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 Fe. FOR Burnah Oil & Gas	Midland
Lewis Ward	Burnah Oil & Gas Co.	Midland
C. M. Pederson	Burnah Oil & Gas	Midland
W F Abbott	A F E A	Hobbs
V T. Lyon	Conoco	Hobbs
Jason Kellahin	Kellahin & Fox	Santa Fe
Charles E. Gholson	Shelby Oil Co.	Tulsa
O. V. Starkey	Shelby Oil Co.	Midland, Texas
Don Stevens	Petro-Lewis	Santa Fe
John Somers	Petro Lewis	Denver
Robert Corbett	Shelby Oil Co	Hobbs
Bill Thomas	Shelby Oil Co	Hobbs
John Bennett	Amerada Production Co.	Houston
Charles B. Carey	Shelby Oil Co.	Midland

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 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 following described area in Lea County, New Mexico:

CASE NO. 5403

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 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.

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SANTA FE, NEW MEXICO 87501
TEL. (505) 982-0386

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. 214 Old Santa Fe Trail Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

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 comenting, 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

is a member of the Texas Bar, and Mr. Blodget 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. RAMEY,

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.

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

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, Agua, Incorporated, Continental Oil, Gulf Oil Corporation, Petro-Lewis, Skelly Oil, and Texas Pacific Oil.

This study committee was charged with making an invest-

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

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 subcommittee. 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 abandaoned 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'.

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?

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 Aqua, Incorporated, in an attempt to use the water going into Aqua'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 Aqua 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 reenter 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 Agua 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 Agua system over to each of the disposal or each of the injection plants, I presume.

A This is right. Pipe 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. PAYEY: Mr. Nelson, it is your recommendation that the water from the Agua disposal well be absorbed by the units, is it not? This is a definite recommendation on your part?

A Yes, it is.

MR. PAYEY: Okay, thank you.

A Now that's units.

MR. PAYEY: Yes.

A Okay.

MR. NUTTER: 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 identification 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

37 east. This subcommittee included representatives of Gulf Oil Corporation, Amerada-Hess, Arua, 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

in scattered areas.

Three, that injection profiles and temperature surveys be run on injection wells in indicated problem areas to monitor injected 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 possiblity 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 replugged 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

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. NUTTER: 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.

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 --

Q What's the location of it?

A It's in Unit M, Section 34.

Q Okay.

A And the Sims "C" No. 1 in Unit N, 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 rig back on it.

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

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 injection 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 plugs 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 injection up in that area.

Q Now, you operate two of the four floods. The north committee said that the four floods should absorb Agua's salt water that they're disposing of. Can Skelly absorb of a portion of this in its two plugs 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 plugs?

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. Blodget?

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

A Yes, they were.

MR. BLODGET: 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. BLODGET: We have no further --

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

MR. BOLDGET: No.

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

MR. BLODGET: No, sir.

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

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

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.

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 th 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.

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

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

PARRIS NELSON,

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

REDIRECT EXAMINATION

BY MR. KELLAHIN:

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

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. NUTTER: Are there further questions?

MR. STUCKEY: I'd like to ask one. Parris, is it -- would you consider it feasible to accept water within thirty to forty days from Agua on that, provided your injection -- you were permitted under the rules of the Commission to inject 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 Agua system if you were permitted to inject in that volume?

A If we had permission from the Oil Commission to inject 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. KELLAHIN: Mr. Nelson, in connection with the com-

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

A Yes, it would.

MR. KELLAHIN: 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. HUTTER: No, he's qualified.

Q (By Mr. Stevens) You're not appearing here with a minority report on the north's recommendeations, 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 temperature 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 because 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 co-operate 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. MUTTER: 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. MUTTER: Are there any questions of Mr. Somers?

(No response.)

MR. MUTTER: 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 Amerada-Hess. 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 30 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

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

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.

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?

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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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.

..., Examiner
New Mexico Oil Conservation Commission

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TEL. (505) 982-0386