STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 10,701

EXAMINER HEARING

IN THE MATTER OF:

Application of Meridian Oil, Inc., for downhole commingling and for an administrative downhole commingling procedure within the Huerfanito Unit Area, San Juan County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R CATANACH, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

April 8, 1993

A P P E A R A N C E S

FOR THE DIVISION:

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I N D E X

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E X H I B I T S

APPLICANT'S EXHIBITS:

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WHEREUPON, the following proceedings were had at 1:40 p.m.:

EXAMINER CATANACH: At this time we'll call Case 10,701.

MR. STOVALL: Application of Meridian Oil, Inc., for downhole commingling and for an administrative downhole commingling procedure within the Huerfanito Unit Area, San Juan County, New Mexico.

EXAMINER CATANACH: Appearances in this case?

MR. KELLAHIN: I'm Tom Kellahin of the Santa Fe Law firm of Kellahin and Kellahin, appearing on behalf of the Applicant.

We have three witnesses in this case, Mr. Examiner.

The first witness is Mr. Beers, who is already under oath and has been previously qualified as an expert. I'd like the record to reflect that Mr. Beers continues under oath and continues to qualify as an expert in this case.

EXAMINER CATANACH: The record shall so reflect.

Are there any additional appearances in this case?

KENT BEERS,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Beers, please summarize for us what you're proposing to accomplish with this Application insofar as it affects the Huerfanito unit.

A. The Application today proposes to obtain a permission to commingle gas production from the Blanco-Mesa Verde Gas Pool with gas from the Basin-Dakota Gas Pool. In two existing Dakota wellbores we want to add Mesa Verde, and then within four additional drill blocks we want to drill new wells and commingle those two horizons.

Q. Apart from the six specifically identified wellbores, are you in addition seeking any other relief for the unit concerning commingling of these two reservoirs?

A. Yes, we'd like to obtain approval for administrative downhole commingling for all future Blanco-Mesa Verde/Basin-Dakota Gas wells in the Huerfanito Unit

Q. Is the Huerfanito unit a unit whereby you have participating areas that would be different for

each of the two pools?

A. That's correct.

Q. Do you have an index for the exhibit book that identifies for us the documents that are shown in the book behind each exhibit tab?

A. Yes, I do.

Q. All right, let's turn now to Exhibit A. Identify that for us.

A. Exhibit A is a plat of the Huerfanito Unit, including all current wellbores in that unit.

You may want to look at that Exhibit A in conjunction with Exhibit D, because Exhibit D also provides us with the outline of the Huerfanito Unit, but also shows us that the participating area for the Dakota is the same as the boundaries of the Huerfanito Unit, and it also shows us that the participating area for the Mesa Verde in Huerfanito is something different.

It indicates there are four new drills. All fall within the current Mesa Verde PA, and the two wells that we're -- the two Dakota wells that we're wishing to add Mesa Verde pay to are outside the existing Mesa Verde PA.

Q. Can you direct our attention, Mr. Beers, to the ownership information concerning the Dakota?

A. Yes. Perhaps I should back up and just point out that Exhibit B includes all ownership as to all depths in the entire Huerfanito unit.

Exhibit C1 shows us Dakota ownership in the Dakota PA, and C2 shows us Mesa Verde ownership in the Mesa Verde PA.

(Off the record)

THE WITNESS: I don't believe we ever reflect this on an exhibit, so I would go along -- go ahead and tell the Division that Meridian's interest in the 104 well where we're adding the Mesa Verde is 99.5 percent. In the 71 it's a hundred percent. And --

MR. STOVALL: Excuse me, Mr. Beers, let me just interrupt you there.

Those are the ones outside --

THE WITNESS: Those are the ones outside --

MR. STOVALL: -- the participating area?

THE WITNESS: -- the existing Mesa Verde PA, that's correct.

Within the Mesa Verde PA, and as to all four of the new drills, Meridian currently has a 95-percent interest in the Dakota and 88 percent interest in Mesa Verde. We have obtained approval for all other parties to participate.

Q. (By Mr. Kellahin) Have you had Meridian

personnel take all the ownership information for ownership of production from each -- either one of the pools within the Huerfanito Unit, tabulated that ownership information, and provided notices to those parties that might be affected by the approval of this Application?

A. We have. Exhibit E is a schedule of some 140 people that we have sent certified notice to.

Q. To finish your discussion of the exhibits behind Exhibit D, you've identified the plat. Identify for us the next two displays.

A. Yes, Exhibit D, in addition to showing the Unit outline and the Mesa Verde and Dakota PA outlines, also is a key that is tied to the pages behind it that provide who the offset owners are in the Huerfanito Unit.

Q. In addition to the interest owners within the Unit who have production that may be affected by the approval of this Application, have you caused notification to be sent to the offset operators?

A. Yes, we have.

Q. The last illustration, then, the third display behind Exhibit Tab D, shows the addresses of operators offsetting the unit, and it tabulates as to which of the two pools they have an interest?

A. That's correct.

Q. All right. You've already identified for us Exhibit E, which is the ownership within the unit.

Finally, then, identify for us what is contained behind Exhibit Tab F.

A. Exhibit Tab F is simply our certificate of mailing.

Q. To the best of your knowledge, has there been any objection received by Meridian to the approval by the Division of this Application?

A. No, there has not been.

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

We move the introduction of Exhibits A through F.

EXAMINER CATANACH: Exhibits A through F will be admitted as evidence.

EXAMINATION

BY MR. STOVALL:

Q. Mr. Beers, which tab is the one with the ownership plat -- Oh, here it is. D, isn't it? That's the one I'm looking for.

A. D is the Unit and PA boundaries.

MR. STOVALL: Yeah, that's the one I was looking for.

(Off the record)

Q. (By Mr. Stovall) Mr. Beers, let me clarify one thing on those Mesa Verde, going to Exhibit D, now, just -- In Section 27, the block there that you're drilling on, how much of the Mesa Verde is Meridian-owned in that one, west half of 27?

A. The west half of 27, now, is not a new drill. That's an existing Dakota well --

Q. Correct.

A. -- producer, and we're going to come uphole into the -- and add the Mesa Verde.

Q. Which -- And it's not in the Mesa Verde participating area?

A. That is correct, it is not. In that 104 well, we have 99.5 percent.

Q. Okay. Who has the other .5? Do you remember offhand?

A. I don't remember offhand.

Q. Okay. And in Section 3, the east half of 3, you own a hundred percent of the Mesa Verde?

A. That's correct.

Q. And in those two tracts, the Mesa Verde will participate on a tract basis, rather than any sort of unit basis; is that -- I think that's the part I may have missed.

A. That's correct, since those particular drill blocks fall outside the existing Mesa Verde PA, the Mesa Verde drill block owner, i.e., Meridian, will pay a hundred percent of those costs.

If the results warrant it, and they probably will not, those drill blocks may expand the Mesa Verde PA.

Q. Okay. What production -- Do you have any idea what production it would take to get a commercial well determination out of those? Just raw --

A. The BLM's position is --

Q. They look for a pretty good well, don't they?

A. Yes, they would -- Even though we are simply adding that production in an existing wellbore, the BLM's current interpretation of the unit rules would require that production be sufficient to stand the cost of a new drill.

And again, that's unlikely, that the results will be that good in the Mesa Verde that we could apply some generic new-drill costs to a stand-alone Mesa Verde and have it be an economic well, according to their criteria.

Q. But in terms of the significance of that, as far as allocating production, it's just -- really doesn't make any difference. You just have to allocate

that production to the Mesa Verde owners, just as you do within the participating area; is that correct? I mean, based on the commingling?

In other words, it really doesn't matter whether it's on a tract basis or a unit basis; you still have to allocate production between the Mesa Verde and the Dakota tracts, whether --

A. Yes, as between those two formations now, that drill block as to the Mesa Verde may not be taken into the participating area.

Q. I understand that, but what I'm saying is that in the one case, the determination of who shares the Mesa Verde production -- or in each case, it's based on whether or not it is in a stand-alone drill block or a participating area?

A. Correct.

Q. But it doesn't change the allocation between Mesa Verde and Dakota --

A. No.

Q. -- it just simply determines who gets the money --

A. That's right.

Q. -- or the cost, as the case may be?

A. That's correct.

MR. STOVALL: That's all I have.

EXAMINER CATANACH: I don't have anything.

MR. STOVALL: Tom, I assume you are providing an affidavit that somehow references the notice.

MR. KELLAHIN: (Nods)

MR. STOVALL: Okay.

(Off the record)

MR. KELLAHIN: Are you referring to Exhibit F, the notification?

MR. STOVALL: Is there an affidavit associated with that, that says you've mailed to all parties entitled to --

MR. KELLAHIN: Yes.

THE WITNESS: Specifically --

MR. STOVALL: Is it in here? I didn't --

THE WITNESS: -- under Exhibit F.

MR. KELLAHIN: Go to another exhibit, go behind the Exhibit F tab.

MR. STOVALL: Oh, I did see that. It's been a long afternoon.

MR. KELLAHIN: It's a separate tab.

MR. STOVALL: I remember seeing it once and then spaced it out again.

MR. KELLAHIN: Recall Chuck head at this time.

I'd like the record to reflect that Mr. head

is continuing under oath and continues to qualify as an expert in this case in the matters of petroleum geology. Is that okay with you?

EXAMINER CATANACH: Sure.

CHARLES HEAD,

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

DIRECT EXAMINATION

BY MR KELLAHIN:

Q. Mr. Head, let's take the geology of the Huerfanito Unit and have you give us a summary of what you see as a geologist concerning the viability of producing additional reserves out of both of these pools by using commingling downhole procedures.

A. Okay, last fall I mapped Mesa Verde sandstone development in and around the Huerfanito area to determine the westernmost limit of commercial sandstone development, and I identified several locations which I felt were suitable for new-drill Mesa Verde locations.

And when I got together with my various engineers on my team, we decided that it would be prudent to drill down to add the Dakota interval with the Mesa Verde, to produce or commingle that along with the Mesa Verde.

Q. Do you recall the development history of the

Huerfanito Unit concerning these two reservoirs? Can you give us a general summary, what has historically happened and what has happened in the recent past?

A. Well, there's really a mix of completion types out there. There are quite a few Dakota penetrations from the Fifties and Sixties and Seventies, mainly. And there are probably about -- 30 percent of the Dakota wellbores in the area are commingled with the Mesa Verde at this time.

Q. Do you believe that these two reservoirs in the unit are viable candidates to produce hydrocarbons that might not otherwise be produced?

A. Yes, sir, I do.

Q. And we can do that by the downhole commingling procedures?

A. Yes, we can.

Q. Let's look at some of your geologic mapping. Turn behind Exhibit G and identify and describe the first display.

A. Okay, this is a Point Lookout, which is the lowermost member of the Mesa Verde formation, net sandstone isopach that I mapped based on wireline log criteria, which I feel are indicative of prospective sandstone development, correlating to offset production from the Mesa Verde.

The stars on that map show locations that I feel are prospective for new drill development in the Mesa Verde and Dakota, and the triangles are Mesa Verde recompletion candidates, based on the presence of commercial Mesa Verde sandstone development in existing Dakota wellbores.

Q. Turn next to the following display. Identify and describe that for us.

A. Okay, the following display is a Lower Point Lookout net sandstone isopach.

I might add that this particular interval has not been completed in this part of the Huerfanito Unit in many wells, namely really only one well in this area, so I feel that this is a secondary Mesa Verde target.

Q. Okay. Let's go to the information behind Exhibit H and have you identify and describe that.

A. Is that a decline curve?

Q. Yes, you've got some decline curves in here.

A. Okay, I would defer -- I would like to defer discussion about the decline curves to the production engineer.

Q. All right, let's turn now to Exhibit I and have you identify for us the cross-section.

A. Okay, that's a cross-section -- It's a north-

south trending cross section, stratigraphic cross-section, which correlates in the productive reservoir sandstones of the Massive Point Lookout formation between three wells that are currently completed and producing from that interval.

And also it illustrates our recompletion candidates, the Number 104, which is the second from the left, and then the Number 71, which is the -- on the right-hand side of the cross-section.

You'll note that there are two sandstones illustrated in the Massive Point Lookout, the "B" and then the "A" sands, and you can see the perforations marked on the three wells that are currently producing from those intervals.

And it also shows the Lower Point Lookout interval, which we feel is, as I mentioned before, a secondary target in the Mesa Verde.

Q. All right. Let's turn now to Exhibit J and have you give us the geologic setting using the B-B'.

A. Okay this cross-section is similar to the preceding cross-section in that it illustrates the correlations of the Massive Point Lookout sandstones over our area of interest.

Also, it shows our proposed four new-drill locations up at the top there, and it also shows the

Lower Point Lookout once again. And then I've broken the section with the wavy lines there to take out a lot of Mancos shale.

And on the lower part of the cross-section I'm illustrating the Dakota marine sandstones which are commercial in the area, and those sands on these cross-sections have all been completed and are producing.

Q. As a geologist, what is your geologic conclusions about the approval of this Application?

A. Well, I feel that due to the expense of drilling a Dakota well, and a Mesa Verde well for that matter, that it would certainly be prudent to include the Dakota interval as a productive -- as a producing horizon, along with the Point Lookout.

These sandstones -- The sandstones in both the Mesa Verde and the Dakota are certainly prospective for development and I feel should be commingled.

MR. KELLAHIN: That concludes my examination of Mr. Head, with the introduction, then, of his Exhibit G, I and J.

EXAMINER CATANACH: I'm sorry, what were they numbered?

MR. KELLAHIN: They were letters, G, I and J.

EXAMINER CATANACH: Exhibits, G, I and J will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Head, how many new drills in the unit have you identified or targeted for commingling?

A. I've identified 17 locations that I feel are prospective. The four that are in question today are probably the four best candidates.

Any further development that we would do in the area would certainly be contingent upon the results of these four.

Q. And how many recompletions do you have targeted right now?

A. Right now, I have seven recompletion candidates with a potential for probably three or four additional candidates.

Q. Now, the main area of interest is the Massive Point Lookout -- or the Upper Point Lookout?

A. That's correct.

Q. There is potential at the Lower as well?

A. We feel that there is. There is a well that has been perforated and is producing out of the Lower Point Lookout, which is approximately two miles away from this general area of interest, which has produced quite a bit of liquids, an anomalous amount of liquids, and we feel there's a good chance that a lot of that

production is coming from the Lower Point Lookout.

EXAMINER CATANACH: I have nothing further.

MR. KELLAHIN: Call at this time, Mr. Mike Pippin.

MIKE PIPPIN,

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. Pippin, for the record would you please state your name and occupation?

A. Mike Pippin. I'm a petroleum engineer.

Q. And you are an employee of Meridian Oil Company and you reside in Farmington, New Mexico?

A. Yes, sir.

Q. On prior occasions, Mr. Pippin, have you testified before the Division as a petroleum engineer?

A. Yes, sir.

Q. Pursuant to your employment, have you worked with Mr. Head in evaluating the prospects for additional recoveries out of the Huerfanito Unit?

A. Yes, sir.

Q. And have you come to conclusions about commingling of production in the two reservoirs we've been discussing?

A. That's correct.

MR. KELLAHIN: We would tender Mr. Pippin as an expert petroleum engineer.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Before we look at the specifics of your displays, give us a summary of what you see to be the opportunity for your company, if this Application is approved, for commingling production in the Huerfanito Unit.

A. Meridian views this as a salvage operation, really.

We're dealing with a very old field here, in both the Dakota and the Mesa Verde. The Dakota was drilled in the early Sixties -- or I should say the Dakota was drilled in the early Fifties with the Mesa Verde drilling starting in the middle Fifties.

Based on the cost to drill a single Dakota or a single Mesa Verde well now, or the cost to drill a dual Mesa Verde-Dakota well, and the high costs -- or the pressure depletion that both the Dakota and the Mesa Verde have experienced in this area, there's been very little infilling in either the Dakota or the Mesa Verde. As a matter of fact, there's been very little in the last 15 years.

Meridian believes that we can salvage

additional hydrocarbons from both Mesa Verde and Dakota reservoirs, utilizing commingling of the Mesa Verde and Dakota.

Q. Let's turn to Exhibit H, look at some decline curves.

A. Yes.

Q. Why have you selected the decline curves from the Unit 104 and the 107 wells for illustration purposes?

A. These are two single Dakota wells which we plan on adding the Mesa Verde to, commingling.

The Huerfanito Unit 104, it shows on the decline curve, is making about 90 MCF a day. It has had production problems. We hope that the addition of Mesa Verde gas will help lift the small amount of liquids so that this well will produce more evenly.

Similar on the Huerfanito Unit Number 71. The Dakota is making about 30 MCF a day, and we hope with the addition, the commingling of the Mesa Verde to this Dakota production, we can make the Dakota produce a little more evenly, we can extend the life of each of these wells.

Q. Your decline plots on the 71 well, you've shown both the Dakota and then on the next one you've shown the Mesa Verde?

A. On the last --

Q. What's happening here?

A. On the last one, it's labeled Huerfanito Unit 71.

Q. Uh-huh.

A. We show the Dakota Production again as being about 30 MCF a day.

We're hoping that the Mesa Verde production will come on at about 200 MCF a day, which will, in fact, extend the life of the Dakota producing formation.

Q. You've not yet established production rates for the Mesa Verde in that well?

A. No, no, we have not done the workover.

Q. That decline is simply a forecast or an expectation forecast of where you think it's going to come from?

A. That is correct.

Q. Let's go to Exhibit K. Identify and describe that display for us, Mr. Pippin.

A. This is the workover procedure for the Huerfano Unit 71.

In short, it states that we will set a bridge plug above the Dakota producing horizon. We will make sure that there's sufficient cement behind -- across

the Mesa Verde formation. We'll perforate, frac the Mesa Verde with a single-stage frac job, clean it up, and then retrieve the bridge plug and commingle the well, both the Mesa Verde and Dakota.

Q. You've provided a wellbore schematic for the Examiner's use of before-and-after illustration?

A. Correct.

Q. Let's turn now to the information behind Exhibit 11. Identify and describe that information.

EXAMINER CATANACH: Exhibit what, Mr. Kellahin?

MR. KELLAHIN: I'm sorry, Exhibit L. This is the commingling procedure on the -- I think it's the 104.

THE WITNESS: Yeah.

MR. KELLAHIN: All right.

THE WITNESS: This is the workover procedure on the Huerfanito Unit 104, very similar to the 71.

We'll be setting a bridge plug above the Dakota Horizon, making sure there's cement across the Mesa Verde, perforating and stimulating the Mesa Verde, and then commingling both zones.

Q. (By Mr. Kellahin) Direct your attention now to what your recommendations are to the Examiner for a commingling allocation procedure or formula to allocate

production between the two pools.

A. We plan to confer with the District Supervisor in Aztec with the flow tests that we will take during the workover or completion operations.

Q. And that is the standard procedure used under the administrative commingling procedures of the Division where you take separate, individual rate tests on each zone and then you commingle and allocate according to that number?

A. That is correct.

Q. Turn now for me to the last display, Exhibit M. What have you included here?

A. This is the Dakota and Mesa Verde shut-in pressure data. It indicates the Dakota average shut-in pressure of the Dakota wells in the area to be 572. This is down from an initial shut-in pressure of 2899.

We've had over -- We've had just about a 25-percent -- or more than 25-percent loss in formation pressure.

Mesa Verde, very similar. We currently have a 444 p.s.i. shut-in pressure in the formation. The original shut-in pressure was 1515 p.s.i., right over a third decrease in its pressure.

Q. When you look at all the reservoir information and the rules and regulations of the

Division for commingling, do you see any problems in terms of pressure differentials between commingling the two reservoirs?

A. No, we do not.

Q. Any fluid-compatibility problems?

A. No.

Q. No migrations, cross-flows, things of concern to the Division or you as operator for the commingling or production?

A. We don't believe there will be any significant cross-flow, and of course the pipeline pressure is significantly lower than either of the shut-in pressures of the Dakota or the Mesa Verde.

We have -- Meridian has commingled many Mesa Verde/Dakota wells in the San Juan Basin, and we have not had fluid incompatibility problems. We have a well, as a matter of fact, just two miles north of this unit that is commingled in Mesa Verde and Dakota, and we have experienced no problems there.

MR. KELLAHIN: That concludes our presentation.

We move the introduction of the engineering exhibits, which would be Exhibit H, K, L and M.

EXAMINER CATANACH: Exhibits H, K, L and M will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Pippin, what kind of rates do you expect to encounter in the Mesa Verde and the Dakota?

A. We are estimating initial rates on the Mesa Verde drilling wells to be about 250 MCF a day, two and a half barrels of oil a day; and on the Dakota drilling wells, 400 MCF a day, one and a half barrels of oil a day.

On the two workovers, the Number 104 and the Number 71, we are anticipating 150 MCF a day from each, three barrels of oil from each.

Q. And these kind of rates on your drilling wells singly would not justify drilling a stand-alone?

A. No, sir.

EXAMINER CATANACH: I have nothing further.

MR. KELLAHIN: That completes our presentation in this case, Mr. Examiner.

EXAMINER CATANACH: There being nothing further Case 10,701 will be taken under advisement.

(Thereupon, these proceedings were concluded at 2:18 p.m.)

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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 April 25th, 1993.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1994

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10701, heard by me on April 8 1993.

David R. Catanach, Examiner
Oil Conservation Division