONS. The provision of Work by American Cementing, LLC or its affiliated companies ("Contractor" or "American") to any person or entity placing an Order for such Work ("Company" or "Customer") is subject to these T&Cs. By requesting the Work, Company voluntarily elects to enter into and be bound by these T&Cs, and any Order for Work shall constitute acceptance of these T&Cs, *unless* Contractor and Company have entered into a Master Service Agreement or other agreement expressly accepted in writing by Contractor's authorized representative, in which case the terms and conditions of such agreements shall govern the provision of the Work and completely supersede these T&Cs in all respects.

1. DEFINITIONS. "Claims" means all claims, lawsuits, demands, causes of action, liabilities, damages (including punitive damages), judgments, awards, fines, penalties, losses, costs, expenses (including, without limitation, reasonable attorneys' fees, expert fees, and costs of litigation) of any kind or character, without limit, which arise out of or are related to the Work. "COMPANY GROUP" means (i) COMPANY, and any of its parent, subsidiary and affiliated or related entities; (ii) the working interest owners, co-owners, co-lessees, co-lessors, partners and joint venturers of (i); (iii) any person or entity with an economic interest or property rights in the well, premises or the property in relation to or upon which Work is performed; and (iv) the officers, directors, employees, shareholders, agents, representatives, contractors (except CONTRACTOR), subcontractors, consultants, and invitees of (i), (ii) and (iii) above. "CONTRACTOR GROUP" means (i) CONTRACTOR and any of its subsidiary and affiliated or related entities; and (ii) the officers, directors, employees, shareholders, agents, representatives, contractors, subcontractors, consultants, and invitees of all of the foregoing. "Order" means a written or verbal request for specific Work, including by way of a purchase order, work order, service order, work authorization, or similar instrument issued by COMPANY to CONTRACTOR, and which shall incorporate the pricing proposal submitted by CONTRACTOR for such Work. A request will be considered written if exchanges, whether by correspondence, letter, fax, or email include all material terms and conditions and they have been accepted or ratified by both COMPANY and CONTRACTOR; *provided, however*, if verbal, such request shall be confirmed in writing as soon as practicable, and the terms of the written Order shall control. "Work" means any cementing services and other related services provided by CONTRACTOR, along with all related personnel, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items used in connection with such services.

2. INDEPENDENT CONTRACTOR. This Agreement does not create any agency, partnership, joint venture, or similar business relationship between parties. COMPANY will have the right generally to oversee and inspect the performance of the Work to ensure the reasonable satisfactory completion thereof; it being understood and agreed that CONTRACTOR shall have exclusive control over the operational details of the Work.

3. PRICING AND PAYMENT. 3.1 COMPANY will pay CONTRACTOR for the Work according to the prices and rates contained the applicable Order; *provided, however*, that if there are no such prices and rates, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for the Work shall apply. The pricing proposals submitted by CONTRACTOR are generally valid sixty (60) days from submission of such proposal, unless otherwise set forth in such pricing proposal. Notwithstanding the foregoing, before commencing the Work and until an agreement is reached between the parties regarding such prices and rates, CONTRACTOR has the right to revise and shall advise COMPANY of any changes in the pricing proposal, and COMPANY may either accept or reject such changes, and proceed with the Work or not. **3.2** COMPANY shall pay CONTRACTOR's invoices within thirty (30) days of receipt of invoice. In the event COMPANY disputes any amount, it shall do so in good faith and shall notify CONTRACTOR of such dispute within thirty (30) days of receipt of invoice; *provided, however*, that COMPANY shall pay any undisputed portion of the invoice within the time for payment noted above and shall endeavor to expeditiously resolve such disputes. Any undisputed invoices, remaining unpaid for sixty (60) days after receipt by COMPANY, shall accrue interest at the rate of 1.5% per month or the maximum interest rate allowed by applicable law, whichever is less, through the time of collection. **3.3** Prices quoted by CONTRACTOR do not include sales, VAT, use or similar taxes, and such taxes, where applicable, shall be added to the quoted prices and invoiced accordingly. Each party shall pay all taxes levied or assessed by any governmental authority in connection with or incident to its performance under an Order; *provided, however,* that CONTRACTOR shall pay any assessments or taxes upon wages of CONTRACTOR, social security, unemployment insurance, old age benefits, or any other employment taxes, contributions or withholdings.

4. ORDERS; STANDARD OF PERFORMANCE; WARRANTIES. 4.1 COMPANY may from time to time place an Order for Work, and CONTRACTOR may provide such Work to COMPANY, subject to these T&Cs. Orders shall become binding only after signed or acknowledged by an authorized representative of each party. **4.2** CONTRACTOR shall provide all labor, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items required for the execution and completion of the Work, as more fully described in the applicable Order. **4.3** CONTRACTOR shall perform the Work with due diligence and care, in a good and workmanlike manner, using skilled, competent, experienced, and, where applicable, licensed personnel in accordance with the specifications represented by CONTRACTOR and with generally accepted oilfield practices. **4.4** CONTRACTOR shall conduct its Work, in all material respects, in accordance with all applicable laws, rules, regulations, decrees, and/or official government orders of any governing body having jurisdiction over the Work. **4.5** CONTRACTOR's Work is designed to operate under conditions normally encountered in a wellbore. COMPANY shall notify CONTRACTOR in advance and make special arrangements for Work in which hazardous or unusual conditions exist. COMPANY has complete care, custody, and control of the well, the premises around the well, and the drilling and production equipment of the well (other than such equipment provided by CONTRACTOR hereunder), and Company shall furnish directions and requirements for Work performed hereunder. CONTRACTOR is relying on COMPANY to provide such directions and requirements without further investigation by CONTRACTOR. CONTRACTOR agrees to observe and abide by COMPANY's safety policies and procedures communicated to and acknowledged by CONTRACTOR. CONTRACTOR shall as promptly as possible under the circumstances report to COMPANY's representative all accidents or occurrences resulting in injuries, illness or death to person(s) or damage to property, arising out of or occurring during the Work. **4.6** CONTRACTOR's sole liability, and COMPANY's exclusive remedy, for any Claims for breach of warranty under this Section 4 are limited to, at CONTRACTOR's sole option, (i) if practical, the re-performance of the defective Work or portion thereof, at no additional cost to COMPANY; or (ii) a refund or credit to COMPANY of any amount paid to CONTRACTOR for such defective Work or portion thereof. In the event that CONTRACTOR materially fails to perform the Work or if CONTRACTOR provides defective Work for reasons solely within CONTRACTOR's control, COMPANY shall give notice to CONTRACTOR of such non-performance or defective performance immediately upon discovery and prior to CONTRACTOR's departure from the worksite, otherwise such warranty Claim is waived. **4.7** Due to the nature of the Work to be performed in unpredictable wellbore conditions, CONTRACTOR does not warrant the accuracy, correctness, or completeness of any interpretations, analysis, recommendations, or advice, nor that COMPANY's or any third party's reliance on such interpretations, analysis, recommendations, or advice will accomplish any particular results, and which in any event are opinions only. Accordingly, it is COMPANY's responsibility, and sole risk, to determine the completion, well treatment, production, or financial decision involving any risk. Any outcomes that are less than expected will not relieve COMPANY of its responsibility to pay for the Work in accordance with these T&Cs. **4.8** THE WARRANTIES PROVIDED IN THIS SECTION 4 ARE THE SOLE AND EXCLUSIVE WARRANTIES RELATING TO THE WORK AND ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

5. ORDER CHANGES; PROJECT ADMINISTRATION. 5.1 COMPANY may ask for and CONTRACTOR may agree to variations in the Work, whether by way of addition, modification or omission, which variations shall be in writing and signed by authorized representatives of both parties. The value of any such variations shall be ascertained by reference to the prices and rates specified in the applicable Order for like or analogous Work; *provided, however,* that if there are no such prices and rates or if they are otherwise inapplicable, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for such additional Work shall apply. **5.2** To acknowledge or document various events during the provision of the Work, a party may from time to time sign the other party's forms, such as Orders, delivery tickets, job tickets, invoices, or similar instruments used by the parties in the normal course of business. In the event of a conflict between these T&Cs and any such documents, these T&Cs shall control, *unless* specific reference is made that these T&Cs are modified and the intention to modify is explicitly stated in such documents. **5.3** It is understood and agreed between the parties that COMPANY's representative (appointed in accordance with Section 5.4 below) shall have the authority to approve any job tickets, delivery tickets, or similar forms attesting to the completion of the Work by CONTRACTOR ("Job Tickets"). A COMPANY representative's signature on such Tickets shall indicate acceptance of the Work. If the Job Tickets are not acknowledged within forty-eight (48) hours of receipt through no fault of CONTRACTOR, CONTRACTOR may submit invoices for payment as if such Tickets had been acknowledged. **5.4** COMPANY will appoint a representative who will be responsible for the supervision of the Work, and who shall have full authority to represent and make decisions on behalf of COMPANY with respect to the Work, or otherwise to resolve the day-to-day issues which may arise related to the Work. Likewise, CONTRACTOR shall designate a representative with similar responsibilities and authority to liaise with COMPANY's representative.

6. CONTRACTOR'S EQUIPMENT. 6.1 Title to CONTRACTOR's equipment, including any lost, damaged, or confiscated equipment, shall remain in CONTRACTOR, and COMPANY shall have no right to assign, transfer, hypothecate, or remove such equipment from the place of its intended use without CONTRACTOR's prior written consent. **6.2** COMPANY shall be responsible for and agrees to compensate CONTRACTOR for all damages, losses, or any abnormal wear to CONTRACTOR GROUP's equipment: (i) while in COMPANY GROUP's care, custody or control, including while being transported by any member of COMPANY GROUP; (ii) as a result of operations conducted out of specifications at COMPANY GROUP's request, or in corrosive, abnormal temperatures or other

unusual conditions; (iii) due to fishing operations (if any); or (iv) if lost in the hole or damaged beyond repair while in the hole or used in the hole. COMPANY will replace such equipment or reimburse CONTRACTOR with the current replacement price of such equipment.

7. INDEMNITY.

7.1 Application of Indemnities. 7.1.1 In those matters in which a party is required by these T&Cs to RELEASE, DEFEND, PROTECT, INDEMNIFY, AND HOLD HARMLESS the other party and/or members of its respective Group, SUCH OBLIGATIONS SHALL, EXCEPT TO THE EXTENT EXPRESSLY PROVIDED OTHERWISE IN THESE T&CS, APPLY TO INDEMNITOR REGARDLESS OF THE CAUSE OR REASON, OR WHO MAY BE AT FAULT OR OTHERWISE RESPONSIBLE UNDER ANY CONTRACT, STATUTE, RULE, OR THEORY OF LAW, INCLUDING WITHOUT LIMITATION STRICT LIABILITY, TORT, BREACH OF DUTY (STATUTORY OR OTHERWISE), BREACH OF CONTRACT, BREACH OF REPRESENTATION OR WARRANTY, BREACH OF ANY SAFETY REQUIREMENT OR REGULATION, DUE TO ANY LATENT, PATENT, OR PRE-EXISTING DEFECTS OR CONDITIONS, IMPERFECTION OF MATERIAL, FAILURE OF EQUIPMENT, OR ANY LEGAL FAULT OR RESPONSIBILITY OF EITHER PARTY, INCLUDING THE SOLE, JOINT, AND/OR CONCURRENT NEGLIGENCE OR FAULT, WHETHER ACTIVE OR PASSIVE, OF THE INDEMNIFIED PARTY, OR OTHER PERSONS OR ENTITIES. **7.1.2** In the event these T&Cs are subject to the indemnity limitations in Chapter 127 of the Texas Civil Practice and Remedies Code (or any successor statute), and so long as such limitations are in force, each party covenants and agrees to support the mutual indemnity and release obligations contained herein by carrying insurance in an amount and of a type sufficient to cover their indemnity obligations**. 7.1.3** Notwithstanding any provisions in these T&Cs to the contrary, the following provision applies where Work is to be performed in New Mexico or Wyoming, as applicable: to the extent this Section 7 is governed by New Mexico or Wyoming law, then the provisions herein shall be read not to include indemnification for the indemnified party's own negligence. **7.1.4** If any defense, indemnity, or insurance provision contained in these T&Cs conflicts with, is prohibited by or violates public policy under any federal, state or other law determined to be applicable to a particular situation arising or involving these T&Cs, it is understood and agreed that the conflicting, prohibited or violating provision shall be deemed automatically amended in that situation to the extent—but only to the extent—necessary to conform with, not be prohibited by, and avoid violating public policy under such applicable law. The parties agree that the exculpatory, indemnification, and hold harmless provisions herein shall be modified or altered only insofar as required by a jurisdiction purporting to limit such provisions, it being the intention of both parties to enforce to the fullest extent, all terms and conditions herein agreed to.

7.2 CONTRACTOR's Indemnification. CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of CONTRACTOR GROUP, and any and all Claims for damage to or loss of any property of CONTRACTOR GROUP.

7.3 COMPANY's Indemnification. COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of COMPANY GROUP, and any and all Claims for damage to or loss of any property of COMPANY GROUP.

7.4 Pollution and Contamination; Catastrophic Damages or Losses. Notwithstanding each party's obligations pursuant to Sections 7.2 and 7.3 hereof, it is understood and agreed between the parties that the following additional terms shall apply: 7.4.1 (a) CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims arising from pollution or contamination, which originates above the surface of the land or water, and which shall directly result from or be caused by CONTRACTOR GROUP's equipment, vehicles, or other tools and instruments while in CONTRACTOR GROUP's sole care, custody or control, and shall assume all responsibility for control and removal of same; and (b) COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all pollution or contamination other than that described under Section 7.4.1 (a) above, and including but not limited to, that which may result from cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, and shall assume all responsibility for control and removal of same. 7.4.2 COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all catastrophic damages or losses, including but not limited to those on account of injury, destruction of, loss or impairment (i) of any formation, strata, or reservoir beneath the surface of the earth; (ii) of any property rights in or to oil, gas, or other mineral substance or water, or the quiet enjoyment thereof, including subsurface trespass; (iii) to the well or the hole, including its casing; (iv) from radioactive sources; and (v) from fire, explosion, blowout, or any other uncontrolled well conditions, and the cost of controlling or regaining control of a wild well or out of control well.

7.5 Incidental or Consequential Damages. Notwithstanding any provisions to the contrary in these T&Cs, neither party shall be liable to the other party for, and parties shall RELEASE, PROTECT, DEFEND, INDEMNIFY AND HOLD EACH OTHER HARMLESS from and against any special, punitive, indirect, incidental or consequential damages or losses suffered by the other party and its Group resulting from or arising, directly or indirectly, out of or in connection with the Work, including, without limitation, loss and/or deferral of production, loss of product, loss of use, loss of bargain, contract expectations, or opportunity to contract with others, loss of revenue, profit, or anticipated profit, loss of business, business interruption, or downtime, whether direct or indirect, and whether or not such loss was foreseeable at the time of placing of an Order.

8. INSURANCE. **8.1** CONTRACTOR and COMPANY agree, at their sole cost and expense, to procure and continuously maintain in full force and effect throughout the term of this Agreement the following insurance coverage which may be met by a combination of primary and excess/umbrella insurance: A. Statutory Workers' Compensation Insurance and Employer's Liability in the amount of $1,000,000 per occurrence and in the aggregate; B. Commercial General Liability insurance providing for third party property damage and personal injury, including broad form contractual liability for any agreement and broad form property damage in the amount of $1,000,000 per occurrence and $2,000,000 in the aggregate; C. Owned and Non-Owned Automobile Liability Insurance for bodily injury and property damage combined single limit in the amount of $1,000,000 per occurrence and in the aggregate; D. Excess/Umbrella Liability Insurance providing coverage in excess of the foregoing insurances in the amount of $5,000,000 per occurrence and in the aggregate, excluding statutory insurance coverage. **8.2** Each party agrees that, to the extent it assumes liability herein, it shall endorse the above coverages to name the indemnified parties as additional insureds (except for Workers' Compensation), shall waive its right of subrogation against the indemnified parties and their insurers, and agrees that its insurance shall be primary to that carried by the indemnified parties and non-contributory as per negligence for third party Claims, and shall not contribute in case of any Claim of exhaustion of horizontal limits. **8.3** Each party shall furnish an insurance certificate to the other to evidence the insurance required herein, and such certificates shall contain an endorsement stating that the insurer will endeavor to provide a thirty (30) days prior written notice of alteration or material change to such coverage. All deductible amounts, premiums, franchise amounts, or other charges due with respect to each party's required insurance should be the sole obligation of the insured party.

9. CONFIDENTIALITY. Each party contemplates that the other party may be provided and exposed to confidential and proprietary information ("Confidential Information"), which includes information relating to specifications of its tools, designs, inventions, component parts, parts list, software, firmware, hardware, processes, computer interfaces, operational parameters, and terms and pricing of Work. All Confidential Information shall remain the property of the party disclosing the same and no license is granted to the receiving party by virtue of the provision of such information. Confidential Information shall (i) be used by the recipient solely for the purpose of the provision of the Work and (ii) kept confidential and not disclosed to any person, except authorized representatives of the receiving Party, without written permission of the disclosing party. The receiving party shall take all reasonable steps to require its authorized representatives to keep such information confidential during and after the Work. Confidential Information shall not include information which: (i) at the time of placement of the Order is in the public domain or subsequently comes into the public domain through no fault of the receiving party and not in breach of these T&Cs; (ii) was already known to the receiving party on the date of disclosure, provided that such prior knowledge can be substantiated and proved by documentation; or (iii) properly and lawfully available to the receiving party from sources independent of the disclosing party.

10. INTELLECTUAL PROPERTY. While performing the Work, CONTRACTOR may utilize CONTRACTOR's intellectual property (including, without limitation, copyrights, registered marks, trademarks, service marks, patents, know-how, trade secrets, inventions, discoveries, techniques. technical information, technologies, designs, software, computer programs, formulae, calculations, computations, expertise, ideas, concepts, improvements, sketches, drawings, models, methods, practices, and/or processes, whether patentable or not) and/or develop, conceive, create, acquire, obtain, collect, generate, or make such additional intellectual property, which is and shall be CONTRACTOR's exclusive property. *Except if* expressly and specifically agreed in writing in a separate development agreement executed by the parties, and in exchange for appropriate payment, CONTRACTOR shall not develop any intellectual property for ownership by COMPANY in association with Work performed under a specific Order. Notwithstanding the foregoing, COMPANY or COMPANY GROUP shall own any intellectual property solely developed by COMPANY or COMPANY GROUP, respectively.

11. FORCE MAJEURE. 11.1 "Force Majeure" means (to the extent and only to the extent that any of the following are not reasonably within the control of the party claiming a Force Majeure and by the exercise of due diligence such party could not have mitigated, avoided, or overcome such condition) acts of God, fire, floods, lightning, blizzards, tornadoes, earthquakes, ice storms, named tropical storms and hurricanes, pandemics, terrorism, insurrection, revolution, war, strikes, lockouts, federal or state laws, rules and regulations of any governmental or public authorities having or asserting jurisdiction over the premises of either or both parties, inability to procure material due to industry wide shortages or soaring commodity costs, equipment, or necessary labor despite reasonable efforts, or similar causes. 11.2 If a party is rendered unable, wholly or in part, by a Force Majeure event to perform, that party will give written notice detailing such Force Majeure event to the other party as soon as reasonably possible. If a Force Majeure event continues without interruption for ten (10) days, either Party may cancel the applicable Order by giving prompt, written cancellation notice to the other party. Nothing in this Section 14.2 shall excuse COMPANY from its payment obligations of any invoices due and owing for Work performed under a specific Order.

12. LIMITATION OF LIABILITY. Notwithstanding anything to the contrary in these T&Cs, CONTRACTOR's liability arising from or in connection with its performance of the Work shall be limited to the value of the consideration paid to CONTRACTOR under the applicable Order.

13. GOVERNING LAW; VENUE. 13.1 For Work performed on a worksite within the **United States,** these T&Cs shall be exclusively governed by the laws of the **State of Texas**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction. Venue shall lie exclusively in the state or federal courts of Harris County, Texas, and the parties consent to personal

jurisdiction therein. **13.2** For Work performed on a worksite within **Canada,** these T&Cs shall be exclusively governed by the laws of **Province of Alberta**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction.

14. MISCELLANEOUS. 14.1 Notices. Notices shall be sent by registered post, or delivered in person, to the address for notices communicated by the other party. Said notices shall be deemed received (i) upon delivery if hand delivered, (ii) upon delivery if sent by registered post, and (iii) upon recipient's confirmation of receipt if faxed. **14.2 Waiver.** No benefit or right accruing to either party under these T&Cs shall be deemed to be waived unless the waiver is in writing, expressly refers to these T&Cs, and is signed by a duly authorized representative of both parties. A waiver in any one or more instances shall not constitute a continuing waiver, unless specifically so stated in the written waiver. **14.3 Severability.** In the event one or more of the provisions contained in these T&Cs shall be held, for any reason, to be invalid, void, illegal, contrary to law and/or unenforceable in any respect, these T&Cs shall be deemed to be amended to partially or completely modify such provision or portion thereof to the extent necessary to make it enforceable. If necessary, these T&Cs shall be deemed to be amended to delete the unenforceable provision or portion thereof, in which event such invalidity, illegality or unenforceability shall not affect the remaining provisions hereof, and these T&Cs shall remain unaffected and shall be construed as if such invalid, void, illegal or unenforceable provision never had been contained herein. **14.4 Independent Representation.** COMPANY AND CONTRACTOR ACKNOWLEDGE THAT THEY HAVE CONSULTED AN ATTORNEY CONCERNING THESE T&Cs OR HAVE ELECTED NOT TO DO SO, BUT REPRESENT THAT THEY FULLY UNDERSTAND THEIR RIGHTS AND OBLIGATIONS HEREUNDER

Company: _____

Signature: _____
Name: _____
Title:_____
Date: _____

Coterra Energy Inc.
CEMENT PROPOSAL #81471

Long String Proposal

Royal Oak 24 Fed Com #513H 30-025-54156
S:24 T:18S R:33E Lea NM

February 06, 2025

CEMENT PROPOSAL

Attention: Kyle Adamek | (660) 247-2024 | kyle@deepenergyllc.com
Coterra Energy Inc.
202 S. Cheyenne Ave Suite 1000 | Tulsa, OK 74103
February 06, 2025

Dear Kyle Adamek,

Thank you for the opportunity to submit pricing for cementing services on the attached wellbore. American Cementing's priority is to provide premium customer service while operating in a safe, efficient manner. If you have any questions regarding the proposal or services offered, please contact American Cementing at any time.

Sincerely,

Will Bautista
Sales | (432) 254-0261 | will.bautista@americancementing.com

Prepared By
Meseret Belayneh
Field Engineer III | (801) 513-8231 | meseret.belayneh@americancementing.com

Field Office 6165 W Murphy St, Odessa, TX 79763
Phone: (432) 208-6452

Disclaimer

1. Proposal is valid for 30 days
2. Proposal is for pricing purposes only; actual job procedure to be confirmed prior to job
3. American Cementing recommends proper hole conditioning prior to initiating cementing; please discuss procedures with your American Cementing representative
4. Applicable sales tax will be added to the final invoice
5. American Cementing's general terms and conditions are hereby incorporated into this Proposal

Well Information

Well Name: **Royal Oak 24 Fed Com #513H**
Well API: **30-025-54156**
Latitude: **32.728046**
Longitude: **-103.613684**
Section: **24**
Township: **18S**
Range: **33E**
County: **Lea, NM**

Job: Long String (Long String) - Well Information

Drilling Fluid Density: **9.20 lb/gal**
Drilling Fluid: **OBM**
Total Measured Depth: **19678 ft**
Total Vertical Depth: **9300 ft**
BHCT: **171 °F**
BHST: **171 °F**
Temperature Gradient: **0.98 °F/100ft**
Surface Temp: **80 °F**

Geometry

#	Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Grade	Thread	Top	Bottom	Excess (%)
1	Casing	Outer	9.625	8.835	40.00		n/a	0	5651	0.0
2	OpenHole	Outer		8.750			n/a	5651	8994	50.0
3	OpenHole	Outer		8.750			n/a	8994	19678	20.0
1	Casing	Inner	5.500	4.778	20.00		n/a	0	19678	0.0

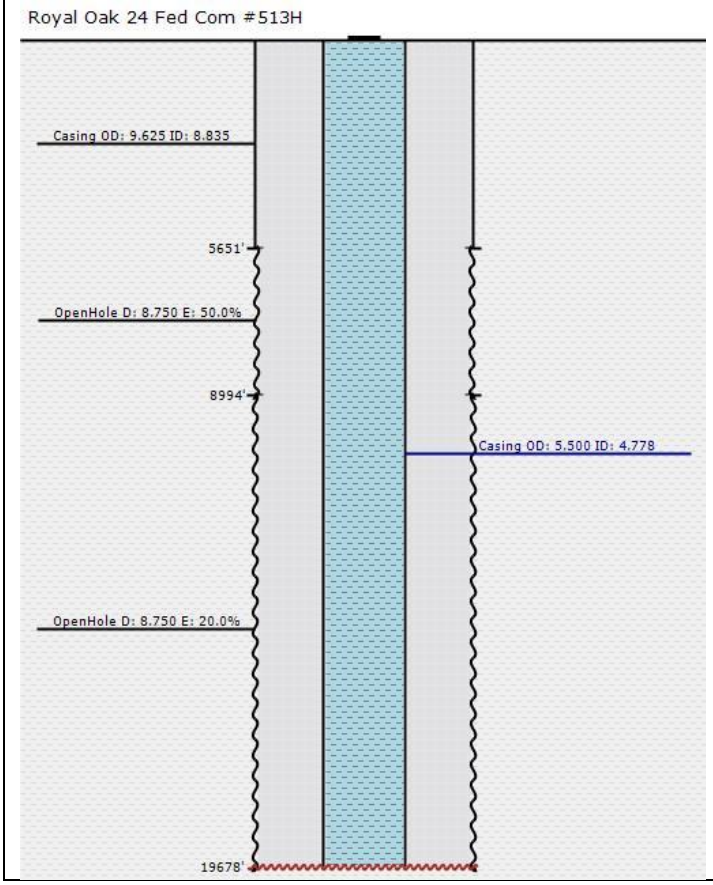
Capacities

Excess added to Capacity Factor

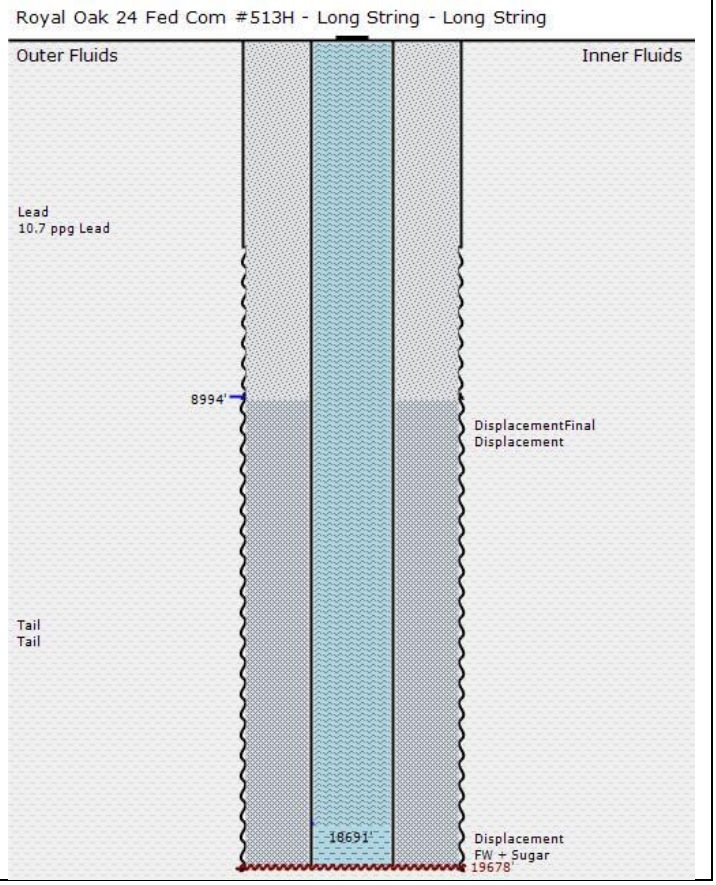
Type	TopDepth (ft)	Length (ft)	OD (in)	ID (in)	Capacity (bbl/ft)	Capacity ($ft^{3/ft}$)	Fill (ft/bbl)	Fill (ft/ft^{3})
DisplacementFinal	0	19593	4.778	0.000	0.0222	0.1245	45.09	8.03
ShoeJoint	19593	85	4.778	0.000	0.0222	0.1245	45.09	8.03
Casing to OpenHole	8994	10684	8.750	5.500	0.0540	0.3031	18.52	3.30
Casing to OpenHole	5651	3343	8.750	5.500	0.0675	0.3789	14.82	2.64
Casing to Casing	0	5651	8.835	5.500	0.0464	0.2607	21.53	3.84

Job: Long String (Long String) - Well & Fluid Diagrams

Well Diagram



Fluid Diagram



Job: Long String (Long String) - Material Information

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
1	Spacer	Spacer + LCM	0.00	9.70	38.5	n/a		40.00
WEIGHTING ADDITIVE, BARITE - Heavyweight - 65.072 lb/bbl								
IntegraSeal HOLD, ALOC-1212 - LostCirculation - 10.000 lb/bbl								
BIOSUITE GQ2510 - Biocide - 0.010 gal/bbl								
DYE, LIQUID, BLUE - Other - 0.050 gal/bbl								
CORROSION INHIBITORS, HS-2 - Other - 0.050 gal/bbl								
XCem-621 - Viscosifier - 10.000 lb/bbl								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
2	Lead	10.7 ppg Lead	0.00	10.70	24.5	3.92	700	488.55
CEMENT, CLASS C, HSR - Cement - 75.000 %								
CEMENT, FLY ASH (OTX1) - Extender - 25.000 %								
CEMENT EXTENDER, GYPSUM, A-10 - Accelerator - 5.000 %BWOB								
Cement Additive, Sodium Metasilicate A-2 - Accelerator - 2.000 %BWOB								
FLUID LOSS, AFL-533 - FluidLoss - 0.500 %BWOB								
Viscosifier, AVIS-617 - Viscosifier - 0.300 %BWOB								
BONDING AGENT, BA-95 - BondEnhancer - 15.000 lb/sk								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
RETARDER, R-21 - Retarder - 0.100 %BWOB								
RETARDER, R-7C - Retarder - 0.500 %BWOB								
DISPERSANT, XCem-403 - Dispersant - 0.100 %BWOB								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/sk)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
3	Tail	Tail	8994.00	14.80	4.9	1.16	2809	578.85
IntegraCem XTL, AEXT-1012 - Extender - 5.000 %								
CEMENT, CLASS H, HSR - Cement - 70.000 %								
CEMENT, FLY ASH (OTX1) - Extender - 25.000 %								
SALT,SODIUM CHLORIDE, A-5 - Accelerator - 3.000 %BWOW								
ANTI SETTLING, ASA-301 - Viscosifier - 0.150 %BWOB								
FLUID LOSS, FL-66 - FluidLoss - 0.700 %BWOB								
FOAM PREVENTER, FP-28L - Defoamer - 0.005 gal/sk								
RETARDER, R-3 - Retarder - 0.080 %BWOB								
DISPERSANT, XCem-403 - Dispersant - 0.700 %BWOB								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
4	Displacement	FW + Sugar	18691.00	8.36	41.8	n/a		20.00
RETARDER, SUGAR, GRANULAR - Retarder - 2.500 lb/bbl								

Pump Order	Type	Fluid	Fluid Top (ft)	Density (lb/gal)	Water Req. (gal/bbl)	Yield ($ft^{3/sk}$)	Proposed Volume (sks)	Proposed Volume (bbl)
5	DisplacementFinal	Displacement	0.00	8.34	41.9	n/a		415.00
BIOSUITE GQ2510 - Biocide - 0.010 gal/bbl								
CORROSION INHIBITORS, HS-2 - Other - 0.050 gal/bbl								

Job: Long String (Long String) - Pump Schedule

Sequence	Type	Fluid	Density (lb/gal)	Pump Rate (bpm)	Volume (bbls)	Volume (sks)	Cum. Vol. (bbls)	Stage Time (min)	Cum. Time (min)
1	Spacer	Spacer + LCM	9.70	5.00	40.00		40.00	8.00	8.00
2	Lead	10.7 ppg Lead	10.70	5.00	488.55	700	528.55	97.71	105.71
3	Tail	Tail	14.80	5.00	578.85	2809	1107.40	115.77	221.48
4	Displacement	FW + Sugar	8.36	5.00	20.00		1127.40	4.00	225.48
5	DisplacementFinal	Displacement	8.34	5.00	415.00		1542.40	83.00	308.48

General Terms and Conditions

AMERICAN CEMENTING, LLC TERMS AND CONDITIONS

These Terms and Conditions (these "T&Cs") contain INDEMNIFICATION, LIMITATION OF LIABILITY AND RISK SHIFTING PROVISIONS. The provision of Work by American Cementing, LLC or its affiliated companies ("Contractor" or "American") to any person or entity placing an Order for such Work ("Company" or "Customer") is subject to these T&Cs. By requesting the Work, Company voluntarily elects to enter into and be bound by these T&Cs, and any Order for Work shall constitute acceptance of these T&Cs, *unless* Contractor and Company have entered into a Master Service Agreement or other agreement expressly accepted in writing by Contractor's authorized representative, in which case the terms and conditions of such agreements shall govern the provision of the Work and completely supersede these T&Cs in all respects.

1. DEFINITIONS. "Claims" means all claims, lawsuits, demands, causes of action, liabilities, damages (including punitive damages), judgments, awards, fines, penalties, losses, costs, expenses (including, without limitation, reasonable attorneys' fees, expert fees, and costs of litigation) of any kind or character, without limit, which arise out of or are related to the Work. "COMPANY GROUP" means (i) COMPANY, and any of its parent, subsidiary and affiliated or related entities; (ii) the working interest owners, co-owners, co-lessees, co-lessors, partners and joint venturers of (i); (iii) any person or entity with an economic interest or property rights in the well, premises or the property in relation to or upon which Work is performed; and (iv) the officers, directors, employees, shareholders, agents, representatives, contractors (except CONTRACTOR), subcontractors, consultants, and invitees of (i), (ii) and (iii) above. "CONTRACTOR GROUP" means (i) CONTRACTOR and any of its subsidiary and affiliated or related entities; and (ii) the officers, directors, employees, shareholders, agents, representatives, contractors, subcontractors, consultants, and invitees of all of the foregoing. "Order" means a written or verbal request for specific Work, including by way of a purchase order, work order, service order, work authorization, or similar instrument issued by COMPANY to CONTRACTOR, and which shall incorporate the pricing proposal submitted by CONTRACTOR for such Work. A request will be considered written if exchanges, whether by correspondence, letter, fax, or email include all material terms and conditions and they have been accepted or ratified by both COMPANY and CONTRACTOR; *provided, however*, if verbal, such request shall be confirmed in writing as soon as practicable, and the terms of the written Order shall control. "Work" means any cementing services and other related services provided by CONTRACTOR, along with all related personnel, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items used in connection with such services.

2. INDEPENDENT CONTRACTOR. This Agreement does not create any agency, partnership, joint venture, or similar business relationship between parties. COMPANY will have the right generally to oversee and inspect the performance of the Work to ensure the reasonable satisfactory completion thereof; it being understood and agreed that CONTRACTOR shall have exclusive control over the operational details of the Work.

3. PRICING AND PAYMENT. 3.1 COMPANY will pay CONTRACTOR for the Work according to the prices and rates contained the applicable Order; *provided, however*, that if there are no such prices and rates, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for the Work shall apply. The pricing proposals submitted by CONTRACTOR are generally valid sixty (60) days from submission of such proposal, unless otherwise set forth in such pricing proposal. Notwithstanding the foregoing, before commencing the Work and until an agreement is reached between the parties regarding such prices and rates, CONTRACTOR has the right to revise and shall advise COMPANY of any changes in the pricing proposal, and COMPANY may either accept or reject such changes, and proceed with the Work or not. **3.2** COMPANY shall pay CONTRACTOR's invoices within thirty (30) days of receipt of invoice. In the event COMPANY disputes any amount, it shall do so in good faith and shall notify CONTRACTOR of such dispute within thirty (30) days of receipt of invoice; *provided, however*, that COMPANY shall pay any undisputed portion of the invoice within the time for payment noted above and shall endeavor to expeditiously resolve such disputes. Any undisputed invoices, remaining unpaid for sixty (60) days after receipt by COMPANY, shall accrue interest at the rate of 1.5% per month or the maximum interest rate allowed by applicable law, whichever is less, through the time of collection. **3.3** Prices quoted by CONTRACTOR do not include sales, VAT, use or similar taxes, and such taxes, where applicable, shall be added to the quoted prices and invoiced accordingly. Each party shall pay all taxes levied or assessed by any governmental authority in connection with or incident to its performance under an Order; *provided, however,* that CONTRACTOR shall pay any assessments or taxes upon wages of CONTRACTOR, social security, unemployment insurance, old age benefits, or any other employment taxes, contributions or withholdings.

4. ORDERS; STANDARD OF PERFORMANCE; WARRANTIES. 4.1 COMPANY may from time to time place an Order for Work, and CONTRACTOR may provide such Work to COMPANY, subject to these T&Cs. Orders shall become binding only after signed or acknowledged by an authorized representative of each party. **4.2** CONTRACTOR shall provide all labor, equipment, machinery, tools, supplies, materials, vehicles, facilities, consumables, goods, and any other items required for the execution and completion of the Work, as more fully described in the applicable Order. **4.3** CONTRACTOR shall perform the Work with due diligence and care, in a good and workmanlike manner, using skilled, competent, experienced, and, where applicable, licensed personnel in accordance with the specifications represented by CONTRACTOR and with generally accepted oilfield practices. **4.4** CONTRACTOR shall conduct its Work, in all material respects, in accordance with all applicable laws, rules, regulations, decrees, and/or official government orders of any governing body having jurisdiction over the Work. **4.5** CONTRACTOR's Work is designed to operate under conditions normally encountered in a wellbore. COMPANY shall notify CONTRACTOR in advance and make special arrangements for Work in which hazardous or unusual conditions exist. COMPANY has complete care, custody, and control of the well, the premises around the well, and the drilling and production equipment of the well (other than such equipment provided by CONTRACTOR hereunder), and Company shall furnish directions and requirements for Work performed hereunder. CONTRACTOR is relying on COMPANY to provide such directions and requirements without further investigation by CONTRACTOR. CONTRACTOR agrees to observe and abide by COMPANY's safety policies and procedures communicated to and acknowledged by CONTRACTOR. CONTRACTOR shall as promptly as possible under the circumstances report to COMPANY's representative all accidents or occurrences resulting in injuries, illness or death to person(s) or damage to property, arising out of or occurring during the Work. **4.6** CONTRACTOR's sole liability, and COMPANY's exclusive remedy, for any Claims for breach of warranty under this Section 4 are limited to, at CONTRACTOR's sole option, (i) if practical, the re-performance of the defective Work or portion thereof, at no additional cost to COMPANY; or (ii) a refund or credit to COMPANY of any amount paid to CONTRACTOR for such defective Work or portion thereof. In the event that CONTRACTOR materially fails to perform the Work or if CONTRACTOR provides defective Work for reasons solely within CONTRACTOR's control, COMPANY shall give notice to CONTRACTOR of such non-performance or defective performance immediately upon discovery and prior to CONTRACTOR's departure from the worksite, otherwise such warranty Claim is waived. **4.7** Due to the nature of the Work to be performed in unpredictable wellbore conditions, CONTRACTOR does not warrant the accuracy, correctness, or completeness of any interpretations, analysis, recommendations, or advice, nor that COMPANY's or any third party's reliance on such interpretations, analysis, recommendations, or advice will accomplish any particular results, and which in any event are opinions only. Accordingly, it is COMPANY's responsibility, and sole risk, to determine the completion, well treatment, production, or financial decision involving any risk. Any outcomes that are less than expected will not relieve COMPANY of its responsibility to pay for the Work in accordance with these T&Cs. **4.8** THE WARRANTIES PROVIDED IN THIS SECTION 4 ARE THE SOLE AND EXCLUSIVE WARRANTIES RELATING TO THE WORK AND ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

5. ORDER CHANGES; PROJECT ADMINISTRATION. 5.1 COMPANY may ask for and CONTRACTOR may agree to variations in the Work, whether by way of addition, modification or omission, which variations shall be in writing and signed by authorized representatives of both parties. The value of any such variations shall be ascertained by reference to the prices and rates specified in the applicable Order for like or analogous Work; *provided, however,* that if there are no such prices and rates or if they are otherwise inapplicable, then the prices and rates set forth in the pricing proposal submitted by CONTRACTOR for such additional Work shall apply. **5.2** To acknowledge or document various events during the provision of the Work, a party may from time to time sign the other party's forms, such as Orders, delivery tickets, job tickets, invoices, or similar instruments used by the parties in the normal course of business. In the event of a conflict between these T&Cs and any such documents, these T&Cs shall control, *unless* specific reference is made that these T&Cs are modified and the intention to modify is explicitly stated in such documents. **5.3** It is understood and agreed between the parties that COMPANY's representative (appointed in accordance with Section 5.4 below) shall have the authority to approve any job tickets, delivery tickets, or similar forms attesting to the completion of the Work by CONTRACTOR ("Job Tickets"). A COMPANY representative's signature on such Tickets shall indicate acceptance of the Work. If the Job Tickets are not acknowledged within forty-eight (48) hours of receipt through no fault of CONTRACTOR, CONTRACTOR may submit invoices for payment as if such Tickets had been acknowledged. **5.4** COMPANY will appoint a representative who will be responsible for the supervision of the Work, and who shall have full authority to represent and make decisions on behalf of COMPANY with respect to the Work, or otherwise to resolve the day-to-day issues which may arise related to the Work. Likewise, CONTRACTOR shall designate a representative with similar responsibilities and authority to liaise with COMPANY's representative.

6. CONTRACTOR'S EQUIPMENT. 6.1 Title to CONTRACTOR's equipment, including any lost, damaged, or confiscated equipment, shall remain in CONTRACTOR, and COMPANY shall have no right to assign, transfer, hypothecate, or remove such equipment from the place of its intended use without CONTRACTOR's prior written consent. **6.2** COMPANY shall be responsible for and agrees to compensate CONTRACTOR for all damages, losses, or any abnormal wear to CONTRACTOR GROUP's equipment: (i) while in COMPANY GROUP's care, custody or control, including while being transported by any member of COMPANY GROUP; (ii) as a result of operations conducted out of specifications at COMPANY GROUP's request, or in corrosive, abnormal temperatures or other

unusual conditions; (iii) due to fishing operations (if any); or (iv) if lost in the hole or damaged beyond repair while in the hole or used in the hole. COMPANY will replace such equipment or reimburse CONTRACTOR with the current replacement price of such equipment.

7. INDEMNITY.

7.1 Application of Indemnities. 7.1.1 In those matters in which a party is required by these T&Cs to RELEASE, DEFEND, PROTECT, INDEMNIFY, AND HOLD HARMLESS the other party and/or members of its respective Group, SUCH OBLIGATIONS SHALL, EXCEPT TO THE EXTENT EXPRESSLY PROVIDED OTHERWISE IN THESE T&CS, APPLY TO INDEMNITOR REGARDLESS OF THE CAUSE OR REASON, OR WHO MAY BE AT FAULT OR OTHERWISE RESPONSIBLE UNDER ANY CONTRACT, STATUTE, RULE, OR THEORY OF LAW, INCLUDING WITHOUT LIMITATION STRICT LIABILITY, TORT, BREACH OF DUTY (STATUTORY OR OTHERWISE), BREACH OF CONTRACT, BREACH OF REPRESENTATION OR WARRANTY, BREACH OF ANY SAFETY REQUIREMENT OR REGULATION, DUE TO ANY LATENT, PATENT, OR PRE-EXISTING DEFECTS OR CONDITIONS, IMPERFECTION OF MATERIAL, FAILURE OF EQUIPMENT, OR ANY LEGAL FAULT OR RESPONSIBILITY OF EITHER PARTY, INCLUDING THE SOLE, JOINT, AND/OR CONCURRENT NEGLIGENCE OR FAULT, WHETHER ACTIVE OR PASSIVE, OF THE INDEMNIFIED PARTY, OR OTHER PERSONS OR ENTITIES. **7.1.2** In the event these T&Cs are subject to the indemnity limitations in Chapter 127 of the Texas Civil Practice and Remedies Code (or any successor statute), and so long as such limitations are in force, each party covenants and agrees to support the mutual indemnity and release obligations contained herein by carrying insurance in an amount and of a type sufficient to cover their indemnity obligations**.** **7.1.3** Notwithstanding any provisions in these T&Cs to the contrary, the following provision applies where Work is to be performed in New Mexico or Wyoming, as applicable: to the extent this Section 7 is governed by New Mexico or Wyoming law, then the provisions herein shall be read not to include indemnification for the indemnified party's own negligence. **7.1.4** If any defense, indemnity, or insurance provision contained in these T&Cs conflicts with, is prohibited by or violates public policy under any federal, state or other law determined to be applicable to a particular situation arising or involving these T&Cs, it is understood and agreed that the conflicting, prohibited or violating provision shall be deemed automatically amended in that situation to the extent—but only to the extent—necessary to conform with, not be prohibited by, and avoid violating public policy under such applicable law. The parties agree that the exculpatory, indemnification, and hold harmless provisions herein shall be modified or altered only insofar as required by a jurisdiction purporting to limit such provisions, it being the intention of both parties to enforce to the fullest extent, all terms and conditions herein agreed to.

7.2 CONTRACTOR's Indemnification. CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of CONTRACTOR GROUP, and any and all Claims for damage to or loss of any property of CONTRACTOR GROUP.

7.3 COMPANY's Indemnification. COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims for personal or bodily injury to, sickness, disease or death of any member of COMPANY GROUP, and any and all Claims for damage to or loss of any property of COMPANY GROUP.

7.4 Pollution and Contamination; Catastrophic Damages or Losses. Notwithstanding each party's obligations pursuant to Sections 7.2 and 7.3 hereof, it is understood and agreed between the parties that the following additional terms shall apply: 7.4.1 (a) CONTRACTOR shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD COMPANY GROUP HARMLESS from and against any and all Claims arising from pollution or contamination, which originates above the surface of the land or water, and which shall directly result from or be caused by CONTRACTOR GROUP's equipment, vehicles, or other tools and instruments while in CONTRACTOR GROUP's sole care, custody or control, and shall assume all responsibility for control and removal of same; and (b) COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all pollution or contamination other than that described under Section 7.4.1 (a) above, and including but not limited to, that which may result from cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, and shall assume all responsibility for control and removal of same. 7.4.2 COMPANY shall be liable for, and hereby agrees to RELEASE, DEFEND, PROTECT, INDEMNIFY AND HOLD CONTRACTOR GROUP HARMLESS from and against any and all Claims arising from any and all catastrophic damages or losses, including but not limited to those on account of injury, destruction of, loss or impairment (i) of any formation, strata, or reservoir beneath the surface of the earth; (ii) of any property rights in or to oil, gas, or other mineral substance or water, or the quiet enjoyment thereof, including subsurface trespass; (iii) to the well or the hole, including its casing; (iv) from radioactive sources; and (v) from fire, explosion, blowout, or any other uncontrolled well conditions, and the cost of controlling or regaining control of a wild well or out of control well.

7.5 Incidental or Consequential Damages. Notwithstanding any provisions to the contrary in these T&Cs, neither party shall be liable to the other party for, and parties shall RELEASE, PROTECT, DEFEND, INDEMNIFY AND HOLD EACH OTHER HARMLESS from and against any special, punitive, indirect, incidental or consequential damages or losses suffered by the other party and its Group resulting from or arising, directly or indirectly, out of or in connection with the Work, including, without limitation, loss and/or deferral of production, loss of product, loss of use, loss of bargain, contract expectations, or opportunity to contract with others, loss of revenue, profit, or anticipated profit, loss of business, business interruption, or downtime, whether direct or indirect, and whether or not such loss was foreseeable at the time of placing of an Order.

8. INSURANCE. **8.1** CONTRACTOR and COMPANY agree, at their sole cost and expense, to procure and continuously maintain in full force and effect throughout the term of this Agreement the following insurance coverage which may be met by a combination of primary and excess/umbrella insurance: A. Statutory Workers' Compensation Insurance and Employer's Liability in the amount of $1,000,000 per occurrence and in the aggregate; B. Commercial General Liability insurance providing for third party property damage and personal injury, including broad form contractual liability for any agreement and broad form property damage in the amount of $1,000,000 per occurrence and $2,000,000 in the aggregate; C. Owned and Non-Owned Automobile Liability Insurance for bodily injury and property damage combined single limit in the amount of $1,000,000 per occurrence and in the aggregate; D. Excess/Umbrella Liability Insurance providing coverage in excess of the foregoing insurances in the amount of $5,000,000 per occurrence and in the aggregate, excluding statutory insurance coverage. **8.2** Each party agrees that, to the extent it assumes liability herein, it shall endorse the above coverages to name the indemnified parties as additional insureds (except for Workers' Compensation), shall waive its right of subrogation against the indemnified parties and their insurers, and agrees that its insurance shall be primary to that carried by the indemnified parties and non-contributory as per negligence for third party Claims, and shall not contribute in case of any Claim of exhaustion of horizontal limits. **8.3** Each party shall furnish an insurance certificate to the other to evidence the insurance required herein, and such certificates shall contain an endorsement stating that the insurer will endeavor to provide a thirty (30) days prior written notice of alteration or material change to such coverage. All deductible amounts, premiums, franchise amounts, or other charges due with respect to each party's required insurance should be the sole obligation of the insured party.

9. CONFIDENTIALITY. Each party contemplates that the other party may be provided and exposed to confidential and proprietary information ("Confidential Information"), which includes information relating to specifications of its tools, designs, inventions, component parts, parts list, software, firmware, hardware, processes, computer interfaces, operational parameters, and terms and pricing of Work. All Confidential Information shall remain the property of the party disclosing the same and no license is granted to the receiving party by virtue of the provision of such information. Confidential Information shall (i) be used by the recipient solely for the purpose of the provision of the Work and (ii) kept confidential and not disclosed to any person, except authorized representatives of the receiving Party, without written permission of the disclosing party. The receiving party shall take all reasonable steps to require its authorized representatives to keep such information confidential during and after the Work. Confidential Information shall not include information which: (i) at the time of placement of the Order is in the public domain or subsequently comes into the public domain through no fault of the receiving party and not in breach of these T&Cs; (ii) was already known to the receiving party on the date of disclosure, provided that such prior knowledge can be substantiated and proved by documentation; or (iii) properly and lawfully available to the receiving party from sources independent of the disclosing party.

10. INTELLECTUAL PROPERTY. While performing the Work, CONTRACTOR may utilize CONTRACTOR's intellectual property (including, without limitation, copyrights, registered marks, trademarks, service marks, patents, know-how, trade secrets, inventions, discoveries, techniques. technical information, technologies, designs, software, computer programs, formulae, calculations, computations, expertise, ideas, concepts, improvements, sketches, drawings, models, methods, practices, and/or processes, whether patentable or not) and/or develop, conceive, create, acquire, obtain, collect, generate, or make such additional intellectual property, which is and shall be CONTRACTOR's exclusive property. *Except if* expressly and specifically agreed in writing in a separate development agreement executed by the parties, and in exchange for appropriate payment, CONTRACTOR shall not develop any intellectual property for ownership by COMPANY in association with Work performed under a specific Order. Notwithstanding the foregoing, COMPANY or COMPANY GROUP shall own any intellectual property solely developed by COMPANY or COMPANY GROUP, respectively.

11. FORCE MAJEURE. 11.1 "Force Majeure" means (to the extent and only to the extent that any of the following are not reasonably within the control of the party claiming a Force Majeure and by the exercise of due diligence such party could not have mitigated, avoided, or overcome such condition) acts of God, fire, floods, lightning, blizzards, tornadoes, earthquakes, ice storms, named tropical storms and hurricanes, pandemics, terrorism, insurrection, revolution, war, strikes, lockouts, federal or state laws, rules and regulations of any governmental or public authorities having or asserting jurisdiction over the premises of either or both parties, inability to procure material due to industry wide shortages or soaring commodity costs, equipment, or necessary labor despite reasonable efforts, or similar causes. 11.2 If a party is rendered unable, wholly or in part, by a Force Majeure event to perform, that party will give written notice detailing such Force Majeure event to the other party as soon as reasonably possible. If a Force Majeure event continues without interruption for ten (10) days, either Party may cancel the applicable Order by giving prompt, written cancellation notice to the other party. Nothing in this Section 14.2 shall excuse COMPANY from its payment obligations of any invoices due and owing for Work performed under a specific Order.

12. LIMITATION OF LIABILITY. Notwithstanding anything to the contrary in these T&Cs, CONTRACTOR's liability arising from or in connection with its performance of the Work shall be limited to the value of the consideration paid to CONTRACTOR under the applicable Order.

13. GOVERNING LAW; VENUE. 13.1 For Work performed on a worksite within the **United States,** these T&Cs shall be exclusively governed by the laws of the **State of Texas**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction. Venue shall lie exclusively in the state or federal courts of Harris County, Texas, and the parties consent to personal

jurisdiction therein. **13.2** For Work performed on a worksite within **Canada,** these T&Cs shall be exclusively governed by the laws of **Province of Alberta**, excluding any conflict of laws principle that would refer to the laws of another jurisdiction.

14. MISCELLANEOUS. 14.1 Notices. Notices shall be sent by registered post, or delivered in person, to the address for notices communicated by the other party. Said notices shall be deemed received (i) upon delivery if hand delivered, (ii) upon delivery if sent by registered post, and (iii) upon recipient's confirmation of receipt if faxed. **14.2 Waiver.** No benefit or right accruing to either party under these T&Cs shall be deemed to be waived unless the waiver is in writing, expressly refers to these T&Cs, and is signed by a duly authorized representative of both parties. A waiver in any one or more instances shall not constitute a continuing waiver, unless specifically so stated in the written waiver. **14.3 Severability.** In the event one or more of the provisions contained in these T&Cs shall be held, for any reason, to be invalid, void, illegal, contrary to law and/or unenforceable in any respect, these T&Cs shall be deemed to be amended to partially or completely modify such provision or portion thereof to the extent necessary to make it enforceable. If necessary, these T&Cs shall be deemed to be amended to delete the unenforceable provision or portion thereof, in which event such invalidity, illegality or unenforceability shall not affect the remaining provisions hereof, and these T&Cs shall remain unaffected and shall be construed as if such invalid, void, illegal or unenforceable provision never had been contained herein. **14.4 Independent Representation.** COMPANY AND CONTRACTOR ACKNOWLEDGE THAT THEY HAVE CONSULTED AN ATTORNEY CONCERNING THESE T&Cs OR HAVE ELECTED NOT TO DO SO, BUT REPRESENT THAT THEY FULLY UNDERSTAND THEIR RIGHTS AND OBLIGATIONS HEREUNDER

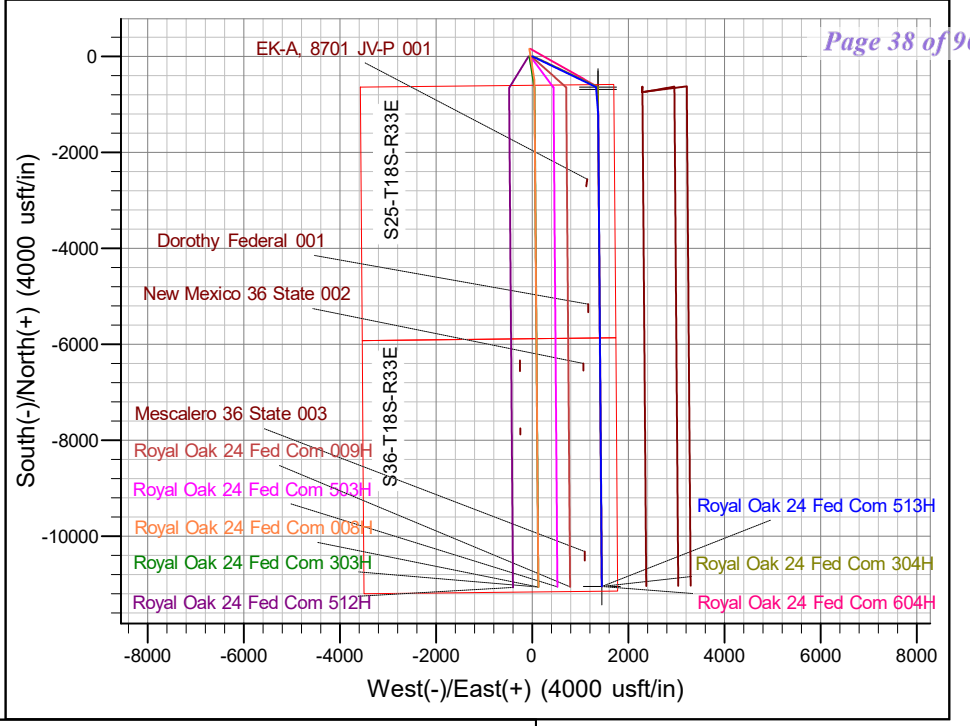
Company: _____

Signature: _____
Name: _____
Title:_____
Date: _____

AVANT NATURAL RESOURCES

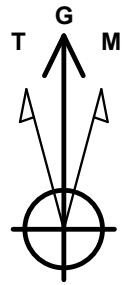
WELL DETAILS: Royal Oak 24 Fed Com 513H					
Ground Elev: 3910.5		KB: 3937			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	629187.27	762704.25	32.727608	-103.613485

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



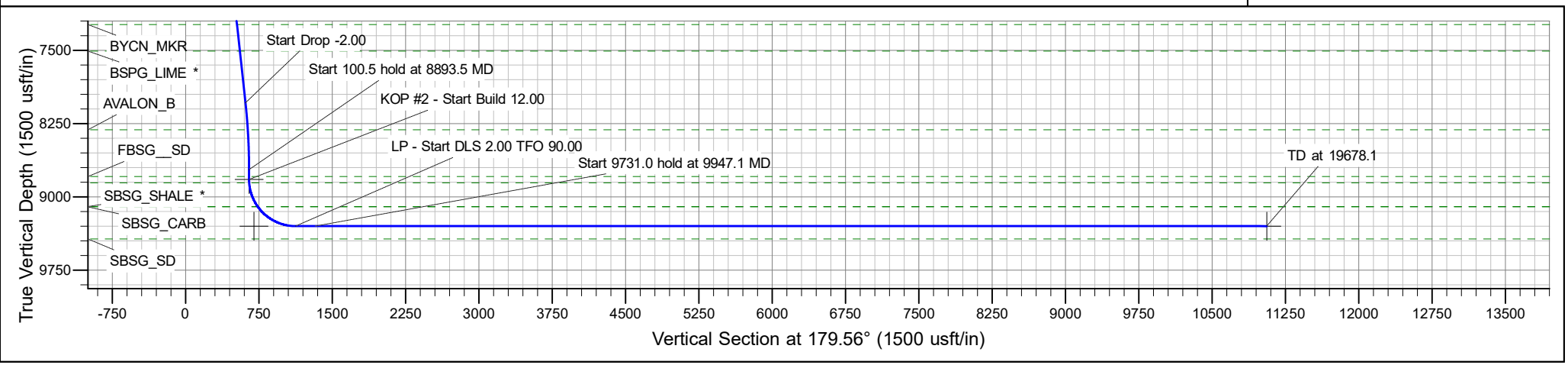
SECTION DETAILS

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	2050.0	0.00	0.00	2050.0	0.0	0.0	0.00	0.00	0.0	KOP - Start Build 2.00
3	2741.1	13.82	115.72	2734.4	-36.0	74.7	2.00	115.72	36.6	Start 5461.3 hold at 2741.1 MD
4	8202.4	13.82	115.72	8037.6	-602.2	1250.3	0.00	0.00	611.8	Start Drop -2.00
5	8893.5	0.00	0.00	8722.0	-638.2	1325.0	2.00	180.00	648.4	Start 100.5 hold at 8893.5 MD
6	8994.0	0.00	0.00	8822.5	-638.2	1325.0	0.00	0.00	648.4	KOP #2 - Start Build 12.00
7	9744.0	90.00	175.50	9300.0	-1114.2	1362.5	12.00	175.50	1124.7	LP - Start DLS 2.00 TFO 90.00
8	9947.1	90.00	179.56	9300.0	-1317.0	1371.2	2.00	90.00	1327.5	Start 9731.0 hold at 9947.1 MD
9	19678.1	90.00	179.56	9300.0	-11047.8	1445.7	0.00	0.00	11058.6	



Azimuths to Grid North
True North: -0.39°
Magnetic North: 8.23°

Magnetic Field
Strength: 49721.3nT
Dip Angle: 60.90°
Date: 12/31/2004
Model: IGRF2000



Avant Operating, LLC

Lea Co., NM (NAD 83)
Royal Oak 24 Fed Com Pad 1
Royal Oak 24 Fed Com 513H

OH

Plan: Plan 0.1

Standard Planning Report

05 February, 2025

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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 24 Fed Com Pad 1

Site Position:		**Northing:**	629,247.19 usft	**Latitude:**	32.727773
From:	Lat/Long	**Easting:**	762,688.50 usft	**Longitude:**	-103.613535
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "		

Well Royal Oak 24 Fed Com 513H

Well Position	**+N/-S**	0.0 usft	**Northing:**	629,187.27 usft	**Latitude:**	32.727608
	+E/-W	0.0 usft	**Easting:**	762,704.25 usft	**Longitude:**	-103.613485
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,910.5 usft
Grid Convergence:		0.39 °				

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	8.62	60.90	49,721.28478495

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	179.56

Plan Survey Tool Program **Date** 2/5/2025

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	19,677.8	Plan 0.1 (OH)	B001Mb_MWD+HRGM OWSG MWD + HRGM	

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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	
2,050.0	0.00	0.00	2,050.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,741.1	13.82	115.72	2,734.4	-36.0	74.7	2.00	2.00	0.00	115.72	
8,202.4	13.82	115.72	8,037.6	-602.2	1,250.3	0.00	0.00	0.00	0.00	
8,893.5	0.00	0.00	8,722.0	-638.2	1,325.0	2.00	-2.00	0.00	180.00	
8,994.0	0.00	0.00	8,822.5	-638.2	1,325.0	0.00	0.00	0.00	0.00	
9,744.0	90.00	175.50	9,300.0	-1,114.2	1,362.5	12.00	12.00	0.00	175.50	
9,947.1	90.00	179.56	9,300.0	-1,317.0	1,371.2	2.00	0.00	2.00	90.00	
19,678.1	90.00	179.56	9,300.0	-11,047.8	1,445.7	0.00	0.00	0.00	0.00	LTP/BHL - Royal Oak

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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
1,628.0	0.00	0.00	1,628.0	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
1,951.0	0.00	0.00	1,951.0	0.0	0.0	0.0	0.00	0.00	0.00
SOLADO									
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,050.0	0.00	0.00	2,050.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
2,100.0	1.00	115.72	2,100.0	-0.2	0.4	0.2	2.00	2.00	0.00
2,200.0	3.00	115.72	2,199.9	-1.7	3.5	1.7	2.00	2.00	0.00
2,300.0	5.00	115.72	2,299.7	-4.7	9.8	4.8	2.00	2.00	0.00
2,400.0	7.00	115.72	2,399.1	-9.3	19.2	9.4	2.00	2.00	0.00
2,500.0	9.00	115.72	2,498.2	-15.3	31.8	15.5	2.00	2.00	0.00
2,600.0	11.00	115.72	2,596.6	-22.8	47.4	23.2	2.00	2.00	0.00
2,700.0	13.00	115.72	2,694.4	-31.9	66.2	32.4	2.00	2.00	0.00
2,741.1	13.82	115.72	2,734.4	-36.0	74.7	36.6	2.00	2.00	0.00
Start 5461.3 hold at 2741.1 MD									
2,800.0	13.82	115.72	2,791.6	-42.1	87.4	42.8	0.00	0.00	0.00
2,900.0	13.82	115.72	2,888.7	-52.5	108.9	53.3	0.00	0.00	0.00
3,000.0	13.82	115.72	2,985.8	-62.8	130.5	63.8	0.00	0.00	0.00
3,100.0	13.82	115.72	3,082.9	-73.2	152.0	74.4	0.00	0.00	0.00
3,200.0	13.82	115.72	3,180.0	-83.6	173.5	84.9	0.00	0.00	0.00
3,300.0	13.82	115.72	3,277.1	-93.9	195.0	95.4	0.00	0.00	0.00
3,400.0	13.82	115.72	3,374.2	-104.3	216.6	106.0	0.00	0.00	0.00
3,500.0	13.82	115.72	3,471.3	-114.7	238.1	116.5	0.00	0.00	0.00
3,600.0	13.82	115.72	3,568.4	-125.1	259.6	127.0	0.00	0.00	0.00
3,674.7	13.82	115.72	3,641.0	-132.8	275.7	134.9	0.00	0.00	0.00
YATES									
3,700.0	13.82	115.72	3,665.5	-135.4	281.1	137.6	0.00	0.00	0.00
3,800.0	13.82	115.72	3,762.7	-145.8	302.7	148.1	0.00	0.00	0.00
3,900.0	13.82	115.72	3,859.8	-156.2	324.2	158.6	0.00	0.00	0.00
4,000.0	13.82	115.72	3,956.9	-166.5	345.7	169.2	0.00	0.00	0.00
4,100.0	13.82	115.72	4,054.0	-176.9	367.2	179.7	0.00	0.00	0.00
4,200.0	13.82	115.72	4,151.1	-187.3	388.8	190.2	0.00	0.00	0.00
4,300.0	13.82	115.72	4,248.2	-197.6	410.3	200.8	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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)
4,400.0	13.82	115.72	4,345.3	-208.0	431.8	211.3	0.00	0.00	0.00
4,500.0	13.82	115.72	4,442.4	-218.4	453.3	221.8	0.00	0.00	0.00
4,600.0	13.82	115.72	4,539.5	-228.7	474.9	232.4	0.00	0.00	0.00
4,700.0	13.82	115.72	4,636.6	-239.1	496.4	242.9	0.00	0.00	0.00
4,800.0	13.82	115.72	4,733.7	-249.5	517.9	253.4	0.00	0.00	0.00
4,900.0	13.82	115.72	4,830.8	-259.8	539.4	264.0	0.00	0.00	0.00
5,000.0	13.82	115.72	4,927.9	-270.2	561.0	274.5	0.00	0.00	0.00
5,100.0	13.82	115.72	5,025.0	-280.6	582.5	285.0	0.00	0.00	0.00
5,200.0	13.82	115.72	5,122.1	-290.9	604.0	295.6	0.00	0.00	0.00
5,300.0	13.82	115.72	5,219.2	-301.3	625.5	306.1	0.00	0.00	0.00
5,400.0	13.82	115.72	5,316.3	-311.7	647.1	316.6	0.00	0.00	0.00
5,500.0	13.82	115.72	5,413.4	-322.0	668.6	327.2	0.00	0.00	0.00
5,600.0	13.82	115.72	5,510.5	-332.4	690.1	337.7	0.00	0.00	0.00
5,700.0	13.82	115.72	5,607.6	-342.8	711.6	348.2	0.00	0.00	0.00
5,747.8	13.82	115.72	5,654.0	-347.7	721.9	353.3	0.00	0.00	0.00
CHERRY_CNYN									
5,800.0	13.82	115.72	5,704.7	-353.1	733.2	358.8	0.00	0.00	0.00
5,900.0	13.82	115.72	5,801.8	-363.5	754.7	369.3	0.00	0.00	0.00
6,000.0	13.82	115.72	5,898.9	-373.9	776.2	379.8	0.00	0.00	0.00
6,100.0	13.82	115.72	5,996.0	-384.3	797.7	390.4	0.00	0.00	0.00
6,200.0	13.82	115.72	6,093.1	-394.6	819.2	400.9	0.00	0.00	0.00
6,300.0	13.82	115.72	6,190.3	-405.0	840.8	411.4	0.00	0.00	0.00
6,400.0	13.82	115.72	6,287.4	-415.4	862.3	422.0	0.00	0.00	0.00
6,500.0	13.82	115.72	6,384.5	-425.7	883.8	432.5	0.00	0.00	0.00
6,600.0	13.82	115.72	6,481.6	-436.1	905.3	443.0	0.00	0.00	0.00
6,700.0	13.82	115.72	6,578.7	-446.5	926.9	453.6	0.00	0.00	0.00
6,800.0	13.82	115.72	6,675.8	-456.8	948.4	464.1	0.00	0.00	0.00
6,900.0	13.82	115.72	6,772.9	-467.2	969.9	474.6	0.00	0.00	0.00
7,000.0	13.82	115.72	6,870.0	-477.6	991.4	485.2	0.00	0.00	0.00
7,100.0	13.82	115.72	6,967.1	-487.9	1,013.0	495.7	0.00	0.00	0.00
7,200.0	13.82	115.72	7,064.2	-498.3	1,034.5	506.2	0.00	0.00	0.00
7,300.0	13.82	115.72	7,161.3	-508.7	1,056.0	516.8	0.00	0.00	0.00
7,376.9	13.82	115.72	7,236.0	-516.6	1,072.6	524.9	0.00	0.00	0.00
BYCN_MKR									
7,400.0	13.82	115.72	7,258.4	-519.0	1,077.5	527.3	0.00	0.00	0.00
7,500.0	13.82	115.72	7,355.5	-529.4	1,099.1	537.8	0.00	0.00	0.00
7,600.0	13.82	115.72	7,452.6	-539.8	1,120.6	548.4	0.00	0.00	0.00
7,657.0	13.82	115.72	7,508.0	-545.7	1,132.9	554.4	0.00	0.00	0.00
BSPG_LIME *									
7,700.0	13.82	115.72	7,549.7	-550.1	1,142.1	558.9	0.00	0.00	0.00
7,800.0	13.82	115.72	7,646.8	-560.5	1,163.6	569.4	0.00	0.00	0.00
7,900.0	13.82	115.72	7,743.9	-570.9	1,185.2	580.0	0.00	0.00	0.00
8,000.0	13.82	115.72	7,841.0	-581.2	1,206.7	590.5	0.00	0.00	0.00
8,100.0	13.82	115.72	7,938.1	-591.6	1,228.2	601.0	0.00	0.00	0.00
8,202.4	13.82	115.72	8,037.6	-602.2	1,250.3	611.8	0.00	0.00	0.00
Start Drop -2.00									
8,300.0	11.87	115.72	8,132.7	-611.6	1,269.8	621.4	2.00	-2.00	0.00
8,400.0	9.87	115.72	8,230.9	-619.8	1,286.8	629.7	2.00	-2.00	0.00
8,483.1	8.21	115.72	8,313.0	-625.5	1,298.6	635.4	2.00	-2.00	0.00
AVALON_B									
8,500.0	7.87	115.72	8,329.7	-626.5	1,300.7	636.5	2.00	-2.00	0.00
8,600.0	5.87	115.72	8,429.0	-631.7	1,311.5	641.8	2.00	-2.00	0.00
8,700.0	3.87	115.72	8,528.6	-635.4	1,319.1	645.5	2.00	-2.00	0.00

Planning Report

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Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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)
8,800.0	1.87	115.72	8,628.5	-637.6	1,323.6	647.7	2.00	-2.00	0.00
8,893.5	0.00	0.00	8,722.0	-638.2	1,325.0	648.4	2.00	-2.00	0.00
Start 100.5 hold at 8893.5 MD									
8,900.0	0.00	0.00	8,728.5	-638.2	1,325.0	648.4	0.00	0.00	0.00
8,963.5	0.00	0.00	8,792.0	-638.2	1,325.0	648.4	0.00	0.00	0.00
FBSG__SD									
8,994.0	0.00	0.00	8,822.5	-638.2	1,325.0	648.4	0.00	0.00	0.00
KOP #2 - Start Build 12.00 - KOP - Royal Oak 24 Fed Com 513H									
9,000.0	0.72	175.50	8,828.5	-638.3	1,325.0	648.4	12.04	12.04	0.00
9,025.0	3.72	175.50	8,853.5	-639.2	1,325.1	649.4	12.00	12.00	0.00
9,028.6	4.14	175.50	8,857.0	-639.5	1,325.1	649.6	12.00	12.00	0.00
300'S									
9,050.0	6.72	175.50	8,878.3	-641.5	1,325.3	651.7	12.00	12.00	0.00
9,075.0	9.72	175.50	8,903.1	-645.1	1,325.5	655.2	12.00	12.00	0.00
9,100.0	12.72	175.50	8,927.6	-649.9	1,325.9	660.1	12.00	12.00	0.00
9,125.0	15.72	175.50	8,951.8	-656.0	1,326.4	666.2	12.00	12.00	0.00
9,150.0	18.72	175.50	8,975.7	-663.4	1,327.0	673.6	12.00	12.00	0.00
9,175.0	21.72	175.50	8,999.2	-672.0	1,327.7	682.2	12.00	12.00	0.00
9,200.0	24.72	175.50	9,022.1	-681.8	1,328.4	692.0	12.00	12.00	0.00
9,225.0	27.72	175.50	9,044.6	-692.8	1,329.3	703.0	12.00	12.00	0.00
9,250.0	30.72	175.50	9,066.4	-705.0	1,330.3	715.2	12.00	12.00	0.00
9,275.0	33.72	175.50	9,087.5	-718.3	1,331.3	728.5	12.00	12.00	0.00
9,290.1	35.53	175.50	9,100.0	-726.9	1,332.0	737.1	12.00	12.00	0.00
SBSG_SHALE *									
9,293.8	35.98	175.50	9,103.0	-729.0	1,332.1	739.2	12.00	12.00	0.00
SBSG_CARB									
9,300.0	36.72	175.50	9,108.0	-732.7	1,332.4	742.9	12.00	12.00	0.00
9,325.0	39.72	175.50	9,127.6	-748.1	1,333.6	758.3	12.00	12.00	0.00
9,350.0	42.72	175.50	9,146.4	-764.5	1,334.9	774.7	12.00	12.00	0.00
9,375.0	45.72	175.50	9,164.3	-781.9	1,336.3	792.1	12.00	12.00	0.00
9,400.0	48.72	175.50	9,181.3	-800.2	1,337.7	810.4	12.00	12.00	0.00
FTP - Royal Oak 24 Fed Com 513H									
9,425.0	51.72	175.50	9,197.3	-819.3	1,339.3	829.6	12.00	12.00	0.00
9,450.0	54.72	175.50	9,212.3	-839.3	1,340.8	849.6	12.00	12.00	0.00
9,475.0	57.72	175.50	9,226.2	-860.0	1,342.5	870.3	12.00	12.00	0.00
9,500.0	60.72	175.50	9,239.0	-881.4	1,344.1	891.7	12.00	12.00	0.00
9,525.0	63.72	175.50	9,250.6	-903.5	1,345.9	913.8	12.00	12.00	0.00
9,550.0	66.72	175.50	9,261.1	-926.1	1,347.7	936.4	12.00	12.00	0.00
9,575.0	69.72	175.50	9,270.4	-949.2	1,349.5	959.6	12.00	12.00	0.00
9,600.0	72.72	175.50	9,278.4	-972.8	1,351.3	983.2	12.00	12.00	0.00
9,625.0	75.72	175.50	9,285.2	-996.8	1,353.2	1,007.2	12.00	12.00	0.00
9,650.0	78.72	175.50	9,290.7	-1,021.1	1,355.1	1,031.5	12.00	12.00	0.00
9,675.0	81.72	175.50	9,295.0	-1,045.7	1,357.1	1,056.0	12.00	12.00	0.00
9,700.0	84.72	175.50	9,297.9	-1,070.4	1,359.0	1,080.8	12.00	12.00	0.00
9,725.0	87.72	175.50	9,299.6	-1,095.3	1,361.0	1,105.7	12.00	12.00	0.00
9,744.0	90.00	175.50	9,300.0	-1,114.2	1,362.5	1,124.7	12.00	12.00	0.00
LP - Start DLS 2.00 TFO 90.00									
9,800.0	90.00	176.62	9,300.0	-1,170.1	1,366.3	1,180.5	2.00	0.00	2.00
9,900.0	90.00	178.62	9,300.0	-1,270.0	1,370.5	1,280.5	2.00	0.00	2.00
9,947.1	90.00	179.56	9,300.0	-1,317.0	1,371.2	1,327.5	2.00	0.00	2.00
Start 9731.0 hold at 9947.1 MD									
10,000.0	90.00	179.56	9,300.0	-1,370.0	1,371.6	1,380.5	0.00	0.00	0.00
10,100.0	90.00	179.56	9,300.0	-1,470.0	1,372.4	1,480.5	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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)
10,200.0	90.00	179.56	9,300.0	-1,570.0	1,373.1	1,580.5	0.00	0.00	0.00
10,300.0	90.00	179.56	9,300.0	-1,670.0	1,373.9	1,680.5	0.00	0.00	0.00
10,400.0	90.00	179.56	9,300.0	-1,770.0	1,374.7	1,780.5	0.00	0.00	0.00
10,500.0	90.00	179.56	9,300.0	-1,870.0	1,375.4	1,880.5	0.00	0.00	0.00
10,600.0	90.00	179.56	9,300.0	-1,969.9	1,376.2	1,980.5	0.00	0.00	0.00
10,700.0	90.00	179.56	9,300.0	-2,069.9	1,377.0	2,080.5	0.00	0.00	0.00
10,800.0	90.00	179.56	9,300.0	-2,169.9	1,377.7	2,180.5	0.00	0.00	0.00
10,900.0	90.00	179.56	9,300.0	-2,269.9	1,378.5	2,280.5	0.00	0.00	0.00
11,000.0	90.00	179.56	9,300.0	-2,369.9	1,379.3	2,380.5	0.00	0.00	0.00
11,100.0	90.00	179.56	9,300.0	-2,469.9	1,380.0	2,480.5	0.00	0.00	0.00
11,200.0	90.00	179.56	9,300.0	-2,569.9	1,380.8	2,580.5	0.00	0.00	0.00
11,300.0	90.00	179.56	9,300.0	-2,669.9	1,381.6	2,680.5	0.00	0.00	0.00
11,400.0	90.00	179.56	9,300.0	-2,769.9	1,382.3	2,780.5	0.00	0.00	0.00
11,500.0	90.00	179.56	9,300.0	-2,869.9	1,383.1	2,880.5	0.00	0.00	0.00
11,600.0	90.00	179.56	9,300.0	-2,969.9	1,383.9	2,980.5	0.00	0.00	0.00
11,700.0	90.00	179.56	9,300.0	-3,069.9	1,384.6	3,080.5	0.00	0.00	0.00
11,800.0	90.00	179.56	9,300.0	-3,169.9	1,385.4	3,180.5	0.00	0.00	0.00
11,900.0	90.00	179.56	9,300.0	-3,269.9	1,386.2	3,280.5	0.00	0.00	0.00
12,000.0	90.00	179.56	9,300.0	-3,369.9	1,386.9	3,380.5	0.00	0.00	0.00
12,100.0	90.00	179.56	9,300.0	-3,469.9	1,387.7	3,480.5	0.00	0.00	0.00
12,200.0	90.00	179.56	9,300.0	-3,569.9	1,388.5	3,580.5	0.00	0.00	0.00
12,300.0	90.00	179.56	9,300.0	-3,669.9	1,389.2	3,680.5	0.00	0.00	0.00
12,400.0	90.00	179.56	9,300.0	-3,769.9	1,390.0	3,780.5	0.00	0.00	0.00
12,500.0	90.00	179.56	9,300.0	-3,869.9	1,390.8	3,880.5	0.00	0.00	0.00
12,600.0	90.00	179.56	9,300.0	-3,969.9	1,391.5	3,980.5	0.00	0.00	0.00
12,700.0	90.00	179.56	9,300.0	-4,069.9	1,392.3	4,080.5	0.00	0.00	0.00
12,800.0	90.00	179.56	9,300.0	-4,169.9	1,393.1	4,180.5	0.00	0.00	0.00
12,900.0	90.00	179.56	9,300.0	-4,269.9	1,393.8	4,280.5	0.00	0.00	0.00
13,000.0	90.00	179.56	9,300.0	-4,369.9	1,394.6	4,380.5	0.00	0.00	0.00
13,100.0	90.00	179.56	9,300.0	-4,469.9	1,395.4	4,480.5	0.00	0.00	0.00
13,200.0	90.00	179.56	9,300.0	-4,569.9	1,396.1	4,580.5	0.00	0.00	0.00
13,300.0	90.00	179.56	9,300.0	-4,669.9	1,396.9	4,680.5	0.00	0.00	0.00
13,400.0	90.00	179.56	9,300.0	-4,769.9	1,397.7	4,780.5	0.00	0.00	0.00
13,500.0	90.00	179.56	9,300.0	-4,869.9	1,398.4	4,880.5	0.00	0.00	0.00
13,600.0	90.00	179.56	9,300.0	-4,969.9	1,399.2	4,980.5	0.00	0.00	0.00
13,700.0	90.00	179.56	9,300.0	-5,069.9	1,400.0	5,080.5	0.00	0.00	0.00
13,800.0	90.00	179.56	9,300.0	-5,169.9	1,400.7	5,180.5	0.00	0.00	0.00
13,900.0	90.00	179.56	9,300.0	-5,269.9	1,401.5	5,280.5	0.00	0.00	0.00
14,000.0	90.00	179.56	9,300.0	-5,369.8	1,402.3	5,380.5	0.00	0.00	0.00
14,100.0	90.00	179.56	9,300.0	-5,469.8	1,403.0	5,480.5	0.00	0.00	0.00
14,200.0	90.00	179.56	9,300.0	-5,569.8	1,403.8	5,580.5	0.00	0.00	0.00
14,300.0	90.00	179.56	9,300.0	-5,669.8	1,404.6	5,680.5	0.00	0.00	0.00
14,400.0	90.00	179.56	9,300.0	-5,769.8	1,405.3	5,780.5	0.00	0.00	0.00
14,500.0	90.00	179.56	9,300.0	-5,869.8	1,406.1	5,880.5	0.00	0.00	0.00
14,600.0	90.00	179.56	9,300.0	-5,969.8	1,406.9	5,980.5	0.00	0.00	0.00
14,700.0	90.00	179.56	9,300.0	-6,069.8	1,407.6	6,080.5	0.00	0.00	0.00
14,800.0	90.00	179.56	9,300.0	-6,169.8	1,408.4	6,180.5	0.00	0.00	0.00
14,900.0	90.00	179.56	9,300.0	-6,269.8	1,409.1	6,280.5	0.00	0.00	0.00
15,000.0	90.00	179.56	9,300.0	-6,369.8	1,409.9	6,380.5	0.00	0.00	0.00
15,100.0	90.00	179.56	9,300.0	-6,469.8	1,410.7	6,480.5	0.00	0.00	0.00
15,200.0	90.00	179.56	9,300.0	-6,569.8	1,411.4	6,580.5	0.00	0.00	0.00
15,300.0	90.00	179.56	9,300.0	-6,669.8	1,412.2	6,680.5	0.00	0.00	0.00
15,400.0	90.00	179.56	9,300.0	-6,769.8	1,413.0	6,780.5	0.00	0.00	0.00
15,500.0	90.00	179.56	9,300.0	-6,869.8	1,413.7	6,880.5	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**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)
15,600.0	90.00	179.56	9,300.0	-6,969.8	1,414.5	6,980.5	0.00	0.00	0.00
15,700.0	90.00	179.56	9,300.0	-7,069.8	1,415.3	7,080.5	0.00	0.00	0.00
15,800.0	90.00	179.56	9,300.0	-7,169.8	1,416.0	7,180.5	0.00	0.00	0.00
15,900.0	90.00	179.56	9,300.0	-7,269.8	1,416.8	7,280.5	0.00	0.00	0.00
16,000.0	90.00	179.56	9,300.0	-7,369.8	1,417.6	7,380.5	0.00	0.00	0.00
16,100.0	90.00	179.56	9,300.0	-7,469.8	1,418.3	7,480.5	0.00	0.00	0.00
16,200.0	90.00	179.56	9,300.0	-7,569.8	1,419.1	7,580.5	0.00	0.00	0.00
16,300.0	90.00	179.56	9,300.0	-7,669.8	1,419.9	7,680.5	0.00	0.00	0.00
16,400.0	90.00	179.56	9,300.0	-7,769.8	1,420.6	7,780.5	0.00	0.00	0.00
16,500.0	90.00	179.56	9,300.0	-7,869.8	1,421.4	7,880.5	0.00	0.00	0.00
16,600.0	90.00	179.56	9,300.0	-7,969.8	1,422.2	7,980.5	0.00	0.00	0.00
16,700.0	90.00	179.56	9,300.0	-8,069.8	1,422.9	8,080.5	0.00	0.00	0.00
16,800.0	90.00	179.56	9,300.0	-8,169.8	1,423.7	8,180.5	0.00	0.00	0.00
16,900.0	90.00	179.56	9,300.0	-8,269.8	1,424.5	8,280.5	0.00	0.00	0.00
17,000.0	90.00	179.56	9,300.0	-8,369.8	1,425.2	8,380.5	0.00	0.00	0.00
17,100.0	90.00	179.56	9,300.0	-8,469.8	1,426.0	8,480.5	0.00	0.00	0.00
17,200.0	90.00	179.56	9,300.0	-8,569.8	1,426.8	8,580.5	0.00	0.00	0.00
17,300.0	90.00	179.56	9,300.0	-8,669.8	1,427.5	8,680.5	0.00	0.00	0.00
17,400.0	90.00	179.56	9,300.0	-8,769.7	1,428.3	8,780.5	0.00	0.00	0.00
17,500.0	90.00	179.56	9,300.0	-8,869.7	1,429.1	8,880.5	0.00	0.00	0.00
17,600.0	90.00	179.56	9,300.0	-8,969.7	1,429.8	8,980.5	0.00	0.00	0.00
17,700.0	90.00	179.56	9,300.0	-9,069.7	1,430.6	9,080.5	0.00	0.00	0.00
17,800.0	90.00	179.56	9,300.0	-9,169.7	1,431.4	9,180.5	0.00	0.00	0.00
17,900.0	90.00	179.56	9,300.0	-9,269.7	1,432.1	9,280.5	0.00	0.00	0.00
18,000.0	90.00	179.56	9,300.0	-9,369.7	1,432.9	9,380.5	0.00	0.00	0.00
18,100.0	90.00	179.56	9,300.0	-9,469.7	1,433.7	9,480.5	0.00	0.00	0.00
18,200.0	90.00	179.56	9,300.0	-9,569.7	1,434.4	9,580.5	0.00	0.00	0.00
18,300.0	90.00	179.56	9,300.0	-9,669.7	1,435.2	9,680.5	0.00	0.00	0.00
18,400.0	90.00	179.56	9,300.0	-9,769.7	1,436.0	9,780.5	0.00	0.00	0.00
18,500.0	90.00	179.56	9,300.0	-9,869.7	1,436.7	9,880.5	0.00	0.00	0.00
18,600.0	90.00	179.56	9,300.0	-9,969.7	1,437.5	9,980.5	0.00	0.00	0.00
18,700.0	90.00	179.56	9,300.0	-10,069.7	1,438.3	10,080.5	0.00	0.00	0.00
18,800.0	90.00	179.56	9,300.0	-10,169.7	1,439.0	10,180.5	0.00	0.00	0.00
18,900.0	90.00	179.56	9,300.0	-10,269.7	1,439.8	10,280.5	0.00	0.00	0.00
19,000.0	90.00	179.56	9,300.0	-10,369.7	1,440.6	10,380.5	0.00	0.00	0.00
19,100.0	90.00	179.56	9,300.0	-10,469.7	1,441.3	10,480.5	0.00	0.00	0.00
19,200.0	90.00	179.56	9,300.0	-10,569.7	1,442.1	10,580.5	0.00	0.00	0.00
19,300.0	90.00	179.56	9,300.0	-10,669.7	1,442.9	10,680.5	0.00	0.00	0.00
19,400.0	90.00	179.56	9,300.0	-10,769.7	1,443.6	10,780.5	0.00	0.00	0.00
19,500.0	90.00	179.56	9,300.0	-10,869.7	1,444.4	10,880.5	0.00	0.00	0.00
19,600.0	90.00	179.56	9,300.0	-10,969.7	1,445.2	10,980.5	0.00	0.00	0.00
19,678.1	90.00	179.56	9,300.0	-11,047.8	1,445.7	11,058.6	0.00	0.00	0.00
TD at 19678.1 - LTP/BHL - Royal Oak 24 Fed Com 513H									

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Company:	Avant Operating, LLC	**TVD Reference:**	Well @ 3937.0usft (3937)
Project:	Lea Co., NM (NAD 83)	**MD Reference:**	Well @ 3937.0usft (3937)
Site:	Royal Oak 24 Fed Com Pad 1	**North Reference:**	Grid
Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 0.1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP - Royal Oak 24 Fed - plan misses target center by 40.0usft at 8994.0usft MD (8822.5 TVD, -638.2 N, 1325.0 E) - Point	0.00	0.00	8,822.5	-638.2	1,365.0	628,549.04	764,069.22	32.725829	-103.609061
FTP - Royal Oak 24 Fed - plan misses target center by 165.5usft at 9400.0usft MD (9181.3 TVD, -800.2 N, 1337.7 E) - Point	0.00	0.00	9,300.0	-688.3	1,365.4	628,499.02	764,069.63	32.725691	-103.609061
LTP/BHL - Royal Oak 24 - plan hits target center - Point	0.00	0.00	9,300.0	-11,047.8	1,445.7	618,139.47	764,150.00	32.697217	-103.609029

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
20,101.4		20" Casing	20	24

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,628.0	1,628.0	RUSTLER			
1,951.0	1,951.0	SOLADO			
3,674.7	3,641.0	YATES			
5,747.8	5,654.0	CHERRY_CNYN			
7,376.9	7,236.0	BYCN_MKR			
7,657.0	7,508.0	BSPG_LIME *			
8,483.1	8,313.0	AVALON_B			
8,963.5	8,792.0	FBSG__SD			
9,028.6	8,857.0	300'S			
9,290.1	9,100.0	SBSG_SHALE *			
9,293.8	9,103.0	SBSG_CARB			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,050.0	2,050.0	0.0	0.0	KOP - Start Build 2.00
2,741.1	2,734.4	-36.0	74.7	Start 5461.3 hold at 2741.1 MD
8,202.4	8,037.6	-602.2	1,250.3	Start Drop -2.00
8,893.5	8,722.0	-638.2	1,325.0	Start 100.5 hold at 8893.5 MD
8,994.0	8,822.5	-638.2	1,325.0	KOP #2 - Start Build 12.00
9,744.0	9,300.0	-1,114.2	1,362.5	LP - Start DLS 2.00 TFO 90.00
9,947.1	9,300.0	-1,317.0	1,371.2	Start 9731.0 hold at 9947.1 MD
19,678.1	9,300.0	-11,047.8	1,445.7	TD at 19678.1

Avant Operating, LLC

Lea Co., NM (NAD 83)
Royal Oak 24 Fed Com Pad 1
Royal Oak 24 Fed Com 513H

OH
Plan 0.1

Anticollision Report

05 February, 2025

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Reference Plan 0.1

Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 2,167.8usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 2/5/2025

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	19,677.8	Plan 0.1 (OH)	B001Mb_MWD+HRGM	OWSG MWD + HRGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Royal Oak 24 Fed Com Pad 1						
Dorothy Federal 001 - OH - OH	13,800.0	9,235.4	239.1	-38.3	0.862	Level 1, ES, SF
Dorothy Federal 001 - OH - OH	13,810.3	9,235.3	238.9	-38.1	0.863	Level 1, CC
EK-A, 8701 JV-P 001 - OH - OH	11,200.0	9,285.5	240.9	-1.4	0.994	Level 1, ES, SF
EK-A, 8701 JV-P 001 - OH - OH	11,206.1	9,285.4	240.8	-1.2	0.995	Level 1, CC
Mescalero 36 State 003 - OH - OH	18,974.5	9,190.8	349.0	-5.2	0.985	Level 1, CC, ES, SF
New Mexico 36 State 001 - OH - OH	15,045.8	9,230.3	1,667.0	1,374.2	5.694	CC, ES, SF
New Mexico 36 State 002 - OH - OH	15,040.9	9,225.1	345.8	54.2	1.186	Level 2, CC, ES, SF
New Mexico 36 State 004 - OH - OH	16,386.3	9,205.9	1,668.3	1,366.8	5.534	CC, ES
New Mexico 36 State 004 - OH - OH	16,400.0	9,205.7	1,668.3	1,366.8	5.533	SF
Royal Oak 24 Fed Com 008H - OH - Plan 0.1	2,359.9	2,373.7	162.8	146.5	9.988	CC, ES
Royal Oak 24 Fed Com 008H - OH - Plan 0.1	19,678.1	20,590.1	1,597.8	1,306.4	5.483	SF
Royal Oak 24 Fed Com 009H - OH - Plan 0.1	2,206.9	2,206.0	18.7	3.4	1.225	Level 2, CC
Royal Oak 24 Fed Com 009H - OH - Plan 0.1	2,300.0	2,299.4	19.2	3.3	1.206	Level 2, ES, SF
Royal Oak 24 Fed Com 303H - OH - Plan 0.1	2,000.0	1,996.9	60.0	46.2	4.327	CC
Royal Oak 24 Fed Com 303H - OH - Plan 0.1	2,100.0	2,097.2	60.2	45.6	4.133	ES
Royal Oak 24 Fed Com 303H - OH - Plan 0.1	2,200.0	2,197.3	62.8	47.5	4.123	SF
Royal Oak 24 Fed Com 304H - OH - Plan 0.1	2,000.0	2,000.0	20.0	6.1	1.441	Level 3, CC
Royal Oak 24 Fed Com 304H - OH - Plan 0.1	8,644.1	8,658.8	53.4	-10.1	0.840	Level 1, ES, SF
Royal Oak 24 Fed Com 503H - OH - Plan 0.1	2,000.0	1,997.2	40.1	26.2	2.887	CC
Royal Oak 24 Fed Com 503H - OH - Plan 0.1	2,100.0	2,097.2	40.4	25.9	2.773	ES, SF
Royal Oak 24 Fed Com 512H - OH - Plan 0.1	2,000.0	1,996.8	80.1	66.2	5.771	CC, ES
Royal Oak 24 Fed Com 512H - OH - Plan 0.1	2,100.0	2,095.3	81.3	66.8	5.585	SF
Royal Oak 24 Fed Com 604H - OH - Plan 0.1	9,103.8	9,131.6	62.0	-7.3	0.895	Level 1, CC, ES, SF
Speedmaster 30 Fed Com Pad 1B						
Speedmaster 30 Fed Com 301H - OH - Plan 0.1	8,831.6	8,721.0	1,632.8	1,569.0	25.595	CC
Speedmaster 30 Fed Com 301H - OH - Plan 0.1	19,678.1	19,163.2	1,645.2	1,335.5	5.312	ES, SF
Speedmaster 30 Fed Com 501H - OH - Plan 0.1	9,996.8	10,026.3	940.5	868.4	13.046	CC
Speedmaster 30 Fed Com 501H - OH - Plan 0.1	19,678.1	19,707.2	941.1	631.0	3.035	ES, SF
Speedmaster 30 Fed Com 511H (fka 007H) - OH - Plan 0	8,455.7	8,110.6	1,839.3	1,778.0	30.042	CC
Speedmaster 30 Fed Com 511H (fka 007H) - OH - Plan 0	19,678.1	19,997.6	1,892.6	1,584.3	6.138	ES, SF

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Dorothy Federal 001 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 370-INC-ONLY

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,700.0	9,300.0	9,257.0	9,255.7	58.0	195.8	95.19	-5,181.9	1,161.9	2,123.8	1,886.8	237.03	8.960	
11,800.0	9,300.0	9,257.0	9,255.7	59.1	195.8	95.19	-5,181.9	1,161.9	2,024.5	1,787.2	237.26	8.533	
11,900.0	9,300.0	9,257.0	9,255.7	60.2	195.8	95.19	-5,181.9	1,161.9	1,925.2	1,687.7	237.52	8.105	
12,000.0	9,300.0	9,257.0	9,255.7	61.3	195.8	95.19	-5,181.9	1,161.9	1,826.0	1,588.2	237.81	7.678	
12,100.0	9,300.0	9,257.0	9,255.7	62.5	195.8	95.19	-5,181.9	1,161.9	1,726.9	1,488.8	238.13	7.252	
12,200.0	9,300.0	9,249.6	9,248.3	63.6	195.6	93.43	-5,182.0	1,161.9	1,628.0	1,389.6	238.37	6.829	
12,300.0	9,300.0	9,248.7	9,247.4	64.8	195.6	93.22	-5,182.0	1,161.9	1,529.1	1,290.3	238.77	6.404	
12,400.0	9,300.0	9,247.9	9,246.6	65.9	195.6	93.01	-5,182.0	1,161.9	1,430.4	1,191.2	239.23	5.979	
12,500.0	9,300.0	9,247.0	9,245.7	67.1	195.6	92.81	-5,182.0	1,161.9	1,331.9	1,092.2	239.77	5.555	
12,600.0	9,300.0	9,246.1	9,244.8	68.3	195.6	92.60	-5,182.0	1,161.9	1,233.7	993.3	240.40	5.132	
12,700.0	9,300.0	9,245.2	9,243.9	69.5	195.6	92.39	-5,182.0	1,161.9	1,135.8	894.6	241.15	4.710	
12,800.0	9,300.0	9,244.4	9,243.1	70.7	195.5	92.18	-5,182.0	1,161.9	1,038.2	796.2	242.05	4.289	
12,900.0	9,300.0	9,243.5	9,242.2	71.9	195.5	91.97	-5,182.0	1,161.9	941.2	698.0	243.16	3.871	
13,000.0	9,300.0	9,242.6	9,241.3	73.2	195.5	91.76	-5,182.0	1,161.9	844.8	600.3	244.54	3.455	
13,100.0	9,300.0	9,241.7	9,240.4	74.4	195.5	91.54	-5,182.0	1,161.9	749.5	503.2	246.30	3.043	
13,200.0	9,300.0	9,240.8	9,239.5	75.6	195.5	91.33	-5,182.0	1,161.9	655.4	406.9	248.60	2.637	
13,300.0	9,300.0	9,239.9	9,238.6	76.9	195.5	91.11	-5,182.0	1,161.9	563.5	311.9	251.65	2.239	
13,400.0	9,300.0	9,239.0	9,237.7	78.1	195.4	90.90	-5,182.0	1,161.9	474.8	219.0	255.81	1.856	
13,500.0	9,300.0	9,238.1	9,236.8	79.4	195.4	90.68	-5,182.1	1,161.9	391.7	130.2	261.47	1.498	Level 3
13,600.0	9,300.0	9,237.2	9,235.9	80.7	195.4	90.46	-5,182.1	1,161.9	318.3	49.5	268.77	1.184	Level 2
13,700.0	9,300.0	9,236.3	9,235.0	82.0	195.4	90.25	-5,182.1	1,161.9	263.2	-12.9	276.05	0.953	Level 1
13,800.0	9,300.0	9,235.4	9,234.1	83.2	195.4	90.03	-5,182.1	1,161.9	239.1	-38.3	277.43	0.862	Level 1, ES, SF
13,810.3	9,300.0	9,235.3	9,234.0	83.4	195.4	90.00	-5,182.1	1,161.9	238.9	-38.1	276.95	0.863	Level 1, CC
13,900.0	9,300.0	9,234.5	9,233.2	84.5	195.3	89.81	-5,182.1	1,161.9	255.1	-13.4	268.54	0.950	Level 1
14,000.0	9,300.0	9,233.6	9,232.3	85.8	195.3	89.59	-5,182.1	1,161.9	305.0	49.0	255.96	1.191	Level 2
14,100.0	9,300.0	9,232.6	9,231.3	87.1	195.3	89.36	-5,182.1	1,161.9	375.4	129.2	246.20	1.525	
14,200.0	9,300.0	9,231.7	9,230.4	88.4	195.3	89.14	-5,182.1	1,161.9	457.0	217.0	240.04	1.904	
14,300.0	9,300.0	9,230.8	9,229.5	89.7	195.3	88.92	-5,182.1	1,161.9	544.8	308.4	236.38	2.305	
14,400.0	9,300.0	9,229.8	9,228.5	91.0	195.3	88.69	-5,182.1	1,161.9	636.1	401.9	234.25	2.716	
14,500.0	9,300.0	9,228.9	9,227.6	92.3	195.2	88.47	-5,182.1	1,161.9	729.8	496.8	233.01	3.132	
14,600.0	9,300.0	9,227.9	9,226.6	93.7	195.2	88.24	-5,182.1	1,161.9	824.9	592.6	232.30	3.551	
14,700.0	9,300.0	9,227.0	9,225.7	95.0	195.2	88.01	-5,182.2	1,161.9	921.1	689.2	231.90	3.972	
14,800.0	9,300.0	9,226.0	9,224.7	96.3	195.2	87.79	-5,182.2	1,161.9	1,018.0	786.3	231.69	4.394	
14,900.0	9,300.0	9,225.1	9,223.8	97.6	195.2	87.56	-5,182.2	1,161.9	1,115.4	883.8	231.59	4.816	
15,000.0	9,300.0	9,224.1	9,222.8	99.0	195.1	87.33	-5,182.2	1,161.9	1,213.3	981.7	231.57	5.239	
15,100.0	9,300.0	9,223.2	9,221.9	100.3	195.1	87.10	-5,182.2	1,161.9	1,311.5	1,079.9	231.60	5.663	
15,200.0	9,300.0	9,222.2	9,220.9	101.6	195.1	86.87	-5,182.2	1,161.9	1,409.9	1,178.3	231.66	6.086	
15,300.0	9,300.0	9,221.2	9,219.9	103.0	195.1	86.63	-5,182.2	1,161.9	1,508.6	1,276.8	231.74	6.510	
15,400.0	9,300.0	9,220.2	9,218.9	104.3	195.1	86.40	-5,182.2	1,161.9	1,607.4	1,375.6	231.83	6.934	
15,500.0	9,300.0	9,219.3	9,218.0	105.7	195.0	86.17	-5,182.2	1,161.9	1,706.3	1,474.4	231.92	7.357	
15,600.0	9,300.0	9,218.3	9,217.0	107.0	195.0	85.93	-5,182.2	1,161.9	1,805.4	1,573.4	232.02	7.781	
15,700.0	9,300.0	9,217.3	9,216.0	108.4	195.0	85.69	-5,182.2	1,161.9	1,904.6	1,672.4	232.12	8.205	
15,800.0	9,300.0	9,216.3	9,215.0	109.7	195.0	85.46	-5,182.3	1,161.9	2,003.8	1,771.6	232.23	8.629	
15,900.0	9,300.0	9,215.3	9,214.0	111.1	195.0	85.22	-5,182.3	1,161.9	2,103.1	1,870.8	232.33	9.052	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - EK-A, 8701 JV-P 001 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 207-INC-ONLY

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
6,900.0	6,772.9	6,803.6	6,802.9	28.6	139.3	60.93	-2,619.8	1,132.9	2,159.2	1,992.4	166.81	12.944	
7,000.0	6,870.0	6,904.2	6,903.5	29.1	141.6	61.48	-2,617.5	1,133.3	2,145.2	1,975.6	169.59	12.649	
7,100.0	6,967.1	7,004.7	7,004.0	29.6	143.9	62.04	-2,615.0	1,133.9	2,131.2	1,958.8	172.37	12.364	
7,200.0	7,064.2	7,102.4	7,101.6	30.1	146.2	62.58	-2,612.6	1,134.4	2,117.3	1,942.1	175.21	12.084	
7,300.0	7,161.3	7,199.3	7,198.5	30.5	148.6	63.13	-2,610.1	1,135.0	2,103.6	1,925.5	178.07	11.813	
7,400.0	7,258.4	7,296.2	7,295.4	31.0	150.9	63.68	-2,607.6	1,135.5	2,090.0	1,909.1	180.94	11.551	
7,500.0	7,355.5	7,393.2	7,392.3	31.5	153.3	64.24	-2,605.1	1,136.1	2,076.7	1,892.9	183.80	11.299	
7,600.0	7,452.6	7,490.1	7,489.1	32.0	155.7	64.81	-2,602.7	1,136.7	2,063.6	1,877.0	186.67	11.055	
7,700.0	7,549.7	7,583.7	7,582.8	32.5	157.8	65.37	-2,600.3	1,137.2	2,050.8	1,861.4	189.33	10.832	
7,800.0	7,646.8	7,675.7	7,674.7	33.0	159.9	65.92	-2,598.2	1,137.7	2,038.4	1,846.5	191.90	10.622	
7,900.0	7,743.9	7,767.7	7,766.7	33.5	161.9	66.48	-2,596.4	1,138.0	2,026.4	1,832.0	194.46	10.421	
8,000.0	7,841.0	7,859.7	7,858.7	34.0	164.0	67.05	-2,594.7	1,138.3	2,014.9	1,817.9	197.03	10.227	
8,100.0	7,938.1	7,951.7	7,950.7	34.4	166.0	67.63	-2,593.3	1,138.5	2,003.9	1,804.3	199.59	10.040	
8,200.0	8,035.2	8,045.4	8,044.4	34.9	167.9	68.23	-2,592.1	1,138.7	1,993.4	1,791.3	202.05	9.866	
8,300.0	8,132.7	8,141.0	8,140.0	35.4	169.8	68.62	-2,590.9	1,138.8	1,983.7	1,779.4	204.38	9.706	
8,400.0	8,230.9	8,237.4	8,236.3	35.9	171.6	68.96	-2,589.8	1,138.9	1,975.7	1,769.0	206.70	9.558	
8,500.0	8,329.7	8,334.3	8,333.3	36.3	173.5	69.25	-2,588.8	1,139.0	1,969.1	1,760.1	209.00	9.421	
8,600.0	8,429.0	8,431.8	8,430.7	36.7	175.4	69.47	-2,587.9	1,139.0	1,963.9	1,752.6	211.28	9.295	
8,700.0	8,528.6	8,532.0	8,531.0	37.0	177.3	69.63	-2,587.0	1,139.1	1,960.0	1,746.4	213.57	9.177	
8,800.0	8,628.5	8,633.7	8,632.6	37.3	179.2	69.72	-2,586.0	1,139.2	1,957.3	1,741.4	215.86	9.067	
8,900.0	8,728.5	8,735.5	8,734.4	37.6	181.2	-174.55	-2,584.9	1,139.3	1,955.7	1,737.5	218.11	8.966	
9,000.0	8,828.5	8,837.3	8,836.3	37.9	183.1	9.95	-2,583.7	1,139.4	1,954.4	1,734.1	220.35	8.870	
9,100.0	8,927.6	8,938.1	8,937.1	38.2	185.1	10.29	-2,582.5	1,139.5	1,941.7	1,719.1	222.59	8.723	
9,200.0	9,022.1	9,032.2	9,031.1	38.6	187.0	11.24	-2,581.2	1,139.7	1,908.9	1,684.1	224.81	8.491	
9,300.0	9,108.0	9,117.4	9,116.3	39.1	188.7	13.09	-2,580.1	1,139.8	1,857.6	1,630.8	226.86	8.189	
9,400.0	9,181.3	9,189.8	9,188.7	39.5	190.1	16.43	-2,579.2	1,139.9	1,790.1	1,561.5	228.64	7.830	
9,500.0	9,239.0	9,246.4	9,245.3	40.0	191.2	22.82	-2,578.5	1,140.0	1,709.4	1,479.4	230.08	7.430	
9,600.0	9,278.4	9,284.7	9,283.6	40.6	192.0	36.78	-2,578.0	1,140.0	1,619.1	1,388.0	231.13	7.005	
9,700.0	9,297.9	9,303.0	9,301.9	41.1	192.4	70.84	-2,577.7	1,140.1	1,523.3	1,291.5	231.77	6.572	
9,800.0	9,300.0	9,303.7	9,302.6	41.7	192.4	93.45	-2,577.7	1,140.1	1,425.8	1,193.8	232.05	6.145	
9,900.0	9,300.0	9,302.4	9,301.3	42.3	192.4	93.79	-2,577.7	1,140.1	1,328.0	1,095.7	232.28	5.717	
10,000.0	9,300.0	9,301.1	9,300.0	42.9	192.3	93.81	-2,577.7	1,140.1	1,229.9	997.4	232.52	5.289	
10,100.0	9,300.0	9,299.8	9,298.7	43.6	192.3	93.50	-2,577.8	1,140.1	1,132.0	899.2	232.80	4.863	
10,200.0	9,300.0	9,298.5	9,297.4	44.2	192.3	93.20	-2,577.8	1,140.1	1,034.5	801.4	233.13	4.437	
10,300.0	9,300.0	9,297.2	9,296.1	45.0	192.2	92.89	-2,577.8	1,140.1	937.6	704.0	233.54	4.014	
10,400.0	9,300.0	9,295.9	9,294.8	45.7	192.2	92.58	-2,577.8	1,140.1	841.3	607.3	234.06	3.594	
10,500.0	9,300.0	9,294.6	9,293.5	46.5	192.2	92.27	-2,577.8	1,140.1	746.1	511.3	234.70	3.179	
10,600.0	9,300.0	9,293.3	9,292.2	47.3	192.2	91.96	-2,577.8	1,140.1	652.2	416.7	235.54	2.769	
10,700.0	9,300.0	9,292.0	9,290.9	48.2	192.1	91.65	-2,577.9	1,140.1	560.5	323.9	236.65	2.369	
10,800.0	9,300.0	9,290.7	9,289.6	49.1	192.1	91.34	-2,577.9	1,140.1	472.2	234.1	238.12	1.983	
10,900.0	9,300.0	9,289.4	9,288.3	50.0	192.1	91.03	-2,577.9	1,140.0	389.5	149.5	240.04	1.623	
11,000.0	9,300.0	9,288.1	9,287.0	50.9	192.1	90.72	-2,577.9	1,140.0	317.0	74.7	242.30	1.308	Level 3
11,100.0	9,300.0	9,286.8	9,285.7	51.9	192.0	90.42	-2,577.9	1,140.0	263.2	19.3	243.89	1.079	Level 2
11,200.0	9,300.0	9,285.5	9,284.4	52.8	192.0	90.11	-2,578.0	1,140.0	240.9	-1.4	242.28	0.994	Level 1, ES, SF
11,206.1	9,300.0	9,285.4	9,284.3	52.9	192.0	90.09	-2,578.0	1,140.0	240.8	-1.2	242.03	0.995	Level 1, CC
11,300.0	9,300.0	9,284.2	9,283.1	53.8	192.0	89.80	-2,578.0	1,140.0	258.4	21.5	236.94	1.091	Level 2
11,400.0	9,300.0	9,282.9	9,281.8	54.9	192.0	89.49	-2,578.0	1,140.0	309.1	77.4	231.77	1.334	Level 3
11,500.0	9,300.0	9,281.6	9,280.5	55.9	191.9	89.18	-2,578.0	1,140.0	379.9	151.1	228.79	1.660	
11,600.0	9,300.0	9,280.3	9,279.2	57.0	191.9	88.87	-2,578.0	1,140.0	461.6	234.1	227.44	2.029	
11,700.0	9,300.0	9,279.0	9,277.9	58.0	191.9	88.56	-2,578.0	1,140.0	549.4	322.5	226.91	2.421	
11,800.0	9,300.0	9,277.7	9,276.6	59.1	191.9	88.25	-2,578.1	1,140.0	640.7	414.0	226.77	2.826	
11,900.0	9,300.0	9,276.4	9,275.3	60.2	191.8	87.94	-2,578.1	1,140.0	734.4	507.6	226.79	3.238	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - EK-A, 8701 JV-P 001 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 207-INC-ONLY

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,000.0	9,300.0	9,275.1	9,274.0	61.3	191.8	87.63	-2,578.1	1,140.0	829.5	602.6	226.89	3.656	
12,100.0	9,300.0	9,273.8	9,272.7	62.5	191.8	87.33	-2,578.1	1,140.0	925.6	698.6	227.01	4.077	
12,200.0	9,300.0	9,272.5	9,271.4	63.6	191.8	87.02	-2,578.1	1,140.0	1,022.5	795.4	227.14	4.502	
12,300.0	9,300.0	9,271.2	9,270.1	64.8	191.7	86.71	-2,578.1	1,140.0	1,119.9	892.7	227.27	4.928	
12,400.0	9,300.0	9,269.9	9,268.8	65.9	191.7	86.40	-2,578.2	1,140.0	1,217.8	990.4	227.40	5.355	
12,500.0	9,300.0	9,268.6	9,267.5	67.1	191.7	86.09	-2,578.2	1,140.0	1,315.9	1,088.4	227.51	5.784	
12,600.0	9,300.0	9,267.3	9,266.2	68.3	191.7	85.79	-2,578.2	1,140.0	1,414.4	1,186.7	227.63	6.214	
12,700.0	9,300.0	9,266.0	9,264.9	69.5	191.6	85.48	-2,578.2	1,140.0	1,513.0	1,285.3	227.73	6.644	
12,800.0	9,300.0	9,264.7	9,263.6	70.7	191.6	85.17	-2,578.2	1,140.0	1,611.8	1,384.0	227.82	7.075	
12,900.0	9,300.0	9,263.4	9,262.3	71.9	191.6	84.86	-2,578.2	1,140.0	1,710.7	1,482.8	227.91	7.506	
13,000.0	9,300.0	9,262.1	9,261.0	73.2	191.5	84.56	-2,578.3	1,140.0	1,809.8	1,581.8	228.00	7.938	
13,100.0	9,300.0	9,260.8	9,259.7	74.4	191.5	84.25	-2,578.3	1,140.0	1,908.9	1,680.8	228.08	8.370	
13,200.0	9,300.0	9,259.5	9,258.4	75.6	191.5	83.95	-2,578.3	1,140.0	2,008.1	1,780.0	228.15	8.802	
13,300.0	9,300.0	9,258.2	9,257.1	76.9	191.5	83.64	-2,578.3	1,140.0	2,107.5	1,879.2	228.23	9.234	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Mescalero 36 State 003 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 281-INC-ONLY

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,900.0	9,300.0	9,263.2	9,261.4	124.8	203.6	101.73	-10,344.3	1,091.4	2,102.4	1,846.5	255.84	8.217	
17,000.0	9,300.0	9,259.7	9,257.9	126.1	203.5	101.18	-10,344.4	1,091.4	2,003.9	1,747.2	256.63	7.808	
17,100.0	9,300.0	9,256.2	9,254.5	127.5	203.4	100.63	-10,344.6	1,091.4	1,905.5	1,648.0	257.51	7.400	
17,200.0	9,300.0	9,252.7	9,251.0	128.9	203.3	100.07	-10,344.7	1,091.4	1,807.4	1,548.9	258.51	6.991	
17,300.0	9,300.0	9,249.2	9,247.5	130.3	203.2	99.52	-10,344.8	1,091.4	1,709.4	1,449.8	259.65	6.584	
17,400.0	9,300.0	9,245.8	9,244.0	131.7	203.1	98.96	-10,344.9	1,091.4	1,611.7	1,350.8	260.95	6.177	
17,500.0	9,300.0	9,242.3	9,240.5	133.1	203.0	98.40	-10,345.0	1,091.4	1,514.3	1,251.9	262.44	5.770	
17,600.0	9,300.0	9,238.8	9,237.0	134.4	202.9	97.84	-10,345.2	1,091.4	1,417.3	1,153.1	264.16	5.365	
17,700.0	9,300.0	9,235.3	9,233.5	135.8	202.8	97.27	-10,345.3	1,091.4	1,320.6	1,054.5	266.17	4.962	
17,800.0	9,300.0	9,231.8	9,230.0	137.2	202.7	96.71	-10,345.4	1,091.4	1,224.5	956.0	268.53	4.560	
17,900.0	9,300.0	9,228.3	9,226.6	138.6	202.6	96.14	-10,345.5	1,091.4	1,129.1	857.8	271.33	4.161	
18,000.0	9,300.0	9,224.8	9,223.1	140.0	202.5	95.58	-10,345.7	1,091.4	1,034.5	759.8	274.67	3.766	
18,100.0	9,300.0	9,221.3	9,219.6	141.4	202.4	95.01	-10,345.8	1,091.4	941.0	662.3	278.72	3.376	
18,200.0	9,300.0	9,217.8	9,216.1	142.8	202.3	94.44	-10,345.9	1,091.4	849.0	565.4	283.65	2.993	
18,300.0	9,300.0	9,214.3	9,212.6	144.2	202.2	93.87	-10,346.0	1,091.4	759.0	469.3	289.74	2.620	
18,400.0	9,300.0	9,210.9	9,209.1	145.6	202.1	93.30	-10,346.1	1,091.4	671.8	374.6	297.28	2.260	
18,500.0	9,300.0	9,207.4	9,205.6	147.0	202.0	92.73	-10,346.3	1,091.4	588.7	282.1	306.64	1.920	
18,600.0	9,300.0	9,203.9	9,202.1	148.4	201.9	92.16	-10,346.4	1,091.4	511.7	193.6	318.06	1.609	
18,700.0	9,300.0	9,200.4	9,198.7	149.8	201.8	91.59	-10,346.5	1,091.4	443.9	112.6	331.27	1.340	Level 3
18,800.0	9,300.0	9,196.9	9,195.2	151.2	201.7	91.01	-10,346.6	1,091.4	390.1	45.6	344.53	1.132	Level 2
18,900.0	9,300.0	9,193.4	9,191.7	152.6	201.6	90.44	-10,346.7	1,091.4	356.8	3.3	353.53	1.009	Level 2
18,974.5	9,300.0	9,190.8	9,189.1	153.6	201.5	90.02	-10,346.8	1,091.4	349.0	-5.2	354.14	0.985	Level 1, CC, ES, SF
19,000.0	9,300.0	9,189.9	9,188.2	154.0	201.5	89.87	-10,346.9	1,091.4	349.9	-3.0	352.88	0.992	Level 1
19,100.0	9,300.0	9,186.4	9,184.7	155.4	201.4	89.30	-10,347.0	1,091.4	370.8	29.2	341.66	1.085	Level 2
19,200.0	9,300.0	9,182.9	9,181.2	156.8	201.3	88.72	-10,347.1	1,091.4	415.4	90.5	324.95	1.278	Level 3
19,300.0	9,300.0	9,179.5	9,177.7	158.2	201.2	88.15	-10,347.2	1,091.4	477.1	168.9	308.21	1.548	
19,400.0	9,300.0	9,176.0	9,174.3	159.6	201.1	87.58	-10,347.4	1,091.4	550.1	256.2	293.95	1.871	
19,500.0	9,300.0	9,172.5	9,170.8	161.0	201.0	87.01	-10,347.5	1,091.4	630.6	348.0	282.59	2.231	
19,600.0	9,300.0	9,169.0	9,167.3	162.4	200.9	86.44	-10,347.6	1,091.4	716.0	442.2	273.75	2.615	
19,678.1	9,300.0	9,166.3	9,164.6	163.4	200.8	85.99	-10,347.7	1,091.4	785.0	514.7	270.40	2.903	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - New Mexico 36 State 001 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 308-INC-ONLY **Rule Assigned:** **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.0	9,300.0	9,259.5	9,258.4	82.0	195.3	91.01	-6,427.8	-256.6	2,142.2	1,871.3	270.87	7.909	
13,800.0	9,300.0	9,257.3	9,256.2	83.2	195.2	90.94	-6,427.8	-256.6	2,080.9	1,808.0	272.87	7.626	
13,900.0	9,300.0	9,255.1	9,254.1	84.5	195.2	90.86	-6,427.9	-256.6	2,022.6	1,747.7	274.91	7.357	
14,000.0	9,300.0	9,252.9	9,251.9	85.8	195.1	90.79	-6,427.9	-256.6	1,967.7	1,690.7	276.98	7.104	
14,100.0	9,300.0	9,250.7	9,249.7	87.1	195.1	90.71	-6,428.0	-256.6	1,916.5	1,637.4	279.04	6.868	
14,200.0	9,300.0	9,248.6	9,247.5	88.4	195.0	90.64	-6,428.0	-256.6	1,869.2	1,588.1	281.09	6.650	
14,300.0	9,300.0	9,246.4	9,245.3	89.7	195.0	90.56	-6,428.0	-256.6	1,826.1	1,543.0	283.08	6.451	
14,400.0	9,300.0	9,244.2	9,243.2	91.0	194.9	90.49	-6,428.1	-256.6	1,787.6	1,502.6	284.98	6.273	
14,500.0	9,300.0	9,242.1	9,241.0	92.3	194.9	90.41	-6,428.1	-256.6	1,754.0	1,467.2	286.76	6.117	
14,600.0	9,300.0	9,239.9	9,238.8	93.7	194.8	90.34	-6,428.2	-256.6	1,725.5	1,437.1	288.38	5.984	
14,700.0	9,300.0	9,237.7	9,236.7	95.0	194.8	90.26	-6,428.2	-256.6	1,702.4	1,412.6	289.80	5.875	
14,800.0	9,300.0	9,235.6	9,234.5	96.3	194.8	90.19	-6,428.3	-256.6	1,685.0	1,394.0	290.98	5.791	
14,900.0	9,300.0	9,233.4	9,232.4	97.6	194.7	90.12	-6,428.3	-256.6	1,673.3	1,381.4	291.91	5.732	
15,000.0	9,300.0	9,231.3	9,230.2	99.0	194.7	90.04	-6,428.4	-256.6	1,667.6	1,375.0	292.54	5.700	
15,045.8	9,300.0	9,230.3	9,229.3	99.6	194.6	90.01	-6,428.4	-256.6	1,667.0	1,374.2	292.74	5.694	CC, ES, SF
15,100.0	9,300.0	9,229.1	9,228.1	100.3	194.6	89.97	-6,428.4	-256.6	1,667.8	1,375.0	292.88	5.695	
15,200.0	9,300.0	9,227.0	9,226.0	101.6	194.6	89.90	-6,428.5	-256.6	1,674.1	1,381.2	292.91	5.715	
15,300.0	9,300.0	9,224.9	9,223.8	103.0	194.5	89.82	-6,428.5	-256.6	1,686.2	1,393.6	292.65	5.762	
15,400.0	9,300.0	9,222.7	9,221.7	104.3	194.5	89.75	-6,428.6	-256.6	1,704.2	1,412.1	292.10	5.834	
15,500.0	9,300.0	9,220.6	9,219.6	105.7	194.4	89.68	-6,428.6	-256.6	1,727.7	1,436.4	291.30	5.931	
15,600.0	9,300.0	9,218.5	9,217.4	107.0	194.4	89.60	-6,428.6	-256.6	1,756.6	1,466.4	290.26	6.052	
15,700.0	9,300.0	9,216.4	9,215.3	108.4	194.3	89.53	-6,428.7	-256.6	1,790.7	1,501.6	289.03	6.195	
15,800.0	9,300.0	9,214.3	9,213.2	109.7	194.3	89.46	-6,428.7	-256.6	1,829.6	1,541.9	287.64	6.361	
15,900.0	9,300.0	9,212.2	9,211.1	111.1	194.2	89.39	-6,428.8	-256.6	1,873.0	1,586.9	286.13	6.546	
16,000.0	9,300.0	9,210.0	9,209.0	112.4	194.2	89.31	-6,428.8	-256.6	1,920.6	1,636.1	284.52	6.750	
16,100.0	9,300.0	9,207.9	9,206.9	113.8	194.2	89.24	-6,428.9	-256.6	1,972.2	1,689.3	282.85	6.973	
16,200.0	9,300.0	9,205.8	9,204.8	115.2	194.1	89.17	-6,428.9	-256.6	2,027.4	1,746.2	281.14	7.211	
16,300.0	9,300.0	9,203.7	9,202.7	116.5	194.1	89.10	-6,429.0	-256.6	2,085.9	1,806.5	279.42	7.465	
16,400.0	9,300.0	9,201.7	9,200.6	117.9	194.0	89.03	-6,429.0	-256.6	2,147.5	1,869.8	277.71	7.733	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - New Mexico 36 State 002 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 307-INC-ONLY

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,000.0	9,300.0	9,260.4	9,259.4	73.2	194.3	95.85	-6,412.8	1,064.4	2,069.7	1,830.8	238.92	8.663	
13,100.0	9,300.0	9,258.7	9,257.6	74.4	194.2	95.56	-6,412.8	1,064.4	1,971.2	1,731.8	239.38	8.235	
13,200.0	9,300.0	9,256.9	9,255.9	75.6	194.2	95.27	-6,412.9	1,064.4	1,872.9	1,633.0	239.89	7.807	
13,300.0	9,300.0	9,255.2	9,254.1	76.9	194.2	94.98	-6,412.9	1,064.4	1,774.7	1,534.2	240.46	7.380	
13,400.0	9,300.0	9,253.4	9,252.4	78.1	194.1	94.69	-6,412.9	1,064.4	1,676.7	1,435.6	241.11	6.954	
13,500.0	9,300.0	9,251.7	9,250.6	79.4	194.1	94.40	-6,412.9	1,064.4	1,579.0	1,337.2	241.86	6.529	
13,600.0	9,300.0	9,249.9	9,248.9	80.7	194.1	94.11	-6,413.0	1,064.4	1,481.6	1,238.9	242.71	6.105	
13,700.0	9,300.0	9,248.2	9,247.1	82.0	194.0	93.83	-6,413.0	1,064.4	1,384.6	1,140.9	243.70	5.682	
13,800.0	9,300.0	9,246.4	9,245.4	83.2	194.0	93.54	-6,413.0	1,064.4	1,288.0	1,043.2	244.86	5.260	
13,900.0	9,300.0	9,244.7	9,243.6	84.5	194.0	93.25	-6,413.1	1,064.4	1,192.0	945.8	246.22	4.841	
14,000.0	9,300.0	9,243.0	9,241.9	85.8	193.9	92.97	-6,413.1	1,064.4	1,096.7	848.9	247.84	4.425	
14,100.0	9,300.0	9,241.2	9,240.2	87.1	193.9	92.68	-6,413.1	1,064.4	1,002.3	752.6	249.79	4.013	
14,200.0	9,300.0	9,239.5	9,238.4	88.4	193.9	92.39	-6,413.2	1,064.4	909.2	657.0	252.16	3.606	
14,300.0	9,300.0	9,237.8	9,236.7	89.7	193.8	92.11	-6,413.2	1,064.4	817.6	562.5	255.07	3.205	
14,400.0	9,300.0	9,236.0	9,235.0	91.0	193.8	91.82	-6,413.2	1,064.4	728.2	469.5	258.68	2.815	
14,500.0	9,300.0	9,234.3	9,233.3	92.3	193.7	91.54	-6,413.2	1,064.4	642.0	378.8	263.19	2.439	
14,600.0	9,300.0	9,232.6	9,231.6	93.7	193.7	91.25	-6,413.3	1,064.4	560.3	291.5	268.78	2.085	
14,700.0	9,300.0	9,230.9	9,229.8	95.0	193.7	90.97	-6,413.3	1,064.4	485.6	210.1	275.52	1.762	
14,800.0	9,300.0	9,229.2	9,228.1	96.3	193.6	90.69	-6,413.3	1,064.4	421.5	138.5	283.00	1.489	Level 3
14,900.0	9,300.0	9,227.5	9,226.4	97.6	193.6	90.41	-6,413.4	1,064.4	373.4	83.8	289.65	1.289	Level 3
15,000.0	9,300.0	9,225.8	9,224.7	99.0	193.6	90.12	-6,413.4	1,064.4	348.2	55.9	292.35	1.191	Level 2
15,040.9	9,300.0	9,225.1	9,224.0	99.5	193.6	90.01	-6,413.4	1,064.4	345.8	54.2	291.59	1.186	Level 2, CC, ES, SF
15,100.0	9,300.0	9,224.1	9,223.0	100.3	193.5	89.84	-6,413.4	1,064.4	350.8	62.4	288.47	1.216	Level 2
15,200.0	9,300.0	9,222.4	9,221.3	101.6	193.5	89.56	-6,413.4	1,064.4	380.7	101.4	279.24	1.363	Level 3
15,300.0	9,300.0	9,220.7	9,219.6	103.0	193.5	89.28	-6,413.5	1,064.4	432.1	163.6	268.49	1.609	
15,400.0	9,300.0	9,219.0	9,217.9	104.3	193.4	89.00	-6,413.5	1,064.4	498.5	239.5	258.95	1.925	
15,500.0	9,300.0	9,217.3	9,216.3	105.7	193.4	88.72	-6,413.5	1,064.4	574.7	323.3	251.44	2.286	
15,600.0	9,300.0	9,215.6	9,214.6	107.0	193.4	88.44	-6,413.6	1,064.4	657.3	411.5	245.84	2.674	
15,700.0	9,300.0	9,213.9	9,212.9	108.4	193.3	88.16	-6,413.6	1,064.4	744.2	502.5	241.74	3.079	
15,800.0	9,300.0	9,212.3	9,211.2	109.7	193.3	87.88	-6,413.6	1,064.4	834.0	595.3	238.75	3.493	
15,900.0	9,300.0	9,210.6	9,209.5	111.1	193.3	87.61	-6,413.6	1,064.4	926.0	689.4	236.57	3.914	
16,000.0	9,300.0	9,208.9	9,207.9	112.4	193.2	87.33	-6,413.7	1,064.4	1,019.4	784.4	234.97	4.338	
16,100.0	9,300.0	9,207.2	9,206.2	113.8	193.2	87.05	-6,413.7	1,064.4	1,114.0	880.2	233.80	4.765	
16,200.0	9,300.0	9,205.6	9,204.5	115.2	193.2	86.78	-6,413.7	1,064.4	1,209.4	976.5	232.93	5.192	
16,300.0	9,300.0	9,203.9	9,202.8	116.5	193.1	86.50	-6,413.8	1,064.4	1,305.5	1,073.2	232.29	5.620	
16,400.0	9,300.0	9,202.2	9,201.2	117.9	193.1	86.23	-6,413.8	1,064.4	1,402.2	1,170.4	231.82	6.049	
16,500.0	9,300.0	9,200.6	9,199.5	119.3	193.1	85.95	-6,413.8	1,064.4	1,499.3	1,267.8	231.47	6.477	
16,600.0	9,300.0	9,198.9	9,197.9	120.6	193.0	85.68	-6,413.8	1,064.4	1,596.7	1,365.5	231.21	6.906	
16,700.0	9,300.0	9,197.3	9,196.2	122.0	193.0	85.41	-6,413.9	1,064.4	1,694.5	1,463.5	231.03	7.335	
16,800.0	9,300.0	9,195.6	9,194.6	123.4	193.0	85.14	-6,413.9	1,064.4	1,792.5	1,561.6	230.90	7.763	
16,900.0	9,300.0	9,194.0	9,192.9	124.8	192.9	84.87	-6,413.9	1,064.4	1,890.7	1,659.9	230.81	8.192	
17,000.0	9,300.0	9,192.3	9,191.3	126.1	192.9	84.60	-6,413.9	1,064.4	1,989.1	1,758.3	230.76	8.620	
17,100.0	9,300.0	9,190.7	9,189.6	127.5	192.9	84.33	-6,414.0	1,064.4	2,087.6	1,856.9	230.73	9.048	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - New Mexico 36 State 004 - OH - OH

Offset Site Error: 0.0 usft

Survey Program: 251-INC-ONLY

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,100.0	9,300.0	9,222.7	9,222.0	100.3	185.3	90.58	-7,768.7	-247.7	2,106.5	1,830.4	276.19	7.627	
15,200.0	9,300.0	9,221.4	9,220.7	101.6	185.3	90.54	-7,768.7	-247.7	2,047.0	1,768.3	278.71	7.345	
15,300.0	9,300.0	9,220.1	9,219.4	103.0	185.3	90.49	-7,768.7	-247.7	1,990.8	1,709.5	281.27	7.078	
15,400.0	9,300.0	9,218.8	9,218.1	104.3	185.2	90.45	-7,768.7	-247.7	1,938.0	1,654.2	283.83	6.828	
15,500.0	9,300.0	9,217.5	9,216.8	105.7	185.2	90.40	-7,768.7	-247.7	1,889.1	1,602.7	286.36	6.597	
15,600.0	9,300.0	9,216.2	9,215.4	107.0	185.2	90.36	-7,768.8	-247.7	1,844.3	1,555.4	288.84	6.385	
15,700.0	9,300.0	9,214.9	9,214.1	108.4	185.2	90.31	-7,768.8	-247.7	1,803.9	1,512.7	291.22	6.194	
15,800.0	9,300.0	9,213.6	9,212.8	109.7	185.1	90.27	-7,768.8	-247.7	1,768.3	1,474.8	293.46	6.026	
15,900.0	9,300.0	9,212.2	9,211.5	111.1	185.1	90.22	-7,768.8	-247.7	1,737.7	1,442.2	295.51	5.880	
16,000.0	9,300.0	9,210.9	9,210.2	112.4	185.1	90.18	-7,768.8	-247.7	1,712.4	1,415.1	297.33	5.759	
16,100.0	9,300.0	9,209.6	9,208.9	113.8	185.1	90.13	-7,768.9	-247.7	1,692.7	1,393.8	298.88	5.663	
16,200.0	9,300.0	9,208.3	9,207.6	115.2	185.0	90.09	-7,768.9	-247.7	1,678.7	1,378.5	300.10	5.594	
16,300.0	9,300.0	9,207.0	9,206.3	116.5	185.0	90.04	-7,768.9	-247.7	1,670.5	1,369.5	300.99	5.550	
16,386.3	9,300.0	9,205.9	9,205.2	117.7	185.0	90.01	-7,768.9	-247.7	1,668.3	1,366.8	301.46	5.534	CC, ES
16,400.0	9,300.0	9,205.7	9,205.0	117.9	185.0	90.00	-7,768.9	-247.7	1,668.3	1,366.8	301.51	5.533	SF
16,500.0	9,300.0	9,204.4	9,203.7	119.3	185.0	89.95	-7,768.9	-247.7	1,672.1	1,370.5	301.65	5.543	
16,600.0	9,300.0	9,203.1	9,202.4	120.6	184.9	89.91	-7,768.9	-247.7	1,681.9	1,380.5	301.42	5.580	
16,700.0	9,300.0	9,201.8	9,201.1	122.0	184.9	89.86	-7,769.0	-247.7	1,697.5	1,396.7	300.84	5.643	
16,800.0	9,300.0	9,200.5	9,199.7	123.4	184.9	89.82	-7,769.0	-247.7	1,718.8	1,418.9	299.93	5.731	
16,900.0	9,300.0	9,199.2	9,198.4	124.8	184.9	89.77	-7,769.0	-247.7	1,745.6	1,446.8	298.72	5.843	
17,000.0	9,300.0	9,197.8	9,197.1	126.1	184.8	89.73	-7,769.0	-247.7	1,777.5	1,480.3	297.26	5.980	
17,100.0	9,300.0	9,196.5	9,195.8	127.5	184.8	89.69	-7,769.0	-247.7	1,814.5	1,518.9	295.58	6.139	
17,200.0	9,300.0	9,195.2	9,194.5	128.9	184.8	89.64	-7,769.0	-247.7	1,856.1	1,562.4	293.73	6.319	
17,300.0	9,300.0	9,193.9	9,193.2	130.3	184.8	89.60	-7,769.1	-247.7	1,902.0	1,610.3	291.76	6.519	
17,400.0	9,300.0	9,192.6	9,191.9	131.7	184.7	89.55	-7,769.1	-247.7	1,952.0	1,662.4	289.69	6.738	
17,500.0	9,300.0	9,191.3	9,190.6	133.1	184.7	89.51	-7,769.1	-247.7	2,005.8	1,718.2	287.57	6.975	
17,600.0	9,300.0	9,190.0	9,189.3	134.4	184.7	89.46	-7,769.1	-247.7	2,063.0	1,777.5	285.43	7.228	
17,700.0	9,300.0	9,188.7	9,188.0	135.8	184.6	89.42	-7,769.1	-247.7	2,123.3	1,840.1	283.28	7.496	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 008H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-21.40	158.9	-62.3	170.7				
100.0	100.0	99.6	99.6	0.1	0.1	-21.40	158.9	-62.3	170.7	170.4	0.26	649.176	
200.0	200.0	199.6	199.6	0.5	0.5	-21.40	158.9	-62.3	170.7	169.7	0.98	174.365	
300.0	300.0	299.6	299.6	0.8	0.8	-21.40	158.9	-62.3	170.7	169.0	1.70	100.653	
400.0	400.0	399.6	399.6	1.2	1.2	-21.40	158.9	-62.3	170.7	168.3	2.41	70.746	
500.0	500.0	499.6	499.6	1.6	1.6	-21.40	158.9	-62.3	170.7	167.6	3.13	54.540	
600.0	600.0	599.6	599.6	1.9	1.9	-21.40	158.9	-62.3	170.7	166.9	3.85	44.375	
700.0	700.0	699.6	699.6	2.3	2.3	-21.40	158.9	-62.3	170.7	166.1	4.56	37.404	
800.0	800.0	799.6	799.6	2.6	2.6	-21.40	158.9	-62.3	170.7	165.4	5.28	32.326	
900.0	900.0	899.6	899.6	3.0	3.0	-21.40	158.9	-62.3	170.7	164.7	6.00	28.462	
1,000.0	1,000.0	999.6	999.6	3.4	3.4	-21.40	158.9	-62.3	170.7	164.0	6.71	25.423	
1,100.0	1,100.0	1,099.6	1,099.6	3.7	3.7	-21.40	158.9	-62.3	170.7	163.3	7.43	22.970	
1,200.0	1,200.0	1,199.6	1,199.6	4.1	4.1	-21.40	158.9	-62.3	170.7	162.6	8.15	20.949	
1,300.0	1,300.0	1,299.6	1,299.6	4.4	4.4	-21.40	158.9	-62.3	170.7	161.8	8.87	19.255	
1,400.0	1,400.0	1,399.6	1,399.6	4.8	4.8	-21.40	158.9	-62.3	170.7	161.1	9.58	17.814	
1,500.0	1,500.0	1,499.6	1,499.6	5.2	5.1	-21.40	158.9	-62.3	170.7	160.4	10.30	16.574	
1,600.0	1,600.0	1,599.6	1,599.6	5.5	5.5	-21.40	158.9	-62.3	170.7	159.7	11.02	15.495	
1,700.0	1,700.0	1,699.6	1,699.6	5.9	5.9	-21.40	158.9	-62.3	170.7	159.0	11.73	14.549	
1,800.0	1,800.0	1,799.6	1,799.6	6.2	6.2	-21.40	158.9	-62.3	170.7	158.3	12.45	13.711	
1,900.0	1,900.0	1,899.6	1,899.6	6.6	6.6	-21.40	158.9	-62.3	170.7	157.5	13.17	12.964	
2,000.0	2,000.0	1,999.6	1,999.6	6.9	6.9	-21.40	158.9	-62.3	170.7	156.8	13.88	12.295	
2,100.0	2,100.0	2,105.7	2,105.7	7.3	7.3	-137.38	157.0	-62.0	169.2	154.6	14.59	11.600	
2,200.0	2,199.9	2,211.7	2,211.5	7.6	7.6	-138.72	151.2	-61.0	166.4	151.2	15.24	10.919	
2,300.0	2,299.7	2,314.1	2,313.5	8.0	8.0	-141.15	142.5	-59.6	163.4	147.5	15.90	10.276	
2,359.9	2,359.3	2,373.7	2,372.9	8.2	8.2	-142.97	137.1	-58.8	162.8	146.5	16.30	9.988	CC, ES
2,400.0	2,399.1	2,413.7	2,412.7	8.3	8.3	-144.33	133.6	-58.2	163.1	146.5	16.57	9.842	
2,500.0	2,498.2	2,513.0	2,511.6	8.7	8.6	-148.12	124.7	-56.8	166.2	149.0	17.24	9.639	
2,600.0	2,596.6	2,612.0	2,610.2	9.0	9.0	-152.24	115.8	-55.3	173.2	155.2	17.92	9.661	
2,700.0	2,694.4	2,710.4	2,708.2	9.4	9.3	-156.43	107.0	-53.9	184.1	165.5	18.60	9.898	
2,800.0	2,791.6	2,808.4	2,805.8	9.8	9.7	-160.45	98.3	-52.5	198.7	179.5	19.29	10.304	
2,900.0	2,888.7	2,906.4	2,903.4	10.2	10.0	-163.97	89.5	-51.1	214.5	194.5	19.97	10.738	
3,000.0	2,985.8	3,004.3	3,000.9	10.6	10.3	-167.01	80.7	-49.7	230.9	210.2	20.66	11.175	
3,100.0	3,082.9	3,102.3	3,098.5	11.0	10.7	-169.64	72.0	-48.3	247.9	226.5	21.35	11.608	
3,200.0	3,180.0	3,200.2	3,196.0	11.4	11.0	-171.94	63.2	-46.9	265.3	243.3	22.05	12.032	
3,300.0	3,277.1	3,298.2	3,293.5	11.8	11.4	-173.95	54.5	-45.5	283.1	260.4	22.75	12.444	
3,400.0	3,374.2	3,396.1	3,391.1	12.2	11.7	-175.73	45.7	-44.1	301.2	277.8	23.46	12.841	
3,500.0	3,471.3	3,494.0	3,488.6	12.7	12.1	-177.30	37.0	-42.6	319.6	295.4	24.16	13.224	
3,600.0	3,568.4	3,592.0	3,586.2	13.1	12.4	-178.70	28.2	-41.2	338.1	313.2	24.88	13.592	
3,700.0	3,665.5	3,689.9	3,683.7	13.5	12.8	-179.96	19.5	-39.8	356.9	331.3	25.59	13.944	
3,800.0	3,762.7	3,787.9	3,781.2	14.0	13.2	178.91	10.7	-38.4	375.7	349.4	26.31	14.281	
3,900.0	3,859.8	3,885.8	3,878.8	14.4	13.5	177.88	1.9	-37.0	394.8	367.7	27.03	14.603	
4,000.0	3,956.9	3,983.7	3,976.3	14.9	13.9	176.95	-6.8	-35.6	413.9	386.1	27.76	14.911	
4,100.0	4,054.0	4,081.7	4,073.8	15.3	14.2	176.11	-15.6	-34.2	433.1	404.6	28.48	15.205	
4,200.0	4,151.1	4,179.6	4,171.4	15.8	14.6	175.33	-24.3	-32.8	452.4	423.2	29.21	15.486	
4,300.0	4,248.2	4,277.6	4,268.9	16.2	14.9	174.62	-33.1	-31.4	471.8	441.8	29.95	15.754	
4,400.0	4,345.3	4,375.5	4,366.5	16.7	15.3	173.96	-41.8	-30.0	491.2	460.5	30.68	16.011	
4,500.0	4,442.4	4,473.5	4,464.0	17.2	15.7	173.35	-50.6	-28.5	510.7	479.3	31.42	16.256	
4,600.0	4,539.5	4,571.4	4,561.5	17.6	16.0	172.79	-59.4	-27.1	530.3	498.1	32.16	16.491	
4,700.0	4,636.6	4,669.3	4,659.1	18.1	16.4	172.27	-68.1	-25.7	549.9	517.0	32.90	16.715	
4,800.0	4,733.7	4,767.3	4,756.6	18.6	16.8	171.78	-76.9	-24.3	569.5	535.9	33.64	16.930	
4,900.0	4,830.8	4,865.2	4,854.2	19.0	17.1	171.33	-85.6	-22.9	589.2	554.8	34.38	17.136	
5,000.0	4,927.9	4,963.2	4,951.7	19.5	17.5	170.90	-94.4	-21.5	608.9	573.8	35.13	17.334	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 008H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,100.0	5,025.0	5,061.1	5,049.2	20.0	17.8	170.51	-103.1	-20.1	628.6	592.8	35.87	17.523	
5,200.0	5,122.1	5,159.1	5,146.8	20.4	18.2	170.13	-111.9	-18.7	648.4	611.8	36.62	17.705	
5,300.0	5,219.2	5,257.0	5,244.3	20.9	18.6	169.78	-120.6	-17.3	668.2	630.8	37.37	17.879	
5,400.0	5,316.3	5,354.9	5,341.9	21.4	18.9	169.45	-129.4	-15.9	688.0	649.9	38.12	18.047	
5,500.0	5,413.4	5,452.9	5,439.4	21.9	19.3	169.14	-138.2	-14.4	707.8	669.0	38.88	18.208	
5,600.0	5,510.5	5,550.8	5,536.9	22.3	19.7	168.84	-146.9	-13.0	727.7	688.1	39.63	18.363	
5,700.0	5,607.6	5,648.8	5,634.5	22.8	20.0	168.56	-155.7	-11.6	747.6	707.2	40.38	18.512	
5,800.0	5,704.7	5,746.7	5,732.0	23.3	20.4	168.30	-164.4	-10.2	767.4	726.3	41.14	18.655	
5,900.0	5,801.8	5,844.6	5,829.6	23.8	20.8	168.04	-173.2	-8.8	787.3	745.5	41.89	18.794	
6,000.0	5,898.9	5,942.6	5,927.1	24.3	21.1	167.80	-181.9	-7.4	807.3	764.6	42.65	18.927	
6,100.0	5,996.0	6,040.5	6,024.6	24.7	21.5	167.58	-190.7	-6.0	827.2	783.8	43.41	19.056	
6,200.0	6,093.1	6,138.5	6,122.2	25.2	21.9	167.36	-199.5	-4.6	847.1	803.0	44.17	19.180	
6,300.0	6,190.3	6,236.4	6,219.7	25.7	22.2	167.15	-208.2	-3.2	867.1	822.2	44.93	19.300	
6,400.0	6,287.4	6,334.4	6,317.3	26.2	22.6	166.95	-217.0	-1.8	887.1	841.4	45.69	19.415	
6,500.0	6,384.5	6,432.3	6,414.8	26.7	23.0	166.76	-225.7	-0.3	907.0	860.6	46.45	19.527	
6,600.0	6,481.6	6,530.2	6,512.3	27.2	23.3	166.58	-234.5	1.1	927.0	879.8	47.21	19.635	
6,700.0	6,578.7	6,628.2	6,609.9	27.6	23.7	166.41	-243.2	2.5	947.0	899.0	47.97	19.740	
6,800.0	6,675.8	6,726.1	6,707.4	28.1	24.1	166.24	-252.0	3.9	967.0	918.3	48.74	19.841	
6,900.0	6,772.9	6,824.1	6,805.0	28.6	24.4	166.08	-260.8	5.3	987.0	937.5	49.50	19.939	
7,000.0	6,870.0	6,922.0	6,902.5	29.1	24.8	165.93	-269.5	6.7	1,007.0	956.7	50.26	20.034	
7,100.0	6,967.1	7,019.9	7,000.0	29.6	25.2	165.78	-278.3	8.1	1,027.0	976.0	51.03	20.127	
7,200.0	7,064.2	7,117.9	7,097.6	30.1	25.6	165.64	-287.0	9.5	1,047.1	995.3	51.79	20.216	
7,300.0	7,161.3	7,215.8	7,195.1	30.5	25.9	165.50	-295.8	10.9	1,067.1	1,014.5	52.56	20.302	
7,400.0	7,258.4	7,313.8	7,292.7	31.0	26.3	165.37	-304.5	12.4	1,087.1	1,033.8	53.33	20.386	
7,500.0	7,355.5	7,411.7	7,390.2	31.5	26.7	165.24	-313.3	13.8	1,107.2	1,053.1	54.09	20.468	
7,600.0	7,452.6	7,509.7	7,487.7	32.0	27.0	165.12	-322.0	15.2	1,127.2	1,072.4	54.86	20.547	
7,700.0	7,549.7	7,607.6	7,585.3	32.5	27.4	165.00	-330.8	16.6	1,147.3	1,091.6	55.63	20.624	
7,800.0	7,646.8	7,705.5	7,682.8	33.0	27.8	164.89	-339.6	18.0	1,167.3	1,110.9	56.40	20.699	
7,900.0	7,743.9	7,803.5	7,780.4	33.5	28.1	164.78	-348.3	19.4	1,187.4	1,130.2	57.16	20.772	
8,000.0	7,841.0	7,901.4	7,877.9	34.0	28.5	164.67	-357.1	20.8	1,207.5	1,149.5	57.93	20.842	
8,100.0	7,938.1	7,999.4	7,975.4	34.4	28.9	164.57	-365.8	22.2	1,227.5	1,168.8	58.70	20.911	
8,200.0	8,035.2	8,097.3	8,073.0	34.9	29.2	164.47	-374.6	23.6	1,247.6	1,188.1	59.47	20.978	
8,300.0	8,132.7	8,195.5	8,170.8	35.4	29.6	164.45	-383.4	25.0	1,266.1	1,205.9	60.24	21.018	
8,400.0	8,230.9	8,294.3	8,269.2	35.9	30.0	164.38	-392.2	26.5	1,281.3	1,220.3	61.00	21.003	
8,500.0	8,329.7	8,393.5	8,368.0	36.3	30.4	164.25	-401.1	27.9	1,293.2	1,231.4	61.77	20.937	
8,600.0	8,429.0	8,493.0	8,467.0	36.7	30.7	164.06	-410.0	29.3	1,301.7	1,239.2	62.52	20.821	
8,700.0	8,528.6	8,592.7	8,566.3	37.0	31.1	163.82	-418.9	30.8	1,307.0	1,243.7	63.27	20.657	
8,800.0	8,628.5	8,692.4	8,665.6	37.3	31.5	163.51	-427.8	32.2	1,308.9	1,244.9	64.01	20.448	
8,900.0	8,728.5	8,792.0	8,764.8	37.6	31.9	-81.13	-436.7	33.6	1,307.5	1,242.8	64.73	20.199	
9,000.0	8,828.5	8,891.6	8,864.0	37.9	32.3	103.01	-445.6	35.1	1,304.7	1,239.3	65.45	19.936	
9,052.3	8,880.6	8,943.9	8,916.1	38.1	32.5	103.04	-450.3	35.8	1,304.1	1,238.3	65.83	19.810	
9,100.0	8,927.6	8,991.4	8,963.4	38.2	32.6	103.15	-454.5	36.5	1,304.6	1,238.5	66.17	19.717	
9,200.0	9,022.1	9,088.4	9,060.0	38.6	33.0	103.55	-463.2	37.9	1,309.5	1,242.6	66.87	19.583	
9,300.0	9,108.0	9,178.5	9,149.7	39.1	33.3	103.96	-471.2	39.2	1,320.1	1,252.5	67.52	19.550	
9,400.0	9,181.3	9,257.7	9,228.5	39.5	33.6	103.94	-478.3	40.3	1,337.6	1,269.5	68.10	19.641	
9,500.0	9,239.0	9,317.2	9,287.9	40.0	33.9	102.76	-483.5	41.2	1,363.2	1,294.7	68.54	19.891	
9,600.0	9,278.4	9,354.9	9,325.5	40.6	34.0	99.84	-486.3	41.6	1,397.9	1,329.1	68.80	20.318	
9,700.0	9,297.9	9,375.5	9,346.0	41.1	34.1	95.02	-487.7	41.8	1,441.1	1,372.2	68.92	20.909	
9,800.0	9,300.0	9,381.7	9,352.2	41.7	34.1	92.35	-488.0	41.9	1,490.6	1,421.7	68.92	21.628	
9,900.0	9,300.0	9,386.1	9,356.6	42.3	34.1	92.49	-488.3	41.9	1,542.5	1,473.6	68.90	22.386	
10,000.0	9,300.0	9,400.0	9,370.5	42.9	34.2	93.07	-489.1	42.1	1,596.5	1,527.5	68.95	23.156	
10,100.0	9,300.0	11,012.0	10,200.0	43.6	42.9	124.26	-1,480.4	50.5	1,599.5	1,524.6	74.86	21.365	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 008H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	9,300.0	11,112.0	10,200.0	44.2	43.7	124.26	-1,580.4	51.3	1,599.5	1,523.2	76.27	20.971	
10,300.0	9,300.0	11,212.0	10,200.0	45.0	44.6	124.26	-1,680.4	52.0	1,599.4	1,521.7	77.73	20.576	
10,400.0	9,300.0	11,312.0	10,200.0	45.7	45.5	124.26	-1,780.3	52.8	1,599.4	1,520.2	79.25	20.182	
10,500.0	9,300.0	11,412.0	10,200.0	46.5	46.4	124.26	-1,880.3	53.6	1,599.4	1,518.6	80.82	19.789	
10,600.0	9,300.0	11,512.0	10,200.0	47.3	47.3	124.26	-1,980.3	54.4	1,599.4	1,517.0	82.44	19.401	
10,700.0	9,300.0	11,612.0	10,200.0	48.2	48.3	124.26	-2,080.3	55.2	1,599.4	1,515.3	84.11	19.016	
10,800.0	9,300.0	11,712.0	10,200.0	49.1	49.3	124.26	-2,180.3	56.0	1,599.4	1,513.5	85.82	18.637	
10,900.0	9,300.0	11,812.0	10,200.0	50.0	50.3	124.26	-2,280.3	56.8	1,599.3	1,511.8	87.57	18.264	
11,000.0	9,300.0	11,912.0	10,200.0	50.9	51.3	124.26	-2,380.3	57.6	1,599.3	1,510.0	89.36	17.898	
11,100.0	9,300.0	12,012.0	10,200.0	51.9	52.3	124.26	-2,480.3	58.3	1,599.3	1,508.1	91.18	17.540	
11,200.0	9,300.0	12,112.0	10,200.0	52.8	53.4	124.26	-2,580.3	59.1	1,599.3	1,506.2	93.04	17.189	
11,300.0	9,300.0	12,212.0	10,200.0	53.8	54.5	124.27	-2,680.3	59.9	1,599.3	1,504.3	94.93	16.846	
11,400.0	9,300.0	12,312.0	10,200.0	54.9	55.6	124.27	-2,780.3	60.7	1,599.3	1,502.4	96.85	16.512	
11,500.0	9,300.0	12,412.0	10,200.0	55.9	56.7	124.27	-2,880.3	61.5	1,599.2	1,500.4	98.81	16.186	
11,600.0	9,300.0	12,512.0	10,200.0	57.0	57.8	124.27	-2,980.3	62.3	1,599.2	1,498.4	100.78	15.868	
11,700.0	9,300.0	12,612.0	10,200.0	58.0	59.0	124.27	-3,080.3	63.1	1,599.2	1,496.4	102.79	15.559	
11,800.0	9,300.0	12,712.0	10,200.0	59.1	60.1	124.27	-3,180.3	63.8	1,599.2	1,494.4	104.81	15.258	
11,900.0	9,300.0	12,812.0	10,200.0	60.2	61.3	124.27	-3,280.3	64.6	1,599.2	1,492.3	106.86	14.965	
12,000.0	9,300.0	12,912.0	10,200.0	61.3	62.5	124.27	-3,380.3	65.4	1,599.2	1,490.2	108.93	14.680	
12,100.0	9,300.0	13,012.0	10,200.0	62.5	63.7	124.27	-3,480.3	66.2	1,599.1	1,488.1	111.02	14.404	
12,200.0	9,300.0	13,112.0	10,200.0	63.6	64.9	124.27	-3,580.3	67.0	1,599.1	1,486.0	113.13	14.135	
12,300.0	9,300.0	13,212.0	10,200.0	64.8	66.1	124.27	-3,680.3	67.8	1,599.1	1,483.8	115.26	13.874	
12,400.0	9,300.0	13,312.0	10,200.0	65.9	67.3	124.27	-3,780.3	68.6	1,599.1	1,481.7	117.40	13.620	
12,500.0	9,300.0	13,412.0	10,200.0	67.1	68.5	124.27	-3,880.3	69.3	1,599.1	1,479.5	119.56	13.374	
12,600.0	9,300.0	13,512.0	10,200.0	68.3	69.8	124.27	-3,980.3	70.1	1,599.1	1,477.3	121.74	13.135	
12,700.0	9,300.0	13,612.0	10,200.0	69.5	71.0	124.27	-4,080.3	70.9	1,599.0	1,475.1	123.93	12.903	
12,800.0	9,300.0	13,712.0	10,200.0	70.7	72.3	124.27	-4,180.3	71.7	1,599.0	1,472.9	126.13	12.677	
12,900.0	9,300.0	13,812.0	10,200.0	71.9	73.5	124.27	-4,280.3	72.5	1,599.0	1,470.7	128.35	12.458	
13,000.0	9,300.0	13,912.0	10,200.0	73.2	74.8	124.27	-4,380.3	73.3	1,599.0	1,468.4	130.58	12.245	
13,100.0	9,300.0	14,012.0	10,200.0	74.4	76.1	124.27	-4,480.3	74.1	1,599.0	1,466.1	132.82	12.039	
13,200.0	9,300.0	14,112.0	10,200.0	75.6	77.4	124.27	-4,580.3	74.9	1,598.9	1,463.9	135.07	11.838	
13,300.0	9,300.0	14,212.0	10,200.0	76.9	78.7	124.27	-4,680.3	75.6	1,598.9	1,461.6	137.33	11.643	
13,400.0	9,300.0	14,312.0	10,200.0	78.1	79.9	124.27	-4,780.3	76.4	1,598.9	1,459.3	139.60	11.453	
13,500.0	9,300.0	14,412.0	10,200.0	79.4	81.2	124.27	-4,880.3	77.2	1,598.9	1,457.0	141.88	11.269	
13,600.0	9,300.0	14,512.0	10,200.0	80.7	82.5	124.27	-4,980.3	78.0	1,598.9	1,454.7	144.18	11.090	
13,700.0	9,300.0	14,612.0	10,200.0	82.0	83.9	124.27	-5,080.2	78.8	1,598.9	1,452.4	146.47	10.916	
13,800.0	9,300.0	14,712.0	10,200.0	83.2	85.2	124.28	-5,180.2	79.6	1,598.8	1,450.1	148.78	10.746	
13,900.0	9,300.0	14,812.0	10,200.0	84.5	86.5	124.28	-5,280.2	80.4	1,598.8	1,447.7	151.10	10.582	
14,000.0	9,300.0	14,912.0	10,200.0	85.8	87.8	124.28	-5,380.2	81.1	1,598.8	1,445.4	153.42	10.421	
14,100.0	9,300.0	15,012.0	10,200.0	87.1	89.1	124.28	-5,480.2	81.9	1,598.8	1,443.0	155.75	10.265	
14,200.0	9,300.0	15,112.0	10,200.0	88.4	90.5	124.28	-5,580.2	82.7	1,598.8	1,440.7	158.09	10.113	
14,300.0	9,300.0	15,212.0	10,200.0	89.7	91.8	124.28	-5,680.2	83.5	1,598.8	1,438.3	160.43	9.966	
14,400.0	9,300.0	15,312.0	10,200.0	91.0	93.1	124.28	-5,780.2	84.3	1,598.7	1,436.0	162.78	9.822	
14,500.0	9,300.0	15,412.0	10,200.0	92.3	94.5	124.28	-5,880.2	85.1	1,598.7	1,433.6	165.13	9.681	
14,600.0	9,300.0	15,512.0	10,200.0	93.7	95.8	124.28	-5,980.2	85.9	1,598.7	1,431.2	167.49	9.545	
14,700.0	9,300.0	15,612.0	10,200.0	95.0	97.1	124.28	-6,080.2	86.6	1,598.7	1,428.8	169.86	9.412	
14,800.0	9,300.0	15,712.0	10,200.0	96.3	98.5	124.28	-6,180.2	87.4	1,598.7	1,426.4	172.23	9.282	
14,900.0	9,300.0	15,812.0	10,200.0	97.6	99.8	124.28	-6,280.2	88.2	1,598.7	1,424.0	174.61	9.156	
15,000.0	9,300.0	15,912.0	10,200.0	99.0	101.2	124.28	-6,380.2	89.0	1,598.6	1,421.7	176.99	9.032	
15,100.0	9,300.0	16,012.0	10,200.0	100.3	102.6	124.28	-6,480.2	89.8	1,598.6	1,419.2	179.38	8.912	
15,200.0	9,300.0	16,112.0	10,200.0	101.6	103.9	124.28	-6,580.2	90.6	1,598.6	1,416.8	181.77	8.795	
15,300.0	9,300.0	16,212.0	10,200.0	103.0	105.3	124.28	-6,680.2	91.4	1,598.6	1,414.4	184.16	8.680	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 008H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	9,300.0	16,312.0	10,200.0	104.3	106.6	124.28	-6,780.2	92.2	1,598.6	1,412.0	186.56	8.568	
15,500.0	9,300.0	16,412.0	10,200.0	105.7	108.0	124.28	-6,880.2	92.9	1,598.6	1,409.6	188.97	8.459	
15,600.0	9,300.0	16,512.0	10,200.0	107.0	109.4	124.28	-6,980.2	93.7	1,598.5	1,407.2	191.38	8.353	
15,700.0	9,300.0	16,612.0	10,200.0	108.4	110.7	124.28	-7,080.2	94.5	1,598.5	1,404.7	193.79	8.249	
15,800.0	9,300.0	16,712.0	10,200.0	109.7	112.1	124.28	-7,180.2	95.3	1,598.5	1,402.3	196.20	8.147	
15,900.0	9,300.0	16,812.0	10,200.0	111.1	113.5	124.28	-7,280.2	96.1	1,598.5	1,399.9	198.62	8.048	
16,000.0	9,300.0	16,912.0	10,200.0	112.4	114.9	124.28	-7,380.2	96.9	1,598.5	1,397.4	201.04	7.951	
16,100.0	9,300.0	17,012.0	10,200.0	113.8	116.2	124.28	-7,480.2	97.7	1,598.5	1,395.0	203.46	7.856	
16,200.0	9,300.0	17,112.0	10,200.0	115.2	117.6	124.28	-7,580.2	98.4	1,598.4	1,392.5	205.89	7.764	
16,300.0	9,300.0	17,212.0	10,200.0	116.5	119.0	124.29	-7,680.2	99.2	1,598.4	1,390.1	208.32	7.673	
16,400.0	9,300.0	17,312.0	10,200.0	117.9	120.4	124.29	-7,780.2	100.0	1,598.4	1,387.6	210.75	7.584	
16,500.0	9,300.0	17,412.0	10,200.0	119.3	121.8	124.29	-7,880.2	100.8	1,598.4	1,385.2	213.19	7.497	
16,600.0	9,300.0	17,512.0	10,200.0	120.6	123.1	124.29	-7,980.2	101.6	1,598.4	1,382.7	215.63	7.413	
16,700.0	9,300.0	17,612.0	10,200.0	122.0	124.5	124.29	-8,080.2	102.4	1,598.4	1,380.3	218.07	7.330	
16,800.0	9,300.0	17,712.0	10,200.0	123.4	125.9	124.29	-8,180.2	103.2	1,598.3	1,377.8	220.51	7.248	
16,900.0	9,300.0	17,812.0	10,200.0	124.8	127.3	124.29	-8,280.1	103.9	1,598.3	1,375.4	222.96	7.169	
17,000.0	9,300.0	17,912.0	10,200.0	126.1	128.7	124.29	-8,380.1	104.7	1,598.3	1,372.9	225.41	7.091	
17,100.0	9,300.0	18,012.0	10,200.0	127.5	130.1	124.29	-8,480.1	105.5	1,598.3	1,370.4	227.86	7.014	
17,200.0	9,300.0	18,112.0	10,200.0	128.9	131.5	124.29	-8,580.1	106.3	1,598.3	1,368.0	230.31	6.940	
17,300.0	9,300.0	18,212.0	10,200.0	130.3	132.9	124.29	-8,680.1	107.1	1,598.3	1,365.5	232.77	6.866	
17,400.0	9,300.0	18,312.0	10,200.0	131.7	134.3	124.29	-8,780.1	107.9	1,598.2	1,363.0	235.22	6.795	
17,500.0	9,300.0	18,412.0	10,200.0	133.1	135.7	124.29	-8,880.1	108.7	1,598.2	1,360.5	237.68	6.724	
17,600.0	9,300.0	18,512.0	10,200.0	134.4	137.1	124.29	-8,980.1	109.5	1,598.2	1,358.1	240.14	6.655	
17,700.0	9,300.0	18,612.0	10,200.0	135.8	138.5	124.29	-9,080.1	110.2	1,598.2	1,355.6	242.61	6.588	
17,800.0	9,300.0	18,712.0	10,200.0	137.2	139.9	124.29	-9,180.1	111.0	1,598.2	1,353.1	245.07	6.521	
17,900.0	9,300.0	18,812.0	10,200.0	138.6	141.3	124.29	-9,280.1	111.8	1,598.1	1,350.6	247.54	6.456	
18,000.0	9,300.0	18,912.0	10,200.0	140.0	142.7	124.29	-9,380.1	112.6	1,598.1	1,348.1	250.01	6.392	
18,100.0	9,300.0	19,012.0	10,200.0	141.4	144.1	124.29	-9,480.1	113.4	1,598.1	1,345.6	252.48	6.330	
18,200.0	9,300.0	19,112.0	10,200.0	142.8	145.5	124.29	-9,580.1	114.2	1,598.1	1,343.2	254.95	6.268	
18,300.0	9,300.0	19,212.0	10,200.0	144.2	146.9	124.29	-9,680.1	115.0	1,598.1	1,340.7	257.42	6.208	
18,400.0	9,300.0	19,312.0	10,200.0	145.6	148.3	124.29	-9,780.1	115.7	1,598.1	1,338.2	259.89	6.149	
18,500.0	9,300.0	19,412.0	10,200.0	147.0	149.7	124.29	-9,880.1	116.5	1,598.0	1,335.7	262.37	6.091	
18,600.0	9,300.0	19,512.0	10,200.0	148.4	151.1	124.29	-9,980.1	117.3	1,598.0	1,333.2	264.85	6.034	
18,700.0	9,300.0	19,612.0	10,200.0	149.8	152.5	124.29	-10,080.1	118.1	1,598.0	1,330.7	267.33	5.978	
18,800.0	9,300.0	19,712.0	10,200.0	151.2	153.9	124.30	-10,180.1	118.9	1,598.0	1,328.2	269.80	5.923	
18,900.0	9,300.0	19,812.0	10,200.0	152.6	155.3	124.30	-10,280.1	119.7	1,598.0	1,325.7	272.29	5.869	
19,000.0	9,300.0	19,912.0	10,200.0	154.0	156.7	124.30	-10,380.1	120.5	1,598.0	1,323.2	274.77	5.816	
19,100.0	9,300.0	20,012.0	10,200.0	155.4	158.1	124.30	-10,480.1	121.2	1,597.9	1,320.7	277.25	5.764	
19,200.0	9,300.0	20,112.0	10,200.0	156.8	159.5	124.30	-10,580.1	122.0	1,597.9	1,318.2	279.74	5.712	
19,300.0	9,300.0	20,212.0	10,200.0	158.2	161.0	124.30	-10,680.1	122.8	1,597.9	1,315.7	282.22	5.662	
19,400.0	9,300.0	20,312.0	10,200.0	159.6	162.4	124.30	-10,780.1	123.6	1,597.9	1,313.2	284.71	5.612	
19,500.0	9,300.0	20,412.0	10,200.0	161.0	163.8	124.30	-10,880.1	124.4	1,597.9	1,310.7	287.20	5.564	
19,600.0	9,300.0	20,512.0	10,200.0	162.4	165.2	124.30	-10,980.1	125.2	1,597.9	1,308.2	289.69	5.516	
19,678.1	9,300.0	20,590.1	10,200.0	163.4	166.3	124.30	-11,058.2	125.8	1,597.8	1,306.4	291.44	5.483	SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 009H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.93	-0.3	-20.0	20.1				
100.0	100.0	98.2	98.2	0.1	0.1	-90.93	-0.3	-20.0	20.1	19.8	0.26	76.791	
200.0	200.0	198.2	198.2	0.5	0.5	-90.93	-0.3	-20.0	20.1	19.1	0.97	20.586	
300.0	300.0	298.2	298.2	0.8	0.8	-90.93	-0.3	-20.0	20.1	18.4	1.69	11.858	
400.0	400.0	398.2	398.2	1.2	1.2	-90.93	-0.3	-20.0	20.1	17.6	2.41	8.327	
500.0	500.0	498.2	498.2	1.6	1.6	-90.93	-0.3	-20.0	20.1	16.9	3.12	6.417	
600.0	600.0	598.2	598.2	1.9	1.9	-90.93	-0.3	-20.0	20.1	16.2	3.84	5.219	
700.0	700.0	698.2	698.2	2.3	2.3	-90.93	-0.3	-20.0	20.1	15.5	4.56	4.398	
800.0	800.0	798.2	798.2	2.6	2.6	-90.93	-0.3	-20.0	20.1	14.8	5.28	3.801	
900.0	900.0	898.2	898.2	3.0	3.0	-90.93	-0.3	-20.0	20.1	14.1	5.99	3.346	
1,000.0	1,000.0	998.2	998.2	3.4	3.4	-90.93	-0.3	-20.0	20.1	13.3	6.71	2.988	
1,100.0	1,100.0	1,098.2	1,098.2	3.7	3.7	-90.93	-0.3	-20.0	20.1	12.6	7.43	2.700	
1,200.0	1,200.0	1,198.2	1,198.2	4.1	4.1	-90.93	-0.3	-20.0	20.1	11.9	8.14	2.462	
1,300.0	1,300.0	1,298.2	1,298.2	4.4	4.4	-90.93	-0.3	-20.0	20.1	11.2	8.86	2.263	
1,400.0	1,400.0	1,398.2	1,398.2	4.8	4.8	-90.93	-0.3	-20.0	20.1	10.5	9.58	2.094	
1,500.0	1,500.0	1,498.2	1,498.2	5.2	5.1	-90.93	-0.3	-20.0	20.1	9.8	10.29	1.948	
1,600.0	1,600.0	1,598.2	1,598.2	5.5	5.5	-90.93	-0.3	-20.0	20.1	9.0	11.01	1.821	
1,700.0	1,700.0	1,698.2	1,698.2	5.9	5.9	-90.93	-0.3	-20.0	20.1	8.3	11.73	1.710	
1,800.0	1,800.0	1,798.2	1,798.2	6.2	6.2	-90.93	-0.3	-20.0	20.1	7.6	12.45	1.611	
1,900.0	1,900.0	1,898.2	1,898.2	6.6	6.6	-90.93	-0.3	-20.0	20.1	6.9	13.16	1.523	
2,000.0	2,000.0	1,998.2	1,998.2	6.9	6.9	-90.93	-0.3	-20.0	20.1	6.2	13.88	1.445	Level 3
2,100.0	2,100.0	2,098.7	2,098.7	7.3	7.3	150.51	-1.5	-18.8	19.2	4.6	14.57	1.319	Level 3
2,200.0	2,199.9	2,199.1	2,198.9	7.6	7.6	144.41	-4.9	-14.9	18.7	3.5	15.23	1.229	Level 2
2,206.9	2,206.8	2,206.0	2,205.8	7.7	7.6	143.90	-5.2	-14.5	18.7	3.4	15.27	1.225	Level 2, CC
2,300.0	2,299.7	2,299.4	2,298.9	8.0	8.0	136.14	-10.7	-8.4	19.2	3.3	15.89	1.206	Level 2, ES, SF
2,400.0	2,399.1	2,399.4	2,398.3	8.3	8.3	130.88	-17.8	-0.4	21.4	4.9	16.58	1.294	Level 3
2,500.0	2,498.2	2,499.3	2,497.6	8.7	8.6	132.77	-24.9	7.5	26.1	8.8	17.26	1.512	
2,600.0	2,596.6	2,599.0	2,596.7	9.0	9.0	138.35	-31.9	15.4	33.3	15.3	17.94	1.856	
2,700.0	2,694.4	2,698.4	2,695.6	9.4	9.3	144.70	-38.9	23.3	43.5	24.9	18.62	2.335	
2,800.0	2,791.6	2,797.4	2,794.0	9.8	9.7	150.17	-45.9	31.2	56.5	37.2	19.30	2.926	
2,900.0	2,888.7	2,896.4	2,892.5	10.2	10.0	153.72	-52.9	39.1	70.1	50.1	19.99	3.505	
3,000.0	2,985.8	2,995.4	2,990.9	10.6	10.4	156.11	-59.9	47.0	83.8	63.1	20.69	4.052	
3,100.0	3,082.9	3,094.4	3,089.3	11.0	10.7	157.82	-67.0	54.8	97.7	76.3	21.39	4.568	
3,200.0	3,180.0	3,193.4	3,187.8	11.4	11.1	159.11	-74.0	62.7	111.6	89.5	22.09	5.053	
3,300.0	3,277.1	3,292.4	3,286.2	11.8	11.5	160.11	-81.0	70.6	125.6	102.8	22.80	5.508	
3,400.0	3,374.2	3,391.4	3,384.6	12.2	11.8	160.91	-88.0	78.5	139.6	116.1	23.52	5.936	
3,500.0	3,471.3	3,490.4	3,483.1	12.7	12.2	161.57	-95.0	86.3	153.6	129.4	24.24	6.339	
3,600.0	3,568.4	3,589.4	3,581.5	13.1	12.6	162.11	-102.0	94.2	167.7	142.7	24.96	6.719	
3,700.0	3,665.5	3,688.4	3,679.9	13.5	12.9	162.57	-109.0	102.1	181.7	156.1	25.68	7.076	
3,800.0	3,762.7	3,787.4	3,778.4	14.0	13.3	162.97	-116.0	109.9	195.8	169.4	26.41	7.414	
3,900.0	3,859.8	3,886.4	3,876.8	14.4	13.7	163.31	-123.0	117.8	209.9	182.7	27.14	7.734	
4,000.0	3,956.9	3,985.4	3,975.3	14.9	14.0	163.61	-130.0	125.7	224.0	196.1	27.87	8.036	
4,100.0	4,054.0	4,084.4	4,073.7	15.3	14.4	163.87	-137.0	133.6	238.0	209.4	28.60	8.323	
4,200.0	4,151.1	4,183.4	4,172.1	15.8	14.8	164.11	-144.0	141.4	252.1	222.8	29.34	8.595	
4,300.0	4,248.2	4,282.4	4,270.6	16.2	15.1	164.32	-151.0	149.3	266.2	236.1	30.07	8.853	
4,400.0	4,345.3	4,381.4	4,369.0	16.7	15.5	164.50	-158.0	157.2	280.3	249.5	30.81	9.098	
4,500.0	4,442.4	4,480.4	4,467.4	17.2	15.9	164.67	-165.0	165.0	294.4	262.9	31.55	9.332	
4,600.0	4,539.5	4,579.4	4,565.9	17.6	16.2	164.83	-172.0	172.9	308.5	276.2	32.29	9.554	
4,700.0	4,636.6	4,678.4	4,664.3	18.1	16.6	164.97	-179.0	180.8	322.6	289.6	33.03	9.767	
4,800.0	4,733.7	4,777.4	4,762.7	18.6	17.0	165.10	-186.0	188.7	336.7	302.9	33.78	9.969	
4,900.0	4,830.8	4,876.4	4,861.2	19.0	17.4	165.22	-193.0	196.5	350.8	316.3	34.52	10.163	
5,000.0	4,927.9	4,975.3	4,959.6	19.5	17.7	165.33	-200.0	204.4	364.9	329.7	35.27	10.348	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 009H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,025.0	5,074.3	5,058.0	20.0	18.1	165.43	-207.0	212.3	379.0	343.0	36.01	10.525	
5,200.0	5,122.1	5,173.3	5,156.5	20.4	18.5	165.52	-214.0	220.1	393.2	356.4	36.76	10.695	
5,300.0	5,219.2	5,272.3	5,254.9	20.9	18.9	165.61	-221.0	228.0	407.3	369.8	37.51	10.858	
5,400.0	5,316.3	5,371.3	5,353.3	21.4	19.2	165.69	-228.0	235.9	421.4	383.1	38.26	11.014	
5,500.0	5,413.4	5,470.3	5,451.8	21.9	19.6	165.77	-235.0	243.8	435.5	396.5	39.01	11.164	
5,600.0	5,510.5	5,569.3	5,550.2	22.3	20.0	165.84	-242.0	251.6	449.6	409.8	39.76	11.308	
5,700.0	5,607.6	5,668.3	5,648.7	22.8	20.4	165.91	-249.1	259.5	463.7	423.2	40.51	11.447	
5,800.0	5,704.7	5,767.3	5,747.1	23.3	20.8	165.97	-256.1	267.4	477.8	436.6	41.26	11.580	
5,900.0	5,801.8	5,866.3	5,845.5	23.8	21.1	166.03	-263.1	275.2	491.9	449.9	42.01	11.709	
6,000.0	5,898.9	5,965.3	5,944.0	24.3	21.5	166.09	-270.1	283.1	506.1	463.3	42.77	11.833	
6,100.0	5,996.0	6,064.3	6,042.4	24.7	21.9	166.14	-277.1	291.0	520.2	476.7	43.52	11.952	
6,200.0	6,093.1	6,163.3	6,140.8	25.2	22.3	166.19	-284.1	298.9	534.3	490.0	44.28	12.067	
6,300.0	6,190.3	6,262.3	6,239.3	25.7	22.6	166.24	-291.1	306.7	548.4	503.4	45.03	12.179	
6,400.0	6,287.4	6,361.3	6,337.7	26.2	23.0	166.29	-298.1	314.6	562.5	516.7	45.79	12.286	
6,500.0	6,384.5	6,460.3	6,436.1	26.7	23.4	166.33	-305.1	322.5	576.6	530.1	46.54	12.390	
6,600.0	6,481.6	6,559.3	6,534.6	27.2	23.8	166.37	-312.1	330.4	590.8	543.5	47.30	12.490	
6,700.0	6,578.7	6,658.3	6,633.0	27.6	24.2	166.41	-319.1	338.2	604.9	556.8	48.05	12.587	
6,800.0	6,675.8	6,757.3	6,731.4	28.1	24.5	166.45	-326.1	346.1	619.0	570.2	48.81	12.681	
6,900.0	6,772.9	6,856.3	6,829.9	28.6	24.9	166.48	-333.1	354.0	633.1	583.5	49.57	12.772	
7,000.0	6,870.0	6,955.3	6,928.3	29.1	25.3	166.52	-340.1	361.8	647.2	596.9	50.33	12.861	
7,100.0	6,967.1	7,054.3	7,026.7	29.6	25.7	166.55	-347.1	369.7	661.4	610.3	51.08	12.946	
7,200.0	7,064.2	7,153.3	7,125.2	30.1	26.1	166.58	-354.1	377.6	675.5	623.6	51.84	13.029	
7,300.0	7,161.3	7,252.3	7,223.6	30.5	26.4	166.61	-361.1	385.5	689.6	637.0	52.60	13.110	
7,400.0	7,258.4	7,351.3	7,322.1	31.0	26.8	166.64	-368.1	393.3	703.7	650.4	53.36	13.188	
7,500.0	7,355.5	7,450.3	7,420.5	31.5	27.2	166.67	-375.1	401.2	717.8	663.7	54.12	13.264	
7,600.0	7,452.6	7,549.3	7,518.9	32.0	27.6	166.70	-382.1	409.1	732.0	677.1	54.88	13.337	
7,700.0	7,549.7	7,648.3	7,617.4	32.5	28.0	166.72	-389.1	416.9	746.1	690.4	55.64	13.409	
7,800.0	7,646.8	7,747.3	7,715.8	33.0	28.3	166.75	-396.1	424.8	760.2	703.8	56.40	13.478	
7,900.0	7,743.9	7,846.3	7,814.2	33.5	28.7	166.77	-403.1	432.7	774.3	717.2	57.16	13.546	
8,000.0	7,841.0	7,945.3	7,912.7	34.0	29.1	166.79	-410.1	440.6	788.4	730.5	57.92	13.612	
8,100.0	7,938.1	8,044.3	8,011.1	34.4	29.5	166.82	-417.1	448.4	802.6	743.9	58.68	13.676	
8,200.0	8,035.2	8,143.3	8,109.5	34.9	29.9	166.84	-424.1	456.3	816.7	757.2	59.44	13.739	
8,300.0	8,132.7	8,242.5	8,208.2	35.4	30.3	166.89	-431.2	464.2	829.2	769.0	60.20	13.773	
8,400.0	8,230.9	8,342.1	8,307.2	35.9	30.6	166.87	-438.2	472.1	838.3	777.4	60.96	13.752	
8,500.0	8,329.7	8,441.9	8,406.4	36.3	31.0	166.78	-445.3	480.0	844.1	782.4	61.71	13.677	
8,600.0	8,429.0	8,541.8	8,505.8	36.7	31.4	166.63	-452.3	488.0	846.4	784.0	62.46	13.552	
8,700.0	8,528.6	8,641.7	8,605.2	37.0	31.8	166.40	-459.4	495.9	845.4	782.2	63.20	13.377	
8,800.0	8,628.5	8,741.6	8,704.4	37.3	32.2	166.10	-466.5	503.9	841.0	777.1	63.94	13.154	
8,900.0	8,728.5	8,841.1	8,803.4	37.6	32.6	-78.55	-473.5	511.8	833.3	768.6	64.65	12.888	
9,000.0	8,828.5	8,940.6	8,902.3	37.9	32.9	105.64	-480.6	519.7	824.1	758.7	65.36	12.608	
9,100.0	8,927.6	9,040.0	9,001.2	38.2	33.3	106.74	-487.6	527.6	818.1	752.1	66.05	12.386	
9,144.3	8,970.3	9,083.4	9,044.3	38.4	33.5	107.43	-490.7	531.1	817.5	751.1	66.34	12.322	
9,200.0	9,022.1	9,136.5	9,097.1	38.6	33.7	108.41	-494.4	535.3	818.6	751.9	66.68	12.277	
9,300.0	9,108.0	9,225.7	9,185.8	39.1	34.0	110.17	-500.7	542.4	827.3	760.0	67.23	12.305	
9,400.0	9,181.3	9,303.8	9,263.5	39.5	34.4	111.27	-506.3	548.6	846.3	778.6	67.69	12.502	
9,500.0	9,239.0	9,367.4	9,326.7	40.0	34.6	110.86	-510.8	553.6	877.7	809.6	68.06	12.896	
9,600.0	9,278.4	9,413.7	9,372.7	40.6	34.8	108.05	-514.0	557.3	922.1	853.7	68.32	13.496	
9,700.0	9,297.9	9,440.6	9,399.5	41.1	34.9	101.96	-515.9	559.5	978.5	910.0	68.45	14.294	
9,800.0	9,300.0	9,450.3	9,409.1	41.7	34.9	98.24	-516.6	560.2	1,043.6	975.1	68.48	15.239	
9,900.0	9,300.0	9,457.7	9,416.5	42.3	34.9	98.50	-517.1	560.8	1,111.9	1,043.4	68.51	16.229	
10,000.0	9,300.0	9,464.8	9,423.6	42.9	35.0	98.87	-517.6	561.4	1,182.7	1,114.1	68.56	17.249	
10,100.0	9,300.0	9,472.0	9,430.7	43.6	35.0	99.37	-518.1	562.0	1,257.1	1,188.5	68.63	18.317	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 009H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	9,300.0	9,479.1	9,437.8	44.2	35.0	99.87	-518.7	562.5	1,334.9	1,266.2	68.71	19.428	
10,300.0	9,300.0	9,486.3	9,444.9	45.0	35.1	100.37	-519.2	563.1	1,415.4	1,346.6	68.79	20.575	
10,400.0	9,300.0	9,493.4	9,452.0	45.7	35.1	100.86	-519.7	563.7	1,498.2	1,429.3	68.88	21.751	
10,500.0	9,300.0	9,500.5	9,459.1	46.5	35.1	101.36	-520.2	564.2	1,583.0	1,514.0	68.97	22.952	
10,600.0	9,300.0	9,507.7	9,466.2	47.3	35.1	101.86	-520.7	564.8	1,669.4	1,600.4	69.06	24.174	
10,700.0	9,300.0	9,514.8	9,473.3	48.2	35.2	102.35	-521.2	565.4	1,757.3	1,688.1	69.15	25.412	
10,800.0	9,300.0	9,521.9	9,480.4	49.1	35.2	102.84	-521.7	565.9	1,846.4	1,777.1	69.24	26.665	
10,900.0	9,300.0	9,529.1	9,487.5	50.0	35.2	103.33	-522.2	566.5	1,936.5	1,867.1	69.33	27.930	
11,000.0	9,300.0	9,536.2	9,494.6	50.9	35.2	103.83	-522.7	567.1	2,027.5	1,958.0	69.42	29.205	
11,100.0	9,300.0	9,543.3	9,501.6	51.9	35.3	104.31	-523.2	567.6	2,119.2	2,049.7	69.51	30.488	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 303H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.95	-1.0	-60.0	60.1				
100.0	100.0	96.9	96.9	0.1	0.1	-90.95	-1.0	-60.0	60.0	59.8	0.26	231.432	
200.0	200.0	196.9	196.9	0.5	0.5	-90.95	-1.0	-60.0	60.0	59.1	0.97	61.933	
300.0	300.0	296.9	296.9	0.8	0.8	-90.95	-1.0	-60.0	60.0	58.3	1.69	35.601	
400.0	400.0	396.9	396.9	1.2	1.2	-90.95	-1.0	-60.0	60.0	57.6	2.40	24.980	
500.0	500.0	496.9	496.9	1.6	1.6	-90.95	-1.0	-60.0	60.0	56.9	3.12	19.240	
600.0	600.0	596.9	596.9	1.9	1.9	-90.95	-1.0	-60.0	60.0	56.2	3.84	15.645	
700.0	700.0	696.9	696.9	2.3	2.3	-90.95	-1.0	-60.0	60.0	55.5	4.55	13.182	
800.0	800.0	796.9	796.9	2.6	2.6	-90.95	-1.0	-60.0	60.0	54.8	5.27	11.389	
900.0	900.0	896.9	896.9	3.0	3.0	-90.95	-1.0	-60.0	60.0	54.0	5.99	10.025	
1,000.0	1,000.0	996.9	996.9	3.4	3.3	-90.95	-1.0	-60.0	60.0	53.3	6.70	8.953	
1,100.0	1,100.0	1,096.9	1,096.9	3.7	3.7	-90.95	-1.0	-60.0	60.0	52.6	7.42	8.089	
1,200.0	1,200.0	1,196.9	1,196.9	4.1	4.1	-90.95	-1.0	-60.0	60.0	51.9	8.14	7.376	
1,300.0	1,300.0	1,296.9	1,296.9	4.4	4.4	-90.95	-1.0	-60.0	60.0	51.2	8.86	6.779	
1,400.0	1,400.0	1,396.9	1,396.9	4.8	4.8	-90.95	-1.0	-60.0	60.0	50.5	9.57	6.271	
1,500.0	1,500.0	1,496.9	1,496.9	5.2	5.1	-90.95	-1.0	-60.0	60.0	49.7	10.29	5.834	
1,600.0	1,600.0	1,596.9	1,596.9	5.5	5.5	-90.95	-1.0	-60.0	60.0	49.0	11.01	5.454	
1,700.0	1,700.0	1,696.9	1,696.9	5.9	5.9	-90.95	-1.0	-60.0	60.0	48.3	11.72	5.121	
1,800.0	1,800.0	1,796.9	1,796.9	6.2	6.2	-90.95	-1.0	-60.0	60.0	47.6	12.44	4.826	
1,900.0	1,900.0	1,896.9	1,896.9	6.6	6.6	-90.95	-1.0	-60.0	60.0	46.9	13.16	4.563	
2,000.0	2,000.0	1,996.9	1,996.9	6.9	6.9	-90.95	-1.0	-60.0	60.0	46.2	13.87	4.327 CC	
2,000.0	2,000.0	1,996.9	1,996.9	6.9	6.9	-90.95	-1.0	-60.0	60.0	46.2	13.87	4.327	
2,100.0	2,100.0	2,097.2	2,097.1	7.3	7.3	151.96	-2.6	-59.8	60.2	45.6	14.57	4.133 ES	
2,200.0	2,199.9	2,197.3	2,197.1	7.6	7.6	148.77	-7.7	-58.9	62.8	47.5	15.23	4.123 SF	
2,300.0	2,299.7	2,297.1	2,296.5	8.0	7.9	144.53	-16.2	-57.6	68.4	52.5	15.89	4.303	
2,400.0	2,399.1	2,396.4	2,395.2	8.3	8.3	140.07	-27.9	-55.7	77.2	60.7	16.56	4.663	
2,500.0	2,498.2	2,495.7	2,493.6	8.7	8.6	137.48	-40.4	-53.7	89.1	71.8	17.23	5.168	
2,600.0	2,596.6	2,594.6	2,591.7	9.0	8.9	136.78	-52.8	-51.7	103.5	85.6	17.92	5.779	
2,700.0	2,694.4	2,693.1	2,689.5	9.4	9.3	137.33	-65.2	-49.7	120.5	101.9	18.61	6.477	
2,800.0	2,791.6	2,791.2	2,786.8	9.8	9.6	138.62	-77.6	-47.7	139.7	120.4	19.31	7.234	
2,900.0	2,888.7	2,889.3	2,884.0	10.2	10.0	139.74	-89.9	-45.7	159.1	139.1	20.02	7.949	
3,000.0	2,985.8	2,987.3	2,981.3	10.6	10.3	140.63	-102.3	-43.7	178.6	157.8	20.73	8.614	
3,100.0	3,082.9	3,085.4	3,078.5	11.0	10.7	141.34	-114.6	-41.7	198.1	176.6	21.45	9.233	
3,200.0	3,180.0	3,183.5	3,175.8	11.4	11.0	141.92	-127.0	-39.7	217.6	195.4	22.18	9.810	
3,300.0	3,277.1	3,281.5	3,273.0	11.8	11.4	142.40	-139.3	-37.7	237.1	214.2	22.92	10.348	
3,400.0	3,374.2	3,379.6	3,370.3	12.2	11.8	142.82	-151.7	-35.7	256.7	233.0	23.66	10.851	
3,500.0	3,471.3	3,477.6	3,467.5	12.7	12.1	143.17	-164.0	-33.7	276.3	251.9	24.40	11.322	
3,600.0	3,568.4	3,575.7	3,564.8	13.1	12.5	143.48	-176.4	-31.8	295.8	270.7	25.15	11.763	
3,700.0	3,665.5	3,673.7	3,662.0	13.5	12.8	143.75	-188.7	-29.8	315.4	289.5	25.90	12.177	
3,800.0	3,762.7	3,771.8	3,759.3	14.0	13.2	143.98	-201.0	-27.8	335.0	308.4	26.66	12.566	
3,900.0	3,859.8	3,869.8	3,856.6	14.4	13.6	144.19	-213.4	-25.8	354.6	327.2	27.42	12.932	
4,000.0	3,956.9	3,967.9	3,953.8	14.9	14.0	144.38	-225.7	-23.8	374.2	346.0	28.19	13.276	
4,100.0	4,054.0	4,065.9	4,051.1	15.3	14.3	144.55	-238.1	-21.8	393.8	364.9	28.95	13.602	
4,200.0	4,151.1	4,164.0	4,148.3	15.8	14.7	144.71	-250.4	-19.8	413.4	383.7	29.72	13.909	
4,300.0	4,248.2	4,262.0	4,245.6	16.2	15.1	144.85	-262.8	-17.8	433.0	402.5	30.49	14.200	
4,400.0	4,345.3	4,360.1	4,342.8	16.7	15.5	144.98	-275.1	-15.8	452.6	421.4	31.27	14.476	
4,500.0	4,442.4	4,458.1	4,440.1	17.2	15.8	145.09	-287.5	-13.8	472.3	440.2	32.05	14.737	
4,600.0	4,539.5	4,556.2	4,537.3	17.6	16.2	145.20	-299.8	-11.8	491.9	459.0	32.82	14.985	
4,700.0	4,636.6	4,654.3	4,634.6	18.1	16.6	145.30	-312.2	-9.9	511.5	477.9	33.60	15.220	
4,800.0	4,733.7	4,752.3	4,731.8	18.6	17.0	145.39	-324.5	-7.9	531.1	496.7	34.39	15.445	
4,900.0	4,830.8	4,850.4	4,829.1	19.0	17.3	145.48	-336.9	-5.9	550.7	515.5	35.17	15.658	
5,000.0	4,927.9	4,948.4	4,926.3	19.5	17.7	145.56	-349.2	-3.9	570.3	534.4	35.96	15.862	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 303H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,100.0	5,025.0	5,046.5	5,023.6	20.0	18.1	145.63	-361.5	-1.9	590.0	553.2	36.74	16.056	
5,200.0	5,122.1	5,144.5	5,120.8	20.4	18.5	145.70	-373.9	0.1	609.6	572.0	37.53	16.242	
5,300.0	5,219.2	5,242.6	5,218.1	20.9	18.9	145.77	-386.2	2.1	629.2	590.9	38.32	16.419	
5,400.0	5,316.3	5,340.6	5,315.3	21.4	19.3	145.83	-398.6	4.1	648.8	609.7	39.11	16.589	
5,500.0	5,413.4	5,438.7	5,412.6	21.9	19.6	145.89	-410.9	6.1	668.4	628.5	39.90	16.752	
5,600.0	5,510.5	5,536.7	5,509.8	22.3	20.0	145.94	-423.3	8.1	688.1	647.4	40.70	16.908	
5,700.0	5,607.6	5,634.8	5,607.1	22.8	20.4	145.99	-435.6	10.1	707.7	666.2	41.49	17.057	
5,800.0	5,704.7	5,732.8	5,704.4	23.3	20.8	146.04	-448.0	12.0	727.3	685.0	42.28	17.201	
5,900.0	5,801.8	5,830.9	5,801.6	23.8	21.2	146.09	-460.3	14.0	746.9	703.9	43.08	17.339	
6,000.0	5,898.9	5,929.0	5,898.9	24.3	21.6	146.13	-472.7	16.0	766.6	722.7	43.88	17.471	
6,100.0	5,996.0	6,027.0	5,996.1	24.7	21.9	146.17	-485.0	18.0	786.2	741.5	44.67	17.599	
6,200.0	6,093.1	6,125.1	6,093.4	25.2	22.3	146.21	-497.3	20.0	805.8	760.4	45.47	17.722	
6,300.0	6,190.3	6,223.1	6,190.6	25.7	22.7	146.25	-509.7	22.0	825.5	779.2	46.27	17.840	
6,400.0	6,287.4	6,321.2	6,287.9	26.2	23.1	146.29	-522.0	24.0	845.1	798.0	47.07	17.954	
6,500.0	6,384.5	6,419.2	6,385.1	26.7	23.5	146.32	-534.4	26.0	864.7	816.8	47.87	18.064	
6,600.0	6,481.6	6,517.3	6,482.4	27.2	23.9	146.36	-546.7	28.0	884.3	835.7	48.67	18.170	
6,700.0	6,578.7	6,615.3	6,579.6	27.6	24.3	146.39	-559.1	30.0	904.0	854.5	49.47	18.272	
6,800.0	6,675.8	6,713.4	6,676.9	28.1	24.6	146.42	-571.4	31.9	923.6	873.3	50.27	18.371	
6,900.0	6,772.9	6,811.4	6,774.1	28.6	25.0	146.45	-583.8	33.9	943.2	892.1	51.08	18.467	
7,000.0	6,870.0	6,909.5	6,871.4	29.1	25.4	146.47	-596.1	35.9	962.9	911.0	51.88	18.559	
7,100.0	6,967.1	7,007.5	6,968.6	29.6	25.8	146.50	-608.5	37.9	982.5	929.8	52.68	18.649	
7,200.0	7,064.2	7,105.6	7,065.9	30.1	26.2	146.52	-620.8	39.9	1,002.1	948.6	53.49	18.736	
7,300.0	7,161.3	7,203.3	7,162.8	30.5	26.6	146.56	-633.0	41.9	1,021.7	967.5	54.29	18.821	
7,400.0	7,258.4	7,300.0	7,259.0	31.0	27.0	146.73	-642.6	43.4	1,041.5	986.4	55.06	18.915	
7,500.0	7,355.5	7,396.1	7,354.9	31.5	27.3	147.06	-649.0	44.5	1,061.4	1,005.6	55.80	19.020	
7,600.0	7,452.6	7,491.8	7,450.5	32.0	27.6	147.56	-652.2	45.0	1,081.5	1,025.0	56.52	19.136	
7,700.0	7,549.7	7,587.9	7,546.6	32.5	28.0	148.19	-652.6	45.0	1,101.9	1,044.7	57.19	19.266	
7,800.0	7,646.8	7,685.0	7,643.7	33.0	28.3	148.83	-652.6	45.0	1,122.4	1,064.5	57.86	19.397	
7,900.0	7,743.9	7,782.1	7,740.8	33.5	28.6	149.45	-652.6	45.0	1,143.1	1,084.5	58.54	19.527	
8,000.0	7,841.0	7,879.2	7,837.9	34.0	28.9	150.04	-652.6	45.0	1,163.8	1,104.6	59.21	19.655	
8,100.0	7,938.1	7,976.3	7,935.0	34.4	29.2	150.61	-652.6	45.0	1,184.7	1,124.9	59.89	19.782	
8,200.0	8,035.2	8,073.4	8,032.1	34.9	29.5	151.17	-652.6	45.0	1,205.8	1,145.2	60.57	19.908	
8,300.0	8,132.7	8,170.9	8,129.6	35.4	29.8	151.85	-652.6	45.0	1,225.5	1,164.2	61.24	20.010	
8,400.0	8,230.9	8,269.1	8,227.8	35.9	30.1	152.42	-652.6	45.0	1,242.2	1,180.3	61.92	20.062	
8,500.0	8,329.7	8,367.9	8,326.6	36.3	30.5	152.87	-652.6	45.0	1,255.9	1,193.3	62.59	20.066	
8,600.0	8,429.0	8,465.0	8,423.5	36.7	30.8	152.98	-657.6	45.1	1,266.7	1,203.4	63.30	20.012	
8,700.0	8,528.6	8,557.7	8,513.3	37.0	31.2	152.21	-679.8	45.3	1,274.7	1,210.6	64.09	19.888	
8,800.0	8,628.5	8,640.0	8,588.2	37.3	31.6	150.83	-713.7	45.5	1,280.9	1,216.0	64.87	19.745	
8,900.0	8,728.5	8,708.9	8,645.7	37.6	32.0	-95.07	-751.7	45.8	1,286.7	1,221.2	65.52	19.638	
9,000.0	8,828.5	8,765.3	8,688.2	37.9	32.3	87.72	-788.6	46.1	1,295.0	1,229.0	65.95	19.635	
9,100.0	8,927.6	8,816.4	8,722.8	38.2	32.6	84.77	-826.2	46.4	1,307.3	1,241.0	66.23	19.739	
9,200.0	9,022.1	8,867.4	8,753.1	38.6	32.9	81.74	-867.2	46.7	1,322.1	1,255.7	66.40	19.911	
9,300.0	9,108.0	8,918.2	8,778.8	39.1	33.2	78.79	-911.0	47.0	1,338.0	1,271.5	66.51	20.118	
9,400.0	9,181.3	8,968.9	8,799.6	39.5	33.6	76.12	-957.2	47.4	1,353.9	1,287.3	66.60	20.327	
9,500.0	9,239.0	9,025.0	8,816.8	40.0	34.0	73.79	-1,010.6	47.8	1,368.5	1,301.7	66.83	20.478	
9,600.0	9,278.4	9,075.0	8,826.8	40.6	34.3	72.03	-1,059.5	48.2	1,380.9	1,313.8	67.05	20.594	
9,700.0	9,297.9	9,125.0	8,831.5	41.1	34.6	70.82	-1,109.3	48.6	1,390.5	1,323.0	67.42	20.623	
9,800.0	9,300.0	9,196.0	8,832.0	41.7	35.1	70.54	-1,180.3	49.1	1,396.8	1,328.6	68.22	20.475	
9,900.0	9,300.0	9,295.9	8,832.0	42.3	35.8	70.60	-1,280.2	49.9	1,400.0	1,330.5	69.48	20.150	
10,000.0	9,300.0	9,395.9	8,832.0	42.9	36.6	70.61	-1,380.2	50.7	1,400.4	1,329.6	70.80	19.780	
10,100.0	9,300.0	9,495.9	8,832.0	43.6	37.4	70.61	-1,480.2	51.5	1,400.4	1,328.2	72.20	19.396	
10,200.0	9,300.0	9,595.9	8,832.0	44.2	38.2	70.61	-1,580.2	52.2	1,400.4	1,326.7	73.68	19.006	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 303H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM **Rule Assigned:** **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.0	9,300.0	9,695.9	8,832.0	45.0	39.1	70.61	-1,680.2	53.0	1,400.3	1,325.1	75.23	18.614	
10,400.0	9,300.0	9,795.9	8,832.0	45.7	40.0	70.61	-1,780.2	53.8	1,400.3	1,323.5	76.85	18.221	
10,500.0	9,300.0	9,895.9	8,832.0	46.5	41.0	70.61	-1,880.2	54.6	1,400.3	1,321.8	78.54	17.830	
10,600.0	9,300.0	9,995.9	8,832.0	47.3	41.9	70.61	-1,980.2	55.3	1,400.3	1,320.0	80.29	17.442	
10,700.0	9,300.0	10,095.9	8,832.0	48.2	42.9	70.61	-2,080.2	56.1	1,400.3	1,318.2	82.09	17.058	
10,800.0	9,300.0	10,195.9	8,832.0	49.1	44.0	70.61	-2,180.2	56.9	1,400.3	1,316.4	83.95	16.681	
10,900.0	9,300.0	10,295.9	8,832.0	50.0	45.0	70.61	-2,280.2	57.7	1,400.3	1,314.4	85.85	16.310	
11,000.0	9,300.0	10,395.9	8,832.0	50.9	46.1	70.61	-2,380.2	58.4	1,400.3	1,312.5	87.81	15.947	
11,100.0	9,300.0	10,495.9	8,832.0	51.9	47.1	70.61	-2,480.2	59.2	1,400.3	1,310.5	89.80	15.592	
11,200.0	9,300.0	10,595.9	8,832.0	52.8	48.3	70.61	-2,580.2	60.0	1,400.3	1,308.4	91.84	15.246	
11,300.0	9,300.0	10,695.9	8,832.0	53.8	49.4	70.61	-2,680.2	60.8	1,400.3	1,306.3	93.92	14.909	
11,400.0	9,300.0	10,795.9	8,832.0	54.9	50.5	70.61	-2,780.2	61.6	1,400.2	1,304.2	96.03	14.581	
11,500.0	9,300.0	10,895.9	8,832.0	55.9	51.7	70.61	-2,880.2	62.3	1,400.2	1,302.1	98.17	14.263	
11,600.0	9,300.0	10,995.9	8,832.0	57.0	52.8	70.61	-2,980.2	63.1	1,400.2	1,299.9	100.35	13.954	
11,700.0	9,300.0	11,095.9	8,832.0	58.0	54.0	70.61	-3,080.2	63.9	1,400.2	1,297.7	102.55	13.653	
11,800.0	9,300.0	11,195.9	8,832.0	59.1	55.2	70.61	-3,180.2	64.7	1,400.2	1,295.4	104.79	13.363	
11,900.0	9,300.0	11,295.9	8,832.0	60.2	56.4	70.61	-3,280.2	65.4	1,400.2	1,293.2	107.04	13.081	
12,000.0	9,300.0	11,395.9	8,832.0	61.3	57.6	70.61	-3,380.2	66.2	1,400.2	1,290.9	109.33	12.807	
12,100.0	9,300.0	11,495.9	8,832.0	62.5	58.9	70.61	-3,480.2	67.0	1,400.2	1,288.6	111.63	12.543	
12,200.0	9,300.0	11,595.9	8,832.0	63.6	60.1	70.61	-3,580.2	67.8	1,400.2	1,286.2	113.96	12.287	
12,300.0	9,300.0	11,695.9	8,832.0	64.8	61.4	70.61	-3,680.1	68.5	1,400.2	1,283.9	116.30	12.039	
12,400.0	9,300.0	11,795.9	8,832.0	65.9	62.6	70.61	-3,780.1	69.3	1,400.2	1,281.5	118.67	11.799	
12,500.0	9,300.0	11,895.9	8,832.0	67.1	63.9	70.61	-3,880.1	70.1	1,400.1	1,279.1	121.05	11.567	
12,600.0	9,300.0	11,995.9	8,832.0	68.3	65.2	70.61	-3,980.1	70.9	1,400.1	1,276.7	123.45	11.342	
12,700.0	9,300.0	12,095.9	8,832.0	69.5	66.4	70.61	-4,080.1	71.6	1,400.1	1,274.3	125.86	11.124	
12,800.0	9,300.0	12,195.9	8,832.0	70.7	67.7	70.61	-4,180.1	72.4	1,400.1	1,271.8	128.29	10.914	
12,900.0	9,300.0	12,295.9	8,832.0	71.9	69.0	70.61	-4,280.1	73.2	1,400.1	1,269.4	130.73	10.710	
13,000.0	9,300.0	12,395.9	8,832.0	73.2	70.3	70.61	-4,380.1	74.0	1,400.1	1,266.9	133.19	10.512	
13,100.0	9,300.0	12,495.9	8,832.0	74.4	71.6	70.61	-4,480.1	74.7	1,400.1	1,264.4	135.66	10.321	
13,200.0	9,300.0	12,595.9	8,832.0	75.6	72.9	70.61	-4,580.1	75.5	1,400.1	1,261.9	138.14	10.135	
13,300.0	9,300.0	12,695.9	8,832.0	76.9	74.2	70.61	-4,680.1	76.3	1,400.1	1,259.4	140.63	9.956	
13,400.0	9,300.0	12,795.9	8,832.0	78.1	75.6	70.61	-4,780.1	77.1	1,400.1	1,256.9	143.13	9.782	
13,500.0	9,300.0	12,895.9	8,832.0	79.4	76.9	70.61	-4,880.1	77.8	1,400.0	1,254.4	145.65	9.613	
13,600.0	9,300.0	12,995.9	8,832.0	80.7	78.2	70.61	-4,980.1	78.6	1,400.0	1,251.9	148.17	9.449	
13,700.0	9,300.0	13,095.9	8,832.0	82.0	79.5	70.61	-5,080.1	79.4	1,400.0	1,249.3	150.70	9.290	
13,800.0	9,300.0	13,195.9	8,832.0	83.2	80.9	70.61	-5,180.1	80.2	1,400.0	1,246.8	153.24	9.136	
13,900.0	9,300.0	13,295.9	8,832.0	84.5	82.2	70.61	-5,280.1	81.0	1,400.0	1,244.2	155.79	8.987	
14,000.0	9,300.0	13,395.9	8,832.0	85.8	83.6	70.61	-5,380.1	81.7	1,400.0	1,241.7	158.34	8.842	
14,100.0	9,300.0	13,495.9	8,832.0	87.1	84.9	70.61	-5,480.1	82.5	1,400.0	1,239.1	160.91	8.701	
14,200.0	9,300.0	13,595.9	8,832.0	88.4	86.3	70.61	-5,580.1	83.3	1,400.0	1,236.5	163.48	8.564	
14,300.0	9,300.0	13,695.9	8,832.0	89.7	87.6	70.61	-5,680.1	84.1	1,400.0	1,233.9	166.05	8.431	
14,400.0	9,300.0	13,795.9	8,832.0	91.0	89.0	70.61	-5,780.1	84.8	1,400.0	1,231.3	168.64	8.302	
14,500.0	9,300.0	13,895.9	8,832.0	92.3	90.3	70.61	-5,880.1	85.6	1,400.0	1,228.7	171.23	8.176	
14,600.0	9,300.0	13,995.9	8,832.0	93.7	91.7	70.61	-5,980.1	86.4	1,399.9	1,226.1	173.82	8.054	
14,700.0	9,300.0	14,095.9	8,832.0	95.0	93.1	70.61	-6,080.1	87.2	1,399.9	1,223.5	176.42	7.935	
14,800.0	9,300.0	14,195.9	8,832.0	96.3	94.4	70.61	-6,180.1	87.9	1,399.9	1,220.9	179.03	7.820	
14,900.0	9,300.0	14,295.9	8,832.0	97.6	95.8	70.61	-6,280.1	88.7	1,399.9	1,218.3	181.64	7.707	
15,000.0	9,300.0	14,395.9	8,832.0	99.0	97.2	70.60	-6,380.1	89.5	1,399.9	1,215.7	184.26	7.598	
15,100.0	9,300.0	14,495.9	8,832.0	100.3	98.6	70.60	-6,480.1	90.3	1,399.9	1,213.0	186.88	7.491	
15,200.0	9,300.0	14,595.9	8,832.0	101.6	99.9	70.60	-6,580.1	91.0	1,399.9	1,210.4	189.50	7.387	
15,300.0	9,300.0	14,695.9	8,832.0	103.0	101.3	70.60	-6,680.1	91.8	1,399.9	1,207.7	192.13	7.286	
15,400.0	9,300.0	14,795.9	8,832.0	104.3	102.7	70.60	-6,780.1	92.6	1,399.9	1,205.1	194.77	7.187	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 303H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,500.0	9,300.0	14,895.9	8,832.0	105.7	104.1	70.60	-6,880.1	93.4	1,399.9	1,202.5	197.41	7.091	
15,600.0	9,300.0	14,995.9	8,832.0	107.0	105.5	70.60	-6,980.0	94.1	1,399.9	1,199.8	200.05	6.998	
15,700.0	9,300.0	15,095.9	8,832.0	108.4	106.8	70.60	-7,080.0	94.9	1,399.8	1,197.1	202.70	6.906	
15,800.0	9,300.0	15,195.9	8,832.0	109.7	108.2	70.60	-7,180.0	95.7	1,399.8	1,194.5	205.34	6.817	
15,900.0	9,300.0	15,295.9	8,832.0	111.1	109.6	70.60	-7,280.0	96.5	1,399.8	1,191.8	208.00	6.730	
16,000.0	9,300.0	15,395.9	8,832.0	112.4	111.0	70.60	-7,380.0	97.2	1,399.8	1,189.2	210.65	6.645	
16,100.0	9,300.0	15,495.9	8,832.0	113.8	112.4	70.60	-7,480.0	98.0	1,399.8	1,186.5	213.31	6.562	
16,200.0	9,300.0	15,595.9	8,832.0	115.2	113.8	70.60	-7,580.0	98.8	1,399.8	1,183.8	215.97	6.481	
16,300.0	9,300.0	15,695.9	8,832.0	116.5	115.2	70.60	-7,680.0	99.6	1,399.8	1,181.1	218.64	6.402	
16,400.0	9,300.0	15,795.9	8,832.0	117.9	116.6	70.60	-7,780.0	100.4	1,399.8	1,178.5	221.31	6.325	
16,500.0	9,300.0	15,895.9	8,832.0	119.3	118.0	70.60	-7,880.0	101.1	1,399.8	1,175.8	223.98	6.250	
16,600.0	9,300.0	15,995.9	8,832.0	120.6	119.4	70.60	-7,980.0	101.9	1,399.8	1,173.1	226.65	6.176	
16,700.0	9,300.0	16,095.9	8,832.0	122.0	120.8	70.60	-8,080.0	102.7	1,399.8	1,170.4	229.33	6.104	
16,800.0	9,300.0	16,195.9	8,832.0	123.4	122.2	70.60	-8,180.0	103.5	1,399.7	1,167.7	232.01	6.033	
16,900.0	9,300.0	16,295.9	8,832.0	124.8	123.6	70.60	-8,280.0	104.2	1,399.7	1,165.0	234.69	5.964	
17,000.0	9,300.0	16,395.9	8,832.0	126.1	125.0	70.60	-8,380.0	105.0	1,399.7	1,162.4	237.37	5.897	
17,100.0	9,300.0	16,495.9	8,832.0	127.5	126.4	70.60	-8,480.0	105.8	1,399.7	1,159.7	240.05	5.831	
17,200.0	9,300.0	16,595.9	8,832.0	128.9	127.8	70.60	-8,580.0	106.6	1,399.7	1,157.0	242.74	5.766	
17,300.0	9,300.0	16,695.9	8,832.0	130.3	129.2	70.60	-8,680.0	107.3	1,399.7	1,154.3	245.43	5.703	
17,400.0	9,300.0	16,795.9	8,832.0	131.7	130.6	70.60	-8,780.0	108.1	1,399.7	1,151.6	248.12	5.641	
17,500.0	9,300.0	16,895.9	8,832.0	133.1	132.0	70.60	-8,880.0	108.9	1,399.7	1,148.9	250.82	5.580	
17,600.0	9,300.0	16,995.9	8,832.0	134.4	133.4	70.60	-8,980.0	109.7	1,399.7	1,146.2	253.51	5.521	
17,700.0	9,300.0	17,095.9	8,832.0	135.8	134.8	70.60	-9,080.0	110.4	1,399.7	1,143.4	256.21	5.463	
17,800.0	9,300.0	17,195.9	8,832.0	137.2	136.2	70.60	-9,180.0	111.2	1,399.6	1,140.7	258.91	5.406	
17,900.0	9,300.0	17,295.9	8,832.0	138.6	137.6	70.60	-9,280.0	112.0	1,399.6	1,138.0	261.61	5.350	
18,000.0	9,300.0	17,395.9	8,832.0	140.0	139.1	70.60	-9,380.0	112.8	1,399.6	1,135.3	264.31	5.295	
18,100.0	9,300.0	17,495.9	8,832.0	141.4	140.5	70.60	-9,480.0	113.5	1,399.6	1,132.6	267.01	5.242	
18,200.0	9,300.0	17,595.9	8,832.0	142.8	141.9	70.60	-9,580.0	114.3	1,399.6	1,129.9	269.72	5.189	
18,300.0	9,300.0	17,695.9	8,832.0	144.2	143.3	70.60	-9,680.0	115.1	1,399.6	1,127.2	272.42	5.138	
18,400.0	9,300.0	17,795.9	8,832.0	145.6	144.7	70.60	-9,780.0	115.9	1,399.6	1,124.5	275.13	5.087	
18,500.0	9,300.0	17,895.9	8,832.0	147.0	146.1	70.60	-9,880.0	116.6	1,399.6	1,121.7	277.84	5.037	
18,600.0	9,300.0	17,995.9	8,832.0	148.4	147.5	70.60	-9,980.0	117.4	1,399.6	1,119.0	280.55	4.989	
18,700.0	9,300.0	18,095.9	8,832.0	149.8	149.0	70.60	-10,080.0	118.2	1,399.6	1,116.3	283.27	4.941	
18,800.0	9,300.0	18,195.9	8,832.0	151.2	150.4	70.60	-10,180.0	119.0	1,399.6	1,113.6	285.98	4.894	
18,900.0	9,300.0	18,295.9	8,832.0	152.6	151.8	70.60	-10,279.9	119.8	1,399.5	1,110.9	288.69	4.848	
19,000.0	9,300.0	18,395.9	8,832.0	154.0	153.2	70.60	-10,379.9	120.5	1,399.5	1,108.1	291.41	4.803	
19,100.0	9,300.0	18,495.9	8,832.0	155.4	154.6	70.60	-10,479.9	121.3	1,399.5	1,105.4	294.13	4.758	
19,200.0	9,300.0	18,595.9	8,832.0	156.8	156.1	70.60	-10,579.9	122.1	1,399.5	1,102.7	296.85	4.715	
19,300.0	9,300.0	18,695.9	8,832.0	158.2	157.5	70.60	-10,679.9	122.9	1,399.5	1,099.9	299.56	4.672	
19,400.0	9,300.0	18,795.9	8,832.0	159.6	158.9	70.60	-10,779.9	123.6	1,399.5	1,097.2	302.29	4.630	
19,500.0	9,300.0	18,895.9	8,832.0	161.0	160.3	70.60	-10,879.9	124.4	1,399.5	1,094.5	305.01	4.588	
19,600.0	9,300.0	18,995.9	8,832.0	162.4	161.7	70.60	-10,979.9	125.2	1,399.5	1,091.8	307.73	4.548	
19,678.1	9,300.0	19,074.1	8,832.0	163.4	162.7	70.60	-11,058.0	125.8	1,399.5	1,090.0	309.52	4.521	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 304H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.14	0.3	20.0	20.0				
100.0	100.0	100.0	100.0	0.1	0.1	89.14	0.3	20.0	20.0	19.7	0.26	75.954	
200.0	200.0	200.0	200.0	0.5	0.5	89.14	0.3	20.0	20.0	19.0	0.98	20.412	
300.0	300.0	300.0	300.0	0.8	0.8	89.14	0.3	20.0	20.0	18.3	1.70	11.790	
400.0	400.0	400.0	400.0	1.2	1.2	89.14	0.3	20.0	20.0	17.6	2.41	8.289	
500.0	500.0	500.0	500.0	1.6	1.6	89.14	0.3	20.0	20.0	16.9	3.13	6.391	
600.0	600.0	600.0	600.0	1.9	1.9	89.14	0.3	20.0	20.0	16.2	3.85	5.200	
700.0	700.0	700.0	700.0	2.3	2.3	89.14	0.3	20.0	20.0	15.4	4.57	4.384	
800.0	800.0	800.0	800.0	2.6	2.6	89.14	0.3	20.0	20.0	14.7	5.28	3.789	
900.0	900.0	900.0	900.0	3.0	3.0	89.14	0.3	20.0	20.0	14.0	6.00	3.336	
1,000.0	1,000.0	1,000.0	1,000.0	3.4	3.4	89.14	0.3	20.0	20.0	13.3	6.72	2.980	
1,100.0	1,100.0	1,100.0	1,100.0	3.7	3.7	89.14	0.3	20.0	20.0	12.6	7.43	2.692	
1,200.0	1,200.0	1,200.0	1,200.0	4.1	4.1	89.14	0.3	20.0	20.0	11.9	8.15	2.456	
1,300.0	1,300.0	1,300.0	1,300.0	4.4	4.4	89.14	0.3	20.0	20.0	11.1	8.87	2.257	
1,400.0	1,400.0	1,400.0	1,400.0	4.8	4.8	89.14	0.3	20.0	20.0	10.4	9.58	2.088	
1,500.0	1,500.0	1,500.0	1,500.0	5.2	5.2	89.14	0.3	20.0	20.0	9.7	10.30	1.943	
1,600.0	1,600.0	1,600.0	1,600.0	5.5	5.5	89.14	0.3	20.0	20.0	9.0	11.02	1.816	
1,700.0	1,700.0	1,700.0	1,700.0	5.9	5.9	89.14	0.3	20.0	20.0	8.3	11.73	1.705	
1,800.0	1,800.0	1,800.0	1,800.0	6.2	6.2	89.14	0.3	20.0	20.0	7.6	12.45	1.607	
1,900.0	1,900.0	1,900.0	1,900.0	6.6	6.6	89.14	0.3	20.0	20.0	6.8	13.17	1.520	
2,000.0	2,000.0	2,000.0	2,000.0	6.9	6.9	89.14	0.3	20.0	20.0	6.1	13.89	1.441	Level 3, CC
2,100.0	2,100.0	2,099.4	2,099.3	7.3	7.3	-25.03	-0.4	21.6	21.2	6.6	14.57	1.454	Level 3
2,200.0	2,199.9	2,198.6	2,198.5	7.6	7.6	-23.28	-2.7	26.2	22.8	7.5	15.22	1.495	Level 3
2,300.0	2,299.7	2,297.9	2,297.3	8.0	8.0	-21.82	-6.3	34.0	24.3	8.5	15.85	1.535	
2,400.0	2,399.1	2,397.0	2,395.8	8.3	8.3	-20.59	-11.5	44.8	25.9	9.4	16.48	1.572	
2,500.0	2,498.2	2,496.2	2,493.7	8.7	8.6	-19.57	-18.1	58.7	27.5	10.4	17.09	1.607	
2,600.0	2,596.6	2,595.2	2,591.0	9.0	9.0	-18.71	-26.1	75.7	29.0	11.3	17.68	1.640	
2,700.0	2,694.4	2,694.2	2,687.5	9.4	9.4	-17.99	-35.6	95.6	30.5	12.3	18.27	1.671	
2,800.0	2,791.6	2,793.5	2,783.5	9.8	9.8	-17.18	-46.4	118.5	32.4	13.5	18.89	1.715	
2,900.0	2,888.7	2,893.5	2,880.0	10.2	10.2	-16.26	-57.7	142.1	34.7	15.1	19.59	1.772	
3,000.0	2,985.8	2,993.5	2,976.5	10.6	10.6	-15.45	-68.9	165.8	37.0	16.7	20.30	1.825	
3,100.0	3,082.9	3,093.5	3,072.9	11.0	11.0	-14.73	-80.1	189.4	39.4	18.4	21.02	1.873	
3,200.0	3,180.0	3,193.4	3,169.4	11.4	11.4	-14.10	-91.4	213.1	41.7	20.0	21.74	1.918	
3,300.0	3,277.1	3,293.4	3,265.9	11.8	11.9	-13.54	-102.6	236.7	44.0	21.6	22.47	1.960	
3,400.0	3,374.2	3,393.4	3,362.4	12.2	12.3	-13.03	-113.8	260.4	46.4	23.2	23.20	1.999	
3,500.0	3,471.3	3,493.3	3,458.9	12.7	12.8	-12.57	-125.1	284.0	48.7	24.8	23.94	2.036	
3,600.0	3,568.4	3,593.3	3,555.3	13.1	13.2	-12.15	-136.3	307.7	51.1	26.4	24.68	2.070	
3,700.0	3,665.5	3,693.3	3,651.8	13.5	13.7	-11.77	-147.5	331.4	53.4	28.0	25.43	2.101	
3,800.0	3,762.7	3,793.3	3,748.3	14.0	14.1	-11.42	-158.7	355.0	55.8	29.6	26.18	2.131	
3,900.0	3,859.8	3,893.2	3,844.8	14.4	14.6	-11.10	-170.0	378.7	58.2	31.2	26.93	2.159	
4,000.0	3,956.9	3,993.2	3,941.3	14.9	15.1	-10.80	-181.2	402.3	60.5	32.8	27.69	2.185	
4,100.0	4,054.0	4,093.2	4,037.8	15.3	15.5	-10.53	-192.4	426.0	62.9	34.4	28.45	2.210	
4,200.0	4,151.1	4,193.1	4,134.2	15.8	16.0	-10.28	-203.7	449.6	65.2	36.0	29.21	2.233	
4,300.0	4,248.2	4,293.1	4,230.7	16.2	16.5	-10.04	-214.9	473.3	67.6	37.6	29.97	2.255	
4,400.0	4,345.3	4,393.1	4,327.2	16.7	17.0	-9.82	-226.1	496.9	70.0	39.2	30.74	2.276	
4,500.0	4,442.4	4,493.1	4,423.7	17.2	17.5	-9.62	-237.3	520.6	72.3	40.8	31.50	2.296	
4,600.0	4,539.5	4,593.0	4,520.2	17.6	18.0	-9.42	-248.6	544.2	74.7	42.4	32.27	2.314	
4,700.0	4,636.6	4,693.0	4,616.7	18.1	18.5	-9.24	-259.8	567.9	77.1	44.0	33.04	2.332	
4,800.0	4,733.7	4,793.0	4,713.1	18.6	18.9	-9.07	-271.0	591.5	79.4	45.6	33.81	2.349	
4,900.0	4,830.8	4,892.9	4,809.6	19.0	19.4	-8.91	-282.3	615.2	81.8	47.2	34.58	2.365	
5,000.0	4,927.9	4,992.9	4,906.1	19.5	19.9	-8.76	-293.5	638.8	84.2	48.8	35.36	2.380	
5,100.0	5,025.0	5,092.9	5,002.6	20.0	20.4	-8.62	-304.7	662.5	86.5	50.4	36.13	2.394	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 304H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.0	5,122.1	5,192.9	5,099.1	20.4	20.9	-8.48	-315.9	686.1	88.9	52.0	36.91	2.408	
5,300.0	5,219.2	5,292.8	5,195.5	20.9	21.4	-8.36	-327.2	709.8	91.3	53.6	37.69	2.421	
5,400.0	5,316.3	5,392.8	5,292.0	21.4	21.9	-8.23	-338.4	733.4	93.6	55.2	38.47	2.434	
5,500.0	5,413.4	5,492.8	5,388.5	21.9	22.4	-8.12	-349.6	757.1	96.0	56.8	39.25	2.446	
5,600.0	5,510.5	5,592.8	5,485.0	22.3	22.9	-8.01	-360.9	780.7	98.4	58.3	40.03	2.458	
5,700.0	5,607.6	5,692.7	5,581.5	22.8	23.4	-7.90	-372.1	804.4	100.7	59.9	40.81	2.469	
5,800.0	5,704.7	5,792.7	5,678.0	23.3	23.9	-7.80	-383.3	828.0	103.1	61.5	41.59	2.479	
5,900.0	5,801.8	5,892.7	5,774.4	23.8	24.4	-7.71	-394.5	851.7	105.5	63.1	42.37	2.489	
6,000.0	5,898.9	5,992.6	5,870.9	24.3	24.9	-7.62	-405.8	875.3	107.9	64.7	43.16	2.499	
6,100.0	5,996.0	6,092.6	5,967.4	24.7	25.4	-7.53	-417.0	899.0	110.2	66.3	43.94	2.509	
6,200.0	6,093.1	6,192.6	6,063.9	25.2	25.9	-7.44	-428.2	922.7	112.6	67.9	44.72	2.518	
6,300.0	6,190.3	6,292.6	6,160.4	25.7	26.4	-7.36	-439.5	946.3	115.0	69.5	45.51	2.526	
6,400.0	6,287.4	6,392.5	6,256.9	26.2	27.0	-7.29	-450.7	970.0	117.3	71.0	46.30	2.535	
6,500.0	6,384.5	6,492.5	6,353.3	26.7	27.5	-7.21	-461.9	993.6	119.7	72.6	47.08	2.543	
6,600.0	6,481.6	6,592.5	6,449.8	27.2	28.0	-7.14	-473.2	1,017.3	122.1	74.2	47.87	2.551	
6,700.0	6,578.7	6,692.4	6,546.3	27.6	28.5	-7.07	-484.4	1,040.9	124.5	75.8	48.66	2.558	
6,800.0	6,675.8	6,792.4	6,642.8	28.1	29.0	-7.01	-495.6	1,064.6	126.8	77.4	49.44	2.565	
6,900.0	6,772.9	6,892.4	6,739.3	28.6	29.5	-6.94	-506.8	1,088.2	129.2	79.0	50.23	2.572	
7,000.0	6,870.0	6,992.4	6,835.7	29.1	30.0	-6.88	-518.1	1,111.9	131.6	80.6	51.02	2.579	
7,100.0	6,967.1	7,092.3	6,932.2	29.6	30.5	-6.82	-529.3	1,135.5	134.0	82.1	51.81	2.586	
7,200.0	7,064.2	7,192.3	7,028.7	30.1	31.0	-6.77	-540.5	1,159.2	136.3	83.7	52.60	2.592	
7,300.0	7,161.3	7,292.3	7,125.2	30.5	31.5	-6.71	-551.8	1,182.8	138.7	85.3	53.39	2.598	
7,400.0	7,258.4	7,392.2	7,221.7	31.0	32.1	-6.66	-563.0	1,206.5	141.1	86.9	54.18	2.604	
7,500.0	7,355.5	7,492.2	7,318.2	31.5	32.6	-6.61	-574.2	1,230.1	143.5	88.5	54.97	2.610	
7,600.0	7,452.6	7,592.2	7,414.6	32.0	33.1	-6.56	-585.4	1,253.8	145.8	90.1	55.76	2.615	
7,700.0	7,549.7	7,692.8	7,511.7	32.5	33.6	-6.51	-596.7	1,277.6	148.2	91.6	56.57	2.619	
7,800.0	7,646.8	7,798.2	7,614.1	33.0	34.1	-6.56	-607.6	1,300.4	148.3	90.8	57.48	2.580	
7,900.0	7,743.9	7,903.5	7,717.2	33.5	34.6	-6.78	-616.8	1,319.8	144.8	86.4	58.33	2.482	
8,000.0	7,841.0	8,008.4	7,820.5	34.0	35.0	-7.20	-624.3	1,335.7	137.6	78.5	59.11	2.327	
8,100.0	7,938.1	8,112.6	7,923.8	34.4	35.5	-7.88	-630.2	1,348.1	126.8	67.0	59.84	2.119	
8,200.0	8,035.2	8,215.8	8,026.6	34.9	35.8	-8.96	-634.5	1,357.1	112.5	52.0	60.52	1.859	
8,300.0	8,132.7	8,318.1	8,128.7	35.4	36.2	-10.50	-637.1	1,362.6	96.4	35.2	61.17	1.575	
8,400.0	8,230.9	8,419.9	8,230.4	35.9	36.5	-12.65	-638.2	1,364.9	80.2	18.4	61.82	1.298	Level 3
8,500.0	8,329.7	8,519.2	8,329.7	36.3	36.8	-15.53	-638.2	1,365.0	65.3	2.6	62.76	1.041	Level 2
8,600.0	8,429.0	8,616.8	8,427.1	36.7	37.0	-13.05	-643.8	1,365.0	54.9	-8.5	63.46	0.865	Level 1
8,644.1	8,472.9	8,658.8	8,468.3	36.8	37.2	-5.39	-652.0	1,365.1	53.4	-10.1	63.50	0.840	Level 1, ES, SF
8,700.0	8,528.6	8,709.9	8,517.1	37.0	37.4	8.43	-666.8	1,365.2	56.9	-7.1	64.05	0.889	Level 1
8,800.0	8,628.5	8,792.3	8,591.8	37.3	37.7	30.57	-701.3	1,365.5	84.6	20.1	64.57	1.311	Level 3
8,900.0	8,728.5	8,861.1	8,648.8	37.6	38.0	158.12	-739.7	1,365.8	135.3	72.9	62.42	2.168	
9,000.0	8,828.5	8,917.1	8,690.8	37.9	38.2	-11.87	-776.7	1,366.0	199.5	140.2	59.36	3.361	
9,100.0	8,927.6	8,968.0	8,725.0	38.2	38.4	-7.51	-814.4	1,366.3	264.1	208.1	56.00	4.717	
9,200.0	9,022.1	9,018.7	8,754.8	38.6	38.6	-5.15	-855.4	1,366.7	321.0	268.7	52.35	6.132	
9,300.0	9,108.0	9,069.3	8,780.1	39.1	38.9	-3.69	-899.2	1,367.0	369.3	320.8	48.59	7.601	
9,400.0	9,181.3	9,125.0	8,802.4	39.5	39.1	-2.65	-950.2	1,367.4	408.6	363.2	45.38	9.003	
9,500.0	9,239.0	9,175.0	8,817.2	40.0	39.4	-1.94	-997.9	1,367.8	438.1	396.3	41.87	10.465	
9,600.0	9,278.4	9,225.0	8,827.0	40.6	39.6	-1.38	-1,046.9	1,368.1	457.7	418.8	38.91	11.765	
9,700.0	9,297.9	9,275.0	8,831.6	41.1	39.9	-0.91	-1,096.7	1,368.5	467.2	430.4	36.79	12.697	
9,800.0	9,300.0	9,348.4	8,832.0	41.7	40.3	-0.34	-1,170.0	1,369.1	468.0	431.7	36.24	12.913	
9,870.7	9,300.0	9,419.0	8,832.0	42.1	40.7	0.00	-1,240.7	1,369.6	468.0	431.4	36.52	12.813	
9,900.0	9,300.0	9,448.3	8,832.0	42.3	40.9	0.07	-1,270.0	1,369.9	468.0	431.3	36.67	12.762	
10,000.0	9,300.0	9,548.3	8,832.0	42.9	41.5	0.12	-1,370.0	1,370.6	468.0	430.7	37.28	12.554	
10,100.0	9,300.0	9,648.3	8,832.0	43.6	42.2	0.12	-1,470.0	1,371.4	468.0	430.0	37.95	12.330	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 304H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	9,300.0	9,748.3	8,832.0	44.2	42.9	0.12	-1,570.0	1,372.2	468.0	429.3	38.68	12.098	
10,300.0	9,300.0	9,848.3	8,832.0	45.0	43.6	0.11	-1,670.0	1,373.0	468.0	428.5	39.46	11.859	
10,400.0	9,300.0	9,948.3	8,832.0	45.7	44.4	0.11	-1,770.0	1,373.8	468.0	427.7	40.29	11.616	
10,500.0	9,300.0	10,048.3	8,832.0	46.5	45.2	0.11	-1,870.0	1,374.5	468.0	426.8	41.15	11.371	
10,600.0	9,300.0	10,148.3	8,832.0	47.3	46.0	0.11	-1,970.0	1,375.3	468.0	425.9	42.06	11.125	
10,700.0	9,300.0	10,248.3	8,832.0	48.2	46.9	0.11	-2,070.0	1,376.1	468.0	425.0	43.01	10.881	
10,800.0	9,300.0	10,348.3	8,832.0	49.1	47.8	0.11	-2,169.9	1,376.9	468.0	424.0	43.99	10.638	
10,900.0	9,300.0	10,448.3	8,832.0	50.0	48.7	0.11	-2,269.9	1,377.6	468.0	423.0	45.01	10.397	
11,000.0	9,300.0	10,548.3	8,832.0	50.9	49.7	0.11	-2,369.9	1,378.4	468.0	421.9	46.05	10.161	
11,100.0	9,300.0	10,648.3	8,832.0	51.9	50.6	0.10	-2,469.9	1,379.2	468.0	420.8	47.13	9.929	
11,200.0	9,300.0	10,748.3	8,832.0	52.8	51.6	0.10	-2,569.9	1,380.0	468.0	419.7	48.23	9.702	
11,300.0	9,300.0	10,848.3	8,832.0	53.8	52.7	0.10	-2,669.9	1,380.7	468.0	418.6	49.36	9.480	
11,400.0	9,300.0	10,948.3	8,832.0	54.9	53.7	0.10	-2,769.9	1,381.5	468.0	417.5	50.51	9.264	
11,500.0	9,300.0	11,048.3	8,832.0	55.9	54.8	0.10	-2,869.9	1,382.3	468.0	416.3	51.69	9.054	
11,600.0	9,300.0	11,148.3	8,832.0	57.0	55.8	0.10	-2,969.9	1,383.1	468.0	415.1	52.88	8.849	
11,700.0	9,300.0	11,248.3	8,832.0	58.0	56.9	0.10	-3,069.9	1,383.8	468.0	413.9	54.10	8.651	
11,800.0	9,300.0	11,348.3	8,832.0	59.1	58.0	0.10	-3,169.9	1,384.6	468.0	412.6	55.33	8.458	
11,900.0	9,300.0	11,448.3	8,832.0	60.2	59.2	0.10	-3,269.9	1,385.4	468.0	411.4	56.58	8.272	
12,000.0	9,300.0	11,548.3	8,832.0	61.3	60.3	0.09	-3,369.9	1,386.2	468.0	410.1	57.84	8.091	
12,100.0	9,300.0	11,648.3	8,832.0	62.5	61.4	0.09	-3,469.9	1,386.9	468.0	408.9	59.12	7.916	
12,200.0	9,300.0	11,748.3	8,832.0	63.6	62.6	0.09	-3,569.9	1,387.7	468.0	407.6	60.41	7.746	
12,300.0	9,300.0	11,848.3	8,832.0	64.8	63.8	0.09	-3,669.9	1,388.5	468.0	406.3	61.72	7.583	
12,400.0	9,300.0	11,948.3	8,832.0	65.9	65.0	0.09	-3,769.9	1,389.3	468.0	404.9	63.03	7.424	
12,500.0	9,300.0	12,048.3	8,832.0	67.1	66.2	0.09	-3,869.9	1,390.0	468.0	403.6	64.36	7.271	
12,600.0	9,300.0	12,148.3	8,832.0	68.3	67.4	0.09	-3,969.9	1,390.8	468.0	402.3	65.70	7.123	
12,700.0	9,300.0	12,248.3	8,832.0	69.5	68.6	0.09	-4,069.9	1,391.6	468.0	400.9	67.05	6.979	
12,800.0	9,300.0	12,348.3	8,832.0	70.7	69.8	0.08	-4,169.9	1,392.4	468.0	399.6	68.41	6.841	
12,900.0	9,300.0	12,448.3	8,832.0	71.9	71.0	0.08	-4,269.9	1,393.2	468.0	398.2	69.78	6.707	
13,000.0	9,300.0	12,548.3	8,832.0	73.2	72.3	0.08	-4,369.9	1,393.9	468.0	396.8	71.15	6.577	
13,100.0	9,300.0	12,648.3	8,832.0	74.4	73.5	0.08	-4,469.9	1,394.7	468.0	395.4	72.54	6.452	
13,200.0	9,300.0	12,748.3	8,832.0	75.6	74.8	0.08	-4,569.9	1,395.5	468.0	394.0	73.93	6.330	
13,300.0	9,300.0	12,848.3	8,832.0	76.9	76.0	0.08	-4,669.9	1,396.3	468.0	392.7	75.33	6.213	
13,400.0	9,300.0	12,948.3	8,832.0	78.1	77.3	0.08	-4,769.9	1,397.0	468.0	391.2	76.73	6.099	
13,500.0	9,300.0	13,048.3	8,832.0	79.4	78.6	0.08	-4,869.9	1,397.8	468.0	389.8	78.14	5.989	
13,600.0	9,300.0	13,148.3	8,832.0	80.7	79.9	0.07	-4,969.9	1,398.6	468.0	388.4	79.56	5.882	
13,700.0	9,300.0	13,248.3	8,832.0	82.0	81.1	0.07	-5,069.9	1,399.4	468.0	387.0	80.98	5.779	
13,800.0	9,300.0	13,348.3	8,832.0	83.2	82.4	0.07	-5,169.9	1,400.1	468.0	385.6	82.41	5.679	
13,900.0	9,300.0	13,448.3	8,832.0	84.5	83.7	0.07	-5,269.9	1,400.9	468.0	384.1	83.84	5.582	
14,000.0	9,300.0	13,548.3	8,832.0	85.8	85.0	0.07	-5,369.9	1,401.7	468.0	382.7	85.28	5.487	
14,100.0	9,300.0	13,648.3	8,832.0	87.1	86.3	0.07	-5,469.9	1,402.5	468.0	381.3	86.72	5.396	
14,200.0	9,300.0	13,748.3	8,832.0	88.4	87.7	0.07	-5,569.8	1,403.2	468.0	379.8	88.17	5.308	
14,300.0	9,300.0	13,848.3	8,832.0	89.7	89.0	0.07	-5,669.8	1,404.0	468.0	378.4	89.62	5.222	
14,400.0	9,300.0	13,948.3	8,832.0	91.0	90.3	0.06	-5,769.8	1,404.8	468.0	376.9	91.08	5.138	
14,500.0	9,300.0	14,048.3	8,832.0	92.3	91.6	0.06	-5,869.8	1,405.6	468.0	375.4	92.54	5.057	
14,600.0	9,300.0	14,148.3	8,832.0	93.7	92.9	0.06	-5,969.8	1,406.3	468.0	374.0	94.00	4.979	
14,700.0	9,300.0	14,248.3	8,832.0	95.0	94.3	0.06	-6,069.8	1,407.1	468.0	372.5	95.46	4.902	
14,800.0	9,300.0	14,348.3	8,832.0	96.3	95.6	0.06	-6,169.8	1,407.9	468.0	371.0	96.93	4.828	
14,900.0	9,300.0	14,448.3	8,832.0	97.6	96.9	0.06	-6,269.8	1,408.7	468.0	369.6	98.41	4.756	
15,000.0	9,300.0	14,548.3	8,832.0	99.0	98.3	0.06	-6,369.8	1,409.4	468.0	368.1	99.88	4.685	
15,100.0	9,300.0	14,648.3	8,832.0	100.3	99.6	0.06	-6,469.8	1,410.2	468.0	366.6	101.36	4.617	
15,200.0	9,300.0	14,748.3	8,832.0	101.6	101.0	0.05	-6,569.8	1,411.0	468.0	365.1	102.84	4.551	
15,300.0	9,300.0	14,848.3	8,832.0	103.0	102.3	0.05	-6,669.8	1,411.8	468.0	363.7	104.32	4.486	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 304H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	9,300.0	14,948.3	8,832.0	104.3	103.7	0.05	-6,769.8	1,412.6	468.0	362.2	105.81	4.423	
15,500.0	9,300.0	15,048.3	8,832.0	105.7	105.0	0.05	-6,869.8	1,413.3	468.0	360.7	107.30	4.362	
15,600.0	9,300.0	15,148.3	8,832.0	107.0	106.4	0.05	-6,969.8	1,414.1	468.0	359.2	108.79	4.302	
15,700.0	9,300.0	15,248.3	8,832.0	108.4	107.7	0.05	-7,069.8	1,414.9	468.0	357.7	110.28	4.244	
15,800.0	9,300.0	15,348.3	8,832.0	109.7	109.1	0.05	-7,169.8	1,415.7	468.0	356.2	111.77	4.187	
15,900.0	9,300.0	15,448.3	8,832.0	111.1	110.5	0.05	-7,269.8	1,416.4	468.0	354.7	113.27	4.132	
16,000.0	9,300.0	15,548.3	8,832.0	112.4	111.8	0.04	-7,369.8	1,417.2	468.0	353.2	114.77	4.078	
16,100.0	9,300.0	15,648.3	8,832.0	113.8	113.2	0.04	-7,469.8	1,418.0	468.0	351.7	116.27	4.025	
16,200.0	9,300.0	15,748.3	8,832.0	115.2	114.6	0.04	-7,569.8	1,418.8	468.0	350.2	117.77	3.974	
16,300.0	9,300.0	15,848.3	8,832.0	116.5	115.9	0.04	-7,669.8	1,419.5	468.0	348.7	119.28	3.924	
16,400.0	9,300.0	15,948.3	8,832.0	117.9	117.3	0.04	-7,769.8	1,420.3	468.0	347.2	120.78	3.875	
16,500.0	9,300.0	16,048.3	8,832.0	119.3	118.7	0.04	-7,869.8	1,421.1	468.0	345.7	122.29	3.827	
16,600.0	9,300.0	16,148.3	8,832.0	120.6	120.1	0.04	-7,969.8	1,421.9	468.0	344.2	123.80	3.780	
16,700.0	9,300.0	16,248.3	8,832.0	122.0	121.5	0.04	-8,069.8	1,422.6	468.0	342.7	125.31	3.735	
16,800.0	9,300.0	16,348.3	8,832.0	123.4	122.8	0.04	-8,169.8	1,423.4	468.0	341.2	126.82	3.690	
16,900.0	9,300.0	16,448.3	8,832.0	124.8	124.2	0.03	-8,269.8	1,424.2	468.0	339.7	128.34	3.647	
17,000.0	9,300.0	16,548.3	8,832.0	126.1	125.6	0.03	-8,369.8	1,425.0	468.0	338.1	129.85	3.604	
17,100.0	9,300.0	16,648.3	8,832.0	127.5	127.0	0.03	-8,469.8	1,425.7	468.0	336.6	131.37	3.562	
17,200.0	9,300.0	16,748.3	8,832.0	128.9	128.4	0.03	-8,569.8	1,426.5	468.0	335.1	132.88	3.522	
17,300.0	9,300.0	16,848.3	8,832.0	130.3	129.8	0.03	-8,669.8	1,427.3	468.0	333.6	134.40	3.482	
17,400.0	9,300.0	16,948.3	8,832.0	131.7	131.1	0.03	-8,769.8	1,428.1	468.0	332.1	135.92	3.443	
17,500.0	9,300.0	17,048.3	8,832.0	133.1	132.5	0.03	-8,869.7	1,428.8	468.0	330.5	137.44	3.405	
17,600.0	9,300.0	17,148.3	8,832.0	134.4	133.9	0.03	-8,969.7	1,429.6	468.0	329.0	138.97	3.368	
17,700.0	9,300.0	17,248.3	8,832.0	135.8	135.3	0.02	-9,069.7	1,430.4	468.0	327.5	140.49	3.331	
17,800.0	9,300.0	17,348.3	8,832.0	137.2	136.7	0.02	-9,169.7	1,431.2	468.0	326.0	142.01	3.295	
17,900.0	9,300.0	17,448.3	8,832.0	138.6	138.1	0.02	-9,269.7	1,432.0	468.0	324.5	143.54	3.260	
18,000.0	9,300.0	17,548.3	8,832.0	140.0	139.5	0.02	-9,369.7	1,432.7	468.0	322.9	145.06	3.226	
18,100.0	9,300.0	17,648.3	8,832.0	141.4	140.9	0.02	-9,469.7	1,433.5	468.0	321.4	146.59	3.193	
18,200.0	9,300.0	17,748.3	8,832.0	142.8	142.3	0.02	-9,569.7	1,434.3	468.0	319.9	148.12	3.160	
18,300.0	9,300.0	17,848.3	8,832.0	144.2	143.7	0.02	-9,669.7	1,435.1	468.0	318.3	149.65	3.127	
18,400.0	9,300.0	17,948.3	8,832.0	145.6	145.1	0.02	-9,769.7	1,435.8	468.0	316.8	151.18	3.096	
18,500.0	9,300.0	18,048.3	8,832.0	147.0	146.5	0.01	-9,869.7	1,436.6	468.0	315.3	152.71	3.065	
18,600.0	9,300.0	18,148.3	8,832.0	148.4	147.9	0.01	-9,969.7	1,437.4	468.0	313.8	154.24	3.034	
18,700.0	9,300.0	18,248.3	8,832.0	149.8	149.3	0.01	-10,069.7	1,438.2	468.0	312.2	155.77	3.004	
18,800.0	9,300.0	18,348.3	8,832.0	151.2	150.7	0.01	-10,169.7	1,438.9	468.0	310.7	157.30	2.975	
18,900.0	9,300.0	18,448.3	8,832.0	152.6	152.1	0.01	-10,269.7	1,439.7	468.0	309.2	158.84	2.946	
19,000.0	9,300.0	18,548.3	8,832.0	154.0	153.5	0.01	-10,369.7	1,440.5	468.0	307.6	160.37	2.918	
19,100.0	9,300.0	18,648.3	8,832.0	155.4	154.9	0.01	-10,469.7	1,441.3	468.0	306.1	161.90	2.891	
19,200.0	9,300.0	18,748.3	8,832.0	156.8	156.3	0.01	-10,569.7	1,442.0	468.0	304.6	163.44	2.863	
19,300.0	9,300.0	18,848.3	8,832.0	158.2	157.7	0.00	-10,669.7	1,442.8	468.0	303.0	164.98	2.837	
19,400.0	9,300.0	18,948.3	8,832.0	159.6	159.1	0.00	-10,769.7	1,443.6	468.0	301.5	166.51	2.811	
19,500.0	9,300.0	19,048.3	8,832.0	161.0	160.6	0.00	-10,869.7	1,444.4	468.0	299.9	168.05	2.785	
19,600.0	9,300.0	19,148.3	8,832.0	162.4	162.0	0.00	-10,969.7	1,445.1	468.0	298.4	169.59	2.760	
19,678.1	9,300.0	19,226.4	8,832.0	163.4	163.1	0.00	-11,047.8	1,445.7	468.0	297.5	170.49	2.745	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 503H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.94	-0.7	-40.0	40.2				
100.0	100.0	97.2	97.2	0.1	0.1	-90.94	-0.7	-40.0	40.1	39.8	0.26	154.185	
200.0	200.0	197.2	197.2	0.5	0.5	-90.94	-0.7	-40.0	40.1	39.1	0.97	41.278	
300.0	300.0	297.2	297.2	0.8	0.8	-90.94	-0.7	-40.0	40.1	38.4	1.69	23.739	
400.0	400.0	397.2	397.2	1.2	1.2	-90.94	-0.7	-40.0	40.1	37.7	2.40	16.660	
500.0	500.0	497.2	497.2	1.6	1.6	-90.94	-0.7	-40.0	40.1	36.9	3.12	12.833	
600.0	600.0	597.2	597.2	1.9	1.9	-90.94	-0.7	-40.0	40.1	36.2	3.84	10.436	
700.0	700.0	697.2	697.2	2.3	2.3	-90.94	-0.7	-40.0	40.1	35.5	4.56	8.794	
800.0	800.0	797.2	797.2	2.6	2.6	-90.94	-0.7	-40.0	40.1	34.8	5.27	7.598	
900.0	900.0	897.2	897.2	3.0	3.0	-90.94	-0.7	-40.0	40.1	34.1	5.99	6.688	
1,000.0	1,000.0	997.2	997.2	3.4	3.3	-90.94	-0.7	-40.0	40.1	33.3	6.71	5.973	
1,100.0	1,100.0	1,097.2	1,097.2	3.7	3.7	-90.94	-0.7	-40.0	40.1	32.6	7.42	5.396	
1,200.0	1,200.0	1,197.2	1,197.2	4.1	4.1	-90.94	-0.7	-40.0	40.1	31.9	8.14	4.921	
1,300.0	1,300.0	1,297.2	1,297.2	4.4	4.4	-90.94	-0.7	-40.0	40.1	31.2	8.86	4.523	
1,400.0	1,400.0	1,397.2	1,397.2	4.8	4.8	-90.94	-0.7	-40.0	40.1	30.5	9.57	4.184	
1,500.0	1,500.0	1,497.2	1,497.2	5.2	5.1	-90.94	-0.7	-40.0	40.1	29.8	10.29	3.892	
1,600.0	1,600.0	1,597.2	1,597.2	5.5	5.5	-90.94	-0.7	-40.0	40.1	29.0	11.01	3.639	
1,700.0	1,700.0	1,697.2	1,697.2	5.9	5.9	-90.94	-0.7	-40.0	40.1	28.3	11.72	3.416	
1,800.0	1,800.0	1,797.2	1,797.2	6.2	6.2	-90.94	-0.7	-40.0	40.1	27.6	12.44	3.220	
1,900.0	1,900.0	1,897.2	1,897.2	6.6	6.6	-90.94	-0.7	-40.0	40.1	26.9	13.16	3.044	
2,000.0	2,000.0	1,997.2	1,997.2	6.9	6.9	-90.94	-0.7	-40.0	40.1	26.2	13.88	2.887	CC
2,000.0	2,000.0	1,997.2	1,997.2	6.9	6.9	-90.94	-0.7	-40.0	40.1	26.2	13.88	2.887	
2,100.0	2,100.0	2,097.2	2,097.2	7.3	7.3	153.61	-0.7	-40.0	40.4	25.9	14.59	2.773	ES, SF
2,200.0	2,199.9	2,197.1	2,197.1	7.6	7.6	155.62	-0.7	-40.0	43.6	28.3	15.28	2.854	
2,300.0	2,299.7	2,298.0	2,298.0	8.0	8.0	157.44	-2.0	-39.1	49.0	33.0	15.96	3.069	
2,400.0	2,399.1	2,398.9	2,398.8	8.3	8.3	157.43	-6.2	-35.9	55.3	38.7	16.61	3.329	
2,500.0	2,498.2	2,500.0	2,499.4	8.7	8.7	156.14	-13.3	-30.7	62.6	45.4	17.27	3.627	
2,600.0	2,596.6	2,600.9	2,599.6	9.0	9.0	154.03	-23.1	-23.4	71.0	53.1	17.93	3.960	
2,700.0	2,694.4	2,700.3	2,698.0	9.4	9.3	152.71	-33.9	-15.4	81.8	63.2	18.62	4.392	
2,800.0	2,791.6	2,799.4	2,796.2	9.8	9.7	152.55	-44.7	-7.4	95.1	75.8	19.31	4.925	
2,900.0	2,888.7	2,898.4	2,894.4	10.2	10.0	152.54	-55.4	0.6	108.7	88.7	20.01	5.432	
3,000.0	2,985.8	2,997.5	2,992.6	10.6	10.4	152.53	-66.2	8.6	122.3	101.6	20.71	5.902	
3,100.0	3,082.9	3,096.6	3,090.7	11.0	10.7	152.52	-76.9	16.6	135.8	114.4	21.43	6.340	
3,200.0	3,180.0	3,195.7	3,188.9	11.4	11.1	152.51	-87.7	24.6	149.4	127.3	22.15	6.747	
3,300.0	3,277.1	3,294.7	3,287.1	11.8	11.5	152.51	-98.4	32.6	163.0	140.1	22.87	7.126	
3,400.0	3,374.2	3,393.8	3,385.2	12.2	11.8	152.50	-109.2	40.6	176.6	153.0	23.61	7.481	
3,500.0	3,471.3	3,492.9	3,483.4	12.7	12.2	152.50	-120.0	48.6	190.2	165.8	24.34	7.812	
3,600.0	3,568.4	3,592.0	3,581.5	13.1	12.6	152.50	-130.7	56.6	203.8	178.7	25.09	8.122	
3,700.0	3,665.5	3,691.0	3,679.7	13.5	12.9	152.49	-141.5	64.5	217.3	191.5	25.83	8.414	
3,800.0	3,762.7	3,790.1	3,777.9	14.0	13.3	152.49	-152.2	72.5	230.9	204.3	26.58	8.687	
3,900.0	3,859.8	3,889.2	3,876.0	14.4	13.7	152.49	-163.0	80.5	244.5	217.2	27.34	8.945	
4,000.0	3,956.9	3,988.3	3,974.2	14.9	14.0	152.49	-173.7	88.5	258.1	230.0	28.09	9.187	
4,100.0	4,054.0	4,087.3	4,072.4	15.3	14.4	152.49	-184.5	96.5	271.7	242.8	28.85	9.416	
4,200.0	4,151.1	4,186.4	4,170.5	15.8	14.8	152.48	-195.3	104.5	285.2	255.6	29.61	9.632	
4,300.0	4,248.2	4,285.5	4,268.7	16.2	15.2	152.48	-206.0	112.5	298.8	268.5	30.38	9.837	
4,400.0	4,345.3	4,384.5	4,366.9	16.7	15.6	152.48	-216.8	120.5	312.4	281.3	31.15	10.030	
4,500.0	4,442.4	4,483.6	4,465.0	17.2	15.9	152.48	-227.5	128.5	326.0	294.1	31.92	10.214	
4,600.0	4,539.5	4,582.7	4,563.2	17.6	16.3	152.48	-238.3	136.4	339.6	306.9	32.69	10.388	
4,700.0	4,636.6	4,681.8	4,661.3	18.1	16.7	152.48	-249.0	144.4	353.2	319.7	33.46	10.554	
4,800.0	4,733.7	4,780.8	4,759.5	18.6	17.1	152.48	-259.8	152.4	366.7	332.5	34.24	10.711	
4,900.0	4,830.8	4,879.9	4,857.7	19.0	17.5	152.48	-270.5	160.4	380.3	345.3	35.02	10.861	
5,000.0	4,927.9	4,979.0	4,955.8	19.5	17.9	152.48	-281.3	168.4	393.9	358.1	35.79	11.005	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 503H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,100.0	5,025.0	5,078.1	5,054.0	20.0	18.3	152.47	-292.1	176.4	407.5	370.9	36.58	11.141	
5,200.0	5,122.1	5,177.1	5,152.2	20.4	18.6	152.47	-302.8	184.4	421.1	383.7	37.36	11.272	
5,300.0	5,219.2	5,276.2	5,250.3	20.9	19.0	152.47	-313.6	192.4	434.7	396.5	38.14	11.396	
5,400.0	5,316.3	5,375.3	5,348.5	21.4	19.4	152.47	-324.3	200.4	448.2	409.3	38.92	11.516	
5,500.0	5,413.4	5,474.4	5,446.6	21.9	19.8	152.47	-335.1	208.4	461.8	422.1	39.71	11.630	
5,600.0	5,510.5	5,573.4	5,544.8	22.3	20.2	152.47	-345.8	216.3	475.4	434.9	40.50	11.739	
5,700.0	5,607.6	5,672.5	5,643.0	22.8	20.6	152.47	-356.6	224.3	489.0	447.7	41.28	11.844	
5,800.0	5,704.7	5,771.6	5,741.1	23.3	21.0	152.47	-367.3	232.3	502.6	460.5	42.07	11.945	
5,900.0	5,801.8	5,870.6	5,839.3	23.8	21.4	152.47	-378.1	240.3	516.1	473.3	42.86	12.042	
6,000.0	5,898.9	5,969.7	5,937.5	24.3	21.8	152.47	-388.9	248.3	529.7	486.1	43.65	12.135	
6,100.0	5,996.0	6,068.8	6,035.6	24.7	22.2	152.47	-399.6	256.3	543.3	498.9	44.44	12.225	
6,200.0	6,093.1	6,167.9	6,133.8	25.2	22.5	152.47	-410.4	264.3	556.9	511.7	45.23	12.311	
6,300.0	6,190.3	6,266.9	6,232.0	25.7	22.9	152.47	-421.1	272.3	570.5	524.4	46.03	12.394	
6,400.0	6,287.4	6,366.0	6,330.1	26.2	23.3	152.47	-431.9	280.3	584.1	537.2	46.82	12.474	
6,500.0	6,384.5	6,465.1	6,428.3	26.7	23.7	152.47	-442.6	288.3	597.6	550.0	47.61	12.552	
6,600.0	6,481.6	6,564.2	6,526.4	27.2	24.1	152.47	-453.4	296.2	611.2	562.8	48.41	12.626	
6,700.0	6,578.7	6,663.2	6,624.6	27.6	24.5	152.47	-464.1	304.2	624.8	575.6	49.20	12.698	
6,800.0	6,675.8	6,762.3	6,722.8	28.1	24.9	152.47	-474.9	312.2	638.4	588.4	50.00	12.768	
6,900.0	6,772.9	6,861.4	6,820.9	28.6	25.3	152.47	-485.7	320.2	652.0	601.2	50.80	12.835	
7,000.0	6,870.0	6,960.5	6,919.1	29.1	25.7	152.47	-496.4	328.2	665.5	614.0	51.59	12.900	
7,100.0	6,967.1	7,059.5	7,017.3	29.6	26.1	152.47	-507.2	336.2	679.1	626.7	52.39	12.963	
7,200.0	7,064.2	7,158.6	7,115.4	30.1	26.5	152.47	-517.9	344.2	692.7	639.5	53.19	13.024	
7,300.0	7,161.3	7,257.7	7,213.6	30.5	26.9	152.47	-528.7	352.2	706.3	652.3	53.99	13.083	
7,400.0	7,258.4	7,356.7	7,311.7	31.0	27.3	152.47	-539.4	360.2	719.9	665.1	54.78	13.140	
7,500.0	7,355.5	7,455.8	7,409.9	31.5	27.7	152.46	-550.2	368.1	733.5	677.9	55.58	13.195	
7,600.0	7,452.6	7,554.9	7,508.1	32.0	28.1	152.46	-561.0	376.1	747.0	690.7	56.38	13.249	
7,700.0	7,549.7	7,654.0	7,606.2	32.5	28.5	152.46	-571.7	384.1	760.6	703.4	57.18	13.301	
7,800.0	7,646.8	7,753.0	7,704.4	33.0	28.9	152.46	-582.5	392.1	774.2	716.2	57.98	13.352	
7,900.0	7,743.9	7,852.1	7,802.6	33.5	29.3	152.46	-593.2	400.1	787.8	729.0	58.78	13.401	
8,000.0	7,841.0	7,951.2	7,900.7	34.0	29.7	152.46	-604.0	408.1	801.4	741.8	59.59	13.449	
8,100.0	7,938.1	8,050.3	7,998.9	34.4	30.1	152.46	-614.7	416.1	814.9	754.6	60.39	13.495	
8,200.0	8,035.2	8,149.3	8,097.1	34.9	30.5	152.46	-625.5	424.1	828.5	767.3	61.19	13.541	
8,300.0	8,132.7	8,236.5	8,183.5	35.4	30.8	152.58	-634.2	430.6	841.2	779.3	61.90	13.590	
8,400.0	8,230.9	8,321.4	8,268.0	35.9	31.1	152.74	-640.8	435.4	852.6	790.0	62.57	13.626	
8,500.0	8,329.7	8,400.0	8,346.5	36.3	31.4	152.91	-645.0	438.6	862.5	799.4	63.14	13.661	
8,600.0	8,429.0	8,490.9	8,437.3	36.7	31.7	153.14	-647.8	440.6	871.1	807.3	63.77	13.659	
8,700.0	8,528.6	8,579.4	8,525.8	37.0	32.0	153.39	-648.3	441.0	878.2	813.8	64.34	13.650	
8,800.0	8,628.5	8,679.3	8,625.7	37.3	32.3	153.57	-648.3	441.0	882.7	817.7	64.98	13.583	
8,900.0	8,728.5	8,779.3	8,725.7	37.6	32.7	-90.65	-648.3	441.0	884.0	818.4	65.62	13.472	
8,909.0	8,737.5	8,788.3	8,734.7	37.7	32.7	93.85	-648.3	441.0	884.0	818.4	65.68	13.461	
9,000.0	8,828.5	8,879.3	8,825.7	37.9	33.0	93.85	-648.3	441.0	884.0	817.8	66.25	13.344	
9,100.0	8,927.6	8,978.4	8,924.8	38.2	33.3	94.49	-648.3	441.0	884.9	818.1	66.84	13.238	
9,200.0	9,022.1	9,073.0	9,019.3	38.6	33.6	96.06	-648.3	441.0	888.0	820.7	67.35	13.186	
9,300.0	9,108.0	9,158.8	9,105.2	39.1	33.9	97.97	-648.3	441.0	895.4	827.6	67.75	13.216	
9,400.0	9,181.3	9,232.1	9,178.5	39.5	34.1	99.42	-648.3	441.0	909.5	841.4	68.04	13.368	
9,500.0	9,239.0	9,289.8	9,236.2	40.0	34.3	99.55	-648.3	441.0	932.7	864.5	68.21	13.675	
9,600.0	9,278.4	9,402.6	9,348.1	40.6	34.7	101.71	-660.1	441.1	965.1	896.2	68.96	13.996	
9,700.0	9,297.9	9,691.6	9,594.3	41.1	36.1	110.23	-802.9	442.2	1,000.8	930.5	70.22	14.251	
9,800.0	9,300.0	10,097.6	9,720.0	41.7	38.5	114.68	-1,177.2	445.1	1,013.6	940.5	73.14	13.858	
9,900.0	9,300.0	10,197.5	9,720.0	42.3	39.1	114.58	-1,277.1	445.9	1,016.7	942.3	74.42	13.661	
10,000.0	9,300.0	10,297.5	9,720.0	42.9	39.8	114.57	-1,377.1	446.7	1,017.0	941.3	75.75	13.426	
10,100.0	9,300.0	10,397.5	9,720.0	43.6	40.5	114.57	-1,477.1	447.5	1,017.0	939.9	77.15	13.183	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 503H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	9,300.0	10,497.5	9,720.0	44.2	41.3	114.57	-1,577.1	448.2	1,017.0	938.4	78.61	12.937	
10,300.0	9,300.0	10,597.5	9,720.0	45.0	42.1	114.57	-1,677.1	449.0	1,017.0	936.9	80.15	12.689	
10,400.0	9,300.0	10,697.5	9,720.0	45.7	42.9	114.57	-1,777.1	449.8	1,017.0	935.2	81.74	12.442	
10,500.0	9,300.0	10,797.5	9,720.0	46.5	43.8	114.57	-1,877.1	450.6	1,017.0	933.6	83.39	12.195	
10,600.0	9,300.0	10,897.5	9,720.0	47.3	44.7	114.57	-1,977.1	451.3	1,017.0	931.9	85.10	11.951	
10,700.0	9,300.0	10,997.5	9,720.0	48.2	45.6	114.57	-2,077.1	452.1	1,017.0	930.1	86.85	11.709	
10,800.0	9,300.0	11,097.5	9,720.0	49.1	46.6	114.57	-2,177.1	452.9	1,016.9	928.3	88.66	11.470	
10,900.0	9,300.0	11,197.5	9,720.0	50.0	47.5	114.57	-2,277.1	453.7	1,016.9	926.4	90.51	11.236	
11,000.0	9,300.0	11,297.5	9,720.0	50.9	48.5	114.57	-2,377.1	454.4	1,016.9	924.5	92.40	11.005	
11,100.0	9,300.0	11,397.5	9,720.0	51.9	49.5	114.57	-2,477.1	455.2	1,016.9	922.6	94.34	10.780	
11,200.0	9,300.0	11,497.5	9,720.0	52.8	50.6	114.57	-2,577.1	456.0	1,016.9	920.6	96.31	10.559	
11,300.0	9,300.0	11,597.5	9,720.0	53.8	51.7	114.57	-2,677.1	456.8	1,016.9	918.6	98.32	10.343	
11,400.0	9,300.0	11,697.5	9,720.0	54.9	52.7	114.57	-2,777.1	457.5	1,016.9	916.5	100.36	10.133	
11,500.0	9,300.0	11,797.5	9,720.0	55.9	53.8	114.57	-2,877.1	458.3	1,016.9	914.5	102.43	9.928	
11,600.0	9,300.0	11,897.5	9,720.0	57.0	54.9	114.57	-2,977.1	459.1	1,016.9	912.3	104.53	9.728	
11,700.0	9,300.0	11,997.5	9,720.0	58.0	56.1	114.57	-3,077.1	459.9	1,016.9	910.2	106.66	9.534	
11,800.0	9,300.0	12,097.5	9,720.0	59.1	57.2	114.57	-3,177.1	460.7	1,016.9	908.0	108.81	9.345	
11,900.0	9,300.0	12,197.5	9,720.0	60.2	58.4	114.57	-3,277.1	461.4	1,016.8	905.9	110.99	9.162	
12,000.0	9,300.0	12,297.5	9,720.0	61.3	59.5	114.57	-3,377.1	462.2	1,016.8	903.6	113.19	8.983	
12,100.0	9,300.0	12,397.5	9,720.0	62.5	60.7	114.57	-3,477.1	463.0	1,016.8	901.4	115.42	8.810	
12,200.0	9,300.0	12,497.5	9,720.0	63.6	61.9	114.57	-3,577.1	463.8	1,016.8	899.2	117.66	8.642	
12,300.0	9,300.0	12,597.5	9,720.0	64.8	63.1	114.57	-3,677.1	464.5	1,016.8	896.9	119.93	8.479	
12,400.0	9,300.0	12,697.5	9,720.0	65.9	64.3	114.57	-3,777.1	465.3	1,016.8	894.6	122.21	8.320	
12,500.0	9,300.0	12,797.5	9,720.0	67.1	65.5	114.57	-3,877.1	466.1	1,016.8	892.3	124.51	8.166	
12,600.0	9,300.0	12,897.5	9,720.0	68.3	66.8	114.57	-3,977.1	466.9	1,016.8	890.0	126.83	8.017	
12,700.0	9,300.0	12,997.5	9,720.0	69.5	68.0	114.57	-4,077.1	467.6	1,016.8	887.6	129.16	7.872	
12,800.0	9,300.0	13,097.5	9,720.0	70.7	69.3	114.57	-4,177.1	468.4	1,016.8	885.3	131.50	7.732	
12,900.0	9,300.0	13,197.5	9,720.0	71.9	70.5	114.57	-4,277.1	469.2	1,016.8	882.9	133.86	7.595	
13,000.0	9,300.0	13,297.5	9,720.0	73.2	71.8	114.57	-4,377.1	470.0	1,016.7	880.5	136.24	7.463	
13,100.0	9,300.0	13,397.5	9,720.0	74.4	73.1	114.57	-4,477.1	470.7	1,016.7	878.1	138.62	7.335	
13,200.0	9,300.0	13,497.5	9,720.0	75.6	74.3	114.57	-4,577.0	471.5	1,016.7	875.7	141.02	7.210	
13,300.0	9,300.0	13,597.5	9,720.0	76.9	75.6	114.57	-4,677.0	472.3	1,016.7	873.3	143.43	7.089	
13,400.0	9,300.0	13,697.5	9,720.0	78.1	76.9	114.57	-4,777.0	473.1	1,016.7	870.9	145.85	6.971	
13,500.0	9,300.0	13,797.5	9,720.0	79.4	78.2	114.57	-4,877.0	473.8	1,016.7	868.4	148.28	6.857	
13,600.0	9,300.0	13,897.5	9,720.0	80.7	79.5	114.57	-4,977.0	474.6	1,016.7	866.0	150.72	6.746	
13,700.0	9,300.0	13,997.5	9,720.0	82.0	80.8	114.57	-5,077.0	475.4	1,016.7	863.5	153.17	6.638	
13,800.0	9,300.0	14,097.5	9,720.0	83.2	82.1	114.58	-5,177.0	476.2	1,016.7	861.0	155.63	6.533	
13,900.0	9,300.0	14,197.5	9,720.0	84.5	83.4	114.58	-5,277.0	476.9	1,016.7	858.6	158.09	6.431	
14,000.0	9,300.0	14,297.5	9,720.0	85.8	84.7	114.58	-5,377.0	477.7	1,016.7	856.1	160.57	6.332	
14,100.0	9,300.0	14,397.5	9,720.0	87.1	86.1	114.58	-5,477.0	478.5	1,016.6	853.6	163.05	6.235	
14,200.0	9,300.0	14,497.5	9,720.0	88.4	87.4	114.58	-5,577.0	479.3	1,016.6	851.1	165.54	6.141	
14,300.0	9,300.0	14,597.5	9,720.0	89.7	88.7	114.58	-5,677.0	480.1	1,016.6	848.6	168.03	6.050	
14,400.0	9,300.0	14,697.5	9,720.0	91.0	90.0	114.58	-5,777.0	480.8	1,016.6	846.1	170.54	5.961	
14,500.0	9,300.0	14,797.5	9,720.0	92.3	91.4	114.58	-5,877.0	481.6	1,016.6	843.6	173.05	5.875	
14,600.0	9,300.0	14,897.5	9,720.0	93.7	92.7	114.58	-5,977.0	482.4	1,016.6	841.0	175.56	5.791	
14,700.0	9,300.0	14,997.5	9,720.0	95.0	94.1	114.58	-6,077.0	483.2	1,016.6	838.5	178.08	5.709	
14,800.0	9,300.0	15,097.5	9,720.0	96.3	95.4	114.58	-6,177.0	483.9	1,016.6	836.0	180.61	5.629	
14,900.0	9,300.0	15,197.5	9,720.0	97.6	96.8	114.58	-6,277.0	484.7	1,016.6	833.4	183.14	5.551	
15,000.0	9,300.0	15,297.5	9,720.0	99.0	98.1	114.58	-6,377.0	485.5	1,016.6	830.9	185.68	5.475	
15,100.0	9,300.0	15,397.5	9,720.0	100.3	99.5	114.58	-6,477.0	486.3	1,016.6	828.3	188.22	5.401	
15,200.0	9,300.0	15,497.5	9,720.0	101.6	100.8	114.58	-6,577.0	487.0	1,016.5	825.8	190.77	5.329	
15,300.0	9,300.0	15,597.5	9,720.0	103.0	102.2	114.58	-6,677.0	487.8	1,016.5	823.2	193.32	5.258	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 503H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	9,300.0	15,697.5	9,720.0	104.3	103.5	114.58	-6,777.0	488.6	1,016.5	820.7	195.87	5.190	
15,500.0	9,300.0	15,797.5	9,720.0	105.7	104.9	114.58	-6,877.0	489.4	1,016.5	818.1	198.43	5.123	
15,600.0	9,300.0	15,897.5	9,720.0	107.0	106.3	114.58	-6,977.0	490.1	1,016.5	815.5	201.00	5.057	
15,700.0	9,300.0	15,997.5	9,720.0	108.4	107.6	114.58	-7,077.0	490.9	1,016.5	812.9	203.56	4.994	
15,800.0	9,300.0	16,097.5	9,720.0	109.7	109.0	114.58	-7,177.0	491.7	1,016.5	810.4	206.14	4.931	
15,900.0	9,300.0	16,197.5	9,720.0	111.1	110.4	114.58	-7,277.0	492.5	1,016.5	807.8	208.71	4.870	
16,000.0	9,300.0	16,297.5	9,720.0	112.4	111.8	114.58	-7,377.0	493.2	1,016.5	805.2	211.29	4.811	
16,100.0	9,300.0	16,397.5	9,720.0	113.8	113.1	114.58	-7,477.0	494.0	1,016.5	802.6	213.87	4.753	
16,200.0	9,300.0	16,497.5	9,720.0	115.2	114.5	114.58	-7,577.0	494.8	1,016.5	800.0	216.46	4.696	
16,300.0	9,300.0	16,597.5	9,720.0	116.5	115.9	114.58	-7,677.0	495.6	1,016.4	797.4	219.04	4.640	
16,400.0	9,300.0	16,697.5	9,720.0	117.9	117.3	114.58	-7,777.0	496.3	1,016.4	794.8	221.64	4.586	
16,500.0	9,300.0	16,797.5	9,720.0	119.3	118.7	114.58	-7,876.9	497.1	1,016.4	792.2	224.23	4.533	
16,600.0	9,300.0	16,897.5	9,720.0	120.6	120.1	114.58	-7,976.9	497.9	1,016.4	789.6	226.83	4.481	
16,700.0	9,300.0	16,997.5	9,720.0	122.0	121.4	114.58	-8,076.9	498.7	1,016.4	787.0	229.43	4.430	
16,800.0	9,300.0	17,097.5	9,720.0	123.4	122.8	114.58	-8,176.9	499.5	1,016.4	784.4	232.03	4.380	
16,900.0	9,300.0	17,197.5	9,720.0	124.8	124.2	114.58	-8,276.9	500.2	1,016.4	781.8	234.63	4.332	
17,000.0	9,300.0	17,297.5	9,720.0	126.1	125.6	114.58	-8,376.9	501.0	1,016.4	779.1	237.24	4.284	
17,100.0	9,300.0	17,397.5	9,720.0	127.5	127.0	114.58	-8,476.9	501.8	1,016.4	776.5	239.85	4.238	
17,200.0	9,300.0	17,497.5	9,720.0	128.9	128.4	114.58	-8,576.9	502.6	1,016.4	773.9	242.46	4.192	
17,300.0	9,300.0	17,597.5	9,720.0	130.3	129.8	114.58	-8,676.9	503.3	1,016.4	771.3	245.08	4.147	
17,400.0	9,300.0	17,697.5	9,720.0	131.7	131.2	114.58	-8,776.9	504.1	1,016.3	768.6	247.69	4.103	
17,500.0	9,300.0	17,797.5	9,720.0	133.1	132.6	114.58	-8,876.9	504.9	1,016.3	766.0	250.31	4.060	
17,600.0	9,300.0	17,897.5	9,720.0	134.4	134.0	114.58	-8,976.9	505.7	1,016.3	763.4	252.93	4.018	
17,700.0	9,300.0	17,997.5	9,720.0	135.8	135.4	114.58	-9,076.9	506.4	1,016.3	760.8	255.55	3.977	
17,800.0	9,300.0	18,097.5	9,720.0	137.2	136.8	114.58	-9,176.9	507.2	1,016.3	758.1	258.18	3.936	
17,900.0	9,300.0	18,197.5	9,720.0	138.6	138.2	114.58	-9,276.9	508.0	1,016.3	755.5	260.80	3.897	
18,000.0	9,300.0	18,297.5	9,720.0	140.0	139.6	114.58	-9,376.9	508.8	1,016.3	752.9	263.43	3.858	
18,100.0	9,300.0	18,397.5	9,720.0	141.4	141.0	114.58	-9,476.9	509.5	1,016.3	750.2	266.06	3.820	
18,200.0	9,300.0	18,497.5	9,720.0	142.8	142.4	114.58	-9,576.9	510.3	1,016.3	747.6	268.69	3.782	
18,300.0	9,300.0	18,597.5	9,720.0	144.2	143.8	114.58	-9,676.9	511.1	1,016.3	744.9	271.32	3.746	
18,400.0	9,300.0	18,697.5	9,720.0	145.6	145.2	114.59	-9,776.9	511.9	1,016.2	742.3	273.96	3.709	
18,500.0	9,300.0	18,797.5	9,720.0	147.0	146.6	114.59	-9,876.9	512.6	1,016.2	739.6	276.60	3.674	
18,600.0	9,300.0	18,897.5	9,720.0	148.4	148.0	114.59	-9,976.9	513.4	1,016.2	737.0	279.23	3.639	
18,700.0	9,300.0	18,997.5	9,720.0	149.8	149.4	114.59	-10,076.9	514.2	1,016.2	734.4	281.87	3.605	
18,800.0	9,300.0	19,097.5	9,720.0	151.2	150.8	114.59	-10,176.9	515.0	1,016.2	731.7	284.51	3.572	
18,900.0	9,300.0	19,197.5	9,720.0	152.6	152.2	114.59	-10,276.9	515.7	1,016.2	729.0	287.15	3.539	
19,000.0	9,300.0	19,297.5	9,720.0	154.0	153.6	114.59	-10,376.9	516.5	1,016.2	726.4	289.80	3.507	
19,100.0	9,300.0	19,397.5	9,720.0	155.4	155.1	114.59	-10,476.9	517.3	1,016.2	723.7	292.44	3.475	
19,200.0	9,300.0	19,497.5	9,720.0	156.8	156.5	114.59	-10,576.9	518.1	1,016.2	721.1	295.09	3.444	
19,300.0	9,300.0	19,597.5	9,720.0	158.2	157.9	114.59	-10,676.9	518.9	1,016.2	718.4	297.73	3.413	
19,400.0	9,300.0	19,697.5	9,720.0	159.6	159.3	114.59	-10,776.9	519.6	1,016.2	715.8	300.38	3.383	
19,500.0	9,300.0	19,797.5	9,720.0	161.0	160.7	114.59	-10,876.9	520.4	1,016.1	713.1	303.03	3.353	
19,600.0	9,300.0	19,897.5	9,720.0	162.4	162.1	114.59	-10,976.9	521.2	1,016.1	710.5	305.68	3.324	
19,678.1	9,300.0	19,975.6	9,720.0	163.4	163.2	114.59	-11,055.0	521.8	1,016.1	708.6	307.57	3.304	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 512H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.98	-1.4	-80.0	80.1				
100.0	100.0	96.8	96.8	0.1	0.1	-90.98	-1.4	-80.0	80.1	79.8	0.26	308.807	
200.0	200.0	196.8	196.8	0.5	0.5	-90.98	-1.4	-80.0	80.1	79.1	0.97	82.627	
300.0	300.0	296.8	296.8	0.8	0.8	-90.98	-1.4	-80.0	80.1	78.4	1.69	47.489	
400.0	400.0	396.8	396.8	1.2	1.2	-90.98	-1.4	-80.0	80.1	77.7	2.40	33.320	
500.0	500.0	496.8	496.8	1.6	1.6	-90.98	-1.4	-80.0	80.1	76.9	3.12	25.663	
600.0	600.0	596.8	596.8	1.9	1.9	-90.98	-1.4	-80.0	80.1	76.2	3.84	20.867	
700.0	700.0	696.8	696.8	2.3	2.3	-90.98	-1.4	-80.0	80.1	75.5	4.55	17.582	
800.0	800.0	796.8	796.8	2.6	2.6	-90.98	-1.4	-80.0	80.1	74.8	5.27	15.190	
900.0	900.0	896.8	896.8	3.0	3.0	-90.98	-1.4	-80.0	80.1	74.1	5.99	13.371	
1,000.0	1,000.0	996.8	996.8	3.4	3.3	-90.98	-1.4	-80.0	80.1	73.4	6.70	11.942	
1,100.0	1,100.0	1,096.8	1,096.8	3.7	3.7	-90.98	-1.4	-80.0	80.1	72.6	7.42	10.788	
1,200.0	1,200.0	1,196.8	1,196.8	4.1	4.1	-90.98	-1.4	-80.0	80.1	71.9	8.14	9.838	
1,300.0	1,300.0	1,296.8	1,296.8	4.4	4.4	-90.98	-1.4	-80.0	80.1	71.2	8.86	9.041	
1,400.0	1,400.0	1,396.8	1,396.8	4.8	4.8	-90.98	-1.4	-80.0	80.1	70.5	9.57	8.364	
1,500.0	1,500.0	1,496.8	1,496.8	5.2	5.1	-90.98	-1.4	-80.0	80.1	69.8	10.29	7.781	
1,600.0	1,600.0	1,596.8	1,596.8	5.5	5.5	-90.98	-1.4	-80.0	80.1	69.1	11.01	7.274	
1,700.0	1,700.0	1,696.8	1,696.8	5.9	5.9	-90.98	-1.4	-80.0	80.1	68.3	11.72	6.829	
1,800.0	1,800.0	1,796.8	1,796.8	6.2	6.2	-90.98	-1.4	-80.0	80.1	67.6	12.44	6.436	
1,900.0	1,900.0	1,896.8	1,896.8	6.6	6.6	-90.98	-1.4	-80.0	80.1	66.9	13.16	6.085	
2,000.0	2,000.0	1,996.8	1,996.8	6.9	6.9	-90.98	-1.4	-80.0	80.1	66.2	13.87	5.771	CC, ES
2,100.0	2,100.0	2,095.3	2,095.3	7.3	7.3	152.48	-2.7	-80.9	81.3	66.8	14.56	5.585	SF
2,200.0	2,199.9	2,193.5	2,193.4	7.6	7.6	150.75	-6.9	-83.5	87.2	72.0	15.21	5.735	
2,300.0	2,299.7	2,291.0	2,290.5	8.0	7.9	148.62	-14.0	-87.8	98.2	82.4	15.85	6.196	
2,400.0	2,399.1	2,387.7	2,386.5	8.3	8.2	146.49	-23.7	-93.7	114.3	97.8	16.49	6.931	
2,500.0	2,498.2	2,485.7	2,483.6	8.7	8.6	145.20	-34.6	-100.4	134.1	116.9	17.15	7.817	
2,600.0	2,596.6	2,583.1	2,580.2	9.0	8.9	144.91	-45.5	-107.1	156.7	138.9	17.83	8.793	
2,700.0	2,694.4	2,679.8	2,676.1	9.4	9.2	145.23	-56.3	-113.7	182.2	163.7	18.50	9.845	
2,800.0	2,791.6	2,775.8	2,771.3	9.8	9.6	146.03	-67.0	-120.3	209.9	190.7	19.18	10.942	
2,900.0	2,888.7	2,871.7	2,866.4	10.2	9.9	146.79	-77.7	-126.9	237.9	218.1	19.87	11.974	
3,000.0	2,985.8	2,967.7	2,961.5	10.6	10.3	147.39	-88.4	-133.4	266.0	245.4	20.56	12.935	
3,100.0	3,082.9	3,063.6	3,056.6	11.0	10.6	147.87	-99.2	-140.0	294.1	272.8	21.26	13.830	
3,200.0	3,180.0	3,159.6	3,151.8	11.4	11.0	148.27	-109.9	-146.6	322.2	300.2	21.97	14.665	
3,300.0	3,277.1	3,255.5	3,246.9	11.8	11.3	148.60	-120.6	-153.2	350.3	327.6	22.68	15.445	
3,400.0	3,374.2	3,351.5	3,342.0	12.2	11.7	148.89	-131.3	-159.7	378.4	355.0	23.39	16.174	
3,500.0	3,471.3	3,447.4	3,437.1	12.7	12.0	149.14	-142.0	-166.3	406.5	382.4	24.11	16.858	
3,600.0	3,568.4	3,543.4	3,532.3	13.1	12.4	149.35	-152.7	-172.9	434.6	409.8	24.84	17.499	
3,700.0	3,665.5	3,639.3	3,627.4	13.5	12.8	149.54	-163.4	-179.4	462.7	437.2	25.56	18.101	
3,800.0	3,762.7	3,735.3	3,722.5	14.0	13.1	149.70	-174.2	-186.0	490.9	464.6	26.30	18.668	
3,900.0	3,859.8	3,831.2	3,817.6	14.4	13.5	149.85	-184.9	-192.6	519.0	492.0	27.03	19.201	
4,000.0	3,956.9	3,927.2	3,912.8	14.9	13.9	149.99	-195.6	-199.1	547.2	519.4	27.77	19.705	
4,100.0	4,054.0	4,023.1	4,007.9	15.3	14.2	150.11	-206.3	-205.7	575.3	546.8	28.51	20.181	
4,200.0	4,151.1	4,119.1	4,103.0	15.8	14.6	150.21	-217.0	-212.3	603.5	574.2	29.25	20.631	
4,300.0	4,248.2	4,215.1	4,198.1	16.2	15.0	150.31	-227.7	-218.9	631.6	601.6	30.00	21.057	
4,400.0	4,345.3	4,311.0	4,293.3	16.7	15.3	150.40	-238.5	-225.4	659.7	629.0	30.74	21.461	
4,500.0	4,442.4	4,407.0	4,388.4	17.2	15.7	150.49	-249.2	-232.0	687.9	656.4	31.49	21.844	
4,600.0	4,539.5	4,502.9	4,483.5	17.6	16.1	150.56	-259.9	-238.6	716.0	683.8	32.24	22.208	
4,700.0	4,636.6	4,598.9	4,578.6	18.1	16.4	150.64	-270.6	-245.1	744.2	711.2	33.00	22.555	
4,800.0	4,733.7	4,694.8	4,673.7	18.6	16.8	150.70	-281.3	-251.7	772.4	738.6	33.75	22.885	
4,900.0	4,830.8	4,790.8	4,768.9	19.0	17.2	150.76	-292.0	-258.3	800.5	766.0	34.51	23.199	
5,000.0	4,927.9	4,886.7	4,864.0	19.5	17.6	150.82	-302.7	-264.8	828.7	793.4	35.26	23.500	
5,100.0	5,025.0	4,982.7	4,959.1	20.0	17.9	150.87	-313.5	-271.4	856.8	820.8	36.02	23.786	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 512H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,200.0	5,122.1	5,078.6	5,054.2	20.4	18.3	150.92	-324.2	-278.0	885.0	848.2	36.78	24.060	
5,300.0	5,219.2	5,174.6	5,149.4	20.9	18.7	150.97	-334.9	-284.6	913.1	875.6	37.54	24.322	
5,400.0	5,316.3	5,270.5	5,244.5	21.4	19.1	151.01	-345.6	-291.1	941.3	903.0	38.31	24.573	
5,500.0	5,413.4	5,366.5	5,339.6	21.9	19.4	151.06	-356.3	-297.7	969.5	930.4	39.07	24.813	
5,600.0	5,510.5	5,462.4	5,434.7	22.3	19.8	151.09	-367.0	-304.3	997.6	957.8	39.83	25.044	
5,700.0	5,607.6	5,558.4	5,529.9	22.8	20.2	151.13	-377.7	-310.8	1,025.8	985.2	40.60	25.265	
5,800.0	5,704.7	5,654.3	5,625.0	23.3	20.6	151.17	-388.5	-317.4	1,053.9	1,012.6	41.37	25.478	
5,900.0	5,801.8	5,750.3	5,720.1	23.8	21.0	151.20	-399.2	-324.0	1,082.1	1,040.0	42.13	25.682	
6,000.0	5,898.9	5,846.2	5,815.2	24.3	21.3	151.23	-409.9	-330.5	1,110.3	1,067.4	42.90	25.879	
6,100.0	5,996.0	5,942.2	5,910.4	24.7	21.7	151.26	-420.6	-337.1	1,138.4	1,094.7	43.67	26.068	
6,200.0	6,093.1	6,038.1	6,005.5	25.2	22.1	151.29	-431.3	-343.7	1,166.6	1,122.1	44.44	26.250	
6,300.0	6,190.3	6,134.1	6,100.6	25.7	22.5	151.32	-442.0	-350.3	1,194.7	1,149.5	45.21	26.425	
6,400.0	6,287.4	6,230.0	6,195.7	26.2	22.8	151.34	-452.7	-356.8	1,222.9	1,176.9	45.98	26.595	
6,500.0	6,384.5	6,326.0	6,290.9	26.7	23.2	151.37	-463.5	-363.4	1,251.1	1,204.3	46.75	26.758	
6,600.0	6,481.6	6,421.9	6,386.0	27.2	23.6	151.39	-474.2	-370.0	1,279.2	1,231.7	47.53	26.915	
6,700.0	6,578.7	6,517.9	6,481.1	27.6	24.0	151.41	-484.9	-376.5	1,307.4	1,259.1	48.30	27.068	
6,800.0	6,675.8	6,613.8	6,576.2	28.1	24.4	151.43	-495.6	-383.1	1,335.5	1,286.5	49.07	27.215	
6,900.0	6,772.9	6,709.8	6,671.4	28.6	24.7	151.46	-506.3	-389.7	1,363.7	1,313.9	49.85	27.357	
7,000.0	6,870.0	6,805.7	6,766.5	29.1	25.1	151.48	-517.0	-396.2	1,391.9	1,341.2	50.62	27.494	
7,100.0	6,967.1	6,901.7	6,861.6	29.6	25.5	151.49	-527.7	-402.8	1,420.0	1,368.6	51.40	27.627	
7,200.0	7,064.2	6,997.6	6,956.7	30.1	25.9	151.51	-538.5	-409.4	1,448.2	1,396.0	52.18	27.756	
7,300.0	7,161.3	7,093.6	7,051.9	30.5	26.3	151.53	-549.2	-416.0	1,476.4	1,423.4	52.95	27.881	
7,400.0	7,258.4	7,189.5	7,147.0	31.0	26.7	151.55	-559.9	-422.5	1,504.5	1,450.8	53.73	28.002	
7,500.0	7,355.5	7,285.5	7,242.1	31.5	27.0	151.56	-570.6	-429.1	1,532.7	1,478.2	54.51	28.119	
7,600.0	7,452.6	7,381.4	7,337.2	32.0	27.4	151.58	-581.3	-435.7	1,560.8	1,505.6	55.28	28.233	
7,700.0	7,549.7	7,477.4	7,432.4	32.5	27.8	151.60	-592.0	-442.2	1,589.0	1,532.9	56.06	28.343	
7,800.0	7,646.8	7,573.3	7,527.5	33.0	28.2	151.61	-602.7	-448.8	1,617.2	1,560.3	56.84	28.451	
7,900.0	7,743.9	7,669.3	7,622.6	33.5	28.6	151.62	-613.5	-455.4	1,645.3	1,587.7	57.62	28.555	
8,000.0	7,841.0	7,765.3	7,717.7	34.0	29.0	151.64	-624.2	-461.9	1,673.5	1,615.1	58.40	28.656	
8,100.0	7,938.1	7,861.2	7,812.9	34.4	29.3	151.65	-634.9	-468.5	1,701.7	1,642.5	59.18	28.754	
8,200.0	8,035.2	7,993.6	7,944.3	34.9	29.9	151.73	-647.9	-476.5	1,729.1	1,668.8	60.21	28.716	
8,300.0	8,132.7	8,138.9	8,089.3	35.4	30.4	152.19	-656.2	-481.6	1,752.4	1,691.2	61.26	28.606	
8,400.0	8,230.9	8,277.3	8,227.7	35.9	30.9	152.69	-658.4	-482.9	1,770.1	1,708.0	62.18	28.466	
8,500.0	8,329.7	8,376.1	8,326.5	36.3	31.2	153.04	-658.4	-482.9	1,783.9	1,721.0	62.87	28.376	
8,600.0	8,429.0	8,475.4	8,425.8	36.7	31.5	153.31	-658.4	-482.9	1,794.6	1,731.1	63.54	28.242	
8,700.0	8,528.6	8,575.0	8,525.4	37.0	31.8	153.50	-658.4	-482.9	1,802.2	1,738.0	64.21	28.067	
8,800.0	8,628.5	8,674.9	8,625.3	37.3	32.1	153.61	-658.4	-482.9	1,806.7	1,741.8	64.87	27.851	
8,900.0	8,728.5	8,774.9	8,725.3	37.6	32.4	-90.64	-658.4	-482.9	1,808.0	1,742.5	65.51	27.600	
8,909.0	8,737.5	8,783.9	8,734.3	37.7	32.5	93.86	-658.4	-482.9	1,808.0	1,742.5	65.57	27.576	
9,000.0	8,828.5	8,874.9	8,825.2	37.9	32.7	93.86	-658.4	-482.9	1,808.0	1,741.9	66.14	27.337	
9,100.0	8,927.6	8,973.7	8,923.3	38.2	33.1	93.79	-669.2	-482.8	1,808.9	1,742.0	66.86	27.053	
9,200.0	9,022.1	9,072.6	9,017.2	38.6	33.5	93.55	-699.9	-482.6	1,811.1	1,743.4	67.72	26.745	
9,300.0	9,108.0	9,171.8	9,102.9	39.1	34.0	93.15	-749.4	-482.2	1,814.7	1,746.0	68.69	26.420	
9,400.0	9,181.3	9,271.1	9,176.7	39.5	34.6	92.62	-815.6	-481.7	1,819.5	1,749.8	69.76	26.084	
9,500.0	9,239.0	9,370.7	9,235.3	40.0	35.1	91.97	-895.8	-481.1	1,825.3	1,754.4	70.90	25.743	
9,600.0	9,278.4	9,470.5	9,276.1	40.6	35.7	91.24	-986.7	-480.4	1,831.8	1,759.7	72.11	25.401	
9,700.0	9,297.9	9,570.6	9,297.2	41.1	36.4	90.45	-1,084.4	-479.6	1,838.7	1,765.3	73.35	25.067	
9,800.0	9,300.0	9,670.7	9,300.0	41.7	37.0	90.10	-1,184.4	-478.8	1,845.2	1,770.6	74.59	24.737	
9,900.0	9,300.0	9,770.6	9,300.0	42.3	37.7	90.10	-1,284.3	-478.1	1,848.6	1,772.7	75.91	24.353	
10,000.0	9,300.0	9,870.6	9,300.0	42.9	38.4	90.10	-1,384.3	-477.3	1,849.0	1,771.7	77.30	23.920	
10,100.0	9,300.0	9,970.6	9,300.0	43.6	39.2	90.10	-1,484.3	-476.5	1,849.0	1,770.2	78.77	23.472	
10,200.0	9,300.0	10,070.6	9,300.0	44.2	40.0	90.10	-1,584.3	-475.7	1,848.9	1,768.6	80.32	23.019	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 512H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.0	9,300.0	10,170.6	9,300.0	45.0	40.8	90.10	-1,684.3	-475.0	1,848.9	1,767.0	81.95	22.563	
10,400.0	9,300.0	10,270.6	9,300.0	45.7	41.6	90.10	-1,784.3	-474.2	1,848.9	1,765.3	83.64	22.106	
10,500.0	9,300.0	10,370.6	9,300.0	46.5	42.5	90.10	-1,884.3	-473.4	1,848.9	1,763.5	85.40	21.651	
10,600.0	9,300.0	10,470.6	9,300.0	47.3	43.5	90.10	-1,984.3	-472.6	1,848.9	1,761.7	87.21	21.199	
10,700.0	9,300.0	10,570.6	9,300.0	48.2	44.4	90.10	-2,084.3	-471.9	1,848.9	1,759.8	89.09	20.753	
10,800.0	9,300.0	10,670.6	9,300.0	49.1	45.4	90.10	-2,184.3	-471.1	1,848.9	1,757.9	91.02	20.313	
10,900.0	9,300.0	10,770.6	9,300.0	50.0	46.4	90.10	-2,284.3	-470.3	1,848.9	1,755.9	93.00	19.881	
11,000.0	9,300.0	10,870.6	9,300.0	50.9	47.4	90.10	-2,384.3	-469.5	1,848.9	1,753.8	95.02	19.457	
11,100.0	9,300.0	10,970.6	9,300.0	51.9	48.5	90.10	-2,484.3	-468.8	1,848.9	1,751.8	97.09	19.042	
11,200.0	9,300.0	11,070.6	9,300.0	52.8	49.5	90.10	-2,584.3	-468.0	1,848.8	1,749.6	99.20	18.637	
11,300.0	9,300.0	11,170.6	9,300.0	53.8	50.6	90.10	-2,684.3	-467.2	1,848.8	1,747.5	101.35	18.241	
11,400.0	9,300.0	11,270.6	9,300.0	54.9	51.7	90.10	-2,784.3	-466.4	1,848.8	1,745.3	103.54	17.856	
11,500.0	9,300.0	11,370.6	9,300.0	55.9	52.9	90.10	-2,884.3	-465.7	1,848.8	1,743.1	105.76	17.481	
11,600.0	9,300.0	11,470.6	9,300.0	57.0	54.0	90.10	-2,984.3	-464.9	1,848.8	1,740.8	108.01	17.116	
11,700.0	9,300.0	11,570.6	9,300.0	58.0	55.1	90.10	-3,084.3	-464.1	1,848.8	1,738.5	110.30	16.762	
11,800.0	9,300.0	11,670.6	9,300.0	59.1	56.3	90.10	-3,184.3	-463.3	1,848.8	1,736.2	112.61	16.418	
11,900.0	9,300.0	11,770.6	9,300.0	60.2	57.5	90.10	-3,284.3	-462.6	1,848.8	1,733.8	114.94	16.084	
12,000.0	9,300.0	11,870.6	9,300.0	61.3	58.7	90.10	-3,384.3	-461.8	1,848.8	1,731.5	117.31	15.760	
12,100.0	9,300.0	11,970.6	9,300.0	62.5	59.9	90.10	-3,484.3	-461.0	1,848.8	1,729.1	119.69	15.446	
12,200.0	9,300.0	12,070.6	9,300.0	63.6	61.1	90.10	-3,584.2	-460.2	1,848.7	1,726.6	122.10	15.141	
12,300.0	9,300.0	12,170.6	9,300.0	64.8	62.3	90.10	-3,684.2	-459.4	1,848.7	1,724.2	124.53	14.846	
12,400.0	9,300.0	12,270.6	9,300.0	65.9	63.5	90.10	-3,784.2	-458.7	1,848.7	1,721.8	126.98	14.560	
12,500.0	9,300.0	12,370.6	9,300.0	67.1	64.8	90.10	-3,884.2	-457.9	1,848.7	1,719.3	129.44	14.282	
12,600.0	9,300.0	12,470.6	9,300.0	68.3	66.0	90.10	-3,984.2	-457.1	1,848.7	1,716.8	131.93	14.013	
12,700.0	9,300.0	12,570.6	9,300.0	69.5	67.3	90.10	-4,084.2	-456.3	1,848.7	1,714.3	134.43	13.752	
12,800.0	9,300.0	12,670.6	9,300.0	70.7	68.5	90.10	-4,184.2	-455.6	1,848.7	1,711.7	136.94	13.500	
12,900.0	9,300.0	12,770.6	9,300.0	71.9	69.8	90.10	-4,284.2	-454.8	1,848.7	1,709.2	139.47	13.255	
13,000.0	9,300.0	12,870.6	9,300.0	73.2	71.1	90.10	-4,384.2	-454.0	1,848.7	1,706.6	142.02	13.017	
13,100.0	9,300.0	12,970.6	9,300.0	74.4	72.4	90.10	-4,484.2	-453.2	1,848.7	1,704.1	144.58	12.787	
13,200.0	9,300.0	13,070.6	9,300.0	75.6	73.7	90.10	-4,584.2	-452.5	1,848.6	1,701.5	147.15	12.563	
13,300.0	9,300.0	13,170.6	9,300.0	76.9	75.0	90.10	-4,684.2	-451.7	1,848.6	1,698.9	149.73	12.347	
13,400.0	9,300.0	13,270.6	9,300.0	78.1	76.3	90.10	-4,784.2	-450.9	1,848.6	1,696.3	152.32	12.136	
13,500.0	9,300.0	13,370.6	9,300.0	79.4	77.6	90.10	-4,884.2	-450.1	1,848.6	1,693.7	154.93	11.932	
13,600.0	9,300.0	13,470.6	9,300.0	80.7	78.9	90.10	-4,984.2	-449.4	1,848.6	1,691.1	157.54	11.734	
13,700.0	9,300.0	13,570.6	9,300.0	82.0	80.2	90.10	-5,084.2	-448.6	1,848.6	1,688.4	160.17	11.542	
13,800.0	9,300.0	13,670.6	9,300.0	83.2	81.5	90.10	-5,184.2	-447.8	1,848.6	1,685.8	162.80	11.355	
13,900.0	9,300.0	13,770.6	9,300.0	84.5	82.8	90.10	-5,284.2	-447.0	1,848.6	1,683.1	165.44	11.174	
14,000.0	9,300.0	13,870.6	9,300.0	85.8	84.2	90.10	-5,384.2	-446.3	1,848.6	1,680.5	168.09	10.997	
14,100.0	9,300.0	13,970.6	9,300.0	87.1	85.5	90.10	-5,484.2	-445.5	1,848.6	1,677.8	170.75	10.826	
14,200.0	9,300.0	14,070.6	9,300.0	88.4	86.8	90.10	-5,584.2	-444.7	1,848.5	1,675.1	173.42	10.660	
14,300.0	9,300.0	14,170.6	9,300.0	89.7	88.2	90.10	-5,684.2	-443.9	1,848.5	1,672.4	176.09	10.498	
14,400.0	9,300.0	14,270.6	9,300.0	91.0	89.5	90.10	-5,784.2	-443.1	1,848.5	1,669.8	178.77	10.340	
14,500.0	9,300.0	14,370.6	9,300.0	92.3	90.9	90.10	-5,884.2	-442.4	1,848.5	1,667.1	181.46	10.187	
14,600.0	9,300.0	14,470.6	9,300.0	93.7	92.2	90.10	-5,984.2	-441.6	1,848.5	1,664.4	184.15	10.038	
14,700.0	9,300.0	14,570.6	9,300.0	95.0	93.6	90.10	-6,084.2	-440.8	1,848.5	1,661.6	186.85	9.893	
14,800.0	9,300.0	14,670.6	9,300.0	96.3	94.9	90.10	-6,184.2	-440.0	1,848.5	1,658.9	189.55	9.752	
14,900.0	9,300.0	14,770.6	9,300.0	97.6	96.3	90.10	-6,284.2	-439.3	1,848.5	1,656.2	192.27	9.614	
15,000.0	9,300.0	14,870.6	9,300.0	99.0	97.7	90.10	-6,384.2	-438.5	1,848.5	1,653.5	194.98	9.480	
15,100.0	9,300.0	14,970.6	9,300.0	100.3	99.0	90.10	-6,484.2	-437.7	1,848.5	1,650.8	197.70	9.350	
15,200.0	9,300.0	15,070.6	9,300.0	101.6	100.4	90.10	-6,584.2	-436.9	1,848.4	1,648.0	200.43	9.222	
15,300.0	9,300.0	15,170.6	9,300.0	103.0	101.7	90.10	-6,684.2	-436.2	1,848.4	1,645.3	203.16	9.098	
15,400.0	9,300.0	15,270.6	9,300.0	104.3	103.1	90.10	-6,784.2	-435.4	1,848.4	1,642.5	205.89	8.978	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 512H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM **Rule Assigned:** **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,500.0	9,300.0	15,370.6	9,300.0	105.7	104.5	90.10	-6,884.1	-434.6	1,848.4	1,639.8	208.63	8.860	
15,600.0	9,300.0	15,470.6	9,300.0	107.0	105.9	90.10	-6,984.1	-433.8	1,848.4	1,637.0	211.38	8.745	
15,700.0	9,300.0	15,570.6	9,300.0	108.4	107.2	90.10	-7,084.1	-433.1	1,848.4	1,634.3	214.13	8.632	
15,800.0	9,300.0	15,670.6	9,300.0	109.7	108.6	90.10	-7,184.1	-432.3	1,848.4	1,631.5	216.88	8.523	
15,900.0	9,300.0	15,770.6	9,300.0	111.1	110.0	90.10	-7,284.1	-431.5	1,848.4	1,628.7	219.63	8.416	
16,000.0	9,300.0	15,870.6	9,300.0	112.4	111.4	90.10	-7,384.1	-430.7	1,848.4	1,626.0	222.39	8.311	
16,100.0	9,300.0	15,970.6	9,300.0	113.8	112.8	90.10	-7,484.1	-430.0	1,848.4	1,623.2	225.15	8.209	
16,200.0	9,300.0	16,070.6	9,300.0	115.2	114.1	90.10	-7,584.1	-429.2	1,848.3	1,620.4	227.92	8.110	
16,300.0	9,300.0	16,170.6	9,300.0	116.5	115.5	90.10	-7,684.1	-428.4	1,848.3	1,617.6	230.69	8.012	
16,400.0	9,300.0	16,270.6	9,300.0	117.9	116.9	90.10	-7,784.1	-427.6	1,848.3	1,614.9	233.46	7.917	
16,500.0	9,300.0	16,370.6	9,300.0	119.3	118.3	90.10	-7,884.1	-426.9	1,848.3	1,612.1	236.23	7.824	
16,600.0	9,300.0	16,470.6	9,300.0	120.6	119.7	90.10	-7,984.1	-426.1	1,848.3	1,609.3	239.01	7.733	
16,700.0	9,300.0	16,570.6	9,300.0	122.0	121.1	90.10	-8,084.1	-425.3	1,848.3	1,606.5	241.79	7.644	
16,800.0	9,300.0	16,670.6	9,300.0	123.4	122.5	90.10	-8,184.1	-424.5	1,848.3	1,603.7	244.58	7.557	
16,900.0	9,300.0	16,770.6	9,300.0	124.8	123.9	90.10	-8,284.1	-423.7	1,848.3	1,600.9	247.36	7.472	
17,000.0	9,300.0	16,870.6	9,300.0	126.1	125.3	90.10	-8,384.1	-423.0	1,848.3	1,598.1	250.15	7.389	
17,100.0	9,300.0	16,970.6	9,300.0	127.5	126.7	90.10	-8,484.1	-422.2	1,848.3	1,595.3	252.94	7.307	
17,200.0	9,300.0	17,070.6	9,300.0	128.9	128.1	90.10	-8,584.1	-421.4	1,848.2	1,592.5	255.73	7.227	
17,300.0	9,300.0	17,170.6	9,300.0	130.3	129.5	90.10	-8,684.1	-420.6	1,848.2	1,589.7	258.53	7.149	
17,400.0	9,300.0	17,270.6	9,300.0	131.7	130.9	90.10	-8,784.1	-419.9	1,848.2	1,586.9	261.33	7.072	
17,500.0	9,300.0	17,370.6	9,300.0	133.1	132.3	90.10	-8,884.1	-419.1	1,848.2	1,584.1	264.13	6.997	
17,600.0	9,300.0	17,470.6	9,300.0	134.4	133.7	90.10	-8,984.1	-418.3	1,848.2	1,581.3	266.93	6.924	
17,700.0	9,300.0	17,570.6	9,300.0	135.8	135.1	90.10	-9,084.1	-417.5	1,848.2	1,578.5	269.73	6.852	
17,800.0	9,300.0	17,670.6	9,300.0	137.2	136.5	90.10	-9,184.1	-416.8	1,848.2	1,575.6	272.54	6.781	
17,900.0	9,300.0	17,770.6	9,300.0	138.6	137.9	90.10	-9,284.1	-416.0	1,848.2	1,572.8	275.35	6.712	
18,000.0	9,300.0	17,870.6	9,300.0	140.0	139.3	90.10	-9,384.1	-415.2	1,848.2	1,570.0	278.15	6.644	
18,100.0	9,300.0	17,970.6	9,300.0	141.4	140.7	90.10	-9,484.1	-414.4	1,848.2	1,567.2	280.97	6.578	
18,200.0	9,300.0	18,070.6	9,300.0	142.8	142.1	90.10	-9,584.1	-413.7	1,848.1	1,564.4	283.78	6.513	
18,300.0	9,300.0	18,170.6	9,300.0	144.2	143.5	90.10	-9,684.1	-412.9	1,848.1	1,561.5	286.59	6.449	
18,400.0	9,300.0	18,270.6	9,300.0	145.6	144.9	90.10	-9,784.1	-412.1	1,848.1	1,558.7	289.41	6.386	
18,500.0	9,300.0	18,370.6	9,300.0	147.0	146.3	90.10	-9,884.1	-411.3	1,848.1	1,555.9	292.23	6.324	
18,600.0	9,300.0	18,470.6	9,300.0	148.4	147.7	90.10	-9,984.1	-410.6	1,848.1	1,553.1	295.05	6.264	
18,700.0	9,300.0	18,570.6	9,300.0	149.8	149.2	90.10	-10,084.1	-409.8	1,848.1	1,550.2	297.87	6.204	
18,800.0	9,300.0	18,670.6	9,300.0	151.2	150.6	90.10	-10,184.1	-409.0	1,848.1	1,547.4	300.69	6.146	
18,900.0	9,300.0	18,770.6	9,300.0	152.6	152.0	90.10	-10,284.0	-408.2	1,848.1	1,544.6	303.51	6.089	
19,000.0	9,300.0	18,870.6	9,300.0	154.0	153.4	90.10	-10,384.0	-407.5	1,848.1	1,541.7	306.34	6.033	
19,100.0	9,300.0	18,970.6	9,300.0	155.4	154.8	90.10	-10,484.0	-406.7	1,848.1	1,538.9	309.16	5.978	
19,200.0	9,300.0	19,070.6	9,300.0	156.8	156.2	90.10	-10,584.0	-405.9	1,848.0	1,536.1	311.99	5.923	
19,300.0	9,300.0	19,170.6	9,300.0	158.2	157.6	90.10	-10,684.0	-405.1	1,848.0	1,533.2	314.82	5.870	
19,400.0	9,300.0	19,270.6	9,300.0	159.6	159.1	90.10	-10,784.0	-404.3	1,848.0	1,530.4	317.65	5.818	
19,500.0	9,300.0	19,370.6	9,300.0	161.0	160.5	90.10	-10,884.0	-403.6	1,848.0	1,527.5	320.48	5.766	
19,600.0	9,300.0	19,470.6	9,300.0	162.4	161.9	90.10	-10,984.0	-402.8	1,848.0	1,524.7	323.31	5.716	
19,678.1	9,300.0	19,548.7	9,300.0	163.4	163.0	90.10	-11,062.1	-402.2	1,848.0	1,522.6	325.36	5.680	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 604H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.1	0.1	0.0	0.0	-14.92	159.3	-42.4	164.9				
100.0	100.0	100.1	100.1	0.1	0.1	-14.92	159.3	-42.4	164.9	164.6	0.26	624.882	
200.0	200.0	200.1	200.1	0.5	0.5	-14.92	159.3	-42.4	164.9	163.9	0.98	168.097	
300.0	300.0	300.1	300.1	0.8	0.8	-14.92	159.3	-42.4	164.9	163.2	1.70	97.110	
400.0	400.0	400.1	400.1	1.2	1.2	-14.92	159.3	-42.4	164.9	162.5	2.41	68.277	
500.0	500.0	500.1	500.1	1.6	1.6	-14.92	159.3	-42.4	164.9	161.7	3.13	52.646	
600.0	600.0	600.1	600.1	1.9	1.9	-14.92	159.3	-42.4	164.9	161.0	3.85	42.838	
700.0	700.0	700.1	700.1	2.3	2.3	-14.92	159.3	-42.4	164.9	160.3	4.57	36.111	
800.0	800.0	800.1	800.1	2.6	2.6	-14.92	159.3	-42.4	164.9	159.6	5.28	31.210	
900.0	900.0	900.1	900.1	3.0	3.0	-14.92	159.3	-42.4	164.9	158.9	6.00	27.481	
1,000.0	1,000.0	1,000.1	1,000.1	3.4	3.4	-14.92	159.3	-42.4	164.9	158.1	6.72	24.547	
1,100.0	1,100.0	1,100.1	1,100.1	3.7	3.7	-14.92	159.3	-42.4	164.9	157.4	7.43	22.179	
1,200.0	1,200.0	1,200.1	1,200.1	4.1	4.1	-14.92	159.3	-42.4	164.9	156.7	8.15	20.228	
1,300.0	1,300.0	1,300.1	1,300.1	4.4	4.4	-14.92	159.3	-42.4	164.9	156.0	8.87	18.593	
1,400.0	1,400.0	1,400.1	1,400.1	4.8	4.8	-14.92	159.3	-42.4	164.9	155.3	9.58	17.202	
1,500.0	1,500.0	1,500.1	1,500.1	5.2	5.2	-14.92	159.3	-42.4	164.9	154.6	10.30	16.005	
1,600.0	1,600.0	1,600.1	1,600.1	5.5	5.5	-14.92	159.3	-42.4	164.9	153.8	11.02	14.963	
1,700.0	1,700.0	1,700.1	1,700.1	5.9	5.9	-14.92	159.3	-42.4	164.9	153.1	11.73	14.049	
1,800.0	1,800.0	1,800.1	1,800.1	6.2	6.2	-14.92	159.3	-42.4	164.9	152.4	12.45	13.240	
1,900.0	1,900.0	1,900.1	1,900.1	6.6	6.6	-14.92	159.3	-42.4	164.9	151.7	13.17	12.519	
2,000.0	2,000.0	2,000.1	2,000.1	6.9	6.9	-14.92	159.3	-42.4	164.9	151.0	13.89	11.873	
2,000.0	2,000.0	2,000.1	2,000.1	6.9	6.9	-14.92	159.3	-42.4	164.9	151.0	13.89	11.873	
2,100.0	2,100.0	2,100.1	2,100.1	7.3	7.3	-130.75	159.3	-42.4	165.2	150.6	14.60	11.315	
2,200.0	2,199.9	2,200.0	2,200.0	7.6	7.7	-131.62	159.3	-42.4	167.4	152.2	15.29	10.952	
2,300.0	2,299.7	2,299.8	2,299.8	8.0	8.0	-133.28	159.3	-42.4	172.2	156.2	15.98	10.771	
2,400.0	2,399.1	2,399.2	2,399.2	8.3	8.4	-135.60	159.3	-42.4	179.5	162.8	16.68	10.761	
2,500.0	2,498.2	2,498.3	2,498.3	8.7	8.7	-138.39	159.3	-42.4	189.7	172.4	17.38	10.917	
2,600.0	2,596.6	2,602.7	2,602.7	9.0	9.1	-141.37	158.4	-40.8	201.7	183.6	18.08	11.155	
2,700.0	2,694.4	2,707.9	2,707.7	9.4	9.4	-144.05	155.6	-35.9	213.8	195.1	18.76	11.399	
2,800.0	2,791.6	2,813.8	2,813.2	9.8	9.8	-146.45	150.8	-27.5	225.6	206.2	19.43	11.612	
2,900.0	2,888.7	2,920.7	2,919.2	10.2	10.2	-148.28	144.1	-15.6	234.7	214.6	20.09	11.683	
3,000.0	2,985.8	3,028.3	3,025.3	10.6	10.5	-149.54	135.4	-0.2	240.6	219.9	20.74	11.603	
3,100.0	3,082.9	3,136.4	3,131.2	11.0	10.9	-150.33	124.6	18.8	243.3	221.9	21.38	11.380	
3,200.0	3,180.0	3,242.0	3,233.7	11.4	11.3	-150.71	112.3	40.5	242.8	220.7	22.04	11.016	
3,300.0	3,277.1	3,341.9	3,330.7	11.8	11.7	-150.98	100.2	61.8	241.5	218.7	22.76	10.610	
3,400.0	3,374.2	3,441.9	3,427.6	12.2	12.1	-151.26	88.2	83.1	240.2	216.7	23.49	10.226	
3,500.0	3,471.3	3,541.9	3,524.6	12.7	12.5	-151.54	76.1	104.4	238.9	214.7	24.22	9.863	
3,600.0	3,568.4	3,641.9	3,621.5	13.1	12.9	-151.82	64.0	125.7	237.7	212.7	24.96	9.520	
3,700.0	3,665.5	3,741.9	3,718.4	13.5	13.3	-152.10	51.9	147.0	236.4	210.7	25.71	9.195	
3,800.0	3,762.7	3,841.9	3,815.4	14.0	13.7	-152.39	39.9	168.3	235.1	208.7	26.46	8.888	
3,900.0	3,859.8	3,941.8	3,912.3	14.4	14.2	-152.68	27.8	189.6	233.9	206.7	27.21	8.596	
4,000.0	3,956.9	4,041.8	4,009.3	14.9	14.6	-152.97	15.7	210.9	232.6	204.7	27.96	8.320	
4,100.0	4,054.0	4,141.8	4,106.2	15.3	15.0	-153.27	3.7	232.2	231.4	202.7	28.72	8.057	
4,200.0	4,151.1	4,241.8	4,203.2	15.8	15.4	-153.57	-8.4	253.5	230.2	200.7	29.48	7.808	
4,300.0	4,248.2	4,341.8	4,300.1	16.2	15.9	-153.87	-20.5	274.8	229.0	198.7	30.24	7.571	
4,400.0	4,345.3	4,441.8	4,397.0	16.7	16.3	-154.18	-32.5	296.1	227.7	196.7	31.01	7.345	
4,500.0	4,442.4	4,541.8	4,494.0	17.2	16.8	-154.49	-44.6	317.4	226.5	194.8	31.77	7.130	
4,600.0	4,539.5	4,641.7	4,590.9	17.6	17.2	-154.80	-56.7	338.7	225.3	192.8	32.54	6.925	
4,700.0	4,636.6	4,741.7	4,687.9	18.1	17.7	-155.12	-68.7	360.0	224.1	190.8	33.30	6.730	
4,800.0	4,733.7	4,841.7	4,784.8	18.6	18.1	-155.44	-80.8	381.3	222.9	188.9	34.07	6.543	
4,900.0	4,830.8	4,941.7	4,881.7	19.0	18.6	-155.76	-92.9	402.6	221.8	186.9	34.84	6.365	
5,000.0	4,927.9	5,041.7	4,978.7	19.5	19.1	-156.09	-105.0	423.9	220.6	185.0	35.61	6.194	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 604H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,025.0	5,141.7	5,075.6	20.0	19.5	-156.42	-117.0	445.2	219.4	183.0	36.38	6.031	
5,200.0	5,122.1	5,241.7	5,172.6	20.4	20.0	-156.75	-129.1	466.5	218.3	181.1	37.15	5.875	
5,300.0	5,219.2	5,341.6	5,269.5	20.9	20.5	-157.09	-141.2	487.8	217.1	179.2	37.92	5.725	
5,400.0	5,316.3	5,441.6	5,366.5	21.4	20.9	-157.43	-153.2	509.1	216.0	177.3	38.69	5.582	
5,500.0	5,413.4	5,541.6	5,463.4	21.9	21.4	-157.78	-165.3	530.4	214.8	175.4	39.46	5.444	
5,600.0	5,510.5	5,641.6	5,560.3	22.3	21.9	-158.12	-177.4	551.7	213.7	173.5	40.23	5.312	
5,700.0	5,607.6	5,741.6	5,657.3	22.8	22.3	-158.48	-189.4	573.0	212.6	171.6	41.00	5.185	
5,800.0	5,704.7	5,841.6	5,754.2	23.3	22.8	-158.83	-201.5	594.3	211.5	169.7	41.77	5.062	
5,900.0	5,801.8	5,941.6	5,851.2	23.8	23.3	-159.19	-213.6	615.6	210.3	167.8	42.54	4.945	
6,000.0	5,898.9	6,041.5	5,948.1	24.3	23.8	-159.55	-225.7	636.9	209.2	165.9	43.31	4.832	
6,100.0	5,996.0	6,141.5	6,045.0	24.7	24.2	-159.92	-237.7	658.2	208.2	164.1	44.08	4.723	
6,200.0	6,093.1	6,241.5	6,142.0	25.2	24.7	-160.29	-249.8	679.5	207.1	162.2	44.84	4.618	
6,300.0	6,190.3	6,341.5	6,238.9	25.7	25.2	-160.67	-261.9	700.8	206.0	160.4	45.61	4.517	
6,400.0	6,287.4	6,441.5	6,335.9	26.2	25.7	-161.04	-273.9	722.1	204.9	158.6	46.38	4.419	
6,500.0	6,384.5	6,541.5	6,432.8	26.7	26.2	-161.43	-286.0	743.4	203.9	156.7	47.15	4.325	
6,600.0	6,481.6	6,641.4	6,529.8	27.2	26.6	-161.81	-298.1	764.7	202.8	154.9	47.91	4.234	
6,700.0	6,578.7	6,741.4	6,626.7	27.6	27.1	-162.20	-310.1	786.0	201.8	153.1	48.68	4.146	
6,800.0	6,675.8	6,841.4	6,723.6	28.1	27.6	-162.60	-322.2	807.3	200.8	151.3	49.44	4.061	
6,900.0	6,772.9	6,941.4	6,820.6	28.6	28.1	-163.00	-334.3	828.6	199.8	149.6	50.21	3.979	
7,000.0	6,870.0	7,041.4	6,917.5	29.1	28.6	-163.40	-346.3	849.9	198.8	147.8	50.98	3.899	
7,100.0	6,967.1	7,141.4	7,014.5	29.6	29.1	-163.81	-358.4	871.2	197.8	146.0	51.74	3.822	
7,200.0	7,064.2	7,241.4	7,111.4	30.1	29.6	-164.22	-370.5	892.5	196.8	144.3	52.50	3.748	
7,300.0	7,161.3	7,341.3	7,208.3	30.5	30.0	-164.63	-382.6	913.8	195.8	142.5	53.27	3.676	
7,400.0	7,258.4	7,441.3	7,305.3	31.0	30.5	-165.05	-394.6	935.1	194.8	140.8	54.03	3.606	
7,500.0	7,355.5	7,541.3	7,402.2	31.5	31.0	-165.47	-406.7	956.4	193.9	139.1	54.80	3.538	
7,600.0	7,452.6	7,641.3	7,499.2	32.0	31.5	-165.90	-418.8	977.7	192.9	137.4	55.56	3.472	
7,700.0	7,549.7	7,741.3	7,596.1	32.5	32.0	-166.33	-430.8	999.0	192.0	135.7	56.32	3.409	
7,800.0	7,646.8	7,841.3	7,693.1	33.0	32.5	-166.77	-442.9	1,020.3	191.1	134.0	57.09	3.347	
7,900.0	7,743.9	7,941.3	7,790.0	33.5	33.0	-167.21	-455.0	1,041.6	190.2	132.3	57.85	3.287	
8,000.0	7,841.0	8,041.2	7,886.9	34.0	33.5	-167.65	-467.0	1,062.9	189.3	130.6	58.62	3.229	
8,100.0	7,938.1	8,141.2	7,983.9	34.4	34.0	-168.10	-479.1	1,084.2	188.4	129.0	59.38	3.172	
8,200.0	8,035.2	8,241.2	8,080.8	34.9	34.4	-168.55	-491.2	1,105.5	187.5	127.4	60.14	3.117	
8,300.0	8,132.7	8,341.2	8,177.7	35.4	34.9	-168.90	-503.3	1,126.8	185.0	124.1	60.91	3.037	
8,400.0	8,230.9	8,441.0	8,274.5	35.9	35.4	-169.04	-515.3	1,148.0	179.1	117.4	61.68	2.904	
8,500.0	8,329.7	8,540.5	8,371.0	36.3	35.9	-168.95	-527.3	1,169.2	169.8	107.3	62.44	2.719	
8,600.0	8,429.0	8,639.7	8,467.2	36.7	36.4	-168.60	-539.3	1,190.4	157.0	93.8	63.21	2.484	
8,700.0	8,528.6	8,738.4	8,562.9	37.0	36.9	-167.88	-551.2	1,211.4	140.9	76.9	63.98	2.202	
8,800.0	8,628.5	8,836.4	8,657.9	37.3	37.4	-166.61	-563.0	1,232.3	121.5	56.7	64.78	1.875	
8,900.0	8,728.5	8,933.8	8,752.3	37.6	37.8	-48.61	-574.8	1,253.0	98.8	33.2	65.63	1.506	
9,000.0	8,828.5	9,030.7	8,846.3	37.9	38.3	139.85	-586.5	1,273.7	75.0	8.4	66.66	1.126	Level 2
9,100.0	8,927.6	9,128.0	8,940.6	38.2	38.8	153.69	-598.2	1,294.3	62.0	-7.1	69.10	0.897	Level 1
9,103.8	8,931.3	9,131.6	8,944.2	38.3	38.8	154.42	-598.6	1,295.0	62.0	-7.3	69.25	0.895	Level 1, CC, ES, SF
9,200.0	9,022.1	9,222.4	9,032.7	38.6	39.2	171.92	-608.4	1,312.4	75.9	2.6	73.24	1.036	Level 2
9,300.0	9,108.0	9,310.3	9,119.0	39.1	39.6	-177.95	-616.6	1,326.9	116.7	41.1	75.62	1.543	
9,400.0	9,181.3	9,386.8	9,194.5	39.5	40.0	-173.79	-622.7	1,337.6	177.9	101.3	76.67	2.321	
9,500.0	9,239.0	9,447.9	9,255.0	40.0	40.2	-171.46	-626.8	1,344.9	255.1	177.9	77.18	3.305	
9,600.0	9,278.4	9,490.9	9,297.7	40.6	40.4	-168.26	-629.4	1,349.3	344.0	266.6	77.43	4.443	
9,700.0	9,297.9	9,514.6	9,321.3	41.1	40.5	-156.93	-630.6	1,351.6	440.4	362.9	77.50	5.683	
9,800.0	9,300.0	9,521.7	9,328.3	41.7	40.5	-147.94	-631.0	1,352.2	540.0	462.5	77.47	6.970	
9,900.0	9,300.0	9,526.5	9,333.1	42.3	40.5	175.75	-631.2	1,352.6	639.8	562.4	77.49	8.257	
10,000.0	9,300.0	9,530.9	9,337.5	42.9	40.5	160.89	-631.4	1,353.0	739.7	662.2	77.55	9.539	
10,100.0	9,300.0	9,535.1	9,341.7	43.6	40.5	163.16	-631.6	1,353.4	839.6	762.0	77.60	10.819	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 604H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
10,200.0	9,300.0	11,116.7	10,196.0	44.2	48.0	179.94	-1,570.0	1,372.2	895.9	853.6	42.31	21.178	
10,300.0	9,300.0	11,216.7	10,196.0	45.0	48.7	179.94	-1,670.0	1,373.0	895.9	852.9	43.02	20.824	
10,400.0	9,300.0	11,316.7	10,196.0	45.7	49.4	179.94	-1,770.0	1,373.8	895.9	852.1	43.79	20.461	
10,500.0	9,300.0	11,416.7	10,196.0	46.5	50.2	179.94	-1,870.0	1,374.5	895.9	851.3	44.59	20.091	
10,600.0	9,300.0	11,516.7	10,196.0	47.3	51.1	179.94	-1,970.0	1,375.3	895.9	850.5	45.44	19.718	
10,700.0	9,300.0	11,616.7	10,196.0	48.2	51.9	179.94	-2,070.0	1,376.1	895.9	849.6	46.32	19.342	
10,800.0	9,300.0	11,716.7	10,196.0	49.1	52.8	179.94	-2,169.9	1,376.9	895.9	848.7	47.24	18.965	
10,900.0	9,300.0	11,816.7	10,196.0	50.0	53.7	179.94	-2,269.9	1,377.6	895.9	847.7	48.19	18.591	
11,000.0	9,300.0	11,916.7	10,196.0	50.9	54.6	179.94	-2,369.9	1,378.4	895.9	846.8	49.18	18.219	
11,100.0	9,300.0	12,016.7	10,196.0	51.9	55.5	179.95	-2,469.9	1,379.2	895.9	845.7	50.19	17.851	
11,200.0	9,300.0	12,116.7	10,196.0	52.8	56.5	179.95	-2,569.9	1,380.0	895.9	844.7	51.23	17.488	
11,300.0	9,300.0	12,216.7	10,196.0	53.8	57.5	179.95	-2,669.9	1,380.7	895.9	843.6	52.30	17.130	
11,400.0	9,300.0	12,316.7	10,196.0	54.9	58.5	179.95	-2,769.9	1,381.5	895.9	842.5	53.39	16.780	
11,500.0	9,300.0	12,416.7	10,196.0	55.9	59.5	179.95	-2,869.9	1,382.3	895.9	841.4	54.51	16.436	
11,600.0	9,300.0	12,516.7	10,196.0	57.0	60.6	179.95	-2,969.9	1,383.1	895.9	840.3	55.65	16.100	
11,700.0	9,300.0	12,616.7	10,196.0	58.0	61.6	179.95	-3,069.9	1,383.8	895.9	839.1	56.81	15.772	
11,800.0	9,300.0	12,716.7	10,196.0	59.1	62.7	179.95	-3,169.9	1,384.6	895.9	837.9	57.98	15.452	
11,900.0	9,300.0	12,816.7	10,196.0	60.2	63.8	179.95	-3,269.9	1,385.4	895.9	836.7	59.18	15.139	
12,000.0	9,300.0	12,916.7	10,196.0	61.3	64.9	179.95	-3,369.9	1,386.2	895.9	835.5	60.39	14.835	
12,100.0	9,300.0	13,016.7	10,196.0	62.5	66.0	179.95	-3,469.9	1,386.9	895.9	834.3	61.62	14.539	
12,200.0	9,300.0	13,116.7	10,196.0	63.6	67.1	179.95	-3,569.9	1,387.7	895.9	833.1	62.87	14.252	
12,300.0	9,300.0	13,216.7	10,196.0	64.8	68.3	179.95	-3,669.9	1,388.5	895.9	831.8	64.12	13.972	
12,400.0	9,300.0	13,316.7	10,196.0	65.9	69.4	179.95	-3,769.9	1,389.3	895.9	830.5	65.40	13.700	
12,500.0	9,300.0	13,416.7	10,196.0	67.1	70.6	179.95	-3,869.9	1,390.0	895.9	829.2	66.68	13.436	
12,600.0	9,300.0	13,516.7	10,196.0	68.3	71.8	179.95	-3,969.9	1,390.8	895.9	827.9	67.98	13.180	
12,700.0	9,300.0	13,616.7	10,196.0	69.5	73.0	179.96	-4,069.9	1,391.6	895.9	826.6	69.28	12.931	
12,800.0	9,300.0	13,716.7	10,196.0	70.7	74.1	179.96	-4,169.9	1,392.4	895.9	825.3	70.60	12.690	
12,900.0	9,300.0	13,816.7	10,196.0	71.9	75.3	179.96	-4,269.9	1,393.2	895.9	824.0	71.93	12.456	
13,000.0	9,300.0	13,916.7	10,196.0	73.2	76.6	179.96	-4,369.9	1,393.9	895.9	822.7	73.27	12.228	
13,100.0	9,300.0	14,016.7	10,196.0	74.4	77.8	179.96	-4,469.9	1,394.7	895.9	821.3	74.61	12.007	
13,200.0	9,300.0	14,116.7	10,196.0	75.6	79.0	179.96	-4,569.9	1,395.5	895.9	820.0	75.97	11.793	
13,300.0	9,300.0	14,216.7	10,196.0	76.9	80.2	179.96	-4,669.9	1,396.3	895.9	818.6	77.33	11.585	
13,400.0	9,300.0	14,316.7	10,196.0	78.1	81.5	179.96	-4,769.9	1,397.0	895.9	817.2	78.70	11.383	
13,500.0	9,300.0	14,416.7	10,196.0	79.4	82.7	179.96	-4,869.9	1,397.8	895.9	815.8	80.08	11.187	
13,600.0	9,300.0	14,516.7	10,196.0	80.7	84.0	179.96	-4,969.9	1,398.6	895.9	814.5	81.47	10.997	
13,700.0	9,300.0	14,616.7	10,196.0	82.0	85.2	179.96	-5,069.9	1,399.4	895.9	813.1	82.86	10.813	
13,800.0	9,300.0	14,716.7	10,196.0	83.2	86.5	179.96	-5,169.9	1,400.1	895.9	811.7	84.26	10.633	
13,900.0	9,300.0	14,816.7	10,196.0	84.5	87.8	179.96	-5,269.9	1,400.9	895.9	810.3	85.66	10.459	
14,000.0	9,300.0	14,916.7	10,196.0	85.8	89.1	179.96	-5,369.9	1,401.7	895.9	808.8	87.07	10.290	
14,100.0	9,300.0	15,016.7	10,196.0	87.1	90.3	179.96	-5,469.9	1,402.5	895.9	807.4	88.49	10.125	
14,200.0	9,300.0	15,116.7	10,196.0	88.4	91.6	179.97	-5,569.8	1,403.2	895.9	806.0	89.91	9.965	
14,300.0	9,300.0	15,216.7	10,196.0	89.7	92.9	179.97	-5,669.8	1,404.0	895.9	804.6	91.33	9.810	
14,400.0	9,300.0	15,316.7	10,196.0	91.0	94.2	179.97	-5,769.8	1,404.8	895.9	803.2	92.76	9.658	
14,500.0	9,300.0	15,416.7	10,196.0	92.3	95.5	179.97	-5,869.8	1,405.6	895.9	801.7	94.19	9.511	
14,600.0	9,300.0	15,516.7	10,196.0	93.7	96.8	179.97	-5,969.8	1,406.3	895.9	800.3	95.63	9.368	
14,700.0	9,300.0	15,616.7	10,196.0	95.0	98.1	179.97	-6,069.8	1,407.1	895.9	798.8	97.07	9.229	
14,800.0	9,300.0	15,716.7	10,196.0	96.3	99.4	179.97	-6,169.8	1,407.9	895.9	797.4	98.52	9.094	
14,900.0	9,300.0	15,816.7	10,196.0	97.6	100.8	179.97	-6,269.8	1,408.7	895.9	795.9	99.97	8.962	
15,000.0	9,300.0	15,916.7	10,196.0	99.0	102.1	179.97	-6,369.8	1,409.4	895.9	794.5	101.42	8.833	
15,100.0	9,300.0	16,016.7	10,196.0	100.3	103.4	179.97	-6,469.8	1,410.2	895.9	793.0	102.88	8.708	
15,200.0	9,300.0	16,116.7	10,196.0	101.6	104.7	179.97	-6,569.8	1,411.0	895.9	791.6	104.34	8.586	
15,300.0	9,300.0	16,216.7	10,196.0	103.0	106.1	179.97	-6,669.8	1,411.8	895.9	790.1	105.80	8.468	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Royal Oak 24 Fed Com Pad 1 - Royal Oak 24 Fed Com 604H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	9,300.0	16,316.7	10,196.0	104.3	107.4	179.97	-6,769.8	1,412.6	895.9	788.6	107.27	8.352	
15,500.0	9,300.0	16,416.7	10,196.0	105.7	108.7	179.97	-6,869.8	1,413.3	895.9	787.2	108.74	8.239	
15,600.0	9,300.0	16,516.7	10,196.0	107.0	110.1	179.97	-6,969.8	1,414.1	895.9	785.7	110.21	8.129	
15,700.0	9,300.0	16,616.7	10,196.0	108.4	111.4	179.97	-7,069.8	1,414.9	895.9	784.2	111.69	8.022	
15,800.0	9,300.0	16,716.7	10,196.0	109.7	112.8	179.98	-7,169.8	1,415.7	895.9	782.8	113.16	7.917	
15,900.0	9,300.0	16,816.7	10,196.0	111.1	114.1	179.98	-7,269.8	1,416.4	895.9	781.3	114.64	7.815	
16,000.0	9,300.0	16,916.7	10,196.0	112.4	115.5	179.98	-7,369.8	1,417.2	895.9	779.8	116.12	7.715	
16,100.0	9,300.0	17,016.7	10,196.0	113.8	116.8	179.98	-7,469.8	1,418.0	895.9	778.3	117.61	7.618	
16,200.0	9,300.0	17,116.7	10,196.0	115.2	118.2	179.98	-7,569.8	1,418.8	895.9	776.8	119.09	7.523	
16,300.0	9,300.0	17,216.7	10,196.0	116.5	119.5	179.98	-7,669.8	1,419.5	895.9	775.3	120.58	7.430	
16,400.0	9,300.0	17,316.7	10,196.0	117.9	120.9	179.98	-7,769.8	1,420.3	895.9	773.8	122.07	7.339	
16,500.0	9,300.0	17,416.7	10,196.0	119.3	122.2	179.98	-7,869.8	1,421.1	895.9	772.3	123.57	7.250	
16,600.0	9,300.0	17,516.7	10,196.0	120.6	123.6	179.98	-7,969.8	1,421.9	895.9	770.9	125.06	7.164	
16,700.0	9,300.0	17,616.7	10,196.0	122.0	125.0	179.98	-8,069.8	1,422.6	895.9	769.4	126.56	7.079	
16,800.0	9,300.0	17,716.7	10,196.0	123.4	126.3	179.98	-8,169.8	1,423.4	895.9	767.9	128.05	6.996	
16,900.0	9,300.0	17,816.7	10,196.0	124.8	127.7	179.98	-8,269.8	1,424.2	895.9	766.4	129.55	6.915	
17,000.0	9,300.0	17,916.7	10,196.0	126.1	129.1	179.98	-8,369.8	1,425.0	895.9	764.9	131.05	6.836	
17,100.0	9,300.0	18,016.7	10,196.0	127.5	130.4	179.98	-8,469.8	1,425.7	895.9	763.4	132.56	6.759	
17,200.0	9,300.0	18,116.7	10,196.0	128.9	131.8	179.98	-8,569.8	1,426.5	895.9	761.8	134.06	6.683	
17,300.0	9,300.0	18,216.7	10,196.0	130.3	133.2	179.98	-8,669.8	1,427.3	895.9	760.3	135.57	6.609	
17,400.0	9,300.0	18,316.7	10,196.0	131.7	134.6	179.99	-8,769.8	1,428.1	895.9	758.8	137.07	6.536	
17,500.0	9,300.0	18,416.7	10,196.0	133.1	135.9	179.99	-8,869.7	1,428.8	895.9	757.3	138.58	6.465	
17,600.0	9,300.0	18,516.7	10,196.0	134.4	137.3	179.99	-8,969.7	1,429.6	895.9	755.8	140.09	6.395	
17,700.0	9,300.0	18,616.7	10,196.0	135.8	138.7	179.99	-9,069.7	1,430.4	895.9	754.3	141.60	6.327	
17,800.0	9,300.0	18,716.7	10,196.0	137.2	140.1	179.99	-9,169.7	1,431.2	895.9	752.8	143.12	6.260	
17,900.0	9,300.0	18,816.7	10,196.0	138.6	141.5	179.99	-9,269.7	1,432.0	895.9	751.3	144.63	6.194	
18,000.0	9,300.0	18,916.7	10,196.0	140.0	142.8	179.99	-9,369.7	1,432.7	895.9	749.8	146.14	6.130	
18,100.0	9,300.0	19,016.7	10,196.0	141.4	144.2	179.99	-9,469.7	1,433.5	895.9	748.2	147.66	6.067	
18,200.0	9,300.0	19,116.7	10,196.0	142.8	145.6	179.99	-9,569.7	1,434.3	895.9	746.7	149.18	6.006	
18,300.0	9,300.0	19,216.7	10,196.0	144.2	147.0	179.99	-9,669.7	1,435.1	895.9	745.2	150.70	5.945	
18,400.0	9,300.0	19,316.7	10,196.0	145.6	148.4	179.99	-9,769.7	1,435.8	895.9	743.7	152.21	5.886	
18,500.0	9,300.0	19,416.7	10,196.0	147.0	149.8	179.99	-9,869.7	1,436.6	895.9	742.2	153.74	5.828	
18,600.0	9,300.0	19,516.7	10,196.0	148.4	151.2	179.99	-9,969.7	1,437.4	895.9	740.6	155.26	5.770	
18,700.0	9,300.0	19,616.7	10,196.0	149.8	152.6	179.99	-10,069.7	1,438.2	895.9	739.1	156.78	5.714	
18,800.0	9,300.0	19,716.7	10,196.0	151.2	154.0	179.99	-10,169.7	1,438.9	895.9	737.6	158.30	5.659	
18,900.0	9,300.0	19,816.7	10,196.0	152.6	155.4	180.00	-10,269.7	1,439.7	895.9	736.1	159.83	5.606	
19,000.0	9,300.0	19,916.7	10,196.0	154.0	156.8	180.00	-10,369.7	1,440.5	895.9	734.6	161.35	5.553	
19,100.0	9,300.0	20,016.7	10,196.0	155.4	158.1	180.00	-10,469.7	1,441.3	895.9	733.0	162.88	5.501	
19,200.0	9,300.0	20,116.7	10,196.0	156.8	159.5	180.00	-10,569.7	1,442.0	895.9	731.5	164.40	5.449	
19,300.0	9,300.0	20,216.7	10,196.0	158.2	160.9	180.00	-10,669.7	1,442.8	895.9	730.0	165.93	5.399	
19,400.0	9,300.0	20,316.7	10,196.0	159.6	162.3	180.00	-10,769.7	1,443.6	895.9	728.4	167.46	5.350	
19,500.0	9,300.0	20,416.7	10,196.0	161.0	163.7	180.00	-10,869.7	1,444.4	895.9	726.9	168.99	5.302	
19,600.0	9,300.0	20,516.7	10,196.0	162.4	165.1	180.00	-10,969.7	1,445.1	895.9	725.4	170.52	5.254	
19,678.1	9,300.0	20,594.8	10,196.0	163.4	166.2	180.00	-11,047.8	1,445.7	895.9	724.5	171.41	5.227	

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 301H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,200.0	6,093.1	6,177.8	6,115.6	25.2	23.3	-19.97	-629.9	2,955.7	2,149.4	2,105.0	44.42	48.392	
6,300.0	6,190.3	6,274.9	6,212.8	25.7	23.7	-20.19	-629.9	2,955.7	2,126.9	2,081.7	45.15	47.108	
6,400.0	6,287.4	6,372.0	6,309.9	26.2	24.0	-20.41	-629.9	2,955.7	2,104.4	2,058.5	45.88	45.863	
6,500.0	6,384.5	6,469.1	6,407.0	26.7	24.3	-20.64	-629.9	2,955.7	2,081.9	2,035.3	46.62	44.658	
6,600.0	6,481.6	6,566.2	6,504.1	27.2	24.6	-20.87	-629.9	2,955.7	2,059.5	2,012.2	47.36	43.488	
6,700.0	6,578.7	6,663.4	6,601.2	27.6	24.9	-21.11	-629.9	2,955.7	2,037.1	1,989.0	48.10	42.354	
6,800.0	6,675.8	6,760.5	6,698.3	28.1	25.3	-21.36	-629.9	2,955.7	2,014.8	1,965.9	48.84	41.254	
6,900.0	6,772.9	6,857.6	6,795.4	28.6	25.6	-21.61	-629.9	2,955.7	1,992.5	1,942.9	49.58	40.185	
7,000.0	6,870.0	6,954.7	6,892.5	29.1	25.9	-21.86	-629.9	2,955.7	1,970.2	1,919.8	50.33	39.148	
7,100.0	6,967.1	7,051.8	6,989.6	29.6	26.2	-22.12	-629.9	2,955.7	1,947.9	1,896.9	51.07	38.140	
7,200.0	7,064.2	7,148.9	7,086.7	30.1	26.6	-22.39	-629.9	2,955.7	1,925.7	1,873.9	51.82	37.161	
7,300.0	7,161.3	7,246.0	7,183.8	30.5	26.9	-22.66	-629.9	2,955.7	1,903.6	1,851.0	52.57	36.209	
7,400.0	7,258.4	7,343.1	7,280.9	31.0	27.2	-22.94	-629.9	2,955.7	1,881.4	1,828.1	53.32	35.283	
7,500.0	7,355.5	7,440.2	7,378.0	31.5	27.5	-23.23	-629.9	2,955.7	1,859.4	1,805.3	54.08	34.383	
7,600.0	7,452.6	7,537.3	7,475.1	32.0	27.9	-23.52	-629.9	2,955.7	1,837.3	1,782.5	54.83	33.507	
7,700.0	7,549.7	7,634.4	7,572.2	32.5	28.2	-23.82	-629.9	2,955.7	1,815.4	1,759.8	55.59	32.655	
7,800.0	7,646.8	7,731.5	7,669.3	33.0	28.5	-24.12	-629.9	2,955.7	1,793.4	1,737.1	56.35	31.825	
7,900.0	7,743.9	7,828.6	7,766.4	33.5	28.9	-24.44	-629.9	2,955.7	1,771.5	1,714.4	57.11	31.017	
8,000.0	7,841.0	7,925.7	7,863.5	34.0	29.2	-24.76	-629.9	2,955.7	1,749.7	1,691.8	57.88	30.230	
8,100.0	7,938.1	8,022.8	7,960.6	34.4	29.5	-25.09	-629.9	2,955.7	1,727.9	1,669.3	58.65	29.464	
8,200.0	8,035.2	8,119.9	8,057.7	34.9	29.8	-25.43	-629.9	2,955.7	1,706.2	1,646.8	59.41	28.717	
8,300.0	8,132.7	8,217.4	8,155.2	35.4	30.2	-25.58	-629.9	2,955.7	1,686.0	1,625.8	60.18	28.016	
8,400.0	8,230.9	8,315.6	8,253.4	35.9	30.5	-25.71	-629.9	2,955.7	1,669.0	1,608.0	60.94	27.389	
8,500.0	8,329.7	8,414.4	8,352.2	36.3	30.8	-25.81	-629.9	2,955.7	1,655.0	1,593.4	61.68	26.833	
8,600.0	8,429.0	8,513.0	8,450.8	36.7	31.2	-25.87	-630.7	2,955.7	1,644.3	1,581.9	62.40	26.350	
8,700.0	8,528.6	8,608.6	8,545.0	37.0	31.5	-25.40	-645.9	2,955.8	1,636.8	1,573.7	63.04	25.963	
8,800.0	8,628.5	8,695.9	8,626.9	37.3	31.7	-24.38	-675.9	2,956.1	1,633.1	1,569.5	63.62	25.667	
8,831.6	8,660.1	8,721.0	8,649.3	37.4	31.8	-23.99	-687.2	2,956.2	1,632.8	1,569.0	63.79	25.595 CC	
8,900.0	8,728.5	8,770.5	8,691.5	37.6	31.9	92.62	-712.9	2,956.4	1,634.1	1,570.0	64.15	25.473	
9,000.0	8,828.5	8,831.8	8,739.9	37.9	32.0	-81.51	-750.6	2,956.7	1,639.3	1,574.7	64.63	25.365	
9,100.0	8,927.6	8,887.2	8,779.1	38.2	32.1	-79.53	-789.8	2,957.0	1,645.9	1,580.8	65.11	25.280	
9,200.0	9,022.1	8,941.8	8,812.9	38.6	32.2	-77.77	-832.5	2,957.3	1,652.1	1,586.5	65.61	25.180	
9,300.0	9,108.0	9,000.0	8,843.5	39.1	32.3	-76.27	-882.0	2,957.7	1,657.1	1,591.0	66.15	25.052	
9,400.0	9,181.3	9,050.0	8,864.7	39.5	32.3	-75.26	-927.2	2,958.0	1,660.2	1,593.5	66.71	24.886	
9,500.0	9,239.0	9,100.0	8,881.1	40.0	32.4	-74.67	-974.4	2,958.4	1,661.0	1,593.7	67.36	24.660	
9,600.0	9,278.4	9,150.0	8,892.5	40.6	32.5	-74.53	-1,023.1	2,958.7	1,659.2	1,591.1	68.10	24.364	
9,700.0	9,297.9	9,208.6	8,899.3	41.1	32.6	-74.84	-1,081.2	2,959.2	1,654.7	1,585.8	68.95	23.998	
9,800.0	9,300.0	9,285.2	8,900.0	41.7	32.7	-75.13	-1,157.8	2,959.8	1,648.6	1,578.7	69.86	23.597	
9,900.0	9,300.0	9,385.1	8,900.0	42.3	33.0	-75.12	-1,257.8	2,960.5	1,645.3	1,574.5	70.84	23.225	
9,996.7	9,300.0	9,481.8	8,900.0	42.9	33.3	-75.11	-1,354.5	2,961.3	1,644.5	1,572.6	71.88	22.879	
10,000.0	9,300.0	9,485.1	8,900.0	42.9	33.3	-75.12	-1,357.7	2,961.3	1,644.9	1,573.0	71.91	22.874	
10,100.0	9,300.0	9,585.1	8,900.0	43.6	33.8	-75.12	-1,457.7	2,962.1	1,644.9	1,571.8	73.08	22.508	
10,200.0	9,300.0	9,685.1	8,900.0	44.2	34.2	-75.12	-1,557.7	2,962.9	1,644.9	1,570.6	74.34	22.127	
10,300.0	9,300.0	9,785.1	8,900.0	45.0	34.8	-75.12	-1,657.7	2,963.6	1,644.9	1,569.3	75.68	21.735	
10,400.0	9,300.0	9,885.1	8,900.0	45.7	35.3	-75.12	-1,757.7	2,964.4	1,644.9	1,567.8	77.11	21.333	
10,500.0	9,300.0	9,985.1	8,900.0	46.5	36.0	-75.12	-1,857.7	2,965.2	1,644.9	1,566.3	78.61	20.926	
10,600.0	9,300.0	10,085.1	8,900.0	47.3	36.6	-75.12	-1,957.7	2,965.9	1,644.9	1,564.8	80.18	20.515	
10,700.0	9,300.0	10,185.1	8,900.0	48.2	37.4	-75.12	-2,057.7	2,966.7	1,644.9	1,563.1	81.83	20.103	
10,800.0	9,300.0	10,285.1	8,900.0	49.1	38.1	-75.12	-2,157.7	2,967.5	1,644.9	1,561.4	83.53	19.692	
10,900.0	9,300.0	10,385.1	8,900.0	50.0	38.9	-75.12	-2,257.7	2,968.2	1,644.9	1,559.6	85.30	19.284	
11,000.0	9,300.0	10,485.1	8,900.0	50.9	39.8	-75.12	-2,357.7	2,969.0	1,645.0	1,557.8	87.13	18.880	
11,100.0	9,300.0	10,585.1	8,900.0	51.9	40.7	-75.12	-2,457.7	2,969.8	1,645.0	1,555.9	89.01	18.481	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 301H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
11,200.0	9,300.0	10,685.1	8,900.0	52.8	41.6	-75.12	-2,557.7	2,970.5	1,645.0	1,554.0	90.94	18.089	
11,300.0	9,300.0	10,785.1	8,900.0	53.8	42.5	-75.12	-2,657.7	2,971.3	1,645.0	1,552.0	92.91	17.705	
11,400.0	9,300.0	10,885.1	8,900.0	54.9	43.5	-75.12	-2,757.7	2,972.1	1,645.0	1,550.0	94.93	17.328	
11,500.0	9,300.0	10,985.1	8,900.0	55.9	44.5	-75.12	-2,857.7	2,972.8	1,645.0	1,548.0	96.99	16.960	
11,600.0	9,300.0	11,085.1	8,900.0	57.0	45.5	-75.12	-2,957.7	2,973.6	1,645.0	1,545.9	99.09	16.601	
11,700.0	9,300.0	11,185.1	8,900.0	58.0	46.5	-75.12	-3,057.7	2,974.4	1,645.0	1,543.7	101.23	16.250	
11,800.0	9,300.0	11,285.1	8,900.0	59.1	47.6	-75.12	-3,157.7	2,975.2	1,645.0	1,541.6	103.39	15.910	
11,900.0	9,300.0	11,385.1	8,900.0	60.2	48.7	-75.12	-3,257.7	2,975.9	1,645.0	1,539.4	105.60	15.578	
12,000.0	9,300.0	11,485.1	8,900.0	61.3	49.8	-75.12	-3,357.7	2,976.7	1,645.0	1,537.2	107.83	15.256	
12,100.0	9,300.0	11,585.1	8,900.0	62.5	50.9	-75.12	-3,457.7	2,977.5	1,645.0	1,534.9	110.08	14.943	
12,200.0	9,300.0	11,685.1	8,900.0	63.6	52.0	-75.12	-3,557.7	2,978.2	1,645.0	1,532.6	112.37	14.639	
12,300.0	9,300.0	11,785.1	8,900.0	64.8	53.1	-75.12	-3,657.7	2,979.0	1,645.0	1,530.3	114.68	14.344	
12,400.0	9,300.0	11,885.1	8,900.0	65.9	54.3	-75.12	-3,757.7	2,979.8	1,645.0	1,528.0	117.01	14.058	
12,500.0	9,300.0	11,985.1	8,900.0	67.1	55.5	-75.12	-3,857.7	2,980.5	1,645.0	1,525.6	119.36	13.781	
12,600.0	9,300.0	12,085.1	8,900.0	68.3	56.7	-75.12	-3,957.7	2,981.3	1,645.0	1,523.3	121.74	13.512	
12,700.0	9,300.0	12,185.1	8,900.0	69.5	57.9	-75.12	-4,057.7	2,982.1	1,645.0	1,520.9	124.13	13.252	
12,800.0	9,300.0	12,285.1	8,900.0	70.7	59.1	-75.12	-4,157.7	2,982.8	1,645.0	1,518.5	126.55	12.999	
12,900.0	9,300.0	12,385.1	8,900.0	71.9	60.3	-75.12	-4,257.7	2,983.6	1,645.0	1,516.0	128.97	12.755	
13,000.0	9,300.0	12,485.1	8,900.0	73.2	61.5	-75.12	-4,357.7	2,984.4	1,645.0	1,513.6	131.42	12.517	
13,100.0	9,300.0	12,585.1	8,900.0	74.4	62.8	-75.12	-4,457.7	2,985.1	1,645.0	1,511.1	133.88	12.287	
13,200.0	9,300.0	12,685.1	8,900.0	75.6	64.0	-75.12	-4,557.7	2,985.9	1,645.0	1,508.7	136.35	12.064	
13,300.0	9,300.0	12,785.1	8,900.0	76.9	65.3	-75.12	-4,657.7	2,986.7	1,645.0	1,506.2	138.84	11.848	
13,400.0	9,300.0	12,885.1	8,900.0	78.1	66.5	-75.12	-4,757.6	2,987.4	1,645.0	1,503.7	141.34	11.638	
13,500.0	9,300.0	12,985.1	8,900.0	79.4	67.8	-75.12	-4,857.6	2,988.2	1,645.0	1,501.2	143.86	11.435	
13,600.0	9,300.0	13,085.1	8,900.0	80.7	69.1	-75.12	-4,957.6	2,989.0	1,645.0	1,498.6	146.38	11.238	
13,700.0	9,300.0	13,185.1	8,900.0	82.0	70.4	-75.12	-5,057.6	2,989.8	1,645.0	1,496.1	148.92	11.046	
13,800.0	9,300.0	13,285.1	8,900.0	83.2	71.7	-75.12	-5,157.6	2,990.5	1,645.0	1,493.6	151.47	10.861	
13,900.0	9,300.0	13,385.1	8,900.0	84.5	73.0	-75.12	-5,257.6	2,991.3	1,645.0	1,491.0	154.02	10.680	
14,000.0	9,300.0	13,485.1	8,900.0	85.8	74.3	-75.12	-5,357.6	2,992.1	1,645.0	1,488.4	156.59	10.505	
14,100.0	9,300.0	13,585.1	8,900.0	87.1	75.6	-75.12	-5,457.6	2,992.8	1,645.0	1,485.9	159.16	10.336	
14,200.0	9,300.0	13,685.1	8,900.0	88.4	76.9	-75.12	-5,557.6	2,993.6	1,645.0	1,483.3	161.75	10.170	
14,300.0	9,300.0	13,785.1	8,900.0	89.7	78.2	-75.12	-5,657.6	2,994.4	1,645.0	1,480.7	164.34	10.010	
14,400.0	9,300.0	13,885.1	8,900.0	91.0	79.5	-75.12	-5,757.6	2,995.1	1,645.0	1,478.1	166.94	9.854	
14,500.0	9,300.0	13,985.1	8,900.0	92.3	80.9	-75.12	-5,857.6	2,995.9	1,645.0	1,475.5	169.54	9.703	
14,600.0	9,300.0	14,085.1	8,900.0	93.7	82.2	-75.12	-5,957.6	2,996.7	1,645.0	1,472.9	172.16	9.555	
14,700.0	9,300.0	14,185.1	8,900.0	95.0	83.5	-75.12	-6,057.6	2,997.4	1,645.0	1,470.3	174.78	9.412	
14,800.0	9,300.0	14,285.1	8,900.0	96.3	84.9	-75.12	-6,157.6	2,998.2	1,645.0	1,467.6	177.40	9.273	
14,900.0	9,300.0	14,385.1	8,900.0	97.6	86.2	-75.12	-6,257.6	2,999.0	1,645.1	1,465.0	180.04	9.137	
15,000.0	9,300.0	14,485.1	8,900.0	99.0	87.6	-75.12	-6,357.6	2,999.7	1,645.1	1,462.4	182.68	9.005	
15,100.0	9,300.0	14,585.1	8,900.0	100.3	88.9	-75.12	-6,457.6	3,000.5	1,645.1	1,459.7	185.32	8.877	
15,200.0	9,300.0	14,685.1	8,900.0	101.6	90.3	-75.12	-6,557.6	3,001.3	1,645.1	1,457.1	187.97	8.752	
15,300.0	9,300.0	14,785.1	8,900.0	103.0	91.6	-75.12	-6,657.6	3,002.1	1,645.1	1,454.4	190.62	8.630	
15,400.0	9,300.0	14,885.1	8,900.0	104.3	93.0	-75.12	-6,757.6	3,002.8	1,645.1	1,451.8	193.28	8.511	
15,500.0	9,300.0	14,985.1	8,900.0	105.7	94.3	-75.12	-6,857.6	3,003.6	1,645.1	1,449.1	195.95	8.395	
15,600.0	9,300.0	15,085.1	8,900.0	107.0	95.7	-75.12	-6,957.6	3,004.4	1,645.1	1,446.5	198.62	8.283	
15,700.0	9,300.0	15,185.1	8,900.0	108.4	97.1	-75.12	-7,057.6	3,005.1	1,645.1	1,443.8	201.29	8.173	
15,800.0	9,300.0	15,285.1	8,900.0	109.7	98.4	-75.12	-7,157.6	3,005.9	1,645.1	1,441.1	203.97	8.065	
15,900.0	9,300.0	15,385.1	8,900.0	111.1	99.8	-75.12	-7,257.6	3,006.7	1,645.1	1,438.4	206.65	7.961	
16,000.0	9,300.0	15,485.1	8,900.0	112.4	101.2	-75.12	-7,357.6	3,007.4	1,645.1	1,435.7	209.34	7.859	
16,100.0	9,300.0	15,585.1	8,900.0	113.8	102.6	-75.12	-7,457.6	3,008.2	1,645.1	1,433.1	212.03	7.759	
16,200.0	9,300.0	15,685.1	8,900.0	115.2	103.9	-75.12	-7,557.6	3,009.0	1,645.1	1,430.4	214.72	7.662	
16,300.0	9,300.0	15,785.1	8,900.0	116.5	105.3	-75.12	-7,657.6	3,009.7	1,645.1	1,427.7	217.42	7.567	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 301H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,400.0	9,300.0	15,885.1	8,900.0	117.9	106.7	-75.12	-7,757.6	3,010.5	1,645.1	1,425.0	220.11	7.474	
16,500.0	9,300.0	15,985.1	8,900.0	119.3	108.1	-75.12	-7,857.6	3,011.3	1,645.1	1,422.3	222.82	7.383	
16,600.0	9,300.0	16,085.1	8,900.0	120.6	109.5	-75.12	-7,957.6	3,012.0	1,645.1	1,419.6	225.52	7.295	
16,700.0	9,300.0	16,185.1	8,900.0	122.0	110.8	-75.12	-8,057.6	3,012.8	1,645.1	1,416.9	228.23	7.208	
16,800.0	9,300.0	16,285.1	8,900.0	123.4	112.2	-75.12	-8,157.5	3,013.6	1,645.1	1,414.2	230.94	7.123	
16,900.0	9,300.0	16,385.1	8,900.0	124.8	113.6	-75.12	-8,257.5	3,014.3	1,645.1	1,411.4	233.66	7.041	
17,000.0	9,300.0	16,485.1	8,900.0	126.1	115.0	-75.12	-8,357.5	3,015.1	1,645.1	1,408.7	236.38	6.960	
17,100.0	9,300.0	16,585.1	8,900.0	127.5	116.4	-75.12	-8,457.5	3,015.9	1,645.1	1,406.0	239.10	6.881	
17,200.0	9,300.0	16,685.1	8,900.0	128.9	117.8	-75.12	-8,557.5	3,016.7	1,645.1	1,403.3	241.82	6.803	
17,300.0	9,300.0	16,785.1	8,900.0	130.3	119.2	-75.12	-8,657.5	3,017.4	1,645.1	1,400.6	244.54	6.727	
17,400.0	9,300.0	16,885.1	8,900.0	131.7	120.6	-75.12	-8,757.5	3,018.2	1,645.1	1,397.8	247.27	6.653	
17,500.0	9,300.0	16,985.1	8,900.0	133.1	122.0	-75.12	-8,857.5	3,019.0	1,645.1	1,395.1	250.00	6.580	
17,600.0	9,300.0	17,085.1	8,900.0	134.4	123.4	-75.12	-8,957.5	3,019.7	1,645.1	1,392.4	252.73	6.509	
17,700.0	9,300.0	17,185.1	8,900.0	135.8	124.8	-75.12	-9,057.5	3,020.5	1,645.1	1,389.7	255.46	6.440	
17,800.0	9,300.0	17,285.1	8,900.0	137.2	126.2	-75.12	-9,157.5	3,021.3	1,645.1	1,386.9	258.20	6.372	
17,900.0	9,300.0	17,385.1	8,900.0	138.6	127.6	-75.12	-9,257.5	3,022.0	1,645.1	1,384.2	260.94	6.305	
18,000.0	9,300.0	17,485.1	8,900.0	140.0	129.0	-75.12	-9,357.5	3,022.8	1,645.1	1,381.5	263.68	6.239	
18,100.0	9,300.0	17,585.1	8,900.0	141.4	130.4	-75.12	-9,457.5	3,023.6	1,645.1	1,378.7	266.42	6.175	
18,200.0	9,300.0	17,685.1	8,900.0	142.8	131.8	-75.12	-9,557.5	3,024.3	1,645.1	1,376.0	269.16	6.112	
18,300.0	9,300.0	17,785.1	8,900.0	144.2	133.2	-75.12	-9,657.5	3,025.1	1,645.1	1,373.2	271.91	6.050	
18,400.0	9,300.0	17,885.1	8,900.0	145.6	134.6	-75.12	-9,757.5	3,025.9	1,645.1	1,370.5	274.65	5.990	
18,500.0	9,300.0	17,985.1	8,900.0	147.0	136.0	-75.12	-9,857.5	3,026.6	1,645.1	1,367.7	277.40	5.931	
18,600.0	9,300.0	18,085.1	8,900.0	148.4	137.4	-75.12	-9,957.5	3,027.4	1,645.1	1,365.0	280.15	5.872	
18,700.0	9,300.0	18,185.1	8,900.0	149.8	138.8	-75.12	-10,057.5	3,028.2	1,645.1	1,362.2	282.90	5.815	
18,800.0	9,300.0	18,285.1	8,900.0	151.2	140.2	-75.12	-10,157.5	3,029.0	1,645.2	1,359.5	285.65	5.759	
18,900.0	9,300.0	18,385.1	8,900.0	152.6	141.6	-75.12	-10,257.5	3,029.7	1,645.2	1,356.7	288.41	5.704	
19,000.0	9,300.0	18,485.1	8,900.0	154.0	143.0	-75.12	-10,357.5	3,030.5	1,645.2	1,354.0	291.16	5.650	
19,100.0	9,300.0	18,585.1	8,900.0	155.4	144.4	-75.12	-10,457.5	3,031.3	1,645.2	1,351.2	293.92	5.597	
19,200.0	9,300.0	18,685.1	8,900.0	156.8	145.9	-75.12	-10,557.5	3,032.0	1,645.2	1,348.5	296.68	5.545	
19,300.0	9,300.0	18,785.1	8,900.0	158.2	147.3	-75.12	-10,657.5	3,032.8	1,645.2	1,345.7	299.44	5.494	
19,400.0	9,300.0	18,885.1	8,900.0	159.6	148.7	-75.12	-10,757.5	3,033.6	1,645.2	1,343.0	302.20	5.444	
19,500.0	9,300.0	18,985.1	8,900.0	161.0	150.1	-75.12	-10,857.5	3,034.3	1,645.2	1,340.2	304.96	5.395	
19,600.0	9,300.0	19,085.1	8,900.0	162.4	151.5	-75.12	-10,957.5	3,035.1	1,645.2	1,337.4	307.73	5.346	
19,678.1	9,300.0	19,163.2	8,900.0	163.4	152.6	-75.12	-11,035.6	3,035.7	1,645.2	1,335.5	309.71	5.312	ES, SF

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 501H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,400.0	3,374.2	3,395.7	3,395.7	12.2	11.9	-8.85	-740.3	2,280.8	2,160.0	2,136.3	23.69	91.159	
3,500.0	3,471.3	3,492.8	3,492.8	12.7	12.3	-8.94	-740.3	2,280.8	2,136.3	2,111.9	24.40	87.554	
3,600.0	3,568.4	3,589.9	3,589.9	13.1	12.6	-9.05	-740.3	2,280.8	2,112.7	2,087.6	25.11	84.146	
3,700.0	3,665.5	3,687.0	3,687.0	13.5	13.0	-9.15	-740.3	2,280.8	2,089.1	2,063.3	25.82	80.918	
3,800.0	3,762.7	3,784.2	3,784.2	14.0	13.3	-9.25	-740.3	2,280.8	2,065.5	2,039.0	26.53	77.858	
3,900.0	3,859.8	3,881.3	3,881.3	14.4	13.7	-9.36	-740.3	2,280.8	2,041.9	2,014.7	27.24	74.953	
4,000.0	3,956.9	3,978.4	3,978.4	14.9	14.0	-9.47	-740.3	2,280.8	2,018.3	1,990.4	27.96	72.193	
4,100.0	4,054.0	4,075.5	4,075.5	15.3	14.4	-9.58	-740.3	2,280.8	1,994.8	1,966.1	28.67	69.567	
4,200.0	4,151.1	4,172.6	4,172.6	15.8	14.7	-9.70	-740.3	2,280.8	1,971.2	1,941.8	29.39	67.066	
4,300.0	4,248.2	4,269.7	4,269.7	16.2	15.1	-9.82	-740.3	2,280.8	1,947.6	1,917.5	30.11	64.682	
4,400.0	4,345.3	4,366.8	4,366.8	16.7	15.4	-9.94	-740.3	2,280.8	1,924.1	1,893.2	30.83	62.406	
4,500.0	4,442.4	4,463.9	4,463.9	17.2	15.8	-10.06	-740.3	2,280.8	1,900.5	1,869.0	31.55	60.233	
4,600.0	4,539.5	4,561.0	4,561.0	17.6	16.1	-10.19	-740.3	2,280.8	1,877.0	1,844.7	32.28	58.154	
4,700.0	4,636.6	4,658.1	4,658.1	18.1	16.5	-10.32	-740.3	2,280.8	1,853.4	1,820.4	33.00	56.166	
4,800.0	4,733.7	4,755.2	4,755.2	18.6	16.8	-10.46	-740.3	2,280.8	1,829.9	1,796.2	33.72	54.261	
4,900.0	4,830.8	4,852.3	4,852.3	19.0	17.2	-10.59	-740.3	2,280.8	1,806.4	1,772.0	34.45	52.435	
5,000.0	4,927.9	4,949.4	4,949.4	19.5	17.5	-10.73	-740.3	2,280.8	1,782.9	1,747.7	35.18	50.683	
5,100.0	5,025.0	5,046.5	5,046.5	20.0	17.9	-10.88	-740.3	2,280.8	1,759.4	1,723.5	35.91	49.001	
5,200.0	5,122.1	5,143.6	5,143.6	20.4	18.2	-11.03	-740.3	2,280.8	1,735.9	1,699.3	36.63	47.385	
5,300.0	5,219.2	5,240.7	5,240.7	20.9	18.6	-11.18	-740.3	2,280.8	1,712.5	1,675.1	37.36	45.831	
5,400.0	5,316.3	5,337.8	5,337.8	21.4	18.9	-11.34	-740.3	2,280.8	1,689.0	1,650.9	38.10	44.336	
5,500.0	5,413.4	5,434.9	5,434.9	21.9	19.3	-11.50	-740.3	2,280.8	1,665.6	1,626.7	38.83	42.897	
5,600.0	5,510.5	5,535.4	5,535.4	22.3	19.6	-11.68	-740.1	2,280.8	1,642.1	1,602.5	39.57	41.502	
5,700.0	5,607.6	5,638.4	5,638.4	22.8	20.0	-11.96	-737.3	2,281.0	1,618.2	1,577.9	40.31	40.141	
5,800.0	5,704.7	5,735.2	5,735.1	23.3	20.3	-12.26	-733.9	2,281.3	1,594.3	1,553.2	41.05	38.839	
5,900.0	5,801.8	5,831.9	5,831.8	23.8	20.7	-12.57	-730.5	2,281.6	1,570.4	1,528.6	41.78	37.583	
6,000.0	5,898.9	5,928.7	5,928.5	24.3	21.0	-12.89	-727.2	2,281.8	1,546.5	1,504.0	42.52	36.370	
6,100.0	5,996.0	6,025.4	6,025.1	24.7	21.4	-13.22	-723.8	2,282.1	1,522.7	1,479.5	43.26	35.198	
6,200.0	6,093.1	6,122.2	6,121.8	25.2	21.7	-13.56	-720.4	2,282.4	1,499.0	1,455.0	44.00	34.066	
6,300.0	6,190.3	6,218.9	6,218.5	25.7	22.1	-13.91	-717.1	2,282.7	1,475.3	1,430.5	44.75	32.971	
6,400.0	6,287.4	6,315.7	6,315.2	26.2	22.4	-14.27	-713.7	2,282.9	1,451.6	1,406.1	45.49	31.911	
6,500.0	6,384.5	6,412.4	6,411.9	26.7	22.8	-14.64	-710.3	2,283.2	1,428.0	1,381.8	46.24	30.886	
6,600.0	6,481.6	6,509.1	6,508.6	27.2	23.1	-15.03	-707.0	2,283.5	1,404.5	1,357.5	46.98	29.893	
6,700.0	6,578.7	6,605.9	6,605.3	27.6	23.5	-15.43	-703.6	2,283.8	1,381.0	1,333.3	47.73	28.932	
6,800.0	6,675.8	6,702.6	6,701.9	28.1	23.8	-15.84	-700.2	2,284.0	1,357.6	1,309.2	48.49	28.000	
6,900.0	6,772.9	6,799.4	6,798.6	28.6	24.1	-16.27	-696.9	2,284.3	1,334.3	1,285.1	49.24	27.098	
7,000.0	6,870.0	6,896.1	6,895.3	29.1	24.5	-16.71	-693.5	2,284.6	1,311.1	1,261.1	50.00	26.222	
7,100.0	6,967.1	6,992.9	6,992.0	29.6	24.8	-17.17	-690.2	2,284.9	1,287.9	1,237.1	50.76	25.373	
7,200.0	7,064.2	7,089.6	7,088.7	30.1	25.2	-17.64	-686.8	2,285.1	1,264.8	1,213.2	51.52	24.550	
7,300.0	7,161.3	7,186.4	7,185.4	30.5	25.5	-18.13	-683.4	2,285.4	1,241.8	1,189.5	52.28	23.750	
7,400.0	7,258.4	7,283.1	7,282.1	31.0	25.9	-18.64	-680.1	2,285.7	1,218.8	1,165.8	53.05	22.974	
7,500.0	7,355.5	7,379.9	7,378.7	31.5	26.2	-19.17	-676.7	2,286.0	1,196.0	1,142.2	53.82	22.221	
7,600.0	7,452.6	7,476.6	7,475.4	32.0	26.6	-19.72	-673.3	2,286.2	1,173.3	1,118.7	54.60	21.490	
7,700.0	7,549.7	7,573.3	7,572.1	32.5	26.9	-20.29	-670.0	2,286.5	1,150.7	1,095.3	55.37	20.779	
7,800.0	7,646.8	7,670.1	7,668.8	33.0	27.3	-20.88	-666.6	2,286.8	1,128.1	1,072.0	56.16	20.089	
7,900.0	7,743.9	7,766.8	7,765.5	33.5	27.6	-21.50	-663.2	2,287.1	1,105.8	1,048.8	56.94	19.419	
8,000.0	7,841.0	7,863.6	7,862.2	34.0	28.0	-22.14	-659.9	2,287.3	1,083.5	1,025.8	57.73	18.768	
8,100.0	7,938.1	7,960.3	7,958.9	34.4	28.3	-22.81	-656.5	2,287.6	1,061.4	1,002.9	58.53	18.135	
8,200.0	8,035.2	8,057.1	8,055.6	34.9	28.7	-23.50	-653.1	2,287.9	1,039.4	980.1	59.33	17.520	
8,300.0	8,132.7	8,154.2	8,152.6	35.4	29.0	-24.03	-649.7	2,288.2	1,019.1	958.9	60.13	16.949	
8,400.0	8,230.9	8,252.1	8,250.5	35.9	29.4	-24.52	-646.3	2,288.4	1,002.0	941.1	60.92	16.448	
8,500.0	8,329.7	8,350.7	8,349.0	36.3	29.7	-24.97	-642.9	2,288.7	988.2	926.5	61.70	16.017	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 501H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.0	8,429.0	8,449.7	8,448.0	36.7	30.1	-25.37	-639.5	2,289.0	977.6	915.1	62.46	15.651	
8,700.0	8,528.6	8,549.2	8,547.4	37.0	30.4	-25.73	-636.0	2,289.3	970.2	907.0	63.21	15.349	
8,800.0	8,628.5	8,648.9	8,647.1	37.3	30.8	-26.03	-632.5	2,289.6	966.0	902.0	63.94	15.108	
8,898.8	8,727.2	8,750.3	8,748.4	37.6	31.1	-26.19	-630.4	2,289.8	964.7	900.1	64.62	14.928	
8,900.0	8,728.5	8,751.6	8,749.7	37.6	31.1	89.53	-630.4	2,289.8	964.8	900.2	64.63	14.928	
9,000.0	8,828.5	8,851.9	8,850.0	37.9	31.5	-85.97	-630.3	2,289.8	964.8	899.5	65.30	14.775	
9,100.0	8,927.6	8,951.0	8,949.1	38.2	31.9	-86.74	-630.3	2,289.8	964.0	898.0	66.06	14.593	
9,200.0	9,022.1	9,047.7	9,045.8	38.6	32.2	-88.72	-630.9	2,289.8	962.7	895.7	66.98	14.374	
9,300.0	9,108.0	9,154.6	9,151.1	39.1	32.5	-91.22	-648.0	2,289.9	961.4	893.6	67.88	14.163	
9,400.0	9,181.3	9,272.6	9,259.7	39.5	32.9	-93.80	-693.4	2,290.2	960.1	891.5	68.67	13.981	
9,500.0	9,239.0	9,403.7	9,363.2	40.0	33.2	-96.35	-773.2	2,290.9	958.4	889.2	69.22	13.846	
9,600.0	9,278.4	9,548.2	9,447.4	40.6	33.5	-98.64	-890.0	2,291.7	955.5	886.0	69.49	13.751	
9,700.0	9,297.9	9,703.3	9,494.7	41.1	33.9	-100.37	-1,036.9	2,292.9	950.8	881.1	69.68	13.645	
9,800.0	9,300.0	9,829.6	9,500.0	41.7	34.2	-100.91	-1,162.9	2,293.8	944.6	874.3	70.27	13.443	
9,900.0	9,300.0	9,929.5	9,500.0	42.3	34.5	-100.94	-1,262.9	2,294.6	941.3	870.1	71.14	13.231	
9,996.8	9,300.0	10,026.3	9,500.0	42.9	34.8	-100.94	-1,359.6	2,295.4	940.5	868.4	72.09	13.046	CC
10,000.0	9,300.0	10,029.5	9,500.0	42.9	34.8	-100.94	-1,362.9	2,295.4	940.9	868.8	72.12	13.046	
10,100.0	9,300.0	10,129.5	9,500.0	43.6	35.2	-100.94	-1,462.9	2,296.1	940.9	867.7	73.20	12.854	
10,200.0	9,300.0	10,229.5	9,500.0	44.2	35.7	-100.94	-1,562.9	2,296.9	940.9	866.5	74.37	12.651	
10,300.0	9,300.0	10,329.5	9,500.0	45.0	36.2	-100.94	-1,662.9	2,297.7	940.9	865.3	75.63	12.440	
10,400.0	9,300.0	10,429.5	9,500.0	45.7	36.7	-100.94	-1,762.9	2,298.5	940.9	863.9	76.98	12.223	
10,500.0	9,300.0	10,529.5	9,500.0	46.5	37.3	-100.94	-1,862.9	2,299.2	940.9	862.5	78.41	12.000	
10,600.0	9,300.0	10,629.5	9,500.0	47.3	38.0	-100.94	-1,962.9	2,300.0	940.9	861.0	79.91	11.774	
10,700.0	9,300.0	10,729.5	9,500.0	48.2	38.7	-100.94	-2,062.8	2,300.8	940.9	859.4	81.49	11.546	
10,800.0	9,300.0	10,829.5	9,500.0	49.1	39.4	-100.94	-2,162.8	2,301.5	940.9	857.8	83.14	11.318	
10,900.0	9,300.0	10,929.5	9,500.0	50.0	40.2	-100.94	-2,262.8	2,302.3	940.9	856.1	84.85	11.089	
11,000.0	9,300.0	11,029.5	9,500.0	50.9	41.0	-100.94	-2,362.8	2,303.1	940.9	854.3	86.62	10.862	
11,100.0	9,300.0	11,129.5	9,500.0	51.9	41.9	-100.94	-2,462.8	2,303.8	940.9	852.5	88.45	10.638	
11,200.0	9,300.0	11,229.5	9,500.0	52.8	42.7	-100.94	-2,562.8	2,304.6	940.9	850.6	90.33	10.416	
11,300.0	9,300.0	11,329.5	9,500.0	53.8	43.6	-100.94	-2,662.8	2,305.4	940.9	848.6	92.27	10.198	
11,400.0	9,300.0	11,429.5	9,500.0	54.9	44.6	-100.94	-2,762.8	2,306.1	940.9	846.7	94.25	9.983	
11,500.0	9,300.0	11,529.5	9,500.0	55.9	45.5	-100.94	-2,862.8	2,306.9	940.9	844.6	96.27	9.773	
11,600.0	9,300.0	11,629.5	9,500.0	57.0	46.5	-100.94	-2,962.8	2,307.7	940.9	842.6	98.34	9.568	
11,700.0	9,300.0	11,729.5	9,500.0	58.0	47.5	-100.94	-3,062.8	2,308.4	940.9	840.5	100.45	9.367	
11,800.0	9,300.0	11,829.5	9,500.0	59.1	48.6	-100.94	-3,162.8	2,309.2	940.9	838.3	102.59	9.172	
11,900.0	9,300.0	11,929.5	9,500.0	60.2	49.6	-100.94	-3,262.8	2,310.0	940.9	836.2	104.77	8.981	
12,000.0	9,300.0	12,029.5	9,500.0	61.3	50.7	-100.94	-3,362.8	2,310.7	940.9	834.0	106.98	8.796	
12,100.0	9,300.0	12,129.5	9,500.0	62.5	51.8	-100.94	-3,462.8	2,311.5	940.9	831.7	109.22	8.615	
12,200.0	9,300.0	12,229.5	9,500.0	63.6	52.9	-100.94	-3,562.8	2,312.3	940.9	829.4	111.49	8.440	
12,300.0	9,300.0	12,329.5	9,500.0	64.8	54.0	-100.94	-3,662.8	2,313.1	940.9	827.2	113.78	8.270	
12,400.0	9,300.0	12,429.5	9,500.0	65.9	55.2	-100.94	-3,762.8	2,313.8	940.9	824.8	116.10	8.104	
12,500.0	9,300.0	12,529.5	9,500.0	67.1	56.3	-100.94	-3,862.8	2,314.6	940.9	822.5	118.45	7.944	
12,600.0	9,300.0	12,629.5	9,500.0	68.3	57.5	-100.94	-3,962.8	2,315.4	940.9	820.1	120.82	7.788	
12,700.0	9,300.0	12,729.5	9,500.0	69.5	58.7	-100.94	-4,062.8	2,316.1	940.9	817.7	123.20	7.637	
12,800.0	9,300.0	12,829.5	9,500.0	70.7	59.9	-100.94	-4,162.8	2,316.9	940.9	815.3	125.61	7.491	
12,900.0	9,300.0	12,929.5	9,500.0	71.9	61.1	-100.94	-4,262.8	2,317.7	940.9	812.9	128.04	7.349	
13,000.0	9,300.0	13,029.5	9,500.0	73.2	62.3	-100.94	-4,362.8	2,318.4	941.0	810.5	130.48	7.211	
13,100.0	9,300.0	13,129.5	9,500.0	74.4	63.5	-100.94	-4,462.8	2,319.2	941.0	808.0	132.94	7.078	
13,200.0	9,300.0	13,229.5	9,500.0	75.6	64.7	-100.94	-4,562.8	2,320.0	941.0	805.5	135.42	6.948	
13,300.0	9,300.0	13,329.5	9,500.0	76.9	66.0	-100.94	-4,662.8	2,320.7	941.0	803.0	137.91	6.823	
13,400.0	9,300.0	13,429.5	9,500.0	78.1	67.2	-100.94	-4,762.8	2,321.5	941.0	800.5	140.42	6.701	
13,500.0	9,300.0	13,529.5	9,500.0	79.4	68.5	-100.94	-4,862.8	2,322.3	941.0	798.0	142.94	6.583	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 501H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Offset Well Error: 0.0 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.0	9,300.0	13,629.5	9,500.0	80.7	69.8	-100.94	-4,962.8	2,323.0	941.0	795.5	145.47	6.469	
13,700.0	9,300.0	13,729.5	9,500.0	82.0	71.0	-100.94	-5,062.8	2,323.8	941.0	793.0	148.01	6.357	
13,800.0	9,300.0	13,829.5	9,500.0	83.2	72.3	-100.94	-5,162.8	2,324.6	941.0	790.4	150.57	6.250	
13,900.0	9,300.0	13,929.5	9,500.0	84.5	73.6	-100.94	-5,262.8	2,325.3	941.0	787.8	153.13	6.145	
14,000.0	9,300.0	14,029.5	9,500.0	85.8	74.9	-100.94	-5,362.8	2,326.1	941.0	785.3	155.71	6.043	
14,100.0	9,300.0	14,129.5	9,500.0	87.1	76.2	-100.94	-5,462.7	2,326.9	941.0	782.7	158.29	5.944	
14,200.0	9,300.0	14,229.5	9,500.0	88.4	77.5	-100.94	-5,562.7	2,327.6	941.0	780.1	160.89	5.849	
14,300.0	9,300.0	14,329.5	9,500.0	89.7	78.8	-100.94	-5,662.7	2,328.4	941.0	777.5	163.49	5.755	
14,400.0	9,300.0	14,429.5	9,500.0	91.0	80.1	-100.94	-5,762.7	2,329.2	941.0	774.9	166.10	5.665	
14,500.0	9,300.0	14,529.5	9,500.0	92.3	81.4	-100.94	-5,862.7	2,330.0	941.0	772.3	168.73	5.577	
14,600.0	9,300.0	14,629.5	9,500.0	93.7	82.7	-100.94	-5,962.7	2,330.7	941.0	769.6	171.35	5.491	
14,700.0	9,300.0	14,729.5	9,500.0	95.0	84.1	-100.94	-6,062.7	2,331.5	941.0	767.0	173.99	5.408	
14,800.0	9,300.0	14,829.5	9,500.0	96.3	85.4	-100.94	-6,162.7	2,332.3	941.0	764.4	176.63	5.327	
14,900.0	9,300.0	14,929.5	9,500.0	97.6	86.7	-100.94	-6,262.7	2,333.0	941.0	761.7	179.28	5.249	
15,000.0	9,300.0	15,029.5	9,500.0	99.0	88.1	-100.94	-6,362.7	2,333.8	941.0	759.1	181.94	5.172	
15,100.0	9,300.0	15,129.5	9,500.0	100.3	89.4	-100.94	-6,462.7	2,334.6	941.0	756.4	184.60	5.098	
15,200.0	9,300.0	15,229.5	9,500.0	101.6	90.8	-100.94	-6,562.7	2,335.3	941.0	753.7	187.26	5.025	
15,300.0	9,300.0	15,329.5	9,500.0	103.0	92.1	-100.94	-6,662.7	2,336.1	941.0	751.1	189.94	4.954	
15,400.0	9,300.0	15,429.5	9,500.0	104.3	93.4	-100.94	-6,762.7	2,336.9	941.0	748.4	192.61	4.885	
15,500.0	9,300.0	15,529.5	9,500.0	105.7	94.8	-100.94	-6,862.7	2,337.6	941.0	745.7	195.30	4.818	
15,600.0	9,300.0	15,629.5	9,500.0	107.0	96.2	-100.94	-6,962.7	2,338.4	941.0	743.0	197.99	4.753	
15,700.0	9,300.0	15,729.5	9,500.0	108.4	97.5	-100.94	-7,062.7	2,339.2	941.0	740.3	200.68	4.689	
15,800.0	9,300.0	15,829.5	9,500.0	109.7	98.9	-100.94	-7,162.7	2,339.9	941.0	737.6	203.38	4.627	
15,900.0	9,300.0	15,929.5	9,500.0	111.1	100.2	-100.94	-7,262.7	2,340.7	941.0	734.9	206.08	4.566	
16,000.0	9,300.0	16,029.5	9,500.0	112.4	101.6	-100.94	-7,362.7	2,341.5	941.0	732.2	208.78	4.507	
16,100.0	9,300.0	16,129.5	9,500.0	113.8	103.0	-100.94	-7,462.7	2,342.2	941.0	729.5	211.49	4.449	
16,200.0	9,300.0	16,229.5	9,500.0	115.2	104.3	-100.94	-7,562.7	2,343.0	941.0	726.8	214.21	4.393	
16,300.0	9,300.0	16,329.5	9,500.0	116.5	105.7	-100.94	-7,662.7	2,343.8	941.0	724.1	216.93	4.338	
16,400.0	9,300.0	16,429.5	9,500.0	117.9	107.1	-100.94	-7,762.7	2,344.5	941.0	721.4	219.65	4.284	
16,500.0	9,300.0	16,529.5	9,500.0	119.3	108.5	-100.94	-7,862.7	2,345.3	941.0	718.7	222.37	4.232	
16,600.0	9,300.0	16,629.5	9,500.0	120.6	109.8	-100.94	-7,962.7	2,346.1	941.0	715.9	225.10	4.180	
16,700.0	9,300.0	16,729.5	9,500.0	122.0	111.2	-100.94	-8,062.7	2,346.9	941.0	713.2	227.83	4.130	
16,800.0	9,300.0	16,829.5	9,500.0	123.4	112.6	-100.94	-8,162.7	2,347.6	941.0	710.5	230.57	4.081	
16,900.0	9,300.0	16,929.5	9,500.0	124.8	114.0	-100.94	-8,262.7	2,348.4	941.0	707.7	233.30	4.034	
17,000.0	9,300.0	17,029.5	9,500.0	126.1	115.4	-100.93	-8,362.7	2,349.2	941.0	705.0	236.04	3.987	
17,100.0	9,300.0	17,129.5	9,500.0	127.5	116.7	-100.93	-8,462.7	2,349.9	941.0	702.3	238.79	3.941	
17,200.0	9,300.0	17,229.5	9,500.0	128.9	118.1	-100.93	-8,562.7	2,350.7	941.0	699.5	241.53	3.896	
17,300.0	9,300.0	17,329.5	9,500.0	130.3	119.5	-100.93	-8,662.7	2,351.5	941.0	696.8	244.28	3.852	
17,400.0	9,300.0	17,429.5	9,500.0	131.7	120.9	-100.93	-8,762.7	2,352.2	941.0	694.0	247.03	3.809	
17,500.0	9,300.0	17,529.5	9,500.0	133.1	122.3	-100.93	-8,862.6	2,353.0	941.0	691.3	249.78	3.767	
17,600.0	9,300.0	17,629.5	9,500.0	134.4	123.7	-100.93	-8,962.6	2,353.8	941.0	688.5	252.54	3.726	
17,700.0	9,300.0	17,729.5	9,500.0	135.8	125.1	-100.93	-9,062.6	2,354.5	941.0	685.8	255.30	3.686	
17,800.0	9,300.0	17,829.5	9,500.0	137.2	126.5	-100.93	-9,162.6	2,355.3	941.1	683.0	258.06	3.647	
17,900.0	9,300.0	17,929.5	9,500.0	138.6	127.9	-100.93	-9,262.6	2,356.1	941.1	680.2	260.82	3.608	
18,000.0	9,300.0	18,029.5	9,500.0	140.0	129.3	-100.93	-9,362.6	2,356.8	941.1	677.5	263.58	3.570	
18,100.0	9,300.0	18,129.5	9,500.0	141.4	130.7	-100.93	-9,462.6	2,357.6	941.1	674.7	266.35	3.533	
18,200.0	9,300.0	18,229.5	9,500.0	142.8	132.1	-100.93	-9,562.6	2,358.4	941.1	671.9	269.12	3.497	
18,300.0	9,300.0	18,329.5	9,500.0	144.2	133.5	-100.93	-9,662.6	2,359.1	941.1	669.2	271.89	3.461	
18,400.0	9,300.0	18,429.5	9,500.0	145.6	134.9	-100.93	-9,762.6	2,359.9	941.1	666.4	274.66	3.426	
18,500.0	9,300.0	18,529.5	9,500.0	147.0	136.3	-100.93	-9,862.6	2,360.7	941.1	663.6	277.43	3.392	
18,600.0	9,300.0	18,629.5	9,500.0	148.4	137.7	-100.93	-9,962.6	2,361.4	941.1	660.9	280.21	3.358	
18,700.0	9,300.0	18,729.5	9,500.0	149.8	139.1	-100.93	-10,062.6	2,362.2	941.1	658.1	282.99	3.326	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 501H - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM

Rule Assigned:

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,800.0	9,300.0	18,829.5	9,500.0	151.2	140.5	-100.93	-10,162.6	2,363.0	941.1	655.3	285.76	3.293	
18,900.0	9,300.0	18,929.5	9,500.0	152.6	141.9	-100.93	-10,262.6	2,363.8	941.1	652.5	288.54	3.261	
19,000.0	9,300.0	19,029.5	9,500.0	154.0	143.3	-100.93	-10,362.6	2,364.5	941.1	649.8	291.33	3.230	
19,100.0	9,300.0	19,129.5	9,500.0	155.4	144.7	-100.93	-10,462.6	2,365.3	941.1	647.0	294.11	3.200	
19,200.0	9,300.0	19,229.5	9,500.0	156.8	146.1	-100.93	-10,562.6	2,366.1	941.1	644.2	296.89	3.170	
19,300.0	9,300.0	19,329.5	9,500.0	158.2	147.5	-100.93	-10,662.6	2,366.8	941.1	641.4	299.68	3.140	
19,400.0	9,300.0	19,429.5	9,500.0	159.6	149.0	-100.93	-10,762.6	2,367.6	941.1	638.6	302.47	3.111	
19,500.0	9,300.0	19,529.5	9,500.0	161.0	150.4	-100.93	-10,862.6	2,368.4	941.1	635.8	305.26	3.083	
19,600.0	9,300.0	19,629.5	9,500.0	162.4	151.8	-100.93	-10,962.6	2,369.1	941.1	633.0	308.05	3.055	
19,606.7	9,300.0	19,636.3	9,500.0	162.5	151.9	-100.93	-10,969.3	2,369.2	941.1	632.9	308.22	3.053	
19,678.1	9,300.0	19,707.2	9,500.0	163.4	152.9	-100.93	-11,040.3	2,369.7	941.1	631.0	310.06	3.035	ES, SF

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 511H (fka 007H) - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM **Rule Assigned:** **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.0	4,733.7	4,492.3	4,470.6	18.6	16.3	-13.56	-700.0	2,617.3	2,165.9	2,133.1	32.85	65.933	
4,900.0	4,830.8	4,591.2	4,568.6	19.0	16.7	-13.83	-698.2	2,630.9	2,155.7	2,122.1	33.60	64.152	
5,000.0	4,927.9	4,690.2	4,666.6	19.5	17.1	-14.11	-696.5	2,644.6	2,145.5	2,111.1	34.36	62.449	
5,100.0	5,025.0	4,789.1	4,764.6	20.0	17.5	-14.38	-694.8	2,658.2	2,135.3	2,100.2	35.11	60.817	
5,200.0	5,122.1	4,888.1	4,862.6	20.4	17.9	-14.66	-693.0	2,671.9	2,125.3	2,089.4	35.87	59.253	
5,300.0	5,219.2	4,987.0	4,960.6	20.9	18.3	-14.94	-691.3	2,685.5	2,115.2	2,078.6	36.63	57.752	
5,400.0	5,316.3	5,086.0	5,058.5	21.4	18.6	-15.23	-689.5	2,699.2	2,105.2	2,067.8	37.39	56.312	
5,500.0	5,413.4	5,184.9	5,156.5	21.9	19.0	-15.51	-687.8	2,712.8	2,095.3	2,057.2	38.15	54.929	
5,600.0	5,510.5	5,283.9	5,254.5	22.3	19.4	-15.80	-686.1	2,726.5	2,085.4	2,046.5	38.91	53.599	
5,700.0	5,607.6	5,382.8	5,352.5	22.8	19.8	-16.09	-684.3	2,740.1	2,075.6	2,035.9	39.67	52.320	
5,800.0	5,704.7	5,481.8	5,450.5	23.3	20.2	-16.39	-682.6	2,753.8	2,065.8	2,025.4	40.44	51.088	
5,900.0	5,801.8	5,580.7	5,548.5	23.8	20.6	-16.69	-680.9	2,767.5	2,056.1	2,014.9	41.20	49.903	
6,000.0	5,898.9	5,679.6	5,646.5	24.3	21.0	-16.99	-679.1	2,781.1	2,046.4	2,004.5	41.97	48.760	
6,100.0	5,996.0	5,778.6	5,744.4	24.7	21.4	-17.29	-677.4	2,794.8	2,036.8	1,994.1	42.74	47.658	
6,200.0	6,093.1	5,877.5	5,842.4	25.2	21.8	-17.59	-675.7	2,808.4	2,027.3	1,983.8	43.51	46.595	
6,300.0	6,190.3	5,976.5	5,940.4	25.7	22.2	-17.90	-673.9	2,822.1	2,017.8	1,973.5	44.28	45.569	
6,400.0	6,287.4	6,075.4	6,038.4	26.2	22.6	-18.22	-672.2	2,835.7	2,008.4	1,963.3	45.05	44.578	
6,500.0	6,384.5	6,174.4	6,136.4	26.7	23.0	-18.53	-670.4	2,849.4	1,999.0	1,953.2	45.83	43.621	
6,600.0	6,481.6	6,273.3	6,234.4	27.2	23.4	-18.85	-668.7	2,863.0	1,989.7	1,943.1	46.60	42.695	
6,700.0	6,578.7	6,372.3	6,332.4	27.6	23.8	-19.17	-667.0	2,876.7	1,980.4	1,933.1	47.38	41.800	
6,800.0	6,675.8	6,471.2	6,430.4	28.1	24.2	-19.49	-665.2	2,890.3	1,971.3	1,923.1	48.16	40.933	
6,900.0	6,772.9	6,570.2	6,528.3	28.6	24.6	-19.82	-663.5	2,904.0	1,962.1	1,913.2	48.94	40.095	
7,000.0	6,870.0	6,669.1	6,626.3	29.1	24.9	-20.15	-661.8	2,917.7	1,953.1	1,903.4	49.72	39.283	
7,100.0	6,967.1	6,768.1	6,724.3	29.6	25.3	-20.48	-660.0	2,931.3	1,944.1	1,893.6	50.50	38.496	
7,200.0	7,064.2	6,867.0	6,822.3	30.1	25.7	-20.81	-658.3	2,945.0	1,935.2	1,883.9	51.29	37.733	
7,300.0	7,161.3	6,966.0	6,920.3	30.5	26.1	-21.15	-656.5	2,958.6	1,926.3	1,874.2	52.07	36.994	
7,400.0	7,258.4	7,064.9	7,018.3	31.0	26.5	-21.49	-654.8	2,972.3	1,917.5	1,864.7	52.86	36.277	
7,500.0	7,355.5	7,163.9	7,116.3	31.5	26.9	-21.84	-653.1	2,985.9	1,908.8	1,855.2	53.65	35.581	
7,600.0	7,452.6	7,262.8	7,214.2	32.0	27.3	-22.19	-651.3	2,999.6	1,900.2	1,845.7	54.44	34.905	
7,700.0	7,549.7	7,361.8	7,312.2	32.5	27.7	-22.54	-649.6	3,013.2	1,891.6	1,836.3	55.23	34.250	
7,800.0	7,646.8	7,460.7	7,410.2	33.0	28.1	-22.89	-647.9	3,026.9	1,883.1	1,827.0	56.02	33.613	
7,900.0	7,743.9	7,559.7	7,508.2	33.5	28.5	-23.25	-646.1	3,040.5	1,874.6	1,817.8	56.82	32.994	
8,000.0	7,841.0	7,658.6	7,606.2	34.0	28.9	-23.61	-644.4	3,054.2	1,866.3	1,808.7	57.62	32.392	
8,100.0	7,938.1	7,757.6	7,704.2	34.4	29.3	-23.97	-642.7	3,067.9	1,858.0	1,799.6	58.41	31.807	
8,200.0	8,035.2	7,856.5	7,802.2	34.9	29.7	-24.34	-640.9	3,081.5	1,849.8	1,790.6	59.21	31.239	
8,300.0	8,132.7	7,955.6	7,900.3	35.4	30.1	-24.64	-639.2	3,095.2	1,843.2	1,783.2	60.01	30.714	
8,400.0	8,230.9	8,055.1	7,998.8	35.9	30.5	-24.91	-637.4	3,108.9	1,839.8	1,779.0	60.79	30.262	
8,455.7	8,285.9	8,110.6	8,053.8	36.1	30.7	-25.06	-636.5	3,116.6	1,839.3	1,778.0	61.22	30.042 CC	
8,500.0	8,329.7	8,154.7	8,097.5	36.3	30.9	-25.17	-635.7	3,122.7	1,839.6	1,778.0	61.56	29.881	
8,600.0	8,429.0	8,254.4	8,196.2	36.7	31.3	-25.42	-633.9	3,136.4	1,842.6	1,780.3	62.32	29.568	
8,700.0	8,528.6	8,354.1	8,294.9	37.0	31.7	-25.64	-632.2	3,150.2	1,848.8	1,785.7	63.05	29.320	
8,800.0	8,628.5	8,453.6	8,393.4	37.3	32.1	-25.84	-630.4	3,163.9	1,858.1	1,794.3	63.77	29.136	
8,900.0	8,728.5	8,552.8	8,491.6	37.6	32.5	89.71	-628.7	3,177.6	1,870.5	1,806.1	64.47	29.016	
9,000.0	8,828.5	8,733.9	8,671.4	37.9	33.2	-85.81	-625.9	3,199.9	1,883.4	1,818.0	65.43	28.787	
9,100.0	8,927.6	9,019.8	8,956.9	38.2	34.2	-86.42	-624.2	3,212.8	1,887.1	1,820.7	66.43	28.408	
9,200.0	9,022.1	9,106.6	9,043.6	38.6	34.5	-87.50	-624.2	3,212.9	1,885.3	1,818.1	67.25	28.035	
9,300.0	9,108.0	9,192.4	9,129.5	39.1	34.8	-89.04	-624.2	3,212.9	1,883.6	1,815.4	68.15	27.637	
9,360.9	9,154.3	9,238.8	9,175.8	39.3	34.9	-90.00	-624.2	3,212.9	1,883.1	1,814.4	68.75	27.390	
9,400.0	9,181.3	9,265.8	9,202.8	39.5	35.0	-90.57	-624.2	3,212.9	1,883.4	1,814.2	69.14	27.240	
9,500.0	9,239.0	9,331.6	9,268.6	40.0	35.2	-91.85	-624.5	3,212.9	1,886.3	1,816.1	70.19	26.874	
9,600.0	9,278.4	9,467.9	9,402.4	40.6	35.7	-94.57	-648.3	3,213.1	1,892.6	1,821.4	71.12	26.609	
9,700.0	9,297.9	9,779.4	9,646.8	41.1	36.3	-100.15	-832.4	3,214.5	1,899.1	1,828.3	70.84	26.807	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 511H (fka 007H) - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM **Rule Assigned:** **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,800.0	9,300.0	10,119.5	9,730.0	41.7	36.9	-102.46	-1,155.7	3,217.0	1,895.3	1,824.9	70.43	26.911	
9,900.0	9,300.0	10,219.5	9,730.0	42.3	37.1	-102.47	-1,255.6	3,217.8	1,892.0	1,820.7	71.27	26.546	
9,995.9	9,300.0	10,315.4	9,730.0	42.9	37.4	-102.48	-1,351.6	3,218.5	1,891.2	1,819.0	72.18	26.203	
10,000.0	9,300.0	10,319.5	9,730.0	42.9	37.4	-102.47	-1,355.6	3,218.5	1,891.6	1,819.4	72.22	26.194	
10,100.0	9,300.0	10,419.5	9,730.0	43.6	37.8	-102.47	-1,455.6	3,219.3	1,891.6	1,818.4	73.26	25.820	
10,200.0	9,300.0	10,519.5	9,730.0	44.2	38.2	-102.47	-1,555.6	3,220.1	1,891.7	1,817.3	74.40	25.426	
10,300.0	9,300.0	10,619.5	9,730.0	45.0	38.7	-102.47	-1,655.6	3,220.9	1,891.7	1,816.0	75.63	25.013	
10,400.0	9,300.0	10,719.5	9,730.0	45.7	39.2	-102.47	-1,755.6	3,221.7	1,891.7	1,814.7	76.94	24.586	
10,500.0	9,300.0	10,819.5	9,730.0	46.5	39.8	-102.47	-1,855.6	3,222.4	1,891.7	1,813.3	78.33	24.149	
10,600.0	9,300.0	10,919.5	9,730.0	47.3	40.4	-102.47	-1,955.6	3,223.2	1,891.7	1,811.9	79.81	23.704	
10,700.0	9,300.0	11,019.5	9,730.0	48.2	41.1	-102.47	-2,055.6	3,224.0	1,891.7	1,810.4	81.35	23.254	
10,800.0	9,300.0	11,119.5	9,730.0	49.1	41.8	-102.47	-2,155.6	3,224.8	1,891.7	1,808.7	82.96	22.802	
10,900.0	9,300.0	11,219.5	9,730.0	50.0	42.5	-102.47	-2,255.6	3,225.5	1,891.7	1,807.1	84.64	22.349	
11,000.0	9,300.0	11,319.5	9,730.0	50.9	43.3	-102.47	-2,355.6	3,226.3	1,891.7	1,805.3	86.38	21.899	
11,100.0	9,300.0	11,419.5	9,730.0	51.9	44.1	-102.47	-2,455.6	3,227.1	1,891.7	1,803.6	88.18	21.453	
11,200.0	9,300.0	11,519.5	9,730.0	52.8	44.9	-102.47	-2,555.6	3,227.9	1,891.8	1,801.7	90.03	21.011	
11,300.0	9,300.0	11,619.5	9,730.0	53.8	45.8	-102.47	-2,655.6	3,228.6	1,891.8	1,799.8	91.94	20.576	
11,400.0	9,300.0	11,719.5	9,730.0	54.9	46.7	-102.47	-2,755.6	3,229.4	1,891.8	1,797.9	93.89	20.149	
11,500.0	9,300.0	11,819.5	9,730.0	55.9	47.7	-102.47	-2,855.6	3,230.2	1,891.8	1,795.9	95.89	19.729	
11,600.0	9,300.0	11,919.5	9,730.0	57.0	48.6	-102.47	-2,955.6	3,231.0	1,891.8	1,793.9	97.93	19.318	
11,700.0	9,300.0	12,019.5	9,730.0	58.0	49.6	-102.47	-3,055.6	3,231.7	1,891.8	1,791.8	100.01	18.917	
11,800.0	9,300.0	12,119.5	9,730.0	59.1	50.6	-102.47	-3,155.6	3,232.5	1,891.8	1,789.7	102.12	18.525	
11,900.0	9,300.0	12,219.5	9,730.0	60.2	51.6	-102.47	-3,255.6	3,233.3	1,891.8	1,787.5	104.28	18.143	
12,000.0	9,300.0	12,319.5	9,730.0	61.3	52.7	-102.47	-3,355.6	3,234.1	1,891.8	1,785.4	106.46	17.770	
12,100.0	9,300.0	12,419.5	9,730.0	62.5	53.7	-102.47	-3,455.6	3,234.9	1,891.8	1,783.2	108.68	17.408	
12,200.0	9,300.0	12,519.5	9,730.0	63.6	54.8	-102.47	-3,555.6	3,235.6	1,891.9	1,780.9	110.92	17.056	
12,300.0	9,300.0	12,619.5	9,730.0	64.8	55.9	-102.47	-3,655.6	3,236.4	1,891.9	1,778.7	113.19	16.714	
12,400.0	9,300.0	12,719.5	9,730.0	65.9	57.0	-102.47	-3,755.6	3,237.2	1,891.9	1,776.4	115.49	16.381	
12,500.0	9,300.0	12,819.5	9,730.0	67.1	58.1	-102.47	-3,855.5	3,238.0	1,891.9	1,774.1	117.81	16.058	
12,600.0	9,300.0	12,919.5	9,730.0	68.3	59.3	-102.47	-3,955.5	3,238.7	1,891.9	1,771.7	120.16	15.745	
12,700.0	9,300.0	13,019.5	9,730.0	69.5	60.4	-102.47	-4,055.5	3,239.5	1,891.9	1,769.4	122.52	15.441	
12,800.0	9,300.0	13,119.5	9,730.0	70.7	61.6	-102.47	-4,155.5	3,240.3	1,891.9	1,767.0	124.91	15.146	
12,900.0	9,300.0	13,219.5	9,730.0	71.9	62.8	-102.47	-4,255.5	3,241.1	1,891.9	1,764.6	127.32	14.860	
13,000.0	9,300.0	13,319.5	9,730.0	73.2	64.0	-102.47	-4,355.5	3,241.8	1,891.9	1,762.2	129.74	14.582	
13,100.0	9,300.0	13,419.5	9,730.0	74.4	65.2	-102.47	-4,455.5	3,242.6	1,891.9	1,759.8	132.18	14.313	
13,200.0	9,300.0	13,519.5	9,730.0	75.6	66.4	-102.47	-4,555.5	3,243.4	1,892.0	1,757.3	134.64	14.052	
13,300.0	9,300.0	13,619.5	9,730.0	76.9	67.6	-102.47	-4,655.5	3,244.2	1,892.0	1,754.9	137.11	13.799	
13,400.0	9,300.0	13,719.5	9,730.0	78.1	68.8	-102.47	-4,755.5	3,244.9	1,892.0	1,752.4	139.60	13.553	
13,500.0	9,300.0	13,819.5	9,730.0	79.4	70.0	-102.47	-4,855.5	3,245.7	1,892.0	1,749.9	142.10	13.315	
13,600.0	9,300.0	13,919.5	9,730.0	80.7	71.3	-102.47	-4,955.5	3,246.5	1,892.0	1,747.4	144.61	13.083	
13,700.0	9,300.0	14,019.5	9,730.0	82.0	72.5	-102.47	-5,055.5	3,247.3	1,892.0	1,744.9	147.14	12.859	
13,800.0	9,300.0	14,119.5	9,730.0	83.2	73.8	-102.47	-5,155.5	3,248.1	1,892.0	1,742.3	149.67	12.641	
13,900.0	9,300.0	14,219.5	9,730.0	84.5	75.1	-102.47	-5,255.5	3,248.8	1,892.0	1,739.8	152.22	12.429	
14,000.0	9,300.0	14,319.5	9,730.0	85.8	76.3	-102.47	-5,355.5	3,249.6	1,892.0	1,737.3	154.78	12.224	
14,100.0	9,300.0	14,419.5	9,730.0	87.1	77.6	-102.47	-5,455.5	3,250.4	1,892.0	1,734.7	157.35	12.025	
14,200.0	9,300.0	14,519.5	9,730.0	88.4	78.9	-102.47	-5,555.5	3,251.2	1,892.1	1,732.1	159.93	11.831	
14,300.0	9,300.0	14,619.5	9,730.0	89.7	80.2	-102.47	-5,655.5	3,251.9	1,892.1	1,729.6	162.51	11.642	
14,400.0	9,300.0	14,719.5	9,730.0	91.0	81.5	-102.47	-5,755.5	3,252.7	1,892.1	1,727.0	165.11	11.459	
14,500.0	9,300.0	14,819.5	9,730.0	92.3	82.8	-102.47	-5,855.5	3,253.5	1,892.1	1,724.4	167.71	11.282	
14,600.0	9,300.0	14,919.5	9,730.0	93.7	84.1	-102.47	-5,955.5	3,254.3	1,892.1	1,721.8	170.33	11.109	
14,700.0	9,300.0	15,019.5	9,730.0	95.0	85.4	-102.47	-6,055.5	3,255.0	1,892.1	1,719.2	172.95	10.940	
14,800.0	9,300.0	15,119.5	9,730.0	96.3	86.7	-102.47	-6,155.5	3,255.8	1,892.1	1,716.5	175.57	10.777	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Offset Design: Speedmaster 30 Fed Com Pad 1B - Speedmaster 30 Fed Com 511H (fka 007H) - OH - Plan 0.1

Offset Site Error: 0.0 usft

Survey Program: 0-B001Mb_MWD+HRGM **Rule Assigned:** **Offset Well Error:** 0.0 usft

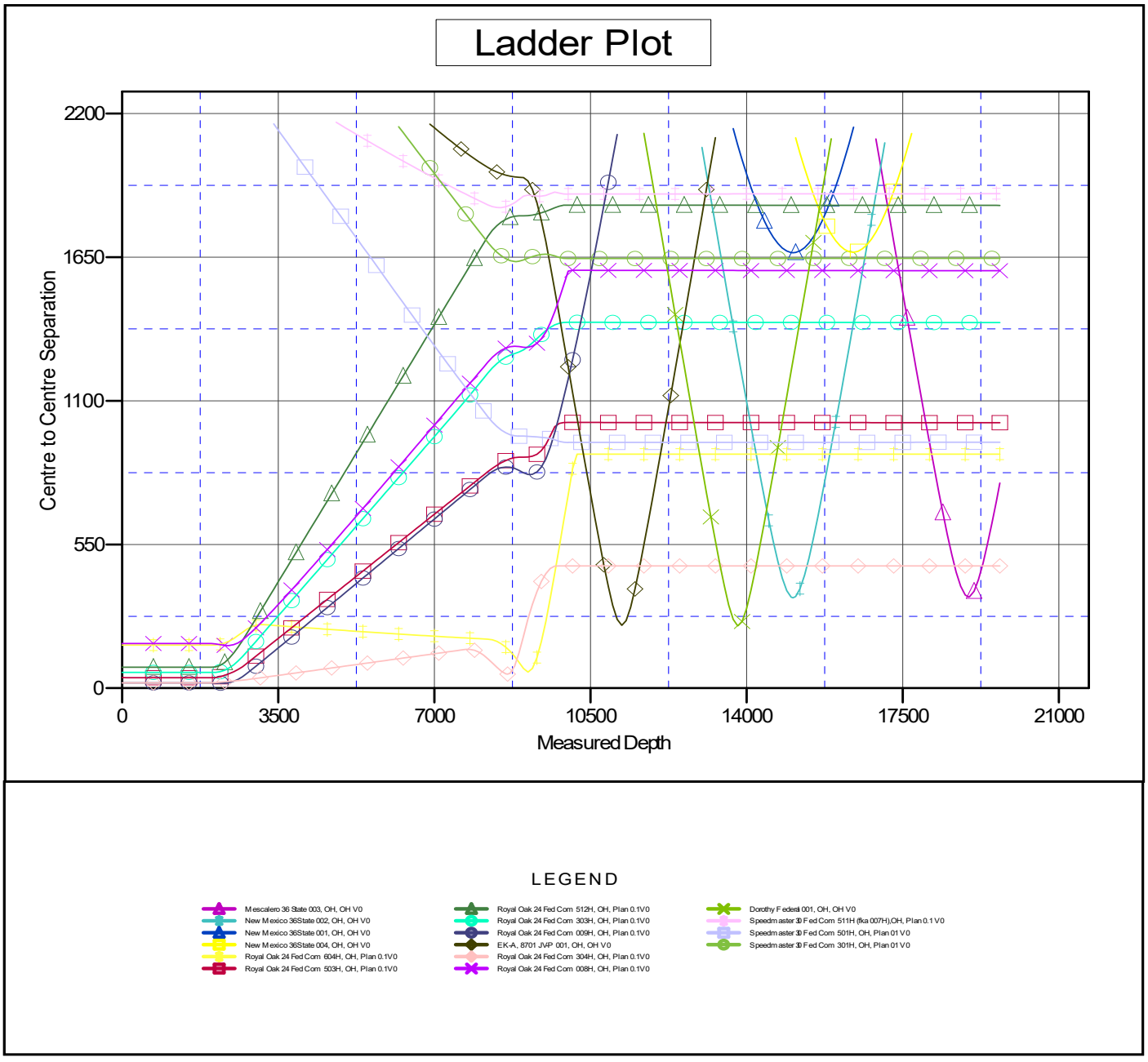
Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,900.0	9,300.0	15,219.5	9,730.0	97.6	88.0	-102.47	-6,255.5	3,256.6	1,892.1	1,713.9	178.21	10.618	
15,000.0	9,300.0	15,319.5	9,730.0	99.0	89.4	-102.47	-6,355.5	3,257.4	1,892.1	1,711.3	180.85	10.463	
15,100.0	9,300.0	15,419.5	9,730.0	100.3	90.7	-102.47	-6,455.5	3,258.2	1,892.2	1,708.7	183.49	10.312	
15,200.0	9,300.0	15,519.5	9,730.0	101.6	92.0	-102.47	-6,555.5	3,258.9	1,892.2	1,706.0	186.14	10.165	
15,300.0	9,300.0	15,619.5	9,730.0	103.0	93.3	-102.47	-6,655.5	3,259.7	1,892.2	1,703.4	188.80	10.022	
15,400.0	9,300.0	15,719.5	9,730.0	104.3	94.7	-102.47	-6,755.5	3,260.5	1,892.2	1,700.7	191.47	9.883	
15,500.0	9,300.0	15,819.5	9,730.0	105.7	96.0	-102.47	-6,855.5	3,261.3	1,892.2	1,698.1	194.13	9.747	
15,600.0	9,300.0	15,919.5	9,730.0	107.0	97.4	-102.47	-6,955.5	3,262.0	1,892.2	1,695.4	196.81	9.614	
15,700.0	9,300.0	16,019.5	9,730.0	108.4	98.7	-102.47	-7,055.5	3,262.8	1,892.2	1,692.7	199.49	9.485	
15,800.0	9,300.0	16,119.5	9,730.0	109.7	100.1	-102.47	-7,155.4	3,263.6	1,892.2	1,690.1	202.17	9.360	
15,900.0	9,300.0	16,219.5	9,730.0	111.1	101.4	-102.47	-7,255.4	3,264.4	1,892.2	1,687.4	204.86	9.237	
16,000.0	9,300.0	16,319.5	9,730.0	112.4	102.8	-102.47	-7,355.4	3,265.1	1,892.2	1,684.7	207.55	9.117	
16,100.0	9,300.0	16,419.5	9,730.0	113.8	104.1	-102.47	-7,455.4	3,265.9	1,892.3	1,682.0	210.24	9.000	
16,200.0	9,300.0	16,519.5	9,730.0	115.2	105.5	-102.47	-7,555.4	3,266.7	1,892.3	1,679.3	212.94	8.886	
16,300.0	9,300.0	16,619.5	9,730.0	116.5	106.8	-102.47	-7,655.4	3,267.5	1,892.3	1,676.6	215.65	8.775	
16,400.0	9,300.0	16,719.5	9,730.0	117.9	108.2	-102.47	-7,755.4	3,268.2	1,892.3	1,673.9	218.36	8.666	
16,500.0	9,300.0	16,819.5	9,730.0	119.3	109.6	-102.47	-7,855.4	3,269.0	1,892.3	1,671.2	221.07	8.560	
16,600.0	9,300.0	16,919.5	9,730.0	120.6	110.9	-102.47	-7,955.4	3,269.8	1,892.3	1,668.5	223.78	8.456	
16,700.0	9,300.0	17,019.5	9,730.0	122.0	112.3	-102.47	-8,055.4	3,270.6	1,892.3	1,665.8	226.50	8.355	
16,800.0	9,300.0	17,119.5	9,730.0	123.4	113.7	-102.47	-8,155.4	3,271.4	1,892.3	1,663.1	229.22	8.256	
16,900.0	9,300.0	17,219.5	9,730.0	124.8	115.0	-102.47	-8,255.4	3,272.1	1,892.3	1,660.4	231.94	8.159	
17,000.0	9,300.0	17,319.5	9,730.0	126.1	116.4	-102.47	-8,355.4	3,272.9	1,892.3	1,657.7	234.67	8.064	
17,100.0	9,300.0	17,419.5	9,730.0	127.5	117.8	-102.47	-8,455.4	3,273.7	1,892.4	1,655.0	237.40	7.971	
17,200.0	9,300.0	17,519.5	9,730.0	128.9	119.2	-102.47	-8,555.4	3,274.5	1,892.4	1,652.2	240.13	7.881	
17,300.0	9,300.0	17,619.5	9,730.0	130.3	120.6	-102.47	-8,655.4	3,275.2	1,892.4	1,649.5	242.87	7.792	
17,400.0	9,300.0	17,719.5	9,730.0	131.7	121.9	-102.47	-8,755.4	3,276.0	1,892.4	1,646.8	245.60	7.705	
17,500.0	9,300.0	17,819.5	9,730.0	133.1	123.3	-102.47	-8,855.4	3,276.8	1,892.4	1,644.1	248.34	7.620	
17,600.0	9,300.0	17,919.5	9,730.0	134.4	124.7	-102.47	-8,955.4	3,277.6	1,892.4	1,641.3	251.09	7.537	
17,700.0	9,300.0	18,019.5	9,730.0	135.8	126.1	-102.47	-9,055.4	3,278.3	1,892.4	1,638.6	253.83	7.455	
17,800.0	9,300.0	18,119.5	9,730.0	137.2	127.5	-102.47	-9,155.4	3,279.1	1,892.4	1,635.8	256.58	7.376	
17,900.0	9,300.0	18,219.5	9,730.0	138.6	128.9	-102.47	-9,255.4	3,279.9	1,892.4	1,633.1	259.33	7.297	
18,000.0	9,300.0	18,319.5	9,730.0	140.0	130.3	-102.47	-9,355.4	3,280.7	1,892.4	1,630.4	262.08	7.221	
18,100.0	9,300.0	18,419.5	9,730.0	141.4	131.7	-102.47	-9,455.4	3,281.4	1,892.5	1,627.6	264.83	7.146	
18,200.0	9,300.0	18,519.5	9,730.0	142.8	133.0	-102.47	-9,555.4	3,282.2	1,892.5	1,624.9	267.59	7.072	
18,300.0	9,300.0	18,619.5	9,730.0	144.2	134.4	-102.47	-9,655.4	3,283.0	1,892.5	1,622.1	270.35	7.000	
18,400.0	9,300.0	18,719.5	9,730.0	145.6	135.8	-102.47	-9,755.4	3,283.8	1,892.5	1,619.4	273.10	6.930	
18,500.0	9,300.0	18,819.5	9,730.0	147.0	137.2	-102.47	-9,855.4	3,284.6	1,892.5	1,616.6	275.87	6.860	
18,600.0	9,300.0	18,919.5	9,730.0	148.4	138.6	-102.47	-9,955.4	3,285.3	1,892.5	1,613.9	278.63	6.792	
18,700.0	9,300.0	19,019.5	9,730.0	149.8	140.0	-102.47	-10,055.4	3,286.1	1,892.5	1,611.1	281.39	6.726	
18,800.0	9,300.0	19,119.5	9,730.0	151.2	141.4	-102.47	-10,155.4	3,286.9	1,892.5	1,608.4	284.16	6.660	
18,900.0	9,300.0	19,219.5	9,730.0	152.6	142.8	-102.47	-10,255.4	3,287.7	1,892.5	1,605.6	286.93	6.596	
19,000.0	9,300.0	19,319.5	9,730.0	154.0	144.2	-102.47	-10,355.4	3,288.4	1,892.5	1,602.9	289.69	6.533	
19,100.0	9,300.0	19,419.5	9,730.0	155.4	145.6	-102.47	-10,455.3	3,289.2	1,892.6	1,600.1	292.47	6.471	
19,200.0	9,300.0	19,519.5	9,730.0	156.8	147.0	-102.47	-10,555.3	3,290.0	1,892.6	1,597.3	295.24	6.410	
19,300.0	9,300.0	19,619.5	9,730.0	158.2	148.4	-102.47	-10,655.3	3,290.8	1,892.6	1,594.6	298.01	6.351	
19,400.0	9,300.0	19,719.5	9,730.0	159.6	149.8	-102.46	-10,755.3	3,291.5	1,892.6	1,591.8	300.79	6.292	
19,500.0	9,300.0	19,819.5	9,730.0	161.0	151.2	-102.46	-10,855.3	3,292.3	1,892.6	1,589.0	303.56	6.235	
19,600.0	9,300.0	19,919.5	9,730.0	162.4	152.7	-102.46	-10,955.3	3,293.1	1,892.6	1,586.3	306.34	6.178	
19,678.1	9,300.0	19,997.6	9,730.0	163.4	153.8	-102.46	-11,033.4	3,293.7	1,892.6	1,584.3	308.34	6.138	ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 3937.0usft (3937)	Coordinates are relative to: Royal Oak 24 Fed Com 513H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.39°

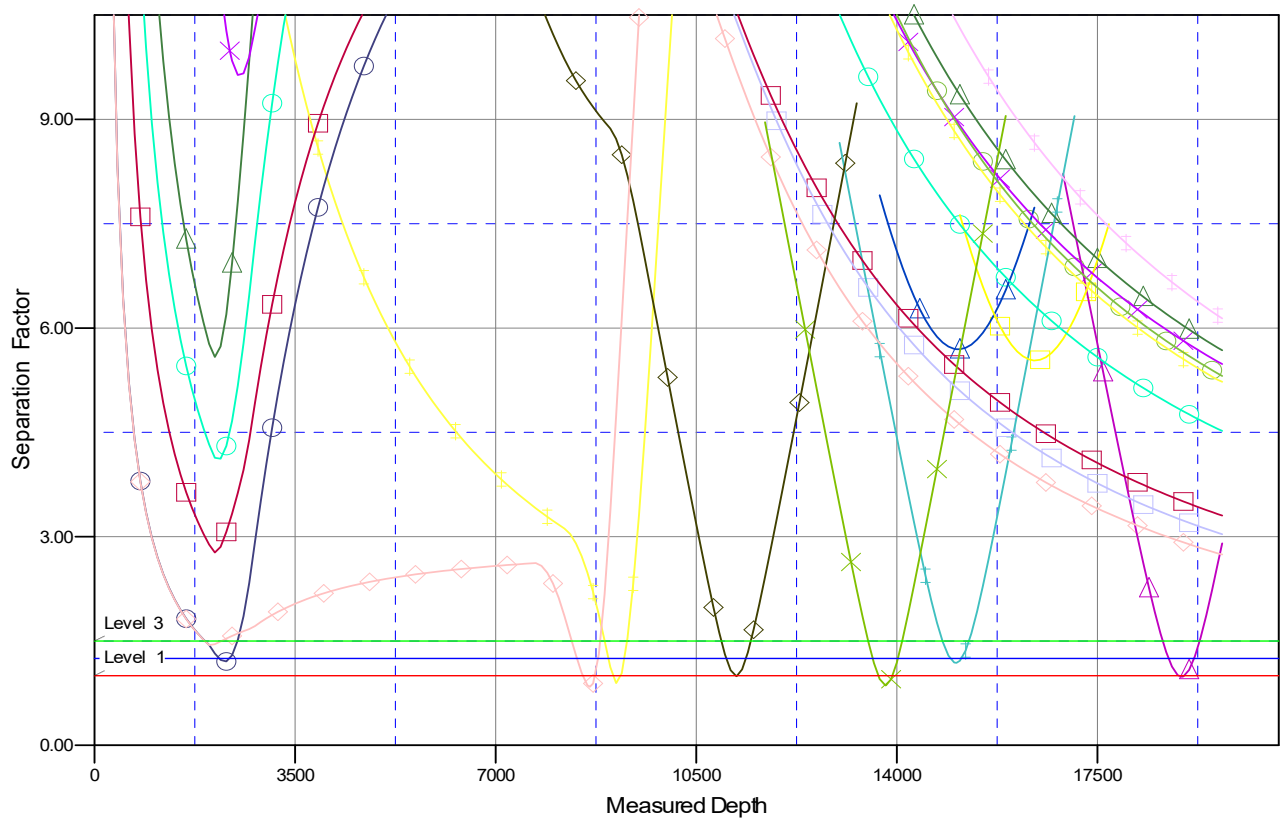


Anticollision Report

Company:	Avant Operating, LLC	**Local Co-ordinate Reference:**	Well Royal Oak 24 Fed Com 513H
Project:	Lea Co., NM (NAD 83)	**TVD Reference:**	Well @ 3937.0usft (3937)
Reference Site:	Royal Oak 24 Fed Com Pad 1	**MD Reference:**	Well @ 3937.0usft (3937)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Royal Oak 24 Fed Com 513H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 0.1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 3937.0usft (3937)	Coordinates are relative to: Royal Oak 24 Fed Com 513H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.39°

Separation Factor Plot



LEGEND

Mescalero 36 State 003, OH, OH V0
New Mexico 36State 002, OH, OH V0
New Mexico 36State 001, OH, OH V0
New Mexico 36State 004, OH, OH V0
Royal Oak 24 Fed Com 604H, OH, Plan 0.1V0
Royal Oak 24 Fed Com 503H, OH, Plan 0.1V0
Royal Oak 24 Fed Com 512H, OH, Plan 0.1V0
Royal Oak 24 Fed Com 303H, OH, Plan 0.1V0
Royal Oak 24 Fed Com 009H, OH, Plan 0.1V0
EK-A, 8701 JVP 001, OH, OH V0
Royal Oak 24 Fed Com 304H, OH, Plan 0.1V0
Royal Oak 24 Fed Com 008H, OH, Plan 0.1V0
Dorothy Federal 001, OH, OH V0
Speedmaster 30 Fed Com 511H (fka 007H),OH, Plan 0.1 V0
Speedmaster 30 Fed Com 501H, OH, Plan 01 V0
Speedmaster 30 Fed Com 301H, OH, Plan 01 V0

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

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

CONDITIONS

Operator:	OGRID:
Avant Operating, LLC 1515 Wynkoop Street Denver, CO 80202	330396
	Action Number: 431507
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	If cement is not circulated to surface during cementing operations, a Cement Bond Log (CBL) is required.	2/14/2025
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing.	2/14/2025