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:

APPLICATION OF CHEVRON U.S.A. FOR SPECIAL POOL RULES, LEA COUNTY, NEW MEXICO

CASE NO. 13,174

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

October 23rd, 2003

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, October 23rd, 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

October 23rd, 2003
Examiner Hearing
CASE NO. 13,174

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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	6	17-18
Exhibit 2	8-9	17-18
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* * *

A P P E A R A N C E S

FOR THE DIVISION:

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By: MICHAEL H. FELDEWERT

* * *

WHEREUPON, the following proceedings were had at 8:26 a.m.:

EXAMINER STOGNER: At this time I'll call Case Number 13,174. This is the Application of Chevron U.S.A. for special pool rules, Lea County, New Mexico.

Call for appearances.

MR. FELDEWERT: May it please the Examiner, my name is Michael Feldewert with the Santa Fe office of Holland and Hart, appearing on behalf of the Applicant Chevron U.S.A., Inc., and we have one witness today.

EXAMINER STOGNER: Any other appearances in this matter?

At this time will the witness please stand to be sworn?

(Thereupon, the witness was sworn.)

EXAMINER STOGNER: Mr. Feldewert?

MR. FELDEWERT: Thank you, Mr. Examiner.

J. DAVID CRAWFORD,

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

DIRECT EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Crawford, would you please state your full name and address for the record?

A. Yes, my name is James David Crawford. I reside

at 3508 Northfield Drive in Midland, Texas.

Q. And by whom are you employed and in what capacity?

A. Chevron, and I am a petroleum engineer.

Q. Have you previously testified before this Division as a petroleum engineer?

A. No, I haven't.

Q. Okay, then why don't you briefly go through your educational background and your work history focusing on the Permian Basin area of New Mexico?

A. Okay, I'm a 1977 graduate of Mississippi State University with a BS in petroleum engineering. I've worked with Chevron for approximately 26 years. Of those 26 years, approximately seven of those years have been in the State of New Mexico. I worked initiating waterfloods in Lea County from approximately 1987 to 1990, and most recently I've been working Eddy and Lea Counties as a petroleum engineer.

Q. Have you testified before the Texas Railroad Commission?

A. Yes, I have, and am certified to testify before the Railroad Commission.

Q. Okay. Are you familiar with the Application that's been filed by Chevron U.S.A. in this case?

A. Yes, I am.

Q. And have you conducted a study of the area and the pool that is the subject of this hearing?

A. Yes.

Q. And are you prepared to share the results of your work with the Examiner?

A. Yes.

MR. FELDEWERT: Mr. Examiner, I would offer David Crawford as an expert witness in petroleum engineering.

EXAMINER STOGNER: Mr. Crawford is so qualified, and you can consider yourself also certified to testify here in the State of New Mexico, however you will not receive a certificate of any kind. Thank you.

THE WITNESS: Thank you.

Q. (By Mr. Feldewert) Would you briefly state what Chevron seeks under this Application?

A. Chevron seeks adoption of special pool rules and regulations for the North Strawn-Penn Pool and to increase the pool's allowable GOR to 20,000 to 1.

Q. Is it for the North Lusk-Strawn Pool?

A. That's correct.

Q. Okay. Would you turn to Chevron Exhibit Number 1, identify that for the Examiner, and just orient us to this exhibit, please?

A. Okay, on Exhibit Number 1 please reference the magenta-colored line, if you will. That is the pool

boundaries. The green circles show the wells that are in that pool. The yellow area -- This data was actually pulled from a Chevron land database and the yellow really has no significance, other than that's Chevron acreage.

Q. Now, it shows five wells within the pool area. Are those wells that are completed in the North Lusk-Strawn Pool?

A. That's correct.

Q. Are all of those wells producing today?

A. No, they are not.

Q. How many of these -- Can you identify for us the producing wells?

A. There are three producing wells. In the south half of Section 29 there's the Lusk 29 Federal Number 1, which is the well of our topic today. In the north half of Section 32, the Lusk 32 Number 1. And then in the lower right-hand corner the Keel A Federal Number 3 is currently producing.

Q. Now, the Spear Federal well down there, do you know when that last produced?

A. No, sir, not right offhand, but I can check real quick. I did bring that documentation. And I'm sorry, sir, which well --

Q. I think you mentioned -- Can you identify the two wells that are no longer producing?

A. Okay, the Spear Federal Number 1 and the Scott E Federal.

Q. Okay, and when did those wells cease producing?

A. The Spear Federal Number 1 ceased producing on June of 2001 and the Scott E Federal ceased production on February, 2000.

Q. Now, is this pool comprised of both federal and state acreage?

A. That's correct.

Q. And how many operators are in this pool?

A. Chevron is the only operator.

Q. Are there any Division-designated operators of Strawn wells within one mile of the outer boundary of this pool that have not been assigned to another pool?

A. No.

Q. Which pool are the other wells assigned to?

A. Those wells have been assigned to the Lusk-Strawn Pool.

Q. Okay, so there are no operators, then, that are affected by this Application?

A. That's correct.

Q. Has the State and the BLM been notified of Chevron's Application?

A. Yes.

Q. And is Chevron Exhibit Number 2 an affidavit

that's prepared by our office, in which both the State of New Mexico, the Commissioner of Public Lands and the U.S. Bureau of Land Management was notified of this Application?

A. Yes.

Q. Okay. Would you identify for the Examiner why Chevron seeks an adoption of special pool rules that would increase the GOR to 20,000 to 1?

A. Under the statewide rules, the GOR is 2000 to 1, and the problem with that is that that gas-oil ratio is too low in order for this well to be able to produce oil.

Q. Have you been experiencing any operational problems as a result of this limiting gas-oil ratio?

A. Yes, we have. Currently our lease operators have to keep up with the daily production on the well in order to determine the gas volumes that are produced in order to shut the well in, to keep it within compliance, and the well's therefore only producing about half the time, half of a month.

Q. Now, did Chevron receive approval from the Division's District Office to conduct a testing allowable in preparation for this hearing?

A. Yes, we did.

Q. And has the approval letter from Mr. Chris Williams been marked as Chevron Exhibit Number 3?

A. Yes.

Q. And what did Mr. Williams authorize Chevron to do?

A. Mr. Williams authorized us to have a testing period of 90 days, and we did show Mr. Williams the data that we had, and he concurred that this was an example where we could increase the allowable and thereby prevent waste.

Q. Okay. Now, you mentioned a 90-day testing period. Did you get an extension of that period as well?

A. Yes, we did. After the initial time period we showed the current data to Mr. Williams, and he gave us a verbal approval to continue producing the well for another 30 days, with the caveat that we get the well on the docket for hearing.

Q. Okay, now let's go through the data that you obtained. I want you to first turn to Chevron Exhibit Number 4, identify that, and review that for the Examiner, please.

A. Exhibit Number 4 is -- first of all, it's a very, very busy graph, but I'll attempt to go through there and explain things to you. It represents the production for this particular well, the Lusk 29 Number 1, for the year 2003. First, the scale on the left is either barrels or MCF, and the scale on the right being GOR, and that's plotted against the date.

Also if you'll look, the jagged red line is gas production, the dotted black line is GOR, the green line at the bottom is our oil production, and the magenta line represents our average daily gas production that our lease operators use in order to shut the well in.

I'd also like to focus you a little bit down on the oil production line, the green one. There are spaces where there is no production. That is representative of time that the wells have to be shut in after the allowable has been made.

Also on this graph we will show -- and we have another exhibit that will show this, but the dashed line, if you'll notice, in the early days after the wells are cut on, the GOR goes off the page, which means greater than 40,000 to 1. And also we're looking at it taking a couple of days for us to be able to get our oil production from the wells.

Q. Okay, now you mentioned some other exhibits. Why don't we go ahead and leave this one out and lay out the other two. You've got Chevron Exhibit Number 5. Do you want to just identify that for the Examiner, please, and review that with him briefly?

A. Yes, Exhibit Number 5 represents a portion of the data in Exhibit Number 4. It's the time frame from April 7th of '03 through June 2nd, 2003. And the reason for this

particular exhibit is just to give you a little bit more detail where it's easier to see.

The same color code applies: The red is gas, the green is oil, the dotted black line is GOR, and the magenta line is representative of the month-average gas.

If you'll notice on the left side of the graph, this is also representative of our normal producing characteristics for the well. If you'll notice on the left side, when the well has been shut in and we open the well, you get a sudden surge or increase in gas production. There in the early part of April the average gas is roughly 1500 MCF a day. If you'll also look at the bottom of the graph where the green oil production is, you'll notice that the oil production is very low, on the order of 20 or so barrels a day. It's hard to tell on this graph, but 20 or so barrels a day.

It takes several days for the gas to basically bleed off of the well to where we begin to get the oil production, and again during this time period the GOR is greater than 40,000. After these few days the oil production appears to stabilize a little bit and the gas production stabilizes a little bit.

At about the time the well begins to stabilize, it's time to shut the well in again because we've exceeded our gas allowable. So the well is shut in for a period of

time and we begin the process all over again. We open the well initially, the reservoir pressure and tubing pressure have equalized, and there's a lot of gas on the well and we have to basically blow down that gas production. GOR again is off the page, and we have to wait several days to get our oil production.

Q. Okay. Now, this Exhibit Number 5 is, I think you said, a subset of Exhibit Number 4. Is this taken out of the middle of Exhibit Number 4, roughly?

A. Yes, it is.

Q. Okay. Now, do you have an exhibit that highlights what would be the right side of Exhibit Number 4?

A. Yes, I do, that would be Exhibit Number 6.

Q. Okay --

A. And it's --

Q. -- turn to that and review that for the Examiner, please.

A. Exhibit Number 6 is representative of the testing period that we have from Mr. Williams. As it's shown there, the same color code applies again: green, oil, the red line is gas, the dotted black line is GOR, and it's from a period of June the 9th through October the 6th, approximately.

During this time we were already in a producing

phase, and we began a testing period. And in that testing period what we did was to try to design a production test whereby it would more readily kind of create what we were doing in our producing cycle, as well as show what the well would produce at various gas-production rates, as far as the oil production is concerned.

So beginning on July the 15th, we opened the well above our normal producing rate to about 2000 MCF a day.

Q. Is that represented by the blue line on this Exhibit Number 6?

A. That's correct.

Q. Okay.

A. The first blue line. And because it was already producing, the increased opening of the well, we got increased oil production. The operators at this rate were having a little difficulty controlling and getting the rate to stabilize, so they cut the well back to about 1475 MCF a day.

And at that time, if you'll look down there at the green line, you'll notice that the oil production dropped off significantly, from 100 to 200 barrels a day down to roughly 25 to 40 barrels a day. And they got that somewhat stabilized and then felt like that it was time to drop the production down to 1000 MCF a day. And if you'll notice the oil production at 1000 MCF a day, the oil was

only three to five barrels.

Then we cut the well back to 750 MCF a day, and there's virtually no oil production. In fact, there was no oil production recorded.

Then we shut the well in to represent the shut-in periods on our normal producing cycle, and then we opened the well up at 750 MCF a day, zero oil production. Then we stepped the rate up to 1000 a day, and the oil production went to two to four.

And then the final part of the testing period, we opened the well all the way up. The GOR immediately shot off the page, greater than 40,000. It took a couple of days for us to recover and get our oil production. We began to get somewhat of a stabilized oil production, the gas volume stabilized approximately 1500 or so a day, and the GOR began to stabilize but at the same time climb a little bit, in the 15,000 to 20,000 GOR range.

Q. Would you -- Looking at these three exhibits now, would you summarize for the Examiner your conclusions following this testing period in your analysis of this pool?

A. During our testing period at the 750-MCF-a-day range, which is also roughly equivalent to a 2000-to-1 GOR under statewide rules, we have zero oil production. We need a higher GOR and a greater gas production in order to

get oil production and to prevent the waste of the gas during the early days of just bringing a well on.

Q. Now, you mentioned the waste associated with the early days of bringing the well on. Is that the spikes that we see on these charts when you first bring the well on line after having shut in for a period of time?

A. That's correct.

Q. You're producing gas, but you're not producing oil?

A. That's correct.

Q. Okay. Now, is there any concern about -- If you continue on this trend, is it your anticipation that you will be able to produce the oil in the most efficient fashion?

A. Yes, we do expect to be able to produce the oil at a higher gas-production rate and higher GOR.

Q. If the GOR is not changed, is there concern that there will be oil left in the ground?

A. Yes, we do.

Q. Okay. Based on your analysis, what is the most efficient GOR level for this particular pool at this time?

A. Based on the erratic nature of the GOR, and particularly the increasing GOR towards the -- If you'll look at Exhibit 6 on the graph there, with the GOR being 15,000 to 20,000 we are requesting 20,000-to-1 GOR.

Q. Is it your opinion that the most efficient use of reservoir energy will occur if you are allowed a GOR of 20,000 to 1?

A. Yes.

Q. You mentioned the fact that you visited with Mr. Williams. Did you show him this data?

A. Yes, we did.

Q. Okay. And did he agree with your conclusions that the GOR should be increased?

A. Yes, he did.

Q. In your opinion, can the GOR for this pool be increased to 20,000 to 1 without damaging the reservoir?

A. Yes.

Q. And in your opinion, will increasing the GOR for this pool to 20,000 to 1 be in the best interests of conservation, the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Were Chevron Exhibits 1 through 6 prepared by you or prepared under your direction and supervision?

A. Yes, they were.

MR. FELDEWERT: Mr. Examiner, at this time I would move the admission into evidence of Chevron Exhibits 1 through 6.

EXAMINER STOGNER: Exhibits 1 through 6 will be

admitted into evidence at this time.

MR. FELDEWERT: And that concludes my examination of this witness.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Crawford, let's see, I've got several questions here, just for the record. I refer to Exhibit Number 3, and you discuss in this correspondence Chevron U.S.A., Inc.'s, Lusk Federal 29 Well Number 1. Is that, in fact, the North Lusk 29 Federal 1? Are we talking about --

A. Yes, sir.

Q. -- the same well with all your exhibits?

A. Right.

Q. Okay. Take me back a little bit here, give me a little bit of history on this pool. When was it formed, how long have these wells been out there, what was the discovery well?

A. As I recall, the Spear Federal Number 1 was the discover well, and that was approximately 1997 when the pool was named.

Q. So that was the first well. And Chevron was the operator --

A. Yes, sir.

Q. -- that discovered it?

Are there any special pool rules out there, or is

that 40-acre spacing?

A. I think there's only 40-acre spacing. I'm not aware of any special pool rules.

Q. Okay. Let's see, in your Application it was referred that -- the present depth bracket allowable is 365 barrels a day would make it -- the production being between 11,000 and 12,000 feet; is that correct?

A. That's correct, yes, sir.

Q. Okay. In the scheme of things, which well or what -- When was the North Lusk 29 Federal Well Number 1 drilled in respect to the other production, the other producing wells in this pool?

A. The Lusk 29 Number 1 was drilled and completed in October, 1999 --

Q. Okay.

A. -- and the Lusk State 32 Number 1 was in early 2000. February, 2000, is when it was completed.

Q. Okay.

A. So it's -- The Lusk 29 is the next-to-the-last well completed in the pool.

Q. Next-to-the-last well. And then Keel A Federal Number 3, that would have been a post-2000 well also?

A. Keel 2003 was December of 1997.

Q. 1997. And let's see, you show a Scott E Federal Number 1. Do you have the dates of when that production --

A. The Scott E Federal produced from August, 1998, through February, 2000.

Q. What can you tell me about the production on these other wells? Did you see a high GOR or a presence of high gas rates in these wells?

A. Yes, sir, initially the wells did come on similarly to the 29 Number 1 at high GORs, in excess of 2000 to 1. The wells were not quite as prolific as the 29 Number 1, and therefore over a period of time as reservoir energy declined, the GORs were a little bit lower. We were able to produce those.

Q. Okay, you mentioned a reservoir energy. Kind of give me a brief description of what kind of reservoir we have out there, what's the drive mechanism?

A. The particular area that we're looking at, this is what we refer to as a Strawn mound or a Strawn buildup. It's fairly localized. This particular mound -- I don't know the areal extent of it, because there are multiple mounds out there. The pressure data that we have in the files is a little bit limited, but as best I can tell or estimate the reservoir pressure was somewhere in the area of 1500 pounds initially.

Q. Okay, these algal mounds, or these little reef mounds, just by looking at -- and I'm referring to Exhibit Number 1. Just by where the producing wells are -- You say

there are multiple mounds. Am I looking at about three mounds within this pool? You've got the North Lusk 29 and that North Lusk 32 well kind of together. Are they producing from the same mound, in your recollection?

A. Yes, sir, the 29 Number 1 and the 32 Number 1 are producing from the same mound. I don't recall and can't comment on whether the other three are in the same mound or not.

Q. Okay. What kind of reservoir energy -- what is the mechanism out there for flow in these wells, or drive?

A. As best I can determine, you know, based on only two wells, it looks like it's a gas-depletion-type drive.

Q. Is there any water drive in these algal mounds?

A. No, sir, the water production is very minimal at best. In the 29 Number 1 we see volumes of approximately half a barrel to a barrel every few days. It's not much at all.

Q. Now, generally speaking out here -- I'm just talking algal-mound production in the Lea County area -- what's been your experience whenever you do produce them at a higher GOR? Do you have a gas cap buildup, or what a kind of production -- How does that affect the production overall in the algal mound when you start drawing the gas off at a higher than 2000-to-1 rate?

A. Based on the data that we've gotten out of the 29

Number 1, we're able to produce that oil and get the oil out of the ground. The other wells, from the history that I recall, were not as prolific as the 29 Number 1 and did not have as much cumulative oil production as what we're expecting to see out of the 29 Number 1.

Q. Now, do you have any experience with other algal mounds in the Lea County area?

A. No, sir, this is the only Strawn algal mound that I look after at the time.

Q. Do you know of any other Lusk pools -- I'm sorry, Strawn pools, in Lea County that have a higher GOR than 2000 to 1 that has been given over the past?

A. No, sir, I don't.

Q. Let's see, also I had a quick question because I'm a little confused here. Whenever I look at your Exhibits 4 and 5, the magenta line --

A. Yes, sir.

Q. -- what are you showing me here?

A. That goes back to our difficulty with our operations. That line is an average daily producing gas rate so that our lease operators can tell when we've produced the 735 or 750 range of gas and have to shut the well in. So it's just a cumulative average, daily gas amounts, that they know when to shut the wells in.

Q. Okay, that's over just that particular period

that it covers or --

A. Yes, sir.

Q. -- does it extend further than that?

A. It's over just that particular period.

Q. When these wells first come on are they flowing, or do you put a pump out there on them?

A. All the wells here came in initially flowing. And in fact the 29 Number 1 is still flowing, the 32 Number 1 is still flowing, and the Keel Number 3, I think, is flowing.

Q. Referring to Exhibit Number 1 -- and I'm looking over now to the southwest quarter of Section 28 -- you show 50 percent, a hundred percent. Is this Chevron's working interest in those wells or in that lease?

A. Yes, sir, that's correct.

Q. Who are your other interest owners? Have you contacted them? Because I notice that you contacted the royalty, being the U.S. government and the State of New Mexico. But have you had any correspondence with your other working interests?

A. No, sir, I have not.

EXAMINER STOGNER: Mr. Feldewert, do you have anything further in this matter?

MR. FELDEWERT: No, Mr. Examiner.

EXAMINER STOGNER: Okay, Mr. Crawford, I have no

other questions unless there's any other questions? Do you have anything?

MS. MacQUESTEN: (Shakes head)

EXAMINER STOGNER: You may be excused. Thank you, sir.

THE WITNESS: Thank you.

EXAMINER STOGNER: Anything else further?

MR. FELDEWERT: No, Mr. Examiner, thank you.

EXAMINER STOGNER: In that case, Case Number 13,174, Chevron U.S.A., Inc., for special pool rules, this matter will be taken under advisement at this time.

(Thereupon, these proceedings were concluded at 8:53 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 13174 heard by me on 23 October 2008

, 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 October 24th, 2003.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006