STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

26 July 1989

EXAMINER HEARING

IN THE MATTER OF:

In the matter of Case 9175 being reopened pursuant to the provisions of Division Order No. R-8476, which promulgated temporary special rules and regulations for the North Hume-Wolfcamp Pool, Lea County, New Mexico, and

CASE 9175

In the matter of Case 9354 being reopened pursuant to the provisions of Division Order Nos. R-8476 and R-8476-A which promulgated temporary special rules and regulations for the North Hune-Wolfcamp Pool, Lea County, New Mexico.

9354

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. CATANACH: Call Case 9175.

MR. STOVALL: In the matter of Case 9175 being reopened pursuant to provisions of Division Order No. R-8476, which promulgated temporary special rules and regulations for the North Hume Wolfcamp Pool, Lea County, New Mexico, including the provision for 80-acre spacing rules.

MR. CATANACH: Are there appearances in this case?

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Law Firm in Albuquerque, representing Santa Fe Energy Operating Partners, L. P..

We have three witnesses in this case and we would ask that it be consolidated with Case 9354, since they involve the same pool.

MR. CATANACH: Okay. At this time we'll call Case 9354.

MR. STOVALL: In the matter of Case 9354 being reopened pursuant to provisions of Division Order No. R-8476 and R-8476-A, which promulgated temporary special rules and regulations for the North Hume Wolfcamp -- Wolfcamp Pool, Lea County, New Mexico, including provision for 160-acre spacing units.

MR. CATANACH: Are there any other appearances in either one of these cases?

You may proceed, Mr. Bruce.

MR. BRUCE: Thank you.

MR. STOVALL: Want me to swear your witnesses in, Jim?

MR. BRUCE: Yes.

(Witnesses sworn.)

MR. BRUCE: My first witness is Mr. Green.

GARY GREEN,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Green, would you please state your full name and city of residence?

A My name's Gary Green. I live in Midland, Texas.

Q And what is your occupation and who are you employed by?

A I am employed as a landman by Santa Fe Energy Operating Partners, L.P.

Q And have you previously testified before the OCD as a landman?

A Yes, I have.

Q And are you familiar with the land matters regarding the North Hume Pool?

A Yes, I am.

MR. BRUCE: Are Mr. Green's credentials acceptable, Mr. Examiner?

MR. CATANACH: Yes, sir.

Q Mr. Green, what is Santa Fe's position in these hearings?

A Santa Fe requests that 160-acre spacing be made permanent for the North Hume Wolfcamp Pool.

Q And were both of these cases originally started at the request of Santa Fe Energy?

A Yes, they were.

Q Referring to Exhibit Number One, would you describe its contents, please?

A Exhibit Number One is a land plat, a location map, on a 1-to-1000th scale.

Q Okay.

A It shows the acreage colored in yellow is the Santa Fe acreage. It identifies the wells in the North Hume Wolfcamp Pool, Santa Fe's wells in the North Wolfcamp Pool. The discovery well in Section 5 was drilled

in October of 1986; the NH-35 No. 1 in the southeast quarter of Section 35 was drilled in December of '87; the Humble Hume State No. 1 in the southeast quarter of Section 5, drilled in January of '88, are the three producing wells.

Santa Fe has drilled the North -- the NH-5-A State No. 1 over in Lot 11 of Section 5 in May of '88. It's a dry hole.

They have drilled the Humble Hume 5-A State No. 1 in the southwest quarter of Section 5. It's a dry hole, was drilled in June of '88.

In the southwest quarter of Section 35 they drilled the NH-35 No. 1 in July of '88. It was also a dry hole.

Q And for the record, what were Santa Fe's costs for a completed Wolfcamp well in the North Hume Pool?

A Approximately $700,000.

Q And were AFEs and other data submitted at prior hearings in this matter?

A Yes, they were.

MR. BRUCE: Mr. Examiner, we move the admission of Exhibit Number One.

MR. CATANACH: Exhibit Number One will be admitted as evidence.

MR. BRUCE: No further ques-

tions of the witness.

CROSS EXAMINATION

BY MR. CATANACH:

Q Just one, Mr. Green. In the yellow acreage you have Flag Redfern and (unclear) Oil. Do you have farmouts from those companies?

A No, they were under lease; leases have since expired, so we've listed them as mineral -- mineral owners.

We did have other acreage, undivided interest in the lease.

Q What is the orange boundary that you have?

A Those are the proposed -- the 160-acre spacing unit for each of the producing wells.

MR. BRUCE: The current.

A Current, current producing wells, Yes.

MR. CATANACH: That's all I have.

DENNIS BUTLER,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Will you state your name, please, and place of residence?

A My name is Dennis Butler and I live in Midland, Texas.

Q By whom are you employed?

A Santa Fe Energy Corporation.

Q And what is your current job with Santa Fe?

A I'm the District Geophysicist in the Permian Basin.

Q And have you previously testified before the OCD and had your credentials accepted?

A Yes, sir.

Q And are you familiar with the geology of the North Hume Pool?

A Yes.

MR. BRUCE: Mr. Examiner, are the witness' credentials acceptable?

MR. CATANACH: Yes.

Q Mr. Butler, first refer to Exhibit Two. Would you describe that briefly?

A This is a map of the net porosity for the pay interval in the North Hume Wolfcamp Pool. We used

a 6 percent porosity cutoff for the net pay in each well. This was determined by core analysis and drill stem tests to be the lower limit of producable reservoir. You can see that we have a large area of porosity development ranging from as little as 3 feet of porosity up to a maximum of 17 feet of porosity in these wells.

When we get to the cross section we can see how this zone is correlative over the area.

Q Would you move on to Exhibit Number Three?

A Exhibit Number Three is a structure map on top of that porosity. The dotted outline around the edge is the same as the zero contour line on the net porosity map and the structural contours are inside where the porosity exists.

The wells that are currently completed in the pool are colored in the solid green color. Wells that have tested water are in solid blue. Other wells that by either drill stem test or log calculations would appear to be oil bearing or water bearing have also been annotated.

Q Before you describe this further, would you please discuss the cross section and what that shows?

A Yes. The cross section is W-W' hung

upon the wall. Starting at the north end of the field, the V-F Petroleum Well is the northeasternmost limit of the field.

Further to the south the Santa Fe Energy NH-35 No. 1 Well. Then (unclear) cross section is the discovery well for the (unclear) field, the Santa Fe Energy NH-5 Federal No. 1.

Then one of the dry holes that was drilled in the area, which we'll discuss in a little more detail, the NH-5-H State, a west offset to the discovery well produced only water.

And then, continuing to the south, the Humble Hume 5 No. 1 Well, which was also completed in the Wolfcamp Pool.

So you can see from the cross section the porosity within a carbonate group in the Wolfcamp, which we have used in the name of the HG Carbonate in this area is just a marker that we can correlate for a group of carbonates which correlate through the area. We see porosity development approximately 50 feet into this (not clearly understood) -- held up, you know, under the history of the wells.

The only anomalous thing on the maps and cross sections is the NH-5-A State, if you'll look back at the structure map, actually came in 13 feet

high to the discovery well in the field. It has the same correlative porosity zone and that well was also cored and had oil and water in the core, and although the logs would indicate that it was wet, Santa Fe chose to run pipe and test the well and we produced some 15,000 barrels of water with just a barrel or two of oil.

After analyzing the field as a whole, it's apparent that the three wells to the north have a small structure which has trapped oil and that those three wells, the -- the V-F Petroleum Well, the 35 No. 1, and the discovery well, the NH-5 Federal No. 1, are producing oil from that structural closure.

Then you have a small saddle between (unclear) and you're in a water leg for the balance of the oil, which is productive in the Humble Hume State some 100 feet higher.

We know that this is a connected reservoir because as we testified in earlier cases, we saw pressure drops when the VF Petroleum well was drilled, and the 35 No. 1. And when the 5-A State Well was drilled we had lost approximately 1200 pounds of bottom hole pressure.

Subsequent testing in the well indicated no barriers between the 5-A State and the NH-5 Federal.

So we know we're in a connected pressure system, and this was the most reasonable interpretation we could come up with to explain the water in the up-dip well.

Q So in your opinion the wells in the cross section are, first, geologically correlative, and, second, they are pressure connected.

A Yes, sir.

Q Just briefly would you give the outline of the order in which the wells were drilled in this field?

A Yes. The chronological order, the discovery well was the NH-5 Federal No. 1, in the northeast of Section 5.

Subsequent to that V-F Petroleum drilled their well in the southwest quarter of Section 36.

Then Santa Fe drilled their NH-35 No. 1 in Section 35, southeast quarter.

Then we moved to the southeast corner of Section 5 and drilled the Humble Hume 5 State Well.

Then we drilled the NH 5-A State, in which we had difficulty explaining our water problems, and that's in the west half of Section 5.

Then we moved to the south and

drilled the Humble Hume 5-A State in the southwest quarter of Section 5. That well had no reservoir.

Then we attempted the NH-35 No. 2 in the southwest quarter of Section 35 and again that well had no reservoir development.

Q Thank you, Mr. Butler. Were Santa Fe Exhibits Two through Four prepared by you?

A Yes, they were.

Q And in your opinion is the continuation of 160-acre spacing in the interest of conservation and the prevention of waste and the protection of correlative rights?

A Yes, I do.

MR. BRUCE: I have no further questions of the witness at this time, Mr. Examiner.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Butler, I show a producing well in Section 8. Whose is that?

A Moncrief drilled the State 8 No. 2 in the northeast quarter of Section 8 and that well, as you can see from the porosity map, has about 5 feet of porosity. The well was potentialed, I don't have the card in front of me, on the order of 20 barrels a day. We could

not find any records in the state production history to see what that well has actually done.

In talking with Moncrief, they initially had some oil and were having a depleting pressure situation in the first couple days that they put it on production and had not decided whether it was economic to put on pump.

We would interpret that well, from our limited amount of information, to just be a little too thin and near the edge of the reservoir, that they do not have good permeability development away from the wellbore, but we don't have a lot of data on that well.

Q And what about the two wells south of there in the east half of Section 8? Do you look at those as being productive or potentially productive?

A We'd say indicated productive by log calculation or drill stem test. Both of those wells appear to be productive by log calculation. They were -- neither well was tested in the correlative zone. That's strictly our interpretation.

Q Where are those wells producing from? Do you know?

A The Moncrief 8 No. 1 in the southwest of the northeast is a Devonian producer and the Moncrief 1-Y in the northeast of the southeast, although we show that as

a gas well on this map, it was producing from the Morrow and I believe that well has subsequently been recompleted in the Pennsylvanian.

But it has not been recompleted in the Wolfcamp.

Q So is it your opinion that the area shaded in green on Exhibit Number Three is the (unclear) extent of the producing area in those wells?

A Yes, that's our best interpretation.

MR. CATANACH: I have no further questions at this time. The witness may be excused.

GEORGE B. NELSON,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Will you please state your full name and place of residence?

A George B. Nelson, Midland, Texas.

Q And who do you work for and in what capacity?

A I'm currently the District Reservoir Engineer for Santa Fe Energy.

Q And have you previously testified before the OCD as an engineer?

A No, I have not.

Q Will you please outline your educational and employment background?

A I have a Bachelor of Science degree from Bucknell University in 1977.

I have twelve years experience in engineering with Gulf Oil and Petro Lewis Corporation and Santa Fe Energy in California, and also Santa Fe Energy in the Permian Basin.

Q And what are your responsibilities for Santa Fe in the Permian Basin?

A As I said, I'm the District Reservoir Engineer over the southeast New Mexico and west Texas areas.

Q And are you familiar with the hearing matters involved in the North Hume Pool?

A Yes, I am.

MR. BRUCE: Mr. Examiner, are the witness' credentials acceptable?

MR. CATANACH: They are.

Q Mr. Nelson, would you please refer to Exhibits Five through Eight and describe their contents for the Examiner?

A Okay. First, Exhibit Five is some calculations and an attached production plot of the North Hume 5 Federal No. 1 Well, indicating my estimate of gross ultimate recovery for the North Hume 5 Federal No. 1, which was the discovery well. The well has cumulative production to date of 123,000 barrels. It's currently producing at an 84-barrel a day rate and I've estimated a 47 percent decline, which would calculate an ultimate recovery for the well of 170,000 barrels of oil.

I would like to indicate that throughout these wells I've used a straight -- straight line decline based on what current past history has been, which -- which I think is a a little bit conservative since we see these wells level out over time, but for the basis of these calculations I've stayed with a straight line decline.

The second part of each of these is just a calculation estimating drainage in the area, assuming a 20 percent recovery factor. This particular well shows to drain an area of about 153 acres.

The next exhibit is the Humble Hume 5 State No. 1. This well has cumulative production to date of 118,000 barrels; currently making 168 barrels a day at approximately 55 percent decline. This calculates to a gross ultimate recovery of 194,000.

Going through a similar drainage calcu-

lation shows this well to drain approximately 157 acres.

The next exhibit is the North Hume 35 No. 1 in Section 35. This well has cumulative production of almost 25,000 barrels to date; currently making 50 barrels a day at a 28 percent decline.

The gross ultimate estimated on this well is 79,000 barrels of oil.

The drainage calculation for this well indicates and area of approximately 77 acres drained.

The next exhibit is the Chevron State No. 1 in Section 36. This well has cumed close to 9000 barrels of oil; currently making 15 barrels a day at a 25 percent decline. Estimated ultimate on the well is 24,000 barrels of oil. Associated drainage for that well is about 19 acres.

Q And that is the poorest producing well in the field, is it not?

A Yes, it is.

Q In your opinion will the North Hume 5 Fed No. 1, the North Hume 35 No. 1, and the V-F Chevron State No. 1 Wells drain the northern portion of this pool?

A Yes, I believe that they will.

Q And in your opinion as an engineer, is it economically feasible to drill additional wells in this pool? Has it been geologically defined based upon 40 or 80

acre spacing?

A I don't believe that it is, no.

Q In your opinion will one well economically and efficiently drain 160 acres in the North Hume Wolfcamp Pool?

A I believe it will, yes.

Q And do you recommend that 160-acre spacing be maintained in this pool?

A I do.

Q Were Exhibits Five through Eight prepared by you, Mr. Nelson?

A Yes, they were.

Q And in your opinion is 160-acre spacing in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A I think it is, yes.

MR. BRUCE: I move the admission of Exhibits Five through Eight, Mr. Examiner.

MR. CATANACH: Exhibits Five through Eight will be admitted as evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Nelson, how do you explain the two small drainage areas for the two northern wells?

A Basically what I've shown in the calculations is that it is an area of oil drainage. If you look at the previous maps provided by Dennis Butler, you can see that both of these wells are very near the oil/water contact and both produce large quantities of water. I think the small area of oil drainage is due to the position that they're in in the reservoir and it's -- it's the available oil contained in the area that can be drained for these wells.

Q The reservoir data that you used in your equations, did those come from actual well data, from actual porosity and water saturations?

A Yes. They were taken off of the porosity resistivity logs. As testified in previous hearings the log porosity was adjusted due to some core data that we have and actually increased from the log porosity and those are the porosity and saturation numbers for our net pay in the wells.

Q Are either of these two, the wells in Section 5, producing any water?

A Which wells?

Q The wells in Section 5?

A The -- the North Hume 5 Federal No. 1 is producing water at a much lower cut than the wells in the north area.

The Humble Hume 5 State No. 1 is currently essentially water free.

Q Does -- do you know if Santa Fe plans to drill any additional wells in the area?

A No, we don't.

Q You don't.

MR. CATANACH: I have no further questions of the witness. He may be excused.

MR. BRUCE: I have nothing further in this case, Mr. Examiner.

MR. CATANACH: Being nothing further in this case, Case 9175 and 9354 will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9175, 9354 heard by me on July 26 1989.

David R. Catanach, Examiner
Oil Conservation Division

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JULY 26, 1989 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
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Tracy LeCocq	RW Byram	SF
Bill Mueller	Phillips Petro Co.	Odessa TX
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NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JULY 26, 1989 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
Robert M Ahrens	Unocal	Midland TX