HEARING OF THE OIL CONSERVATION COMMISSION ON THE 13th DAY OF OCTOBER, 1936, IN THE CAPITOL, SANTA FE, NEW MEXICO, CALLED AFTER THE ADVERTISEMENT AND IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 72, LAWS OF 1935 FOR THE PURPOSE OF CONSIDERING CASE NO. 4: MODIFICATIONS AND ADDITIONS TO CIRCULAR 2 OF THE OIL CONSERVATION COMMISSION, "SPECIAL RULES AND REGULATIONS FOR THE HOBBS, JAL, COOPER, EUNICE AND MONUMENT FIELDS, LEA COUNTY, NEW MEXICO", AND ANY OTHER SPECIAL RULES AND REGULATIONS THAT ARE IN EFFECT FOR THESE FIELDS, AMONG THOSE ARE: 1. THE USE OF GAS-LIFT. 2. THE OPTIONAL USE OF CENTRAL TANK BATTERIES ON SEPARATE LEASEHOLDS. 3. REDUCTION OF THE REQUIRED CEMENTING TIME ON CASING STRINGS. 4. CASING PROGRAMS. 5. SHOOTING OF WELLS IN THE HOBBS FIELD; and CASE NO. 5. REVISIONS OF ORDER NO. 1 OF THE COMMISSION, "GENERAL STATE PRORATION ORDER."

OF THE COMMISSION PRESENT:

Governor CLYDE TINGLEY, Chairman

Commissioner of Public Lands,
FRANK VESELY, Secretary.

Mr. Vesely called the hearing to order at 10:00 o'clock A.M.

MR. VESELY:

Gentlemen, Governor Tingley is here with us and he will take part in this meeting and will spend just as much time with us as he will be permitted. Governor Tingley.

GOVERNOR TINGLEY:

The meeting has been called here for the purposes of:

Case No. 4. Modifications and additions to Circular 2 of the Oil Conservation Commission, "Special Rules and Regulations for the Hobbs, Jal, Cooper, Eunice and Monument Fields, Lea County, New Mexico", and any other special rules and regulations that are in effect for these fields, among those are:

1. The use of gas-lift.

2. The optional use of central tank batteries on separate leaseholds.

3. Reduction of the required cementing time on casing strings.

4. Casing programs.

5. Shooting of wells in the Hobbs Field.

Other desirable modifications and additions to the said special rules and regulations.

Special Rules and Regulations for recently discovered Lea County fields, in addition to those fields listed in Circular 2.

At this hearing only rules and regulations pertaining to drilling, operating and engineering matters shall be considered.

Gentlemen, I cannot be with you long this morning. I want you to have a good time up here. I am sorry I cannot spend the rest of the day with you, but I must leave. Mr. Vesely will take charge of the meeting. I thank you.

MR. VESELY:

Gentlemen, the first three items on this call are:

1. The use of gas-lift.
2. The optional use of central tank batteries on separate leaseholds.
3. Reduction of the required cementing time on casing strings.

These three items have been petitioned by the Humble Oil and Refining Company and I imagine the Humble Oil and Refining Company will present enough evidence for the record to show.

MR. HUBBARD:

Mr. Commissioner, we are planning to do it ourselves. Would like to say in reference to the petition for the use of gas-lift in Hobbs. After talking to you yesterday and after the passing of a Resolution by a group of Engineers, which Resolution was addressed to the Hobbs Executive Committee, we have thought it better to prosecute the matter through this Committee first and would ask that it be dropped from this docket, and in connection with the other two items, I would like to offer Mr. R. S. Dewey as a witness.

MR. R. S. DEWEY SWORN IN BY MR. VESELY.

MR. HUBBARD EXAMINING MR. DEWEY:

Q. Have you ever been qualified before this body?

A. No sir.

Q. You are an engineer?

A. Yes sir.

Q. Since 1929 you have been in charge of all the Engineering activities of the Humble Oil and Refining Company in Lea County, New Mexico?

A. Correct.

Mr. Vesely, will that be sufficient for qualifications?

Mr. Vesely: Yes, that is sufficient.

Q. Mr. Dewey, in regard to the use of central tank batteries in Lea County, New Mexico, do you know approximately the added cost of the present arrangement whereby each well has a separate battery?

A. Where you have four wells, that production can be combined into one central battery. Our estimates of the saving per well amounts to approximately $1000.00 over having individual tank batteries for each one of the four wells.

Q. That is $1000.00 for each well?

A. $4000.00 for the four wells.

Q. Would you say this cost is justified?

A. In my opinion, you are not justified in spending an additional $1000.00 to maintain separate batteries for each well.

Q. Would you state to the Commission the reasons for the present use of separate batteries?

A. When development first began in Hobbs Pool, the operators formed an agreement, termed the Hobbs Agreement, in which they specified certain regulations for the operation of that pool and subsequent to that agreement, each well of the Hobbs pool has been produced into separate tank batteries, except where there are two wells on the same unit, in which instance these two wells are permitted to produce into a common battery. I think the custom has arisen from the original Hobbs

Agreement and the practice was unanimous at that time. I also believe the Commission has desired to have it that way in order that their records would be kept on individual well protection and that there might be no reflection on the Commission by any Royalty owner or other interest who might desire to criticise the Commission.

Q. Mr. Dewey, are there any conditions under which the use of central batteries are allowed at the present time?

A. The Commission has modified the use of one tank battery for each individual wells by their Special Rules covering individual fields, which they permit wells making water on the same lease and royalty interest, to be produced into a common tank battery in order that the oil may be treated more economically than if each well's oil were treated separately.

Q. Would you say that the marginal profit in New Mexico was increasing or decreasing at this time, marginal per unit oil produced?

A. The marginal profit is decreasing due to the restriction of production per well. The average production is falling in New Mexico.

Q. Would you state as your opinion that more waste would result from the use of central batteries than from the practices in effect at the present time?

A. No, I do not believe more waste would result from the use of central tank batteries. I think central tank batteries would conserve the resources of the State of New Mexico just as well as separate tank batteries.

Q. Isn't it a fact that after all, the mere lack of profit would tend to increase inefficiency and waste?

A. True. When an operator has decreasing profits, his operations become more inefficient and that has a tendency to increase waste.

Q. Now if each well required to produce periodically and there were adequate facilities installed so that gauges could be taken on individual wells at any time, would there then be any incentive among the operators to over-produce?

A. Some wells under produce and some over produce. I don't think there is any incentive to under produce and over produce where wells are capable of making their production. There is, under any set up if the wells were not capable of making their production, an incentive that might lead to some operators to try to take more oil from one well than from another, but central tank batteries, in my opinion, do not lead to greater incentive.

Mr. Commissioner, those are all the questions I have to ask Mr. Dewey on this particular point. If you would like to cross-examine him, we could stop now.

MR. VESELY:

Anyone present interested in this question and wish to ask Mr. Dewey any question in cross-examination? Mr. Dewey Dewey qualified as a competent oil man with experience. He gave his reasons.

Q. Mr. Dewey, as an experienced oil man, you absolutely believe it would be fair to the royalty owners and the State, and you would recommend to the Oil Conservation Commission to approve the central tank batteries?

A. Yes sir, I do.

MR. WILLIAMS CROSS-EXAMINING MR. DEWEY.

Q. Is it your thought that all this applies to all pools in Lea County?

A. Yes.

Q. Operators have meters for separate tanks?

A. At their option, they would be permitted to do so.

Q. Consolidate where they care to?

A. All we are asking for is the option to do it.

Q. Proration now is on per well basis?

A. Yes sir.

Q. If they adopt a central tank battery, it might as well be placed on a lease basis?

A. Not if adequate control is set up to keep records on each individual well. Do not think it necessarily follows on a lease basis.

Q. In the case of a lease on which all wells will make their allowable, the matter of taking tests from time to time not of any particular value?

A. It would develop capabilities of the wells to produce their pro ratio share less allowable after set up on the proration schedules.

Q. In Texas where there isn't any requirement, we have separate batteries in most fields for each well. Isn't it a fact they are producing a great deal?

A. It has been abused in certain instances, I am sure. I don't think in those instances there have been adequate control set up.

Q. The force of the Commission is rather limited right now for the amount of work they have to do.

A. I understand they are rather limited in their personnel.

Q. So if you place on them the responsibility of having to see that each well produced normal allowable, there is no way of gauging the allowable on a monthly basis and they really would not be very much in control over it.

A. I think the Commission is very capable to set up control, either by requiring each well be tested periodically or by requiring that the oil from each well be metered or by requiring operators to sign affidavits relative to production from each well. There are several different methods the Commission can apply to control the situation.

Q. Personally, I see no objection to using an approved type of meter for metering oil from each well. It would provide the Commission definite record of production on that well. It appears tome if they should attempt to try to supervise the production of a well without having it metered or gauged separately, they would have to put on an additional force and would require quite an organization.

A. I don't think the Commission has been burdened particularly relative to water wells already being produced into central tank batteries, and it seems to me that if there is any time some operator would cheat, it would be when his wells have gone to water, rather than pipe line oil, and to be consistent the Commission should grant the same permission for combining pipe line oil wells that they have now granted wells making water. I have not heard a great deal of criticism from the Commission relative to the records kept on water wells.

Q. Of course I will say personally, I think we went a long ways when we recommended the rule to the Commission that would permit running wells producing water into common treating system. That was of course clearly an economical matter, and we all know that the oil from those wells in most cases was difficult to treat and quite expensive. Putting up separate treating plants for each well was as I recall at that time, after wells commence making water the productive life of a well intimated it was getting into the stage, to me rather, where the profits would be much lower and it would seem justified in that case. It seems to me that wells producing pipe line oil and producing the full allowable, that some means should be provided for actually metering or gauging oil from each well.

A. I believe that is a matter for theCommission.

Q. Want to ask you a question here. In those fields where bottom hole pressure is used in determining the potential or allowable of a well, should an operator take more oil than the legal allowable from a given well ofsetting his neighbor, isn't it likely that a heavy withdrawal from that well will affect the bottom hole pressure of that well of his neighbor?

A. Probably would in certain instances, but in the Hobbs Pool, in part of Hobbs Pool, it is rather doubtful if it would seriously affect bottom hole pressure unless the withdrawal is very excessive.

Q. You agree if excessive withdrawals continue over a period of time from any well it would affect the bottom hole pressure?

A. Under the slow withdrawal in the Hobbs Pool at the present time, I personally question if it would materially affect Bottom Hole Pressure between parts of the field.

Q. The basic principal of bottom hole pressure formerly was to the equalization of withdrawals. If correct, should we have not have been striving for that?

A. Correct. That is what we have been striving for.

Q. If you now permit the operators to take unduly large volumes from one well, it would have an influence on bottom hole pressure?

A. It would have an influence.

MR. WAHLSTROM CROSS-EXAMINING MR. DEWEY.

Q. What is the past practice in other fields in other states in regard to handling production on an individual well or unit basis?

A. I am not familiar personally with fields outside of the West Texas Fields, such as Yates. There most operators kept their oil in separate tank batteries for separate units. In other

fields in West Texas you are allowed to run your oil into a common tank battery.

MR. HUBBARD EXAMINING MR. DEWEY:

Q. Do you know of any field except Yates whereby a Commission Order that operators are forced to produce the oil from each well into separate tanks of your own knowledge?

A. In the Judkins Pool they keep the oil separate by units.

Q. By an Order of the Commission?

A. I don't think so, there is an Operator's Agreement there originally.

Q. Are you acquainted with form C-104, Operators Monthly Report of Operation?

A. I have seen the form.

Q. That is in affidavit form, isn't it?

A. I believe so.

Q. The affidavit provides the correct amount of oil taken from each well. Do you think that if an operator wishes to violate running the correct allowable after making an affidavit, he would do so. Do you think any rule will stop him from violating in a great many ways, if he wishes to violate the rule?

A. Experience has proven that if an operator desires to violate the regulations, some operator will find a way to do it. With the present set-up an operator might connect his tanks so he could produce his oil from one well on the lease.

Q. Have you any suggestions to make in the event the Commission granted the option to the operators, any recommendation how they could be carried out in the field?

A. I would recommend the Commission establish adequate rules, safeguarding the keeping the records on individual wells, either by requiring that the operators submit suitable

affidavits relative to production from each well or by requiring meters be placed to gauge the production from each well.

Q. As a matter of fact, what you would suggest would be more drastic upon the operators than rule 34, which is as follows:

OPERATOR'S MONTHLY REPORT OF OPERATIONS
(FORM C-104)

A report shall be made for each calendar month for all drilling and producing wells and wells not finally abandoned on Form C-104, "Operator's Monthly Report of Operations." It shall be filed in triplicate by the operator with the Commission covering each calendar month, before the 25th day of the succeeding month, regardless of the status of operations. A separate form shall be filed for each lease. The number and location of each well shall be given. Data in addition to that specified below may be called for.

For drilling wells the report shall include for each well the number of days during which drilling operations were conducted, progress for the month, and depth of the well at the end of the month. For wells on which drilling operations were discontinued, the cause shall be given.

For wells producing oil, the report shall give for each well where such data are available, otherwise for the group of wells on a lease or segregated tract, the number of barrels of oil produced, the gravity of the oil and the estimated number of barrels of water produced. The report shall also state the number of days each well produced, and if a well was shut down, that fact shall be stated and the cause of shut down given. The total production for the month shall be divided into pipe line runs, local sales, amount used in developing or operating the lease, and any miscellaneous dispositions.

For wells producing gas, the report shall give for each well if such data are available, otherwise for the group of wells on a lease or segregated tract, the number of thousands of cubic feet produced; also the producing well-head pressure or pressures of each well. If gasoline was extracted from any of the gas, the report shall give the estimated content of gasoline per thousand feet of gas processed for gasoline, according to the last information available to the operator, and the actual (or if the actual is not available, the estimated) volume of gas processed for gasoline. If any gas wells were shut down that fact shall be stated, and the cause of the shut-down shall be given, and the static pressure last taken of the shut-down well shall be noted.

For wells producing oil and gas, data as outlined above shall be given for both oil and gas.

Would you not say your recommendation would make it more drastic upon the operator than Rule 34?

A. Believe the full responsibility is placed upon the operator by the Commission and that the Commission would safeguard the matter by a suitable rule somewhat similar to rule 34, which was read into the record.

MR. COMMISSIONER, in this Connection, I wonder if I might read a redraft to the Commission which would supersede a number of others.

The use of central tank batteries on segregated lease of tracts shall be optional with the operator, provided adequate equipment shall be installed to permit of the guaging of individual wells at any time.

MR. WILLIAMS:

At any time, you don't mean at all times? Do you mean by that a guage taken at option of the Commission once a month or is it your idea it means a continuous guage?

MR. HUBBARD:

At any time, not continuous gauge. I had in mind the installing of traps at batteries with a proper system of manifolds. It might read at any reasonable time.

MR. WILLIAMS:

I want to make my position clear. I am heartily in favor of eliminating undue expense where it can be done without interfering with the rights of others and without waste. I feel however it is rather difficult for an operator to make an accurate affidavit as to what a well produces in any given month, unless he kept a continuous gauge on the production of that well. It seems to me he would be guessing and making an affidavit to a guess. The only way that I, if I were an operator, would be willing to sign such affidavit would be

qualifying it to the effect. That would be my objection to an estimate. You could not make an affidavit as to the exact amount a well produced unless I gauged it. It would seem these affidavits would have to be on an estimated basis and the affiant should be permitted to do it that way, and of course some people are most lax in estimating than others. I have this thought that in the case of leases for instance in the sand area where the wells will not make the top well allowable or marginal. We know if one of those wells were permitted to produce all it can up to the top allowable. I see no advantage in central tank batteries if an operator files application to run oil in the central batteries and giving tests on the well some 75-50-35 because that operator is entitled to produce all the well will make up to top well allowable, but I feel it is likely to lead to abuse if a general rule is adopted to permit the operators to run all oil from a lease into a central tank battery. We are all human and I am just wondering if the thing would not be abused.

MR. VESELY:

Mr. Williams is not under oath and you are, so that is a different thing. He could go ahead.

MR. HARDISON:

What would you consider the maximum number of wells run into a central tank battery with the well spacing as it is in Lea County.

MR. DEWEY:

If you have run four wells into a common tank, the length of the lead lines begin to diminish savings, that can be effected by putting additional wells into tank batteries.

MR. HARDISON:

Then it is possible by order of the Commission to test each

well monthly?

MR. DEWEY:

Perfectly possible.

MR. HARDISON:

In that case you could estimate the production of wells?

MR. DEWEY:

I believe you could.

MR. WILLIAMS SWORN IN.

MR. DEWEY EXAMINING MR. WILLIAMS:

Q. Would you feel you could swear to an affidavit relative to the production of individual wells gauged into common tank batteries, providing the oil was metered from each well and provided you believed the meters registered correctly within 5%?

A. I have never had any experience with oil meters. I understand however they have developed meters that are much improved over the oil type they used to try out, and I understand certain manufacturers guarantee the accuracy of meters. I would not be in a position to say here whether meters are entirely accurate or not. I should think if the operator adopted the use of meters however, it would be quite simple to have a calibrate test and calibrate into the tank regularly transfers and he could tell from that if they were running correctly.

Q. I don't believe it is necessary to get to great accuracy in making these estimates and I would personally feel if meters were correct within 5%, that would be substantially correct enough so that the operator should feel he could swear to an affidavit that way.

A. As I say I think, for example we are using meters, I think it would be fairly easy for us to satisfy ourselves as to the accuracy of meters by calibrate into tanks. That could be done very easy. We all assume pipeline gauges on tanks are the recognized method of measuring oil. Royalties are paid on that basis. It would be quite proper that the gauges in tanks are accurate.

Q. We are not trying to upset the present method of gauging oil into tanks. We merely desire to supplement that by the use of meters, providing the Commission saw fit to order that meters be used.

A. It seems to me meters could be adopted satisfactority by those who want to use them. I don't see any objection to that.

MR. WAHLSTROM CROSS-EXAMINING MR. WILLIAMS.

Q. How are they handling production in Texas at the present time? Leases are prorated on well basis running into central lease batteries?

A. Correct, except the Panhandle. That was the point brought out in the beginning in Texas. All of us now operating in Texas in any way, gauge these individual wells each day and that in some cases take more from one well than another. No way of telling. That is just the point I am making.

Q. Most practical in the oil business, metering each well, most economical, that is the past custom in the oil business?

A. Might not be, I don't know. I think in New Mexico where we have gone along for a couple of years keeping production to these units separate and development on the basis of one well to 40 acres, we should be a little slow adopting a plan permitting the consolidating all wells on leases into one battery.

Q. You stated awhile ago about fields in Texas you are familiar with, although individual wells on a well basis, the wells ran into a central tank battery, except Yates and Judkins, there are exceptions there and leases have 100 well units?

A. Right.

MR. WOOTTEN:

Q. In the Yates field where there are these exceptions, operators are required to sign an affidivit for each unit producing into a central tank?

A. I don't know.

Q. Our A.B. Form each one an affidavit?

A. The A.B. form is on a lease basis, not well basis.

MR. SLAVIK CROSS-EXAMINING MR. WILLIAMS.

Q. These oil meters cannot today register all right, discontinue that way for any period, then tomorrow may be off a little, and a little more the next day?

A. I think meters ~~tend to be accurate check~~. from time to time have to have their accuracy checked.

Q. What are you going to do with two or three hundred of them. For instance, will cite an example. Suppose four wells go into a common tank battery and there are four meters, one for each well on the lease. From your individual tank gauges each day and from the meter readings each day, I believe that each ~~day~~ wells production can be kept.

A. Within at least 5% of the daily allowable as now determined by tank gauges and I believe the operators could by the tank gauges and meter r ecords soon tell wehter meters were running fast or slow and at any time know when they should calibrate them or not.

Q. Don't you think after you get a lot of these meters they will start overlooking and let it go on and take tank gauges?

A. I think if an operator desires to set the meter fast or slow on a particular well he could and in that way produce his production from part of the wells.

Q. Put in oil meters now and a little later the wells will be making water.

A. At that time disconnect meters and flow into the central tank battery.

Q. Why spend money for meters?

A. I think that is a matter for the Commission to decide. Am merely making suggestions for the guidance of the Commission as to handling the matter, and the meter is one suggestion.

MR. WAHLSTROM CROSS-EXAMINING MR. ~~WHLLIAMS~~ Dewey

Q. In the case on the use of meters on test tanks the final analyses of the amount of production taken into batteries? As a matter of fack, the pumper reads the meters and turns it in?

A. The gauger would have to take his records of how much pass through his meter each day.

Q. In the last analysis is taking the pumpers report on the amount of oil ran from each well?

A. A good deal of responsibility will be with the pumpers accuracy.

Q. Another angle is this. Assume you put in meters, figuring the cost of meter installation and assuming you assign a group of men of Engineers to keep the meters running accurately and assuming you would have to install four well tank batteris, three additional separators thenn installed, possible expense and original cost of maintainence would take what you would save.

A. You would make a material saving even if you put in expensive meter equipment and have maintainance charges on it. Eliminate meters and put on affidavit form, save still further money.

MR. WAHLSTROM CROSS EXAMINING MR. DEWEY.

Q. For example, considering central tank batteries without

meters and central tank batteries with meters. In the first place you would have to add to three three additional separators over the original installment in addition to that to add four meters, then you would have maintainance cost, keeping up those meters, it is going a long way to wipe out the savings of $1000.00 per well.

A. Might explain that the estimate of $1000.00 is based on a separator for each well, meter for each well and common tank. If you eliminate individual separator per well and individual meter, there will be additional savings in a common tank battery.

Q. Possibly $800 to $1000.00 per well?

A. Somewhere in that neighborhood.

MR. VESELY: CROSS EXAMINING MR. DEWEY.

The only reason you recommend this to the Commission would be from a economical standpoint?

A. I believe it is becoming increasingly difficult to find the money to drill additional wells and any saving that can be made in the cost of these present wells, based on some more wells drilled, and that there will be no more waste involved than at the present time. It is useless for that amount of money to be spent.

Q. If the Commission after investigating this how to supervise this or control it, if they would see the cost would not be much savings, you would not care for that. It may not cost the producer, but it would would cost the Commission, put on additional gaugers if the royalty owners holler for it?

A. That would be an expense. I trust the matter can be handled in such a way so there will not be pressure brought upon the Commission to employ gaugers.

Q. Additional gaugers would be costly?

A. We don't want to throw any additional burden on the Commission.

MR. HUBBARD EXAMINING MR. WILLIAMS.

Q. I did not quite understand your testimony in regard to the situation in other states. I believe you said several pools in Texas in which you are producing into a common tank battery, where the allowable is on a per well basis, was that correct?

A. Yes, that is the usual thing in Texas, for wells on a common tank battery.

Q. Did you also say you thought there were a good many cases where the saving was of sufficient magnitude to offset lower terms on investment, cases in which the use of central tank batteries were justified?

A. I think so, in cases of marginal wells especially, and I suggested a while ago that the rule be modified that wells not producing the top well allowable by proper request on the part of operators stating the potential of that well, he could run into a common tank battery.

Q. It finally gets down to the basis as to whether or not individual companies think it can justify additional expense of separate batteries or not?

A. Yes, in Texas?

Q. Texas or anyplace?

A. Not now in New Mexico. Have to gauge it separately.

Q. My point is this, your Company and all companies look into the economical phase of it.. If you feel the additional expenditure of $1000.00 is not justified to put in the investment, you are not in favor of it, are you?

A. That is a rather broad question. What an operator might consider economical might not be considered economical by

another operator.

Q. Isn't that the thing you are figuring on, whether you are in some cases justified to use central tank batteries and in other cases not justified to use central tank batters on account of the economical phase. It gets down to that basis?

A; In Texas the economical point is considered in permitting the running into a common tank battery. I know it is the common thing down there during the first production of a field to run into a common tank battery.

Q. You think in no case it is justified?

A. I did not say in no case.

Q. In some cases it is justified?

A. In some cases.

Q. Do you know of any specific cases of any irregularities in Texas that would not have have happened if you had separate tank batteries or not?

A. Texas is a big State. That is a big order. Sometime in some of the fields, some wells flowing on a lease and others have stopped and put on the pump. Any operators are slow to put a well on a pump while flowing. They produce oil from wells still flowing because there is no restriction on it, and operators are permitted to do it.

Q. Would you not say gross irregularities of producing too much from a lease, operators dothat any way, regardless of rules. If he wants to run hot oil, he has plenty of ways to do it?

A. Not legal ways.

Q. This would not be legal to produce a well under this arrangement, would it?

A. It would be illegal to produce it that way if we would not have some definite means of keeping it separate.

MR. VESELY:

Any other questions to ask either Mr. Williams or Mr. Dewey, they are both under oath.

MR. HUBBARD:

May we go on with proper cementing time?

MR. VESELY:

Of course the Commission, I know you all agree that the New Mexico Commission is only too glad to cooperate with all the oil operators and make it just as simple and cheap as possible within our State, but of course we will have to take certain precautions and protect the royalty owners and protect us against any undue criticism, and not leave ourselves wide open, so some safety measure measure would have to be taken if the Commission would permit the use of central tank batteries. We would have to take some other measure, there is no question some safety device would have to be used, the question would be would there be any saving. That is in my mind now. Would it be a saving to put on gaugers? That would likely be more costly than the present system. That is the only thing. The Commission will go over this testimony very carefully and if we will be sure of a saving, we will give it due consideration.

MR. DEWEY:

I might explain each royalty interest will have its oil individually gauged, just the same as it is now. There will be no question in that procedure, and there may be a slight variation of the amount of oil in different parts, but the total oil taken will be the same.

MR. VESELY:

Next is Number 3: Reduction of the required cementing time on casing strings.

MR. HUBBARD EXAMINING MR. DEWEY:

Q. Do you know what the present regulations in New Mexico regarding cementing time on oil wells is?

A. The present rules of the Commission require that 72 hours elapse before the cement is drilled. I will read the present rule into the record:

CASING AND CEMENTING:

The casing program for the Hobbs Pool shall consist of (a) a surface casing string, (b) an intermediate casing string, except as hereinafter provided, and (c) a production casing string.

A. SURFACE CASING STRING.

In order to protect the frest water supply, the surface casing string shall be set at least 10 feet into the "Red Bed" section and cemented back to the bottom of the cellar. The well shall stand cemented not less than 36 hours before drilling plug and testing for water shut-off. Testing for water shut-off shall be made after drilling plug by bailing the hole dry. The hole shall remain dry for one hour thereafter to constitute satisfactory proof of a water shut-off.

B. INTERMEDIATE CASING STRING.

The intermediate casing string, if required, may consist of either (1) a "short" string, or (2) a "long" string, at the option of the operator.

(1) The "short" string, if used, shall be set in the Rustler formation above the top of the main salt and shall be cemented with 150 per cent of the calculated amount of cement to fill back to the bottom of the cellar.

(2) The "long" string, if used, shall be set at least 100 feet below the base of the salt and cemented with 150 per cent of the calculated amount to fill back to the top of the main salt.

The intermediate string shall stand cemented not less than 72 hours before testing pipe and cement. Tests of pipe and cement shall consist of building up a pressure of 1200 pounds, closing of valves and allowing to stand 30 minutes. If the pressure does not drop more than 120 pounds during that period, the test shall be considered satisfactory. This test shall be made both before and after drilling plug.

The intermediate string may be dispensed with, only by special permission of the Commission, in wells

where the "Brown Lime", "Bowers Sand" and "Big Gas" horizons have, by adequate and satisfactory proof, been found to contain neither oil nor gas.

C. PRODUCTION CASING STRING.

The production string shall be set and cemented below the top of the "Sandy Dolomite". Where a short intermediate string is used, the production string shall be cemented with 150 per cent of the calculated cement to bring it to the base of the salt.

Where a long intermediate casing string is used, the production string shall be cemented with 150 per cent of the calculated amount to fill back to above the top of "Bowers" sand. Where no intermediate string is used the production string shall be cemented with 150 per cent of the calculated amount required to fill back to bottom of cellar.

The production string shall stand cemented not less than 72 hours before testing casing. This test shall be made by building up a pressure of 1200 pounds, closing of valves and allowing to stand 30 minutes. If the pressure does not drop more than 120 pounds during that period, the test shall be considered satisfactory.

All cementing shall be done by the pump and plug method.

Bailing tests may be used on all casing and cementing tests and drill stem tests may be used on cement tests, in lieu of pressure tests. In making bailing tests, the well shall be bailed dry and remain approximately dry for 30 minutes.

If any string of casing fails while being tested by pressure of by bailing tests herein required. It shall be recemented and retested, or an additional string of casing shall be run and cemented. If an additional string is used the same tests shall be made as outlined for the original string. In submitted Form C-101 the number of sacks of cement to be used on each string of casing shall be stated.

All flowing wells shall be tubed with tubing not to exceed three inches in diameter. The tubing shall be set as near bottom aspracticable, but in no case shall tubing perforations be more than 250 feet from bottom. The bottom of the tubing shall be restricted to an opening of less than one inch or bull-plugged in order to prevent the loss of pressure bombs or other devices.

Q. Do you have any information on the relative percent of strength developed in cement at various periods of time. Do you know for example the average strength cement developed in 28 days?

A. Our Research Department is continuously carrying on tests of various cements relative to the time of their setting and their strength under various conditions and these reports on various cements are furnished to us periodically. If I might be permitted to read briefly here a paragraph relative to the question you ask.

(Mr. Dewey reads a paragraph from report which appears later in this record in its entirety.)

Q. Do you have any information on the relationship of setting time and pressure and relation of setting time and temperature?

A. Yes sir.

Q. Would you briefly outline it?

A. Both temperature and pressure affected by setting time of the cement.

"Reads from same report, which appears later in this record.)

Q. Mr. Dewey, it would appear if you agree with that, you would state the setting time is facilitated by both temperature and pressure?

A. Right.

Q. If that is the case, should not the strings which are set at fairly high depths be as low as the setting time? as strings set at shallow depth?

A. The temperature increases with depth and pressure increases, so both forces acting on the cement forces it to set with the depth.

Q. And that 36 hours is sufficient for both shallow and for deep?

A. Yes.

Q. Do you have any record of actual field experience or field data that have to do with the setting time of cement?

A. Records have been kept covering the operations of the company over a considerable period of time relative to the results obtained on cement jobs. A summary of this experience in the fields is stated and I will read it.

(Mr. Dewey reads from the report which appears later in the record)

Q. So then in all cases, cement in the pipe, the jobs were 100% sufficient?

A. All drilled satisfactory.

MR. HUBBARD:

I would like if there is no objection to introduce that report Mr. Dewey read put in the record in its entirety.

MR. VESELY:

No objection.

The report Mr. Dewey read exerpts from in its entirety.

October 22, 1935

Mr. Laton Stamberry, Chief Deputy,
Mr. Gordon M. Griffin, Chief Petroleum Engineer,
Railroad Commission of Texas,
Austin, Texas.

Subject: Cementing Practices.

Gentlemen:

In general, Railroad Commission orders provide that all cement jobs on casing shall set at least 24 hours under pressure and a total of 48 to 72 hours before drilling the plug. However, this does not apply to conductor pipe. In several orders it has been provided that in cases where a quick setting cement is used, the plug may be drilled after 48 hours, while 72 hours must be allowed in cases where ordinary portland cement is used.

We have for sometime collected data on the characteristics and properties of the various cements available for use for cementing casing and have, as a result, an approved list of cements for the purpose. We have also kept a record of cementing jobs and have paid special attention to the hardness of the plugs when drilled. These data indicate that (1) portland cements are equal to and in many cases better than quick setting cements for cementing casing, and (2) the minimum setting time required by the Railraod Commission should be reduced to conform with field experience and with various factors discussed below.

FACTORS INFLUENCING THE SETTING AND STRENGTH OF CEMENT SLURRIES.

Water Content

In order to make a semifluid past of cement and water at least 23 to 26 pounds of water (depending on the cement) has to be mixed with 100 pounds of cement, but in order to make a pumpable fluid, the water content has to be incerased approximately 40 pounds for each 100 pounds of cement. The average cement slurry that we use for casing jobs weighs 15.8 pounds per gallon, or contains 44 pounds of water per 100 pounds of cement. With everything else equal, the strength of the hardened cement at any age is reduced by increasing the water content and the length of time required for the cement to set increases with the water percentage. Table 1 which gives a comparison of the tensile strengths of briquettes cured at 80 degrees Fahrenheit and made from the same ordinary portland cement illustrates this point.

TABLE I.

Percent Water	Setting Time Hours		Tensile Strength Pounds per Square Inch			
	Initial	Final	1-day	3-day	7-day	28-day
23	2-1/2	7	470	761	845	876
42	8	13-1/2	220	376	466	487

The strength of good portland cements increases with age, but usually 90 to 95 percent of its ultimate strength is attained in 28 days although the ultimate strength varies with the water-cement ratio. If the relation of time of curing to the tensile strength of cement at different ages is plotted on graph paper, a characteristic curve for neat cements is obtained. The general shape of this curve cannot be changed by varying the factors which influence strength although the values can be changed by using different water ratios, etc. Attached is a curve which shows the average strength of cement mixed and cured under conditions similar to those actually encountered in the field when setting the oil

string. It will be noted that 67 percent of the 28-day strength is attained at 24 hours, 79.5 percent at 48 hours and 87 percent at 72 hours. The increase in strength with time proceeds rapidly for about 24 hours but from then on the rate of increase is much lower. The small increase in strength that occurs between 48 and 72 hours does not justify delaying the drilling of the plug after 48 hours. It is believed, and this is substantiated by some field experience, that if the plug is soft at 48 hours, it will not harden appreciably if allowed to set for an additional length of time.

Effect of Temperature

The degree of heat to which a cement slurry is subjected has considerable effect on the setting time and the strength-time relationship. High temperatures do not materially change the ultimate strength except when unusually high temperatures cause "flash settings", but it definitely causes high early strengths. Soon after a cement slurry is placed, it is heated not only to the temperature of the formation but for a period of from two to ten hours, its temperature might be as much as 20 degrees Fahrenheit above the formation temperature due to the heat of hydration of the cement. The early strength and quicket setting at elevated temperatures of a 40 percent neat ordinary portland cement mixture is illustrated by the following comparison of tests using the same cement.

TABLE II

Temperature °F	Setting Time hours		Tensile Strength pounds per square inch			
	Initial	Final	1-day	3-day	7-day	28-day
80	11	16	253	350	412	510
130	2-1/4	4-1/2	312	420	542	550

Quick setting cement, although sold as an early strength cement, does not show this same tendency toward earlier strengths at elevated temperatures, even though it shows quicker setting time and higher early strength at 80 degrees Fahrenheit than portland cements. A duplicate of the above table but for a quick setting cement follows:

TABLE III

Temperature °F	Setting Time hours		Tensile Strength pounds per square inch			
	Initial	Final	1-day	3-day	7-day	28-day
80	7-1/4	13	325	465	508	540
130	1-3/4	3	283	393	413	400

All portland cements are not of equal quality but those on our approved list show the tendency of higher earlier tensile strengths at elevated temperatures than at 80 degrees Fahrenheit. A comparison of Tables II and III brings out the fact that when the formation temperature is only 80 degrees Fahrenheit, quick setting cements set faster and have higher strengths at all ages than ordinary portland cements. But when the temperature is 150 degrees Fahrenheit, the ordinary portland cements set slower and show higher early strength than the quick setting and so-called high early strength cements.

Effect of Pressure

We have run no extensive tests to determine the effect of pressure on the setting time or its effect on the age-strength relationship when set under pressure, but it is expected that the effect will be the same as in other similar chemical reactions. That is, in this case, it causes earlier setting and higher early strength. Several investigators have recently done work which tended to show that the effect of pressure is even greater than the effect of elevated temperatures in causing high early strengths.

Setting Time under Pressure

Any cement placed at and around the bottom of the casing with the hole and pipe full of fluid is setting under pressure. The only advantage of applying and holding more pressure than this hydrostatic head is to prevent any movement until the time elapsed is sufficient to allow enough setting of the cement so that it could not be moved by any difference of head inside and outside of the pipe. When a float collar is used, if there is no back flow after placing the cement, it is evident that the float valve is holding and there is no need of holding a pressure at the well head to prevent a movement of the cement before it has time to set.

Any portland cement immediately after being mixed with water begins to hydrate which results in a gelling or setting reaction. This gelling varies with the individual cement and with temperature, and although we have no specific data to substantiate such a statement, we have reason to believe that before the cement takes its final set, it has reached a state of setting after which it cannot be pumped or moved by any pressure differential that might exist in a hole in which casing has been run and cemented. There is a somewhat common belief that a cement slurry will not tend to set as long as it is in motion. The hydration of portland cement might be accelerated or retarded by chemical means or by changing the temperature and pressure conditions, but agitation cannot prevent hydration and subsequent setting. If the slurry is agitated

with a gas or allowed to mix with air, as in a rotary concrete mixer, it is possible to include gas bubbles in the mass and prevent it from having proper strength and hardness after the slurry sets. Properly placed cement slurries in a well should not contain gas inclusions, and the pumping of the cement will not prevent setting at a time which is consistent with the existing temperature, pressure, and characteristics of the particular cement and mixture used. "Flash" setting of cement in wells is usually brought about by high temperatures and pressures or by the addition of chemicals to the cement or to the slurry.

Summary of Field Experiences

Since January 1, 1935, the Company has used portland cements on more than 95 percent of all casing jobs, and in fields where the Railroad Commission specified 48 hours or made no rulings, plugs have been drilled on 227 jobs in 48 hours, after allowing the cement to set 12 to 24 hours under pressure. The casing size varied from 20 to 5 inched o.d., the depth varied from 84 to 8070 feet, and the formation temperature varied from approximately 90 to above 190 degrees fahrenheit. Of these 227 plugs, 216 were reported as "drilled hard", 5 as "medium hard", 5 as "medium", and only one job at Loma Novio was reported as failing to harden, but it was found that the cement had all been pumped out of the casing and above the water sand which lies just above the casing seat and there was no way of telling how the cement had set.

RECOMMENDATIONS

Allow me to suggest that the Railroad Commission discontinue, or at least modify its rulingson casing cementing jobs in order to (1) conform more closely with field experience and (2) to remove any possible lack of incentive on the part of cement manufacturers to improve on cements available for oil well purposes.

The following suggested modifications of Railroad Commission orders are believed to be safe and more in line with the properties of cement and the well conditions.

1. No differentiation should be made between quick setting cements and ordinary portland cements when used for cementing casing below 1,000 feet.

2. The minimum time that cement should set "under pressure" should not exceed 15 hours, regardless of depth; this time requirement for other than surface casing should not exceed that for surface casing.

3. The total minimum time requirement for allowing cement to set before drilling the plug should never exceed 48 hours regardless of depth, and for surface casing it should never exceed 24 hours.

Very truly yours,

W. E. HUBBARD.

MR. VESELY:

Any questions on this question.

MR. KRAUS CROSS EXAMINING MR. DEWEY:

Q. Since the 72 hour delay in drilling plug has become usual or customary in oil business, any improvement in oil well cement?

A. A great deal of improvements in oil well cements. Namely, every Cement Company has studied their cements and the ordinary cements we get today are better oil well cements than we had a number of years ago.

MR. VESELY:

The Lea County Engineers made any recommendations on this particular question?

MR. HUBBARD:

I would like Mr. Dewey to make a recommendation.

MR. DEWEY:

I recommend that in all cases that the plug be drilled in a minimum of 48 hours.

MR. HUBBARD:

Have you any recommendation the length of time the cement should set under pressure?

MR. DEWEY:

12 hours is sufficient time under pressure.

MR. VESELY:

You heard the recommendation of Mr. Dewey, 48 hours and under pressure 12 hours, anything else?

MR. WILLIAMS:

I don't know that I get the minimum 48 hours, does that apply in all cases?

A. Yes.

MR. VESELY:

Not less than 48 hours in any case.

MR. DEWEY:

If your cement does not harden in 48 hours, it probably never will.

MR. WILLIAMS:

Is the data you gave awhile ago, percentage to the well, strength of cement, claimed they are passed on standard laboratory test?

MR. DEWEY:

Yes.

MR. WILLIAMS CROSS EXAMINING MR. DEWEY:

Q. Conditions in wells vary widely from standard laboratory conditions, do they not?

A. True, and that is the reason a very careful watch of cement jobs covering our operations in Texas, Louisiana and New Mexico determine the conclusions drawn and substantiated in the field.

Q. In the case of all cements, haven't you found that the setting time and time required for cement to obtain the ultimate strength is on the age of cement used.

A. It has some bearing on it.

Q. Fresh cement as you can is used on your jobs?

A. We don't store cement at all. We barely anticipate our needs to have shipments from the cement mills.

Q. Have yout you known any cases where cement did not set in 72 hours, waited a longer time and it finally set satisfactorily?

A. I don't know that of my own experience.

Q. I have known a good many cases with cable tools where that was the case. It is a fact that the chemical content of the water in which the cement is run has a bearing on the strength of the cement?

A. It has a bearing on the characteristics of your cement.

Q. Your thought is however that so long as the present requirements are in force in New Mexico as to testing cement pressure or bailing dry, that is adequate protection?

A. We are not trying to change the present regulations relative to testing cement job. Just the length of time before the plug is pulled.

Q. Granted in some cases that the cement does not set properly in 48 hours? You think those instances are discovered by the test required after plug is drilled?

A. Yes, I think if the cement does not drill hard in 48 hours it is just a case of recement.

Q. I am not sure you can recement after waiting 48 hours in all cases. Sometimes it is very hard to get circulations. That is why I was thinking that if the cement is not set in 48 hours you thought the operator should be required to recement or be permitted to wait longer time, and then the casing tested all right after waiting four days. I understood the bailing test and stand pressure test of 30 minutes, that would really be the final test to determine if the cement is satisfactory?

A. I think the operator should have the option of deferring drilling cement or waiting to give it a chance to cement, if he believes in additional time. I think if he goes in

there and finds the plug isn't hard and desires to pull out and wait additional time, he should have that option.

MR. HUBBARD EXAMINING MR. ~~SLAYIK~~ WILLIAMS

Q. Do you have any idea of the added expense of waiting 72 hours instead of 48 hours before drilling plug?

A. One drilling day lost, which is an expense to the oil operator, whether he does his own drilling or whether he contracts to have it done. That one days operation will cost a minimum of $500.00.

Q. The operator pays the bill whether he drills or has a contractor? It is in the bill.

A. Whatever the contractors cost are they are eventually met by the operator.

MR. WILLIAMS CROSS EXAMINING MR. DEWEY.

Q. Isn't it a fact that most contracts are let on a footage gasis in New Mexico?

A. That is true.

Q. Isn't it a fact if a operator waits 72 hours, it is the same so far as the contract is concerned?

A. No comparison in New Mexico, the present regulations require 72 hours.

Q. Isn't it the same if he waits 72 hours as it is if he waits 96 hours?

A. I imagine the individual contract price on a footage basis is the same. However the contractor anticipates he will not be placed to additional delay. In one day he can get an additional profit in drilling which could be passed on to the operator.

Q. That would be on in case the operator guaranteed the contracter he would be permitted to drill plug in 48 hours. If the operator keep the option of waiting an additional time, that would do away with the saving?

A. He might be forced to pay the contractor the days time while waiting.

MR. SLAVIK:

We are making it on contract, the cheaper we can get the footage drilled.

MR. DEWEY:

Follows as naturally as cause and effect. Contractor's expenses reduced, he in turn reduces the price to the individual companies.

MR. KRAUS:

You emphasize it is an optional matter. If any company still desires 72 hours, then he can continue to do so?

MR. DEWEY:

If anybody wants to wait a longer time, he should have the privilege of doing so.

MR. KRAUS:

48 hours would appli on cement? Do you realize the regulations now say 36 hours?

MR. DEWEY:

I did not realize that.

MR. KRAUS:

You don't want to change the cementing time on surface, no well less than 36 hours?

MR. WILLIAMS:

In the final analyses it boils down to this, the Commission places the responsibility on the operator to get a satisfactory cementing job, regardless of 48 or 72 hours?

MR. WILLIAMS CROSS EXAMINING MR. DEWEY:

A. Correct.

Q. The Commission did not propose to stand aside and release the operator should he wait 48 hours. If he gets a bad job, a blow out or anything of that kind he shortens the cementing time at his own risk?

A. True.

Q. As stated a while ago, the tests now required under the regulations is bail surface pipe dry, test other strings, adequate test of whether cement is satisfactory?

A. Think that enough wells in New Mexico tested that way satisfactory, we can feel assured it is an adequate test.

Q. It seems to me that is the major safety feature we have. An operators judgment whether the plug drills hard or not in here. If soft he drills at his own risk. He has to make the casing stand this pressure test regardless?

A. That is right.

MR. HARDISON:

Did you say oil cement ~~xxxxxx~~ strings set 72 hours?

MR. DEWEY:

All strings. Mr. Kraus called my attention to the regulation that surface strings set 36 hours at the present time, so change my recommendation as to that.

MR. VESELY:

Everybody satisfied with the explanation? Nothing else? The next is casing programs.

MR. SLAVIK:

I would like to present several casing programs in the sand area, either one of these used by operators.

MR. SLAVIK SWORN IN BY MR. VESELY.

MR. VESELY:

What is your name?

A. T. J. Salvik.

MR. VESELY:

What is your occupation and with what company?

A. Petroleum Engineer for the Gulf Oil Company.

MR. SLAVIK:

First program, set surface pipe in the red beds at least 15 or 20 feet, and cement to the surface. The oil string shall be set above the pay and cemented with 150 percent of the calculated amount of cement to fill back to the cellar, or 2 stage job;

b. The oil string shall be set above the pay. This string shall be cemented with two stage cement job, lower stage shall be cemented with 150 percent of the calculated cement to fill back to base of the salt. The upper stage shall be cemented from the top of the salt to the surface using 150 percent of the calculated amount.

2. A conductor pipe of one joint shall be set and cemented to the surface. An intermediate string shall be set on top of the salt and cemented to the surface. The oil string shall be set above the pay and cemented with 150 percent of the calculated amount to fill back to base of the sale.

3, Surface pipe shall be set at least 15 feet into the red beds and cemented to the surface. An intermediate string shall be set on top of the salt and cemented with at least 25 sacks. Set oil casing above the pay and cement with 150 percent of the calculated amount to bring back to the base of the salt.

MR. HARDISON:

These programs take care of cable tools as well as rotray tools in the sand agre?

MR. SLAVIK:

Yes.

MR. KRAUS:

What would your program accomplish:

MR. SLAVIK:

It would protect the surfact xxx water and salt section.

MR. KRAUS:

How about the producing horizon?

MR. SLAVIK:

It will protect that too.

MR. HUBBARD:

The only difference between the second and third plan is the amount of cement in the intermediate string?

MR. SLAVIK:

Yes.

MR. HUBBARD:

In the third with 25 sacks and in the second to the surface?

MR. SLAVIK:

Yes.

MR. HUBBARD:

Is that about 250 feet?

MR. SLAVIK:

Approximately.

MR. DEWEY:CROSS EXAMINING MR. SLAVIK:

Q. These plans are sued to advantage in other areas beside the sand areas?

A. The seoond plan, one joint conductor pipe set intermediate string in anhydrite on top of salt, circulate cement and set oil string, that plan would work in other fields in Lea County.

Q. Do you know if anybody ever tried that plan?

A. We tried ten wells and we have had one failure. Recemented that and got a god job. All other jobs circulated cement.

Q. What fields?

A. In the Eunice Pool.

MR. WILLIAMS:

Perhaps I did not get those two plans. 1st. Surface string 15 feet in red beds and cemented to sellar, production string cemented with 150 percent of the calculated amount to bring to surface ot two stage job. 2nd plan, set surfact pipe 15 feet in red beds. One joint conductor pipe set and intermediate string set on top of salt and cemented to the surface. 3rd. Set surface pipe at least 15 feet into red beds, an intermediate string set and cemented with minimum of 25 sacks of cement.

MR. KRAUS:

Will you simplify the two stage job.

MR. SLAVIK:

Calculate cement from salt to surface string 150 percent of the calculated amount, sufficient amount to take care of the salt, 150 percent calculated amount of cement from bottom of oil string to base of salt.

MR. DEWEY:

In these ten instances have you calculated the saving in either time or money of cementing this way over the present regulations covering casing in the Eunice field?

MR. SLAVIK:

We have calculated our saving is material, about Six Hundred dollars per well.

MR. SLAVIK:

In this second plan, use one joint, circulate the cement to the salt string, and an affidavit is furnished to the Commission that the cement circulated on the intermediate string.

MR. DEWEY:

Any trouble in getting the cement to circulate?

MR. SLAVIK:

On one job.

MR. DEWEY:

How much cement do you ordinarily use?

MR. SLAVIK:

It will be about 2.3 times to calculate the amount.

MR. DEWEY:

Have you tried the two stage job?

MR. SLAVIK:

No.

MR. WILLIAMS:

I understand our present system of regulations as to Monument have been modified in some extent as to the amount of surface pipe required. Not officially adopted by the Commission, 15 feet in red beds in lieu of 150 feet. Did not see any modification.

MR. VESELY:

No modification officially, but it has been permitted.

MR. WILLIAMS:

That applies to all fields?

MR. VESELY:

Yes. Anything else on this particular point? We may go back to the casing program in the afternoon. The next question is the shooting of wells in the Hobbs Field.

MR. VESELY:

In connection with this, there is a letter from the Chairman of the Hobbs Pool Executive Committee, Mr. McCorkle. Will read that letter.

HOBBS POOL EXECUTIVE COMMITTEE
P. O. BOX 1410
FORT WORTH, TEXAS
SEPTEMBER 1, 1936.

Oil Conservation Commission,
State of New Mexico,
Santa Fe, New Mexico.

ATTENTION: Honorable Frank Vesely, Secty.

Gentlemen:

You have heretofore been furnished copies of the attached letters concerning request of Samedan Oil Corporation for permission to shoot their well State B-1 SENW 25-37-18, Hobbs Pool, Lea County, New Mexico.

After considerable delay, a vote of the entire Executive Committee has been obtained and is set out below:

MEMBER	REPRESENTING	VOTE
C. B. Williams	The Texas Co.	Yes, Provided approved by Hobbs Engineers Committee.
J. N. Dunlavey	Skelly Oil Co.	Yes
D. B. Collins	Shell Pet. Co.	No
E. A. LANDRETH	Landreth Pro. Corp.	Yes
H. E. Marsh	Amerada Pet. Corp.	Yes
J. R. Suman	Humble Oil & Rfg. Co.	Yes
S. G. Sanderson	Gulf Oil Company	No
Harry W. Walker	Walker Oil Corp.	Yes
A. M. McCorkle	Stanolind Oil & Gas Co.	Yes

I am sending copy of this correspondence to Dr. Wells, with whom Mr. Staley and I have discussed matter n one or two occasions. You will note from the above that a majority of the Executive Committee is in favor of granting the Samedan's request and it is my understanding that a unanimous vote of the Executive Committee on questions of this kind is not necessary. Therefore, I feel that if and when Samedan's formal request to shoot their well is filed with the Commission, it will be agreeable with a majority of the Hobbs Operators to grant same, although, if you think best, it might be better to take question up at a public hearing.

Very truly yours,

(Signed) A. M. McCorkle
CHAIRMAN.

MR. VESELY:

Different attorneys advised they thought it best to take it up at this public hearing. In the Hobbs Agreement it says the unanimous consent by given. Is there a Representative here of the Samedan?

LLOYD BIDDICK SWORN IN BY MR. VESELY.

MR. VESELY:

Your name and occupation?

MR. BIDDICK:

Lloyd Biddick, Engineer for the Samedan Oil Corporation.

MR. VESELY:

Mr. Biddick, your company has made application for permission to shoot this will, give your reason for it.

MR. BIDDICK:

State B No. 1 drilled into white lime, hole full of water found. Plugged back above top of white lime and producing in the sandy lime, which is a hard and tight formation. We believe that an increase in production can be obtained by shooting. No other well in the Hobbs Pool has been shot in the sandy lime. We feel that shot is more effective, the pressure on the formation is greatest and with the greatest formation pressure, well cleaned up better and placed on production with greater production.

MR. VESELY:

This well is to one side of the Hobbs Pool?

MR. BIDDICK:

On the southwest flank of the Hobbs Pool.

MR. WAHLSTROM:

No intention to take test after shooting?

MR. BIDDICK:

No, not to increase our potential, merely to see if it would increase.

MR. WILLIAMS:

Do you plan to ask to have your potential raised?

MR. BIDDICK:

No.

MR. WILLIAMS:

In the event that shooting that well would result in a higher gas-oil ratio to the well, what plan have you for correcting that?

MR. BIDDICK:

If we had a high gas-oil ratio after shooting, it is questionable what tactics to be used to reduce the ratio.

MR. WOOTTEN:

Not a pumping well?

MR. BIDDICK:

It flows its production for half the time and have to keep it shut in two days.

MR. WOOTTEN:

No gas now?

MR. BIDDICK:

Practically no gas.

MR. WILLIAMS:

It does produce gas in the pool, doesn't it?

MR. BIDDICK:

Not in any of the wells we drilled. Hard to tell if sandy lime does or not.

MR. WILLIAMS:

Seems to me in other developments of the field, the sandy lime was found to contain quite a bit.

MR. BIDDICK:

It may be true, I don't know.

MR. WAHLSTROM:

Isn't it true this sandy lime has proven to be not very prolific over the field?

MR. BIDDICK:

It has been in all cases we have had. This one particular well is a small well, the only other case is the Shell State E which is about 10 barrel well in the sandy lime. On the flanks of the structure have not had very large amounts of gas in the sandy area or lime.

MR. WAHLSTROM:

One of the purposes that you desire to shoot this well is to get an idea of the reserve of this particular area?

MR. BIDDICK:

We did not contemplate drilling any wells through the sandy lime if we got an increase. Merely thought if later on some wells on the edge were completed in the white lime, we would have some information on the productivity of the sandy lime when we were ready for abandonment.

MR. WILLIAMS CROSS EXAMINING MR. BIDDICK:

Q. There would not be any immediate gain by shooting the well at this time if you do not intend to ask for a new potential test and do not intend to drill additional wells and so far as other wells at the time of abandonment, the sandy line test then could be made, could it not?

A. Better results are obtained from shooting when a well is first brought in and not waiting to delay shooting until the well is completed. Results of shooting will not be greater and then we can go ahead with other wells.

Q. We have made lot of progress in conserving gas in that pool by using formation packers.

A. In some cases.

Q. We have a rule where an operator is required not to case a well having a high gas oil ratio, and that it is generally understood that an operator is obliged to follow out the recommendations of the engineers in setting packers in order to conserve this gas where the gas oil ratio is high. In this particular well, of course assuming the shooting does not result in increasing the gas oil ratio, there would not be any harm in doing it. Seems to me it would be very dangerous thing to start shooting wells in the Hobbs field in the face of the very good reaults we have had in setting packers in many wells. The conservation of your gas high on the structure by setting packers or other means of keeping down the gas oil ratio has been beneficial to the other wells and has helped to prolong the life of each of the wells.

A. That is the theory we all work on.

Q. If the shooting of wells in the Pool is generally permitted, might it not result in damage to several wells you have that are edge wells?

A. I think if all the wells in the Hobbs Pool were shot at this time in the sandy lime, it would be a harmful thing.

MR. WAHLSTROM:

Do you believe this pay is a single pay in a pay zone?

A. No the formations, as near as we can tell only two or three strings went in the sandy lime in a range of fifteen feet.

MR. WAHLSTROM:

Possibly no chance to correct work in a packer. Your purpose of shooting this well is to obtain an additional amount to flow?

MR. BIDDICK:

True.

MR. WILLIAMS CROSS EXAMINING MR. BIDDICK:

Q. The fact is the well is flowing its allowable now?

A. True.

Q. You don't really need additional gas at this time?

A. I stated before the reason we wanted to shoot now was to shoot while we had pressure on the sand.

Q. The point I was making, in the event you should by shooting this well cause it to have a high gas oil ratio, there is nothing you could do about it?

A. Not any more there than you can do to other wells in the pool. Corrective measures are not effective.

Q. You don't believe the use of any kind of corrective measures are effective?

A. Not that I know of.

MR. WILLIAMS:

I have no particular objections to raise to shooting this particular well under its present condition, except for the possible danger of increasing the gas oil ratio where I understand now the well is flowing its allowable and making pipeline oil and has a low gas oil ratio. In other words the well is being operated in a manner which prevents waste a and I hate to see anything done to the well unless some immediate advantage in doing it which might result in increasing the gas oil ratio or otherwise causing waste of gas. Another point I have in mind is the experience we all went through treating with acid, and so far as I know we all came out at the same place we started. Except that it makes a great deal of expense in treating these wells, and I would dislike to see the shooting of wells started. Think the Hobbs Engineers at the time they made recommendations as to provisions of Hobbs Pool, they had that in mind in prohibiting

the shooting of wells originally. Know that after an operator shoots a well, it is just human nature to want a new test made if good resutls, and I would very much dislike to see anything started which would result in the expenditure of money and would result in operators being forced to spend money to keep up with the band wagon after someone starts shooting, or which would result in the taking of new potentials. I appreciate the fact that since the Hobbs Agreement does not prohibit the shooting of wells with glycerine, each case taken separately by the Executive Committee. As a matter of fact the Texas Company vote isn't mentioned there in that report.

MR. VESELY:

Yes, C. B. Williams representing the Texas Company, vote Yes-Provided approved by Hobbs Engineers Committee.

MR. WILLIAMS:

I stated there I would be glad to reconsider, subject to approval of the Hobbs Engineers Committee. If they approved it, I would be glad to consider it. I like to place those things of a technical nature on the shoulders of men most capable of analyzing them and determining then what results might be. It would seem to me it would be a very bad practice right at this time at least to permit the shooting of wells with glycerine in that field generally, and I just hate to see the thing started for the reason that once started it is hard to stop.

MR. CUSACK EXAMINING MR. BIDDICK:

Q. In your opinion shooting of this well might increase the ultimate production of that lease?

A. In any well where you shoot, it will increase production.

MR. WILLIAMS:

Is that in a low pressure well?

MR. BIDDICK:

I don't recall.

MR. WILLIAMS:

The bottom hole pressure of that well might be low in comparison with other wells around there?

MR. BIDDICK:

I don't know.

MR. WILLIAMS:

I understand it is. That being the case, opening up the pay around that well might enable it in getting more oil.

MR. KRAUS:

That well the same horizons as other wells?

MR. BIDDICK:

No.

MR. RANKIN:

That well not producing from the same formations as other wells?

MR. BIDDICK:

No.

MR. WILLIAMS:

It is true that in the Hobbs Pool the pipe is set on top of the pay?

MR. BIDDICK:

It is the general practice to begin with to set it on top of sandy lime.

MR. VESELY:

I misquoted the rule in Section 9, stating it said unanimous consent, will read it.

"The parties hereto agree that no well in said field shall be shot with explosives without first obtaining the written permission of the Executive Committee."

MR. WILLIAMS:

It does not say unanimous.

MR. VESELY:

Would the Shell like to change their vote?

MR. SCHNEKLE OF THE SHELL PETROLEUM CORPORATION:

As far as I know that is the official vote of the Shell Petroleum Corporation to vote no.

MR. VESELY:

In this particular case not the company, just the member of the Executive Committee.

MR. VESELY:

C. G. Sanderson of the Gulf present? Th

MR. SLAVIK:

The Gulf has no objections in making an exception in the case of the Samedan well.

MR. VESELY:

Anybody else any question to ask Mr. Biddick? Mr. Williams did I understand you correct that under these conditions you would change your vote from yes to no?

MR. WILLIAMS:

I don't believe I will change my vote. Because of the process involved I have no particular reason to oppose the Samedan and their application. I just hate to see anything done in the pool which might result in trouble later on. I recall a lot of discussion at the first meet on that first exception to acid.

The majority favored it it and treatment of the well was unanimous. They all had to treat. That is the only thing I fear.

MR. VESELY:

I guess there is enough testimony presented on that question. The Commission can decide on that question.

MR. SLAVIK:

Opening up the casing program again. On this No. 2 plan of one joint surface pipe, cementing intermediate string to surface, we would like to make that one of the casing programs in any of the fields in Lea County, outside of the Hobbs Pool.

MR. VESELY:

Anything else? Then we will adjourn until 2:00 o'clock this afternoon. Please all register.

REGISTRATION.

NAME	Company	Address
R. S. Christie	Amerada Pet. Corp.	Ft. Worth, Texas
Edgar Kraus	Atelantic Refining Co.	Carlsbad, N.M.
Harvey Hardison	California Co.	Midland, Texas
Paul M. Colliston	Continental Oil Co.	
J. C. Johnson	Continental Oil Co.	Ft. Worth, Texas.
H. C. Johnson	Continental Oil Co.	
R. Van A. Mills	Continental Oil Co.	
J. P. Cusack,	J. R. Cusack Inc.	Midland, Texas.
J. E. Keston	Empire Oil & Rfg. Co.	
J. L. Slavik	Gulf Oil Corp.	Hobbs, N.M.
R. S. Dewey	Humble Oil & Rfg. Co.	Midland, Texas
J. S. Griffith	Humble Oil & Rfg. Co.	Roswell, N.M.
W. E. Hubbard	Humble Oil & Rfg. Co.	Houston, Texas
James M. Murray	Me-Tex Company	Hobbs, N.M.
S. P. Hannifin	Magnolia Oil Co.	Roswell, N.M.
Glenn Bish	The Ohio Co.	Hobbs, N.M.

NAME	COMPANY	ADDRESS
C. A. Daniels	Phillips Pet. Co.	Amarillo, Texas.
Earl P. Kelso	Phillips Petroleum Co.	Midland, Texas
E M. Stevenson	Phillips Petroleum Co.	Amarillo, Texas
J. W. Jordan	Repollo Oil Co.	Midland, Texas
Jack H. Rankin	Repollo Oil Co.	Midland, Texas
N. W. Baird	Republic Production Co.	Artesia, N.M.
L. W. Biddick	Samedan Oil Co.	Ardmore, Okla.
R. G. Schnekle	Shell Petroleum Corp.	Hobbs, N.M.
J. N. Dunlavey	Skelly Oil Co.	Hobbs, N.M.
E. A. Wahlstrom	Stanolind Oil Co.	Ft. Worth, Texas
J. E. Wootton	Stanolind Oil Company	Ft. Worth, Texas.
C. B. Williams	Texas Company	Ft. Worth, Texas.
John Wilmot	The Texas Company	
C. G. Campbell	T.P. C. & O. Co.	Midland, Texas
C. P. Fedrick	T. P. C. & O.	Midland, Texas.
Ernest A. Hanson	U.S.G.S.	Roswell, N.M.
C. G. Staley	Proration Office	Hobbs, New Mexico
F. J. Vesely	State of New Mexico	Carlsbad, New Mexico
Carl B. Livingston	State Land Office	Santa Fe, N.M.

MR. VESELY:

Called hearing to order at 2:00 o'clock P.M. Read call for afternoon hearing:

NOTICE FOR PUBLICATION

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

Pursuant to Chapter 72, Session Laws of 1935, State of New Mexico, by which act the Oil Conservation Commission of New Mexico was created, investing said Commission with the jurisdiction and authority over all matters relating to the conservation of oil and gas in this State and of the enforcement of all provisions of said Act, notice is hereby given that a Public Hearing will be held at the Capitol, Santa Fe, New Mexico on the 13th day of October, 1936 at 2:00 o'clock P.M., for the purpose of considering the following:

Case No. 5 . Revisions of Order No. 1 of the Commission, "General State Proration Order"

Given under the seal of said Commission at Santa Fe, New Mexico on September 10th, 1936.

OIL CONSERVATION COMMISSION

CLYDE TINGLEY
Governor

(SEAL)

FRANK VESELY
COMMISSIONER OF PUBLIC LANDS

E. H. WELLS
State Geologist

MR. VESELY:

This Gentlemen is simply the sad condition in Monument Pool. As you know Monument Pool has been developed so rapidly the pipeline outlet is very limited. The Proration Office and the Oil Conservation Commission are doing everything in their power to allocate all the oil in Monument Pool there is a market for.

Is there anyone who wants to be heard at this time? We have been notified by the Texas Pipe Line Company they could only take 10,000 barrels per day and the Gulf Pipe Line Company only 2000 barrels per day. That is all the market we could find. That is the way Monument Pool is allocated today on the daily market of 12,000 barrels per day.

MR. HARDISON:

Any attempt to get another pipeline in there been made?

MR. VESELY:

On the part of the State?

MR. HARDISON:

Yes.

MR. VESELY:

I don't know if we could call it an attempt when we try to encourage people to come in and put in a pipe line. Mr. Williams, the Texas Company could not take any more at this time than 10,000 barrels?

MR. WILLIAMS:

That is my understanding. I did not receive any instructions in the change of our nomination.

MR. VESELY:

How about the Gulf? Any hope for them to take more?

MR. SLAVIK:

I could not say on that point, that is out of our Department. I am not in any position to make any suggestion on that at all.

MR. VESELY:

The Amerada and the State of New Mexico are really the two most interested in this than anyone else. They suffer more in that area. The State holds title to quite an acreage and the Amerada, as you know, have about 52 wells now. I guess Mr.

Staley had better come up and clear the record.

MR. STALEY SWORN IN BY MR. VESELY.

MR. STALEY:

We were notified by the Commission or the State Geologist and Mr. Vesely, Secretary of the Commission that the Texas Pipe Line Company could not take more than 10,000 barrels of oil per day. Talked the matter over with the superintendent of the Pipe line and he stated he could run slightly over that. So we figured out the amount taken at that time the outlet for the field would be about 12,000 barrels per day, giving the Gulf connection the average that was being taken by connections of the Texas Pipe Line, which would give the Texas Pipe Line 10,160 barrels of oil per day and the Gulf 1,840 barrels of oil per day. That is what is being taken out of the field at the present time. The matter was taken up with the Shell, trying to persuade them to put a gathering systen in there. Due to the strike they had been cut down for about fifty days and 40,000 barrels per day was going into storage and they did not think it looked like good business for them to put gathering systems in Monument to gather oil they did not need. The matter was taken up with the Atlantic Pipe Line Company by Dr. Wells, I had no contact with them. The Humble lines are at about capacity.

MR. VESELY:

The present allocation is all that there is a market demand for out of the Monument pool?

MR. STALEY:

Yes Sir.

MR. VESELY:

No more market than what we are allocating now?

MR. STALEY:

True.

JUDGE SETH:

Did I understand you to say the Gulf could take more. If the Gulf Pipe Line capacity is larger after they took more without extending the wells connection, the wells to which they are connected would get more?

MR. STALEY:

Unequal withdrawal.

MR. VESELY:

That condition existed for a period of two weeks. The Gulf ran 86 or 90 top allowable and the rest of the wells there ran 20% less. That is what brought this emergency about where the Commission declared an emergency and changed the proration order No. 1?

MR. STALEY:

Yes.

MR. VESELY:

Have any of the producers in Monument Pool any suggestion at this time, any question of Mr. Staley?

MR. CRISTE:

Our officials are working trying to get another connection, trying to get the Texas and Gulf to take more oil. So far have had no success. Another thing Another thing brought up at this time, the inequity, unbalanced condition existing at the present time because of the fact that the Texas Company cut their takiggs. Don't know how long that period was, I believe just two ~~wekk~~ weeks.

MR. STALEY:

A little longer, they ran short before they notified the Commission, I believe six weeks altogether. Shortage around 60,000 barrels that will be made up. They will be allowed to make it up at such time another pipe line is secured.

MR. CRISTE:

Other companies outside of the Gulf? We were wondering if that could not be done at the present time. There are two ways. One, increase the takings of the Texas Company a small amount, spread over a long period. Another, cut the Gulf, that would be on the basis of the other companies until they make up that overage, that probably would be the best solution. Would bring the takings all into balance quicker than any other way. Don't know how the other companies feel about it. Seems to me if can balance equal at the present time is better than waiting. Any influence to get another pipe line? I would like to hear some of the other companies view point on that.

MR. STALEY:

The Proration Sheet is an order to the pipe lines. The pipelines are not supposed to run anything except what is on that sheet. To chahge that each days run would have to have a letter so that the pipe lines would corresponds to the Proration sheet or be changed by order of the Commission or representative. It would complicate things to a great entent to try to balance that shortage in that way.

MR. HARDISON:

When you make it up you will have to do it.

MR. STALEY:

The way we are handling it now, the pipe line are given a blanket letter by us covering all the shortages and they make it up over a period of time, we designate the time.

MR. HARDISON:

A great deal of the economical conditions change, the price of oil, etc. Let that go a year or two and it still might make an unablanced condition. The quicker adjusted the better for all concerned.

MR. STALEY:

I talked to Mr. Crites of the Shell and he stated it was purely his personal opinion that they would probably go into Monument before the year with gathering systems. They want to go in there on account of their own production. That was his personal opinion and not the opinion of the Company. I don't know if he wanted me to put it out.

HUBBARD:

As a matter of equity, it should be balanced out.

MR. HARDISON:

If this condition exists six months from now, it will cost more to lift the oil. When it was necessary for this inequity to exist, it should ge corrected as soon as possible.

MR. STALEY:

I think that is a question if they want to do it. It isn't a question to be settled here. I think the Commission will O.K. anything the pipelines and operators can agree on in making up the shortage. At the time this shortage commenced, the Commission agreed this shortage should be made up, and if the operators will get the pipelines to agree to some procedure, where the pipelines will run capacity, you will have to juggle the proration sheet.

MR. HARDISON:

All you would have to do is cut the Gulf down on their takings.

MR. STALEY:

You have to allocate more oil to take care of the shortages. You are allocating oil not being run.

MR. HARDISON:

They cut it a certain percent, why cannot they add it. You have 60,000 barrels for a certain number of operators to make up, decide on the number of days and issue a sheet to take care of it to that effect. Cannot see it unbalances anything.

You have to take only those wells into consideration on production during that period.

MR. STALEY:

The thing is this, do you mean to say make out the proration sheet, cutting the Gulf back?

MR. HARDISON:

They have over run it.

MR. WILLIAMS:

It would be practicable to make the sheet in the usual manner, and say a lease produces 3000 barrels during the month, state due to the fact 250 barrels in excess during the period of unablanced condition. 250 barrels less than that prorated on the schedule.

MR. VESELY:

The Gulf did not exceed their allocation. They just produced what they were allocated. They had a market and the rest did not have a market until the condition was corrected. They did not violate any allocation or anything.

MR. WILLIAMS:

They took the oil under regular schedule. One and the same thing when you allow this to the filed to make it up.

MR. HARDISON:

Cut the field 1000 barrels per day and that would be cut from the Gulf. Figure that schedule and and the Texas connection and they will have more oil.

MR. VESELY:

I know what you mean. What do you think Judge Seth.

JUDGE SETH:

I don't know.

MR. KRAUS:

I am talking for the Gulf. I think their position should be considered. If they run their business, they have a certain

demand for oil and they are figuring on Monument for it and if you cut them down, that spoils their picture, you cannot make that without consulting the Gulf.

MR. WAHLSTROM:

Could the Texas Company be prevailed on making up this shortage?

MR. VESELY:

If the Texas Company could find a market for additional number of barrels of oil, that would solve the problem.

MR. STALEY:

The reason this shortage occured in Monument and not in other fields where the Texas Company is gathering oil is due to the fact of the low pressure system in the Monument area and where this gathering line runs into the main line is an elbow and it was impossible under the present set up to get more oil through that line than at the present time. The allocation to Monument became so large and due to the fact that the Texas Company are gathering from all connections other than the Gulf in the Monument field through the period, running most of the oil was on that company.

MR. WAHLSTROM:

The Texas Company might have a market demand, just a physical condition?

MR. STALEY:

Yes, just physical and as soon as conditions justify the expenditure a higher pressure system will be put in.

MR. VESELY:

The only thing I can see myself if it were possible that the Texas or any other pipeline could find a market for this shortage of 60,000 barrels, roughly, these wells that have been producing at that time when this shortage occured will receive the benefit of this additional outlet of Monument

Pool. I imagine that would be the fairest way to adjust that. As soon as the Commission will find an outlet for it, these wells that are cut will receive the benefit and then all of them will be put on an equal footing again.

MR. WILLIAMS:

I think that was stated at the first. Believe at the meeting in Dallas on July 28th, at which meeting nominations were taken up, called for that purpose. I attended that meeting and I recall that they would have to reduce their takings to 10,000 barrels.

MR. SLAVIK:

Cutting the allowable of all those wells now will not help the allowable still will be 12,000 barrels. Looks to me the other operators lose to make up this shortage.

MR. VESELY:

The rest of them would get what they lost. That is what is intended. If there is any advise or suggestions you wish to make to the Commission on this particular question, we will be only too thankful to you. The main thing is to find an outlet for Monument. Not only for Monument, but we will need additional outlets for the whole of Lea County. Wells are coming in every day, the allocation is increasing and the production is increasing. All we need is more or bigger pipelines

MR. VESELY:

Nothing else? We have covered everything we were called here for. Thank you very much for your attendance and assistance. The meeting is adjourned.