NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MAY 11, 1988 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
W. Perkins	Kellahin, Kellahin and Aubrey	Santa Fe
R L Hocker	Oxy USA Inc	Tulsa, OK
Paul W. Benchell	El Paso Natural Gas	El Paso, TX
Bela Hulen	Bryan	Santa Fe
Vic Fryon	OCD	Santa Fe
MIKE PIPPIN	UNION TEXAS PETR	FARMINGTON, NM
J. Bruce	Hinkle Law Firm	Santa Fe
K. Goldsberry	OCD	SF
William F. Carr	Campbell + Black	Santa Fe
Ed + L. Padilla	Padilla + Snyder	SF
Gary Green	SFEOP, LP	Midland, TX
JOE R. PARADISO	SFEOP, LP	Midland, TX
Donald Eckerly	SFEOP, LP	Midland, TX
JERRY SILLERUD	OXY USA INC	MIDLAND TX
Eddie Rodriguez	Siete Oil & Gas	Roswell, NM
Dan Nutter	Consv. Engr	Santa Fe
Kenn Hansen	B... C...	FT Worth

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NAME	REPRESENTING	LOCATION
George A. Hillis	Bass Enterprises Prod Co	Fort Worth

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

11 May 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Siete Oil & Gas Corporation for a waterflood project, Eddy County, New Mexico.	CASE 9368

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Charles E. Roybal
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: Ernest L. Padilla
Attorney at Law
PADILLA & SNYDER
P. O. Box 2523
Santa Fe, New Mexico 87504-2523

I N D E X

E X H I B I T S

MR. CATANACH: We'll call next Case 9368.

MR. ROYBAL: Case 9368. Application of Siete Oil and Gas Corporation for a waterflood project, Eddy County, New Mexico.

MR. PADILLA: Mr. Examiner, Ernest L. Padilla, Santa Fe, New Mexico, for the applicant.

I have one witness to be sworn.

MR. CATANACH: Any other appearances?

Will the witness please stand to be sworn in?

(Witness sworn.)

EDDIE RODRIGUEZ,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Rodriguez, for the record would you please state your name and where your reside?

A Mr. Padilla, my name is Eddie Rodriguez.

I currently live in Roswell, New Mexico.

Q Mr. Rodriguez, who do you work for?

A I'm currently employed by Siete Oil and Gas Corporation in Roswell.

Q What are your duties with Siete Oil and Gas Corporation?

A I am -- my present position with Siete Oil and Gas Corporation is that of production reservoir engineer; basically just all phases of engineering with regard to waterfloods, or economic evaluations, whatever it might be.

Q Mr. Rodriguez, do you -- have you previously testified before the Oil Conservation Division?

A No, sir.

Q Tell us, sir, where you received your degree.

A Yes, sir. I'm a 1981 graduate of the University of Texas at El Paso with a Bachelor of Science in civil engineering.

Q What is your oil and gas experience?

A My previous oil and gas experience is -- includes 5-3/4 years which I spent with Conoco, Incorporated, in the Hobbs Division, working both the oil and gas fields of southeast and northwest New Mexico.

And for the past 7 months I've been em-

ployed by Siete Oil and Gas in Roswell.

Q Mr. Rodriguez, did your duties with Conoco include waterflood projects?

A Yes, sir. I was assigned at three different times to three different waterfloods and my purpose there was to basically monitor waterflood performance and do well conversion from producing over to injection in order to maximize the efficiency of that waterflood.

Q Mr. Rodriguez, have you made a study and are you familiar with the application in the case we're going to present here today?

A Yes, sir.

MR. PADILLA: Mr. Examiner, we tender Mr. Rodriguez as an expert witness in petroleum engineering.

MR. CATANACH: He is so qualified.

Q Mr. Rodriguez, let's turn now to Exhibit Number One, which is the C-108 that you have submitted with your application in this case and I ask you, sir, to first of all turn to the area map, which I believe is the fourth or fifth -- fourth page of this C-108 and have you explain that for the Examiner.

A Sir, this map basically shows the Blackhawk lease, which includes the southeast quarter under Sec-

tion 23, 18, 31; the southwest quarter under Section 24, 18, 31, and the southeast of the northwest quarter of Section 24, 18, 31; this all in Eddy County, New Mexico.

Q And is that all one lease?

A Yes, sir.

Q Is that a Federal lease?

A Yes, sir.

Q Have you communicated with the BLM concerning this application?

A Yes, sir.

Q And what is the -- what is the basis of your -- what was the contents or subject matter of your communication?

A I established communication with Mr. Shannon Shaw in Carlsbad with the BLM, basically explaining to him what we were doing. We went ahead and sent him a sundry notice with our intention to establish a waterflood and also sent him a copy of this information which we have (unclear) to the Commission, and just talking to him this past Friday, he communicated that he basically saw no objections to what we were doing and we anticipate receiving an approval from the BLM.

Q Okay, let's go around and look at this map and tell us who the offset operators are, please.

A Okay. We're currently offset to the east

by primarily West -- Mr. Westall, the (not clearly understood).

Okay. Our east offset is the Keohane (sic) Federal No. 2, which is operated by Mr. -- or by Westall/Mask, and this southeast quarter of Section 24, the shallow rights are operated by them and they are currently Grayburg completions.

To the northwest is some ARCO acreage. They don't have any wells drilled on it right now.

Q Do you have a farmout from ARCO for the acreage that is the waterflood application?

A Yes, sir.

Q Okay.

A We have an ARCO farmout which is north of the Blackhawk Federal lease and those wells right now are Grayburg producers. They are not Penrose producers.

Q Okay. How about to the south of the yellow area, who operates those lands in Section --

A That is also operated by Westall/Mask.

Q Okay. Have you received any objections from ARCO or from Westall/Mask concerning this application?

A We have not received any objection from ARCO. We have received a call from Mr. Jennings, which represents Westall/Mask and does have an interest in these wells, basically saying that he has no objections to this

waterflood.

Q In fact, you may benefit their acreage to the southeast, in the southeast of Section 24, isn't that correct?

A That is correct.

Q Okay, let's go on now to the page following the C-108 where you have started outlining the information for Roman Numeral III of the C-108. Would you discuss that page briefly for the Examiner, please?

A This information right there is tabular data for the Blackhawk Federal No. 3 Well, which we plan to convert over to injection.

Basically what it shows, it shows the well name, the well number, the legal description of the well, which is 2040 feet from the south line, 920 feet from the west line of Section 24, 18, 31, in Eddy County, New Mexico.

Casing record, 8-5/8ths inch casing set at 351 feet with 500 sacks of cement circulated to surface.

We have 5-1/2 inch production casing set at 4498 feet with 1985 sacks of cement circulated to surface.

We plan to pull the existing production tubing from the well and install a Baker Model AD-1 injection packer, or equivalent, at a depth of approximately 3670

feet, and we will also install above that packer, we will have 2-3/8ths inch internally plastic-coated tubing. We intend to load the back side with packer fluid to minimize any kind of external commotion in this tubing.

Other information which is related to this well, it's presently completed in the Queen-Penrose interval from 3722 through 3747 and this will be the injection interval. It's the Shugart-Yates-Seven Rivers-Queen-Grayburg-San Andres Field an the Blackhawk Federal No. 3 Well was originally drilled for oil and gas production and there are no other perforated or tested intervals in this well at the time.

Q Mr. Rodriguez, this well currently produces oil and gas, isn't that correct?

A Yes, sir.

Q How much production are you experiencing from this well?

A The Blackhawk Federal No. 3 Well currently produces approximately 11 barrels of oil per day, 4 barrels of water per day and 49 MCF of gas per day; however this well is exhibiting a very steep decline, approximately in excess, actually, of 35 percent per year and has very (not clearly understood).

Q How about the other wells surrounding it? Well, let's go on now to the -- your -- the wells that you

propose to be the recovery wells, and you might turn to the map as well on the -- and tell the Examiner which are those recovery wells?

A The wells which will be benefiting from the conversion of the Blackhawk Federal No. 3 to injection will be the Blackhawk Federal No. 1, which is in the northeast quarter of the southwest quarter of Section 24; Blackhawk Federal No. 2, which is in the southwest quarter of the northwest quarter of Section 24; and the Blackhawk Federal No. 5, which is at present a Grayburg completion and however, once response is felt on the other, for example, Blackhawk Federal No. 1 and No. 2, this well will be recompleted to the Penrose and simultaneously produced with the Grayburg.

Q Mr. Rodriguez, I notice that there is a well in the southwest quarter of the northwest quarter of Section 24. Is that well going to be a recovery well?

A Sir, this well was originally drilled and it was tested in the Grayburg formation, which is deeper than the Penrose, and it was -- we did find commercial production there.

We perforated the Penrose interval. That zone had minimal amounts of hydrocarbons in it. It may receive some benefit from the waterflood but at this time it does produce only in Penrose interval.

Q So basically it's your testimony that the Penrose formation may be unproductive in that wellbore.

A Yes, sir.

Q How much additional oil will you recover that would not otherwise -- that would not otherwise be recovered were it not for the waterflood project?

A We anticipate recovering incremental secondary reserves of approximately 94,000 barrels of oil from the three wells which will be benefitting from this commercial injection in the Blackhawk Federal No. 3.

Q And that oil is oil that would not otherwise be produced.

A Yes, sir, that is correct.

Q And then do you believe that you will also recover the current 13 barrels that you're going to be losing as a result of converting the well into an injection well?

A Yes, sir, that is correct.

Q Let's go on now, sir, to the schematic that was the following page and have you tell the Examiner the relevant data that you believe is necessary for the Division's knowledge.

A Basically this wellbore schematic here represents what was outlined in the tabular data for the Blackhawk Federal No. 3. It shows again the casing depths,

our proposed packer setting. I do indicate there we will be using plastic-lined tubing, internally plastic-lined tubing, and it also shows our currently perforated interval in that well, which will be the injection interval in this water-flood unit.

Q Okay. Let's now go on and skip through -- go on through the long pages of the C-108 and tell us what that -- that information contains.

A This information is basically tabular da ta of all the wells which fall within a one-half mile radius surrounding the Blackhawk Federal No. 3 and what this sheet shows is -- it shows operator name, well name, the date it was spudded, legal location for these wells, whether or not oil and gas, it's present TD, its casing settings and sack amount of cement used to set this casing, and the present completion interval and perforation -- perforated interval.

Q Mr. Rodriguez, does this list show that there is adequate protection between the injection interval and any other oil and gas producing zone in the area?

A Yes, sir.

Q Or in the wells listed in this list?

A Basically what this thing shows is that most of the wells that were currently -- that currently exist in the Blackhawk Federal Unit are all circulated to surface, I mean the cement used in production casing installa-

tion was circulated to surface and we have excellent bonding across all these wells. We do run (unclear) in all our completions and should be adequate protection against this water going to any other zones.

Q How about fresh water in the area, can you tell us anything about your investigation regarding fresh water in the area?

A There are presently no fresh water or known fresh water sources in this particular area. One proof of that is the fact that Siete Oil and Gas has open pit disposal, approved open pit disposal, and those pits are located on the Blackhawk Federal lease, and this is (not clearly understood) lease (not clearly understood).

Q And this is an exception to the general order of the Oil Conservation Commission which prohibits surface disposal, is that correct?

A Yes, sir.

Q Let's go on now to the schematics that you have attached following the long sheets on the C-108 and have you explain those to the Examiner.

A Those are schematics, or wellbore schematics, basically showing two plugged and abandoned wells that currently exist in the Blackhawk Federal lease, the first one here being the Blackhawk Federal No. 6 Well, which was plugged and abandoned by Siete Oil and Gas in November of

1987 after it was tested noncommercial in the Grayburg interval. There was no Penrose interval to be tested, so therefor -- thereby we went ahead and plugged this well.

The second schematic I'm showing you is the Blackhawk Federal No. 4 Well, which is located to the south of the Blackhawk Federal No. 3 Well, which we intend to convert to injection. And this Blackhawk Federal No. 4 was originally drilled to a total depth of 4500 feet. It was determined to have noncommercial pay in the Grayburg - Penrose intervals by conventional log analysis, thereby the well was plugged.

Q Okay. Let's go on now to the portion of the C-108 that deals with Roman Numerals VII and VIII and have you tell the Examiner what information that contains regarding injection rates and pressures.

A Under Roman Numeral VII basically what I'm showing is the anticipated injection rates which will be going into the Blackhawk Federal No. 3 Well and that is approximately 300 barrels of water per day.

The maximum rate of water which we plan or may ever inject into this well is 500 barrels of water per day, which is the maximum (not clearly understood) of those (unclear) pumps which we will be installing for injection.

The injection station for gathering (un-

clear) injection water will be a closed system.

Q What's the significance of a closed system, Mr. Rodriguez?

A Basically what we're going to be doing is gathering water which would otherwise be disposed into the open pits and processing it for injection, basically the addition of oxygen scavengers (sic) and any scale additives which may be necessary to maintain a clean water source with no significant oxygen bubbles in it.

Q Okay.

A The injection pressures, the anticipated injection pressure is approximately 370 psi; however, if -- since we have no available core data, if that formation tends to be a little tighter than anticipated and we need to increase our pressure, we will not exceed 740 psi per foot, which is advised by the .2 psi per foot maximum injection pressure imposed by the NMOCD.

Any necessary increases above this pressure will be obtained be obtained administratively from the NMOCD using the step rate test data.

Q At what is -- at what pressure do you estimate that the formation will be fractured by injection pressures?

A Since we have considerable experience in working on these wells in the area, we anticipate that the

pressure, parting pressure would approximately 400 pounds on surface.

Q So even if you exceed the 740 psi you don't expect damage to the formation until you reach somewhere about 1200 psi?

A Yes, sir.

Q Okay. Go ahead with your testimony, sir.

A What this number 4 there shows is we will be injecting water into the Blackhawk Federal No. 3 from -- which is produced water from offsetting Siete operated leases, those being the Geronimo Leases, Inca Leases, and which currently produce from the Grayburg and Delaware formations.

Q These are adjoining leases, Mr. Rodriguez?

A Yes, sir.

Q And have you conducted water compatibility tests for this injected water?

A Yes, sir. There is a letter attached from Mr. Dave (unclear) with (unclear) Chemicals there in Hobbs who went out and took water samples from the leases which we will be injecting water into this Blackhawk Federal 3, and we also took a water sample from our Siete operated Scotsdale leases, which are Penrose completion; the reason being we chose -- or we had to use that Penrose water sample

as the Blackhawk Federal leases do not produce any water, we were not able to obtain a water sample from the Blackhawk leases; thereby we had to use offsetting Siete operated leases in the Penrose and then we mixed this water, Penrose water, and the water sources which we'll be using for injection, and he determined that the scaling (unclear) were very low and therefor he does not anticipate us having any problems.

He does recommend that we make sure that we free this water of oxygen before we inject it.

Q And you're going to do that?

A Yes, sir.

Q Okay. Let's go back now and have you discuss in general the geologic data that you have attached here on the final page of -- with regard to Roman Numeral VIII. Tell us about that geology.

A A basic description of that reservoir, that Penrose reservoir which we intend to waterflood, it's an east/west trending stratigraphic trap. It's small in nature and it's been -- its reservoir limits have been well outlined by Siete's drilling in the area.

This Penrose sand is a fine to medium grade sandstone of the Guadalupe Series, Permian age. It exists at an average depth of 3723 feet, which is approximately -16 feet subsea; has a gross average thickness of 200

feet and the net effective pay is approximately 8 feet, and again there are no sources of drinking water overlying or underlying this reservoir.

Q Is, Mr. Rodriguez, is the sandstone that you discussed, is that conducive to a waterflood?

A Yes, sir, this sandstone of this nature, especially exhibiting the other qualities which it did, upon initial completion the GOR was initially 1000 standard cubic feet to 1 barrel of oil. This GOR has progressively gone up, as I said. The wells themselves exhibited a very steep decline in production and those -- the offsetting or waterfloods in the area have demonstrated they are very receptive to waterflooding.

Q Okay. Mr. Rodriguez, in your opinion would approval of this application be in the best interest of conservation of oil and gas?

A Yes, sir.

Q And would correlative rights be impaired in any way by approval of this application?

A No, sir.

MR. PADILLA: Mr. Examiner -- well, let me go on to Exhibit Number Two.

Q I hand you Exhibit Number Two and have you tell us what that is, Mr. Rodriguez?

A Exhibit Number Two is the verification

that we did notify ARCO Oil & Gas, Mr. Westall and Mr. Jennings as to the fact that we were approaching the Commission for approval to install this waterflood in the Blackhawk lease, and, as I mentioned earlier, there has been no objection from any of these parties.

MR. PADILLA: Mr. Examiner, we tender Exhibits One and Two and we tender the witness for cross examination.

MR. CATANACH: Exhibits One and Two will be admitted into evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Rodriguez, that's Federal land, is that correct?

A That is correct.

Q So there is no surface owner, just the BLM, it's not leased (not clearly audible).

A No, sir.

Q You said that your Blackhawk No. 3 is currently producing at a decline of 35 percent per year?

A Yes, sir.

Q What are your other wells currently producing in the area?

A Blackhawk Federal No. 1, which offsets

that Blackhawk Federal No. 3, currently produces about 7 barrels a day and it is also showing a very significant decline.

Blackhawk No. 2 produces approximately 4 barrels a day and the Blackhawk Federal No. 5, which as I mentioned, is a Grayburg completion, is producing about 20 barrels a day roughly.

Q So they can all be considered as marginal wells?

A Yes, sir.

Q You said when you get response to the waterflood you're going to complete the No. 5 in the Penrose and produce both zones together, the Penrose and the Grayburg --

A Yes, sir.

Q -- is that correct?

A They're (not understood), basically opening up that additional pay will be, I guess, in compliance with Commission rules and basically we'll just approach this matter using good waterflood practices, basically pumping your wells off and keeping any cross flow between those two areas.

Q Is the Grayburg currently being flooded out here?

A Not in the immediate area.

Q The -- you also said you had some producing wells up in the northwest quarter of 24?

A Yes, sir.

Q Are those -- are those also in the same pool?

A Yes, sir, they are in the same pool, the ARCO Federal No. 1 and the ARCO Federal No. 2, which is operated by Siete. Both of them are currently producing from the Grayburg interval.

Q Those are both current Grayburg producers, you say?

A Yes, sir.

Q They've never been completed or produced in the Penrose?

A The ARCO Federal No. 1 is open in the Penrose; however, when we opened up this interval, basically swabbed down to nothing, had very small amounts of hydrocarbons in it. It's still open; however it does not contribute anything towards production in this well.

Q Have you conducted any kind of injectivity tests on the No. 3 or --

A Not at the moment. Basically reservoir pressure has dropped approximately 250 psi at this time and our estimated permeability is approximately 50 millidarcies, so I anticipate once we put this waterflood, or activate

this waterflood, we'll probably be taking water on vacuum for a period of time.

Q Okay, and all you're requesting is the .2 psi per foot initially, right?

A Yes, sir.

Q Mr. Rodriguez, you said on all the wells that you've drilled in this area you -- you do -- you run cement bond logs on those?

A Yes, sir.

Q Can I get you to submit cement tops from the bond logs on these wells?

A There are no cement tops; they are all circulated to surface.

Q On the production string?

A Yes, sir.

Q They're all circulated?

A Yes, sir.

Q Mr. Rodriguez, how long before you see some response, do you think?

A Basically we anticipate it will take at least a year before we see any response from this water-flood, the reason being is that the preventing premature water fingering on over to our producing wells. We intend to maybe cut that average 300 barrels of water per day down to about 150 to keep from reaching the producers prematurely

since all those wells were artificially hydraulically fraced.

MR. CATANACH: That's all the questions I have.

MR. PADILLA: Mr. Examiner, if I may, if the Division is amenable to approving this application, we would request that any difference between the 740 psi based on the .2 psi limitation, and the 1200 psi parting pressure would be authorized administratively without having to come back for a hearing in that range.

MR. CATANACH: Yeah, that's part of the typical order, Mr. Padilla. The language is in the step rate tests.

Anything further in this case?

If not, it 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 (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me 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. 9368, heard by me on May 11 1989.

David R. Catanach, Examiner
Oil Conservation Division