STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AVANT OPERATING, LLC FOR COMPULSORY POOLING AND APPROVAL OF NON-STANDARD HORIZONTAL SPACING UNIT, LEA COUNTY, NEW MEXICO

CASE NO. 24544

NOTICE OF SECOND AMENDED HEARING EXHIBIT PACKET

Prima Exploration, Inc., ("Prima") provides notice that it is amending the evidentiary record in this case to properly identify all of Prima's admitted evidentiary exhibits and surrebuttal exhibits, described herein as Prima's Rebuttal Exhibits. The Second Amended Exhibit Packet includes a revised Table of Contents to account for the inclusion of Prima's Rebuttal Exhibits 1 through 8.

The Second Amended Hearing Packet also includes a corrected Exhibit A-1. The corrections made to Exhibit A-1 are described in full on the Description of Errata Corrected included as the first document in the hearing packet, page 4 of the packet.

Respectfully submitted,

ABADIE & SCHILL, PC

/s/ Darin C. Savage

Darin C. Savage

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Attorneys for Prima Exploration, Inc.

BEFORE THE OIL CONSERVATION DIVISION EXAMINER HEARING AUGUST 20, 2024

SECOND AMENDED HEARING PACKET IN SUPPORT OF THE OBJECTION BY PRIMA EXPLORATION, INC. TO THE APPLICATION OF AVANT OPERATING, LLC FOR COMPULSORY POOLING AND APPROVAL OF A NON-STANDARD HORIZONTAL SPACING UNIT, LEA COUNTY, NEW MEXICO

Case No. 24544

PRIMA EXPLORATION, INC.

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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SECOND AMENDED HEARING EXHIBIT PACKET <u>TABLE OF CONTENTS</u>

Notice of Errata

Prima Exhibit A: Self-Affirmed Statement of David Rhodes, Engineer

• Prima Exhibit A-1: Interference and Waste

Prima Exhibit B: Resume of Ron Solt

Prima Rebuttal Exhibits:

• Prima Rebuttal Exhibit 1: Rebuttal to Avant Rebuttal Exhibits G-10, G-12, G-13,

and G-16

- Prima Rebuttal Exhibit 2: Rebuttal to Avant Rebuttal Exhibit G-12
- Prima Rebuttal Exhibit 3: Rebuttal to Avant Rebuttal Exhibit G-14
- Prima Rebuttal Exhibit 4: Rebuttal to Avant Rebuttal Exhibit G-15
- Prima Rebuttal Exhibit 5: Rebuttal to Avant Rebuttal Exhibit G-16
- Prima Rebuttal Exhibit 6: Rebuttal to Avant Rebuttal Exhibit G-17
- Prima Rebuttal Exhibit 7: Rebuttal to Avant Rebuttal Exhibits G-18 and G19
- Prima Rebuttal Exhibit 8: Rebuttal to Avant Rebuttal Exhibit G-20

DESCRIPTION OF ERRATA CORRECTED

Certain items identified as errata and/or scrivener's errors in Prima's original exhibits have been addressed in this Second Amended Hearing Packet, as described below with page numbers for convenient review. These corrections and edits have been made to provide clarification in certain exhibits pursuant to the guidance provided at the conclusion of the hearing and Rule 19.15.4.17(A).

The following corrections have been made to Exhibit A-1:

- 1. The well labels on the Ironhouse Group page for the Ironhouse 20 State 1H and 2H Wells have been corrected to properly identify the wells. *See* Page 11.
- 2. Minor adjustments have been made to the Ironhouse Group page to improve visibility and clarity of the Condor State 2H Well label by moving the label slightly to the left. *See* Page 11.
- 3. The well labels on the Kingfisher Group page for the Kingfisher 1H and 2H Wells have been corrected to properly identify the wells. *See* Page 13.
- 4. The Kingfisher Group page has been corrected to identify the Kingfisher 5H well as originally intended. *See* Page 13.
- 5. Edited description on the Kingfisher Group page to accurately describe the graph. *See* Page 13.

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

APPLICATION OF AVANT OPERATING LLC FOR COMPULSORY POOLING AND APPROVAL OF NON-STANDARD HORIZONTAL SPACING UNIT, LEA COUNTY, NEW MEXICO

Case No. 24544

SELF-AFFIRMED STATEMENT OF DAVID RHODES

I, David Rhodes, state and affirm the following:

1. I am over the age of 18, and I have personal knowledge of the matters stated herein.

2. I am employed as the VP of Exploration for Prima Exploration, Inc. ("Prima"). I am familiar with the subject application and the geology involved.

3. This self-affirmed statement is submitted in connection with Prima's Objection to the Application for Compulsory Pooling and Approval of Non-Standard Spacing Unit in Case No. 24544 for purposes of having the pooling application revised or amended.

4. I have not testified previously before the Oil Conservation Division ("Division"). I have a Bachelor of Science Degree in Petroleum Engineering from The Colorado School of Mines. I have worked in the Oil and Gas field as an Engineer for 17 years and have 9 years of experience in New Mexico. Based on my credentials and experience, I ask that I be accepted of record as an expert witness in petroleum engineering matters. A copy of my resume is attached to this statement for the Division's review.

5. Prima is an exploration and production company formed in 1981 with a management team that has experience in developing and producing in the Delaware Basin in New Mexico.



6. In my Statement, I will address the issue of Avant Operating, LLC's, ("Avant") overproduction of the unit with more wells than are necessary.

7. It is my opinion, based on my experience in the Delaware Basin and the evidence in Exhibit A-1, that drilling 12 wells in the Bone Spring is an overdevelopment of the unit and such over development would result in the drilling of unnecessary wells and burden the working interest owners with excessive costs.

8. Therefore, based on my review, I find that the current pooling application in Case No. 24544 should be amended to propose nine (9) wells in the Bone Spring formation, with three (3) wells per bench, which would be a reasonable number to drill and operate to meet the terms of the pooling order. As there are three distinct benches in the Bone Spring formation in the subject area – the 1st Bone Spring, 2nd Bone Spring, and 3rd Bone Spring, the proper number of wells to fully develop these lands would be three wells per bench, 9 wells total for the Bone Spring formation.

9. Based on my review of the development plan, it is my belief that a total of 9 Bone Spring wells is the optimal number of wells for the Subject Lands to avoid the drilling of unnecessary wells, prevent waste, maximize the ultimate recovery of hydrocarbons, and provide the owners with their just and equitable share of production without excessive burdens and costs.

10. Exhibit A-1 demonstrates how a well density of twelve (12) wells in the Bone Spring formation (four wells per zone) will create waste by burdening owners with excessive costs to recover the reserves within the Unit through interference in production from each well.

11. The exhibits included herein were prepared by me or under my supervision. The This statement is true and correct the best of my knowledge and understanding.

(Signature Page Follows)

Signature Page to David Rhodes' Self-Affirmed Statement:

I understand that this Self-Affirmed Statement will be used as written testimony before the Division in Case No. 24544 and affirm that my testimony herein is true and correct, to the best of my knowledge and belief and made under penalty of perjury under the laws of the State of New Mexico.

Um

David Rhodes

Date Signed

DAVID RHODES

drhodes@primaex.com

250 Fillmore Street, Suite 500 Denver, Colorado 80206 (303) 755-5681 extension 116

PROFESSIONAL EXPERIENCE

Prima Exploration, Inc.

Petroleum Engineer, 2009 – Present

- Provide engineering, operational, and geologic support for company properties
- Manage company reserve report of over 3,000 wells, including over 100 horizontal unconventional wells in numerous basins, including the Delaware Basin in New Mexico
- Perform company A&D evaluations and recommend valuations
- Formulate new venture ideas and proposals for company investments
- Evaluate well proposals for new drills on company acreage and engage operators for best practices for completion techniques and well density/drainage areas
- Managed 70 operated wells, including 21 operated Bakken/Three Forks horizontals, for two years until expansion of company brought in dedicated Operations Engineer
- Involved heavily in geology projects and perform low-mid level geologic functions
- Involved in the planning, drilling, geologic evaluation, and completion of multiple operated wells including horizontal Bone Springs wells in New Mexico
- Testified as expert Petroleum Engineer witness multiple times in front of the Wyoming Oil and Gas Conservation Commission staff, Montana Board of Oil and Gas Commission, North Dakota Industrial Commission, and the Colorado Oil and Gas Conservation Commission

EMPLOYMENT HISTORY

2009 - 2009	Quantum Resources Management	Petroleum Engineer, Denver, CO
2007 - 2009	Quantum Resources Management	Petroleum Intern, Denver, CO
2006 - 2007	Kestrel Energy/Samson Oil and Gas	Petroleum Intern, Lakewood, CO

EDUCATION

B.S. in Petroleum Engineering, Colorado School of Mines, May 2009 Minor in Economics and Business, Colorado School of Mines, May 2009



Exhibit A-1: Interference and Waste

This exhibit demonstrates that the proposed well density of 12 wells within the Bone Spring formation, 4 wells per zone, will create waste, by burdening owners with excess costs to recover the reserves within the unit.

- 1. Avant's proposals are for 4 wells in each of the 1st Bone Spring, 2nd Bone Spring, and 3rd Bone Spring formations
 - a. In general, the wells are proposed to be spaced 1,320' apart from one another in each bench
- 2. Numerous offset developed units within the Bone Spring formation indicate that 4 wells per mile result in interference
 - a. Curve overlays clearly demonstrate step change in production
 - b. Curve overlays show reactionary changes in production between wells
 - c. Curve overlays show long-term parallel production indicating communication
- 3. Extrapolated production from wells prior to interference demonstrate proper density to fully drain the reservoir is just over 2 wells per mile
 - a. As we cannot drill fractional wells, in order to fully develop, the proper density to fully drain the reservoir is 3 wells per mile
- 4. As Avant is proposing one unnecessary well per formation, the economic impact on the working interest owners is considerable
 - a. \$35 million in excess and unnecessary drilling and completion costs
 - b. \$16 million in excess and unnecessary operating costs over the life of the wells
 - c. Total of \$51 million in excess and unnecessary costs to the working interest owners
- 5. Additional wells require more land and water use, more wear and tear on roads, and more pollution





Map locating subject DSU and offset development case studies for interference

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IRONHOUSE 20 STATE - WILDCAT



Ironhouse 1H and 2H wells show near immediate interference with a step change, then transition to parallel and reactionary

Condor State 2H well was drilled and completed at the same time as the Ironhouse 2H, so interference is masked between the two

Condor State Group

CONDOR STATE - WILDCAT



Condor State 1H sees very early step change due to Ironhouse 19 State 2H coming online. The wells have been reactionary ever since

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KINGFISHER STATE COM - AIRSTRIP



Kingfisher 1H and Ironhouse 24 State 4H were completed in the same timeframe, and both were severely impacted by the infill of the Kingfisher 5H & 2H

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EK 29 BS2 FEDERAL COM - E-K



EK 29-4H and 29-3H wells came on at the same time. Both were impacted by their respective offsets, the Ek 29-2H for the EK 29-4H, and the EK 30-1H for the EK 29-4H. Even steeper declines from initial close density with the 3H and 4H wells had significant step change impact from the offset wells drilled

COG Group

KSI 22 FEDERAL - CORBIN SOUTH



Wells gradually completed from west to east. Each time, the well offsetting it is impacted immediately by the new well Extreme reactionary early for the KSI 22 1H and KSI 22 2H wells

The KSI 22 1H and the Scooter Federal 2H will recover more oil than the inner wells, as they don't have interference on their opposite flanks





Drilled from west to east over the years, these modern, 2 mile lateral wells show interference shortly after new wells are brought online The Buffalo 12 1-H will recover the most oil by far out of these wells, as it is further spaced from the offsets and was the initial producer The following page demonstrates this with cumulative and ultimate oil projections

Rate





1,320' Spacing is 4 wells per 5,280' wide DSU

Multiplying 4 wells by 54.1% results in 2.16 wells required for interference free development, to fully drain a mile wide DSU Since we cannot drill fractions of wells, the proper density to fully drain would be 3 wells per mile wide DSU Avant's proposal to drill 4 wells per mile, is unnecessary and wasteful, as 3 wells would readily and fully drain the DSU

Economic Impact

Page 19 of 31

As it has been demonstrated that only three wells per bench is required to fully drain the DSU, and Avant proposes drilling four wells, the economic impact to the working interest owners is considerable.

For the 1st Bone Spring formation, Avant's AFEs average \$11,579,328 per well. At one unnecessary well for this formation, the working interest owners are burdened by \$11,579,328 in unnecessary expenditures.

For the 2nd Bone Spring formation, Avant's AFEs average \$11,698,701 per well. At one unnecessary well for this formation, the working interest owners are burdened by \$11,698,701 in unnecessary expenditures.

For the 3rd Bone Spring formation, Avant's AFEs average \$11,753,101 per well. At one unnecessary well for this formation, the working interest owners are burdened by \$11,753,101 in unnecessary expenditures.

For drilling and completion, the working interest owners are burdened by \$35,031,130 in unnecessary expenditures.

With three unnecessary wells, assuming \$15,000/well/month lifetime average in operating costs, over 30 years, an additional \$16,200,00 in excess costs will burden the working interest owners.

Total excess costs over the life of the wells would thus be estimated at roughly \$51,000,000.

Resume of Ron Solt

Bachelor's of Business – Western Illinois University - 2001

Juris Doctorate - South Texas College of Law - 2006

My current role is as Land Manager of Prima Exploration, Inc, where I have been employed for approximately 3 years. I have 18 years of experience in various land and managerial roles. I have worked and/or managed projects in Texas, New Mexico and throughout the Rocky Mountain states. I have worked the Delaware and Permian Basins in different capacities for approximately 3 years of my career. I graduated from Western Illinois University in 2001 with a Bachelor's of Business, and in 2006 I earned a Juris Doctorate from the South Texas College of Law.



Prima Rebuttal Exhibit 1 – Rebuttal to Avant Rebuttal Exhibits G-10, G-12, G-13, G-16



- Though these examples include wells Prima did not present or are incomplete, they are useful to push back on Exhibit G-10's claims
- In the Summary to Exhibit G-10, Avant argues:
 - $\circ~$ 4 WPS is historically normal, and thus Avant's proposal is normal
 - $\circ~$ Greater than 4 WPS is, however, also normal and becoming more normal
- Avant's conclusion with these examples is that denser than 4 WPS shows interference, and that is not what Avant is advocating for
- This is a direct contradiction to their summary arguments in Exhibit G-10
- None of these arguments by Avant recognize the foundational issue of overdevelopment. Instead, they focus on historical norms
- Just because someone else is throwing money away, doesn't mean you should too

Prima Rebuttal Exhibit 2 – Rebuttal to Avant Rebuttal Exhibit G-12



- Avant's Exhibit G-12 erroneously compares the Condor State 2H and the Ironhouse 20 State 1H well
- Those wells are denser than Avant's proposals. However, the comparison Prima is making is between the Ironhouse 20 State 1H and the Ironhouse 20 State 2H wells, which are actually ~ 1,597' spacing between wells, or 3.3 wells per section, WIDER spacing than Avant's proposals
- Overlaying the Ironhouse 20 State wells, we again see that the impact at this density in this case 3.3 wells per section has early and significant interference and reduction in reserves per well

Prima Rebuttal Exhibit 3 – Rebuttal to Avant Rebuttal Exhibit G-14



1H is directly stacked with the 5H and therefor not representative of Avant's proposed development

- Avant's Exhibit G-14 confirms the typo edits that Prima relayed during testimony with their exhibit in regard to well number labels
- In addition, Prima selected the Kingfisher 1H in error, meaning to select the Kingfisher 5H to compare 2BS wells across the board
- That error has been corrected on the next page of Prima's Rebuttal Exhibit 3
- Avant erroneously claims that the spacing between the Kingfisher 5H and the Ironhouse 24 State 4H is 1,004'
- In fact, the average spacing is approximately 1,307'
- It is general practice to give directional drillers an east-west window to drill in
- Prima's typical window is 100', 50' to either side of the planned wellbore
- Between the 2H and 5H(approximately 1,296') and the 5H and 4H, the well spacing is very much within standard directional windows for horizontal wells for a 4 WPS spacing of roughly 1,320' between wells
- Thus, comparing these laterals as like-development to Avant's proposal is quite valid

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Prima Rebuttal Exhibit 3 Continued – Rebuttal to Avant Rebuttal Exhibit G-14

Rate

From Avant's Exhibit G-14

1H is directly stacked with the 5H and therefor not representative of Avant's proposed development

When looking at the correct wells production, the Kingfisher 5H (interior well excluded in Prima analysis) is outperforming the edge well in the package indicating adequate well spacing

- Correcting the overlay with the inclusion of the Kingfisher 5H shows:
 - Different benches communicate
 - Wine rack unlikely to prevent communication
 - 1,320' spacing immediately interferes
- The Kingfisher 5H had such a large impact • on the Kingfisher 1H, that it is clear it pulled much of the lower bench's reserves, improving its performance at the expense of the 1H
- Still, the Kingfisher 2H projects to catch • and surpass the Kingfisher 5H, despite Avant's claims



Prima Rebuttal Exhibit 4 – Rebuttal to Avant Rebuttal Exhibit G-15



- Avant claims multiple times that Prima did not include the EK 29-2H well
 This is erroneous
- The Ek 29-2H well is key in showing the impact of new wells impact on existing wells within their drainage area
- As is clearly demonstrated, the EK 29-2H well had a significant impact on the EK 29-3H well, and will accumulate much lower reserves due to:
 - $_{\odot}$ $\,$ Being drilled into a significantly drained area with a year of depletion $\,$
 - $_{\odot}$ $\,$ Being bound then on both sides for its entire lifespan $\,$

Prima Rebuttal Exhibit 4 Continued – Rebuttal to Avant Rebuttal Exhibit G-15



Inner wells are performing better than edge wells in the group of 6, signaling minimal communication at 4 WPS

Levels of communication indicate appropriate spacing and waste prevention

Modern slickwater frac design we will improve ultimate resource recovery (2,700 lb/ft with and 2,700 gal/ft high density frac)

- The EK wells are unique, in that the inner wells were actually the original wells
- A full year of reduced interference allowed them to drain significant reserves prior to the offsets being drilled
- The EK 29-3H accumulated 114 MBO in its first year, prior to the offset EK 29-2H impacting it
- That amounts to just under half the oil it has made in its 8 year life(238 MBO total)!
- The fact that it has taken 7 years to double the production from year 1 for the EK 29-3H is NOT a vindication for this well spacing. Quite the opposite
- No evidence of "appropriate spacing and waste prevention" is given
- No metrics for determining "appropriate spacing and waste prevention" are given
- Well spacing density consistently shows significant communication, regardless of the completion technique and intensity

Prima Rebuttal Exhibit 5 – Rebuttal to Avant Rebuttal Exhibit G-16



Summary

Wells presented by Prima NOT representative of 1,320' / 4 WPS spacing

2012-2015 vintage wells with gel frac data not comparable to modern design planned by Avant at Royal Oak

Initial well KSI 1H looks to have been frac hit but then recovered on an expected decline for the vintage of frac used and recently seen an uptick in oil most likely due to updated artificial lift install



- Avant claims Prima is not representing 4 WPS
- The average spacing for the KSI 1H and 2H wells is ~1,320', which is exactly 4 WPS
- The average spacing or the Scooter 1H and 2H wells is ~1,267', which is very near the wellbore window for 1,320' spacing
- With that, each of the 4 wells has an ~ 4 WPS offset • on one side
- Avant claims the KSI 1H took a frac hit then recovered... that's a nearly 2 year "frac hit" that ignores the obvious interference and reactions to the KSI 2H
- The recent uptick was short-lived and it's back on • decline





- The Buffalo 1H is approximately 1,671 ft offset to the Buffalo 4H, well beyond Avant's proposed 1,320'
- Despite this, interference was immediate
- Avant just argued in exhibit after exhibit that interference closer than 1,320' is irrelevant to their plans
- Avant just argued in exhibit after exhibit that interference at their 1,320' plans has numerous excuses
- Now, after all that, Avant says that density doesn't matter, because interference is a good thing?
- If "interference among offset wells is indicative of sufficient well density & completion size", then why not propose 20 wells per bench? Surely 264' spacing with 20 wells would result in "interference among offset wells", which would be "indicative of sufficient well density & completion size"
- In reality, development that prevents waste minimizes interference, achieving it only towards the very end of the life of the wells, when the boundary of drainage areas slightly overlap

Prima Rebuttal Exhibit 6 Continued – Rebuttal to Avant Rebuttal Exhibit G-17



- The Buffalo 1H, when unbound, recovers nearly 2x the amount of oil as the infill wells offsetting it
 - $_{\circ}$ This despite being 1,671' away from the nearest infill well
 - Through the first year, it is 2x the amount of the infills
- Thus, the ROR approaches 2x that of drilling at a 4 WPS density
- Thus, drilling excess wells diminishes the returns of both the unbound and the infill wells
- Further, it destroys the ROI, as the capital expenditure is greatly increased
- Stacked wells interfering with each other between zones again brings up the concern that 4 wells per bench will lead to even greater interference within each zone, as the wine-racked wells in other benches will frac into each other and contribute to interference and economic waste

Prima Rebuttal Exhibit 7 – Rebuttal to Avant Rebuttal Exhibits G-18 and G-19



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Prima Rebuttal Exhibit 8 – Rebuttal to Avant Rebuttal Exhibit G-20

From Avant's Exhibits G-20

Summary

Matador's Airstrip Unit was developed with 4 WPS spacing in 2017, 2018, and 2019. The average well had produced over 200 MBO per 10,000 feet of lateral, despite multiple parent-child well interference events.

Easternmost Airstrip well 134H is the worst performer in the group, but still has an excellent 1-year cumulative production volume of 166 MBO per 10,000 ft, despite being placed online 5 years after direct offset Merit 32DM, which had produced 176 MBO per 10,000 ft at that point. This further indicates that 4 WPS well spacing is not the limiting factor of performance.

Well	Length	BBL/Ft	#/Ft
Merit 32DM	4057	14	764
Airstrip 134H	4662	51	2573

- Above table compares completion technique between the Merit 32DM and the Airstrip 134H 3BS wells
- The Merit 32 DM, being completed in early 2013, is over 6 years older than the Airstrip 134H
- Completion techniques have evolved and help recover oil in the reservoir

- Prima has never contended that improvements in completion don't yield more recoverable oil from the reservoir ٠
- Indeed, some of Prima's exhibits show improvements through time (i.e, COG well IP rates)
- It is irrelevant, however, to compare a 2013 vintage well to a 2019 vintage well and claim that has any bearing on interference
- Indeed, among the reasons that Prima chose the Buffalo and Mescalero wells to drive the point home, is that they are all modern wells of the same vintage in completion technique