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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 2, 1970

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production
Company for a unit agreement, Lea
County, New Mexico.

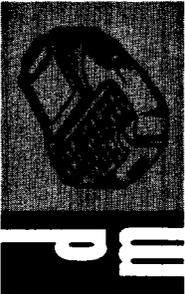
Case No. 4469

Application of Anadarko Production
Company for a waterflood project,
Lea County, New Mexico.

Case No. 4470

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING



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MR. NUTTER: Case 4469.

MR. HATCH: Case 4469, Application of Anadarko Production Company for a unit agreement, Lea County, New Mexico.

MR. KELLAHIN: Jason B. Kellahin, Kellahin and Fox, Santa Fe, appearing for the Applicant in association with Mr. Robert E. Anderson who will present the case. I would move that it be consolidated for the purposes of the record with Case 4470.

MR. NUTTER: We will call Case 4470 at this time.

MR. HATCH: Case 4470, Application of Anadarko Production Company for a waterflood project, Lea County, New Mexico.

MR. NUTTER: Cases 4469 and 4470 will be consolidated for purposes of testimony.

C. W. STUMHOFFER

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ANDERSON:

- Q State your name for the record?
- A C. W. Stumhoffer.
- Q By whom are you employed, Mr. Stumhoffer?
- A Anadarko Production Company.

Q In what capacity?

A Superintendent of the secondary recovery division.

Q Have you qualified and testified as a witness before this Commission?

A Yes, I have.

MR. ANDERSON: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Anderson) Mr. Stumhoffer, briefly, what is sought by Anadarko's Application in 4469?

A In Case 4469 Anadarko seeks approval of its Teas-Yates Unit that has been formed for secondary recovery of oil from the Yates formation that is found at a depth of 4147 feet to 3376 feet as shown on Gammaray Nutron Log on Anadarko's Federal "A" Number 3 located 1980 from the North line and 1650 from the West line of Section 14, Township 20 South, Range 33 East, Lea County, New Mexico.

Q Mr. Stumhoffer, I refer you to what was attached to the Application as Exhibit 1, being the unit agreement dated as of June 1, 1970. Have you a copy of that before you?

A Yes, I do.

Q Was that unit agreement prepared by you or under

your direction or employees supervised by you?

A Yes, it was.

Q I refer you to Exhibit "A" to that being the plat of Teas Yates Unit, will you explain briefly why the particular unit area depicted there was chosen for unit possession?

A We chose the particular boundaries that have been outlined to include all wells that are produced from the Yates formation under the Teas Yates Seven Rivers Field. The boundaries were depicted by the fact that the reservoir limits had been defined by dry holes on all sides of the reservoir.

Q And the proposed unit area now concludes what was formally the proration unit for all the wells that produced from the Teas Yates sand in the pool?

A From the Yates formation, right.

Q And what is the unitized formation as proposed by the unit agreement?

A It is the Yates formation as found in the well that I gave the information on.

Q That is the only formation that is unitized?

A That's right.

Q Is Exhibit "A" portion of Exhibit 1, the plat originally attached to the Application correct in all respects?

A It is not.

Q You have a corrected plat?

A Yes, I do.

Q Was that prepared by you or under your direction or under your supervision?

A Yes, it was.

Q In what respect does that differ from the plat attached to the original Application?

A It shows Anadarko as the Lessee of record of tract 15. Tract 15 was previously an unleased federal tract that Anadarko obtained by bid effective November 30 of this year, 1970.

Q I refer you to Page 3 of Exhibit "B", being schedule of ownership in the unit agreement and ask you if that is in all respects correct?

A No, it is not.

Q In what respect is it incorrect?

A It is incorrect as to the Tract 15 ownership.

Q And do you have the corrected Page 3?

A Yes, I do.

Q Was that prepared by you or under your supervision?

A Yes, it was.

Q With the exception of the two corrected pages

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which have been handed to the Examiner, is Unit 1 the unit agreement in all other respects correct?

A Yes, it's correct.

Q Has the approval of the regional supervisor, USGS, been obtained to this unit?

A Yes, he has given preliminary approval.

Q And what is yet lacking to obtain final approval?

A The approval of the New Mexico Oil Conservation Commission as to the approval of the unit.

Q Now, I direct your attention to Paragraph 3 of the Application wherein we point out that certain owners of overriding royalty have not as yet signed or ratified the unit agreement. Subsequent to the filing of the Application, has ratification been received from any of those indicated owners?

A Yes, we have received a ratification from New Mexico Boys' Ranch, Inc.

Q And do you know the status of the ratification as to any of those other parties?

A We have not obtained ratification from the other parties shown. We have contacted and are attempting to obtain ratification from three of the remaining four. The fourth one we have been unable to locate. We have had no

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refusals to ratify the unit agreement.

Q Are all tracts within the unit area qualified under the terms of the unit agreement?

A Yes, sir.

Q Ratification was necessary to present to royalty and working interest owners?

A Yes.

MR. ANDERSON: At this time I would move the admission into evidence of Exhibit 1 originally attached to the Application as corrected by the substituted pages.

MR. NUTTER: Exhibit 1 as amended by the addition of the two pages will be admitted in evidence in Case 4469.

(Whereupon, Applicant's Exhibit 1 was admitted in evidence.)

Q (By Mr. Anderson) Now, then, Mr. Stumhoffer, turning to Case 4470, I will ask you to explain briefly to the Commission what is sought by this Application?

A In Case 4470 Anadarko seeks approval from the New Mexico Oil Conservation Commission for the proposed waterflood development of the Teas Yates Unit.

Q Now, the proposed area, is that the area shown on Exhibit 1 attached to the Application within the heavy

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broken lines as the unit area?

A Yes.

Q Do you propose all of that as the waterflood area?

A Yes.

Q What about the status of the presently producing well shown on that Exhibit? Those that are producing, are they making their allowable?

A They are all marginal wells at or near their economic limit of three barrels per day. We have some less than that.

Q Would that be regarded as a strip of well?

A Yes, it would be.

Q Would you explain briefly the proposed injection program that you contemplate if this Application is granted?

A We propose to use a peripheral tap injection pattern using the low, **structurally low wells** for injection. There will be ten injection wells. Of the ten wells, seven will be conversions of existing producing wells. They are listed on Exhibit 4.

Q At this point, I will ask you if Exhibit 4 attached to the Application was prepared by you or under your direction?

A It was.

Q Is it correct?

A Yes.

Q In all respects?

A Except for Tract 15 it is now an Anadarko Lease and on the Exhibit 4 it is shown as an unleased federal tract.

Q And has corrected page 3 been prepared to show that change in ownership?

A Yes, it has.

Q Proceed.

A We propose to utilize ten wells for injection purposes of the ten, seven will be conversions of existing producing wells as previously stated. We will re-enter two dry holes that shows in the Yates formation and complete them for injection and we will convert a temporarily abandoned Yates formation well that was completed for production but never was produced for injection and that will total ten injection wells.

Q Mr. Stumhoffer, I would refer you to Exhibit 2 and 3 that were attached to the Application and ask you if those Exhibits were prepared by you or under your supervision?

A Yes, they were.

Q Whtt is Exhibit 2?

A Exhibit 2 is a gamma ray nutron log of the City

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Service Jewett McDonald (C) No. 1 Well located in the Southwest of the Northwest quarter of Section 18, Township 20 South, Range 34 East, Lea County, New Mexico. On this log we have shown the producing formation as to subject to water injection.

Q Is that log typical of the formation shown in all the wells you propose to use as injection wells?

A Yes, it is.

Q What about Exhibit 3?

A Exhibit 3 is a diagrammatic sketch of a typical water injection well completion on which we have shown the casing program for Well No. 1-1 on the Teas Yates Unit. This is the well that Exhibit 2 shows the gamma ray neutron log we propose to inject into the open hole section down tubing set on a packer at the bottom of the five and a half inch O.D. casin string that has been cemented. We will inject approximately at 300 barrels of Seven Rivers water per day at a service pressure of approximatly 1800 pounds.

Q Is the information shown on that schematic diagram typical of the ten injection wells that will be utilized?

A All ten injection wells will be completed similar to this well. They will be an injection into open-hole interval or through perforations or a combination thereof

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under a packer.

Q I call your attention to Section 3 of the Application where there are listed certain overriding royalty owners who have not computed the unit agreement. We have referred to them a moment ago. Is this list as presently set out correct or does the same information apply with respect to New Mexico Boys Ranch?

A The same applies to New Mexico Boys Ranch as previously they have ratified the unit agreement, the others have not.

Q With the exception of these interested owners shown on this Paragraph 3 have all other overriding royalty owners, overriding interest owners and working interest owners signed the unit agreement and operating unit agreement under which this waterflood will be conducted?

A We have a 100 percent working interest and royalty ratification under all tracts except Tracts 12 and 13.

Q Now then I call your attention to the plat of the unit area which also depicts the proposed waterflood area and notice on there that each of tracts 12 and 13 which are presently producing wells are indicated to be converted to injection wells if the Commission grants the Application here. Now, if for any reason those wells were not permitted

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to be converted to injection wells, would that materially interfere with the effectiveness of your proposed flood?

A Yes, it would.

Q Are any of the royalty interest owners or overriding royalty owners who have not signed under Item 12 or 13?

A Yes, they are under 12 or 13. They are minor overriding royalty interest as set out in the Application.

Q Under Tract 12, we now have one, E. B. Nobel and under 13 these three individuals who have not ratified the unit?

A That's right.

Q What arrangements will Anadarko make to account to these royalty owners for the conversion on the only producing well on the tract where they own and they have not ratified the unit agreement if these wells are converted to injection wells so they no longer have production from their tract?

A Anadarko was willing to assume responsibility for payment of the monies due these overriding royalty interest owners on a unit basis.

Q Are you aware of the possibility that they would be held to be entitled to be paid on something either than

the unitized basis?

A Yes, I realize that.

Q Are these interests of such magnitude that it wouldn't make any appreciable difference in the economics of your program?

A No, it wouldn't.

Q Are they willing to proceed even if they are paid on a non-unitized basis?

A The reason we would like to convert these wells into injection, they are low structurally and further for maximum recovery they should be converted to injection.

Q Does the entire unit area as proposed strictly qualify as a waterflood project area under the provision of Rules 701E2?

A No, it does not.

Q Are you asking the entire unit area be approved as an exception to that Rule?

A No, we are only asking for allowable purposes. We have some 40-acre proration units that do not have wells on them and we only ask that the 40-acre proration units that have existing wells or will have injection wells to be considered for allowable purposes. We would like to include the whole area in the waterflood area.

Q Why would you like it all?

A Because of the type of waterflood pattern we propose where we plan to use a perforable type flood. We will drill oil across these undrilled 40-acre proration units to existing well and we feel like they should be within the waterflood area. We feel that the economics do not justify drilling of wells on 40-acre proration unit.

Q You would propose the entire unit area of the Teas Yates unit as a waterflood project area but with the recognition no allowable based on that number of acres necessarily?

A That's correct.

Q Were Exhibits 1 through 4 and the one change, Page 2, Exhibit 1, prepared by you or under your direction?

A Yes, they were.

MR. ANDERSON: We move the introduction into evidence of Exhibits 1 through 4 and as attached to the Agreement and with the one corrected page.

MR. NUTTER: Exhibits 1 through 4 as amended will be admitted as amended.

(Whereupon, Exhibits 1 through
4 were admitted into evidence.)

MR. ANDERSON: That concludes our examination of

Mr. Stumhoffer.

CROSS EXAMINATION

BY MR. NUTTER:

Q What percentage of working interest has committed its acreage to this unit?

A 100 percent.

Q What about royalty interest?

A It's all federal acreage.

Q And the U. S. Government has agreed to this unitization?

A Preliminary approval.

Q Of your overriding royalty owners, how many tracts are involved in this tract that has not been signed?

A Two, Tract 12 located in the Northeast, Northeast of Section 15 and No. 13 located in Southwest of the Southwest of Section 11 and Township 20 South, Range 33 East.

Q 13 in Section 11?

A Right.

Q And in Section 15, No. 12?

A We have one unsigned overriding royalty owner, a very small one as shown in the Application under Tract 12 and three under Tract 13, very small overriding royalty interest.

Q And outside of that overriding royalty interest everything else is 100 percent committed?

A That's right.

Q And you are willing to treat these tracts as an un-unitized tract for payment of overriding royalties?

A We would like authority to convert the wells to injection.

Q Now, you mentuoned that there were certain tracts that don't have wells on them. If you will turn to Exhibit 1, I guess it is Exhibit "A" in the unit agreement, please?

A Yes.

Q We also need Exhibit No. 1, Case 4470 so we can tell which of the injection wells. It would appear in Section 14, the Federal "A" No. 1 which is shown as an abandoned well?

A Yes.

Q Over on our Exhibit 1 in Case 4470 I notice that is circled but not colored green?

A That is the County map, the discovery well of the field.

Q That circle around that well doesn't mean a thing?

A No.

Q On Exhibit "A" it is shown as an abandoned well

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and that well will be back on production as soon as you get water into the well North and West of it?

A We plan to complete this well in Seven Rivers. The Seven Rivers is water productive and producing some oil with it and we will produce it into a certain tank battery and use water to inject into the Yates.

Q This won't be an oil well in your flood?

A No.

Q Which wells would account for allowable?

A We have nine existing wells, Tract 13, I will start on the Northwest side of the unit, Tract 13, Well No. 1 -- I'm sorry that is going to be an objection.

Q It will account for allowable purposes?

A Tract 13, Well No. 1, an injection well. Tract 12, No. 1, an injection well. Tract 5, Well No. 2, Tract 5, Well No. 3 we plan to drill a well at location 990 from the North line and 990 from the West line of Section 14. It will be Tract 5, Well No. 5.

Q So that 40 will count?

A Tract 6, Well No. 1 will be an injection well. Tract 7, Well No. 1 will be a producing well. Tract 9, Well No. 1 will be an injection well. Tract 14, Well No. 1 on the three shown on the map will be reentered and completed

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for production. Tract 10, Well Nos. 1 and 2 will be producing wells. Tract 11, Well No. 1 will be an injection well. Tract 15, Well No. 1 we will re-enter for injection. Tract 8, Well No. 2 will be a producing well. Tract 2, Well No. 1 will be a producing well. Well No. 2 on Tract 2 will be an injection well. On Tract 4, Well No. 1, will be a producing well. Tract 3, Well Nos. 2 and 4, will be completed for injection. Well No. 3 on Tract 3 will be a producing well. Tract No. 1, Well No. 1, will be converted to injection. There will be a total of 21 wells. There will be 10 injection wells and 11 producing wells each on a 40-acre proration unit.

Q Very well, now Mr. Stumhoffer, it appears from the casing program this is a rather unusual casing program on some of these?

A Yes, it is. It is on a potash area and this is the reason for it.

Q These wells that don't have any surface pipe, the first one would be on Page 1 of Exhibit 4, the Reserve Federal Bob No. 2?

A 2-2.

Q Yes, sir, 2-2, Unit Well 2-2. It indicates there is no surface pipe in this well but five and a half-inch

pipe is set at 3325 cemented with 200 sacks around the shoe and 200 sacks through a stage at 1410. Could you give me the top of the cement on the top of that second stage?

A I do not have that available.

Q Available in your files?

A No.

Q No way of knowing how far the cement came?

A No.

Q Well No. 9 on the one on Page 2 of Exhibit 4 which has no surface pipe but the seven-inch is at 3290 cemented with 50 sacks around the shoe and 400 sacks to the surface?

A They did not specify where the cement was pumped out but they did say circulated to surface.

Q By surface you mean the cement did not come back to the surface from wherever it was staged?

A I don't believe I have any information of where it was staged in the well file.

Q Now, on Well No. 11-1 we've got 335 sacks plus a hundred sacks of neat cemented and circulated to the surface. I presume that is from the shoe, is this correct?

A I took this from the well record and this is what the well record stated, circulated to surface.

Q Down from what point?

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A I assume from the 3215.

Q From the shoe?

A From the shoe. This is the best information I had.

Q Now, what about the next well, 12-1, 50 sacks around the shoe and 300 sacks to the surface, is this a stage?

A Yes, it was in these wells they pulled the surface pipe. They cemented around the shoe and was anywhere from 50 to 500 sacks and knocked a hole in the long string, pulled the surface pipe and cemented through the hole. This was at varying depths, anywhere from 400 to 1400 feet. In a lot of cases they did not specify where they pumped the cement out on the upper stage. I have no information in our files.

Q Who drilled these wells originally?

A The wells that Anadarko operates in this field were drilled by Henry Black and Company.

Q Who is the operator of these wells that were completed in this manner, the original operator?

A The original operator is Henry Black Drilling Company.

Q And Well No. 13-1 appears to have five and a half

at 3275 cemented with 50 sacks. This is a complicated cementing program.

A Five and a half O.D. set at 3275. They cemented the shoe with 50 sacks. The top of that cement was at 2610. They perforated the five and a half inch O.D. at 2600.

Q Which would be immediately above the top?

A Yes, and cemented with 450 sacks and the top of the cement came to 970 feet.

Q You don't have any cement from the surface to 970?

A That's correct.

Q In each case you plan to inject down tubing and under a packer, is that correct?

A That's right.

Q And although some of these wells have open hole and some have pipe down through the pay, your injection will either be through open hole or perforations or a combination of the two?

A Yes, sir.

Q But in all events, under a packer?

A Yes, sir.

Q What about casing tubing annulus?

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A We will load it with treated water and we will either have a pressure gauge at the surface or have it in such a situation we can detect any communication. There will be no pressure on the backside of the casing.

Q When were these wells drilled?

A During 1953 to '58, the bulk of them. There was one drilled in 1965.

Q And these wells were drilled in the oil potash area, is this correct?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Stumhoffer? He may be excused. Do you have anything else, Mr. Anderson?

MR. ANDERSON: That completes our presentation.

MR. NUTTER: If there is nothing further anyone wishes to offer in Case 4469 or Case 4470 we will take the case under advisement.

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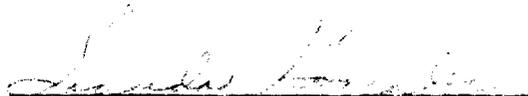
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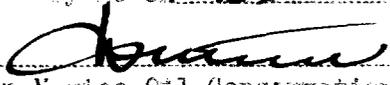
STATE OF NEW MEXICO)

COUNTY OF BERNALILLO)

I, SOVEIDA GONZALES, Court Reporter, in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me and that the same is a true and correct record of the said proceedings, to the best of my knowledge skill and ability.


COURT REPORTER

I do hereby certify that the foregoing is a true and correct record of the proceedings of the hearing of Case No. 4469-4470 on Dec 2 1970


New Mexico Oil Conservation Commission