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

31 August 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Conoco Inc. for down-hole commingling, Lea County, New Mexico. CASE 9471

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

For the Applicant: W. Thomas Kellahin
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# I N D E X

HUGH INGRAM



# E X H I B I T S

MR. STOGNER: Call next Case Number 9471, which is the application of Conoco, Incorporated for downhole commingling, Lea County, New Mexico.

Call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin & Aubrey. I'm appearing on behalf of Conoco, Inc., and I have one witness.

MR. STOGNER: Are there any other appearances?

There being none, will the witness please stand and raise your right hand?

(Witness sworn.)

Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Kellahin.

HUGH INGRAM,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Ingram, for the record would you please state your name and occupation?

A My name is Hugh Ingram. I'm Conservation Coordinator for Conoco, Inc., for our Hobbs Division, all of New Mexico.

Q Mr. Ingram, have you previously qualified as an expert before the Oil Conservation Division in matters such as downhole commingling?

A Yes, I have.

Q And have you made a study and prepared certain exhibits for review by the Examiner in this case, 9471?

A Yes, I have.

MR. KELLAHIN: We tender Mr. Ingram as an expert, Mr. Stogner.

MR. STOGNER: Mr. Ingram is so qualified.

Q Mr. Ingram, would you take a moment and first of all describe in a general way what Conoco seeks to accomplish with this application?

A In Case 9471 Conoco seeks to commingle production in the wellbore for its State F-1, Well No. 9,

producing from the Hardy Blinebry and Hardy Tubb-Drinkard Pools.

Q What is the current status of the well, Mr. Ingram?

A The current status of the well is a single Blinebry producing well.

Q Let me direct your attention to Exhibit Number One and would you identify and describe the information contained on that exhibit?

A Exhibit Number One is OCD Form C-102. It was filed with the Commission in 1980 when this well was originally drilled. The purpose for the exhibit is to show the location of the State F-1 Well No. 9 to be 330 feet from the south and west lines of Section 1, Township 21 South, Range 36 East, Lea County, New Mexico.

Q What is the spacing unit assigned to the well?

A 40 acres, both zones.

Q Are you aware of any opposition to this application by either offset operators or other interested parties?

A No. There's only one offset operator, being Amoco, and Amoco was mailed a copy of the application when we originally filed for administrative application and they made no objection.

Q Let me direct your attention to Exhibit Number Two and would you identify and describe that exhibit?

A Exhibit Number Two is an area map showing the offset operator to the well of this application. You will note that Amoco operates the offsetting wells, being their State C Tract 11 Well No. 11, which is a west offset; their --

Q All right, let me go back, in Section 2, then, the west offset to your Well No. 9 --

A That's right.

Q -- is the Amoco Well 11?

A That's correct.

Q And what is the status of that well?

A That well is a producing well in the Blinebry and Tubb-Drinkard Pools it is presently downhole commingled in those two.

Q And that's the same type of relief that you seek from Mr. Stogner today?

A That's correct.

Q All right. Are there any other wells in this immediate vicinity that are similarly downhole commingled?

A Yes. Looking to the south in Section 11, Amoco operates two wells in the north half of the

northeast quarter. Well No. 3, let me check my notes here to be sure, Well No. 3 produces from the Blinebry and Tubb-Drinkard Pools and is also downhole commingled.

Well No. 4 is currently producing only from the Blinebry Pool.

And over in Section 12 Well No. 5 is producing from the Blinebry and Tubb Drinkard pools and that well is also downhole commingled.

Q How was this matter finally placed upon the examiner docket, Mr. Ingram?

A In my absence from the office an application was made for administrative approval for downhole commingling and --

Q When was that -- when was that filed, do you recall the approximate date?

A That was filed June 17th, 1988.

Q In filing the administrative application did your office cause a copy of the letter and application to be sent to Amoco in Odessa?

A Yes, we did.

Q Describe for us why it was you were not able to successfully obtain administrative approval for your application.

A There is regulation in the statewide rule which states that in downhole commingling if either

zone produces more water than the combined oil allowable for both zones, then it cannot be approved administratively.

Q Let's look at Exhibits Three and Three-A and see your production from the well.

A Exhibit Number Three is the most recent well test for the State F-1 Well No. 9, producing from the Blinebry zone. This well test shows in 24 hours the well made 16 barrels of water, 15 barrels of oil, and 112 MCF gas.

Exhibit Number Three-A is a similar test for the Tubb-Drinkard zone. That test showed in 24 hours the well made 88 barrels of water, 6 barrels of oil and 58 MCF gas.

Q What do you anticipate the combined water production from the Tubb and Drinkard zones?

A We estimate the combined water production to be somewhere around 100 barrels, maybe a little bit more, anywhere from 100 to 105 or 10.

Q And under the regulations for this depth what would be your oil allowable for the combined production?

A The oil allowable for this depth would be 40 barrels for both zones.

Q And what do you anticipate to be the

combined potential for the oil production from the two zones?

A 21 barrels.

Q Do you have any pressure information with regards to either or both of the zones?

A Yes. Based on static fluid levels when both zones were producing we estimated the pressure would be 1660 psi from the Blinebry and about 1800 psi for the Tubb Drinkard.

Q Have you and the engineering staff of Conoco reviewed that information to determine whether or not Conoco as operator can expect cross flow to occur between those two zones?

A Yes, we have. We don't expect cross flow to be any problem at all. As a matter of fact, we will install producing equipment on this well that was originally used in the Drinkard, for the Drinkard formation and we expect that that producing equipment will keep this fluid level pumped down below the Blinebry perfs for sure and probably below the Drinkard, Tubb-Drinkard perfs, as well.

Q Both these zones, then, do require additional lift.

A That's correct.

Q And are both zones currently capable of

producing?

A Yes, both zones are capable of producing at this time; however, we are not producing the Tubb-Drinkard zone, and I will explain that in reference to future exhibits.

Q All right. Let's turn to Exhibit Four and have you identify and describe that exhibit.

A Exhibit Number Four is a downhole schematic showing how this well was designed during the time that it was produced as both a Blinebry and a Tubb-Drinkard well with separation between the two zones.

Q Let's turn to Exhibit Number Five and have you identify and describe that exhibit.

A Exhibit Number Five is how the well is presently equipped. We found in reviewing our cost statements and net lease operating statements that we were losing money producing the Tubb-Drinkard zone and so we set a retrievable bridge plug between the two zones and since March of this year we've produced it as a single Blinebry producer.

Q Turn to Exhibit Six and identify that.

A Exhibit Number Six is a wellbore diagram showing how we propose to equip the well after downhole commingling is approved, showing the tubing anchor set above the Blinebry perfs and both sets of perfs, the Bline-

bry and the Tubb-Drinkard perfs both being open to production.

Q Now, Exhibit Seven and Seven-A, Mr. Ingram.

A Exhibit Number Seven is a production decline curve drawn for the Blinebry zone. You can see there the well began producing, it was drilled in 1980. In 1983 where you see a pretty sharp decline in production there, in 1983 we installed artificial lift equipment and since time we have seen a decline of somewhere in the neighborhood of 10, between 10 and 11 percent annual natural decline.

Exhibit Number Seven-A is a similar exhibit for the Tubb-Drinkard zone and we see very similar characteristics of production for the Tubb-Drinkard, declining at a very similar rate of 10, between 10 and 11 percent.

Q Do you have a recommendation to the Examiner as to an allocation formula between the two pools?

A Yes. Based on production history and actually based on the production decline curves, rather than Exhibits Three and Three-A, which is simply the most recent tests for these two zones, I believe that an allocation based on Exhibits Seven and Seven-A will be more representative of the production from each zone, and based

on these two exhibits I recommend that the oil production be allocated 62 percent to the Blinebry, 38 percent to the Tubb-Drinkard, and breaking it down into barrels and looking at Exhibit Number Seven, I've chosen about 13 barrels barrels of oil per day for the Blinebry and 8 barrels of oil per day for the Tubb-Drinkard, giving us 62-38 percent breakdown.

For the gas, using the same two exhibits, I recommend 57 percent allocation to the Blinebry, which is about 160 MCF, and 43 percent gas allocation to the Tubb-Drinkard, which is approximately 120 MCF per day.

Q Why have you recommended to the Examiner he use the decline curves as a basis to make the allocation as opposed to having each zone tested separately and then making the allocation based upon current tests?

A I believe that production history for the two zones, which is what we're looking at in Exhibits Seven and Seven-A, is more representative of what those formations will give up in the way of oil and water, and rather than a single 24-hour well test that might have been taken before commingling and even after commingling. I think that the production decline curve would be a very accurate allocation method.

Q Do you and the engineering staff for Conoco have an opinion as to what is the likely source of

the water produced?

A At this point in time we have not determined exactly where the water is coming from but before we actually downhole commingle, we will probably run a log and make that determination. If we find that the water zone is isolated pretty much, say, toward the bottom perfs in the Drinkard zone, then we would take steps to shut off that -- that high water producing zone.

But at this point in time we really don't know for sure where the water is coming from. Historically it's been there and we don't have any logs at this point in time to show where it's coming from.

Q Have you determined whether offset operators such as Amoco with their commingled wells experience similar water production problems?

A In reviewing the -- Amoco's records in the Oil Conservation Division Office in Hobbs, I found that in some of their wells the water production is not as high as ours, and in one well that I looked at, and I don't recall now exactly which well it was, the water production from that well was similar, maybe not quite as high, but very similar, to the water production in our Drinkard zone.

Q Does your official lift equipment designated for the well have the capacity to lift all the fluids?

A Yes. As I stated before, we will use the same producing equipment that was used -- that was installed for the Drinkard zone back in 1983. In looking at the production decline curve you can see very easily that we were moving more fluid at that point in time than we will be moving from both zones at this time.

Q So regardless of the source of the water, then, the lift equipment will have the capacity to move the oil and the water out of the wellbore and not let water cross migrate or flow into any of the producing zones.

A That's correct. We, what we plan to do is we will -- of course you never want too much pump submergence, anyway, and so we want to keep the fluid level pumped down probably below the Drinkard perfs. We'll set the pump maybe, oh, 75 to 100 feet below the Drinkard perfs, and then we will keep the fluid level pumped down to -- we'd like to keep it somewhere in the neighborhood of 50 to -- between 50 and 100 barrels above the pump setting depth.

Q Are both ownerships in both formations identical, Mr. Ingram?

A Yes, they are.

Q And what about the gravity and the price of the oil produced from each zone?

A The gravity of oil from both zones is about 44.4 degrees and the price per barrel for both zones is identical.

Q Do you have an opinion, Mr. Ingram, as to whether approval of this application will prevent waste?

A Yes. In doing the well -- and referring to Exhibit Seven-A, we have estimated the remaining reserves in the Drinkard zone to be somewhere around 22,000 barrels; that is, following a straight line decline to an economic limit of about 3 barrels a day, and so that -- that gives us an estimated 22,000 barrels of reserves that we feel will be produced under downhole commingled conditions that would not be produced under separation conditions.

Q And do you have an opinion as to whether approval of this application would violate the correlative rights of any of the interested parties?

A I don't believe they would violate correlative rights of any party.

MR. KELLAHIN: That concludes my examination of Mr. Ingram, Mr. Stogner.

We move the introduction of Conoco Exhibits One through Seven-A.

MR. STOGNER: Exhibits One through Seven-A will be admitted into evidence at this

time.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Ingram, would you run that gas allocation by me again, both the percentage and the production figures?

A Okay. The recommended gas allocation is for the Blinebry 57 percent; that's 160 MCF. For the Tubb-Drinkard, we're recommending 43 percent, which is about 120 MCF per day.

Q And the oil allocation is 52 percent for the Blinebry and 38 percent for the Tubb-Drinkard, is that correct?

A Yes, sir.

Q Okay. Just for a little historical data, when was this well drilled?

A This well was drilled in 1980.

Q And it was dually completed until what time?

A It flowed until 1983 at which pumping equipment was installed in both zones and it was produced as a separate dual well until March of this year when the Tubb-Drinkard zone was isolated and no longer produced.

Q Okay. When I refer to your Exhibit Number Four, that's your previous dual completion wellbore diagram?

A Uh-huh.

Q What's that small tubing over to the right?

A I'm not -- that small what?

Q You've got three strings of tubing running from --

A Oh, oh, that's a vent string.

Q A vent string.

A Uh-huh, to relieve some of the pressure from the lower zone.

Q Would that be gas production?

A Well, yes, it would just be mostly a vapor, a vent, no --

Q No production from the vent.

A No production, right.

Q Okay. Do you have an idea of what percentage of the water is coming from the Drinkard?

A I haven't calculated percent but I think the -- the one test that's shown on Exhibits Three and Three-A are fairly representative of water, one of them being, I think, 16 barrels from the Blinebry and 88 barrels from the Tubb-Drinkard, and I think that is fairly repre-

sentative, but it might be slightly different, but not enough to be significant.

MR. STOGNER: Okay, I have no further questions of this witness.

Are there any other questions of Mr. Ingram?

MR. KELLAHIN: No, sir.

MR. STOGNER: He may be excused.

Anything further in Case Number 9471?

MR. HALL: Mr. Examiner, my name is Scott Hall from the Campbell & Black law firm on behalf of Amoco Production Company.

It's my understanding that Amoco opposes the application. We ask that the record be kept open until the next Examiner hearing for Amoco to have an opportunity to present some testimony.

MR. KELLAHIN: I'd object, Mr. Examiner. They were provided notice; obviously Mr. Hall was able to come today. Today's the day of the hearing.

We'd ask that you take the case under advisement and enter an appropriate order.

MR. STOGNER: What is the basis of your objection, Mr. Hall?

MR. HALL: Instructions from the client. I don't have much more information than that.

MR. STOGNER: I have records that Amoco was notified. Is that an issue?

MR. HALL: I don't believe so.

MR. STOGNER: Well, Mr. Hall, it appears to me that Amoco was notified and you're obviously here today. I'm going to take this case under advisement.

Your objection will be so noted.

Anything further, or do you have any questions of this witness?

MR. HALL: No, sir.

MR. STOGNER: 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 (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. 9471, heard by me on 31 August 1988.

Michael E. Stogner, Examiner
Oil Conservation Division