BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1755

TRANSCRIPT OF HEARING

SEPTEMBER 16, 1959

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Santa Fe, New Mexico
September 16, 1959

IN THE MATTER OF:	
Application of El Paso Natural Gas Company for an amendment of Rule 112-A of the Commission Rules and Regulations. Applicant, in the above-styled cause, seeks an amendment of Rule 112-A of the Commission Rules and Regulations to provide for administrative approval of dual completions utilizing retrievable-type packers.	Case 1755

BEFORE:

Honorable John Burroughs
Mr. A. L. Porter
Mr. Murray Morgan

TRANSCRIPT OF HEARING

MR. PORTER: The hearing will come to order, please. The Commission will consider at this time Case 1755, and I would like to call for some appearances.

MR. SETH: If the Commission please, Mr. Garrett Whitworth, El Paso Natural Gas Company, El Paso, and Oliver Seth for the Applicant.

MR. N. R. REESE: Mr. N. R. Reese, MWL Tool and Supply Company.

MR. COOPER: John Cooper, Haliburton Cementing.

MR. PORTER: John Cooper, Haliburton.

MR. VERITY: George L. Verity for Southern Union.

MR. WHITE: L. C. White of Gilbert, White and Gilbert

on behalf of Texas Company, Incorporated.

MR. BUSHNELL: H. D. Bushnell in association with Jason Kellahin, appearing for Amerada Petroleum Corporation.

MR. SPERLING: J. E. Sperling appearing for Magnolia Petroleum.

MR. LOAR: William R. Loar for Sunray Mid-Continent Oil Company.

MR. KASTLER: Bill Kastler from Roswell, New Mexico appearing on behalf of Gulf Oil Corporation, for the purposes of making a statement only.

MR. PAYNE: Mr. Commissioner, the Staff may present testimony in this case.

MR. WHITWORTH: El Paso has three witnesses to present in this case to be sworn, Mr. John Mason, Mr. Ed Coel and Mr. John Muse.

(Witnesses sworn.)

MR. WHITWORTH: At the outset El Paso would like to make the following opening statement. The purpose of this application is to leave to the discretion of the operator of the multiple completions in the State of New Mexico the matter of determining what type of production packer should be used, and to allow for the administrative approval of these multiple completions when the operator has exercised that discretion by certifying that the production packer selected, whether permanent or retrievable,

is sufficient to effectively separate the producing zones.

In the application El Paso has suggested the wording of amendments to Rule 112-A, II (d) and Rule 112-A, V (d) in order to effectuate this purpose.

After considerable reflection, El Paso has decided that the suggestion for the adding to these rules a certification that the production packer used will satisfy the requirements of applicable rules as set out in Paragraph 4 of the application should read in the manner that has been distributed to the Commission and Staff this morning rather than as set out in Paragraph 4 of the application.

At this time we request that the Commission accept what has been submitted this morning to the Commission, the way Paragraph 4 should read, be accepted as amendments to the application.

MR. PORTER: Is there objection to this amendment as offered by counsel for El Paso?

MR. WHITE: Could we find out what the amendment is?

MR. PORTER: I thought it had been circulated, Mr. White.

MR. WHITWORTH: We will defer a request for ruling on this until the first witness has testified, because he will read the suggested amendments to the application.

MR. PORTER: All right, Mr. Whitworth, you may proceed with your first witness.

JOHN MASON

called as a witness, having been previously duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WHITWORTH:

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

A John Mason, employed by the El Paso Natural Gas Company as a proration engineer.

Q Have you previously testified before this Commission as a proration engineer and an expert witness?

A Yes, sir, I have.

MR. WHITWORTH: We ask that the witness' qualifications be accepted.

MR. PORTER: They are accepted.

Q Mr. Mason, you are familiar with El Paso's application in this case, are you not?

A Yes, sir, I am.

Q You are familiar with the suggested amendments to the application?

A Yes, sir.

Q Would you read to the Commission the suggested amendments, please?

A In the application, in Paragraph III of the application

we have proposed to revise Rule 112-A, II (d) in this manner: "The packer used to segregate the separate producing zones of the multiple completion shall be effective to prevent communication between all producing zones and may be either a permanent or a retrievable type production packer which shall be certified as adequate by the manufacturer or representative thereof as provided in Subsection V (d) of this rule."

Now, on the revised edition of this rule, which you have on a separate sheet, we are proposed to change the next to the last line of that paragraph to strike the words "manufacturer or representative thereof" and insert in its place "the operator", so that the operator will be the one certifying them rather than the manufacturer's representative.

We have a similar change in Paragraph IV of the application. In Paragraph IV we wish to strike the word "manufacturer or authorized representative thereof", and in its place insert the word "operator".

Q Would you state to the Commission the reasons for submitting these amendments?

A There are several reasons, the first one being that the operator or the manufacturer does not always have a representative at the well when the packer is being set. Also, at times they may sell these packers to an operator in groups of anywhere from two to any number to be used by the operator, as the

conditions warrant. Therefore the manufacturer has neither control nor knowledge of how these packers are being used. We originally inserted the words "manufacturer" because we felt that the Commission might place more reliance on the certification issued from the manufacturer, that the packer has been used under conditions for which it was designed. But after being advised by the manufacturers as to the reasons that I have just stated that they could not certify to this, or would choose not to, it has occurred to us that the operator should have been more properly designated as the one to accept this responsibility at the beginning, because it is against the operator that the Commission will have, more easily and readily have recourse in the event of false swearing or violation of the provisions of the rule.

Q You stated that you are familiar with El Paso's application. Would you state to the Commission El Paso's purpose in making this application?

A By this application we seek an order amending Rule 112-A, Section II, Subsection (d) and Section V, Subsection (d), which Rule 112-A is concerned with multiple completion wells. Section II deals with the requirements which must be satisfied in order to gain administrative approval before dual completion. Section V deals with all dual completions. As presently written the rule requires that in order to attain approval through administrative procedures to dually complete a well, that it is necessary for the

operator to use a permanent-type packer. This permanent-type packer the Commission has defined in Memo 10-59 dated I believe May 26 of '59 as being non-retrievable, permanently set, preferably of drillable materials which may be run on an electric line and/or tubing, drillpipe and so forth.

Our purpose is to amend this application, is to amend the rule so that an operator may gain administrative approval to use either a permanent or retrievable-type packer and at the same time to provide a safeguard to the Commission which will assure them that an operator is using prudence and good faith in selecting a packer which will effectively protect commingling of fluids from the separate strata.

It is the position of El Paso that an operator should be able to exercise its own discretion as a prudent operator in selecting its completion equipment so long as we effectuate the broad objectives of the Commission in preventing waste and protecting correlative rights in the case of dually completed wells, so long as we prevent commingling of fluids from the separate strata.

We feel the Commission has adequate means of determining whether or not in the case of dual completions, whether or not there is effective separating, and further that the Commission has means of compelling remedial action in case there is communication between those zones.

Q You mentioned a certification to be made by the

operator. Do you have a suggested form for that certification?

A Yes, sir, I do.

MR. WHITWORTH: We will mark that as El Paso's Exhibit No. 1.

(Whereupon the above referred to document was marked El Paso's Exhibit No. 1, for identification.)

MR. PORTER: At this time I would like to ask if anyone has any objection or is there any discussion of the Applicant's proposed amendment to the application? Let the record show that the application has been amended by counsel for the Applicant. You may proceed, Mr. Whitworth.

Q Mr. Mason, is there anything you would like to add to your testimony?

A We do have this proposed form to be used as a packer setting affidavit which the Commission already requires the affidavit in Subsection (d) of Section V of Rule 112-A. This is a form that is in use in other states, and we feel it would be adequate to satisfy the desires of the Commission. This affidavit in the first part gives merely a description of the person making the affidavit, who he is employed by, the type of packer that is being used in the well, and the well in which it is being used. Then the affidavit on the part of the operator is concluded by saying: "that the purpose of setting this packer was to effect a seal in the annular space between the two strings of pipe where the packer

was set so as to prevent the commingling in the bore of this well, of fluids produced from a stratum below the packer with fluids produced from a stratum above the packer; that this packer was properly set and that it did, when set, effectively and absolutely seal off the annular space between the two strings of pipe where it was set in such manner as that it prevented any movement of fluids across the packer."

This is merely a proposed form which we consider to embody the provisions that should satisfy the Commission, and if there are any revisions or any other form that the Commission might choose, then we will probably be willing to go along with it. This is merely a suggestion.

MR. WHITWORTH: That concludes all we expect to show by this witness.

A I have one more thing I would like to add. We have a letter from Skelly Oil Company dated September 16, 1959 addressed to El Paso Natural Gas Company in Farmington, New Mexico to the attention of Mr. Lou Galloway. "Gentlemen: This is to advise that as an interested operator in the production of oil and gas in the State of New Mexico, we favor a change in this Rule 112-A, II (d) so as to provide the packer used to segregate the separate producing zones of the dual completion may be a permanent-type packer or retrievable-type production packer which may be approved administratively. Signed George L. Sellinger."

Q Do you have any other concurrences, Mr. Mason?

A We have some, but we anticipate that these concurrences will be made at the conclusion of our testimony.

MR. PORTER: Does anyone have a question of Mr. Mason?

MR. PAYNE: Yes, sir.

CROSS EXAMINATION

BY MR. PAYNE:

Q What is your definition of a production packer?

A That is a packer that is, well, I might add first, Mr. Payne, that we have other witnesses here this morning who are going to testify as to their experience in association with these type packers, and perhaps you could get a more satisfactory explanation from them, but I would be willing to give my explanation of it if you so desire.

Q Let me ask you this, is it the opposite of a testing packer?

A Often times a production packer will be used for, no, a packer that you run in the well will be used for the purposes of testing the well, also, if you are speaking in regards to tests that are required by the Commission, or are you referring to tests that are conducted in the completion of the well?

Q Well, what I'm getting at, I notice that your proposed rule says that you may use either a permanent or retrievable-type production packer.

A That is a packer that is run in the well, and it is

in the well during the time that the well is producing its fluids during the normal life of the well.

MR. PAYNE: Thank you.

MR. PORTER: Anyone else have a question of Mr. Mason? You may be excused.

MR. UTZ: I have a question.

BY MR. UTZ:

Q Is it your intention, Mr. Mason, that packer leakage tests accompany this packer setting affidavit?

A Yes, sir. There are other provisions in Section V, I believe, 112-A, which require packer leakage tests, and there is a separate provision in Section V which is Subsection (d) which we have proposed, for which we have proposed this amendment, and that refers only to the furnishing of a packer setting affidavit, and this is something that we are adding in addition, or to make that more complete.

Q You couldn't very well swear to this until after you had run a packer leakage test?

A That is correct, and I believe the rule provides that it will be submitted with the separation packer leakage tests, the rules as written.

MR. PORTER: Anyone else have a question?

MR. WHITWORTH: I have one.

REDIRECT EXAMINATION

BY MR. WHITWORTH:

Q This suggested form for certification that has been submitted as El Paso's Exhibit No. 1, that was prepared by you, was it not, Mr. Mason?

A Yes, sir. I'll say it was prepared under my direction. It was copied from forms in use in other states in the industry.

MR. WHITWORTH: We ask that be accepted as El Paso's Exhibit No. 1.

MR. PORTER: You want to identify the packer setting affidavit as El Paso's Exhibit No. 1?

MR. WHITWORTH: Yes. The packer setting affidavit.

MR. PORTER: Any objections?

MR. MORGAN: I have no objection to it. I might suggest something to the witness, something about the exhibit.

RECROSS EXAMINATION

BY MR. MORGAN:

Q Do you propose this be signed by an officer of the company or the competent engineer?

A By the engineer who supervised the job for the company.

Q He is committing the responsibility of the company, is he not, when he does that?

A Yes, sir, I think so.

Q It doesn't appear to me that an engineer on the part of the company would be competent to subject the company to the

penalties that would be provided for false affidavit.

A Well, I'm not sure what the rules of the Commission provide for there, whether the recourse would be against the company or the individual. I believe it's, I may be mistaken, but I believe it's for false swearing of the State of New Mexico, you are subject to a conviction of perjury.

Q The recourse would be against, only against the engineer then, not the company, is that right?

A Presumably, yes, sir.

MR. PORTER: Anyone else have a question? The witness may be excused. Call your next witness, Mr. Whitworth.

(Witness excused.)

MR. WHITWORTH: Mr. Ed Coel.

E D W I N J. C O E L

called as a witness, having been previously duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WHITWORTH:

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

A Edwin John Coel, Superintendent Petroleum Engineering, El Paso Natural Gas Company.

Q You have previously qualified as an expert witness before this Commission, have you not?

A Yes, sir, I have.

MR. WHITWORTH: We move that his qualifications be accepted.

MR. PORTER: They are accepted.

Q You are familiar with El Paso's application in this case?

A Yes.

Q In your official capacity you have personal knowledge of the approximate number of multiple completions that El Paso has made in the past in the State of New Mexico?

A Yes, sir, approximately 158.

Q What percentage of these multiple completions would you say have employed retrievable-type packers?

A Approximately 72 percent.

Q What section of the state does El Paso have the majority of its multiple completion wells?

A The vast majority is in the San Juan Basin Area, Northwest Section of the state.

Q You are familiar with the range of temperature in these dual completions, are you not, Mr. Coel?

A Yes, sir. They're two-fold according to depth in that area, first range would be approximately 90 degrees Fahrenheit to about 120 degrees Fahrenheit. The second range would be in the neighborhood of 180 degrees Fahrenheit to 230 degrees Fahrenheit.

Q Are you familiar also with the magnitude of differential

pressure with respect to these multiple completions?

A Yes, sir, they're likewise two-fold. Differential pressures occurring in one type of completion would range from five hundred to a thousand pounds per square inch, and in second type from one thousand to three thousand pounds per square inch.

Q Is it your opinion that retrievable-type production packers operating under the conditions that have been encountered and that are likely to be encountered in the State of New Mexico are just as effective to separate the producing zones as the permanent type production packer?

A Yes, sir.

Q On what do you base that opinion?

A On the use that we have had of them and the small number of failures that we could actually blame on the packer.

Q On the experience that El Paso has had in multiple completion wells?

A Yes, sir.

Q In these multiple completions has El Paso used various types and models of retrievable-type packers?

A Yes. Approximately three types, different types.

Q Do you have knowledge of the method by which these production packers are set?

A Yes, sir.

Q Would you explain that method to the Commission?

A It's getting a little technical there, but a general idea that all packer companies give out or make their recommendations as to the actual mechanical procedure in which retrievable packers should be set, some retention-type packers in which you may use a, employ a J tool to set the packer in place and then employ a pull with your tubing string to actually effect the set of the packer or a seat down type which would go the opposite direction, you would actually set the weight of the tubing string on the packer to hold it in place. That is just general.

Q In other words, these packers are set in accordance with recommended practices?

A They generally are.

Q By the manufacturer? A Yes, sir.

Q Is the packer setting made under the supervision of El Paso personnel?

A Yes, it is.

Q To your knowledge, what particular personnel supervise?

A Our petroleum engineers supervise each and every job of this type.

Q Is it your opinion that the Commission could formulate rules and regulations making companies responsible for the proper setting and use of retrievable-type production packers?

A Yes, sir. I think the Commission could definitely depend on us to adhere to the type rules they put out for that.

Q Would El Paso particularly be willing and able to make the certifications suggested?

A Yes, sir, we would, and I might add that we definitely would want to have the packer leakage test run prior to making the certification.

Q Do you feel that these suggested amendments to the rules that El Paso has made should be adopted?

A Yes, sir, I do.

Q Why?

A Mainly that we could and have in the past scheduled as many as one hundred dual completion wells in a year's time. If we were to elect to use retrievable-type packers in all one hundred of them, under the present rules we would have to have one hundred hearings.

Q Now, El Paso has made packer leakage tests with respect to all of these multiple completions that you have mentioned?

A Yes, sir.

Q What, in general, have these tests reflected with regard to satisfactory or unsatisfactory performance of the retrievable-type production packer?

A They have reflected a very satisfactory performance of retrievable-type production packer.

Q Do you have a recommendation to make to the Commission with regard to frequency of testing periods for packer leakage

tests?

A At the present time the general rule is to run a packer or perform a packer leakage test once every calendar year. I think from the experience that we have had that that seems to be satisfactory.

Q Have any of these retrievable-type production packers ever been removed from a well?

A Yes, sir, they have.

Q Why have they been removed?

A Well, there have been several reasons. In many instances we have found that the point in the well in which they were set there had occurred casing damage which was definitely not attributable to the packer. In other words, it was there prior to the actual setting point, and in some cases auxiliary equipment has failed, to cause us to pull the packer in order to replace the auxiliary piece.

Q Has El Paso had any difficulty in removing one of the retrievable production packers?

A No, sir.

Q In the event that you could not pull one of the packers, what would you do?

A Well, it would incur a fishing job to get the tubing out of the hole, and if not successfully remove the packer to actually mill it out to get it out of our way.

Q To your knowledge has it ever been necessary to mill one out?

A Not for us, no.

Q If the relief requested by El Paso in its application here is not obtained, what effect would you say that would have with respect to El Paso Natural Gas Company?

A I think the effect would be the same as I stated a minute ago, that if we were to elect to run retrievable packers, that we would actually have to come to that many hearings according to the number of retrievable packers we would run.

Q How many hearings would you estimate that would take?

A Approximately one hundred if we ran that many.

Q What would you say are the chief advantages, if any, of retrievable-type production packers over a permanent type from the company's standpoint?

A The chief advantages are these: First, the initial cost is usually lower. Second, they are retrievable, therefore allowing you to have a full bore available for workover of a well, and third, being retrievable they are also salvageable. In other words, you can run the packer back in the same well or put it in another well.

Q Do you consider that should this application to amend the rules be granted, that that would have the effect of preventing waste?

A Yes, sir.

Q Do you think it would violate or prejudice correlative rights?

A No, sir.

Q Do you have anything else that you would like to add to your testimony?

A Yes, sir, just generally I do. First off, we are neither for nor against any type of packer, but we do feel that the operator should be allowed to choose and use equipment that has been engineered, designed and priced for whatever condition he happens to find. Our packer leakage tests will definitely have shown that any poor choice in this will be pinpointed immediately, and they do require that we would take remedial action immediately, and which we do.

MR. WHITWORTH: That's all the questions we have.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Coel, you stated that the cost would be less for the installation of retrievable packers. Could you tell us approximately how much you would save?

A Yes, sir, if I could refer to notes for a second. Using one type of permanent production packer set on a wire line, the price, the actual setting price all around to us would be about $1238.00. A retrievable-type packer set in the same place

would cost us approximately $400.00, as much as $800.00 can be saved in that particular instance.

Q Are these particular packers to which you refer manufactured by the same people, just different types of packers by the same manufacturers?

A No, these two. However, going on the same basis, using the same manufacturer of the first type would be around the same price, $1238.00. The second type, the retrievable would be approximately $578.00 in their case.

Q Anyway, it would still be less than half for the retrievable packer?

A Yes, sir.

Q You also testified that El Paso had completed approximately a hundred, I believe you said an exact figure of 158 duals at this time employing three types of packers?

A Three types of retrievable packers.

Q Three types of retrievable packers. Have you also employed some permanent type packers?

A Yes, sir, we definitely have.

Q In these 158 installations have you experienced any packer failures?

A No, sir. We haven't as such. We have had failures, yes, sir, but we have yet to actually blame those failures on a packer at any time. We feel there were other circumstances which

showed probable failure other than packer.

Q Are you in a position to state whether or not your company has had more or less difficulty with the retrievable-type packer as compared to the permanent or non-retrievable?

A Percentagewise they are almost the same, sir.

MR. PORTER: Does anyone have a question of Mr. Coel? Governor.

BY GOVERNOR BURROUGHS:

Q Does the price differential that you have quoted mean that that is the price in purchase of the packer itself or is that of the packers in place?

A That is of the purchase of it, and the equipment needed to set it.

Q Would there be a difference in the cost of the actual setting operation?

A Yes, sir.

Q In favor of which?

A Still in favor of retrievable, sir.

GOVERNOR BURROUGHS: That's all.

BY MR. MORGAN:

Q The failures that you referred to awhile ago, you didn't name them, but were some of them in the matter of setting?

A No.

Q You said you didn't feel it was the time?

A Something was in the setting, human error where a mistake was.

Q Manufacturer has nothing to do with the setting of the packer?

A No, sir, we often times employ the manufacturer to come out there and aid us with this. However, once the packer is put into our hands, it is actually considered our piece of equipment and whatever we do with it depends on how we use it, sir.

MR. MORGAN: That's all.

BY MR. PAYNE:

Q I believe you testified that most of your duals are in Northwestern New Mexico?

A Yes, sir.

Q You gave the temperature ranges in the Northwest?

A Yes, sir.

Q Do you know what the ranges are in the Southeast?

A Not exactly. But I'm given to the opinion that they are less than the extremes found in the Northwest.

Q Now, the extreme in the Northwest is 230 degrees, is that right?

A Just about.

Q Are you familiar with the Otis Engineering Corporations Model 12 JO hook wall packer?

A No, sir, I am not.

Q I might add that that packer is not recommended for maximum temperature in excess of 200 degrees.

A If I might add something, there will be many packers on the market that are not recommended for what may be considered extremes or normals either one, the course is up to the manufacturer to recommend what he feels that the operator can best use, and for the operator to definitely take what he knows to be the best.

Q Yet under your proposed rule, wouldn't you be allowed to use any permanent-type or retrievable-type production packer?

A Yes, sir.

Q Are you familiar with the Wilson L. V. hook wall production packer?

A No, sir.

Q How about the Lane Wells Company BOC hook wall valve-type packer?

A I have employed those.

Q Have you found them satisfactory?

A Yes, sir. They were not employed in dual completion wells the best of my knowledge, but they were employed as production packers.

Q Have you ever employed a Gúiberson tension set hook wall retrievable packer?

A Yes, sir.

Q In a dual completion? A Yes, sir.

Q Have you found them satisfactory?

A Yes, sir.

Q Now you gave the advantages of a retrievable packer. What are the disadvantages, or does it have any?

A I would say that in the case where we have employed them they have no disadvantages as such. In other words, in relation to another type of packer.

MR. PAYNE: That's all I have.

MR. PORTER: Mr. Nutter.

BY MR. NUTTER:

Q Mr. Coel, you stated that a permanent-type packer would cost you $1238.00 installed, and that a retrievable packer would be something like $540.00?

A Seventy I believe it was.

Q It wasn't too long ago that we had a witness from El Paso testify that permanent-type packer could be run in a hole for approximately $640.00.

A That is true.

Q Where does your cost come from?

A This is true in the one case I stated, I believe I qualified that as a permanent-type set on a wire line.

Q In other words, you picked the most expensive means to give us an example?

A Yes, sir, I did, in that case I did. It is possible to set a permanent-type packer on tubing or drillpipe where the cost of the packer would be only slightly higher than the retrievable, but auxiliary equipment required for it would run the price up to about $837.00.

Q Instead of the $640.00 that was testified to not long ago?

A Yes, sir.

Q You stated also that you have used some permanent-type packers. If they cost more, why did you use them?

A Retrievable-type packers have not always been available in the ranges that we wish to employ them, and we have in those cases employed what we thought was the best piece of equipment at the time.

Q There are some instances when the permanent packer might be more satisfactory or more desirable than the retrievable-type packer?

A Well, there have been. I won't say that there will be. There have been some instances. As I say, the retrievable packers are relatively new, we have been doing this type of work for many years. I am sorry, go ahead.

Q What are the principal zones of dual completions in the San Juan Basin?

A Well, principally I was speaking of the two zones, the

Pictured Cliffs and the Mesaverde as a combination, and also of the Dakota and Mesaverde as a second combination.

Q Is there any general correlation as far as El Paso's practices are concerned in using either one of these two types of packers for either one of the two types of zones?

A I am afraid I don't understand you.

Q It's my understanding, correct me if I'm wrong, that perhaps one combination of horizons might be more suitable for the use of one type of packer, and another combination of horizons might be suitable for a different type of packer. Is there any correlation?

A Not because of the horizons. It may be because of individual well conditions.

Q Well, then, individual well conditions do enter this too?

A Yes, very definitely do. It's best to pick what's going to make the safest and best completion for you at the time.

Q What well conditions could exist that would affect your decision?

A Oh, maybe an extremely large volume well that had a tendency to be very hard to hold and kill with mud might cause you to run in there with a wire line, a hole with a wire line, a permanent-type packer in order to set it and use it as a plug while you prepared your final completion. And consequently you also used this production packer later. That would be a condition.

Q Is there any general correlation between pressure differential and the selection of the type of packer?

A I don't think it is necessary. I think the packers are available for all types of conditions, sir.

Q This first combination that you mentioned, Pictured Cliffs and Mesaverde --

A Yes, sir.

Q Do you commonly select a retrievable-type packer for that type of dual completion?

A Commonly we do, yes, sir.

Q How about Gallup and Dakota?

A We have, yes, sir.

Q Have you selected permanent-type packers?

A Also.

Q Percentagewise now, do you use permanent-type packers more frequently in Gallup-Dakota than you do in Pictured Cliffs-Mesaverde?

A Well, percentagewise, yes, sir. There's also another thing to be added to that, to your question a minute ago as to the use of the permanent-type packers, since we were corrected in our misconception of what constituted a permanent-type packer, we have used definitely only permanent-type packers since the May order that you all put out, sir.

Q Another question, Mr. Coel, do the New Mexico Oil

Conservation Commission rules presently prohibit the use of a retrievable-type packer?

A No, sir.

MR. NUTTER: Thank you.

MR. PORTER: Anyone else have a question? Mr. Utz.

BY MR. UTZ:

Q Mr. Coel, I'm still a little confused on the cost of the packers. Let's attack it from a little different angle. Could you give me the range of cost of a permanent-type packer?

A Let me see here, Mr. Utz, if I can. Yes, sir, a range of approximately $767.00 to approximately $1238.00.

Q Does that include the tools for setting, and actual setting in the well bore?

A Yes, sir.

Q How about your retrievable-type packer?

A From $400.00 to approximately $578.00.

Q Does that include being set in the well bore?

A Yes, sir. In neither case does that include the rig time required.

Q I see. When you use a retrievable-type packer, do you use this packer for testing purposes also to run DSDS, fracting or any of your other operations?

A They have been used for acidizing, fracting, I don't recall using one of them exactly for drillstem testing though.

In other words, drillstem tests, referring to drillstem tests as being run in openhole, these are primarily packers for casing.

Q Yes, sir. You did use this same retrievable-type packer in your fracting operation?

A It has been and can be used that way, yes, sir. It's not a common practice, but it has been done.

Q Is there any danger of damaging your retrievable-type packer when you use it for fracting?

A I would think that if you put extreme loads upon that retrievable-type packer it certainly should be checked and perhaps redressed before employed as a production packer. However, in some cases it could be left right in place if it's found in the hole satisfactory.

Q How many times can you retrieve and reset a retrievable-type packer without being damaged?

A I don't know. It has been done as many as two and three times, but I don't know how many other times it could be.

Q When you retrieve a retrievable-type packer, do you usually dress it or repair it in any way before it is reset?

A Yes, sir, I believe it's common practice to definitely check it and if it requires dressing and so forth, it's usually done immediately.

Q It can be done then? A Yes, sir.

Q I believe you mentioned a combination of Mesaverde and

Pictured Cliffs and Dakota and Mesaverde, did you have occasion to have a combination of Dakota and Pictured Cliffs?

A We haven't as of yet. It's always possible though.

Q What would be, well, I might say that I'm thinking primarily of the West Kutz Area at this time, where you have as far as I know only Pictured Cliffs and Dakota. What would be the bottomhole pressures in both of those zones in that particular area, would you say?

A Someone will have to correct me if I'm wrong, but I'm under the impression that the Dakota is approximately 2300 pounds bottomhole pressure maximum in that area and Pictured Cliffs four to five hundred pounds, probably.

Q Your retrievable-type would operate satisfactorily?

A There are some on the market that we feel definitely would.

Q Not all of them?

A No, sir, not everything for sure. I don't know about that because there are some of them I'm not familiar with.

Q Do you not think under those conditions it might be advisable to specify the type packers that should be used under those particular conditions?

A No, sir, I think the operator should be certainly capable of selecting the proper piece of equipment. If he doesn't, the packer leakage test is going to show him to be wrong.

Q You think he would select the proper ones under these conditions?

A I think so. He certainly should.

Q You are speaking for El Paso only?

A Speaking for us, I think we would, yes, sir.

MR. UTZ: That's all I have.

MR. PORTER: Anyone else have a question? Mr. Whitworth.

REDIRECT EXAMINATION

BY MR. WHITWORTH:

Q There are some permanent-type production packers thatwill not satisfy every conceivable condition, is that correct?

A I understand that is true.

Q Yet under the rules that are presently in effect, the operator has the right to select what type of permanent packer to put in a well and gain approval by administrative hearing?

A That is true.

Q Or administrative approval, rather.

A Yes, sir.

Q Actually the rules do not prohibit the use of a retrievable-type packer, but what is required before a retrievable-type packer may be utilized in a multiple completion?

A Well, first off we have, it has to pass a packer leakage test, it has to have all the other forms sworn to requested

by the Commission and then brought before the Commission for hearing and approval.

Q Would you say that an operator exercising his discretion in a multiple completion could easily find a retrievable-type packer that would satisfy all conditions likely to be encountered in the State of New Mexico?

A Yes, sir, I would say that's true.

MR. WHITWORTH: That's all I have.

MR. PORTER: Any further questions? Mr. Payne.

RECROSS EXAMINATION

BY MR. PAYNE:

Q What type permanent packer is not satisfactory to effectively separate the two zones?

A I don't know the names. I have heard this, as I said, by hearsay, that there are some that are made in such a way that they are made for very light duty work.

MR. PORTER: Anyone else have a question? The witness may be excused. (Witness excused.)

MR. WHITWORTH: Our next witness is Mr. John Muse.

J O H N F. M U S E

called as a witness, having been previously duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WHITWORTH:

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

A John Francis Muse with Baker Oil Tools. I'm the Chief Production Engineer.

Q Would you state to the Commission your scholastic qualifications and experience as an engineer?

A I attended the University of Arizona at Tuscon and graduated with a Bachelor of Science degree in metallurgical engineering. I was employed by the then Texas Company in Cutback, Montana as an engineering trainee, and as a junior petroleum engineer, and I went with Baker Oil Tools in 1951, being employed by that company in the Service Department for one year, then in the Engineering Department as a design engineer, project engineer, and then as chief production engineer, and in my present capacity for approximately a year and a half.

MR. WHITWORTH: We ask that the witness' qualifications be accepted.

MR. PORTER: The witness' qualifications are accepted.

Q In your testimony here today, Mr. Muse, are you speaking for other production packer manufacturers other than Baker?

A Yes, sir.

Q In a general nature?

A Yes, that's correct.

Q What particular production packer manufacturer?

A Well, I believe that I'm speaking in concurrence with Guiberson, Haliburton and Brown.

Q You have been selected to present your views with respect to retrievable-type production packers in order to facilitate the testimony in this case?

A Yes.

Q Rather than have all the other witnesses?

MR. WHITWORTH: I wish to state to the Commission that the other witnesses are available should the Commission wish to call them.

MR. PORTER: From other manufacturers?

MR. WHITWORTH: Yes, sir.

Q In your capacity with your company you have had occasion to become acquainted with the purpose and operation of a retrievable-type production packer?

A Yes, I have.

Q Are you familiar with the experience that various operators have had with the use of retrievable-type production packers throughout the State of New Mexico?

A In a general way, yes, sir.

Q What would you say are the characteristics of a retrievable-type production packer that differentiate it from a permanent type?

A A retrievable-type production packer has characteristics

which may permit the sealing element and the holding elements or slips to become disengaged from the casing and then the packer may be removed from the well, whereas a permanent packer once set may not be removed from the well, that is the sealing element and holding elements are permanently fixed to the casing.

Q What is the retrievable-type packer designed to accomplish particularly?

A Retrievable-type packer is designed to accomplish zonal segregation or separation, isolation, confining the flow usually to tubing string.

Q Are you familiar with the conditions in the State of New Mexico under which production packers must operate?

A In a general way, yes, sir.

Q Are you familiar with the designing and operation of retrievable-type packers now generally in use in multiple completion wells in the State of New Mexico?

A Yes, I believe I am.

Q Well, now, in your opinion do you know of a major manufacturer of retrievable-type production packers that does not manufacture and sell a retrievable-type packer that should satisfy all the conditions that are likely to be encountered in multiple completion wells in the State of New Mexico?

A I don't know a major manufacturer, no, sir.

Q Do you know of any specific examples where retrievable-

type production packers have been used and been shown to be satisfactory under conditions of temperature and pressure that are more extreme than are likely to be encountered in the State of New Mexico?

A Quite a large number of retrievable packers are currently in use, and to the best of my knowledge performing satisfactorily in conditions quite a bit in excess of those you expect to encounter here.

Q For the magnitude of temperature and pressures that have been encountered in New Mexico, do you have an opinion as to the operation of retrievable-type production packers if properly designed and selected as compared to the permanent type?

A Would you please repeat that?

Q Well, I'll state it this way, considering the magnitude of temperature and pressures that are likely to be encountered in the State of New Mexico, is it your opinion that if properly designed and selected, a retrievable-type production packer should be just as effective to separate producing zones as a permanent type?

A Yes, I do.

Q Generally speaking what are the methods by which a retrievable-type production packer may be removed from a well should it become necessary?

A Well, as I stated before, the sealing and holding

elements of the packer are disengaged from the casing. This is accomplished by either mechanical manipulation of the tubing before pulling the tube, or in some cases hydraulic manipulation, or in some cases the tubing may just be removed from the well, just a string taken and the packer pulled out.

Q In dealing with production packers of both retrievable and permanent-type, how would you compare the demand in the oil and gas industry in general of retrievable-type production packers as compared to permanent type?

A Well, rather than get into quantities, I think I could say this, that if we as manufacturers would tell the industry tomorrow that we're no longer furnishing either one or the other type packers, I think the demand would be just as great either way. That is, I believe there is a need for both and I think I would say the demand is equal.

Q Did you say just about as many retrievable-type packers are used as permanent?

A I wouldn't have an opinion on that. I just don't have any knowledge.

Q Is it your opinion that once an appropriate retrievable-type production packer is properly run and set, if the conditions under which it's properly run and set do not significantly change, should that packer remain set and successfully separate the zones of production?

A Yes. Yes, sir.

Q For how long would you say?

A I would say an indefinite period of time.

Q Well, then, considering that, do you have any kind of recommendation to make to the Commission as to the frequency or necessity for packer leakage tests?

A Well, yes, sir, I do, only this, that pressure, let me say drastically changing conditions across the packer are more severe on the packer than sustained conditions or sustained loading. Therefore, considering the packer by itself, the less the packer leakage test would be run, the better for the packer. The conditions of changing pressures are more severe on any packer, permanent packer or retrievable packer either. Considering the packer by itself, you'd be better off not to test it at all. I know you would want to, but considering the packer, that's right.

Q You are familiar with El Paso's application in this case, are you not, as amended?

A Yes, sir, I am.

Q How does your company and production packer manufacturers of whom you are speaking, how do they feel about this application, do they oppose it or concur?

A No, we concur.

Q Have tests been made to your knowledge on retrievable-

type packers?

A Yes, sir.

Q To determine their effectiveness to separate zones of production?

A Certainly.

Q Could you describe these tests to the Commission?

A Well, of course, ourselves and packer manufacturers thoroughly test our equipment. In a general way you subject the packer to, as near as you can determine, to the maximum conditions that the packer is going to be exposed to. We would set the packer under temperature and then expose the packer to pressure from above and below with reversals over a period of time.

Q Now, with respect to retrievable-type packers, particularly, what have these tests showed?

A Providing that the packer is properly designed for a given set of conditions, retrievable packer performs very satisfactorily.

Q Is there anything else that you would like to add to your testimony, Mr. Muse?

A Well, yes, I had two things I think. One is that I think as Mr. Coel brought out, and it's certainly true, there are tools which we make and other manufacturers make that are being used as permanent packers which would not satisfactorily do the job in the State of New Mexico. There are permanent packers

that will. There are retrievable packers that won't and there are retrievable packers that will. It's my own opinion that it's pretty well up to the operating company even on permanent packers, although this is something that seems pretty straightforward, it's certainly true that he could select a permanent packer that would fail.

The other point I thought worth bringing out is something like H-40 and J-55 and N-80, and certainly N-80 would operate with a higher safety factor than J-55. However, it would be to the detriment of the operating companies and the industry as a whole to require companies to use N-80 where J-55 would adequately do the job. It seems to me personally that it's somewhat analogous on these retrievable packers.

Q When you say N-80 and J-55, to what are you referring?

A Casing. That's all I have.

MR. WHITWORTH: That's all we have from this witness.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Muse, do you have any idea what percentages of the total permanent or non-retrievable-type packers Baker sells?

A Would you please rephrase that?

Q Well, your Baker model D is possibly as well known, maybe the best known permanent-type packer.

A Yes.

Q Would you have any idea what percentage of the total sales this Model D represents?

A Yes, sir, I do. I would rather not disclose that. I could tell you this, if my management I think would just as soon as I didn't, actually from a percentages standpoint -- this is dollar volume?

Q This is compared to all types of non-retrievable packers, not all manufacturers, not your particular company. I didn't make myself clear.

A I see. Well, I'd just take, you mean what percentage of the permanent packer business we have?

Q Yes, sir.

A I would guess, this is a wild guess, I would say ninety percent. That's my own opinion.

Q Would you occupy that same position in retrievable-type packers?

A Not by a long ways, no, sir.

Q I wonder if your company knows that you are down here giving this kind of testimony?

A Well, we make and recommend both types of equipment and we feel that there are definite applications for both, and we sell a lot of retrievable packers too. We wouldn't sell them and recommend them if we didn't feel they do a good job, and our experience backs us up, they are doing a good job.

Q Well, now, do you know conditions where retrievable-type packers would do a better job than the permanent-type packer?

A Yes, sir.

Q As a dual completion separator?

A I sure do.

Q Would you state some of those conditions?

A Well, in Texas and Louisiana, for instance, where they're dually and triplely completing these combined zones to the tubing, you get into situations where you just cannot do the job as far as tubing sizes, flow areas and volumes, you just cannot do the job, you just can't get as many strings of tubing involved with permanent packers as you can with retrievables.

MR. PORTER: Does anyone else have a question of Mr. Muse? You may be excused.

(Witness excused.)

MR. WHITWORTH: That concludes El Paso's testimony.

MR. PORTER: The hearing will recess until one-fifteen.)

(Whereupon a recess was taken until one-fifteen.)

AFTERNOON SESSION

MR. PORTER: The hearing will come to order, please. Does anyone else desire to present testimony in this case at this time?

MR. PAYNE: Mr. Commissioner, I would like to call one witness, Mr. Nutter.

MR. PORTER: Have Mr. Nutter come forward and be sworn, please.

(Witness sworn)

DANIEL S. NUTTER,

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

DIRECT EXAMINATION

BY MR. PAYNE:

Q Will the witness please state his name and position?

A Daniel S. Nutter, Chief Engineer for the Oil Conservation Commission.

Q Mr. Nutter, have you recently had mailed out a questionnaire to the various manufacturers of packers requesting certain information?

A Yes, sir. I'm not sure that we mailed them to all of the manufacturers of packers. However, we did find the names and addresses of eighteen manufacturers, and we sent this questionnaire to those parties.

Q Now, what was the information that you requested?

A The questionnaire requested certain information from the manufacturers of the packers as to the characteristics and features of the packers and their capability to be used in dual completions. The questionnaire has six items on it. No. 1 is the basic model number. No. 2 is the variations of the basic number that the manufacturer might have. No. 3 is the type of packer, whether it is hookwall completion, retrievable, permanent, or what have you. No. 4 is the question, "Is this packer recommended for permanent zone separation in dual completions?" No. 5, the maximum pressure differential for which you would recommend this packer. And the sixth item on the questionnaire is the maximum temperature for which you would recommend this packer.

Q Now, did you also furnish the manufacturer with an instruction sheet as to what sort of information you wanted to get on this?

A Yes, sir. We had a little sheet that was sent along with the questionnaire, as well as the cover letter and the instruction sheet for the completion of the packer questionnaire. Took each of these six items, one at a time, and explained exactly the information that was desired for that column.

Q Now, how many companies did you write to?

A We mailed out eighteen questionnaires.

Q And how many replies did you receive?

A We had eleven questionnaires returned.

Q Now, what general types of packers did the manufacturer report on?

A Oh, we have hookwall packers, and tension packers, and compression packers, and shorty packers and permanent packers. Just every kind of a packer you can think of was listed.

Q Have you added these up to determine how many different models were made by these eleven companies?

A Yes, sir. These particular eleven companies listed one hundred twenty-one different packers in their questionnaires.

Q And I assume that new types and models are being developed from time to time?

A Yes, sir. One of the companies, as a matter of fact, with the letter that they returned, their questionnaire brought that point out. "Although this is a complete listing of our packers which would conceivably be used for multiple completions in New Mexico at this time, we are constantly developing new ideas and concepts in packer materials and designs. As each tool is perfected, an addition would be necessary to keep this list current."

Q Is that letter from Halliburton?

A No, this happens to be from Brown Oil Tools.

Q Now, the information you received on this form, did it show that all permanent packers were recommended for zone separation?

A The answers to the questionnaires indicate that each of the permanent packers manufactured by the companies that returned

the questionnaire stated emphatically that this permanent type packer is recommended for zone separation of the dual completion.

Q Now, did they all recommend the retrievable type packer --

A No, sir.

Q -- for zone separation?

A No, sir, they didn't.

Q In fact, some of them said they would not recommend it, is that right?

A Yes. That's an interesting point. Some companies will make what they call a hookwall production type packer, and they'll say this packer is recommended for zone separation. Another company might make a hookwall production type packer, and they'll say, no, this is not recommended for dual completions.

Q Was the pressure differential the same on each of these packers?

A No, there is a variation in -- a similiarly described packer will have a variation in the temperature or pressure differential for which the packer is recommended.

Q How, did you account for that?

A Well, either a difference in the packer itself or difference in the opinion of the man that answered the questionnaire, I would say.

Q Was the maximum temperature the same for the same models?

A No, sir. We had a range of temperatures there from 200 to 400 pounds, I believe it was.

Q And again you would say there was a difference in packer or difference of opinion?

A Yes, sir.

Q Now, Mr. Nutter, what holds a retrievable type packer in place?

A Well, most retrievable type packers are held by tension on the tubing string or by completion, the weight of tubing string sitting on top of the retrievable packer.

Q Only one set of slips?

A As far as I know, retrievable packers just do have one set of slips. Now, there are several slips in the set, but I would say that all the packers that I've had the occasion to inspect in the literature seem to have one set of slips pointing in one direction only.

Q And they have an auxiliary hold down device?

A Some of the packers are used in conjunction with some other type of hold down device to keep the packer from moving in the direction opposite the way the slips are pointed.

Q What holds a permanent type packer in place?

A A permanent type packer is set either by wire line, causing a discharge of an explosive element in the packer, which expands the slips and compresses the sealing rubber against the side of the casing, or it's set hydraulically to cause the slips

to expand and set the sealing rubber against the casing.

Q But it has --

A It has two sets of slips, one pointed up and one pointed down to keep the packer from moving in either direction.

Q Do you feel that gives you better protection in both directions from movement?

A It appears it will, yes.

Q Is a retrievable type packer non-drillable?

A For all practical purposes, retrievable packers are non-drillable. It is my understanding that some of them are so designed that if they fail to retrieve that you can by pulling hard enough, pull the Mandral from the core of the packer itself, leaving a shell there that may be drillable. I think that all packers are probably malleable.

Q Now, isn't there a possibility that if you had to mill it out, you could lose the hole?

A Well, milling a packer is a very expensive operation, and if it was a marginal operation or a marginal well, there is a possibility of abandoning the well rather than going through the expense of milling the packer, yes, sir.

Q Now, in both flowing wells and pumping wells, you do have tubing movement, don't you?

A Yes, sir. In flowing wells you have tubing movement primarily due to expansion and contraction of the tubing as a result of temperature changes during the flow of the wells, and pumping

wells, you would have tubing movement to the reaction of the tubing string and the rod.

Q Do you feel that tubing movement would be more inclined to upset a retrievable type packer than it would as a permanent type packer?

A Yes. I would think whether it would upset it or not, it would constantly put a strain on the packer which might cause it to weaken.

Q Now, if I understand you correctly, you say that a retrievable type packer depends on the tubing weight to hold it in place?

A Yes, sir.

Q Now, as it contracts --

A That, as a compression type retrievable packer, it would depend on the tubing weight, yes.

Q Now, if you have a contraction, would there be less weight to hold the packer in place?

A Yes. It would stand to weight that as the tubing string cooled, it would shorten itself, and as it shortened itself, it would take some of the strain off of the packer itself and put more of the weight of the tubing string on the tubing head.

Q The tubing itself would weigh the same?

A The tubing would weigh the same, yes.

Q Now, do you feel that there is less chance of a packer moving or becoming unsituated due to tubing movement in a permanent

type packer?

A Yes, sir, I think there is less chance for the packer to become unsituated. I also feel the permanent packers have a smooth bore on the inside of them, and the portion of the tubing that goes through the packer is equipped with [illegible],rings,and this tubing can actually slide and move within the permanent -- within the body of the packer itself, if need be.

Q Now, Mr. Nutter, have you any packer literature which refers to the retrievable type packer as the second packer and where the schematics indicate that the permanent type is to be used for zone separation?

A Yes, sir, I have. I would like to call your attention to Baker Oil Tools catalog for 1959 in which they make this statement on Page 491. That the Baker multiple zone retrievable packers are designed primarily to be used as the upper packer of a two-packer installation. Now, the lower packer in a two-packer installation is the one that delivers you separation between the zones. So they said, to go ahead and conclude this, they say it is to be used as the upper packer of a two-packer installation in which the lower packer is a Baker drillable packer. In other words, they have made the statement in their catalog that the retrievable type packer is to be used in conjunction with permanent type packer, but they are depending on the permanent type packer for the separation of the zones. Also, their schematic diagrams reflect this sort of a hook-up all the way through their literature.

Q Mr. Nutter, do you have a reprint from an article that appeared in the Journal of Petroleum Technology in December of 1958, written by Althouse and Fisher with Baker Oil Tools, Incorporated?

A Yes, sir.

Q Would you read certain portions of that and we'll put the entire article in as Commission's Exhibit 1?

A I might mention Mr. Althouse is the manager of engineering and research for Baker, and Mr. Fisher is division mechanical engineer for that company. And in this article they have gone into the selection of multiple completion hook-ups going into tubing strings, all the other phases of the equipment that go into these dual completions. They do have a complete section on the packers themselves in the article. I'm quoting from the article.

> "Regardless of their individual design differences all packers used for multiple completions fall into two basic classes: permanent (drillable) and retrievable. Generally, either type can be used interchangeably or in combination throughout all multiple completion hook-ups regardless of complexity. Each has inherent advantages and disadvantages for each application."

In the permanent, then, that's the general statement under packers, and then they go into the retrievable packers and the permanent packers. In the permanent packer section they say:

> "These packers, sometimes referred to as retainer-type packers, are run into the well and set on electric conductor cable or on tubing. When these packers are set they become for all practical purposes a permanent, though drillable part of the casing. The smooth packer bore, which contains a flapper-type back-pressure valve at its lower end,"--

I might stray from the text of this article now, and mention this flapper valve. There is no means of maintaining separation of the zones in a dual completion when you've pulled the tubing and the packer on the well, when you have a retrievable type packer. However, if you have occasion to pull the tubing and you have a permanent type packer in the well, you pull the tubing, and the flapper valve automatically closes the opening through the packer, and you have separation maintained even while your tubing is out of the well. To get on to the article.

> "The permanent packer is characterized by two complete sets of opposed slips and a packing element that is confined by expanding retaining rings that back up the expanded packing element and improve its high pressure, high temperature performance.
>
> The permanent packer offers two prime advantages from the standpoint of multiple completion applications: (1) the permanence and reliability of its pack-off particularly under high pressure, high temperature conditions, and (2) the flexibility provided by a removable tubing string. A third advantage, its prime disadvantage in some installations, is that it is designed to be removed by drilling out. Under many conditions where an operator might be concerned over the amount of steel in the hole, known drillability might outweigh questionable retrievability. Recent progress in the development of special packer milling tools has greatly improved the drilling-out operation."

Now, we'll offer, too, the advantages and disadvantages of retrievable packers.

> "The prime advantage of the retrievable packer is its retrievability. This is a desirable feature in any completion, particularly so in many multiple completions where access for truly extensive workover can only be provided by complete removal

of the packer. Loss of retrievability, of course, can be a decided disadvantage.

Although it is subject to controversy, field preferences seem to indicate that the permanent packer is capable of providing a better, longer lasting pack-off particularly under exceptionally rigorous conditions of pressure and temperature than retrievable packers. One of the possible reasons for this could be that the permanent packer does not have to make any design concessions to provide for retrievability."

I believe that's all for that article.

Q Let me ask you this, Mr. Nutter. How can communication occur in a dual completion other than by way of the packer?

A Well, there is probably four ways that you can communicate in a dual completion. One would be through the packer or leakage in the packer. You could have communication between the pipe due to a faulty cement job. You could have communication in the tubing, a hole in the tubing, or a leak in the collars, and you could have communication in the wellhead itself or the tubing head, the hanger. Those are the only four conceivable means of communication that I can think of in a well.

Q Now, does the packer leakage test that is required by this Commission indicate whether communication is occurring by any of these means?

A Yes, sir, it would, --

Q Now, how often --

A -- provided the communication is substantial enough to be detected on the packer leakage test.

Q How often do you think these packer leakage tests, or

what we will refer to as a communication test, should be taken.

A I think with a packer that is not subject to the strains and tensions that retrievable packers are subject to, can probably get along with the test of once a year, maybe, But I think any packer that has this retrievability built into it should probably be tested more often, granted you may take the test. You may have a good seal when you install the thing, but these constant strains and tensions that are on the packer may cause that thing to leak, and it should probably be tested more often, perhaps six-month intervals in the case of a retrievable type packer.

Q Now, I notice in the article you read, the main advantage of the retrievable type packer is retrievability. Is that so that you can conduct an extensive major workover?

A I suppose so, yes.

Q Now, isn't it true that most workovers, we'll say the majority of the workovers that are done, can be done through the tubing?

A A large number of the workovers can be done through tubing, yes.

Q Do you have any further comments or any recommendations you would like to make to the Commission in regard to this case?

A Yes, sir. As I stated, we had one hundred twenty-one packers mentioned by eleven returned questionnaires. How many more packers there are in existence, I don't know; probably another hundred and twenty-one, anyway. We've made a conscientious effort to

try to find out what all these various packers are. We obviously haven't been able to find all of them. I have in my hand here an application for a dual completion for an operator in which he has a schematic diagram, that he is going to run a Guiberson C-1 or C-I production packer. Now, I diligently searched the literature of the Guiberson Company, their 1959 and '60 catalog, and I can't find any Guiberson C-1 or C-I packer in this literature. I find that they have a type C-formation packer. I certainly don't think this operator is going to put a formation packer in there, I don't know, but without knowing something about this packer, I don't know whether we should approve this thing administratively.

Q Now, assuming the Commission decided to approve El Paso's application, do you think it would be a good idea to have the operators,at least for a time, send the literature on the proposed packer?

A Well, if we don't have the literature,we are going to have to know something about it. Actually, we have no quarrel whatsoever with retrievable packers; we just feel that under the majority of the conditions the permanent type packer will do the job, and under some of the conditions the retrievable type packer may do the job. Under other conditions, maybe some of the retrievable packers will do the job and some of them wouldn't. Mr. Whitworth, Mr. Mason, Mr. Cole all went into this idea that they felt that the Commission should leave it to the discretion of the operator, the selection of their equipment. Well, I agree one hundred

percent with them. Now, we have never said that a retrievable type packer could not be utilized for a dual completion. We only want to be sure that the place where it is used is suitable for that type of packer. We don't want to interfere with an operator's prerogative of using and employing equipment that will adequately do the job. providing that such selection would not prevent waste and protect correlative rights of any neighboring operator.

Q Is there some way that the operator can furnish us information that you need in connection with the application for administrative approval?

A I think when you come up with a new type of packer that we've never encountered before, and there is probably hundreds of them, that the only way that you can examine the installation, check the equipment, explore the pressures, the temperatures, and such, that you must know about a well in order to know the suitability of that packer for the well. The only way you can do that is to have a hearing, be able to ask the questions and get the evidence.

Q Of course, if it does prove unsatisfactory, that would be discovered by the packer leakage test, wouldn't it?

A Well, you might know that you didn't have an adequate setting the first time you ran the test, or the first test may be good, and then the packer may fail after you completed the test.

Q Do you have anything further you would like to offer?

A I don't believe so.

Q Would you have that designated Exhibit 1, that article?

MR. PAYNE: Mr. Commissioner, we move for the introduction of Exhibit No. 1.

MR. PORTER: Without objection, Commission's Exhibit No. 1 will be admitted into the record.

Anyone have a question of Mr. Nutter?

CROSS EXAMINATION

BY MR. REESE:

Q Mr. Nutter, are you familiar with the Brown BP-4 packer?

A As a matter of fact, I'm not positive that I am. I think I have used that packer myself in the field, Mr. Reese.

Q I believe you stated that these retrievable packers were not -- could not be used for treating and isolation where the tubing was removed? That there would be communication where you retrieved or brought your tubing out?

A Yes, sir, I stated that in the installation where you remove the tubing and the packer, you wouldn't have any separation of the zones when you had the tubing and the packer out of the hole.

Q In connection with this, the catalog, I'll read you this statement and ask you if you are aware of it.

> "For dual gravity packing and other treating techniques to either or both zones in a dually completed well, where a bridge plug is needed for zone isolation, the BP-4 has proved highly satisfactory and very economical after using both a squeeze tool and

bridging plug. This vertical tool can be left in the hole for a parallel completion."

Were you aware of this?

A Yes, sir. I knew that that packer could be left in the hole.

Q And you weren't testifying about that packer, then, when you were talking about packers that could not maintain the separation?

A Well, I stated, Mr. Reese, that when the packer was pulled out of the hole, you wouldn't have anything to separate the zones. Now, I think if this packer were pulled out of the hole, there wouldn't be any separation.

Q When a permanent packer is pulled out, is it separated?

A There is no separate --

Q When you pull a packer out, there is nothing to separate?

A That's right.

Q So that really wouldn't be an objectionable feature to the retrievables?

A Well, does the Brown BP-4 have a flapper valve on it?

Q No, it has a tubing plug.

A Of course, a tubing plug can be run in a permanent type packer too, but in the interim, from the time you pull your plug out until you run your plug in, the flapper valve is closed.

Q Mr. Nutter, are you aware of whether or not any of

these flapper valves are removed before the permanent plug?

A Yes, sir. I understand that sometimes operators do pull that flapper off of there.

Q Now, I believe you also stated that there was on these retrievable packers only a single set of slips that engaged the wall of the casing?

A The ones that I have recently inspected had one set of slips.

Q I call your attention in the Brown catalog to the Brown SOS J-7 packer, and ask you if that does not have two sets of slips?

A Yes, sir, I would say that it appears that this packer has two sets of slips that are operated by hydraulic pressure.

Q Thank you.

MR. PAYNE: What was that packer again, Mr. Reese?

MR. REESE: Brown. Brown SOS J-7.

Q (By Mr. Reese) It'll also ask you, Mr. Nutter, if you are able to say, that the Brown SH-16 has two sets off slips?

A No, sir, I don't know how many sets it has.

Q Will you examine this blueprint of the HS-16 and state whether or not it has two sets of slips?

A Yes, sir. It has an upper set pointing down and a lower set pointing up.

Q So that from your engineering viewpoint that packer would be as effective as a permanent type?

A I'll say it has as many slips as a permanent type packer.

Q I believe you also stated that these retrievable packers could not be drilled?

A I said that some of them couldn't. Some of them, the hard center portion, the Mandral in the packer can be pulled out. You might say "pull the guts" out of the packer and then drill the shell out of it.

Q I'll call your attention again to the Brown Tool catalog in discussing the Brown dual packer, wherein the statement is made that the entire packer, except the stem is drillable in cases of extreme emergency.

A Yes, sir, that's the part that I was talking about. The stem can be pulled out, but it says here that the entire packer, except the stem, is drillable. I don't know if the stem can be pulled out in that packer or not; I suppose it can.

Q Are you familiar with the practice in the adjacent states on retrievable packers --

A No.

Q -- as to whether or not they require Commission hearings or not?

A No, I'm not aware of what the rules are in the other states on that.

MR. REESE: I believe that's all.

MR. PORTER: Anyone else have a question of Mr. Nutter?

Mr. Verity?

QUESTIONS BY MR. VERITY:

Q Mr. Nutter, if I understand your testimony, you say that in some situations you think the retrievable type packer would probably leak --

A Yes, sir.

Q -- but you can see that in some situations the retrievable type packer would be all right for zone separation for dual completion?

A Yes, sir.

Q I believe you also stated that you also thought it was not the prerogative of the Commission to determine the mechanics of operating a lease, right?

A I said I didn't think the Commission would want to interfere with the prerogative of the operators.

Q So, doesn't that bring us to this; that it merely becomes a question of what is an adequate test, so that there is no leakage between the two zones?

A An adequate test and to know that there is no leakage, and also the assurance that leakage wouldn't occur after you have taken the test.

Q Well, if the Commission does not desire, and I'm in complete accord with Southern Union that they shouldn't, if they do not desire to supervise completion of wells or dually completed wells, and actually it seems to me from your testimony and other-

wise, that what the Commission really wants to know is that there is not going to be leakage between the two zones?

A That's the whole purpose of having a packer in the well.

Q Then, if we admit here that some retrievable packers are adequate to seal off the two zones, then isn't further conversation and testimony with regard to retrievable packers really beside the point in this hearing?

A The question arises, Mr. Verity, which packer is suitable for which zones, whether you have some retrievable packer--

Q That gets back to supervision, how we are going to complete?

A It gets back to the question, are we going to have permanent separation of the two zones.

Q Well, if we admit, which I thought we did at the start here, that in the proper situation retrievable packers will separate the two zones, then it seems to me that we come right back to the fact that the only thing the Commission is interested in is knowing that a test has been made and adequately often enough that there is not going to be communication of the oil?

A That is correct.

Q Well, then, isn't the only thing to be determined by this hearing, is how often the leakage test needs to be made?

A Maybe the leakage test ought to be made very frequently with some packers in some holes.

Q Well, this is the only question that we really need

to determine here, isn't it?

A If you've got separation of the zones, that's all you need.

Q That's all the Commission needs to know, is that there is separation?

A That is correct.

Q So, actually doesn't the hearing resolve itself into the determination of that one question?

A Well, I don't know. That wasn't what the application was for.

MR. VERITY: That's all.

REDIRECT EXAMINATION

BY MR. PAYNE:

Q Mr. Nutter, do you know every type of packer that is made?

A No, sir.

Q Are you familiar with a majority of them?

A I'm afraid I'm not, no, sir.

Q If you have an application for administrative approval, would you know if the packer was of the type that would achieve separation?

A No, sir, I probably wouldn't.

Q You feel that probably you should have a hearing on this so that you could determine whether this packer was adequate to do the job?

A I believe so. I would like to know a little about it anyway.

Q Well, to get back to this question of Mr. Verity's as to how often a packer leakage test should be taken, do you think that perhaps, whether or not El Paso's application is granted, packer leakage tests ought to be taken every six months?

A I think on retrievable packers, they certainly should.

Q Why is that?

A Because, like I said previously, retrievable packer is subject to strains and movement, and can yield to them more readily than the permanent type packer can, and by yielding to them, it is more likely that you will have communication.

Q So, you feel it wouldn't be discriminatory to have six month packer leakage tests on retrievable type packers and annual packer leakage tests on permanent type packers?

A No, I don't believe it is discriminatory.

MR. PAYNE: I believe that's all. Thank you.

MR. PORTER: Anyone else have a question of Mr. Nutter? The witness may be excused.

MR. VERITY: One more question.

QUESTIONS BY MR. VERITY:

Q Mr. Nutter, couldn't a rule be written here to the effect that where administrative approval had been requested, if there was no doubt about the packer, that then administrative approval could be granted, and if there was doubt about it, the Com-

mission on its motion should set it down for hearing? In other words, couldn't we allow, where there is no question about the retrievable packer being adequate, that administrative approval be granted, but if the Commission felt there was a question about it, only in those circumstances would a hearing be held?

A Mr. Verity, that is the present rule that we have, in my opinion. In other words, we don't have any doubt about the permanent type packer, but we have doubt about the retrievable type.

Q But on retrievable type packers, you request hearing?

A Yes, sir.

Q But if there was no question about a retrievable type packer, that no hearings be held?

A Well, there might always be a question.

MR. PORTER: Does anybody else want to ask the witness a question before we excuse him again? Witness may be excused.

(Witness excused)

MR. PORTER: Does anyone else desire to present testimony? Any statements?

MR. DAVIS: Sid Davis with Atlantic Refining Company. I have a letter from our Chief Engineer. I'll read it to Mr. Porter.

> "The Atlantic Refining Company would like to go on record as concurring with El Paso Natural Gas Company's application, as amended, to revise Subsections II (d) and V (d) of Rule 112-A of the Rules and Regulations, New Mexico Oil Conservation Commission. The application relates to the type of production packer required for administrative ap-

proval of multiple completions.

> Our experience, gained through shop testing and field usage, indicates that retrievable production packers presently available from all major packer manufacturers are just as effective as permanent type drillable packers for isolating production zones at pressure differentials up to 6000 psi and at temperatures up to 300°F."

I would like to add one point. Atlantic Refining Company has spent thousands of dollars on packer testing. We have tested probably between thirty-five and fifty retrievable, drillable, all kinds, and I feel -- I mean that's my responsibility with our company, seeing that we have adequate tools, and I for one, would not recommend retrievable, drillable or otherwise for a well if I felt it wasn't adequate.

MR. DAVIS: Earl Davis, Guiberson Corporation. I also have a letter directed to you.

> "This Corporation, a manufacturer of retrievable hookwall packers concurs with the application as amended and submitted to the State of New Mexico Oil Conservation Commission by El Paso Natural Gas Company, relating to the usage of such type packers."

And it goes on further to introduce myself, being qualified to testify on Guiberson's behalf. Signed, Executive Vice President, Alex P. Smith.

We've also passed the test that Mr. Davis here mentioned as the other manufacturers of retrievable packers.

MR. REESE: On behalf of Brown Tool Company and MWL Tool Supply, we concur with the application of El Paso and state that Brown Tool Company has retrievable packers in use

under conditions that are much more extreme than have been encountered in New Mexico, and these packers have been installed under the same approval as permanent type packers in all states except New Mexico, which to the knowledge of Brown Tools, is the only state that differentiates in the packers, and the -- we further take the position that it is an unjust burden on the retrievable packer industry to require that in order to use the retrievable packer, which the manufacturer and the operator think adequate, to require them to appear at a Commission hearing to secure that approval.

MR. VERITY: For Southern Union I would like to make this statement. In Texas, Oklahoma and Colorado they have used with universal success retrievable packers. They think they are adequate and that they would be adequate in New Mexico for dual completions, and they think that they have many advantages, particularly with regard to those situations where you may want to rework the hole or deepen it, and also recovering a packer for use in other holes. They would have no objection to the Commission reserving the right to request that in those applications wherein retrievable packers had been requested for use in a dually completed well, that it could be set down for hearing, if the Commission felt that there was a doubt about the advisability of that type of packer. But they want to join in this application and urge the Commission to allow administrative approval in those cases where the operator feels that a retrievable packer is proper for use.

Also they would have no objection to the Commission making whatever rule it feels is necessary in order to assure that ample leakage tests are made from time to time to insure no leakage between the zones.

MR. WHITE: Charles White of Santa Fe, New Mexico. I would like to read into the record a letter from Skelly Oil Company under date of September 11, 1959, addressed to El Paso Natural Gas Company.

> "Gentlemen: This is to advise that as an interested operator in the production of oil and gas in the State of New Mexico, we favor a change in Rule 11-A 2 D so as to provide that the packer used to segregate the separate producing zones of a dual completion may be a permanent type production packer or a retrievable type packer, which may be approved administratively. Yours very truly, George W. Selinger."

I would also like to read a statement on behalf of Texaco Company, Incorporated.

> "Texaco Company, Incorporated believes that an operator should be given the opportunity to select himself a permanent or a retrievable production type packer at his option, and to that extent, we concur in the application as amended."

MR. LOAR: Bill Loar, representing Sunray Mid-Continent Oil Company. Sunray had run retrievable type packers in the several states other than New Mexico, and we have found that they have been successful. Like any other well completion equipment, they must be sized and designed according to the need. We feel the operators should have this option. We have no objection, of course, if the Commission should have any doubt about the installa-

tion setting the matter for a hearing.

MR. COOPER: John Cooper appearing on behalf of Halliburton Cementing Company. Our company joins in the evidence which was presented on behalf of the manufacturers this morning, and we certainly concur with the recommendation in the application as amended by El Paso Natural Gas. One point, if the manufacturers are going to be limited, the designers and manufacturers like us to the permanent type, I feel that it might discourage the research and development which is being carried on by these companies, and which add a great deal to the advancement of the oil industry.

MR. SPERLING: Mr. Sperling, representing Magnolia Oil Company, concurs in the application of El Paso in this case.

MR. KASTLER: Bill Kastler, appearing for Gulf Oil Corporation. Gulf concurs in El Paso's recommendations that operators be permitted to use retrievable type packers with administrative approval rather than only after notice and formal hearing.

MR. BUSHNELL: H. D. Bushnell representing Amerada. Amerada is in accord with the application filed here on behalf of El Paso Natural Gas Company, and in that connection, from my observation of the testimony here offered, it is my opinion that those who are in the degree of greatest expertness have established by their testimony that the retrievable type packer is not only a satisfactory, but is apparently working well in other states, and in that connection, it is my understanding that the duties that this Commission has is making sure that there is no waste, make

sure that the rights of owners are being protected, it seems that the packer test data, the information that each operator is required to furnish, should be adequate to permit the Commission to fulfill that obligation.

MR. PORTER: Anyone else desire to comment on the case? The Commission will take the case under advisement, and in order to release a Commission witness, we are going to take the Southeast nomenclature case which shouldn't take more than ten minutes, Case 1758. After that we will proceed with Case 1759.

STATE OF NEW MEXICO)
:
COUNTY OF BERNALILLO)

WE, ADA DEARNLEY and JOSEPH A. TRUJILLO, Court Reporters, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of our knowledge, skill and ability.

IN WITNESS WHEREOF we have affixed our hands and notarial seals this 30th day of September, 1959.

Ada Dearnley
Notary Public-Court Reporter

Joseph A. Trujillo
Notary Public-Court Reporter

Our Commissiones Expire:
Oct 5 1960