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:

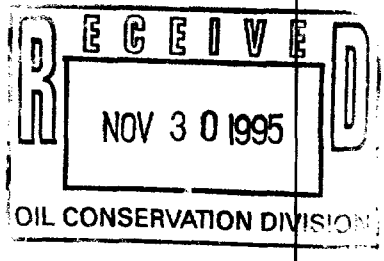
APPLICATION OF TEXACO EXPLORATION AND PRODUCTION, INC., FOR DOWNHOLE COMMINGLING, LEA COUNTY, NEW MEXICO

CASE NO. 11,429

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING



BEFORE: DAVID R. CATANACH, Hearing Examiner

November 16th, 1995

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, November 16th, 1995, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, 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

November 16th, 1995
Examiner Hearing
CASE NO. 11,429

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A P P E A R A N C E S

FOR THE DIVISION:

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FOR THE APPLICANT:

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Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

ALSO PRESENT:

LESLYN M. SWIERC
Landman
Meridian Oil, Inc.

* * *

WHEREUPON, the following proceedings were had at 1:05 p.m.:

EXAMINER CATANACH: At this time we'll call Case 11,429.

MR. CARROLL: Application of Texaco Exploration and Production, Inc., for downhole commingling, Lea County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr and Berge.

We represent Texaco Exploration and Production, Inc., and I have one witness in this matter.

EXAMINER CATANACH: Any additional appearances?

Will the witness please stand to be sworn in at this time?

(Thereupon, the witness was sworn.)

JAMES R. DORE,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. James R. Dore, and I live in Denver, Colorado.

Q. Mr. Dore, by whom are you employed?

A. Texaco.

Q. And what is your current position with Texaco?

A. Advanced petroleum engineer.

Q. Have you previously testified before the New Mexico Oil Conservation Division?

A. Yes, I have.

Q. And at the time of that testimony, were your credentials as a petroleum engineer accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Application filed in this case on behalf of Texaco?

A. Yes.

Q. And are you familiar with Texaco's plans for its proposed development area?

A. Yes.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER CATANACH: Yes, they are.

Q. (By Mr. Carr) Mr. Dore, could you briefly describe to Mr. Catanach what it is Texaco seeks to accomplish with this Application?

A. An order from the Division authorizing the downhole commingling of production from the Delaware

formation, West Triste Draw-Delaware Pool, and the Bone Springs formation, South Sand Dunes-Bone Springs Pool, in wellbores of existing or future wells, drilled on certain lands in Lea County, New Mexico.

Q. Have you prepared exhibits for presentation here today?

A. Yes.

Q. Let's go to what has been marked Texaco Exhibit Number 1. I would ask you to identify this and then review the information contained thereon.

A. This is a plat of the development area. The development area is outlined in red. It is the west half of the east half and the east half of west half of Section 31, Township 23 South, Range 23 East [*sic*].

All of the operators in the commingled pools in the development area and the offset areas are identified on the plat.

Q. And what range is the property located in?

A. Range 32 East.

Q. Is the ownership in each of the zones that you're proposing to commingle common throughout the development area?

A. Yes.

Q. We're talking working interest, royalty interest and any other override?

A. That's correct.

Q. Let's go to Exhibit Number 2. Can you identify that?

A. Exhibit Number 2 is an isopach of a representative Bone Springs sand, in this case an Upper Bone Springs sand. It is a map on a 12-percent porosity cutoff, which represents the way that we map to show the difference between an economically productive reservoir in this area and those which are not.

It shows a north-south linear trend through the development area, and it also shows the trace for a Bone Springs cross-section, B-B'.

Q. And that's your Exhibit Number 3?

A. That is correct.

Q. All right. Let's go to that exhibit, and I'd ask you to review for the Examiner the information contained thereon.

A. This exhibit shows the Upper Bone Springs interval throughout the development area and offset to the north and to the south. The top of the Bone Springs interval shown lies directly below the base of the Delaware Mountain Group.

And it also shows that the Upper Bone Springs zone displayed in this cross-section is similar and continuous throughout the development area and offset to

the development area.

Q. All right, let's go to the Delaware formation now, and I would ask you to go to what has been marked Exhibit Number 4, your isopach of the Delaware, and review that for Mr. Catanach.

A. This is an isopach of the Upper Brushy Canyon member of the Delaware Mountain Group, mapped on the 14-percent porosity cutoff, which represents, again, our method of mapping to show the difference between economic production in this reservoir and that which is not.

It shows the same type of north-south trend, and it also shows a trace for the Delaware cross-section, A-A', which is the next exhibit.

Q. How much vertical separation, approximately, do we have between the Delaware and the Bone Springs?

A. The top of the Delaware Mountain Group is approximately 2700 feet above the top of the Bone Springs. The top of the Upper Brushy Canyon as exhibited here is approximately 1500 feet above the top of the Bone Springs. And the base of the Brushy Canyon formation is directly above the -- the base of the Brushy Canyon is directly above the Bone Springs formation.

Q. All right. Let's go to Texaco Exhibit Number 5, the cross-section for the Delaware, and I would ask you to review that for Mr. Catanach.

A. This is an exhibit showing the Upper Brushy Canyon sand, which is again a member of the Delaware Mountain group, and it shows similar characteristics throughout the development area and north and south of the development area, and it shows it is continuous throughout this area.

Q. What is Exhibit Number 6?

A. Exhibit Number 6 is a well data sheet for an example well in our development area, which is the SDE 31 Federal Number 2, which is located in Unit C, Unit Letter C, 660 from the north and 1880 [*sic*] from the west of Section 31.

The well currently, or initially, was completed in the lower pool, which is the Sand Dunes South-Bone Springs Pool, at 8571 feet to 8623 feet. As of August, the last production test I have, the well was still flowing and surging at times, and we were getting prepared to put a pumping equipment on at that time. The well was producing 48 barrels of oil per day and 680 MCF per day.

Recently, in the last couple of weeks, we have recompleted into the upper pool, the West Triste Draw-Delaware Pool, at 7170 feet to 7222 feet. We're currently testing this zone.

I've got a report this morning that's not on this data sheet. It produced 124 oil, 50 gas, 202 load water,

and it was pumping on a surface pump at the time.

Q. Could you refer to Texaco Exhibit Number 7 and, using this exhibit, review the pressure data you have on the Bone Springs completion in this area?

A. Exhibit 7 is the cover sheet from a transient pressure analysis report done by Schlumberger on the Texaco SDE 31 Fed 2, and basically it summarizes the results of that test. The extrapolated bottomhole pressure, initial pressure, was 3549 p.s.i.

Q. You have pressure data now on the Delaware formation; is that correct?

A. That's correct. I have pressure data, Exhibit 7A, that was provided to me by Santa Fe. It's a cover sheet from a transient analysis done by Gist and Statton for Enron Oil and Gas, which is the predecessor to Santa Fe, on the Mesaverde 6 Federal 5, which is approximately one mile south of the 31-2, and it shows that the initial bottomhole pressure was 2145 pounds.

Q. Mr. Dore, do you anticipate the potential for any crossflow between these pools?

A. No, no crossflow between the commingled zones is anticipated. The bottomhole pressure of the lower pressured zone is more than 50 percent of the bottomhole pressure of the higher-pressured zone, adjusted to a common datum.

Q. Could you identify what is marked Texaco Exhibit 8?

A. Exhibit 8 are nine representative production graphs, rate-time graphs, from the development in the area and also the sections to the north and south. The Meridian data was provided to me by Meridian, and the same thing for the Santa Fe data. So we have fairly recent data.

The decline curves show both the Bone Springs and the Delaware zones have established decline rates. I expect that the Delaware wells will behave approximately like the Santa Fe Energy Mesaverde 6 Federal 5, which is the second sheet from the last. At least we're hopeful of that.

And the reference under the Bone Springs curves would be the Texaco SDE 31 Federal 2.

Q. These show wells have reached the point in their producing life where you really have an established producing rate; is that not correct?

A. In most cases they're still declining at some rate, but we expect them, both the Bone Springs and Delaware zones, to have a hyperbolic decline instead of settling in about 20 barrels a day each.

Q. And that's what you anticipate you'll be able to achieve from these zones?

A. That's correct.

Q. Will the value of the production after commingling be equal to or exceed the value of the production if you produce the formation separately?

A. The reserves recovered will be approximately the same. Commingling will be more efficient and the value of the production will be greater since we'll get the production earlier.

Q. How does Texaco recommend that the production between the commingled zones actually be allocated?

A. We'll have established production in the Bone Springs, in our development area, at the time we recomplete. We will test the Delaware zones separately and then commingle, and we will work out the allocation percentages with the Hobbs District Supervisor.

Q. Do you prefer to isolate the zones and test them as to a running production log?

A. Yes, we do.

Q. Now, this -- with this Application, you are actually seeking the authority for the commingling of these zones; that's correct?

A. That is correct.

Q. And you will then provide additional data that can be utilized on a well-by-well basis for the purposes of allocating production?

A. We'll provide any data that is requested, yes.

Q. And that would apply to any additional data concerning the commingling itself that the Division may desire?

A. That is correct.

Q. Exactly what methods are you intending to use to test the zones? Are you just going to --

A. We will, after we -- Again, we have established production on the Bone Springs in the development area. We will set a cast- -- or a retrievable bridge plug above this zone when we recomplete to the Delaware, to pump test the Delaware zones individually.

Q. Let's go to Exhibit Number 9. Would you identify that, please?

A. Exhibit Number 9 is a wellbore diagram and completion procedure for the SDE Federal 31 Number 2 workover in the Delaware.

It shows that the surface casing is set -- It's 970 feet, cemented to the surface, intermediate string at 4500 feet, cemented to the surface, and the production string set to 8700 feet, cemented back to the intermediate string.

The existing perforations in the Bone Springs is at 8571 to 8623, and the recompletion into the Delaware is at 7170 to 7222 feet.

The second and third pages is the completion

procedure we used to complete into the Delaware, which involved setting the bridge plug at 8500 feet, perf'ing the desired interval. We acidized the interval first and swabbed, and then we frac'd it with 7200 gallons of crosslinked gel and 25,000 pounds of 1630 Ottawa sand, and then we have set the surface pumping equipment and have tested the well for two and a half days now.

Q. Do you anticipate any problems with the compatibilities of the fluids that will be commingled?

A. No.

Q. Do you have a copy of a water analysis for the water in this area?

A. Yes, Exhibit Number 10 has some information about the waters, some tests performed by Reservoirs, Inc.

The first page of the exhibit shows that they mixed the four samples of the simulated Bone Springs and Brushy Canyon water, and during the test period, for 48 hours, no physical change or precipitation was observed in the mixtures.

Page number 2 is a sample for the Bone Springs, which shows the total dissolved solids of 89,090 [*sic*].

And page 3 is a sample for the Brushy Canyon, which shows TDS of 269,640.

We also had tests run by -- a special core analysis run by Reservoirs, Inc. We were -- In the initial

development of this area, we were thinking about flooding the Bone Springs zone with Brushy Canyon water, so we did some basic rock properties, critical velocity and rock fluid compatibility studies.

The next few pages of data show the results of these tests, comparing the percent of initial perm to the brine flow through the core samples, and the tests indicated that there was no significant sensitivity problems between the rock and water, and no fluid-fluid compatibility problems.

Q. So we see no formation damage, we see no incompatibility problems from what you're proposing?

A. That's correct.

Q. Is Exhibit Number 11 a copy of an affidavit confirming that notice has been provided of this hearing as required by Oil Conservation Division Rules?

A. Yes.

Q. And attached to that affidavit are the names of the parties who have been notified and copies of the letters and the return receipts; is that correct?

A. That's correct.

Q. Has the Bureau of Land Management been notified of this Application?

A. Yes.

Q. Have you received waivers in response to your

notice letters from any of the affected operators?

A. I believe Santa Fe has.

MR. CARR: Mr. Examiner, at this time we have a copy of a waiver from Santa Fe that I would tender to you to be included in the record.

EXAMINER CATANACH: Is that going to be marked as an exhibit?

MR. CARR: We can mark it as an exhibit, or you can just include it. It is just a letter that has been returned to us indicating a waiver of objection, Santa Fe.

If it is to be included as an exhibit, it should be marked as Exhibit 12.

EXAMINER CATANACH: We'll just enter this like it is.

Q. (By Mr. Carr) Mr. Dore, in your opinion will approval of this Application and the downhole commingling of the subject formations in the development area be in the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Were Exhibits 1 through 11 prepared by you or compiled at your direction?

A. Yes.

Q. And that includes Exhibit 7A?

A. Yes.

MR. CARR: At this time, Mr. Catanach, we would move the admission of Exhibits 1 through 7, 7A, and 8 through 11.

EXAMINER CATANACH: Exhibits 1 through 7, 7A, and -- What?

MR. CARR: -- 8 through 11.

EXAMINER CATANACH: -- 8 through 11, will be admitted as evidence.

MR. CARR: And that concludes my direct examination of Mr. Dore.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Dore, within the development area how many wells are there at the current time?

A. There are six at the current time.

Q. And what are these wells completed in at the current time?

A. As indicated on the Exhibit 2, there are five completed in the Bone Springs and two completed in the Delaware.

Q. Seven?

A. Seven, sorry. Within the development area, though, there's only six. I'm sorry, there's one in the Delaware in the development area.

Q. One in the Delaware?

A. Yes.

Q. Okay. Now, these six wells are all proposed to be commingled?

A. Yes.

Q. How many more wells within the development area do you think are going to be drilled?

A. Depending on the results, or if the order is granted, on the results of the commingling, we could possibly drill two more wells.

Q. Now, the five Bone Spring producing wells, have those been producing long from the Bone Spring?

A. The 31 Number 2 was the first well completed, and it was completed about the first of 1995. The others were drilled approximately on a two-month incremental basis. And actually the fifth well in the area, the SDE 31 Number 8, is being completed into the Bone Springs at this point, this week, as a matter of fact.

Q. Okay. What kind of initial rates from the Bone Springs are you getting in these wells?

A. We're getting approximately 100 to 200 barrels a day, flowing. The rates drop off at approximately 85 to 90 percent, so it's a very rapid decline.

Q. Do you know what the average producing rate is at this time?

A. The average for -- I would say the average would

be somewhere around 40 to 45 barrels a day.

Q. That's after a period of 12 months?

A. A year to six months.

Q. Do all these wells typically show this rapid decline?

A. Yes, sir.

Q. Has the better portion of the Bone Spring reservoir been drilled by the existing wells?

A. Yes.

Q. So the additional two wells probably won't be as good as the other ones?

A. That's correct, and I would say that they probably will not be drilled unless we get good results from the commingling and also the order approving the commingling.

Q. So essentially if this commingling is not approved, it's unknown whether these Bone Spring wells will be drilled at all?

A. I would say that they will not. The Bone Springs forma- -- the map indicates it gets thinner over to the east, and we could not afford to drill those wells with the reserves that those would be provided by that interval.

Q. Okay, let's talk a little bit about the Delaware. You've got one producing Delaware well?

A. Yes, sir, that well is producing currently from a

lower Delaware zone, which is not as good as the Upper Delaware zones that I talked about in this hearing. And the displays that I've shown on the production graphs are for the Upper Delaware zones.

Q. That's what you're targeting in all of these wells?

A. In the -- Yes, that's correct.

Q. Okay. And that's in the Brushy Canyon?

A. It's the Upper Brushy Canyon.

Q. So do you have any idea at this point in time what kind of rates you might be getting from those completions?

A. I would estimate, as these production curves show, somewhere between 100 and 200 barrels of oil per day, declining somewhere around 50 to 60 percent.

I might add that the upper -- the Delaware zones produce at about a 50-percent water cut, whereas the Bone Springs does not produce water, or a significant amount of water.

Q. It's probably economically viable to drill stand-alone Delaware wells in this development area, isn't it?

A. No.

Q. And why is that?

A. The standard -- Okay, let me rephrase that.

When we went into this development area, we went

in with the idea that we needed two or three zones to be economically justifiable to produce this area and they would include all the Delaware zones plus the Bone Springs.

If we only had -- If we had a good Upper Brushy Canyon zone, which it looks like some of the offsets have, we could probably drill it independently. But we could not drill to the Lower Brushy Canyon by itself or the Bone Springs by itself.

Q. Even at rates of 100 to 200 barrels per day?

A. No, because they drop off dramatically, and I don't believe we would ever obtain a payout before the cost of the production would outweigh the operation.

Q. These wells -- You assume these wells are all going to be artificially lifted?

A. Yes, the SD 31-2, the pumping equipment was being installed for the Bone Springs, and it is installed on the Delaware now that we're testing, but the well did not flow after completion, so it will be on artificial lift.

Q. Aside from the difference in the bottomhole pressure, do you see any potential for crossflow?

A. No, I do not. They will be on artificial lift, so...

Q. Maintained at pumped-off condition --

A. Yes, uh-huh.

Q. -- all the time?

A. Yes, we will.

Q. What type of leases are these? Are these fee leases?

A. These are federal leases, a hundred percent Texaco.

Q. Let me make sure I understand your allocation proposal. You don't intend to do additional testing on the Bone Springs on the existing wells?

A. I don't -- At this point in time, I think we'll have a good enough decline rate and good enough idea of what the well will do in the Bone Springs, so at this point in time, I don't think we'll need one.

If you desire one down the road, we can certainly do that.

Q. Okay. And upon recompletion to the Delaware, you will test the Delaware separate from the Bone Spring?

A. That is correct, and that's what we're doing right now in the 31 Federal 2 well.

Q. For how long a period?

A. We'll probably test it until we see a stabilization in the production rate. I would say at least two weeks, maybe three.

Q. Okay. The wells that will be drilled, are you going to basically use the same procedure, test each zone individually for two or three weeks?

A. Yes, sir, that's normally the way Texaco does things.

Q. In terms of allowable, are you seeking any special kind of allowable in this case?

A. The -- No, sir, we're not. The Bone Springs wells have never produced to their allowable, which is 365 barrels of oil a day, and I don't believe that when we commingle these wells, they would top the top allowable for this depth in the Delaware.

Q. Well, what I'm referring to is, under the administrative rules, a commingled well at these depths would be limited to 50 barrels of oil per day production. I assume that these wells are going to produce more than that?

A. Yes, sir, and I would say that -- I guess the reasoning Enron would be using, that we would probably prefer to have the allowable at whatever depth bracket, that we would be at the upper depth.

So in answer to your question, yes, I would like the special allowable set at that.

Q. Same thing basically that Enron requested this morning?

A. Yes, sir.

Q. Mr. Dore, is there any potential for secondary-recovery operations in this area?

A. I've run some simulations on secondary recovery in the Bone Springs, like I indicated during the testimony on the water samples. There is potential, but the structure is such that the water tends to overrun the oil, and in the Bone Springs I don't think it would be economical. I think in the Delaware there may be some potential.

Q. Let me ask you about -- within the existing wells, the existing Bone Spring wells, is it -- what kind of problems do you face with maybe a dual completion in these wells?

A. It's more or less an equipment problem of trying to pump two separate zones together with surface equipment, especially at this depth.

Also, we have 5-1/2-inch casing in the well. If we have any operational problems, we're likely to lose one or both of the zones.

Q. So that's not an option Texaco wishes to pursue?

A. It's an option we vigorously would like to not pursue. We have discussed that, and the operating area just doesn't want to do it. They have done it before and lost wells by doing that.

Q. So the advantage of commingling the existing wells is just to accelerate the recovery of the Delaware reserves?

A. Yes, sir. More economical for us to do that way. Also provides us a chance to drill additional wells in the area.

I'm afraid that if we produce these zones separately that we'll have to shut them in at a rate that we wouldn't recover the full potential of each zone if they were commingled, because down the road the rate that we would shut it in at this time would not be economical to even commingle at that point.

Q. If commingling is not approved, basically, you deplete the Bone Spring before you came up and recompleted to the Delaware?

A. We would deplete it to the point where it's not economical to produce, and then come up to the Delaware.

Q. Do you know what kind of time frame you might be looking at in terms of that?

A. I would venture to guess it would be somewhere around the 20-barrel-of-oil-a-day rate, which may not be very long from now.

We had a well in Section 18, the Sand Federal 18-1, which was a Bone Springs completion, back in the mid-Seventies. It produced ten barrels a day for about ten years. But we could not do that now. It was shut in in 1992, due to economics. But again, with the prices and operating costs nowdays, at this depth it would be probably

around 20 barrels a day, for Texaco, that is.

EXAMINER CATANACH: That's all I have.

MR. CARR: We have nothing further in this case.

MS. SWIERC: Mr. Examiner, my name is Leslyn Swierc with Meridian Oil, and I would simply like to state for the record that we have executed the waiver of objection letter that's identical to that which is attached as Exhibit 11, and it was forwarded to Mr. Carr's office on Tuesday of this week.

EXAMINER CATANACH: Okay. Meridian is an offset operator in this case?

MS. SWIERC: Yes, sir.

EXAMINER CATANACH: I assume that the list of interest owners that you did notify, those were the offset operators?

MR. CARR: That's correct.

EXAMINER CATANACH: Okay. Anything further, Mr. Carr?

MR. CARR: Nothing further.

EXAMINER CATANACH: There being nothing further, Case 11,429 will be taken under advisement.

(Thereupon, these proceedings were concluded at 1:45 p.m.)

* * *

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 November 26th, 1995.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11409, heard by me on November 16 1995.

David R. Catanach, Examiner
Oil Conservation Division