STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	)	CASE NO. 12,815 (Reopened)
IN THE MATTER OF CASE NUMBER 12,815 BEING REOPENED PURSUANT TO THE PROVISIONS OF DIVISION ORDER NUMBER R-11,771, WHICH ORDER PROMULGATED TEMPORARY SPECIAL POOL RULES FOR THE NORTH OSUNA-DEVONIAN POOL IN LEA COUNTY, NEW MEXICO, INCLUDING PROVISIONS FOR 160-ACRE SPACING UNITS AND DESIGNATED WELL LOCATIONS	)	

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

July 10th, 2003

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, July 10th, 2003, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

July 10th, 2003
Examiner Hearing
CASE NO. 12,815 (Reopened)

* * *

E X H I B I T

Applicant's	Identified	Admitted
Exhibit 1	5	16

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A P P E A R A N C E S

FOR THE DIVISION:

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FOR READ AND STEVENS, INC.:

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WHEREUPON, the following proceedings were had at 10:12 a.m.:

EXAMINER CATANACH: At this time we'll call Case 12,815, which is in the matter of Case Number 12,815 being reopened pursuant to the provisions of Division Order Number R-11,771, which order promulgated temporary special pool rules for the North Osuna-Devonian Pool in Lea County, New Mexico, including provisions for 160-acre spacing units and designated well locations.

Call for appearances in this case.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe, representing Read and Stevens, Incorporated, in this case. I have one witness.

EXAMINER CATANACH: Okay, will the witness please stand to be sworn in?

(Thereupon, the witness was sworn.)

MR. BRUCE: Mr. Examiner, this is my fourth case today, and I'd like to tell you that one of these would be normal, but I don't think I can do that.

JOHN MAXEY,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. John Maxey.

Q. Where do you reside?

A. In Roswell.

Q. Who do you work for and in what capacity?

A. I work for Read and Stevens, and I'm the operations manager, also the petroleum engineer.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert petroleum engineer accepted as a matter of record?

A. Yes, they were.

Q. Does your area of responsibility at Read and Stevens include this particular pool?

A. Yes.

Q. And in fact, did you testify on behalf of Read and Stevens at the original hearing?

A. Yes.

Q. So you are familiar with the engineering matters related to this case?

A. Yes.

MR. BRUCE: Mr. Examiner, I'd tender Mr. Maxey as an expert petroleum engineer.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Bruce) Now, Mr. Stevens [*sic*], the

original hearing in this matter resulted in special pool rules which basically allowed 160-acre spacing in the Devonian; is that correct?

A. Yes.

Q. And then well locations no closer than 330 feet to a quarter quarter section line?

A. Yes.

Q. And you are appearing here today to request that those rules be maintained in effect?

A. Yes.

Q. Okay. Let's go to your exhibit -- the only exhibit today, Exhibit 1, and could you go through that and describe why -- Take a step back. To describe the pool, how it's changed since you first came in over a year ago for the pool rules and what the wells in this pool have shown you regarding the pool structure, the pool area, et cetera, and why you want to maintain this spacing in effect.

A. Okay, the first item in Exhibit 1 is a structure map. There was an item in our last hearing very similar to this one. This structure map was based on 3-D seismic, and we'd come in after the Liberty "4" Number 1 was drilled in the southwest quarter of 4. We have now since drilled the Klein 5 Number 1 in the southeast quarter of Section 5, and that well came in as nearly perfect to projected structural

position as we could ever want. We were approximately five foot off on the tops, and considering the dip of the structure, we felt like that was a very good confirmation of our 3-D seismic.

What we confirmed in the Klein 5 Number 1, we started further downdip in the 5 Number 1, based on structure, started perforating in the lower portion of the Devonian, which is the pay zone out here, and confirmed that our oil-water contact -- as estimated in the last hearing, we estimated at minus 7150 foot -- we have now confirmed that the oil-water contact is 7071 foot, based on completion testing in the Klein 5 Number 1. Basically what that did was shrunk the reservoir dramatically.

In the last hearing the reservoir -- If you'll look at the dashed line on the map, that's our oil-water contact now. I do have estimated on there -- In error I left that on there from the last hearing, but that is based on an actual test of perforated interval which we'll look at later. That dashed line on the previous map, based on the 3-D control and the estimated contact, actually extended further downdip, up into the northwest quarter of 4 and into the southwest quarter of 33, and you can see now that our reservoir has dramatically shrunk. I believe it's approximately 104 acres now in areal extent on that bump.

Q. Okay. What are the next few pages of this

exhibit?

A. Okay, the next couple of pages, basically, are logs on the two wells. The second page is the Liberty "4" Com Number 1. That was submitted at the last hearing. I included i for information purposes. It's perforated in the upper portion of the Devonian. I have added to this item the minus 7071 point that is considered wet in the Devonian, on this log.

The next log is the Klein 5 Number 1. You can see the perforations below the cast-iron bridge plug, just below 10,700 feet, that confirmed water in the upper portion of that second lobe of porosity, you can see kind of a tight streak in that density log there, where that cast-iron bridge plug is set. The perforations at minus 7071 yielded 100-percent water.

We then perforated the upper portion. You can see those perfs just under what's denoted as top of the pay, and the well came in producing approximately 95 to 100 percent oil. We had a very small water cut.

Q. Have you calculated the -- estimated the recoveries from each of these two wells?

A. Yes, I have. Next three pages of this exhibit are decline curves that are actually based on daily production, not monthly, so there's quite a bit of detail in them.

The first curve is the Liberty well. All of these are titled the Liberty and the Klein well, but if you'll look in the box on the graph just below the curves you'll see that the first page of the decline curves is the Liberty oil production, Liberty water production. And based on a pretty good trend that's been established in the Liberty well, it's on a 30-percent decline, and we've produced a cumulative of 82,000 barrels of oil. We have remaining approximately 41,000 barrels of oil, for an ultimate of 123,167 barrels of oil.

The Klein 5 Number 1, we'll see on the next page, that well actually came in and produced -- the initial production was the same as what the Liberty was producing, and one of our reasons to believe that the well came in very close to what the Liberty was actually producing at the time was because the Klein was approximately 30 percent pressure-depleted from the Liberty. The Liberty had produced approximately 30 percent of its ultimate reserve when the Klein was drilled. When we DST'd the Klein, sure enough, pressure depletion was approximately 30 percent in the Klein. I've got that in later pages.

But the Klein, another trend that's been pretty well established, approximately 75 percent decline rate. Again, these are daily, so that's why the scale may be somewhat deceiving here. That is daily rate, so it doesn't

appear to be real steep, but it is a 75 percent decline, annual decline.

Crunching those numbers out, we've got a -- this well has cum'd 40,200 barrels of oil. It's producing about 12 barrels of oil a day right now. It only has a remaining of 4000 barrels, for an ultimate of 44,476.

The last decline curve page is just to -- I put that for information purposes to show you the Klein production, which is the symbols, the triangular symbols superimposed over the Liberty oil production, which is a line with no symbols. And you can see in roughly June, end of June, 2002, or first part of July, where the Klein came on, it overlaid the Liberty quite well. And then where they diverge, the Liberty, we lowered the pump a little bit more on the Liberty and increased our production a little bit more. We lowered it all the way to the perfs.

Okay, the next page is a spreadsheet with some -- Some of this data was included in the first hearing for the initial data on the reservoir, some has been updated based on the new well. The original spreadsheet was obviously based on one well, this spreadsheet is based on two.

Cum oil production -- and I've put some dates on here to kind of help out with delineating where these figures came from, what time period -- cum oil production through June from both wells was 122,600.

Gas production has been too small to measure for quite some time, so... We had some initial gas, but we never were able to track anybody's market, and now the gas has basically declined to nothing.

Water production is about 10,600 barrels, and we don't have a real high water cut. Every water cut is about eight percent.

As you move through that spreadsheet, notice in the first paragraph that I've boxed in, at the bottom of that paragraph the drive mechanism. We estimated we had -- As nearly every Devonian well in southeast New Mexico, we estimated we had water drive. We were estimating 50-percent recovery, based on the data we presented at the last hearing.

We've subsequently determined now, with the pressure drop in the Liberty and the pressure depletion in the Klein, that we have no water drive. We are very -- a block of geology that's popped up very. We do not appear to be attached to any aquifer, and we have very little gas in the reservoir, so subsequently we have very little drive mechanism. We're operating primarily on expansion drive, and it's primarily liquid expansion drive.

In the center box it gives some information about the reservoir itself. The first line there is the one that dramatically changed from the last hearing. The area of

the oil column above the oil-water contact is now 104 acres.

The net pay is 64.5 feet, porosity 6 percent and water saturation 35 percent. Those numbers are very similar to the first hearing because the logs did not change that much in the reservoir rock.

Basically, coming down to the third box, I've calculated an original oil in place of 1.8 million barrels, based on the average thickness of the reservoir rock and the areal extent, and some of the initial PVT data.

The recovery factor -- I estimated a recovery factor to get a recoverable reserve, I estimated at 10 percent. It looks like our actual is going to be 9.3 percent, and that is not out of line with the expansion drive. The expansion drive is going to be one of the worst recoveries we could expect. Liquid expansion drive, I should say. If we were looking at solution gas we'd hope for 15, possibly 20 percent, but we're looking at approximately 10 percent, leaving recoverable reserves, based on a 10-percent recovery factor, of 180,000 barrels. That matches pretty close with the number I just gave you on the decline curve of approximately 170,000 barrels of oil.

So on the decline curves we can project 170,000 barrels of oil, ultimate. Based on a volumetric

calculation on the actual bump and a 10-percent recovery factor, I calculated 180,000 barrels of oil. That recoverable is 27 barrels per acre-foot, and I believe at our first hearing we were looking at a figure of more like 100 barrels per acre-foot, based on a different drive mechanism. So it's a very low recovery, it's a very low recovery.

In the remaining portion of that page, the comments, there's a lot of information on this page. You'll notice the first DST in the top of the pay in the Liberty. That's the upper half of the Devonian pay. Notice the final shut-in pressure that's been bolded and underlined, 4240. And in the Klein, a DST taken April 11th of '02 after the Liberty had made 40,000 barrels of oil, the Klein DST indicated 2768 p.s.i. bottomhole pressure.

Note that -- I said 40,000. The Klein well was DST'd after the Liberty well had produced 49,900 barrels of oil. That decline in pressure, again, as I stated earlier, was roughly one-third of the original bottomhole pressure, and 49,000 barrels of oil is close to one third of the ultimate of the Liberty well.

Q. What is the approximate cost of these wells?

A. The approximate cost is $1.15 million.

Q. And is the final sheet of your exhibit economics on this prospect?

A. The final sheet was an AFE on the Klein 5 Number 1. Nearly $1.15 million is what it takes to drill these wells.

And the page after that is an economic page that would show a reasonable rate of return. The borderline rate of return that we would want for an expenditure of this type would be a 20-percent return on our money. And basically a 20-percent return on this type of investment on the well alone would require 175,000 barrels of oil. That's based on a price deck at the first hearing of an average price of $22 a barrel. We could probably up that to $25 and be looking at ultimates of less than $174,000 for an economic well, a break-even economic well, but not much less than $174,000.

So in retrospect, we kind of busted our pick. We've got a well that, number one, the Liberty 4, based on the pressure depletion we saw in the Klein, they're 700 feet apart, that's approximately 40-acre spacing right there. We were seeing a dramatic pressure decrease in the reservoir for drainage in the Liberty, the Liberty 4 would have, in all likelihood, drained this bump. And even if we'd have drained the bump with one well, with the amount of money we've spent on seismic and acreage and the well cost, this was not an economic venture.

Q. Okay. If you turn back to the first page of that

exhibit, Mr. Maxey, again, you are still seeking 160-acre spacing --

A. Yes, we are.

Q. -- for several reasons. First of all, it wouldn't be economic to drill on 40s, would it?

A. No.

Q. Secondly, as you said, the Liberty 4 could have drained the entire feature, which you thought was larger originally?

A. We thought it was larger at the time, yes.

Q. But the Liberty 4 Number 1 could drain the entire 104 acres, so it is capable of draining in excess of 40 or 80 acres?

A. Yes.

Q. And that is also -- the pressure figures that you have show that?

A. Yes.

Q. The other factor that was used in establishing 160-acre spacing originally was the geometry of the reservoir, was it not?

A. Yes.

Q. I think some questions came up as to whether or not there should be 80-acre spacing, but just looking at the southwest quarter of Section 4, if you had had 80-acre spacing it could have been interpreted that another well

should have been drilled in the southwest quarter of Section 4; is that correct?

A. Yes.

Q. If you had done a standup unit, somebody could have demanded a well be drilled in the southwest of the southwest, if you had had a laydown unit, north-half laydown unit?

A. Right.

Q. And so as a result, with the oil-water contact and the faulting you have in here, even though the entire acreage may not have been productive it was just more economical to use 160-acre spacing?

A. Yes, that's correct.

Q. And once again, if the oil-water contact had been minus 7150, the reservoir would have been much larger?

A. Yes.

Q. Unfortunately, that did not pan out?

A. That did not pan out.

Q. So what you're asking is that the rules for this pool be made permanent at this time, despite the disappointment that you've experienced so far?

A. Yes, we are. Yes.

Q. Was Exhibit 1 prepared by you or under your supervision?

A. Yes.

Q. And in your opinion is the continuation of the 160-acre spacing in the interests of conservation and the prevention of waste?

A. Yes, it is.

MR. BRUCE: Mr. Examiner, I'd move the admission of Read and Stevens Exhibit Number 1.

EXAMINER CATANACH: Exhibit Number 1 will be admitted.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Maxey, when you brought the Klein well on did you notice a decline in production in the Liberty well?

A. No, what we noticed is the -- on the production curve that we have with both wells -- Well, let me retract that. We noticed that the Klein came on at the same rate as the Liberty. However, there is a slight point of inflection in the Liberty curve at the point where the Klein comes on.

I also have a point of inflection just after January 30th of 2002. That's prior to the Klein coming on. There are some issues with reservoir boundaries, I'm sure, that are coming into play in the first inflection point, but it's quite probable that that second inflection point is from the Klein production. I can't state emphatically it is. It could be coincidental, another boundary effect.

Q. Uh-huh. I assume that -- The acreage dedicated to the Liberty 4, I assume that's the southwest quarter?

A. Yes.

Q. And the Klein is what, the southeast quarter of 5?

A. Yes.

Q. Is that commonly owned, that acreage?

A. The southwest quarter of 4 has a different mineral owner configuration. It's slightly different, there's not a big difference. The south half of the southwest quarter, there was I believe one, maybe two mineral owners that were different in that south half of 4, as opposed to the north half of the southwest quarter of 4.

MR. BRUCE: Mr. Examiner that was, I think, Exhibit 1 from the original hearing.

THE WITNESS: That was --

MR. BRUCE: I think there was testimony by --

THE WITNESS: Yes.

MR. BRUCE: -- Mr. Watson, the landman, at the original hearing. The southeast quarter of 5 is all one common lease. The southwest quarter of 4 is split up into a north-half tract and a south-half tract.

THE WITNESS: Yes.

Q. (By Examiner Catanach) Okay. So both of these wells are being produced at this time?

A. Yes.

Q. At their capacity, so there's --

A. Yes.

Q. And that's how you plan to keep producing the wells --

A. Yes.

Q. -- so there's no correlative rights issues with production from these wells?

A. No. They are both pumped down to the perforations.

Q. What's the estimated remaining time that you need to recover the reserves here? Do you know?

A. I did not calculate the remaining time, but the Liberty is on a 30-percent decline, and if I had a better X scale I could tell you pretty quick. Unless I see some change in production later in the life of the Liberty -- The Klein is going to be over very quickly, it appears. The Liberty, we're probably looking at several years.

Q. But you plan on producing the Klein until it's no longer economic produce?

A. To economic limit, yes, we do.

Q. On your first page you show the black bold line on the --

A. Yes.

Q. -- east side. I assume that's a fault?

A. Yes. Yes, this is faulted to the east side, and then if you go back further, off the map, there's a big fault to the west. This is coming up on the shelf six miles west of Monument, so we're coming up pretty dramatically from the Basin into the shelf area, and there's a lot of faulting, we had a lot of directional problem drilling the well. But this block is very high compared to the surrounding area.

I might add that even if the oil-water contact had been found where we had estimated it originally, we'd still have a problem of not being connected to an aquifer for a drive. We'd still be looking at very low recoveries per acre-foot, which would be very difficult to even drill a bigger reservoir with the drive mechanism that we were saddled with.

EXAMINER CATANACH: Okay, I don't think I have anything else, Mr. Bruce.

MR. BRUCE: I have nothing further of Mr. Maxey.

EXAMINER CATANACH: Okay, there being nothing further, Case 12,815 will be taken under advisement.

(Thereupon, these proceedings were concluded at 10:38 a.m.)

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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 July 13th, 2003.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006