STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
CASE 10108

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corporation to Amend the Special Pool Rules for the South Dagger Draw-Upper Pennsylvanian Associated Pool, Eddy County, New Mexico.

TRANSCRIPT OF PROCEEDINGS

BEFORE: JIM MORROW, EXAMINER

STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
October 3, 1990

ORIGINAL

A P P E A R A N C E S

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I N D E X

E X H I B I T S

APPLICANT'S EXHIBITS:

EXAMINER MORROW: Call Case #10108. This is the application of Yates Petroleum Corporation to amend the special pool rules for the South Dagger Draw-Upper Pennsylvanian Associated Pool, Eddy County, New Mexico.

Call for appearances.

MR. CARROLL: Mr. Examiner, my name is Ernest Carroll of the Artesia Law Firm of Losee, Carson, Haas & Carroll. I'm here representing the Applicant, Yates Petroleum, and I will have three witnesses.

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Law Firm, representing Santa Fe Energy Operating Partners, L.P. I have no witnesses and will present no testimony.

EXAMINER MORROW: All right. Will the witnesses please stand and be sworn at this time.

KATHY PORTER

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

EXAMINATION

BY MR. CARROLL:

Q. Would you please state your name and occupation for the record.

A. My name is Kathy Porter. I'm employed as a

landman by Yates Petroleum Corporation.

Q. Have you testified before this Commission as a petroleum landman at prior hearings?

A. Yes, I have.

Q. And your credentials have been accepted as a professional petroleum landman?

A. Yes, they have.

MR. CARROLL: I tender Ms. Porter as an expert witness in the area of petroleum land work.

EXAMINER MORROW: We accept her qualifications.

Q. Ms. Porter, are you familiar with the application that Yates Petroleum has filed in this cause number?

A. Yes, I am.

Q. Would you briefly state what the purpose of that application is?

A. In Case 10108, Yates Petroleum Corporation seeks a revision of the special rules and regulations for the South Dagger Draw-Upper Pennsylvanian Associated Pool as set by Division Order No. 5353 as amended, to provide that each well be located no closer than 660 feet to the outer boundary of the proration unit, nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary,

to increase the gas/oil ratio to 10,000 cubic feet of gas for each barrel of oil, and for a special depth allowable for oil wells on a 320-acre proration unit of 700 barrels of oil per day.

Q. Ms. Porter, have you prepared a land plat showing the South Dagger Draw Field in relation to the North Dagger Draw Field and with respect to the areas wherein Yates was required to give notice?

A. That's correct, Exhibit No. 1.

Q. All right. Would you please describe the colored lines? And there are, apparently, two colors of dots that are shown with respect to the wells. Would you explain those to the Examiner?

A. Yes. Exhibit No. 1 is the land plat of the area that contains the Dagger Draw pools in Eddy County, New Mexico. The green outline to the north reflects the boundaries of the North Dagger Draw-Upper Pennsylvanian Associated Pool. The red outline defines the South Dagger Draw pool.

The red dots show the Yates Petroleum Corporation operated wells that are in the South Dagger Draw Pool. The one-mile boundary around this South Pool is shown in yellow.

Blue dots are wells operated by other companies within the South Dagger Draw Pool or within

the one-mile boundary. All operators and unleased mineral owners within this area were given notification of our application.

MR. CARROLL: Mr. Examiner, prior to this hearing we did file the required certificate of mailing in compliance with Rule 12-07, and that should be on file along with the copies of the letters and the green cards, return receipt cards.

Q. With respect to this notice that was sent out, Ms. Porter, were any waivers actually received from the persons that were required to be given notice?

A. We have actually received written waivers from four of the parties that were notified. These parties are Conoco, Cathy Cone Auvenshine, Clifford Cone and the D. C. Trust.

Q. Conoco is the only other operator, is it not, of the wells in this area?

A. Within the pool, yes.

MR. CARROLL: Mr. Examiner, I have for the file at this time the four original waivers which Ms. Porter just spoke of.

Q. With respect to the other parties listed which were operators on that list which was part of the certificate of mailing, and they are the Graham

Royalty, the Estate of Kathleen Cone, Kenneth G. Cone, Texas Oil & Gas and McKay Oil Corporation, have you received any correspondence in return for your notices which were mailed to them?

A. No, we have not.

Q. You're not aware of any opposition from those parties, though, are you?

A. No, I'm not.

Q. With respect to the specific rules which Yates is wishing to have amended, could you go over those and list them for the Examiner?

A. These two Dagger Draw pools are currently operated under separate rules and regulations by a series of Orders, R-4691 and R-5565. The Commission had established special rules and regulations for the North Dagger Draw Pool that covered, among other things, 160-acre spacing allowable of 350 barrels of oil per day, and a gas/oil ratio of 10,000 cubic feet.

In January 1977, the Commission, in their Orders R-5353 and R-5353-A, set special rules and regulations for the South Dagger Draw. In part, these rules set out 320-acre spacing, an allowable of 267 barrels of oil per day, and the gas/oil ratio was set at 8,000 cubic feet.

In the geological and engineering testimony to be given today, we will show that the North Dagger Draw and the South Dagger Draw Associated Pools are actually one pool. The pool rules are dramatically different. 267 barrels of oil per day on the 320-spacing in the south compared to 350 barrels of oil per day allowable on the 160-spacing in the north.

We do believe the two pools are actually one reservoir and should be governed by one set of rules. Our testimony will show that there's no reason not to treat these two pools equally.

Q. So basically, the purpose of this application of Yates today is to bring these two pools under a like set of rules, one set of rules, rather than the differing rules which now exist?

A. Right. We want to amend the rules for the South Dagger Draw Pool to be essentially the same as the rules for the North Dagger Draw Pool, without down spacing.

Q. In your opinion, would the granting of this application be in the interest of conservation, protect correlative rights and prevent waste?

A. Yes.

MR. CARROLL: I have no other questions of

this particular witness. I would move the admission of her Exhibit 1.

EXAMINER MORROW: Exhibit 1 is admitted.

I don't believe I have any questions. The witness may be excused.

MR. CARROLL: We would next call Denise Fly.

DENISE FLY

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

EXAMINATION

BY MR. CARROLL:

Q. Would you please state your full name, occupation, and by whom you're employed for the record?

A. My name is Denise Fly. I'm a geologist with Yates Petroleum Corporation.

Q. Have you previously testified and had your credentials accepted as an expert in the field of petroleum geology by this Commission?

A. Yes, I have.

MR. CARROLL: I would tender Ms. Fly as an expert in the field of geology.

EXAMINER MORROW: She's accepted.

Q. Ms. Fly, you're here in support of the

application which Yates has filed in this cause number, are you not?

A. Yes.

Q. In preparation for this hearing, you have prepared for this hearing two exhibits, have you not?

A. Yes, sir.

Q. Would you please, starting with your Exhibit No. 2 which I have placed on the wall--and if you need to go up and help explain them--would you please start with that? And I guess you might want to give an overview of the geologic makeup that we have out here in the South Dagger Draw. And please do it as you feel most comfortable.

A. Okay. First of all I would like to state a little bit about the well site work I've done in these two fields. I've set numerous wells out there within the past year and a half, and both the Dagger Draw North and South fields seem to exhibit very similar characteristics in regard to sample and oil and gas show parameters in the respective pay intervals.

Lithologically they both are comprised of a characteristic tan, sucrosic dolomite (phonetic) which exhibits a well-developed medium crystalline orthorhombic texture in the porous zones.

Hydrocarbon shows in both fields are

generally characterized by a subtle but obvious gas kick through the pay interests. And Exhibit 2 is my map. This exhibit is a map of both the Dagger Draw North and South oil fields, and both fields can produce from a combined stratigraphic and hydrodynamic trap consisting of a band of porous and permeable dolomite pinching out updip, which is towards the west on this map, into a tight-sealing limestone.

Production in both fields is essentially identical in composition, composed in various quantities of a sweet oil, sour gas and sulfa water. The downdip producing limit is constrained by economics related to a substantial increase in the water production. There's no water-free production in these two fields. However, there is a hydrodynamically tilted surface below which the dolomite reservoir is virtually all waterfilled. This waterfilled part is referred to by Yates as the Big Water.

Due to an eastward directed hydrodynamic water flow, the Big Water surface tilts predominantly in the eastward direction. The map shows a combined canyon dolomite structure top and a top structure top of the Big Water.

The blue lines show the structural

configuration of the dolomite dipping towards the east and in 100-foot contours. And the red contour show the structural configuration of the tilted Big Water surface in a 50-foot contour interval.

Both sets of contours are limited on the east and west by zero dolomite pinchput lines that are shown there in purple. The wells that are circled on the map are canyon or deeper penetration, with the green-highlighted ones being canyon dolomite producers.

I know it's kind of busy, but can you pick up all of that?

EXAMINER MORROW: I didn't get it all, but I got some.

A. I would like to go on to the next exhibit.

Q. That's fine. Exhibit No. 3.

A. Exhibit No. 3 here is a cross-section that adds a third dimension to my map. I have this highlighted in kind of--supposed to be yellow here. It should run along strike of the Dagger Draw South up to the North field.

It does seem apparent in this cross-section that the reservoirs in both fields are actually one continuous lithologically identical interval. Here is my structure of the Big Water. We tend to perforate

above that.

Q. Okay, thank you. Ms. Fly, with respect to the conclusions that one can draw from these two exhibits that you have prepared, what is the basic conclusion that one may draw with respect to the issue at hand as to whether or not these North Dagger Draw and South Dagger Draw are one reservoir?

A. Well, I feel like this map and cross-section show that both the North and South Dagger Draw oil fields are in the same reservoir system, and the dolomite reservoir is continuous from the north to the south as seen there in the map, with the same updip pinchout into the impermeable limestone.

Not only are the lithological relationships the same in both fields, but the fluid characteristics are essentially the same, both quantitatively and qualitatively. In addition, Yates feels that the pressure regime is the same in both fields also, and that aspect will be covered in a little more detail by our reservoir engineer.

Q. From a geologic standpoint, Ms. Fly, is there any evidence which would--any geologic evidence which would dictate against the Commission granting the application of Yates?

A. No. I don't see any.
Q. With respect to the issue of the prevention of waste, do you feel that the granting of this application would prevent waste?
A. Yes.
Q. With respect to the issue of the protection of correlative rights, do you feel that the granting of this application, at least from your point of view, a geologic standpoint, would the granting of this application protect correlative rights?
A. Yes, I feel that way.
Q. The two exhibits which you have testified to, Exhibits 2 and 3, were those exhibits prepared by yourself or under your direction for presentation here?
A. Yes, they were.
MR. CARROLL: Mr. Examiner, I would move the admission of Exhibits 2 and 3.
EXAMINER MORROW: Exhibits 2 and 3 are accepted.
MR. CARROLL: I have no further questions of Ms. Fly, Mr. Examiner.

EXAMINATION

BY EXAMINER MORROW:
Q. Ms. Fly, the wells in between the South

Dagger Draw and the North Dagger Draw, are there some completions there in the same zone as produces from these two fields?

A. In that one-mile interval there?

Q. Yes, ma'am.

A. I think there are. Let's see here on my map. That would fall in Section 11. All those completions there are in the Morrow gas.

Q. It looks like there's some up in Section 2 and 3 also, some acreage at least. I can't make it out. There's some sort of completion there?

A. Yes, there is one here, the Ceniza, in the southern portion.

Q. Do you know what field those are assigned to?

A. I think they might be in an undesignated field right now. I'm not sure. I can clarify that with my petroleum engineer.

Q. All right. You indicated you thought this would prevent waste. How do you perceive that it will?

A. Right now I feel like we're leaving a lot of oil in the subsurface by not lifting out as much as we can. And with the technique of our production, which the reservoir engineer will speak of, it would

help to be able to lift out a larger quantity of oil and, therefore, it would leave less in the subsurface.

MR. CARROLL: Mr. McWhorter will address that issue directly in his testimony, Mr. Examiner.

EXAMINER MORROW: Ms. Fly, you may be excused. Thank you.

MR. CARROLL: We will be calling Pinson McWhorter next, Mr. Examiner.

PINSON McWHORTER

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

EXAMINATION

BY MR. CARROLL:

Q. Would you please state your full name, occupation, and by whom you're employed?

A. My name is Pinson McWhorter. I work for Yates Petroleum Corporation. I'm a petroleum engineer.

Q. Mr. McWhorter, you have not previously testified before this Commission, have you?

A. That is correct.

Q. Mr. McWhorter, would you please briefly go over your educational and work experience background as a petroleum engineer?

A. I have a Bachelor of Science in petroleum engineering from the University of Texas at Austin. I was employed as a reservoir engineer with Tenneco Oil Company for eight years. I have been employed with Yates Petroleum as a petroleum engineer for about 15 months.

The basis of my experience has been the Permian Basin, West Texas and Southeast New Mexico, which has been 90 percent of my experience.

Q. With respect to the application that Yates has before the Commission today, do you have personal experience and knowledge of this particular field, the South Dagger Draw, and this part of Southeastern New Mexico?

A. Yes, I do.

MR. CARROLL: Mr. Examiner, we would tender Mr. McWhorter as an expert in the field of petroleum engineering.

EXAMINER MORROW: His qualifications are accepted.

Q. Mr. McWhorter, you are familiar with this application, are you not?

A. Yes, I am.

Q. Mr. McWhorter, could you briefly summarize the need that has been felt by Yates and why it has

presented this application, as an overview, so that the Commission will understand just exactly where we stand and where we're going?

A. Surely. Yates Petroleum views this pool as being really part of all of the same continuous dolomite system that runs from Indian Basin, north. We look at it as the pools were developed separately, by separate operators, in the mid-60s, early 70s. As continual development has gone on, the added information has indicated that they are, in fact, part of the same reservoir system and that they are hydrologically communicated systems.

We feel that there is a disparity in the field rules, and that in order to protect the correlative rights of interest owners in the southern part, that there needs to be more equity in the way the rules are partitioned between the north and the south.

Q. Mr. McWhorter, you have prepared certain exhibits to aid in your presentation, have you not?

A. Yes, I have.

Q. Turn to your Exhibit No. 4. If you would explain what that exhibit is, what it purports to portray and any conclusions that one might draw from that exhibit?

A. Yes. Exhibit No. 4 is a tabulation of original reservoir pressure in the South Dagger Draw Upper Penn and in the North Dagger Draw Upper Penn. I have tabulated them according to the particular area. South Dagger Draw is at the top and the north Dagger Draw is at the bottom.

I've identified the well names and the locations of the wells. Some of the wells Yates Petroleum has taken over operation of. I've indicated the current name--we changed the names on them--and the former name of the well.

In addition, I've indicated the date that these pressure tests were taken, and I've referenced everything to a subsea datum of minus 3900 feet, and referenced everything to absolute pressure.

What this shows is that the average original pressure in Dagger Draw South, measured pressure, was 2976 PSIA, and in the North Dagger Draw it was 2969 PSIA, about two-tenths of a percent difference. The conclusion from that is that this is evidence of hydraulic communication in that the reservoir pressures were the same.

Q. With respect to the issue before the Commission and that is making a determination that the South Dagger Draw and North Dagger Draw are, in fact,

one reservoir, does the data or the conclusions which you've drawn support that?

A. Yes, it does. It shows that the reservoir not only is lithologically and geologically the same, but also there's hydraulic communication. It's the same reservoir.

Q. All right. Would you turn to your Exhibit No. 5 and likewise describe what it is, the material contained thereon, and any conclusions that you're able to draw from it?

A. Yes, this is a similar exhibit. This is a tabulation of current reservoir pressure, South Dagger Draw and North Dagger Draw. The wells that I've selected are wells that are representative sample from the South and the North portion. Again, I've identified the location and the date of the sampling of these pressure measurements. I've referenced it to minus 3900 foot subsea datum.

The average pressure in Dagger Draw South currently is 2449 PSIA; the average reservoir pressure in North Dagger Draw currently is 2429 PSIA; again, less than a one-percent difference currently. Again, this is indicative of these two being the same reservoir.

Q. All right. Would you turn to Exhibit No. 6

and likewise explain any conclusions that you might draw from it?

A. Yes. Exhibit No. 6 is a comparison of the Upper Penn formation waters between the South Dagger Draw and the North Dagger Draw. I've basically listed wells from the South Dagger Draw, some wells from the North Dagger Draw, and shown the similarities of the formation waters, that being an indication again of the hydraulic connectivity of the two reservoirs.

The thing that makes it more unique is the total dissolved solids on these waters run usually less than 10,000. There are a couple that are greater than 10,000. This is an extremely fresh water system. Chlorides run anywhere from 3,000 to 6,000 parts per million. It's an extremely fresh water system indicative of hydrodynamic traps and recharge.

You'll see that water is fresh water in the South, formation water, and the water in the North Dagger Draw is a fresh formation water, again indicating the fact that these are the same reservoir system.

Q. Mr. McWhorter, with respect to your study of this particular reservoir, are you aware of any other evidence that you have not presented to the Commission which would be contrary to the conclusion

which you have at least presented to the Commission that this is one reservoir system? Is there anything out there that you believe dictates, or that you're aware of that dictates that your conclusion is incorrect?

A. No. The studies I've done as reservoir engineer and the reservoir fluid studies that I've done and the reservoir pressure study and production studies that I've done, indicate that this is one reservoir system here and there's not any evidence that I've come across to indicate otherwise.

Q. Mr. McWhorter, with respect to your field of expertise, is there any reason that you can think of for having differing pool rules at this period of time for the North Dagger Draw field as opposed to the South Dagger Draw field?

A. No. I can think of none.

Q. Mr. McWhorter, as we've alluded to earlier in the testimony, especially with respect to the issue of waste, does Yates have, or yourself, do you have an opinion as to why there is a need at this time to change the field rules?

A. Yes. We believe, and studies have shown, that with regard to waste that there is such a tremendous demand on lift in this pool, these two

pools, as far as lifting large volumes of fluid, that if we run submersible pumps in all these wells and those wells that have restrictions on the pumping rates do not produce the oil rates of the wells that are unrestricted--and the restrictions and the unrestrictions I mean there is that if a well can produce and keep a bottom-hole flowing pressure or pump intake pressure of 8- to 900 pounds, and it is pumped off, and it is a considerably different well from one where we might have to run a pump somewhere in the neighborhood of 1,500 to 1,600 pounds of pump intake pressure, we have a lot of back pressure from the water, the excessive amount of water, and we see dramatic decreases in our oil cut. The things that would necessitate keeping that much back pressure would be lower allowables, where we either have to cut the pump rate back or we have to actually shut the well in for a given amount of days.

Q. With respect to the testimony that you just gave, you have prepared an exhibit which shows a case in point which illustrates what has happened, and that is Exhibit 7, is it not?

A. Yes, it is.

Q. Would you explain what is contained on Exhibit 7, what well and where that well is located

that we're using for an example?

A. Okay. This well is the Roden GD Fed Com #2. It's actually a well in the North Dagger Draw. It's in Section 25 of North Dagger Draw. This plot shows gas and water, and on the left-hand axis it shows oil production and the right-hand axis is monthly production. Oil's in green, gas and Mcf is in red and water is in blue, and it shows the history of the well, and it shows that--this example shows the effects of what I was talking about.

When this well was actually curtailed not for allowable reasons but for some other reasons, we could not keep pump intake pressure at 8- to 900 pounds. We had quite a bit of high intake pressure and we had to shut the well in and bring it back down and lift all the water back off again. Once we were out of those conditions and were able to pump the well off, we were able to substantially increase our oil production, even though the water production didn't increase quite as dramatically as the oil production.

Q. Mr. McWhorter, is it your opinion if the allowable were raised from the present 267 to bring it up to, I believe it would be, 700 barrels per day for a 320-acre, do you believe that the wells in the South Dagger Draw would be able to be produced or would

bring up their production of oil as illustrated by this Roden GD Federal Com #2?

A. Yes, I believe that that would maximize the pumping efficiency for this particular reservoir, and lifting of the 267 per day top allowable for a 320-acre spacing unit, which is the equivalent to 133 barrels per day per 160, as compared to 350 barrels per day for 160 in the North, would give us the operating room to more efficiently lift these wells and, really, produce more oil.

Q. In that conjunction, then, is it your opinion that the granting of this application would prevent waste?

A. Yes.

Q. The reason it would prevent waste is the basis of the discussion you have just given to the Commission?

A. That is correct.

Q. With respect to the issue of protection of correlative rights, do you believe that the granting of this petition will protect correlative rights?

A. Yes, I do. I think that having the more reasonable and just and equitable allowable between, essentially, two pools that are of the same reservoir system, would better protect the correlative rights of

those in the South Dagger Draw.

Q. You were aware, Mr. McWhorter, that last week the OCD held an open meeting in Santa Fe to discuss potential methods for increasing oil production, were you not?

A. Yes.

Q. At that particular meeting, Conoco Oil made a statement to Mr. LeMay that one of the ways to accomplish this might be to up the allowable in the South Dagger Draw Field, is that correct?

A. Yes, that is correct.

Q. And apparently the increasing of production without affecting correlative rights and causing of waste seems to be a very important issue within the state in oil producers, and this is also a very important problem for Yates Petroleum, is it not?

A. It is.

Q. Exhibit 8 is a letter which the land manager of Yates Petroleum wrote to Mr. LeMay and discusses this particular field, does it not?

A. Yes, it does.

Q. In that letter there are certain, I guess, predictions made about how much oil or how much oil production could be increased down there. You've seen those figures and actually were the source of those

figures, were you not?

A. Yes, that is correct.

Q. And exactly what kind of increase in production are we talking about which was conveyed in this letter by Mr. Patterson to Mr. LeMay?

A. Currently we're producing approximately 4500 barrels of oil per day in the North Dagger Draw and South Dagger Draw combined. That is on Yates Petroleum Corporation operated wells only.

We project that if we could have--our letter asks or proposes a doubling of the allowable and also supposes that the current application for fuel oil changes would be approved.

Under those two suppositions, we could increase, just for the current wells we have, to 5100 barrels a day, which would be a 600 barrel per day increase in production. With further drilling in the South Dagger Draw, further drilling could result in 6500 hundred 7000 barrels per day of Yates Petroleum operated production, which would be about 2000 to 2500 barrel per day increase of what we currently make.

Q. With respect to the exhibits that you've testified to, Mr. McWhorter, were these exhibits prepared under your direction and control?

A. Yes, they were.

MR. CARROLL: Mr. Examiner, we would move the admission of the remainder of Yates exhibits, which I believe would be Exhibits 4 through 8.

EXAMINER MORROW: Exhibits 4 through 8 are admitted.

MR. CARROLL: I would have no further questions of Mr. McWhorter.

EXAMINATION

BY EXAMINER MORROW:

Q. Mr. McWhorter, my memory of the discussion of the hearing on September 24th was that Conoco proposed an increase in the North Dagger Draw. They may have gotten around to the South later, but if that increase was obtained, would you then propose another increase to catch up with the North Dagger Draw, or do you know yet?

A. Well, sir, what I would propose is that the two pools always be kept equitable in the ways that we can produce and the allowables that we can produce.

Q. Are there any wells in the field now that will produce at the rates that any wells or any 320-acre producing units that will produce at the rates which are requested here today?

A. Currently, sir, there certainly are. There are some wells--well, only in the North part. We have

not really done enough drilling in the South part to really have any combinations or a particular well on a 320 that would come up to the 700 barrel a day. Although we do have a well, the John AGU which is listed on the current reservoir pressure exhibit, and its location is given, and also on the comparison of water and the formation of water there, also. The John AGU has a capacity of about 450 barrels per day right now, and the allowable for that proration unit is 267. So, that one particular well substantially has a lot of capacity in excess of the current allowable.

Q. To meet the 700, then, would you anticipate that additional wells would be drilled where there's already a well on the 320, in order to get two or more wells to produce at the rate requested?

A. Yes, sir. That is part and parcel of these numbers that were referred to in this letter to Mr. LeMay. That development drilling program is set upon the idea of drilling more 320-spacing units and drilling second wells within a given 320-spacing unit.

MR. CARROLL: Mr. Examiner, if I might interrupt and address that issue, the drilling on the 320? In the past that was a problem that we have

faced in other places in New Mexico, and the Commission has, through Mr. LeMay, has always voiced a preference not to go back and readjust these old--certainly it would be the best to have 160-acre proration units like the North Dagger Draw, but these wells, a number of them have been drilled for a number of years and going back and adjusting the equities for the different royalty owners and what have you, almost presents an insurmountable problem.

So the solution which we've seen the Commission take in the past is the one that we propose, is to go ahead and leave it at 320, allow us to drill on 160s, which would then necessitate the cutting in half of the allowable, which would then make it the same as the North, 350 on each 160 acres.

That's why we've presented the application like it is and it's based on our perception of what the Commission's policy has been in the past and that overwhelming problem of trying to protect the interests of these royalty interest holders. Like I say, these wells, as Mr. McWhorter stated, they have been drilled back into the 60s. This field has been slow in developing, and these rights have been developed over a long time, and it would be hard to untangle them.

Q. (BY EXAMINER MORROW) You indicated there were some 320s that aren't developed in the South Dagger Draw area, or did I miss that?

A. That is correct, sir. There are some that haven't been drilled, such as the South 320 in Section 26 there has not been drilled on to date in the Upper Penn.

Q. With the gas limit increase up to seven million a day for each 320-acre unit, how much additional gas would you anticipate would be produced from the South Dagger Draw area?

A. Looking at the current production versus what we could really incrementally increase, looking somewhere in the neighborhood of 8 to 9 million a day.

Q. Increase?

A. Increase, actually incremental volumes of gas.

Q. That's just on your wells in the unit?

A. Yes, sir.

Q. What percentage of the field does Yates control?

A. Of the South Dagger Draw, we control all except one 640, which Conoco has in Section 35.

Q. Are sales facilities available for the additional gas production? Would there be any problem

with processing and marketing that gas?

A. No, sir, we have ample facilities to gather the gas, deliver it, sweeten the gas, and sell it at this time.

Q. Ms. Fly talked about the water in relation to the oil interval?

A. Yes, sir.

Q. Do you know if there's a gas cap in the field at this time, or was there one originally?

A. Since this field is cover by 5353, it was surmised in the initial development of the field that it seemed to be a gas cap type field. My studies of it indicate that the gas is significantly displaced, the gassier portion of the reservoir is significantly displaced in the updip western edge of the field along the dolomite pinchout. Much of that is due to the hydrodynamic nature of the packing mechanism itself.

Just the pure physics of it would necessitate that if you have moving water that the oil is going to migrate to a different location within the reservoir than the gas will, and as we've drilled this up, we have found higher gas ratio wells on the western edge of the dolomite, but we have not found a true gas cap that overlies an oil column and would give a lot of energy through gas cap expansion to the

completion of the oil column.

Q. Do you know what the original solution GOR was?

A. Original solution GOR was around a thousand. We have sampled a well, the State CO #2, which is in Section 36 of 19/24, and we picked up a sample out of there and we measured like a 990 GOR in that well. That was in the north part. I do not have any PVT fluid analyses for the South Dagger Draw.

Q. The July-December proration schedule shows three Yates completions, and the information you submitted requesting the hearing had seven or eight or more than that on there. Are those recently drilled wells or recompletions or what?

A. They're recently drilled and there are some that are recent reenters of some wells that were part of the original drilling of South Dagger Draw when Roger Hanks was the operator and drilled it up and Conoco later acquired that, and we have subsequently acquired it from Conoco and have reentered some of those Upper Penn wells in recent months. And we're also doing some additional drilling. We have ongoing completions and drilling going on at this very time.

Q. You may have covered it and I missed it, but would you go over the reason for requesting the

change from 1980 to 660 from the lease line?

A. All right. The 1980 rule, of course, is based upon a 320-spacing unit. We feel that to properly drill up this field in a fashion similar to how we're drilling the North Dagger Draw, since these are really one in the same, that we need to have well spacing requirements that will allow us to better spot locations and be more in compliance with the North Dagger Draw.

EXAMINER MORROW: You may be excused, sir.

MR. CARROLL: We have no further evidence to put on before the Commission today, Mr. Examiner.

EXAMINER MORROW: All right.

MR. STOVALL: Mr. Carroll, I have waivers here. Do you wish to have those admitted, too?

MR. CARROLL: I intended just to file them with the Commission for filing in the file, but however you wish to do that. I have no objection to them being treated as exhibits or as just a filing.

MR. STOVALL: Why don't you go ahead and mark them and submit them that way. It's easier to refer to them that way. Just mark them all as one exhibit, I think.

MR. CARROLL: They would be Exhibits 9-A through -D.

EXAMINER MORROW: All right. Case 10108 will be taken under advisement.

(Thereupon, the proceedings concluded.)

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

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

WITNESS MY HAND AND SEAL October 14, 1990.

CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

I do hereby certify that the ... Oct 3 ... 10108. ... 1990. ... Examiner ... Oil Conservation Division

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 10,108

EXAMINER HEARING

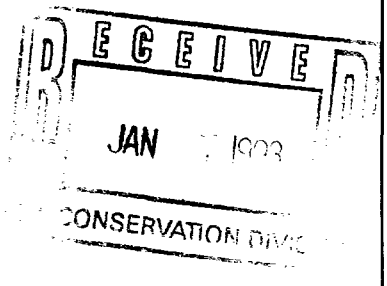
IN THE MATTER OF:

In the matter of Case 10,108 being reopened pursuant to the provisions of Division Order Number R-5353-L, as amended, which order amended the special rules and regulations for the South Dagger-Upper Pennsylvanian Associated Pool in Eddy County

TRANSCRIPT OF PROCEEDINGS

ORIGINAL

BEFORE: DAVID R. CATANACH, EXAMINER



STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

December 3rd, 1992

A P P E A R A N C E S

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* * *

I N D E X

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E X H I B I T S

YATES EXHIBITS:

* * *

WHEREUPON, the following proceedings were had at 10:04 a.m.

EXAMINER CATANACH: Call the hearing back to order, and at this time we'll call Case 10,108.

MR. STOVALL: In the matter of Case 10,108 being reopened pursuant to the provisions of Division Order Number R-5353-L, as amended, which order amended the special rules and regulations for the South Dagger-Upper Pennsylvanian Associated Pool in Eddy County.

EXAMINER CATANACH: Are there appearances in this case?

MR. CARROLL: Mr. Examiner, my name is Ernest Carroll of the Artesia law firm of Losee, Carson, Haas and Carroll.

I'm here today representing Yates Petroleum, and I will have one witness.

EXAMINER CATANACH: Other appearances?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin & Kellahin, appearing today on behalf of Marathon Oil Company and Conoco, Inc.

EXAMINER CATANACH: Additional appearances?

Will the witness please stand and be sworn in?

DAVID F. BONEAU,

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

DIRECT EXAMINATION

BY MR. CARROLL:

Q. Would you please state your name and employment for the record?

A. My name is David Francis Boneau. I'm employed by Yates Petroleum in Artesia, New Mexico as a reservoir engineering supervisor.

Q. Mr. Boneau, have you previously testified before the Oil Conservation Division and had your credentials accepted with respect to the field of oil reservoir engineering?

A. Yes, sir.

MR. CARROLL: Mr. Examiner, I tender Mr. Boneau as an expert in the field of reservoir engineering.

EXAMINER CATANACH: Mr. Boneau is so qualified.

Q. (By Mr. Carroll) Mr. Boneau, today you're here on behalf of Yates Petroleum with respect to the reopening of Case 10,108; is that correct?

A. Yes, sir.

Q. You are familiar with the matters that that

case dealt with in the past, are you not?

A. That's correct.

Q. Would you briefly state for the record and this Examiner the position that Yates Petroleum takes with respect to the reopening of this case?

A. I think it would help to take a minute or two to review where we are and what we -- how we got here and what we want, what we need.

Case 10,108 was heard October 3rd, 1990, by Jim Morrow and resulted in Order 5353-L.

At that time Yates asked that the special pool rules for South Dagger Draw field be made equivalent or parallel to those for the North Dagger Draw-Upper Penn field, and we put on engineering and geological testimony at that time which showed that North and South Dagger Draw-Upper Penn Pools are in geological and pressure communication and are in fact both part of the same pool, and one of the findings in Order 5353-L states that.

MR. STOVALL: Dr. Boneau, if I might interrupt you, just to get my -- I don't know what -- orientation.

Is this the one where you've got a 160 and a 320 pool adjacent to each other, and you're --

THE WITNESS: That's correct.

MR. STOVALL: -- and that was originally to balance the allowables and GORs so they could produce at a common rate with different spacing?

THE WITNESS: You're thinking the right place, yes, sir.

MR. STOVALL: Oh, good, I know where I am now. Please continue. I'm sorry to interrupt you.

THE WITNESS: Yeah, I was hoping to get to that point pretty quickly.

MR. STOVALL: Got you there quick.

THE WITNESS: Before October, 1990, the rules were, in North Dagger, 160-acre spacing with 350-barrel-a-day allowable and 10,000 GOR.

And the rules in South Dagger before this hearing in October of 1990 were 320-acre spacing, 267 barrels of oil a day and an 8000 GOR.

And in the case we asked, along with some other operators, that South Dagger Draw be made equivalent or parallel or -- you know, not exactly the same, retain the 320-acre spacing, but raise the allowable to 700 barrels of oil per day, per 320 acres, with a 10,000 GOR, and the space -- the well locations were changed so that wells could be 660 from an outer boundary and no closer than 330 to a quarter quarter section.

And that's what was granted. In the Order of October 26th, 1990, the 700-barrel-a-day allowable and the 10,000 GOR were granted on a temporary basis with the case to be re-opened late in 1992, which is now.

One other factor, then, in February of 1991, just a couple of months after this, Conoco came and asked that the allowable in North Dagger Draw be doubled, and at the same time Yates came and asked that the allowable in South Dagger Draw be kept equivalent and also doubled.

And that resulted in an Order 5353-L-1, which doubled the allowable temporarily till now, is how it was stated. So it modified the October Order to be 1400 barrels a day in South Dagger Draw.

So the present rules in South Dagger Draw are 320-acre spacing, 1400 barrels a day allowable, 10,000 GOR, and the wells 660 from the outer boundary and 330 from the quarter quarter section.

And we are here today asking that these rules be retained and made permanent.

Q. (By Mr. Carroll) Now, Mr. Boneau, you have prepared certain exhibits to substantiate this request of the Commission to make these rules permanent; is that correct?

A. That's correct, yes, sir.

Q. Would you turn to your first two exhibits, which is -- they are marked 1 and 1A -- and would you identify for the record what these exhibits are and then explain their significance.

A. At the time of these earlier hearings, the main findings in my mind were that the two pools were in communication; they really are part of the same reservoir.

And secondly, we essentially promised that the new rules would result in increased production from South Dagger Draw.

Exhibit Number 1 shows the average daily production for the last month that's available, which is September, and the oil production in South Dagger Draw has gone from about 500 barrels a day in October of 1990 to 6565 barrels of oil per day in the fall of 1992. The gas production is now 40 million a day, and water production is 18,732 barrels of water per day.

Kind of as a point of interest, the combined pools are producing about 22,000 barrels of oil per day, which is the largest production from any field in New Mexico.

Q. So basically the operator's promise to make more -- or create more production, they have at least followed through with that promise, have they not?

A. There were about ten wells in South Dagger Draw. There are now 57.

It's a big thick dolomite reservoir with up to -- as Exhibit 1 says, up to 236 feet of net pay. We estimate there are around 50 million barrels of oil in place and 100 BCF of gas in place in South Dagger Draw, and in the past two years there's been a lot of activity to develop these resources.

Exhibit 1A simply breaks down the production by operator, and it basically just shows that Yates operates 80 to 90 percent of the production in South Dagger Draw. The other operators there are Nearburg, McKay, Conoco, and also Marathon, who has started a well or two in the recent past.

Yates is not so much the dominant operator in North Dagger Draw, but in South Dagger Draw we are the largest part of the operation.

Q. All right, Mr. Boneau, would you turn now to your Exhibit Number 2 --

A. Okay.

Q. -- and describe it and --

A. The two things I'm trying to show the Examiner are that the 10,000 GOR is reasonable and that the 1400-barrel-a-day allowable is being used and is -- ought to be maintained.

So Exhibit Number 2 is a map, and it's the only map I brought, and so it's -- going to be the map we refer to from time to time.

Q. This map does cover Townships 19 South and 20 South of Range 24 East of Eddy County, New Mexico, does it not?

A. Well, it covers the south part of 19 and 24, and the --

Q. -- north part of 20?

A. Pretty much all of 20-24.

Q. All right.

A. To kind of help orient people, South Dagger Draw is the field south of the dashed line that goes through Sections 9, 10, 11 and 12. The field continues up into 20-24, and continues five or so miles further up to the northeast. The Indian Basin-Upper Penn Pool is in the township to the south.

Dagger Draw South consists of a -- is an associated pool, and it consists of a strong oil leg, where most of the black dots are, down through Sections 11, 14, 23 and 26. And to the west there is a gas cap, and the gas wells out in Sections 15, 16, 22, et cetera are in the gas cap of the South Dagger Draw-Upper Penn Pool. Also the Conoco gas well in Section 35 of 20-24, the Preston Federal, is in the gas cap of the South

Dagger Draw-Upper Penn Pool.

What's shown on this figure, the numbers next to each dot is the GOR for the particular well in September of 1992, and they range from, a few of them, around a thousand, up to 8000 and 10,000 and 12,000 for the oil wells. And then out in the gas cap, of course, the GORs are 100,000, very large.

If you go down the wells that are on the east side of Sections 11, 14, 23 and 26, those GORs average about 3800.

If you go one set of 40s west, the GORs average about 5000.

And if you go down that line of wells that are essentially 1980 feet in from the west of 11, 14, 23 and 26, the average GOR is about 11,000.

And it increases as you go west. The field is heterogeneous, and so it's not -- every well doesn't follow what I'm saying. But the GORs increase to the west.

And in the oil leg -- you can see the numbers, but they're 2000s, 4000s, 6000s and some 8000s, and you're -- that's the GOR that occurs.

And the operators are trying to produce the oil and keep the gas down, because the oil is what's valuable.

But the GORs that occur are, in my opinion, consistent with a GOR of 10,000. This is the data.

Q. All right. Would you turn now to your exhibits, and I think Exhibits 3 and 4 can be talked about concurrently, if you would describe what they are and their significance.

A. Exhibits 3 and 4 are a history of production and GOR in the South Dagger Draw-Upper Penn Pools, starting from 1981 to -- through the first nine months of 1992, and the -- Exhibit 4 is a plot of the GOR over that time period.

There was not a whole lot of activity in South Dagger Draw from 1981 to -- through 1989. If you look at the oil production, it sort of decreased from that 40,000 barrels a year down to almost nothing. And the GORs were in the 20,000, 30,000, 40,000 range. The main production during that time was from the Conoco Preston Federal well.

Then in 1990, 1991 and 1992, occurred the development that we talked about, and the GORs during that time period have been 11,000 in 1990, 6875 in 1991 and about 5300 on average during 1992.

A real strong effort's been made to develop the oil and stay away from the gas cap, and so we've tried and the other operators have tried to drill oil

wells and minimize the GOR. And with all that effort, the GOR is 5300.

The plot in Exhibit 4 shows exactly those numbers, and the GORs in the last several years has been in the 5000-to-10,000 range.

Q. All right. Would you next go to your Exhibits 5 and 6?

A. Exhibits 5 and 6 are similar pictures for North Dagger Draw, and the -- Again, there's been a big upsurge in development in North Dagger Draw, but North Dagger Draw does not have the gas cap, it has a little better water support, and it's always had lower GORs.

So the GORs in North Dagger Draw are shown in the right-hand column from 1976 to 1992. Actually, the number for the 1984 is incorrect. It really should be about 2500. But the GOR in North Dagger Draw has been between 2500 and 4000 over the last ten years, basically.

Q. Mr. Boneau, let me ask at this point, has anything developed since the original hearing of this case back in -- which resulted in the first Order granting the special pool rules, has there been anything come to your attention which would cause you to change your opinion as to whether or not the North and the South Dagger Draw fields are actually one field

geologically and are in communication?

A. No, there's nothing happened to change that. In fact, the development has confirmed that. The map in Exhibit 2 shows that wells have been developed right across the boundary between the pools, and the wells behave similarly and are clearly in pressure communication.

Q. All right. Your next set -- group of exhibits, 7 through 11, are individual proration unit case histories, are they not?

A. Yes, sir, and what I had in mind for showing that 1400 barrels a day is an acceptable allowable are really two kinds of arguments.

First argument simply is that in the oil leg, the field has been developed on what you would call 40-acre spacing. You look at the map, and there's a well on every 40 acres.

The depth bracket allowable for these wells at 7500 feet is 187 barrels a day on a -- for a 40-acre well, and you multiply that by eight wells in a 320-acre spacing unit and you get 1496, which to me is consistent with the 1400-barrel-a-day allowable that we now have and that we're asking for.

So my first argument is that the field has in fact been developed on 40 acres in the oil leg, and the

plain vanilla rules for 40-acre spacing at 7500 foot would result in something very close to 1400 barrels of oil per day.

MR. STOVALL: Except for the GOR. Pardon me.

THE WITNESS: Yes, sir. You've heard my comments about the GOR in earlier exhibits, and now I'd like to talk about the oil wells.

MR. STOVALL: Right, got you. I understand.

THE WITNESS: Yes, sir.

My other argument for the reasonableness of the oil allowable is simply that the 1400-barrel-a-day allowable is being used by proration units both in South Dagger Draw and in nearby parts of North Dagger Draw, and I have five exhibits which show specific proration units and what their production has been.

Do you want to proceed to those?

Q. (By Mr. Carroll) Yes, just go right -- if you would, starting with Exhibit Number 7 and proceed through 11.

A. Exhibit Number 7 is a plot of monthly oil production from the proration unit that consists of the north half of Section 14 of 20-24, and that's in South Dagger Draw.

The lines -- The black lines, the black horizontal lines indicate -- the upper one indicates

the 1400-barrel-a-day allowable, approximately 43,000 barrels of oil per month. And the lower black line is 70 percent of that top allowable, just to indicate that it's reasonably close to the top allowable.

The production from these wells in the north half of 14 -- and there are five wells in that spacing unit -- was around 15,000 barrels a day.

And when the other -- the wells were drilled to bring it up to five wells, the production increased, and it increased, as you can see, in early 1992, past the allowable. And there was a month it was over 60,000 barrels, and it's dropped back down. But through 1992 it's been producing mostly over 30,000 barrels a month and still producing 25,000 barrels a month.

So it's using a really good part of that 1400 barrels a day allowable. And Yates will -- is attempting to get two more wells drilled in that proration unit. So this proration unit is capable of producing over 1000 barrels of oil per day.

The second example is in Exhibit 8, and it shows the spacing unit which is the east half of Section 23, again in South Dagger Draw, and in that spacing unit there are seven wells drilled. And since mid-1991, the production has been over 25,000 barrels a

month, and mostly over 30,000 barrels a month. And those seven wells are producing, again, approximately a thousand barrels of oil per day out of that spacing unit.

Exhibit 9 is the third example from South Dagger Draw, and it consists of the east half of Section 26 of 20-24. There, there are -- Six wells exist on the map. There are actually five of them that are producing. One of them is an old Roger Hanks well from 20 or 25 years ago which is not producing very much.

Again, those wells have just been drilled in 1992, and in the last half of 1992 they've been producing above 30,000 barrels a month, so that those five wells are producing approximately 1000 barrels of oil per day from that spacing unit.

So pretty much throughout and in different parts of South Dagger Draw, there are 320-acre spacing units that are using this 1400 -- a very good part of this 1400-barrel-a-day allowable, and they're capable of producing that.

Exhibit 10, then, and Exhibit 11 are two examples from North Dagger Draw. And there's a lot of examples from North Dagger Draw we could bring up, but I brought two that are fairly close to South Dagger

Draw.

Exhibit 10 is the 160 acres consisting of the northeast quarter of Section 36 of 19-24, and that's at the very top right of the map in Exhibit 2. This spacing unit contains four wells, so it's fully developed. And here for the 160-acre spacing unit, the allowable is now 700 barrels a day, and these four wells have been producing right at 700 barrels of oil per day, or you can see some months have been over the allowable.

And the final example is quite close to Dagger Draw. It's the northeast quarter -- It's quite close to South Dagger Draw. The spacing unit in Exhibit 11 consists of the northeast quarter of Section 11, 20-24. It's immediately adjacent to South Dagger Draw. There are three wells and one undrilled location in this spacing unit.

In 1991, the production was between 18,000 and 22,000, 25,000 barrels of oil per month, and it's decreased to about 15,000 barrels of oil per month. And there will probably be a fourth well drilled in this. But this spacing unit just offsetting South Dagger Draw has been using the 700-barrel-a-day allowable in North Dagger Draw.

So 160 acres -- There are many examples where

160 acres can produce very close to the 700 barrels a day, and a number of examples are shown where the 320-acre proration unit can produce near 1400 barrels of oil per day. And we think that production should be allowed to continue.

Q. All right. Mr. Boneau, your last exhibit is Exhibit number 12. Would you describe what that exhibit is?

A. Exhibit Number 12 is a letter faxed from a man representing Nearburg Exploration, and it simply says that they agree with keeping the rules the way they are and they support all we're saying this morning.

Q. All right. Mr. Boneau, is it your opinion that the making permanent of the present temporary rules that were put into effect by Order R-5353-L, as amended, and R-5353-L-1 -- is it your opinion that the making permanent of those special pool rules would prevent waste and protect correlative rights?

A. Yes, sir.

Q. Is there any other issue that you'd like to bring before the -- or bring to the attention of the Examiner that I've overlooked to ask you about, Mr. Boneau?

A. I don't believe so. I've assumed that the

well location part of the previous Order is really what's standard, and I don't see any reason for controversy about that.

I've tried to talk about the GOR and the oil allowable, which are large numbers for an oil pool in New Mexico, and I've shown what evidence there is to show about how reasonable they are.

MR. CARROLL: All right, thank you, Mr. Boneau.

At this time, Mr. Examiner, I would move admission of Yates Exhibits 1 through 12.

EXAMINER CATANACH: Exhibits 1 through 12 will be admitted as evidence.

MR. CARROLL: Mr. Examiner, I would pass the witness at this time.

EXAMINER CATANACH: Mr. Kellahin?

MR. KELLAHIN: Thank you.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Let me ask you about projections of future expansions of the pool.

As we move south into 35 and into the next township, do you anticipate that the oil will continue to be productive in the pool as the pool is extended further south, or have we determined and found the

limits of the oil production?

A. You're getting my opinion for your money --

Q. Yes, sir.

A. -- and that's what I'll tell you.

We are close to the limits of oil production in the pools. There may be some oil production in the north half of 35, there may be some oil production in a decent part of 36, in the north half of 36, say.

There is probably no oil production associated with South Dagger Draw in the township to the south or in anything west of what we've talked about.

Most of it -- mostly to the east -- Yates is looking to go as far west as we can go and still get oil. And you see on this exhibit there's a couple wells in that westernmost column that have 22,000 GOR and 67,000 GOR, but you also see in Section 14 there's a well in the west half of the west half of Section 14 that still has a low GOR. So Yates is exploring moving towards the gas cap and still getting oil.

People who have leases on the edge of the pool are exploring to the south that we've talked about.

And there still may be some wells, a few wells to the east, but I think that's as far as the oil

can go.

Q. I'm curious in how the rules are going to address the transition areas between the oil and the gas production.

Under the associated pools, we currently are precluded from having a 320 spacing unit that's simultaneously dedicated to a gas well and to an oil well in this pool. Is that yet a problem for anyone? And if so, how do we handle it?

A. To my knowledge, that is not yet a problem for anyone.

Well, the real answer to the problem is that the -- in my mind, the gas is more valuable as energy to produce the oil than it is as produced gas, and --

Q. If the operator is unfortunate enough, though, in the first well in that spacing unit to have drilled a gas well, then he needs to either not produce the gas well and try again for an oil well --

A. Yes, and the reason there's not been a problem like that to date is that Yates has the majority of the oil and the majority of the gas leases. If different people had the gas and the oil, that would be a problem right now.

Q. So you don't see any problem in continuing the associated rules as to this pool in terms of that

limitation?

A. No, I don't see a problem. I see that the field cries to be unitized at some time in the not real distant future.

Q. Okay. Are you satisfied that there is a gas cap in the South Dagger Draw, that the gas zone is going to be in communication with this oil zone?

A. Yes, definitely.

Q. What is the explanation for the limitation on production as we move to the east?

A. Two limitations: You run out of dolomite. But before you run out of dolomite, you run into water, because it's downdip and the wells get wetter and wetter. And not very far out there you run out of dolomite, but you hit the water and -- excessive water.

Q. Within this fairway of oil, then, I don't see any dry holes in the oil production. Has every well that's been drilled in here been able to produce oil?

A. Yeah, there are four or five examples of stinker wells in amongst good wells where it may be a 5- or 10-barrel-a-day well, surrounded by 200-barrel-a-day wells. There are a couple of examples of things like that.

But the Dolomite and the pay zone is continuous through that fairway. It's very

heterogeneous, as low-porosity carbonates often are, but it's all through there for sure.

Q. And the operators thus far have been generally successful in maximizing the oil production and minimizing the water?

A. Been fairly successful, yes. On a scale of 1 to 1, we've been 8 1/2 or 9, or something like that, but not perfect.

MR. KELLAHIN: Okay. Thank you, Mr. Examiner.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Boneau, in the North Dagger Draw Pool, what is the GOR in that pool?

A. What is the --

Q. What is the GOR?

A. The allowed GOR is 10,000. The actual producing GOR is about 3000.

The 10,000 that has been in effect in South Dagger, and we're asking to continue in effect, arose from North, from North Dagger Draw. And I don't know all that history, but we took the GOR from North Dagger Draw and said, Sounds like it would be good in South Dagger Draw too.

Q. Do you know if the allowable and the GOR in

the north pool, are those subject to a review in the near -- in the future?

A. My understanding is that they are not.

Q. Those are permanent rules?

A. Those are permanent rules, that's my understanding.

MR. CARROLL: Mr. Examiner, if I might help, in Case Number 10,221 and Order Number R-4691-D, it set -- it made specific findings about when the gas/oil ratio was set at 10,000, which was set November 1, 1977, by Order Number R-5565.

And with respect to the Order of the -- the Order I just -- the 4691-D, it made no mention in the Order that such was a temporary or special. And I would suggest that from my reading of it, that it is a permanent order with respect to the north pool.

Q. (By Examiner Catanach) It was my understanding that the allowable was bumped up in the pool fairly recently; is that correct?

A. November of 1991.

MR. CARROLL: That's correct, and that is the Order R-4691-D --

EXAMINER CATANACH: Okay.

MR. CARROLL: -- and it recited all the earlier orders. That bumped just the allowable, but

the gas/oil ratio had been set back in 1977 --

EXAMINER CATANACH: I see.

MR. CARROLL: -- and those other things, and they were all apparently permanent orders of the Commission.

EXAMINER CATANACH: So as far as you can tell, that Order does not have a reopening provision?

MR. CARROLL: It does not have a reopening position. It just has the standard statement that jurisdiction of this cause is retained for entry of such further orders as the Division may deem necessary.

EXAMINER CATANACH: Okay.

Q. (By Examiner Catanach) Mr. Boneau, are there wells on any given proration unit that are capable of producing more than a standard 40-acre allowable of 187 today?

A. Yes.

Q. Do you have an opinion as to whether producing in excess of 187 barrels per day per 40 is in any way detrimental to the reservoir?

A. You may or may not recall, in the hearings that we're talking about in February of 1991, Yates appeared and asked that the spacing be set at 80 acres, that one well per 80 acres be allowed and not one well per 40 acres.

And it's still my opinion that the wells drain 80 acres more accurately than they drain 40 acres. They drain more than 40 acres.

So does that answer your question? I'm not sure that answers your question, but there is communication between 40-acre offsets.

Q. In terms of the whole proration unit, then, with an allowable of 1400 barrels per day, and in terms of ultimate recovery from that proration unit, do you have an opinion as to whether the GOR or the allowable will reduce ultimate recovery?

A. The present rules and the rules we're asking for will not reduce ultimate recovery. So...

Q. Relative to a lower allowable in the pool?

A. Relative to a lower allowable, I think that's correct.

EXAMINATION

BY MR. STOVALL:

Q. Dr. Boneau, am I reading the exhibits correctly that it appears that as production has gone up out in the field, the actual producing GOR has actually gone down? Is that correct?

A. That's correct, and the explanation for that is that the operators have attempted to drill in the oil leg, where the lower GOR is. So you're getting a

higher concentration of wells in the oil leg with lower GORs to negate the effect of the few wells that were in the gas cap.

There used to be two wells in the gas cap and eight wells in the oil leg, and now there are three wells in the gas cap and 50 wells in the oil leg, and the GOR goes down.

Q. So it's not an effect of the mechanism, what's happening in the reservoir; it's more of an indication of what operators have done as far as how they're producing the reservoir?

A. Yes, if you look at a particular well, the GOR has probably gone up a little for a particular well in the oil leg.

Q. You stated earlier that you thought the field, probably the best operations for the field would be under unitized operations to avoid -- specifically the concern Mr. Kellahin has is the operator who doesn't have an oil leg is going to want his gas for sale since he doesn't have any -- can't use it to get oil.

A. Yeah, and in my opinion -- What I said to Mr. Catanach, the rules are okay, but what needs to happen to increase production is maintaining reservoir energy by not blowing down the gas cap.

Q. Does -- Is the logical extension of that to do some pressure maintenance?

A. Yes, sir.

Q. So in other words, it could be unitized for secondary operations?

A. It sure needs to be looked at for that, yes.

Q. What's the time frame. In your opinion, is it approaching that stage now, or are you looking at some more production to maximize ultimate oil recovery?

A. It's approaching that stage, and Yates has initiated on our own a fairly elaborate reservoir study of most of our part of South Dagger Draw with the idea of trying to answer some of the questions you brought up about pressure maintenance and with the idea of getting with -- with the idea that if that's encouraging, getting with the other operators and trying to get something started in the first quarter or first half of 1993.

Q. I rarely venture into engineering, but every once in a while I get tempted.

Am I correct in my understanding that it isn't necessarily right to wait until you pretty well deplete a primary well before you start pressure maintenance? In this type of -- in a gas-cap-type reservoir, you do better by maintaining pressure

earlier in the life of the reservoir?

A. As a general rule, you're ahead to maintain pressure rather than to dissipate it and try to regenerate it somehow, yes.

MR. STOVALL: That's enough for now.

FURTHER EXAMINATION

BY EXAMINER CATANACH:

Q. Is that the primary drive in the reservoir, is the gas cap?

A. There are clearly three significant drive mechanisms in the reservoir, and I'm unable to rank them, really -- Well, solution gas drive is a -- is one of the three primary mechanisms in South Dagger Draw.

The gas cap is important, and in South Dagger Draw water is important, but probably not as important as the other two.

In North Dagger Draw, solution gas drive is important and water is, in my opinion, important, and the gas cap is the least important of the three in North Dagger Draw.

But all three of those mechanisms are significant, and that's why the -- what to do with the field is not obvious without really close study.

EXAMINER CATANACH: I believe that's all I have.

Anything further of this witness?

MR. CARROLL: Nothing.

EXAMINER CATANACH: If not, he may be excused.

MR. CARROLL: Mr. Examiner, that completes our presentation.

EXAMINER CATANACH: Okay, there being nothing further, case 10,108 will be taken under advisement.

Thereupon, these proceedings were concluded at 10:48 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10108, heard by me on December 3 1992.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

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

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

WITNESS MY HAND AND SEAL December 22nd, 1992.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1994