STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

9 May 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production Company for downhole commingling, Lea County, New Mexico. CASE 8181

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

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MR. STAMETS: We'll call next Case 8181.

MR. PEARCE: That case is on the application of Amoco Production Company for downhole commingling, Lea County, New Mexico.

MS. KRUGER: Katherine Kruger for Amoco Production Company. I have a few brief opening remarks.

MR. PEARCE: Okay, before you do.

Do we have any other appearances in this matter?

(Witness sworn.)

MS. KRUGER: We have Mr. William Carr here of Campbell, Byrd, and Black, appearing in behalf of Amoco. There may be a letter in the file to that effect already.

MR. CARR: There should be a letter in the file from Campbell, Byrd, and Black, signed by Scott Hall. It was hand delivered yesterday afternoon. If it isn't there --

MR. STAMETS: It is here.

MR. CARR: -- I will enter my appearance.

MS. KRUGER: Thank you. Should I proceed or should I wait for Mr. Pearce to come back?

MR. STAMETS: You may proceed.

MS. KRUGER: Amoco Production Company is requesting the Oil Conservation Division to approve an exception to statewide rules 303-A to grant authority to downhole commingle the Blinebry, Drinkard and Tubb Pools within the wellbores of the four wells.

The wells that are subject of this application are as follows: The Southland Royalty "A" No. 1, 1980 feet from the north line; 1980 feet from the east line in Unit G, Section 9, Township 21 South, R 37 East.

I won't repeat the township and range. They are all going to be in that township and range.

Southland Royalty "A" No. 2, 660 feet from the north line, 1980 feet from the east line of Unit B, Section 9.

Southland Royalty "A" No. 3, 660 feet from the south line, 1650 feet from the west line in Unit B, Section 4.

And Southland Royalty "A" No. 7, 660 feet from the north line and 585 feet from the west line in Unit A, Section 9, all in Lea County, New Mexico.

All the affected parties have been notified of this application by letter mailed April

10th, 1984 to the Oil Conservation Division. A copy of that letter was sent to Conoco in Hobbs, Gulf Oil in Hobbs, Texaco in Hobbs, and Shell Oil in Houston.

Additionally, notice of this hearing appeared in the New Mexico Statehouse Recording Service on April 27th, 1984.

It is Amoco's opinion that the subject wells will be produced more efficiently if the commingling application presented today should be granted and we will present evidence and testimony today on behalf of these applications to provide the data in support of this contention.

And we have one witness.

STEPHEN SCHEFFLER,

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

DIRECT EXAMINATION

BY MS. KRUGER:

Q Would you please state for the record your name?

A Stephen Scheffler.

Q For whom do you work and in what capacity and at what location?

A I work with Amoco Production Company in our Houston Regional Office as a proration engineer in the

Regulatory Affairs Group.

Q And have you testified previously before the Oil Conservation Division as an expert and were credentials accepted?

A Yes.

MS. KRUGER: Are there any questions regarding Mr. Scheffler's qualifications?

MR. STAMETS: He is considered qualified.

Q Mr. Scheffler, is the subject of today's hearing within the area of your responsibilities with Amoco?

A Yes, it is.

Q And with respect to the exhibits that you will present today, were they prepared either by you or under your direction?

A Yes, they were.

Q Okay, would you please show us your first exhibit and explain that for us?

A Exhibit Number One is a location map of the 320-acre Southland Royalty "A" Lease. I've identified that lease acreage by coloring it in yellow. That acreage is -- covers a portion of Sections 9 and 4 and is located in Township 21 South, Range 37 East of Lea County, New Mexico.

I've also noted on that acreage the eight wells that are currently in existence on the lease. All of those wells are producing from the Blinebry, Drinkard and Tubb in some combination.

The red area that I've outlined around that lease acreage identifies this portion of the township and range that will be used in subsequent exhibits to note -- to identify the offset acreage around our lease.

Q Okay, you have an exhibit that shows the current status of the commingled wells, is that right?

A Yes. Exhibit Number Two identifies the status of current and proposed downhole commingling the Blinebry, Tubb and Drinkard horizons for the subject lease.

I've noted on this exhibit in the boxes that are not colored the horizons which are currently completed in for the subject wells noted. Those boxes that are colored in the color pink are the horizons that we intend to complete in and downhole commingle with the horizons that are currently downhole commingled as per this exhibit in each of those wellbores.

I would point out that the Southland Royalty "A" No. 1 Well is a well that is currently producing from the Abo formation. The Blinebry and Drinkard horizons are currently squeezed off. They have produced in the past and in this application we will be talking about that further in subsequent exhibits; however, we do want approval to open the Blinebry and Drinkard, which have previously produced, as well as the Tubb, which has had no previous production from this horizon, or from this wellbore, and downhole commingle all three.

Q Okay, Exhibit Two-A discusses the

completions of these wells, is that not right?

A Yes, Exhibit Two-A is a summary of the downhole commingled completions that I've identified on the previous exhibit. I've shown the horizon name, the number of completions that are in that horizon, and under comments, the combination of completions that are commingled with that horizon.

As an example, the Blinebry has four completions, three of which are downhole commingled with the Drinkard; one of which is downhole commingled with the Drinkard and Tubb.

I'd like to note that this exhibit identifies the tremendous amount of activity from the standpoint of downhole commingling that does exist on this lease at this time.

Q Have you prepared a history of the prior applications for downhole commingling for this lease?

A Yes. Exhibit Number Three identifies the authorized downhole commingling that has been granted Amoco for the Southland Royalty "A" Lease wells.

On this exhibit I've noted the well name, the case and date, the order and horizons commingled.

I would point out that all of the horizons that are currently downhole commingled were achieved through administrative application with the exception of the Southland Royalty "A" No. 8 which is currently downhole commingled in all three horizons, the Blinebry, Tubb and Drink-

ard.

I'd like to mention that this downhole commingling has existed or has been in effect since 1970 and this is the similar type of downhole commingling request that we are making here today for the subject wells that are part of this application.

Q Okay. Can you indicate for us the position of the subject horizons and subsurface?

A Exhibit Number Four is simply a type log that I've used to identify the relative locations of the Blinebry, Tubb and Drinkard horizons on the Southland Royalty "A" Lease.

This is a log taken from the Southland Royalty "A" No. 3 and the only purpose for this exhibit is to identify the tops as they appear generally throughout this lease area.

Q All right, your next exhibit is a data sheet of the lease requirements, is that right?

A Yes, Exhibit Number Five, Five-A and Five-B identifies Southland Royalty "A" Lease performance for the Blinebry, Tubb and Drinkard production. On these exhibits I've shown for the period from 1-83, January of '83 through January of '84 the number of completions that existed in each of these horizcns, the associated oil, gas and water production on a monthly basis, and the calculated barrels of oil per day per completion, MCFD per day per -- or MCFD per completion and barrels of water per day per comple-

tion that existed at these various times for each of these horizons.

I would point out that as you can see for each of these -- each of these horizons the actual production is relatively low. It is for this reason that this is -- is relatively low on a per completion basis, and it is this low production which is typical of these horizons that have required the dowhole commingling of wells to insure economic operations and additional reserve recovery that might otherwise not be recovered.

Q Okay. The subsequent exhibits are going to be addressing the data regarding a specific well. Would you please proceed with Exhibit Six?

A Exhibit Number Six is a location map of the Southland Royalty "A" Lease. I'm sorry, a location map for Well No. 1, which again is located on the subject lease. That location is identified by the red dot.

Exhibit Six-A is a well history summary for this particular well. I've identified dates and associated main event within the well's history. I will briefly note that those particular events which I have underlined for the purpose of identifying, in 1947 the Drinkard was perforated in this well and in 1962 the Blinebry was perforated. The well was dually completed over these two horizons in 1962, and in 1970 downhole commingling authority was approved and the Blinebry and Drinkard were downhole commingled.

In 1973 the NMOCD reclassified the Blinebry zone at that time as a gas zone due to high gas production and the well was shut in in 1973.

Subsequent to that time both of the horizons were then dually completed in order to separate the high gas producing horizon from the Drinkard oil producing horizon. Production occurred in a dual -- dually completed configuration until 1981 when both the Blinebry and Drinkard perforations were squeezed due to relatively low producing rates.

The well was then deepened and completed in the Wantz-Abo Pool where it is currently realizing its production.

Exhibit Six-B is a --

MR. STAMETS: Where it's what?

A It's realizing the current production. It's now completed in the Abo.

MR. STAMETS: Okay.

A Wantz-Abo Pool.

MR. STAMETS: And what is that current production?

A Let me see, I don't think I have that down. I could get that for you, though. I have it available with me, I Just have to look it up.

MR. STAMETS: Okay.

A It's a gas -- it is a gas well, by the way.

MR. STAMETS: Okay.

A And I can get that information for you.

MS. KRUGER: Would you like the witness to look that up now or later?

MR. STAMETS: Is it a good producer or bad producer?

A It's a very good gas well, yes, sir. Let me see, Mr. Stamets, if I have it here.

MR. STAMETS: What are you going to do with the Abo zone?

A We're going to -- I was going to show you a proposed wellbore sketch. We're going to go ahead and --

MR. STAMETS: Go ahead, then, that's fine.

A Okay. The next exhibit shows the current wellbore configuration that exists out there. As I've noted earlier, we are producing only from the Abo horizon. I've noted here the previously produced Blinebry perforated interval and Drinkard perforated interval. That's the main point of interest on this exhibit.

Both of those horizons are squeezed.

Exhibit Six-C is the administrative order that was granted Amoco to downhole commingle the Blinebry and Drinkard Pools. This, I mentioned earlier in the reviewing the well history, this particular application allowed for the upper pool to be allocated 50 percent of the production and the lower pool, being the Drinkard, to be al-

located 50 percent of the production.

Exhibit Six-D is a well test data plot for the Southland Royalty "A" No. 1 Blinebry oil and gas horizon that previously produced.

I've noted on here in red, green and blue the gas, oil, and water production that was seen in that particular horizon.

As you can see, there's a period when production was not reported or tests were not taken. That is the result of the well, of course, being downhole commingled with the Drinkard.

I might note that the high gas production that I pointed out that occurred prior to the well's abandonment in 19 -- or this horizon's abandonment in early 1981 had come down significantly. Gas production at that time, the last test taken was some 47 MCFD. Oil production was about 4 barrels of oil per day and water was down to 2 barrels of water per day.

Also attached to this set of exhibits is Exhibit Six-E which is a production performance curve for the Drinkard horizon which is currently squeezed.

The purpose of this exhibit is mainly to point out -- merely to point out the production history for that well in terms of oil, gas, and water production and to show the relatively low producing rates that were apparent at the time the well was abandoned, or that horizon was abandoned.

Q Okay.

A Exhibit --

Q I was just going to say Exhibit Seven continues with that well, right?

A Yes, Exhibit Seven is a production summary for the proposed downhole commingled horizons in the Southland Royalty "A" No. 1.

I've noted in the left portion of this exhibit the proposed downhole commingled horizons that Amoco is seeking application approval for, that being the Blinebry, Tubb and Drinkard. For each of those horizons I've noted production as of the last production data that was available, particularly for the Blinebry and Drinkard. That information is shown on this exhibit.

For the Tubb horizon which we are also requesting approval to downhole commingle with the Blinebry and Drinkard, there has been no previous completion in that interval in this well.

I've noted, to give you some idea as to what the type of production that may be expected from this particular horizon would be, I've noted offset Tubb completion data.

As you can see, production listed here as of January of 1984 is low production. Looking at this production on an average rate per Tubb completion basis, we're looking at production of about 2 barrels of oil per day, half a barrel of water per day, and 115 MCFD per day.

Of course that is only an average. That can range according to what we see here on a per well basis.

I want to point out that Exhibit Eight identifies the location of those offset Tubb horizon completions to the Southland Royalty "A" No. 1. Those offset wells are identified by the orange dots.

Exhibit Eight-A through Eight-C, which is attached and which I will not address individually, only to state that these are associated production performance curves for the offset Tubb completions that I've just previously mentioned and I've noted on Exhibit Number Seven.

Exhibit Number Nine is the proposed wellbore configuration that Amoco would prefer in the downhole commingling of the Blinebry, Tubb and Drinkard horizons.

As you can see, we have a dual set of -- a dual completion here in which we have a long string producing from the lower horizon. It is currently producing in this wellbore in the Abo; the upper string producing from the Blinebry, Tubb and Drinkard horizons we're proposing to downhole commingle.

And I can point out that for January of 1984 the production from the Wantz-Abo horizon in the Southland Royalty "A" No. 1 was 2,395 barrels of oil. Water was 632 barrels. Gas produced was 68,269 Mcf.

Exhibit Number Ten is a location map for Well No. 2, the second well for which we are seeking approval to downhole commingle the Blinebry, Tubb and Drinkard

horizons.

Again I've noted here a well -- a summary of the well history. The main events that are of importance with regard to this well is that it has been perforated in the Drinkard, in the Tubb, and in the Blinebry. The Blinebry was squeezed in 1974. Currently we are operating under the authorization by the NMOCD to downhole commingle the Drinkard and Tubb horizons, the two horizons that are currently open to the wellbore.

Attached is a current wellbore configuration that identifies the Tubb perforated intervals and the Drinkard perforated intervals and the squeezed Blinebry intervals.

Attached as Exhibit Ten-C is the Blinebry performance curve that exists and is noted up to the point that this horizon was squeezed. I've noted also the -- attached also as Exhibit Ten-D, the Tubb oil and gas production performance curve through December of 1983.

Attached as Exhibit Ten-E is the Southland Royalty "A" No. 2 Drinkard horizon production performance curve that shows production again through December of 1983.

The Exhibit Eleven shows the production summary again for the proposed downhole commingled horizons for the No. 2 Well, those horizons being the Blinebry, Drinkard and Tubb, the Tubb and Drinkard currently being downhole commingled.

I've noted on here for the Tubb and Drinkard horizons production in January of 1984 that was realized. Again those producing rates are relatively low. For oil we are producing as a result of the allocation some 227 MCFD of gas from that Tubb horizon.

The Blinebry horizon which has previouly been squeezed, the last rate that was obtained from that well prior to its being abandoned was 4.2 barrels of oil per day, 1.4 barrels per day, and 146 MCFD.

Exhibit Number Twelve is the proposed wellbore configuration for the Southland Royalty "A" No. 2. It notes the horizons, particularly the perforated intervals in these horizons that we would want to commingle.

I've noted here for the Blinebry by color coding the horizons that had previously produced and we would want to reopen, those being the red underlined intervals. The intervals that have not previously produced in the Blinebry are colored in green, are underlined in green.

Exhibit Number Thirteen is the Southland Royalty Well No. 3 location map. This exhibit shows the well history summary for the No. 3. It notes that the Drinkard and Tubb have previously been produced in this well. We have received permission to downhole commingle the Drinkard and Tubb in this particular well. That is the current producing coonfiguration in the wellbore.

Exhibit Thirteen-B notes the current

wellbore configuration and the perforated intervals over the Tubb and Drinkard that are currently in existence.

Q Excuse me, that would be Exhibit Thirteen-C for the wellbore configuration and Thirteen-B for the history?

A I'm sorry.

Q You may have those mixed up in there.

A Thirteen-A would be the well history summary.

Thirteen-B would be the Southland Royalty "A" current wellbore configuration, I'm sorry.

Thirteen-C is again a production performance curve, which notes the well's production performance since 1970 through 12 of 1983 for the Tubb oil and gas producing horizon.

Exhibit Thirteen-D identifies the production performance from the Drinkard from 1970 through December of 1983.

Again Exhibit Number Fourteen is a production summary for the proposed downhole commingled horizons in the Southland Royalty "A" No. 3. I've noted on this exhibit the Tubb and Drinnkard which are currently commingled. I've noted their production as of January 1 of 1984. As is indicated, these are relatively low rates. The Blinebry, which has not previously been produced in this horizon, we would propose to open and commingle with the Tubb and Drinkard. To get, again, some idea as to what the

type of production that may be expected in the Blinebry would be, I've noted offset Blinebry completions and the production that is realized or has been realized from these wells as of January, 1984.

Again, the average rate per Blinebry completion is 2.7 barrels of oil per day, no water, and 44 MCFD per day.

These offset well locations are noted on the next exhibit relative to the location of the No. 3 Well.

Attached to this exhibit again, Exhibit Fifteen-A through Fifteen-E, are the associated production curves for the offset Blinebry completions through December of 1983.

Exhibit Number Sixteen identifies the proposed wellbore configuration for the No. 3 Well. I've noted here for the interval that we propose to open that has not previously been produced, that being the Blinebry, the intervals that we would be perforating are underlined in green. These will be commingled with existing perforations shown for the Tubb and Drinkard horizons.

Exhibit Number Seventeen is a location map for the Southland Royalty "A" -- I'm sorry, for the Well No. 7, the subject lease, that location being identified by the red dot.

I've noted the, again, well history summary for this well. The well has been perforated in the Drinkard and in the Blinebry. It was dually completed in

the Blinebry and Drinkard in 1962 and in 1972 it commenced downhole commingling which had been previously authorized by the Commission.

The No. 7 Well's current configuration is shown as Exhibit Seventeen-B which identifies the Blinebry perfs and Drinkard perfs which are currently producing.

Also noted, of course, here is the Abo perfs for the interval that has been plugged back and had previously produced.

Attached to this exhibit as Exhibit Seventeen-C is a production performance curve for the Blinebry oil and gas horizon through December of '83. Also attached is a performance curve for the Drinkard horizon through 12 of '83.

A production summary for the proposed downhole commingled horizons for the Southland Royalty "A" No. 7 is noted as Exhibit Eighteen. Again I've shown the Blinebry, Tubb and Drinkard as the proposed downhole commingled horizons with the Blinebry and Drinkard currently being commingled. We would like to include the Tubb horizon after completion, which has not previously been completed in this horizon -- or in this wellbore.

I have shown the production for the Blinebry and Drinkard again to be relatively low with the Blinebry production producing at 14.5 barrels of oil per day, which is low producing rate, not yet at a marginal limit.

The offset Tubb completions, as I mentioned before, which are identified here to give us some idea as to the type of production that might be expected in the completion interval over the Tubb, I've an average rate per Tubb completion here of one barrel of oil per day, one barrel of water per day, and 143 MCFD.

We would, of course, hope to do better than that and that could, of course, result in production higher as is indicated on an individual well basis here for production that was realized for these offset wells for January of 1984.

Again, Exhibit Number Nineteen is a location of the offset Tubb horizons to the Southland Royalty "A" No. 7 Well.

Exhibits Nineteen-A through Nineteen-D are the associated production performance curves for the offset Tubb completions through December of '83.

Exhibit Number Twenty is the proposed wellbore configuration. It identifies the current Blinebry and Drinkard perforations that would continue to be producing with the downhole commingled configuration.

I have identified the proposed perforations that would be included over the Tubb and have underlined those in green to represent horizons -- or intervals that have not previously produced in this wellbore.

The last exhibit, Exhibit Number Twenty-one, is a bottom hole pressure data sheet that I have gen-

erated for each of the subject wells for which we're requesting downhole commingling. I've shown the horizon, the perforated interval that would exist after downhole commingling, the midpoint of these perforations, the bottom hole pressure that is correlative to the midpoint perforated interval, and a bottom hole pressure corrected to a common subsea datum -3050 feet.

I would point out that these pressures are estimated by averaging available bottom hole pressure from offset operated wells as reported to the Oil Conservation Division and from available Southland Royalty Lease pressure data.

I would note that in the last column, which is the pressure data that's corrected to the -3050 feet, there is a very, actually a very small amount of pressure difference between the three horizons, approximately 170 pounds on the average between the highest and lowest pressure, that being between the -- well, that being the Blinebry -- that -- with the Blinebry being the higher pressure of the three horizons.

I would state, I'd like to state that the bottom hole pressure of the lower pressure zone in each of these cases is not less than 50 percent of the bottom hole pressure of the higher pressure zone adjusted to a common datum. In fact, it's -- the lower pressure zone is approximately 70 to 75 percent of the higher pressure zone.

Q With respect to these bottom hole pres-

sures, in your opinion do you foresee any detrimental effect in the downhole commingling proposed in these applications?

A No, I do not.

MS. KRUGER: We have a few questions that I'd like to ask of the witness but I'd like to ask that Exhibits One through Twenty-one and the subparts therein be admitted into evidence.

MR. STAMETS: The exhibits will be admitted.

Q Mr. Scheffler, in your opinion will the fluids from each zone proposed to be downhole commingled, will they be compatible so that precipitation will not occur?

A There will be no problem with incompatibility of fluids. Based upon our experience in downhole commingling in this area we haven't observed since inintially downhole commingling any of these horizons problems with incompatibility of the fluids produced.

Q Upon reviewing the exhibits and testimony today, in your opinion with respect to oil zones to be commingled, will any of these zones produce more water than the combined oil limit as determined under Rule 303?

A From the information that was reviewed, it appears that all of the water production will be very negligible. It would not be greater than the combined oil production after downhole commingling.

Q Can you state that the ownership in the

zones proposed for downhole commingling are common with respect to working interest, royalty interest, and overriding royalty interest that might be present?

A Yes, they are.

Q Will the proposed downhole commingling allow for a more econmic and streamlined operation of the four wells?

A Yes, it will.

Q And in turn will this allow an increase in the reserves to be recovered which might otherwise not be recovered?

A Yes.

Q In your opinion will the requested downhole commingling application which is presented today help prevent waste and in addition will not jeopardize the correlative rights of the other parties in the pool?

A It will prevent waste and will not jeopardize correlative rights.

Q Can you briefly explain to us what you recommend for determining the allocation formula with respect to the four subject wells?

A Yes. What we would like to be able to do is to coordinate with the Hobbs District Office the actual allocation formula to be assigned to each of the individual producing horizons after commingling has occurred. This will be worked out between the Hobbs District Office and the Amoco District Office in Hobbs.

MS. KRUGER: We have no further direct questions of the witness. Amoco will be glad to submit a proposed order to facilitate matters if this will be acceptable to you.

MR. STAMETS: It might very well be helpful. I would appreciate that.

MS. KRUGER: We will try to get one in the mail as soon as possible.

MR. STAMETS: Are there any questions of this witness?

Mr. Scheffler?

A I don't have a question but I need to state one thing, Mr. Stamets.

I, on the first, or rather second exhibit, I wanted to point something out that is in error.

Let's see if I can find it. It's the exhibit that's identified as Exhibit Number Two, status of current downhole commingling Blinebry, Tubb, Drinkard horizons for the subject lease.

I've noted there in the, well, with the box that identifies current downhole commingled horizons for the Well No. 5, up to the upper lefthand corner --

MS. KRUGER: Lefthand corner?

A I'm sorry, righthand corner. That the Blinebry is currently a gas producing horizon, that is not correct. That is an oil producing horizon, as are all the other horizons with the exception of the Tubb, which is

noted as gas for the No. 4.

MR. STAMETS: Okay. I presume you intend to file on the No. 1 Well as a dual completion --

A Yes, sir, the dual -- excuse me.

MR. STAMETS: -- in the Hobbs office.

A Yes, sir, the District will handle that operation.

MR. STAMETS: Any other questions of the witness? He may be excused.

Anything further in this case?

The case 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 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. 8181 heard by me on 5-8, 1980.

Richard L. Stamets, Examiner
Oil Conservation Division