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:	)	CASE NO. 11,435
APPLICATION OF SHELL WESTERN E&P, INC., TO AMEND DIVISION ADMINISTRATIVE ORDER DHC-1149, LEA COUNTY, NEW MEXICO	)	

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

February 8th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, February 8th, 1996, 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

February 8th, 1996
Examiner Hearing
CASE NO. 11,435

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E X H I B I T S

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A P P E A R A N C E S

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By: JAMES G. BRUCE

* * *

WHEREUPON, the following proceedings were had at 10:30 a.m.:

EXAMINER STOGNER: At this time I'll call Case Number 11,435.

MR. CARROLL: Application of Shell Western E&P, Inc., to amend Division Administrative Order DHC-1149, Lea County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce from the Hinkle law firm in Santa Fe, representing the Applicant.

I have one witness to be sworn.

EXAMINER STOGNER: Are there any other appearances?

Will the witness please stand to be sworn?

DAVID NELSON,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence for the record?

A. My name is David Nelson. I reside in Hobbs, New Mexico.

Q. And what is your occupation and who is your employer?

A. My occupation is field and production engineer for Shell Western E&P in Hobbs, covering that area of production.

Q. Have you previously testified before the Division as a production engineer?

A. No, I have not.

Q. Would you briefly describe your educational and employment background?

A. I have completed a bachelor of science degree in engineering technology from New Mexico State University and have 15 years of experience in production and facility assignments for Shell Western.

Q. And does your area of responsibility cover southeast New Mexico?

A. Yes, it does.

Q. And are you familiar with the engineering matters pertaining to this case?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I would tender Mr. Nelson as an expert production engineer.

EXAMINER STOGNER: Mr. Nelson is so qualified.

Q. (By Mr. Bruce) Mr. Nelson, referring to Exhibit 1, what is the well involved in this Application?

A. This is a land plat identifying the subject well and offset operators. The subject well is located on the

State "A" lease, Well Number 10 in Unit A of Section 31, Township 17 South, Range 35 East.

We obtained an administrative order on this subject well, Number 1149, downhole commingling order, authorizing the downhole commingling of the Wolfcamp in the middle Penn, and under that order our production was limited to 80 barrels of oil and 160 barrels of water per day.

Q. What does Shell seek in this case?

A. We seek to amend Downhole Commingling Order 1149 to permit commingled production of 300 barrels a day oil and 300 barrels a day of water.

Q. Okay, let's discuss the reasons for your request. Referring to Exhibit 2, would you discuss the history of this well?

A. As indicated on Exhibit 2, we spudded the well in February of 1995 and completed several zone tests during the time period between when the well was TD'd and our final completion in May.

Our final initial completion was a dual completion of the middle Penn zone and the Wolfcamp. And through decline in both zones we approached -- or applied for a downhole commingling agreement of the two zones and were so granted on September 25th, 1995, a downhole commingling of the middle Penn and Wolfcamp zones.

Q. Okay.

A. We then commingled the two zones downhole.

Q. What is Exhibit 3?

A. Exhibit 3 is an example or a schematic showing how the dual completion was done.

Q. Back in May?

A. That's correct. Two tubing strings with a packer isolating the Wolfcamp and the Penn. The Wolfcamp perfs, as you'll notice, are from 9711 foot to 10,126 foot, and our middle Penn perfs are from 10,524 to 10,600.

Q. Now, after the dual completion, what were the producing rates from these two zones? And I'd refer you to your Exhibits 4 and 5.

A. Exhibits 4 and 5 show production history of the two zones while separated.

Exhibit 4 is the middle Penn zone. The data points on this curve are -- as you can see on the X axis, are test dates and not a chronological time line of the history of the well.

That format is consistent on Exhibit 5, which is our Wolfcamp production history.

Q. And at the time, up until about the time the well was commingled, the production rates in the Wolfcamp were about what? Twenty, 25 barrels a day?

A. Yes, by late August the Wolfcamp had declined to

around 20 to 25 barrels, and the Penn completion or Penn zone had declined to around 40 barrels.

Q. Now, after the rates declined, at that time you applied for the downhole commingling?

A. Yes, that's correct, and we --

Q. And that was in early September?

A. Right, we applied in early September and were granted by Order 1149 on September 25th.

Q. What is Exhibit 6?

A. Exhibit 6 is the schematic of the well that was originally completed as a single completion after the order was granted. This was a rod pump configuration with our pump located below the middle Penn perfs, and we were attempting to artificially lift the combined production with the rod lift system.

Q. Okay. After you instituted the downhole commingling, what happened to production? And I refer you to your Exhibit 7.

A. Exhibit 7 is a production history of the combined zones, since downhole commingling, in September of 1995.

I might walk you through the format of this exhibit a little bit.

Again on our X axis, we are indicating test dates and not a time line in chronological order.

Our Y axis on the left-hand side are oil and

water in barrels per day and gas in MCF per day.

The X axis on the right-hand side is fluid above pump in feet.

The legend at the bottom, we used different symbols to indicate each data stream as you walk through the plot.

Early October, the well performance was within the limits of our current downhole commingling order. As we proceeded to produce the well, our indication on our surface monitoring equipment was that we had more fluid available. So we began to -- we made a lift system change and extended our stroke length to try to increase our capacity on a rod lift system.

At that point, our well began to produce over the limit of the current order of 80 barrels. We were averaging around 100 barrels a day of oil.

We recognized that we were going to have fluid available to consistently overproduce at this point, and we applied for an amended downhole commingling allowable, and this was in October, and that request was to increase the allowable to 250 barrels a day, oil.

Q. Did you discuss this well with Jerry Sexton in the Hobbs Division Office?

A. Yes, in -- I might back up a little bit. As we got through October and into November, we made another

change mechanically and increased our capacity, because we were having indications of additional fluid. We made a pump change, size change in early November, and our well -- and continued to pump the well.

In November, our well unloaded and we were going to begin -- be in an overproduced position for the month of November, and we approached Jerry Sexton at that time and indicated to him that we were in an overproduced condition, or would soon be there, and requested a temporary relief of that allowable while we tested the well and gained data for the hearing.

Q. Before you shut the well down, how was it producing?

A. In mid- to late November, the well was producing around 200 barrels a day, all production coming up the tubing string with a rod lift system.

At that point, the well -- the fluid level was lowered to a point where it unloaded its fluids or went on a kick-type production where we were actually producing fluids both up the annulus and up the tubing string with the rod system. That's when we shut the well down and contacted Jerry.

Q. What did you do next?

A. Jerry gave us a temporary allowance for the allowable, and we returned the well to production.

We went through a series of additional lift capacity changes, trying to continue to reduce the fluid level in the well.

As you can see on Exhibit 7, we indicate an estimated fluid level in our solid circles, and obviously it was -- we were maintaining a high fluid level, so we continued to make lift changes to try to pump the well off.

Q. At what point did you then install -- I think you installed the submersible pump?

A. Right. By early January of 1996, we recognized that our current lift system was inadequate to pump the well off. So in January of this year, we ran a submersible pump to double our lift capacity and try to expedite our pump-off condition in our well.

Along with the submersible pump we ran a bottomhole pressure sensing device to help us better monitor the downhole conditions so that we could gain data for the hearing.

Exhibit 8 indicates the well schematic, which is its current state, and it shows that our -- we have the submersible -- the intake of the submersible actually between the Wolfcamp and the Penn production, or perforation, excuse me.

And our bottomhole sensor is actually at the bottom of that assembly, or around 10,500 foot.

Q. And with this configuration you finally succeeded in pumping off the well?

A. Yes. If you refer to Exhibit 9, we have a -- some recent bottomhole pressure data that was gathered by our device that we ran with the submersible pump. The initial pressure listed on that exhibit is a static pressure that was in the well, that we developed as we made a mechanical change, which -- over the period of a day, day and a half. So the well was basically in a static condition at that point.

As you can see, as we go down the list through time, currently we're at approximately 340 pounds bottomhole pressure with the well, submersible pump running. Our production rate is somewhere around 220 barrels of oil, 220 barrels of water, and 550 MCF gas.

Q. Based on these pressures, would you anticipate any crossflow or damage to either reservoir by allowing the continued downhole commingling?

A. No, our estimated bottomhole pressure on our Wolfcamp when we had the original order put together was somewhere around 1150 p.s.i.g. level. And as you can see, this 340 is significantly below that pressure.

Q. Now, if this Application was denied and you go to a single middle Penn completion, could there be an adverse effect on recovery from the Wolfcamp?

A. Yes, as indicated on Exhibit 4, I believe it is, the production history of the Wolfcamp --

Q. Five.

A. Excuse me, 5, Exhibit 5. Our Wolfcamp production was around the 20- to 25-barrel range. And because of the depth of this well, 20 to 25 barrels would be marginally, at best, economics, from an economic standpoint to produce from artificial lift as a single completion.

So because of that fact, we -- it would be difficult for us to justify a single Wolfcamp completion by itself.

Q. Now, you asked for 300 barrels of oil per day as an allowable. How did you pick that number?

A. At the time when we had initially readvertised our request for the 300, the well was producing at close to that level. The 300 also is below the prorated allowable for the Penn zone by itself, which is 320, and it -- the well was indicating at that point that it had the capability of producing at 300 barrels a day.

Q. What is the current allocation of production between zones, or what -- What is it currently producing, to the best of your knowledge between zones?

A. I believe the current Order of 1149 indicates that our production will be split on a 35 oil to the Wolfcamp and 65 oil to the Penn.

And the gas is, I believe, 37 to the Wolfcamp and the balance to the Penn.

Q. And what do you think is a more proper allocation at this point?

A. Based on our history of our Wolfcamp while it was isolated, we feel that probably a 90 percent Penn and 10 percent Wolfcamp, both on the oil and gas, is more appropriate at this time.

Q. Okay. Were all offset operators notified of this Application?

A. Yes.

Q. And is Exhibit 10 my affidavit of notice to the offset operators?

A. Yes.

Q. And were Exhibits 1 through 9 prepared by you or under your direction?

A. Yes.

Q. And in your opinion, is the granting of this Application in the interests of conservation and the prevention of waste?

A. Yes.

MR. BRUCE: Mr. Examiner, at this point I would move the admission of Shell's Exhibits 1 through 10.

EXAMINER STOGNER: Exhibits 1 through 10 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Nelson, I don't have a copy of DHC Order 1149. What is the current oil allowable from that order?

A. I believe it's 80 barrels of oil and 160 barrels of water.

Q. How about gas?

A. I don't have it in front of me.

MR. BRUCE: Yeah, Mr. Examiner, I did attach the DHC-1149 to the Application. Yeah, the gas allowable is 2000 times the -- it says times the top unit allowable for the Vacuum-Middle Penn Pool. And the allowable for that pool is 320 barrels per day, so it would be 640 MCF.

Q. (By Examiner Stogner) Okay. What is the current spacing for the Vacuum-Wolfcamp Pool, Mr. Nelson?

A. 80 acre.

Q. 80 acres.

A. And it's 40 on the Penn.

Q. And it's 40 on the Penn. And in the Vacuum-Wolfcamp Pool there's 80 acres. Is this the only well on that proration unit?

A. Yes, that's right.

Q. Okay. And what is the current stand-alone allowable for the Vacuum-Wolfcamp Pool?

A. 355, I believe, on the oil.

Q. 355. And do you know what the GOR on that pool is?

A. No, sir, I don't.

Q. Okay. And the Vacuum-Middle Penn Pool, that's 40-acre spacing?

A. Yes, sir, that's right.

Q. Is this the only well in that proration unit at this time?

A. Yes, that's right.

Q. And what is the allowable for that pool?

A. 320 oil.

Q. 320 oil. And what's the GOR?

A. 2000 for the Penn.

MR. BRUCE: Mr. Examiner, for your information, the Wolfcamp unit is a laydown comprised of the north half, northeast quarter. All of the acreage is state acreage. And if you look at Exhibit 1, the entire northeast quarter is a single state lease owned solely by Shell and with the state the only royalty owner.

Q. (By Examiner Stogner) When I compare your Exhibits 4 and 5 again, and once you started commingling, what caused the production to shoot up?

A. Our configuration in a dual completion was, we had 2 1/16 tubing on the Penn side and 2 3/8 tubing on the Wolfcamp side. The Wolfcamp was rod-pumped and was pumping

off.

Our Penn production, we believe now, was being curtailed by our mechanical system in the hole, and that we were not -- If you'll look at the Penn historical plot, our water production was less than ten barrels.

It appears that we were probably not producing the available water in a flowing or a natural production type setup. And that led us to believe that there as more fluid there possibly available, or that we were not producing -- the well would not continue to flow, naturally flow. It was in a slug-flow-type status when we downhole commingled.

Q. And you're proposing a 90-percent -- a 10-percent allocation, 90 for Penn and 10 for Wolfcamp?

A. Right.

Q. And what is that based on?

A. Because our Wolfcamp was already artificial lift prior to the downhole commingling and was in a pumped off condition, we feel like the Wolfcamp was probably at maximum production.

And based on the rate at that time of 20 to 25 barrels versus our total rate of 250 to 300 barrels, we think a 90 to 10 is a little more realistic.

Q. Neither one of these zones is being waterflooded, is it?

A. That's correct, both are primary.

Q. When I look at your Exhibit Number 1, is this an accurate indication of how many wells are out there in that quarter section? Just two of them?

A. No, sir, there's a shallower waterflood currently active in that area. These are the deep penetrations below that waterflood.

Q. The Number 9 well, what's its status?

A. It's a Drinkard completion, and its perforations are in the 7500 range.

Q. In this quarter section, has there been any Pennsylvanian and/or Wolfcamp production before?

A. No.

Q. This well isn't by chance a discovery well for either zone, is it?

A. I don't believe it is, no, sir.

Q. You have 7-inch casing in this well, correct?

A. That's correct. That gave us the ability to dual complete.

Q. Did you dual complete again and do something different again in that one zone that was being curtailed or mechanically curtailed?

A. The -- It would get back to an economic issue as far as whether we would continue to produce the Wolfcamp or not.

By a single completion or commingling the production, we feel like probably the opportunity to produce the Wolfcamp reserves -- yes, the Wolfcamp reserves is better justified if it could be combined with the Penn production.

It's marginally economic to produce the Wolfcamp by itself.

Q. And this is a single state lease, correct?

A. Yes, that's right.

Q. And the difference between the 40-acre proration unit and the 80-acre proration unit, as far as interest goes, is that different?

A. No difference there.

Q. Pardon?

A. No difference.

Q. No difference, it's identical?

A. Correct. We own 100 percent of the working interest, and the state is the royalty owner.

EXAMINER STOGNER: Any other questions of this witness?

MR. BRUCE: No, sir.

EXAMINER STOGNER: You may be excused, Mr. Nelson.

Anything further, Mr. Bruce?

MR. BRUCE: No, Mr. Examiner.

EXAMINER STOGNER: Does anybody else have anything further in Case Number 11,435?

Then this case will be taken under advisement.

(Thereupon, these proceedings were concluded at 10:58 a.m.)

* * *

I do hereby certify that the foregoing is a complele record of the proceedings in the Examiner hearing of Case No. 11435, heard by me on 8 February 1996.

Examiner
Oil Conservation Division

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 February 16th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998