

Case No.

54103

Large Exhibits

10-3-94

From

EVELYN DOWNS
Oil Conservation Staff
Specialist

Memo:

To Dear Dave,

I am returning Case file #5403
+ #5377. If you recall there were
no copies of the transcripts
for these cases. I had Florence
send me copies of the transcripts
from the microfiche file so
I am enclosing these so if you
have another call for this
info the transcripts will be
available.

Thanks a million for your
help.

Evelyn

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
22 January 1975

EXAMINER HEARING

IN THE MATTER OF:

CASE No. 5403, the hearing called
by the Oil Conservation Commission
on its own motion to further con-
sider the subject matter of Case
No. 5377, namely to permit all in-
terested parties to appear and
show cause why the continued in-
jection of water for secondary
recovery or disposal purposes into
any formation from the surface of
the ground down to and including
the Drinkard formation should be
permitted in the following de-
scribed area in Lea County, New
Mexico:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM
Sections 13 through 36: All

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM
Sections 1 through 12: All

Further to consider requiring tempera-
ture surveys and cement bond logs on all
wells in the above-described area; and
to consider requiring that any well in
said area indicating any leakage, surface
or sub-surface, or inadequate cementing,
should be repaired, recemented, or
plugged.

CASE NO.
5403

BEFORE: Daniel S. Nutter, Examiner.

For the New Mexico Oil Conservation Commission: William H. Carr, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico 87501

For Anadarko Production Company: Jason W. Kellahin, Esq.
KELLAHIN & FOX
500 Don Gaspar
Santa Fe, New Mexico 87501

In association with:

Irley Bonnette, Esq.
Houston, Texas

For Skelly Oil Company: Jason W. Kellahin, Esq.
KELLAHIN & FOX
500 Don Gaspar
Santa Fe, New Mexico 87501

In Association with:

Chester E. Blodget, Esq.
Tulsa, Oklahoma

For Petro-Lewis Corporation: Don Stevens, Esq.
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MR. NUTTER: The first case this session will be Case 5403.

MR. DERRYBERRY: In the matter of the hearing called by the Oil Conservation Commission on its own motion to further consider the subject matter of Case No. 5377, namely to permit all interested parties to appear and show cause why the continued injection of water for secondary recovery or disposal purposes into any formation from the surface of the ground down to and including the Drinkard formation should be permitted in the certain described area in Lea County, New Mexico.

Further to consider requiring temperature surveys and cement bond logs on all wells in the above-described area; and to consider requiring that any well in said area indicating any leakage, surface or sub-surface, or inadequate cementing, should be repaired, recemented, or plugged.

MR. NUTTER: Call for appearances at this time in this case.

MR. CARR: William F. Carr appearing for the Commission.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for Anadarko Production Company in association with Mr. Irly Bonnette, and appearing for Skelly Oil Company in association with Mr. Chester E. Blodget. Mr. Bonnette

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is a member of the Texas Bar, and Mr. Blodret is a member of the Oklahoma Bar.

MR. STEVENS: Mr. Examiner, I'm Don Stevens, Santa Fe, representing Petro-Lewis Corporation.

MR. NUTTER: Would you proceed, Mr. Carr?

MR. CARR: Mr. Examiner, initially I'd request that the Commission take administrative notice of the record in Case 5377.

MR. NUTTER: We will take notice of the record and the contents therein in Case 5377.

MR. CARR: Mr. Examiner, I have one witness, Mr. Ramey. Mr. Ramey will call upon several people to also present part of the report on what the special committee to look into this matter has come up with, and I would request that all of those people be sworn at this time.

MR. NUTTER: All right. Anyone that's going to testify in this case, would you please stand?

(Witnesses sworn.)

JOE D. RAYEY,

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

DIRECT EXAMINATION

BY MR. CARR:

Q Will you state your name and occupation for the record, please?

A Joe D. Ramey, and I'm District Supervisor for the New Mexico Oil Conservation Commission at Hobbs, New Mexico.

Q Mr. Ramey, were you appointed by the Commission to chair a special committee to look into water injection problems in the area?

A Yes, sir, I was.

Q Would you advise the examiner what has transpired since that time?

A Yes, sir. The first meeting of the committee to study this problem was in Hobbs on December the 5th, and this meeting was primarily a review and discussion meeting and actually the conclusions that came out of that meeting was that injection and disposal wells should be investigated to make sure that water was going where it was supposed to out of these wells. All P and A wells should be looked at and replugged if necessary, and to investigate all

wells in the area for leakage to shallower zones and that all operators in the area be required to take bradenhead surveys and report on any water flows or unusual pressures in the area, and that schematic diagrams of all well bores in the area be submitted by the operators. This has been fairly well completed at this time, and let's see, the second meeting was held on December the 17th and at that meeting the area was divided into two parts: A north part with Anadarko as chairman, with Continental, Petro-Lewis, Texas Pacific, and John Hendrix as members of that sub-committee; and the south area with Skelly as chairman and members comprised of Gulf, Amerada, and Agua, and I think that representatives from Anadarko and Skelly will testify as to each area. There have been numerous sub-committee meetings of both the north and south areas and I've attended parts of these and have kept in contact with the sub-committees, and that's all I have to offer at this time.

MR. CARR: Okay. Would you like to have one of the chairmen of the sub-committees come forward now?

A Yes. I think whichever one would like to. Mr. Blodget has a chair here, maybe we can call on Skelly to report.

MR. BLODGET: Well, we would defer to Anadarko.

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MR. KELLAHIN: We have one witness for Anadarko representing the northern portion of the country.

FARRIS NELSON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Farris Nelson.

Q By whom are you employed and in what position?

A I'm a consulting petroleum engineer representing Anadarko Production Company.

Q You are in private business at the present time, is that correct?

A Yes, I am.

Q And were you retained by Anadarko on a consulting basis in connection with this case, Number 5403?

A Yes, I was.

Q Did you participate in the committee meetings which were testified to by Mr. Ramey?

A Yes, I've attended all of those meetings.

Q And when the group was divided in two, were you the chairman of the group that was examining the situation

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NELSON - DIRECT

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in the northern portion of the area?

A Yes, I was.

Q And have you made -- prepared a report on the basis of that investigation?

A Yes, I have a report on the north sub-committee meetings.

Q Would you give us that report at the present time?

MR. NUTTER: Mr. Nelson, would you repeat who the members of that northern committee were again by company? Anadarko chaired it?

A Yes. Let's see, this appears in this testimony, Mr. Nutter, the --

MR. KELLAHIN: He doesn't have a copy of it.

A The companies were Anadarko, Continental, T-P, Petra-Lewis, and John Hendrix.

MR. NUTTER: Thank you.

A At the conclusion of a hearing on December 3rd, 1974, the New Mexico Oil Conservation Commission established a study committee of operators consisting of Amerada-Hess, Anadarko Production Company, Aqua, Incorporated, Continental Oil, Gulf Oil Corporation, Petro-Lewis, Skelly Oil, and Texas Pacific Oil.

This study committee was charged with making an invest-

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igation into the condition of all wells in Sections 13 through 36, Township 22 south, Range 37 east, and Sections 1 through 12, Township 23 south, Range 37 east, with respect to casing, cementing practices, and plugging operations.

A meeting of this study committee was held in the New Mexico Oil Conservation Commission office in Hobbs on December the 5th, 1974. At this time recommendation was made concerning the information needed by the study committee. The study committee recommended that each operator supply the following information on each of their wells in the area covered by Order Number R-4936.

Each bore hole size, casing size, amount of casing and the amount of cement used. Cement top information was requested where this information was available.

Surface and intermediate casing pressures were requested. If pressure existed, it was requested that the pressure be bled down to check for a water flow. If water was produced, they were requested to get a flow rate and an analysis for chlorides and sulfates.

For plugged and abandoned wells, the operators were requested to supply the amount of casing pulled and the amount of and location of all plugs placed in plugging the

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well.

Mr. Pamey agreed to contact all of the operators and request the information needed by the study committee. At a second meeting the area was divided in two by a line commencing at the southeast corner of Section 36, then running west along the section lines to the southeast corner of the Langley-Maddox Penrose "A" Unit, then westward along the south line of the Langley-Maddox Penrose "A" Unit boundary to a point on the south line of Section 29, thence to the west corner of Section 30 along section lines to the south.

This is a report of the study made by the north sub-committee. As well data was received from individual operators, the data was compiled into several categories and then tabulated. These categories consisted of wells exhibiting a water flow from either the surface or intermediate casing, and wells with no apparent -- excuse me, wells with indicated cemented tops below 3100', plugged and abandoned wells, and wells with no apparent problems. Operators supplied the information which indicated that 25 wells had exhibited water flow from either the surface or intermediate casing. Using the information supplied by the operators, a total of 39 wells indicated a cement top below 3100'.

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Two plugged and abandoned wells indicated potential problems.

Concerning the wells with cement tops below 3100', guidelines were established for this study by Mr. Ramey. The guidelines used for calculating cement tops where no temperature survey was reported was a yield of 1.1 cubic feet per sack and a fill efficiency of 65%. A figure of 3100' was set for the minimum acceptable cement top. This would give approximately 400' of cement cover above the uppermost water injection interval. All wells within approximately one mile of injection wells should be required to have a cement top 3100' or higher.

A number of plugged and abandoned wells were studied, only two presented questions concerning whether the well bore could act as a channel for water migrating from one zone to another.

Some of the recommendations from the study committee, based on the guidelines established by the Oil Conservation Commission and the well data supplied by the operators, are as follows:

MR. KELLAHIN: Let's get this clear. This is the recommendation of the study committee dealing only with the northern portion of the pool, is that correct?

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A Yes, this is correct.

Q (By Mr. Kellahin) Would you go ahead and read those recommendations?

A (a) It is recommended that wells having surface or intermediate casing water flow should have a temperature survey run as soon as possible. This information will be used to determine if remedial action is needed on that well and to give overall information for the entire problem area.

(b) It is recommended that the 39 wells having cement tops below 3100' be required to bring the cement from its present depth up to 3100' or to the intermediate casing, whichever is the greater depth.

MR. NUTTER: Now, excuse me. Does that include shallow wells as well as the deeper wells that are in the area?

A Yes, I believe this is the way --

MR. NUTTER: If they don't have cement up to 3100'?

A Right.

MR. NUTTER: Okay.

A This work should be done at the earliest possible date.

(c) It is recommended that a further study be made to determine the feasibility of re-entering the two plugged and abandoned wells.

(d) It is recommended that all wells in the area covered by Order Number R-4936 be equipped so that periodic surface and/or intermediate casing pressures can be obtained. These reports should include the pressure, fluid flow rate, if any, and a water analysis showing the chlorides and sulfates. For the 12 months of 1975, quarterly pressure tests should be required and thereafter semi-annual reports.

(e) It is recommended that the operators of the four water flood units in the area cooperate with Arqua, Incorporated, in an attempt to use the water going into Arqua's disposal well in an effort to eliminate such disposal well as soon as possible.

(f) It is recommended that the required remedial work -- excuse me, it is recommended that when the required remedial work has been accomplished on the wells included in Order Number R-4936, that the injection rate be set at 150% of the oil, gas, and water withdrawals.

MR. NUTTER: On a permanent basis?

A On a permanent basis. These are the recommendations of the north sub-committee.

MR. KELLAHIN: That completes our testimony, Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Now, you have a tabulation, don't you, of the 39 wells that you made reference to?

A Yes, I have.

Q Those P and A wells that need to be --

A Yes, I have a tabulation of those wells and we'll make it available to Mr. Ramey.

Q Well, I think we really ought to have it as part of the record here at this hearing, Mr. Nelson.

MR. KELLAHIN: I refer to what has been marked as Anadarko's Exhibit Number 1. Is that a list of the 39 wells?

A Yes, it is.

MR. KELLAHIN: Was that prepared by you under your supervision?

A Prepared under my supervision, yes.

MR. KELLAHIN: At this time we'll offer Exhibit Number 1.

MR. NUTTER: Exhibit Number 1 will be admitted in evidence.

Q (By Mr. Nutter) All right, Mr. Nelson, I'd like to take your committee recommendations point by point to be sure I've got them down pat. Your, as I understand it,

You had six basic recommendations. Is this correct?

A (a) through (f), yes, that's right.

Q All right. (a) is the temperature survey should be run on all wells demonstrating any surface pressure or surface flow, is this correct?

A Only on wells that exhibited water flows at the surface from either the surface or intermediate casing. Not including just pressure.

Q I see.

A Only if it exhibited a water flow.

Q Only if it exhibited a surface flow?

A Right.

Q (b) was that the 39 wells listed on Exhibit A should be recemented and the minimum top would be 3100', is this correct?

A This is correct.

Q (c) to study the re-entry of two plugged and abandoned wells. Would you identify those for us, please? And the two wells, -- are you going to introduce this?

MR. KELLAHIN: Mr. Nelson, I call your attention to Anadarko's Exhibit 2. Is that the description of the two wells that have been plugged and abandoned to which you've

testified?

A Yes, it is.

MR. KELLAHIN: We'll offer Exhibit Number 2.

MR. NUTTER: Exhibit Number 2 will be admitted in evidence.

Q (By Mr. Nutter) Then, Mr. Nelson, your fourth recommendation is that the wells be equipped so that periodic surface and intermediate casing surveys could be taken on the wells, and that such surveys be required on a quarterly basis through 1975 and then semi-annually after that, is this correct?

A Yes, that's correct.

Q Your fourth -- fifth proposal was to ultimately eliminate the Agua injection well from the area and that the water flood operators would study the feasibility of using this water to be disposed of in their flooding operation.

A Yes, this is correct.

Q And in the event that this well is handling more water, or disposing of more water than could be handled by the water flood operations, what would be the disposition of the remainder of that water?

A This is why we suggested all four companies, or

all four floods be involved in this. This water should be -- we should be able to divide the water among the four floods if that were necessary.

Q And the four floods should have the capacity to handle all of this water?

A They should have.

Q And your last injection -- or your last recommended proposal is that after all of the requirements of the recommended requirements have been met, that a rate of 150% of oil, gas, and water withdrawals be established for all of the water floods in the area. This would be for all four water floods, is that correct?

A Yes, that's correct.

Q And no differential among the floods or between the floods; all at 150%?

A Yes, this is the committee's thinking.

MR. NUTTER: Does anyone have any questions of Mr. Nelson as to his recommendations?

MR. KELLAHIN: Mr. Nelson, in connection with the information shown on Exhibits 1 and 2, the list of the 39 wells and the two wells that have been plugged and abandoned about which you have made recommendations, are those the lists that were developed by the committee?

A Yes. This is the committee report.

Q (By Mr. Kellahin) Not Anadarko's list?

A No, it is not.

MR. KELLAHIN: That's all.

MR. NUTTER: Now, one other thing, Mr. Nelson. How about timetables for accomplishing some of these things? Does the committee have a recommendation on that?

A The committee did not establish a timetable on this, Mr. Nutter.

MR. NUTTER: Well, let's take them point by point again and what is your thought on Paragraph -- Recommendation (a)', that temperature surveys be run on wells having surface flows? I presume that this has been done on the wells that have surface flows already, hasn't it?

A The temperature surveys on wells that have exhibited water flows?

Q (By Mr. Nutter) Uh-huh.

A I need to say at this point that from here on it doesn't necessarily represent the committee, because the committee did not talk about a time schedule for these, and in answer to your question, no, they have not. There were 25 wells that reported water flows and to my knowledge probably only five or six of these may have had surveys run on

them.

Q I see.

A At this time.

Q So some period of time should be established, probably, by the Commission for accomplishing these surveys, and would it be your recommendation that continuous surveys be run, or would this be a one-shot deal?

A I think that probably a one-shot deal at this time and then the recommendation that periodic surface and intermediate casing pressures would be the follow-up on this thing. This was the intention.

Q I see, so this temperature survey will be a one time thing, then?

A Yes.

Q Okay. Now, we've got Paragraph (b) to look at 39 wells for recementing? How long should it take to accomplish that?

A My opinion again, but it's going to take quite a bit of time because there's a great deal of work involved.

Q Uh-huh, is six months adequate, do you think?

A I don't think it could be accomplished in less than six months. I don't really believe that all of it can be done within the next six months.

Q Now these are owned by quite a number of operators.

A Yes.

Q How many wells could an operator recement in three months?

A That isn't really the basis of the problem. The problem is going to be well servicing units to accomplish this work and there's a fixed number of pulling units available in the area that can be used in this work at the present time. Just for normal, routine requirements for pulling it, you may have to wait as much as a week to get a unit, and that is in the case that most of the units are busy most of the time. This is going to be a considerable additional work load, and each one of these jobs is going to require several days, and this is going to be involving well servicing units, which is in short supply.

Q So it's not a matter of how many wells an operator but it's a matter of how many pulling units are available?

A This is true, pulling units, and this is really the hang-up, is the pulling unit availability.

Q Now how long do you think it would take to decide whether those two P and A wells should be re-entered and how long is it going to take before we know whether they should be plugged and replugged or not?

A Well, --

Q Can a determination of that be made in one month?

A Oh, yes, I think it can be done easily within one month.

Q And if they need to be re-entered they can be re-entered and plugged in another month, couldn't they?

A Well, the question, the reservation I'm making is concerning one of the wells, whether it's even possible to re-enter it or not. They both need to be re-entered. One of them, it may not be possible.

Q Well, will you actually be able to determine that without re-entering it?

A We may just have to make an attempt and see how far we can get on that particular one well. The other poses no problem.

Q When would you suggest that these quarterly surveys be taken and then the semi-annual surveys?

A Most of the operators have just completed taking these pressure surveys, so it's the committee's recommendation that -- that the next quarterly report be accumulated in March and reported in April.

Q So the months would be March, June, September, and December for the quarterly surveys and reported the

following month?

A Yes, this is correct.

Q How long is it going to take to absorb this Arua water in the four water flood project?

A This is my opinion again and not the committee's, but it would take in excess of ninety days.

Q Lines will have to be run from the Arua system over to each of the disposal or each of the injection plants, I presume.

A This is right. Pine has to be bought, right-of-way has to be acquired, and I don't see how this can be accomplished in less than ninety days.

Q All right, sir, I believe that's all I have.

Does anybody have any further questions of Mr. Nelson?

MR. RAMEY: Mr. Nelson, it is your recommendation that the water from the Arua disposal well be absorbed by the units, is it not? This is a definite recommendation on your part?

A Yes, it is.

MR. RAMEY: Okay, thank you.

A Now that's units.

MR. RAMEY: Yes.

A Okay.

MR. MUSTER: Mr. Stevens?

MR. STEVENS: Mr. Nelson, on recommendation (a) you, I think, set a timetable of one -- one time logging of these wells that had surface and intermediate water flows. In your opinion will that let you know whether the remedial work further contemplated was effective or not, or should possibly there be a subsequent logging to confirm this?

A The thinking was that the periodic surface and intermediate casing pressure surveys would be an indication of whether the work was successful or not. In specific cases it may require additional temperature surveys.

MR. STEVENS: Do you think only the pressure information would be definitive enough, really? Let me rephrase it. Isn't it possible that if you log it before and subsequently log it after on only those few wells where you will have this that you will have the definitive information you need?

A You're suggesting that the temperature survey be run, remedial work be performed, and then a second survey should be run following the work? Is that what you're --

MR. STEVENS: Yes. I'm asking you if you think that might be a more feasible method to give you some more definitive answers?

A It's probably a better way than relying on the

surface casing pressure, but it's also going to be more time consuming and more expensive, and one of the things we're trying to accomplish here is to get as much work done in as short a period of time as possible.

MR. STEVENS: Would this actually increase your time period in the sense that you would have performed the remedial work and wouldn't this, in effect, give you the answer as to whether it worked or not?

A Yes, probably it would, but it's going to also tie up more equipment on an immediate follow-up, and it could become a problem getting enough logging equipment to perform this number of surveys.

MR. NUTTER: Well, Mr. Nelson, what is the indicated remedial work when your temperature survey shows the water flow there, a recementing of the well?

A I don't know. I think that would almost have to be decided on an individual basis, but just -- I think that probably this is going to have to be done on most of the wells.

MR. NUTTER: Normally you would think that recementing would be the answer to it, a problem like that.

A Right.

MR. NUTTER: Now, if -- rather than another temperature

survey, a cement bond log were run, would that be adequate?

A The committee discussed bond logs and it was generally -- the general opinion of the committee that they preferred not to recommend bond logs.

MR. KELLAHIN: Say for what reason, Mr. Nelson.

A Most of the bond logs that are available are highly interpretive and in many cases the information that you gain from them is not totally reliable.

MR. NUTTER: But they show a bond between the cement and the pipe but they don't necessarily show a seal between the cement and the formation. I think this is correct.

A Well, it's highly interpretive. It depends on the interpretation.

MR. NUTTER: Are there any further questions of Mr. Nelson?

(No response.)

MR. NUTTER: You may be excused. Did you have any further witness, Mr. Kellahin?

MR. KELLAHIN: Mr. Blodget will have a witness.

MR. NUTTER: But you have no further witness for the north committee?

MR. KELLAHIN: No, the south committee will take over.

O. V. STUCKEY,

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

DIRECT EXAMINATION

BY MR. BLODGET:

Q Please state your name.

A O. V. Stuckey.

Q And were you appointed as a representative of
Skelly on the subcommittee for the south area?

A I was.

Q Has that committee prepared a report for the south
area?

A Yes, we have.

Q Is that report what has been marked for identi-
fication purposes as Skelly Exhibit Number 3?

A Yes.

Q Would you summarize that report for us, please?

A Well, this report of the south committee or the
committee for the south area, which included Sections 1
through 12, Township 23 south, Range 37 east, the south
half of Section 31, Township 22 south, Range 37 east, and
portions of the Penrose "A" and "B" units, which extend
into Sections 31, 32, 33, and 34, Township 22 south, Range

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37 east. This subcommittee included representatives of Gulf Oil Corporation, Amerada-Hess, Arco, Incorporated, and Skelly Oil Company, with Skelly serving as chairman.

We have reviewed available well schematics, available data on all known wellbores in the study area, and available data on waterflows, temperature surveys, injection profiles, bradenhead pressure surveys, and any information on remedial work performed in this area. Based on this information we have formulated the following recommendations:

Under general recommendations, Number 1, that bradenhead pressure surveys be required on all active wells within the study area; that an initial bradenhead pressure check be obtained on each well as soon as possible; that bradenhead pressures be routinely reported at quarterly intervals for one year and semi-annually thereafter; that remedial operations be expeditiously performed on any wells where waterflows are indicated.

Our second recommendation is that bradenhead pressure data be utilized to determine localized problem areas within this general study area where additional information or surveys are required to determine the scope of the problem. Our review of the south area indicates that the problem is not blanket throughout the area at this time, but localized

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in scattered areas.

Three, that injection profiles and temperature surveys be run on injection wells in indicated problem areas to monitor infected water movement. That temperature surveys be run on producing wells in indicated problem areas to monitor water movement behind the casing, unless the Commission approves exemption due to recent remedial cementing operations which are considered to have eliminated any possibility of waterflow. That temperature surveys be run on any well in an indicated problem area where bradenhead pressure check is deemed inconclusive due to either shallow casing leak repair operation or suspected bridge condition in the bradenhead annulus. We recommend that remedial operations be expeditiously performed on wells where waterflows behind the pipe are indicated.

Number Four, that plugged and abandoned wells located in indicated problem areas be re-entered and replurmed in a manner to insure against water movement within the wellbore under waterflood conditions.

Five, that injection into the Skelly Penrose "A" Unit be increased to 150% of withdrawal rates as soon as remedial work indicated in the "Recommendations on Specific Wells" Section for wells in the immediate area has been

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satisfactorily completed.

Q Now, did the committee make a survey and have recommendations on specific wells in the area?

A Yes, we did.

Q Are those wells shown on the plat that was marked Skelly Exhibit Number 4?

A Yes, they are.

Q And is that list of wells also attached to this Skelly Exhibit Number 3?

A Yes, it is.

Q Would you review those, or Mr. Examiner, would you want us to review all those? They are all outlined there, on there. We can put Exhibit in the record.

MR. MUTTER: What are these wells basically, Mr. Stuckey? Are these producing wells that have already indicated they have leakage in them or just what is the general situation here?

A As indicated on this plat, we have indicated the wells in red where we have located either a casing leak or a waterflow within the past eighteen months and have repaired that. This also includes three wells in which there was a channel up above the unitized interval, which was in wells Number -- Skelly Penrose "A" Unit wells 42, 50, and 52.

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QUESTIONS BY MR. NUTTER:

Q How are those identified?

A They are identified in red, that work has been done.

Q Well, now, this exhibit that I have only has one red well on it. That's way up here in Section 26.

A We have only red, green, and orange.

Q Well, I've got a bunch of brown wells.

MR. BLODGET: For the purpose of the record, those are supposed to be red, although they look brown, is that right?

A Yes, sir.

Q (By Mr. Nutter) All right. What do the red or brown wells indicate?

A Where casing leaks, waterflows, or channels above the unitized interval were encountered and the work performed.

Q Casings, waterflows, or channels?

A Right.

Q And the green wells?

A Green wells indicate wells in which we, the south area committee has recommended work; in which we have work planned. They are indicated in green. That covers two plugged and abandoned wells, H. O. Sims 16 --

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Q What's the location of it?

A It's in Unit F, Section 34.

Q Okay.

A And the Sims "C" No. 1 in Unit H, Section 3.

Q Okay.

A And then it covers three wells which we have indicated waterflows on the bradenhead check.

Q And what are those?

A That's Penrose "A" No. 23, Unit F, Section 3.

Q Okay.

A Penrose "A" Unit 46, Unit B of Section 9.

Q Okay.

A And Penrose "A" 48, Unit H of Section 9.

Q Okay, that leaves one green well in the south area. That's that Number 14.

A That well had a casing leak in the upper 900 feet and we went in and cut off the seven inch casing and pulled it and were not able to tie it back to the seven inch casing and we shut down operations to get five inch casing and run a full liner on the well.

Q So that well is being repaired, too, right?

A It will be repaired as soon as we get a five and one-half and get a tie back on it.

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Q And then what are the orange wells? There is only one of them?

A This orange well is the Intercoast's Citco-State No. 1 in Unit F of Section 2.

Q And what's the status of that?

A That is a plugged and abandoned Queen Sand well; reportedly has 400 foot water sand open only and this well was previously used as a water well for stock by P. D. Sims until early in 1974.

Q What's your recommendation with regard to that well?

A We consider the well as possibly inadequately plugged due to very limited data available as to what -- what manner the well was plugged originally.

Q That's the well that Mr. Sims testified to or made a statement to at the previous hearing, I think, and said he really didn't know what the company had done to the well when they gave it to him as a water well?

A Right.

Q So apparently no one knows what the status of that well is.

A The south area committee recommends that this well be replugged.

Q All right. Now, Mr. Stuckey, with respect to your general recommendations, in Recommendation One your last sentence says that remedial operations be expeditiously performed on wells where waterflows are indicated. Now, you're talking about waterflows, either channels or waterflows through the intermediate section or at the surface?

A Yes, sir.

Q Any type of waterflow in the wellbore?

A Yes, sir.

Q Now, your last sentence in Recommendation Three repeats that statement, again, this would apply?

A Yes, sir.

Q Okay. Now, you state in Recommendation Two "our review of the south area indicated that the problem is not blanket through the area at this time but localized in scattered areas", and then in a number of places in your following two recommendations, your following recommendation, you say in "indicated problem areas" and underline that. Now, how is the Commission going to write a definitive order if we don't know exactly what the indicated problem areas are?

A Well, in our consideration of the south area as the area shown on this plat where we have indicated we have

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had waterflows or casing problems or some type of problem with waterflows in that area, which would include basically the Skelly Penrose "A" Unit, the portion of the Skelly Penrose "B" Unit which is located in the west half of Section 9, and the area located in the north half of Section 2, and in Section 3 in the area outside of the Skelly Penrose "A" Unit.

Q That would be that 80-acre tract there?

A That would be that 80-acre tract there. This pretty well defines the areas that are indicated problem areas within the south area. We would not recommend going into any extensive temperature surveys or cement bond logging program in the other areas in this south area. We do not believe that it -- the expense, and the lost production, and the tying up of equipment should be used within the problem area to correct this problem.

Q Okay. Now, you heard Mr. Nelson's recommendation for the northern committee in which they had determined that there were a number of wells that didn't have cement coming up to a certain level, and the committee recommended, or the sub-committee recommended, that those wells be re-cemented and have a minimum top portion. Was a similar study made in the south area of the wells to see what the

topping cement was?

A Well, we had a -- these basically are two different areas, in that we had very few deeper wells in this south area, and practically every case, the deeper wells was a well which at the present time is plugged and abandoned, so that these shallow Queen Sand wells which we're dealing with basically in the south area all had cement above this point.

Q I see. Are there any producing wells or any wells that aren't plugged and abandoned that penetrate beyond the Queen formation and don't have cement across the pipe through the Queen, in the south area?

A Not to my knowledge, other than the ones that we've indicated here.

Q The ones that are already in trouble and shown in color on the map?

A Yes, sir.

Q And you subscribe to the same recommendation that was made by the north area of quarterly surveys and then semi-annual surveys after that, is that correct?

A Yes, sir.

Q Now, you've stated in Number Five that infection into the Penrose "A" Unit be increased to 150%. I believe that's in the area that's presently limited to 100%, isn't

it?

A Yes, sir.

Q Also the portion of the Penrose "B" Unit that's in Sections 4 and 9 is presently limited to 100%, so you would want that increased to 150% also?

A Yes, sir.

Q In other words, the northern committee's recommendation for 150% of withdrawals for all four water plums in the areas is concurred in by the south committee, right?

A Yes, sir, except that we kind of felt like that if we got the south end in shape before the north end work had been performed, why, we would like to bring our inflection up in that area.

Q Now, you operate two of the four floods. The north committee said that the four floods should absorb Arua's salt water that they're disposing of. Can Skelly absorb of a portion of this in its two plums here, or do you agree with that recommendation that the north made?

A We agree with the recommendation that this flood water, this disposal water, should be incorporated into the floods.

Q Including Skelly's two plums?

A Well, we're a little reluctant to accept that into

our floods.

Q Well, --

A But we, if necessary, we feel like we could.

Q Could you give us a progress report on Skelly's
LPG Storage Well? Is it still making water?

A It is still making water. I discussed that with
the well Monday and the information given at that time, that
it was flowing at about 170 barrels per day.

Q Which is less than half what it was previously
flowing?

A At one time it was flowing at approximately 1370
and had been decreasing.

Q Is there any apparent change in the situation from
the time of the hearing on December 3rd and here? Has the
decrease in water injection shown any affect on waterflows,
or can you tell at this point?

A I really cannot tell any -- any difference within
the south area, other than in digging into it we have found
more evidence than we realized that we had at the time.

Q Uh-huh.

A But we have been concentrating so much on the
south that I am not quite as familiar with the northern area
during this time.

MR. NUTTER: Does anyone have any other questions for Mr. Stuckey? Mr. Blodgett?

MR. BLODGETT: Well, cutting back to 100% has affected the oil production, has it not? Considerably?

A We have indications that we are operating at approximately 250 barrels per day oil production less on the Skelly Penrose Unit, "A" Unit.

MR. BLODGETT: Were what have been marked Exhibits 3 and 4 prepared by you or under your supervision?

A Yes, they were.

MR. BLODGETT: We introduce Exhibits 3 and 4.

MR. NUTTER: South Committee's Exhibits - they are identified as "Skelly". We'll call them South Committee's Exhibits 3 and 4.

MR. BLODGETT: We have no further --

MR. NUTTER: They are admitted in evidence. You have no other witness, Mr. Blodgett?

MR. BLODGETT: No.

MR. NUTTER: The witness may be excused. Do you have any further statement, Mr. Blodgett?

MR. BLODGETT: No, sir.

MR. NUTTER: Mr. Kellahin, did you have a statement?

MR. KELLAHIN: If the testimony -- has the testimony

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been completed?

MR. NUTTER: Does anyone else have any testimony they wish to present at this time?

MR. STEVENS: We may have. We're wondering -- we had the impression that perhaps Mr. Ramey was going to comment on what had been presented, but if not, then, yes, we have some testimony.

MR. CARR: Mr. Ramey, would you care to comment on the evidence that's been presented?

MR. RAMEY: Yes. It would be my recommendation that the recommendations of the two committees be accepted by the Commission, and I think definite timetables should be established in an order, I think. I think it's very necessary that the operators be expeditious in repairing wells and re-entering dry holes in this area.

MR. NUTTER: Now, you heard the questioning, Mr. Ramey, of Mr. Nelson and also of Mr. Stuckey, as to feasibility of accomplishing these things within various periods of time. Do you have any recommendation as to deadlines that the Commission should impose in entering an order in this case?

MR. RAMEY: Well, Mr. Nutter, I would hesitate to make a recommendation because I am unfamiliar about the equipment problems. All I know is hearsay that it is nigh on to im-

possible to get a pulling unit. All pulling units are busy, and so I would think we would have to go with -- with what Mr. Nelson has recommended. I think probably the south end, it seems like they are working very diligently at this time and will probably be through in three months with the exception, perhaps, of re-entering the Intercoast well.

MR. NUTTER: And do you concur in the recommendation that injection rates might be restored in the south sooner than they would be in the northern area?

MR. RAMEY: I think they could be. It might be well to consider a buffer zone on the north end of these two units.

MR. NUTTER: Depending on where -- how close to the boundary between the areas the problem wells are which haven't been taken care of.

MR. RAMEY: And also on the Petro-Lewis flood, I think probably the injection rates can be increased.

MR. NUTTER: Well, I think that's already 150%. The overall recommendation was 150% withdrawals for the entire area, so isn't that correct, Mr. -- you're operation 150%?

MR. STEVENS: No, we have cut back.

MR. NUTTER: You're permitted to operate at 150%?

MR. STEVENS: That's correct.

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MR. NUTTER: In that western side.

MR. RAMEY: Okay. But I think it might be well to consider a buffer zone in between the south half and the north half until such time as the work is completed in the north half.

MR. NUTTER: If the south half were to return to 150% sooner than the north half?

MR. RAMEY: Yes, sir, but I also think that, for example, if the water from the Agua well were absorbed, say, into only one unit, the Anadarko Unit, I think that by the time it was absorbed that they wouldn't be able to inject that much water, and so it might be at that time that some special compensation be made to absorb this water, I think. I think it would be more important to get the water out of the Agua well than it would be to cut back on injection.

MR. NUTTER: Where is that Agua well again?

MR. RAMEY: It's in Section 35, 22-37, Unit "H".

MR. NUTTER: Do you have anything you'd like to add?

MR. RAMEY: I have nothing further to add.

MR. NUTTER: Does anyone have any questions of Mr.

Ramey?

(No response.)

MR. NUTTER: He may be excused.

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MR. KELLAHER: Mr. Mutter, I'd like to recall Mr. Nelson very, very briefly to clarify one point.

MR. MUTTER: All right, sir. Mr. Nelson is still under oath.

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

REDIRECT EXAMINATION

BY MR. KELLAHER:

Q Mr. Nelson, you heard Mr. Ramey's testimony in regard to Anadarko absorbing the Agua water. In your opinion would the Anadarko flood be able to absorb that water and operate under 150% injection rate?

A There's a possibility that they still couldn't operate under 150%.

Q Now, in your testimony you did make the recommendation in response to the question by Mr. Ramey, you said you were recommending that the four floods attempt to absorb this water. Did you mean by that that they should be required to absorb all of the water from Agua?

A No. They should only be required to absorb what they can use under the Commission's orders.

Q I see. Now, as far as what disposal will be made

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of any water remaining over, your committee did not inquire into that, did they?

A No. That would still be Agua's problem.

Q Yes. Now, in connection with any timetable on the use of the Agua water, was there any discussion of that?

A No, there wasn't.

Q Would it, in your opinion, call for a high degree of cooperation among all of the operators and Agua?

A It will have to be cooperation between all five, all four floods and Agua.

Q And there would be certain problems in laying pipelines and obtaining right-of-ways which, in your opinion, could a timetable to set on solving that type of problem?

A I don't know how one could be established.

MR. KELLAHIN: That's all I have. Thank you.

MR. NUTTER: Are there any further questions of Mr. Nelson?

MR. RAMEY: Let me ask him one. Mr. Nelson, you do, though, feel that the injection of water into the Agua well could be contributing to a lot of the problem in the area?

A Yes. The committee -- the committee agreed that this could be a big part of the problem.

MR. RAMEY: Yes, sir, that's all. Thank you.

MR. HUTTER: Are there further questions?

MR. STUCKEY: I'd like to ask one. Farris, is it -- would you consider it feasible to accept water within thirty to forty days from Arua on that, provided your infection -- you were permitted under the rules of the Commission to infect at that volume? It's my understanding that approximately 80% of the water that's going in this well could be diverted within a short period of time.

A Yes, we could accept it but at the current -- under the Order R-4936 we can only accept approximately 1500 barrels of water per day from an outside source.

MR. STUCKEY: But I wanted to -- what I was referring to, it should mechanically be feasible to accept 80% of that from the Arua system if you were permitted to infect in that volume?

A If we had permission from the Oil Commission to infect at the higher rate than what the Order now calls for, mechanically it can be done.

MR. STUCKEY: Then it would be an extended period before the other 20% could be -- could be diverted to some other point?

A Yes.

MR. KELLAHAN: Mr. Nelson, in connection with the com-

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panies taking water from Agua, that would call for the companies taking water from Agua, wouldn't it?

A Yes, it would.

MR. KELLAMIN: You'd agree to discuss with them prices and any other matters that would come into this contract?

A That's the reason it's difficult to assign a timetable because of these contractual negotiations.

MR. STEVENS: Mr. Nelson, is the Agua well in the north area or the south area?

A It's in the north area. It's in the very south part of the north area.

MR. ABBOTT: But I'm on the south committee.

MR. NUTTER: That was Mr. Abbott making that remark. The witness may be excused. Mr. Stevens, are you going to call your witness? How long do you think it's going to take, Mr. Stevens?

MR. STEVENS: Possibly no more than ten or fifteen minutes.

MR. NUTTER: I presume people would rather conclude this hearing before going to lunch. Let's proceed.

MR. STEVENS: Mr. Examiner, this witness was present at the previous hearing. I'll ask him to state his name.

JOHN SOMERS,

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

DIRECT EXAMINATION

BY MR. STEVENS:

Q State your name, please.

A John Somers.

MR. STEVENS: Do you have any further questions on
qualifications?

MR. NUTTER: No, he's qualified.

Q (By Mr. Stevens) You're not appearing here with
a minority report on the north's recommendations, are you?

A No, not at all.

Q Is it your intention to briefly discuss some of
these recommendations of the northern report?

A Yes.

Q The first recommendation was for wells being temp-
erature logged at surface and intermediate waterflows. Do
you have a comment on that?

A Yes. It was actually the committee's opinion that
the logging should be restricted to temperature surveys be-
cause these would be the only meaningful surveys that could

be conducted in that they felt that the reliability of the cement bond log in other surveys was questionable. Also, really, to correct a point which was brought up by Mr. Nutter at the last hearing as to how costly this is, the statement was made at that time that it would be about \$1000 a well to do this work. We have one problem well in our unit, or in our water flood, the State "M" water flood, and we have already logged it in compliance with what the committee had recommended and we've also done some estimates as to what might be required if we were required to run cement bond log, injection profiles, as Mr. Stuckey had pointed out, and temperature logs on producing wells as well as the injection wells, and for our flood, which is made up of 64 water flood wells and four gas wells, shallow gas wells, we estimate it would cost over a Quarter of a Million Dollars based on, in addition to the logging, the pulling unit expense and other related expenses in getting this work done. So really it works out to closer to a number of about \$4000 a well to be able to perform this work, so as Mr. Stuckey pointed out, it is an extremely costly program if we were to go into a total logging program of all three logs versus logging wells which do have a problem, identifying that problem, performing remedial work, and then making sure

that we have shut off the waterflow or crossflow by a follow-up survey, temperature survey.

MR. NUTTER: Well, is there any way to tell whether a well has a flow without having a survey; at least an initial temperature survey has to be run, isn't that correct?

A That's correct, on those which we do have an indication of flow.

MR. NUTTER: Well, if you don't have any indication on a well, if you don't show a leak on the surface and you don't show a leak on the bradenhead and you don't show any pressure on the intermediate?

A Then we don't feel, particularly since this is something like Mr. Stuckey has pointed out restricted to these problem areas. The remaining areas we have no problem anywhere, as we pointed out at the previous hearing.

Q (By Mr. Stevens) Concerning the point Mr. Nelson made about running these logs, these temperature logs only initially and not subsequently after the work was done, what is your opinion about that?

A Well, actually, as Mr. Nelson stated, that it would be better to run them on a before and after basis to make sure that we had effectively shut off any waterflow.

Q The point was made that all operators should cooperate in taking the Agua injection water. What Petro-Lewis' position on that?

A We'd be willing to and be able to accept some of that water. As a matter of fact, we are presently buying make-up water from Skelly for our flood, so we would be right at this point in time able to immediately take some of that Agua water.

Q Is it your feeling that this should be a permanent setup to take the Agua water, or perhaps temporary?

A Actually, if we go to the investment of laying the line, I would say that it would be a permanent situation because we could put this water to beneficial use, whereas right now it's just being disposed of in the San Andres.

MR. NUTTER: Then why are we worrying about it?

Q (By Mr. Stevens) Do you have any further comments concerning the north area recommendations?

A No.

MR. STEVENS: No further questions. We have no further questions.

MR. NUTTER: Are there any questions of Mr. Somers?

(No response.)

MR. NUTTER: He may be excused. Do you have anything

Further, Mr. Stevens?

MR. STEVENS: Nothing further.

MR. NUTTER: Does anyone have any testimony that they wish to enter in the case?

(No response.)

MR. NUTTER: Does anyone have any statements they wish to make?

MR. SNYDER: I'm A. E. Snyder from Amarada-Heas. I'm from Seminole, Texas. I hadn't intended to say anything today, but we were not completely aware of the north committee's recommendations. Their second recommendation that the 39 wells with low cement have temperature surveys run and cement then squeezed back up to 3100 feet or to the base of the casing, I have a case in point here. The fifth well on his exhibit, the long exhibit showing the wells, is one of our wells that we just happened to run a temperature survey on last month. It is a culprit well, apparently. It is immediately offset to one of the injection wells. It does not have cement above the Queen or across the Queen, yet we ran the temperature survey, the cement bond log, and it shows that the well has no problem, and we would like to just ask the Commission to consider this, that the cement survey and the temperature survey are run, no problems are

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indicated, that we not have to squeeze the well.

MR. NUTTER: Is that the Wallen 3, Mr. Snyder?

MR. SNYDER: Yes, sir, I brought copies of the logs in case you'd like to have those.

MR. NUTTER: How near is that to the nearest injection well in a water flood, Mr. Snyder?

MR. SNYDER: I believe it's about 100 feet, although I don't have it spotted exactly. It would be close.

MR. NUTTER: There are flood operations going on in the immediate vicinity of the Wallen Number 3?

MR. SNYDER: Yes. There are injection wells on the Wallen, and I believe one of the injectors is very close. We anticipated we'd have waterflow but the temperature log indicated no, no extraneous water at all.

MR. NUTTER: You can leave these logs. I don't think we can accept them as an exhibit, official exhibit of the hearing, but we'll take them as part of the record on the case.

MR. SNYDER: Yes, I understand. Okay.

MR. NUTTER: Does that conclude your statement?

MR. SNYDER: Yes.

MR. NUTTER: Does anyone else have a statement?

MR. KELLANIN: Mr. Nutter, I don't want to make a long

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statement here, but there is one item that we are rather deeply concerned about in connection with this case, and that is the use of this Agua water. The recommendation of the north committee as shown by the record is that all of the operators of the four floods cooperate with Agua in attempting to resolve this problem.

Now, we would certainly hate to see an Order entered by the Commission which says "you will by such-and-such a date take this water." This would impose upon us or on Agua a contract which we were not free to negotiate, and a great many variables included in the situation of taking the Agua water, such as the price of the water, the delivery points, the volumes to be delivered, and other factors, and certainly, on the other side of the coin, Agua has its problems in laying pipelines, putting in proper equipment for the delivery of this water, and arriving at some figures that will enable them to recover their costs of operation. For the Commission to make a timetable on this, I think, would be a very serious mistake, and we urge you not to do so. On the other hand, we do feel that it's incumbent on all of the operators and Agua to cooperate to the fullest extent possible, because we do realize that this is a problem.

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MR. NUTTER: Thank you. Any further statements?

No one has anything? Mr. Abbott?

MR. ABBOTT: W. G. Abbott with Agua, from Hobbs. To clarify our situation, at the present time we are -- have completed a study, a cost study, so we know what it will cost to divert most of this water to one of the Anadarko floods, but since we are the operator of a disposal system with 36 different parties in it, we haven't gotten permission from those parties to go ahead with our recommendations and work, but we will continue to develop this idea and submit the views to our parties and then we will negotiate with Anadarko or Skelly or anybody else for this water flood water.

MR. NUTTER: I believe at the first hearing, Mr. Abbott, you talked about the feasibility of diverting this water to another one of your disposal wells some place and you had some cost figures on that.

MR. ABBOTT: Yes, but since that time we think, and also I believe the Commission feels, that it would be better to use this disposal water for beneficial use and the beneficial use in the area would be water flood, and it would be cheaper to do that.

MR. NUTTER: What is your current rate of disposal?

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MR. ABBOTT: 5500 barrels a day.

MR. NUTTER: Does anyone else have any statements they wish to make in this case?

(No response.)

MR. NUTTER: We'll take the case under advisement and the hearing is adjourned.

(Hearing concluded at 12:25 noon.)

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STATE OF NEW MEXICO)
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COUNTY OF SANTA FE)

I, Sally Walton Boyd, Notary Public and General Court Reporter, Santa Fe, 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 the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Sally Walton Boyd
Sally Walton Boyd
Notary Public and General Court
Reporter

My Commission expires:
10 September 1975

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 5403
heard by me on 1/22 1975

[Signature] Examiner
New Mexico Oil Conservation Commission

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 19, 1975

EXAMINER HEARING

IN THE MATTER OF:

The hearing called by the Oil Conserva-) CASE
tion Commission on its own motion to) 5403
further consider the subject matter of)
Case 5377.)

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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1 MR. NUTTER: We will call Case Number 5403.

2 MR. CARR: Case 5403 in the matter of the hearing
3 called by the Oil Conservation Commission on its own motion
4 to further consider the subject matter of Case No. 5377.

5 MR. NUTTER: Okay, before we get into 5403, I would
6 like to very briefly for the sake of the record review the
7 history in this Case.

8 Case Number 5377 was originally called by the
9 Commission and heard on December 3rd, 1974 at which time
10 evidence concerning apparent leakage of water from deeper
11 formations into more shallow formations and also at the surface
12 of the ground, probably the result of either water flooding
13 and/or salt water disposal had occurred and the Commission
14 considered banning of injection in the area that was described
15 as being the south four tiers of sections in Township 22
16 South, Range 37 East, and the northernmost two tiers of
17 Sections in Township 23 South, Range 37 East. After hearing
18 this Case Order No. R-4936 was entered on December 5th,
19 1974, which placed certain restrictions on water injections,
20 both for waterflooding and disposal purposes and the Case was
21 ordered to be heard again at a later date. Case 5403 was then
22 called and heard by the Examiner on January 22nd, 1975 to
23 consider the subject matter of Case Number 5377 and Order
24 Number R-5003 was entered April 29th, 1975 which defined
25 certain problem areas and problem wells and ordered that

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1 certain remedial action be taken. It further ordered that
2 certain restrictions be continued on the waterflood injection
3 rates and also on the disposal rates. It ordered casing
4 bradenhead surveys be taken and other things, and ordered
5 that a lot of this work be accomplished within six months
6 after the entry of the Order.

7 It further ordered that this Case would be reopened
8 at a Hearing in November of 1975, and that's where we are
9 today.

10 At this point I will call for appearances in Case
11 Number 5403, reopened.

12 MR. CARR: I'm William F. Carr appearing for the
13 Commission and I have one witness to be sworn.

14 MR. NUTTER: Any other appearances?

15 MR. KELLAHIN: Tom Kellahin of Kellahin and Fox,
16 Santa Fe, New Mexico appearing on behalf of Anadarko Production
17 Company in association with Irley Bonnette, a member of the
18 Texas bar, and Skelly Oil Company in association with
19 Mr. Chester Blodget, member of the Texas and Oklahoma bar. Mr.
20 Blodget will present his case for Skelly.

21 MR. JENNINGS: James T. Jennings of Jennings,
22 Christy and Copple appearing on behalf of Agua.

23 MR. NUTTER: Mr. Kellahin and Mr. Jennings, do
24 you plan to have witnesses?

25 MR. JENNINGS: I have one witness, Mr. Abbott, if

1 possible.

2 MR. NUTTER: Okay, would all the witnesses please
3 stand and be sworn at the same time?

4 (THEREUPON, the witnesses were duly sworn.)

5 MR. NUTTER: Mr. Carr, would you proceed, please?

6 LESLIE A. CLEMENTS

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

9

10 DIRECT EXAMINATION

11 BY MR. CARR:

12 Q Will you state your name, position and place of
13 residence, please?

14 A Leslie A. Clements, Oil and Gas Inspector for
15 the State of New Mexico, Oil Conservation Commission, District
16 One, Hobbs, New Mexico.

17 Q Does District One include that part of Lea County
18 that is involved in this Case?

19 A Yes, sir, it does.

20 Q Do your duties as Deputy Oil and Gas Inspector
21 include supervising compliance with the Oil Conservation
22 Commission Orders Numbers R-4936 and Number R-5003?

23 A Yes, sir.

24 Q What generally do those orders require?

25 A It required the perforating and the squeezing

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1 of some thirty-eight wells, and bringing the cement up
2 above the Queen formation to a depth not less than thirty-
3 one hundred feet from the surface; the reentry and replugging
4 of some six wells; and recompletion of one well.

5 MR. CARR: Mr. Examiner, I think for purposes of
6 having a complete record in this Case it would be wise if
7 the Commission would incorporate the records of Case 5377 and
8 the record in the first Hearing in Case 5403, and I so move.

9 MR. NUTTER: Are there any objections to incorpora-
10 tion of the records? If not the record in Case Number 5377
11 and the record of the first hearing of Case Number 5403 on
12 January 22, 1975 will be incorporated in the record of
13 Case Number 5403 today.

14 Q (Mr. Carr continuing.) Mr. Clements, you have
15 stated that you supervised efforts to comply with the
16 provisions of the previous order, is that correct?

17 A Yes, sir.

18 Q Have you kept notes on the effort?

19 A Yes, sir.

20 Q Will you refer to these notes and review well-by-
21 well what progress has been made towards compliance with
22 these previous orders?

23 A I have a summary here that I would like to read
24 and then later on I would like to read into the record
25 the depths of the cement that we have of the wells that we

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1 have worked over.

2 In summary of this Case the Commission witnessed
3 the following: The perforating and squeezing of the wells
4 as outlined in Paragraph One, Pages Nine and Ten; Paragraph
5 Number Two, Page Ten; and Paragraph Number Three, Page Eleven
6 of Order R-5003. A total of thirty-eight wells were witnessed.
7 A tabulation of the top of the cement will be presented
8 later.

9 The plugging and abandonment of six wells was
10 also witnessed and the recompletion of one well was witnessed.
11 The wells that were plugged and abandoned will also be named
12 later in this testimony.

13 This Order also required a quarterly bradenhead
14 survey to be conducted on all wells in Sections 13 through
15 36 of Township 22 South, Range 37 East, and Sections 1 through
16 12 of Township 23 South, Range 37 East.

17 The first survey was conducted in August of this
18 year and the second survey is presently underway at this
19 time. This survey encompassed five hundred and forty wells,
20 and twenty-nine producing companies.

21 As a result of these tests, thirty-two wells were
22 found to have pressure on either the surface or intermediate
23 casing. As of this date fourteen wells have been worked
24 over and six are under further evaluation pending future
25 bradenhead surveys, leaving a total of twelve wells that the

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1 Commission has not had any communication on.

2 The other provisions of this Order restricts the
3 amount of water being disposed of in this area. Three
4 disposal wells were involved in the Order. They are: Skelly's
5 Eunice TP Well Number One, located in Unit L of Section 27,
6 Township 22 South, Range 37 East and it is limited to
7 fifteen hundred barrels per day disposal rate; Armer's
8 Gulf State Salt Water Disposal Well Number One located in
9 Unit M of Section 2, Township 23 South, Range 37 East, and is
10 limited to three hundred and fifty barrels daily disposal
11 rate; and Agua's Salt Water Disposal Well Number H-35 located
12 in Unit H of Section 35, Township 22 South, Range 37 East and
13 was limited to fifty-five hundred barrels per day disposal
14 rate. This well has been since shut in by a letter from
15 the Commission dated August 22nd, 1975, and at this time
16 Agua, Inc. received temporary permission to dispose of the
17 water that would have been disposed of in H-35 in their
18 SWD Well Number C-2 located in Unit C of Section 2, Township
19 22 South, Range 37 East, approximately five miles north of
20 H-35.

21 Also pending at this time is Case 5592 which covers
22 a permanent substitution for Well H-35.

23 At this time I would like to read into the record
24 the companies and their wells and the top of the cement
25 after the required work was done.

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1 I'm going to read from this directive from
2 Order 5003 which I have written the tops of the cement on.

3 Amerada-Hess Walden Number 1 located in Unit K of
4 Section 15, Township 22 South, Range 37 East. The top of the
5 cement was at twenty-nine, oh, six.

6 Amerada-Hess Walden Number 2 located in Unit K of
7 Section 15, Township 22 South, Range 37 East. The top of the
8 cement was at twenty-four, seventy-five.

9 Amerada-Hess Walden Number 3 located in Unit N of
10 Section 15, Township 22 South, Range 37 East. The top of
11 the cement was at nineteen, forty.

12 Amerada-Hess Walden Number 6 located in Unit M
13 of Section 15, Township 22 South, Range 37 East. The top
14 of the cement was at twenty-nine, nineteen.

15 Amerada-Hess Wood Number 5 located in Unit B of
16 Section 22 South, Range 37 East. The top of the cement was
17 located at twenty-four thirty.

18 Amerada-Hess Wood Number 9 located in Unit G of
19 Section 22, Township 22 South, Range 37 East. The top of the
20 cement was located at twenty-five fifty.

21 Amerada-Hess Wood Number 10 located in Unit H of
22 Section 22, Township 22 South, Range 37 East. The top of
23 the cement is located at eighteen ten.

24 Cleary Production Company Parks Number 7 located
25 in Unit K of Section 13, Township 22 South, Range 37 East.

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1 The top of the cement was located at twenty-three, ninety-
2 five.

3 Cleary Production Company Parks Number 8 located
4 in Unit J of Section 14, Township 22 South, Range 37 East.
5 The top of the cement was located at twenty-four hundred feet.

6 Cleary Production Company Parks Number 9 located
7 in Unit N, Section 14, Township 22 South, Range 37 East. The
8 top of the cement was located at twenty-two eighty.

9 Coquina Oil Corporation Baker Number 1 located in
10 Unit B of Section 26, Township 22 South, Range 37 East. The
11 top of the cement was located at twenty-five, twenty-six.

12 Exxon Company, USA Paddock Unit Number 98 located
13 in Unit H of Section 15, Township 22 South, Range 37 East,
14 plugged and abandoned.

15 Gulf Oil Corporation Cole Number 5 located in Unit
16 O of Section 16, Township 22 South, Range 37 East. The top
17 of the cement one hundred feet.

18 John H. Hendrix Cossatot F Number 1-C, Section 23,
19 Township 22 South, Range 37 East. A bond log was run on
20 this well and the top of the cement was found to be twenty-
21 eight, ninety.

22 Samedan Oil Corporation Parks Well Number 3,
23 located in Unit P of Section 14, Township 22 South, Range
24 37 East. The top of the cement was found to be at twenty-
25 eight hundred feet.

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1 Samedan Oil Corporation Parks Number 4, Unit I,
2 located in Section 14, Township 22 South, Range 37 East. The
3 top of the cement, fifteen hundred feet.

4 Q Leslie, if it is all right, I think we can note that
5 all of these are in Township 22 South, Range 37 East and not
6 have to repeat them.

7 A Samedan Oil Corporation Parks Number 50, Section
8 14. Top of the cement was at twenty-two hundred feet.

9 Skelly Oil Company Baker A Number 5 located in
10 Unit E of Section 26. Top of the cement was at sixteen,
11 fifty-five.

12 Skelly Oil Company Baker Number 9, Unit N of
13 Section 22. The cement circulated.

14 Skelly Oil Company Baker Number 10, Unit A,
15 Section 27, the top of the cement twenty-seven, ten.

16 Skelly Oil Company Baker Well Number 11 located
17 in Unit B of Section 27, cement circulated.

18 Skelly Oil Company Baker C Number 1 located in
19 Unit A of Section 26, cement circulated.

20 Sohio Petroleum Company Walden Number 3 located in
21 Unit F of Section 15. The cement was found at nineteen forty.

22 Sohio Petroleum Company Walden Number 4-E located
23 in Unit E of Section 15. The top of the cement was found
24 at twenty-seven sixty.

25 Sohio Petroleum Company Walden Number 5 located in

1 Unit E of Section 15. The top of the cement was at twenty-
2 nine, fifty-five.

3 Texas Pacific Oil Company Incorporated Danglade
4 Number 1 located in Unit F of Section 13. Top of the cement
5 was found at twenty-nine, forty.

6 Texas Pacific Oil Company Incorporated Walden
7 Number 3 located in Unit C of Section 15. The top of the
8 cement was found at twenty-three, twenty-five.

9 Texas Pacific Oil Company Incorporated Walden
10 Number 4 located in Unit C of Section 15. The top of the
11 cement was found at twenty-one, forty.

12 Texas Pacific Oil Company Incorporated Boyd
13 Number 1 located in Unit G of Section 23, plugged and abandoned.

14 Texas Pacific Oil Company Incorporated Boyd
15 Number 2-Y located in Unit H of Section 23, the top of the
16 cement at thirty, forty.

17 Texas Pacific Oil Company Incorporated Boyd
18 Number 3-A in Section 23. The top of the cement was located
19 at twenty-nine forty.

20 Texas Pacific Oil Company Incorporated Boyd
21 Number 5 located in Unit B of Section 23. The top of the
22 cement was located at thirty-fourty.

23 Texas Pacific Oil Company Incorporated Cary
24 Number 7 located in Unit F of Section 22. The top of
25 the cement was located at twenty-five, oh, five.

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1 Texas Pacific Oil Company Incorporated located
2 in Unit L of Section 22, cement circulated.

3 The following wells had three strings of casing
4 in them and these were perforated and the cement was brought
5 back up into the intermediate string: Samedan Oil Corporation
6 Boyd Number 1, Unit J of Section 23, top of the cement at
7 twenty-one hundred feet. Skelly Oil Company Baker A Number
8 1 located in Unit D of Section 26, top of the cement at
9 twenty-eight, fifty.

10 MR. NUTTER: I missed the top of the cement on that
11 Samedan Boyd Number 1, what was that again?

12 A Twenty-one hundred feet.

13 MR. NUTTER: Even?

14 A Yes, sir.

15 MR. NUTTER: Okay, you didn't give a report on
16 the Wilbanks well?

17 A No, sir.

18 MR. NUTTER: Okay.

19 A The following workover was witnessed and this
20 well was recompleted by running a five-inch liner. I might
21 add that this company also removed a drilling rig on this
22 well that they might have proper handling facilities.

23 The Skelly Oil Company Penrose A Unit Well
24 Number 3 located in Unit I, Section 33. The Unit was
25 recompleted by running a five-inch liner.

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1 Skelly Oil Company Penrose A Unit Well Number 14
2 located in Unit C of Section 3.

3 Q (Mr. Carr continuing.) You are now talking about
4 wells located in Township 23 South?

5 A Yes, sir.

6 Q Range 37 East?

7 A Township 23 South, Range 37 East was plugged and
8 abandoned.

9 Skelly Oil Company Penrose A Unit Well Number
10 23 located in Section F of Section 3, cement circulated.

11 Penrose A Unit, Well Number 46 located in Unit B
12 of Section 9. Cement was found at twenty-four, seventy.

13 Skelly Oil Company Penrose A Well Number 48
14 located in Unit H of Section 9, the top of the cement at
15 nineteen, ten.

16 Samedan Oil Corporation Boyd Number 2 J, they
17 were directed to reenter this well and replug it, and they
18 reentered this well -- this well is located in Unit J of
19 Section 23 of Township 22 South, Range 37 East. This well
20 was reentered and re-perforated and cement was brought to
21 the height of twenty-two hundred and fifty feet and they
22 now are evaluating the feasibility of recompleting this
23 well and possibly replug Boyd Number 1 which I previously
24 gave you on the other page.

25 Skelly Oil Company H. O. Sims Well Number 16

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1 located in Unit M of Section 34 was plugged and abandoned
2 properly.

3 Q Leslie, this is again, what Township and range?

4 A Township 22 South, Range 37 East.

5 Skelly Oil Company Sims C Number 1 located in Unit
6 N of Section 3, Township 23 South, Range 37 East, was reentered
7 and properly plugged and abandoned.

8 I would like to continue on, if I may, in my
9 summary work here. This leaves a total of three wells that
10 have not met the Commission's requirement under Order R-5003.
11 They are: Armer Oil Company's Keohane Well Number 1 located
12 in Unit I of Section 26, Township 22 South, Range 37 East.

13 MR. NUTTER: Okay, what was the requirement for
14 work on that?

15 A They were to perforate the production string and
16 bring the cement to thirty-one hundred feet or less.

17 Q (Mr. Carr continuing.) Do you have a status
18 report on that well?

19 A Yes, I received a phone call regarding this well
20 on Monday morning from Mr. Clarence Dunnhoffer who said
21 that they would move with all diligence to run a cement
22 bond log and if the cement was not high enough they would
23 comply with Order R-5003 by bringing the cement above
24 thirty-one hundred feet.

25 Q What other wells are not complied with?

1 A Okay. Bruce A. Wilbanks Baker Number 2 located
2 in Unit letter A of Section 26, Township 22 South, Range 37
3 East. The well was also to be perforated and cement brought
4 higher than thirty-one hundred feet.

5 Q Do you have a status report?

6 A Yes, sir, I was informed last night by Mr. Aubrey
7 Kenyon, superintendent for Mr. Wilbanks that he was not
8 aware, this is Mr. Wilbanks was not aware of Order R-5003
9 until Thursday or Friday of last week when he received a
10 letter at his home from Mr. Gary Sexton informing him of
11 being in violation of Order R-5003. Mr. Kenyon also informed
12 me that they would begin workover operations immediately.

13 Q Now, what was the third well?

14 A The third well was a well that was to be reentered
15 and replugged in accordance with Order R-5003, being the
16 Wolfson Oil Company Boyd Number 1 located in Unit N of
17 Section 3, Township 23 South, Range 37 East.

18 MR. NUTTER: Wait a minute, what's the name of
19 that well and where is it located?

20 A Wolfson Oil Company Boyd Number 1 located in Unit
21 L, I'm sorry, of Section 23, I'm sorry again.

22 MR. NUTTER: Okay, it's the Boyd 1 in L of 23?

23 A Right, 23, 23, 37.

24 Q (Mr. Carr continuing.) Now, Mr. Clements, would
25 you refer to the letter which I have just handed you marked

1 Oil Conservation Commission Exhibit Two and read that into
2 the record, please?

3 A From Wolfson Oil Producers, Dallas Texas, addressed
4 to the Oil Conservation Commission, P. O. Box 2086, Santa Fe,
5 New Mexico, 87501, attention Mr. Joe D. Ramey. (Reading.)
6 Dear Joe: In line with our telephone conversation this date
7 regarding the plugging of the above-described well, I'm
8 enclosing our progress report showing we reached a total depth
9 of slightly over four hundred feet before giving up the hole.
10 Due to junk in the hole such as pieces of wire, wood and iron,
11 we were unable to penetrate any farther, therefore, we set a
12 ten-sack plug and marker. Inasmuch as we were unable to
13 get into the cut off eight and five-eighths casing at five
14 hundred feet we don't feel that it would be economically or
15 mechanically feasible for us to attempt any deeper penetration.
16 With best personal regards, I remain, yours very truly, Sam
17 Wolfson. (End of reading.)

18 Q Do you have any other information concerning this
19 well?

20 A We have here a work record of work done from
21 March 30th, 1968 to April 5th, 1968 as to work being done
22 on this well.

23 Q And that is attached to Exhibit Two?

24 A Yes.

25 Q In your opinion, Mr. Clements, does this evidence

1 a good faith effort to comply with the provisions of Order
2 Number R-50037

3 A No, sir, not under the present situation it does
4 not.

5 Q Okay. I would like you, just for purposes of the
6 record, to identify what has been marked as Oil Conservation
7 Commission Exhibit One? What is this, Mr. Clements?

8 A This is a letter from the Oil Conservation Commission
9 to Agua, Incorporated, dated August 22nd, 1975, directing
10 that the disposal well H-35 be shut in.

11 Q And is this the letter you referred to in your
12 previous testimony?

13 A Yes, sir.

14 Q I now hand you letters which have been marked Oil
15 Conservation Commission Exhibits Three, Four and Five and
16 explain what these are to the Examiner?

17 A These are three letters to the three companies that
18 I have mentioned that have not complied with Order R-5003,
19 being Armer Oil Company, Bruce A. Wilbanks, and Wolfson
20 Oil Company.

21 Q What do these letters state in general terms?

22 A In general terms that they are in violation of
23 Order Number R-5003 and they are subject to a thousand dollar
24 a day fine for not having this work done.

25 Q Do you have a recommendation to make to the Examiner

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1 at this time concerning what action should be taken concerning
2 these wells?

3 A. Yes, sir, I do. I think that in regard to these
4 three wells that have not met the requirements of this
5 Order that it would be my recommendation that prompt punitive
6 action be taken by the Commission until these requirements
7 are met.

8 Q As you discussed the salt water disposal wells
9 in this area, how many were there, three?

10 A. Yes, sir.

11 Q And they were what wells?

12 A. They are the Armer Gulf State Salt Water Disposal
13 Well Number 1 located in Unit M of Section 2, Township 23 South
14 Range 37 East; and Skelly's Eunice DP Well Number 1 located
15 in Unit L of Section 27, Township 22, Range 37 East; and
16 Agua's Salt Water Disposal Well H-35 located in Unit H of
17 Section 35, Township 22 South, Range 37 East.

18 Q And Mr. Clements, you indicated that the Agua
19 well is shut in?

20 A. Yes, sir.

21 Q Do you have a recommendation to the Examiner
22 concerning injection in the other salt water disposal wells?

23 A. Yes, sir, I think that the amount of water that is
24 being disposed of under this Order should be made permanently.

25 Q Do you have a recommendation to the Examiner

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1 concerning injection rates for secondary recovery purposes?

2 A At this time and due to the amount of information
3 that we have, I would recommend that they remain the same
4 until further bradenhead surveys are conducted.

5 Q I believe the previous Order set out certain
6 recommendations concerning quarterly casing surveys?

7 A Yes, sir.

8 Q What is your recommendation concerning them?

9 A I recommend that they be continued as they are at
10 the present time.

11 Q And how is that?

12 A They are on a quarterly basis.

13 Q How long would that continue?

14 A Up for a period of one year and we are now in the
15 middle of the second quarter.

16 Q And that includes previous?

17 A Yes, sir.

18 Q And at the end of a one-year period what is your
19 recommendation?

20 A That we evaluate the information we have and see
21 whether we may want to continue them on a quarterly basis.

22 Q Is it your intention to provide any procedure
23 whereby they would go to another time period for these tests?

24 A Yes, sir.

25 Q And what would that be?

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1 A They could approach the Secretary-Director and
2 ask for a biannual survey.

3 Q Could this also be accomplished by authorizing the
4 district supervisor to authorize this change?

5 A Yes, sir.

6 Q Do you have anything further to add to your
7 testimony at this time?

8 A No, sir.

9 Q Are Exhibits One through Five true and correct
10 copies of correspondence from the official file of the Oil
11 Conservation Commission?

12 A Yes, sir.

13 MR. CARR: Mr. Examiner, at this time I would
14 offer Oil Conservation Commission Exhibits One through Five.

15 MR. NUTTER: Exhibits One through Five will be
16 admitted into evidence.

17 MR. CARR: I have nothing further at this time.

18

19 CROSS EXAMINATION

20 BY MR. NUTTER:

21 Q Mr. Clements, I might have missed it, but when
22 you started off on the first group of wells under Order
23 Number One on Page Nine of the Order, I think you started
24 off with the Amerada-Hess Walden Number One and you came
25 back later to the Armer well, but I don't think you ever

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1 mentioned that Atlantic Richfield one.

2 A I'm sorry, Mr. Nutter, I do not have -- there was
3 a temperature survey filed by Atlantic Richfield on this
4 Boyd Number 2 and I do not have a copy of it. I understand it
5 is here in the Santa Fe office or that they originally had
6 their cement higher than thirty-one hundred feet.

7 Q Originally?

8 A Yes, sir.

9 Q All of those other wells that are covered in Order
10 One, you gave us a top of the cement or that the well had
11 been P&A, or that cement had been circulated?

12 A Yes, sir.

13 Q Now, were each of these the result of a recement
14 job?

15 A Yes, sir.

16 Q With the exception of that one you say that a
17 bond log had been run on the Hendrix Cossatot Well and the
18 cement top was found to be at twenty-eight, ninety?

19 A Yes, that is true.

20 Q And now you are saying that there is a temperature
21 survey supposedly on file that shows that the original cement
22 top on the Boyd Well, Arco's Boyd Well, would be above
23 thirty-one hundred feet also?

24 A Yes, sir.

25 Q What was that depth, you said, supposed to show?

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1 A He didn't tell me, he just said it was above
2 thirty-one hundred feet.

3 Q Have they got a copy of their original temperature
4 survey?

5 A I have not seen it.

6 Q But you don't have it in your well file in Hobbs?

7 A No, sir, I sure don't.

8 Q Did you look in the Santa Fe files?

9 A No, sir.

10 Q So that covers all of the wells in that Number One?

11 A Yes, sir.

12 Q When we get to that Order Number Two then, we've
13 got two wells listed there which were supposed to be
14 recemented and both of them were recemented, is that
15 correct?

16 A Yes, sir.

17 Q Then we get to Order Three and it covers five wells
18 altogether in which remedial work was supposed to be taken
19 and in which they were supposed to eliminate an existing
20 casing leak or bradenhead water flow. Now you mentioned that
21 one of them had been recompleted with a five-inch liner, one
22 had been P&A, one had cement circulated, one has cement top
23 at twenty-four seventy, the other at nineteen, ten?

24 A Yes, sir.

25 Q Does the work on each of those four comply with the

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1 first sentence in Order Three?

2 A Yes, sir.

3 Q That the existing casing leak or break in that
4 water flow has been eliminated?

5 A Yes, sir.

6 Q Okay. Now we get to Item Four which calls for
7 the plugging of four wells, two wells have been plugged. That
8 would be the two Skelly wells?

9 A Yes, sir.

10 Q Samedan has reentered theirs and is considering
11 maybe putting it back on production and plugging the well
12 which was mentioned in Order Number Two instead?

13 A Yes, sir, that is correct.

14 Q And Wolfson is covered by that letter that you
15 had, that Exhibit?

16 A Yes, sir.

17 Q Okay. Now we get to Order Number Five. What
18 about this Interstate Petroleum Corporation-J. S. Clower
19 well?

20 A This well was reentered and it is replugged at the
21 proper time. I mean, I don't remember the time. I will
22 have to look back on my notes is what I'm trying to say and
23 we've got the bottom plug set at seven hundred and fifty
24 feet on it.

25 Q But the well was reentered, cleaned out as far as

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1 possible and replugged?

2 A Yes, sir. I would say that a concerted effort was
3 made to get to TD on this well.

4 Q Who worked on that well?

5 A Armer was actually supervised the work, but Skelly,
6 as I understand, split half the bill.

7 Q They participated in the work?

8 A Yes, sir.

9 Q That is the one that is known as the old R. D. Sims
10 water well?

11 A Yes, sir, that s right.

12 Q Okay. Now, you have conducted one quarterly survey,
13 is that right?

14 A Yes, sir. We are now presently in the midst of
15 another one.

16 Q And what does the Order call for, that the Secretary-
17 Director can change these surveys to a semi-annual basis after
18 four of these quarterlies are taken, is that right?

19 A Yes, sir.

20 Q And you are just now starting your second quarter?

21 A Yes, sir, that is correct.

22 Q Okay, now referring to these three disposal wells
23 in Orders Eleven, Twelve and Thirteen, they are given a
24 disposal allowable, one of them is no longer in use, but
25 the other two would have a disposal allowable. Are they

1 staying within their disposal allowable?

2 A Yes, sir, they are.

3 Q Okay. Now what about Order Number Fourteen there
4 that Skelly Oil Company until further order of the Commission
5 continue to produce the LPG Well, do you have any knowledge
6 as to what Skelly is doing there?

7 A Yes, sir, they are continuing to produce this well.
8 I have that information somewhere if I can just find it. Last
9 week they run a shut-in test on it and shut it in for -- let
10 me find that information.

11 MR. NUTTER: Maybe Mr. Blodgett would testify as
12 to that. Did you plan to go into that?

13 MR. BLODGET: Not really.

14 A Okay. The well was shut in last week, shut in for
15 fifteen minutes, and it pressured up to three hundred pounds
16 in fifteen minutes. It is presently flowing at a rate of
17 some hundred and thirty-seven barrels of water per day.

18 Q (Mr. Nutter continuing.) That's the old LPG storage
19 well?

20 A Yes, sir.

21 Q And it is still making water?

22 A Yes, sir.

23 MR. BLODGET: Is that volume down?

24 A No, it is not.

25 Q (Mr. Nutter continuing.) How about the pressure,

1 you say it was shut in and built up to three hundred pounds
2 in fifteen minutes?

3 A Yes, sir.

4 Q How about when this whole thing first started, what
5 kind of pressures were they getting on that well?

6 A Of course, again I would have to go back to some
7 other information, Dan, but this was an LPG storage well and
8 Mr. Shahan informed me that normally LPG wells have a very
9 small amount of pressure on it and they went out some morning
10 and discovered eight or nine hundred pounds on this well which
11 is close to blowing the overburden off and they got real
12 panicky and the well was full of LPG at the time and they
13 did recover directly a hundred percent of their LPG product
14 out of this well. We then directed them to keep this well
15 open and not load it up with this pressure and I'm sure that
16 this fifteen minute shut in was kind of hair raising. I
17 really don't know what the pressure should be on it, on an
18 LPG well, not much, however.

19 Q Okay, now Orders Fifteen, Sixteen, Seventeen,
20 Eighteen, Nineteen and Twenty all relate to the waterflood
21 projects in the area and the volumes of water that would be
22 injected?

23 A Yes, sir.

24 Q I think that under Orders Fifteen and Sixteen that
25 two floods were permitted to inject a volume of water equal

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1 to the reservoir voidage, and that one project in which
2 considerable work had already been accomplished was permitted
3 to inject a volume of water equal to one hundred and fifty
4 percent of the reservoir voidage?

5 A Yes, sir.

6 Q Then later in the order it provided that the super-
7 visor could raise the injection rate for those that were held
8 to actual reservoir voidage up to a hundred and fifty percent.
9 Do you know if all three floods in this area are injecting at
10 the rate of one hundred and fifty percent of voidage or what
11 is their injection ratio, do you know?

12 A No, sir, I do not. I have seen this information,
13 but they are complying with this letter requirement.

14 Q Do you have any recommendation as to, if the
15 Commission enters an order on the reopening of this Case
16 today, do you have any recommendation as to whether the Case
17 should be reopened again later or just an open-end order, or
18 what?

19 A I think it should be possibly an open-ended order.
20 I think it would be my recommendation that we continue on with
21 the injection volumes as they are now until we can get
22 further data through bradenhead surveys and actually ascertain
23 if this flow of water is going to decrease in these wells
24 such as the Skelly LPG well and certain other wells that we
25 are now having problems with.

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1 Q Until we have ascertained, though, whether the
2 remedial work has been successful and some of these other
3 problems have been eliminated, do you recommend that we continue
4 the bradenhead survey and possibly reopen this thing later?

5 A Yes, sir.

6 Q would a year be adequate?

7 A I think so, that would be just fine.

8 Q Do you think that over all you have received a
9 considerable amount of cooperation from the operators?

10 A Yes, sir, I certainly do.

11 Q And they have been diligent in their efforts?

12 A Yes, sir.

13 MR. NUTTER: Okay, any further questions of
14 Mr. Clements? He may be excused.

15 MR. BLODGET: I would like to ask one since he
16 brought up the salt dome problem.

17

18 CROSS EXAMINATION

19 BY MR. BLODGET:

20 Q To your knowledge, is there anyone else that has
21 a well drawing salt water out of the salt dome?

22 A No, sir. Are you speaking specifically of LPG wells?

23 Q Yes sir, well, the LPG or any other kind of wells
24 that are getting water out of that particular salt formation?

25 A There are indications, yes, that there is some

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1 water coming in basically this area or through the salt, yes,
2 sir.

3 Q That is being drained out of that --

4 A Yes, sir, however, not in the amount that Skelly is
5 getting.

6 Q Well, now, if this salt formation is pretty well
7 pressured up with water and all of these wells that have been
8 drilled through it and properly cemented and so forth, and
9 then if there was just one well which actually this well is
10 in a big cavern, is it not?

11 A Yes, sir.

12 Q And if this is the only well, drawing well from
13 this formation it is going to take a long time to relieve the
14 pressure in that particular salt formation, is it not.

15 A I would think so, yes, sir.

16 Q Now, if all the wells in the area had all of the
17 remedial work that had been recommended done, and there
18 was no other place except the Skelly LPG Well that this
19 water was escaping, how could that injure anybody else's
20 well, I mean into the operations of this area?

21 A In other words, would you please --

22 Q What I meant, if all of these wells that have
23 been drilled through this salt formation are properly
24 protected, and even if the Skelly well was allowed either
25 to be plugged and abandoned or just kept pumping, why would

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1 there be a necessity to continue the one hundred and fifty
2 or the voidage rate or the one hundred and fifty percent
3 factor through the waterfloods?

4 A As I say, we still have problem wells that have
5 got this flow water and I'm just not real sure that we have
6 enough data to increase this at the present time. I think
7 we should run some more bradhead surveys and see that these
8 things are as they should be. We have only run one and
9 partially another one so far, and we are still encountering
10 some pressures in this area where the intermediate or salt
11 strings are set.

12 Q And when you encounter that then what do you do
13 then?

14 A We try to get them to work the well over and
15 relieve this problem by the use of cement.

16 Q Have you been successful with every operator?

17 A In some cases, yes, sir, I would say ninety-nine
18 percent of the time we have, yes, sir. We occasionally
19 will perforate into a well that will have a flow of water
20 that we cannot shut off.

21 Q Wouldn't the fact that you are running periodic
22 tests now give you notice within a reasonable time to where
23 if there is a break through somewhere and that it is
24 discovered fairly soon it can be remedied within a reasonable
25 time without doing a great deal of damage?

1 A I still think that we have the situation probably
2 that if the pressure had dissipated, I would say, yes, but
3 it has not dissipated.

4 Q Well, if you remedy the problem you find in all
5 of these other wells it is going to take that Skelly well
6 a long time to dissipate the pressure from that particular
7 salt formation, isn't it?

8 A It may possibly do it, yes, sir.

9 MR. BLODGET: I have no further questions.

10 MR. NUTTER: Does anyone else have any questions
11 of the witness? Mr. Ramey?

12
13 CROSS EXAMINATION

14 BY MR. RAMEY:

15 Q Mr. Clements, in the second bradenhead survey, have
16 you witnessed any increases in pressure over what you found
17 in the first?

18 A Yes, sir, in one case.

19 Q Do you have those figures in your head or --

20 A Yes, sir, that would be where they would be, and
21 I would say approximately from five hundred and fifty pounds
22 to six hundred and seventy pounds in one well, being T P's
23 shut in or temporarily abandoned well over east of H-35
24 there. It is a Sims well. I don't remember the number of
25 it offhand.

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1 Q Have you witnessed any decrease in pressure on
2 some of them?

3 A Yes, sir, I certainly have.

4 MR. RAMEY: Thank you, that's all.

5 MR. NUTTER: Mr. Kellahin.

6
7 CROSS EXAMINATION

8 BY MR. KELLAHIN:

9 Q What is the current order affecting the Anadarko
10 Langley Mattox Penrose Unit, what are they limited to in
11 their injection rates on that waterflood?

12 A Like I say I have been out working personally with
13 these wells but I haven't checked the C-120's and I really
14 don't know. Which one is it?

15 MR. RAMEY: What is the order?

16 A One hundred percent, isn't it? I believe it is
17 one hundred percent.

18 Q (Mr. Kellahin continuing.) I believe the order
19 requires Anadarko to limit their injection to one hundred
20 percent of the withdrawal. Is that still your recommendation
21 now or are you willing to recommend that that be increased
22 to one hundred and fifty percent?

23 A No, sir. My recommendation is that it stay at
24 one hundred percent.

25 Q Based on what facts would you continue with that

1 rate?

2 A. We have a well that a certain company has spent
3 some forty thousand dollars offsetting some of Anadarko's
4 wells attempting to squeeze off and they cannot get it
5 squeezed off.

6 Q. Which well is that?

7 A. Texas Pacific Oil Company, Incorporated, Elliott
8 B-20 Number 1.

9 MR. RAMEY: Are these other wells offsetting
10 Anadarko's flood?

11 A. They are just scattered at random, actually from
12 one end of the field to the other, however, some of them
13 are at random.

14 Have you located it, I might find it here.

15 Q. (Mr. Kellahin continuing.) In Section 20?

16 A. I don't know, I can look and see. Elliott B-20
17 Number 1 located in Unit H of Section 20, Township 22 South,
18 Range 37 East.

19 Q. Is that in Section 20?

20 A. Yes, sir.

21 Q. Is that named in one of these Commission orders?

22 A. No, sir, this is one of the wells that we found
23 had pressure by the bradenhead survey.

24 Q. Subsequently you have discovered some problems?

25 A. Yes, sir.

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1 Q Are there any other wells that are directly affected
2 by the Anadarko waterflood?

3 A I don't know, I have a list here. I'm sure that some
4 of them are in close proximity. I haven't plotted them out
5 on the map to really know.

6 MR. KELLAHIN: No further questions.

7
8 RECROSS EXAMINATION

9 BY MR. BLODGET:

10 Q Are there any wells in the south area that have
11 not been taken care of, the necessary remedial action been
12 taken?

13 A I can just only go through these letters that I
14 wrote and the ones that we heard from, I can tell you offhand
15 that I believe Continental has some offsetting you over
16 there, being the State JJ-36 and Number 1 located in Unit G
17 of 36, 22, 37; and the Stevens B Number 19 located in Unit O
18 of 7, 23, 37, and so far we have only received an intent
19 that they are going to do this work.

20 Q It's my understanding that the injection rate for
21 both the Penrose A and Penrose B Units is at one hundred and
22 fifty percent at this time, if all of the wells are taken
23 care of with all of the necessary remedial work in the south
24 area, would you still recommend that the injection rate there
25 be kept at one hundred and fifty?

1 A Yes, sir, I sure would until further evaluation
2 of these bradenhead surveys are done.

3 MR. BLODGET: No further questions.

4 MR. NUTTER: Any further questions of Mr. Clements?
5 He may be excused.

6 MR. JENNINGS: Will he be available this afternoon
7 if we might need to question him after other testimony?

8 MR. NUTTER: Yes, he will be in the Hearing for
9 the rest of the day.

10 (THEREUPON, the witness was excused.)

11 MR. NUTTER: Did you have anything further at this
12 time, Mr. Carr?

13 MR. CARR: I have nothing further.

14 MR. NUTTER: At this time then we will recess the
15 Hearing until one-thirty.

16 (THEREUPON, the Hearing was in recess.)
17
18
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AFTERNOON SESSION

MR. NUTTER: The Hearing will come to order, please.

MR. CARR: I would like to recall Mr. Clements for one question.

MR. NUTTER: Mr. Clements, will you resume the stand and you are still under oath.

MR. CLEMENTS: Yes, sir.

REDIRECT EXAMINATION

BY MR. CARR:

Q Mr. Clements, do you have a recommendation to make to the Examiner concerning Agua, Inc. salt water disposal well H-35?

A Yes, sir, I would like to go on record to having this well to be permanently shut in, and all water flowed back that will possibly come back and when the pressure is dissipated that it be plugged and abandoned.

MR. NUTTER: To flow back as long as it would flow?

A Yes, sir.

MR. NUTTER: And at that point plug it?

A Yes, sir.

MR. NUTTER: Are there any questions of the witness?

MR. JENNINGS: Yes, sir.

MR. NUTTER: Mr. Jennings.

CROSS EXAMINATION

2 BY MR. JENNINGS:

3 Q Would you please state your reason for your
4 recommendation, Mr. Clements?

5 A I do not think that it can be properly repaired.

6 Q Wherein does the fault lie?

7 A I don't know.

8 Q Were you present at any tests that were made on
9 this well?

10 A Yes, sir.

11 Q When were the tests made and what did they reflect?

12 A It reflected that you had communication with the
13 surface.

14 Q Which test was that?

15 A The last bradenhead survey. I'll have to look it
16 up here. I have it here somewhere. Let's see, it was run
17 in August on H-35, it had eight hundred and twenty-five
18 pounds on the surface with water flow.

19 Q Have you been present when any later tests were
20 run?

21 A Yes, sir, we run a temperature survey and an
22 injectivity profile.

23 Q What did that reflect?

24 A It indicated that you had a water movement
25 around fifteen hundred feet.

1 MR. ABBOTT: Where?
2 A. Around fifteen hundred feet.
3 MR. ABBOTT: Where was the flow?
4 A. Sir?
5 MR. ABBOTT: Where was the flow?
6 A. At fifteen hundred feet up.
7 MR. ABBOTT: Up?
8 A. Yes, sir.
9 MR. ABBOTT: There is no flow inside the casing?
10 A. This is outside of the casing.
11 MR. NUTTER: Mr. Abbott, if you would defer your
12 questioning to your attorney, please?
13 Q. (Mr. Jennings continuing.) I believe you stated
14 that the flow was outside of the casing?
15 A. Yes, sir.
16 Q. How was this determined?
17 A. By temperature tools.
18 Q. Who performed the test?
19 A. I believe Western did.
20 Q. And they indicated that there was communication?
21 A. No, sir, they did not, the temperature tool did.
22 Q. Where was that indicated, fifteen hundred feet?
23 A. Yes, sir.
24 Q. Outside the casing?
25 A. Yes, sir.

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1 Q In your opinion is there any way that this can
2 be remedied?

3 A No, sir, short of flooding the well.

4 (THEREUPON, a discussion was held off
5 the record.

6 Q (Mr. Jennings continuing.) My understanding is
7 that the water is coming in, is that in the salt?

8 A I don't know, I think it's above the salt.

9 Q Above the salt?

10 A I'm just speaking offhand, I really don't know,
11 I would have to look at the log.

12 Q And the test, you are saying it is coming in at
13 fourteen or fifteen hundred feet?

14 A Yes, sir, it is coming in next to the casing and
15 flowing up.

16 Q Do you have any idea as to the source of the
17 water?

18 A No, sir, I certainly don't.

19 Q Do you have any other situations in the pool or
20 in the area we're talking about where this is happening?

21 A We have had some previously.

22 Q Were they able to remedy them?

23 A In some cases, yes, sir.

24 Q Well, we've spoken about all but three cases, do
25 remember those cases where it was not remedied?

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1 A. These were done even prior to the issuing of
2 this Order, back when we run a temperature and profile
3 injection -- temperature survey on all of the Skellys and
4 Anadarko's injection wells some eighteen months ago
5 approximately.

6 MR. JENNINGS: I believe that's all at this
7 time.

8 MR. NUTTER: Any further questions of the witness?
9 He may be excused.

10 (THEREUPON, the witness was excused.)

11 MR. NUTTER: Do you have anything further, Mr. Carr?

12 MR. CARR: Nothing further.

13 MR. NUTTER: Who is going to call the next witness?
14 Mr. Kellahin? Are you going to present a case or are you
15 just representing Mr. Blodget and Mr. Bonnette here?

16 MR. KELLAHIN: I'm going to put on some testimony
17 for Anadarko.

18 MR. NUTTER: Do you want to do that at this time,
19 or Mr. Blodget?

20 O. V. STUCKEY
21 called as a witness, having been first duly sworn, was
22 examined and testified as follows:

23
24 DIRECT EXAMINATION
25 BY MR. BLODGET:

1 Q Would you please state your name, by whom you are
2 employed and in what capacity?

3 A My name is O. V. Stuckey, I'm employed by Skelly
4 Oil Company as a production engineering specialist in Midland,
5 Texas.

6 Q Now you have testified at both of the previous
7 Hearings concerning the subject matters of this particular
8 Hearing, have you not?

9 A Yes, sir.

10 Q And what is your responsibility as far as the
11 Penrose A and B Units are concerned?

12 A I have production engineering responsibilities
13 for these two Units.

14 Q You have testified, as you mentioned, before this
15 Commission and your qualifications have been accepted?

16 A Yes, sir.

17 MR. BLODGET: Is that right?

18 MR. NUTTER: Yes, he's qualified.

19 Q (Mr. Blodget continuing.) As far as you know, have
20 all of the tests and remedial work called for in Order Number
21 R-5003 been completed on both the Penrose A and B Units?

22 A Yes, sir.

23 Q And approximately when were they all completed?

24 A The bulk of this work was completed in March. We
25 completed the work on one well in August.

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1 Q And now to your knowledge has the Commission run
2 the second set of tests on the well and completed them in the
3 two Units?

4 A It is my understanding that these two Units, they
5 have been run.

6 Q Now at the time of the first Order in this matter,
7 the injection rate was cut back to voidage, is that right?

8 A That is correct on the Penrose A Unit.

9 Q All right, then after the remedial work had been
10 done and administrative approval was granted in accordance
11 with Order Number R-5003 to increase the injection rates in
12 the Penrose A to a hundred and fifty percent, is that correct?

13 A I believe so.

14 Q Now, what has happened to the production from the
15 Penrose A Unit, first, say while Skelly was only injecting a
16 hundred percent, or voidage, and then what has happened since
17 they started to inject a hundred and fifty percent of the
18 voidage, what has happened to the production?

19 A It has been declining throughout that entire period.

20 Q Have you prepared an exhibit which amounts to a
21 graph showing the decline curves?

22 A Yes, sir, we have.

23 Q I call your attention to what has been marked as
24 Exhibit One, would you identify and explain that please?

25 A Exhibit One was the Unit's performance curve of

1 the Skelly Penrose A Unit which indicates on a daily basis,
2 by months, the water injection, water production, oil produc-
3 tion, gas-oil ratio performance of this Unit from a period of
4 1965 through September 1975.

5 Q Now, can you explain whether or not there is any
6 difference in the oil production during the period where we
7 were just injecting the amount of water amounting to voidage
8 as compared to the period where we jumped to a hundred and
9 fifty percent of voidage?

10 A Immediately prior to the period of curtailment of
11 water injection, we were producing approximately fourteen
12 hundred and seventy-five barrels of oil per day. This took
13 a drastic decrease at the end of January 1975, and approximately
14 the last two months has been approximately nine hundred
15 barrels of oil per day.

16 Q Now, what is that difference, about five hundred
17 barrels a day?

18 A Approximately five hundred and seventy-five barrels
19 a day.

20 Q And in your opinion what would be needed in order
21 to increase the production, or at least keep the production
22 of oil constant on this Unit?

23 A In my opinion it would require an increase in
24 the water injection volume to either stabilize or increase
25 production rates.

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1 Q In other words, you are of the opinion that the
2 restrictions on injections as far as the Penrose A Unit is
3 concerned should be removed?

4 A Yes, sir.

5 Q Now, on what do you base your opinion, and why do
6 you think the restrictions should be removed?

7 A We have participated in the area-wide study of
8 water-flow problem in this thirty-six section area, we were
9 actively participating as chairman of the south study area,
10 we have diligently pursued all indications of any water
11 injection loss and are continuing to monitor and take care of
12 any well problems that we have located or that have been
13 located through the efforts of the Commission and we feel
14 like that with this work that we are doing that we have the
15 problem pretty well under control in the south end, to the
16 best of our knowledge and really the only way that you can
17 tell is to try a little higher injection and see if there is
18 anything that we have missed by continually monitoring and
19 gradually increasing your rate and try to get this oil bank
20 moving again to try to get the production back to what it
21 should be.

22 Q Now you heard some testimony as far as bradenhead
23 tests are concerned and they felt that we needed to run some
24 tests periodically, do you have any comment on that?

25 A That was our recommendation for the Skelly leases

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1 involved in this area, we supported that position for the
2 south area and for this entire Unit, and we are actually
3 participating in it and we are preparing any well as soon
4 as we see any indication that it has any casing leak or
5 water flow problems. We did, either as a result of the
6 first bradenhead survey or in between that due to field
7 operations, locate two casing leaks in the Skelly
8 Penrose B Unit which is Well Number 41 located in Unit C,
9 Section 9, Township 23 South, Range 37 East. Also Well
10 Number 43 located in Unit A, Section 8, Township 23 South,
11 Range 37 East. Leaks in the upper nine hundred feet were
12 located in these two wells, they were repaired and the wells
13 returned to productions and we performed this on a routine
14 manner, similar to what we do on all the other leases there
15 whether they are within this water-flow area or not.

16 Q Do you have any opinion as to whether or not the
17 Commission should include in any order that comes out of
18 this Hearing, that there should be a provision to the effect
19 that the Commission can grant administratively increases or
20 decreases of water injection rates depending on evidence
21 that comes forth during whatever period of time they are
22 going to continue this case?

23 A I would recommend that some provision be made in
24 the order to provide for an increase in the injection as
25 soon as possible following any surveys or any type of

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1 examinations that the Commission might feel necessary to
2 satisfy themselves about any aspect of this problem. I
3 feel that we should make some provision to increase this over
4 a period of time or without a lengthy process of coming back
5 for an additional Hearing because of the effect of the
6 production in the waterflood area.

7 I think that all of the operators in this area
8 recognize the problems and are attempting to clear them out,
9 and we would like to get on with the business as soon as
10 feasible, as soon as we have completed the corrective measures
11 and we feel like we have completed the corrective measures in
12 the south area.

13 MR. BLODGET: I'll pass the witness.

14 MR. NUTTER: Are there any questions of Mr. Stuckey?

15
16 CROSS EXAMINATION

17 BY MR. NUTTER:

18 Q Mr. Stuckey, you mentioned Well Numbers 41 and
19 43 down there in Sections 8 and 9, what occurred there that
20 caused you to take remedial action on those wells?

21 A One well went off because of subsurface pump
22 repair and they put another unit on the well and started
23 repairs and it showed up pressure on the bradenhead so the
24 foreman notified us of it and we got set up to make the
25 casing repairs and get the well back on production, but

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1 it was a routine pulling operation.

2 Q Now it is your contention that as long as we have
3 these quarterly bradenhead surveys and maybe semi-annual
4 bradenhead surveys later on that the Commission should permit
5 injection rates to resume to unlimited volumes and then in
6 the event that a survey would show a problem well, fix that
7 well and then continue the injection rates, or just what?

8 A Really the reason for restricting the injection rates
9 is to get this water-flow problem in the area under control,
10 and that was the reason the study committee was set up, to
11 try to set up criteria for handling this problem and recommend
12 means of monitoring the wells and the subsequent work, and I
13 feel like that as we perform the work if we locate any problems
14 we set up periodic surveys to locate any changes or any
15 additional developments. Really I think we need to proceed
16 to put this area, as soon as we can eliminate the water-flow
17 problems, all known problems there, then we should gradually
18 increase injecting them as the Commission provided for in
19 this Order 5003, recognized that there was a need to
20 gradually increase the production back to the point where we
21 can sustain the productive capacity of these units, and I
22 feel like we do need to increase this back to regain our
23 productive rate and to proceed with the waterflood operations
24 on these units.

25 Q Now, Mr. Stuckey, I think that everyone agrees that

1 at the time of the original hearing and at the first hearing
2 of this case, the evidence showed the formations above the
3 Queen formations had been charged with water and this water
4 was under considerable pressure, at least in certain areas
5 of the sub-area. Until all of that pressure has dissipated
6 does it make sense to increase the injection rates in the
7 event that there may be some well that we have overlooked and
8 haven't been able to properly seal the channel from the Queen
9 formation or the San Andres formation to the upper formations
10 that were artificially charged?

11 A. Well, I feel like we have pursued any known problem
12 well there.

13 Q. You heard Mr. Clements state under oath, didn't
14 you, that he has one well that has already shown an increase
15 in pressure and it is just one of the few wells that he has
16 taken the second bradenhead survey on, so in some areas
17 apparently the pressure is still going up, how would you
18 account for that?

19 A. I'm not familiar with the particular wells that he
20 has testified that on, and I cannot account for it, but it is
21 my understanding that this well that he was talking about is
22 in the north area rather than the south area.

23 Q. Okay, now, Skelly operates two floods, the Penrose A
24 and the Penrose B Units and then you have this Exhibit One
25 on the Penrose Skelly A Unit, did you have a similar exhibit

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1 on the B or has the performance been similar to that on the
2 A?

3 A We have one on the Penrose B.

4 Q It was on the decline on the injection anyway
5 apparently, wasn't it, or on the production?

6 A This Penrose B Unit is quite a bit further down the
7 line. It has been in flood much longer, and it is much more
8 advanced on the flood and it is not nearly as sensitive to
9 rate changes as the A.

10 Q And your water injection had been going down on this
11 for several years anyway, hadn't it?

12 A Yes.

13 Q Now, back to the Penrose A Unit, Exhibit Number
14 One, I note that the high rate of production was in the month
15 of October 1974 and that is when you had that fourteen hundred
16 and seventy-five barrels per day, I think, average production,
17 is that it?

18 A No, sir, that high rate was following four frac
19 jobs on that unit and which caused this immediate kick, but
20 four seventy-five would cover the period from about August to
21 January, the end of January of '75 -- from August of '74 --
22 discounting the kick we got immediately following the
23 stimulation job.

24 Q The production declined following the stimulation
25 jobs, production declined prior to any decrease in injection

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1 rates, is that it?

2 A We received this kick following this stimulation
3 and then declined down to about the average rate.

4 Q Do you think it is possible that this waterflood
5 would have shown a decline of production over the last twelve
6 months had there not been a decrease in injection rates, is
7 it time for a normal decline in the waterflood production?

8 A No, sir, we anticipated a further increase in this
9 period due to planned infield drilling and stuff, we feel that
10 we are pretty well at the peak there, but we had plans for
11 some additional infield drilling. We performed some infield
12 drilling, added four wells in '74 and we were evaluating that
13 work and had some additional work planned in '75 on that which
14 we deferred because of the restricted injection rate.

15 Q Would the infield wells be producers or would you
16 have infield injection wells also?

17 A They would be producers only.

18 Q Under normal conditions if you do infield drilling
19 for production wells do you have to have an increase in your
20 injection rates in the existing injection wells?

21 A Yes, sir, we do.

22 Q So this would call for an increase in injection
23 rates if you had gone through with that infield drilling
24 program?

25 A We had added an injection pump at the plant and

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1 increased our injection in July of '74 based on this planned
2 infield drilling.

3 Q Well, now, in the event that you did resume your
4 infield drilling program and put more wells on production this
5 automatically allows you to put more water in, doesn't it
6 because of the voidage formula that is applicable. I mean,
7 the more you produce the more you can inject, can't you?

8 A Well, the three successful infield wells that we
9 had in our prior program showed the most drastic drop from
10 this injection restriction.

11 Q They showed the most drastic drop in production
12 after injection was restricted?

13 A Right.

14 Q Couldn't that have been just a normal decline,
15 maybe you had gotten into an area that had primary production
16 and it wasn't very long lived?

17 A Not in our opinion, it was basined in.

18 Q The decline was solely due to the decline in
19 injection rates, in your opinion?

20 A Well, it had an abnormal decline. We feel like
21 it is based solely on the injection restrictions.

22 Q I see.

23 MR. NUTTER: Are there any further questions of
24 Mr. Stuckey?

25 MR. BLODGET: I have just one.

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1 Were Exhibits One and Two prepared by you or
2 under your supervision?

3 THE WITNESS: They were.

4 MR. NUTTER: Skelly Exhibits One and Two will be
5 admitted into evidence.

6 Any further questions of Mr. Stuckey? He may be
7 excused.

8 (THEREUPON, the witness was excused.)

9 MR. NUTTER: Do you have any further witnesses,
10 Mr. Blodget?

11 MR. BLODGET: No, sir.

12 MR. NUTTER: Mr. Kellahin?

13 DAN KERNAGHAN

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

17 DIRECT EXAMINATION

18 BY MR. KELLAHIN:

19 Q Please state your name, by whom you are employed
20 and in what capacity?

21 A My name is Dan Kernaghan, I'm employed by Anadarko
22 Production Company as Division Evaluation Engineer.

23 Q Have you previously testified before the Commission
24 and had your qualifications as an expert witness accepted and
25 made a matter of record?

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1 A Yes, I have.

2 Q Are you familiar with the facts surrounding this
3 particular Hearing?

4 A Yes, I am.

5 Q Does Anadarko Production Company operate the
6 Langley Mattox Penrose Sand Unit waterflood project?

7 A We do.

8 Q And has Anadarko completed all of the Oil Conservation
9 Commission ordered surveys and done all of the remedial work
10 indicated by those surveys?

11 A Yes, we have.

12 Q Have you prepared a tabulation of those surveys and
13 the results of that remedial work?

14 A I have.

15 Q Is that marked as Exhibit Number One for Anadarko?

16 A Yes, it is. Let me point out on this Exhibit one
17 well, our injection well 35-2 has not been surveyed, it has
18 a leak in the casing at around the casing flaps and there
19 is a hole in there around fifteen hundred feet. we squeezed
20 it a number of times and do not have a successful squeeze job.
21 The well is not in use, it will be surveyed prior to the time
22 that we put it in use. This is the lone exception to all of
23 our wells being surveyed and like I said, this well is not
24 in use at the present time.

25 Q Do you have any other comments about the Exhibit?

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1 A. No.

2 Q What has been the effect, Mr. Kernaghan, of the
3 curtailment of injection upon Anadarko's production?

4 A The rate of decline on our flood has decreased
5 substantially. We are witnessing an overall loss in ultimate
6 secondary recovery.

7 Q Was Exhibit One prepared by you directly or under
8 your direction and supervision?

9 A Yes, it was.

10 MR. KELLAHIN: If the Examiner please, we move
11 the introduction of Exhibit Number One.

12 MR. NUTTER: Exhibit One will be admitted into
13 evidence.

14 MR. KELLAHIN: That concludes our examination.

16 CROSS EXAMINATION

17 BY MR. NUTTER:

18 Q Mr. Kernaghan, do you have any tabulation or other
19 evidence of this decline of production in your waterflood
20 project as experienced?

21 A Well, yes.

22 Q I think you said the rate of decline has increased?

23 A Yes.

24 Q Has the project already peaked out?

25 A The project had peaked and was declining prior to this.

Q But the decline was steeper?

A That's right. We can send you the data if you would like to see it.

Q What was the percentage rate of decline prior to the curtailment of injection rates?

A I would hate to quote that figure. We are talking about a big project that is making in the neighborhood of thirty thousand to forty thousand barrels a month. The rates of decline are on the order of two or three percent a month, but small changes make a big difference. In magnitude we are talking about something that's probably twice the rate now that it was earlier, three percent versus one-and-a-half, four percent versus two. I can tabulate this and supply you with the information.

Q Would you do that please?

MR. NUTTER: Are there any further questions of Mr. Kernaghan? Mr. Jennings?

CROSS EXAMINATION

BY MR. JENNINGS:

Q What is your average injection pressure, Mr. Kernaghan?

A It's on the order of fifteen hundred pounds.

Q Okay.

MR. NUTTER: If there are no further questions the

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1 witness may be excused.

2 (THEREUPON, the witness was excused.)

3 MR. NUTTER: Would you call your witness, Mr.
4 Jennings?

5 W. G. ABBOTT

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

8
9 DIRECT EXAMINATION

10 BY MR. JENNINGS:

11 Q Would you state your name and occupation, please, sir?

12 A W. G. Abbott, manager of Agua at Hobbs, New Mexico.

13 Q You are the same W. G. Abbott who testified earlier
14 today in cause number 5592 and had your qualifications
15 accepted?

16 A Yes, sir.

17 MR. JENNINGS: Are the witness's qualifications
18 acceptable?

19 MR. NUTTER: Yes, they are.

20 Q (Mr. Jennings continuing.) Mr. Abbott, after you
21 received what has been marked as Commission's Exhibit Two
22 in this Case, which is a letter dated August 22nd, 1975 from
23 Mr. Ramey requesting you or ordering you to cease injection
24 into your H-35 well on September 26th, 1975 at eight A.M.,
25 what did you do?

1 A Well, what prompted this was the quarterly pressure
2 test which was run under the supervision of the Conservation
3 Commission and they ran a pressure test August the fourteenth
4 at which time they ordered us to open up the surface pipe on
5 our disposal well. If you remember, our H-35 has nine-and-
6 five-eighths inch pipe set at eleven hundred and eighty feet
7 with the cement circulated and the seven-inch pipe is at
8 thirty-nine, seventy-five and the calculated top of the
9 cement is estimated at twenty-four hundred feet. So on
10 August 14th, we opened up the surface pipe valve and I think
11 at that time -- I don't have the pressure, but I understand
12 it was six hundred plus psi, and when they opened it up there
13 was some air or gas and then a flow of salt water. This
14 salt water -- a test was run by John Runyon from the Commission
15 on the salt water and it was estimated to be saturated salt
16 water evidently coming from the salt section. It was a
17 hundred and eighty-eight thousand, eight hundred and sixty
18 parts per million chloride.

19 On the twentieth, I don't know why there is a delay,
20 but a sample of our injected water was taken from our
21 storage tank at the same location and that test showed that
22 the chlorides were thirty-two thousand, six hundred and
23 sixty parts per million.

24 We had previously had an analysis run on our
25 disposal water and the chlorides were thirty-four thousand

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1 parts per million and that was run in November of '74.

2 Then we had run a tracer survey. By the way, a
3 previous tracer survey was run on December 8th, 1974 and
4 on this first survey since we were disposing in the well we
5 had to shut the well down for just a short time, but we
6 ran the radioactive survey and ninety-two percent of the water
7 was going in a zone in the open-hole section below into the
8 San Andres and eight percent was shown to go out right at the
9 shoe, at the seven-inch open-hole section.

10 Q Just to keep the matter straight, I don't want to
11 interrupt you, but what was the date of the survey?

12 A That was December 8, 1974.

13 So then after the well had been shut down by order
14 then we came back October 16th, 1975 and ran another tracer
15 survey and also a temperature survey. Mr. Clements witnessed
16 this tracer survey and there again it showed that ninety-two
17 percent of the water was going up the wellbore, the bottom of
18 the casing, and there is a mistake on this log. They show ten
19 percent of the casing shoe, which obviously must be eight per-
20 cent. But then under the direction of Mr. Clements he wanted
21 us to open up the surface pipe which has pressure on it, we
22 ran a temperature survey. Well, I have run hundreds of
23 temperature surveys and I don't think this was a good tempera-
24 ture survey in that it was run inside the tubing and you
25 are going through the tubing and then the tubing casing

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1 annulus and then recording temperature change outside of
2 the seven-inch pipe and the flow wasn't great enough to
3 indicate much, but it did show there was possible fluid
4 coming in. Now, that's in at fourteen hundred and fifty feet.
5 Now, the flow was into the wellbore outside of the seven-inch
6 pipe, which is obvious it is the salt section and this whole
7 area is pressured up and the flow is through the salt section
8 and it came into our wellbore and up the outside of the
9 seven-inch pipe into the surface pipe which is why we have
10 the pressure on it. So to give me more of an idea of what
11 flow we would have in that surface pipe I had my field man
12 go out there this month, the twelfth of this month and he
13 ran the following test: The surface pipe had five hundred
14 and twenty pounds on it. The tubing had eleven hundred and
15 fifty pounds. Now you understand that this well has been
16 shut in since September 19th and we have been bleeding back
17 the tubing somewhat but we are limited on how much we can
18 bleed back because we don't have any place to dispose of it.
19 Eventually when we get another disposal well we can bleed the
20 pressure back and pull the tubing and do any remedial work
21 on this flow which is outside of the seven-inch pipe.

22 And so this test, eleven-fifty A.M., casing was
23 five, twenty, tubing eleven, fifty. Removed tap-hole plug
24 and surface casing gauge, connected two-inch suction hose to
25 sixty-barrel truck at top of valve, connected hose to a

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1 surface line and opened valve completely. Approximately one-
2 fourth of a stream of water back flowed at first, then it
3 started to pulsate small amounts back to the tank. At eleven-
4 twenty-five A.M. seven barrels of water flowed back and the
5 water was barely returning. The pressure was zero and they
6 put the pressure gauge on, closed the well in at eleven-twenty-
7 five. Immediately the pressure jumped to two hundred and
8 twenty-five pounds and at the end of two hours the pressure
9 was four hundred and fifty pounds, which indicates that there
10 is pressure in the salt section. It indicates to me that there
11 is no communication within our wellbore at our H-35 well.

12 Any flow into the salt section is from an external
13 source, which could be anything. It could be the pressures
14 that are recorded in the salt section on the whole area, or a
15 lot of the area, which the operators are repairing now, but we
16 feel that the well has no communication and we weren't going to
17 bring it up at this time, but I will bring it up since it was
18 recommended that they shut in the well, that we be allowed
19 to repair the well when we are able to and resume a limited
20 injection into the well. I say limited, of approximately a
21 thousand barrels a day.

22 Q Well, you have heard Mr. Clements' testimony. In
23 your opinion is it possible to shut off this flow that is
24 coming from the salt?

25 A Yes, perforate it.

1 Q Is this in effect what they have done in the other
2 wells?

3 A Yes.

4 Q Could it be done in the same manner, or how would
5 it be accomplished?

6 A Yes, as soon as the pressure is let off our well
7 so we can pull the tubing then we can perforate the seven-inch
8 and circulate cement behind the seven-inch up into the surface
9 pipe at eleven hundred and seventy feet, eleven, eighty feet.

10 Q I assume from your testimony that you have found
11 that the statement which was made in the August 22nd letter
12 to the effect that there was communication between the tubing
13 and the casing in the well, that situation does not exist?

14 A No, we couldn't find it.

15 Q What further recommendations, if any, do you have
16 to make to the Commission in light of the problems that you
17 are encountering in injecting water, not only in this well,
18 but other wells in the area?

19 A Well, the disposed water has to be disposed of
20 at some place and we think the San Andres is as good a place
21 as any, but I think the Commission should continue on with
22 their program of monitoring the wells for any pressures. I'm
23 not too sure that it 's necessary to squeeze off some of
24 this pressure that is showing up on the surface pipe,
25 especially when you have a long surface pipe string. I think

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1 you would gain more by observing those pressures rather than
2 squeezing them off or doing a bradenhead squeeze and then
3 losing the information at that particular well. Now this
4 goes for our well and other producing wells in the area.

5 Q And you are ready, willing, and able to squeeze off
6 the zone if and when you can and get the well in condition?

7 A Right.

9 CROSS EXAMINATION

10 BY MR. NUTTER:

11 Q Mr. Abbott, right now will this H-35 well flow back?

12 A We haven't taken a rate, Dan, it would probably
13 flow back one hundred to two hundred barrels an hour. We
14 have to put a choke on it to flow it back.

15 Q Have you ever taken a pressure on the tubing, does
16 it have a present shut-in tubing pressure?

17 A Yes.

18 Q How much is that?

19 A It's eleven hundred and eighty pounds, I think it
20 was, eleven fifty.

21 Q And your surface casing runs at about five hundred
22 pounds of pressure, I think you said?

23 A Yes, right.

24 MR. NUTTER: Are there any further questions of
25 Mr. Abbott?

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1 Mr. Ramey?

3 CROSS EXAMINATION

4 BY MR. RAMEY:

5 Q Mr. Abbott, you are reasonably familiar with the
6 area around your H-35 well?

7 A Right.

8 Q Could you say definitely that injecting water into
9 the San Andres at the H-35, say within a two-mile radius,
10 that water is going to stay in the San Andres?

11 A You're right, we don't know if it will stay in the
12 San Andres. It could migrate to any well that is improperly
13 cemented or improperly plugged and get from the San Andres
14 up to the salt section and move through the salt section.

15 MR. RAMEY: Thank you.

16 MR. NUTTER: Are there any questions of the witness?
17 You may be excused.

18 (THEREUPON, the witness was excused.)

19 MR. NUTTER: Do you have anything further, Mr.
20 Jennings?

21 MR. JENNINGS: No, sir, not today.

22 MR. NUTTER: Do you have anything further, Mr. Carr?

23 MR. CARR: No, sir.

24 MR. NUTTER: Mr. Blodget?

25 MR. BLODGET: No, sir.

1 MR. NUTTER: Mr. Kellahin?

2 MR. KELLAHIN: If the Examiner please, Anadarko has
3 no objection to the Oil Conservation Commission recommendations
4 to continue the present restrictions on injection in the
5 disposal wells until such time as there is further evidence
6 that the various problems in that area have been remedied.

7 MR. NUTTER: Does anyone else have anything they
8 wish to offer in Case Number 5403?

9 We will take the Case under advisement and recess
10 the Hearing for fifteen minutes.

11 (THEREUPON, the Hearing was in recess.)
12
13
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REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a court reporter, do hereby
 certify that the foregoing and attached Transcript of Hearing
 before the New Mexico Oil Conservation Commission was reported
 by me, and the same is a true and correct record of the said
 proceedings to the best of my knowledge, skill and ability.

Sidney F. Morrish
 Sidney F. Morrish, Court Reporter

I do hereby certify that the foregoing is
 a complete and correct record of the proceedings in
 the Examiner hearing of Case No. 5403
 heard by me on 11/19, 19 76
[Signature] Examiner
 New Mexico Oil Conservation Commission

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NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE

NEW MEXICO

Case
5403
1/22/75Hearing Date JANUARY 22, 1975 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
<i>Barla</i> A. Gene Wachtel-	utilite Rods de Tropico Inc	S Fe Denver
Oscar Siwan	Amoco Production Co.	Denver
R. B. Giles	"	"
Tom Dugan	Walter Duncan	Farmington
Met Schroeder	TPOCI	Midland, Tex.
D. K. KERNAN	ANADARKO	Houston
C. W. Jumbhoff	amoco oil co.	Ft Worth
J. D. LEWIS	ANADARKO	HOUSTON TEXAS
<i>Johnstone</i> R. C. Henderson	"	"
M. F. Nelson	Anadarko	El Paso, N.M.
Lloyd A. Wright	Amoco	Hobbs
Gene Gradick	Texas Pacific Oil Co.	Midland, Tex
A. E. SNYDER	Amoco (no approval)	Houston
G. E. MILLER	AMERADON HESS	SEMINOLE, TEX.
	✓	TULSA, OKLA.

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JANUARY 22, 1975 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
K. H. GRIFFIN	GRIFFIN & Burnett Inc.	Midland
Ronnie Ward	FOR Burmah Oil & Gas	Midland
G. M. Pederson	BURMAH OIL & GAS CO.	Midland
W. F. Abbott	Jurnal Oil & Gas	Hobbs
V. T. Lyon	A F U A	HOBBS
Jason Kellahin	CONOCO	Santa Fe
Shenton E. Blodgett	Kellahin & Son	Tulsa
O. V. Stuckey	Shelley Oil Co.	Midland, Texas
Don Stearns	Shelley Oil Co.	Santa Fe
John Somers	Petro-Lewis	Denver
Dale & Crankitt	Petro-Lewis	Hobbs
Bill Thomas	Shelley Oil Co.	Hobbs
Judy Bonnette	Shelley Oil Co.	Houston
Andrew B. Carey	Anderson Production	Midland
	Shelley Oil Co.	

IT IS THEREFORE ORDERED

(4) That each of the following wells shall be cemented with a sufficient amount of cement to ensure that there is cement around the production casing string throughout the Queen formation and immediately above to a depth of 3100 feet beneath the surface of the ground, or less:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM LEA COUNTY

COMPANY	LEASE	WELL NO.	UNIT	SECTION
Armer Oil Company	Keohane	1	I	26
Atlantic Richfield Co.	Boyd	2	D	23
Amerada-Hess Corp.	Walden	1	K	15
" " "	"	2	K	15
" " "	"	3	N	15
" " "	"	6	M	15
" " "	Wood	5	B	22
" " "	"	9	G	22
" " "	"	10	H	22
Cleary	Parks	7	K	14
"	"	8	J	14
"	"	9	N	14
Coquina Oil Corp.	Baker	1	B	26
Exxon Company, USA	Paddock Unit	98	H	15
Gulf Oil Corporation	Cole	5	O	16
John H. Hendrix	Cossatot F	1	C	23
Samedan Oil Corp.	Parks	3	P	14
" " "	"	4	I	14
" " "	"	5	O	14
Skelly Oil Co.	Baker A	5	E	26
" " "	Baker	9	N	22
" " "	"	10	A	27
" " "	"	11	B	27
" " "	Baker C	1	A	26
Sohio Petroleum Co.	Walden	3	F	15
" " "	"	4	E	15
" " "	"	5	E	15
Texas Pacific Oil Co., Inc.	Danglade	1	L	13
Texas Pacific Oil Co., Inc.	Walden	3	C	15
Texas Pacific Oil Co., Inc.	"	4	C	15
Texas Pacific Oil Co., Inc.	Boyd	1	G	23
Texas Pacific Oil Co., Inc.	"	2Y	H	23
Texas Pacific Oil Co., Inc.	"	3	A	23
Texas Pacific Oil Co., Inc.	"	5	B	23
Texas Pacific Oil Co., Inc.	Cary	7	F	22
Texas Pacific Oil Co., Inc.	"	8	L	22
Bruce A. Wilbanks	Baker	2	A	26