STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
12 OCTOBER 1983

EXAMINER HEARING

IN THE MATTER OF:

Application of Joe E. Brown for nine unorthodox oil well locations, Roosevelt County, New Mexico. CASE 7975

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
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For the Applicant: W. Thomas Kellahin, Esq.
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I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 7975.

MR. PEARCE: That case is on the application of Joe E. Brown for nine unorthodox oil well locations, Roosevelt County, New Mexico.

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 to be sworn.

MR. PEARCE: Are there other appearances in this matter?

(Witness sworn.)

WILLIAM J. GRAHAM,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Graham, for the record would you please state your name, sir?

A William J. Graham.

Q And what is your occupation?

A I'm currently President of GNP Exploration, Incorporated, Houston, Texas.

Q Do you hold any technical degrees in

geology or engineering?

A I have a BS degree in engineering from Texas A&M, 1956.

Q Subsequent to graduation, Mr. Graham, have you worked as a petroleum engineer in southeastern New Mexico?

A I worked all over the United States; spent approximately 19 years with Exxon in various engineering and management functions; four years with an independent in Houston, working in Montana, New Mexico, and Texas, and have been an independent consultant and indepedent operator for approximately four years.

Q And your company is in the process of acquiring from the applicant, Joe E. Brown, these properties subject, however, to Mr. Brown obtaining the necessary permits for this infill program that you propose.

A That is correct.

Q Pursuant to this application, then, you have made a study of the facts surrounding Mr. Brown's operation and the wells drilled in this section and you have familiarzied yourself with Mr. Brown's activities with regards to these wells?

A Yes, sir.

MR. KELLAHIN: We tender Mr. Graham as an expert petroleum engineer.

MR. STAMETS: He is considered qualified.

Q Mr. Graham, let's turn to what I've marked as Exhibit Number One, which is simply an ownership plat that shows some proration units and some wells. If you'll orient us, and explain, first of all, what is the producing formation involved in all the wells depicted on the exhibit showing Section 28?

A Well, the producing formation is the San Andres in that particular section and in the entire Chaveroo Field producing area.

Q Section 28 is composed of what kind of acreage, State, fee, Federal?

A This is Federal acreage, all royalties being consistent under the entire section.

Q Where is no disparity, then, in percentages or individuals with regards to any of the 40-acre proration units.

A No, sir.

Q Describe for us a little bit about the history involved in the drilling of these wells in Section 28.

Q The field was originally discovered in 1965 and these wells were drilled in the 1965-66 period; were initially fraced using in today's consideration very minor stimulation techniques. The maximum propping agent would run from 20 to maybe 35,000 pounds of propping agent and 20 to 30,000 gallons of lease crude for the carrying agent, and in today's technology that is considered to be

barely sufficient to reasonably stimulate wells in a tight carbonate, dolomitic tight reservoir.

Q You have indicated, I believe, nine proposed unorthodox oil well locations in this application, and how are those identified?

A Those are identified as Wells No. 17 through 25 on the exhibit, and are drilled predominantly as close to, as spacing will allow, on the quarter quarter sections.

Also to provide some pattern efficiency in the future in the event that we elect to flood this particular property, which we believe capable of water-flooding at some future date.

Q Give us a little general background, Mr. Graham, on your thoughts as to why the San Andres wells in this particular section are, and proration units, are reasonable candidates for an infill program as you propose.

A Well, one of the things that we referred to and looked at initially was a report by (not understood) Federal to the Department of Energy reflecting that at the end of 1979 there were only some 16 percent of the oil in place had been recovered. We had done various and sundry calculations ourself, basically agreed with those calculations.

We took the initial stimulation techniques, had Halliburton rerun those for us and that would have drained, assuming 100 percent effectiveness and

175 foot frac height, about 16-1/2 acres, and we do not consider that you'll get 100 percent effectiveness out of that type of frac, particularly with that type of fluid. Very difficult to get water loss with a crude oil and some wells did screen out prematurely that we can find no records on.

We believe that the drainage on the 40 acres cannot -- cannot be effectively done, nor do we feel like that waterflood would be really effective on that wide a spacing. This field has been compared with several other analogous fields in other areas where the San Andres is currently being flooded, more notoriety than the Chaveroo as far as the flood potential.

Q Have you considered the possibility of re-entering the existing wells and reworking them, restimulating them, reperforating them, in order to obtain the additional reserves that you're seeking?

A We made a very careful evaluation on a well-by-well based on all the records that we could find and initially were drilled by PanAmerican.

A well in case that only three years after initial production was Well No. 15 where they actually set a packer above the existing perforations, attempted to open up what I call the P-2 interval, which is above the normal interval that's opened up in the San Andres Field with a pressure bomb on the bottom, and is the case that we have found either the cement or the formation is not

competent to keep you isolated and when you run into an area of substantial pressure reduction right around the old wellbores, it's almost impossible to get enough diversion in here to get additional intervals stimulated.

Well No. 7 is another example there that a survey was run, a temperature survey was run on that well approximately two years after being completed. The well still had a producing rate of approximately 59 barrels a day, pumping.

At that time, based on temperature survey, it was estimated that over 75 percent of the oil was coming from less than 15 percent of the formation at the top.

This has been further backed up by an attempt by Mr. Brown and them on Well No. 8 and 9. In the P-4 section below the anhydrite they encountered pump in pressures, sustained pumped in pressures of almost 1800 pounds recently, and that is substantially above what you would anticipate because other sections of the wellbore actually take water on a vacuum.

We have talked to Halliburton, Dresser, a number of different companies, and believe it to be very, very difficult to get a diverting agent that would in fact let us stimulate some of these other areas.

The other thing is that these wells are approximately twenty years old. For five years that I can document, and probably for the last ten, I cannot find a

very adequate corrosion and inhibition program on these casings, and we do know of some cases where some iron sulfide solutions have been pumped in Well No. 1 and copious amounts of iron sulfide comes back and I would be extremely leery of trying to refrac down the casing. These old casings and the corrosion problem that you're running into, plus the cementing jobs, we just didn't put as many centralizers in them as they probably need, nor did we reciprocate pipe, and we've examined the cement jobs and we find those in other San Andres locations where we've gone back and tried to frac where the casing was not this old, that even then the cement jobs were not adequate to hold up to current frac techniques.

So we feel like we need fresh pipe and a new approach to the primary cementing in this area, and that is the primary reason that we want to go to the new wells, so we can adequately determine that.

Q All right, sir. The Exhibit Number Two is a written summary of just what you've told us verbally, is it not?

A Basically that's correct.

Q And that was prepared by you?

A Yes, sir.

Q What is your timing for this project, Mr. Graham? When do you propose to drill your first well?

A Well, we would like to, and would plan to initiate drilling the first well, hopefully, within two

weeks after approval of the locations, both from the irregular spacing from the State and the approval from the BLM because it is on a Federal lease.

Q In your opinion, Mr. Graham, will approval of this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A Absolutely. We believe that there is significant amounts of reserves that can be recovered from this program.

Q Exhibits Three and Four, just to identify for the record, Mr. Graham, are copies of logs for -- and I'm not sure which wells they were.

A They're Well No. 7 and Well No. 16. Well No. 7 is located in the southeast quarter. No. 16 is located in the extreme northeast northeast quarter. They are just there as examples of the section.

Well No. 7 was picked because it has consistently made excessive gas compared to every other well in that field. We think that's an indication that the fracture treatment went up into the P-2 zone, where we also believe there are additional hydrocarbon reserves.

That is the well, you might recall, that the original survey indicated we were getting very little contribution from the lower part of this reservoir.

It is a candidate to go back in but we do not feel like we could adequately stimulate the reservoir

from these old wells.

MR. KELLAHIN: That concludes our examination of Mr. Graham. We move the introduction of Exhibits One, Two, Three, and Four.

MR. STAMETS: These exhibits will be admitted.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Graham, how are you going to control the stimulation program on these new wells?

A Primarily with selective perforation and substantially increased pumping rates. The maximum rates, they had, the initial wells had perforations ranging from 40 to 70 different holes and we would restrict that probably to a maximum of 30-35 holes selectively oriented through the San Andres area.

We also intend to core out of the nine wells somewhere between 2 and 4 to get a better feel on the entire San Andres section below the pi (sic) zone to better help us determine where these permeability streaks and fractures lie.

So primarily through rate and a better fluid loss control. By using the 100 mesh sand you can control your fluid loss through fractures much better and I think get a better frac efficiency over, say, 20-25 acres.

We do not believe these wells we can frac

and sustain the 40-acre drainage pattern even with the wells we're going to drill.

We will be shooting for a substantially longer frac length in order to give us, hopefully, an effective 20 to 25 acre drainage pattern.

Q What size of frac treatments are you going to put on these?

A We'll be talking somewhere between 70 and 100,000 pounds. We will initially do an inhibited gel acid treatment to be sure we've got distribution and run some follow up, either temperature or radioactive surveys, to be sure we've got distribution in the formation. That seems to be the biggest problem. I can find very little follow up data on the old wells to really determine wshere the fracs went, and I bellieve that they did not go where everybody through they were going, based on some of the surveys we've seen.

MR. STAMETS: Any other questions of the witness? He may be excused.

Anything further in the case?

The case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division 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. 7975 heard by me on 10-12, 1983.

Richard L. Stamets, Examiner
Oil Conservation Division