STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
Santa Fe, New Mexico

18 March 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corporation for pool reclassification, or, in the alternative, the amendment of Division Order No. R-6129-A, Eddy County, New Mexico.	CASE 9109
and	
Application of Meridian Oil Inc. to amend Division Order R-6129-A, Eddy County, New Mexico.	CASE 9110

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. CATANACH: Call next Case Number 9109.

MR. TAYLOR: The application of Yates Petroleum Corporation for pool reclassification, or, in the alternative, the amendment of Division Order No. R-6129-A, Eddy County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. DICKERSON: Mr. Examiner, I'm Chad Dickerson of Artesia, New Mexico, on behalf of the applicant and I have three witnesses.

MR. CATANACH: Are there other appearances in this case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of Meridian Oil, Inc., and I have one witness.

We'd request at this time, Mr. Examiner, that you also call Case 9110. Both cases involve the same subject matter. Both involve the Benson Strawn Pool, and I think the operators have simply taken alternative choices as to a solution to some producing rate questions, and so I think they ought to be consolidated and we would so request.

MR. CATANACH: Any objection to

that?

MR. DICKERSON: No.

MR. CATANACH: We'll call next Case 9110.

MR. TAYLOR: The application of Meridian Oil, Incorporated, to amend Division Order No. R-6129-A, Eddy County, New Mexico.

MR. CATANACH: And let the record show we have the same appearances in both cases.

You may proceed.

MR. DICKERSON: Mr. Examiner, --

MR. TAYLOR: Let me swear them all. Do you have any witnesses, Tom?

MR. KELLAHIN: Yes, sir, I'd like to swear Mr. Herring.

(Witnesses sworn.)

MR. DICKERSON: Mr. Examiner, a brief procedural point first. Rule 1207 (a) 4 of the Division Rules of Procedure require notice in a proceeding of this type to offsetting operators and unleased mineral interest owners, and I took the liberty of reviewing your file and it does not appear that the required notice has been

given to other offset operators.

I mentioned this to Mr. Kellahin and we -- I would suggest that we proceed with our hearing today; that Yates Petroleum Corporation give the required notice to the offsetting owners; and that the case be held open for thirty days, which should be a sufficient period of time for any of these parties, if they desire, to object and we did not think any others would, to make an appearance and handle the problem in that manner.

MR. CATANACH: Any objection to that?

MR. KELLAHIN: I have no objection.

MR. CATANACH: Okay, we'll leave the record open in this case until the -- we'll leave the record open until the April 22nd Examiner Hearing Docket.

MR. DICKERSON: Mr. Examiner, we also would direct your attention to the provisions of 1207 (a) 4 and ask your and Mr. Taylor's opinion on the parties that should be notified.

There are only at this point three wells actually completed in this Benson Strawn Pool. There are a total of five or six wells in the area which have penetrated this zone. The rule merely says that all

operators of wells within one mile of such boundaries. There are a great number of shallow wells that have not penetrated the Benson Strawn Pool and a little guidance on who is required to be notified under that rule would be appreciated.

MR. TAYLOR: Well, just off the -- off tne top, I'd say anybody who would be affected, so if their well was not penetrating the horizon we're going to be dealing with and you'll have to know from what rules you're proposing and I certainly don't know what -- at this point you're proposing, but you should be able to tell from what you're proposing who would be affected by it, and I guess if later on they wanted to deepen their wells or something, then -- then they would --

MR. DICKERSON: So a working interest owner on undeveloped acreage that has no well located on it at the present time but is within a mile of the boundaries of the Benson Strawn Pool needs to be notified?

MR. TAYLOR: Oh, I would say probably so. I know that may be difficult, I don't know unless the -- certainly unleased people (not clearly understood).

MR. DICKERSON: Well, operators are no problem but working interest owners on undeveloped acreage are a little more difficult but we can do it.

MR. TAYLOR: And if there's no operator that could be difficult.

MR. DICKERSON: Thank you for that.

Mr. Examiner, may I make a brief opening statement?

MR. CATANACH: Yes, sir.

MR. DICKERSON: We've hung a map of the general vicinity of the Benson Strawn Pool on the wall.

Mr. Examiner, in approximately the mid-part of 1979 NAPCO, Inc., who was then the operator of the unit, put together a three-section federal exploratory unit. It approved by the federal, the state authorities, and this Division at a hearing and the boundaries of that unit are shown in the yellow acreage. It consists of the west half of Section 34 and all of Section 33 in 18 South, 30 East, Eddy County, New Mexico; all of Section 4 and the west half of Section 3 in 19 South, 30 East, Eddy County.

The initial unit well was drilled later that same year and it was the Benson Deep Unit No. 1 Well, operated by NAPCO, Inc. It was a Morrow attempt not completed in the Morrow but instead completed in the Strawn formation and has continued to produce from the Strawn con-

tinuously to the current date.

The second well drilled was the Benson Deep Unit No. 2 Well. It was also drilled to the Morrow formation. It was subsequently depleted in the Morrow and is now completed as a Bone Spring oil well.

The third well was the No. 3 Well, also a Morrow completion and continuing to produce from the Morrow formation to the current date.

The fourth well was the Yates Petroleum Corporation Benson Deep Unit No. 4 Well, located in the west half of Section 3, 19 South, 30 East. This well was drilled in the middle of 1984 and has been producing gas and condensate from the Strawn formation since that time.

The number five well was drilled in 1985 and at the present time Meridian has very recently, within the last month, drilled and completed a well offsetting the Benson Deep Unit No. 4 but outside the boundaries of the Benson Deep Unit Federal exploratory unit.

Following the completion of the Benson Deep Unit No. 1 Well, and prior to the drilling of any additional wells in this unit area, NAPCO filed an application with this Division to establish 160-acre spacing and at the Examiner Hearing, based on some inconclusiveness in the evidence to the area that could be drained, because the only well penetrating the formation was not on line at

that time, it was denied on the basis that no evidence had been presented to show that it in fact was capable of draining 160 acres.

A de novo hearing was requested and in April of 1980 the de novo hearing resulted in the establishment of the Benson Strawn Pool, at that time consisting only of the southeast quarter of Section 33 in 18 South, 30 East.

The Benson Strawn Pool rules very briefly insofar as they affect the parties here today provided for 160-acre spacing, classified the pool as an oil pool.

The evidence presented to the Commission in that case, the order, for your information was R-6129-A, was somewhat uncertain at the time because the well had not been on line. It was a -- fluids in the reservoir were of some unusual nature and there was considerable debate and expert testimony regarding whether this was -- this fluid existed in the reservoir as oil, whether it existed as gas, or in fact the opinions of NAPCO's experts at that time was that in fact it consisted of a substance they called volatile oil, which as I understood the testimony was neither oil nor gas, but based on that evidence prior to the production history being established from the Benson No. 1 Well, the Benson Strawn Pool rules were promulgated.

There was a provision in there because of the concern of the Commission and the parties, as well, because of the unusual qualities of these reservoir fluids, that as additional information became available from the production of this well, that further studies would be done and the order was left open to revise or change the pool rules as the evidence would dictate.

What in fact happened was that the Benson Deep Unit No. 2 Well was then drilled, completed in the Morrow formation, not affected by the Benson Strawn Pool rules.

The No. 3 Well also drilled, completed in the Morrow formation, not affected by these rules.

The No. 4 Well in 1984 was then drilled and it was completed in the lower part of the Strawn formation.

While not within the original boundaries of the Benson Strawn Pool, it was within one mile of those boundaries and therefore technically was subject to those pool rules.

This was not recognized by Yates Drilling Corporation, who effective October 1st, 1980, following the completion of the first well and prior to the completion and drilling of the second well, had assumed

operations of this Benson Deep Unit Federal exploratory unit.

The No. 4 Well has continued to produce from the lower part of the Strawn since that time.

Approximately a year after its completion the No. 5 Well was also completed in the Strawn formation. It has been shut-in and has not produced. At this date it is still waiting on a pipeline connection.

As production from the Benson Deep Unit No. 1 Well was developed the pool rules as originally established set an allowable of 70 barrels of oil per day. At that time, based on the testimony that this was the substance that was called by the witnesses volatile oil. It followed the general 2000-to-1 GOR rule and as I stated, there was a provision for the parties to submit additional evidence to the Division with the discretion left in the Director of the Division to either administratively revise these rules or set it for hearing at his pleasure.

At least later in 1980 there were some submittals of additional information made by Yates to the Division at that time reflecting what little additional information had been gained, but it really, given the fact that at that time and for several years thereafter, the Benson Deep Unit No. 1 Well was the only well producing from the Strawn formation and following a fracture treatment that

was performed on that well in 1981, the productivity of that well never approached the 70-barrel per day allowable set in the order.

As a result, while we don't know, the records are somewhat skimpy on whatever happened, it looks like it just sort of -- the parties lost interest on it because the well would not -- was not a very good producer, and as I stated, upon the drilling of the Benson No. 4 Well, which has proven to be a very good producer since that time, the present problem arose when the Meridian well offsetting was completed and about contemporaneously with the completion of the Meridian well offsetting the unit acreage, Yates Petroleum Corporation received from the Division an order to shut in its Benson Deep Unit No. 4 Well because under the pool rules it has exceeded its casinghead gas allowable.

The position of Yates Petroleum Corporation that we intend to introduce today is that the establishment of the Benson Strawn Pool was based on information which has later subsequently been proven to be simply incorrect. The unit has been developed de facto on 320-acre spacing since its inception. In fact, you can notice that of the five unit wells drilled within the boundaries of the Benson Deep Unit one, two, three, four, five wells, each potential spacing unit within that unit area has one well lo-

cated upon it completed in either one of three formations, except the west half of Section 4, 19 South, 30 East, and you'll note in some of the exhibits that we introduce that that is within the potash area.

MR. CATANACH: Would you like to make a statement.

MR. KELLAHIN: Yes, we do, Mr. Catanach.

I'd like to amplify some of the points that Mr. Dickerson addressed in his opening statement to you.

The transcript of the hearing of the original case back in April of 1980, when parties came forward to establish spacing rules and production rates for the Benson 1 Well is an interesting transcript and I would invite your attention to look at some of the material that established that pool.

My recollection is that representatives of the applicant had a fluid reservoir study made of the Benson Deep well fluid charateristics and they had pvt data for that well, and the conclusion of their engineering experts, and there were, I believe, a total of three, was that in classifying this well they characterized it as a volatile oil reservoir. It was their opinion looking at that data that this was not a gas reservoir. It cer

tainly was not a dry gas reservoir, and when you talk about classifying the reservoir, it wasn't a strictly crude reservoir, either. It had elements of an oil pool and they characterized it as volatile.

The testimony was that the composition of the hydrocarbons in the reservoir were in an oil stage and that after they were produced they were separated and recombined to confirm the technical data.

The initial question we believe you need to decide is whether or not the additional development that's occurred in the pool should be required to abide by the characterization of the reservoir or the pool as an oil pool, or whether or not you can reclassify this area as a gas pool. We consider that the threshold question.

Meridian not realizing that the Yates Benson Deep 4 Well, which is also in Section 3, not realizing that Yates was under the impression they were dealing with a gas well, filed for approval to drill its well in Section 3 in the northeast quarter, and contacted the District Office to confirm whether or not their well was going to be subject to the Benson Deep rules, the Benson Strawn Pool rules.

They were advised that they were within a mile of those rules; that the Strawn interval was suspected to correlate; that was the principal objec-

tive, and that they were to abide by the oil spacing on 160-acres for that pool.

In good faith reliance upon that as being the rules, they in fact drilled the Meridian Benson 3 Federal 1 Well.

After the well was completed in February of this year and potentialed for a significant amount of oil and demonstrating a very low gas/oil ratio, Meridian contacted the District Office to reconfirm whether or not the producing limitation of those pool rules of 70 barrels a day was going to apply to them. They were advised that yes, they were subject to the 70-barrel a day limitation.

Apparently, and at some speculation on my part, but apparently, as a result of that conversation and the examination of other wells in the area, including the Yates well, it became apparent to the District Office that we had a well, the Yates Benson Deep Well No. 4 being operated as if it were a gas well and producing in excess of those limits set in the Benson Strawn as Mr. Dickerson has told us, and we simply inquired as to what the rules were. Was this a gas reservoir and should we do what Yates was doing or were we still all committed to the original oil pool rules.

As an outcome of that discus-

sion, each operator has filed applications for you today to solve the situation in different ways.

The situation and the next decision we would ask you to make is what the production limitation ought to be. I think both Yates and Meridian are in agreement that the original 70-barrel a day limitation in the Benson Strawn is no longer justified, if it ever was originally. My recollection of the testimony in that transcript is that there was a computer model projected upon the information available on that original well at that time, and the computer modeling showed that there was at least a producing rate for which the original well could be produced and not concern anyone about damage to the reservoir, and the question remained open as to the whether the pool was going to be rate sensitive.

The Commission, I think, arbitrarily set 70 barrels a day limit. It appears that the original well never produced much in excess of that at any point and it never became an issue, and it's natural to see how that well was shelved and as the unit, Yates unit was developed, it was quite natural to assume that they were dealing with gas wells and acted accordingly.

Our opinion from what we know about our well and from what we know about the Benson Deep 1 Well, is we are of the opinion and believe the evidence will

demonstrate that this is an oil reservoir and that the gas/oil ratios are so low that you must continue to treat it as an oil reservoir; that the production limitation, however, can be increased to the statewide depth bracket allowable.

In addition we believe that you can use a higher gas/oil ratio than the statewide 2000-to-1.

Our evidence shows that the production has not caused the gas/oil ratios to climb when that production exceeds 70 barrels a day. We don't see any damage to the reservoir, no adverse consequences, and believe the reduction limitation can be eliminated and increased; however, we believe the geologic testimony and the engineering data shows that for whatever you do with the Yates wells in the Strawn, you must also do for the Meridian well because we believe that they're in communication and ought to be subject to the same rules. They appear to be in the same equivalent interval in the Strawn and it would be inappropriate to set different rules for the two wells.

So in conclusion we believe our evidence is that the oil reservoir continues to be an oil reservoir; that all wells ought to abide by those rules, and that the production limitation ought to be eliminated and let us go to the statewide basis and allow the production to be balanced and treated accordingly, and that would be our

position.

MR. DICKERSON: Mr. Examiner I'll only close my statement by saying that the Yates position is only that the evidence will show that this is in fact a gas pool and should be continued to be developed on 320-acre spacing as it has in the -- as a matter of fact in the past, subject to the statewide, the general statewide rule on gas well spacing in formations of this age in southeast New Mexico.

In the alternative, in the event that the Division believed the evidence of Meridian, that this was not in fact a gas pool but was an oil pool, then we seek the same relief as Meridian, that is an increase to a realistic level in the allowable and the gas/oil ratio, but at the same time we request that in view of the fact that the Yates Benson Deep Unit No. 4 Well has produced for several years, and given the nature of the questions as to the reservoir actually involved, which you will decide here today, that it would be inequitable to force Yates to shut its well in for any period of time given the recent completion of Meridian's offsetting well, that both parties obviously have the right to drill and to produce their fair and equitable share of the gas, oil, or condensate, or combination, whatever it actually is that is in place, and that the only manner in which the status quo can be equitably pro-

served for both parties regardless of the decision of the Division, is to allow both of those wells to continue to produce since we also believe that the Meridian well is in communication and in fact in the same reservoir as the Benson Deep Unit No. 4 Well and other wells in the Benson Strawn Pool.

JANET RICHARDSON,

being called as a witness and being duly sworn upon her oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q For the record, will you state your name, your occupation, and by whom you're employed, please?

A Janet Richardson. I'm a landman for Yates Petroleum Corporation in Artesia, New Mexico.

Q And, Mrs. Richardson, you have testified on several occasions before this Division --

A Yes.

Q -- have you not?

A Yes, I have.

Q And are you familiar with the land situation in the area of the Benson Strawn Pool and the Benson Deep Unit Area?

A Yes, I am.

MR. DICKERSON: Is this witness qualified, Mr. Examiner?

MR. CATANACH: The witness is qualified.

Q Ms. Richardsan, directing your attention to what we have submitted as Yates Exhibit Number One, will you tell the Examiner what that map shows?

A This is a map of the Benson Deep Unit. The purple outline shows the full outline of the unit, it's a three section unit.

The red spots are where the well locations are. We have five wells in this unit.

The red outline is where the Strawn participating area is at.

Q Okay. Let's turn to Exhibit Number Two but keep Exhibit Number One handy because I'll ask you to make further reference to it in a minute. Identify what we have submitted as Yates Exhibit Number Two.

A Exhibit Number Two is the first page and basically paragraph IX of our unit agreement for the Benson Deep Unit Area. Paragraph IX deals with the participation after discovery. It outlines how the Bureau of Land Management delegates lands to be put into a participating area. They say that land regarded as reasonably proved to be pro-

ductive in paying quantities should be included in the participating area.

Q And who is it that makes that determination?

A The Bureau of Land Management.

Q Okay. Now directing your attention back to Exhibit Number One, will you point out for the Examiner the first well drilled in this area?

A The Benson Deep Unit No. 1 Well is drilled in the south half of Section 33 and it was applied for and received approval for the initial Strawn participating area.

Q Consisting of what acreage?

A Of 320 acres.

Q Okay, what was the second well drilled in this unit?

A The Benson Deep Unit -- No. 2 Unit -- No. 2 Well. It was in the west half of Section 34.

Q And that was completed in what zone?

A That was completed in the Morrow zone and then subsequently recompleted.

Q In the Bone Spring?

A In the Bone Spring.

Q Was a Strawn participating area in fact dedicated to that well by the BLM also?

A Yes, it was. The well was proved to be capable of producing in the Strawn but isn't at the moment.

Q Okay. And what was the third well drilled within the boundaries of the Benson Deep Unit?

A That's the Benson Deep Unit No. 3 Well. It's in the north half of Section 33 and it's completed in the Morrow.

Q And so is not affected by any Strawn --

A Right.

Q -- participating area.

A Right.

Q Point out for us the fourth well drilled on the unit area.

A It's located in the west half of Section 3 of 19 South, 30 East, and it was also included in the Strawn participating area and is completed in the Strawn at this time.

Q And has produced continuously from the Strawn since it's completion?

A Yes, It has.

Q Describe for us the fifth and last well which has been drilled in the boundaries of the unit.

A The fifth well is in the east half of Section 4 and it's completed in the Strawn but it is shut-in at this time.

Q Did -- in connection with that, and as required under the terms of the Federal exploratory unit, did the Bureau of Land Management make a determination as to whether or not that No. 5 Well was a commercial well or not?

A Yes, they have determined that that No. 5 Well is a noncommercial well.

Q Okay, identify Exhibit Number Three and tell us what it consists of.

A Exhibit Number Three are the applications for the initial participating area for the Strawn formation. This exhibit also includes the first revision and second revision of the Strawn participating area.

It also includes the approvals by the Bureau of Land Management, which approved all of the initial and both revisions of the Strawn Participating Area.

Q So given (not understood) to all revisions of the Strawn Participating Area, what acreage is at the present time included by the BLM in the Strawn Participating Area for this Federal Unit?

A At this time it includes the south half of Section 33 and the west half of Section 34 and the west half of Section 3.

Q Mrs. Richardson, directing your attention to the acreage in Sections 34 and Section 3 lying to the east and contiguous to the Benson Deep Unit boundaries, spe-

cifically first with regard to the southeast quarter of Section 3, do you have any knowledge of who owns that 160-acre tract?

A The Hinkle Law Firm filed an application for this tract and received approval from the Bureau of Land Management on their last KGS sale.

Q This is a Federal KGS tract?

A Yes, it is.

Q Did the application show on whose behalf the application -- it was filed?

A Yes, on Meridian Oil Company.

Q Okay. And to your knowledge does Meridian also have acreage in the east half of Section 34 immediately to the north?

A I believe they have aa option from the owners of the acreage to go up there and drill.

Q This is based on your conversations with Meridian personnel?

A No. Based on -- on some of the owners of the southeast quarter of 34.

Q Okay. Were Exhibits One, Two, and Three compiled by you?

A Yes.

MR. DICKERSON: Mr. Examiner, I move admission of Yates Exhibits One, Two, and Three at this

time and I have no further questions of Mrs. Richardson.

MR. CATANACH: Exhibits One, Two, and Three will be admitted into evidence.

Any cross?

MR. KELLAHIN: Yes, Mr. Catanach.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q A couple points of clarification, Mrs. Richardson.

My Exhibit Three that Mr. Dickerson has given me, the first page is a February 4th, 1984 letter, but then stapled together are a number of documents. Is this all intended to be one exhibit?

A Yes, it is. This includes -- the top letter is the application. The application also includes the geological report, a plat for the different participating area. It also includes another letter for the first revision. That's dated July 3rd, 1984, and it also -- no, it doesn't have any --

Q You don't have to tell me --

A Okay.

Q -- all of the pieces of paper in here but this constituted then the attachments to the February 8th

letter to the Bureau of Land Management talking about the participation area in the Strawn for the Benson Deep No. 1 Well.

A Well, it also includes, though, when we went in and revised the participating area.

Q Ah, all right.

A For -- and enlarged it.

Q Very good.

A So that you have both of those in there, also.

Q All right. My second point of clarification is my colors on Exhibit Number One are perhaps not as clear as yours. What was intended by the purple outline?

A That is the outline of the Benson Deep Unit.

Q Is that entire area still intact insofar as the unit area goes?

A No, I believe it was on July 9th of 1985 the unit contracted.

Q To conform to the red outline.

A Right, to the participating area.

Q All right. Let me ask you this. If the Examiner finds that the appropriate spacing for the Strawn is going to be 160 acres as opposed to 320 gas, my question is whether or not that will require you to contract the par-

ticipation area for the Benson Deep 4 Well and to delete the southeast quarter from the section -- from the unit.

A The southwest quarter?

Q Yeah, the southwest quarter.

A I believe that under the rules that you do not contract your participating area unless all the wells producing out of that formation are plugged and abandoned, so your -- your participating area will remain the same.

Q Let me make my question more simply --

A All right.

Q Simpler. If -- if the Commission determines that the Benson Strawn rules, 160-acre rules, are to apply to the No. 4 Well, is that going to cause you to have to change the parties that are currently sharing and enjoying the production from that well?

A No, our unit also consists of a working interest unit which -- the working interest owners equally share in the entire outline of the Benson Deep Unit.

Q In addition, will the deletion of the southwest quarter of Section 3 from the acreage dedicated to the Benson Deep 4 Well, would that result in the change in thke participation percentage for any of those individuals?

A No.

Q Same answer, same units holding it together.

A Right. Uh-huh.

Q Will the change from 320 to 160, if that's what the outcome is, would that require you to perform any other function under either the agreement with the BLM or under the unit agreement?

A I don't believe so.

Q Okay.

MR. KELLAHIN: Thank you, I have nothing further.

MR. CATANACH: Anything further?

MR. DICKERSON: One question, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. DICKERSON:

Q Mrs. Richardson, upon the contraction of the deep -- of the Benson Deep Unit Area to the areas contained within the then participating areas on July 9th of 1985, we had the area 960 acres outlined in red, roughly shaped like a sideways T, committed to Strawn participating areas. We had the acreage consisting of the north half of Section 33 dedicated to a Morrow participating area. So the contraction of that unit actually affected only Section 4?

A No, I believe that the Morrow well in Sec-

tion 33, the No. 3 Well, I don't believe it was commercial, either.

Q No, it was deemed noncommercial.

A Okay, also noncommercial and I don't believe it's in the participating area.

Q And to amplify just a little bit on Mr. Kellahin's question, did I understand you that regardless of the contraction of the Benson Deep Unit Area, the Federal Exploratory Unit, that the working interest unit operating agreement executed along with that remains in effect according to its terms among the parties, regardless of the contraction of the Federal Unit?

A Yes, it does.

Q Okay.

MR. DICKERSON: No further questions.

MR. CATANACH: I don't have any questions of the witness, either.

She may be excused.

MR. DICKERSON: Call Mr. Ray Beck.

RAY BECK,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Beck, will you state your name, your occupation and by whom you're employed?

A Ray Beck, geologist, Yates Petroleum, Artesia, New Mexico.

Q Mr. Beck, you have testified before this Division and the Commission on numerous occasions as a petroleum geologist and your credentials are a matter of record, are they not?

A Yes, sir.

Q And have you made an examination of the available geological data as the prelude to forming your opinions upon which you're prepared to testify today?

A Yes, I have.

Q And are you familiar with the geology in the area of the Benson Deep Unit and the Benson Strawn Pool?

A Yes, I am.

MR. DICKERSON: Tender Mr. Beck as an expert petroleum geologist, Mr. Examiner.

MR. CATANACH: Mr. Beck is so qualified.

Q Mr. Beck, what is the purpose of your geological testimony today?

A The purpose of my testimony is to serve as a geological background for the main testimony, which will be reservoir engineering testimony to be presented later.

Q Directing your attention to what we have submitted as Yates Exhibit Number Four, Mr. Beck, will you describe to the Examiner what that instrument is?

A Exhibit Number Four is a location and structure map covering the township-sized area surrounding the Yates Benson Deep No. 4 Well in the west half of 3, 19, 30.

The well spots on the map indicate the horizon at which the wells are now completed; however, I will talk about the Strawn in those wells.

The Yates, formerly Napeco, Benson Deep No. 1 in the south half of 33, produces from the upper part of the Strawn Series, as indicated by the coloration on the well spot on the map.

The Yates Benson No. 2, the west half of 34 of 18, 30, is a Morrow well, which is probably capable of producing gas and condensate from the upper part of the Strawn Series, same zone which is producing in the No. 1 Well.

The Yates Benson Deep No. 3, the north half of 33 of 18, 30, is a Morrow gas well which has good

potential to produce at a later time from the middle part of the Strawn Series, a little lower than the other two wells previously mentioned.

The Yates Benson No. 4, in the west half of 3, 19, 30, is producing from the middle part of the Strawn Series, as indicated on the map by a different well spot coloration.

The Yates Benson Deep No. 5, in the east half of 4, is completed in the middle part of the Strawn Series.

So two of the wells that we know of are producing from the middle part and two are from the upper part -- excuse me, three from the middle part and two from the upper part.

The Texaco Manning Well in 28 of 18, 30, is a Devonian penetration which was plugged back for a completion in the Morrow Clastics. It might make a small recovery of gas and condensate later from the middle part of the Strawn Series.

The ARCO State No. 1 Well in the Section 2 of 19, 30, is a dry -- is a Morrow penetration that was a dry hole. They attempted a completion in the Bone Spring and plugged the well as noncommercial.

The structure on the top of the Strawn shows the present Strawn production and especially the

better future production apparently, is not within the closed structure or on the top of the structural closure.

I'd say this map sums up that the sporadic scattering of production from different zones within the Strawn and the non-relationship of Strawn production to the structural closure, shows that the horizontal and vertical pool limitations are difficult to ascertain on the basis of one early well, the Benson Deep No. 1, and my be expected to be changed as more drilling is done and more information obtained.

Q Is the trace of your next Exhibit Number Five shown on this map, Mr. Beck?

A Yes, it is.

Q Okay, refer now to what we've hung on the wall as Yates Exhibit Number Five and tell us what you depict by that cross section.

A The cross section is hung on the top of the Strawn Series. The top of the Strawn and other log markers are easily correlated from well to well.

The purpose of the cross section is to show the relationship of the different Strawn producing zones and certain log characteristics present in the Strawn.

The perforations or producing zones in the Benson Deep No. 1 are stratigraphically higher than the perforations in the zones in the Benson Deep No. 5 and Ben-

son Deep No. 4.

Correlating the Benson Deep No. 1 with the Benson Deep No. 4, one on one, it is found that the base of hte perforations in the No. 1 Well are 42 feet stratigraphically high to the top of the perforations in the Benson Deep No. 4 Well, and in the previous map I refer to these as the upper zone and the middle zone.

Now, it may be also observed from the appearance of the log that the clean limestone lens from which the Benson Deep No. 4 produces is present in the Benson Deep No. 5 but is not present in the Benson Deep No. 1 or the ARCO State No. 2 Well.

This BDU No. 4 reservoir lens is obviously cleaner and less radioactive and less broken than the equivalent stratigraphic intervals in either the Benson Deep No. 1 or the ARCO well.

In addition, the neutron density log, what this cross section is composed of, shows gas effect, that is, separation of about 3 chart divisions between the neutron curve and the density curve on the Benson Deep No. 4 Well. This indicates a gas hydrocarbon reservoir at depth.

In contrast, experience has shown that oil productive pay zones show the density curve and neutron curves stacked or to be coincident, or much closer together than this.

Q Mr. Beck, based on your examination of this data have you formed an opinion as to the likely ultimate extent of the Benson Strawn Pool, whether it be classified as oil or gas?

A I would say that the -- there are two probably good wells in the pool, the Benson Deep No. 4 and the Meridian Well, which we have not seen a log on, but we assume it's in the same reservoir.

The Benson Deep No. 5 would be, say, an edge well.

The Benson Deep No. 1 would be a small well, upper.

The Benson Deep No. 3 would be a small well in the lower, I mean middle zone.

The Benson Deep No. 2 would be a small well in the upper zone.

So I would say that we probably have one more good location besides the wells drilled now.

Q Mr. Beck, were Exhibits Four and Five prepared by you or under your direction and supervision?

A Yes, they were.

MR. DICKERSON: Mr. Examiner, I'd move admission of Yates Exhibits Four and Five at this time and that concludes my direct examination of Mr. Beck.

MR. CATANACH: Exhibits Four

and Five will be admitted into evidence.

Mr. Kellahin, any questions?

MR. KELLAHIN: Thank you, Mr. Catanach.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Beck, what is your understanding of the vertical limits for the Benson Strawn Pool? Can you show those to us on the cross section?

A The vertical limits as -- if you call the whole Strawn Series the Strawn formation, it would be this here.

Q You've identified on your Exhibit -- what is that, Exhibit Four?

A Five.

Q Exhibit Number Five, you've picked that line that's shown across the cross section labeled Strawn Series and then you've taken it down to the top of where it identifies itself as the Atoka Series?

A Yes.

Q Okay, that is the vertical limits, then, for the Benson Strawn Pool?

A That's my understanding.

Q Do you see any geologic reason to change

the vertical limits for the Benson Strawn Pool?

A In my geological opinion, I don't believe that the Benson Deep No. 1 and the Benson Deep No. 4 are connected. They may be all in the Strawn Series but I don't believe it's the same reservoir.

Q Are you proposing to the Examiner that we ought to try to separate out any of these wells into separate reservoirs or pools?

A I'm not proposing that.

Q Okay. We generally treat the Strawn Series as one pool under the pool rules of the various Strawn pools?

A As far as my experience has shown, yes.

Q Do you know of any instance where we've attempted to isolate out the various zones within the Strawn Series as separate reservoirs?

A Not to my knowledge.

Q In terms of the horizontal extent of the reservoir as you have seen it thus far, do you have a geologic opinion as to whether the Deep 1, the Benson Deep 5, the Benson Deep 4 Wells ought to be in the same horizontal reservoir?

A Would you restate your question while I'm looking at the map?

Q Yes, sir. When we look at the wells on

your exhibit, do you see any geologic reason not to include all those wells in the same common rules for whatever reservoir that is?

A What all wells are you talking about?

Q Well, I'm talking about the Deep 1, which is completed in the Upper Strawn.

A Uh-huh.

Q And I'm talking about the two Yates wells that are completed in what you call the Middle Strawn.

A I understand your question. I -- I can see by the pool rules that they're all in the Strawn Pool, but like I say, the Benson Deep No. 1 and 5 in my opinion are different reservoirs, geologically different.

Q Okay, and you haven't seen the log on the Meridian well yet.

A No, sir.

Q All right, sir. Thank you, I have nothing further.

MR. DICKERSON: No further questions.

MR. CATANACH: I have no questions of the witness at this time.

MR. DICKERSON: Call Mr. David Lanning at this time, Mr. Examiner.

DAVID LANNING,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Lanning, will you state for the record your name, your occupation, and by whom you're employed?

A My name is David Lanning. I'm a petroleum engineer in Artesia, New Mexico, with Yates Petroleum Corporation.

Q And you have testified before this Division and the Commission as a petroleum engineer in the recent past, have you not, and your --

A Yes, I have.

Q -- credentials are a matter of record? Have you made a study, Mr. Lanning, of the available engineering data in the area in question before us today?

A Yes, I have.

Q And based on your study have you presented -- have you prepared certain exhibits upon which you intend to rely today?

A Yes, I have.

MR. DICKERSON: Mr. Examiner, I tender Mr. Lanning as an expert petroleum engineer.

MR. CATANACH: Mr. Lanning is so qualified.

Q Mr. Lanning, what is the purpose of Yates application in this Case 9109?

A We are asking that the pool rules for the Benson Strawn Pool that were established with Order R-6129 be rescinded and that the Benson Strawn be reclassified as a gas pool under statewide rules.

For the last seven years Yates has been the only operator in the field. We have developed the field on 320-acre spacing. We believe it is a gas reservoir and that that correlative rights can be protected and that wasteful drilling could be prevented if 320-acre development can be continued.

Q Do you have an alternate proposal in the event that the Division did not agree with Yates' evidence on that --

A Yes.

Q -- finding?

A Yes. If the Commission does not agree that the pool is in fact a gas pool and that a well is capable of draining 320 acres, we ask that the temporary allowable be increased from the current 70 barrels of oil per day

to the full depth bracket allowable of 560 barrels of oil per day and that a special gas/oil ratio limitation of 3000-to-1 be established.

In addition, we request that the Commission make the necessary changes in the Benson Strawn Pool rules effective January 1st, 1985.

Q Mr. Lanning, what is your testimony before the Division today designed to show?

A I prepared several exhibits to show that the Benson Strawn is in fact a gas pool and that it should be developed under statewide rules of 320-acre spacing.

Q Okay, direct the Examiner's attention to the instrument submitted as Yates Exhibit Number Six and tell us what that is.

A Exhibit Number Six is a map of the Benson Strawn area. It includes all of the wells that have been drilled in the Benson Deep Unit, which is outlined on the map, and the well Meridian recently drilled, the Benson 3 Federal No. 1.

Going through the map well by well, in the south half of Section 33 Yates completed the Benson Deep Unit No. 1 in the Strawn in May of 1979.

It has currently produced 258-milllion cubic feet of gas and 62,000 barrels of condensate. It is currently producing about 10 barrels of condensate and 125

MCF a day.

The GOR on this well is currently only 12,500 but it should soon increase back to its previously established trend of about 25,000-to-1.

Over the last year it has gradually decreased because the well was loading up and dying and we recently swabbed the well back in and it's gradually increasing back up to where it was before.

In the west half of Section 34 the Benson No. 2 was completed in the Morrow in 1982. It ws recompleted in the Bone Spring last year.

In the north half of Section 33 the Benson No. 3 was completed in the Morrow in 1983. In the west half of Section 3 the Benson Deep No. 4 was completed in the Strawn in June of 1984. It has produced 383-million cubic feet of gas and 190,000 barrels of condensate. Current production is approxinately 450 MCF a day and 200 barrels of condensate per day.

The current GOR of the No. 4 is about 2300-to-1 and it should begin to increase very soon in the same pattern that the No. 1 did.

In the east half of Section 4 the Benson Deep No. 5 was completed in the Strawn in May of 1985. It has not been hoooked up to pipeline.

In the east half of Section 3 Meridian

completed the Benson 3 Federal No. 1 last month and it is still shut-in waiting on a pipeline connection.

Q Okay, refer to what we've submitted as Yates Exhibit Number Seven, Mr. Lanning, and tell us what that is.

A Okay. This is a copy of the Benson Strawn Pool Rules and I intend to review the major points that were covered in this rule. I've highlighted the portions of the order which are the main points I want to cover.

Order R-6129-A established the Benson Strawn Oil Pool in June of 1980.

Rule Number 1 establishes that Strawn wells drilled within a mile of the southeast quarter of Section 33 would fall under the rules of this order.

Rule Number 2 establishes 160-acre proration units.

Rule Number 3 requires drilling no closer than 660 feet to any quarter section line, nor closer than 330 feet to any quarter quarter section line.

Rule Number 5 assigns a depth bracket allowable of 70 barrels of oil per day to each well.

It was further ordered that (1) special depth bracket allowable established in Rule 5 would remain in effect pending the establishment of a permanent depth

bracket allowable and the gas/oil ratio limit for the pool.

And numbers (2) and (3) production tests were to be performed on the Benson Deep Unit No. 1 and submitted to the Commission.

And then number (4), based on the results of the tests submitted the Director of the Division could administratively revise the special depth bracket allowable set forth in Rule 5, could establish a special GOR limit, or he could set the atter for public hearing.

Q Okay, refer to what we've submitted as Exhibit Number 8, Mr. Lanning, and tell us what that is and how it relates to Yates completion of the No. 4 Well and its subsequent production in excess of the allowable set by the previous exhibit.

A Exhibit Number 8 is a chronological list of the events from the last seven years that concern this case, and I want to go through them one at a time.

In May of 1979 the discovery well, the Benson Deep Unit No. 1, was completed in the Upper Strawn. Napeco was the operator of the Benson Deep Unit at this time.

July 25th of '79, the initial hearing was held in which Napeco sought the creation of the Benson Strawn Pool with provision for 160-acre spacing. In this hearing Napeco was asking for oil classification but they

felt that a well was capable of draining at least 160 acres and possibly 320 acres.

Mr. Nutter was the examiner. He questioned whether the pool was in fact oil or gas. He was aware of a nearby pool, the Parkway -- West Parkway Strawn, in which there had been a question about whether or not the reservoir was oil or gas, and there was some doubt about the classification.

10-10-79, Napeco's application was denied based on their lack of evidence that a well could effectively drain 160 acres.

December 19th of 1979 the first fluid sample was obtained from the Benson Deep Unit No. 1.

February of 1980 the results of the first fluid sample indicated that the fluid was a volatile oil and the de novo application that had been filed after the first hearing was revised to include classification of the Benson Strawn as a volatile oil reservoir.

A volatile oil is a somewhat rare fluid that experiences unusually high shrinkage when it goes below the bubble point. At initial reservoir pressure above the bubble point a volatile oil exists in a single phase as a liquid. As soon as you go below the bubble point a greater than normal percentage of that liquid converts to gas and that's where it gets the term volatile oil.

April 16th of 1980 the de novo hearing was held on Napeco's application for pool creation and special rules allowing for 160-acre spacing. At this hearing there was a great deal of testimony regarding this volatile oil fluid study, pressure analysis that had been done and computer simulation of the Benson Strawn reservoir.

The Benson Deep working interest owners had gone to a lot of trouble and expense to obtain some special pool rules that they felt would allow for the most effective development plan to maximize the ultimate recovery from this new pool.

Their effort was successful and that resulted in Order 6129, which was Exhibit Number Seven, which created the Benson Strawn Pool.

The additional testing requirements of the order were included so that final pool rules would provide for the most efficient production rate for the field.

June 29th of 1980 a second fluid sample was obtained from the Benson Deep Unit No. 1 because of some doubts regarding the validity of the initial sample. At some point in time after this first sample was taken, it was discovered that there was a problem with the measurement of the gas during the sampling procedure. These samples are taken at the surface and then the gas and the fluid are recombined for the fluid analysis in the laboratory.

If they are recombined at the wrong ratio it will alter the results of the analysis. Because a fracture treatment design study for the Benson Deep Unit No. 1 and additional reservoir modeling were being planned, every effort was being made to insure accurate data.

September 19th of 1980 the results of the second fluid analysis indicated the reservoir fluid to be a retrograde condensate gas. A retrograde condensate gas is also an unusual fluid but it is found in other reservoirs in southeastern New Mexico. A retrograde condensate gas is also in a single gas phase under initial reservoir conditions above the dew point pressure. When pressure is reduced in a retrograde condensate gas, instead of expanding as a gas normally would, they condense and varying amounts of condensate fall out of the gas.

October 1st of 1980 Yates Petroleum became the operator of the Benson Deep Unit.

One week later on the 8th Yates Petroleum provided the pre-frac production tests from the Benson Deep Unit No. 1 to the Oil Conservation Division as required by the special pool rules.

Q And your Exhibit Number Nine consists of that letter and one additional letter?

A Yes. This Exhibit Number Nine is two different letters.

The first letter is dated September 10th, 1980. It is from Keplinger and Associates, which was the engineering consulting firm handling the work on this matter.

In this letter they are informing Yates of the preliminary results of this second fluid sample and the second paragraph shows that the C7+ content is much lower than previously determined on the first sample and that the fluid is a rich condensate. The general cutoff in fluid analysis is about 12-1/2 percent. Normally when your C7+ content is above 12-1/2 the fluid exists as a liquid single phase. Below 12-1/2 percent the C7+ content, it normally exists as a gas.

He then summarizes that additional model and simulation studies are planned and based upon this data he expects a completion date of somewhere between 1 and 15 October.

The second letter is dated October 8th, 1980, and it is from Yates Petroleum to Joe Ramey. In this letter we were filing the initial production tests on the Benson No. 1 as required by the pool rules.

The last paragraph also said that further tests would be performed after the fracture stimulation so that the requirements of the order would be complied with to their fullest.

Q Was that fracture stimulation subsequently performed?

A Yes. In June of 1981 the Benson Deep Number 1 received its fracture treatment. The treatment was not a success. Production prior to the frac was 100 MCF a day and 40 barrels of condensate per day. After the frac it only increased to 120 MCF a day and 45 barrels of condensate per day.

At this point the Benson Deep Unit No. 1 was still the only well in the pool and it was unable to produce the temporary depth bracket allowable of 70 barrels of oil per day. There was no need to perform additional tests because it was producing at essentially the same rate as it had produced before the fracture treatment was done; therefore the temporary allowable established in the pool rules was continued as it was written.

Then three years passed during which time the Benson No. 2 and the No. 3 were drilled to the Morrow.

In June of 1984 Yates drilled the Benson Deep Unit No. 4 as a Morrow test. There was no reservoir quality Morrow pay so the well was completed in the Strawn formation as a gas well with a 320-acre proration unit and it was assigned to the Eddy County Undesignated Strawn Pool. It was being carried as a gas well.

This Strawn pay interval in the Benson

No. 4 is approximately 40 feet lower than the completion interval in the No. 1 and it's obviously a much more productive interval as you can see just from looking at the cumulative production.

The Benson Deep Unit No. 1 is completed in 30 feet of low quality pay. The Benson Deep Unit No. 4 is completed in 12 feet of very high quality pay. It is essentially a separate reservoir; nowever, the Benson Deep Unit No. 4 is within a mile of the Benson Deep Unit No. 1 and therefore it technically fell within the special pool rules that had been established back in 1980.

The pool should have been reclassified at this time but due to the three year time period which it will last and the different pay intervals in which the wells were completed, it was inadvertantly not done at that time.

From June of '84 two more years passed and then in June of 1986 the OCD recognized that the Benson Deep Unit No. 4 was within the limits of the Benson Strawn special pool rules.

Q Identify and tell us what Exhibit Number Ten is, Mr. Lanning.

A Exhibit Number Ten is a copy of the monthly statistical page for June of 1986 and the second page is a shut-in notice for the Benson Deep Unit No. 4.

Looking at page one you can see that the

Benson No. 4 was placed in the Benson Strawn Pool. Prior to this time, as I said, it was being carried as Eddy County Undesignated Strawn.

In this particular sheet you can see it was now being classified as a gas well in an oil pool and it began to accumulate casinghead gas overproduction based on the 70-barrel of oil a day allowable and the 2000-to-1 GOR limitation.

Yates did not become aware of this action in June of '86 because we do not routinely review these monthly statistical reports and we received no other notice.

Page 2 is the shut-in notice that we received on February 13th of 1987. It is also shown to be calculating overproduction for the well based on the special pool rules allowable.

This shut-in order was the first indication that Yates received of the problem that we're here addressing today.

Then in January and February of this year Meridian drilled their Benson 3 Federal No. 1 offset to Yates Petroleum Benson Deep No. 4.

Q Mr. Lanning, has any further action been taken on the shut-in order which was sent to Yates Petroleum Corporation prior to this hearing?

A Well, immediately after we received the

shut-in order I called the girl's name who is on the shut-in order and she told me I needed to talk to Les Clements in the Artesia Office, and so I went and talked to Les and explained the problem and told him that we were going to be appearing at a hearing to take care of the matter and we were requesting to produce the well as we had for the previous two years until the hearing.

He said that he would allow us to produce the well until the hearing and he would grant us to produce it in the event a continuance was necessary.

Q And he wrote a letter to that effect?

A Yes, he wrote a letter to that effect.

Q Which should be in the Division's files.

A Yes, it is.

Q So then, Mr. Lanning, is it then Yates' position in this case that in fact the Benson Strawn is a gas reservoir and in fact not an oil reservoir and that the special pool rules adopted in 1980 should be rescinded effective at least as early as January 1st, 1985?

A That's correct.

Q Have you prepared any exhibits that you could use to show -- to demonstrate your opinion that the Benson Strawn is in fact a gas reservoir?

A Yes, I have.

Q Identify what we've submitted as Yates

Exhibit Number Eleven, Mr. Lanning, and tell us what that is.

A Exhibit Number Eleven is a 9-page exhibit which will summarize the fluid analysis available for the Benson Strawn and two other adjacent Strawn pools.

Page 1 of the exhibit is an area map which illustrates the location of the Benson Strawn and the two adjacent Strawn pools, the West Parkway Strawn and the East Burton Flats Strawn.

The red circles indicate which wells have had fluid analysis performed on them.

Page 2 and 3 summarize the results of a fluid analysis performed by Core Laboratories and on the second sample obtained from the Benson Deep Unit No. 1 in July of 1980.

This fluid was identified as a retrograde condensate gas. The initial reservoir pressure was above the dew point pressure that's listed, so the reservoir was in a 100 percent gas phase when it was discovered.

The maximum observed retrograde condensate volume was 43.1 percent of the hydrocarbon pore space. That means that of the 100 percent gas phase that originally existed in the reservoir 43 percent of that hydrocarbon pore volume at some particular pressure will revert to condensate.

As you produce past that pressure, then part of that condensate will then re-vaporize. This is a very high percentage of retrograde condensate volume and this is what accounts for the high condensate production and the low initial GOR's in this Benson Strawn Pool.

Q And has that opinion been subsequently borne out by the actual production of this oil?

A Yes, it has. Pages 4 and 5 summarize the results of the fluid analysis performed by Core Laboratories on a sample obtained from the Benson Deep Unit No. 4 last month, February 25th.

This fluid was also identified as a retrograde condensate gas and it was compared to the Benson Deep Unit No. 1 sample, which you can see on the second page.

Reading from that second page it says, "An examination of the study done on the Benson Deep Unit No. 1 indicates strong similarities with the Benson Deep No. 4. This is evidenced in the well stream composition and the retrograde liquid accumulation."

The well stream composition in the Benson Deep No. 1, the C7+, had I believe it was a 10.5 percent concentration and in the Benson Deep No. 4 it was 9.8 percent.

The retrograde volumes were also very

similar.

Q Based on this information have you formed a conclusion or is it possible for an engineer to form a conclusion as to whether this -- the fluids in place in this Benson Strawn Reservoir are in fact oil or gas?

A Yes. Based on the fact that the original fluid sample was suspected to be in error and the fact that two samples have been done subsequent to that sample, and they both agree very close to one another, we now believe that the gas -- that the reservoir was in fact a gas reservoir and not a volatile oil reservoir as originally believed.

Q Do you have another gas analysis contained in part of this Exhibit --

A Yes.

Q -- Eleven?

A Page 6 and 7 of the exhibit are the fluid analysis of the Slinkard UR Federal No. 2. This well is also operated by Yates Petroleum and is located in the East Burton Flats Strawn Field approximately eight miles southwest of the Benson Strawn.

This fluid sample was also obtained by Core Laboratories, analyzed in 1984. It shows the fluid to be a retrograde condensate gas.

Q And do you know whether or not this East

Burton Flats Strawn Pool is classified as an oil pool or as a gas pool?

A It is classified as a gas pool and developed on 320-acre spacing.

Q Okay. Please continue with this exhibit.

A Pages 8 and 9 relate to the West Parkway Strawn Pool, which is located approximately seven miles southwest of the Benson Strawn. This is the pool that Mr. Nutter questioned Napeco about in the original hearing for the Benson Pool.

This exhibit is a copy of Order R-4638, which created operating rules for the West Parkway Strawn Gas Pool and the West Parkway Atoka Gas Pool.

Findings 6 and 8, which are highlighted, they indicate that there was initially a question regarding whether the reservoir was in fact oil, gas, or retrograde condensate gas.

Finding 8 established that the reservoir should be developed on 320-acre spacing. These rules were adopted ona temporary basis in October of 1973 and then the case was reopened in October of 1974 to hear additional testimony.

Q Mr. Lanning, as part of your study of the engineering data in this area, have you reviewed the testimony presented concerning this West Parkway Strawn Pool?

A Yes, I have. The Petroleum Corporation, who is the operator of the only well in the pool, presented the results of a fluid sample obtained from the West Parkway Unit No. 1. This fluid sample was also analyzed by Core Laboratories. the fluid was identified as a retrograde condensate gas, which supported their classification of the West Parkway Strawn as a gas pool with 320-acre spacing.

These pool rules were made permanent in November of 1974.

Q What conclusions, if any, do you draw from your study of what you have submitted as Exhibit Number Eleven?

A Well, I have presented fluid samples from four different wells. Two of the wells are in the Benson Strawn Pool and they are the only two wells that have ever produced from the Benson Strawn Pool up to this time except for initial testing on two other wells.

The other two samples are from Strawn pools that are immediately adjacent to the Benson Strawn and all of these samples agree that the reservoir fluid is a retrograde condensate gas.

Q Identify what we have submitted as Yates Exhibit Number Twelve and tell us what that is.

A This is an exhibit to show another offset pool, the Sand Tank Strawn, which is located about five

miles north of the Benson Strawn. This field was developed beginning in 1983 and it contains three wells operated by Southland Royalty, which I believe is now Meridian.

Page 2 is tghe field's production history. It shows the initial GOR started at 3900 and it has gradually increased to about 7000.

This pool is also classified as a gas pool and is developed on 320-acre spacing.

Q Okay. Turn now, Mr. Lanning, to Exhibit Number Thirteen and tell us what is relevant on that log.

A Number Thirteen is the neutron density log through a portion of the Strawn interval for the Benson Deep Unit No. 4. The completed interval is shown from 10,829 to 839 and the Strawn pay in this interval is a very clean limestone.

Because this log was recorded on a limestone matrix the neutron and density curves should approximately overlay each other. It is a well known fact that a zone containing gas, or very light hydrocarbons, will cause the neutron log response to be suppressed.

In this well we are seeing an average peak response of 7 porosity units for the density curve and only one porosity unit for the neutron curve, or to put it another way, the gas effect in this well is causing a neutron curve to be suppressed six porosity units.

Q And what conclusion do you draw from your examination of this log?

A Well, this log in conjunction with the other evidence, I would conclude that the Strawn interval is filled with gas and not oil.

Q Your final exhibit submitted, Mr. Lanning, is Yates Exhibit Number Fourteen. Identify that and tell us what you show by those calculations.

A This is a volumetric analysis of the Benson Strawn reservoir in the area immediately surrounding the Benson Deep Unit No. 4.

For this analysis I'm going to assume for argument's sake that the reservoir is filled with oil. The formula for original oil in place and barrels per acre is given and I'm going to utilize parameters from the log analysis of the Benson Deep Unit No. 4. Insertion of those parameters, 12 feet of net pay, 6 percent average porosity, 25 percent water saturation, and assuming a formation volume factor of 2.03, which comes from the initial volatile oil fluid sample, you get a resulting original oil in place of 2064 barrels per acre.

You then assume 160-acre spacing as required by the current pool rules, the original oil in place would be 330,000 barrels of oil.

The Benson Deep Unit No. 4 has already

recovered 190,000 barrels of oil or 58 percent of the original oil in place for 160 acres.

The Benson No. 4 is still producing approximately 200 barrels of condensate per day and if you'll further assume with me that it will produce another 100,000 barrels of condensate, the resultant recovery would be 88 percent of the original oil in place for 160-acre spacing.

I don't know of any oil reservoir that can boast of this kind of primary recovery efficiency; therefore, the only explanations are that the well is draining a lot more than 160 acres, which would be unlikely for an oil well. The well is actually a gas well draining greater than 160 acres, or the log of the Benson No. 4 is totally unrepresentative of the surrounding reservoir.

Q Mr. Lanning, do you have the results of any pressure analysis that would indicate that the area being -- what area is in fact being drained by wells in the Benson Strawn?

A Yes, I do. Pressure build-up analysis of the Benson Deep Unit No. 4 indicates some fracturing tendency and also the initial pressure of the zone that the Benson No. 4 and No. 5 are completed in was approximately 5200 pounds. These wells are a half mile apart. The Benson 5 has never been produced. The current pressure of the No. 5 Well is 4,360 pounds so it has been reduced by about 16

percent with no production from the well. That tells me that the Benson No. 4 is actively draining an area a half mile away.

Q How recently has your pressure data been obtained?

A As late as yesterday afternoon.

Q Okay. Mr. Lanning, were Exhibits Six through Fourteen either prepared by you or under your direction and supervision or compiled under your direction and supervision?

A Yes, I prepared all of them.

MR. DICKERSON: Mr. Examiner, at this time I would move admission of Yates Exhibits Six through Fourteen.

Q Mr. Lanning, do you have in conclusion a recommendation to the examiner as to what should be done in this case and summarize again for the examiner what Yates is seeking with this application in regard to the Benson Strawn pool rules.

A I hope that it is obvious by now that these pool rules for the Benson Strawn should have been rescinded years ago. The reservoir is a gas reservoir and not an oil reservoir as originally believed. This conclusion is based on fluid analysis, analogy with surrounding pools, and observed performance.

The field has been developed on 320 acres up to this point in time. Future development should also be done on 320-acre spacing. Correlative rights will be protected and wasteful drilling will e prevented.

If, however, a decision is made to develop on 160-acre spacing in accordance with the existing rules, the allowable should be changed to the top depth bracket allowable of 560 barrels of oil per day and a 3000-tol GOR limitation.

We all realize that a 70-barrel a day allowable is not practical for an 11,000 foot well, and that the allowable was established on a temporary basis.

Also, we are asking that whatever decision is made, it should have an effective date of January 1st, 1985. This is the date of the first production for the Benson Deep No. 4. The Benson Deep No. 4 is currently overproduced because the pool rules were not revised at an earlier time; however, Yates has been the only operator in the field until this year and we have established that no harm has been done to the Strawn reservoir or to any other operator.

If the Benson No. 4 is now required to be shut in, actual drainage will take place from the Benson Deep Unit to the offset Meridian well.

Q In your opinion will the development of

this Benson Strawn Pool on 60-acre spacing, Mr. Lanning, result in the drilling of unnecessary and wasteful wells?

A Yes, I believe it would.

Q In your opinion will the development of the Benson Strawn Pool on 320 acres prevent this waste and adequately protect the corrlative rights of all parties within the pool boundaries?

A Yes, I believe it will.

MR. DICKERSON: Mr. Examiner, I have no further questions of this witness.

MR. CATANACH: Okay, let me -- Exhibits Six through Fourteen will be admitted into evidence.

Mr. Kellahin, any questions?

MR. KELLAHIN: Yes, Mr. Examiner. I wonder if we might take a short break so that I can organize my questions for Mr. Lanning. I have received from him for the first time a number of engineering analyses that obviously I haven't had any time to look at. We might take a short break and let me see if I can't organize my questions of Mr. Lanning in a way that moves this hearing along.

MR. CATANACH: Ten minutes be enough for you?

MR. KELLAHIN: I think so.

MR. CATANACH: Okay. We'll

take a ten inute recess.

(Thereupon a recess was taken.)

MR. CATANACH: O'kay, we'll reconvene at this time.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Lanning, while I'm searching through your exhibits here, sir, would you identify for me among your exhibits with regards to the Benson Deep No. 4 Well those documents that refer to anay fluid analysis or reservoir fluid study?

A On the Benson No. 4 the only exhibit was Exhibit Number Eleven.

Q All right, sir, on the No. 4, then, we're looking at the Core Laboratory's letter of September 19th, 1980.

A No, that's on the Benson No. 1.

Q Looking at Exhibit Eleven -- all right, I'm getting there.

A Pages 4 and 5.

Q Yes, sir, pages 4 and 5, the Litton Core Lab letter of March 13th, 1987, is the reservoir fluid study summary for the No. 4 Well, is that correct?

A That's correct.

Q Do you have under your control, Mr. Lanning, any other reservoir fluid studies other than this one for this subject well?

A No, I do not.

Q Will you share with me, Mr. Lanning, the underlying documents that support and go with the reservoir fluid studies?

A Yes, I will.

Q Do you have a copy available today?

MR. KELLAHIN: Mr. Examiner, what we propose to do is for clarity in the record, we will mark this before the hearing is over as a supplemental exhibit.

We'll make additional copies so that we may have them and so they will be in the record for you that Mr. Lanning has given me a reservoir fluid study booklet in an orange cover that he's testified goes -- is the supporting documents that go with the reservoir fluid study for the No. 4 Well, and I'll subsequently mark that.

Q Mr. Lanning, with regards to the No. 1

Deep Well in Section 33, Exhibit Number Eleven shows a September 19th, 1980 Core Lab summary etter. Do you also have the supporting data that goes with that letter?

A Yes, I do.

MR. KELLAHIN: Mr. Examiner, I propose to accomplish the same task with the supporting documents that go with that letter.

Q Other than the September 19th, 1980 fluid study summary done for the No. 1 Deep Well, Mr. Lanning, and with the excepton of the luid study that was presented to the Commisson in the hearing of the case 6609 back in 1980, are you aware of any other reservoir fluid studies for that well?

A No, there are not others.

Q With regards to the reservir fluid studies for the No. 1 and the No. 4, have you constructed any type of phase envelope showing the composition of the hydrocarbons, the liquids and the gas?

A Well, in those fluid studies you'll find the retragrade falloutCurve, if that's what -- there's not a phase, a pressure versus temperature. I have not created a pressure versus temperature phase envelope.

Q The pressure versus temperature envelope can be conducted based upon the information available in these fluid studies or do you have to take outside informa-

tion?

A Well, I'm not -- I'm not sure exactly what information you're wanting. What is in those documents is all there is.

Q Have you plotted the production decline for either one of those two wells?

A Yes, I have.

Q Do you have a production decline curve for those wells?

A Yes, I do.

Q You've talked about pressure information on the wells. What type of pressure study have you made of the well?

A Well, throughout the life of the reservoir there's been -- I can't quote you every single pressure study that has been done.

Yates Petroleum normally conducts an initial pressure nd then an initial pressure buildup on every well. That will not be the case for every well but thqt's the normal practice and there are some initial pressure buildups which indicate initial pressure in these reservoirs.

Just recently we did a static bottom hole pressure on the Benson Deep No. 5, the wellthat has never produced, to see if there had been a decline in the pressure

in that zone.

Q And what did you find?

A Found that whatever the number was that I testified to, there was a 15 percent decrease in the pressure in that zone and there was a pressure buildup analysis that I received at 5:00 o'clock yesterday afternoon on the Benson Deep No. 4, which I analyzed far enough to realize that it was involving a fractured reservoir and at that point I did not do any further analysis on it.

Q Have you made an analysis of the gas/oil ratios of either the No. 1 or the No. 4 Well?

A They are plotted on the production plots. We don't have a -- I did not submit an exhibit of a production plot.

Q Okay. Is the pressure information that you have on -- on those two wells information that's reported to the Oil Conservation Division that could be utilized?

A No, it's not.

Q It's not? All right. What was the original reservoir pressure, then, for the Benson Deep No. 4 Well?

A Approximately 5200 pounds.

Q And that's the original bottom hole pressure for that -- for that well?

A For the Benson No. 4, yes.

Q The gravity of the fluid that you see in the Benson No. 4 Well as what?

A To the best of my recollection it's approximately 48 or 49 degrees.

Q You said you made an analysis or study the prior documents and transcripts in the 1980 hearing before the Commission?

A Yes, I have.

Q And in that presentation there was a reservoir fluid study presented.

A Yes.

Q Was there not?

A Yes, there was.

Q Can you describe for us and summarize for us, Mr. Lanning, what you saw in that study as compared to the more recent reservoir studies on the No. 1 Well that caused you to believe that the original studies were in error?

A I did not realize it until this whole case came up and I started reviewing all of the records and putting together the story of what's happened over the last seven years.

When I realized that there was a second fluid study done, the initial question in my mind was why did they do a second fluid study when they had just done

one, because we were also thinking about doing one on the Benson Unit No. 4. I called Tefteller, Incorporated, who's the primary sampling contractor for nearly all amples taken in this part of the country, they're in Midland, and I had a conversation with Mr. Forrest Tefteller, who was a secondary contractor on the taking of the sample that said it was a volatile oil.

In his review he pulled out his old files and his review of those files, he told me about this question that had been brought up about the calibration of the meter which they had been measuring the gas with.

Another service company had taken a production separator out there and all Tefteller did was gather the actual sample, and I don't know the details because Mr. Tefteller was not -- I requested a letter explaining all the facts but he requested that I not do that, to not make the other service company look bad.

So he just summarized over the phone to me that there was an obvious problem with the first sample. Tefteller had complete control of the sampling procedure and the free flow conditioning treatment of the well prior to the taking of the second sample.

Q Did you examine that information from the earlier transcript to determine whether or not you could detect that type of error in the documents?

A Well this --

Q Is that something you could detect without having actually conducted the study?

A Well, I think if you compare the two, you will see obvious differences in the GOR's that they were recombined at, which indicates that no more difference in time and production than there was between the two samples indicates there was definitely something different between the two samples.

Q With regards to the sampling and the fluid study done on the No. 4 Well, --

A Yes.

Q -- the one done in 1987, are you aware of any problems with the sample for that well?

A No, it's -- the ideal conditions for sampling a reservoir are when a well is initially completed -- the first well in the reservoir.

If you do take a sample in a reservoir, like we did in the Benson No. 4, after it's produced for a significant period of time, the most important thing is that the well is producing in a stabilized rate and has been producing at a stabilized rate. The Benson No. 4 was a very stable well and so rather than do any other conditioning, which would take a long time which we did not have, we determined that the best way to sample it was to sample it

at its existing rate.

That fluid sample was obtained and you have the report and as the -- Doug Turner, who I visited with frequently on the phone about it, notated it in the letter, there were obvious very strong similarities between the fluids in the No. 1 and No. 4.

The biggest contrast that you'll see in the two reports is the dew point pressure and the dew point pressure on the No. 4 Well, I can't remember the number, but it is higher than the initial reservoir pressure.

Q I believe you've told us it was about 5300?

A The initial reservoir pressure was 5200 and I don't remember what the dew point pressure was for the No. 4 sample; however, through my study of fluid sampling that I've done in preparation for this hearing, that is a common -- once the reservoir pressure has decreased below the dew point pressure and you take a sample and you recombine it, you will get a dew point pressure that is higher than the actual dew point pressure and will often be higher than the original reservoir pressure and I can provide you with documentation for that.

Q I'd appreciate that. That would be of assistance to us.

A I just happen to have it with me in case

I needed it on cross examination.

Q A bundle of information. You got any more secret goodies in there?

A I also visited with Philip Moses, who is the author of this particular paper.

Q All right, we will, if it's acceptable, Mr. Examiner, we will do with -- with this report as we are with the other two fluid studies.

MR. CATANACH: All right.

Q So I am clear in my own simple way, Mr. Lanning, about the significance of the dew point pressure insofar as characterizing this as a gas reservoir versus an oil reservoir, describe for me what is the critical point in your mind as an engineer as to the significance of that dew point when it's above and below the reservoir pressure.

A Well, if you complete a well in a reservoir that is already below the dew point pressure, condensate will already have fallen out of the gas. It's now a two-phase reservoir rather than a single phase reservoir.

Q And if you complete it in a reservoir that has a pressure above the dew point, then you will see it as a single phase reservoir and you're producing gas.

A Your initial fluid in the wellbore should still be in the single phase as long as you're not drawing it down so far that the condensate will fall out.

Q All right.

A So normally in a newly discovered reservoir that is a retrograde condensate gas, it is in single phase in the reservoir as a gas. Once the pressure had decreased below the dew point pressure it becomes a two-phase reservoir and you produce both phases simultaneously.

Q In the Deep No. 4 Well we see what is characterized as a two-phase reservoir. We see the gas and the condensate, do we not?

A Yes, the Benson No. 4 is below the dew point pressure.

Q Okay. Because we see that in the operation of the well, how can we then know that that well demonstrates that we are producing in a retrograde condensate reservoir?

A Because the sampling technique, you have a stable situation. That's the purpose of the conditioning before the well. As long as you're producing at a stable rate, and I'm again going by what has been told to me and what I read in the literature, as long as you are producing at a stable rate and the well is properly conditioned, you will still get a proper analysis of the fluid as far as the percentage of retrograde fallout, et cetera.

And I think that is obviously shown by the comparison of those two samples.

Q When we talk about classifying a reservoir as either a gas reservoir or an oil reservoir there are certain benchmarks that I hear engineers talk about.

One, they talk about the gas/oil ratio. In this reservoir I think it's customary to see a very low gas/oil ratio, is that not true?

A That's correct.

Q Okay, and what is the general range of the gas/oil ratio?

A Well, in this -- in the Benson Strawn, both the Benson No. 1 and the Benson No. 4 initial GOR's are in the 2000 to 3000 range.

They produce, the Benson No. 1 produced at essentially a constant GOR for two years and then it began a steady increase up to about 25,000 was the highest that GOR ever went.

The Benson No. 4 has only produced two years. We are still seeing it in that low GOR range. I would expect the GOR"s will increase as the liquid phase falls out.

You have to remember that when you're talking about a reservoir that was 100 percent gas to begin with, normally recoveries of condensate in a retrograde condensate reservoir are low because when this condensate falls out, it's normally not at a high enough saturation to

be mobile and that is why pressure maintenance projects, gas reinjection projects, et cetera, are initiated in these reservoirs, to try to maximize the pressure, keep everything in the gas phase so we could get this liquid out of the reservoir.

These -- this particular reservoir is a little bit unusual because it has such a high retrograde condensate fall-out of over 40 percent. How much of that is mobile, I don't know.

Q In a more typical retrograde reservoir what would you see to be that ratio? What is that percentage of fall out?

A I don't really know. I just know that one of my first questions to them was, you know, is this very high, and Core Lab said, yes, it is very high. You very seldom see a ratio this high. That is the reason for your low initial GOR's.

Q Okay. Does the color of the condensate that's produced give you any indication as an engineer of -- of whether you're dealing with a gas reservoir or an oil reservoir?

A No, and that first document you have there on the top, that is a rebuttal from Phil Moses, who is the head of the Reservoir Fluid Analysis Section of Core Labs, to another response. This -- both of these articles

appeared in JPT.

Another fellow said that you can always tell the difference between a gas reservoir and an oil reservoir because condensate reservoirs always have clear condensate and oil reservoirs always have colored condensate and Philip Moses was responding to that saying that that was not true and that you could not use color of the liquids as a determination of whether or not the reservoir was oil or gas.

Q Which opinion do you share?

A I share Mr. Moses.

Q And what is the color of the condensate that is produced from the No. 4 Well?

A What I have seen has a yellowish color.

Q One of the other benchmarks I've heard engineers talk about in deciding what type of reservoir it is, is the gravity of the fluid produced, what the API gravity is. Does that give you a clue as an engineer of what kind of reservoir you're dealing with?

A Gravity, of course, has a bearing on it, but it in itself is not indicative. I mean you can have oil reservoirs or condensate reservoirs in the 40+, high 40 API limit and there is no clear cut break that you can say this is oil or this is gas.

Q What is the gravity of the fluid produced

out of the No. 4 Well, do you remember?

A I believe it's approximately 49.

Q Is that shown in the studies?

A I'm sure it is.

Q Is it significant to you as a reservoir engineer in deciding whether or not the reservoir is rate sensitive, producing rate sensitive, to see that the -- to see that the gas/oil ratios are not climbing abruptly?

A Yes, that is -- that is an indication that an engineer should be looking for, to see if a reservoir is rate sensitive.

Q When we talk about this particular reservoir having a limit of 70 barrels of oil a day, we know that the Deep 4 Well has produced in excess of that on a daily basis.

A Yes.

Q Do you see any indications to you that the reservoir is being ineffectively produced at a higher rate than 70 barrels of oil a day?

A No, there has been no indication of any problem due to the high producing rates of the Benson No. 4.

Q Are there any other factors that support your opinion that if this remains classified as an oil reservoir and we go to an oil rate of 560 barrels a day, that that will diminish ultimate recovery or damage the re-

servoir in any way?

A Well, the Benson 4 did not produce at 560 barrels a day so I cannot base an opinion on what a 560-barrel a day rate will do. I personally don't think that Meridian's well will produce at 560 barrels a day for very long, if it produces that high. I know that it potentialed real well but wells have a tendency to potential better than they end up producing.

Q What's the highest producing rate you had on a daily basis, approximately, in the No. 4 Well?

A Offhand I would say we never were more than probably 400 barrels a day.

Q Okay, and at that rate you've not seen any damage to the reservoir?

A No.

Q Thank you, Mr. Lanning.

QUESTIONS BY MR. LEMAY:

Q Mr. Lanning, have you looked at the Lusk Strawn Field and taken any fluid analysis in that field?

A The only familiarity I have with the Lusk Strawn is through reading the testimony of the 1980 hearing.

Q Could we draw any conclusions or comparisons between that reservoir and the reservoir you have here

in this case?

A No, the only -- the only information I've ever read about the Lusk Strawn was in that testimony and it -- I don't believe that testimony referred to any fluid samples. There were some opinions expressed that it was possibly a volatile oil reservoir, but I don't know, I -- I assume that if there were some fluid studies done they would have been available but I'm not aware of them.

Q Does Yates have some production in the Lusk Strawn Field?

A I think -- I don't really know; none that I'm aware of. We may have an interest in some production in the Lusk Strawn. I just don't know.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Lanning, how much was the No. 4 Well currently overproduced? How much, do you know exactly how much?

A Well, on the shut-in notice, that was as of December and it was overproduced 74,179 MCF. That was based on calculating overproduction from June of 1986 when the -- when the State changed it from the gas pool to the oil pool.

I might just say that if the allowable

was kept 70 barrels a day and we were required to shut that well in to make up that overproduction, it would be on the order, I think, of two years that well would be required to be shutin, which I think is ridiculous.

Q What effect would it have if the Division entered an order making the rules effective January 1st, 1985? That would cancel all your overproduction.

A That -- since the Benson No. 4 was completed in June of 1984 but it did not go on production until January of 1985, so that would in effect cancel any overproduction that might be attributed to that well.

Q Could that underproduction for that time be made up? Or could the extra allowable that would be given to you, would that be able to be made up?

A I don't understand, I don't know that I really understand your question.

MR. DICKERSON: We have not requested that and that is not our desire, Mr. Examiner, to allow us to make up oil production based on an amendment or rescission of the order.

A If the allowables are changed or if the pool is reclassified, the well will not be able to produce in excess of the depth bracket allowable that you would probably be willing to place on it. It is currently producing at about its maximum rate, which is 200 barrels a day.

Q So the only affect that would have would be to cancel the overproduction.

A Yes, that was the intent of making the order effective January 1st, was solely to counteract any overproduction which might be attributed to the well, and that could be so specified in the order if you desired that.

CROSS EXAMINATION

BY MR. TAYLOR:

Q Mr. Lanning, would -- as I understad it, you are proposing a retroactive affect of the pool rules, is that what you're wanting?

A Well, we're asking that they be rescinded and that replacement pool rules be put in their place dated January 1st, 1985.

Q Would the replacement pool rules, dating them back to '85, would that have any affect on either preventing waste or protection correlative rights, or what? What would the impact of those be?

A If it is not made retroactive and the Benson No. 4 is required to be shut in to make up this overproduction, which exists due to a technicality, then the Benson 4 will be shut in; the Meridian well will be produced; drainage will be taking place from the Benson Deep Unit to the Meridian acreage, so correlative rights would

not be protected.

Q They would not be protected unless there's a retroactive --

A Unless there is a restroactive order.

Q Okay, that's all. Thank you.

RECROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Lanning, the gas/oil ratios on your No. 1 and No. 4, have those -- those have remained fairly constant over the producing life of the wells?

A The first two years they've remained relatively constant and the -- because the Benson 4 has only produced two years, it is still producing essentially constant. It's at 2300 right now.

The Benson No. 1 started in the 2500 range, remained approximately constant for two years, and then from the second year through the seventh year it was a constant percentage incline up to a 25,000 GOR.

This just -- you could see a steadily increasing GOR, which is what you would expect from this type of reservoir; as the fluid phase is produced, no more of the fluid phase is -- or the less amount of the fluid phase can be produced, so you get more gas production. The gas phase is more mobile.

And I might just remind you that this is the same trend you see in the, for instance, the Sand Tank Strawn, which was one of the other exhibits. Relatively constant.

It was a relatively constant GOR for about a year and then it has slowly increased up to about 7000.

Q Mr. Lanning, have you done any calculations as to the amount of acreage the No. 1 Well would drain?

A No, I have not.

MR. CATANACH: I have no further questions at this time.

MR. DICKERSON: Mr. Examiner, I would just like to point out that until the completion of the No. 4 Well and the Meridian well in the east half of Section 3, none of the other wells produced or completed in the Benson Strawn Pool or in this Benson Deep Unit Area, were even capable of producing any amount up to the 70 a day allowable established by the original pool rules.

MR. CATANACH: Mr. Lanning may be excused.

MR. KELLAHIN: Mr. Examiner, l'd like to call a geologic witness to simply authenticate a cross section that has the Meridian log on it. We do not

yet have one in the record, and so with your permission at this time I'd like to call Mr. Lee Catalano.

(Mr. Catalano sworn at this time.)

MR. KELLAHIN: Mr. Examiner, I'll have to apologize. I have neglected to bring copies of Mr. Catalano's cross section. With your permission after the hearing I'll withdraw it, make additional copies, and forward them to all the parties involved.

Because I only have one, I'd like to take a moment and put it on the wall here so we can look at what we do have.

MR. CATANACH: All right.

LEE CATALANO,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Let's take a moment, Mr. Catalano, and qualify you as a geologist.

For the record would you please state your name and occupation?

A My name is Lee Catalano and I'm an exploration geologist with Meridian Oil Company.

Q And, Mr. Catalano, have you previously testified as a geologist before the Division?

A No.

Q Would you tell the Examiner when and where you obtained your degree in geology?

A I have a Bachelor's degree from Adrian College in Michigan and a Master's degree from Oklahoma State.

Q In what year, sir?

A 1978.

Q Subsequent to graduation would you summarize your employment experience as a petroleum geologist?

A I worked for Sun Oil Company in Midland, Texas for three years and then for the last five and a half years for Southland Royalty/Meridian in Midland, Texas.

Q Pursuant to your employment as a geologist for Meridian, have you caused a cross section to be constructed including certain wells in the Benson Strawn Pool in addition to the Meridian completion in Section 3?

A Yes, I have.

MR. KELLAHIN: We tender Mr. Catalano as an expert petroleum geologist.

MR. CATANACH: He is so quali-

fied.

Q Mr. Catalano, let me have you go to the wall where we have place Meridian Exhibit Number One, and first of all have you simply identify for us that exhibit.

A This is it right here.

Q All right, sir, and what is it?

A This is a stratigraphic cross section.

Q If we look at the upper righthand corner of the cross section, would you orient us as to what wells are depicted on that cross section?

A Okay. The original Benson Deep Unit No. 1 will be the well on the left here and as you go across following this line, on the righthand side is the ARCO State 2 No. 1 Well.

Q All right. When we look at the discovery well, the Benson Deep No. 1 Well, which is the first log on the far left, how have you identified the perforations of the Strawn producing interval in that well?

A This -- I've colored them yellow, right here in the depth column.

Q All right, sir. What is the significance of the blue shaded area that passes through the center three logs?

A The zone that I have colored blue in here is the zone that I have correlated and believe is the produ-

cing interval in the Meridian Benson 3 No. 1, the Yates Benson Deep Unit No. 4, and the Yates Benson Deep Unit No. 3 Wells.

Q And what is your geologic opinion about the correlation of that interval which you've identified as the Benson 4 Zone?

A Yes.

Q What is the correlation of that zone among those three wells? Is it continuous between the wells?

A Yes, the overall zone is continuous here. It's a -- I've picked it by the clean gamma ray signature in these three wells.

Q What is your geologic opinion with regards to the continuity of that -- you called it an algal mound facies?

A Algal mound facies, yes.

Q All right. Describe for us what your geologic opinion is about that mound facies.

A I think what this cross section is showing is that this facies is present in these middle three wells. It's not present in the No. 1 Well nor in this ARCO well to the east. So it's a -- it's within a limited area.

Q Do the perforations in each of those three wells satisfy you as a geologist that they are perfor-

ated in that algal mound facies that you've identified?

A Yes.

Q Do you see any geologic reason that those wells should not be in communication?

A No.

Q Anything else about the exhibit you'd like to direct our attention to?

A The only thing would be that fault producing zones in the Strawn here are within this overall Strawn interval.

Q And it looks like all three of those wells are producing out of the same Strawn facies there.

A Yes, they are.

Q All right. Thank you, very much.

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

I'd move the introduction of Exhibit Number Seven.

MR. CATANACH: Exhibit Number Seven will be admitted into evidence.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Catalano, isn't it correct that the second well on your cross section, although it's labeled the

Benson Deep Unit No. 3 is in fact the Benson Deep Unit No. 5 Well in Section 4, of 19, 30?

A Yes, we -- that's a typo. Yes.

Q Okay. You heard Mr. Beck's testimony and his review of the log on the Benson Deep Unit No. 4 Well, did you not?

Did you agree with his testimony?

A Which parts --

Q Particularly when he directed your attention, or all of our attention to the gas effect that he observed on that log?

A Uh-huh.

Q Did you observe a gas effect?

A There are other things that could possibly cause that other than -- than gas.

Q But you observed the same effect --

A Yes, uh-huh.

Q -- whatever the cost.

A Right.

Q Do you see a similar effect in the log on your Meridian well?

A Yeah, they look very similar.

Q Do you have -- did you conduct or obtain bottom hole pressure information from your well?

A Yes.

Q Do you know what that information was?

A It's around 3400 pounds. Our engineer will tell you more about it.

Q Okay.

MR. DICKERSON: I have no further questions.

QUESTIONS BY MR. LEMAY:

Q Mr. Catalano, you referred to the algal mound facies in the Strawn A Zone. Have you looked at any of the samples or have you cored that well?

A Yes, we cored our well.

Q And did you examine the core yourself?

A Yes.

Q Are you familiar with the fossil ivanova?

A Yes.

Q Was that present in your core?

A Above the point, yes.

Q For the record, ivanova has had characteristics of high permeability, is that true?

A Some of the literature that I've reviewed since we drilled this well and got the core, that's right. That's correct.

Q So you would expect to be in communication with wells surrounding you and you would expect it to have -- be able to drain a substantial area, based on the

sample description only?

A If you're within the same reservoir, yes, right.

Q That's all I have.

MR. CATANACH: Are there other questions of the witness?

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Let's see if I understand your response to Mr. Dickerson.

Mr. Beck saw an indication in a log that he attributed to a gas effect and you say you see a similar indication in your well and you can see it in the Benson 4 Well, but you say that it may not necessarily be a gas effect.

A What I --

Q Describe for us what the choices are.

A One thing we noted in our core through the pay interval in our well is some secondary chert replacement and silica cam sometimes cause what's known as gas effect on logs, too.

Q The gas effect on the log, comparing the log to the core analysis that you had, you can attribute that effect to something else.

A You could in part.

Q All right.

A Yes.

Q What are the other choices for accounting for that, what Mr. Beck called gas effect?

A Gas -- generally that's the only two that I -- actual presence of some gas within the reservoir or chert.

Q Okay. What is chert?

A It's a silica mineral.

Q And you saw that in the core samples and analysis?

A In the core, yes.

Q Okay. Thank you.

RECROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Catalona, you stated Meridian cored your well in the east half of Section 3?

A Yes, sir.

Q Did you observe in those core samples any evidence of fracturing?

A No.

Q Was any stimulation -- was a fracture stimulation program administered on that well?

A No, it treated this with acid. an acid job.

MR. DICKERSON: No further questions.

MR. CATANACH: Are there questions of this witness?

He may be excused.

MR. KELLAHIN: Mr. Examiner, I note on the exhibits I've handed you that I have failed to indicate that these were Meridian Exhibits. Subsequent to the hearing I'll be happy to complete marking these and provide additional copies if there aren't sufficient enough copies.

BRETT HERRING,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Herring, for the record would you please state your name and whom you work for?

A My name is Brett Herring. I'm a petroleum engineer employed by Meridian Oil.

Q Mr. Herring, you're going to have to speak up a little bit. It's getting late in the day and we're all getting a little tired; let you shout at us.

Have you previously testified before the Division, Mr. Herring?

A No, sir, I haven't.

Q Why don't you tell us when and where you obtained your degree?

A I received my BS in petroleum engineering in 1982 from Texas A&M University. Subsequently was employed by Superior Oil Company in Houston for a little over two and a half years.

After the buy out went to work for Mobil Oil in Midland, Texas. I worked for them for approximately six months and subsequently left and joined Meridian and have worked for them for approximately a year and a half.

Q Would you summarize for us what has been your experience as an engineer with regards to oil and gas production in Eddy County, New Mexico, and southeastern New Mexico? Where have you been involved in doing your work?

A Mostly in Eddy County, New Mexico.

Q Pursuant to your employment have you made a study of some of the engineering details around the Benson

Strawn Pool and Meridian's Benson No. 3 Federal 1 Well?

A Yes, sir.

MR. KELLAHIN We tender Mr. Herring as an expert petroleum engineer.

MR. CATANACH: He is so qualified.

Q Mr. Herring, we've been through some of this information up to now and where we have already been through that information I will attempt to bypass it and focus your attention on the subjects we've not yet discussed.

For purposes of beginning your testimony, let me have you look at what we've marked as Exhibit Number One and have you identify that for me.

A This is a map of the general area of the Benson Strawn Field.

The yellow indicates the current Benson Strawn outline. The shaded areas indicate our current leasehold and the green area is also our current leasehold.

Q You've identified for us four wells on the plat. Are these the wells we've been discussing that have been subject to the Benson Strawn Pool Rules?

A Yes, sir.

Q The discovery well is in 33 outlined in the yellow and is identified by the red dot and then the (not understood)?

A Yes, sir.

Q And that's identified as the Deep 1 Well.

A Yes, sir.

Q Let's look for a moment at Section 3 and the Meridian Benson No. 3 Federal No. 1 Well and have you give us the information that you have available for that well.

When was it completed?

A We spudded the Benson 3 Federal on December 14th, 1986. The completion date was 24 January -- I'm sorry, that's 14 December 1985 -- I mean 6. The completion date is 24 January 1987. Typo again.

The initial potential from the well was 612 barrels of oil per day and 1900 MCF; no water.

Current production is awaiting allowable and also a pipeline hookup. Cumulative production, of course, is not applicable.

Q All right. Let's add to the legend here what the bottom hole pressure is that you believe applies to that well.

A Yes, sir. Upon conducting a build-up we -- it has indicated that it was 3400 pounds.

Q Where did you obtain the information that you put on the exhibit with regards to the three Yates wells that are shown?

A They were obtained through scout tickets and also conservation's monthly production report.

Q Let me ask you to give us a short summary of where you're going with your presentation, Mr. Herring, and ask you whether or not you have formulated an opinion based upon information available to you as ot whether or not you're dealing with a gas reservoir or an oil reservoir?

A Yes, sir. We had some expiring acreage there in the northwest -- northeast quarter section of Section 3 and subsequently took cursory view of the area and identified the Benson 4 Well. It just demonstrated the GOR of less than 2000-to-1; appeared to be oil; piqued our curiosity and we went from there.

Q Okay, let me ask you this before we get to the details of what you have used to support your opinon.

Do you have an opinion as to whether you're dealing with an oil or a gas reservoir?

A Yes, sir, I believe it's oil.

Q With regards to the producing rate, the Benson Strawn Pool rules sets a maximum of 70 barrels a day allowable.

A Yes.

Q Have you formulated an opinion based upon your study, Mr. Herring, as to whether or not we can eliminate or increase that rate?

A I believe we can increase.

Q Do you have a recommendation to the Examiner as to what rate ought to apply?

A Yes, sir. I believe we should increase it to the current depth bracket allowable.

Q Which would be 560 barrels a day?

A Yes, sir.

Q And what would you do with the gas/oil ratio?

A We would like it also increased to 3000-to-1.

Q Let's go back now and have you give me the perspective that Meridian had when they attempted to develop their acreage in the northeast quarter of Section 3 back in the fall of 1986, I guess it is.

If you'll pick it up there and tell me what you did to set up the drilling of that well.

A Yes, sir. As mentioned before, we had some expiring acreage and it prompted a cursory look at the area.

The Benson 4 Well was identified, production was obtained, and it appeared to be an oil well.

The other wells in the area, the No. 1 and the No. 5 Wells were looked at based on production data and also appeared to be oil wells.

The next step would be to find the nearest field, which was the Benson Strawn Field.

Q And how did you satisfy yourself that the nearest applicable rules were those of the Benson Strawn Pool?

A Well, generally you look for anything within a mile of your current location and the Benson Strawn Pool was within a mile.

Q Did you file an application for a permit to drill the Meridian well?

A Yes, sir.

Q And have you had conversations with the Oil Conservation Division about that well permit?

A Yes, sir.

Q Did the District office require you to drill that well pursuant to the Benson Strawn Pool Rules?

A Yes, sir.

Q And have you done so?

A Yes, sir.

Q All right, with the exception of the location, now, we've got a location problem, do you not?

A Yes, sir.

Q You've applied for an unorthodox location that comes up to a subsequent hearing on the Examiner docket?

A Yes, sir.

Q Just for clarity now, what is the problem with the location?

A We're approximately 100 foot too close to the quarter section line.

Q All right, you should be 660 out of the northeast -- out of the northwest corner of that 160-acre tract.

A Yes, sir.

Q You should be 660 and you're 560 from the west line?

A Yes.

Q And 660 from the north?

A Yes, sir.

Q All right. You said awhile ago that your preliminary examination of the other wells in the area caused you to conclude that they were oil wells.

A Yes, sir.

Q What caused you to reach that conclusion?

A The first one that struck my attention was the GOR. It was below 2000-to-1 in the Benson 4 Well currently.

Q Did you examine the gas/oil ratios in the other wells?

A Yes, sir.

Q And what conclusion did you reach?

A The Benson 5 Well was essentially a dry hole. I pushed it off to the side and went on to the No. 1 Well.

Q Okay, and what did you do when you examined the gas/oil ratio for that well?

A The gas/oil ratio was in the range of 4900-to-1 and it still led me to believe it was still oil.

Q As an engineer, did you make any further examination of any other factors to cause you to conclude that the Meridian well was likely to be an oil well?

A I'm sorry, I don't --

Q All right, we're talking about setting up the well to drill it.

A Uh-huh.

Q First thing you looked at were the gas-oil ratios and you contacted the District office and you were led to believe you were drilling an oil well in the Strawn.

A Uh-huh.

Q All right. You drilled and completed the well.

A Yes, sir.

Q Okay? What does your well tell you that causes you to conclude that you have an oil well?

A We had experienced a low GOR, also. Our GOR came in at just a hair over 3100, 3140, to be exact.

API gravity of the crude was 48.7. The color of the crude was brown. This still led us to believe we had an oil well.

Q Subsequently, have you made further investigation of information available to you on the Benson Strawn Pool and its wells?

A Yes, sir.

Q Let me direct your attention to Meridian Exhibit Number Two, Mr. Herring, and have you identify that exhibit for me.

A Yes, sir. This is the production, monthly production curve from the Benson Strawn No. 1. It shows, the dark line at the top shows gas production. The thinner line below it shows oil production and the line on the bottom is of course water.

Q All right. To what purpose have you applied or utilized this information in discussing or thinking about the Benson Strawn Pool?

A Just basically, oil production has decreased and gas production has increased. The over -- cumulative GOR is roughly 4900-to-1. To me that curve would suggest a solution gas drive (not understood).

Q Does the change in the gas/oil ratio for

the No. 1 Well that's depicted on this exhibit cause you to be concerned about the producing rate that was utilized for this well?

A No, sir.

Q You don't see anything unusual about the producing rate in this well?

You've characterized this one as potentially a solution gas drive reservoir. What causes you to say that?

A Well, usually in a solution gas drive reservoir your oil production, of course, decreases, and your gas will start out at roughly flat, maybe decreasing slightly, and then increase substantially.

Q About this period of time did you examine a transcript and the exhibits in the Commission case held in April, 1980, in Case 6609?

A Yes, sir, I did.

Q And you further reviewed the history then set forth in that case with regards to the Benson Deep No. 1 well?

A Yes, sir.

Q And what was your impression or conclusions about reviewing that additional information?

A It still confirmed that it was an oil well to me.

Q They had available in that transcript fluid reservoir studies, a PVT analysis and whatnot?

A Yes, sir.

Q And you read that information?

A Yes, sir.

Q All right. Let's turn now to the No. 4 Well and look at Exhibit Number Three now, Mr. Herring.

So that we understand what this exhibit is, will you take a moment and identify it?

A Yes, sir. Basically you've just got production versus time, daily production versus time for the Benson 4 Well. It just plots daily oil production or average monthy -- I'm sorry, excuse me, average daily oil production for that month would be a better way to clarify it.

Q Can you tell as an engineer whether or not the Benson Deep 4 Well is reprsenting characteristics, producing characteristics, that would cause you to identify this either as an oil or a gas well?

A I would lean more towards an oil well.

Q Does the decline, the way it's plotted here on Exhibit Number Three, cause you to reach any conclusion with regards to the ability of this reservoir to withstand producing rates in excess of 70 barrels a day?

A Yes, sir. Two years of production, the decline has not significantly deviated either way. I don't

see damage.

Q If the reservoir was rate sensitive as was potentially suspected in the 1980 hearing, there was some concern about the effective producing rate, if the reservoir in fact was truly rate sensitive, what would happen to the producing characteristics as plotted on the exhibit?

A They would more than likely decrease substantially. We would go into a bubble point, reach a bubble point, and we'd produce a lot more gas.

Q So you and Mr. Lanning are in agreement about the fact that this is not a rate sensitive reservoir.

A Yes.

Q Do you see -- double negative, I think. You son't see any reason, then, that would require you to urge the Commission to maintain the 70-barrel a day.

A No, sir, I don't.

Q All right, let's go to Exhibit Number Four, now, Mr. Herring, and have you identify that exhibit for us.

A Yes, sir, this is a GOR curve plotted on the Benson Deep No. 4. Again it is also the monthly average GOR. It has a cumulative GOR on the well of 1975. Of course it's only complete as of November, when the last Commission report came out, production report.

Q If this was a reservoir, an oil reservoir, that was sensitive to producing rates, would you see the gas/oil ratio climb in a more dramatic way than has been depicted with the actual production on this exhibit?

A Yes, sir.

Q From the lack of that dramatic increase in gas/oil ratio can you further conclude then the reservoir is not rate sensitive?

A Yes, sir.

Q Does this exhibit or information tell you anything with regards to whether or not the reservoir should be classified as an oil or a gas reservoir?

A It would still lead me to believe it's an oil reservoir.

Q And why?

A The log GOR. It's got a cum GOR of less than 2000-to-1.

Q Let's turn to Exhibit Number Five, Mr. Herring, and have you identify that exhibit for us.

A Yes, sir, these are the reservoir fluid parameters that we have experienced or obtained on our well through coring or build-up analysis. We've got oil gravities, 48.7; reservoir temperature, 154 degrees; our average reservoir pressure was 3400 pounds; our observed gas/oil ratio, as mentioned before, 3104; and formation volume factor

was 1.6 -- 36; our porosity was 8 percent; permeability, taken from build-up data was 28.4 millidarcies; and based upon the DST conducted on the Benson 4 Well we had estimated original reservoir pressure of 5200 pounds, which was subsequently (inaudible).

Q The difference in reservoir pressures, you have encountered a reservoir pressure that's some 1800 pounds less than the original reservoir pressure?

A Yes, sir.

Q What significance does that have for you as an engineer?

A It would suggest that we have been drained or are being drained.

Q All right. To what wells would you attribute the drainage of the reservoir?

A The Benson 4 Well.

Q You believe then that they are completed and communicating in the same reservoir?

A Yes, sir.

Q Any other information about the reservoir and fluid parameters you've identified for your well that you want to draw our attention to?

A No, sir.

Q Okay. Have you had an opportunity yet, Mr. Herring, to have a reservoir fluid study conducted on

your well?

A No, sir, we haven't.

Q Let's turn to Exhibit Number Six. Could you identify for us Exhibit Number Six?

A Yes, sir. This is just a straight volumetric calculation that was used for economic purposes in drilling our wells. All it does is give us the amount of recoverable oil we feel is in place underneath a 160-acre proration unit.

Q What conclusion do you reach from using the volumetric calculation with regards to this well?

A Based on volumetric calculations we can economically drill on 160-acre proration units.

Q So if the Commission leaves the pool on 160-acre spacing, then at least for this well you're satisfied that there is sufficient recoverable reserves to make the well economic?

A Yes, sir.

Q You've indicated on the first exhibit that Meridian has available to it an additional 160 acres for which I guess it could potentially dedicate 320 if they had to.

A Yes, sir.

Q All right. The decision, then, about how to operate the -- this reservoir is not affected by Meri-

dian's land position.

A No, sir.

Q In your opinion, based upon what you know now, would you recommend that the Examiner continue the Benson Strawn Oil Pool Rules subject to a change in the allowable?

A Yes, sir.

Q Have you had an opportunity to study Mr. Lanning's documents as he's presented today on the reservoir fluid studies?

A Just briefly.

Q You haven't had a chance to study that information?

A Huh-uh.

Q Were Exhibits One through Six prepared by you or compiled under your direction and supervision?

A Yes, sir, they were.

Q Mr. Lemay asked a question awhile ago with regards to the Lusk Strawn Pool.

A Yes, sir.

Q Have you had an opportunity to study any of the information about the Lusk Strawn Pool?

A Yes, sir, I obtained a deposition from the initial set-up of the field and reviewed it.

Q You talking about the transcript for the

hearing that shows the testimony --

A Yes.

Q -- of how it was set up?

A Yes, that's right.

Q What type of reservoir did the Commission set up for that pool?

A It was set up on 160-acre proration units.

Q Was it set up as a gas pool or an oil pool?

A Set up as an oil pool.

Q Can you -- can you share with us any of the information that you have derived from the study of the Lusk Strawn and how it might apply to the Benson Strawn Pool?

A Just basically looking at the production curves obtained from the Lusk Strawn, there appears to be no reservoir damage to the production rates. I believe the daily allowables are 605 barrels a day and a 4000-to-1 GOR. There appears to be no damage based on the production history.

Q How long have -- how long has the Lusk Strawn Pool been a producing pool, do you recall?

A The pool was originally set up, I believe, in 1961/62 and --

Q We've been producing at those kind of rates for that period of time?

A 25 years.

Q And you plotted the pool gas/oil ratios and production rates?

A Yes, sir.

Q Do you see any significant changes in the gas/oil ratio to cause you to believe that that pool is being improperly produced?

A No, sir, I don't.

Q In what way does that pool compare to the Benson Strawn Pool?

A It has the same API gravities right around in the 46/47 degree range.

The permeabilities and porosities, I believe they had permeabilities around 17.3 millidarices, porosities were 7 or 8 percent. I don't know the color of the crude. Gas/oil ratio cumulative right now was 4200, roughly.

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

We would move the introduction of Meridian Exhibits One through Six. I think we've already introduced Seven, have we not?

Please add Number Seven.

MR. CATANACH: Exhibits One through Seven will be admitted into evidence.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Herring, I believe you stated that when you were assigned to review the general area of the Meridien 3-1 well it was based on an expiring lease problem?

A Yes sir.

Q When was it, can you tell us, that you began that review process approximately?

A Approximately in October.

Q And what information did you consult as far as reviewing the production in the surrounding area?

A Obtained the production curves from the Benson 4 Well, the Benson 1, and also the Benson 5 Well.

Q Specifically, you obtained that from public records, the OCD published reports?

A Dwight's, Dwight's Production Data, OCD data, yes, sir.

Q Okay, how far back, if you recall, did you review the OCD production data? Did you simply look at the latest and take the cumulative productions off that?

A I believe at that time the OCD was out until August, July or August, and that was the most up to

date information I had at that time.

Q Did you note in your review the data published by the Oil Conservation Division that the Benson Deep Unit No. 4 Well operated by Yates was carried on those records and shown to be a gas well?

A Yes, sir.

Q Did you attach any significance to that?

A No, sir.

Q Did you, what did you think when you saw that?

A I still looked at the GOR and it showed that it was an oil well, just because it was in the conservations books as a gas well (not understood.)

Q At that time were you familiar with the Benson Strawn pool rules?

A Yes, sir, I was.

Q And how did you become familiar with those?

A Read the rules themselves. We have a copy of --

Q Approximately when would it have been that you first found that your proposed location, or the acreage in which you were interested was arguably subject to the Benson Strawn pool rules?

A In October.

Q And so as early as October Meridian was aware that the Benson Strawn pool rules, assuming it was still oil, provided for 160-acre spacing and well location requirements within that 160-acres.

A Yes, sir.

Q Did the location subsequently drilled by Meridian comply with those pool rules?

A Yes, sir.

Q As to spacing, as well?

A Yes, sir.

Q In the spacing required by the Benson pool rules?

A Yes, sir, 160 acres.

Q No, but I mean the well location requirements.

A Well location requirements, we had to move 100 foot closer to the quarter section line, into BLM requirements.

Q Topographical problems?

A Burnt rocks.

Q Indian problems.

A And we also had a pipeline restriction to the north.

Q Okay. During the time that you were reviewing the production from the Yates Benson Unit Wells, you

also reviewed in addition to the No. 4 Well the No. 5 and the No. 1 Well?

A Yes, sir.

Q You heard Mr. Lanning's testimony earlier, did you not?

A Yes, sir.

Q Did you hear this testimony that the gas/oil ratio over a period of time in the Benson Deep Unit No. 1 Well has climbed to in excess of 25,000 GOR?

A Yes, sir.

Q Did you note that in your study of the --

A I believe --

Q -- production in the area?

A -- it wasn't that high based on the conservation reports.

Q So you, whatever data you looked at reflects what, that Mr. Lanning was incorrect in saying that the GOR was either in excess of 25,000 GOR --

A Yes, sir.

Q -- during the later production stages of the No. 1 Well?

A Yes, sir, on the initial examination in October.

Q Let's look at your Exhibit Number Two, I think it is. This is your -- is this the -- this shows the

gas production, the oil production, and the water production--

A Yes, sir.

Q -- and what, again from what sources was this exhibit prepared?

A Dwights's Production Data.

Q Well, what wells were included in it?

A This is the Benson No. 1.

Q Only the Benson No. 1 Well?

A Yes, sir.

Q So the gas production in your upper line, as I understand the exhibit has remained relatively constant with some upward increase?

A Yes, sir.

Q The oil production, your middle line, has -- had declined, whether we call it oil or gas or condensate, the liquid production has declined at a relatively stable rate. Would that be a fair --

A Yes, sir.

Q -- statement? Doesn't that show that the relative ratio or the relative productivity of these two substances, the liquids and the gas, has -- has substantially increased over the period of production that that No. 1 Well?

A Yes, sir, but not to 25,000-to-1.

Q Well, if we showed you data that the gas/oil ratio was in fact 25,000-to-1, would that change your --

A Yes, sir.

Q -- opinion toward any of this? Would it throw any question in your mind as to the safety of your assumption that the production from the Benson No. 4 Unit Well that it has shown in the approximately two years it's been on line, could be safely assumed to continue at that rate given the history of the No. 1 Well?

A Yes, sir.

Q Did you make any determination yourself, or I believe you testified that -- no, it was your geologist. Have you made any determination yourself as to whether or not the Benson No. 1 Well is in anyway connected to the reservoir of the other three wells?

A Geologically, talking to the geologist, no, sir.

Q Okay. At the time you were making your initial study of the area for Meridian, you knew, did you not of the period of time during which the Yates Benson No. 4 Well had actually been produced.

A Yes, sir.

Q So given the proximity of the Meridian 3 No. 1 Well to the Benson No. 4 Well, it's not surprising

that your reservoir characteristics now reflect some drainage has occurred, but at the same time Meridian, during all the previous -- times previous to the completion of the No.1 Well had the right to drill and could have protected itself from that drainage.

A Well, we weren't privy to information from the No. 4 Well as far as reservoir characteristics. That would certainly go into your calculations and not --

Q Right, but all I'm saying is Meridian -- it was not anything that Yates did to unfairly take advantage of Meridian draining their acreage; Meridian had the right -- could have drilled a well prior to the expiration of the lease. It simply didn't get anyone's attention till the lease expired.

A Exactly, yes, sir.

Q Okay. Let me hand you a copy of the application for a permit to drill, deepen, or plug back filed with the BLM. Have you seen this instrument before?

A Yes, sir.

Q This is Meridian's APD filed with the BLM for your 3 No. 1 Well?

A Uh-huh, yes, sir.

Q And this is dated November 17th, 1986?

A Yes, sir.

Q Directing your attention to the field and

pool designated on this APD, what does this document reflect?

A Undesignated Eddy Strawn and it is crossed out and reflects Benson Strawn.

Q Do you know at what point that was crossed out?

A No, sir, I don't.

Q I mean would that have been about the time that you discovered that it was subject to the Benson Strawn pool rules?

A No, sir, I don't. I didn't -- I didn't cross it out so I don't know approximately when it was crossed out.

Q In your review of the production data and in your process of deciding for yourself whether in your own opinion the Benson reservoir is in fact a gas reservoir or an oil reservoir, did you make a study of any of the other Strawn pools in the area with the exception of the Lusk Strawn Pool, which you testified to?

A No, sir, I didn't.

Q Were you aware of the other Strawn pools in the area that Mr. Lanning described in his examination?

A Yes, sir.

Q Was -- do you have any information that the -- that the information that he described relating to

those other Strawn pools, including the Sand Tank Unit operated by Meridian, which are all developed on 320-acre spacing, are in any material respects different from the Benson Strawn Pool?

A GOR's are slightly higher. API gravities are slightly higher. That's about it.

Q What about the -- the actual reservoir rock itself?

A No, sir, I haven't done any study on it.

Q You simply didn't look at that information?

A No, sir.

Q So you really did not agree or disagree with Mr. Lanning's --

A No.

Q -- opinion on those?

A No, sir.

Q Directing your attention to your Exhibit Number Six, Mr. Herring, you calculated what you believe to be the recoverable oil in place in the Meridian 3-1 Well.

A Yes, sir.

Q And you have calculated that to be 184,235 barrels of oil?

A Yes, sir.

Q You also, on one of your exhibits, did you not, calculate the total oil in place or recoverable oil

on the Benson Deep Unit No. 1 Well -- or No. 4 Well?

A No, sir, I didn't.

Q Your Exhibit Number Three -- oh, I'm sorry.

A Yes, the -- as far as the -- I thought you were referring to the actual calculations.

Q Right.

A No, they're not on there, but yes, I did --

Q This was -- excuse me.

A -- and that's just based on exponential decline projection.

Q And based on that decline, you would expect an ultimate recovery of 332,000 barrels of oil.

A Yes, sir, and the well currently trends to produce it at the --

Q Now you've heard Mr. Lanning's testimony, in his calculations of the total oil in place he came up with I think it was 330,000 barrels of oil for the Benson No. 4, so that's remarkably close to the projection you get on your decline curve, isn't it?

A Yes, sir.

Q Did you -- or what did you think of his volumetric calculation on Yates Exhibit Number Fourteen, which showed, assuming and using the same, virtually the

same, 330,000-barrel recovery in the No. 4 Well and projecting that on both 160 and 320-acre spacing, that he came up with on 160-acre spacing an ultimate recovery of -- on 300 -- on 160-acre spacing of 88 percent of the original oil in place?

A Yes, sir.

Q What, based on your Exhibit Number Six, assumption have you made for your calculation there as to the total volume of original oil in place?

A I would say that you are going to drain more than 160 acres but less than 320 acres, thus creating waste.

Q But you notice from the comparison of the two exhibits that -- that Yates has already produced from the Benson No. 4 Well 190,000 barrels of oil.

A Yes, sir.

Q And you're projecting a total recovery from your well of 194,000 barrels of oil.

A Yes, sir.

Q The question I was trying to get was what percentage of total oil in place, assuming that you recover 194,235 barrels of oil from your well, --

A Yes, sir.

Q -- how much oil was actually in place?

A I haven't done that calculation on our

wells

Q What is the .4 in your formula?

A That's the recovery factor.

Q So you have assumed forty percent recovery factor?

A Yes, sir, an assumption.

Q Which would be fairly-- it would be good, but it would be--

A It would be mid-range, looking at 80% for a gas well, 20% for a crude oil well, and 40% (not understood)

Q It would be too strong to say that a 40% recovery factor on primary production is good?

A It would be pushing it.

Q Well how do you compare that to Mr. Lanning's calculation that for 160 acre spacing, given the production history of the Benson Deep Unit No. 1 Well, Yates is going to -- assuming it is an oil and not a gas reservoir-- ultimately produce 88 % of the oil in place in that reservoir?

A I don't. Based on his calculations, that's correct-- 88%.

Q Is that possible?

A I don't know.

Q Have you ever heard of an oil reservoir that produced 88% of the original oil in place through primary production?

A No, sir, I haven't.

Q I think you heard Mr. Lanning testify that based on that, he drew one of three conclusions. Number one, it would be possible that the log of the Benson Deep Unit No. 4 Well is totally unrepresentative of the reservoir. None of us believe that based on your own cross section and your own examination of the area; we all think they are in the same reservoir, correct-- so that's not one of the alternatives.

The other possibility that he stated was that it was a gas well, and was in fact draining far in excess of 160 acres.

A Yes, sir.

Q So, do I understand your disagreement to be with the fact-- you agree that it's draining more than 160 acres?

A Yes, sir.

Q But you simply disagree that it's draining 320 acres?

A Yes, sir.

Q Did you notice on Mr. Lanning's calcula-

tion again with regard to his Exhibit No. 14, he made the same calculation but assumed a 320-acre spacing unit, and he comes up woth original or a percentage of total recovery to original oil in place of 44%?

A Yes, sir.

Q Now that would be much more in line with your 40% recovery factor that you assumed for the purpose of your calculations.

A Yes, sir, based on his reservoir parameters.

Q Well, did you have any quarrel with any of the parameters that he used in his calculations?

A Well, his porosity is 6% while ours is in the 8% range.

Q And --

A His formation volume factor is higher, and ours is lower.

Q You're saying that the data from your well is lower or different in your well, but not that the data that he used is erroneous to his calculations?

A No.

Q Okay. The permeability that you have calculated for the reservoir in the Meridian well is also much higher than that shown in any of the other wells in the Benson Strawn pool that you examined, was it not?

A The only information I have privy to is our well. You know, from build-up data and core analysis we've got roughly 28 millidarcies.

Q Did you-- you reviewed the testimony in the original hearing in Case 6069 in 1980?

A Yes, sir.

Q Did you recall the permeability that was testified to in the Benson No. 1 Well?

A I believe they couldn't decide on a permeability. It went anywhere from .46 to .3 something, if I'm not mistaken.

Q At any rate, it was far below the permeability encountered in the Meridian well?

A As far as build-up data on any of the wells to do my own analysis, I wasn't privy to that information. That was in the testimony, and it was conflicting testimony.

Q In your study of this data, Mr. Herring, did you -- or in your examination of the results from the Meridian well, haveyou observed any evidence of fracture -- or production from a fracture system of some nature?

A No, sir, I haven't.

Q If Mr. Lanning testified that in his opinion there was a fracture system in place underlying the zone, would you agree or disagree with that?

A I would have a tendency to believe the core that we recovered, analyzing the core.

He is dealing with information from build-up data. We have actually got the rock and according to our geologist it shows no fracture.

Q You made reference to the Lusk Strawn Pool. Do you have any knowledge as to whether or not there is any gas free injection system being undertaken in that pool?

A No, sir, I don't.

Q You don't know that there is or you don't know if it's not, either.

A I don't know that there is.

Q You just don't know. Have you in your experience as a reservoir engineer or in preparation for your testimony here today or your examination of this Benson Strawn area, have you studied any reservoirs that Core Lab or other parties have testified or have established to be retrograde condensate reservoirs?

A No, sir, I haven't.

Q Are you familiar with reservoirs which have been classified by that name as opposed to an oil pool or a gas pool?

A I know from textbook how they are supposed to respond but as far as physical data, no, I

haven't.

Q On cross examination by Mr. Kellahin, Mr. Herring, Mr. Kellahin requested and Mr. Lanning furnished certain requested fluid analyses which had been obtained by Yates and which Meridian desired to see for itself.

In the event that following this hearing it's going to be held open for a month for notice purposes, in the event that Yates during that period of a month feels that it would be worthwhile for it to obtain information from Meridian on the same basis, informally presented so that the parties can review and discuss each other's information, would Meridian be willing to furnish such information?

A Yes, sir. Yes, sir.

Q Do you know whether or not Meridian has any fluid analysis from the Sand Tank Unit?

A Not to my knowledge.

Q Do you know --

A It may be in the well files but I haven't seen it.

Q Do you know whether or not Meridian has any analyses from the Lusk Strawn Pool?

A No, sir, not to my knowledge.

Q If such analyses are present, no problem with furnishing those to Yates?

A No. No, sir.

MR. DICKERSON: I have no further questions, Mr. Examiner.

MR. CATANACH: Mr. Kellahin?

MR. KELLAHIN: Very briefly, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Let me show you Yates' Exhibit Fourteen, Mr. Herring. Mr. Dickerson was asking you about Mr. Lanning's volumetric calculation. If we take Mr. Lanning's calculation and substitute in it your -- your reservoir parameters, you have used for porosity 8 percent, Mr. Lanning used 6. I think your water saturation was 20 percent and his was 25. There may have been some other changes.

In substituting in your parameters in that calculation have you calculated the drainage affected acreage that would be influenced by the Yates Benson No. 4 Well?

A Yes, sir. It would be approximately 240, 245 acres, in that range.

Q Thank you. I have nothing further.

RECROSS EXAMINATION

BY MR. DICKERSON:

Q Are you saying that that area would be influenced from the period that that No. 4 Well went on production to a current date?

A Yes, sir. That would be the area that had been drained.

Q To date?

A No, sir, ultimate.

Q Ultimate.

A Yes, sir.

MR. DICKERSON: No further questions.

MR. CATANACH: I don't have any questions of the witness. Is there anything else?

MR. KELLAHIN: No, sir.

MR. CATANACH: Then he may be excused.

MR. KELLAHIN: Mr. Examiner, I have nothing further with regards to presentation of testimony.

We're prepared to have this case continued to the -- to the next examiner hearing that you have selected for completion of the case.

MR. DICKERSON: Mr. Examiner,

because of the notice problem that I've described at the beginning, I understand that my request was to the effect that it be held open until I think you stated the April 22nd hearing for the purpose of other parties objecting.

We did not at that point, and I don't think Mr. Kellahin and I thought in the nature of a continuance that we're expected at this point to reappear, these same two parties, and rehash or re-argue based on hindsight or new calculations what we've already testified here today.

Is there any misunderstanding about that?

MR. KELLAHIN: No, there's not.

MR. TAYLOR: Why don't you provide in your notice twenty days to object so that we will know if you need to come back and perhaps put on --

MR. DICKERSON: Okay.

MR. TAYLOR: -- or let those other parties put on witnesses.

MR. CATANACH: Do counsel want to make any closing statements at this time?

MR. KELLAHIN: Let me suggest to you, Mr. Examiner, that we have some additional information that Yates has shared with us with regards to the reservoir fluid studies, the underlying information that sup-

ports some of their studies.

I would suggest in terms of wrapping this up that you grant us an opportunity to provide you simply written comments by way of argument of counsel as to -- to any observations we might make about some of those studies, so that we don't have to come back when this case is docketed again in April to present further testimony.

I think the evidence that is available is before you. The opportunity for the parties to respond on the technical data, I think can be easily accomplished if you would give us a time period to make an initial response and perhaps grant to Mr. Dickerson a comment period after this, after the time that we've supplied you with our impressions of some of the studies that we haven't had available until today.

What was the -- what's the hearing date for --

MR. CATANACH: The 22nd of April.

MR. KELLAHIN: Perhaps we could split the time between now and then between Mr. Dickerson and myself. If he's agreeable I will take the first half and within that period of time I'll provide written comments to the Examiner, share them with Mr. Dickerson, and that would give him the balance of the time, then to rebut any

comments I may have had, and that will allow him to share with his technical people the comments that we might have on this.

MR. CATANACH: Is that agreeable to you, Mr. Dickerson?

MR. DICKERSON: Yes, it certainly is.

MR. CATANACH: Okay.

MR. DICKRSON: Mr. Examiner, we'd simply also point out that the testimony was that Meridian's well is currently shut in waiting a pipeline connection.

Yates' well, the No. 4 Well, is under the provisions of the shut-in order, order to be shut in that has been waived by the local office for a period ending today.

We intend to request the local office for an additional extension of time. It's our position that the status quo between these parties can only be, as far as we know, Meridian is able in the very near future to hook up its well and they certainly have the right to do so and should be allowed to do so, and we have no objection to them doing so. We simply want to make it clear that we are requesting, and will request the local office, a further extension so that the shut-in order pending a resolution of

the spacing question, the reservoir question, by the Division will not come into effect so that -- to cause the shut-in of the No. 4 Well.

MR. KELLAHIN: I would join with Mr. Dickerson and perhaps request that the Examiner either through the Director or to the District, would authorize the District to allow both the Meridian well and the Yates well to continue to produce from now until we have an ultimate decision, using the same maximum rate, I believe, of 150 barrels a day.

That does in fact preserve the status quo. It doesn't preclude you then from going back and requiring either party to balance with the pool, wipe out the overproduction, or do whatever you decide is in the best interests of the reservoir, but so that we maintain an equal competitive arrangement in the pool. Being the only two producers, we'd request that we both be given the same opportunity to produce now until there's an ultimate decision.

MR. LEMAY: Mr. Examiner, I have a point of clarification.

I think, as I understand it, that Yates requested from our Artesia office a period of time in which to test that well because you did plan on coming to hearing, and therefore we did suspend allowable re-

quirements for that period of time that it took you to test the well and get all the information you needed.

I don't think -- it was my understanding that we have not issued an order to produce it at any --

MR. DICKERSON: That's correct.

MR. LEMAY: -- that were authorized beyond the pool rates.

We can take under consideration, Mr. Kellahin's request that we preserve the status quo in the pool and issue a temporary allowable so to speak, so that no one will gain a competitite advantage.

MR. KELLAHIN: Rather than having us both have a testing allowable, if you will, I think it's cleaner if you would simply issue us a temporary provision allowing us to produce at that rate and maintain the status quo.

MR. DICKERSON: That rate is the current deliverability of the Yates No. 4 Well?

MR. KELLAHIN: I believe that's how it was established.

MR. DICKERSON: That's fine with us, Mr. Examiner.

MR. LEMAY: Mr. Dickerson, I'm sorry, Mr. Kellahin, do you -- do you know if -- if Meridian

has a market and will be hooking up their well in the near future?

MR. KELLAHIN: I understand that hoookup is to be accomplished by Monday, front end of the week?

MR. HERRING: It should be.

MR. LEMAY: A week?

MR. KELLAHIN: We've almost got that done.

MR. CATANACH: Anything else from either counsel?

All right, the record will be left open until the April 22nd docket, hearing examiner docket.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9109 9110 heard by me on March 18 1987.

David R. Catanach, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
Santa Fe, New Mexico

22 April, 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corporation for pool reclassification or, in the alternative, the amendment of Division Order No. R-6129-A, Eddy County, New Mexico. CASE 9109

BEFORE: Michael E. Stogner, Alternate Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Legal Counsel to the Division
Oil Conservation Division
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant:

MR. STOGNER: Call next Case Number 9109.

MR. TAYLOR: The application of Yates Petroleum Corporation for pool reclassification or, in the alternative, the amendment of Division Order No. R-6129-A, Eddy County, New Mexico.

MR. STOGNER: This case was heard at the Examiner Hearing March 18th of 1986. It was continued for notification purposes until today.

We'll call for any additional appearances or testimony.

There appear there being none Case Number 9109 will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9109, heard by me on 22 April 1987.

, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 9109 and
CASE NO. 9110
Order No. R-8446

APPLICATION OF YATES PETROLEUM
CORPORATION FOR POOL RECLASSIFICATION
OR, IN THE ALTERNATIVE, THE AMENDMENT
OF DIVISION ORDER NO. R-6129-A, EDDY
COUNTY, NEW MEXICO.

APPLICATION OF MERIDIAN OIL INC.
TO AMEND DIVISION ORDER NO. R-6129-A,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on March 18 and April 22, 1987, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 29th day of May, 1987, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) Yates Petroleum Corporation ("Yates"), the applicant in Case No. 9109, seeks the reclassification of the Benson-Strawn Oil Pool to a gas pool, with a provision for 320-acre spacing and proration units or, in the alternative, to amend the Special Rules and Regulations for said pool, as promulgated by Division Order No. R-6129-A, to increase the allowable for said pool from the current 70 barrels of oil per day to the statewide depth bracket allowable of 560 barrels of oil per day, and to increase the current gas-oil ratio limitation from 2000 to 3000 cu.ft./barrel, both changes to be made effective January 1, 1985.

(3) Meridian Oil Inc. ("Meridian"), the applicant in Case No. 9110, seeks to retain the oil pool classification of the Benson-Strawn Pool and to amend the Special Rules and Regulations for said pool to also change the current allowable for said pool to the statewide depth bracket allowable of 560 barrels of oil per day and to further increase the current gas-oil ratio limitation from 2000 to 3000 cu.ft./barrel.

(4) At the time of the hearing Division Case Nos. 9109 and 9110 were consolidated for the purpose of testimony.

(5) Inasmuch as the applications in both Case Nos. 9109 and 9110 concern the classification and amendment of the Special Rules and Regulations for the Benson-Strawn Pool, one order should be entered for these cases.

(6) By Order No. R-6129-A, issued in Case No. 6609 on May 14, 1980, the Division created and defined the Benson-Strawn Pool as a volatile oil pool based upon PVT analysis of a fluid sample obtained from the only producing well in the pool at that time, the Benson Deep Unit Well No. 1, as described below in Finding Paragraph No. (9), and further promulgated Special Rules and Regulations for said pool, including a provision for 160-acre spacing and proration units.

(7) At the time of the original hearing for Case No. 6609, insufficient reservoir information and production data existed to allow the Division to establish a permanent oil allowable and gas-oil ratio limitation for said pool and, as a result, a temporary oil allowable of 70 barrels a day and a gas-oil ratio limitation of 2000 cu.ft./barrel was established by the Division for a temporary period pending the gathering and submittal of production data from the pool by Napeco Inc., the applicant in said Case No. 6609.

(8) The record in said Case No. 6609 indicates that subsequent production data from the Benson-Strawn Pool was submitted to the Division on October 8, 1980, by Yates Petroleum Corporation, the successor operator to Napeco Inc., but that the Division failed to make appropriate changes in the oil allowable and gas-oil ratio limitations at that time.

(9) Yates Petroleum Corporation is the owner and operator of the Benson Deep Unit Well Nos. 1, 4, and 5, located respectively in Section 33, Township 18 South, Range 30 East, and Sections 3 and 4, Township 19 South,

Range 30 East, NMPM, Eddy County, New Mexico, and all currently completed in the Benson-Strawn Pool.

(10) Meridian Oil Inc. is the owner and operator of the Benson "3" Federal Well No. 1 located in Section 3, Township 19 South, Range 30 East, NMPM, Eddy County, New Mexico, which was drilled and completed in the Benson-Strawn Pool in January, 1987.

(11) Yates testified that subsequent to the issuance of Division Order No. R-6129-A and upon further investigation by Yates, it was determined that the PVT analysis obtained from the Benson Deep Unit Well No. 1, which was used as evidence in Case 6609 and which indicated the Benson-Strawn Pool to be a volatile oil reservoir, was inaccurate due to improper fluid sampling procedures.

(12) Yates presented at the hearing new PVT data based upon fluid samples obtained from the Benson Deep Unit Well No. 1 during June, 1980, and from the Benson Deep Unit Well No. 4 obtained during February, 1987, which indicate that the reservoir demonstrates characteristics of a retrograde condensate gas reservoir.

(13) Meridian contends that the temperature at which said fluid samples were analyzed in the laboratory were higher than the actual reservoir temperature as determined from well logs in this area and, as a result, the data obtained from the tests are inaccurate.

(14) Evidence presented by Yates indicates that the temperatures used for fluid analysis were determined from pressure buildup tests conducted on the wells which are more accurate than temperatures obtained from well logs.

(15) The PVT data presented by Yates represent the best and most current reservoir fluid analysis available at the present time with which to make a determination regarding the classification of the Benson-Strawn Pool.

(16) Production data for the Benson Deep Unit Well No. 4 which, as a result of a clerical error, was not placed in the Benson-Strawn Pool until June, 1986, and which for a period of two years subsequent to that time produced as a gas well, indicate that the reservoir is not rate-sensitive and that waste should not occur by increasing the allowable in said pool.

(17) Meridian also testified that the reservoir was not rate-sensitive and that waste should not occur by increasing the allowable in said pool.

(18) Yates further presented evidence that shows that two other Strawn pools in the area, the East Burton Flat-Strawn Gas Pool and the West Parkway-Strawn Gas Pool, both exhibit similar retrograde condensate gas reservoir characteristics as determined by PVT data and are both currently classified by the Division as gas pools developed on 320-acre well spacing and proration units.

(19) Sufficient evidence exists at the present time to justify the reclassification of the Benson-Strawn Pool to a gas pool.

(20) Testimony by Yates indicates that the retroactive reclassification of the Benson-Strawn Pool to January 1, 1985, will not cause waste and will protect the correlative rights of all parties.

(21) The request by Yates for retroactive reclassification of the Benson-Strawn Pool should be approved.

(22) Yates testified that the Benson Deep Unit Well No. 5, which had not been produced at the time of the hearing, has experienced since its completion a 16 per cent decrease in bottomhole pressure attributable to the drainage taking place by the Benson Deep Unit Well No. 4 which is located approximately one-half mile away.

(23) This evidence would indicate that the Benson Deep Unit Well No. 4 is currently capable of draining 320 acres.

(24) The application of Yates in Case No. 9109 for reclassification of the Benson-Strawn Pool to a gas pool to be developed on 320-acre spacing and proration units should be approved.

(25) The application of Meridian Oil Inc. in Case No. 9110 to retain the current oil pool classification of the Benson-Strawn Pool and for the promulgation of special pool rules for said pool should be denied.

(26) In order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Benson-Strawn Pool should be reclassified as a gas pool effective January 1, 1985, and the Special Rules and Regulations for said pool as promulgated by Division Order No. R-6129-A should be rescinded.

(27) The Benson-Strawn Gas Pool should be governed by General Statewide 320-acre Gas Rules and Regulations, as contained in Rule 104 C (II) of the Division Rules and Regulations, for a temporary period of two years.

(28) Case No. 9109 should be reopened at an examiner hearing in May, 1989, at which time the operators in the subject pool should be prepared to appear and show cause why the Benson-Strawn Gas Pool should not be redesignated as an oil pool and the Special Rules and Regulations reinstituted.

IT IS THEREFORE ORDERED THAT:

(1) The application of Yates Petroleum Corporation in Case No. 9109 for the reclassification of the Benson-Strawn Pool to a gas pool effective January 1, 1985, is hereby approved.

(2) The application of Meridian Oil Inc. to retain the current oil pool classification and the amendment of the Special Rules and Regulations for said pool is hereby denied.

(3) The Special Rules and Regulations for the Benson-Strawn Pool as promulgated by Division Order No. R-6129-A are hereby rescinded.

(4) The Benson-Strawn Gas Pool shall be developed and operated in accordance with General Statewide 320-acre Gas Spacing Rule 104 C (II) of the Division's Rules and Regulations until further order of the Division.

(5) The locations of all wells presently drilling to or completed in the Benson-Strawn Gas Pool or in the Strawn formation within one mile thereof are hereby approved; the operator of any well having an unorthodox location shall notify the Artesia district office of the Division in writing of the name and location of the well on or before July 1, 1987.

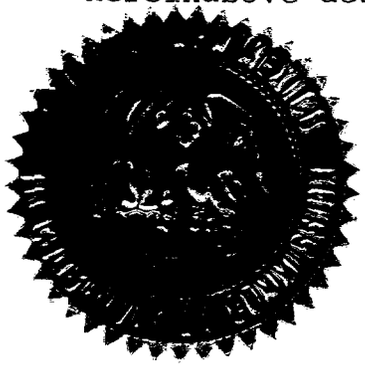
(6) Pursuant to Paragraph A of Section 70-2-18, NMSA 1978, contained in Chapter 271, Laws of 1969, existing wells in the Benson-Strawn Gas Pool shall have dedicated thereto 320 acres in accordance with the foregoing pool rules; or, pursuant to Paragraph C of said Section 70-2-18, existing wells may have non-standard spacing or proration units established by the Division and dedicated thereto.

(7) Failure to file new Forms C-102 with the Division dedicating 320 acres to a well or to obtain a non-standard unit approved by the Division within 60 days from the date of this order shall subject the well to cancellation of allowable.

(8) Case No. 9109 shall be reopened at an examiner hearing in May, 1989, at which time the operators in the subject pool may appear and show cause why the Benson-Strawn Gas Pool should not be redesignated as an oil pool and the Special Rules and Regulations reinstituted.

(9) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



S E A L

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

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