STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING)
CALLED BY THE OIL CONSERVATION)
DIVISION FOR THE PURPOSE OF)
CONSIDERING:) CASE NO. 11,038
)
APPLICATION OF MERIDIAN OIL, INC.)
)

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

August 18, 1994

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, August 18, 1994, at Morgan Hall, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

August 18, 1994
Examiner Hearing
CASE NO. 11,038

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E X H I B I T S

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A P P E A R A N C E S

FOR THE APPLICANT:

KELLAHIN & KELLAHIN
117 N. Guadalupe
P.O. Box 2265
Santa Fe, New Mexico 87504-2265
By: W. THOMAS KELLAHIN

* * *

WHEREUPON, the following proceedings were had at 10:36 a.m.:

EXAMINER CATANACH: At this time we'll call Case 11,038, the Application of Meridian Oil, Inc., for downhole commingling, Rio Arriba County, New Mexico.

Appearances in this case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the Applicant, and I have three witnesses to be sworn.

EXAMINER CATANACH: Additional appearances?

Will the witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: My first witness, Mr. Examiner, is Mr. Van Goebel.

<u>VAN GOEBEL</u>,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Goebel, for the record, please state your name and occupation.

A. I'm Van Goebel. I'm with Meridian Oil, I'm a landman.

Q. And where do you reside, sir?

A. Farmington, New Mexico.

Q. On prior occasions have you testified and qualified as an expert landman before the Division?

A. Yes, I have.

Q. Summarize for us what has been your involvement in this Application that's before the Examiner.

A. Okay. We are divided into area teams at Meridian. This is the Area 3 team, made up of Mike Dawson, our geologist, Tom Mullins, our engineer, and myself as the landman. My worked together in putting this project together for the Klein/Vaughn area commingle Application.

Q. As part of that work, have you made yourself familiar and knowledgeable about the leasehold position in what you've characterized the Klein/Vaughn area?

A. Yes.

Q. Do you also know the offset operators to that project area?

A. Yes.

MR. KELLAHIN: We would tender Mr. Goebel as an expert petroleum landman.

EXAMINER CATANACH: Mr. Goebel is so qualified.

Q. (By Mr. Kellahin) Let's find a display in the book, Mr. Goebel, that will serve to illustrate what we've identified as the project area. Where may we turn and find that display?

A. Okay, Under Exhibit 3 is a map showing the -- a portion of the State of New Mexico. The project area is 50 miles southeast of Bloomfield.

Q. Why is it called Klein/Vaughn?

A. The reason it's called the Klein/Vaughn area is that we have a number of overriding interest owners in our leases. Family members were named Klein and Vaughn, so the wells were named after these family members.

Q. As you understand the project from a landman's point of view, what is Meridian trying to do?

A. In this area, we have existing Dakota wells which are approaching their economic limit. The configuration of the wellbores will not allow dual completions. The Mesaverde formation and the Gallup formation in this area are considered marginal.

And if we're allowed to commingle these wellbores with all three formations, this will aid in lifting the fluids associated with the Dakota formation, allowing us to have ultimate recovery, and also allow us to produce the Mesaverde and Gallup formations, which otherwise may not be produced if they had to be completed on their own.

Q. How large an area are we dealing with when we talk about the Klein/Vaughn area?

A. Okay, under the overview map on the second is a foldout map indicating the Klein/Vaughn area. And --

Q. When we fold that out and look at that area, how is the Klein/Vaughn designated?

A. It is designated by the sections with the hashmarks. It contains 4800 acres.

Q. Why are you asking the Division Examiner to give you an areawide approval for this commingling procedure, as opposed to coming to him on a case-by-case downhole commingling application?

A. Okay, we feel that due to the nature of the current Dakota wells, with them approaching their economic limit, that if we're unable to have a commingle order covering this area, that as the wells reach that point, we would have in place a mechanism to allow us to commingle without having to go to hearing each time and that we could present our evidence to the Aztec office once that was in place.

Q. When you go through the Division procedures with regards to downhole commingling, we're going to show the Examiner a bunch of the technical information. What are you specifically asking him to delegate to the district office, then, for the final commingling for these wells?

A. What we would ask to be provided would be the allocation formula and what would be considered the project economic parameters that would then enable us to go forth and commingle.

Q. Your concept, then, is to present to this Examiner all the technical data, among which is to establish an economic threshold below which, then, when production from these wells hits that number, we would go to the district office and process these applications?

A. That's correct.

Q. So you're going to submit to him proof of the economics?

A. Yes.

Q. If he's persuaded, then, you would go to the district for each of these wells, show them that economic benchmark, and then work out the allocation?

A. Yes.

Q. When we look at the locator map, the foldout map that you just referred to --

A. Yes.

Q. -- all right, what kind of wells are shown on this map?

A. Okay, on this particular map, the foldout map shows a variety of different type of wells. At the left-hand corner of the map, lower left-hand corner, is an indication of what the symbols represent for the types of wells. So you'll see in there, we've got Dakota wells, Chacra wells, Pictured Cliffs wells.

Q. Okay, let's go to the next display. We're still behind the information shown on Exhibit 3 tab?

A. Yes.

Q. And we're continuing through that section?

A. Yes. Now, what we have next are formation-specific plats. The next one is indicating in the Klein/Vaughn area the Mesaverde wells or formation completions.

Q. All right, the Mesaverde wells within the Klein/Vaughn area are going to be designated with the Mesaverde well symbol. It's the circle with the gas well symbol in it?

A. Yes.

Q. All right. The next display?

A. The next display indicates where Gallup wells would be located, or production. You'll see on the map there in Section 33 we've indicated a Gallup which has been completed with the Dakota well, the 28 E.

Q. There's only one Gallup well in the area?

A. Yes.

Q. Do you recall from memory how many Mesaverde wells we have in the Klein/Vaughn area currently?

A. No.

Q. I believe you told me there were seven. Do you --

A. Yeah, there would be about seven.

Q. All right. And --

A. And we also are planning to do additional projects.

Q. I meant currently existing now.

A. Current would be about seven.

Q. The next display is the Dakota?

A. Yes, it shows the Dakota completions in the area.

Q. And how many actual Dakota completions do you currently have in the project area?

A. We have approximately 20 or so.

Q. All right. So that's been the formation or reservoir that's been more fully developed in the project area?

A. Yes.

Q. When you look at the Klein/Vaughn area, how is that ownership arranged?

A. Okay, in the Klein/Vaughn area it is composed of two federal leases.

If you go to the very last page under this exhibit, what I have provided there is a breakout of the burden owners, the overriding interest owners and the royalty owners.

We have two federal leases, and the royalty and overriding interest owners are common under both of those federal leases.

Also indicated under each federal lease would be the sections that are covered, so that in these leases Meridian would have a 100-percent gross working interest, all depths, and we have a 68.25-percent net, all depths, which would include the royalty owners and the overriding interest owners.

There are 12 overriding interest owners.

Q. Let's deal with each of the three reservoir pools.

In the Dakota -- Let's start with the Gallup, that's the easiest one. In the Gallup, what's your spacing in the Gallup for gas?

A. It's undesignated, but we're using 160-acre spacing.

Q. For any Gallup gas well spacing within that 160, are you going to have common ownership?

A. Yes.

Q. When we go to the Mesaverde, you've got 320 gas spacing with an optional infill well?

A. Yes.

Q. In each instance, are the proposed or current Mesaverde spacing units configured so that you would have common ownership if it's commingled with the Gallup and/or Dakota?

A. Yes.

Q. And the same would be true, then, of the Dakota?

A. Yes.

Q. There are no circumstances or incidents where the spacing unit for any of these wells will include a difference of ownership as you move to any of the three reservoirs?

A. No, that would not occur.

Q. If you'll turn to the tab that's marked Exhibit 7 and look behind that, there's a certificate of mailing?

A. Yes.

Q. It shows what appear to be oil and gas operators?

A. Yes, this would be the mailing for the offset operator notification.

Q. Have you or others under your control verified the accuracy of the notice list of offset operators?

A. Yes, we have.

Q. And does this appear to be accurate and reliable?

A. It appears so.

MR. KELLAHIN: That concludes my examination of Mr. Goebel, Mr. Examiner.

We would move the introduction of Exhibit 3 and Exhibit 7.

EXAMINER CATANACH: I'm sorry, Exhibit 7 and what other one?

MR. KELLAHIN: Three.

EXAMINER CATANACH: Exhibit 7 and Exhibit 3 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Goebel, the interest ownership within any given spacing unit within this area would be common, despite the difference in proration unit size?

A. Yes, it would.

Q. And their actual percentage in each of the formations would remain the same, right?

A. Yes, they would.

Q. The way I understand it, you would have us establish a procedure where you would submit to the district office a proposed allocation formula for the well?

A. Yes.

Q. And some economics to show that you've reached the economic limit, so to speak, of the well?

A. Yes, that's what we're proposing.

EXAMINER CATANACH: Okay. I have nothing else of this witness, Mr. Kellahin.

MR. KELLAHIN: Call at this time Mr. Mike Dawson. Mr. Dawson is a geologist.

Give him just a moment, he's got a rather large-size three-well cross-section that he'd like to use.

(Off the record)

MIKE DAWSON,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Dawson, for the record would you identify yourself, please?

A. My name is Mike Dawson. I'm a geologist with Meridian Oil in Farmington, New Mexico.

Q. Mr. Dawson, on prior occasions have you testified before this Division and qualified as an expert petroleum geologist?

A. Yes, I have.

Q. Summarize for the Examiner what has been your personal involvement as a geologist in this project.

A. Along with Mr. Mullins and Mr. Goebel, I'm part of the area team responsible for this area, and I've mapped various reservoirs and furnished information on reservoir stratigraphy in particular that helped us make decisions and recommendations.

Q. Summarize the project concept from the geologist's point of view.

A. In general, we feel like as far as the lower part of the Cretaceous section, the best potential has been in the Dakota.

As we have approached the economic limits of the Dakota, we are looking for ways to extend the life of these wellbores and to efficiently produce the remaining reserves in the Gallup and Mesaverde formations, both of which are economically rather risky and perhaps marginal in this area.

So we've tried to arrive at a plan to officially recover those reserves and extend the life of the wells.

Q. Let's start with the Gallup. You've got a single Gallup well in the Klein/Vaughn area?

A. Yes, sir.

Q. How successful is that well?

A. Extremely marginal. We're getting a sustained rate of 40 to 50 MCF a day and a couple of barrels of oil.

Q. Have you mapped the Gallup in this area to know whether or not that was going to be a typical result of Gallup wells in this area, or otherwise?

A. We would project that that would be typical. The Gallup has a layer-cake stratigraphy. It's an extremely homogeneous unit through this area, sequence of sandstones, siltstones and dark shales, and it's very, very easy to trace individual beds throughout.

So the result that we had in our one attempt should provide the expected result for the other wells.

The one caveat to that is that for the Gallup formation to produce commercially, natural fracturing is required. It's a very, very tight formation, so...

Natural fracturing is -- appears to be a somewhat random process. We may do better or worse, depending on the degree of natural fracturing that we tie into.

Q. Would you recommend to management the drilling in this area of a Gallup well as a Gallup-alone test?

A. No, sir, not in any case.

Q. How, then, would you as a geologist recommend we exploit any opportunity for any Gallup production in this area?

A. Our best and perhaps only option to recover those Gallup reserves would be in existing wellbores, and of course those would have to be the Dakota wellbores that we referred to earlier.

Q. When we look at the existing wellbores, are there any current wellbore limitations that are a challenge for you and Mr. Mullins to deal with?

A. Yes, sir, our Dakota wellbores are 4-1/2-inch casing, not large enough for a dual completion. We can complete both the Gallup and Dakota and commingle. We are able to do that.

Q. Let's move to the Mesaverde. Describe for us in a geologic sense what your opinions are about the Mesaverde and the potential in the project area.

A. The Mesaverde here, the productive part, the only part of it with productive potential, is the Point Lookout.

In this area, the Cliffhouse and the Menefee are both water-productive. There have been some successful completions in the Point Lookout only. We are right on the edge of the Blanco Mesaverde field, on the southwest edge, so there are some risks in terms of producing water in a Mesaverde completion.

Also, we're in an area where the total pay in the Mesaverde, the total gross pay and net pay, are somewhat -- because of the inconsistent stratigraphy, is somewhat of a risk, so that it would be very risky to go in and develop it with dual drills in particular, on a 160-acre basis.

Q. Describe for us the Dakota reservoir in the project area.

A. The Dakota consists of several individual sandstones. Normally in our completions, we complete every sandstone that looks even modestly prospective. And as I say, we've witnessed pressure depletion, and we feel like we're late in the life of the Dakota reservoir within this particular leasehold.

Q. Let's look behind Exhibit Tab Number 4. If you'll look at the first geologic display behind that tab section, does that represent your work product?

A. Yes, sir, this is just intended as an index map.

It illustrates three or four points that I'd like to bring up.

The purple outline outlines the same area that Mr. Goebel earlier described, the Klein/Vaughn leasehold.

I've put a couple of different symbols on to indicate wells that I think are probably key to our Application.

The open red gas well symbols represent three existing Dakota-Mesaverde commingle wells in our area.

The red gas well symbols with the green interior represent wells that have been -- in which the Dakota has been temporarily abandoned and the Mesaverde completed.

Then the third symbol, which is the green gas well symbol, is the single Gallup completion in this immediate area. And again, the Dakota was temporarily abandoned.

I've denoted a three-well cross-section that would typify the stratigraphy in this area, and that's what I've brought forward here on the chalk board.

Q. Let's have you do that now. If you'll go to the cross-section and use the pointer, show us those items on the cross-section that are of significance to you as a geologist.

A. I start at the bottom here, at the top of the Dakota.

I've highlighted in yellow the sandstones based on the gamma-ray response and greater than 30 ohmmeters resistivity. This nicely portrays the individual sandstone units for which I've put names.

And in general, every sandstone unit has been completed in every well, so there may be some remaining reserves. But because in all but one of the sections in our leasehold here we have four wells per section, we think that we probably have efficiently drained the Dakota up to the point at which we are today.

The next item that I'd like to show you relates to the Gallup. This is the top of the Gallup. I show this just so you'll have a feel for the relative position.

The Gallup in this area would average about 6000 feet, the Dakota more like 6700 feet. And if you'll notice, perhaps a little hard to see from your vantage point, but individual beds are very consistent through this whole section. We have the same zones exhibited here with the shading on the resistivity.

And just to repeat myself, natural fracturing would be required in that type rock unit in order to achieve commercial production.

Of the remaining potential in our area, we feel like this Point Lookout has the most potential. Intrinsic-ally, in terms of virgin reservoir conditions, it does not have the same kind of potential that the Dakota did before we developed it, but --

Q. In this area the Point Lookout is part of the Dakota?

A. It's part of the Mesaverde group. This is the top of the Mesaverde here. I've denoted the Cliffhouse sandstone. It's water-productive, it has fair matrix permeability, but produces only water. And I've shaded that in blue, as well as the prominent Menefee sands.

The log response and the limited testing in the area suggests that all of these will produce only water.

Once we get below the top of the Point Lookout, though, we see enhanced resistivity. I've shaded here the resistivity response greater than 30 ohmmeters as an indication of productivity.

This probably -- From here to here, that interval probably represents the best remaining asset that we have in that area.

Q. Mr. Dawson, if you'll look at the next display behind your Exhibit Tab 4, it's your Point Lookout sand isopach. Is that what you have?

A. Yes, sir.

Q. Describe for us the conclusions from that map.

A. If you'll look at the symbology, I've indicated with gas-well symbols, open in the center, the three existing area Mesaverde-Dakota commingles.

I've indicated with a red dot individual Mesaverde completions, some of which are actually dual completions.

Then I've indicated with the gas-well symbol and the green dot in the center, Mesaverde completions in which the Dakota has been temporarily abandoned.

From that pattern of the red symbols, you get an accurate portrayal of the local edge and the extent of the Blanco-Mesaverde field.

To the southwest of these symbols, the Point Lookout is wet. And of course, as in the case of our area of concern, both the Cliffhouse and Menefee are also water-productive.

I've tried to make a gross sandstone map here using a resistivity cutoff, which is more or less an accepted procedure for the Mesaverde in the San Juan Basin, and what you see is sort of the sporadic nature of the occurrence of what you might consider gross sandstone. And I've done that to indicate that the reservoir in this area is not particularly consistent or homogeneous, and in some drill blocks we would expect to have very, very marginal results. Others, perhaps, we could expect a little better results.

Q. Turn to the next display, the structure map.

Identify and describe its significance.

A. This is a structure map on a marker bed just below the Huerfanito bentonite and the Lewis shale. It depicts a very gentle northeast dip of about 80 feet per mile. You see general folding in there on this contour interval. Perhaps it looks -- it would lead you to believe that it's a little more deformed than it actually is.

This actually represents a very flat surface with a very moderate dip. We don't have any evidence of faulting or any severe structural deformation in this leasehold.

Q. Let me direct your attention to the project area and to existing wells.

When we look at existing wells and start with the Dakota existing wells, what's the plan, then, to attempt to obtain additional Mesaverde and Gallup production out of those existing Dakota wells?

A. Our plan would be to temporarily abandon the Dakota, move uphole, and complete the Gallup and the Mesaverde, and of course test them in order to set ourselves up for the proper allocation, then to re-enter the wellbore and remove the bridge plug, temporary bridge plug, and commingle all three formations potentially.

Q. Does that plan change if we're dealing with an existing Mesaverde well?

A. Yes, sir. In a Mesaverde-only completion, we wouldn't have the options of adding Gallup and Dakota.

Q. So what's your plan for existing Mesaverde wells?

A. We would just produce them as they are until we reach that economic limit.

Q. No requests to deepen those wells and to commingle those?

A. No, sir. Since most of our wells, our existing wells here, are 4-1/2-inch casing, we wouldn't have a large enough casing size to deepen.

Q. When we get into that portion of the project area that you're going to drill new wells, describe for me the plan for new wells.

A. First of all, there's only one section, that being Section 30 on the -- If you'll refer to your index map on the left-hand side, in which the Dakota has not been fully developed.

In that section, our plan would be to set the wells up with 5-1/2-inch casing that would allow us to at least initially make a dual completion with Mesaverde and/or Gallup with the Dakota. So that would be how we would initially set up the well for the new-drill situation.

Q. The new well drill would include commingling of the Gallup with either the Dakota or the Mesaverde portions?

A. It could potentially. That evaluation would be made based on mud-log shows and wireline response, so it would -- we would have the potential for doing that.

Q. I guess the most practical configuration on the new drill would be to commingle the Dakota and the Gallup in one tubing string and then produce the Mesaverde with the second string of tubing?

A. Yes, sir, it would.

Q. And then when those new drills reached a certain economic threshold, then they would be candidates by which you could take your information to the District Office in Aztec and get a commingling allocation formula assigned to the well?

A. Exactly.

Q. Anything else, Mr. Dawson?

A. No, sir.

MR. KELLAHIN: That concludes my examination of Mr. Dawson.

We move the introduction of his geologic displays found behind Exhibit Tab Number 4.

You'll also find, I think, there's a -- didn't we fold up -- Is this the only copy of the cross-section we have?

THE WITNESS: Yes, sir, it is, and it's available to leave here if the Commission would like it.

MR. KELLAHIN: I thought there was a smaller copy. But if not, we'll leave that one here with the Examiner, if we need to.

EXAMINER CATANACH: So we've just got Exhibit 4, Mr. Kellahin?

MR. KELLAHIN: Should be Exhibit 3, Mr. Examiner.

EXAMINER CATANACH: It's Number 4.

MR. KELLAHIN: Did I lose track? Is it 4, Mike?

EXAMINER CATANACH: It's Number 4.

THE WITNESS: Yes.

MR. KELLAHIN: All right, Exhibit 4.

EXAMINER CATANACH: Exhibit 4 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Dawson, the Dakota is fully developed except in -- did you say Section --

A. Section 30.

Q. -- 30.

A. Yes, sir.

Q. Do you intend to drill four Dakota wells in Section 30?

A. Right now the plan would be to develop two wells in the northeast -- one in the northeast quarter, one in the southwest, and after testing and evaluation, determine whether the additional two wells would be warranted.

Q. How long have these Dakota wells generally been producing in this area?

A. I think a typical age would be 15 years or thereabouts.

Q. Your assumption that the Point Lookout is the only producing zone in the Mesaverde is based on actual testing in the area?

A. It's -- Sir, there's been limited testing in the area. The trend extends -- very similar production and stratigraphic trend -- quite a distance to the northwest. It does not extend very far to the southeast.

And along this trend there have been a significant number of tests that have tested water. There's a very clear log response. It's fairly easy to tell from the wireline logs whether or not the zones in the Menefee and Cliffhouse will produce water.

What we see is a crossover where our medium and shallow resistivity curves, because of invasion of the freshwater mud systems, and that freshwater mud filtrate has a much higher resistivity than the deep curve, which is showing the more conductive formation, salt water.

So when we have that kind of diversions in the induction curve, we can, I think, very accurately determine whether or not the zones will be productive.

And an additional bit of evidence would be the mud logs that we have in that area. Typically, there are very few shows in that upper interval, and the shows that are there are only found in the Menefee coals. We never get shows from the sandstones in the Cliffhouse and Menefee, as opposed to the Point Lookout sandstones in which the shows are common.

Q. Okay. The -- It appears you've got about seven wells in the area that are Mesaverde completions. Do you know if those wells are just completed in the Point Lookout?

A. Yes, every single one is.

Q. They are?

A. And in fact, on the gross sandstone isopach, I believe every well here -- that would include our recent wells where we've temporarily abandoned the Dakota and completed the Mesaverde, wells that have existed for some time as Mesaverde completions and the commingles -- every well there, on that illustration, has been completed in the Point Lookout only.

Q. What is the significance of your yellow coloring on that isopach map? It appears to just center around the 40-foot-and-more gross interval.

A. The only intention there is to illustrate where the thicker gross sandstones, as defined by resistivity, would be found. And the selection of 40-feet, it was entirely arbitrary.

Q. Would you -- Or would Meridian intend to attempt completions in the Mesaverde at something less than 40 feet?

A. Yes, sir.

Q. Do you have a cutoff of what that might be?

A. In this area, the lower sandstones are relatively tight, but we feel like we have the same sort of potential for natural fracturing, so we that we know that they're not -- in terms of the matrix permeability and porosity system, they're not effective.

When we hydraulically stimulate those sandstones, often we tie into a natural fracture system, and we can recover some hydrocarbons. Usually not significant volumes, but we can get gas and, in some cases, oil from those lower sands.

So my strategy for this area would be to complete the Point Lookout, even outside the yellow area, for instance, just so that we maximize our ultimate Mesaverde recovery in this leasehold.

Our intent here is to maximize that ultimate recovery -- get all we can, in other words -- and be able to afford to do that through the increased efficiency that we feel that we'll realize through the commingling strategy.

Q. Is the initial producing rate that you're likely to encounter in the Point Lookout a direct function of the amount of gross sand you encounter?

A. It's related to that, but it's a very weak relationship. My explanation for that would be that in some wells we tie into that natural fracturing I referred to, and it's sort of a random-appearing effect.

Oftentimes, the wells in -- Perhaps it would have a lower amount of gross sandstone and net sandstone, will give us just as high an initial rate. Where we start to see a change is once we stabilize our production rate, perhaps after a few weeks or a couple months, then we start to see the difference. If there's not as much of a matrix system behind the natural fracture system to replenish it, then we see a more radical hyperbolic decline.

But in general, there is a relationship -- I would characterize it as a weak relationship -- between gross and net sandstone, and initial rate and ultimate recovery.

Q. Does the same type of thinking hold true in the Gallup? You said you need to encounter the natural fractures.

A. Yes, sir. In the Gallup, the contribution of the matrix system is even much less. The sandstones and siltstones are -- the sandstones are very, very fine grain and range into the silt size, and they're highly, highly cemented. They're very calcareous. Fortunately for a producer, they're fairly brittle. And they're also adjacent to excellent source beds, being the dark interbedded shales, which also can be naturally fractured.

So you would tend to get a rather random response, especially in terms of initial potential, from a Gallup completion. If you were lucky enough to tie into a well-developed natural fracture system, you might get an excellent initial rate.

If you aren't so lucky, as in the case of the single well we've tried in this area, you might end up with 40 or 50 MCF a day and a couple barrels of oil. I guess our area team's philosophy on this is that we don't even want to waste that much, and if we can economically recover that, we will.

Q. You really don't know what you have in these two formations till you go down and complete them?

A. That's fair to say, yes, sir.

Q. Is there potential throughout this area for Gallup production?

A. Yes, I would say that the entire area has Gallup potential.

We are several miles north of the Devil's Fork field, which is the best Gallup production in the area.

In this immediate area, there are a couple of completions just to the southeast that Amoco has made, more or less on the same stratigraphic trend, with similar results as our single attempt here, just 40 or 50 MCF a day.

EXAMINER CATANACH: That's all I have of the witness. He may be excused.

MR. KELLAHIN: Mr. Examiner, I'm calling now Mr. Tom Mullins. Mr. Mullins is a petroleum engineer.

<u>TOM MULLINS</u>,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please state your name?

A. My name is Tom Mullins.

Q. Where do you reside?

A. I reside in Farmington, New Mexico.

Q. And what is it that you do?

A. I'm acting as the production engineer for the area team responsible for the Klein/Vaughn lease area.

Q. On prior occasions have you testified before this

Division?

A. No, I have not.

Q. Summarize when and where you obtained your engineering degree.

A. I graduated in December of 1991 from the Colorado School of Mines with a bachelor's degree in petroleum engineering.

I started work January of 1992 and have been working as a production engineer for Meridian Oil in that capacity since that time. I've been working this particular area for about a year and a half.

Q. Based upon that work, have you, Mr. Mullins, and others within your team, come to certain conclusions with regards to how to maximize hydrocarbon recovery out of what we've characterized to be the Klein/Vaughn area?

A. Yes, we have.

MR. KELLAHIN: Tender Mr. Mullins as an expert petroleum engineer.

EXAMINER CATANACH: Mr. Mullins is so qualified.

Q. (By Mr. Kellahin) Summarize for us your conclusions as an engineer, Mr. Mullins. Why are you proposing to do this?

A. Our proposal is based on the fact that we've gathered enough information on all the horizons of interest, the Dakota, the Gallup and the Mesaverde, to at this time propose a commingling order for the entire project area, rather than propose a well-by-well commingling allocation on this area.

Q. When we look at the Dakota production that currently exists, what's your engineering conclusion?

A. The Dakota production from the existing wells in the project area is currently, at an overall level, on a marginal basis.

Q. What's your engineering conclusion concerning how to maximize and improve hydrocarbon recoveries out of the Dakota?

A. Currently, the Dakota in the project area exhibits liquid loading problems, and in order to maximize that recovery we need to have some additional sort of lift mechanism to produce all the hydrocarbons, not only the remaining gas production, but also the remaining liquid production in the Dakota formation.

Q. One strategy often utilized to lift liquids out of one formation is to commingle it with gas out of another zone.

A. That's correct.

Q. Will that work here if you commingle the Dakota and, say, Mesaverde?

A. Yes, based upon our systems analysis model, which is a technique used to compare the different formations and model and see if the lift mechanism would be appropriate. Based upon all that data, we feel that commingling the zones will lift those lift those liquids.

Q. Are you familiar with the Division Rules 303 where they give you a whole checklist of commingling protocols, at least under the administrative process?

A. Yes, I am.

Q. You've gone through all those things?

A. Yes.

Q. Do you as an engineer find any problem with the commingling of any of these zones with any of the other zones?

A. No, I do not.

Q. No fluid incompatibility problems?

A. No. In reference to that specific topic, in January of this past year we went out and obtained fluid samples on all the producing horizons, the three horizons in question, as well as the additional ones in the area.

We contracted that to the Western Company of North America. They did a detailed analysis on all the fluids, as well as a mixture and combination of the oils and waters, and their findings were that there were no instances that should cause new problems on the commingling of the fluids.

Q. Will the commingling result in the reduced market value of those hydrocarbons?

A. No, they will not.

Q. Do you have any kind of pressure-differential problems that cause thieving of hydrocarbons from one formation to another?

A. No.

Q. No kind of technical problem at all?

A. There should not be any.

Q. What's the timing? Why do it now for these Dakota wells?

A. Well, there's -- The main reason is that the majority of the wells are approaching their economic limit. Additional operating cost time for clocking the wells in order to remove the liquids is increasing our expenditures. If we can at this time go out and commingle the production, we'll increase the ultimate recovery in the Dakota horizon, as well as get recovery in the uphole horizons.

Q. Have you shared in detail your project concept with the Division's Aztec office?

A. Yes, I have.

Q. With what results?

A. I sat down with Mr. Ernie Bush and went through all the data and the proposed proposal which we're here today for, and he indicated that there should be no problems.

Q. Have you looked for and reviewed orders received by other operators to commingle Dakota-Mesaverde-Gallup formations on an areawide project basis?

A. Yes, I have.

Q. And what have you found?

A. I've found that there have been several instances of precedents for downhole commingling of these zones in the project area.

Q. In terms of the mechanics of what you're trying to do, what are you asking this Examiner to delegate to the district in order to complete the approval process?

A. Really, there's twofold piece.

The first piece is in the existing Dakota wells in the area, that the remaining Dakota wells, as they're currently producing, be allowed to be commingled with the allocation formula determined with the help of the Aztec office. That would be the first.

The second portion would be on a new-drill basis in the remaining section, that the wells be completed in a dual manner, and at which time one of the horizons, most likely the Dakota horizon, is producing at an uneconomic limit, that the Aztec office at that time be able to approve the commingling of that wellbore with the appropriate determination of allocation.

Q. Is your economic criteria based upon having no more than one of the three zones being economic at the time commingling occurs?

A. Yes.

Q. You're not setting out to prove that each and every zone is uneconomic at commingling, right?

A. No, that is not the case.

Q. All right. So if only one of the three in an individual wellbore is economic, then in your opinion that would justify commingling?

A. That's correct.

Q. All right. So that's how you've organized your presentation?

A. Yes.

Q. In addition, you're going to show this Examiner the allocation protocol that you propose for an individual well so that he can see in a general way what you're asking the District to do?

A. Yes, I am.

Q. Let's start, then. Let's turn to your exhibit book and look at the first of your displays behind Exhibit Tab Number 5. Now, Mr. Mullins, when we look at 5 and 6, that represents your work product?

A. That's correct.

Q. All right. And as part of the team process and all the other participating on the team have approved these exhibits and the presentation?

A. Yes, they have.

Q. All right. Let's look at the first one. What have you demonstrated?

A. My first exhibit, in an overall sense there's a lot of data that goes into this entire evaluation. I've attempted to summarize the majority of it here, the pertinent facts.

This first sheet of data demonstrates the Dakota pressure information and production information on the existing wells in the area.

Referencing this list, there's the well name, number, location, the initial surface casing pressure, and the date upon which the production first initiated on the Dakota well, which corresponds to that pressure.

The next column is a reference to a bottomhole pressure in the existing Dakota wells. That was taken in two methods, one being a dip-in gauge down at the bottomhole depth, the second one being an echometer determination, which was also calibrated in the area to the dip-in gauges for reliability. Both of these are accepted methods for determination of bottomhole pressures.

The final column is the producing characteristics, the current production rates of the Dakota horizon in the existing wellbores.

I'd like to note three production rates here that appear high. The Vaughn Number 12E, which is the second well listed at 460 MCF a day, the Vaughn Number 14, further down in Section 27, which is 378 MCF a day, and the Vaughn Number 13E directly beneath that at 412 MCF a day.

Q. Who do you choose to highlight those three?

A. Those three wells are currently producing in excess of 180 MCF a day. The remaining 24 wells, plus or minus, are all producing less than 180 MCF a day out of the Dakota interval.

Q. So what do you conclude as to the other wells except these three?

A. All the wells, including these three, are exhibiting liquid loading problems in the Dakota. These three particular wells are producing at a sufficient manner to currently recover the majority of the Dakota oil production.

Of instance to note is that one of those particular wells, the Vaughn Number 13E, is a dual Dakota-Mesaverde producer. So in reality, there are only two existing wells that would be a candidate for commingle, making in excess of 200 MCF a day.

Q. Do you have any reservation about these three wells that produce at higher rates than the others being commingled at this time?

A. No, I do not.

Q. All right. Let's look at the next display.

A. The next display, as the first, summarizes the Mesaverde pressure and production information in the project area.

There are also two wells listed that are adjacent to the project area down in there. All the information across is the same. The two wells outside of the project area are the Canyon Largo Unit, non-participating wells. They were completed in 1974, and their current production rates, and that corresponds with their nonparticipating status within the unit.

Each of these Mesaverde producers in the area -- Within the project leasehold, the first well was developed in 1985, and that being the Vaughn Number 33, and it is currently producing 140 MCF a day.

The remaining -- There's one additional well which was a Chacra producer that was plugged and abandoned, and that well deepened, the Klein Number 7. That particular well is a Mesaverde-only producer, and it is currently producing 450 MCF a day.

The Vaughn Number 13E, which I referenced on the last side, is a Dakota-Mesaverde dual producer. It is currently producing 420 MCF a day out of the Mesaverde.

All the remaining Mesaverde producers are wells in which the Dakota is currently temporarily abandoned beneath a bridge plug, and only the Mesaverde is producing up the pre-existing Dakota wellbore.

Q. At the bottom of that display you've summarized the pressure data?

A. Yes, I have. The initial bottomhole pressure for the Mesaverde portion, 1330 p.s.i., with a current average rate in the Mesaverde production of 305 MCF a day.

Q. All right.

A. And on the bottom portion -- I'll continue further on the slide -- is the single Gallup production test in the area, the Klein Number 28E, with its reference pressure and production information.

This is, again, an existing Dakota well that was temporarily abandoned in the Dakota, recompleted to the Gallup. We attempted -- In order to try to maximize the productivity, we installed a pumping unit on this Gallup formation and a compressor in order to maximize the recovery, with the results of about two barrels of oil a day and about 65 MCF a day. We returned the status to just the pumping unit, and we're currently making about a barrel and a half and 45 MCF a day.

The bottom portion of the slide represents all the pressure information in that they're within the 50-percent common pressure point for downhole commingling.

Q. Let's turn to the illustrations, Mr. Mullins, that describe your conclusions about the timing of when to commingle the wells.

A. Okay.

Q. If you'll start with the first display, identify what it is.

A. Okay, the first display graph is the Klein/Vaughn area Dakota stand-alone new drill. This would be representative of the undrilled acreage in the project area.

This slide represents -- and the axes are the same on both the slides. On the X axis, the ultimate recovery anticipated. on the Y axis, the rate of return. And the curves represent varying production forecasts.

What this particular slide is meant to demonstrate is the marginal nature of a Dakota stand-alone to achieve a 15-percent rate of return.

In reality, we could not go out and drill in the Section 30 a Dakota stand-alone for development of that horizon.

Q. And on the right margin of the display you've shown the assumptions that go into the calculation that support the conclusion, and the conclusion is, Meridian cannot go out and drill in Section 30 a Dakota stand-alone?

A. That's correct, a majority of the Dakota production, ultimately recoveries range in the 900 to 1.1 BCF category. So in that instance, in the most likely production scenario in which all the Dakota wells follow, we would not be able to drill a Dakota well.

Q. All right. Show us how to illustrate the graph. At a certain rate, with a certain assumed estimated ultimate recovery, and with your projected 15-percent rate of return, what happens?

A. Okay. Given the high-side case on this particular graph, that we drill a Dakota well at 400 MCF a day -- this is reference the dashed line on the plot -- 400 MCF a day, and we -- if we anticipated, which would be a high-side case of almost 1.3 BCF EUR.

Following the past area production profile, if we follow that curve up to where the 1.3 BCF basically runs into that curve, we would follow over to the Y axis and achieve a 15-percent rate of return. Again, that scenario is very unlikely and of high risk.

All these numbers and models have no risk factor whatsoever involved.

Q. If you assume a slightly less rate of 300 a day and forecast a slightly larger estimated ultimate recovery, it's still not economic to do a Dakota if you look at the next illustration?

A. That is correct.

Q. What is your best engineering opinion and estimate of the potential EUR for a Dakota well in Section 30?

A. In Section 30 I would anticipate the reserves to range right around the 1 BCF category in the Dakota horizon.

Q. How, then, can we afford to drill in Section 30 to obtain hydrocarbon recovery and obtain what might be there and available to be produced?

A. The only manner available to us would be to combine another horizon with the Dakota for development in that area. And based upon our proposal, that would be the Mesaverde. And again, we mentioned earlier that the Gallup production would be commingled with one of those, most likely the Dakota, which would be appropriate.

Q. And if we don't, then we leave the hydrocarbons behind?

A. That would be correct.

Q. Let's turn to the next display. How is it captioned?

A. The next display figures with the new-drill portion on the -- on Section 30 acreage, subsequent determination for commingle in the new wells, a Klein/Vaughn new-drill dual completion. It focuses on the Dakota determination of commingle.

Again, the axes are the same, with estimated ultimate recovery on the X axis. On the Y axis would be the rate of return percentage, and the bearing following rates of production corresponding to the Dakota based upon the evidence in the area, it would follow one of the curves listed, are 400 MCF a day, down through 250 MCF a day.

Q. All right. Let's take a moment and see how to make this work. If in an area you go out and drill a new Dakota-Mesaverde dual --

A. Yes, sir.

Q. -- in the Klein/Vaughn area --

A. Yes, sir.

Q. -- how are you going to use this graph to tell the Division the point in time where you're ready to commingle that production from that well?

A. This plot is basically a comparison graph for the Aztec office to use, based upon the data we submit for commingling.

We would supply a graph which would have basically one of these curves, which would be well-specific.

We would anticipate, based upon our producing characteristics in the Dakota for -- and I would anticipate it would probably be two years' period of time if the well is successful in the Dakota to the point -- time period where it would be eligible for commingle -- that we would have sufficient data to project what the ultimate recovery is, and the producing characteristic forecast for the well, at which time we would enter a site-specific curve representing that particular well and demonstrate that it falls below a 15-percent rate of return from the Dakota horizon, and we would like to commingle the production of the Dakota with the other horizons in the wellbore.

Q. Let me see if I can read the display. You've got a 15-percent-rate-of-return line? All right, that's --

A. Yes, I do.

Q. -- that's horizontal to the display.

Now, look at the first bottom curve which matches 250 MCF a day.

A. The bottom curve, which is the long dashes, represents 250 MCF a day.

Q. All right. If my specific well falls at a point where I know it's producing 250 a day or less, but I'm also able to calculate that its estimated ultimate gas recovery is going to be less than a BCF of gas, then I know it's time to commingle?

A. That's correct.

Q. Correspondingly, if I have a well that's producing 400 MCF a day, which is the top curve, and yet I'm able to calculate that it's going to recover less than

700,000 MCF, then I know the time has arrived to commingle that well?

A. That's correct.

Q. All right. And so this would just be the baseline curves?

A. Yes.

Q. And when you file a specific application with the district, you're going to give them well-specific information that they can then validate or verify your engineering conclusions?

A. That's correct. That represents less than 15 percent rate of return.

Q. And so this Examiner will have made all the other commingling decisions about the project area, with the exception as to the specific point in time the new-drill well is a candidate for downhole commingling?

A. That's correct.

Q. And yet he will establish or approve an economic baseline that will dictate to the District how to validate and verify the decision on an individual well?

A. That's correct.

Q. All right. Let's look at the next display you have behind the exhibit tab. What have you summarized for us, Mr. Mullins?

A. The next display summarizes all our information for the reasoning behind the commingle application here today.

The downhole commingle of these three horizons, the Dakota, Gallup and Mesaverde, would be the only prudent method to maximize recovery of reserves within this project area.

The next listings are -- basically are reasons meeting the commingle requirements. Ownership and royalty is common in all three formations within each specific wellbore, the produced fluids from the formations are all compatible, that the bottomhole pressures are within 50 percent of the highest pressure zone based at a common datum, that offset commingle precedence has been set in this area.

And at this time I'd like to touch on that, which would be the Unocal-operated Rincon unit, which is in the north half of this Township 26 North, 6 West. In addition, Caulkins Operating Company, immediately to the north -- I believe it's in Section 22 -- has three wells that are also commingled in these horizons. In addition, there are some numerous other commingle precedents, well by well, to the north in the project area.

Finally, the overall purpose is that a blanket areawide downhole commingle order will minimize the regulatory requirements, while protecting the correlative rights and maximizing hydrocarbon recovery within this project area.

Q. We've talked just now about the new drills. What do you want to do about the existing Dakota wells in terms of commingling? Do you want that approval now, or is there to be a process where you're going to the district and get those approvals?

A. We are requesting approval now for all of the existing Dakota wells within the project area.

Q. All of those wells, will they meet your economic criteria of the spreadsheet we just looked at, the curve?

A. Yes, they would. They would fall in that commingle category if they were considered stand-alone new drills.

Q. Let's turn to the allocation procedures, if you'll look behind Exhibit Tab Number 6, is it? You have two displays?

A. Yes, I do.

Q. What's the first one?

A. As referenced earlier, we have temporarily abandoned the Dakota production in the project area and completed the Gallup and the Mesaverde for bearing, production and testing. This is in order to determine a more accurate allocation formula, what we feel will be submitted. What I had --

Q. All right. The first one is for the Vaughn 30E; is that what you have?
A. I have the Vaughn 12, but I can skip to the Vaughn 30E. Those are two wells in which the Dakota was temporarily abandoned and the Mesaverde completed.
Q. This is the kind of example that you're showing this Examiner of information that would go to the district to set up the allocation formula?
A. That is correct.
Q. All right. And they're very similar in method?
A. Yes, they are.
Q. In fact, they're identical in method, aren't they?
A. Yes, they are.
Q. Pick one or the other, and let's go through the process.
A. Since we're probably referencing the Vaughn 30E at the moment, I'll pick this.
The basic allocation formula will be a fixed-percentage allocation for both gas and oil production for each of the horizons.
In order to determine that within the existing wellbores, Dakota wellbores, we are planning a minimum of six months of Mesaverde production data in order to determine what the stabilized production rate is.

On the Gallup production, we're going to determine that based upon the wireline log data that we have available, additional information, and the flow testing during the actual completion of the Dakota horizon. Again, that zone is more marginal, and for us to test that for a longer period of time would be -- in my estimation, would not be a full benefit.

The overall determination of the allocation formula is based upon two primary criteria, the first being the remaining reserves, estimated, of both gas and oil in each of the producing horizons, and the second, the stabilized production rates of both the gas and oil in each formation.

The example below listed for the Vaughn Number 30E references it's the temporary abandonment in the Dakota in July of 1993 and subsequent completion to the Mesaverde.

The two portions listed represent the two methods, the top characteristics being the remaining reserve estimation, based on engineering practice and geological and geophysical log information, what the ultimate recovery is for each of those horizons. The referenced percentage is for the Vaughn Number 30E, is that the Dakota has 30 percent of the remaining gas reserves where the Mesaverde had 70 percent of those remaining gas reserves, the oil correspondingly at 20 and 80 percent.

Using the second criteria, which would be production rate, last stabilized rate production prior to commingle from the Dakota was 170 MCF a day in this particular well. The Mesaverde stabilized production rate currently at 460 yields the allocation percentage of 26 percent and 74 percent.

Based upon the overall data available, the determination of these two is reasonable within engineering accuracies to submit an allocation formula listed below of the Dakota allocation of 30 percent of the gas and 20 percent of the oil; the Mesaverde allocation percentage is 70 percent of the gas and 80 percent of the oil.

Q. Do you have an engineering opinion in terms of volumes of liquids that are at risk if commingling is not approved?

A. Yes, I do, and this is an excellent example, in the fact that the current production from the Dakota horizon of one barrel of oil a day and the remaining reserves of 3000 barrels, that without the additional lift mechanism, that 3000 barrels of oil, full recovery of that would be in question.

Q. And you can document that volume for each of the other existing Dakota wells?

A. Yes, I can.

Q. We turn to the Vaughn 12, and you're looking at

2000 barrels of oil?

A. That's correct, referencing that exhibit it's similar.

Q. Do you have an opinion, Mr. Mullins, as to whether approval of this Application will be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, I do.

Q. And what is that opinion?

A. It is my opinion that this is the best -- and, most likely, only -- prudent manner to fully develop the reserves in the project area in all three horizons.

MR. KELLAHIN: That concludes my examination of Mr. Mullins.

We move the engineering exhibits into evidence behind Exhibit Tabs -- 5 and 6? 5 and 6.

EXAMINER CATANACH: Exhibits 5 and 6 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Mullins, in terms of filing an application of this nature, what do you actually save or benefit from in terms of not having to file an individual application to commingle?

A. On an individual application, it is my understanding that basically all of this data would be presented on a well-by-well-specific basis in order to determine whether commingling would be appropriate for the area.

It is our hope that by submitting all this data at one time that we can expedite that process.

Q. I believe you testified that you couldn't economically justify drilling a stand-alone Mesaverde well?

A. Yes. Again, that would be a marginal effort, based upon the geological information in the project area for full development of the Mesaverde in all of the gross/net sand in the project area.

Q. I assume the same would hold true for a Gallup stand-alone?

A. The Gallup, based upon our information, it's currently uneconomic to operate as a stand-alone recompletion within the current wellbore.

Q. How about a stand-alone Gallup-Mesaverde?

A. Stand-alone Gallup-Mesaverde, where the dual configuration scenario -- I don't believe that liquid production from the Gallup would occur in a dual manner without the commingle with the Mesaverde to fully recover the reserves from the Gallup.

Q. How about a commingle-type situation?

A. A commingle of the Gallup and Dakota would be an economic venture. Most likely, again, it would -- due to the natural fracturing tendencies in the Gallup that Mr. Dawson had mentioned, as well as the inconsistent sand thickness and reservoir potential on the Mesaverde, on the full project area development, I don't believe we could drill that in every instance.

Q. The Dakota wells you've got listed, you've got current candidate commingling rate average 114 MCF a day. Is that -- That is an average rate of these wells?

A. That is the average rate with the removal of the Vaughn Number 13E, which is currently the dual producer in the Mesaverde and Dakota. So it's separately -- at the moment, is not included in that average.

Q. But you would propose to include the 12E --

A. -- and the Vaughn Number 14, yes, at this time.

All the wells exhibit that liquid loading tendency. The Gallup production, as well as the Mesaverde, fully combined in that area, would be the only appropriate avenue we have available to develop the reserves in the project area.

Q. Once you commingle these Gallup -- I mean, these Dakota wells, what is that rate likely to come up to?

A. The most likely rate, as evidenced from the two allocation formulas, would be in the 650-MCF-a-day range, most likely with a majority of that production coming from the Mesaverde initially.

Q. Your average rate in the Dakota is 114?

A. 114.

Q. If you get rid of the liquid-loading problems, isn't that likely to come up in --

A. That's likely to increase slightly. Again, it's difficult to quantify how much overall increase, but using the two allocation methods, the production rate as well as the ultimate recovery of reserves in the area, we feel that that allocation formula would be appropriate using both of those pieces of information.

Q. And that allocation formula is essentially based on reserves, right?

A. Essentially based on reserves, as well as the stabilized production rates from the horizons.

Q. Well, you're just using the stabilized rate to compare the reserve calculation?

A. It's also used as a criteria to see if the full reserves are going to be produced.

If it's quite obvious that our Mesaverde production is 50 MCF a day, from testing, that's going to significantly impact the ultimate recovery of that horizon. It's going to have to be determined on a well-by-well basis, and that's the reason for our six-month testing of the Mesaverde testing, being the more prolific remaining reserves in the project area.

Q. Now, is the Mesaverde going to be tested with the Dakota at the same time -- I mean with the Gallup?

A. It would have to be, during the recompletion process, a separate test, testing of the -- I guess a quick walk-through would be, the Dakota has its -- has 20 years' worth of data, 15 plus or minus. The temporary abandonment of the Dakota would occur, the Gallup production, testing and completion at that portion of time, a temporary abandonment of that, the Mesaverde recompletion and production testing for a six-month period of time, at which point we would go back in.

Both of those zones would be commingled during that workover, so we would have workover testing rates on the Gallup and Mesaverde together, as well as the entire -- all three horizons put together in the final wellbore.

Q. So the six months of Mesaverde production would include Gallup production as well?

A. No, it would not. The Gallup production would be determined during the workover process.

Q. You would have the Gallup isolated during the Mesaverde testing period?

A. Yes, we would, If it works, we could include the Gallup as a Gallup-Mesaverde during the production testing period, with the permission of the -- with the State.

Q. What do you anticipate is going to be the average Mesaverde producing rate in this area?

A. The average Mesaverde producing rate in this area would correspond -- generally, I would believe to fall a little below the wells we have already done.

We tended to pick our better Mesaverde recompletion candidates in the project area. If we reference the plat, that would compare with the nonparticipating wells to the south in the Canyon Largo unit, with the varying Mesaverde production in the project area.

I believe that the typical average that I've listed, 300, plus or minus, MCF a day, would be a most likely Mesaverde stabilized production rate.

Q. What about Gallup?

A. The Gallup production rate, I believe, would be consistent in the project area at approximately 45 MCF a day, and a barrel, barrel and a half, of oil a day. Again, that may vary slightly, based upon the completion on a well-specific basis.

Q. Have you had any Mesaverde completions in this area that have been significantly higher than 3 MCF a day?

A. We have had two completions in the project area. Again, they were -- Actually, one. The initial completion, the Klein Number 7, which was a Chacra well, that was our best sand-thickness location. It, based upon the information submitted here, is probably the best potential Mesaverde reservoir characteristics. Its stabilized production rate at the moment is 450 MCF a day.

Q. How long has that been producing?

A. That well has been producing since 1991, December of 1991.

Q. Do you know what it came in at, what rate?

A. They're coming in at about 800 MCF a day, and they're declining at the referenced rate of -- I believe -- I may get confused here -- 45 MCF a day. Or, excuse me, 45 percent decline initially, for the first six months, and then the production trend generally levels out in that time period.

Six months should be more than an ample amount of time for us to see that stabilized production rate from the Mesaverde.

Q. So you make it an initial Mesaverde rate, 600, 700 --

A. That's correct.

Q. -- MCF a day?

But it will come down in the first six months?

A. Yes, it will.

Q. Is it not feasible to commingle Mesaverde in the Gallup for some period of time until it declines --

A. That would be feasible in the determination of the State. Again, that would only benefit us in full recovery of the reserves in the area.

If during that six-month testing time we include the Gallup in place of just the, you know, Mesaverde alone, that would be even better.

We feel that the one test that we do have, the Klein 28E, especially with the addition of the pumping unit compressor and full evaluation, it was a three-stage stimulation of all the productive interval that we could think of, and again, was one of our -- was our best candidate, I believe, in the project area for Gallup completion. I feel that's probably an appropriate production rate that we'll see.

Q. These pools are still prorated; is that correct?

A. That is correct.

Q. Do you know what the current allowable is in these pools?

A. Off the top of my head, I'm not certain. I know that each well has a deliverability test performed on each horizon and that once the zones would be commingled, that the deliverability testing would be based on timing of the lowermost zone completion, which in this case would be the Dakota, and that the appropriate allocation percentage would be listed on the regulatory forms. But other than that, I'm uncertain of that.

Q. Do you have any knowledge as to whether or not any of these existing Dakota wells are overproduced in the Dakota?

A. Currently, to my knowledge, no, but I believe that our current status in this particular area is that we are not overproduced in any of the existing wellbores.

Q. The Dakota wells you have listed behind Tab Number 5, those are the wells that are currently candidates for commingling and that you would wish to commingle immediately or in the near future?

A. That is correct. One exception on that well would be the Klein 2. I listed earlier the Vaughn 13E, which is currently a Mesaverde-Dakota dual, and referencing the sample plat information, that well would not be commingled at this particular time in the Mesaverde and Dakota since both of those horizons are producing above that 15-percent-rate-of-return one.

The only other well would be the Klein Number 26E, which is also a Dakota temporary abandonment and Mesaverde recompletion that was done in the same time period, July of 1993, and during that workover operation we lost the entire wellbore. That again evidenced the risk of working in the 4 1/2 casing and recompleting these horizons.

Q. The new drills in the Dakota --

A. Yes.

Q. -- you would seek downhole commingling approval once the rate fell below the 15-percent rate-of-return level --

A. That is correct.

Q. -- depending on the EUR?

A. We would initially drill and install equipment to produce the well as a dual completion.

Q. They would be dualed and -- They would be dualed in the Dakota-Mesaverde?

A. They would be dualed as a Dakota-Mesaverde, with the Gallup, possibly, based on this order and timing, most likely with the Dakota, or Gallup completion waiting until the actual commingle of the Mesaverde and Dakota at that time.

Q. If for some reason you did, once these wells were commingled, you did experience some overproduction as per proration schedules --

A. Uh-huh.

Q. -- would you have any problem shutting the wells in for an extended period of time?

A. I don't believe we would, based upon our marketing agreement. Again, I'm uncertain of that capacity and, you know --

Q. Would you experience any physical damage in the wellbore as a result of shutting those wells in?

A. I do not believe so, based upon the detailed fluid compatibility and the pressure data that we have.

EXAMINER CATANACH: I think that's all I have, Mr. Kellahin.

MR. KELLAHIN: Mr. Examiner, for your information, I believe that all the current production is classified as marginal in the Mesaverde and Dakota for these wells. We'll be happy to double-check.

We don't think commingling is going to disrupt that prorationing system process, and these are all marginal wells anyway.

That concludes our presentation.

There are some information exhibits in the booklet which are self-explanatory. There's an additional copy of the Application, there is the specific offset ownership plats. But all the technical items have been discussed by each of the individual witnesses, Mr. Examiner.

That concludes our presentation.

If it will aid you, we're more than happy to prepare a draft order, but that concludes our presentation.

EXAMINER CATANACH: I think a draft order just basically outlining the district procedures might be helpful.

MR. KELLAHIN: All right, sir.

EXAMINER CATANACH: Okay, there being nothing further in this case, Case 11,038 will be taken under advisement.

(Thereupon, these proceedings were concluded at 12:05 p.m.)

* * *

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 11038
heard by me on 8/18 1994.
David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL September 19th, 1994.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1994