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

15 July 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for a special (oil) allowable, Lea County, New Mexico. CASE 9176

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

E X H I B I T S

MR. STOGNER: Call next Case 9176, which is the application of Phillips Petroleum Company for a special (oil) allowable, and I stress the word "oil", Lea County, New Mexico.

Call for appearances.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant and I have one witness.

May the record reflect, Mr. Examiner, that Mr. John Currie has previously been sworn and qualified as a petroleum engineer and we would like to call him at this point as our witness in this case.

MR. STOGNER: Let the record so show. Please continue, Mr. Kellahin.

JOHN C. CURRIE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Currie, let me set before you Phillips Exhibit Number One and I'd like you to take a moment, sir, and simply orient the Examiner as to the

physical location of this property in Lea County, New Mexico.

A Yes. This is located approximately nine miles west of Buckeye, New Mexico. The proration units shaded in blue on this are the very western edge of Vacuum Grayburg-San Andres Field. The boundary of that field is shown by the yellow line on this plat. To the west of that yellow line is the Maljamar Grayburg-San Andres Field.

Q Let me make some notes my copy. As we look to the west of the yellow line we're in the Maljamar Field?

A That is correct.

Q And east of the line is what, sir?

A Is Vacuum Grayburg-San Andres Field.

Q What are the formations that you're going to address in this hearing?

A This is the Grayburg and San Andres formations we'll be talking about here. They're located at a depth below approximately 4,200 feet out there.

Q In looking at the Vacuum wells, what is the spacing pattern established in the area for the wells?

A It's generally on 40-acre spacing in the Vacuum Field.

Q And using the depth bracket allowable assigned for 40-acre well locations, what is the daily barrels

of oil that can be produced?

A That's 80 barrels of oil per day.

Q What is it that you're asking the Examiner to do if he should approve this application?

A We're asking for a special capacity oil allowable as a -- well, for the four proration units shown there.

Q When we use the expression "capacity oil allowable", are we talking about wells that are affected by being adjacent to or in a buffer are in proximity to a waterflood operation?

A Yes. We believe this is the case, that these wells are -- should be given a capacity allowable because they are in a buffer area adjacent to a waterflood operation. It's well known that Vacuum Field has been under a number of enhanced recovery and waterflood operations for a number of years now.

Q When we look for some guidance within the rules and regulations, do you have a recommendation to the Examiner as to which of the Division rules and regulations might be appropriately applied for the entry of an order in this case?

A Yes, I do.

Q If I refer you, sir, to what is identified in the rule book as Rule 701, and if we look through

701 and we find subparagraph F under Waterfloods and then under F 3, there is a paragraph on page I-3, which I have marked and I will show you, sir.

A Yes.

Q You might read that out loud so that we'll all have benefit of seeing the same paragraph that you have.

A Yes. This is -- the paragraph reads, "Nothing herein shall be construed as prohibiting the assignment of special allowables to wells in buffer zones after notice and hearing. Special allowables may also be assigned in the limited instances where it is established at a hearing that it is imperative to do so" -- "it is imperative for the protection of correlative rights to do so."

Q Let's talk, sir, about what some of the factors are that you have discovered in your study of this particular problem that have caused you to conclude that a special buffer or capacity allowable is justified for the acreage and for the wells that Phillips operates that we'll discuss in a moment.

A Principally the drilling and completion and subsequent production of Well No. 19, which is shown in the completely shaded in blue proration unit there. It shows indications of a waterflood response due to its high water cut and its high productivity and very high producing

bottom hole pressure.

Q We currently have completed and producing the No. 19 Well shown in Section 35?

A That is correct.

Q And immediately to the north and east of that location there is a No. 20 Well?

A That's correct. That well has been drilled and cased. It's not yet completed.

Q As we look to the west of the Well 19 40-acre tract there's a Well 21.

A That is correct also. That well was drilled and cased Monday. It's also not completed.

Q And then finally there's the remaining of the three offsetting tracts up in the northwest of the northeast of 35?

A That is correct.

Q And there is no well yet for that?

A No.

Q When we talk about a capacity allowable for a well in a buffer area, do we find capacity allowables utilized by producing wells in waterflood areas already?

A Yes.

Q Can you give the Examiner a general range of expectation for the maximum producing rates for the wells that we'll be discussing in terms of a capacity allowable?

A As we'll show later, the oil production would be in the range of approximately 200 to 300 barrels per day.

Q Have you determined for yourself that the bottom hole pressure, for example, in Well No. 19, how does that bottom hole pressure compare to what you would find in a virgin reservoir situation in the Grayburg?

A The bottom hole pressure in particular zones in Well No. 19 is significantly higher than a virgin bottom hole pressure out there. I believe for Vacuum Field that bottom hole pressure would be in the range of 1600 psi, whereas I've calculated a bottom hole pressure in the range of 2300 psi in certain zones in Well No. 19.

Q When we talk about waterfloods in the area for which this acreage that Phillips controls is receiving a waterflood response, could you tell the Examiner generally what waterfloods are being operated that are depicted on this exhibit?

A Yes. On Exhibit One, if you'll go over under the Range 34 East, the third section down, which would be the Section 31, you see on the east side of that section there's the ARCO State Vacuum Unit, which was a Grayburg-San Andres water injection project. Two, two water injectors are shown on that in the east half of the east half of that section.

In addition, moving directly west to the other side of the plat there is a Pennzoil I beieve these are cooperative waterflood units. There's a Phillips state lease, Phillips federal lease, and also on Phillips Philmex lease there's water injection in Section 27.

Further, directly to the southeast of the Well No. 19, approximately 3/4 of a mile to a mile, is the Baxter leases there, which is a Queen waterflood.

Q All right, Mr. Currie, let's turn to the specifics of the information you've examined on Well No. 19 and let me ask you to turn to Exhibit Number Two and identify that for us.

A All right, Exhibit Number Two is a portion of the neutron density porosity log which we ran on Philmex Well No. 19.

On this portion of the log we've written on the top of the Grayburg zone, which is approximately 4,185 feet, the top of the San Andres formation at approximately 4,553 feet. I've also shown on here the perforations in this well and highlighted in red are some particular Grayburg sands that showed up in this well.

Q Can you identify for us the highlighted Grayburg sands in terms of porosity percentages?

A Yes. The upper sands there are between 4300 and 4400 feet are -- are typical Grayburg sands that

show 8 to 12 percent porosity. The sand highlighted down at about 4540 feet shows upwards of about 18 percent porosity, which is somewhat higher than we normally expect in the Grayburg.

Q How does this interval correlate to the Grayburg intervals that are being flooded in the area?

A Most of these sands are directly correlable.

Q This is the same zone, then, that's being flooded in the area?

A Yes.

Q Let's turn now to the production survey, which I think is Exhibit Number Three.

A Yes.

Q Let me have you fold out the bottom portion of that exhibit so that we're looking at the lower end of the production survey log and let me have you, first of all, identify for the record what this exhibit is.

Q Okay. This exhibit is an annular production survey log which we ran on the Philmex Well No. 19. If you get the portion of the log that's next to the heading here, they've got a summary of what happened on this well. They put the heading on the bottom part of this log.

MR. STOGNER: Okay, is that what's wrong with it?

A The purpose behind running this log is when we completed the Well No. 19 we had a high water cut, a high fluid level pumping the well. We though initially that we were getting water from the Lower San Andres and I guess looking back at Exhibit Two you can see we've drawn in a bridge plug which we set in that well at 4618 feet in attempt to shut off water production. This did no good for us and we continued with a high water cut. With this high fluid level, high amount of oil production, we determined we should run this production survey in the attempt to try to shut off the water, if possible, and improve our oil production.

This survey is run by -- we had to remove the tubing anchor from the tubing and it's a tool which is run down the tubing/casing annulus while the well is pumping so that we can actually survey fluid movement while the well is under production.

Q Having done that, what does the survey show you, Mr. Currie?

A Okay, the results of this survey show, as we've highlighted in red, that 71 percent of the total fluid production is coming from the high porosity Grayburg sand located about 4540 feet.

The remaining 29 percent was coming from a couple of the Upper Grayburg sands.

All, it was also interesting -- well --

Q It's more than interesting, isn't it?

A Correct.

Q What else does it show you?

A Principally, first of all, this showed us that the water was not coming from the Lower San Andres, as we suspected. Then additionally, as I've highlighted in yellow there, we found that fluid was moving downhole also in addition to uphole, moving down hole into the San Andres perforations.

Q Even while the well was being produced.

A That's correct, while the well was being produced we were losing fluid to the San Andres perforations, which indicates that we would expect the San Andres formation to be more or less at virgin pressure in this well and if the Grayburg formation had been at virgin pressure, you shouldn't be seeing any crossflow like this at all while producing; therefore, the Grayburg must be at a greatly elevated pressure.

Q Are you able to minimize the crossflow or the thieving of hydrocarbons from the Grayburg into the San Andres under its current allowable of 80 barrels of oil a day?

A Under its current allowable it's likely we're losing some hydrocarbons to the San Andres and because

of the allowable limitation with our current pumping unit, our pumping equipment, we are making allowable, there's no incentive to put larger equipment in there to draw the fluid level down and reduce this crossflow.

Q What will the capacity allowable allow Phillips to do with this well?

A We'll install higher capacity pumping equipment, pump the fluid level down to the point that the -- the Grayburg zone will unable to flow into the San Andres. In fact, we'll probably start producing the San Andres again.

Q Apart from the crossflow problem in the absence of a capacity allowable, what is going to happen to the hydrocarbons that underlie the Phillips tract as the waterflood operations continue in the area?

A It's likely that hydrocarbons in the Grayburg zone will be pushed past this trap. As you can see by this high water cut, we are getting a lot of waterflood influence there, so the hydrocarbons eventually would be pushed off our lease -- our tract.

Q Let's turn now, Mr. Currie, to Exhibit Number Four and have you identify that exhibit for us.

A Exhibit Number Four shows a -- is a brief recap of the well history and also gives the production on this well.

Q As we turn to Exhibit Number Five would you describe for the Examiner the method by which you have determined what you anticipate to be the maximum producing rate for the well?

A Yes. This Exhibit Five is my estimation of what the maximum producing rate would be using the productivity index method.

The, I guess, skipping down to the calculation in Step 3 there, total fluid production used in the equation is just the sum of the latest production test on the well, which comes to 260 barrels per day.

My estimation of reservoir pressure comes from using the hydrostatic gradient to the 4550 foot datum plus a surface injection pressure equal to that reported by ARCO for their State Vacuum Unit injection well. That gives a reservoir pressure of nearly 3500 psi.

Then the bottom hole pressure while the well is producing is estimated using a hydrostatic gradient to the datum based on the oil/water cut and adding 110 psi flowing -- flow line pressure on the well, which gives a flowing bottom hole pressure of 2030 psi.

Then running into the -- putting this back into the productivity index equation and then using a predicted flowing bottom hole pressure of 100 psi, if we were to pump out the well that would be equivalent to about

300 feet of fluid over the perforations. That would give a maximum production rate of 611 barrels of total fluid which with the current water/oil ratio would be about 230 barrels of oil per day.

Q Would a special capacity allowable, Mr. Currie, put Phillips in an unfair advantageous situation over the offsetting operators?

A No, I do not believe so.

Q Have you made an estimate of what the reservoir voidage would be underlying this 40-acre tract so that we could have some estimates or some approximations of the amount of oil or the length of time it woujld take you under a capacity allowable to produce your share of the oil?

A Just some real rough estimates.

Q Well, give us some approximations.

A We estimated somewhere in the order of 350,000-400,000 barrels of oil in place under our lease.

Q And using a capacity allowable if it's approved by the Examiner, how many months or years would it take you to produce your oil?

A I believe it came it out to approxiately 4 years if we are able to continue producing the well at a 230-barrel a day rate.

Q And obviously that's not going to sustain itself over the --

A Probably once we start producing the oil at capacity the pressure will decline and we'll get a decline production number.

Q Having looked at the Well 19 situation, let's direct your attention now to the well to the west of that, Well No. 21, and in that regard let me ask you to identify for us Exhibit Number Six.

A Okay. Exhibit Number Six is a portion of the neutron density porosity log which we ran on Philmex Well No. 21.

Q And what does this log show you, Mr. Currie?

A Okay. Again on this log we've drawn on where the top of the Grayburg zone is and where the top of the San Andres is. We've also highlighted in red some of the principal Grayburg sands; again those sands shown between 4300 and 4400 feet are 8 to 10 percent porosity and this zone shown, starts at 4538 feet, exhibits 18 to 20 percent porosity, very similar to the Well No. 19.

Q What conclusions do you draw from a comparison between Well 19 and the log on Well 21.

A Comparing the logs, and they can be correlated quite directly, we will -- we would have to assume that Well No. 21 will have as high a productivity as Well No. 19 or perhaps higher. This basal Grayburg sand appears

present in both wells and appears to be the zone that's been affected by the waterflood and therefore Well No. 21 will probably -- has probably been affected by the waterflood operations in the area.

Q Rather than divide your request into four separate applications before the Division to come forth at various times, do you have a recommendation to the Examiner as to whether or not there is sufficient information available upon which he can approve a special capacity allowable for all four of these spacing units?

A Yes. Based on the results seen in Wells 19 and 21 it's likely that the other two proration units which we're asking for will also be affected as offsetting proration units and should -- we would assume that we should get them all -- we'd ask for approval for all of them at once.

Q All right. Let me turn to your last Exhibit Number Seven, Mr. Currie, and have you identify that exhibit for us.

A Exhibit Number Seven is a fluid production history plot. The operator isn't shown on here but it is the -- this plot is of the -- the lease name is State FTG Well No. 4. It's the ARCO well immediately offsetting our Well No. 19 to the east. It's in the southwest of the northwest of Section 36.

Q Show us how to read the exhibit.

A All right. There's three curves on here. The oil production in monthly barrels of oil is shown in the black curve.

The gas production is shown in the red curve and water production is shown is shown by the blue curve.

Q Having analyzed the exhibit and its relationship to Well 19, what conclusions do you draw from the information?

A This plot shows fairly strong evidence that the ARCO Well offsetting us to the east has also been influenced by waterflood. If you'll look at the years of production history from 1970 to 1983, the production is pretty much flat at a very low rate, I believe that's three to four barrels a day, typical of a depleted well. Sometime in 1983 to '85 production increases tenfold here.

Q How does that production increase correspond to the flooded area involved in that well?

A I beg your pardon?

Q Yes, sir. With regard to the production increase that you find in 1985, where the oil volume now increases dramatically?

A This it?

Q Yes. Now how does that compare to your

opinion that that is to be attributable to additional movement by a waterflood?

A In the -- in the absence of any pressure support I would have expected the well to continue at the low, low production rate, whereas it increased dramatically, water production went up dramatically. I'd say there would be influence by the amount of waterflood.

Q Do you have any other geologic or engineering explanation for that fact other than attributing it to a waterflood response?

A A response of that magnitude is -- I would have a hard time attributing to any other fact other than some sort of that it caught some sort of pressure support at that point.

Q Were Exhibits One through Seven either prepared by you or compiled under your direction and supervision?

A Yes, they were.

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

A Yes, I feel approval of this application will prevent waste in that under the current producing operation in Well No. 19 fluid is being lost from the Grayburg zone into the San Andres, fluid which may not be recoverable.

Q Do you have an opinion as to whether this application will protect correlative rights?

A Yes, I feel it will protect correlative rights. The tracts in question, by being influenced by a waterflood, are having the oil swept through and off of the unit. If Phillips is unable to produce at capacity, some of that oil may be swept onto adjoining tracts.

MR. KELLAHIN: That concludes my examination of Mr. Currie, Mr. Examiner.

We would move the introduction of his Exhibits One through Seven.

MR. STOGNER: Exhibits One through Seven will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q I'm still a little bit confused on this Exhibit Number Seven. Which well is it referring to?

A Oh, it's the -- in Section 36 there.

Q Uh-huh.

A The ARCO Lease State FTG Well No. 4.

Q Well No. 4.

A Over on the west side there.

Q Now let's refer to Exhibit Number One. I was trying to locate all the injection wells here. Let's go

Baxter wells that you referred to. Now those appear to be in Section 36?

A That's correct.

Q And those down there in Section 1 -- 6

A Section 1 and 6.

Q Okay, and what zones are those injecting into?

A Those are injecting into the Queen zone.

Q Okay, now these would not have any affect on your particular well, is that true?

A Not to my knowledge.

Q Okay.

A The Queen zone is at approximately 3800 feet.

Q Now then, the other batch of wells that you were talking about here over there in Section 27 and 28, are they not? They show Pennzoil and Phillips State leases?

A Yes.

Q They show a cluster of about three injection wells.

A That's -- that is correct, and there's --

Q And what --

A There's one injection well in the northeast of Section 33, also.

Q Northeast of 33, okay, it's marked Well

No. 3 or --

A Yeah, that I believe that's right.

Q Now what zones are these going into?

A Those are injecting into the Grayburg-San Andres.

Q Okay, where is there another cluster of these injection wells?

A Okay, over on the east side.

Q Okay.

A In Section 31.

Q Section 31.

A The two ARCO leases shown there, State Vacuum Unit.

Q Okay.

A Well No. 2, I believe, and Well No. 1 in the southeast quarter. Well --

Q All right.

A -- 2 in the northeast quarter and 1 in the southeast quarter.

Q Now according to your testimony today these -- these two waterflood areas are affecting your zones, is that it?

A That's correct.

Q Although they're about three miles or one about a mile off, that's the one on the west side. Whose --

the ones over on the west side, whose wells are those?

A Phillips has one injection well and Pennzoil has the other injection wells.

Q That was your cooperative unit you were talking about.

A Yes.

Q Okay, and how about the ones over on the State Vacuum Unit, that's ARCO?

A That's ARCO. That's correct.

Q Okay. Can you base which of these two project areas are influencing your area?

A My estimate is that it's the ARCO project area. My reason behind that is the studying in addition to this -- the production curve that we've shown as Exhibit Seven, I've looked at other production histories on those ARCO leases in Section 36 and it appears that you can trace a response in those wells over the last five or six years actually trending from east going ot the west.

Q Okay. Now let's go from the east to the west there, now these wells are all in Section 31, marked Sohio and --

A Yes.

Q -- Kincaid and Watson and Phillips, are all those Grayburg producers?

A Yes, those are all Grayburg producers.

Q Now did they get any influence of this?

A I've been unable to see any production history of those wells where they're influenced by the ARCO flood.

Q And do you know if those particular zones of influence correspond with the zone that you're producing from and the injection zones?

A I don't have any logs on the wells in Section 31 to -- to base -- to see whether the zones are the same or not.

Q Okay. Now let's go to Well No. 19.

A Okay.

Q Let's see, I believe you gave me a production history, is that right?

A Yes.

Q Now from Well No. 19 what was the nearest -- was the ARCO No. 4 the nearest producing well in the Grayburg?

A That's correct.

Q Okay, now do the perforations on the logs of the ARCO Well No. 4 and your Well No. 19, do they correspond with each other?

A I do not know what the exact perforated interval on Well No. 4 was. It was originally completed open hole and I think ARCO may have deepened it. I do not

-- I really don't know what the completion history is on that well now.

Q Okay, how about those wells to the south, the Amoco and Cities, Union wells?

A Yeah, I think virtually all the wells to the south are producing from other horizons.

Down on the bottom I've got a legend showing the symbol for the completion zones --

Q Uh-huh.

A -- on these wells, and the Grayburg-San Andres completions are the ones that have symbol around them.

Q Okay. And if I look at your Well No. 21 and I go to the west and to the southwest, I show a couple of P&A wells.

A Yes.

Q Do you know what zones those were producing from or were they even tested?

A That designation is a dry hole so I would guess they were not tested. I do not know.

Q Okay.

A I believe they were drilled to approximately the San Andres.

Q Is it possible that you could have just drilled into a sweet area in the Grayburg-San Andres that

hasn't never been influenced before?

A I would have -- I would have thought that except for the production survey where it shows that the Grayburg formation pressure is much higher than the San Andres pressure below it. I would have expected them to be at a similar pressure if we just drilled into a virgin area.

Q Now did I understand your testimony that pressures that you encountered in the No. 19 Well far exceeded or exceeded the virgin pressure?

A That's correct. The bottom hole producing pressure in Well No. 19 that I calculated is 2030 psi and initial reservoir pressure in the Vacuum Grayburg-San Andres Field was around 1600 to 1700 psi.

Q Was that -- did that hold true for this whole area?

A In my experience it's held true, yes.

Q How about the water analyses, can you determine whether that's injected water or formation water?

A We can try. We have not got a water analysis run yet.

Q And are both of these zones or most of the injection out there is from this fresh Ogalalla water, is that right?

A I believe that's true.

Q What kind of special allowable are you

really seeking for the Well No. 19? Are you seeking 228 barrels a day or what?

A The 228 barrels a day is an estimate of what we think it could produce. We would like to be free to produce the well at whatever its capacity is.

Q For how long? I mean I'm talking about a calendar of what, say two years and then go -- revert back to normal allowable or are you -- want to keep this forever or as long as it --

A I would assume, well, we'd ask for it for, you know, just to be allowed to do that forever. I don't expect the well will hold up that long.

Q Uh-huh.

MR. STOGNER: I have no further questions of this witness at this time.

Are there any other questions?

MR. KELLAHIN: Just a few to follow-up, Mr. Examiner.

MR. STOGNER: Mr. Kellahin.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Let me have you take Exhibit Number One, Mr. Currie, and circle for us, if you will as we move from the ARCO wells in the far east, as we go from those injec-

tion wells in the Grayburg, as we move to the west, then, towards the Phillips property, would you help us circle the wells that you've examined the production history for to show how you've plotted the waterflood response that you attribute to the ARCO waterflood?

A Certainly.

Q Sure, let's do that. What's the first one as we move from east to west?

A Well, it would be a well shown in Section 31 in the southeast of the northeast on the ARCO Waterflood Unit, Well No. 1 there.

Q Okay.

A That one has shown a production response.

Q Southeast of northeast, No. 1 Well. All right, as we move to the west, then what others have you examined?

A If we move over to Section 36, in the south half of the northeast quarter, the ARCO lease, I've examined both 1 and 2 on the State E-TG Lease.

Q All right.

A They've both shown response similar to that well No. 4.

Then moving straight west from there on the ARCO State F-TG Lease, both Wells No. 1 and 4 have shown a production response.

Q In terms of gathering more information that will help you further document your opinion on the waterflood response, do you have an opinion as to whether obtaining a water analysis of the produced water will give you any definitive results as to whether or not you are receiving a waterflood response?

A It may or it may not. As, Mr. Examiner, as you've noted, this well is a great distance from the nearest Grayburg injector, or Grayburg-San Andres injectors, and it's likely that over that distance the composition of the water would have been affected by the reservoir, natural salts in the reservoir, that we may be unable to detect any similarity between our produced water and anybody's injected water.

Q At this point, then, the best available information to you to support your opinions are the increased bottom hole pressures that are significantly higher than a virgin pressure. That's one of the factors.

A Yes. In fact, the increased pressure in one zone in the Grayburg, that's much higher than the San Andres right below it.

Q And what are the other factors that you believe are significant?

A And the other significant factor is the high water/oil ratio which for initial completion out there

is really again about a 1-to-1 water/oil ratio and that's normally about a 1/2-to-1 or a lot of wells make no water at all initially.

MR. KELLAHIN: Thank you. I have nothing further.

RECROSS EXAMINATION

BY MR. STOGNER:

Q If I look at your Exhibit Number One and I go up to the northeast quarter, northeast northeast of Section 36, it says "salt water disposal well." Do you know anything about that?

A It's disposing into the San Andres and I believe, like several other disposal wells out there, it's Lower San Andres. There's a large -- a high porosity water-bearing zone in the lower part of the San Andres.

Q Do you know if they're produced under pressure or not?

A If they're injecting under pressure?

Q Yeah. In other words --

A I believe --

Q -- would that well be an influence?

A I believe they do have some surface pressure on that well. Yes, I looked it up. I think they're allowed to inject up to 1000 or 1200 psi.

Q Do you know what the injection pressures are over on the State Vacuum ARCO Unit?

A Yes, they're reporting 1450 psi surface pressure.

Q Now when you said that you saw some response on that Well No. 1 over there on that ARCO Unit and then those two ARCO wells over in the State E-TG Lease in Section 36, did you get some similar responses like you did --

A Yes, it was virtually identical to that plot. The response occurred earlier in time on the -- on the State E Lease approximately two years earlier and in the State Vacuum Unit it occurred within a year or two of initiation of injection by the ARCO Unit.

Q When again did ARCO first start injecting over there?

A Middle 1970's.

MR. KELLAHIN: If you'd like to have those, Mr. Examiner, I believe Mr. Currie has copies of those --

A Yeah, I'd like to --

MR. KELLAHIN: -- production plots.

A I'd like for you to supplement Exhibit Number Seven with those.

MR. KELLAHIN: We can do that right now. I believe he's got those.

Do you have those, John?

You've given me four of the five and we've already introduced the fifth, okay.

A Yes.

MR. KELLAHIN: Okay, this is all the ones I --

Mr. Examiner, I have marked Exhibits Eight, Nine, Ten, and Eleven, which are the production plots that Mr. Currie has prepared on the four wells that we've been discussing.

MR. STOGNER: That's all I have of this witness at this time and I'll, if I haven't done so, I'll at this time take into consideration Exhibits One through Ten.

MR. KELLAHIN: I believe we're up to Eleven.

MR. STOGNER: Okay, Eleven, Exhibits One through Eleven will be admitted into evidence.

Do you have --

MR. KELLAHIN: I have nothing further, no, sir.

MR. STOGNER: In that case, Case Number 9176 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 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. 9176, heard by me on 15 July 1987.

Examiner
Oil Conservation Division