STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 9922

EXAMINER HEARING

IN THE MATTER OF:

Application of Heafitz Energy Management, Inc., for Downhole Commingling, Lea County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

May 2, 1990

ORIGINAL

A P P E A R A N C E S

FOR THE APPLICANT:

MONTGOMERY & ANDREWS, P.A.
Attorneys at Law
By: W. PERRY PEARCE
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P.O. Box 2307
Santa Fe, New Mexico 87504-2307

* * *

I N D E X

E X H I B I T S

APPLICANT'S EXHIBITS:

* * *

WHEREUPON, the following proceedings were had at 8:55 a.m.:

EXAMINER CATANACH: Okay, at this time we'll call -- go back and call Case 9922, the Application of Heafitz Energy Management, Inc., for downhole commingling, Lea County, New Mexico.

Appearances in this case?

MR. PEARCE: May it please the Examiner, I'm W. Perry Pearce of the Santa Fe law firm of Montgomery and Andrews, appearing in this matter on behalf of Heafitz Energy Management.

I have one witness who needs to be sworn.

EXAMINER CATANACH: Are there any other appearances in this case?

Would the witness please stand to be sworn in?

(Thereupon, the witness was sworn.)

MR. PEARCE: Thank you, sir.

JOHN BARRIOS,

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

EXAMINATION

BY MR. PEARCE:

Q. For the record, would you please state your name and the city of residence?

A. John Barrios, Oklahoma City.

Q. And how do you spell your last name, sir?

A. B-a-r-r-i-o-s.

Q. And what is your profession?

A. Petroleum engineering.

Q. By whom are you employed, sir?

A. Falcon Engineering Company.

Q. The Applicant in this case is Heafitz Energy Management. What is the relationship between Falcon and Heafitz?

A. Falcon Engineering is agent-operator for the Heafitz Energy Management Company in regards to the well of this hearing.

Q. Have you appeared before the New Mexico Oil Conservation Division or one of its examiners previously?

A. No, sir.

Q. Would you please summarize for us your educational and work experience as it relates to petroleum matters?

A. I'm a 1962 graduate of Louisiana State University, having obtained a BS in petroleum engineering. And since that time I've been involved primarily in analysis, design and execution of deep-well drilling, completion and production matters.

Q. I don't recall if I asked, are you familiar with the Application of Heafitz in this matter?

A. Yes, sir.

MR. PEARCE: Mr. Examiner, I would tender Mr. Barrios as an expert in the field of petroleum engineering.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Pearce) Mr. Barrios, at this time I would like for you to please approach the diagram, if that's easier, that I've hung on the wall -- and it may not be; I see you have another one in front of you -- and discuss what's shown. I've marked that Exhibit Number 1 to this proceeding. What is shown on that exhibit, please?

A. This exhibit is the mechanical schematic of the original wellbore as drilled and put together in 1968 by Skelly Oil, plus the additional mechanical arrangement of the commingled completion for the Devonian, Silurian and Atoka.

Q. Okay, I'd ask you at this time to look at what I've marked as Exhibit Number 2 to this proceeding and describe that for the Examiner.

A. Exhibit Number 2 is a discussion of the production and pressure data for the Atoka and the Devonian-Silurian discovery.

Heafitz Energy Management purchased this property from Texaco in August of 1989. At that time, the well was producing only from the Atoka interval through perforations at 15,565 to 15,616, and daily production was 200 MCF a day at about 1650 p.s.i.g. flowing tubing pressure, 10 to 15 barrels of water per day, plus some small amount of condensate, plus some H_2S concentration was also attendant with the gas flow.

Q. Let me interrupt for a moment. The perforations that you mentioned, the Atoka -- initial Atoka perforations, are they reflected on your Exhibit Number 1?

A. Yes, sir, they are.

Q. And which perforations are those?

A. They are on the left track of the schematic between the depth 15,000 and 16,000 feet.

Q. All right, sir. Go ahead, please.

A. The intent of the property owner was to re-enter the well, rework the Atoka and possibly additional Strawn or Morrow zones behind the 7-5/8 liner, plus evaluate the Devonian-Silurian interval, located below 19,000 feet.

We re-entered the well, squeezing off the Atoka perforations, and drilled out below a 7-5/8 drilling liner that was set at 18,605 feet into open

hole, opened the open hole up to a depth of approximately 19,550 feet, drill-stem tested to Devonian-Silurian intervals with a Hopewell packer test, and at that time had enough positive indication to proceed with a completion, running a production liner in and cementing that liner in place and perforating the Devonian-Silurian.

We did so perforating -- After running the production liner, we perforated the Devonian-Silurian at 19,214 to -225 and 19,382 to -398, as indicated on the schematic, lower right side, acidized and stimulated the Devonian-Silurian interval and float-tested for an average of about a hundred -- about 1.25 million cubic feet a day at flowing tubing pressures ranging from line pressure in the area of about 850 p.s.i.g. up to 1500 p.s.i.g.

After testing the Devonian-Silurian, we isolated away from the Devonian and reperforated the Atoka to test it. Those new perforations are the ones listed on the left track of the schematic.

We acid frac'd the Atoka line interval that the well was originally completed in, flow-tested for a million and a half a day at flowing tubing pressures ranging from 2500 to 3000 p.s.i.g.

Realizing that a commingled completion would

provide better economics for the owner of the property, we discussed the issue with those engineers and commissioners here in Santa Fe and also in Hobbs and requested that we be allowed to commingle production from the Devonian discovery and the re-worked Atoka interval.

As part of Exhibit 2, I have a pressure analysis --

Q. That's the third page of that exhibit?

A. Third page of that document. -- that indicates the pressures existing in the Devonian and the Atoka in its drawn-down condition are compatible, so much so that the difference in shut-in surface pressures from either zone would only be about 20, 25 p.s.i. different.

Specifically, the Devonian midpoint perfs, 19,306, has a P-star of 8375 p.s.i., as obtained from drill-stem test data. The Atoka mid-perfs at 15,591 has a measured 7900 p.s.i. And if you employ a .131 p.s.i.-per-foot gas gradient for column analysis on both zones, either from the zone to the surface or from the upper zone down to the lower zone, you can ascertain that the pressure systems are almost equal.

Realizing that the economics would favor a commingled completion style and that the pressure

systems were very equal and should not provide us any problems with cross-flow between the zones, we obtained verbal approval to proceed with a commingled producing arrangement. That is shown in the center track of the wellbore schematic.

Above the Atoka is a 7-5/8-by-3-3/4 permanent packer with 2-7/8 tubing and seal assembly, proceeding down the hole into the liner top, the five-inch liner top that is set across the Devonian-Silurian interval.

In the 2-7/8 tubing strain is a side-pocket mandrel with check valve, and that is located immediately above the seal assembly at about 17,800 feet. That is a one-way flow-valve arrangement. It requires minimum p.s.i. differential to establish flow from the Atoka into the 2-7/8 tubing. And of course the well is tied back to the surface with a full-strain 2-7/8 tubing from that packer that is set at about 15,140 feet.

Below the top of the 5-inch production liner on the Devonian is set -- We have set a second one-way flow ball-and-seek check valve that will permit flow from the Devonian into the 2-7/8 tubing, but prohibits any flow from the tubing to the Devonian.

Regardless of the pressure system existing at the Atoka or in the Devonian-Silurian perfs, neither

will be able to communicate with the other.

The next page of the Exhibit 2 is a cost comparison of what a dual completion versus a commingled-style completion would have cost the operator, and that's approximately $242,000 difference, the dual completion being more costly than the commingled approach.

Nearly all of the equipment was owned by the operator for the commingled-style completion.

Q. Mr. Barrios, you've outlined your proposal, the savings expected to result from that. Do you believe that commingling of the Atoka and Silurian-Devonian zones in this well will result in the prevention of waste by increasing ultimate recovery from this well?

A. Yes, sir.

Q. And do you believe that the proposal adequately protects the correlative rights of interest owners?

A. Yes, sir, interest owners --

MR. PEARCE: Mr. Examiner, I have nothing further of this witness at this time.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Barrios, you've said the interest was

common in both of these zones?

A. Yes, sir.

Q. Has the well been actually set up for commingling at this point?

A. Yes, sir.

Q. And is it producing?

A. At this point, we are completing installation of surface production equipment, anticipate sometime in the next week, ten days, to begin production. We have tested through the commingled-style completion.

MR. PEARCE: Mr. Examiner, at this time it's reflected in the Application that's on file in this matter, we request permission to work with the Division Office to establish an allocation formula. That is why we have not done all the testing yet, and therefore we have not presented evidence at this hearing of the proper allocation formula.

However, we believe those tests are continuing and that if we are allowed to do so we can work with the District Office to establish that allocation formula.

Q. (By Examiner Catanach) Mr. Barrios, do you think it's possible to get a good allocation on this well?

A. Yes, sir. I should -- I will be able to

isolate the Devonian completely and flow test the Atoka specifically, and then by commingling those two streams and a process of differential would be one method of allocation.

Another method would be that the Atoka production through gas analysis is sweet gas, and the Devonian-Silurian is, of course, sour gas, containing as much as 5000 p.p.m. H_2S, and that would be a direct mathematical relationship as to being to allocate between the two zones, the H_2S concentration ultimately produced in the commingled flowstream.

Q. Now, does the difference in the gas composition present any -- Do you lose any revenue as a result of commingling the two different gas streams?

A. No, sir. Actually, the commingling of the gas streams brings the -- Well, it's an average BTU content. The Atoka BTU content is higher than -- The Atoka gas BTU content is higher than the Devonian, the Devonian being something slightly less than 960 BTU's. The commingled stream actually comes in at something over 1040 BTU's content.

So there's really no loss of BTU value.

Q. There is some water production from the Atoka; is that correct?

A. Originally the Atoka did produce water, but

if you'll look at the first page of Exhibit 2, the early completion efficiency on the Atoka was very low, based on evaluation or analysis of cement bond logs. The Atoka set of perforations were actually communicating with more than one zone of porosity, permeability and hydrocarbon content behind the 7-5/8 liner, originally.

At this point, after having squeezed off those original perforations, we have totally isolated the Atoka zone to the perforations. The Strawn and/or the Morrow are no longer contributory. So the completion efficiency is much greater. The gas flowing through those perforations in the 15,500 to 15,600 interval is Atoka gas, and at this time no formation water.

So we've lost the water, we've lost the condensate and the slight concentrations of H_2S produced under the initial or original completion during Texaco's operation. That's from completely isolating this zone.

Q. Approximately what is the well capable of producing at this point?

A. Testing through the commingled-style hookup, we've flowed the well at 3 1/2 million a day at 3200 p.s.i.g. flowing tubing pressure. This will be the

deepest production in the State of New Mexico, as was the well the deepest well.

Q. Is it your opinion, Mr. Barrios, that the dual completion for this particular well is uneconomic?

A. Based on the amount of cost of the rework, we would have been required to spend approximately an additional 15 percent for a dual completion, 15 percent more funds than have been spent already, versus, as the numbers indicate, something like 3-1/2 to 4 percent additional funds.

The conditions of this well were such that it was -- it was made for a commingled completion because of the pressure systems. The pressure of the Atoka, the remaining pressure in the Atoka, and the initial bottom-hole pressure of the Devonian-Silurian are so near constant on a relative basis that we would not have had any of the cross-flow problems and really allocation problems.

Q. So economics wasn't really a major issue in this -- deciding to commingle this well?

A. Yes, sir, economics were a major issure.

Q. They were?

A. Yes, sir.

Q. Has the BLM consented on this proposed commingling, Mr. Barrios?

A. Yes, sir, we have the same verbal communication with them that we've had with you.

Q. Are there any offset operators to this well that were notified or should have been notified?

MR. PEARCE: If I may, Mr. Examiner, the only offset operator required to be notified under Rule 1207 was the Bureau of Land Management. If your file does not show an affidavit from my office, it's in the mail to you. My office sent that notice as required to the BLM.

EXAMINER CATANACH: Okay, I believe that's all the questions I have of the witness.

Anything further in this case?

MR. PEARCE: Nothing.

EXAMINER CATANACH: Case 9922 will be taken under advisement.

MR. PEARCE: Thank you, Mr. Examiner.

EXAMINER CATANACH: Thank you, sir.

(Thereupon, these proceedings were concluded at 9:18 a.m.)

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, 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 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 May 10, 1990.

STEVEN T. BRENNER
CSR No. 106

My commission expires: October 14, 1990

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9922, heard by me on May 2 1990.

David R. Catanach, Examiner
Oil Conservation Division

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MAY 2, 1990 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
W. Perry Pearce	Montgomery & Andrews, PA	Santa Fe
Jerry Hoover	Conoco	Hobbs
HUGH INGRAM	CONOCO	HOBBS
W T Kellahin	Kellahin Kellahin attorneys	Santa Fe
Maurice Grimmer	Byram Statehouse Report	—
Robert Lee.	Siete Oil & Gas	Roswell
Gene Shumate	"	"
[illegible]	SOCORRO	Midland
Peryl L. Hughes	SOCORRO	MIDLAND
Ray Williamson, Jr.	Williamson Petroleum Consultants for Socorro	
William F. Carr	Campbell and Black, P.A.	Santa Fe
James Bruce	Hinkle Law Firm	Albuquerque

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MAY 2, 1990 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
Carlos Lopez	Hinkle Law Firm	Santa Fe
Bill Selzer	Amerind	Midland
R.C. Leibrock	Amerind Oil Co.	Midland
HANS SHELINE	CONOCO	HOBBS
F. Chavez	OCD	AZTEC
Bonnie Wilson	ORYX	MIDLAND
Tommy Thompson	ANADARKO PETR.	MIDLAND
Charles A. Gray	Oryx Energy Co.	Dallas, Tx.
CLIFF MURRAY	ORYX	MIDLAND, TX
Ray T. Stokes	Heyco	Roswell NM
Robt N Bell	HEYCO	Roswell NM
Tom Hobbs	ORYX	MIDLAND, TX
Robert Kile	CONOCO	Midland TX
Jamy Brooks	HEYCO	ROSWELL