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 AGUA SUCIA, LLC FOR A LEASE PRESSURE MAINTENANCE PROJECT IN THE DELAWARE FORMATION, EDDY COUNTY, NEW MEXICO CASE NO. 14564

TRANSCRIPT OF PROCEEDINGS
Examiner Hearing
October 28, 2010
1:55 p.m.
1220 South St. Francis Drive
Santa Fe, New Mexico 87504

BEFORE: DAVID BROOKS, HEARING EXAMINER
WILL JONES, TECHNICAL EXAMINER

REPORTED BY: CONNIE JURADO, RPR, NM CCR #254
Paul Baca Professional Court Reporters
500 Fourth Street NW, Suite 105
Albuquerque, New Mexico 87102

A P P E A R A N C E S

For the Applicant:

JAMES BRUCE
Attorney at Law
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I N D E X

MR. BROOKS: At this time we will call Case Number 14564, the Application of Agua Sucia, LLC for a lease pressure maintenance project in the Delaware formation, Eddy County, New Mexico. Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe representing the applicant. I have one witness.

MR. BROOKS: Okay. The witness, state your name, please.

MR. NICKELSON: My name is James Nickelson.

JAMES NICKELSON

After having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. BRUCE:

Q Mr. Nickelson, where do you reside?

A I reside in Midland, Texas.

Q And what is your occupation?

A I am a consulting reservoir engineer.

Q What is your relationship to Agua Sucia in this matter?

A As a consultant.

Q And have you previously testified before

the division?

A No, I have not.

Q Would you summarize your educational and employment background for the examiner.

A Yes. I have a BS in mechanical engineering from Lamar University and an MS and Ph.D. in mechanical engineering from the University of Texas at Austin. I have been in the oil and gas industry since 1975. The first 18 years were with ARCO Oil & Gas. Worked in the Plano Research Facility, worked in Houston with offshore projects, and in '86, I transferred to Midland, and then worked with Permian Basin projects since then.

I left ARCO in '93. Did some work with Coastal Management, a small operating company that was ultimately purchased by Schlumberjay, so I worked for Schlumberjay for about a year. And since then, I have been doing consulting.

Q Have you -- did you familiarize yourself with the engineering matters related to this application?

A Yes.

MR. BRUCE: Mr. Examiner, I tender Mr. Nickelson as an expert petroleum engineer -- or reservoir engineer.

MR. BROOKS: He is no qualified.

Q (By Mr. Bruce) Mr. Nickelson, let's start out with Exhibit 1. What is that?

A It is the C-108 application for this injection project.

Q Okay. This was prepared -- who prepared this?

A This was actually prepared by Ben Stone with SOS, and I reviewed it and found it to be factual.

Q Let's go through this. What is the -- could you leaf through a few pages and identify the proposed injection well and state its location for the record.

A Yes. The proposed injection well is the R.T. Wilson Federal No. 1. It is located in Section 24, Township 26 South, Range 31 East. Actually, the package has a map locating that well along with the area of review.

Q And in this case, does Agua Sucia seek to institute a lease pressure maintenance project on its Wilson Federal lease?

A Yes.

Q And this is simply a lease project? It is not a unit or anything, correct?

A That is correct. They own 100 percent of the working interest on the southeast quarter and on the southeast of the northeast quarter of Section 24.

Q And interest ownership is uniform throughout the injection interval, correct?

A That's correct.

Q Now, could you turn to the next page and describe how the well will be completed as an injector and what the surface -- excuse me, what the injection interval will be?

A The water will be injected into the productive formation, which is the Ramsey Sand of Bell Canyon. The well is open hole, and the injection interval will be 4232 to 4250. The well will be completed with a plastic coated tubing with annulus packer fluid. The lease has some injection equipment on it so that the existing injection equipment will be used.

Q And will the injection well be properly recompleted and comply with division requirements?

A Yes.

Q And the next couple of pages identify wells in the area of review. Are there any plugged and abandoned wells?

A Yes, there are. There are three P and A'd

wells within the area of review.

Q And is data on those wells included within the C-108?

A Yes, it is. It is the Hanson No. 12 and the Hanson No. 13 are located directly to the south of the R.T. Wilson lease, and the diagrams there are included as to how they were P and A'd.

Q And in your opinion, are the wells properly P and A'd?

A Yes, they appear to be. We do have a third well, the R.T. Wilson No. 5. That is on the Wilson lease, and prior to P and A, it was being used as an injector.

Q Okay. And what type of operations are proposed? What are the injection rates and the pressures?

A The pressures should be -- will be 800 pounds maximum pressure, injection rate maximum about 300 barrels a day.

Q And the applicant will comply with the .2 PSI per foot of depth maximum injection pressure?

A It does, yes.

Q And what type of water will be injected?

A This will be produced water from the lease, and so it will be compatible with the

formation.

Q And so it is solely from this lease, and so there is not any water coming from other leases on this project?

A No.

Q Okay. Let's move on to your Exhibit 2. What does that reflect?

A Exhibit 2 is simply a cross-section of the five wells on the lease. And this lease is part of the Mason North Delaware field, which extends to the south from the lease location to the state line, and then also extends to the east. The field continues on into Texas and is actually larger in the Texas portion than in the New Mexico portion.

The field dips generally from the west to the east. This is at about 100 feet per mile. You can see that on Exhibit 2 or you can just look at the subsea depths of the formation as it comes across the five wells. The exhibit does show a log section for the five wells. It shows the top of the Lamar and top of the Ramsey Sand, which is the productive sand.

We have the date of initial production or the initial production test and the completion on each of the wells. Four of them are open hole. The No. 5 was a perf'd well. The five wells had

cumulative production of 360 MBO and 620 million cubic feet of gas. Included as Exhibit 3, a production plot showing the lease. Obviously, at this point in time, it is marginal producing, just a little under two barrels of oil per day.

Q And first of, off of the -- looking at Exhibit 2, before we get into the production, the injection zone is continuous across the leasehold owned by the applicant, correct?

A Yes, it is.

Q And in looking at the little land plat, the cross-section, are there other injection wells nearby?

A Yes, there are. To the east in Section 19, the No. 2 well was a well completed by Conoco as a pilot test of a waterflood, and that was by hearing in October of 1968. There is good injection data on this well, and it has injected over five million barrels, almost six million barrels of water as of September of 2000 when the records indicate that they quit injecting into it.

The other two injectors in the near -- in the vicinity are to the south there in Section 25 and were the Hanson No. 7 and the Hanson No. 11. These wells -- Wilson No. -- I'm sorry -- the Hanson No. 11

was approved in '71 by Order R-4135. And I put a considerable effort trying to find the injection data into these two wells and the Wilson well, and they are not carried in the -- I had available to me the Hobbs injection reports or selected reports and could not find those wells.

Later production in the Hanson 7 and 11 was picked up in the electronic media, and the 11 had 651,000 barrels of water injected, and the 7 had 63,000 barrels of water injected. I believe these to be incomplete records. I believe they had more water injected than that, but I was not able to find it. And the reason I believe that is is because of the approval of the permit in '71, and then the first reported that I could find was in '94.

So I think the only thing to add is that the Thompson well took 1,000 barrels a day in 1973 with less than 800 pounds injection, so apparently, the formation will take water.

Q Well, let's then move on to your Exhibit 3 and discuss production. This is production, lease production, correct?

A That's correct. This is just for the five wells, and it is pretty standard. The green is the oil in monthly barrels per month, blue is water, and

red is gas. The reason that I wanted to make an exhibit out of it is it bears directly on the benefits that I think we're going to get from this injector.

Q Go ahead.

A If you notice that solid green line there, starting in '73 at about 500 barrels a month, that -- and the blue line at the bottom is the well count. You can see where they converted -- they went from five wells to four wells, presumably converting the Wilson No. 5 to injection.

In the time reasonable for waterflood response, you can see a little bit of a response in the green line, and you also can see the water increasing dramatically. I am interpreting this, and it is interpretation, as waterflood response to the injection from that disposal well.

If you will go back to the plat on Exhibit 2, the No. 5 is the furthest northern well to the west, and in fact, you can actually almost take those lines that depict the cross-section and that is kind of the area that would be swept by water being injected into that well. You would also have a line coming -- come from the No. 5 -- well, the No. 5 to all four of the wells.

What I am envisioning they are going to do by conversion of the No. 1 well is essentially a repatterning. They are going to put water in, and hopefully, push some oil through the sand that was not affected by the previous injection. The previous injection, if you look at the incremental on Exhibit 3, that works out to be about 50 MBO. And if you take the volume produced under primary and allocate it, you end up with a secondary to primary using 50 as your secondary of .35, which is certainly reasonable. In fact, very low, which indicates to me that there is some oil possibly recoverable by waterflood.

Again, this is not a huge response, but I do believe that they can get about 25 MBO on this with this injector, and that's one of three benefits that we're really going to be getting from the injection.

Q And before we get to that, first of all, what is the cost of instituting this injection?

A They are estimating it will cost about $75,000. The reason -- the conversion, the main cost from that is the plastic coated tubing, and they don't have to put any additional injection facilities, surface facilities on. They have to

rework the oil facilities.

Q It is an inexpensive project?

A It is an inexpensive project, yes.

Q You mentioned the three benefits you foresee from the injection. Go ahead.

A If it does, indeed, the repatterning would result in a little bump on the production. There is essentially, if you think in terms of screen tubes or the areas being swept, they are going to sweep about half of what they swept before. So I said, okay, they've got 50 MBO. I'm going to give them 25 MBO. They got a jump of 500 barrels per month. I am going to give them 250.

If you run economics on that, that is $75 a barrel, it looks quite good with the $75,000. So I think the investor's rate of return, around 75 percent, and possibly three-quarters of a million dollars of value.

The other two benefits, one, there is a distinct production optimization benefit. They are having to haul the water off now. They went in, when they first bought the lease, and they stimulated the wells. The No. 2 is now producing -- well, after the stimulation, they got a large jump in production that is on Exhibit 3 there towards the far end, and then

that dropped off quickly, dropping back to 58 barrels per day. Of that, the majority is coming from the No. 2 well. They are producing about 100 barrels of water per day from that well. Two of the other wells, I believe, have the capacity to produce about what the No. 2 is, but they can't afford to haul the water.

They are paying $1.35 per barrel minimum to haul the water, and so they want to convert this well as a second benefit so that they can put a better artificial lift on the other two wells and see if they can't get some more production out of those wells.

Finally, the benefit is simply on the No. 2 well, with the cost of the injector at $1,200 per month, they can get the cost down, so they are probably saving about 90 cents a barrel on your water for the No. 2 at 100 barrels a day. That's about $2,700 a month, which will enhance this operation.

All three benefits should allow them to increase the recovery from the reservoir. And in that sense, I think it is a good project.

Q So there is a long-term benefit of the pressure maintenance, plus there is the immediate benefit of putting a couple more wells online?

A Exactly.

Q In your opinion, is the granting of this application in the interests of conservation and the prevention of waste?

A Yes.

Q You stated Exhibit 1 was prepared by Ben Stone. Have you reviewed that document, and do you agree that it was properly completed?

A I do.

Q And were Exhibits 2 and 3 prepared by you or under your direction?

A Yes, they were.

MR. BRUCE: Mr. Examiner, I would move the admission of Exhibits 1 through 3.

MR. BROOKS: Exhibits 1 through 3 will be admitted.

(Exhibits 1 through 3 admitted.)

MR. BRUCE: And finally, Mr. Examiner, I will move the admission of Exhibit 4, which is the affidavit of notice. The C-108 contains information on the offset interest owners and the surface owner entitled to notice, and everyone received notice except Penroc Oil Corp. but notice was left for them. The address for Penroc is the correct address. That is the address that is in the

division's records.

MR. BROOKS: Well, I know they exist.

MR. BRUCE: Yeah, they exist. They can be found. So I would move the admission of Exhibit 4, also.

MR. BROOKS: Exhibit 4 will be admitted.

(Exhibit 4 admitted.)

MR. BRUCE: That's all the questions I have of the witness.

MR. BROOKS: I don't really have any questions. I will, again, defer to the expertise of the injection expert.

MR. JONES: I want to say thank you, Dr. Nickelson, for coming up here and making this analysis. Did you see anything similar to this over -- as an effect of the injection over in that offset section of 19, or were you looking at the effects down in 25 or were you looking at the effects in 19? I forgot what you said on that.

A No. The effects I looked at were on the Wilson lease.

MR. JONES: Oh, the Wilson lease. Okay.

A Yes. I did not do a full field review and

look at the effects on the other one. Also, the Mason field in the Texas part of it went under waterflood through Marathon. Marathon put a waterflood in. I just pulled the production on that one. I am sure there was some response, but it was not a classical waterflood response.

MR. JONES: Down south in Texas there is a Geraldine Ford.

A Geraldine Ford. Ramsey Sand or waterflood, also.

MR. JONES: So it looks like it might be feasible. I guess there is -- nobody drilled any wells even deeper than this down here, it didn't seem like.

A I did not see any on the Wilson lease, no, and I did not look on the other leases.

MR. JONES: But the Ramsey Sand was the primary target. I guess the Upper Delaware.

A Yes. Bell Canyon.

MR. JONES: That was really what we were hoping you guys would show here. Thanks for doing it.

A All right.

MR. BROOKS: Okay. Thank you very much. If there is nothing further, then Case Number

14564 will be taken under advisement.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____ heard by me on _____.

_____, Examiner
Oil Conservation Division

REPORTER'S CERTIFICATE

I, CONNIE JURADO, do hereby certify that I reported the foregoing case in stenographic shorthand and transcribed, or had the same transcribed under my supervision and direction, the foregoing matter and that the same is a true and correct record of the proceedings had at the time and place.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

WITNESS MY HAND this 28th day of October, 2010.

Connie Jurado, CCR, RPR
New Mexico CCR No. 254
Expires: December 31, 2010