

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

13 February 1985

EXAMINER HEARING

IN THE MATTER OF:

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| Application of Texas American Oil | CASE |
| Corporation for a waterflood pro- | 8481 |
| ject, Eddy County, New Mexico. | |

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

| | |
|--------------------------|-------------------------------|
| For the Oil Conservation | Jeff Taylor |
| Division: | Attorney at Law |
| | Legal Counsel to the Division |
| | State Land Office Bldg. |
| | Santa Fe, New Mexico 87501 |

| | |
|--------------------|----------------------------|
| For the Applicant: | W. Thomas Kellahin |
| | Attorney at Law |
| | KELLAHIN & KELLAHIN |
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I N D E X

JAMES B. DRAPER

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MR. STOGNER: Call next Case
Number 8481.

MR. TAYLOR: The application of
Texas American Oil Corporation for a waterflood project, Ed-
dy 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. STOGNER: Are there any
other appearances? There being none, please raise your
right hand.

(Witness sworn.)

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Draper, would you please state your
name and occupation?
A My name is James Draper, and I work as a
petroleum engineer for Texas American Oil Company, in Mid-
land, Texas.

1
2 Q Mr. Draper, have you testified before the
3 New Mexico Division?

4 A No, I have not.

5 Q Would you describe for the Examiner when
6 and where you obtained your degree?

7 A Yes. I got my Bachelor of Science in
8 chemical engineering from UT-Austin in 1971.

9 And then I worked as a chemical engineer
10 for the Texas Air Control Board for ten years, and then
11 started working as a combination chemical and petroleum
12 engineer for Texas American Oil two and a half years ago.

13 Q Pursuant to your employment with Texas
14 American Oil Corporation, have you made a study of the pro-
15 posed waterflood project that your company will institute in
16 the Grayburg-San Andres-Queen?

17 A Yes, I have.

18 Q And pursuant to that study, have you
19 caused to be prepared the Division Form C-108 and its
20 attachments?

21 A Yes, I have.

22 MR. KELLAHIN: We tender Mr.
23 Draper as an expert engineer.

24 MR. STOGNER: He is so quali-
25 fied.

Q Mr. Draper, let me show you an ownership
plat, which we've marked as Exhibit Number One, and have you

1
2 generally describe for the Examiner the proposed method of
3 operation of the waterflood project.

4 A Yes. What we plan to do initially is to
5 run a 5-spot preliminary flood utilizing 17-C, 518-B, and 24
6 as the injection wells, and 19-C as the producing well.

7 Q The locations of the injector wells are
8 shown on Exhibit Number One outlined in red, are they not?

9 A That's correct.

10 Q And what is the flood formation?

11 A The flood formation would be the
12 Grayburg-San Andres. Well, a combination of both
13 formations.

14 Q Are there other waterflood areas in the
15 immediate vicinity that flood the Grayburg-San Andres forma-
16 tions?

17 A Yes, there are. Anadarko has a flood es-
18 tablished immediately to the north of us.

19 Q Can you identify for us on the exhibit
20 which ones of the Anadarko wells are injector wells?

21 A Yes, I can. They're marked in, I be-
22 lieve, green on the exhibit.

23 Q Has Anadarko commenced their waterflood
24 operation?

25 A Yes, they have.

Q Would you describe for the Examiner, gen-
erally, what the anticipated rates of injection in the in-
jection wells will be?

1
2 A Yes. We plan to inject approximately 800
3 barrels a day. Let me double-check that. Yes, that's cor-
4 rect.

5 Q And do you anticipate that the injection
6 pressure will exceed the guidelines of 0.2 psi per foot of
7 depth?

8 A Yes, we do.

9 Q If we use the Division guideline, what
10 would be the surface pressure or approximate surface pres-
sure at the wellhead with that guideline in place?

11 A I believe it's approximately 500 psi.

12 Q And what is the anticipated injection
13 pressure that you would seek?

14 A 1500 average; maximum 1800 psi.

15 Q What is the authorized maximum injection
16 pressure used by Anadarko in its flood?

17 A It's approximately 1500.

18 Q So the 1500 pounds will equate to what
19 has been approved for Anadarko?

20 A That's correct.

21 Q Would you outline for the Examiner how
22 you would propose to submit evidence about step rate tests
on wells either in this area or your own wells?

23 A Well, we have two routes to go. We can--
24 we have Anadarko's application and data. We have their step
25 rate tests. And--and/or we can run step rate tests on our
four injection wells.

1
2 Q All right, sir. Let's go through some of
3 the information, now, in Exhibit Number Two, which is the C-
4 108.

5 And if you'll turn to the C-108 and look
6 at the first wellbore schematic on the No. 18 well, this is
7 one of the proposed injector wells?

8 A That is correct. I want to make sure
9 that I'm looking at the 18. That is correct.

10 Q Would you describe for the Examiner what
11 you propose to do for this--to--this is not a new well, it's
12 a conversion of an old producing well?

13 A That's correct.

14 Q All right. Describe for the Examiner
15 what you will do to convert this producing well for injec-
16 tion.

17 A Well, what we'll do is essentially run a
18 packer into the well, set at approximately 2500 feet, and
19 then clean up the Grayburg-San Andres perforations below the
20 packer and inject into the Grayburg and San Andres forma-
21 tions from below a packer.

22 Q From the setting of the packer on up to
23 the surface, will there be a continual string of cement iso-
24 lating the casing and tubings from various formations?

25 A You're saying from the packer all the way
to--

Q Will there be interconnected casing ar-
rangements with cement--

A Okay. Yes, sir--

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Q --so that we'll have cement--

A -- that's correct.

Q --all the way from surface to packer.

All Right. And will you fill the space between the casing and the tubing with some inert fluid?

A That is correct.

Q All right.

A And we will also continually monitor the backside pressure.

Q All right, sir. Let's turn to the second injector well, which I have as No. 24, and have you describe if there are any differences in the method in which this well will be converted for injection.

A No. We will do it approximately the same way.

Q All right, sir. And if you'll turn now to Well No. 17, which is the third injector, are there any significant differences between the completion on this well and the previously described completions?

A No.

Q All right. And finally the last of the four injectors is the No. 3. Again, are there any differences for this well that are not described in the other wells?

A No. We plan to do all four of them the same way.

Q So let's turn now to the area map and you

1
2 have caused to be identified for us an area of review which
3 is an area contained within a half mile radius of any of the
4 injection wells.

5 A That's correct.

6 Q Pursuant to the requirements of the C-
7 108, have you made a tabulation?

8 A Yes, we have.

9 Q And would you describe for us what is
10 contained on the tabulation of wellbore information?

11 A We went through and looked at every well
12 in the area of review and set out its well name, number,
13 operator, location, whether the well was P & A or whether it
14 was still producing, when it was spudded, when it was com-
15 pleted, what depth it was drilled to and the zone, if we
16 could find it, and the record of completions as far as the
17 perforations and casing that was strung, et cetera.

18 Q Have you identified any of the wells
19 within the area of review that currently produce from
20 formations below the Grayburg-San Andres?

21 A We can look through there. I don't be-
22 lieve that there is, but let me check.

23 Yes, we've got them -- we've got them
24 identified that produce below the Grayburg. There were
25 several that do.

Q All right. Are all the producing wells
that produce below the Grayburg-San Andres, do they have
casing--I'm sorry, do they have cement run across the dispo-

1
2 sal interval from the Grayburg and San Andres?

3 A Yes, as best we can tell.

4 Q All right. Within the area of review, do
5 you have plugged and abandoned wells?

6 A Yes, we do.

7 Q And do any of those plugged and abandoned
8 wells reach depths below the Grayburg-San Andres?

9 A Yes, they do.

10 Q And have you prepared schematics to show
11 the plugging details for the plugged and abandoned wells?

12 A Yes, I have.

13 Q In reviewing that information, Mr. Dra-
14 per, do you find any of the plugged and abandoned wells
15 within the area of review that in your opinion as an engin-
16 eer have not been adequately plugged and abandoned?

17 A No, we didn't--have not.

18 Q Do you have an opinion as to whether the
19 method of operation of injection of water into the Grayburg-
20 San Andres will be done in such a way that the water dis-
21 posed of in that formation will remain confined to that for-
22 mation and there will not be a reasonable hazard to the con-
23 tamination of fresh water sources at any depth?

24 A Yes.

25 Q Do you have an opinion as to whether or
not there is known fresh water drinking sources in the area?

A To the best of our knowledge there is
none. We checked with our district office in Monahans and

1
2 they were not aware of any and we reviewed the Anadarko ap-
3 plication they had submitted several years ago and they lis-
4 ted that there were none.

5 Q Do you find any evidence of faulting or
6 other hydrologic connections between the disposal interval
7 and any shallow aquifers that might be water-bearing?

8 A No, we have not.

9 MR. KELLAHIN: If the Examiner
10 please, the third exhibit is a copy of the return receipt
11 cards showing that the C-108 has been mailed and received by
12 all the offsetting operators and the owner of the surface,
which in this case is the State of New Mexico.

13 Mr. Examiner, we move the in-
14 troduction of Exhibits One, Two, and Three.

15 MR. STOGNER: Exhibits One,
16 Two, and Three will be admitted into evidence at this time.

17 MR. KELLAHIN: That concludes
18 my examination of Mr. Draper.

19 CROSS EXAMINATION

20 BY MR. STOGNER:

21 Q Mr. Draper, on Exhibit Number One the
22 four wells marked in red, the planned injection wells, are
23 they presently producers?

24 A Yes, they are.

25 Q And are they producers in the --

MR. KELLAHIN: Grayburg-San An-

1
2 dres?

3 Q -- San Andres or the Grayburg, or both?

4 A I think they're actually producers in the
5 Grayburg and the San Andres and the Queen. I'll have to
6 look through here and make sure that they went through all
7 of them.

8 Q What is their production rate at this
9 time?

10 A None of the wells up there are producing
11 more than one or two barrels a day. I might give you a lit-
12 tle added history.

13 We are in the processes of winding up a
14 Queen flood in this area and it's just essentially reached
15 economic limit.

16 Q So there is a Queen flood presently going
17 on in this particular area and these four wells are part of
18 that as producing wells at this time.

19 A That's correct.

20 Q However, if you start injecting in here
21 it will just be the Grayburg and the San Andres formations.

22 A That's correct.

23 Q And these four wells, although they are
24 presently producing, as you say, from the three zones, they
25 are classified as stripper.

A Just a second. Let me -- let me double
check something, because I think that we squeezed -- we
squeezed three of those four wells off of the Queen, so they

are -- they are currently not producing in the Queen, and we have one that we're going to have to -- that was never completed in the Queen.

Okay, I'm sorry. I needed to have looked -- to have reviewed this again.

We have three, let's see, the 18, and the 17, and the No. 3 have -- were squeezed, the Queen was squeezed. Then we drilled out the cement and pressure tested them to 1000 psi and they held.

Now, the 18 was not completed into the Queen. No, the 24, excuse me, the No. 24 was not completed into the Queen.

Q So none of them are completed in the Queen.

A Right.

Q Okay. Presently.

A Presently.

Q So does your production rate still hold true for these four wells that they are under 10 barrels of oil per day?

A That is correct. In fact, that's just the rule for all our wells up there right now. We don't have any that are producing over 10 barrels of oil a day.

Q Okay. Are these on pump?

A Yes, they are.

Q Okay. The No. 19, let's see, that's the -- that's your producing well that you will be producing.

1
2 That will make up your producing well 5-spot pattern, is
3 that right?

4 A That's correct.

5 Q What's the present location on that? I
6 can't very well make it out, which well that is?

7 A I may have to come up there and point it
8 out to you.

9 Q Okay, will you, please?

10 A Yes.

11 Q Do you have the footage location right
12 now?

13 A Yeah.

14 Q Why don't you give me the footage loca-
15 tion?

16 MR. KELLAHIN: Is this it?

17 A Yes. 1980 feet from the north line, 1980
18 feet from the west line.

19 Q Thank you. Okay, let's refer now to your
20 listing of all the wells within 1/2 mile radius.

21 A Okay.

22 Q You show some in here that's plugged and
23 abandoned and you give a detailed schematic of those wells
24 further back.

25 The wells that are producing, most of
them seem to be in the Seven Rivers. Well, you have some in
the Jackson, and such as that.

Do you know the tops of cement in some of

these?

A No, I do not.

Q Could you supply me that information, because looking through here I don't even see a hole size, casing size, and I couldn't even begin to calculate it.

A Yes, sure, we --

Q So would you supplement this portion of this exhibit, the tops of cement and the long strings, if you would, please?

A You bet.

We can supply -- we've got the scout tickets on those. Would you like -- would that be sufficient or would you like for us to go ahead and do a volumetric calculation and --

Q Why don't you do a volumetric calculation or if you can show the top of cement if it was taken by temperature logs, put that in there, too.

A Okay.

Q This particular project will take in four leases. Am I correct on that?

A Yes. Well, essentially that's -- that's correct.

We carry -- we carry all of our Etz State leases as --

Q That's E-T-Z, is that right?

A Yes. We've got them listed in our wells like it's Etz State B and Etz State C and Etz State, but I

1
2 think they're only called Etz State as far as the State of
3 New Mexico is concerned.

4 I'm not sure about that, but our unit
5 boundaries are outlined in the -- in your Exhibit One there,
6 in the dark.

7 Q Yeah, what is that dark line?

8 A That --

9 Q Unit boundary?

10 A That's -- that's the leases that we own.

11 Q Okay.

12 A That we're working on.

13 Q Do you have a proposed name for this particular waterflood project?

14 A Yes, we're going to call it the Etz State
15 Waterflood.

16 Q State or States?

17 A Etz, E-T-Z, State.

18 Q State Waterflood.

19 A Grayburg Waterflood.

20 Q Okay. Are there any other waterflood
21 projects within a two mile radius in the Grayburg-San Andres?

22 A There was the Anadarko and --

23 Q Other than the Anadarko.

24 A There may be another one to the east that
25 would be within a two mile radius.

Q Okay.

1
2 MR. STOGNER: I have no further
3 questions of this witness.

4 Mr. Kellahin, do you have any-
5 thing further of this witness?

6 MR. KELLAHIN: No, sir. I
7 would like to inquire as to whether or not you desire us to
8 obtain out of the Anadarko transcript the pressure limita-
9 tion information that justified using a higher pressure in
10 the area or whether or not you want us to take step rate
11 tests on our wells to justify the limitation in excess of
the 0.2 psi.

12 MR. STOGNER: In the Anadarko
13 case, it sounds like you're familiar, did they -- was this
14 grandfathered in before the pressure limitations were given
15 by the OCD?

16 MR. KELLAHIN: I think they've
17 got some new step rate tests in their wells.

18 MR. STOGNER: And they obtained
those administratively, did they not?

19 MR. KELLAHIN: Yes, after an
20 order was entered approving the flood with the condition
21 that they submit step rate tests to the Director and to the
22 District.

23 MR. STOGNER: When would Texas
24 American be ready to take these step rate tests, if we re-
25 quired them on your wells?

A I don't know to give you a really good

1
2 time because we're just, you know, we're moving along as --
3 as best we can go on it, but we're also watching the econo-
4 mics with oil prices, and if it turned out that the oil
5 price went down to the point that we didn't want to do it,
6 you know, we would just postpone it.

7 I would, as things now stand, I would an-
8 ticipate that sometime within the next three to four months.

9 MR. STOGNER: Mr. Kellahin, Mr.
10 Draper, would Texas American have any objection if we wrote
11 an order as such limiting to 0.2 psi, then obtain a higher
12 pressure limit administratively, or do you wish to have a
13 finding and a clause requiring you to get the step rate
tests done on these four wells?

14 MR. KELLAHIN: I don't know
15 what the cost is of the step rate tests, Mr. Examiner. If
16 you're satisfied with incorporating for this adjoining pro-
17 perty the step rate test information from Anadarko, then
we'd like the increased pressure approved in this order.

18 If, in reviewing that informa-
19 tion, we'll be happy to submit it to you, if you're comfort-
20 able with the adequacies of the offsetting step rate tests,
21 then we'd be satisfied with an order that approves it up to
22 the limitation now existing plus the condition that on these
23 wells we test to the satisfaction of the District.

24 MR. STOGNER: Okay, why don't
25 you go ahead and submit to me the additional information
concerning the Anadarko wells to the north and I'll look

over those and make a decision.

I'm including that in there or requiring step rate tests on all four wells, or limiting to 0.2 psi and subsequently getting the higher pressures through administrative procedures.

MR. KELLAHIN: Fine.

MR. STOGNER: Okay, so I need two bits of information from Texas American, that being the top of the cement and the producing wells within a half mile radius and the Anadarko pressures, is that correct?

MR. KELLAHIN: Yes, sir.

MR. STOGNER: Is there anything further of this witness?

If not, he may be excused.

Anything further in Case Number 8481?

There being none, Case Number 8481, I will hold the case open until -- pending the additional information.

(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. 8481,
heard by me on 13 February 1985.

Michael E. Hagan, Examiner
Oil Conservation Division