

CHSE No.
5085

Application,

Transcripts,

Small Exhibits

ETC.

BEFORE
NEW MEXICO OIL CONSERVATION COMMISSION
MORGAN HALL, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

October 25, 1973
October 26, 1973

IN THE MATTER OF:

Application of Michael P. Grace and Coriale Grace for an exception to Order No. R-1670, as amended, Eddy County, New Mexico. Applicants, in the above-styled cause, seek an exception to Rule 15(B) of the Prorated Gas Pool Rules for Southeast New Mexico, as promulgated by Order No. R-1670, as amended, for the Grace-Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, which well is more than six times overproduced with respect to its average allowable and is subject to shut-in pursuant to said Rule 15(B).

Pursuant to the provisions of Rule 15(E) of said Order No. R-1670, as amended, applicants seek an exception to said Rule 15(B) to permit overproduction to be made-up at a rate less than by complete shut-in, alleging material damage will result to said well if completely shut in.

Case No. 5085

TRANSCRIPT

OF

PROCEEDINGS

BEFORE: I. R. Trujillo, Chairman

State Geologist, A. L. Porter, Jr.,
Secretary-Director

Land Commissioner, Alex J. Armijo,
Member.

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NEW MEXICO OIL CONSERVATION COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date OCTOBER 25, 1973 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
J.B. Hamblen	Amoco	Midland
Charles White	Midwest Oil Co.	Roswell
E.J. Mathis	Cities Service Oil Co	Midland
R.M. Williams	Morris R. Antweil	Hobbs
Jason Kellahin	Kellahin & Fox	Santa Fe
Lewis B. Hamblen Jr.	Hanagan & Redd	Roswell
J.C. Raney	Pennzoil Co.	Midland
Robert H. Bakerhagan	Mex Coll. Com. Ed / N.M. Gas Retailers Assn.	Hlb
T.R. McCrary	S.U. Inc.	Dallas
Kenneth F. Smith	M.P. Grace	Houston
Robert W. Becker	M.P. Grace	Roswell
E. Hamblen Trigg	N Mex Comm on Public Relations Assoc. Inc. (Gen Counsel)	Los Cruces N.M.
F.L. Schaf 2	Midwest Oil Co.	Midland Tex
Bill Heath	AP	Santa Fe
ROBERT McNEIL	ASS. ROYALTIES	DALLAS
J.C. Johnson	Grace	Alb.

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[illegible] present [illegible] Commissioner Alex Armijo, and A. L. Porter, Secretary-Director. We have one case to consider this morning, Case 5085.

MR. BERRYHILL: Case 5085, Application of Michael P. Grace and Corinne Grace for an exception to Order Number R-1670, as amended, Eddy County, New Mexico. Applicants in the above-styled cause seek an exception to Rule 15 (B) of the Prorated Gas Pool Rules for Southeast New Mexico, as promulgated by Order Number R-1670, as amended for the Grace-Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, Eddy County, New Mexico, which well is more than six times overproduced with respect to its average allowable and is subject to shut-in pursuant to said Rule 15 (B).

Pursuant to the provisions of Rule 15 (E) of said Order Number R-1670, as amended, applicants seek an exception to said Rule 15 (B) to permit overproduction to be made-up at a rate less than by complete shut-in, alleging material damage will result to said well if completely shut in.

MR. PORTER: You have heard the case read. You notice this morning that I am having difficulty with my voice, and I am going to read a short statement, and following that, Mr. Trujillo will run the hearing.

Testimony in this case must be relevant to the

question of whether or not the Gr[illegible] Federal Number 1 Well, South Carlsbad-Morrow Gas Pool, will be damaged by a compulsory shut-in to comply with a Commission order.

The Commission has received numerous telegrams and telephone communications from citizens and [illegible] relating the situation to the economy of the Carlsbad area, employment and the National energy shortage. Under the advertisement these matters are not relevant to the case and cannot be considered.

I thought we could save time if we made that clear at the outset. The advertisement is limited to damage to the well.

MR. TRUJILLO: We will now call for appearances in the case.

MR. HOWDEN: Frederick Howden and Farrell Lines, for the petitioners, Michael P. and Corinne Grace.

MR. KELLAHIN: Jason Kellahin, of Kellahin and Fox, Santa Fe, appearing for Cities Service Oil Company and Pennzoil Company.

MR. STEVENS: Donald Stevens, appearing for Morris R. Antweil. I am an attorney from Santa Fe.

MR. HINKLE: Clarence Hinkle, Roswell, appearing on behalf of Midwest Oil Corporation.

MR. CARR: William Carr, appearing for the Oil Conservation Commission at this proceeding.

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MR. HUNKER: George Hunker, Roswell, attorney for Dan Hannifin and Joe Don Cook.

MR. TRUJILLO: Is there anyone else?

MR. BORKENHAGEN: Robert Borkenhagen, Albuquerque, attorney, appearing for Mr. Max Coll, and also appearing for the New Mexico Gasoline Retailers Association, and the Albuquerque Consumers Federation.

MR. TRUJILLO: How many witnesses will you have, Mr. Howden?

MR. HOWDEN: We will have at most four witnesses.

MR. TRUJILLO: Mr. Kellahin?

MR. KELLAHIN: I am not sure that we will put on any witnesses, but at most, we will have two.

MR. TRUJILLO: Thank you. Mr. Stevens?

MR. STEVENS: We will have one witness, Mr. Commissioner.

MR. TRUJILLO; Mr. Hinkle?

MR. HINKLE: We will have none.

MR. TRUJILLO: Mr. Carr?

MR. CARR: The Oil Conservation Commission will call one witness.

MR. TRUJILLO: Mr. Hunker?

MR. HUNKER: We will have a statement to make,if the Commission please.

MR. TRUJILLO: Mr. Borkenhagen?

MR. BORKENHAGEN: We will have two witnesses and a

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ment, Mr. Commissioner.

MR. HOWDEN: The [illegible]

How[illegible] applicant

MR. [illegible] Commissioner, he[illegible] going in[illegible]

[illegible]ore is clear, and the[illegible]understands the [illegible]ssion, and that the Commission [illegible]discard[illegible] Mr. Porter's statement.

I think that we, in our pleadings, also invoked the question of a moratorium, and I am not quite [illegible] to whether the Commissioner's statement applied to that.

MR. PORTER: The hearing will be strictly limited to the question of whether or not the well will be damaged by a shut-in to comply with the Commission order.

MR. HOWDEN: Then I would simply like to make sure the Commission understands our position, that we have raised that other point also.

MR. PORTER: I think we might clarify this. Mr. Carr, would you like to clarify it, or put Mr. Nutter on the stand to clarify it?

MR. CARR: I don't believe his testimony would be appropriate at this time. It should be called to the Commission's attention regarding a moratorium that the Secretary-Director would exercise his prerogative in an administrative procedure in granting a moratorium, and that

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that would not be a proper matter for a hearing before the full Commission. It was not included in the advertisement for that reason.

MR. HONDEN: If the Commission please, we will go ahead and call our first witness.

MR. TRUJILLO: It will be fine, if you will. Let's swear all of the witnesses at the same time.

(Whereupon ten witnesses were sworn en masse by Mr. Derryberry.)

* * *

DALE CARLSON,

was called as a witness on behalf of the applicant, and having been already duly sworn, testified as follows;

DIRECT EXAMINATION

BY MR. LINES:

Q Would you state your name and address for the Commission, please?

A Dale Carlson, 3110 Pinon, Southwest, Albuquerque.

Q What is your occupation, Mr. Carlson?

A I am a geologist for the Grace Oil Company.

Q What is your educational background?

A Well, I have already qualified before the Commission.

Q I know that.

A I have degrees from the University of New Mexico and New Mexico Highlands University, a bachelor and masters

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degree with majors including geology.

[illegible] 1954, the second one in 1960,

[illegible]

[illegible] been your work experience since that time, Mr. Carlson?

A Well--

Q Have you been working mainly in the area of geology?

A Yes, sir. Since 1954, I have been working in the field of geology including mining geology and oil and gas, primarily in the State of New Mexico.

Q Have you qualified previously to testify as an expert before this Commission?

A Yes, I have.

MR. LINES: May we have this marked as Exhibit One?

(Whereupon Applicant's Exhibit One was marked for identification.)

Q (By Mr. Lines) Mr. Carlson, I hand you a chart that has been marked as Exhibit One. Do you recognize that chart?

A Yes, I do.

Q Was that prepared by you or under your supervision?

A Yes.

Q Would you indicate to us exactly what that chart indicates?

A Well, since September of 1972 through October of this year, this is a graph representing figures given by the

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Oil and Gas Commission in their prorationing schedule on nominations, prorations, and production in the South Carlsbad Morrow Field.

Q These figures have been taken from the Commission's prorationing records?

A Yes.

Q What does the blue line represent?

A Nominations.

Q Nominations by the pipe line companies?

A Yes.

Q What then is represented by the red line?

A The red line is prorationing for the particular month, the total allowable by the Commission.

Q What does the yellow line represent?

A Actual production.

Q From your figures as taken from the production records, do you find that the allocations given by the Commission have any bearing at all, percentage-wise, with the nominations made by the pipe lines?

MR. STEVENS: Objection, Mr. Chairman. I would like to have counsel for the applicant state what relevance this might have as to damage to the well, which is the call of this hearing. I see no relevance. But if he can relate this to damage to the well, we would have no further objection.

MR. PORTER: Mr. Lines, I believe your graph goes

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back to September. Prorationing has
since April 11th.
MR. [illegible] ng to
by Mr. Stevens, I feel
hearing has to do with
establ[illegible] or not we are in fact six times overproduced.
According to the Commission rules, I don't believe there has
been any determination of that, and for that reason, I believe
this is proper at this time. If it is determined by the
Commission that we are six times overproduced, then we have
the question of whether or not there might be material damage
to the well.

MR. TRUJILLO: Go ahead and proceed, Mr. Lines.

MR. [illegible]: We can't see what the exhibit is he is referring to. I wonder if we could put it up on the wall?

MR. TRUJILLO: I think that would be a good idea.

(Whereupon council complied.)

MR. TRUJILLO: Proceed, Mr. Lines.

Q (By Mr. Lines) To review again, you indicated that the blue line represents the nominations made each month by the pipe lines?

A Right.

Q And I think you said that the red line indicates the actual prorationing that was allowed by the Commission

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during each month?

A That's right.

Q And the yellow line indicates the actual production from the pool each month?

A Right.

Q Starting in September, was there any correlation as you discovered from the reports of the Commission on nominations and prorationing?

A They ran exactly together for September through November.

Q Now, starting in April of this year, 1973, since the pool has been prorated, did you find any correlation at all between the nominations and the proration figures that were established by the Commission?

A Well, in some cases, both of them rise together; in some cases, one goes up while the other goes down. This (indicating) is generally where the two form a high together, but there are a lot of differences as you can see. The two are in opposition, traveling in opposition, in several cases.

Q Could you clarify for us what the figures one, two and three are to the left of the chart?

A Those are cubic feet per month-- Billion cubic feet per month. They're in billion cubic feet.

MR. LINES: May we have this marked?

(Whereupon Applicant's Exhibit Two was marked for

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identification.)

Q (By Mr. Lines) Mr. Carlson, can you identify this graph, Applicant's Exhibit Number One?

A Yes, I can. This is another one that I prepared--

Q What does this graph indicate?

A Well, the red line on the graph indicates total field production for 1972 and '73, through October of '73-- No, wait a minute, pardon me. August of 1973, which is the last date that I have production figures for.

Q So this indicates times both before and after prorationing in this pool?

A Right. And this yellow line is the total gas production during the same period of time.

Q Could you identify the numbers on the left for us, numbers one, two, and three?

A This, like the other one, is in billions of cubic feet.

MR. LINES: May we have this marked, please?

(Whereupon Applicant's Exhibit Three was marked for identification.)

Q (By Mr. Lines) Mr. Carlson, can you identify this graph for us?

A This is another one that I prepared, using the number of wells in the field. Now, this is for just 1973.

Q And you are speaking of Exhibit Number Three?

A Yes.

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Q Could you tell us how many wells there are in the pool, Mr. Carlson?
A The last number that they had in October was 32. Now, this graph doesn't have that many wells on it, because there are some that haven't been there for a long enough period of production to show any definite class for us to put the wells in.
Q How many wells does this graph represent?
A At least 29.
Q Twenty-nine of the thirty-two?
A Yes.
Q I notice in the left-hand column you have what you indicate as submarginal wells. Can you indicate how you arrived at that classification?
A These are wells producing less than 35,000 MCF a month.
Q And how many wells were there in that category?
A Eleven.
Q Eleven out of twenty-nine?
A Yes.
Q In the next column, you indicate marginal wells. How do you classify a marginal well?
A From 35,000 MCF a month to where they are fairly close to producing their allowable.
Q Have any of the wells in the marginal category actually produced their allowable?

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A During that period of time, I would say possibly once or twice.

Q How many wells did you find of the 29 in the marginal category?

A Eight.

Q And next you indicate good wells. How did you classify a good well?

A Those are the ones that could make their allowable at least some of the time, or close to it the rest of the time.

Q In other words, they might be marginal some months and non-marginal other months?

A Yes, depending on the amount of prorationing and the amount of production, which are both variables. While they might be able to produce an allowable of, say, 3,000,000 cubic feet a month or four-- Whereas they might be able to produce three or four million a day, they wouldn't be able to produce seven or eight million.

Q How many wells did you find in the good well category?

A There were six in this category.

Q On the right you indicate a column that says giant wells. How do you classify a giant well?

A These are ones capable of producing their allowable or more.

Q How many of the 29 wells in the pool were in that category?

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A [illegible]

Q And how many of those wells are owned by Mr. Grace, or does Mr. Grace have an interest in?

A Two.

Q What percentage of the pool was produced by those four wells?

A The percentage of production, as shown by the yellow bars, show forty-four percent. The sub-marginal wells produced roughly eight percent of production--

Q In other words, eleven out of twenty-nine produced eight percent of the total production in the field?

A Right.

Q All right.

A -- The marginal wells produced eighteen percent--

Q That is eight wells in the field produced eighteen percent of the gas?

A Yes.

MR. PORTER: What was the percentage from the four giant wells?

THE WITNESS: Forty-four percent. The good wells produced approximately twenty-seven percent. I could get the exact figure, but it's between twenty-five and twenty seven percent there.

Q (By Mr. Lines) But according to your graph, you found that all of the wells in the pool, except for the four

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giant wells, were marginal wells. In other words, they were not capable of [illegible] their allowable.

A Right.

MR. LINES: I have no further questions.

MR. TRUJILLO: Does anyone have any questions of the witness?

MR. STEVENS: Yes.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Carlson, is your testimony geological in nature?

A In this particular case, it is just taking information from the Oil Commission records and putting it in graphic form.

Q Statistical work?

A Yes.

Q Are you a statistician?

A Not as such. I have on occasions done considerable statistical work in the field of geology associated with mining production, oil and gas production.

Q Could you somehow relate your previous testimony to whether or not the Grace Atlantic Well No. 1 is six times over or underproduced? I am relating back to my previous objection, as I don't think your testimony is within the

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course of the call of this hearing.

MR. LINES: What we are doing, Your Honor, is laying a foundation here for further testimony. Mr Carlson prepared the charts which will be used by other experts during the course of his testimony this morning.

MR. TRUJILLO: If it is for the purpose of laying a foundation for further testimony, it will be admitted.

MR. STEVENS: No further questions.

MR. LINES: We do at this time tender the admission of Exhibits One, Two and Three.

MR. TRUJILLO: Without objection, they will be accepted.

(Whereupon Applicant's Exhibits One, Two and Three, respectively, were admitted in evidence.)

MR. TRUJILLO: Are there further questions of the witness?

MR. KELLAHIN: Yes, Mr. Chairman.

* * * *

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Is the red line on Exhibit Two the same as the red line on Exhibit Three?

A Let me see. Each one of these-- The red line in Exhibit Two is field production; the yellow line over here (indicating) is gas production.

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Q I meant on Exhibit Number One.
A On Exhibit Number One, the red line is field production.
Q It says prorationing.
A It's prorationing then, and the yellow line is field production.
Q The yellow line is field production?
A Yes.
Q Look at the month of April for example on Exhibit Number One. With the yellow line,you show two billion; is that correct?
A You must realize that this is a compressed scale.
Q Why don't you go back to my question? Your Exhibit Number One for April shows two billion; is that correct?
A Correct.
Q And if you interpolate the month of April, 1973, where would it fall on your red line?
A Approximately here (indicating). You see, this is part of 1973. It isn't all of 1973. You see here (indicating) that we are looking at two different scales. In other words, the middle of this is not July. This is just through August, it's not for the whole year.
Q So you would fall on two billion there also?
A Yes, the two would be comparable. That's the reason for the difference in April's range here (indicating). This is a compressed, lateral scale as compared to this one

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(indicating), as you can see.

And also there is the fact that here you see that this carries out only through August, because this is the last figure the Oil Commission has recorded (indicating). This is the reason it starts in August instead of October.

MR. KELLAHIN: Thank you.

* * * *

RE-CROSS EXAMINATION

BY MR. STEVENS:

Q One more question. Which line on Exhibit Two shows production?

A This one here (indicating).

Q I guess your Exhibit Number One shows production of all of the wells in the field, and that production is represented by the yellow line; is that correct?

A Right.

Q And January and August shows the giant wells producing forty-four percent of production. What percentage in your estimation would that be if the good wells-- I suppose I should say the giant wells that you speak of, were produced at their allowable instead of at a rate in excess of their allowable, which resulted in one of them being six times overproduced during August?

A By adding in the Grace Well, you cut the total field

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by sixteen percent. I haven't done these figures, haven't figured these in this manner. I think we have another witness who can testify to that, but I haven't done it myself. So I would rather you ask our other witness, because I haven't done that work.

Q Would the percentage of those four giant wells be substantially less if those wells had been produced at their allowable as opposed to in excess of their allowable?

A It would be less.

Q You wouldn't state "substantially"?

A No.

MR. STEVENS: No further questions.

* * * *

REDIRECT EXAMINATION

BY MR. LINES:

Q But even with overproduction of the well in question, does your graph indicate their crude production was significantly lower than both the nominations and allocations for the field?

A Yes.

MR. LINES: That's all.

MR. PORTER: I believe you made the statement that you were going to try and show that the well was not overproduced six times within the present rules of the Commission.

MR. LINES: Correct.

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MR. POWERS: That's fine, if you think you can do that. However, we are not discussing overproduction or underproduction other than under the rules of this Commission.

MR. LINES: That's correct, Your Honor, as we interpret them. We will be getting into this discussion, and the Chairman can guide the discussion.

MR. TRUJILLO: And you plan to show that indeed this well is not six times overproduced by your interpretation of the rules?

MR. LINES: That's correct.

MR. TRUJILLO: Are there any further questions?

MR. NUTTER: Yes.

* * * *

CROSS EXAMINATION

BY MR. NUTTER:

Q I don't understand the reasoning for your showing nominations prior to April, 1973, because there was no prorationing. However, what figure did you use for nominations for the month of April of 1973?

A For the month of April, 1973?

Q Yes, sir.

A The ones in the Oil Commission's prorationing schedule.

Q Which schedule? The April schedule?

A Yes, the April schedule.

Q Do you realize that this April schedule was prepared in

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March, and that it was prepared at a time when prorationing was not in effect?

A Yes.

Q And prorationing was not instituted until the 11th day of April, and the allowables were assigned on a basis of two-thirds of the month of April, and that nominations were also adjusted for two-thirds of the month of April, because only two-thirds of the month of April were prorated? And for that reason, your figures would be in error?

A If this was the case, yes, but I just went by the Oil Commission's schedule.

Q Whereas the Commission records for prorationing purposes only took two-thirds of the month's production, I think in that respect your exhibit would be in error.

A As I said, all I did was just go ahead and use the prorationing schedules that were put out by the Oil Commission.

Q And these figures were corrected in subsequent prorationing schedules.

A That might be.

Q But you used the raw April figures without making any corrections for the fact that prorationing was instituted on the 11th of April?

A Yes.

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MR. PORTER: I understand the reasoning for your confusion, because initially we initiated prorationing on September 1st, 1972, and that proration schedule had already gone out when we got the Stay Order.

Then when the Stay Order was dissolved, I believe in March, we proceeded to make it retroactive to September 1st. Then we got a ruling from the Attorney General that we could not do that, so we had to put out a third schedule that came out effective April 11th.

THE WITNESS: I would like to say here that the purpose for going back this far was simply to show a true picture of the total situation, since the question of prorationing came up.

MR. TRUJILLO: Are there any other questions?

MR. BORKENHAGEN: Yes.

* * * *

CROSS EXAMINATION

BY MR. BORKENHAGEN:

Q What are the names of the giant wells? Could you give me the names of those?

A There is the Phillips Drag Well; the Grace Atlantic No. 1; the Merlin "C"; and the Go Po Go.

Q Could you repeat the first one?

A What's that?

Q Would you repeat the first one?

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A The Phillips Disc "B".

Q Thank you.

MR. TRUJILLO: Does anyone else have any questions of the witness?

(No response)

MR. TRUJILLO: If not, the witness may be excused.

(Witness excused.)

MR. HOWDEN: We'll call Mr. Johnson.

* * * *

J. C. JOHNSON,

was called as a witness on behalf of the Applicant, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. HOWDEN:

Q Would you state your name and address for the record?

A J. C. Johnson, 3705 General Chenault, Northeast, Albuquerque, New Mexico.

Q Mr. Johnson, what is presently your occupation?

A I am a petroleum consultant engineer. I am Vice-President of Petroleum Development Corporation, a newly formed New Mexico corporation. I am Vice-President of engineering with that outfit.

Q And how long have you been with this company?

A Five months-- Since May 1st, approximately six months.

Q Prior to that time, what was your employment or occupation?

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A I worked seventeen years plus as a petroleum engineer for various oil companies, the last five years in Albuquerque for Pubco Petroleum Corporation as production manager, and for the last three years as Vice-President of production.

Q And prior to going-- Prior to your experience as a petroleum engineer, what education did you receive?

A I graduated from Oklahoma State University with a degree in mechanical engineering with a petroleum option. I graduated in 1956.

Q Have you at any time previously qualified to testify as an expert before this Commission?

A Yes, I have.

Q Mr. Johnson, I want to ask you first if you have had occasion to do any work in the South Carlsbad-Morrow Gas Field?

A Yes, I have. First of all, Pubco Petroleum Corporation was very active in exploration in that area, and I had geologists and engineers under me that made detailed research in offsetting acreage of the field to the east.

And recently, I have done some work for Mr. Grace in the field, starting on October 12th of this year.

Q In this recent period in connection with your work in that field, have you prepared any exhibits-- gone through any calculations and prepared any exhibits concerning

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the question here before the Commission?

A Yes, I have. I have tried to make an evaluation of the prorationing schedule as published by the Commission, and I came up with some conclusions in my opinion of the shut-in status of the Grace Atlantic No. 1 Well.

I prepared two exhibits.

Q Do you have those with you?

A Yes, sir.

MR. HOWDEN: May we have these marked?

(Whereupon Applicant's Exhibits Four and Five, respectively, were marked for identification.)

Q (By Mr. Howden) Mr. Johnson, you have handed me what we have marked as Grace Exhibits Four and Five. Would you first identify Grace Exhibit Four, please?

A Well, on Grace Exhibit Four, I would like to make a little explanation as to why I made this. I read the testimony from the Oil Conservation Commission hearing in Hobbs, New Mexico, where Elvis Utz testified about the prorationing of the Morrow gas field.

In that testimony, he stated that for the period of January through June, he had estimated that non-marginal wells would have allowables of ten million MCF per day.

I went to the prorationing schedules and started trying to figure out how that could have taken place and what happened in the prorationing of this new gas field.

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In prorationing a new gas field, you start off with a number of non-marginal wells. As Utz testified to in his testimony, there were 5.48 at the end of January production. Each new well drilled, whether it's marginal or non-marginal, is classified non-marginal.

Reclassification then takes place, and what happened in this case is many wells for a period of months ended up as non-marginal wells and built up a very high underproduction status, because they were not marginal wells.

In many cases in the South Carlsbad Field, there were many wells that would start out producing one million cubic feet per day, and this is why the low allowables have been set by the Commission. It will happen with any new well when it is not completely developed, because as development takes place, this is what will occur.

So I used Mr. Utz's idea that he said there would be 5.48 non-marginal wells effective January. Then going through what the Commission used as calculations, I went through and started off calculating that no well would be classified non-marginal until it was proven it could be classified non-marginal by existing production.

This is how I came up with the history of the non-marginal wells and the average allocation of 10.6 million cubic feet per day, which closely approximates

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the statement by Mr. Utz.

Q For the purposes of clarification on this exhibit, if you would just summarize in general terms, Mr. Johnson, what each column is and what it demonstrates?

MR. STEVENS: I wonder if we might be able to see this exhibit, and have copies of it.

MR. HOWDEN: I think we had only four copies. I handed one to Mr. Carr, but I didn't have one for the other appearances. However, I can go ahead and give you this, Mr. Stevens, and I will look on with Mr. Johnson.

MR. TRUJILLO: Let's take about a ten-minute recess so we can have copies made.

(Whereupon a recess was taken.)

(Hearing continues.)

MR. TRUJILLO: The hearing will come to order, please. Mr. Howden?

MR. HOWDEN: I think Mr. Carr has provided copies of the two exhibits to everyone. If anyone does not have copies, you can find them up here on the table.

MR. TRUJILLO: I would like to make a statement, Mr. Howden. Inasmuch as prorationing was instituted on April 11th, I think we should refrain from making any mention to events prior to April 11th. So if you will confine your testimony to events subsequent to that date, that will be fine.

Will you proceed, sir?

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Q (By Mr. Bowden) Mr. Johnson, you were explaining Exhibit Four in general terms just before the recess. If you would just explain for the benefit of the Commission and the other interested parties what you have included in each column on this exhibit?

A The first column is the month; the second column is the acreage factor. I have taken the total acreage factor as shown on the prorationing schedule of the Oil Conservation Commission.

The first of the acreage factors is marginal; the second is non-marginal. The fourth column is the pool allocation allowable as assigned by the prorationing schedules from the Oil Conservation Commission. The fifth column are the marginal allocations-- the allocations assigned to the marginal wells monthly. The sixth column is the non-marginal allocations, the allocations assigned to the total non-marginal wells. The last column is the non-marginal allocations per well.

Q By way of further clarification, what has been the determining factor as to whether you are in a marginal or non-marginal column?

A I have used the order that has come out by the Commission which states that in the event a well during a prorationing period, I used the quarterly prorationing period, did not in any one month produce the average monthly allowable

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for non-marginal wells, it would be classified marginal.

MR. PORTER: Is that your interpretation of the rule?

THE WITNESS: Yes, it is my interpretation of the rule.

Q (By Mr. Howden) Mr. Johnson, before the recess, you made some reference to a term "based upon production history", I believe. I am trying to recall that exact testimony. But in this determination of allocation, does production history have any reference there?

A Well, according to my interpretation of the Commission rules, the Commission does not take into consideration a new well that starts out much below a marginal well. That causes difficulty in balancing in a new field, and makes for more non-marginal wells than should be non-marginal.

For example, the October prorationing schedule has 14.93 acreage factors classified as non-marginal. I have made some calculations estimating September production, and if re-classification would take place at the end of September, there would be only four non-marginal wells in the South Carlsbad-Morrow Field.

This is also represented in another fashion on this Exhibit Number Three, where it shows there are four wells producing a large portion of the production from the field.

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Q Would you turn your attention to Exhibit Five now and explain to the Commission what that is?

A Well, Exhibit Five represents the status of the Grace Atlantic Well No. 1 using re-distribution of underproduction in June, 1973 to determine the shut-in status now. The Commission rules are that if any-- My interpretation of the Commission rules are in the event a well produces in excess of six times its average monthly allowable during any prorationing period, it will be shut in.

Now, what happened here, and it appears to me that the Commission realized that the allowables set through April and June, which were approximately 3.8 million cubic feet per day for non-marginal wells as an average, was excessively low, and for this reason, they elected to re-distribute the gas over that April through June prorationing period.

When they did that, there was an average on each non-marginal well of 388,190 MCF of gas. The actual production-- Correction. The actual allowable assigned to those wells over this same period was 352,000 plus, or less than fifty percent of the allowable after re-distribution, which in my opinion is abnormally low.

I feel, to be completely fair, since they did elect to re-distribute, which was the correct thing to do in a situation like the South Carlsbad-Morrow Field, that that

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re-distribution figure should be also used in determining the shut-in status of any well for overproduction.

I have shown the current allowable which was used by the order issued by the Commission to shut in this well from April through August, 1973. This figure was 697,663 MCF. The re-distribution in June, 1973 was 388,190 MCF, which gave a total of 1,085,853 MCF.

I took that figure and divided by five months to get the average allowable for that period. I then multiplied it by six and came up with 1,303,026 MCF. The overproduction status of the Grace Atlantic Well No. 1 at the end of August, 1973 was 1,061,302 MCF, or lacking the amount of 241,724 MCF of being overproduced in excess of the Commission rules.

I would also like to point out that in this same testimony, the same thing is taking place for the period of July through September. In July through September, there is underproduction of non-marginal wells-- Excuse me, July through August, of approximately 3.1 million MCF. I have estimated that in September, there will be overproduction of non-marginal wells of approximately 1.7 million. At the end of September, there will be overproduction in the South Carlsbad Field in excess of four million MCF.

MR. PORTER: Overproduction?

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THE WITNESS: Overproduction of non-marginal wells.

MR. PORTER: Four point what?

THE WITNESS: Approximately 4.7 MCF.

MR. PORTER: Continue.

A (Continuing) So the same thing is taking place for this period, and it is taking place because of the new wells that are actually not non-marginal. They are producing at a low rate, yet classified as non-marginal. The same thing should take place, in my opinion, at the end of September, re-distribution and re-classification of marginal and non-marginal wells, and that re-distribution should be assigned to the non-marginal wells to be fair to all operators in the field.

Q You have indicated in your testimony-- Or you have classified the field as a new field or a developing field?

A Yes.

Q In your opinion-- Do you have an opinion as to whether or not there is sufficient history to make any firm or final determination with regard to allocation of allowables?

A From my experience in many gas fields, setting up allowable statuses of wells while the field is still developing is very difficult. It is very difficult to set a reasonable allocation to the wells, because until a well is fully developed, and we can look at it, it is a very difficult situation to do, and be fair to all

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operators.

Q Do you find any indication of an effort or an attempt to bring the allowables in line with production?

A As I look at the charts, I understand that possibly this is one of the methods the Commission uses. But as can be seen, it is pretty erratic as far as actually doing it, and it is very difficult to do with new wells continually being drilled in the field.

Q Do you have any opinion as to how much time or history is needed before the Commission could reasonably expect to bring the allowables in line with production?

A I would say that when the majority of the field has been developed, and when all the surrounding wells have been drilled, and the limits of the field have been defined, that a reasonable allocation could be obtained at that time.

Q One further question-- or line of questions regarding this general proposition, Mr. Johnson. Do you understand-- Do you have any understanding one way or the other as to whether or not pipe line nominations are to have any bearing on any determinations?

A Only by the rules of the Commission, and my understanding is that the Commission has to consider pipe line nominations, but not necessarily base their prorationing schedule on pipe line nominations.

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Q On the basis of your studies in preparation for this hearing, do you have any opinion as to whether or not pipe line nominations have been considered?

A Well, from the data I have obtained and studied, for the first three months pipe line nominations were considered, and after that, it has not been. Although it was pointed out that there was a minor difference in April.

Q You just made some reference-- You just pointed in the direction of the charts. Were you referring to Exhibit Number One?

A Yes. The blue line represents the nominations, and the red line represents production-- I'm sorry, prorationing.

Q Mr. Johnson, just for the benefit of those of us who do not understand a great deal about the oil and gas business, would you generally define what the pipe line nominations are?

A Well, pipe line nominations are the nominations that the pipe lines make after signing contracts with people for gas. After the contracts are signed, they review the performances of the wells, normally from reserve standards and deliverability tests, and then come up with monthly nominations for what they would like to have from that field.

Q Let me direct your attention now, Mr. Johnson, to another area of inquiry, and that would be with specific regard

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to the Grace Atlantic Well No. 1. Have you made any review, test, studies, or examinations in connection with this well for presentation to this Commission at this time?

A On October 12th of this year, Mr. Grace contacted me to make a field inspection of the Grace Atlantic No. 1 Well.

I went down to the field and made this study, and it was my understanding that the well had been shut in on October 5th until October 6th, and was opened on October 6th at approximately a rate of four million MCF per day.

On October 6th, after reviewing the daily pumper's records, the tubing pressure was 1925 PSI on October 6th. It had reduced itself flowing at approximately four million MCF per day to 1560 PSI on October 12th, the morning of October 12th.

I was there in the afternoon, and personally recorded the tubing pressure on the Grace Atlantic No. 1. approximately six p.m., the tubing pressure was 1530 PSI pressure.

I told Mr. Grace that from the production history there, there definitely was showing a decrease in tubing pressure, however I would leave it for a few more days at that rate.

Q What rate?

A Four million cubic feet per day.

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Q Before you go ahead, let me back up. You made reference-- You said you reviewed the pumper's records?

A Yes.

Q Would you clarify that for me? What are they?

A The pumper goes by the well each morning, and as he goes by the well, he records the flowing tubing pressure, the static reading on a gas company chart, and the differential reading on a gas company chart.

Then from those records each morning, those are the records I reviewed.

Q Now, going back to your testimony, you said that you recommended continuing at a four million MCF rate?

A Yes.

Q What then?

A Again, I went to the well on October 18th, and from the pumper's report, the well's tubing pressure had decreased on the a.m. of October 18th to 1440 PSI pressure.

I was at the well at approximately four p.m. that day, and recorded the tubing pressure at 1420 PSI. I might say that all the pressures I am giving here are PSIG as taken from the gauge at the well head.

Q I'm sorry--

A All the pressures are PSIG, gauge pressure.

At this time, I realized that the well was definitely loading up with produced fluids which were both fresh

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water and condensate.

MR. PORTER: That well makes fresh water?

THE WITNESS: Correct.

MR. PORTER: Do you know approximately how many barrels a day?

THE WITNESS: One to two barrels per day-- I'm sorry. One or two barrels per million cubic feet of gas production.

Q (By Mr. Howden) What then did you do, Mr. Johnson?

A I told Mr. Gr[illegible] what was happening to the well, that the flow rate was insufficient to unload these liquids, and that they were possibly falling back into the well bore, and in order to prevent damage to the well from fresh water falling back on the well bore, I recommended, and this is because there is 4 1/2 inch tubing in this well, I recommended Mr. Grace's well be immediately opened back up to unload the fluids.

Q Is there anything unusual or significant about 4 1/2 inch tubing?

A Well, any well-- From the reports they had from the drill stem test data, I believe the engineers realized that this was a very large well, and would have an A.O.F. in the range of sixty-five million or more, which in their opinion could produce at the rate of twenty million a day or better.

Q You used another term, "A.O.F.".

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A Absolute open flow. Sometimes it's called calculated absolute open flow.

Can I go on?

Q Yes.

A So at Mr. Grace's direction, I opened the well back up to a rate of approximately fifteen million a day.

Q What date was this?

A October 18th at four p.m. I then allowed the well to flow at the fifteen million rate for approximately two hours-- or exactly two hours because at six o'clock, I re-checked the tubing pressure, and the tubing pressure had increased to 1630 PSI pressure.

I then pinched the well down to a rate of approximately ten million cubic feet per day.

If I have said anywhere in my testimony "fifteen million MCF", it's wrong. It should be cubic feet.

I pinched the well back to ten million cubic feet per day, and the pressure increased immediately to 1770 PSI pressure.

MR. PORTER: It had flowed for two hours at fifteen million cubic feet?

THE WITNESS: Yes.

MR. PORTER: And a tubing pressure of 1630 PSI?

THE WITNESS: Yes.

MR. PORTER: And you cut it back to ten million, and

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flowed i[illegible]y?

THE WITNESS: I took an immediate reading in about five minutes, and the tubing pressure went to 1770 PSI.

I have had the pumper's reports, I have not been back to the well since that time, but I have had the pumper's reports sent to me,and the average tubing pressure on approximately ten million up to October 23rd showed the well varying from 1760 to 1750 MCF per day.

MR. PORTER: At what rate of flow?

THE WITNESS: Ten million.

Q (By Mr. Howden) You said 1770 MCF.

A I'm sorry, 1770 to 1750 PSI pressure.

Q Now, Mr. Johnson, taking into consideration this study you have done on the well, and based on your experience and training in the field, do you have an opinion as to whether or not the shutting in of this well will cause it material damage?

A In my opinion, it is highly probable that if this well is shut in or the well is reduced in rate to a point that will not allow the liquids to be removed from the well bore, that there would be material damage to the well.

Q Now, would you explain to the Commission the considerations and the bases for your opinion? I mean, how you made that determination?

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A I have talked to many engineers from many companies on many occasions concerning the Morrow formation. There is a definite threat of damage occurring to the Morrow formation with the presence of fresh water. And there has been a water analysis taken of this water by the Halburton Company in Lovington, and the analysis shows 250 parts per million chloride.

This information will be given in other testimony. For this reason, anything done to the well that would allow the fresh water to accumulate back on the well bore would cause permanent damage-- It is highly probable it would cause permanent damage.

Q Now, you said, as I understand your opinion, that this probability would occur if it were shut in, and it would also occur if the well was shut back to a rate which would not unload or discharge the condensate. Am I repeating your testimony correctly?

A Yes, you are. I would like to point out that a four million rate, in my professional opinion, is definitely too small a rate to produce this well for a long period of time.

This is definitely proven by the data that I have given that it is definitely too small a rate.

Q When you say a long period of time, what do you mean by that?

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A I feel it is very difficult to realize when fluids start filling the well bore with any kind of volume when these fluids will eventually fall back to the point where they will kill the well and/or get the fresh water that is condensing from the gas back into the actual formation.

For this reason, I felt like the reduction from 1900 pounds pressure to 1400, 500 pounds, from October 6th to October 18th, was getting into a very serious situation.

Q Would you explain what is involved-- what is meant by damage to this well? What is it that occurs? What happens?

A Many sand formations have different particles, and you normally will not know until core analysis what they are. Normally we feel they are clay particles, and when contacted with fresh water, this causes swelling. When this takes place in sand reservoirs, this swelling, many times it reduces the rate and could even completely reduce the rate to zero in a well and treatment could possibly not correct this condition.

Q And when that takes place, this causes this reduction or killing?

A Well, the swelling of the clay particles, I say clay particles, many people might want to call it something else, but these clay particles in the sand stone. If you put clay in water, it swells, and this is the

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simplest way to explain it.

Q Again, given my own limited knowledge, what happens to the gas?

A The gas rate, the porosity, will definitely be reduced where this takes place, and the flow rate will be lower because of the reduction in porosity and permeability.

Q There was some question a little bit earlier in this connection about making fresh water. I think the Commissioner asked you about making fresh water. What do you mean by that?

A Well, fresh water in natural gas reservoirs, and this particularly occurs in very high volume wells, the water is in a gaseous state with the natural gas. It's not formation water, it is in a gaseous state. And because of bottom temperature and pressure drops at certain places which normally take place at the face of the formation, it condenses into fresh water from its gaseous state.

Q How do you get that water out then? You have made reference to discharging it or getting it out.

A Well, there is a heater treater at the well that the gas passes through, and there is a water chamber and condensate chamber for collecting condensate and water from the natural gas stream--

MR. TRUJILLO: In that connection, I don't think you

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have testified as to the rate of condensate production.

THE WITNESS: There's another witness who is more familiar with production history that will be on the stand. I believe that that is also approximately one to two barrels of condensate per million.

MR. TRUJILLO: About the same as the water?

THE WITNESS: Yes.

Q (By Mr. Howden) As I understand your testimony, the amount of gas flow in the well has a bearing or relationship as to whether or not this water is removed, is that correct?

A From the formation?

Q What I am trying to understand is you have indicated, if I can recall your testimony correctly, that at ten million, it would take care of itself.

A At ten million, the well does not load up, or the appearances that I have recorded to date show that it does not load up, but that it will maintain a constant tubing pressure, and at four million, the tubing pressure was continually dropping, which shows it was not unloading the liquids from the tubing.

Q What does the term "loading up" mean?

A Well, what takes place is you get a certain volume of liquid moving up the tubing string in the well bore, and you have to produce that well, depending on the size of the tubing, at a rate that will continue to remove the

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liquids with the flow stream of the gas.

MR. PORTER: Mr. Johnson, you indicated that you thought there was a definite possibility of damage at a flow rate of four million a day.

THE WITNESS: Highly probable.

MR. PORTER: And you thought at ten million, there wouldn't be?

THE WITNESS: At ten million, there wouldn't be.

MR. PORTER: Do you have a figure in between that you would say would be the minimum figure which the well could be flowed without damage to the well?

THE WITNESS: I do not have that at this time. That could only be done by further testing of the well at lower rates.

MR. PORTER: Excuse the interruption, Mr. Howden.

MR. HOWDEN: I think that's all I have. We will pass the witness for cross examination at this time.

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

MR. STEVENS: Yes.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Johnson, on your Exhibit Number Five, you show the overproduction status of the well as of August, 1973, to be 1,061,302 MCF. Is that the figure that results

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from subtracting the 388,190 MCF of re-distribution in June from a greater figure?

A That's correct.

Q Therefore if you added 388,000 MCF to the overproduction status, wouldn't you come up with something on the order of approximately 1,499,000 MCF? Approximately, not exactly.

A You will have to repeat that.

Q If you add 388,000, this is the re-distribution figure of June, to the overproduction status of 1,061,000, wouldn't you come up with something on the order of 1,499,000 MCF?

A Yes.

Q If you subtracted your figure just above the overproduction status of 1,303,026 MCF, wouldn't this well still be overproduced?

A Why would you add 388,000,may I ask?

Q You have used the figure of 388,000 for your re-distribution of June, 1973. You have added that to the allowable?

A That's right.

Q And said in effect that you would have an allowable of over one million MCF?

A Yes.

Q Then you did not use the figure of 388,000 MCF which you previously had subtracted from the overproduction

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figure to get the Commission figure of 1,000,000 MCF. In fact, the Commission has given you credit for 388,000, has it not?

A Yes.

Q Aren't you getting benefit from both ways in using the new allocation formula and yet subtracting from the Commission's overproduction amount?

A Let's say this. If the allowable for the field had been 1,085,000 MCF, that total figure would have been subtracted from the production of the well, and this has been done by the Commission, and they came up with 1,061,000; right?

Q No, that's incorrect, if you are asking me. I would like to ask you.

A Someone else may get into it. I say if the total allowable in the field had been, during the five-month period, 1,085,000 MCF, you would take the-- You would subtract from the production of the field during that period 1,085,000 to decide the overproduction. Then you would use that 1,085,000 and divide it by five, and then multiply it by six-- I believe I could show you on a piece of paper as to the figure for the production of the field.

Q Let's be concerned solely with this well. What was the total production of this well from April through August

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of 1973?

A The total production from April through August?

Q Right.

A I don't know exactly-- It was around two million MCF.

Q Under your allowable figure, which you have on Exhibit Five, it should be 1,203,000 MCF. That's the figure you have placed there.

A Where?

Q You take the figure 1,085,000, divide it by five, and multiply it by six, and you come up with 1,303,026, is that correct?

A That's the average monthly allowable, times six, over that five-month period.

Q And you say the well had produced two million MCF?

A Two million something. It's a million overproduced.

Q It seems to me that you are trying to put a double whammy on it, and I don't understand what you are talking about. I would like it better explained, because it appears to me that you have taken the re-distribution figure and used it twice.

A If you give me a chance here, I might be able to explain it to you.

Q Please do.

A First of all, what the Commission did-- Well, let's get off what they did. Let's assume that if they had taken

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the total allowable during the five-month period of 697,663 MCF, that plus 388,000 would give you 1,085,000 for the five-month period. That total figure would have been subtracted from the actual production, okay?

Now, hold it right there. What they did was they subtracted the 697,000 from the production and 388,000 from the production to come up with the overproduction. Then they just used the 697,000, divided it by five,and multiplied it by six, to get the overproduction status.

They did this rather than using the 1,085,000 divided by five and multiplied by six.

Q You are stating that the figure of overproduction as of August, 1973 is not the figure that the Commission used on their overproduction status?

A The 1,061,302 MCF was the total production of the well during that period after deducting 697,663 MCF and 388,190 MCF.

Q You are not taking the benefit of the 388,000 MCF twice? Is that your testimony?

A I definitely am not.

Q Is 4 1/2 inch tubing the ordinary size tubing for a gas well in Southeastern New Mexico?

A I would say for many wells down there. I don't know myself of any gas wells that have 4 1/2 inch tubing in them. I had nothing to do with that design. But with

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the capability of that well, it was a good design in my engineering opinion.

Q Would lesser size tubing have a tendency not to load up the well with the condensate you spoke of?

A It's possible-- Or it definitely would have a tendency not to load up with condensate.

Q The most usual size tubing is 2 3/8 or 2 7/8, isn't it?

A For a person who thinks small, and doesn't want big gas wells.

Q How about for the person who wants to stay within the prorationing formula?

A At that time, they possibly thought that the prorationing formula would be much higher than it has been.

Q Would then, if this well were replaced with smaller tubing, would there be a lesser tendency for load-up of condensate?

A Definitely.

Q Would this be a reasonable method of bringing this well into the allowable allowed by the New Mexico Oil Conservation Commission?

A Definitely not, not for a good gas well. You don't want to go in and re-work a good gas well under any conditions. This could very definitely cause permanent damage to the well bore.

Q Yet salt water doesn't have an effect on the formation, it's the fresh water that does; isn't that right?

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A I have my doubts. After a well has been pulled for a period of time, I would definitely not recommend that anyone re-work a large producing gas well.

Q You say that four million MCF would cause the well to load up?

A Correct.

Q And ten to fifteen million does not?

A Ten million, from the data I have to date, which is only since October 18th. I would like to watch this for around fifteen days to be sure, but from the information I have now, it does not.

Q Wouldn't a method of producing this rate and staying within the allowable set by the Commission be to stop-cock this well? That is, to flow the well for perhaps ten to fifteen or twenty days a month at your high rate, and then shut the well in for ten to fifteen to twenty days, depending on what your test came out, and therefore avoid your fall-out or liquids?

A I would like to point out that I have never in my engineering history recommended a company I worked for, nor would I recommend to this operator today, to shut in a well of this magnitude with fresh water in the well bore for over a period of more than twenty-four hours.

Q Assuming two barrels per million cubic feet, at fifteen million, that would give you thirty barrels a day?

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A That's right.
Q At fifteen million then, wouldn't the effect on the formation be zero, since there is practically no water in the tubing to fall back?
A I would say that there is always the possibility, because any fresh water in the Morrow formation, from studies I have made, can be damaging to it. Any amount, two gallons, let's say.
Q Aren't most wells, gas wells in Southeastern New Mexico, shut in at one time or another?
A I feel they are for a period of time, yes.
Q Yet you don't recommend it in this particular case?
A I wouldn't recommend it after the well had been produced. I wouldn't recommend this in any Morrow Gas Well that has fresh water present in it.
Q Would higher production cause greater draw-down in pressure?
A At the well bore, or what?
Q The well bore and in the formation itself.
A At the well bore, definitely.
Q How about the formation?
A It depends on the amount of reserves in the formation.
Q Would a higher production rate produce higher production draw-down in the first few years?
A Yes.

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Q Do higher production rates and pressure draw-downs have a greater tendency to cause the drop-out of liquids in the gas as a general rule?

A That's a questionable situation. That is very highly scientific. In my experience with it, and in my personal opinion, which is not that much scientific on this matter, it would fall out at a lesser rate at a lower production rate.

Q Therefore at a higher production rate, you have a greater amount of fall-out?

A That's right.

Q Doesn't a higher draw-down raise the possibility that you could have condensate flowing out of the reservoir in addition to the tubing in the formation itself?

A I feel like the only pressure drop-- In the first place, the pressure drop, and this is my present opinion, is at the well bore.

Q There is no pressure drop inside the reservoir?

A There could be some in the reservoir itself, but where the critical pressure is, who can guess?

Q It can be beyond the well bore and out in the reservoir, though?

A It could be.

Q Shouldn't it be,in most cases?

A Not in my opinion.

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Q Would you consider pressure draw-down only at the perforations?
A Oh, there is more uniform-- You have more drastic changes in the presence of permeability and porosity that restricts the gas flowing throughout, more so than going from a sand stone into open casing. That's why I say that the pressure draw-up is greatest at the well bore.
Q Do you have greater pressure draw-down at ten feet than at one foot?
A You will have to get another person to answer that. In my professional opinion, the greatest pressure drop is at the well bore. There are many, many opinions about where it takes place, at one foot or two foot or five foot.
Q Is there a greater tendency for pressure draw-down within one foot of the well bore than within ten feet?
A I'd say so.
Q Therefore, you do have a higher pressure and higher production, and therefore a higher draw-down within one foot of the well bore than within ten feet of the well bore?
A Definitely.
Q Would this have an adverse effect on producing the well?
A It could.
Q Therefore, could you state that because of the high

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pressure and the high production rate you are using that there is a possibility that this could damage this well?

A I would say it is a very, very slight possibility.

MR. STEVENS: No further questions.

MR. TRUJILLO: Are there any further questions?

MR. NUTTER: Yes.

* * * *

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Johnson, what did you purport to show by your Exhibit Number Five, please?

A Well, Mr. Nutter, I purported to show that it appeared to me that for some reason in June, the Commission decided to make a re-distribution of gas, and I assume they did this because they assumed that the allowable rate that had been assigned to the wells was abnormally low.

Q On your Exhibit Number Five, you showed in fact that there was a re-distribution to the subject well in the amount of 388,190 MCF; is that correct?

A That's correct.

Q And that you had a total allowable assigned to the well, including re-distribution, of 1,085,853 MCF; is that correct?

A That's correct.

Q In line with what Mr. Stevens asked you, you have taken

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credit for the re-distribution allowable of 388,190 in arriving at your total allowable to the well; is that correct?

A That's correct.

Q Now, down here in the next to last line on your exhibit, you show the well's overproduced status at 1,061,302 MCF.

A That's correct.

Q I would like to advise you, Mr. Johnson, that the 388,190 MCF had already been placed in the books as far as that overproduced status was concerned, and that the well without the 388,190 would in fact, as Mr. Stevens was attempting to point out, be 1,449,000 MCF overproduced.--

MR. HOWDEN: Is Mr. Nutter testifying?

MR. PORTER: It sounds like he is, Mr. Howden. Mr. Nutter, you can develop this in your direct testimony later.

Q (By Mr. Nutter) I will just ask Mr. Johnson this question. The 388,190 MCF is in the upper portion of your calculations, is it not?

A That's correct.

Q Assuming that the 388,000 has been credited to the well to arrive at the 1,061,302 overproduction figure, we can then make the assumption that the 388,190 MCF entered into your allocation twice, isn't that correct?

A It definitely does. However it does not enter into the Commission's twice.

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it's right, we only use it once.

MR. HOWDEN: I move to strike Mr. Nutter's repeated efforts to testify.

MR. PORTER: I missed that.

MR. HOWDEN: Well, if the Commission didn't hear it, it's already in the record.

MR. TRUJILLO: Mr. Nutter, are you through?

MR. NUTTER: Yes.

MR. TRUJILLO: Are there any further questions?

* * * *

CROSS EXAMINATION

BY MR. STAMETS:

Q I believe you testified that the water production was one to two barrels per million?

A Yes.

Q How long ago did you observe this?

A I have not observed this myself at all. That's what I was told by the pumper. That question should be asked of the other engineer who will testify after me.

Q This was your testimony.

A Yes.

Q And you were just told this by the pumper?

A Yes.

Q So you don't know that that is the situation?

A Not of my own knowledge.

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Q So the rate could have varied quite a bit without your knowledge?
A That's true.
Q Would that change your opinion as to what-- as to the cause for the water production?
A I beg your pardon?
Q The cause for the water production, I believe you said, was the water was coming out of the gas production. Now, if the water production varied widely over a period in no relationship whatsoever to the gas production, would this affect your opinion as to where the water was coming from?
A It definitely would. I would like to point out one thing. It was also reported to me during the period while the pressure was dropping that no fluid was made from the well bore at the four million rate.
Q So you do not know about that particular period?
A Yes.
Q So your testimony as to where the water was coming from was based on information you cannot be certain about, is that correct?
A I would like to point out that I have a lot of experience with gas wells in many states, and normally when fresh water, and I have seen the analysis of the water, when fresh water starts coming from a reservoir that produces

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salt water, it comes from condensation, from vapor and--

Q We are talking about this one well, and I wish you would answer my question.

A Would you repeat it?

Q Your analysis of where the water is coming from in this well is based on information which was forwarded to you, and which you have not verified, isn't that correct?

A That's correct.

Q Do you have an analysis of the water?

A I do not, but it will be presented.

MR. PORTER: You testified as to nominations a while ago and the bases for the allowables and so forth. Are you aware of the fact that the Commission is not bound entirely by nominations in establishing gas allowables?

THE WITNESS: I definitely know that, yes.

MR. TRUJILLO: Are there any further questions?

MR. KELLAHIN: Yes.

* * * *

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Would you tell us why the well was shut in in October?

A I cannot tell you that. All I have is hearsay information.

Q Were you present when the shut-in was made?

A No, I went down for the first time on October 6th.

Q Is that the only time you went there?

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A I was also there on October 18th.
Q Is that when the well was produced at ten million?
A Yes.
Q Did it produce water that day?
A I understand, by hearsay again, that it produced a large volume of fluids that day.
Q When you say fluids, are you talking about water or condensate?
A Water and condensate.
Q But it was not measured?
A It was, but I don't know how much it was.
Q But you were present during this two-hour flow?
A I was there on October 6th, and I was back again on October 18th. I did not gauge the tank myself, it was done by the pumper later.
Q Wouldn't that have been an important figure for your calculations, Mr. Johnson, inasmuch as you are talking about water damage to this well?
A It was measured, and I don't have the exact amount of water, but it was definitely measured. I was satisfied at that time to see the tubing pressure increased, and I figured it unloaded a fairly good volume of fluid.
Q You have been to the well twice, is that correct?
A Yes.
Q Have you ever operated a well in the South Carlsbad

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Morrow Gas Field?
A No.
Q Have you ever operated a Morrow well?
A Yes.
Q Where?
A That was a Morrow well called the Pubco State No. 1, completed in January of this year.
Q Where is that located?
A It had not been assigned a pool at that time, it was a wildcat.
Q How many cores have you examined on [illegible] well?
A I have not examined any.
Q Have you seen any core analyses?
A No, sir-- I'll take that back. I have looked at some.
Q I am talking about in the South Carlsbad Field.
A No, sir, not in the South Carlsbad Field.
Q So you don't know whether there is clay in the formation?
A No, I do not.
Q Just to clarify the water you are talking about, it is not native to the Morrow, is it?
A That's right, it isn't, in my opinion.
Q Is there any danger, producing at a higher rate, of causing water encroachment in the well bore?
A No.
Q Where is the water?

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A In a gaseous state with the gas.
Q As you reduce the pressure back in the formation, would this cause any damage back there?
A It's in a gaseous state, and my experience has been in most cases, it is assumed it is not dropping out into the formation.
Q That's just an assumption?
A That's correct.
Q You say you have produced this well at approximately ten million a day, and not less than four million, is that correct?
A That's correct.
Q Do you know what the allowable assigned to the well has been?
A Well, the average-- I guess I could run them up here. I think that during the first three months, the allowable was approximately 3.8 million. However, after re-distribution, it went over eight million.
Q That is the allowable assigned to the well?
A The allowable assigned by the Commission, the monthly allowable, was 3.8 million. But after adding the re-distribution in June, the Commission's allowable for that period was 8.1 million.
Q So the four million you are talking about producing would be under the allowable?

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A Yes, with re-distribution.
Q Are you familiar with the provisions of Order Number R-1670?
A I'm sorry, but I would not know the numbers.
Q You stated in your direct examination that you were familiar with prorationing in New Mexico.
A I sure am.
Q But you don't recognize Order Number R-1670 as being the order providing for prorationing?
A I don't go by numbers myself, but I know of the prorationing order.
Q What is the balancing period provided by that order?
A It's for twelve months, and it will be at seven a.m. of April 1st of each year; that's my interpretation.
Q For a twelve-month period?
A Yes.
Q But you are asking the Commission to change that?
A I just know that the Commission, on their own order, changed it.
Q I am talking about in the future. Are you suggesting that the Commission provide another balancing period?
A I am suggesting, if they would do it, the end of September, because of the low monthly allowable of this field.
Q That was part of your testimony?
A That's right.

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MR. KELLAHIN: If the Commission please, I move that any testimony in that regard, as to the re-distribution of allowables, by this witness be stricken from the record as being a collateral attack on the provisions of Commission Order R-1670, as it applies to this pool.

(Whereupon the Commission conferred.)

MR. TRUJILLO: The Commission feels that they should deny the motion.

MR. KELLAHIN: Thank you.

Q (By Mr. Kellahin) Mr. Johnson, do you know who filed the reports for this well with the Oil Conservation Commission?

A I do not.

MR. KELLAHIN: That's all I have.

MR. TRUJILLO: Are there any further questions?

MR. HINKLE: Yes.

* * * *

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Johnson, the water you referred to is commonly referred to as connate water, isn't that right?

A No.

Q It is not?

A No, connate water is referred to as formation water.

Q This is formation water, isn't it?

A No, it is water in a gaseous state with the gas back in

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the formation, and as the temperature and pressure drop at some point, the water condenses from the gas stream into a liquid state.

Q Doesn't it naturally follow that the more gas you produce, the more water you are going to produce?

A Usually these volumes, as has been told me, at this well are very small volumes of water. They normally will not change over the history of the well.

Q You don't think that the water is in direct proportion to the amount of gas produced?

A Definitely not. As the pressure in the reservoir gets lower, I feel that this particular type of water in a gaseous state will reduce as the history of the well goes on and on. You are talking about a minute amount.

Q Do you know of any wells in the South Carlsbad -Morrow Pool that have been damaged by this type of water because of being shut in or shut back?

A I do not know of a well of this type with this type of water. I have not made a study of any of the wells, by the way.

Q Do you know of any in the Morrow formation anyplace?

A I know of many places in the Morrow formation where damage has taken place in the opinion of engineers in the completing of wells.

Q Damage due to fresh water incoming from the formation?

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A No.
Q Coming from elsewhere?
A Right
Q Isn't it true that in the completion of Morrow wells in wildcat areas,sometimes they are shut in for several months at a time before you can get a pipe line connection?
A Yes. I would also like to point out that those wells are usually shut in after a low volume has been extracted from the well, and not two or three billion cubic feet of gas.
Q A lot of it would depend on the character of the study then?
A That's right, but normally very few discoveries produce a billion cubic feet before they are shut in.
Q Do you know of any wells in the South Carlsbad Pool that have been damaged by fresh water?
A I have not made a study of the South Carlsbad Pool in that regard. I do not know of any, no.
Q You do not?
A No, sir.

MR. HINKLE: No further questions.

MR. TRUJILLO: Are there any further questions of the witness?

* * * *

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CROSS EXAMINATION

BY MR. BORKENHAGEN:

Q Do you know the number of wells in the pool?

A I don't know, but from the proration schedule, the last one in October, I believe the acreage factor was thirty, which amounted to approximately thirty-one wells producing. I don't know the number of dryholes.

Q For my clarification, what is the definition of a marginal well?

A Well, by the Commission's proration order, a marginal well is classified as a well that during any prorationing period has not had a monthly, one monthly production, in excess or as high as the average of the allowable during this prorationing period-- This is a little rough to remember and quote, but you can read it right from the proration schedule.

Q From the records you have gone over, have you formed an opinion as to the number of marginal wells in this pool?

A In my opinion currently, if the full allowable is assigned to the wells, which I have stated is only fair in this type of field, both the allowable and re-distribution, there are only now two by the Commission's allowable; there are four in my opinion.

Q Now, if these wells, these marginal wells, were allowed to produce at their capacity, and the non-marginal wells

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were still allowed to produce according to the Commission's order, would that total production come anywhere near the transmission demand?

A No, it would not.

Q If the wells that you feel are non-marginal were allowed to produce without restrictions, in other words, if the total pool was allowed to produce without restrictions, would they be able to make the transmission demands?

A In my opinion from the study I have done, I have not gone into that in detail, they still would not be able to meet demand. But they would more closely approach it.

Q If the Grace Atlantic Well is shut in, are there any other wells in the pool now that face the threat of shut-in?

MR. KELLAHIN: If the Commission please, I would object to this line of questioning. It has no bearing whatever on either the overproduced status of the well or the element of damage that might occur to the well if it were shut in. I move that this questioning is beyond the call of this hearing.

MR. PORTER: The Commission will sustain your objection.

MR. BORKENHAGEN: For the purpose of the record, I would like to state that--

MR. PORTER: I believe that maybe I can help you.

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We allowed this line of testimony to continue a while ago because the first witness testified, or the attorney may have made the statement, that they thought they could show that the well was not overproduced within the rules as now applied by the Commission.

So you are bringing in something else other than the rules now being applied by the Commission, and that's why I sustained Mr. Kellahin's motion.

MR. BORKENHAGEN: For the purpose of the record, could I state our position?

MR. PORTER: Surely.

MR. BORKENHAGEN: Our position in being here was the question of a moratorium, and you said at the outset that you were not considering the moratorium question.

MR. PORTER: That is correct.

MR. BORKENHAGEN: It is our position that we came here, at least the three people that I am representing, came up here to face the question of a moratorium.

MR. PORTER: Had you read the advertisement prior to coming?

MR. BORKENHAGEN: I had read it.

MR. PORTER: And then you got the interpretation after you arrived here?

MR. BORKENHAGEN: That's basically correct, Your Honor. I would like to say that I have been about ten to

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fifteen hours a day handling some other matter, and when I came here, I was not possibly as prepared as I should have been.

MR. PORTER: But you admit that the advertisement was clear as far as any other matters other than damage to the well being considered?

MR. BORKENHAGEN: May I look at it for just a moment, Your Honor?

MR. PORTER: Surely.

MR. BORKENHAGEN: Your Honor, we may be talking about two separate publications, and I would like to point out that this is my second time up here, which would not go to mitigate anything, but would maybe keep some of the laughter down.

We are here under Rule 15(G) to try and show to the Commission, or present our position, that under 15(G) and under the conditions that presently exist throughout the economy as to the gasoline shortage and a natural gas shortage, that that, coupled with Mr. Grace's petition asking for a moratorium pursuant to that, that we were under the impression that we would be able to come up here and present out position, and actively participate in this, showing that there is in fact an emergency situation.

Because of this, we feel that we have properly met all of the requirements of 15(G), and we felt the question of the moratorium would be properly presented.

MR. PORTER: It would still be the position of the

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Commission that the advertisement excluded any discussion of a moratorium.

If you would like to question the witness concerning his direct testimony, you may proceed.

Q (By Mr. Borkenhagen) Mr. Johnson, was it your position that if this well were shut down, that if this well were to be shut down for a period of time, that you would not advise re-opening it? I didn't totally follow what you were saying.

A Definitely not.

Q You would not recommend re-opening it?

A I would not recommend it being shut in for any period of time. If it was shut in for some very short period of time, I would recommend re-opening it as soon as possible.

Q Then I think it was your recommendation that smaller tubing not be placed in this well, is that correct?

A That's correct.

Q If we were to go to 2 3/8 inch or 2 5/8 inch tubing, what effect would that have on the total output of that well?

A Well, it would definitely lower the volume that could be produced at a higher rate. Now, for the exact rate, it would take numerous amounts of calculations. I could make some estimations. It could produce at four million, and still unload liquid, but I do not know if it would or not.

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MR. BORKENHAGEN: No further questions. Thank you.

MR. TRUJILLO: Are there any further questions of the witness?

MR. CARR: Yes.

* * * *

CROSS EXAMINATION

BY MR. CARR:

Q I would like to direct your attention to Exhibit Five, and ask you just a simple question. Is it not correct that what we have in Exhibit Five are certain calculations prepared by you using allowable figures and calculating these against overproduction that indicate that if we used your figures, the Grace Atlantic Well No. 1 would not be overproduced more than six times at the time of shut-in?

A That's right.

Q Now, is it also-- Am I also correct in stating that these are not the figures nor the approach the Commission takes-- This is not a representation of the approach the Oil Commission takes as you understand it?

A That's right.

Q And based on what the Oil Conservation Commission apparently uses, the well would be overproduced?

A That's correct.

Q You are aware that that is the responsibility of the Oil

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Conservation Commission to determine how allowables are calculated; isn't that correct? And this is just a proposal as to how it might be amended?

A I would like to make one point. The point I would like to make is it is not usual for re-distribution in June, and for some reason, the Commission did that.

Q We will call a witness to say why the allowables were re-set in June. We also at this time request that the testimony of this witness be stricken as it applies to anything other than damage to the well.

We also request that the Commission direct the applicant to immediately go to the question which is before the Commission, and that is damage to the well.

MR. TRUJILLO: The Commission will overrule the motion to strike this testimony.

MR. STAMETS: I have an additional question.

* * * *

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Johnson, I believe you indicated that additional gas could be taken from the South Carlsbad Field at the present time, is that correct?

A Yes.

MR. PORTER: And you based that on the nominations--

Is it correct, did you base your statement on the nominations

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that you observed from the transmission companies?

THE WITNESS: I based my statement on the fact that the wells are pinched back that I know of now.

Q (By Mr. Stamets) They are pinched back?

A Yes, they are pinched back at the choke.

Q Why are they pinched back?

A The wells at the present time-- or after the last order-- It was my understanding that after the last order from the Commission saying to shut this well back, Mr. Grace took some action to pinch this well back. He was ordered to shut it in until the overall data we are trying to determine now is determined, if an order is entered shutting the well in.

Of course, that question would be what rate it can be flowed at without damaging the well.

Q Let me get to the heart of this thing. Do you know whether the pipe lines out there are physically able to take more gas from this field than they are at the present time?

A Yes, I do.

Q How much more?

A I assume the nominations that we have.

Q I'm sorry, but I am speaking about the capacities of the pipe lines. Not their nominations, but their physical capacity.

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A I know that El Paso's, and possibly Trans Western's,the pressure on those lines are lower than the tubing pressure currently on the well.

Q Well, that's not unusual, is it? Isn't that the only way the gas will flow from the well into the pipe line?

A Usually you will have the friction pressure in a range-- I don't know, but it may vary fifty pounds. I am talking about a difference of one hundred pounds.

Q They choose the operating pressure of their pipe line, do they not?

A Yes.

Q And you don't know what pressure they choose?

A They are currently running at approximately seven hundred pounds-- They were when I was there.

Q This doesn't tell us how high they could run, or what the capacity of their pipe line is. What I am getting at is do you have any real evidence that more gas could be gotten out of there physically through the facilities that are currently there without the installation of new pipe or new compressors or anything?

A I do not have that information.

Q So it is possible that if this well were shut in, that the other wells, because of the lower pipe line pressure that would result from your well being shut in, the other wells underproducing would be allowed to produce

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more gas into the pipe line because of lower pipe line pressure?

A I couldn't answer that question.

MR. STAMETS: That's all I have.

* * * *

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Johnson, what rate was the well producing at when it was shut in on October 2nd?

A My testimony would be complete hearsay. I think it was around ten million a day, is what I have been told.

MR. HINKLE: That's all.

MR. TRUJILLO: Anyone else? Mr. Hunker?

MR. HUNKER: No questions.

MR. TRUJILLO: If there are no further questions, the witness may be excused.

MR. HOWDEN: I have a few on redirect.

MR. TRUJILLO: Go on.

* * * *

REDIRECT EXAMINATION

BY MR. HOWDEN:

Q Mr. Johnson, Mr. Stamets was asking you about the capacity of the pipe lines to take the gas.

A Right.

Q If it were demonstrated to the Commission by their taking

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judicial notice of the testimony of the pipe line companies in other hearings that they could take all of the gas that could be produced in the area, would that be an indication that in fact they did have the capacity?

A Yes, it would.

Q Now, I think it was Mr. Borkenhagen and Mr. Stevens who asked you about replacing the tubing with a smaller-sized tubing?

A Yes.

Q And if I understood your response correctly, you said that you would not recommend replacing the tubing?

A That's correct, I did. One of the reasons I state that is I have had occasions in the San Juan Basin where we have re-drilled wells because I didn't want to take the chance of re-damaging wells. Normally in engineering, you don't do anything to disturb a large, highly-commercial well after it is on string.

Q I think, if I understood one of Mr. Kellahin's questions correctly, that it was raised in this general sense, that you had testified something to the effect that the well could safely flow at four million. I believe he posed the question in that general sense, and I want to be sure I am clear on that. Is it your opinion that at four million, this well could be safely flowed?

A It is my opinion that at four million, it could not be

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safely flowed.

Q If I understood you correctly,in answer to a question by Mr. Porter, a safe minimum flow would be somewhere between four million and ten million; is that correct?

A It could be between four and ten. The only evidence I have now for a safe minimum flow is ten million, and it could be lower than ten, yes.

Q Again, with reference to Mr. Stevens' cross examination, there was a question I think, if I remember correctly, if my notes are correct, there was a question with reference-- It was again in connection with the 4 1/2 inch tubing, and the idea that the well was designed to flow at too high a rate in the face of the allowable, and I believe if I understood your response correctly, you said something to the effect that there was reason to believe the allowable would be higher. What did you mean by that?

A I assume this, I do not know what the thinking was. But if they felt that the allowable was going to be lower than that, would they have gone to the expense of spending the money for 4 1/2 inch tubing? That tubing is very expensive, and if they didn't think in their own minds that they could produce that well to capacity, they would never have gone to that expense.

Q You made reference in your testimony to some testimony

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of Mr. Utz, I believe it was, that you had reviewed?

A Reviewed what?

Q Some testimony given by Mr. Utz.

A It was given by Mr. Utz, but I do not know if that testimony was given before the 4 1/2 inch tubing was run in the well. From his testimony, they got the impression that the allowable would be ten million a day for a non-marginal well.

Q Just one more question, Mr. Johnson. Given the various questions that have been asked you by these various people, attorneys and experts in the field and so forth, given all those questions, has there been anything suggested to you in any of those questions that would change the basic opinions that you have testified to to this Commission on your direct examination as to material damage to the well if shut in?

A Definitely not.

Q It is still your opinion that it would still be materially damaged in all probability?

A It's highly probable that the well would be damaged if shut in. That is still my opinion.

MR. HOWDEN: I have no further questions.

MR. TRUJILLO: Are there any further questions?

(No response)

MR. TRUJILLO: If not, the witness may be excused.

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(Witness excused.)

MR. HOWDEN: I would like to formally offer and tender in evidence Exhibits Four and Five.

MR. TRUJILLO: Without objection, they will be admitted.

(Whereupon Applicant's Exhibits Four and Five, respectively, were admitted in evidence.)

MR. TRUJILLO: At this time, we will recess until one-fifteen.

(Whereupon a luncheon recess was taken.)

* * * *

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AFTERNOON SESSION

MR. TRUJILLO: The hearing will come to order, please. In view of the fact that at least the Commissioners have a pretty full schedule, we would appreciate it if this hearing could be expedited by everybody.

Do you have some additional witnesses, Mr. Howden?

MR. HOWDEN: Yes. I might say that I think the testimony of Mr. Johnson was the major portion of our case.

MR. TRUJILLO: Will you call your next witness, if you will, Mr. Howden?

MR. LINES: We will call Mr. Ken Smith.

* * * *

KENNETH SMITH,

was called as a witness on behalf of the applicant, and having been already duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. LINES:

Q Would you state your name for the Commission, please?

A Kenneth F. Smith.

Q And your occupation?

A Petroleum consultant.

Q What is your educational background?

A I have a bachelor of science degree from Texas A and M University in 1949.

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Q What has been your work experience since that time?
A Well, I worked for Mobil Oil Corporation for nine years doing just about everything in the production and engineering department. I worked for Dresser Tool Division for five years as division manager on the Texas Gulf Coast. And I have been a consultant for five years.
Q More specifically, have you been qualified previously to testify as an expert witness before this Commission?
A Yes, I have.
Q Have you been employed by Mr. Grace for the last few months in his oil and gas situations?
A Yes.

MR. STEVENS: Mr. Commissioner, if this witness is being tendered as an expert witness, I would like the right to cross examine him to determine if he is qualified as an expert witness.

MR. LINES: I might only say at this time that he has been qualified previously, and has testified before the Commission on several occasions as a witness.

MR. TRUJILLO: The witness's qualifications are accepted.

Q (By Mr. Lines) What has been your employment since the spring of this year, Mr. Smith?
A Since April, for all but about amonth, I guess, it has been with Mr. Grace in the Carlsbad area, and up in

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Wyoming and in various places.
Q More specifically, have you had dealings with the Grace Atlantic Well, the well in question today?
A Yes, quite a lot.
Q Were you the engineer instrumental in bringing the well in?
A I didn't complete it, but I placed it on the line. I placed it on production, I believe, on April 16th.
Q Are you also familiar with the production history since that date?
A Yes.
Q Have you had occasion in the regular course of your business to keep certain records concerning the daily production on this well?
A Yes. We have the pumper fill out what we call a daily well status report showing the flowing pressure, the differential, and the static readings on the meters, along with fluid production and so forth every morning.
Q In your working with this well, Mr. Smith, have you had occasion to form an opinion as to whether or not this well might be damaged if it were cut back or shut in?
A Yes, I sure have.
Q Would you state your opinion for the Commission?
A I would say that it would be almost a cinch that it would be.
Q Would be what?

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A Would be damaged. As Mr. Johnson has testified, it was dropping almost fifty pounds a day when it was flowing from 3800 to 4000 MCF per day.

Q What was the word you used again?

A That it was nearly a cinch that it would be.

Q That it would sustain material damage?

A Yes. This Morrow sand is very susceptible to fluids, even its own produced salt water. This well doesn't make any salt water, but I had occasion to work on one in the summer of 1971, and it was a fabulous well.

Q Was that in the Morrow formation?

A Yes. It was very near this one. We had to kill it and do a fishing job on it to fish some lost equipment out of the hole. At that time, we had almost five thousand bottomhole pressure, and it was swabbed to below 7000 feet before it ever moved a bit of pressure. And this 5000-pound pressure would support a 10,000 column of salt water.

In other words, we had to swab it down to about a 4000-foot column before it would move it at all. And that was treated brine water rather than fresh water. Fresh water is bound to be more damaging to it.

Q Have you had occasion to examine this well to see whether or not it was producing fresh water or salt water?

A Yes, I have.

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MR. LINES: May we have this marked, please?

(Whereupon Applicant's Exhibit Six was marked for identification.)

Q (By Mr. Lines) I hand you a glass container, could you identify that for us?

A Yes, I collected this from the tank where the separator comes off.

Q Can you tell us what contents of the jar labeled Exhibit Six is?

A That's produced water from the Grace Atlantic Well collected last Friday, I believe the 19th.

Q And that was collected personally by you?

A Yes. I also collected another sample and sent it to the Halburton Lab in Lovington, and they have given me an analysis on it.

Q Can you tell us the results of their testing?

A The most important item Mr. Johnson testified to, and that is the chloride count being 250 parts per million.

Q What does the result of this test indicate to you?

A That it's almost drinking water.

Q How do you think this water was formed or was obtained from the production of this well?

A Well, the formation waters in the Morrow sand down there, I forget, but I think are on the order of seventy or eighty thousand parts per million chloride, whereas this

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is 250. This indicates to me that it came out of the gas. It vaporized into gas in the formation. This is very common. All gas wells produce like that, or most of them do.

Q Have you had occasion to work with other gas wells in the Morrow formation that have the same water problems?

A Yes, the City of Carlsbad. I haven't worked with it too much, except that I have tried to manage the production of it. But it has definite water problems, but it's not this sort of thing, it's formation salt water.

Q Do you know of other situations except the one you testified about in 1971 where fresh water problems developed, and where they have been this kind of problem with wells in the Morrow formation?

A No. I think it is a matter of interest to talk about shutting this well in. The Carlsbad-Grace Well was shut in, I don't know exactly when, but it was several months before it was put on the line, and by log calculations, it should have been better than the Grace Atlantic, and it's making about two million a day now, and we have heard testimony of what the Grace Atlantic will make.

Q You testified earlier that in your opinion, there would be material damage to the well if it were shut in. Could you explain for us exactly why you feel that way, and your reasons for that conclusion?

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A I believe it was 1956 where I had experience with Pennsylvanian Age rock. I believe we lubricated with five barrels of water to dissolve a salt plug on the top of the choke, and we might as well have squeezed with cement.

We swabbed it dry, and up until the time I did that and afterwards, we swabbed it dry for two weeks, it had absolutely given up flowing. I think, as I recall, it took 6000 gallons of acid to get it back where it was.

You don't put fresh water in the Pennsylvanian anywhere.

Q Getting back to the Grace Atlantic Well, what kind of difficulties do you anticipate the well would encounter if it were to be shut in?

A It would probably swab dry for a couple of weeks, and you can't acidize that. I haven't seen a successful acid job on that.

Q Getting back to the testimony you heard from Mr. Johnson this morning, I think he indicated that if the well was shut back sharply, or if it was to be shut in, that condensate would form, and with fresh water, that might kill the well. Do you have any testimony or any opinions concerning those allegations he made?

A I would have to agree with him, yes.

Q What do you mean by swabbing dry a well?

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A A swab is a tool. It has a rubber cup, a suction cup, along with valves in it. You run the tubing on a wire line or a cable, and there is a bypass valve, a check valve, that will go down through the fluid, but when you pull it back up, the swab itself is dry-- I mean, we put all the tubing fluid out of the tubing, clear the packer, and keep it that way for two weeks, as I recall, several days anyway, and there is absolutely no input from the formation at all.

Q There was some testimony this morning concerning the size of this well's tubing. Are you familiar with other wells in your experience that have this size of tubing? Or is it just extremely unusual to have tubing of 4 1/2 inches?

A It's apparently very common down south of us a few miles, down in Pecos County, on wells of this magnitude.

Q Have you had occasion to see any production reports or documentations from the State of Texas, specifically concerning wells of that magnitude?

A As a matter of fact, I believe we have pulled fourteen of them-- Or had R. W. Byron of Austin pull fourteen, and I have them here.

Q Have you had occasion to review them?

A Yes.

Q What were your findings?

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A Well, we have fourteen completions here in Pecos County, and the size of the tubing vary from 3 1/2 inches to 5-inch tubing. There is one 3 1/2 and one 5, and the rest are 4 1/2 and 4-inch.

MR. LINES: Mr. Commissioner, at this time, I have a problem. We have daily production reports, and our girl went up to run copies for the parties here. She came back down saying that the Commission was using their machine up there, and that she would get them as soon as she could, and she is not back yet.

MR. PORTER: Are you talking about daily production reports on the Grace Atlantic No. 1 Well?

MR. LINES: That's correct, prepared under the direction of Mr. Smith, who is Mr. Grace's engineer.

MR. PORTER: Does this conclude your testimony with him except for the daily production?

MR. LINES: Yes. If you will just let us re-open this line when they are available?

MR. TRUJILLO: That can be covered on redirect. Are there any questions of Mr. Smith?

MR. PORTER: I have one question.

* * * *

CROSS EXAMINATION

BY MR. PORTER:

Q You testified concerning the Grace-Carlsbad Well.

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A Yes.
Q You are not talking about the City of Carlsbad?
A No, sir.
Q The Grace-Carlsbad?
A Yes.
Q You say that that well is producing at two million a day?
A I believe that's correct, maybe a little less.
Q And the logs would indicate that it should have greater potential than the Grace Atlantic Well?
A I wouldn't say greater, but those are as close as any as I have seen in that field.
Q And you say it was shut in?
A Yes. I believe it was completed in the summer or spring of 1972, and I put it on the line at the same time as the Grace Atlantic in April.
Q In other words, it stayed shut in for about a year?
A Close to it, say nine months, I believe.
Q Thank you.

MR. TRUJILLO: Does anyone else have any questions?

MR. STEVENS: Yes.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Smith, are you a petroleum engineer?
A No, sir.

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Q Are you a geologist?
A No, sir.
Q Your testimony however is still as an expert in reservoir mechanics in the South Carlsbad Field?
A Yes, I think I can do that.
Q You stated--
A I helped make the reservoir. I got pretty good training.
Q Is it a sand or dolomite reservoir?
A Dolomite. I worked for five years in the Texas Gulf Coast with nothing but sand.
Q You stated that if the well is shut in, in your opinion, it will dry up. What is the phenomena that you think might take place to cause such a dry-up?
A Well, if there is Benzanite or clay in it at all, it would do it.
Q Have you ever heard of anyone finding Benzanite or clay in the Morrow formation?
A No. I can't prove there is, but you can't prove there isn't.
Q Do you have any evidence that this water will hurt this well other than your assertion that it will?
A It hurt every other one I ever got it on.
Q Can you name one well that had fresh water introduced into it that was produced as a condensate from the gas in the well?

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A Yes, every gas well had that.
Q Every gas well in the South Carlsbad-Morrow Field has water producing from the gas, and every well has been hurt from that water?
A No, it's not hurt as long as you keep it moving, and keep the formation dried up.
Q To your understanding, most of the other wells have been shut in at one time or another in the South Carlsbad Field, isn't that correct?
A That's right, but there is not a well comparable to this one in the field.
Q Is it your opinion that water in a gaseous state caused a lesser capacity in all of the other wells in the South Carlsbad-Morrow Field?
A I think it's a good possibility, but I wouldn't testify that I think that happened. But I think it's a good possibility.
Q Has this well been shut in?
A Not for a very long rate. After the four point test was run on it, it was shut in for bottomhole pressure.
Q Did that hurt the well, to your knowledge?
A I don't know. We haven't really worked it back since then to see if it did.
Q This well has been shut in, and you have no evidence that from that shut-in, presumably the water might have hurt

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this well?

A No, I don't have any evidence that this well has been damaged at all, no.

Q Don't most of the other wells that report water report salt water as opposed to fresh water?

A Well, if a well is making any salt water at all, these fresh water volumes are very low.

Q Are there other wells in the South Carlsbad Field that make only fresh water and no salt water, to your knowledge?

A Yes, I would imagine the Grace-Carlsbad does,for one.

Q Is there any way to-- First, let me ask you, on these wells in Pecos County, are they producing out of the Morrow sand?

A No-- Well, I don't know-- Some of them may be.

Q Are they producing out of sand or dolomite? Do you have that knowledge?

A We can screen the reports and figure it out. I imagine most of them are producing out of dolomite.

Q Would you be able to compare a dolomite reservoir and a sand reservoir as to whether they might be hurt by water damage?

A I don't see why that would make any difference. You can damage dolomite the same way you can damage sand stone.

Q Do you have any evidence that that has happened?

A No.

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Q What allowables do these Texas wells have that you mentioned?
A I don't know.
Q Is it a greater or lesser allowable than the South Carlsbad-Morrow Field?
A I couldn't say.
Q If it were higher, would you presume that they were running larger tubing in order to produce a higher allowable?
A Well, yes, that's true.
Q Is there any way to run 2 1/2 inch tubing inside 4 1/2 inch tubing-- 2 3/8 inch tubing, I mean, without shutting in the well and thereby having any possibility of having any formation damage?
A Oh, there's a way, yes.
Q It could be done, in other words?
A Yes.

MR. STEVENS: No further questions.

THE WITNESS: It's rather expensive.

MR. STEVENS: In view of the witness's answer, I would like to ask one more question.

MR. TRUJILLO: Proceed.

Q (By Mr. Stevens) How expensive is it to the other operators in the field for Mr. Grace to operate his well at a higher rate than the other operators?

MR. HOWDEN: We will object to that as asking for a

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conclusion without laying a foundation.

MR. STEVENS: I am only asking the question because he brought up economics in regard to re-tubing their well. And I only wanted him to compare it to the economic loss of the other operators in the field.

MR. HOWDEN: That's the point, Mr. Chairman. I don't think it has been established as to the economics of the damage to wells in the field. Now, if he wants to ask him if he has any knowledge, but I don't think he has laid a proper foundation up to this point.

MR. TRUJILLO: The objection is sustained.

Q (By Mr. Stevens) The fresh water that you have contains 250 parts of chloride per million?

A That's correct.

Q When it is transformed from a gaseous state to a liquid state, wouldn't it have zero parts per million?

A Yes.

Q Where would you presume this 250 parts per million came from?

A I don't know. Maybe from an ounce or two of salt water coming out of the-- possibly picked up in rock or someplace.

Q Possibly in the tubing?

A Or out of the gas.

Q Or out of connate water, perhaps?

A Well, it's possible.

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MR. STEVENS: No further questions.

MR. TRUJILLO: Are there any further questions?

MR. HINKLE: Yes.

* * * *

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Smith, you referred to this well in Texas that you put fresh water into to wash out a salt plug, and I believe you stated that that was the Pennsylvanian formation?

A Right.

Q Was that Morrow formation?

A No, it was not.

Q Okay.

MR. HINKLE: That's all I have.

* * * *

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Is the well Mr. Hinkle referred to the one you said you killed in 1971?

A No. No.

Q What well was that?

A That was the Humble-Grace.

Q In the South Carlsbad area?

A Right.

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Q What caused the damage to that well,in your opinion?
A Well, it had to be perforated, and it flowed a little while. I guess it was then tested, and it was found that a perforating gun had been lost, and the process was instituted to fish that gun out of the hole.

Finally we got the tube into it, and damaged the annulus. It was treated with brine water,though.

Q So it was not the same kind of water we are talking about here?
A No, it should be better water for the well than this.
Q Was it the water that killed the well,or was it just a bad completion?
A Well, we got the well back, but it wasn't like it was to start with.
Q Well, could you answer my question? Was it a bad completion, or solely due to the water?
A It was an excellent completion.
Q But you had a lot of trouble making it?
A It depends on whether you are talking about the first time or the second time.
Q At which time was it damaged?
A It was damaged during the work-over on it.
Q The second time?
A Yes.
Q Now, those Texas wells you were referring to with 3 1/2

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to 5-inch tubing. How deep are they?
A They vary from 12,000 to 20,000 feet.
Q They are all rather deep wells?
A Yes, they are a little deeper than this, but some are not much deeper than this.
Q The Grace Atlantic Well is what you call a tubular compression, is it not?
A No.
Q What do you call it?
A A conventional casing tubing compression.
Q Could you give us the casing program on the well?
A Not exactly. It's seven-inch casing set at eleven eight or nine-- I don't recall, I don't have the records with me.
Q To your best recollection.
A Seven-inch casing set at the bottom. I believe it's seven-inch by 4 1/2 with a packer, and with 4 1/2 inch tubing.
Q So you have 4 1/2 tubing set below the casing?
A No, set above the perforations.
Q Now, that sample of water that you have there. You say you got it from the pit or the tank next to the Grace well?
A Right.
Q Do you haul any water from any other well into that tank?
A No.

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Q Do you know this for a fact?
A Yes.
Q Did you find any iron content in that water?
A Nil.
Q No iron?
A No.
Q Isn't it normal to find some iron content from water from the Morrow formation?
A Yes, if you have Morrow salt water.
Q Well, you have some salt in this water.
A Well, no. By all reasonable standards, there is no salt in that water. That's fresher than the city water in Carlsbad, I imagine.
Q That could be, but that's not too fresh. Mr. Smith, I believe you testified that the Grace-Carlsbad Well makes about two million MCF after it nad been shut in.
A That is being generous with it. I don't think it came on the line at a higher rate than that. But it's not near the well this one is.
Q How long has it been making two million?-- When was the well shut in?
A The Grace-Carlsbad?
Q Yes, sir.
A Well, it was shut in-- It was completed and tested, a four point test run, but I don't remember-- It was some

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time in the spring of 1972, and it was shut in until April, 1973.

Q Actually on the June proration schedule, if it shows that the well made approximately eight million a day in June, then your testimony would be incorrect, wouldn't it?

A I am talking about now. In June, it was, I'm sure it was-- I believe we put it on the line at around seven million in April.

Q Was it shut in subsequent to that?

A No.

Q So the shut-in didn't reduce the flow of gas from that well, did it?

A I don't know. I just say that it is not near as good a well as this one.

Q But you don't know what causes this?

A It should be.

Q Was the potential on the well as good as the Grace Atlantic Well?

A Absolutely not. In the first place, it has 2 3/8 inch tubing in it.

Q It could have been damaged during the completion, could it not?

A (No response)

MR. PORTER: I would like to ask one question--

Q (By Mr. Kellahin) Why was the well shut in for so long,

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Mr. Smith?

A I don't know. That's really none of my affair.

Q What is your position with the Graces?

A I am a consultant.

Q Do you have any responsibility for the operation of this well?

A With the Grace Atlantic?

Q Yes, sir.

A Well, I have responsibility passed on by Mr. Grace. He tells me what responsibilities I am to have.

Q And does he pass on to you the responsibility to see to the operation of the well?

A Well, I'm responsible for supervising the pumper and seeing to it-- watching the well and making sure it is performing properly, and that there are no mechanical problems.

Q And is the pumper directly under your supervision?

A In regard to the operation of this well,to a certain extent.

Q Whose responsibility is it to file the reports to the Oil Conservation Commission?

A They're done by the office girls.

Q Who gives them the information?

A The pumper.

Q Do you know why no water production has been reported on

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this well to the Oil Conservation Commission?

A No, I don't.

Q Thank you.

MR. PORTER: I have one question. You said, I believe, that the Grace-Carlsbad Well was completed, and that then they ran the four point test.

THE WITNESS: I believe that's correct.

MR. PORTER: And then they shut it in until April of 1972?

THE WITNESS: 1973. That was waiting for a pipe line connection, I believe.

MR. PORTER: Then I believe you testified that it probably came on at about seven million MCF in April, 1973?

THE WITNESS: I believe so.

MR. PORTER: Do you know what the potential was when they took that four point test?

THE WITNESS: I did look it up, but I don't recall it now.

MR. PORTER: You don't know whether it was greater or less than seven million?

THE WITNESS: I think it was greater-- I know it would be-- You mean calculated absolute openflow?

MR. PORTER: Well, yes.

THE WITNESS: Yes. And I think it flowed at a higher rate than that, yes. Of course, they may not have been

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flowing it against line pressure or something.

MR. PORTER: But you say that by June, it had fallen off to-- I mean, by now, it has fallen off to about two million?

THE WITNESS: By now, yes.

MR. PORTER: You also said that you are to some degree responsible for the supervision of the pumper. Who determines the rate at which the well is to be produced?

THE WITNESS: Well, I don't.

MR. PORTER: Well, do you have a witness who can testify as to who determines the rate of flow?

MR. HOWDEN: We had not anticipated presenting testimony as to that, Mr. Chairman. Perhaps we could get that information for you, though. You want to know who determines how much this well flows per day?

MR. PORTER: Yes. I think that it is apparent that the proration schedule hasn't determined that, so I was wondering whether the purchaser of the gas determines that, or does the operator?

MR. HOWDEN: Mr. Chairman, I will check into it to see if I can come up with an answer.

MR. PORTER: I think we should have that information.

MR. TRUJILLO: I agree.

Does anyone else have any questions of the witness?

MR. STAMETS: Yes, sir.

* * * *

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CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Smith, you heard the testimony earlier by Mr. Johnson that this well is producing one or two barrels of water per million cubic feet of gas?

A Yes, sir.

Q Do you confirm that?

A Yes, sir.

Q Over how long a period do you confirm that?

A Since April 16th.

Q And this is based on the pumper's reports?

A Yes.

* * * *

CROSS EXAMINATION

BY MR. HUNKER:

Q This well is also making some condensate. Do you know to whom it is being sold?

A Navajo, I believe.

MR. TRUJILLO: Does anyone else have any questions?

(No response)

MR. TRUJILLO: Do you have any further questions, Mr. Lines?

MR. LINES: Yes.

* * * *

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REDIRECT EXAMINATION

BY MR. LINES:

(Whereupon Applicant's Exhibit Seven was marked for identification.)

Q (By Mr. Lines) I hand you what has been marked as Exhibit Seven. Do you recognize those?

A Yes, I do.

Q Can you identify them for us?

A Yes, this is our daily status report from the pumper in the South Carlsbad Field. He fills out this every morning.

Q Was this prepared under your direction?

A Yes.

Q Are you familiar with the contents of that report?

A Yes.

Q I would like you to, if you would, Mr. Smith, to review the report for the month of October at the times that the well was shut in as was testified to earlier by Mr. Johnson, and more specifically the changes in the well's pressure because of those shut-in periods.

A On the morning of October 4th at seven a.m., he reported 1870 pounds tubing pressure at a rate of 9643 MCF per day. On his notes, it shows a shut-in at 10:30 a.m. that morning.

At seven a.m. on the morning of the 5th, he reported 2000 pounds tubing pressure. The well was shut in on

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the morning of the 6th, and he reported 1925 pounds of tubing pressure with the well flowing at 4305 MCF per day.

On the morning of the 7th, he reported 1875 pounds tubing pressure with the well flowing at 4370 MCF per day.

On the morning of the 8th, he reported 1800 pounds of tubing pressure with the well flowing at 4370 MCF per day.

On the morning of the 9th, he reported 1750 pounds tubing pressure and 4127 MCF per day.

On the morning of the 10th he reported 1700 pounds of tubing pressure with 4127 MCF per day.

On the morning of the 11th, the tubing pressure was 1650 pounds with the well flowing at 3884 MCF per day.

On the morning of the 12th, there was 1560 pounds of tubing pressure with the well flowing at a rate of 4005 MCF per day.

On the morning of the 13th, there was 1500 pounds of tubing pressure with the well flowing at 4066 MCF per day.

On the 14th, there was 1475 pounds of tubing pressure and 3770 MCF per day.

On the morning of the 16th, 1650 tubing pressure, with a flowing rate of 4409 MCF per day.

On the morning of the 17th, 1500 pounds tubing pressure flowing at a rate of 3998 MCF per day.

On the morning of the 18th, 1440 pounds of tubing pressure flowing at a rate of 3802 MCF per day.

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That was the date that Mr. Johnson went down there and opened it up and unloaded it.

Q Did these reports then verify the information given by Mr. Johnson this morning--

A They sure do.

Q -- As to flow and pressure?

A Yes.

Q Do these reports re-enforce the opinion you earlier stated concerning the material potential damage to the well?

A Yes. As a matter of fact, he was getting these reports by telephone, and was beginning to get concerned, and that's the reason we opened it up.

MR. LINES: That's all I have.

MR. TRUJILLO: Does anyone else have any questions of Mr. Smith?

MR. KELLAHIN: Yes.

* * * *

RE-CROSS EXAMINATION

BY MR. KELLAHIN:

Q We don't seem to have a report for the 19th.

A I don't have one either. I don't know why it's not there. The well was opened, like Mr. Johnson testified, for two hours at a fifteen million rate, and it was pinched back. Since then, the thing has been making nine to ten million.

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The tubing pressure the next morning, after the unloading, was 1975 at this ten million rate.

Q None of these reports seem to be showing water production.

A No, they don't have them there.

Q Was there any water produced on the 15th and 16th?

A No.

Q Can you explain why the pressure went up?

A I can't see this dang thing. The 15th and 16th?

Q Yes, sir. You had a change in your pressure at that time.

A You're right. It made three inches of water, so that's about six barrels.

Q Is that shown on the exhibit?

A No, it isn't.

Q Are you just remembering that?

A No, I have some notes here. Six barrels of water is what I said.

Q You say that these are field reports made by the pumper?

A These are made in the office from the sheets the pumper actually takes into the field.

Q Do you have the original reports presented by the pumper?

A As a matter of fact, I do.

Q Would you produce those, please?

A Here they are.

(Whereupon Applicant's Exhibit Number Eight was marked for identification.)

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Q (By Mr. Kellahin) What has been marked as Grace Exhibit Number Eight is a copy of the actual field reports prepared by the pumper?
A Yes, sir. That's what he takes with him to each well.
MR. KELLAHIN: Can we have just a minute to look at this?
MR. TRUJILLO: Yes.
Q (By Mr. Kellahin) Are you preparing to offer the water analysis today?
A I can, if you would like it.
Q Yes.
A This is what I have here (indicating).
Q Is that the report furnished to you?
A Yes.
Q Could we just have it marked as an exhibit, and offered as an exhibit?
A This came over the telephone, and it's not in very good form.
Q That is the Halburton report then?
A No, I don't have that. That hasn't been received as yet.
Q When was the analysis made?
A I gathered that sample last Friday morning, and I guess the analysis was made early this week.
Q Well, go ahead and read the figures then.
A The P.H. was 6.9; calcium, 25 parts per million;

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magnesium, 9 parts per million; chloride, 250 parts per million; sulphur, 200 parts per million; bicarbonate, 35 parts per million; soluble iron, nil.

Q That is the complete report?

A Right.

Q Thank you, sir.

MR. KELLAHIN: That's all the questions I have-- I have one more question.

Q (By Mr. Kellahin) None of these sheets on the Grace Atlantic Well show any choke size.

A Well, this well has an automatic pressure control choke on it, and it is adjustable,as it were, and there is no way to get the choke size on it.

Q Do you know how much it is choked back now? Is there any way you can tell?

A The only way I have ever attempted to show the choke size is to go to the adjustable and put it on a rate with a meter, and then go open the pressure control tool up to where it produces at the same rate.

Q Have you done that?

A Yes, I have several times, but I'll be danged if I can remember it. I'd say it's on about a twenty-six choke.

Q A twenty-six choke?

A Something on that order. Now, that's flowing on this ten million rate.

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Q And that choke cut it back to ten million?
A Yes.
Q Thank you.

MR. PORTER: I want to get back to the Grace-Carlsbad Well. If you don't know what the well potentialed at, if you don't know its comparative producibility on the date it was completed, you don't know whether it was hurt or not, do you?

THE WITNESS: Well, the well never has acted properly, I'll put it that way. If you look at that log and compare it with the Grace Atlantic, and then compare the production it makes, you have to wonder.

It actually is prettier looking than the Grace Atlantic.

* * * *

RE-CROSS EXAMINATION

BY MR. HUNKER:

Q Referring to your Exhibit Number Eight, could you explain the four columns shown on the right-hand side of that exhibit, what they represent?

A All I can do is read it. The first column on the right of the four columns is the static pen. The next one is the red pen. The third column is water. The fourth column is condensate.

Q And is that condensate measurement represented in inches in the tank?

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A Feet and inches, right.
Q So there were two feet, one inch of condensate produced on the 1st of October, is that correct?
A No.
Q What is that first figure?
A That's two feet, one inch, but that's what was in the tank on the 1st of October.
Q And that figure remained constant until the 22nd, is that correct?
A Well, you shouldn't hold me to these figures. This well is dumping fluids into the tank, and that's a collar cut measurement, and that's not really dependable on that line. I mean, if you average over several days, I'm sure it will be dependable, but not every day.
Q Was the condensate sold on the 22nd so that the tank was reduced to eighteen feet?
A You couldn't reduce it to eighteen feet, the tank is not that tall.
Q What was the number of feet in the tank on the 22nd?
A Two foot, nine, I believe.
Q Wasn't that the figure on the 21st, Mr. Smith?
A Maybe so, I can't see this very well. It could be four foot, four inches on the 22nd. That's the best I can tell.
Q Then on the following date, the figure is one foot, eight

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inches?

A Well, you wouldn't get me to swear to that. I don't know what it is.

MR. HUNKER: That's all I have.

* * * *

RE-CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Smith, several times you have referred to the electric log and the fact that this well looks good. What are the factors on the electric log which would indicate the flow rate?

A Well, the porosity and the cleanliness of the sand on the gamma ray side near the deflection in the rate deviation.

Q Does the porosity have anything to do with flow rate?

A Oh, yes.

Q What kind of porosity--

A Well, the porosity correlates with this sand. No, it doesn't have anything to do with flow rate. The shale itself is thirty-three to thirty-five percent, I guess, or more.

Q Can you flow anything out of shale?

A No, not usually-- As a matter of fact, you can, sometimes you can.

MR. HOWDEN: Just so I understand this correctly,

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I believe Mr. Hinkle's question is directed to the Grace-Carlsbad.

Q (By Mr. Hinkle) How do you know that the Grace well would be damaged by shut-in?

A I didn't say that. I just said that the Grace-Carlsbad Well has a better-looking section on the log than this well does, or as good. I think it's better actually, and it has never performed anything like the Grace Atlantic.

Q And the log was the basis of your assumption, was 't not?

A And the performance of the well, yes.

MR. HINKLE: That's all I have.

* * * *

RE-CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Smith, referring to your Exhibit Number Eight, I would like you to bear with me a little bit while I set this out. I have taken the amount of water made under Exhibit Eight-- shown in your Exhibit Eight from October 6th through October 19th, and come up with thirty-seven inches in that thirteen-day period, and I took the amount of water made from the 20th through the 23rd, four days in there, and I came up with seven inches.

So extrapolating, you get a little less than two inches of water per day at the high flow rate period,

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and I am getting approximately three inches per day at the low flow rate.

Is this in line with your previous testimony that at a higher rate, you are going to flow water out, and you are not going to do so at a lower rate?

A Well, first of all, I don't understand your figuring in there.

Q I will accept the fact that my figures may well be in error.

A It made fourteen inches, didn't it, in the thirteen days?

Q Well, let me go back. Adding up all the inches here, I figure about thirty-seven inches, and I have divided that by approximately thirteen days in there, and I came up with almost three inches. I stand corrected on that if my figures are in error, but on the bottom part, I came up with a total of seven inches, approximately two and a half times the rate of the low rate. Yet you are coming up with only about a little less than two inches of water per day, and you previously testified that the higher rate would flow the water out, and the lower rate wouldn't.

Yet according to these figures, you have the higher rate being blown out at a lower rate of production. Can you explain this discrepancy? A higher rate of water being blown out at the lower rate of production?

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A Well, I assume it made fourteen inches of water during that two weeks time, didn't it?

Q Well, I came up with a much higher figure based on the figures you have there. You did have a bleed-off on the 12th?

A Yes.

Q I am merely adding up the difference in the gauge from day to day just based on this report. Isn't it true that on this exhibit, the higher rate will not blow out as much water as the low rate?

A Well, this is true. It finally got to making some water there at the low rate, and on that day, the tubing pressure went up. It made-- I can't tell whether it's eight inches, it looks like it made eight inches on the day the pressure went up from fourteen hundred fifty pounds to 1650 pounds. When you fill it so full, yes, it will unload it at any rate. It will unload it at two hundred MCF.

Q Then why can't we flow it at four million a day and then unload it occasionally?

A Are you prepared to say at what date it will fall back clear to the perforations?

Q No, sir.

A I'm not either.

* * * *

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CROSS EXAMINATION

BY MR. CARR:

Q One short question, Mr. Smith. The well produces varying amounts of water day to day, isn't that correct?

A Yes, sir.

Q Is this water production a recent development, or has this been over an extended period of time?

A It's about like it was when we flowed it on the first month.

Q So it has produced water in some amount since the initial connection?

A Yes.

MR. CARR: That's all.

* * * *

RE-CROSS EXAMINATION

BY MR. KELLAHIN:

Q Just to clarify the record, is the last column in Exhibit Eight condensate production?

A I left my glasses in Wyoming yesterday, and I can't see anything.

Q It seems to be tank measurement.

A Yes, it is.

Q And I assumed it was condensate.

A Yes, it is.

MR. LINES: I would suggest for the record that you

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read again from left to right exactly what these columns represent so we will have that in the record.

THE WITNESS: The first column is the blue pen, or static pressure pen on the meter.

MR. LINES: This is the first column from the left?

THE WITNESS: Oh, from the left?

MR. LINES: All the way across so we know exactly what each column is.

THE WITNESS: Well, the first column is the meter number; the second column is the date-- Wait a minute. The first column is the time; the second column is the date; the third column is the tubing pressure.

MR. LINES: Why don't you now go from left to right and identity the four columns?

THE WITNESS: The first one is the static pressure reading on the meter; the second one is the differential; the third one is the total water in the tank; and the fourth column is condensate.

* * * *

REDIRECT EXAMINATION

BY MR. LINES:

Q Your chart doesn't show the well making much more water during the high rate.

A Like I said, I can't see the darn thing, but apparently yes. That well hasn't settled down yet from that

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reduced rate. It's still erratic.

Q From where you cut it down earlier?

A Right.

Q Has there been anything asked of you since your direct examination that has changed your mind concerning the professional opinion you gave concerning your thinking that there is high probability that damage would occur if this well were shut in?

A I still think this would be true, yes.

MR. LINES: I have nothing further.

MR. TRUJILLO: Are there any further questions of the witness?

(No response)

MR. TRUJILLO: If not, the witness may be excused.

(Witness excused.)

MR. HOWDEN: At this time, we will offer Exhibits Six, Seven, and Eight.

MR. TRUJILLO: Without objection, Exhibits Six, Seven, and Eight will be accepted in evidence.

(Whereupon Applicant's Exhibits Six, Seven, and Eight, respectively, were admitted in evidence.)

MR. TRUJILLO: Do you have any additional witnesses, Mr. Howden?

MR. HOWDEN: No, Mr. Commissioner, we have no further witnesses. I do want to make sure that our record is clear.

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In our application for this hearing, we requested the question of a moratorium be considered also, and I believe Mr. Carr stated for the record, and I want to make sure I am clear on this, I believe it was his statement that this was strictly in the province of the Secretary-Director for a decision, and not a matter which would be proper subject for a hearing.

I just want to make sure that I understand the reason why this is not being considered. I want to make sure that this is clear, and on the record.

MR. PORTER: Mr. Carr, were you going to answer that?

MR. CARR: Yes. I have to look at the application.

MR. TRUJILLO: I think there was a question from Mr. Porter regarding who was responsible for determining the rate the well is produced at.

MR. HOWDEN: Yes. It is my considered opinion, Mr. Chairman, submitted most respectfully, that it would not be relevant to the question of damage to the well. So therefore, it would be inappropriate for us to put on testimony in that regard.

If the Commissioner would care to call the operator, then of course, we would approach it from that direction. But it being inconsistent with our case, I don't think it's appropriate for us to address ourselves to that question, because we do not believe it is relevant to our case.

MR. CARR: Mr. Chairman, in the application filed

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here, in paragraphs seven and eleven, the applicant requests the Commission to grant a moratorium.

They cite Section 15(G), which provides that the Secretary-Director can provide a moratorium up to three months.

Since they did not request a moratorium for any longer period than three months, it is our position that it is not properly before the Commission, and that this can be handled administratively.

MR. PORTER: As far as that is concerned, the Executive-Director doesn't mind ruling on that right at this moment--

MR. HOWDEN: Mr. Chairman, I think for the purpose--

MR. PORTER: -- Although I don't think it needs to be in this record.

MR. HOWDEN: -- I feel that inasmuch as we have applied for it, if we are to complete our record, we must at least indicate our present preparedness to present evidence in this connection. I simply want to make it understood on the record that we are prepared to proceed with that question.

If we are not to go into that, then we would rest, and of course, the Commission has indicated it is not being heard. But attorneys learn through sad experiences that if they don't make these tenders at the appropriate time, they may be shut off from ever raising the question again.

So with that thought in mind, Mr. Chairman, we say

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that we would offer evidence were it permitted in support of our request for a moratorium.

And may I say-- If I may only say this in addition. As I read Rule 15(G), it makes reference to language in there "upon proper showing that such emergency exists". So I find myself faced with an interpretation-- or with a proposition that this could be interpreted to mean that we must come in and properly show-- That language, to me, would suggest that we should make a showing, and I am saying that we are prepared to do so.

MR. CARR: I would suggest-- request that the Commission take notice of the complete text of Rule 15(G).

MR. PORTER: The Commission will take notice of the complete text of Rule 15(G). However, I believe the Commission does feel that the moratorium is not a proper subject to be heard today, because of the way this case is advertised, and the fact that this is a matter which is handled, up to ninety days, administratively by the Secretary-Director.

If somebody should want to go beyond ninety days, then it would require a hearing.

MR. LINES: Can the Commissioner tell us at this time if he would consider such a moratorium?

MR. PORTER: I would go off the record.

(Whereupon an off the record discussion was held.)

(Hearing continues.)

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MR. HOWDEN: On that, we would rest our application.

MR. PORTER: We may want to call the person who is responsible for the operations.

MR. HOWDEN: I understand that. It is strictly from a standpoint of procedure that we feel that it would be inconsistent if we offered evidence in that respect.

MR. TRUJILLO: That concludes your presentation, Mr. Howden?

MR. HOWDEN: That's correct, Mr. Commissioner.

MR. TRUJILLO: Mr. Carr, do you have some witnesses that you would like to present at this time?

MR. CARR: Yes, we have one witness, Mr. Dan Nutter. The record should show that Mr. Nutter has been previously sworn.

* * * *

DANIEL NUTTER,

was called as a witness on behalf of the Oil Conservation Commission, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

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

A Dan Nutter, Chief Engineer for the Oil Conservation Commission.

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Q Mr. Nutter, how long have you been employed by the New Mexico Oil Conservation Commission?

A Since September 1st, 1954.

Q Would you briefly summarize your qualifications and employment background?

A Yes. I graduated with a bachelor of science degree in petroleum engineering from New Mexico School of Mines and Technology in February, 1952. Subsequent to graduation, I was employed by Phillips Petroleum as a petroleum engineer and staff engineer. After that, I entered the service of the Oil Conservation Commission on September 1st, 1954.

I was employed originally as a petroleum engineer, and then later raised to staff engineer. Subsequently, in 1957, I was raised to Chief Petroleum Engineer. I am a registered professional engineer in the State of New Mexico.

Q Do you hold any additional jobs or positions which might tend to qualify you in the petroleum engineering area?

A I have had considerable experience not only with the Commission, but with various committees of the Interstate Oil Compact Commission. I recently served in an advisory capacity for the State of Michigan in overhauling their prorationing system.

Q Have you had previous Court experience in which you have

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testified as an expert witness?

A Yes.

MR. CARR: Mr. Chairman, I tender Mr. Nutter as an expert witness in the area of petroleum engineering, and submit him for voire dire at this time.

MR. TRUJILLO: The witness's qualifications are accepted.

Q (By Mr. Carr) Would you give us a brief background of prorationing?

A Yes. As a whole, prorationing was instituted in various states of the United States in the early Thirties. It followed an era of chaos which developed during the Teens and Twenties. In the early Thirties, petroleum engineering had advanced to a state where it was felt that much of the waste and chaos could be avoided by the adoption of rules and regulations and other measures which would govern the development of our oil and gas reserves in this country.

As I stated, prorationing was instituted in the early Thirties. Oil prorationing in New Mexico started back in the 1930's; gas prorationing in New Mexico started in the early Fifties.

At the time, hue and cry flowed throughout the nation that you couldn't prorate wells because it would damage them. Subsequent to this, it has been found that

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our reserves in this country have been immeasurably extended as a result of prorationing and wise conservation practices.

I feel that the prorationing of the South Carlsbad-Morrow Pool is also in this interest, and I hope we don't have hue and cry against prorationing in the South Carlsbad-Morrow Gas Pool.

Q Are you familiar with the South Carlsbad-Morrow Gas Pool?

A Yes, I am.

Q With the Morrow formation?

A Yes.

Q And the Grace-Atlantic No. 1 Well?

A Yes, sir.

Q When were you last at the well site?

A In the early part of October.

Q In your opinion, what are the possible causes of damage to the well when it is shut in?

A Well, normally the shutting in of any gas well won't damage it. Now, there are certain conditions in some gas reservoirs, particularly reservoirs with high connate water or water drives, in which the shutting in of the wells may result in damage because of the relative permeability of the gas to the water.

However, under normal circumstances, in any dry gas reservoir, there is no damage whatsoever with the

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shutting in of a well.

Q Will you refer to what has been marked as Oil Conservation Commission Exhibit Number One, and identify it, and explain what it contains?

A Yes. Exhibit Number One is a copy of the well file that we have here for the Grace-Atlantic Well No. 1. I won't go into the location of the well, but the complete file is reproduced here in Exhibit Number One.

Q Will you please refer to Exhibit Number One, and tell the Commission a little bit about the production history of this well, giving special note as to how much condensate has been produced according to the forms filed with the Commission?

A Yes, sir. The first form which I will refer to is Sheet Number 18 in the well file. Mr. Howden, do you have a copy of it? The numbers are down at the bottom of the page, but I don't believe your copy is marked, Mr. Porter. But there are thirty-one pages in it, so it's thirteen pages from the back.

This form, incidentally, is Form C-122.

If you will note, about one-third the way up the page, the hydrocarbon ratio is noted as being T/S/T/M, too small to measure.

The next page is page 17. This is a summary of the drill stem test taken on the well. The interval is

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not given on this, but one side is 11,479, which goes to the general interval of the perforations in the well. You will see that the flow was taken and reported as no fluid. That is in test number two through the bottom line, and is reported as no fluid. Test number three was taken in the interval from 11,477 to 11,620, and again it reports no fluid.

The next form that I will refer to would be page 14, and that is a copy of the C-105 on file with the Commission. You will note down at the bottom that on the test taken March 29th, 1973, it reported a calculated absolute openflow of 65,737 MCF; no oil listed; no water listed; and the gas-oil ratio is given here as being dry gas.

Now, we'll skip over to Form Number 11, which is a copy of the C-104, requesting an allowable for gas. Notice that there is thirteen and thirty-seven casing cemented with 375 sacks at 356 feet. There is 5402 feet of 9 5/8 pipe cemented with 1250 sacks, and another 400 sacks. There is 7-inch pipe at 11,768 feet with 500 sacks of cement. There is 4 1/2 inch tubing listed at 11,000 feet. And I believe there is a packer indicated on here somewhere. I don't see the packer. The packer is listed on some other form.

If we turn now to page 8, this was the second test

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taken on the well. The date of this test was the 3rd of July, 1973. Again, the gas liquid hydrocarbon ratio is given as too small to measure.

Now, going to page 13 of the exhibit, this is a copy of Administrative Order TX-39, a letter issued by the Oil Conservation Commission addressed to Mrs. Juanita A. Jones, Post Office Box 141, Carlsbad, New Mexico. In Administrative Order TX-39, reference is made to your application for an exception to Rules 107-D2 and 107-D3 for the Grace-Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, to permit the production of gas through 4 1/2 inch tubing set at 11,000 feet, the uppermost perforation being at 11,424 feet.

I might point out what these two exceptions are. Rule 107-D2 provides that all gas wells equipped with casing larger in size than 2 7/8 inches shall be subject to a tubing exception. We have considered this as the maximum size of tubing that can be run in a well without a tubing exception. Since the top perforation is 11,424 feet, that would be an exception to the 250-foot tolerance where tubing should be hung. Also since it is 4 1/2 inch tubing, it is larger than the standard size.

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The letter continues: Inasmuch as the gas produced from this well is very dry gas with a liquid ratio reported as T/S/T/M, it appears that this well can be produced in the manner proposed without causing waste. You are therefore granted the requested exception. The Commission does reserve the right however to rescind this authority if at any time it appears that the producing characteristics of the well have so changed that the method of production is causing or may cause waste.

That letter was issued April 17th, 1973.

Q Are those conditions still the same, in your opinion?

A Apparently the conditions are not as we thought them to be. Now Mr. Smith testifies that from his knowledge, this well has been producing these liquids since the date it was connected. However, tests reported to us, not only in March, but in July, said that the liquids were too small to measure, they couldn't measure any liquids.

So apparently conditions have either changed or they have not been what we thought they were.

Q What are the possibilities that could result from granting a tubing exception?

A We have heard it stated this morning about objects in the tubing falling out and dropping down into the well bore and damaging the well bore. We have also heard

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reference to liquids falling out of the gas in the reservoir. Now, just staying with the tubing for a moment, I will say that smaller diameter tubing is usually the best way you can attend to the problem of liquids being produced from a well. Smaller tubing will unload the well. This is the most common procedure available.

Now, we heard that it would be damaging to the well, and there would be the probability or strong possibility of losing the well were it to be shut in in order to run another string of tubing. However, equipment is available wherein you can strip tubing out of a well under pressure without killing it and run new tubing in a well. So this is not an insurmountable problem, and the well does not have to be killed by taking the tubing out.

Now, to get to the problem of liquid falling out in the reservoir, the liquid falling out in a reservoir when you have a decrease in pressure or a decrease in the temperature down there. I think that it just stands to reason and it is only logical and certainly my experience that when a well is produced at a high rate, you lower the reservoir pressure around the well bore more than you do when you produce it at a lesser rate. A lesser rate would stabilize the conditions of the

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reservoir, and you would have less of a pressure decline from the reservoir into the well bore under a lesser rate of production.

But here we have the condition where you have to produce a well at a high rate to keep the reservoir dry around the well bore, and it just doesn't strike me quite that way.

Q Mr. Nutter, is there anything in the file that would indicate that there is any possibility of damage to this well resulting from water?

A There is nothing in the file that indicates water at all. I happen to have here the operator's monthly reports for this well, which have been filed since April of 1973, and I will give the production data reported.

In April of 1973, the well produced 201,634 MCF of gas with 25 barrels of liquid hydrocarbons and zero barrels of water.

In May of 1973, the well produced 492,613 MCF of gas; 78 barrels of hydrocarbons; zero barrels of water.

In June, 1973, the well produced 601,074 MCF of gas; 174 barrels of condensate; zero barrels of water.

In July, 1973, the well produced 437,190 MCF of gas; 107 barrels of condensate; zero barrels of water.

In August of 1973, the well produced 414,644 MCF of gas; 88 barrels of condensate; zero barrels of water.

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So from the information I have at hand, there is no water production causing any problems. That's only from the information I have as related to me by the operator.

Q These forms were relayed to you by the operator?

A These forms were prepared by an agent of the operator, except for the last two months. The July report was signed by Corinne Grace. The August report was signed by Juanita Jones.

Q Mr. Nutter, you heard this morning testimony in which there was some speculation as to why allowables were re-distributed earlier this year by the Oil Conservation Commission. Can you explain the reasoning of the Commission?

A Yes, sir. As was mentioned also this morning, prorationing was instituted in the South Carlsbad-Morrow Gas Pool effective September 1st, 1972. The order prorationing the pool was suspended by the Court, and prorationing was not instituted finally until the order removing the stay was signed effective April 11th, 1973.

On advice from the Attorney General, we made this prorationing effective on that date and started with a complete zero status on the pool, although we did have some history of the pool. Anytime we institute prorationing in a pool, we assign a non-marginal

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allowable to all wells connected. So we took the total available demand for the pool, and divided it among all of the wells in the pool on a non-marginal basis. This included some wells that we knew could not make top allowable. We included even the Humble-Grace Well, and it wasn't producing, although it did have a pipe line connection, and therefore was entitled to receive an allowable.

So what we did was distribute the allowable even to the wells we knew weren't going to make their allowable. So then after we had three months of production history under prorationing, we felt that we had enough history available to us that we could very reasonably classify wells marginal. And that's why we had re-distribution effective June 30th.

Q Mr. Nutter, based upon your professional opinion, and your familiarity with the South Carlsbad-Morrow Pool, the Morrow formation, and the Grace-Atlantic Well No. 1, do you have an opinion as to whether or not the well would be damaged if shut in pursuant to the shut-in directive of the Oil Conservation Commission?

A I can see no damage resulting to the well.

Q Referring you to Exhibit Number One, was it prepared by you or under your supervision?

A It's simply a copy of the well file, and it is a true

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copy of the well file.

Q This morning, we had some discussion concerning Applicant's Exhibit Number Five. There were some questions raised at that time concerning the accuracy of certain information with particular discussion as to how the re-distribution in June of 1973 had been calculated in order to be used in the formula depicted on Applicant's Exhibit Five. Would you refer to the formula and explain how, in your opinion, it is erroneous? First of all, go to Order Number R-1670, and read the rule on re-distribution.

A Rule 15(F) states that any allowable accruing to a well at the end of a gas proration period due to the cancellation of underage in the pool and re-distribution thereof shall be made against the well's overproduction.

Now, that's the first basic criteria. When you re-distribute, you never assign that to the allowable. The mechanics of re-distributing is that re-distribution goes to the well's status, not to its allowable. So the first thing that Mr. Johnson did on his Exhibit Number Five was he took the allowable that he had, 697,663 MCF from April 11th through August 31st. He put that 697,663 MCF down, and then he took the re-distribution that the well received, which was 388,190 MCF, and added that to the allowable. That gave the well a total allowable of 1,085,853 MCF. Then he

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divided that by five to get the average monthly allowable.

Actually we are using the figure 4.667, because we only have two-thirds of the month of April. But divided by 4.667, you get a total average monthly allowable, which is an incorrect allowable, but you get an incorrect average monthly allowable of 232,517.

You then multiply that by six to find out what six times the average monthly allowable would be, and you arrive at the figure 1,395,102 MCF, which would be the well's average monthly allowable using this system that Mr. Johnson has.

Now, we have an overproduced status at the end of August, 1973 of 1,061,302 MCF. Now, the Commission doesn't apply re-distribution to the allowable. The Commission applies it to the status of the well in accordance with this rule right here (indicating).

So we had already applied 388,190 MCF to the well and reduced its overproduced status, which would have been 1,449,492 MCF, we applied that 388,190 MCF and brought the overproduced status down to 1,061,302 MCF.

So the 388,190 MCF re-distribution figure was already in there, making the overproduced status lower. But in Mr. Johnson's figures, the 388,190 MCF appears twice in Mr. Johnson's calculations. Now, using his system, but not putting the 388,190 MCF in there, but

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even using his system, the well would be 53,532 MCF overproduced beyond the six times limit. The reason why his system has decreased it is because he put the re-distribution into the allowable and then divided by five and multiplied by six. So what he put in there was wrong, and it was multiplied by six, magnifying the error again.

That's why he calculated the well as being 241,000 MCF less than six times overproduced.

Q Do you believe,based on proper calculations, that the well is in excess of six times overproduced?

A I know it is.

MR. CARR: We offer OCC Exhibit Number One.

MR. TRUJILLO: Without objection, the exhibit will be admitted.

(Whereupon Oil Conservation Commission Exhibit One was admitted in evidence.)

MR. CARR: I have no further questions of this witness on direct.

MR. TRUJILLO: Does anyone have any questions of Mr. Nutter?

MR. HOWDEN: Yes.

* * * *

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CROSS EXAMINATION

BY MR. HOWDEN:

Q Mr. Nutter, I didn't catch all of the testimony at the beginning. How long did you say you have been working with the Commission?

A Since September 1st, 1954.

Q For the past nineteen years?

A Yes.

Q Am I correct then in assuming that during those nineteen years, you have not been employed in private industry; is that correct?

A This is correct.

Q So in the past nineteen years, you have not been involved in putting a well on the line, for example?

A No, I haven't turned a valve on a well for over nineteen years. I had turned valves before that, though. I have sat in conferences, I have sat at hearings, I have been Examiner at hearings, I have made field trips, I have gone out on leases, and I am fairly well acquainted with field operations.

Q I didn't ask you that. But as I understand it,--

A Although I haven't done any physical work in the field.

Q -- I think you stated rather emphatically that you know the well is in excess of over six times the allowable?

A Yes, sir.

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Q And earlier, you testified that it was your opinion that shutting the well down would not cause any damage to the well?
A That's correct.
Q I am correct, am I not, in assuming that you are not stating that as an absolute certainty?
A This is one of the those things. It's just about as certain as I can be, yes.
Q This is something you state as an absolute certainty?
A As certain as I can be.
Q I think it is important that I understand in order to be able to ask you a question or two. It has been my impression in talking to engineers that this is something that we must talk about in terms of possibility rather than in terms of absolute certainty.
A I made the statement that a dry gas well can be open and closed without damage to the well. Now,I said that based on the reports I have here, this is a dry gas well, notwithstanding what I heard today. Everything I have in the files of the Commission indicates to me that we have a dry gas well, and that's the reason that I will state categorically, in my opinion, you can close the well down without damage.
Q And in order to make that statement, you must totally ignore Mr. Johnson and Mr. Smith?

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A No, I do not, because I told you also that I feel that producing the well at a lesser rate when you have this condition of these condensations of water in the reservoir, when you have this situation going on, producing a well at a lesser rate is going to lessen the problem, not enhance the problem.

Q You made reference, Mr. Nutter, to various pages in the file. I think you made reference to page 8, page 18, page 17. On those pages, if I understand your testimony correctly, you were pointing out that there was no fluid indicated in the well, is that correct?

A That was my point on each of those, yes. We had to have a basis for issuing this tubing exception. Maybe the tubing exception was a mistake.

Q That was not my question, Mr. Nutter, if you will bear with me. My question is would you go back to those pages that I mentioned-- Let's take page 18 first. For how long a period was that flow?

A I believe that was a four-hour flow.

Q Would you take a look at it again?

A Page 18?

Q Yes.

A There were four half-hour flows, I guess.

Q So it flowed for two hours?

A Yes, sir.

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Q Then that would not be a long period of time in order to make a determination?

A Well, it was long enough for the well to produce at an absolute openflow of 65,000. I don't know how much actual gas it produced.

Q Well, I won't belabor that point.

A Apparently the liquids that it produced however were too small to measure.

Q In a two-hour flow period, is that right?

A Yes.

Q Let's take a look at page 17. Would you please tell the Commission what the flow period was there?

A These were drill stem tests, and I don't know how long it was flowing into the sampler. The number two test had a two-hour flow-- No, it had a one-hour flow. It had a one-hour flow, and reported no fluids.

Q So the point you have made with regard to page 17 was based on a one-hour flow period, is that right?

A This is correct.

Q Let's take a look at page 8, I think that was one of the pages you alluded to.

A That was a test run in July. The first flow was 120 minutes; the second flow was 70 minutes; the next flow was 60 minutes; and the fourth flow was 60 minutes. So that's five hours on that one.

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Q So that the longest of any of those flow periods on which those conclusions were drawn by you was a five-hour flow period, is that right?

A Yes. I am also going by the thirty-day production reports here for six months.

Q Mr. Nutter, was the 4 1/2 inch tubing in the well before the production reports were made?

A Well, the 4 1/2 inch tubing was installed on the well on the original completion.

Q Mr. Nutter, was there any production experience or history prior to the application for the 4 1/2 inch tubing? This is what I am trying to get at.

A No. The well was connected on the 16th. You see, this was the history of it. They filed a C-104 requesting an allowable for the well, and we couldn't approve it until we had all the other paper work completed, and until they got the application in for the tubing exception. We actually couldn't approve the C-104, so the C-104 was held up until we could get the tubing exception.

And I believe I said that was dated April 16th, which is the day after the well got the pipe line exception.

Q We were talking about the reports earlier on which you have relied. You don't have any report before you for

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the month of October, do you?

A No, we have no October reports yet.

Q But you have heard sworn testimony as to the experiences during the month of October, haven't you?

A Yes, I have heard testimony today.

Q And did that testimony indicate any reduced top pressure while the well was producing at the rate of four million a day?

A I really couldn't understand some of those pressures, and I couldn't understand what Mr. Stevens was questioning the witness on concerning those water levels that were being produced. I never did understand if that tabulation was actually the measured water level over a prolonged period,or whether the tank was emptied each day and then measured up to two feet, eleven inches during one day, or whether it was two feet, ten inches one day and produced one inch of water and then measured two feet, eleven inches the following day. I really couldn't understand just what was being discussed.

Q Did the report or statement of Mr. Johnson this morning indicate to you in your opinion that the well was loading up with liquid during this period?

A No, I wasn't convinced.

Q Let me ask you this, Mr. Nutter. I ask you to assume for a moment that you are wrong and Mr. Johnson is right.

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A Okay.
Q And suppose the shutting in of the well actually destroyed for all intents and purposes the well? Would you have an opinion as to the dollar value of damage in that eventuality?
A No.
Q You were present during the hearing as to the cost of the well--

MR. CARR: I object to this line of questioning. Mr. Nutter has not been qualified, and has not been offered as a witness with expertise as to well costs. And I would object to this line of questioning. If they would like to develop that line of questioning, they may call their own witness.

MR. TRUJILLO: Sustained.

Q (By Mr. Howden) Mr. Nutter, at the outset of your testimony, you were talking about-- I think you gave us sort of a brief summary of the history of prorationing across the country.
A Yes, sir.
Q You didn't mean to suggest by that testimony that the State of New Mexico handles prorationing exactly the same as every other state, did you?
A No, we don't handle it exactly the same. However, there is very little variation in the overall operations of the states throughout the country, very little difference.

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Most of the producing states belong to the Interstate Oil Compact Commission.

Q Let's just take an example. As I understand it, here in New Mexico, one of the first things you are called upon to do is to make a determination of the reservoir capacity. Isn't that right?

A I don't know if we are or not. You are now probably referring to the Jalmat Decision.

Q That is correct.

A The Jalmat Decision says that the Commission-- What they are doing there is changing a formula in the pool, and they said that in order to change the formula, the Commission should determine the reserves under each tract in the pool, determine the total reserves in the pool, find the relationship that one bears to the other, and assign the allowable in those relationships.

Q I guess we both know that this question is being reviewed by the Courts at this point?

A Yes, as of right now, I think it is in the Supreme Court. The Commission, in making its determination for this pool, said that there was no practical way to determine the reserves under individual tracts, that the most practical way was on a straight acreage basis, and that's the formula in use in this pool.

Q A straight acreage basis?

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A Yes, sir.

Q Mr. Nutter, are you familiar with the-- I think you heard Mr. Johnson's testimony this morning in which he indicated that he had read some testimony given by Mr. Utz at a previous hearing. Did you hear that testimony?

A No, I didn't, and I don't know if he is referring to testimony at a hearing or if he is referring to some testimony that Mr. Utz gave down at Carlsbad at the trial in the South Carlsbad-Morrow prorationing case. I am not acquainted with just exactly where the testimony was given.

I don't think I heard the testimony, and if you could identify just what testimony you are talking about?

Q Yes, I will do that, Mr. Nutter. For the record, I am making reference to the testimony of Mr. Utz at a hearing in the District Court of Eddy County, New Mexico, in Cause Number 28181, on March 7th, 1973.

A I missed that trial, Mr. Howden.

Q You haven't had occasion to review that testimony?

A No, I have never seen that transcript.

Q Let me put this in the form of a summary-type question to you. I ask you to assume that he testified that he was employing a ten million per unit allowable. Can you shed any light on the basis he would have been using in using that figure?

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A I think I might be able to, yes, sir. Although we were not actually prorationing in the South Carlsbad-Morrow Field from September to April 11th, we were carrying the balances for the pool and the allowances in the proration schedule.

For the month of March, we had assigned a top allowable to each well of 83,333 MCF. If we divide that by thirty-one, it is going to be pretty close to the ten million a day, isn't it?-- Three million a day, I guess.

I don't know what Elvis's testimony was on that.

Q Would you tell us who Mr. Elvis Utz is?

A Elvis Utz is a retired Oil Conservation Commission gas engineer.

Q At that time, he was what?

A He was in charge of the gas prorationing department.

I am going to volunteer something, Mr. Howden.

We have come 180 degrees around this gas prorationing just as we have done in all prorationing in the last few years. It is within everybody's memory that we had an overabundance of oil in this country, and allowables were depressed to the point where you couldn't get an allowable good enough to warrant drilling a well sometimes.

We have completely reversed that situation, and now

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we are under-producing our oil allowables. The demand is just too great, and the nation cannot produce enough oil to meet its needs, and we are going to rely more and more on foreign imports of oil in the years to come.

The same is true of gas now, and let me assure you, Mr. Howden, that we are looking very, very closely at our gas prorationing set-up. We are trying to work out some means where we can get these allowables up where they more nearly approximate the market demand. But we must observe correlative rights too.

Now, you asked who Mr. Utz was. He worked for a long time on maintaining pool balance and getting allowables up, but there was so much underproduction being accumulated by wells that if you assign more of an allowable, then the wells can't make it, and you have underproduction.

Mr. Grace made the observation one day in the newspaper that he thought the Commission had a Ouija board connected with its computer. Sometimes I think he is right, because the logic of it sometimes doesn't seem right. We are going into a period right now in the winter months where the complexities of gas prorationing are causing allowables to be decreased at a time when they should be going up. We are working on it. I can assure you that we are working on it, and I expect we

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are going to have something to do with this thing within the next few months at most, because we are trying to solve the problem.

We recognize the problem more than anyone else does.

MR. HOWDEN: Mr. Chairman, if there is no objection, I would like to ask leave of the Commission for Mr. Lines to ask a few questions. I think it will save some time rather than me consulting with him, and then asking the questions.

MR. TRUJILLO: Certainly.

* * * *

CROSS EXAMINATION (Continuing)

BY MR. LINES:

Q Mr. Nutter, I believe testimony indicates that there was a re-classification and re-distribution in this pool in June, is that correct?

A Yes. It was actually in August, but it was effective June 30th.

Q At that time, how many wells were re-classified from non-marginal to marginal?

A I don't remember right offhand, but quite a number were.

Q Approximately?

A Okay, Mr. Lines. The July proration balance here showed that there were 26.03 participating non-marginal factors which more or less would be twenty-six wells. That was in July. The August book shows that there were 10.98,

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which is approximately eleven wells. So it went from--
What did I say the other one was?

Q Twenty-six.

A So it went from twenty-six to eleven.

Q Non-marginal wells?

A Yes. So the difference would be the number that were classified marginal.

Q And you are still carrying today eleven non-marginal wells?

A I think maybe you are right, but I don't know. I can look it up real quick. No, we are carrying 14.93 participating non-marginal factors right now.

Q We heard testimony this morning that probably only four wells in the whole pool are really non-marginal since you re-classified three months after prorationing. Let's assume for the moment that you re-classified again at the end of three more months to try and bring this in line, which would make it the end of September.

I presume at that time then, if these figures were correct, you would take ten more wells and bring them from non-marginal to marginal status, and then re-classify and re-distribute allocations on that basis; is that correct?

A I'm not sure there would be that many wells re-classified. Just because a well is not making its allowable every month doesn't mean it must be re-classified. It is

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re-classified if during a proration period, it fails to makes its average allowable during at least one month. If it makes it for one month, it won't be classified as a marginal well.

Q I think our figures here are correct. Four wells that are non-marginal and six more that were borderline--

A Wasn't this predicated on the idea of re-classification each month, and if a well didn't make its allowable, it would be marked down?

Q No, I think his testimony was as of June. In other words, taking the figures as they have come in since June--

A And taking the average allowable since the last re-classification?

Q I think that's correct.

A And if a well hasn't made its average allowable at least once.

Q That's right.

A Well, probably you're right then. There would be four-- I don't know.

Q Assuming for a minute there were four, and maybe even five that were non-marginal, if we had re-classification now and changed eight more wells from non-marginal to marginal to make a true picture as you did in June, assuming that was the case, is it your opinion, or do you have an opinion as to whether or not the Grace well

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would actually be six times overproduced at the present time?

A Yes, I imagine it would. You see, you are taking overproduction right now against past allowable, and you would only have July and August. You see, this whole production was calculated through August, and it may come out six times overproduced on that basis. But I really don't know.

Q I just want to point out the disparity we have had here between allocations and actual production. I assume that the re-classified and re-distributed amounts here would then be re-distributed to the six non-marginal wells, isn't that correct?

A It would go to the non-marginal wells, yes.

Q Then in your opinion, is there a reasonable chance then by re-classification and re-distribution at the end of September that that might well make the Grace well less than six times overproduced?

A I imagine it could.

Q You said earlier that you were trying to come up with any means possible to get the allowables up for the high peak period coming up. Has there been any discussion on your part about re-classifying again in September as you did in June to compensate for the disparity?

A We have talked about every way possible. Now, you and

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I talked about it, and I said that it was quite possible it was not legal, since the statute says that you will have gas prorationing every six months. Then the next question you asked me the other day was how come we did it at the end of three months. We may have done something that wasn't proper, and maybe we shouldn't have.

Q I believe there is another rule that starting January 1st, you are going to start doing it every three months.

A Yes, but we are not planning to re-distribute.

Q But in fact wasn't that to take care of some of what we were just talking about, about trying to find any means possible of getting the allowable up to meet the high energy demand?

A It will help, even without re-distribution, if we should re-classify again. You will have more wells being assigned allowables in accordance with your actual production, and you will have non-marginal allocations being divided among these wells. So it should result in an increased allowable.

MR. PORTER: I think you need to clarify one point. You said "with re-distribution". Did you mean without re-distribution?

THE WITNESS: Yes, just re-classification without re-distribution. That will help.

Q (By Mr. Lines) Do you have a feeling as to whether or

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not, even if you merely re-classified at the end of September, that this might well bring the Grace well less than six times overproduced?

A I don't know whether it will or not, but it certainly will help as far as future allowables are concerned.

Q Is there a possibility that it would take it under six times overproduced?

A I would have to put a pencil to that.

Q You don't have any figures?

A No, sir, I do not.

Q There was some testimony earlier, I believe-- A question was asked as to the weight the Commission allows with regard to nominations in setting allowables, and I think you said something to the effect-- I think you alluded to the Ouija board computer situation. Can you give us today any kind of corollary or any kind of formula that you presently use taking into account the nominations by the pipe lines each month and your arrival at the actual allowable figure each month? Is there any correlation at all between the two? In other words, what weight, if any, do you give to the nominations in setting the allowables?

A We use the nominations, the raw figure to start with, and Mr. Utz, for about the last year and a half, has been trying to work this situation out so that we would

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have more correlation between the allowable and the nominations.

But underproduction and the under-balancing system has taken off some of that weight, because they want so much of an allowable for a pool, but they couldn't produce so much. It's just the mechanics of the thing that causes these conditions to come about with these pools. These pools are in a sad state of balance, and Mr. Utz for the last two years or so has been trying to alleviate this.

Apparently when we have that much separation between production and nominations, something is possibly wrong.

Q But re-classification on a quarterly basis, as you did in June, could help greatly to try and level off those figures, isn't that correct?

A It would tend to help bring the lines together, I would think, yes.

MR. PORTER: Does that conclude your cross examination?

MR. LINES: Just a few more questions.

Q (By Mr. Lines) We had an engineer testify this morning concerning damage to the City of Carlsbad well from water. Do you think there is a possibility, or even a probability, if in fact we have a water situation as represented by the engineers today, that we might have the same kind of problem with this well as we had with

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the City of Carlsbad Well?

A The City of Carlsbad Well is an entirely different kind of well, Mr. Lines. It has formation water in it. Whether it is coming from the producing formation or another formation near it, no one has ever been able to ascertain. But that well is not producing condensed water out of the gas. That well is producing formation water.

Q Assuming the two engineers today were correct in their observations that these are fresh water problems through condensation, do you believe there might be the probability of damage to the well if it were shut in, or contained in production below the level indicated by Mr. Johnson?

A No, sir, because let me tell you how much water we are talking about. If you took this 4 1/2 inch pipe and just roughly said it had a quarter of an inch wall thickness, I would figure it had about a two-inch radius, which would turn out to mean that the cross section area of that pipe is .082 square feet. The tubing is 11,000 feet long. So you get a total of 1744 cubic feet inside this pipe, and your people have testified that the well is producing from one to two barrels per million, so that's only seventeen forty-four thousandths of a cubic foot of water that could be in the tubing, and when it

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drops down, it's not going to hurt a grain of sand.

Q There has been testimony and reports indicating that as production was curtailed that the well pressure also was significantly lower, and when the well was opened up again, the pressure then would increase. Do you have a corollary in that if you don't attribute it to water?

A I told you that I didn't understand the testimony about the water.

Q Might you have more condensation at a lower rate than at a higher rate?

A No, you will have more condensation at a higher rate.

Q We had two engineers testify differently this morning. Are you saying you do not agree with their testimony?

A I guess I do not.

MR. LINES: I don't think we have any further questions.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Lines asked you to give some opinions based upon his understanding of that far exhibit (indicating), which I think is Exhibit Number Three. I think you stated that there were four wells that would be non-marginal on re-classification according to Mr. Carlson's testimony.

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Perhaps I misunderstood that. But as I understood it, the good well category contained wells that made their allowable occasionally. If my understanding is correct, would that be a non-marginal well in your classification?

A If it made its allowable for one month during the proration period, it wouldn't be classified as a marginal well.

Q Therefore in that case, you had ten non-marginal wells on re-classification, and you have only four of the fourteen-point-something wells that would be considered non-marginal on re-classification?

A I hate to speculate on this exhibit. I didn't prepare it.

Q He asked your opinion on those, and I just wanted to make a point. Assuming there were ten wells, the allowable would go up that much less as opposed to there being four wells, isn't that correct?

A Yes, sir.

MR. STEVENS: No further questions.

MR. TRUJILLO: Are there any further questions of the witness?

MR. HUNKER: Yes.

MR. TRUJILLO: First we will take a fifteen-minute break.

(Whereupon a recess was taken.)

(Hearing continues.)

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MR. TRUJILLO: The hearing will come to order, please. I think, Mr. Hunker, you were about to ask a question.

MR. HUNKER: Yes.

* * * *

CROSS EXAMINATION

BY MR. HUNKER:

Q In connection with Commission Exhibit Number One, you referred to some monthly reports that were filed by the operator, and you testified as to certain condensate production.

A Yes, sir. Actually that wasn't Exhibit One, Exhibit One was the well file. What you just referred to was not offered as an exhibit.

Q Would you look at that monthly production report, and tell me whether it shows whether or not that condensate was actually sold, or is it still in the tank?

A For the month of April, it shows zero on hand at the beginning of the month, zero to the transporter, and twenty-five barrels on hand at the end of the month. So there were no sales in April.

Q What about the following month?

A In the following month, May, it shows oil at hand at the beginning of the month, barrels to the transporter, and oil on hand at the end of the month. At the end of the month, there were 103 barrels on hand, so that would

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be a total of seventy-eight produced in May and twenty-five in April. So there were none sold in May.

For the month of June, it shows 174 were produced, and 103 were on hand at the beginning of the month. One hundred sixty barrels were sold, and 117 barrels were on hand at the end of the month.

Q Does that show to whom it was sold?

A Yes, sir, N.R.C. I don't know who that is, but I would assume Navajo Refining Company. I think that's the code on that.

Q You have one more month.

A The month of August shows 224 barrels on hand at the beginning of the month-- Did I give you July?

Q No, sir.

A July shows 117 barrels on hand at the beginning of the month, 107 barrels produced, no barrels sold, 224 barrels on hand at the end of the month.

Q And August?

A August showed 224 barrels on hand at the beginning of the month, 88 barrels produced, 172 sold to N.R.C., and 140 barrels on hand at the end of the month.

Q Thank you very much.

MR. TRUJILLO: Are there any further questions?

MR. BORKENHAGEN: Yes.

* * * *

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CROSS EXAMINATION

BY MR. BORKENHAGEN:

Q I think you stated that prorationing has extended the reserves. How does that work?

A Well, it resulted in more efficient production of reservoirs throughout the nation, and I think that the conservation programs have been estimated to have at least doubled our producing reserves in this country in the last thirty-five or forty years.

Q What kind of waste did it eliminate?

A A multitude of wasteful practices; depletion of reservoirs at too rapid a rate, which caused premature gas break-out in the reservoirs; premature depletion of reservoir energy and pressure; it eliminated surface wastes by preventing wasteful storage practices. There were just any number of wasteful practices.

Q I notice in all of the exhibits-- Well, at least the three on the wall, that there seems to be a steady increase in production. Now, is this steady increase in production, does it correlate roughly with the steady increase in demand?

A No, it correlates with the number of wells in the pool, the increase in the number of wells in the pool.

Q So really nation-wide demand does not bear a direct correlation to that on say a one-to-one ratio?

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A No, I don't think nation-wide demand is reflected in the increase in production.

Q What you in effect get is an artificial increase of price on the product that is sold, whether it be to the gasoline retailer or whether it be to the ultimate consumer, is this not true?

A I couldn't answer that, sir, whether the increased demand results in increased prices. I sure couldn't answer that. It's apparent that the price of oil and gas, as well as quite a number of other commodities in this country, has risen somewhat in the last few years.

Q But in this particular pool, if restrictions were taken off production, these four giant wells could increase their production without really damaging these wells significantly, a significant increase in production?

A I don't know of any well that is really being curtailed very much. If you doubled the nominations, I don't think production of the pool would go up significantly.

Q Having been on the Commission for a number of years, are you familiar with crude oil production and products coming from that?

A Yes, sir.

Q Do you know of your own knowledge--

MR. CARR: May it please the Commission--

MR. BORKENHAGEN: May I complete my question before

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you object?

MR. CARR: -- I think the questioning is getting so far afield that it couldn't possibly be construed to be within the scope of the direct examination on this witness. First of all, I object on the grounds that it isn't within the scope of the direct examination. And secondly, it is absolutely irrelevant to any question before the Commission.

MR. TRUJILLO: Mr. Borkenhagen, how would you relate your questioning to damage to the well, which is the call of this hearing?

MR. BORKENHAGEN: First of all, Mr. Chairman, I would like to know if the specific call for this hearing, while directed to the damage that could happen to the well if it were shut in-- I would point out that in here, we have gotten rather far afield anyway, and that my line of questioning is no farther afield than the prorationing aspect that has been talked about,and that that in itself was not directed to damage--

MR. PORTER: If I may interject something here? The whole thing relates to prorationing, that's why the well was shut in in the first place. And then the question of damage comes up. This is not a hearing to entertain a collateral attack on prorationing. That has been done for the past forty years unsuccessfully.

MR. BORKENHAGEN: I will withdraw the question.

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MR. TRUJILLO: Have you concluded, Mr. Borkenhagen?

MR. BORKENHAGEN: Yes.

MR. TRUJILLO: Does anyone have anything further?

MR. LINES: Yes, Mr. Commissioner.

* * * *

CROSS EXAMINATION

BY MR. LINES:

Q I think you indicated earlier that when you started in with the pool in April, you had to start from scratch, but you did in fact have production records from September to April, didn't you?

A Yes.

Q Was that in any way taken into account?

A No, we never do that. When we start to prorate a pool, we start off with giving every well a top allowable. If it can sustain its top allowable, then it continues.

Q You stated a minute ago that you are a member of the Interstate Compact Committee?

A Yes, sir.

Q And you just helped re-write the Michigan rules?

A No, sir, I helped write some recommendations for their governor's task force, is the way it was.

Q Do you know what type of proration they use? Is it straight acreage?

A Yes, it is.

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Q They don't have anything but straight acreage?
A For the most part, it's straight acreage.
Q For instance, Wyoming. Does that have straight acreage?
A Wyoming doesn't have prorationing as such.
Q How about Oklahoma?
A Oklahoma uses straight acreage in a number of pools.
Q The majority of pools in the state?
A Yes.
Q How about Texas?
A Texas has a number of different formulas. I wouldn't say what percentage of the pools are prorated on straight acreage in Texas. We are talking about gas pools, I presume?
Q Yes.
A They use every kind of formula, but the largest percentage of the pools are on straight acreage. The Chief Engineer of the Texas Railroad Commission advised me not too long ago that the trend in that state is toward straight acreage in all pools now.
Q We have other formulas besides straight acreage in New Mexico, do we not?
A Yes.
Q I believe in this one though, we are using straight acreage?
A Right.

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Q Are there any other formulas we could use here to develop-- to get the allowable up which would deviate from straight acreage?

A In Northwest New Mexico, we use a formula in all the prorated pools up there that involves acreage and deliverability. How successful this has been, we don't know. We used deliverability for a short time in one pool in Southeast New Mexico, and this was stricken down by the Supreme Court. This was in the Jalmat Pool.

There has also been a great deal of controversy in the industry as to whether there is a direct relationship between reserves and deliverability. Now, probably there is direct relationship betw en the amount of gas that can be produced from a well and that well's deliverability, but that doesn't say that the reserves under the tract would fall into this relationship.

This is the gimmick in the deliverability formula that has raised so much controversy. Because a well has high deliverability doesn't necessarily mean that the gas is coming from that tract.

Q Is there any way you can establish that?

A No, there is not. The closest we have come is the order saying there is general correlation between deliverability and reserves, and this was the one the Supreme Court struck down in the Jalmat case. There have been a couple

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of orders in cases involving the San Juan Basin that were never tested in Court, and I don't know whether they would stand or not if they were tested.

MR. CARR: May it please the Commission, I appreciate the history we are receiving on prorationing, but I think this is all irrelevant.

MR. PORTER: Are you through with this line of questioning, Mr. Lines?

MR. LINES: I believe so-- Yes.

MR. PORTER: That takes care of the objection.

MR. TRUJILLO: Does anyone else have any questions of the witness?

MR. CARR: I have a couple of short questions on redirect.

* * * *

REDIRECT EXAMINATION

BY MR. CARR:

Q We have been discussing the allowable and the six times overproduced aspect of it. Can you tell me why we have such a system?

A Yes. It is recognized that market demand fluctuates for pipe lines. They can have periods of high demand that result from quick changes in the weather, but this six times rule is put in there to allow flexibility for production. In effect, it means that a well in one

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month, if it is capable, can produce a half year of allowable, and this is considered to be a rather wide degree of latitude. But that's the purpose of it, to allow flexibility to meet periods of high demand.

I might add that we were talking today about a moratorium, and I think if you will go back to the transcript of the hearing we had in June when the rules providing for a moratorium were adopted that the testimony in the transcript indicates that this was to permit pipe lines to meet emergency high demand situation when they have situations that develop suddenly. The pipe lines last winter got into an emergency situation where it was almost a matter of having to shut off gas to everything, as a matter of fact, a few schools were curtailed.

But in June of this year, we adopted this rule, and it is intended to meet the nation-wide emergency crisis. It is intended to provide temporary alleviation of a problem resulting from the shutting in of wells when a pipe line has an emergency high demand period. It doesn't mean to apply to the overall national emergency or the energy shortage, it is a temporary method for spot situations, and that's what the testimony was directed to, and what this rule was based on.

Q Mr. Nutter, a few moments ago in cross examination, you

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indicated that the system of allowables as related to particular wells would have a negative effect on total production therefrom. What sort of effect does this system of allowables have on overall total production, if it does have an effect?

A The whole thing is set up and geared so that production ultimately becomes the allowable. Now, this is on a pool-wide basis, but you must have distribution of this allowable among the wells in the pool. But the Commission doesn't curtail production from the pool per se, production is production. But it does curtail production from an individual well, and this is for the protection of correlative rights.

Q You said you were familiar with this pool, and in particular, the Grace-Atlantic Well. Do you have an idea of what the daily allowable would be if we took the monthly allowable and divided it for the Grace-Atlantic Well at the present time?

A Are you talking about the October allowable?

Q Yes-- Or do you have the monthly allowable for the month of September?

A I have October here.

Q We'll need September-- Let me back up. Do you have the daily production figures for the Grace-Atlantic Well for any particular month?

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A Yes, all the months it has been on the line.
Q Do you have those figures for September?
A Yes. The daily allowable-- The top allowable for that pool for the month of October is 127,246 MCF, which calculates out to 4105 MCF per day for the month of October. That's the allowable. Now, you wanted production?
Q Do you have those figures for September?
A I don't have October's production.
Q I will need September.
A And I apparently don't even have September's production figures here with me either. I'm sorry, but I don't have September's production here.
Q Do you have August?
A Yes, I have August.
Q What was August's production?
A August's production on the Grace-Atlantic Well was 414,644.
Q Do you have the monthly allowable for that month?
A The allowable for the month of August was 204, 484.
Q Do you have the proration schedule for the first of August?
A Yes, sir.
Q Does it indicate that that well was in an overproduced status at that time?
A Yes.
Q Then does this look like a good faith effort on the part

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of the operator to bring the well back into line?

A Well, the well was indicated in the August prorationing schedule as having an overproduced status of 554,582 MCF overproduced. It's allowable for August was 204,484, and it produced 414,644. I am not going to draw a conclusion.

Q Based on the testimony you have heard today and your experience in the field of petroleum engineering, along with your knowledge of this formation, the pool, and this particular well, is it still your opinion that it would not be damaged if shut in pursuant to the Commission's directive?

A That's still my opinion.

MR. CARR: That's all I have.

MR. TRUJILLO: Is there anything further?

MR. LINES: Yes.

* * * *

RE-CROSS EXAMINATION

BY MR. LINES:

Q I think you said that the October allowable was 127,246, and that the August allowable was 204,484. So then you decreased the allowable for this well by some 80,000 in that two-month period?

A Yes.

MR. LINES: That's all.

MR. TRUJILLO: Is there anything further?

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(No response)

MR. TRUJILLO: If not, the witness may be excused.

(Witness excused.)

MR. TRUJILLO: Do you have any further witnesses, Mr. Carr?

MR. CARR: No, sir.

MR. TRUJILLO: Mr. Kellahin, would you like to present your testimony?

MR. KELLAHIN: I will defer to Mr. Stevens.

MR. STEVENS: Morris Antweil would like to have one witness give testimony.

* * * *

ROBERT WILLIAMS,

was called as a witness on behalf of Morris Antweil Company, and having been already duly sworn, testified as follows.

DIRECT EXAMINATION

BY MR. STEVENS:

Q Would you state your name and address, please?

A Robert M. Williams, I live in Hobbs, New Mexico, and am employed by Morris Antweil.

Q Would you give a summary of your educational background and work experience, please?

A I graduated in 1953 from Penn State College with a degree--a bachelor of science degree in petroleum and natural gas engineering. I was employed from 1953 to 1957 with the

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Shell Oil Company in the capacity of a production and reservoir engineer. My education during that time included attending reservoir engineering schools offered by Shell Oil Company.

From 1957 until 1961, I was employed by Monterey Oil Company in the capacity of a reservoir engineer working with their Fullerton Unit Operations in Andrews County, Texas.

In 1961, Humble Oil and Refining purchased Monterey, and I became an employee of Humble. I remained with Humble until 1966, continuing to work in reservoir engineering. During that period, in 1962, I taught in Humble's reservoir engineering school in Houston for some three months.

In 1966, I went to work for Morris R. Antweil in the capacity of an engineer, and I have been involved with production and reservoir engineering with the Morris R. Antweil Company, particularly Morris Antweil's operations in the South Carlsbad-Morrow and Strawn Fields since that time.

Q Have you previously testified before this Commission and had your qualifications accepted?

A Yes, I have.

MR. STEVENS: I would like to offer Mr. Williams as an expert witness.

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MR. TRUJILLO: Yes.

Q (By Mr. Stevens) Have you studied the Morrow formation in Southeastern New Mexico?

A Yes.

Q And have you studied in particular the formation and reservoir characteristics in the South Carlsbad-Morrow Pool?

A Yes. We have been involved with the South Carlsbad-Morrow Pool since its discovery. I think we completed the second or third well in the field, and we presently have three wells completed in the Morrow field. I have been familiar with development of the field since the outset.

Q Are you familiar with the subject well, the Grace-Atlantic Well?

A Yes, I am.

Q Could you summarize your views as to the possibility of well damage to that well if it were shut in as directed by the Commission and the shut-in order that is the subject of this hearing?

A I would basically substantiate the testimony given by Mr. Nutter previously. From the information that has been recorded and the information that has been presented here today, I could see of no reason why the well would be damaged in any way by being shut in. The well, as I understand it, was shut in early this month, and was

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shut in, I think, during July, probably for the shut-in required for the shut-in pressure measurements. But it was shut in some time in July. I don't think those shut-ins have evidenced any damage to the well. I don't think that any of the testimony that has been given here today would sustain any reason for the well being damaged by shut-in.

Q There was testimony to the effect that if the well were shut in, the water that is in a gaseous state under pressure, when the pressure is released, it might fall back and damage the reservoir around the formation, is this possible?

A No. As Mr. Nutter calculated the volume of water that would be in the tubing string, say at the time of shut-in, would be minute. If the well were shut in at that point, the pressure and temperature at the well face would begin to increase, and there would be no further condensation of water vapor from the gas. So it would be virtually a minimal amount of water that would be in that tubing string, and no more would condense.

Q Would you presume this hypothesis solely for the purpose of this question: that the condensate, that the water, would fall back and damage the reservoir. If such were the case, wouldn't this have happened the two times that the well was shut in for those twenty-four hour periods?

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A If you make that presumption, some evidence of damage should have been observed from the two previous shut-ins that have taken place.

Q Does lack of such evidence of damage to the well indicate that that theory is untenable in your opinion?

A It would, to me.

Q How about the effect of high draw-downs on this reservoir?

A The source of this water, I think, is the point in question. If the water is very fresh, it is probably condensed water vapors that are contained in the gas in a vapor stage in the reservoir. As that well is produced, and to produce any well, you have to lower the pressure at the well bore, and you have to lower the pressure in the formation, and as you lower the pressure and the gas expands, you get a reduction of temperature also; so with the reduction of temperature and pressure, you change the equilibrium of the conditions of this water vapor in the gas, and you begin to get water condensation much like we get fog out here as it cools off in the evening. Water vapor starts to form, and forms, depending on the pressure and the temperature, in the tubing string, and basically does not do so until it gets to the surface.

Also if there is sufficient pressure reduction, this condensation can take place in the formation as the gas stream is flowing through the formation to the well

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bore.

Now, as to the small amount of chloride content. If this was purely water condensate, it would be distilled water, it would have no chloride content. The 250 parts per million chloride content here,as was testified to, is a very small amount, in the drinking water classification.

But this was probably chlorides that were picked up because this condensation took place in the reservoir, and the condensate water had an opportunity to be in contact with the connate water that is there, and so the chloride content was picked up before it was produced in the well bore.

If the well is produced at a high enough rate, and therefore has substantial pressure draw-down at the face of the well bore and back into the formation surrounding the well bore, this would cause the water vapors to condense and could damage the well. As you have water condensation, you increase the saturation of the water around the well bore, and thereby restrict the permeability of gas in the area surrounding the well bore.

Without the ability to stir it once that water condenses, it is a little hard to vaporize it again.

Q In summary then, would you state that the higher the rate of production, the greater likelihood of damaging the well, more so than at a lower rate of production?

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A Yes. Because of the source of the water in this case, the higher the rate of production, the more pressure draw-down you experience at the face of the well bore and back into the formation at any point in the formation surrounding the well, and the more likelihood there is of water condensation in the formation which could damage that well's permeability to gas, and therefore its deliverability.

Q Have you personally seen any evidence of water damage to wells in the South Carlsbad-Morrow Pool from shut-in as opposed to say damage to the reservoir from perhaps drilling mud?

A The experience I have had is I have seen no evidence whatsoever where a dry gas well such as this one which contains small amounts of water from water vapor, a well such as this being shut in, never have I seen any damage to that well's productivity.

You mentioned the possibility of damage from drilling fluids. The Morrow is noted to be extremely sensitive to damage from, let's say, foreign fluids. The best understanding, I believe the most logical understanding anyway to me to date, is that those solid particles that those drilling fluids carry appear to be the cause of any formation damage, and not the water itself.

Q As a method of producing this well to comply with the

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allowable and still produce it at a high rate if this were felt desirable, what would you recommend?

A If the concern was over the well loading up with water because it wasn't being flowed at a sufficient rate to carry the water from the bottom of the hole to the surface, if this was the concern, I think the two methods that are used-- I think Mr. Nutter expressed the idea of a smaller-sized tubing.

The other method that is frequently used throughout the oil fields-- or gas operations is to stop-cock flow that well. By that, I mean the well would be flowed at a high rate of flow, certainly sufficient to carry any liquids to the surface, for a period of, let's say, ten days, and then be left shut in for twenty days. So by adjusting the number of days you flow it, and then shut it in, would be another method. It could be on an hourly basis, if that was desirable.

In this manner, you could make the well's monthly production match any assigned allowable, and still flow the well at ten or fifteen million a day, if they believed this was necessary to remove the liquids from the well bore.

Q Based on your previous testimony, this shutting in, occasional shutting in, would have no deleterious effect to the reservoir?

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A No, because this well has been produced at a rate that has been determined sufficient to clear all the fluids from the well bore and carry the fluids to the surface.

And you have the stream of gas with no more than the water vapor that it contains, and if you shut it in, as Mr. Nutter calculated, the volume of water that would be contained in the tubing string would be minute.

Q You mentioned that the other alternative would be re-tubing the well. Could this be done without killing the well?

A Yes. There are several methods where smaller-sized tubing could be put in the well without necessarily killing it or introducing a foreign liquid to the face of the well bore. I think the testimony that was given indicated that there was 4 1/2 inch tubing, a packer, and a seal assembly as being in the well. So apparently if there is a seal assembly above the packer, the simplest method would be to set a plug in the packer, disengage the 4 1/2 inch tubing from the seal assembly, remove it from the well bore, and the plug would eliminate any movement of fluids out of the well or into the well during this period of stringing the tubing. And a smaller-sized tubing with a 4 1/2 adapter on the bottom could be run, and engaged in the packer, and the plug knocked out of the bottom of the tubing.

Q There are other methods besides the one you just proposed

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also?

A Yes. The tubing could be stripped in and out of the well without killing the well.

Q Part of the application here asks that the applicant be permitted to produce the well at a lower rate until the allowables were again in balance-- Perhaps that wasn't the application, but what rate would you recommend that a well such as this flow to keep it on the line in the event there was any damage by shut-in, and yet get the well back in balance in a reasonable period of time?

A I have a couple of problems there. First, I don't believe that shutting in t ..ll is going to damage it. Second, the allowable for October is approximately four million a day, and the applicant has testified that they do not think four million a day is sufficient to carry the liquid produced in this well to the surface. Looking at the producing data, there seems to be some doubt on that, though.

Normally the rate for experiencing gas lift at this depth is a rate of half a million to a million cubic feet of gas a day. That would be sufficient to lift liquids from 11,000 feet.

Q Do you have any other observations, anything you want to add concerning these questions?

A That's sort of a vague question.

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Q I am just giving you an out to add anything you like.
A No.
MR. STEVENS: I have no further questions.
MR. TRUJILLO: Mr. Howden?
* * * *
CROSS EXAMINATION
BY MR. HOWDEN:
Q Mr. Williams, you have indicated that you have, I think you said some familiarity with this well; is that right?
A Yes, I have been aware of its being drilled, its production history. The comments concerning this well producing some amount of water were new to me with the testimony today.
Q That familiarity with this well however does not include any direct supervision,or observation of the well,or any direct contact with its operations; isn't that right?
A No, I have not operated the well, and would not go on their lease to look at it.
Q And you have had no occasions to, isn't that right?
A That's right.
Q So you have not had the same degree of contact with this well as the two witnesses who testified for the applicant, have you?
A No.
Q Now, you have indicated, I think you said that you have three wells in the field to date?

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A Yes.
Q How many of those wells have 4 1/2 inch tubing?
A None of them.
Q So with those wells, you have no experience with 4 1/2 inch tubing, is that right?
A No.
Q Now, you have heard the testimony of Mr. Johnson this morning, have you not?
A Yes.
Q And his description of the fluctuation of the well's pressure?
A Yes, I did.
Q As I understand it, you,in effect, are not agreeing with his interpretation of those fluctuations, is that right?
A Basically, no, but could you be a little more specific as to what points?
Q Well, let me ask you this. How do you explain the water?
A As I understood it, his contention was that the data indicated that the well was loading up-- or to define that, that the well was flowing at a rate too low to carry the liquids from the bottom of the well to the surface and clear them through the tubing. As evidence of that. he pointed to the decline in the flowing tubing pressure. This, of course, was immediately after the well had been shut in and restored to production. There

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are some questions as to whether the well was stabilized or if this decline in pressure was being caused by liquid load-up being up in the tubing, or whether it was just the well seeking its normal stabilized flowing pressure.

Looking at subsequent data that was entered, I don't believe it was entered with Mr. Johnson's testimony, but subsequent data was entered of water production during this period as compared to water production during the period of the higher rate of flow.

This water production did not substantiate that the well was loading up with water.

Q You have indicated, I think, that you do agree that fresh water in the well could damage it.

A I think fresh water in the formation, or any liquid intrusion, or the occurrence of any liquids, particularly in this case, let's say, water in the formation, could damage the permeability to gas, and that well's deliverability and production.

Q And you do also agree with the two witnesses who testified for the applicant that this is essentially fresh water. I think you said that on your direct examination.

A Yes. I haven't run an analysis on it, but the 250 parts per million chloride is, I think, acceptable drinking water.

Q Now, you have indicated that there could be a process

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where this well could be re-tubed, if that's the right terminology?

A Yes.

Q Did you use somewhere in your testimony the word "stripping of the tubing"?

A Yes. This is the terminology used whereby the tubing is pulled, or run in or out of a well, without killing the well. And by using the equipment that is available to control the gas pressure at the surface, the tubing can be extracted and another string of tubing re-run in the well without killing the well with substantial well head pressure.

Q This re-tubing process that you referred to. Would it be fair to characterize it as being an expensive, costly process?

A This would be a more expensive process than a normal tubing job.

Q Would you estimate for the Commission what that additional expense would be?

A I would estimate probably a couple of thousand, and I'm guessing here. It's been a long time since I hired that service.

Q What service would that be?

A Otis Well Service offers a stripping service. A well I worked on in conjunction with our work in the Fullerton

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Field, we had to strip some tubing from a well. This was probably ten years ago, and prices have gone up considerably since that time.

Q And did you mention something about some sort of pressure assistance or some sort of pressure application while doing this?

A There is well head equipment that can be installed on the well head to control-- prevent any flow of gas or liquid from the well bore while the tubing is being pulled or re-run.

Q What would this be? Some specialist? Some subcontractor specializing in this particular work?

A The first one that enters my mind that offers this service is Otis. You could classify them as a specialty service company in the oil fields.

Q In doing this stripping, would it be fair to characterize it as a hazardous operation?

A Done properly, it should not be hazardous, no.

Q Mr. Williams, you have indicated that you would anticipate damage from water condensation, if I understood your testimony correctly, when the well is flowing at a higher rate rather than at a lower rat.. Am I recalling your testimony correctly?

A That's correct. The higher the rate you flow the well, the more condensation you will incur in the formation,

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and this is your point of danger as to damaging the well, to incur this water condensation in the formation in between the sands. This will increase the water saturation around the well bore, thereby restricting the flow of gas.

Q You are not saying that there actually has been damage at any of the rates that this well has been flowed up to this point, are you?

A No, I wouldn't testify to that point. But it is more likely to occur in the formation at a higher rate than at a lower rate, because you incur more draw-down at a higher rate than you do at a lower rate.

The small content of chloride in the water sample may be indicating that that is happening.

Q Doesn't a well normally have higher pressure while it is being produced at a lower rate rather than the lower rate that this well is experiencing?

A Normally your well-- Let's leave out "normally" and go on to say "always". The pressure at the perforations, or at the well bore face, is higher the lower the flow rate is. This, of course, must be a stabilized pressure. Any time you make a change in the flow pattern of the well, it takes a period of time, depending on the well's characteristics, before that pressure will then again stabilize. The pressure at the surface, which Mr. Johnson was offering, is not always-- does not always

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exactly correlate with the bottomhole flowing pressure in a well.

I think this was the point that he was trying to make, that the well was loading up with liquid, and that was the cause of the lower pressure as the well was being produced at the four million rate.

Q Mr. Williams, you indicated that in the three wells you have, you don't have any four and a half inch tubing. But I didn't ask you, have you previously used 4 1/2 inch tubing in a well?

A No.

Q You never have?

A Not as tubing. I have had experience with wells with 5 1/2 and 7-inch casing and 2-inch tubing, where we gas-lifted the wells on the tubing casing annulus, and this gives you a cross sectional area comparable to the 4 1/2 inch tubing. And based on my estimate of the volume of flow it would take to lift liquids from that depth, I don't think there is much difference. The cross sectional area of the flowing conduit is the critical factor in the volume required to carry liquids.

Q You alluded to some rate that would be required to unload any liquids. What would that rate be?

A What was the word you used?

Q Some rate.

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A I said that based on my experience with gas lift wells where we were lifting on a tubing casing annulus with similar cross section areas, I would think from my experience, a half million to a million cubic feet a day would be sufficient to lift liquids, particularly when we were talking about small volumes of liquids.

Q Would it be reasonable to anticipate that a well of this magnitude would be stabilized within a week at a given flow rate?

A You would normally think so, yes. Then I think the pressure data that was presented on the daily tabulations showed that the pressure increased from 1450 to 1650, indicating that this would be an indication that maybe at this point, the well was again stabilized.

Q Mr. Williams, am I correct in understanding that one of the wells under your supervision is the Little Jewel?

A That's right.

Q Am I correct in understanding that there has been a very significant drop in production in that well in recent months?

A Let me see if I have the figures-- But I don't know what you call a significant drop in production. In June, it produced fifty-seven million. This is for the month. In August, sixty-five million. In September, approximately sixty-six million, sixty-five million nine hundred

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thousand. So it does not appear to be dropping.

Q You were talking a moment ago about stabilizing the well at a given rate in a week's time. In fact, we could probably expect this to be stabilized in a matter of hours, isn't that true?

A This depends on the well. Ordinarily, the better the well, the sooner that you would expect it to be stabilized.

Q You have previously indicated that fresh water can damage the formation at the perforations.

A What I tried to say was any increase around the well bore of liquid saturation would restrict the flow of gas, the permeability of the gas, and the flow of the gas. And if there was not some method to reduce that liquid saturation back to the point it was previously, that the well would be damaged.

Q Well, do you have an opinion as to how much fresh water, or how much water,as the case may be, it would take to cause this damage that we are talking about?

A I do not know the thickness of the sand in this particular well, which would be a significant factor. But it would not take-- properly placed, it does not take a great volume of water to increase the saturation around the first few feet of the well bore of the well.

Q And thereby cause damage?

A Which would cause damage.

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Q Do you have an opinion as to whether or not a thirty-day shut-in of the well would be more potentially damaging to the well than say a twenty-four hour shut-in?
A I don't think either would be potentially damaging to the well.
Q You don't think there is any difference between one or the other as they go toward damage, be it ever so slight?
A No, I do not.
Q In the figures you just gave us on the Little Jewel a while ago, I think you just gave us the last few months.
A Yes.
Q How about last January? What was the production rate at that time?
A It produced 201 million.
Q Would you regard that as a significant reduction between January and August?
A That is a significant change. This was because of the pipe line takes from our wells.

MR. HOWDEN: That's all I have.

MR. TRUJILLO: Because of the lateness of the hour---

THE WITNESS: I am thinking about my immediate past testimony, and I might say one thing. Mr. Howden was asking on several points if the introduction of this water, or any water into the formation around the well bore would cause damage, and I agreed that this could well cause damage because

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of the change in the water saturation restrictions and the permeability. But I think I ought to clarify that.

The most likely way that this would occur is by the well being produced at a high rate of flow, which causes the water to condense while still flowing through the formation. Shutting the well in is not going to introduce water back into the formation. Any flow that takes place after shutting the well in will be from the formation, so this water would not be introduced into the formation by shutting the well in.

MR. TRUJILLO: Have you concluded, Mr. Howden?

MR. HOWDEN: Yes.

MR. TRUJILLO: We would like to recess the hearing until nine o'clock in the morning. There are two additional witnesses. We hope they won't take too long.

(Whereupon the hearing in Case 5085 was recessed at 5:15 P.M., Thursday, October 25, 1973, to be re-opened at 9:00 A.M., Friday, October 26, 1973.)

* * * *

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OCTOBER 26TH SESSION

Whereupon the hearing in Case 5085 was reconvened at 9:00 A.M., Friday, October 26, 1973.)

MR. TRUJILLO: The hearing will come to order. Let the record show that Commissioners Porter and Trujillo are in attendance. Commissioner Armijo is engaged with a prior engagement, and he will be present at a later time today.

I believe Mr. Williams was on the stand, as we concluded-- recessed yesterday, rather. If there is any-- Mr. Williams, will you take the stand in the event there is any additional cross examination?

(Whereupon Mr. Williams complied.)

MR. TRUJILLO: Let the record also show that Mr. Williams has already been sworn. Are there any questions of Mr. Williams?

MR. HOWDEN: Nothing further.

MR. STEVENS: We have nothing further.

MR. TRUJILLO: You may be excused, Mr. Williams.

(Witness excused.)

MR. TRUJILLO: We will continue now with Mr. Kellahin. Mr. Kellahin, are you ready with your witness?

MR. KELLAHIN: Yes. I would like to call J. C. Raney.

* * * *

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J. C. RANEY,

was called as a witness on behalf of Pennzoil Oil Company, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A J. C. Raney.

Q By whom are you employed?

A Pennzoil Oil Company. I am a petroleum engineer in Midland.

Q For the benefit of the Commission, will you briefly summarize your education and then your experience as a petroleum engineer?

A I received a B.S. degree in petroleum engineering from Texas A and M University in 1962. I worked for approximately seven and a half years for Mobil Oil Corporation as a reservoir engineer, and about six months as a production engineer. I worked for eight months for the Colorado Oil Company as a district engineer. And since September of 1970, I have been employed with Pennzoil Company as a petroleum engineer and supervisor of production in Southeast New Mexico.

Q Where was your experience with Mobil?

A I worked in Wichita Falls, Texas and Pampa, Texas until April of 1966. I have been in Midland since April of

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1966 working in the various fields in West Texas and Southeast New Mexico.

Q Since 1966, you have worked primarily in West Texas and Southeast New Mexico?

A Yes.

Q And is the area involved in this application in the area in which you operate at the present time?

A Yes.

Q Have you qualified as an expert petroleum engineer before this Commission before?

A Yes.

MR. KELLAHIN: We submit the witness as a qualified expert.

MR. TRUJILLO: Yes, sir.

Q (By Mr. Kellahin) Mr. Raney, does Pennzoil Company operate any wells in the South Carlsbad-Morrow Gas Pool?

A Yes, we operate four wells in the South Carlsbad-Morrow Pool-- We operate four Morrow wells; one Strawn, and one Atoka.

Q Are those wells under your direction and supervision?

A Yes.

Q Are you familiar with the characteristics of Morrow production in the South Carlsbad Pool?

A Yes.

Q Over what period of time have you become familiar with

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this?

A Since September of 1970 directly in the South Carlsbad-Morrow Pool. Immediately after that, I went to work for Pennzoil, and we completed the Echols Well in the South Carlsbad Pool. Since then, I have worked on drilling and completion of wells, and as engineering supervisor of production from these wells in the South Carlsbad Field.

Q Now, in your experience in the Morrow Pool, have you observed the condensation of water, which was testified to here yesterday, from gas production?

A The production of water which we have in the South Carlsbad-Morrow Pool itself is very negligible. We measure our water production about once every three months, and the water that we produce is in the form of [illegible] would be classified as salt water.

But the type of water that was described in the testimony yesterday we do not observe in our wells.

Q Based on your experience with the Morrow formation, the volumes of water, assuming they are produced in this Grace Well, would those volumes of water cause any damage to the formation, in your opinion?

A The volumes that were reported here yesterday would not. In fact, the water that is produced from these wells should not be detrimental to the formation because they

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are native to the formation.

Q Have you had occasion to shut in any of your Morrow wells?

A Yes, we shut all of our wells in at least once a year.

Q For what period of time?

A A minimum of twenty-four hours and generally for seventy-two hours.

Q Have you had any occasion to observe wells that have been shut in for a longer period of time than that, say after initial completion?

A Yes, all of our wells are shut in from a minimum of one month up to three months waiting on pipe line connections, depending on how far away they are.

Q In your opinion, have these shut-ins caused any damage to these wells?

A No, sir.

Q In your opinion, would the shutting in of the Grace-Atlantic Well damage the productivity of that well?

A No, sir. In fact, I believe it would tend to maybe help the production from it-- It doesn't need any help, but it should allow it-- allow the pressure to equalize in the formation farther out from the well bore. And there would be no detriment to the well at all from shutting it in.

Q You say equalize the pressure out from the well bore. In that connection, would producing the well at a high

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rate have an adverse effect on the well?

A This is a very strong belief-- Not only a belief, but from our experience, the higher you produce a well, the faster you draw the pressure down right at the well bore and within two or three feet of it. And as you do this, you get the greatest drop in pressure right at the well bore face, and the greatest drop in temperature which causes liquid to drop out, and as this drops out, you change the relative permeability of gas to water, which would tend to reduce the flow of gas or hydrocarbons into the well bore, thus reducing the total recovery from the well.

Q Could that have been avoided by producing the well at a lower rate?

A Yes, sir.

Q You heard the testimony yesterday in regard to the flowing tubing pressure on this particular well and the lower pressure at the lower rate of production. Have you checked those figures?

A Yes, and based on my experience and the volumes of water that were reported after the well was opened back up, it is my belief that the data is incorrect, because with that much of a pressure drop at this low flow rate, there would have had to be a minimum of six to eight hundred feet of water in the hole to show that much

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pressure drop at the surface. And from the reported data, there is not that much water produced. I am not saying that the data was reported incorrectly intentionally, but it's hard-- I don't believe the data is valid. This is just the opposite of what you would expect from reducing the flow rate. The pressure should go up, and we see this-- There are times when pipe line companies will ask you to cut a well back, and your pressure will go up, and we are talking about the same type of pressure, but much larger volumes of condensate and water.

Q Now, in your opinion, would the shutting in of this well cause any damage to the reservoir or to the well?

A I don't believe there would be any damage to the well at all in shutting it in.

Q Would it be possible to run tubing into the well without killing it?

A It's mechanically possible to run tubing into this well without killing it at all. It would necessitate shutting the valve and installing a lubricator and running a wire-lined packer, either a permanent or a retrievable wire-lined packer with an expandable plug in it, and then shut the flow off.

In this way, there is nothing foreign introduced into the well bore. Then you would go ahead and space your tubing out, and when the tubing is spaced out, the

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plug is knocked out at the bottom. In fact, we did a well this way in less than two weeks.

Q Where was that?

A The South Carlsbad area.

Q Not in this particular pool?

A No, this was a wildcat well.

Q Was it a Morrow well?

A Yes.

Q Based on the testimony you heard yesterday, is this well, in your opinion, making sufficient volumes of water to cause a problem with tubing?

A No, not at this time. The amount of water and condensate that was reported in the short duration tests is not sufficient to warrant any additional work or expense.

Now, on this well, it could be done later on, and could be done without any hazards with the techniques developed recently. And the costs would be not near as high as other methods of running tubing.

Q Getting back to these tests, have you examined the data submitted to the Commission yesterday?

A Yes, sir, on Exhibits Seven and Eight. The pumper's notes, or field notes, that were furnished in these were rather hard to follow, because I'm not sure what the last column on the right is. But these numbers do not jive with what was reported as far as volumes of water

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were concerned.

If you try to take the Commission reports or the New Mexico Oil and Gas Engineering Committee's reports of condensate production and try to make an evaluation of what went on either prior to this or just taking the data here, there's no indication that there is sufficient water to be concerned with in this well.

Q Now, getting back to the flowing tubing pressure, in your opinion, were the tests on which these figures were based of sufficient duration for the well to stabilize itself?

A No. This may have been one of the reasons that the data is incorrect. Another phenomena in this is the dropping temperature and pressure. You could have a drop or increase in pressure if this well had been flowed say for ten days or fifteen days at this low rate. Then the pressure would probably come on back up and stabilize. But the duration of this test is not long enough to determine what the well would do.

Another phenomena had to do with the production of water during the time that the well was produced for two hours at the fifteen million rate. This was the very purpose of the data, to determine how much water was actually going to be produced at these low rates. But this wasn't determined or checked. So I think that the

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tests that have been reported are not sufficient in time, nor is the data that was gathered good enough.

Q Thank you, Mr. Raney.

MR. KELLAHIN: That's all I have. I will pass the witness for cross examination.

MR. TRUJILLO: Mr. Howden?

* * * *

CROSS EXAMINATION

BY MR. HOWDEN:

Q Mr. Raney, in your opinion, is it a common occurrence for fresh water to be condensed from high pressure gas wells?

A Yes-- It depends on the type of gas too, and what the analysis of the gas will show. I don't know what the analysis of this gas is.

Q But it is basically your opinion that it is a common occurrence for this condensation to occur from high pressure gas wells?

A But the amount would depend on what the gas contains, what the gas analysis would show.

Q Well then, if I understand your answer correctly, the essence of your answer is you cannot give us a general answer to the question. You cannot state whether or not it is a common occurrence that this condensation will occur?

A No, and the amount and type of water would depend on what

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is in the gas, what the composition of the gas is.

Q Do you have an opinion as to whether or not fresh water can cause damage in the Morrow formation?

A Fresh water, if this is condensation water from the Morrow formation itself, it would be my opinion that it would not damage it because it came out of it. But where you pump fresh water into these wells, then the possibility of damage is great.

Q Mr. Raney, maybe I didn't understand my own question. I thought I simply asked if fresh water could cause damage in the Morrow formation.

A It depends on what the water is.

Q Fresh water.

A You can't answer that. You can't put water in, foreign water, into the formation, and this is not foreign to the Morrow.

Q You heard an analysis of the water introduced here in evidence. Can you take water with that same consistency from outside of the Morrow formation and put it into the well,and under those circumstances, can that cause damage to the formation?

A Volume-wise, you wouldn't. But you are asking a hypothetical question, and I do not intend to answer a hypothetical question.

Q Mr. Raney, if I understand it correctly, you are up here

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as an expert to answer hypothetical questions.
A In the oil field, you don't have hypothetical conditions. Nor do you assume anything.
Q You have assumed nothing in making these answers?
A No.
Q Then do I understand that all of your answers regarding this Grace-Atlantic Well are from your own personal knowledge?
A And the data there.
Q Then your answers are based on assumptions as to the data?
A I guess so.
Q So you are basing some of your testimony on assumptions?
A You assume data is either wrong or right, that's an assumption. But you don't make bare-faced assumptions about pumping water back into it. But the volume here is not great enough to damage it.
Q Are you saying that in this country, we do not have the capacity or the capability to develop water of the same consistency and with the same features except out of that one well?
A There would be some difference.
Q You are saying that you cannot create that same consistency of water except by drawing it out of that well?
A I don't think you can.
MR. HOWDEN: I have no further question.

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MR. TRUJILLO: Does anyone else have any questions?

(No response)

MR. TRUJILLO: Any redirect, Mr. Kellahin?

MR. KELLAHIN: No. We do have one more witness.

MR. TRUJILLO: Thank you, Mr. Raney.

(Witness excused.)

* * * *

E. F. MOTTER,

was called as a witness on behalf of Cities Service Oil Company, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Before I do, I would like to say that because I have my burnt orange shirt on, and with all the Aggies in the crowd, I thought they might not let me up here.

Q Would you state your name, please?

A E. F. Motter, M-o-t-t-e-r.

Q By whom are you employed and in what position?

A Cities Service Oil Company, I am engineering manager for the Southwest Region.

Q Have you had training as a petroleum engineer?

A Yes, I have.

Q Will you outline your education, please?

A I graduated from Kansas University in 1950 with a degree

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in mechanical engineering. I later did some undergraduate work at Southwestern Louisiana University in Lafayette, Louisiana. I attended the University of Texas Reservoir School. And I attended O.U.

Q Where have you worked?

A Well, I have worked in Kansas, Oklahoma--

Q For what companies?

A All my experience has been with Cities Service. I have worked in Kansas, Oklahoma, Mississippi, Louisiana, Texas, New Mexico, Utah, Colorado.

Q What positions have you held?

A I have held all engineering positions; either management positions, district engineering positions, or regional engineering positions.

Q What is your present position?

A Engineering manager of the Southwestern Region.

Q Does that include the South Carlsbad-Morrow Gas Pool?

A Yes.

Q Have you testified before this Commission before?

A Yes, I have. I might also add that I am registered in most of the states we operate in.

Q Does that include New Mexico?

A Yes.

MR. KELLAHIN: We submit the witness's qualifications.

MR. TRUJILLO: They are acceptable.

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Q (By Mr. Kellahin) Does Cities Service Oil Company operate any wells in the South Carlsbad-Morrow Gas Pool?
A Yes, we operate five, plus about three others in surrounding areas, plus the fact that we have an interest in about eight other wells in the South Carlsbad area immediately surrounding the South Carlsbad-Morrow Field.
Q In looking at Exhibit Number Three--
A I will submit that I think we are over here on the sub-marginal side with about four of our wells, and I'm not sure whether the fifth well, what category that would fall in, but it's capable of making its allowable. But I don't know if it is marginal or good. I only wish we had a couple of wells like Mr. Grace.
Q You don't have a giant well?
A We don't. We are still looking.
Q Have you personally had any experience in the use of large diameter tubing in wells?
A Yes, we have. One reason I would like to bring it out is I feel that the comments here yesterday with some of the evidence that said that this large diameter tubing is used extensively in Texas might need a little explanation. We had considerable experience in Pecos and Ward Counties in Texas drilling these deep wells anywhere from sixteen to twenty-two thousand feet. These include the Pecos Grande and the Gomez-Barstow.

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I would like for the Commission's benefit to point out that large casing is normally run on these wells for two purposes. Number one, when you are dealing with dolomite, you require a rather extensive and large treatment to bring a well in, and if you did not run large diameter tubing, you could not get the fluid from the formation, get the frack fluid out away from the well bore.

So in this case, you must run large diameter tubing. It is true that it produces a friction loss when you produce these wells, but these wells are extremely large wells. I think the question was asked about allowables, and I would say that these wells run anywhere from ten to twenty-five million cubic feet on allowables, and of course, this reduces your friction loss.

Q Are these necessary in the South Carlsbad area?

A I wouldn't think so. In the South Carlsbad area at 11,000 feet, we start with two-inch tubing and go to 2 1/2. Not because of our small wells, no.

Q Do the volumes produced from the South Carlsbad-Morrow Pool require this large diameter tubing?

A No, I don't think so. I think you could get fifteen or twenty million out of a gas well even with 2 1/2 inch tubing.

Q And if there is a water problem in the subject well,

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would smaller tubing solve that problem?

A Yes. I agree with Mr. Raney's testimony that this is no problem.

Q Getting to the actual formation. Does Cities Service-- Did they take cores on any of their wells?

A Yes, we cored the offset well to Mr. Grace's well, the Merlin "C" No. 1, and to my knowledge, this is about the only core in the field. My correlation indicates that it was cored in the same pay or the same formation, the sub-C, as is in Mr. Grace's well.

Now, I'll readily admit that we do not have the permeability developed in this particular well that Mr. Grace has, but there are certain things that we have found that I think are quite informational if not only to the Commission, but to the other operators in the field. I will apologize that this report is not complete. It's being done in our lab, and any of you who have worked with major companies know that these things take from six to eight months. I get my reports every two weeks, and the final report is due in my office on the 7th of November.

One of the first things I would like to talk about is the formation water permeability from the tests that were run. The statement is made that there is no indication of clay swelling, fine grain particle

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movement, or core plugging in any of the tests with formation water.

The next thing the report mentions is that the results suggest that passing chloride solution affect the rock in essentially the same manner as formation water. I think the most important thing is the mineralogy report done on samples of the core. The report mentions that although clays are present, they are accumulated in isolated areas, and should present no problem to the formation's permeability.

However citirite was detected in all samples, and should be considered when planning any type of well stimulation. I would like to elaborate on citirite.

It says that treatment with hydrochloric acid resulted in reduction in permeability.

I have all kinds of data here on flow tests, but I think that is sufficient.

Q Does that indicate then that formation water remaining in the reservoir in a shut-in well would cause any damage?

A I don't think so, from what our research has found.

Q Have you shut in your own wells?

A Yes, we have shut our wells in from time to time. I might add that we attempted only yesterday a new treatment on the Morrow formation on an offset well to the Grace well. This well is making about 670 MCF a day. We are

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hoping this treatment does some good. I might, and I am just repeating what Mr. Williams said, but our main finding from these cores is that the filtrate or the solids in the mud that are used to drill the wells with are the culprits that cause most of the problems, especially those that are used to control water loss.

Q Now, based on your experience, would the shutting in of the Grace well damage it?

A I don't really think so.

Q Would the producing flow rate have any effect on the well, in your opinion?

A No. I would like to make one little observation. I realize we are not supposed to deal with anything but the damage to this well. But we have seen some strange phenomena in deeper wells where pressures have dropped tremendously overnight.

When I say this, I mean over three or four hundred pounds. Our immediate reaction is to spend a lot of money to see what was causing this. But it's quite obvious that at a high flow rate, you normally have higher temperatures in the well bore than at a low rate.

Q Would that account for the difference in tubing pressure?

A I'm not saying that's absolute, no.

Q Would the length of time on a flow rate affect the validity of the figures?

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A Well, yes. Quite frankly, all operators operate differently. But I think that had this been one of our wells and we saw this sort of thing happening, I think what we would have done was drop a bottomhole pressure bomb.

MR. KELLAHIN: That's all we have of this witness. We tender him for cross examination.

MR. TRUJILLO: Mr. Howden?

* * * *

CROSS EXAMINATION

BY MR. HOWDEN:

Q Mr. Motter, you alluded to formation water and your findings that there was no indication of formation water.

A Right.

Q Just for my clarification, am I correct in understanding that the formation water you are referring to would be salt water?

A Let me make an explanation of that. I will say yes, with an explanation. The water we took to run these samples on was taken from the wells in the field, and in my opinion, probably part of it was done from condensate and some formation water. It was not water of the type you have here (indicating).

Q What parts chloride per million?

A Offhand, it varies, and I'm not sure, because I don't

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have the analysis with me.

Q Is it substantially more than 250 parts per million?

A Oh, yes, more than that.

Q I think you indicated-- Well, you were making-- You were reporting to the Commission from some tests that were run?

A That our research lab had run.

Q As I understand it, you said that the test was not complete in all parts?

A No, it's supposed to be finished on November 7th. This core analysis was taken-- We drilled the Merlin "C", and it was taken from there, and was routinely analyzed in Midland by a core lab, and we asked them to hold up on all of the information, to keep it confidential, to let no one see the core or anything until we were through with it. And quite frankly, I feel a little odd giving some of this information here now, but I think it might be relevant to the case.

Q I think you said that one of the things you found, or you recognized, is that the offset well-- Which well is that?

A The Merlin "C". I might make one correction. I think somebody qualified it as one of the better wells in the field, and it certainly is not. It's one of the worst wells in the field.

Q I think you said it did not have the permeability that

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the Grace-Atlantic had.

A Absolutely not.

Q It apparently does not have the deliverability either?

A Heavens, no.

Q The deliverability that the Grace-Atlantic has, is that right?

A That's right.

Q I don't quite understand. Again going back to your testimony, I think you said that it indicated that potassium chloride water would affect the formation the same as formation water.

A No, that's not right. It is common practice to use potassium chloride water in the well bore if you have to work on a well, and we used potassium chloride water with a combination of sodium chloride.

Q Did you use potassium chloride in a combination with sodium chloride?

A Yes.

Q I hope that I am on sound ground in assuming that that is not the same as the water that is here in evidence.

A Well no, that's true.

Q Do I understand correctly that when you do this work and use this potassium chloride and sodium chloride, you do not use fresh water?

A We have not, but we will run fresh water before it is

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over. This is being done right now.

Q You have not done it thus far, though?

A No.

Q So you wouldn't be able to say whether or not fresh water might cause damage and the water you used would not cause damage?

A In my opinion, it would not, because although excavation found clays to be present, they are isolated, and the statement is made in the report that they should present no problems to the formation's permeability.

Q Then do I understand correctly that at some point, you are going to be using fresh water?

A Yes, we will conduct these tests.

Q Do I understand that you subsequently might recommend to your management to drill more wells with fresh water?

A No, mainly because you have problems uphole, and it is much easier to use salt water base mud.

Q What diameter tubing would you recommend running into a well capable of an absolute openflow of sixty-five million?

A Well, you are probably going to think that I am being facetious here, but we have computers programmed for this. But an off-the-cuff answer would be at 11,000 feet, 2 1/2 inch tubing would produce any anticipated allowable up to ten or twelve million a day.

I don't see anything higher than that there.

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MR. HOWDEN: No further questions, Mr. Commissioner.

MR. TRUJILLO: Are there any further questions of Mr. Motter?

(No response)

MR. TRUJILLO: Any redirect, Mr. Kellahin?

MR. KELLAHIN: That's all we have.

MR. TRUJILLO: The witness may be excused.

(Witness excused.)

MR. TRUJILLO: Mr. Hunker?

MR. HUNKER: If the Commission please, my client, Mr. Hannifin, has a statement he would like to present to the Commission.

MR. CARR: Before we go to statements, the Oil Conservation Commission would request permission to recall Mr. Dan Nutter for some very brief testimony.

MR. TRUJILLO: Fine.

* * * *

DANIEL NUTTER,

was recalled as a witness, and having been already duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q Mr. Nutter, you have been previously sworn and have been qualified before the Commission as a petroleum engineer?

A That's correct.

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Q Mr. Nutter, I call your attention to what has been marked as Oil Conservation Commission Exhibit Number Two, and ask you to identify this.

A Oil Conservation Commission Exhibit Two is a memorandum with attachments dated June 18th, 1973.

Q Mr. Nutter, did you participate in the drafting of this memorandum?

A Yes.

Q Do you know from your own knowledge this to be a true and accurate copy?

A This is a true and accurate copy of that memorandum.

Q Would you first turn to the last page of the exhibit, and identify this?

A Are you referring to the page that shows the certified mail receipts?

Q Yes, sir.

A Yes.

Q Was this memorandum mailed to all the operators in the South Carlsbad Field?

A Yes, sir, to all of the operators and to all of the trarsporters in the South Carlsbad Field.

Q Were return receipts received back from all the operators and all the transporters?

A Yes, they were.

Q Would you read into the record at this time this

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memorandum?

A The entire memorandum?

Q Yes, and pay particular attention to the last paragraph.

A The memorandum is reproduced on Oil Conservation Commission stationery. It is dated June 18th, 1973. It is a memorandum to all producers and purchasers in the South Carlsbad-Morrow Gas Pool. It is from A. L. Porter, Jr., Secretary-Director. Subject: gas prorationing.

The gas proration schedule for July, 1973 will contain a section for the South Carlsbad Gas Pool showing gas prorationing beginning April 11, 1973. It will include allowables for a portion of April and all of the months of May, June and July. You are directed to disregard all previously assigned allowables. An explanation follows:

In February of 1972, an application upon the motion of the Commission was docketed for an examiner hearing in Santa Fe on March 1, 1972 to consider prorating the South Carlsbad-Morrow Gas Pool. At the request of an operator, the case was dismissed and readverstised to be heard by a quorum of the Commission in Hobbs on April 19, 1972.

After considering testimony which required the better part of two days, the Commission entered an order on June 30, 1972 which established prorationing

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effective September 1, 1972. On August 31, 1972, a stay order was issued by the District Court which prohibited the Commission order being made effective on September 1.

Due to a succession of circumstances,a petition by the Commission to have the stay order set aside was not heard until March 7, 1973. Upon that date, the Court ruled in favor of the Commission. The Court order was filed on April 11, 1973. On May 2, 1973, a memorandum to all purchasers and producers in the pool announced that prorationing was being made effective September 1, 1972. Pending the outcome of the Court action, allowables had been published monthly in the proration schedule, but the proration schedules bore the following notation. "Proration suspended by Court order until further notice." All purchasers had been notified to this effect. The memorandum also suspended the shut-in provisions of Rule 15A of Commission Order No. R-1670-L until December 31, 1973.

Following the above-described action, Mr. William F. Carr, Commission Attorney, received a letter from Mr. David Norvell (copy attached) advising Mr. Carr to in turn advise the Commission that prorationing should not be made retroactive. On May 17, 1973, Mr. Carr issued a memorandum to the Commission to which he

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attached the letter of the attorney general. On May 21, the purchasers connected to overproduced wells were notified by telephone and in writing that curtailment of production in the South Carlsbad-Morrow Pool would not be required pending the outcome of certain legal questions which were to be resolved in District Court in early June of 1973.

The District Court heard the case on June 5, 1973, and upheld the Commission's order. On June 14, 1973, the Commission's Director and Attorney talked with Mr. Norvell concerning his letter of May 16, 1973, since the letter indicated that a further review of the data and research of the law would be made. Mr. Norvell gave us his answer in a letter dated June 15, 1973 (copy attached). In compliance with this letter, I have directed the gas proration department to make gas prorationing effective in the South Carlsbad-Morrow Gas Pool on April 11, 1973.

Since producers in the pool have not had an opportunity to know the amount of the allowables for April, May and June, any wells that may be overproduced in excess of six times the average monthly allowable for the months available will be allowed until September 30, 1973 to become less than six times overproduced. Lack of evidence of a good faith effort to compensate

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for overproduction may result in a complete shut-in order by the Commission.

That is the end of the memorandum. It shows copies to Commissioners Trujillo and Armijo; Attorney General David Norvell; Governor Bruce King.

Q Mr. Nutter, would you explain what the purpose was for the Commission sending this memorandum to the operators of all the wells?

A Primarily the purpose was to outline the history of the case, and in this last paragraph-- I will read this one again:

Since producers in the pool have not had an opportunity to know the amount of the allowables for April, May and June, any wells that may be overproduced in excess of six times the average monthly allowable for the months available will be allowed until September 30, 1973 to become less than six times overproduced.

I am going to read the last sentence once again:

Lack of evidence of a good faith effort to compensate for overproduction may result in a complete shut-in order by the Commission.

Q Mr. Nutter, would you state whether or not it is true that the reason this was sent to the operators in the field was because, one, they determined the flow rate of the wells, and two, they would have an opportunity

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to curtail production?

A And to make their good faith effort in the event they were overproduced.

Q I would request at this point for the purpose of the record to state what the current allowable was, month by month, for the Grace-Atlantic No. 1 Well and the April through August production therefrom and the overproduced status.

A In the month of April, the allowable was 79,928 MCF; production was 201,634 MCF; overproduction was 121,706 MCF.

For the month of May, the allowable was 111,346 MCF; production was 492,613; accumulated overproduction for the two months was 502,973 MCF.

The June allowable was 161,272 MCF; production was 601,074; a re-distribution allowable of 388,190 was assigned to the well status leaving with a net overproduced status at the end of June of 554,582 MCF.

The July allowable was 140,530 MCF; the production was 437,190 MCF; the net accumulated overproduction status was 851,242 MCF.

The allowable for the month of August was 244,584 MCF; production was 414,644 MCF; the net overproduction status was 1,061,302 MCF overproduced.

Q Mr. Nutter, were these figures available to the operator of this well on a monthly basis?

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A Yes, sir.

MR. CARR: At this time, if the Commission please, we offer for admission into evidence Oil Conservation Commission Exhibit Number Two.

MR. HOWDEN: We would like to voice an objection on the grounds that the evidence tendered is tendered after the Commission had rested their case. It is not in the form of rebuttal; it's sort of beyond the scope of proper cross examination. Therefore, we object, and move the testimony be stricken.

MR. CARR: I would suggest that the objection is not timely at this time. We asked for the permission of the Commission to recall Mr. Nutter.

MR. LINES: We assumed at that time it was for the purpose of rebuttal, because everybody is allowed rebuttal. But after you rest your case, I think it is improper for anyone to call for new testimony.

MR. CARR: May it please the Commission, it can be further construed that it was for the purpose of rebutting the question that was raised that the well was not overproduced. It could be correctly construed as rebuttal under those circumstances.

MR. TRUJILLO: The objection is overruled, and of course, the witness is available for cross examination.

MR. HOWDEN: We have no questions.

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MR. TRUJILLO: Does anyone have any questions of Mr. Nutter?

MR. STEVENS: Yes.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Nutter, based on your last sentence that you read there and in view of the fact this well was overproduced during the period, in your opinion, did the applicant exercise a good faith effort in accordance with the dictates of that letter?

A I will answer that by saying--

MR. HOWDEN: I think I will object to that as asking for an opinion beyond the scope of the witness's expertise. I recognize that he has nineteen years experience on the Commission, and has been allowed to testify as an expert and give his opinions in many, many areas; opinions on the law, opinions on production, opinions on drilling and so forth, but I think to ask him whether or not in his opinion this was a good faith effort, I think that is asking for a clear legal conclusion.

MR. STEVENS: I will withdraw the question, and I have no further questions.

MR. TRUJILLO: Are there any further question?

(No response)

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MR. TRUJILLO: If not, the witness may be excused.

(Witness excused.)

MR. TRUJILLO: Is there any further testimony to be presented in Case 5085?

MR. LINES: Yes, Your Honor, we have two rebuttal witnesses. I will call first Mr. Ken Smith to the stand again.

* * * *

KENNETH SMITH,

was recalled as a witness, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LINES:

Q I believe, Mr. Smith, that you are still under oath from yesterday. You did testify yesterday. is that correct?

A That's correct.

Q There was an article in the Albuquerque Journal this morning quoting you as stating yesterday that you feared damage to the well because of water encroachment in the well bore of this well. Did you make that statement yesterday?

MR. KELLAHIN: I would object to the question on the grounds that it is immaterial what the Albuquerque Journal may or may not have quoted this witness of saying. This has no bearing on the evidence before the Commission.

MR. LINES: I will rephrase that question, Mr.

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Commissioner. I will just go ahead and rephrase the question.

Q (By Mr. Lines) Yesterday in your testimony, Mr. Smith, did you make any statement concerning a fear that you had that the well might be damaged because of water encroachment into the well bore?

A No, I did not. For me to determine water encroachment would mean we have a salt water level in this sand or in this formation, and that we were fearing-- assuming or something that this water was free salt water produced by the well, and this is not the case at all. I said this was fresh water in vapor form in the gas in the formation, and apparently was breaking out of the gas, condensing back to liquid in the tubing and in the separators and so forth.

Q And this is what is causing, in your opinion, potential damage to the well?

A Yes.

Q There were some questions this morning that there was uncertainty as to how much water unloaded during the two-hour flow rate at fifteen million on October 18th. Can you clarify that from your own knowledge somewhat?

A Yes, sir. There were twenty barrels of water, fresh water, unloaded during the two-hour period. This is according to the pumper, and incidentally, that comes to a 420-foot height in a seven-inch casing, or some

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1,000 feet in the tubing. I think we had testimony to the effect that we had to have 800 feet of solid salt water in the tubing to decrease the pressure that much.

Well, we had 1,000 feet of fresh water in it, or the equivalent of that.

Q There also has been some question as to the length of time that it might take a well of this magnitude to stabilize its pressure. You have been there, and you have seen this well being curtailed and then opened it up again and curtailed it again. Do you have any opinion as to how long it takes this well to stabilize its pressure?

A The other witnesses who have testified about this well can't even visualize the permeability of this well, and they're talking about pressure drops in the formation. I put this well on the line on April 16th, I believe, or April 15th.

The shut-in pressure from some thirty days shut in was 2400 pounds. It flowed at a twelve million rate, and stabilized in fifteen minutes. It will stabilize on any rate in, I'd say, two or three hours.

Q In other words, you have actual experience in cutting it back and opening it up and then cutting it back again?

A Yes.

Q There has also been some discussion as to certain

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aspects of producing this formation at a high rate and potential damage to the formation or the well bore, or whatever. I would like you to discuss that from your own observations from having worked with this well.

A Well, it's back to the same thing, the permeability on this well is fantastic. If you get on hundred pounds of draw-down from the perforations to the tubing head, you can't have very much pressure loss in the formation outside the perforations, I don't believe.

Q Testimony was given yesterday that the high rate of production from this well causes excessive pressure drop in the sands near the well bore, which in turn causes condensation of water in the formation. I would like you to give your opinion as to this observation from yesterday.

A I think I just answered that, Farrell. Maybe I got it out of order, but the pressure drop in the sand around the well bore is negligible, and you are not going to have very much condensation. You will have some cooling, some pressure drop, but very little. And with a high rate of production, you have new gas coming in all the time, which would tend to keep it dry.

Q Is it your testimony then that the damage you fear isn't from the waters themselves that are there, but from the actual fresh water that might be condensing when you

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are forced to push it back?

A That's correct. With a production history of a little over two billion cubic feet of gas, that high rate has sure not damaged it. It has not been damaged at that high rate.

Q There was testimony yesterday from Mr. Williams that there was absolutely no threat of damage to the well or any hazard at all in attempting to change the tubing in the well. Do you believe that to be true?

A He mentioned certain other things including the figure of $2,000 to re-tube the well. I made a couple of cost estimates last night just off the top of my head, and talked to a couple of tubing men, salesmen and so forth.

In the first place, the tubing is not available. I don't believe you could buy it at any price. Then this morning, we had a third method proposed. So if you don't mind, I will go through all of them.

For 11,000 feet of 2 3/8 inch used tubing, if you could buy it, it would cost $14,300. This is the estimate for removing the 4 1/2 inch tubing in there and replacing it with 2 3/8 inch used tubing drifted and tested.

For rental tools and supervision, I estimated $10,000. We rigged up similar equipment two or three times in the South Carlsbad Field, and we got by with

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$6,000 for three days. Nitrogen services would be about $1,500. Perforating the tubing and plugging the tubing and rental on the plug would be $450.00. Repairing the seal and assembly on the packer would be $150.00. Supervision and expenses for six days would be $1,200. I get a total of $29,920 for doing it that way.

To run 2 3/8 inch tubing and a packer inside the tubing there, you have the same figure for 2 3/8 inch used tubing. I would estimate the time at three days, I think that's conservative, $1,850.00-- Wait a minute. I have an error there. Would you believe $640.00.

Rental tools and supervision, $8,000. One thousand fifty dollars for the packer. We have a 4 1/2 inch well head on there that we would have to change all the valves on, and if we could find a junk dealer with a good price, it would be maybe $2,000 on that. I have to re-add this now.

MR. STEVENS: Mr. Chairman, while he is re-adding his figures, we haven't objected to this up to this point. We are not too concerned about this being entered, however we point out that we consider it utterly and completely immaterial to the issues before this Commission. How much or how little it might cost has nothing to do with whether this well might violate the correlative rights of others by overproduction. On that basis, we have no objection to

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it, but we consider it of no issue.

MR. LINES: I can only mention that it was his witness that brought it up in the first place, and what we are after is the credibility of the witness. When a witness gets on the stand and states a cost of $2,000 to re-tube a well, I think we have to have it discussed. Because of that, I think it is very relevant.

Q (By Mr. Lines) Were the two methods you discussed the methods proposed by Mr. Williams?

A I don't think he proposed a method.

Q How much would the first be?

A Twenty-nine thousand, two hundred thirty dollars for the first and twenty-six thousand, five hundred ninety dollars for the second method.

Then for the third method that we heard proposed this morning, here again, we have 11,000 feet of 2 3/8 inch used tubing at $14,300. Two days rig time, $370.00. Line services for setting the packer with a push-out plug in it, $1,200. The seal assembly would cost $1,000. Supervision expenses would be $400.00. And here again, we would need a new wellhead or a partial new wellhead, and a couple of those gives me a total figure of $19,640.

Q So the least expensive method would cost at least $19,000?

A Yes.

Q Rather than the $2,000 that was testified to?

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A Yes.
Q Would you recommend to Mr. Grace to switch to the 2 1/2 inch tubing?
A It was 2 3/8. No, I sure wouldn't.
Q Under any conditions?
A Well, possibly this well wouldn't flow at four million through this tubing, so I don't know. It will now for a while, but when we g a little less bottomhole pressure there, it wouldn't flow.
Q Do you have any estimate-- First of all, is it hazardous to do this tubing change?
A Yes, it is. You are working with 2,000 pounds, and you have to pull that tubing into the hole and keep it from blowing out of the hole. When you're coming out of the hole, you have to keep it from blowing out, and when you are going in, you have to pull it into the hole. I don't like it, never have.
Q Do you have an opinion as to what the production capability is in one day if you were to open it up and turn it loose?
A I imagine it would make thirty-five, forty million.
Q Do you know how much Mr. Grace is selling this gas for?
A I believe it's fifty-two cents a thousand plus the B.T.U. adjustment of probably ten cents.
Q There has been testimony from two engineers who have had

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experience with the well that there is the probability of potential damage to the well if it were shut in for any period of time. There has also been testimony from three other witnesses who haven't had actual experience with the well who have said that they feel there wouldn't be damage to the well if it were shut in.

Assuming for the moment that they were wrong and you were right and the well was shut in and it was damaged, could you give us the daily amount of loss to Mr. Grace?

MR. STEVENS: Objection to this question. It is obviously not testing the credibility of Mr. Williams, and is not within the call of this hearing, and is immaterial and irrelevant, and we ask that the question be withdrawn or denied.

MR. LINES: I would suggest that the Commission needs before it all the evidence it can get.

MR. TRUJILLO: The objection is sustained.

MR. LINES: I have no further questions.

MR. TRUJILLO: Mr. Kellahin?

* * * *

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Smith, what is the permeability on the Grace well?

A I don't know.

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Q You testified it was high.
A Yes, I can tell you that.
Q What are you doing? Guessing?
A No, I'm not.
Q What are you basing that on?
A I am basing it on the fact that it made twelve million on one hundred pound tubing.
Q That could be due to fractures, couldn't it?
A It could be.
Q So you don't know whether you have fractures or not?
A There could be.
Q So you don't know whether you have high permeability or fractures?
A This is true, we don't have core.
Q This well was not cored?
A No, I don't believe it was.
Q On what day was this well flowed at fifteen million that produced twenty barrels of water?
A I believe it was October 18th.
Q On your Exhibit Number Eight,for October 18th, you show no water production.
A Correct. I guess it's for the 19th.
Q The 19th shows one inch of water.
A One foot, I believe. Twelve inches, yes. It's twenty barrels to the foot; 1.6 barrels to the inch.

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Q Mr. Smith, you never ran a test to determine if there is build-up of fluids in the well, did you?
A No, I don't need to.
Q Wouldn't that give you an accurate indication of what is occurring at the base of the perforations where you say damage is going to occur?
A Well, I know that I haven't done that. Yes, that would give you an accurate indication of what is happening there, yes. I don't want to shut that in with twenty barrels of fresh water in the tubing.
Q You don't have to shut the well in to make that test, do you?
A If you are going to know what is happening at the perforations, yes.
Q Now, on your estimate of tubing in the well, you said it cost $14,000 for the tubing?
A Yes.
Q How much a foot does that run?
A I showed it at a dollar thirty. I talked to a couple of pipe people last night, and when you order or ask for a quote on any tubular goods for the oil fields now, you usually have them laugh at you. He says that it's not available, but if they had it, they could sell used, drifted and tested for around a dollar thirty.
Q You can't find any at ninety cents?

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A I can't find any period. Have you tried to buy any tubing or casing lately?

Q I am not in the business, Mr. Smith. When did you last buy any tubing?

A I guess in July, the latter part of July.

Q How much did you pay for it then?

A This was plastic-lined, and I think it was about ninety-five cents, ninety-six cents.

MR. KELLAHIN: That's all I have.

* * * *

CROSS EXAMINATION

BY MR. STEVENS:

Q Mr. Smith, what would be the salvage value of 11,000 feet of used 4 1/2 inch tubing?

A Pretty good.

Q Do you think you might trade for some 2 1/2 inch tubing and come out ahead?

A I don't know who might have any.

Q Don't you think some might become available if you had 4 1/2 inch tubing to trade on it?

A Maybe.

Q And that hasn't been considered in your cost estimate, has it?

A If you're going to pull it-- No, it hasn't.

Q If you are going to pull it, it should be in the cost

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estimate?
A Yes. In the method where we were removing the tubing, right.
Q Generally speaking, used 4 1/2 inch tubing is worth about twice the amount used 2 1/2 inch tubing is worth, isn't that correct?
A Well, in the market today, it is difficult to say. You see, there really isn't any market on used tubing today.
Q If you have 4 1/2 inch tubing to trade, isn't there possibly some 2 3/8 inch available somewhere? Wouldn't you think that in the ordinary course of your business, even in the tight situation we have today, that there should be some available?
A Well, I'm sure there probably is someplace, but I don't know where.
Q But generally speaking, you agree there might be?
A There might be.
Q Using the one dollar thirty cent figure, which is your figure, isn't 4 1/2 inch tubing worth twice that, and wouldn't it be worth approximately $28,000?
A It might be.
Q What would the cost be on stop-cocking a well flowing at a high rate and shutting it in for a period of time?
A I imagine it would take a valve, and probably cost about $900.00.

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Q Thank you, Mr. Smith.

MR. STEVENS: I have no further questions.

MR. TRUJILLO: Are there any further questions of the witness?

MR. BORKENHAGEN: Yes.

* * * *

CROSS EXAMINATION

BY MR. BORKENHAGEN:

Q Any well in this pool that doesn't meet its allowable, say for a series of months running, what happens to that allowable?

A Let me start by saying that I am not a proration expert in the State of New Mexico. I believe we had testimony here yesterday that underages are deducted from pipe line nominations to start with. So underages tend to reduce the allowable for the field.

MR. STEVENS: I move that that answer be stricken. The witness has said that he is not a proration expert, and he has not testified on either direct or rebuttal about prorationing in the field. It is not proper cross examination.

MR. TRUJILLO: The objection is sustained.

MR. BORKENHAGEN: No further questions.

MR. TRUJILLO: Is there anything further?

(No response)

MR. TRUJILLO: If not, the witness may be excused.

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(Witness excused.)

MR. HOWDEN: We will call Mr. Johnson.

* * * *

J. C. JOHNSON,

was recalled as a witness, and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. HOWDEN:

Q Mr. Johnson, for the record, you are the same Mr. Johnson who testified yesterday during the applicant's case, is that correct?

A That's correct.

Q And you understand that you are still under oath as this proceeding continues?

A Yes.

Q Mr. Johnson, you heard the testimony that has been given during the hearing, have you not?

A I have.

Q There was some testimony with regard to whether or not this fresh water condensation in high pressure gas wells is a common occurrence. Do you have an opinion in that regard?

A My experience with high pressure, high volume gas wells, which extends from the Gulf Coast to New Mexico to Northern Canada, is that any well, any high pressure,

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high volume gas well, normally will make liquids and normally has a condensation problem with water from the gaseous state of the gas.

Q Just so we are clear on this, we are talking about a certain type of well that the Grace-Atlantic Well falls into?

A That's right, it does fall into that category.

Q Do you have an opinion as to whether or not there could be fresh water damage in the Morrow formation?

A All the evidence that I have obtained, and all the evidence that the engineers have obtained working for me while I was with Pubco, and these were extensive studies of the Morrow, found that in Southeast New Mexico, including the South Carlsbad Field, all the operators I have talked to, and I could go through and maybe quote some of them, there is the definite possibility-- or probability, I would like to correct that, probability that fresh water will damage the Morrow formation.

And it is my opinion that it will damage the Morrow formation.

Q Mr. Johnson, there has been testimony to the effect, as I understood it, that this 250 parts per million of chloride in the water would indicate the possibility of formation water. Do you have an opinion in that regard?

A Well, as has been stated, water condensed from natural

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gas would be distilled water with no chloride. I would like to point out that I have not looked at an analysis of the field or formation producing water, but in other Morrow fields, it is somewhere between seventy and eighty thousand parts per million, this is approximately. Most of the water analysis that I have seen of the Morrow formation indicate that formation water runs from seventy to eighty thousand parts per million.

We have a situation here where a couple of droplets from the tubing could amount to almost 250 parts per million chloride.

Also I would like to point out that the possibility that this might be formation water and coming from the formation and therefore would not cause damage, in my opinion fresh water is fresh water, and it does not come out of the Morrow formation in a liquid state. But it comes out in a gaseous state, and is not transferred to liquids until it is at the face of the formation or just inside the casing. I don't know anyone who would say that fresh water isn't fresh water. And it certainly has been agreed to that water containing 250 parts of chloride per million is fresh water.

Q If I understood Mr. Raney's testimony, this particular water has some sort of unique character that cannot be found or created or developed from any other source

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except out of this well. Do you have any opinion on that?

A I would say that laboratories are capable of reproducing any kind of water.

Q I believe Mr. Williams testified as to the cost of stringing that tubing. I won't ask you to go into that in detail, you heard Mr. Smith's testimony. But do you have any opinions in that connection?

A I have reviewed Mr. Smith's estimates of replacing this tubing and the costs, and I agree with him.

Q One thing I want to ask you in that general connection. Do you have any opinions with regard to the salvage value of 4 1/2 inch tubing today?

A Number one, we are talking about using 2 3/8 inch tubing, which this cost estimate would be based on, and replacing the 4 1/2 inch tubing with it. I know of no well in the field capable of producing at the rate this well can produce at. I don't know, nor will I anticipate what the Commission might prorate the allowable for this well to be. But it may get back to ten million a day, and 2 3/8 inch tubing would not then be sufficient to produce this well.

I would recommend that due to the shortage of tubular goods to keep this tubing, because what is going to happen a year from now, we don't know. We could need this tubing again, and if we salvage it, chances are

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we won't find used tubing again if we need it, and we will have to run new tubing into the well. Therefore, I don't think it should be salvaged.

Q I think in that connection, the general connection of stripping, if I am using the right terminology, the stripping of the tubing, there was reference to a stop-cock. Would you describe what a stop-cock is? And would you state if you have an opinion as to its use in the Grace-Atlantic Well?

A Well, a stop-cock is normally used in small producing wells. In the State of New Mexico, especially in the San Juan Basin, we have many wells there where we use stop-cocking to unload fluids from the wells. These are very low volumes in the range of 100 to 200 MCF per day. I have never had any experience in stop-cocking a large volume well. It is a situation that in my opinion would be unrealistic to use on this type of well.

Q And one more question in this general regard, and that involves the changing of this tubing, and perhaps I have been using the wrong term. Would snubbing be more appropriate in place of stripping? I hope that at the end of this hearing, I will graduate from first grade in oil and gas proceedings, so bear with me.

Mr. Johnson, in my terminology, does snubbing mean the same as stripping?

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A Well, I guess it could be explained by different engineers in different ways. I would say that in essence, yes.

Q Now, with regard to this operation, there have been some pros and cons on whether or not it is a hazardous operation. What I would like to ask you is if you would just describe in summary form at my level what is hazardous in this connection? How does it occur? What takes place?

A Well, number one, a stripping job on a high pressure well of this magnitude that will build up a shut-in pressure of 2400 pounds, or whatever it might be, in the range of 2000 to 2400 pounds, is not a commonly used thing in complex wells. Most operators only use this after, in the original completion situation, a mistake has been made or something happens downhole that requires this to be done. I have had much experience with this, and every time I have an operation of this magnitude, even in the San Juan Basin, where we do not want to put fluids in the reservoir, we will generally strip out. But there, we are looking at 600 to 900 pounds. I have seen occasions where stripper rubber has blown and natural gas spews all over the place, and with work-over units there, fire could occur. This is why we normally use drilling mud of sufficient mud and weight as to retain any formation pressure. I would term this type of operation

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as hazardous, even though it is done safely many times, but only if everything goes smoothly.

I would like also to say that while working on a well at 11,000 feet, anything can happen. Here you have a tremendous well capable of producing tremendous rates, and I believe having tremendous reserves, and someone suggests that you go out there with a pulling unit. Every time you pull a pulling unit on a well and start pulling tubing, tubing can be dropped. I have seen it dropped in many wells many times completely causing the loss of the well. To me, to go into a well of this magnitude and do anything to it would be a hazardous operation unless it was completely necessary.

Q I would understand your testimony in this context, this business of it being a hazardous operation means that it is hazardous to the people operating around it, am I correct?

A Well, definitely there is a certain amount of hazard to the ones doing the gas drilling or anything else. Sometimes though it has to be done for economic considerations also. But anytime you start working at the surface with high pressure, and you are depending on stripping rubbers and so forth, and you are pulling tubing, it is hazardous.

In this operation, anything could happen, and it

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would be hazardous to the people involved.

Q Would I be correct also in saying that it would be hazardous to the well?

A It definitely would. I own three drilling rigs, along with my partner, in the San Juan Basin, and when you hire drilling people, it is very hard to get real qualified experienced people on these wells. And one slip by the man at the well bore could allow the tubing to be dropped into the well, and when it drops, it comes into a thousand pieces many times, and will stack up tremendously. I have seen occasions where we have completely lost wells by accidents like this happening.

Q There also has been testimony-- Turning to another point, Mr. Johnson, there has been testimony to the effect that flowing this well at a high rate is what is going to cause any damage to the well. Do you have an opinion in that regard?

A I sure do. The first thing I would like to say, since I guess around April 11th or whenever, this well was put on string, whatever it was, somewhere in the middle of April, since that time, this well has been producing for some 5 1/2 months.

At the end of October, I would estimate that it has produced in the range of 2.7 billion, it may be three, it may be 2 point something else, but it's in that range.

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It has produced at a high rate, maybe twelve million a day, and there has been no indication of damage at this well bore. I have operated in areas where wells of this calculated openflow of sixty-five million have produced from twenty-five percent to thirty-five percent of the calculated openflow, and no damage occurs due to the high rate.

I think by just looking at the history of the well, it will show that this will not happen to the well.

Q In this general connection, is there a well-- Strike that. Now, there has been testimony during this hearing, since you have testified, Mr. Johnson, with regard to the loading up of fluids with different flow rates, and I think there have been varying interpretations of this. Would you clarify what causes the load-ups?

A With all the data that has been given, and I have been to many wells over my experience in the oil business which amounts to approximately a little over seventeen years, and I have never gone to a well or heard of anyone where the well was flowing at a rate, for example, of four million a day at 1400 pounds pressure, which I personally witnessed in this well, I think it was 1430 or 1420, and that well has been opened up to a fifteen million rate, and after a couple of hours time, the pressure increased to 1630 pounds pressure without there

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being a loading effect in the well.

Q Your exhibit that you introduced, I think it's Exhibit Five, it has been discussed back and forth to the point that at least I am somewhat confused to the various interpretations on the exhibit. Would you explain why in your opinion that exhibit is a fair method of determining the shut-in status of the well?

A Well, I would like to point out, number one, that I think I got the impression with some of the testimony that the Commission has followed exactly the rules and regulations as stated in their order except for re-distribution of gas in the field for the month of June.

I believe that Mr. Nutter stated that that was done because all the wells had been set as non-marginal wells, and possibly another lower allowable had been given to the wells during that period than was normal.

It is that type of thing which I say has happened again in July, August, and September, the same thing that happened in May and June-- Excuse me, April, May, and June For this reason, I have calculated that there will be in excess of four million MCF underproduction at the end of September, and we should have those figures from the Commission before very long.

If this continues, a double whammy is happening to the non-marginal wells because they are continually

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starting off at a lower allowable than they should have been, because there is so much underproduction.

Now, if all the operators in the field cut their wells back to these low rates, what will happen? The Commission then, as I understand it, will base their allowable on the producing capacity of the field, and determine that by the prior month's production. We can easily see from this that there is going to be a continual downward trend for allowables for the marginal wells.

My statement in Exhibit Five was that if the Commission had set non-marginal allowables for these wells at a rate that would have allowed no underproduction for non-marginal wells during this three-month period that they calculated on, and I assume that's what the Commission tries to do when they set allowables for a field, they don't do them on the basis of setting them at less than fifty percent of the allowable after re-distribution, but if they would have set the allowable where there would have been no underproduction for April, May, and June, all that would have been put into the monthly allowable.

MR. HOWDEN: I have no further questions, Mr. Chairman.

MR. TRUJILLO: Mr. Kellahin?

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CROSS EXAMINATION

BY MR. KELLAHIN:

Q You said you talked to a number of operators in the South Carlsbad Pool in regard to their opinion about the Morrow formation. Who did you talk to?

A Unfortunately, I can't recall the names and so forth. And I might want to correct that statement. Either I did or engineers working for me at Pubco did, and furnished me with the information. I talked to Cities Service and to Pennzoil at the time we made the studies. That's all I can recall at this time.

Q Who did you talk to at Cities Service?

A I don't remember, sir.

Q You didn't talk to anybody yourself?

A I did.

Q You did?

A I sure did.

Q Where did you talk to them?

A Out of the Midland office.

Q But you don't know who?

A No, sir. This is possibly a year ago.

Q Was it an engineer or a geologist?

A An engineer.

Q Does he have responsibility in the South Carlsbad Field?

A Well, he gave me the information. The information was

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given about mud systems, and I asked them about the possibility of damage while drilling and so forth, and what type of well had lost control from--

Q You are talking about drilling fluids and not fresh water?

A Well, do they use fresh water drilling fluids? Yes, I was concerned about the expense in using high water loss fluids if damage is not going to occur.

Q Who did you talk to with Pennzoil?

A I would not know, sir.

Q Where did you talk to the person from Pennzoil?

A Again in Midland.

Q Was he an engineer or geologist?

A I believe he was an engineer.

Q But you didn't talk to either Mr. Motter or Mr. Raney, did you?

A I did not. I was Vice-President of Pubco Petroleum Corporation, and I imagine in a year's time, I talked to three hundred different people about different fields. As far as recalling a particular name on a particular field we were making a study of, I could not do that.

Q Mr. Johnson, you have offered this testimony as some evidence that operators think the formation will be damaged, and I am trying to find out on what they base this.

A Of course, I was looking at the drilling of wells in the

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South Carlsbad Field,and that's the only one we are talking about now, is that correct?

Q Right.

A The information we found out from the other people, and the two were Cities Service and Pennzoil, was that they took every precaution to carry low water loss and use potassium chloride in the waters.

Q Isn't that true of all of the operators who drill in the Morrow?

A Yes.

Q And that's just a normal precaution?

A Well, potassium chloride added to water is quite expensive. It's not the normal practice in any well, but in a well that you think will be damaged, it is the normal practice.

Q Are you familiar with the operations of the Monsanto in the Burton Flats area?

A No, I am not.

Q That is a Morrow formation, isn't it?

A Burton Flats? I believe that's true.

Q Are you aware that the Monsanto is using fresh water in drilling there?

A No, I am not.

Q Now, you made the conclusion that the formation water, or this condensed water in the well, would damage the formation; am I correct?

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A In my opinion, it is highly probable that it will.
Q What do you base that conclusion on?
A I base that conclusion on the water. The water is fresh water, and in my opinion, it is highly probable that that fresh water will damage the Morrow formation.
Q Have you examined any cores on this particular formation?
A No, sir.
Q You didn't know of any core analysis until Mr. Motter testified here this morning, isn't that correct?
A That's correct.
Q And his testimony was to the effect that there were no clays or solids in it, isn't that correct?
A That's correct, from his testimony.
Q If we assume that is correct, then fresh water would not damage the formation, would it?
A Not necessarily.
Q I take it that you don't think smaller-sized tubing is necessary?
A That's correct.
Q You don't feel that is necessary?
A No.
Q Have you done anything to determine if damage to the well has resulted from the high producing rate?
A No, I have not, except by observing the production curve.
Q Has there been any pressure build-up analysis on this

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well?

A No.

Q That would indicate whether there was or was not formation damage, would it not?

A Yes, it would. I would like to clarify that just a little bit. You can determine the effect of well formation damage by calculations by a reservoir engineer, which I have done many, many times. Your premise is not definitely so in all cases.

Q But it would be a better indicator than simply production figures.

A Definitely not, in my opinion.

Q Wells are produced at varying rates by control at the surface, isn't that correct?

A True.

Q And that affects your production figures, does it not?

A Yes, but I'd like to clarify that. If you calculated this well, you always have the comparison of well bore damage. If you say this well has a well bore damage factor of two, it might have been two originally. I would like to point out that I base my conclusions on well bore damage, the production, and the performance history rather than a series of calculations.

Q You can make actual tests, though, can you not?

A You can make bottomhole pressure tests, but then it goes

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to calculations in determining damage.

Q And that type of information is just not available on this well, is it?

A There has not been, to my knowledge, a build-up done on this well.

Q Have there ever been any other types of tests?

A No, unless this was during the drill stem test.

Q Is that well declining in production at the present time?

A In my opinion, it is not. I would like to open that well up, because I believe right now, that well will produce twenty million a day.

Q But it is not producing at those rates at the present time?

A That's correct.

MR. KELLAHIN: That's all I have.

MR. TRUJILLO: Are there any further questions?

MR. HUNKER: Yes.

* * * *

CROSS EXAMINATION

BY MR. HUNKER:

Q During the period of time that this well was choked back to the point where it produced about four million a day, there was an accumulation of fluids in the pipe during that time, is that correct?

A Accumulation of fluids in the pipe at that time? Yes, in my opinion.

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Q Was that fluid immediately removed at the time you opened the well back up?

A I do not know. I am sure some was, but at that time, I was working a close schedule of catch-a-plan-at-six-o'clock, and I went back and pinched the well back to ten million and left immediately. The pumper did check the rate the next morning, and I understand there was one foot, which has been shown here as twenty barrels of fluids, unloaded from the well bore.

Q Do you think any damage to the well bore occurred to the well during the period when the well was choked back?

A I truthfully believe that at the time the well came back, no.

Q You referred in your testimony to making recommendations to the owner of the well. You didn't mean that, you meant the operator of the well, isn't that correct?

A The operator, yes.

Q You don't know who owns the well?

A No, I do not.

MR. HUNKER: That's all I have.

MR. PORTER: I believe you testified a moment ago that you thought that the average production from that well would be probably around twelve million a day?

THE WITNESS: Yes.

MR. PORTER: And I believe you testified yesterday

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that you thought that ten million a day would not damage the well?

THE WITNESS: That's correct.

MR. PORTER: I made some rough calculations from the exhibit of the Commission's witness this morning, and according to my calculations, the production rate was something in excess of fifteen million for the period used in determining whether the well would be shut in or not.

THE WITNESS: Yes, sir.

MR. PORTER: Now, had this well been produced at even the twelve million cubic feet a day rate during the period in question, it would have been subject to shut-in because of the six times overproduced factor, isn't that correct?

THE WITNESS: I have not calculated that, sir. So I would not know. I could do it.

MR. PORTER: Well, if you wouldn't mind, I would like to have that.

THE WITNESS: Hand me my calculator. You want to say the well was produced from April at a rate of twelve million a day; is that right?

MR. PORTER: That started on April 16th.

THE WITNESS: That would be fifteen days in April, right?

MR. PORTER: Yes. And that would be just through August.

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THE WITNESS: No, it would not be overproduced-- Wait just a minute. My calculations show it would not be overproduced to the point of being shut in at that time.

MR. PORTER: In other words, it would not have been overproduced beyond the tolerance we ordinarily allow?

THE WITNESS: Right.

MR. PORTER: Thank you, sir.

MR. TRUJILLO: Are there any further questions?

(No response)

MR. TRUJILLO: If not, the witness may be excused.

(Witness excused.)

MR. HOWDEN: That concludes our rebuttal, Mr. Commissioner.

MR. TRUJILLO: Is there any further testimony in this case?

(No response)

MR. TRUJILLO: Does anybody have any further testimony, rebuttal testimony?

(No response)

MR. TRUJILLO: Then we would ask for statements, please.

MR. HUNKER: Mr. Hannifin would like to make a statement.

MR. TRUJILLO: Proceed.

MR. HANNIFIN: I am not too good at memorization,

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so I will refer to and read most of this.

My name is D. L. Hannifin, and I am an oil and gas producer and landman from Roswell, New Mexico.

My partner, Mr. Joe Don Cook, and I own the majority working interest in the Grace-Atlantic Well. So we have a great deal more to lose than Mr. Michael P. Grace does concerning whether this well is shut in or not. As majority owners, we would like to advise the Commission that we agree with them that the well is six times overproduced from its average monthly allowable.

The only standing that Michael P. Grace has before this Commission is by his appointment as operator by this Commission. It is our opinion that Michael P. Grace, as operator of this well, has shown to be an imprudent operator--

MR. HOWDEN: I think that unless the witness is going to be qualified as an expert on the question of what makes an imprudent operator, and I don't think he can be so qualified, we would object to such testimony.

MR. HANNIFIN: I will withdraw the last sentence.

MR. PORTER: He has withdrawn that portion of the statement.

MR. HANNIFIN: We feel that possibly some damage could occur to the well if it is completely shut in, but in view of Mr. Grace's failure to comply with prorationing as set by the Commission, and due to some non-payment of taxes

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and royalties, we would prefer--

MR. HOWDEN: We would object to this, Mr. Commissioner, as not being relevant.

MR. HANNIFIN: I will withdraw the last part of that sentence.

In view of the failure to obey the order of the Commission--

MR. HOWDEN: We will object to that, Mr. Commissioner. There has been no evidence at this hearing--

MR. HANNIFIN: I'm sorry, but I have been listening for two days--

MR. KELLAHIN: There is ample evidence that the well is six times overproduced.

MR. HOWDEN: If that is all to which the witness is alluding, I will withdraw my objection.

MR. PORTER: I believe that's all.

MR. HANNIFIN: In view of our majority ownership, and even with that possibility of some possible damage occurring to the well, we would prefer the well be shut in until whatever the decision of the Commission is to get it back within the prorationing schedule.

That's all I have.

MR. HOWDEN: Are we allowed to examine the witness?

MR. PORTER: It is not sworn testimony. The Oil Conservation Commission allows interested parties to make

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statements of position.

Does anyone else have a statement?

MR. BORKENHAGEN: Yes.

MR. TRUJILLO: Proceed.

MR. BORKENHAGEN: Mr. Commissioner, members of the Commission: I am making this statement on behalf of the New Mexico Gas Retailers Association, and on behalf of Mr. Harold Frey. The New Mexico Gasoline Retailers Association is opposed to the shut-in of the Grace-Atlantic Well for the following reasons: Any curtailment of natural gas production during this time of the energy crisis would increase demand for crude oil products. It would further restrict the availability of gasoline to members of our association if the well is shut in.

There is also testimony as to the possibility of damage to the well. If this high volume well is damaged or production is lost or curtailed, there would be a reduced availability of natural gas, and natural gas users already use diesel fuel as a substitute. This would cause an increase in the demand for diesel fuel, which in turn causes gasoline to become restricted. During this time of the restriction of gasoline to association members, it would result in severe economic and property loss to the members of our association.

Our association is also opposed to the methods used by the Oil Conservation Commission in determining the

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Grace-Atlantic Well to be six times overproduced.

Our association understands the methods of determining allowables, and any allowable not met for one month is deducted from the next month's allowable. The time lag of approximately two months which an allowable remains an allowable is then divided among the allowables in the pool. This has the effect of continually reducing the allowable effect in the pool.

We would object for these reasons, and state that we are greatly opposed to this, as it is directly contrary to our property and economic interests.

MR. PORTER: Who did you say you represented?

MR. BORKENHAGEN: The New Mexico Gasoline Retailers Association. The Albuquerque Consumers Federation would concur in the Retailers' position.

MR. TRUJILLO: Thank you.

MR. BORKENHAGEN: I have one short statement on behalf of Max Coll Inc. Max Coll Inc. has an overriding royalty interest in the field in the Go Po Go No. 2, and Max Coll Inc.'s position is that they would not wish to see the Grace-Atlantic Well shut in,because if it is shut in using the present formula, then the Go Po Go No. 2 eventually faces a shut-in order and the overriding royalty interest holders would be opposed to that.

Thank you. That's all.

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MR. TRUJILLO: Are there any further statements?

MR. CARR: If the Commission please, I think the Commission has perhaps wisely permitted the testimony in this proceeding to include a number of issues on a broad number of subjects. I think it would be appropriate at this time to call upon the Commission to take notice of its own order 4682, which was issued on July 6th, 1972, which is a statement by the Commission outlining what it may consider and provides for statements which may be on issues other than those related directly to the prevention of waste and the protection of correlative rights.

But it does emphasize that these are only taken for informational purposes.

MR. TRUJILLO: Are there any other statements?

MR. KELLAHIN: If the Commission please, Mr. Carr stated that we have skirted a lot of issues in this case. I think that basically what we are really talking about is will there or will there not be damage to the well if it is shut in. There is no question that it has been overproduced. There have been efforts to maneuver around this fact by saying if we did this, or if we did that, it would not be overproduced. But all that is immaterial, because the record of this case show the well is overproduced.

The witnesses for Mr. Grace have testified at some length that in their opinion, damage will occur, but they

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produced no scientific evidence to show such is the case. I think we probably agree that the formation would in some instances be damaged by fresh water, as Mr. Raney pointed out.

However, this is formation water, and is highly unlikely to cause damage to the formation it came out of.

Shutting in of this well, in our opinion, will not damage the formation. And as Mr. Motter testified to, and incidentally which was the only evidence actually presented to the Commission concerning core analyses, and according to that information and that core, there are not clays or solids that would be affected by fresh water or any other kind of water.

Now, the testimony actually does show that any damage that is going to occur is going to occur because of the high producing rate extending back out into the formation causing water to vaporize within the formation, and therefore plugging up the permeability around the well bore.

It is rather strange to me, however, that these witnesses have come here and testified at considerable length about volumes of water that are being produced, and yet the operator's reports required by this Commission show no water produced, and they have never shown any water produced. I think there is something strange there.

But if the operator is concerned about water, and we don't feel it is necessary that he be concerned about

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water, but if he is, Mr. Nutter's testimony, supported by Mr. Williams and Mr. Raney and Mr. Motter, indicate that smaller tubing there would take care of the situation. We don't need to have the well produced at an astronomical rate to take care of the water situation which, in the first place, is minimal. Mr. Nutter's testimony showed it would amount to about a teacup full in most instances. If it is an actual problem, and they are concerned about it, they could take care of the situation by re-stringing the well, and therefore by not taking more than their fair share of gas in the reservoir.

That is the purpose of prorationing, and we submit that not only is it the duty of the Commission to enforce this, it is the very firm obligation of the Commission to protect correlative rights, and that that is the reason prorationing was adopted.

Now, to just close, I would like to say this. To allow this man to go ahead and produce, we think would damage the other operators in the pool, as shown by the records in the case. So we ask the Commission to deny the application.

MR. TRUJILLO: Thank you, Mr. Kellahin. Are there any further statements?

MR. STEVENS: The call of this hearing concerned damage to the Grace-Atlantic Well by enforcement of the shut-in order issued by this Commission based on the fact that this well was overproduced. The applicant tried to make

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a collateral attack on prorationing orders by asserting that the well was not in fact overproduced.

Their only real evidence was an exhibit shown to have an arithmetical error which nullified its effect and result. All the evidence before the Commission concerning the proration formula should not be considered. It was brought in under a guise, and we consider it false, and this guise was nothing but an attack on the prorationing order.

The real question here is whether this well would be damaged by a shut-in to bring it back in line with its allowable, and the only evidence submitted by the applicant was strictly opinion evidence based on no rational reasons, no facts. The applicant offered opinions by expert witnesses without back-up facts. There is not much question that the vast weight and mass of evidence was that shutting in of the well and enforcement of the Commission order would not damage the well.

We would ask that the application be denied.

MR. TRUJILLO: Are there any further statements?

MR. HOWDEN: We just have a few remarks primarily because I wouldn't want to sit here in silence and leave the impression that we might agree with some of the statements.

As I understand Mr. Stevens' argument, it is that the Commission should totally ignore the opinion of two experts who testified before the Commission, having had their expertise

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established and accepted by the Commission.

These are the only two experts that have any direct contact with this well. It seems to be Mr. Stevens' position that we shut the well in and let it be the first one damaged, and then someone else could come back and use that as evidence that there is damage when you shut in a well. That's the way I understood the essence of that argument. I think that to suggest that someone has to be first to take the risk is not perhaps the most reasonable approach in the world, and it becomes less reasonable when it is suggested that it be done to one of the primary wells in the field.

I have only one further remark. I think that perhaps there is some misunderstanding as to the position of the applicant here, and I want to make sure it is not misunderstood.

It may be the most appropriate method of handling this situation to prescribe a lesser rate of flow at which this well can be operated, which.of course, the Commission can do under its rules, and thereby avoid this danger. It seems to me, and I make this statement to the Commission as perhaps one of the newer practitioners before this Commission, but it seems to me that when you get such a valuable asset, not just to Mr. Hannifin or Mr. Grace or anyone else, but a valuable asset like this to the whole pool and to the state, and where we have two experts who come before the Commission and testify under oath that there is a real possibility of

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damage in this shut-in that the Commission in its wisdom might best be advised to seek a middle ground opinion as to whether this well would indeed be damaged. It may indeed be the Commission's desire to set up a lesser flow rate, however, we don't apologize, gentlemen of the Commission, for the position we have taken.

It is our best impression that the outline as demonstrated by Mr. Johnson is a very valid consideration on the question as to whether or not there is overproduction. But I think, in conclusion, that I would say to the Commission that the danger should just be avoided altogether, and the Commission not be put in a position of having to say, "We'll take the risk of damage and close the well down."

I think the alternative should be that you rather seek that middle ground. I don't want to belabor that point, gentlemen.

Thank you very much for your patience and consideration.

MR. PORTER: Thank you, Mr. Howden.

MR. TRUJILLO: Is there anything further?

MR. DERRYBERRY: I would like to read into the record a statement by Midwest Oil Corporation which was left by Mr. Hinkle. Midwest Oil Corporation has two producing wells in the South Carlsbad Gas Pool. Midwest is interested in supporting the Commission order issued in connection with

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prorationing the South Carlsbad Gas Pool, including the shut-in order as to the Grace-Atlantic No. 1 Well.

We believe that production information on this well reported to the Commission indicates that no damage will occur by shutting in the well. We further submit that the action of the Commission is in the interest of conservation, the prevention of waste, and the protection of correlative rights. It is signed by Clarence Hinkle, Attorney for Midwest Oil Corporation.

MR. PORTER: Mr. Carr, I believe we did have a number of telegrams. We made reference to them in our original statement, and emphasized that the telegrams relating to employment and the economy do not apply. But there are some telegrams there that indicate support or objection, and I wonder if you might separate those and identify them?

MR. CARR: If I indicated who had wired the Commission, would that be sufficient?

MR. PORTER: As far as I am concerned, it would be satisfactory.

MR. HOWDEN: I can state that for whatever it's worth, as far as the applicant is concerned, I think that would be the most expeditious way.

MR. CARR: The following people sent telegrams:

(Whereupon Mr. Carr read a list of names of the people sending telegrams to the Commission pertaining to

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the application in Case 5085.)

MR. TRUJILLO: Is there anything else to come before the Commission in this case?

MR. HOWDEN: Nothing for the applicant, Mr. Chairman.

MR. TRUJILLO: The case will be taken under advisement, and the hearing is adjourned.

(Whereupon the hearing in Case 5085 was concluded at 11:45 A.M., Friday, October 26, 1973.)

* * * *

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

Richard E. McCormick
CERTIFIED SHORTHAND REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. [illegible] heard by me on [illegible]
New Mexico Oil Conservation Commission

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dearnley, meier & associates
209 SIMMS BLDG.•P.O. BOX 1092•PHONE 243-6691•ALBUQUERQUE, NEW MEXICO 87103
1216 FIRST NATIONAL BANK BLDG. EAST•ALBUQUERQUE, NEW MEXICO 87108

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TRANSCRIPT

~~J. C. Johnson~~

P. 38, L. 24 - "At this time Lineal that the well was definitely loading up with produced fluids which were both steam water and condensate."

P. 39, L. 2 - The well makes feed water?

L. 2 - A. Correct.

P. 65, L. 6 - "Usually these volumes, as has been told me, at this well are very small volumes of water. They normally will not change over the history of the well."

P. 111 L. 10 - Is it has produced water in some amount since the initial completion?

L. 12 Yes

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

October 29, 1973

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

Mr. Samuel A. Francis
Mr. Frederick B. Howden
Mr. Farrell Lines
Attorneys at Law
400 Seventh, N. W.
Albuquerque, New Mexico 87101

Re: Case No. 5085
Order No. R-4648
Applicant:

Michael P. & Corinne Grace

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other Jason Kellahin, Clarence Hinkle, George Hunker, Robert H. Borkenhagen, Don Stevens

Davis & Howden -
Jones - Cities Service & Pan Coil
Stevens - Anderson
Hinkel - Midwest
Carr - Commission
Hunter - Honolulu & Cook
Bortenhagen - gas rebiller
consumers federation

Howden - Witnesses
1. Dale Carlson - Geologist - previously qualified
Relationship of Nominations to allowables &
production.
11 out of 29 submarginal - less than 35,000 MCF
per mo.
8 out of 29 Marginal
6 out of 29 Non-marginal. 27% of total pro.
4 out of 29 "Giant Well" 44%

2. J.C. Johnson - Engineer - Consulting firm. Previously qualified. Exhibits:
A. Chart showing ideal system classifying new wells in new pool as marginal
B. Testimony as to damage to well
(1) well produces water - flow not sufficient to discharge.
(2) well ceases to produce at rate of 3 mcf economically feasible to produce.
(3) very large fluid - cannot produce against allowable because of back pressure.

3. Kennedy family - Economic damage

Docket No. 30-73

DOCKET: REGULAR HEARING - THURSDAY - OCTOBER 25, 1973

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

CASE 5085: Application of Michael P. Grace and Corinne Grace for an exception to Order No. R-1670, as amended, Eddy County, New Mexico. Applicants, in the above-styled cause, seek an exception to Rule 15(B) of the Prorated Gas Pool Rules for Southeast New Mexico, as promulgated by Order No. R-1670, as amended, for the Grace-Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, which well is more than six times overproduced with respect to its average allowable and is subject to shut-in pursuant to said Rule 15(B).

Pursuant to the provisions of Rule 15(E) of said Order No. R-1670, as amended, applicants seek an exception to said Rule 15(B) to permit overproduction to be made-up at a rate less than by complete shut-in, alleging material damage will result to said well if completely shut in.

ir/

AS CRUCES (UPI) — Joe A. Higgins of Las Vegas Gloria Ann Yund of Moriarty took the top awards week at the annual Chile Chef's Recipe Fiesta at Mexico State University.

iggisn won the Super Green Award — first place in green chile division — with his tacitos, which he cribed as rolled tortillas around thin strips of beef ch were deep-fried and covered with a mixture of m cheese, avocados and green chiles.

RS. YUND WAS the Super Red Award winner with chuletas espanolas, Spanish pork chops cooked in hile sauce.

e chile contest, featuring meat recipes with red or n chile, is part of UNMSU's homecoming and Unity Days activities this week.

WAS JUDGED by State Planning Officer David g. Mary Lu Leger, a radio new woman in Las s, and John Chapman, a television newsman from so, Tex.

runnersup in the red chile division were Lauro G. ierrama Jr. of Albuquerque and Linda Gibson of ell. Green chile division runnersup were Mrs. ey Gardner on Albuquerque and Benjamin and ne Fairbank of El Paso.

delia L. Gamboa of Mesilla and Patricia Porto of Cruces received honorable mention.

Carlsbad and Las Cruces are eligible for flood insurance because those cities applied to the Food Administration Office in Washington.

Koogler said Albuquerque, Roswell and Farmington have inquired about the program.

HOWEVER, MUCH OF THE flood hazards occur in

serves of this flood insurance under the building permit authority of the state Construction Industries Board.

BILL HARRISON, executive director of the Council of Governments, said flood insurance could give individuals a chance to protect themselves before a flood since past experience showed the government was of no assistance to private people for private flood losses.

nounced, would receive a grant. This would expand t amount of fish it produces. T produces 22,000 pounds of r

Gary Blackwell of the N Dept. presented a just publis vate forest resources of Catr

Engineer Says High Flow Can Cause Gas Well

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Robert M. Williams was a witness before the Oil Conservation Commission, which on Oct. 2 issues an order to shut down the Grace-Atlantic Well no. 1 in the South Carlsbad-Morrow gas field.

After a full day of testimony, the OCC recessed, to resume at 9 a.m. today.

MICHAEL P. GRACE of Carlsbad, operator of the well, has applied to the commission to be allowed to produce the well at a reduced rate, rather than shutting it down.

Grace contends that a complete shut down will cause material damage to the well.

Grace also has a law suit pending against the OCC in Santa Fe District Court. He obtained a temporary restraining order from the court to prohibit the OCC from enforcing its shut-in order. A hearing on whether this order will be made permanent is scheduled to resume Nov. 2 before Dist. Court Judge Thomas A. Donnelly.

WILLIAMS IS an engineer for Morris Antwell of Hobbs, an independent oil producer who also operates wells in the South Carlsbad field. Antweil has intervened in the court case on the side of the OCC.

The OCC followed the terms of its own rule in directing the shut-in of the Grace well.

This rule requires that gas wells be shut down from production after cumulative overproduction exceeds by six times the average monthly allowable.

THE GRACE WELL went into production in April. In the five-month period from April through August, it was assigned an average monthly allowable of thousand cubic feet. Its cumulative overproduction during this period amounted to 1,061,302 thousand cubic feet, or nearly seven times the average monthly production.

In his application to the OCC, Grace has asked that an exception be made to the rule and that he be allowed to continue production at a reduced rate to close the gap on overproduction.

WITNESSES FOR Grace testified Thursday there is a problem of water encroachment into the well bore, which could cause damage to the well.

Williams told the commission, however, that high production flow of a gas well tends to reduce pressures in the gas producing formation.

As a result of pressure reductions, water vapor in the formation tends to condense underground.

AT A LOWER RATE of production, pressures would be maintained and the water would remain in vapor form and be carried to the surface.

If it condenses underground due to reduced pressures, Williams said, it can reduce the permiability of the gas bearing strata.

DAN NUTTER, engineer for the OCC, said production records from the Grace well indicate it is a dry gas well — that is, one with little or no water or liquid hydrocarbons in the formation.

Nutter cited production reports submitted by the operator to the OCC for the May-August period showing there was no water produced from the well, and only small amounts of hydrocarbon condensates (petroleum).

"The information I have

eming Enrollment at 3697

l Special

MING — The aver- ily membership of g Public Schools, 0 days of the school is 27 less than pro- That means a loss e money to the local system.

average daily mem- p for 1973-74 is 3,- guiar students, com- to the estimated to- ,724.

es Asst. Supt. Joe

sed on the budget e of $469.52 per student, this is a $12,677.04 loss. However, our project of 63 special education students was 3 short of the actual enrollment (66).

"If we are given the full special education distribution of $1,107,76 per student for these three, the deficit will be reduced to $9,353.76; if, however, we are given the regular student distribution of $469.52 per student ($1,-408.56), the amount will be $11,268.48."

The loss will be made up by the use of contingency funds already budgeted.

Estancia Student Elected

l Special

CRUCES — Rocky D. Langley of Estancia has elected to the Agriculture and Home Economics of New Mexico State University.

council is comprised of two representatives from 15 student organizations in the College of Agri- and Home Economics plus officers elected from rious year's membership.

purpose is to coordinate the activities of the organ- s and to serve as a link between students, faculty inistrators within the college.



Dr. Gail Mann

'Ski Swap' Planned At Cloud Country

Journal Special

CLOUDCROFT — Something new has been added this year for skiers at Ski Cloud Country here.

It's the first annual "Ski Swap" Nov. 2 and 3, from 9 a.m. to 5 p.m.

Not only will you have a chance to purchase winter needs, or perhaps to sell some items left over from last year, but it will be an opportunity to contribute to a worthwhile charity as well.

KEITH CHEW, manager and ski director at Cloud Country, said 10 per cent of the handling fee will be donated to the Clouderoft chapter of Lions International.

"The Lions Club will use the money raised in this program to work with the visually

equipment, they should remember that all items must be in usable condition and that they are subject to a 20 per cent handling charge.

ITEMS AVAILABLE include skis, boots, poles, parkas, sweaters, ski racks and toboggans. Practically all sizes will be on hand for sale.

Cloud Country ski instructors also will be on hand to offer expert advice on purchases and to show ski movies.

And there will be a contest for season ski passes and various pieces of equipment.

ARTICLES TO BE sold must be registered at the ski area this Saturday and Sunday from 9 a.m. to 5 p.m.

Ski Cloud Country is

State House Leader Joins Committee

HU to Conduc Conference o

Journal Special

LAS VEGAS, N. M. — New Mexico Highlands University will be co-host for a one-day conference with the American Assn. for High Education (AAHE) on "The Learning Society: Responding to a Buyer's Market" Nov. 1 at Sala de Madrid on campus.

Dr. Joe Flippo, assistant professor of psychology at Highlands, is coordinating the conference here. The one-day session is part of a series of 54 one-day meetings being held throughout the country during Octo-

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Nutter cited production reports submitted by the operator to the OCC for the May-August period showing there was no water produced from the well, and only small amounts of hydrocarbon condensates (petroleum).

"The information I have at hand indicates there is no water problem," Nutter told the commission.

NUTTER SAID that in his opinion there would be no damage caused to the well if it was shut down from production.

Williams said he also doesn't believe shutting down the well would damage it.

Williams said also he believed that a reduced production of one-half million cubic feet of gas per day would be sufficient to lift all the liquids present from the well, if there is a problem of liquid intrusion as claimed.

The October allowable for the well had been set at 4 million cubic feet per day, prior to the shut-in order being issued.

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Journal Special

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Ski Cloud Country is



Dr. Gell-Mann

State House Leader Joins Committee

HU to Conduct Special Conference on Education

Journal Special

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Dr. Joe Flippo, assistant professor of psychology at Highlands, is coordinating the conference here. The one-day session is part of a series of 54 one-day meetings being held throughout the country during Octo-

museums, theaters and military bases.

Flippo said, "Conference participants will have a chance to take a look at how new developments in post-secondary education affect teaching, learning and managing in all kinds of educational programs and institutions — public and private, traditional and non-traditional, tax-paying and tax-exempt."

AAHE, THE SPONSORING organization, is a non-profit professional association that seeks to clari-

Statement of Midwest Oil Corp.

Midwest Oil Corporation is drilling
drilling well in the South
Colbert Lee Field, Midwest is
interested in complying with
Commission order issued in
connection with proration in South
Carlisle Lee Field including the
limit in order to the Gross Unit
#1 Well.

We believe that the production
information on this well, reported
to the Commission, indicate that
no damage will occur to
Cutting in the well.

We further submit that
the orders of the Commission is
in the interest of Conservation,
the prevention of Waste, and the
protection of Correlative rights.

James Smith
for Midwest Oil Corp.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5085
Order No. R-4648

APPLICATION OF MICHAEL P. GRACE II
AND CORINNE GRACE FOR AN EXCEPTION
TO ORDER NO. R-1670, AS AMENDED,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 25, 1973, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 27th day of October, 1973, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That applicants, Michael P. Grace II and Corinne Grace, seek an exception to Rule 15(B) of the Prorated Gas Pool Rules for Southeast New Mexico as promulgated by Order No. R-1670, as amended, for the Grace-Atlantic Well No. 1 located in Unit J of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, which well is more than six times overproduced with respect to its average monthly allowable and is subject to shut-in pursuant to said Rule 15(B).

(3) Pursuant to the provisions of Rule 15(E) of said Order No. R-1670, as amended, applicants seek an exception to said Rule 15(B) to permit overproduction to be made up at a rate less than by complete shut-in, alleging that material damage will result to said well if completely shut in.

(4) That the applicants have submitted evidence for the purpose of showing that the Grace-Atlantic No. 1 well is not overproduced more than six times its average monthly allowable if proration formulas are calculated in the manner suggested by applicants.

(5) That applicants have failed to show that the Commission's method of calculating well allowables is incorrect or in contradiction or violation of Statutes, Rules, Regulations, or Orders relating to the Commission's prorationing functions and have failed to show why their method of calculating well allowables should be substituted for the Commission's method.

(6) That applicants' suggested method of calculating well allowables contains arithmetical errors which preclude its use in determining the overproduced status of the Grace-Atlantic No. 1 well, even if its use were otherwise appropriate, which it is not.

(7) That applicants' Grace-Atlantic No. 1 well is more than six times overproduced with respect to its average monthly allowable.

(8) That applicants have failed to sustain their burden of proof to show that the well would be materially damaged by a complete shut-in.

(9) That applicants have failed to sustain their burden of proof in suggesting and justifying a minimum production level which would correct the well's overproduced status and prevent the alleged damage to the well.

(10) That substantial evidence has been presented to the effect that material damage would not occur to the well if it were properly shut in.

(11) That the evidence preponderates in favor of the engineering viewpoint that the well will not be materially damaged if it is properly shut in.

(12) That the correlative rights of the owners of other mineral interests in the pool could be adversely affected by the continued overproduction of the subject well.

(13) That in order to promote conservation, prevent waste, and protect correlative rights, the subject well should be shut in upon the issuance of this order and should remain shut in until such time that the Commission issues written notification to the applicants that the well is no longer more than six times overproduced with respect to its average monthly allowable according to the records of the Commission.

(14) That the Commission should immediately notify applicants when the well is overproduced in an amount six times or less its average monthly allowable according to the records of the Commission in order that the well may at that time resume production.

IT IS THEREFORE ORDERED:

(1) That applicant's Grace-Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, be shut in upon the issuance of this order and that it remain shut in until such time as the Commission issues written notification to the applicants that the well is no longer more than six times overproduced with respect to its average monthly allowable according to the records of the Commission.

(2) That the Commission shall immediately notify the applicants when the subject well is overproduced in an amount six times or less its average monthly allowable according to the records of the Commission in order that the well may at that time resume production.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

Exhibit IV

South Carlsbad Field

Proration Schedule using Marginal Reclassification and not classifying new wells non-marginal until their monthly production justifies a non-marginal classification.

Month	Acreage Factor		Pool Allocation	Marginal Allocation	Non-Marg. Allocation	Non-Marg. Allocation Per Well
	Marginal	Non-Marg.				
Jan	14.06	4.94	1,800,000	551,444	1,248,556	252,744
Feb	13.06	4.94	1,600,000	551,444	1,048,556	212,258
Mar	12.06	4.94	1,500,000	551,444	948,556	192,015
Apr	14.04	4.94	1,500,000	474,176	1,025,824	207,657
May	13.05	3.96	1,900,000	714,232	1,185,768	299,436
Jun	17.06	3.96	2,250,000	999,912	1,250,008	315,679
Jul	24.03	3.96	3,658,000	2,036,663	1,621,337	409,429
Aug	25.02	2.00	3,020,000	2,051,268	968,732	484,366
Sep	26.02	2.00	3,200,000	2,036,480	1,163,520	581,760
Oct	28.00	2.00	2,529,400	1,941,107	588,293	294,147

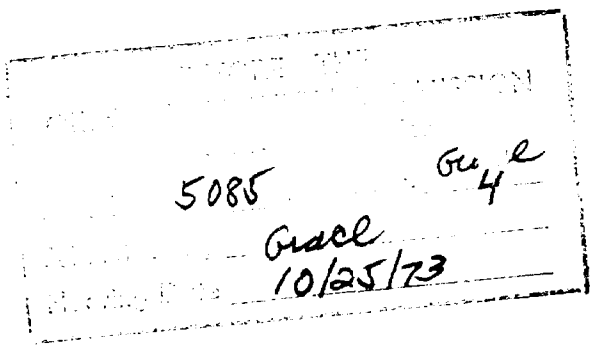
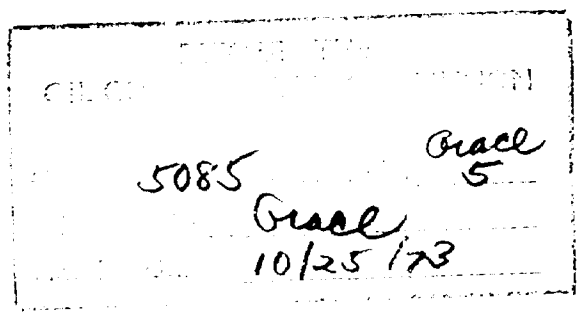


EXHIBIT #V

Effect on shut-in status of Grace-Atlantic No. 1 using the redistribution of under production in June, 1973 to determine the shut-in status.

Current Allowable April thru August, 1973	697,663 MCF	
Redistribution June, 1973	388,190 MCF	
Total	1,085,853 MCF	
1,085,853 ÷ 5 = 217,171 x 6	= 1,303,026 MCF	
Over Production Status August, 1973	- 1,061,302 MCF	
Difference	241,724 MCF	



MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-23 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	675	40/64	670	14	5/8"	0.24	240
Panagra	700	48/64	670	32	½"	0.165	260
City of Carlsbad	850	48/64	700	49	2 3/4"	5.75	5,100
*Gradonoco	900	SI			½"	0.16	
Humble Grace:							
Morrow	200	48/64	670	24	1¼"	1.04	1275
Strawn	100	48/64	670	16			
Go Po Go #2	1035	36/64	670	34	3.0"	6.25	9000
Grace Carlsbad:							
Morrow	1070	3"/64	74	34	3.0"	211	
Strawn	525	28/64	74	37	1¼"	29	
Grace Atlantic	1760		74	36	4.0"	357	9153
Grace Airport	dead						

TOTAL

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	100	700	270	1100

FROM THE
OIL CONSERVATION COMMISSION
Grace
Case No. 5085 7
Submitted by GRACE
Hearing Date 10/25/73

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-22 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	625	48/64	730	15	5/8"	0.24	260
Panagra	725	48/64	720	35	½"	0.165	260
City of Carlsbad	900	48/64	750	44	2 3/4"	5.75	4900
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Strawn	100	48/64	720	15			
Go Po Go #2	1030	35/64	730	31	3.0"	6.25	9000
Grace Carlsbad:							
Morrow	1070	30/64	73	34	3.0"	211	
Strawn	540	28/64	73	38	1¼"	29	
Grace Atlantic	1250		73	37	4.0"	357	9285
Grace Airport	Sub						
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	700	265	1050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-21 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	675	48/64	690	20	5/8"	0.24	290
Panagra	725	48/64	690	39	½"	0.165	260
City of Carlsbad	875	48/64	710	48	2 3/4"	5.75	5000
*Cradonocco	860	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	690	18	1¼"	1.04	4125
Strawn	100	48/64	690	18			
Go Po Go #?		35/64	690	33	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1065	38/64	74	33	3.0"	211	
Strawn	540	28/64	74	44	1¼"	29	
Grace Atlantic	1760		75	3.6	4.0"	357	9639
Grace Airport							
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	120	700	28	1050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 7-20 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	675	48/64	660	20	5/8"	0.24	285
Panagra	225	48/64	800	37	½"	0.165	260
City of Carlsbad	450	48/64	690	51	2 3/4"	5.75	5000
*Gradonoco	825	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	700	19	1¼"	1.04	290
Strawn	100	48/64	700	18			4175
Go Po Go #2	1050	35/64	660	35	3.0"	6.25	9000
Grace Carlsbad:							
Morrow	1080	30/64	73	× 3.4	3.0"	(211	
Strawn	300	28/64	73	× 2.0	1¼"	(29	
Grace Atlantic	1220		75	37	4.0"	(357	9906
Grace Airport	Swb						
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	130	700	290	1000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-18- 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	675	48/64	670	17	5/8"	0.24	265
Panagra	725	48/64	690	37	½"	0.165	255
City of Carlsbad	900		70	49	2 3/4"	5.75	5,100
*Gradonoco	825	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	700	20	1¼"	1.04	1,200
Strawn	100	48/64	690	18			
Go Po Go #2	1050	35/64	670	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	70	37	3.0"	211	5,465
Strawn	500	28/64	70	39	1¼"	29	792
Grace Atlantic	1440		7.1	15	4.0"	357	3,802
Grace Airport	Swb.						
						TOTAL	25,879

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	700	280	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-17 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	690	16	5/8"	0.24	260
Panagra	725	48/64	680	37	½"	0.165	260
City of Carlsbad	875	48/64	700	49	2 3/4"	5.75	5,100
*Gradonoco					½"	0.16	
Humble Grace:							
Morrow	700	48/64	690	22	1¼"	1.04	1,250
Strawn	80	48/64	690	18			
Go Po Go #2		35/64	680	34	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1060	30/64	70	36	3.0"	211	5,317
Strawn	465	28/64	70	40	1¼"	29	812
Grace Atlantic	1500		70	16	4.0"	357	3,998
Grace Airport							
						TOTAL	25,297

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	120	700	270	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-16 1973

Well	T.P. PSIG.	C.P.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	675	48/64	670	17	5/8"	0.24	265
Panagra	725	48/64	670	40	½"	0.165	260
City of Carlsbad	875	43/64	700	50	2 3/4"	5.75	5,100
*Gradonoco	825	S. I.			¾"	0.16	
Humble Grace:							
Morrow	650	48/64	670	19	1½"	1.04	1,150
Strawn	80	48/64	670	18			
Go Po Go #2		35/64	680	35	3.0"	6.25	9,050
Grace Carlsbad:							
Morrow	1075	30/64	65	38	3.0"	211	5,212
Strawn	440	28/64	6.5	4.7	1½"	29	886
Grace Atlantic	1650		6.5	1.9	4.0"	357	4,409
Grace Airport							
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	120	700	265	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-15 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	670	17	5/8"	0.24	275
Panagra	700	48/64	690	37	½"	0.165	255
City of Carlsbad	875	48/64	700	50	2 3/4"	5.75	5,100
*Gradonoco	800	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	670	19	1¼"	1.04	1,150
Strawn	80	48/64	670	18	3/4	372	
Go Po Go #2	1050	35/64	660	36	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1075	30/64	66	3.7	3.0"	211	5,153
Strawn	450	28/64	66	4.6	1¼"	29	880
Grace Atlantic	1450		66	1.7	4.0"	357	4,005
Grace Airport	Sub.						
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	700	265	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-14 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	660	17	5/8"	0.24	275
Panagra	700	48/64	660	40	½"	0.165	280
City of Carlsbad	850		680	53	2 3/4"	5.75	5,100
*Gradonoco	800	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	660	25	1¼"	1.04	1,300
Strawn	80	48/64	660	23			
Go Po Go #2		35/64	670	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	66	37	3.0"	211	5,153
Strawn	475	28/64	6.7	44	1¼"	29	855
Grace Atlantic	1475		6.6	1.6	4.0"	357	3,770
Grace Airport		S.I.					
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:				

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-13 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	550	48/64	650	18	5/8"	0.24	270
Panagra	700	48/64	650	40	½"	0.165	280
City of Carlsbad	850		670	54	2 3/4"	5.75	5,200
*Gradonoco	750	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	650	25	1¼"	1.04	1,275
Strawn	80	48/64	650	24			
Go Po Go #2	1050	35/64	650	36	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	6.7	3.6	3.0"	211	5,089
Strawn	475	28/64	6.7	44	1¼"	29	855
Grace Atlantic	1500		67	17	4.0"	357	4,066
Grace Airport	S. I.						
						TOTAL	

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	680	270	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-12 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Gd Po Go #1	700	48/64	680	14	5/8"	0.24	240
Panagra	700	48/64	670	40	½"	0.165	285
City of Carlsbad	950		690	47	2 3/4"	5.75	4,850
*Gradonoco	750	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	670	20	1¼"	1.04	1,150
Strawn	80	48/64	670	5	3/4	372	210
Go Po Go #2	1050	35/64	680	35	3.0"	6.25	9,050
Grace Carlsbad:							
Morrow	1080	30/64	6.7	3.7	3.0"	211	5,230
Strawn	475	28/64	6.7	4.4	1¼"	29	855
Grace Atlantic	1560		6.6	1.7	4.0"	357	4,005
Grace Airport	Sub.						
						TOTAL	25,875

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	120	680	275	1000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 11 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	650	17	5/8"	0.24	260
Panagra	700	48/64	660	40	½"	0.165	280
City of Carlsbad	900		670	51	2 3/4"	5.75	5,000
*Gradonoco	700	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	650	25	1¼"	1.04	1,300
Strawn	80	48/64	650	5	372	3/4	205
Go Po Go #2	1050	35/64	650	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	68	36	3.0"	211	5,165
Strawn	475	28/64	68	43	1¼"	29	848
Grace Atlantic	1650		68	1.6	4.0"	35?	3,884
Grace Airport	Swb						
						TOTAL	25,942

	Suction Press. PSIG	Discn. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	100	680	250	1,050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 10, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	550	18/64	650	17	5/8"	0.24	260
Panagra	700	48/64	650	42	½"	0.165	265
City of Carlsbad	875		670	57	2 3/4"	5.75	5,300
*Gradonoco	650	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	650	28	1¼"	1.04	1,400
Strawn	80	48/64	650	5	3/4	.372	205
Go Po Go #2	1100	35/64	650	34	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	68	3.6	3.0"	211	5,165
Strawn	475	[illegible]	[illegible]	4.3	1¼"	29	848
Grace Atlantic	1700		68	1.7	4.0"	357	4,127
Grace Airport	Swb.						
						TOTAL	26,570

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor;				

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 9, 1973

Well	T.P. PSIG.	C.P.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	640	17	5/8"	0.24	260
Panagra	700	48/64	640	40	½"	0.165	260
City of Carlsbad	850		670	57	2 3/4"	5.75	5,300
*Gradonoco	610	ST			1"	0.16	
Humble Grace:							
Morrow	700	48/64	640	24	1½"	1.04	1,250
Strawn	80	48/64	640	5	3/4	.372	205
Go Po Go #2	1100	35/64	640	24	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	68	36	3.0"	211	5,165
Strawn	475	28/64	68	42	1½"	29	828
Grace Atlantic	1750		68	1.7	4.0"	357	4,127
Grace Airport	Swb.						
						TOTAL	26,395

	Suction Press. PSIG	Disch. Press. PSIG	Disch. Temp. °F	RPM
*Compressor:	110	680	270	1,000

MICHAEL AND CORIWNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 8, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	650	18	5/8"	0.24	270
Panagra	700	48/64	650	40	½"	0.165	260
City of Carlsbad	850	48/64	680	57	2 3/4"	5.75	5,300
*Gradonoco	610	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	650	22	1¼"	1.04	1,200
Strawn	80	48/64	650	5			210
Go Po Go #2	1100	35/64	650	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	6.8	36	3.0"	211	5,165
Strawn	475	20/64	6.8	4.3	1¼"	29	848
Grace Atlantic	1800		68	1.8	4.0"	357	4,370
Grace Airport	Swb						
						TOTAL	26,623

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	120	680	275	900

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 7, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	640	17	5/8"	0.24	260
Panagra	700	48/64	640	40	½"	0.165	260
City of Carlsbad	850	48/64	660	57	2 3/4"	5.75	5,400
*Gradonoco	600	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	640	32	1¼"	1.04	1,450
Strawn	80	48/64	650	5	3/4	372.	205
Go Po Go #2	1,100	35/64	650	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1,080	30/64	6.8	36	3.0"	211	5,165
Strawn	475	28/64	6.9	43'	1¼"	29	860
Grace Atlantic	1,875		68	1.8	4.0"	357	4,370
Grace Airport	Swb						
						TOTAL	26,970

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	270	680	1,000

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 6, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	640	17	5/8"	0.24	260
Panagra	700	48/64	620	42	½"	0.165	260
City of Carlsbad	1,450	48/64	640	10	2 3/4"	5.75	210
*Gradonoco	600	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	620	34	1¼"	1.04	1,450
Strawn	80	48/64	620	5	3/4	.372	205
Go Po Go #2	1,100	35/64	640	35	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1,100	30/64	68	38	3.0"	211	5,452
Strawn	475	28/64	68	44	1¼"	29	868
Grace Atlantic	1,925		6.7	18	4.0"	357	4,305
Grace Airport	Sub						
						TOTAL	22,010

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	100	630	275	1,050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-05- 1973

Well	T.P. PSIG.	CK.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	660	18	5/8"	0.24	280
Panagra	700	48/64	660	38	½"	0.165	255
City of Carlsbad	900		680	53	2 3/4"	5.75	5,100
*Gradonoco	550	S. I.			½"	0.16	
Humble Grace:							
Morrow	700	48/64	660	20	1¼"	1.04	1,150
Strawn	80	48/64	660	5			210
Go Po Go #2	1100	35/64	670	33	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	66	38	3.0"	211	5,292
Strawn	450	28/64	66	4.5	1¼"	29	861
Grace Atlantic	2000	S. I. 700A			4.0"	357	
Grace Airport	S.I.	0					
						TOTAL	22,148

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	100	680	260	1050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 4, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Co Po Co #1	700	48/64	700	15	5/8"	0.24	260
Panagra	740	48/64	680	35	½"	0.165	250
City of Carlsbad	900		700	53	2 3/4"	5.75	5,100
*Cradonoco	460	SI			½"	0.16	
Humble Grace:							
Morrow	710	48/64	710	19	1¼"	1.04	1,150
Strawn	80	48/64	690	5	3/4		210
Co Po Co #2	1,100	35/64	700	31	3.0"	6.25	8,950
Grace Carlsbad:							
Morrow	1,080	30/64	7.2	38	3.0"	211	5,773
Strawn	520	28/64	7.2	34	1¼"	29	710
Grace Atlantic	1,870		7.3	3.7	4.0"	357	9,643
Grace Airport	0	SI					
						TOTAL	32,046

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	110	700	240	1,050

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 3rd, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	670	18	5/8"	0.24	280
Panagra	710	48/64	680	35	½"	0.165	250
City of Carlsbad	900		700	54	2 3/4"	5.75	5,300
*Gradonoco	450	SI			½"	0.16	
Humble Grace:							
Morrow	180	48/64	680	24	1¼"	1.04	1,300
Strawn	100	48/64	680	5	3/4	.372	210
Go Po Go #2	1100	35/64	680	33	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	71	35	3.0"	211	5,243
Strawn	510	28/64	71	41	1¼"	29	844
Crace Atlantic	1875		7.2	3.8	4.0"	357	9,768
Grace Airport	190	SI					
						TOTAL	32,195

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:		SI		

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: October 2, 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	650	20	5/8"	0.24	285
Panagra	700	48/64	650	39	½"	0.165	260
City of Carlsbad	900		660	58	2 3/4"	5.75	5,300
*Gradonoco	400	SI			½"	0.16	
Humble Grace:							
Morrow	700	48/64	650	27	1¼"	1.04	1,250
Strawn	650	48/64	650	5	3/4	.372	210
Go Po Go #2	1100	35/64	650	34	3.0"	6.25	9,000
Grace Carlsbad:							
Morrow	1080	30/64	7.2	3.4	3.0"	211	5,165
Strawn	510	28/64	7.2	3.8	1¼"	29	793
Grace Atlantic	1875		7.4	3.7	4.0"	357	9,775
Grace Airport	190	SI					
						TOTAL	32,038

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	SI			

MICHAEL AND CORINNE GRACE
GRACE OIL CO.
SOUTH CARLSBAD FIELD

WELL STATUS REPORT

DATE: 10-01- 1973

Well	T.P. PSIG.	Ck.	Static	Diff.	Plate	Coeff.	Volume MCFD
Go Po Go #1	700	48/64	640	20	5/8"	0.24	280
Panagra	700	48/64	640	42	½"	0.165	265
City of Carlsbad	890		660	58	2 3/4"	5.75	5,700
*Gradonoco	340	S.I.			½"	0.16	
Humble Grace:							
Morrow	680	48/64	650	25	1¼"	1.04	1,350
Strawn	650	48/64	650	11	3/4	.372	310
Go Po Go #2	1,100	35/64	650	35	3.0"	6.25	9,400
Grace Carlsbad:							
Morrow	1,100	30/64	71	3.6	3.0"	211	5,393
Strawn	500	28/64	7.1	4.0	1¼"	29	824
Grace Atlantic	1,875		72	3.8	4.0"	357	9,768
Grace Airport	190	S.I.					
						TOTAL	33,290

	Suction Press. PSIG	Disch. Press. PSIG.	Disch. Temp. °F	RPM
*Compressor:	S.I.			

Grace
Atlantic

1000

357

(10)

730A	1	1875	
700A	2	1875	
720A	3	1870	
650A	4	1870	SI $ 10:30A ~~Ft~~ T.P.
650A	5	2000	SI TO 330 PM TP 1960
700A	6	1925	
700A	7	1875	
700A	8	1800	
925A	9	1750	
710A	10	1700	
725	11	1650	
700A	12	1560	
700A	13	1500	
645A	14	1475	
700A	15	1450	
655A	16	1650	
650A	17	1500	
655A	18	1440	
	19	1775	
720A	20	1770	
720A	21	1760	
730P	22	1750	
740A	23	1760	
845A	25	1730	

4"

Bid	Red	water	
[illegible]	3.8	3'11"	2'11"
7.4	3.7	4'5"	2'11"
7.2	3.8	4'8"	2'11"
7.3	3.7	5"	2'11"
6.6	1.8	6"	2'11"
6.7	1.8	6"	2'11"
6.8	1.8	11"	2'11"
6.6	1.8	15"	2'11"
6.8	1.7	17"	3'11"
6.8	1.7	17"	3'11"
6.8	1.6	17"	3'11"
6.6	1.7	17	2'11"
6.7	1.7	6	2'11"
6.6	1.6	10"	2'11"
6.6	1.7	17"	2'11"
6.5	1.9	2'0"	2'11"
7.0	1.6	20"	2'11"
7.1	1.5	2'0"	2'11"
7.5	3.7	30"	2'11"
7.5	3.7	30"	2'11"
7.5	3.6	31"	3'11"
7.3	3.7	3'3"	4'11"
7.4	3.6	3'7"	5'11"
			6"

7.3 X 3.5

OIL CO. PAGE THE ALBANY N

5085 8

Grace
10/25/73

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 3-29-73	
Company: CORINNE GRACE		Connection: To Air			
Pool: South Carlsbad		Formation: Morrow			Unit
Completion Date: 3-15-73	Total Depth: 11,768		Plug Back TD: 11,740	Elevation: 3174 GR	Farm or Lease Name: Grace Atlantic
Csg. Size: 7" / Wt.: 32# / d: / Set At: 11,768			Perforations: From 11,424 To 11,444		Well No.: 1
Tbg. Size: 4½" / Wt.: 15.5# / d: / Set At: 11,000'			Perforations: From Open To Ended		Unit: J / Sec.: 24 / Twp.: 22S / Rge.: 26E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: Single			Packer Set At: 11,000'		County: Eddy
Producing Thru: 4½" Tubing	Reservoir Temp. °F: 190 @ 11,500'	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps

	FLOW DATA					TUBING DATA		CASING DATA		Duration
NO.	Prover Line Size	x Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	of Flow
SI						2581.0		Packer	Choke	72.0
1.	4"	x 3.00"	565.0	8.0	93	2578.0	62		12/64	0.5
2.	4"	x 3.00"	560.0	13.5	85	2563.0	62		17/64	0.5
3.	4"	x 3.00"	700.0	25.0	72	2525.0	60		23/64	0.5
4.	4"	x 3.00"	980.0	32.0	66	2473.0	60		27/64	0.5
5.										

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	51.64	68.01	578.2	.9697	1.313	1.037	4637
2.	51.64	87.97	573.2	.9768	1.313	1.039	6054
3.	51.64	133.53	713.2	.9887	1.313	1.054	9435
4.	51.64	178.28	993.2	.9943	1.313	1.078	12956
5.							

NO.	P_t	Temp. °R	T_r	Z
1.	0.86	553	1.58	.930
2.	0.85	545	1.56	.927
3.	1.06	532	1.52	.901
4.	1.48	526	1.50	.861
5.				

Gas Liquid Hydrocarbon Ratio: TSTM Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: 0.580 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 672 P.S.I.A. P.S.I.A.
Critical Temperature: 350 R R

P_c 3355.2 P_c^2 11257

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		3346.2	11197	60.0
2		3332.2	11104	153.0
3		3295.2	10858	399.0
4		3259.2	10622	635.0
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 17.7276$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 5.0739$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 65,737$

Absolute Open Flow: 65,737 Mcfd @ 15.025 | Angle of Slope θ: 60.3° | Slope, n: 0.570

Remarks: BOTTOM HOLE PRESSURES MEASURED WITH AMERADA GAUGE @ 11,500 FEET
NOTE: MAXIMUM FLOW RATE LIMITED BY TEST EQUIPMENT, WHICH ACCOUNTS FOR SMALL PERCENTAGE OF DRAW-DOWN.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	M.C.T.	R.L.W.	J.W.W.

FORM 2907

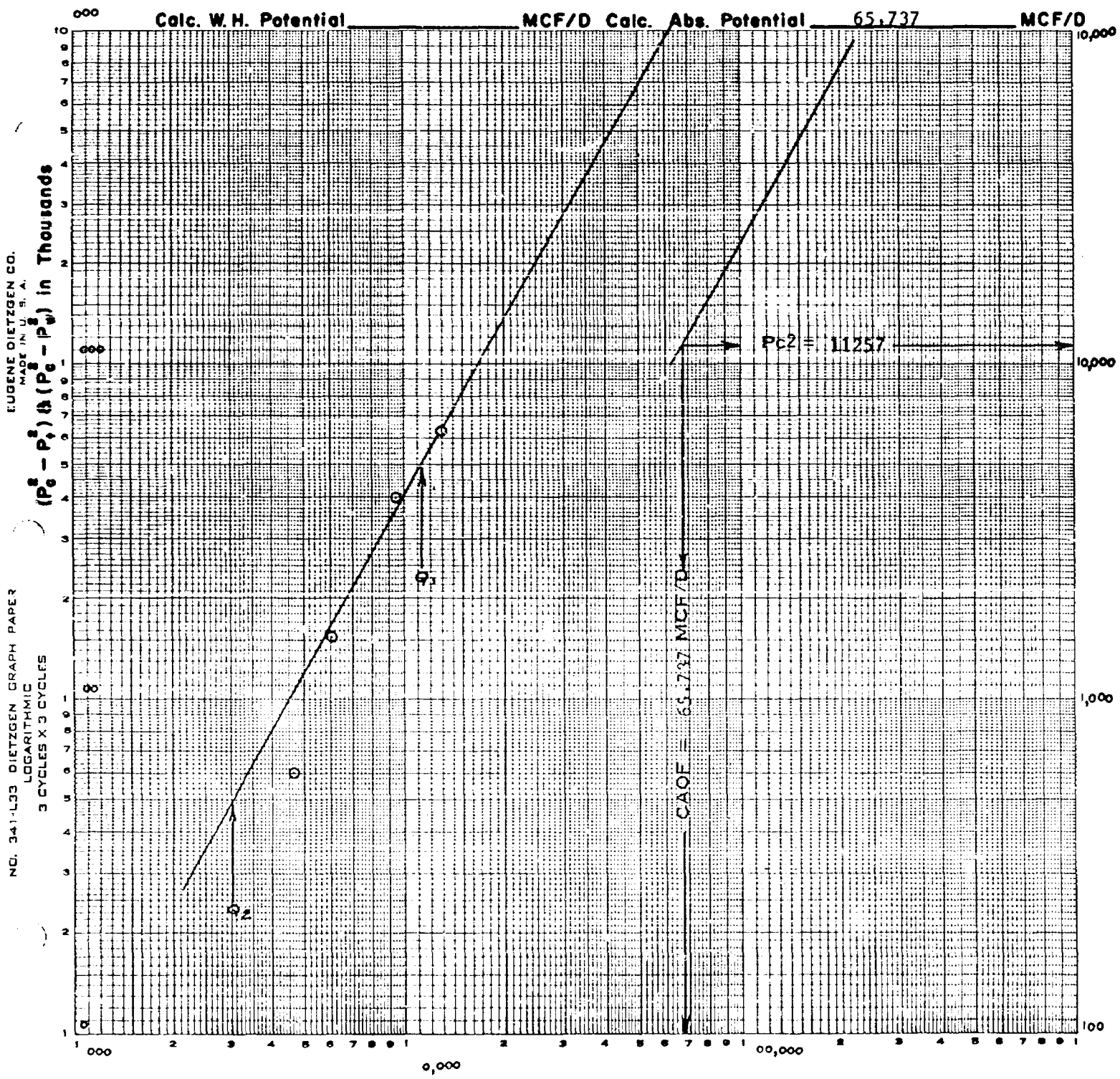
BACK PRESSURE CURVE

Operator CORINNE GRACE Lease GRACE ATLANTIC Well No. 1

County EDDY Field SOUTH CARLSBAD Location J, SEC 24, T22S, R26E

Date of Test 3-29-73 Slope "n" 0.570 W. H. _____ Abs.

Calc. W. H. Potential _____ MCF/D Calc. Abs. Potential 65,737 MCF/D



Q_1 = 11300 = 8.0530784

Q_2 = 3040 = 7.4828736

N = 0.5702048

$$CAOF = 12956 \left(\frac{11257}{635.0}\right)^{.570}$$

17.72755

1.2374432

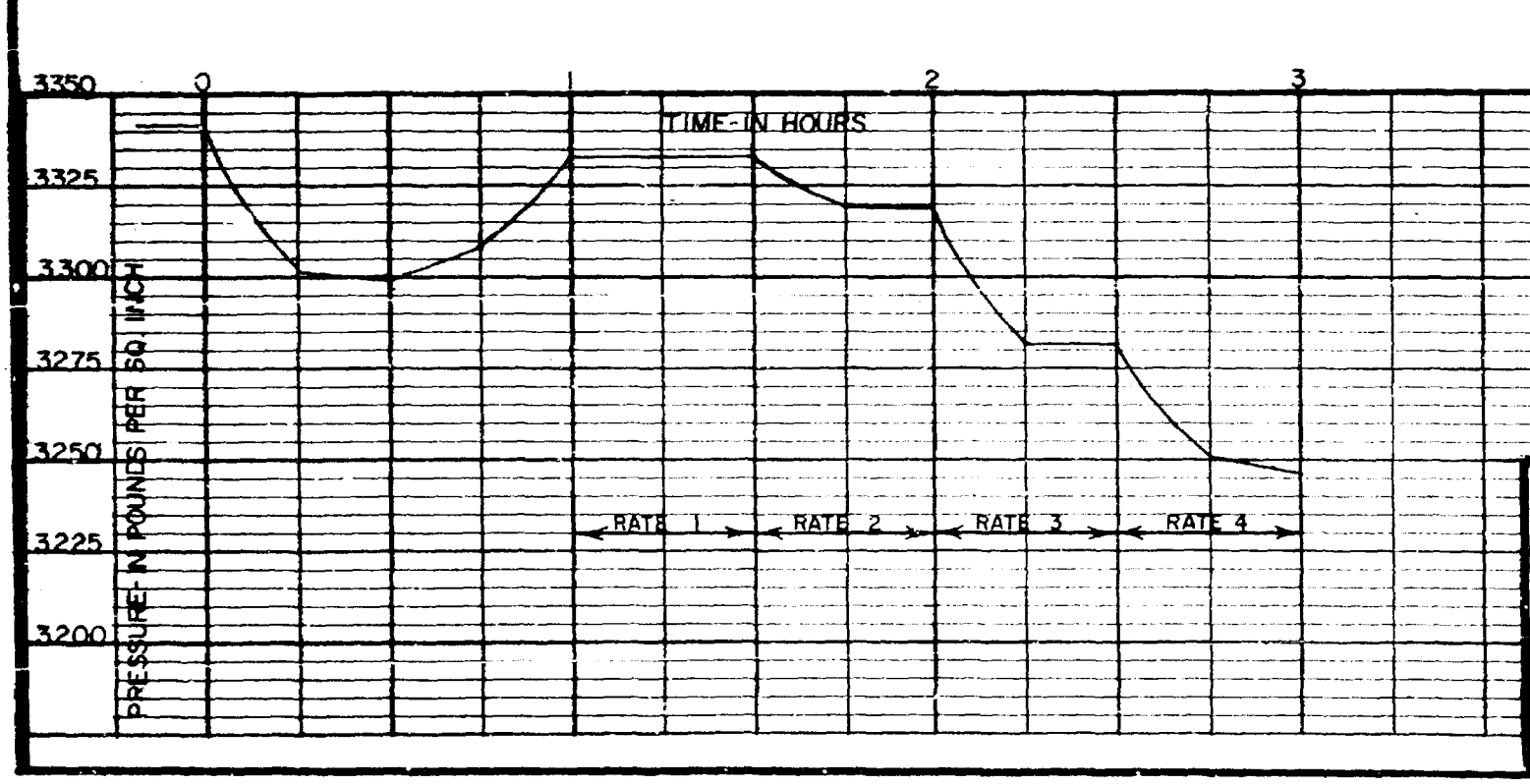
.7053426

= 65,737 MCF/DAY

TEST DATE: MARCH 29, 1973
TEST DEPTH: 11,500 FEET

ELEMENT No.: 8534
RANGE: 0-5600 P S I
CLOCK No.: 11782
RANGE: 0-24 HOUR

NOTE: SEE TABULATION OF PRESSURE AND TIME ON ATTACHED SHEET.



CORINNE GRACE

GRACE ATLANTIC No. 1

BOTTOM HOLE PRESSURES TO USE FOR CALCULA
MULTI-POINT BACK PRESSURE TEST

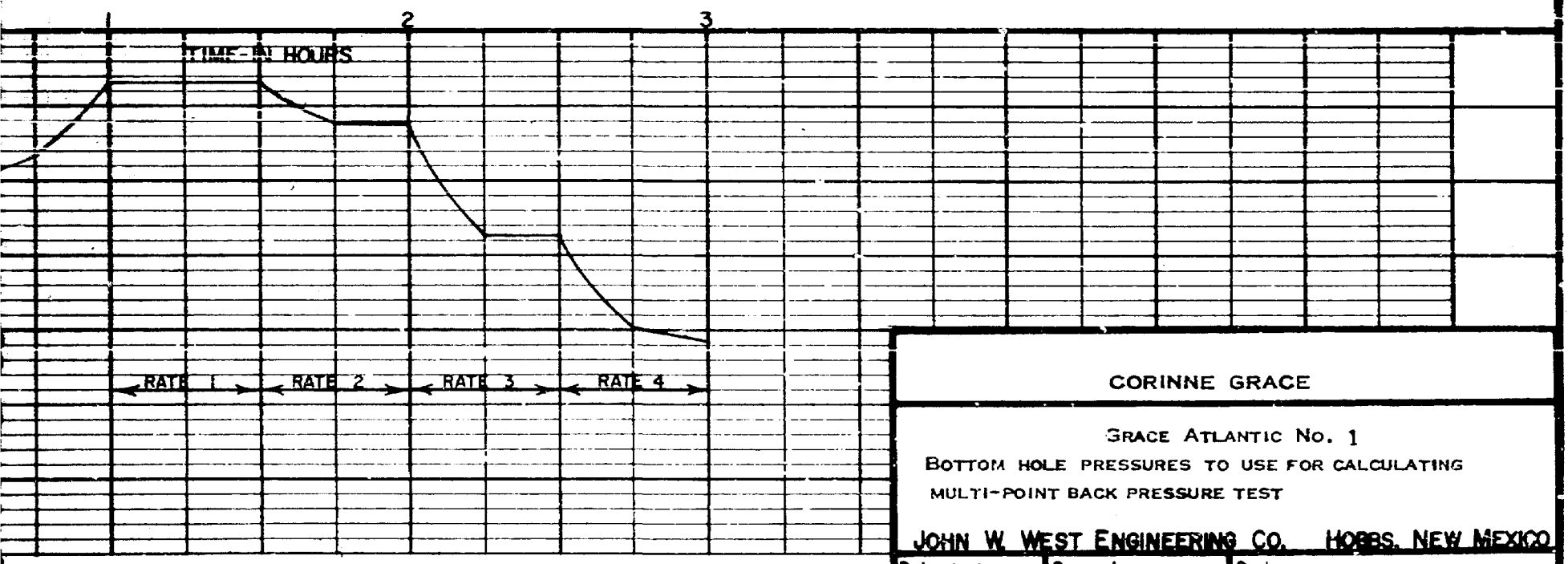
JOHN W. WEST ENGINEERING CO. HOBBS,

Date: 4-2-73 | Drawn by: MCT | Scale: AS SHO

MARCH 29, 1973
11,500 FEET

8534
0-5690 P S I
11782
0-24 HOUR

ATION OF PRESSURE AND TIME ON ATTACHED SHEET.



CORINNE GRACE

GRACE ATLANTIC No. 1
BOTTOM HOLE PRESSURES TO USE FOR CALCULATING
MULTI-POINT BACK PRESSURE TEST

JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 4-2-73 | Drawn by: MCT | Scale: AS SHOWN

CORINNE GRACE
GRACE ATLANTIC No. 1
BOTTOM HOLE PRESSURES TO USE FOR CALCULATING
MULTI-POINT BACK-PRESSURE TEST
TABULATION OF PRESSURE AND TIME

TEST CONDUCTED BY:
JOHN WEST ENGINEERING CO.

TEST DATE: MARCH 29, 1973
TEST DEPTH: 11,500 FEET
ELEMENT NO.: 8534 (0-5600 PSI)
OPER.: M. THOMASON

TIME	CUM. HRS./MIN.	PSIG @ 11,500 FEET	
3:05 PM		3342	GAUGE REACHED 11,500 FEET
3:15 PM	00 HRS 00 MIN	3342	OPENED CHOKE
	00 15	3302	
	00 30	3299	ADJUSTING FLOW RATE
	00 45	3308	
4:15 P.M.	01 00	3333	BEGIN RATE 1, 12/64 CHOKE
	01 15	3333	
4:45 P.M.	01 30	3333	END RATE 1
4:45 P.M.	01 30	3333	BEGIN RATE 2, 17/64 CHOKE
	01 45	3319	
5:15 P.M.	02 00	3319	END RATE 2
5:15 P.M.	02 00	3319	BEGIN RATE 3, 23/64 CHOKE
	02 15	3282	
5:45 P.M.	02 30	3282	END RATE 3
5:45 P.M.	02 30	3282	BEGIN RATE 4, 27/64 CHOKE
	02 45	3251	
6:15 P.M.	03 HRS 00 MIN	3246	END RATE 4

GRADIENT STOPS WERE MADE COMING OUT OF HOLE. THE RESULTS ARE AS FOLLOWS:

DEPTH	PRESSURE	GRADIENT
10,800	3280	
11,200	3308	.070
11,500	3339	.103

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

CASE NO. 5054
Order No. R-4432-A

APPLICATION OF D. L. HANNIFIN AND JOE DON COOK FOR DETERMINATION OF REASONABLE WELL COSTS AND FOR AN ORDER TERMINATING OPERATOR'S WITHHOLDING PERIOD.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 28 and 29, 1973, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 28th day of September, 1973, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That pursuant to Cases Nos. R-4819 and R-4836, heard before an examiner of the Oil Conservation Commission on September 27, 1972, Order No. R-4432 was issued which force pooled the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico.

(3) That Order No. R-4432 created a standard communitized unit comprising 320 acres, named Michael P. Grace II the operator of said unit, established a risk factor of 25 percent to be assessed against any non-consenting working interest, and authorized the drilling of a well for the subject unit to be drilled at a standard location for the South Carlsbad-Morrow Gas Pool.

(4) That the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, is subject to a royalty payment of 18.75 percent, and the working interest ownership of said SE/4 of Section 24 is 81.25 percent; that the SW/4 of said Section 24 is subject to a royalty and overriding royalty payment of 25.0 percent, and the working interest ownership of said SW/4 of Section 24 is 75.0 percent.

(5) That subsequent to the issuance of Order No. R-4432, D. L. Hannifin, as Non-Consenting Working Interest Owner, and Barbara E. Hannifin, his wife, filed with the Commission a "Statement of Non-Consent" executed January 4, 1973, wherein D. L. Hannifin and Barbara E. Hannifin, his wife, stipulated that D. L. Hannifin is the working interest owner under an Oil and Gas Lease covering the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad Field, Eddy County, New Mexico, which said tract, together with the SW/4 of said Section 24, has been dedicated to a 320-acre standard location for the drilling of a test well in the Morrow formation underlying the S/2 of said Section 24; and that Michael P. Grace II has been designated by the New Mexico Oil Conservation Commission as the operator of the proposed well and unit. The Statement of Non-Consent stipulated further:

> "The undersigned, D. L. Hannifin, non-consenting working interest owner, joined herein by his wife, Barbara E. Hannifin, hereby expressly elects not to pay his share of estimated well costs to Operator and in lieu thereof, hereby elects to pay his share of reasonable well costs out of production. The undersigned further certifies and agrees that $135.00 per month should be fixed as a reasonable charge for the supervision (combined fixed rates) for the subject well; agrees to the 25% prorata risk share charge described in finding (7)(B); and agrees that Operator is authorized to withhold from production the proportionate share of such supervision charge attributable to the undersigned non-consenting working interest owner's interest, and Operator is authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to non-consenting working interest owner, all as more particularly defined in Order R-4432."

(6) That on January 28, 1973, Michael P. Grace II as Operator of the S/2 of Section 24, Township 22 South, Range 26 East, caused to be commenced the drilling of a well designated the Grace-Atlantic Well No. 1, located 1980 feet from the South line and 1980 feet from the East line of said Section 24, to a proposed depth of 12,100 feet to test the Morrow formation, the S/2 of said Section 24 being dedicated to the well.

(7) That on March 1, 1973, Michael P. Grace II and Corinne Grace, as "Seller," entered into a contract with El Paso Natural Gas Company, as "Buyer," for the sale of gas produced from those formations between the surface of the ground and the base of the Morrow formation underlying Seller's properties comprising certain lands, including the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico; that said

contract provides that Buyer shall pay Seller for gas purchased thereunder at the rate of $0.52 per MCF commencing on the date of first deliveries and continuing through the month of December, 1973, subject to adjustment for the heating value of the gas produced, either more or less than 1,000 BTU's per MCF; and subject to certain escalations after December, 1973.

(8) That on March 15, 1973, the above-described Grace-Atlantic Well No. 1 was completed and ready to produce; that on March 29, 1973, said well was tested and found to have a calculated absolute open flow potential of 65,737 MCF per day from perforations in the Morrow formation from 11,424 feet to 11,444 feet.

(9) That said Grace-Atlantic Well No. 1 was actually connected to the El Paso Natural Gas Company pipeline system April 16, 1973, and that gas production since that date has yielded, including the BTU adjustment described in Finding No. (7) above, $0.62036 per MCF.

(10) That on July 30, 1973, D. L. Hannifin and Joe Don Cook, through their attorney, made application to the Commission seeking a determination of the reasonable well costs of the Grace-Atlantic well, and a determination of when Michael P. Grace II had been fully compensated for all reasonable well costs and the 25 percent risk charges and the pro rata share of reasonable well costs attributable to Hannifin and Cook on the well.

(11) That at the hearing the parties stipulated to the following facts:

(a) That the original cost of the well is $439,986.35, one-half of which is subject to the 25 percent risk factor provided in Order No. R-4432.

(b) That additional charges have been incurred by the operator in the amount of $25,694.75 and should be divided equally between the parties.

(c) That the Grace share of these costs (50 percent of the original costs and 50 percent of the additional costs) is $232,840.56.

(d) That the Hannifin and Cook share of these costs (50 percent of the original costs, a 25 percent penalty thereon and 50 percent of the additional costs) is $287,838.84.

(e) That the total well costs are $520,679.40.

(f) That each party should pay 50 percent of the reasonable charge for supervision (combined fixed rates).

(g) That the reasonable charge for supervision pursuant to Commission Order No. R-4432, is $135 per month which totals $405 for the months of April, May and June, 1973, $202.50 of which should be paid by each of the two parties.

(h) That the Grace total share of all costs is $233,043.06.

(i) That the Hannifin and Cook share of all costs is $288,041.34.

(12) That each of the 160-acre tracts communitized by Commission Order No. R-4432 should stand on its own insofar as royalty and overriding royalty payments are concerned; that accordingly, the working interest attributable to the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Lea County, New Mexico, is 40.625 percent of the pooled unit interests as a whole; that the royalty interest underlying said SE/4 of Section 24 is 9.375 percent of the pooled unit interests as a whole; that the working interest attributable to the SW/4 of said Section 24 is 37.5 percent of the pooled unit interests as a whole; and the combined royalty interests and overriding royalty interests underlying said SW/4 of Section 24 total 12.5 percent of the pooled unit interests as a whole.

(13) That the current sales price for gas produced from the subject well is $0.52 per MCF plus $0.10036 per MCF BTU adjustment for a total of $0.62036 per MCF. That the royalty under the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, is 18.75 percent of the production attributable to said tract. That the current rate of taxation on the production from the subject well is 6.419 percent of the value received for said production. That these are the proper factors to be used in determining the date on which production, less royalty and taxes, attributable to the subject SE/4 of Section 24 has paid out the stipulated costs chargeable to Hannifin and Cook through June, 1973, which total $288,041.34.

(14) That from April 16, 1973, through 7 o'clock a.m. on June 26, 1973, the subject Grace-Atlantic Well No. 1 produced a total of 1,243,813 MCF of gas. That applying the factors described in Finding No. (13) above to this production indicates that at 7 o'clock a.m. on June 26, 1973, the portion of production attributable to the subject SE/4 of Section 24, less royalty and taxes, had paid out the costs attributable to Hannifin and Cook plus an additional $661.09, or a total of $288,702.43.

(15) That according to the evidence, gas is currently being sold from the subject well under a contract signed pursuant to the Federal Power Commission's Order No. 428-428 A dealing with Small Producer sales; that the sale of gas under such contracts is currently in litigation; that depending upon the outcome of such litigation, the sales price for gas from the subject well could be changed.

(16) That the Commission is in no position to determine what the final sales price for gas from the subject well will be, and can only rely upon the current price.

(17) That certain monies derived from the sale of gas from the subject well have been placed in escrow with the American Bank of Carlsbad, Carlsbad, New Mexico, pending the determination of payout of the well.

(18) That inasmuch as it has been determined that the Hannifin and Cook portion of total well costs was paid out at 7 o'clock a.m. June 26, 1973, plus $661.09, it would appear that monies held in escrow from production after that date should be released to the applicants, Hannifin and Cook.

(19) That it should be up to the working interest owners in the subject well to arrive at a suitable arrangement regarding payment of funds derived from sale of gas from the subject well which may be excessive should the sales price of gas be adjusted retroactively and be subject to refund.

IT IS THEREFORE ORDERED:

(1) That the 18.75 percent royalty of the Hannifin portion of the subject unit, being the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, and the 25.0 percent royalty for the Grace portion of the subject unit being the SW/4 of said Section 24, are independent and separate from each other and cannot be pooled or averaged at the discretion of the operator into a uniform royalty percentage for the purpose of determining the payout date of the Michael P. Grace II Grace-Atlantic Well No. 1, located 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(2) That the 18.75 percent royalty applicable to the SE/4 of said Section 24 shall be applied to one-half of the total production from the well, and the 25 percent royalty and overriding royalty applicable to the SW/4 of said Section 24 shall be applied to the other half of the total production from the well.

(3) That a tax rate of 6.419 percent of the production attributable to the SE/4 of said Section 24 shall be used in determining date of payout for the total share of well costs attributable to Hannifin and Cook through June, 1973.

(4) That the gas price to be used in determining the date of payout for the subject well shall be $0.52 per MCF plus $0.10036 per MCF BTU adjustment, for a total of $0.62036 per MCF of gas.

(5) That the original well costs for the subject well are $439,986.35, one-half of which, or $219,993.18, are to be borne by Michael P. Grace II and one-half of which plus a 25 percent charge for risk, or $274,991.47, are to be borne by D. L. Hannifin and Joe Don Cook.

(6) That additional costs incurred, totalling $25,694.75, are not subject to any charge for risk, and shall be shared equally by the two parties to this hearing, Michael P. Grace II, and Hannifin and Cook.

(7) That Michael P. Grace II's total share of original well costs and additional costs incurred shall be $232,840.56.

(8) That Hannifin and Cook's share of original well costs plus the 25 percent charge for risk, and their share of additional costs incurred, shall be $287,838.84.

(9) That $135.00 per month is a reasonable charge for supervision (combined fixed rates) for the subject well and totals $405.00 for the months of April, May, and June, 1973. That this charge for supervision shall be borne equally by Michael P. Grace II and by Hannifin and Cook, thereby making each party's share $202.50.

(10) That Michael P. Grace II's total share of reasonable well costs (defined as original well costs and additional costs incurred) and charge for supervision through June, 1973, shall be $233,043.06.

(11) That Hannifin and Cook's total share of reasonable well costs (as defined above) plus a 25 percent penalty on the original well costs, and charge for supervision through June, 1973, shall be $288,041.34.

(12) That $288,041.34, being the total share of reasonable well costs (as defined above) plus a 25 percent penalty on the original well costs, and charge for supervision through June, 1973, attributable to Hannifin and Cook, is hereby determined to have been paid out by production attributable to the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, less royalty and taxes, at 7 o'clock on June 25, 1973, with an additional overpayment attributable to Hannifin and Cook of $661.09.

(13) That any funds derived from the sale of gas from the subject well after 7 o'clock a.m. June 26, 1973, attributable to D. L. Hannifin and Joe Don Cook, and held in escrow by American Bank of Carlsbad shall be released to said Hannifin and Cook subject to agreement in writing between Hannifin and Cook and Michael P. Grace II as to future arrangements, escrow, bonding or whatever may be satisfactory to the parties involved, covering the difference, if any, between the current sales price of gas from the subject well and the future sales price of gas.

(14) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

5

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

RECEIVED

Type Test: ☐ Initial ☒ Annual ☐ Special			Test Date: 7-3-73	
Company: Michael P. CORINNE GRACE #F	Connection: EL PASO NATURAL GAS CO.			
Pool: SOUTH CARLSBAD	Formation: MORROW			Unit: J
Completion Date: 3-15-73	Total Depth: 11,768'	Plug Back TD: 11,740'	Elevation: 3174' GR.	Farm or Lease Name: GRACE ATLANTIC Com.
Csg. Size: 7" / Wt.: 32# / d: / Set At: 11,768'		Perforations: From 11,424' To 11,444'		Well No.: 1
Tbg. Size: 4½" / Wt.: 15.5# / d: / Set At: 11,000'		Perforations: From OPEN To ENDED		Unit: J / Sec.: 24 / Twp.: 22S / Rge.: 26E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: SINGLE		Packer Set At: 11,000'		County: EDDY
Producing Thru: TUBING	Reservoir Temp. °F: 208° @ 11,500'	Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2	State: NEW MEXICO

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
11,000'	11,000'	0.580EST					6"	FLANGE

NO.	FLOW DATA: Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2219.0		PKR.	CHOKE	
1.	6" X 4.00"		1.0	94	2214.0	81		10/64	120MIN.
2.	6" X 4.00"		9.0	79	2181.0	82		18/64	70 "
3.	6" X 4.00"		16.8	70	2147.0	83		24/64	60 "
4.	6" X 4.00"		33.6	70	2062.0	86		30/64	60 "
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	85.37	17.87	319.2	0.9688	1.313	1.021	1,98[illegible]
2	85.37	56.92	360.0	0.9822	1.313	1.026	6,430
3	85.37	80.36	384.4	0.9905	1.313	1.030	9,190
4	85.37	122.81	448.9	0.9905	1.313	1.035	14,112
5							

NO.	P_r	Temp. °R	T_r	Z
1	0.48	554	1.58	.960
2	0.54	539	1.54	.950
3	0.57	530	1.51	.943
4	0.67	530	1.51	.934
5				

Gas Liquid Hydrocarbon Ratio: T.S.T.M. Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: 0.580 XXXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 672 P.S.I.A. P.S.I.A.
Critical Temperature: 350 R R

P_c 2232.2 P_c^2 4982.7

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	4960.4			22.3
2	4814.5			168.2
3	4666.5			316.2
4	4306.5			676.2
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 7.3687$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 3.1658$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 44,676$

Absolute Open Flow: 44,676 Mcfd @ 15.025 | Angle of Slope θ: 60.0° | Slope, n: 0.577

Remarks: FRICTION IS NEGLIGBLE-
BASED ON 100"-1000# METER RANGE THE L-10 CHART READINGS CONVERTED TO
CONVENTIONAL READINGS PRIOR TO CALCULATING VALUMES

Approved by Commission:	Conducted By:	Calculated By:	Checked By:
	D. TYSON	R. WEST	

FORM 2987

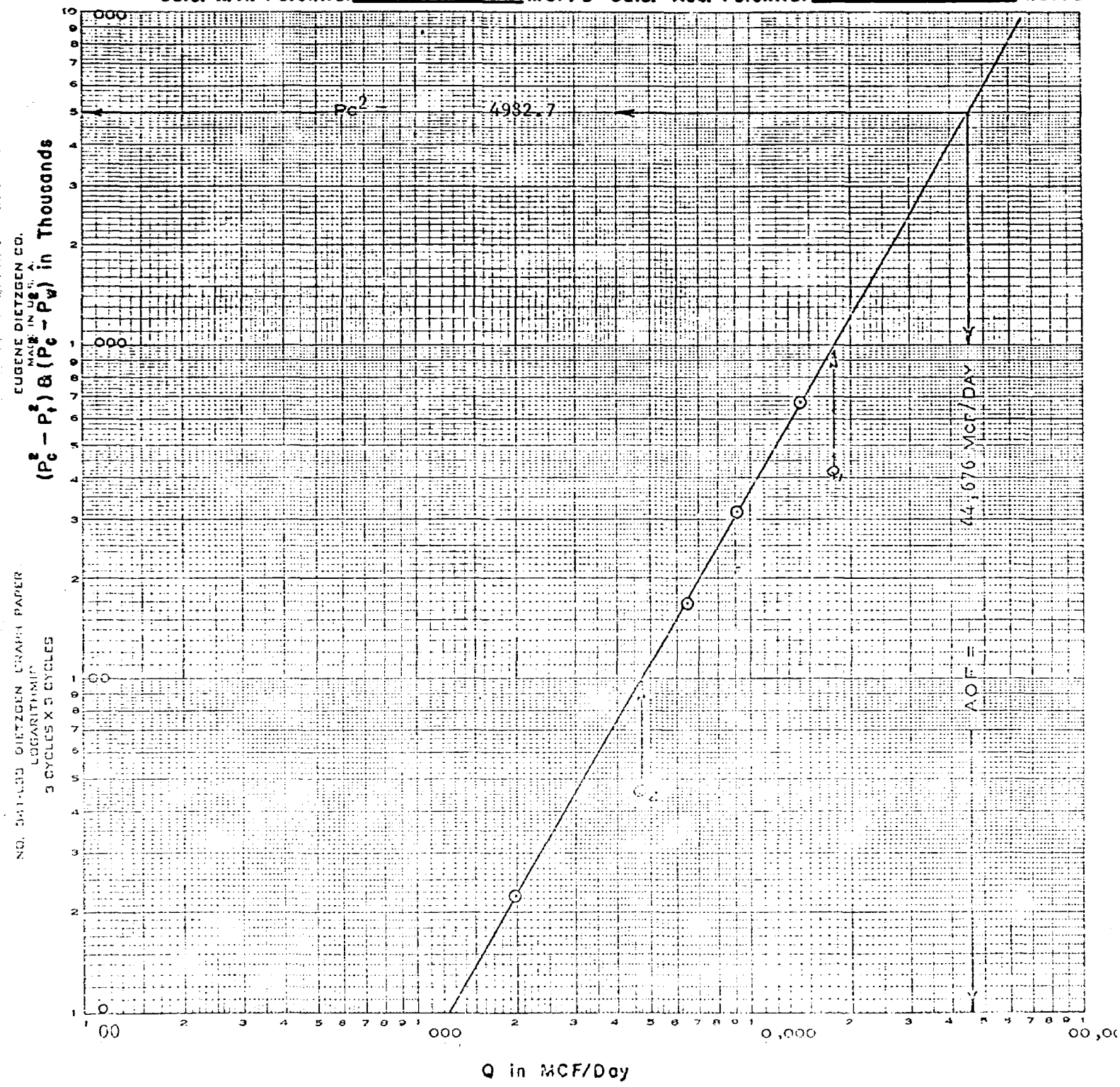
BACK PRESSURE CURVE

Operator CORINNE GRACE Lease GRACE ATLANTIC Well No. 1

County EDDY Field SOUTH CARLSBAD Location J, SEC 24, T22S, R26E

Date of Test 7-3-73 Slope "n" 0.577 W. H. _____ Abs.

Calc. W. H. Potential _____ MCF/D Calc. Abs. Potential 44,676 MCF/D



SLOPE (n) = Q_1 = 17750 = 8.2491984

Q_2 = 4700 = 7.6720979

(n) = 0.5771005

ABS. POT. = 14,112 $\frac{4982.7}{676.2}$ $^{.557}$ = 44,676 MCF/D

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NEW MEXICO OIL CONSERVATION COMMISSION
REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-11
Effective 1-1-65

JUN 1 5 1973

O. C. C.
ARTESIA, OFFICE

I.

Operator: Michael P. Grace II ✓

Address: P. O. Box 1418, Carlsbad, New Mexico 88220

Reason(s) for filing (Check proper box)
- New Well ☐
- Recompletion ☐
- Change in Ownership ☐
- Change in Transporter of: Oil ☐ Dry Gas ☐ Casinghead Gas ☐ Condensate ☐

Other (Please explain): Add Transporters

If change of ownership give name and address of previous owner _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Grace Atlantic Com	1	Undes. So. Carlsbad Morr.	State, Federal or Fee Fee	

Location
Unit Letter J : 1980 Feet From The South Line and 1980 Feet From The East

Line of Section 24 Township T22S Range 26E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil ☐ or Condensate ☑ — Address (Give address to which approved copy of this form is to be sent)
Navajo Crude Oil Purchasing Co. — P.O. Drawer 175, Artesia, New Mexico 88210

Name of Authorized Transporter of Casinghead Gas ☐ or Dry Gas ☐ — Address (Give address to which approved copy of this form is to be sent)
El Paso Nat. Gas Co. — P.O. Box 1492, El Paso, Texas

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
	J	24	22S	26E	Yes	April 15, 1973

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth
Perforations			Depth Casing Shoe

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

V. TEST DATA AND REQUEST FOR ALLOWABLE

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil-Bbls.	Water-Bbls.	Gas-MCF

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Commission have been compiled with and that the information given above is true and complete to the best of my knowledge and belief.

(Signature)
Agent
(Title)
June 13, 1973
(Date)

OIL CONSERVATION COMMISSION

APPROVED JUN 18 1973, 19 ____

BY W. A. Gressett

TITLE OIL AND GAS INSPECTOR

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.

All sections of this form must be filled out completely for allowable on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of owner, well name or number, or transporter, or other such change of condition.

Separate Forms C-104 must be filed for each pool in multiply

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NEW MEXICO OIL CONSERVATION COMMISSION
REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-11
Effective 1-1-65

APR 9 1973

O. C. C.
ARTESIA, OFFICE

MAY - 1 1973
OIL CONSERVATION COMM.
Santa Fe

I. Operator: Michael P. Grace II

Address: P. O. Box 1418, Carlsbad, New Mexico 88220

Reason(s) for filing (Check proper box)
- New Well [XX]
- Recompletion [ ]
- Change in Ownership [ ]
- Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]
- Other (Please explain): Add Com to lease name

If change of ownership give name and address of previous owner _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Grace-Atlantic Com.	1	~~Undes.~~ So. Carlsbad Morrow Gas	State, Federal or Fee Fee	

Location: Unit Letter J : 1980 Feet From The South Line and 1980 Feet From The East

Line of Section 24 Township T22S Range 26E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [ ]	Address (Give address to which approved copy of this form is to be sent)
Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ]	Address (Give address to which approved copy of this form is to be sent)
El Paso Natural Gas Company	El Paso Nat'l. Gas Bldg., El Paso, Texas

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
					~~No~~ Yes	4-16-73

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.
		XX	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
1/28/73	3/15/73	11,772	11,740
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
3162 GR	Morrow	11,424	11,000
Perforations			**Depth Casing Shoe**
11,424 - 11,444 4spf			11768

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17 1/2	13 3/8	356	375 sks Class "C"
12 1/4	9 5/8	5402	1250 sks Hal. lt. & 400 Cl
8 3/4	7	11768	100 Hal.lt. & 400 cl.H
	4 1/2	11000	

V. TEST DATA AND REQUEST FOR ALLOWABLE

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil-Bbls.**	**Water-Bbls.**	**Gas-MCF**

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
65.737	4	0	
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
back pr.	2581	Pkr	variable

VI. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Commission have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Rosanita L. Jones
(Signature)

Agent
(Title)

4/6/73
(Date)

OIL CONSERVATION COMMISSION

APPROVED APR 26 1973, 19__

BY A. R. Gressett

TITLE OIL AND GAS INSPECTOR

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.

All sections of this form must be filled out completely for allowable on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of owner, well name or number, or transporter, or other such change of condition.

Separate Forms C-104 must be filed for each pool in multiply

OIL CONSERVATION COMMISSION

BOX 1980

HOBBS, NEW MEXICO

RECEIVED
APR 26 1973
OIL CONSERVATION COMM
Santa Fe

NOTICE OF GAS CONNECTION

DATE April 23, 1973

This is to notify the Oil Conservation Commission that connection for the purchase of gas from the Michael P. Grace II (Operator), Grace Atlantic Com (Lease),

#1 (Morrow) J (Well Unit), 24-22-26 (S.T.R.), Carlsbad Morrow South (Pool),

61-333-01 (Meter Code), 19000 4 (Site Number), El Paso Natural Gas Co. (Name of Purchaser)

was made on April 16, 1973.

El Paso Natural Gas Company
Purchaser

Travis R. Elliott
Representative
Travis R. Elliott

Gas Production Status Analyst
Title

TRE:bl
cc: To operator
Oil Conservation Commission - Santa Fe
Oil Conservation Commission - Artesia (2)
Proration
H. P. Logan
T. J. Crutchfield
File

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

April 17, 1973

Mrs. Juanita L. Jones
P. O. Box 1418
Carlsbad, New Mexico 88220

Administrative Order TX-39

Dear Mrs. Jones:

Reference is made to your application for an exception to Rules 107(d)(2) and 107(d)(3) for the Michael P. Grace Grace Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, South Carlsbad Morrow gas pool, Eddy County, New Mexico, to permit the production of gas through 4 1/2-inch tubing set at 11,000 feet. The uppermost perforation is at 11,424 feet.

Inasmuch as the gas produced from this well is very dry (gas-liquid ratio reported TSTM on 4-point test), it appears that this well can be produced in the manner proposed without causing waste. You are therefore granted the requested exception. The Commission does reserve the right, however, to rescind this authority if at any time it appears that the producing characteristics of the well have so changed that this method of production is causing or may cause waste.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/dr

cc: Oil Conservation Commission - Artesia
Oil & Gas Engineering Committee - Hobbs

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Form C-105
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

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O. C. C.
ARTESIA, OFFICE

5a. Indicate Type of Lease: State ☐ Fee ☒
5. State Oil & Gas Lease No.

1a. TYPE OF WELL
b. TYPE OF COMPLETION
OIL WELL ☐ GAS WELL ☒ DRY ☐ OTHER
NEW WELL ☒ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ OTHER

7. Unit Agreement Name

8. Farm or Lease Name: Grace-Atlantic

2. Name of Operator: Michael P. Grace II ✓

9. Well No.: 1

3. Address of Operator: P. O. Box 1418, Carlsbad, New Mexico

10. Field and Pool, or Wildcat: South Carlsbad Morrow

APR - 6 1973
OIL CONSERVATION COMM.
Santa Fe

4. Location of Well
UNIT LETTER J LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 24 TWP. 22S RGE. 26E NMPM

12. County: Eddy

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
1/28/73	3/11/73	3/15/73	3162 GR	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
11,772	11,740		→	0-TD	

24. Producing Interval(s), of this completion — Top, Bottom, Name
Morrow 11,424 - 444

25. Was Directional Survey Made: Yes

26. Type Electric and Other Logs Run
Laterolog, Micro-Laterolog, Gamma Ray Neutron, BHC Acoustilog

27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8	61#	356	17 1/2	375 sks Class "C"	circl.
9 5/8	36 & 40#	5402	12 1/4	1250 sks Hal.lt.&400 Class"C"	circl.
7	23#,26#,29#,32#	11768	8 3/4	100 Hal.lt. & 400 Class"H"	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
4 1/2	11,000	11,000'

31. Perforation Record (Interval, size and number)
11,424 - 11,444 4spf

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
None	None

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)
		Shut in

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio
3/29/73	4			* From last 4 point rate			Dry Gas

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)
2473	pkr.			65,737		

34. Disposition of Gas (Sold, used for fuel, vented, etc.)
To be sold AOF 65,737

Test Witnessed By

35. List of Attachments
all logs listed above

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Juanita R. Jones TITLE Agent DATE April 2, 1973

Big West Drilling Company

1714 Commerce Building
Fort Worth, Texas 76102

March 22, 1973

APR - 6 1973
OIL CONSERVATION COMM.
Santa Fe

RECEIVED
APR 2 1973
O. C. C.
ARTESIA, OFFICE

TO: MICHAEL P. GRACE
CORINNE GRACE
POST OFFICE BOX 1418
CARLSBAD, NEW MEXICO 88220

WELL NAME AND LOCATION: Grace Atlantic Well No. 1,
1980' FSL 1980' FEL,
Sec. 24, T-22-S, R-26-E,
Eddy County, New Mexico

EASTMAN DEVIATION RECORD

Date 1973	Depth	Degree of Deviation
1-28	260'	1/2
1-29	375'	3/4
1-30	660'	3/4
1-31	1,370'	1
2-1	1,860'	1 1/4
2-2	2,300'	1
	2,600'	1
2-3	3,095'	1 1/4
2-4	3,550'	1
2-5	4,125'	1
2-9	4,490'	1
2-13	5,396'	1
2-16	5,871'	1 1/4
2-17	6,368'	1 1/4
2-19	6,860'	1/2
2-20	7,340'	3/4
2-21	7,800'	1 1/2
2-22	8,290'	1 1/2
2-23	8,520'	1 1/2
2-24	9,010'	1 1/2
2-25	9,510'	1 1/2
2-27	9,980'	1 1/2
2-28	10,450'	2
3-1	10,690'	1 1/2
3-4	11,165'	1 1/2
	11,260'	1 3/4
3-6	11,470'	1 1/2
3-10	11,770'	1 3/4

Continued

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OIL CONSERVATION COMM.
Santa Fe

Grace Atlantic Well No. 1, Eastman Deviation Record, Page 2

I hereby certify that I have personal knowledge of the data and facts placed on this form, and that such information given above is true and complete.

J. E. Wilsher

JOHN E. WILSHER, Toolpusher
BIG WEST DRILLING COMPANY

Operator Affidavit:

Before me, the undersigned authority, on this day personally appeared Michael P Grace II, known to me to be the person whose name is subscribed hereto, who, after being duly sworn, on oath states that he is the Operator of the well identified in this instrument, and that such well was not intentionally deviated from the vertical whatsoever.

Michael P Grace II
Signature of Affiant

Operator
Title of Affiant

Sworn and Subscribed to before me, this 2nd day of April, 1973.

Juanita R. Jones
Notary Public in and for
Eddy County, New Mexico.

Michael Grace II

D.S.T.'s GRACE-ATLANTIC # 1 S½ Section 24, T22S, R26E
Eddy County, New Mexico

RECEIVED
APR 6 1973
O. C. C.
ARTESIA, OFFICE

#1 38' from 4462 to 4490. Tool open for I.F. gas to surface in 18 min. w/strong blow gradually weakening to medium blow (45 min.) Tool shut for I.S.I.P. tool open for second flow. (1½ hr.)
1½ hr. I.S.I.P. 1986
3 hr. F.S.I.P. 2052
I.F. 107 Hy.2304 Final Flow 444
Sampler: 300 cc water 600 cc oil 1.2 c.f.gas gas volume TSTM
Rec 300' good oil 642' oil & gas cut drilling fluid
Bottom hole temp 82°

#2 11479' Tool open for I.F. gas to surface in 32 min.
30 min pre-flow 3267
1¼ hr. I.S.I.P. 3419
1 hr. #2 Flow 3267
2 hr. F.S.I.P. 3419 temp. 188° stabilized on 1/2" ck. @ 1900#
appr. 12 mcf Sampler 3150 p.s.i. no fluid 14.05 cu.ft.gas
Hy 5545

#3 11477-620 143' 1/2 hr. open w/good blow inc. to strong blow g.t.s. in 28 min 1 hr. s.i. 1½ hr. f.f. 375# on 1/4 ck. 1/2 m.c.f. 3 hr. f.s.i.p.
rec. 668' g.c.d.m. sampler 450# p.s.i. 4.0 cu ft. gas (dry) no fluid
I.S.I.P. 4808
F.S.I.P. 4808
I.F.P. 241
F.F.P. 745
Hy. 5653

NEW MEXICO OIL CONSERVATION COMMISSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

RECEIVED

Type Test: ☒ Initial ☐ Annual ☐ Special				Test Date: 3-29-73	
Company: ~~CORINNE GRACE~~ Michael P. Grace		Connection: To Air			
Pool: South Carlsbad Morrow		Formation: Morrow			Unit
Completion Date: 3-15-73	Total Depth: 11,768	Plug Back TD: 11,740	Elevation: 3174 GR		Farm or Lease Name: Grace Atlantic
Csg. Size: 7" / Wt.: 32# / d / Set At: 11,768		Perforations: From 11,424 To 11,444			Well No.: 1
Tbg. Size: 4½" / Wt.: 15.5# / d / Set At: 11,000'		Perforations: From Open To Ended			Unit: J / Sec.: 24 / Twp.: 22S / Rge.: 26E
Type Well – Single – Bradenhead – G.C. or G.O. Multiple: Single		Packer Set At: 11,000'			County: Eddy
Producing Thru: 4½" Tubing	Reservoir Temp. °F: 190 @ 11,500'	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
Mono	Mono	0.580	0.01	0.003		-	4"	Flange

NO.	FLOW DATA: Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							2581.0		Packer	Choke	72.0
1.	4"	x	3.00"	565.0	8.0	93	2578.0	62		12/64	0.5
2.	4"	x	3.00"	560.0	13.5	85	2563.0	62		17/64	0.5
3.	4"	x	3.00"	700.0	25.0	72	2525.0	60		23/64	0.5
4.	4"	x	3.00"	980.0	32.0	66	2473.0	60		27/64	0.5
5.											

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	51.64	68.01	578.2	.9697	1.313	1.037	4637
2.	51.64	87.97	573.2	.9768	1.313	1.039	6054
3.	51.64	133.53	713.2	.9887	1.313	1.054	9435
4.	51.64	178.28	993.2	.9943	1.313	1.078	12556
5.							

NO.	P_t	Temp. °R	T_r	Z
1	0.86	553	1.58	.930
2.	0.85	545	1.56	.927
3.	1.06	532	1.52	.901
4.	1.48	526	1.50	.861
5.				

Gas Liquid Hydrocarbon Ratio: TSTM Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: ____ Deg.
Specific Gravity Separator Gas: 0.580 XXXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 672 P.S.I.A. ____ P.S.I.A.
Critical Temperature: 350 R ____ R

P_c 3355.2 P_c^2 11257

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		3346.2	11197	60.0
2		3332.2	11104	153.0
3		3295.2	10858	399.0
4		3259.2	10622	635.0
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2}$ = 17.7276 (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = 5.0739

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = 65,737

Absolute Open Flow: 65,737 Mcfd @ 15.025 | Angle of Slope θ: 60.3° | Slope, n: 0.570

Remarks: Bottom hole pressures measured with Amerada Gauge @ 11,500 feet
Note: Maximum flow rate limited by test equipment, which accounts for small percentage of draw-down.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	M.C.T.	R.L.W.	J.W.W.

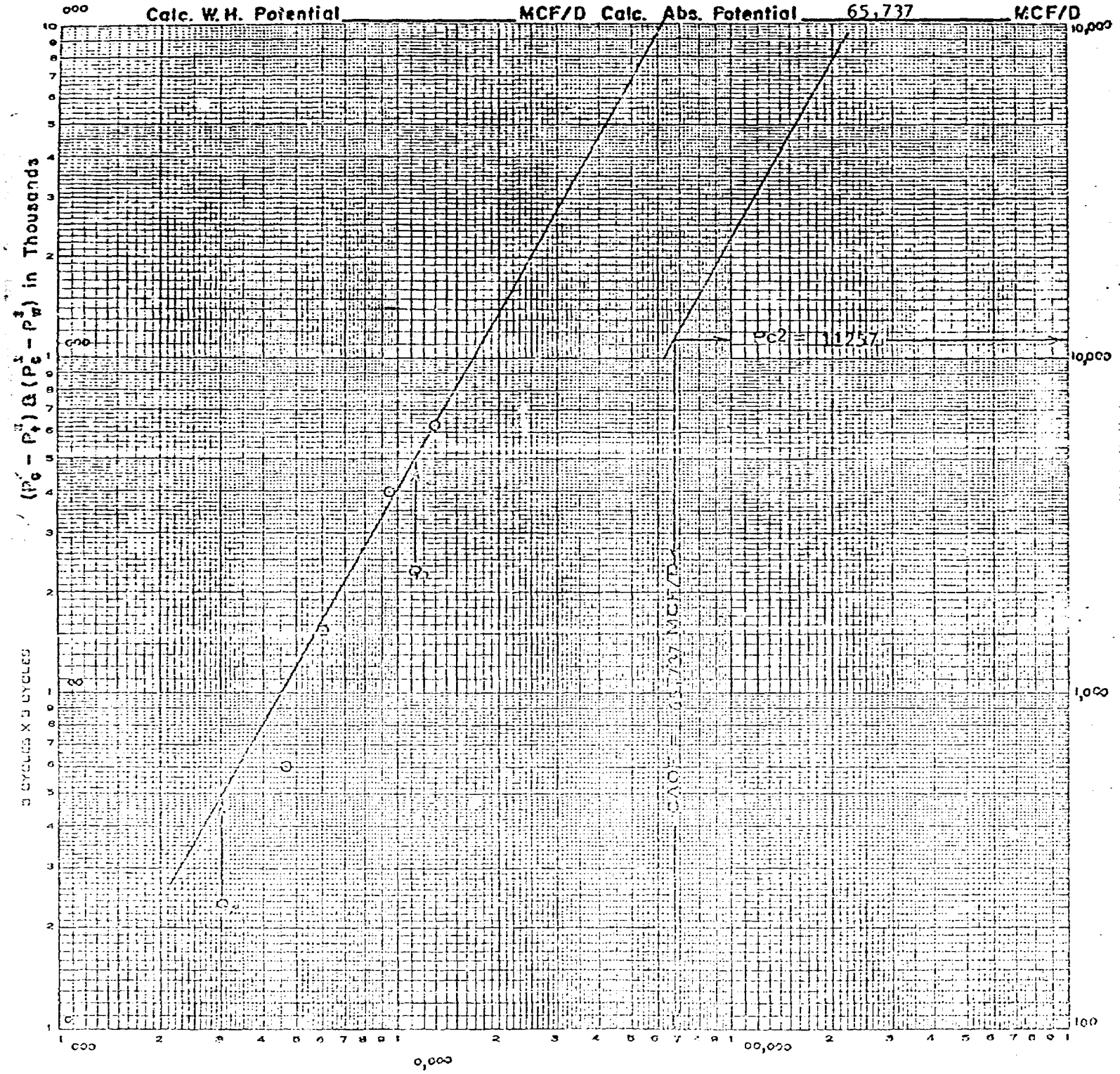
BACK PRESSURE CURVE

Operator Michael P. Grace II CORINNE GRACE Lease GRACE ATLANTIC Well No. 1

County EDDY Field SOUTH CARLSBAD Location J, SEC 24, T22S, R26E

Date of Test 3-29-73 Slope "n" 0.570 W.H. _____ Abs.

Calc. W.H. Potential _____ MCF/D Calc. Abs. Potential 65,737 MCF/D



$Q_1 = 11300 = 8.0530784$

$Q_2 = 3040 = 7.4828736$

$n = 0.5702048$

$$CAOF = 12956 \left(\frac{11257}{635.0}\right)^{.570}$$

$= 65.737$ MCF/DAY

17.72755

1.2374432

.7053426

OIL CONSERVATION COMMISSION

BOX 1980

HOBBS, NEW MEXICO

RECEIVED

APR 26 1973

O. C. C.
ARTESIA, OFFICE

NOTICE OF GAS CONNECTION

DATE April 23, 1973

This is to notify the Oil Conservation Commission that connection for the purchase of gas from the Michael P. Grace II (Operator), Grace Atlantic (Lease), #1 (Morrow) J (Well Unit), 24-22-26 (S.T.R.), Carlsbad Morrow South (Pool), 61-333-01 (Meter Code), 19000 4 (Site Number), El Paso Natural Gas Co. (Name of Purchaser) was made on April 16, 1973.

El Paso Natural Gas Company
Purchaser

Travis R. Elliott
Representative
Travis R. Elliott

Gas Production Status Analyst
Title

TRE:bl
cc: To operator
Oil Conservation Commission - Santa Fe

Oil Conservation Commission - Artesia (2)
Proration
H. P. Logan
T. J. Crutchfield
File

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O. C. C.

ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease
State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ OTHER-

7. Unit Agreement Name

2. Name of Operator
Michael P. Grace II

8. Farm or Lease Name
Grace-Atlantic

3. Address of Operator
P. O. Box 1418. Carlsbad, New Mexico

9. Well No.
1

4. Location of Well
UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 24 TOWNSHIP 22S RANGE 26E NMPM.

10. Field and Pool, or Wildcat
Und. S. Carlsbad Morrow

15. Elevation *(Show whether DF, RT, GR, etc.)*
3162 GR

12. County
Eddy

16.

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☒	
OTHER ☐		OTHER ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

3/12/73 Ran 128 jts. 29#, 78 jts. 26#, 79 jts. 23# and 54 jts. 32# 7" casing and set @ 11,768'. Cemented With 100 sks. Halliburton lt. & 400 sks Class "H". Plug down @ 2 p.m. under 1250 psig. 128 bbls. slurry cmt. Height @ 8500' W.O.C. 24 hrs.

273jts4½" 15.50# C-75 PH6 Hydril Tubing set @ 11,000' Tested to 6000#

Baker 83 FA 47 Pkr seal assembly set @ 11,000'

Perforated 11,424* - 11,444' 4 spf.

RECEIVED
MAY - 1 1973
OIL CONSERVATION COMM.
Santa Fe

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Jeanette L. Bryant TITLE Agent DATE March 20, 1973

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE APR 26 1973

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O. C. C.
ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

FEB 20 1973
OIL CONSERVATION COMM.
Santa Fe

1. OIL WELL ☐ GAS WELL ☒ OTHER-

2. Name of Operator: Michael P. Grace II

3. Address of Operator: P. O. Box 1418 Carlsbad, New Mexico

4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 21 TOWNSHIP 22S RANGE 26E NMPM.

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.:

7. Unit Agreement Name:

8. Farm or Lease Name: Grace-Atlantic

9. Well No.: 1

10. Field and Pool, or Wildcat: Wildcat

12. County: Eddy

15. Elevation (Show whether DF, RT, GR, etc.): 3162GR

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

- PERFORM REMEDIAL WORK ☐
- TEMPORARILY ABANDON ☐
- PULL OR ALTER CASING ☐
- PLUG AND ABANDON ☐
- CHANGE PLANS ☐
- OTHER ☐

SUBSEQUENT REPORT OF:

- REMEDIAL WORK ☐
- COMMENCE DRILLING OPNS. ☐
- CASING TEST AND CEMENT JOB ☒
- ALTERING CASING ☐
- PLUG AND ABANDONMENT ☐
- OTHER ☐

Progress Report

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

2/14/73 Ran 50 jts. of 40#, 85 jts. of 36# and 3 jts. of 40# 9 5/8" J-55 8 rd. csg. to a depth of 5406' set @ 5396'. cemented with 1250 sx. of Halliburton Lt. Wt. cement followed w/400 sks Class C w/3# per sack gilsonite. Circulated out 41 sacks. Plug down.
W. O. C. 26½ hours. Test B.O.P. to 2000# O.K.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Beaufort D. Jones TITLE Agent DATE 2/16/73

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE FEB 19 1973

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JAN 31 1973
O. C. C.
ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease State ☐ Fee ☒
5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ OTHER-
7. Unit Agreement Name
2. Name of Operator: Michael P. Grace II
8. Farm or Lease Name: Grace-Atlantic
3. Address of Operator: P. O. Box 1418 Carlsbad, New Mexico
9. Well No.: 1
4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 24 TOWNSHIP 22S RANGE 26E NMPM.
10. Field and Pool, or Wildcat: Wildcat
15. Elevation (Show whether DF, RT, GR, etc.): 3162 GR
12. County: Eddy

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER Progress report ☒	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Spudded 1/28/73. Cemented 13 3/8" J-55 Buttress 61# casing at 356.65' GL with 375 sks. class "C" with 2# cacl/sk 14.8#/gal slurry (1.32 cu.ft./sk) and reversed out 30 sacks. Left 30' cement in pipe. Plug down at 6:30 a.m. W.O.C. 18 hours. Tested to 500# & held.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Juanita R. Goss TITLE Agent DATE 1/29/73

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE FEB 6 1973

CONDITIONS OF APPROVAL, IF ANY:

city of carlsbad

PHONE 887-1191 • BOX 1569 • CARLSBAD, NEW MEXICO 88220
Mayor — Walter Gerrells City Administrator — Claude Tabor

January 16, 1973

Mr. W. A. Gressett
Oil Conservation Commission
Drawer DD
Artesia, New Mexico 88210

Dear Mr. Gressett:

This letter is to inform you that the City of Carlsbad has no objection to the following proposed location of Grace Oil Company Well in Section 24, Township 22 South, Range 26 East, N.M.P.M.:

A well site lying 1980' from the South line and 1980' from the East line of said Section.

I am informed that that location will not interfere with the operations of the Cavern City Air Terminal. As long as the well is drilled at the above location, the City of Carlsbad has no objection to drilling permits being issued.

Very truly yours,

Walter Gerrells
Mayor

WG:vg

cc: Mr. A. L. Porter, Jr., Oil Conservation Commission
Mr. Claude F. Tabor, City Administrator
Mr. Claude McCausland, Cavern City Air Terminal

30-015-20798

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NEW MEXICO OIL CONSERVATION COMMISSION

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JAN 17 1973

O. C. C.

ARTESIA, OFFICE

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease STATE ☐ FEE ☒

5. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work

b. Type of Well

DRILL ☒ DEEPEN ☐ PLUG BACK ☐

OIL WELL ☐ GAS WELL ☒ OTHER SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Unit Agreement Name

8. Farm or Lease Name: Grace - Atlantic

2. Name of Operator: ~~Corinne~~ Michael P. Grace II

9. Well No.: 1

3. Address of Operator: P. O. Box 1148 Carlsbad, New Mexico 88220

10. Field and Pool, or Wildcat: ~~Wildcat~~ und. S. Carlsbad Morrow Gas

4. Location of Well: UNIT LETTER J LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 24 TWP. 22S RGE. 26E NMPM

12. County: Eddy

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
12,100	Morrow	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
3362 GR	Blanket	Big West Drilling Co.	1/19/73

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
~~17 1/2~~	~~13 3/8~~	~~61#~~	~~375~~	~~350~~	~~circl~~
~~12 1/4~~	~~9 5/8~~	~~40.5#~~	~~5400~~	~~1700~~	~~circl~~
8 3/4	7	26# & 29#	11000	~~900~~	9100
6 1/8	4 1/2	13.5#	12100	100	11000

RECEIVED
JAN 19 1973
OIL CONSERVATION COMM
Santa Fe

Blow out preventor: Hydril Control, Triple Ram

APPROVAL VALID FOR 90 DAYS UNLESS DRILLING COMMENCED,
EXPIRES 4-18-73

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed [signature] Title Agent Date 1/16/73

(This space for State Use)

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE JAN 18 1973

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

RECEIVED
JAN 19 1973
OIL CONSERVATION COMM.
Santa Fe

Form C-102
Supersedes C-128
Effective 1-1-65

WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator ~~CORINNE~~ Michael P GRACE II			Lease GRACE ATLANTIC	Well No. 1
Unit Letter J	Section 24	Township 22 SOUTH	Range 26 EAST	County EDDY
Actual Footage Location of Well: 1980 feet from the SOUTH line and 1980 feet from the EAST line				
Ground Level Elev. 3174'	Producing Formation Morrow		Pool ~~Wildcat~~ Und. Lo. Carlsbad Morrow	Dedicated Acreage: 320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

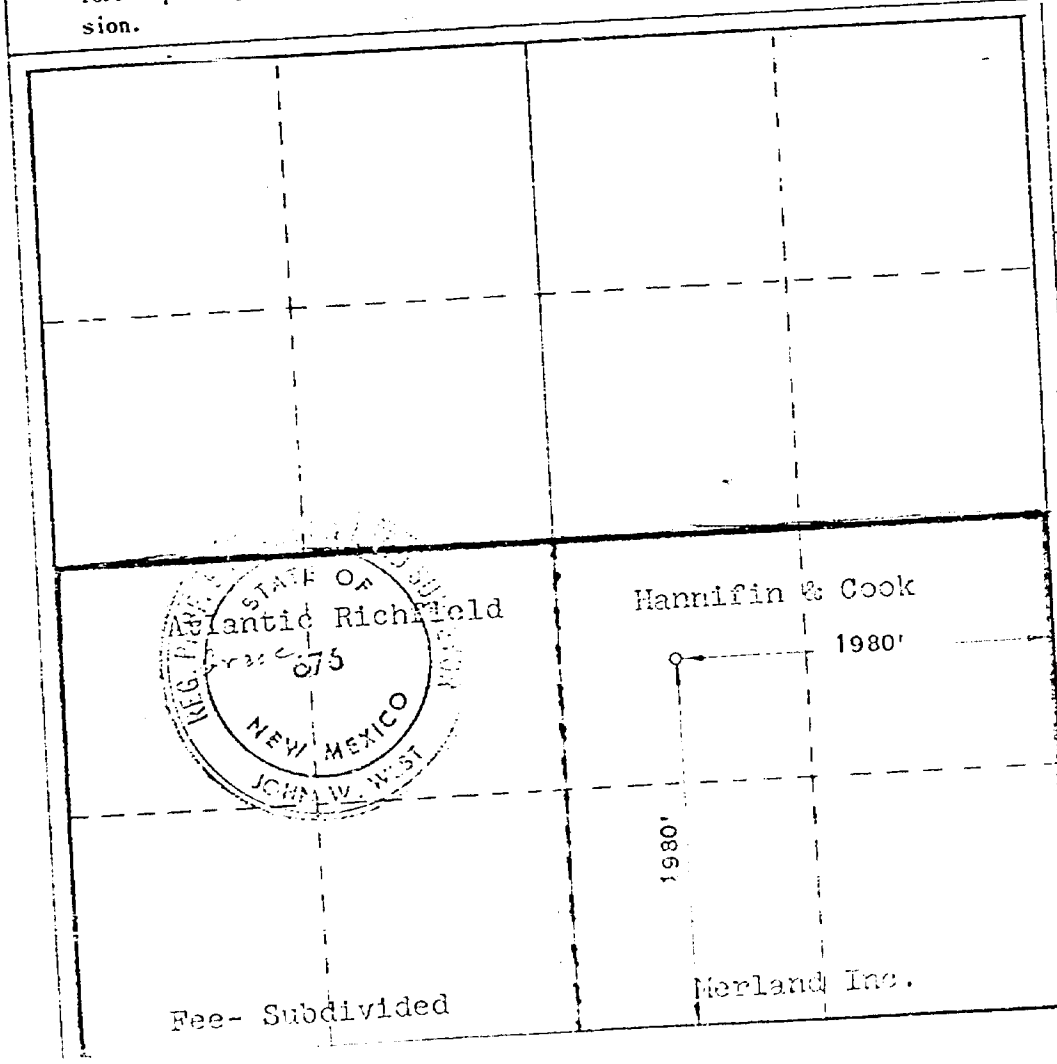
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☒ Yes ☐ No If answer is "yes," type of consolidation Force-pooling R-4432 11-8-72

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Juanita L. Jones

Position: Agent

Company: Michael P. ~~Grace~~ Grace II

Date: 1/16/73

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 1-6-73

Registered Professional Engineer and/or Land Surveyor

John W West

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASES NOS. 4819 AND 4836
Order No. R-4432

APPLICATION OF D. L. HANNIFIN FOR
COMPULSORY POOLING, EDDY COUNTY,
NEW MEXICO.

APPLICATION OF MICHAEL P. GRACE II
AND CORINNE GRACE FOR COMPULSORY
POOLING, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 27, 1972, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of November, 1972, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That in Case No. 4819, the applicant, D. L. Hannifin, seeks an order pooling all mineral interests underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad Field, Eddy County, New Mexico, to form a standard 320-acre unit to be dedicated to a well to be drilled 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(3) That in Case No. 4836, the applicants, Michael P. Grace II and Corinne Grace, seek an order pooling all mineral interests down to and including the Morrow formation underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, to form a standard 320-acre unit to be dedicated to a well to be drilled at an orthodox location for said unit.

(4) That both applicants, D. L. Hannifin and Michael P. Grace II and Corinne Grace, seek to be named operator of the unit to be pooled.

(5) That Cases Nos. 4819 and 4836 were consolidated as both cases involve the same lands.

(6) That the evidence indicates that the entire S/2 of the above-described Section 24 can reasonably be presumed productive of gas from the South Carlsbad Gas Pool.

(7) That the evidence indicates that the entire S/2 of the above-described Section 24 can be efficiently and economically drained and developed by a well located at a point 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(8) That there are interest owners in the proposed 320-acre proration unit who have not agreed to pool their interests.

(9) That to avoid the drilling of unnecessary wells, to protect correlative rights, and to afford to the owner of each interest in the unit the opportunity to receive without unnecessary expense his just and fair share of the gas in the pool, all mineral interests in the Morrow formation underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, should be pooled to form a 320-acre standard unit to be dedicated to a well to be drilled at a standard location in said Section 24.

(10) That Michael P. Grace II should be designated the operator of the proposed well and unit.

(11) That any non-consenting working interest owner should be afforded the opportunity to pay his share of estimated well costs to the operator in lieu of paying his share of reasonable well costs out of production.

(12) That any non-consenting working interest owner that does not pay his share of estimated well costs should have withheld from production his share of the reasonable well costs plus an additional 25% thereof as a reasonable charge for the risk involved in the drilling of the well.

(13) That any non-consenting interest owner should be afforded the opportunity to object to the actual well costs but that said actual well costs should be adopted as the reasonable well costs in the absence of such objection.

(14) That following determination of reasonable well costs, any non-consenting working interest owner that has paid his

share of estimated costs should pay to the operator any amount that reasonable well costs exceed estimated well costs and should receive from the operator any amount that paid estimated well costs exceed reasonable well costs.

(15) That $135.00 per month should be fixed as a reasonable charge for supervision (combined fixed rates) for the subject well; that the operator should be authorized to withhold from production the proportionate share of such supervision charge attributable to each non-consenting working interest, and in addition thereto, the operator is hereby authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to each non-consenting working interest.

(16) That all proceeds from production from the subject well which are not disbursed for any reason should be placed in escrow to be paid to the true owner thereof upon demand and proof of ownership.

IT IS THEREFORE ORDERED:

(1) That all mineral interest, whatever they may be, in the South Carlsbad-Morrow Gas Pool underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, are hereby pooled to form a 320-acre proration unit to be dedicated to a well to be drilled at a standard location in Section 24.

(2) That Michael P. Grace II is hereby designated the operator of the subject well and unit.

(3) That the operator shall furnish the Commission and each known working interest owner in the subject unit an itemized schedule of estimated well costs within 30 days following the date of this order.

(4) That within 30 days from the date the schedule of estimated well costs is furnished to him, any non-consenting working interest owner shall have the right to pay his share of estimated well costs to the operator in lieu of paying his share of reasonable well costs out of production, and that any such owner who pays his share of estimated well costs as provided above shall remain liable for operating costs but shall not be liable for risk charges.

(5) That the operator shall furnish the Commission and each known working interest owner in the subject unit an itemized schedule of actual well costs within 60 days following completion of the well; that if no objection to the actual well

costs are received by the Commission, and the Commission has not objected within 60 days following completion of the well, the actual well costs shall be the reasonable well costs; provided however, that if there is an objection to actual well costs within said 60-day period, the Commission will determine reasonable well costs after public notice and hearing.

(6) That within 60 days following determination of reasonable well costs, any non-consenting working interest owner that has paid his share of estimated costs in advance as provided above shall pay to the operator his pro rata share of the amount that reasonable well costs exceed estimated well costs and shall receive from the operator his pro rata share of the amount that estimated well costs exceed reasonable well costs.

(7) That the operator is hereby authorized to withhold the following costs and charges from production:

(A) The pro rata share of reasonable well costs attributable to each non-consenting working interest owner who has not paid his share of estimated well costs within 60 days from the date the schedule of estimated well costs is furnished to him.

(B) As a charge for the risk involved in the drilling of the well, 25% of the pro rata share of reasonable well costs attributable to each non-consenting working interest owner who has not paid his share of estimated well costs within 30 days from the date the schedule of estimated well costs is furnished to him.

(8) That the operator shall distribute said costs and charges withheld from production to the parties who advanced the well costs.

(9) That $135.00 per month is hereby fixed as a reasonable charge for supervision (combined fixed rates) for the subject well; that the operator is hereby authorized to withhold from production the proportionate share of such supervision charge attributable to each non-consenting working interest, and in addition thereto, the operator is hereby authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to each non-consenting working interest.

(10) That any unsevered mineral interest shall be considered a seven-eighths (7/8) working interest and a one-eighth (1/8) royalty interest for the purpose of allocating costs and charges under the terms of this order.

(11) That any well costs or charges which are to be paid out of production shall be withheld only from the working interests' share of production, and no costs or charges shall be withheld from production attributable to royalty interests.

(12) That all proceeds from production from the subject well which are not disbursed for any reason shall be placed in escrow in Eddy County, New Mexico, to be paid to the true owner thereof upon demand and proof of ownership; that the operator shall notify the Commission of the name and address of said escrow agent within 90 days from the date of this order.

(13) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

I. R. TRUJILLO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY – DIRECTOR

BEFORE THE
OIL CONSERVATION COMMISSION
Case No. 5085 Exhibit No. 2
Submitted by: OCC
Hearing Date: 10/26/73

JUNE 18, 1973

M E M O R A N D U M

TO: ALL PRODUCERS AND PURCHASERS IN THE SOUTH CARLSBAD-MORROW GAS POOL

FROM: A. L. PORTER, Jr., SECRETARY-DIRECTOR

SUBJECT: GAS PRORATIONING

The gas proration schedule for July 1973 will contain a section for the South Carlsbad Gas Pool showing gas prorationing beginning April 11, 1973. It will include allowables for a portion of April and all of the months of May, June and July. You are directed to disregard all previously assigned allowables. An explanation follows:

In February of 1972 an application upon the motion of the Commission was docketed for an examiner hearing in Santa Fe on March 1, 1972 to consider prorating the South Carlsbad-Morrow Gas Pool. At the request of an operator the case was dismissed and readvertised to be heard by a quorum of the Commission in Hobbs on April 19, 1972.

After considering testimony which required the better part of two days, the Commission entered an order on June 30, 1972 which established prorationing effective September 1, 1972. On August 31, 1972 a stay order was issued by the district court which prohibited the Commission order being made effective on September 1.

Due to a succession of circumstances a petition by the Commission to have the stay order set aside was not heard until March 7, 1973. Upon that date the court ruled in favor of the Commission. The court order was filed on April 11, 1973. On May 2, 1973 a memorandum to all purchasers and producers in the pool announced that prorationing was being made effective September 1, 1972. Pending the

outcome of the court action allowables had been published monthly in the proration schedule, but the proration schedules bore the following notation: "Proration suspended by court order until further notice." All purchasers had been notified to this effect. The memorandum also suspended the shut-in provisions of Rule 15A of Commission Order No. R-1670-L until December 31, 1973.

Following the above-described action, Mr. William F. Carr, Commission Attorney, received a letter from Mr. David Norvell (copy attached) advising Mr. Carr to in turn advise the Commission that prorationing should not be made retroactive. On May 17, 1973 Mr. Carr issued a memorandum to the Commission to which he attached the letter of the attorney general. On May 21 the purchasers connected to overproduced wells were notified by telephone and in writing that curtailment of production in the South Carlsbad-Morrow Pool would not be required pending the outcome of certain legal questions which were to be resolved in District Court in early June of 1973.

The District Court heard the Case on June 5, 1973 and upheld the Commission's order. On June 14, 1973 the Commission's Director and attorney talked with Mr. Norvell concerning his letter of May 16, 1973, since the letter indicated that a further review of the data and research of the law would be made. Mr. Norvell gave us his answer in a letter dated June 15, 1973 (copy attached.) In compliance with this letter I have directed the gas proration department to make gas prorationing effective in the South Carlsbad-Morrow Gas Pool on April 11, 1973.

Since producers in the pool have not had an opportunity to know the amount of the allowables for April, May, and June, any wells that may be overproduced in excess of six times the average monthly allowable for the months available will be allowed until September 30, 1973 to become less than six times overproduced. Lack of evidence of a good faith effort to compensate for overproduction may result in a complete shut-in order by the Commission.

cc: Commissioners Trujillo and Armijo
Attorney General David Norvell
Governor Bruce King

ALP/ir

STATE OF NEW MEXICO

Office of the Attorney General

DEPARTMENT OF JUSTICE

P. O. BOX 2246

Santa Fe, N. M. 87501

DAVID L. NORVELL
ATTORNEY GENERAL

June 15, 1973

OLIVER E. PAYNE
DEPUTY ATTORNEY GENERAL

OIL CONSERVATION COMM.
Santa Fe

A. L. Porter, Jr.
Secretary - Director
Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico

Dear Mr. Porter:

Pursuant to our conversation yesterday in which Mr. Carr and Mr. Payne were in attendance, and our subsequent conversation with Mr. Carr this morning, and in view of the complexity of and differing opinions regarding the issue of retroactivity, it has fallen upon this office pursuant to your request to respond.

Mr. Carr, desiring to perform the duties of his office commensurate with the desire of his superiors and at the same time desiring to fulfill his commitment as a Special Assistant Attorney General under this office, has requested that we advise you directly as to the official position of this office as to the retroactivity of the decision of the court entered earlier this month.

After meeting with you yesterday, we expanded upon the research previously done by this office and reflected by memorandum dated May 24, 1973, which has heretofore been submitted to you.

We have reviewed the memorandum of Mr. Carson, talked with Mr. Carr, and are well convinced that the law better supports the position of prospective application of the court's ruling on proration dated earlier this month, although it is not absolutely clear cut.

Therefore, it is the judgment of this office that proration of the field covered in the Grace hearing be applied prospectively only from the date this year when the order was signed by Judge Snead and was filed.

To do otherwise, in my opinion, would be contrariwise to what appears to be the majority rule in this matter.

We trust this matter can be resolved quickly and trust that you will provide this office with a copy of your proration order pursuant to the judgment of the court and opinion of this office.

Although admittedly this is a close question, it is the considered judgment of both Mr. Payne and myself that this position is far preferable than the alternatives which are available.

Sincerely yours,

DAVID L. NORVELL
Attorney General

DLN:lg

STATE OF NEW MEXICO

Office of the Attorney General

DEPARTMENT OF JUSTICE
P. O. BOX 2246
Santa Fe, N. M. 87501

DAVID L. NORVELL
ATTORNEY GENERAL

May 16, 1973

OLIVER E. PAYNE
DEPUTY ATTORNEY GENERAL

William F. Carr
Special Assistant Attorney General
Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico

Re: Effect of Order Staying Oil Conservation Commission Order.

Dear Mr. Carr:

I am at this time reviewing the memorandum of Joel Carson concerning the effect of the order staying the Oil Conservation Commission order.

My initial reaction is that the order dissolving the stay order can be prospective only and that no penalty can be assessed which in effect would make the order retroactive, particularly in view of the clear language of the court on the day of the hearing which is included in the transcript, which to me clearly indicates the court intended the matter to operate prospectively only.

Therefore, I am advising you this date to, in turn, advise the Commission that no proration orders shall issue on the Carlsbad field in question which would have the effect of making this matter retroactive; and this shall be the position of the Office of the Attorney General until such time as we advise you to the contrary if, after reviewing the data we have received and researching the law, we come to a contrary conclusion.

Sincerely yours,

DAVID L. NORVELL
Attorney General

DLN:lg
cc: A. J. Losee

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Linda Reynolds

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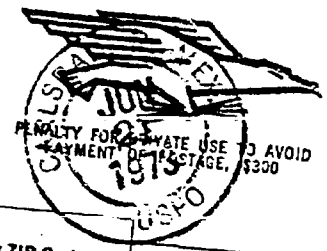
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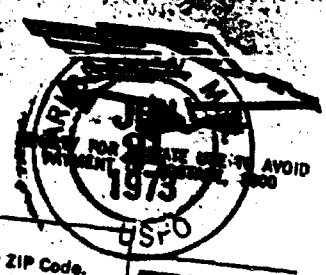
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OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 5085 Exhibit No. 2
Submitted by OCC
Hearing Date 10/25/73

I. R. TRUJILLO
CHAIRMAN
LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER
STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY – DIRECTOR

JUNE 18, 1973

M E M O R A N D U M

TO: ALL PRODUCERS AND PURCHASERS IN THE SOUTH CARLSBAD-MORROW GAS POOL

FROM: A. L. PORTER, Jr., SECRETARY-DIRECTOR

SUBJECT: GAS PRORATIONING

The gas proration schedule for July 1973 will contain a section for the South Carlsbad Gas Pool showing gas prorationing beginning April 11, 1973. It will include allowables for a portion of April and all of the months of May, June and July. You are directed to disregard all previously assigned allowables. An explanation follows:

In February of 1972 an application upon the motion of the Commission was docketed for an examiner hearing in Santa Fe on March 1, 1972 to consider prorating the South Carlsbad-Morrow Gas Pool. At the request of an operator the case was dismissed and readvertised to be heard by a quorum of the Commission in Hobbs on April 19, 1972.

After considering testimony which required the better part of two days, the Commission entered an order on June 30, 1972 which established prorationing effective September 1, 1972. On August 31, 1972 a stay order was issued by the district court which prohibited the Commission order being made effective on September 1.

Due to a succession of circumstances a petition by the Commission to have the stay order set aside was not heard until March 7, 1973. Upon that date the court ruled in favor of the Commission. The court order was filed on April 11, 1973. On May 2, 1973 a memorandum to all purchasers and producers in the pool announced that prorationing was being made effective September 1, 1972. Pending the

outcome of the court action allowables had been published monthly in the proration schedule, but the proration schedules bore the following notation: "Proration suspended by court order until further notice." All purchasers had been notified to this effect. The memorandum also suspended the shut-in provisions of Rule 15A of Commission Order No. R-1670-L until December 31, 1973.

Following the above-described action, Mr. William F. Carr, Commission Attorney, received a letter from Mr. David Norvell (copy attached) advising Mr. Carr to in turn advise the Commission that prorationing should not be made retroactive. On May 17, 1973 Mr. Carr issued a memorandum to the Commission to which he attached the letter of the attorney general. On May 21 the purchasers connected to overproduced wells were notified by telephone and in writing that curtailment of production in the South Carlsbad-Morrow Pool would not be required pending the outcome of certain legal questions which were to be resolved in District Court in early June of 1973.

The District Court heard the Case on June 5, 1973 and upheld the Commission's order. On June 14, 1973 the Commission's Director and attorney talked with Mr. Norvell concerning his letter of May 16, 1973, since the letter indicated that a further review of the data and research of the law would be made. Mr. Norvell gave us his answer in a letter dated June 15, 1973 (copy attached.) In compliance with this letter I have directed the gas proration department to make gas prorationing effective in the South Carlsbad-Morrow Gas Pool on April 11, 1973.

Since producers in the pool have not had an opportunity to know the amount of the allowables for April, May, and June, any wells that may be overproduced in excess of six times the average monthly allowable for the months available will be allowed until September 30, 1973 to become less than six times overproduced. Lack of evidence of a good faith effort to compensate for overproduction may result in a complete shut-in order by the Commission.

cc: Commissioners Trujillo and Armijo
Attorney General David Norvell
Governor Bruce King

ALP/ir

STATE OF NEW MEXICO

Office of the Attorney General

DEPARTMENT OF JUSTICE
P. O. BOX 2246
Santa Fe, N. M. 87501

DAVID L. NORVELL
ATTORNEY GENERAL

June 15, 1973

OLIVER E. PAYNE
DEPUTY ATTORNEY GENERAL

OIL CONSERVATION COMM.
Santa Fe

A. L. Porter, Jr.
Secretary - Director
Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico

Dear Mr. Porter:

Pursuant to our conversation yesterday in which Mr. Carr and Mr. Payne were in attendance, and our subsequent conversation with Mr. Carr this morning, and in view of the complexity of and differing opinions regarding the issue of retroactivity, it has fallen upon this office pursuant to your request to respond.

Mr. Carr, desiring to perform the duties of his office commensurate with the desire of his superiors and at the same time desiring to fulfill his commitment as a Special Assistant Attorney General under this office, has requested that we advise you directly as to the official position of this office as to the retroactivity of the decision of the court entered earlier this month.

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We have reviewed the memorandum of Mr. Carson, talked with Mr. Carr, and are well convinced that the law better supports the position of prospective application of the court's ruling on proration dated earlier this month, although it is not absolutely clear cut.

Therefore, it is the judgment of this office that proration of the field covered in the Grace hearing be applied prospectively only from the date this year when the order was signed by Judge Snead and was filed.

To do otherwise, in my opinion, would be contrariwise to what appears to be the majority rule in this matter.

We trust this matter can be resolved quickly and trust that you will provide this office with a copy of your proration order pursuant to the judgment of the court and opinion of this office.

Although admittedly this is a close question, it is the considered judgment of both Mr. Payne and myself that this position is far preferable than the alternatives which are available.

Sincerely yours,

DAVID L. NORVELL
Attorney General

DLN:lg

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DEPARTMENT OF JUSTICE

P. O. BOX 2246

Santa Fe, N. M. 87501

DAVID L. NORVELL
ATTORNEY GENERAL

May 16, 1973

OLIVER E. PAYNE
DEPUTY ATTORNEY GENERAL

William F. Carr
Special Assistant Attorney General
Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico

Re: Effect of Order Staying Oil Conservation Commission Order.

Dear Mr. Carr:

I am at this time reviewing the memorandum of Joel Carson concerning the effect of the order staying the Oil Conservation Commission order.

My initial reaction is that the order dissolving the stay order can be prospective only and that no penalty can be assessed which in effect would make the order retroactive, particularly in view of the clear language of the court on the day of the hearing which is included in the transcript, which to me clearly indicates the court intended the matter to operate prospectively only.

Therefore, I am advising you this date to, in turn, advise the Commission that no proration orders shall issue on the Carlsbad field in question which would have the effect of making this matter retroactive; and this shall be the position of the Office of the Attorney General until such time as we advise you to the contrary if, after reviewing the data we have received and researching the law, we come to a contrary conclusion.

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Attorney General

DLN:lg
cc: A. J. Losee

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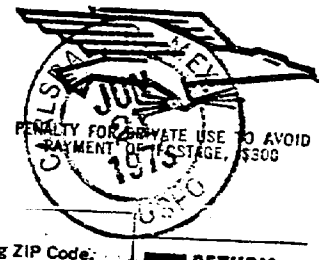
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P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

June 27, 1977

COPY

Michael P. Grace II
Box 1418
Carlsbad, New Mexico 88220

Attention: Ms. Juanita L. Jones

Gentlemen:

On April 17, 1973, Administrative Order TX-39 was issued permitting the use of 4½-inch tubing in your Grace Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, South Carlsbad-Morrow gas pool, Eddy County, New Mexico. This Order in part states, "Inasmuch as the gas produced from this well is very dry (gas-liquid ratio reported TSTM on 4-point test), it appears that this well can be produced in the manner proposed without causing waste. You are therefore granted the requested exception. The Commission does reserve the right, however, to rescind this authority if at any time it appears that the producing characteristics of the well have so changed that this method of production is causing or may cause waste."

Since the well now makes sufficient water that it must be unloaded by flaring periodically (your letter of June 1, 1977), and since the flaring of gas constitutes waste, Administrative Order TX-39 is hereby rescinded.

You are hereby directed to install tubing, maximum size to be no greater than 2 7/8-inch, in this well by August 1, 1977. Tubing perforations are to be set within 250 feet of the top of the pay.

Please contact the Oil Conservation Commission's district office at Artesia at least 24 hours before commencing work on the well.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5054
Order No. R-4432-A

APPLICATION OF D. L. HANNIFIN AND
JOE DON COOK FOR DETERMINATION OF
REASONABLE WELL COSTS AND FOR AN
ORDER TERMINATING OPERATOR'S
WITHHOLDING PERIOD.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 28 and 29, 1973, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 28th day of September, 1973, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That pursuant to Cases Nos. R-4819 and R-4836, heard before an examiner of the Oil Conservation Commission on September 27, 1972, Order No. R-4432 was issued which force pooled the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico.

(3) That Order No. R-4432 created a standard communitized unit comprising 320 acres, named Michael P. Grace II the operator of said unit, established a risk factor of 25 percent to be assessed against any non-consenting working interest, and authorized the drilling of a well for the subject unit to be drilled at a standard location for the South Carlsbad-Morrow Gas Pool.

(4) That the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, is subject to a royalty payment of 18.75 percent, and the working interest ownership of said SE/4 of Section 24 is 81.25 percent; that the SW/4 of said Section 24 is subject to a royalty and overriding royalty payment of 25.0 percent, and the working interest ownership of said SW/4 of Section 24 is 75.0 percent.

(5) That subsequent to the issuance of Order No. R-4432, D. L. Hannifin, as Non-Consenting Working Interest Owner, and Barbara E. Hannifin, his wife, filed with the Commission a "Statement of Non-Consent" executed January 4, 1973, wherein D. L. Hannifin and Barbara E. Hannifin, his wife, stipulated that D. L. Hannifin is the working interest owner under an Oil and Gas Lease covering the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad Field, Eddy County, New Mexico, which said tract, together with the SW/4 of said Section 24, has been dedicated to a 320-acre standard location for the drilling of a test well in the Morrow formation underlying the S/2 of said Section 24; and that Michael P. Grace II has been designated by the New Mexico Oil Conservation Commission as the operator of the proposed well and unit. The Statement of Non-Consent stipulated further:

> "The undersigned, D. L. Hannifin, non-consenting working interest owner, joined herein by his wife, Barbara E. Hannifin, hereby expressly elects not to pay his share of estimated well costs to Operator and in lieu thereof, hereby elects to pay his share of reasonable well costs out of production. The undersigned further certifies and agrees that $135.00 per month should be fixed as a reasonable charge for the supervision (combined fixed rates) for the subject well; agrees to the 25% prorata risk share charge described in finding (7)(B); and agrees that Operator is authorized to withhold from production the proportionate share of such supervision charge attributable to the undersigned non-consenting working interest owner's interest, and Operator is authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to non-consenting working interest owner, all as more particularly defined in Order R-4432."

(6) That on January 28, 1973, Michael P. Grace II as Operator of the S/2 of Section 24, Township 22 South, Range 26 East, caused to be commenced the drilling of a well designated the Grace-Atlantic Well No. 1, located 1980 feet from the South line and 1980 feet from the East line of said Section 24, to a proposed depth of 12,100 feet to test the Morrow formation, the S/2 of said Section 24 being dedicated to the well.

(7) That on March 1, 1973, Michael P. Grace II and Corinne Grace, as "Seller," entered into a contract with El Paso Natural Gas Company, as "Buyer," for the sale of gas produced from those formations between the surface of the ground and the base of the Morrow formation underlying Seller's properties comprising certain lands, including the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico; that said

contract provides that Buyer shall pay Seller for gas purchased thereunder at the rate of $0.52 per MCF commencing on the date of first deliveries and continuing through the month of December, 1973, subject to adjustment for the heating value of the gas produced, either more or less than 1,000 BTU's per MCF; and subject to certain escalations after December, 1973.

(8) That on March 15, 1973, the above-described Grace-Atlantic Well No. 1 was completed and ready to produce; that on March 29, 1973, said well was tested and found to have a calculated absolute open flow potential of 65,737 MCF per day from perforations in the Morrow formation from 11,424 feet to 11,444 feet.

(9) That said Grace-Atlantic Well No. 1 was actually connected to the El Paso Natural Gas Company pipeline system April 16, 1973, and that gas production since that date has yielded, including the BTU adjustment described in Finding No. (7) above, $0.62036 per MCF.

(10) That on July 30, 1973, D. L. Hannifin and Joe Don Cook, through their attorney, made application to the Commission seeking a determination of the reasonable well costs of the Grace-Atlantic well, and a determination of when Michael P. Grace II had been fully compensated for all reasonable well costs and the 25 percent risk charges and the pro rata share of reasonable well costs attributable to Hannifin and Cook on the well.

(11) That at the hearing the parties stipulated to the following facts:

(a) That the original cost of the well is $439,986.35, one-half of which is subject to the 25 percent risk factor provided in Order No. R-4432.

(b) That additional charges have been incurred by the operator in the amount of $25,694.75 and should be divided equally between the parties.

(c) That the Grace share of these costs (50 percent of the original costs and 50 percent of the additional costs) is $232,840.56.

(d) That the Hannifin and Cook share of these costs (50 percent of the original costs, a 25 percent penalty thereon and 50 percent of the additional costs) is $287,838.84.

(e) That the total well costs are $520,679.40.

(f) That each party should pay 50 percent of the reasonable charge for supervision (combined fixed rates).

(g) That the reasonable charge for supervision pursuant to Commission Order No. R-4432, is $135 per month which totals $405 for the months of April, May and June, 1973, $202.50 of which should be paid by each of the two parties.

(h) That the Grace total share of all costs is $233,043.06.

(i) That the Hannifin and Cook share of all costs is $288,041.34.

(12) That each of the 160-acre tracts communitized by Commission Order No. R-4432 should stand on its own insofar as royalty and overriding royalty payments are concerned; that accordingly, the working interest attributable to the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Lea County, New Mexico, is 40.625 percent of the pooled unit interests as a whole; that the royalty interest underlying said SE/4 of Section 24 is 9.375 percent of the pooled unit interests as a whole; that the working interest attributable to the SW/4 of said Section 24 is 37.5 percent of the pooled unit interests as a whole; and the combined royalty interests and overriding royalty interests underlying said SW/4 of Section 24 total 12.5 percent of the pooled unit interests as a whole.

(13) That the current sales price for gas produced from the subject well is $0.52 per MCF plus $0.10036 per MCF BTU adjustment for a total of $0.62036 per MCF. That the royalty under the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, is 18.75 percent of the production attributable to said tract. That the current rate of taxation on the production from the subject well is 6.419 percent of the value received for said production. That these are the proper factors to be used in determining the date on which production, less royalty and taxes, attributable to the subject SE/4 of Section 24 has paid out the stipulated costs chargeable to Hannifin and Cook through June, 1973, which total $288,041.34.

(14) That from April 16, 1973, through 7 o'clock a.m. on June 26, 1973, the subject Grace-Atlantic Well No. 1 produced a total of 1,243,813 MCF of gas. That applying the factors described in Finding No. (13) above to this production indicates that at 7 o'clock a.m. on June 26, 1973, the portion of production attributable to the subject SE/4 of Section 24, less royalty and taxes, had paid out the costs attributable to Hannifin and Cook plus an additional $661.09, or a total of $288,702.43.

(15) That according to the evidence, gas is currently being sold from the subject well under a contract signed pursuant to the Federal Power Commission's Order No. 428-428 A dealing with Small Producer sales; that the sale of gas under such contracts is currently in litigation; that depending upon the outcome of such litigation, the sales price for gas from the subject well could be changed.

(16) That the Commission is in no position to determine what the final sales price for gas from the subject well will be, and can only rely upon the current price.

(17) That certain monies derived from the sale of gas from the subject well have been placed in escrow with the American Bank of Carlsbad, Carlsbad, New Mexico, pending the determination of payout of the well.

(18) That inasmuch as it has been determined that the Hannifin and Cook portion of total well costs was paid out at 7 o'clock a.m. June 26, 1973, plus $661.09, it would appear that monies held in escrow from production after that date should be released to the applicants, Hannifin and Cook.

(19) That it should be up to the working interest owners in the subject well to arrive at a suitable arrangement regarding payment of funds derived from sale of gas from the subject well which may be excessive should the sales price of gas be adjusted retroactively and be subject to refund.

IT IS THEREFORE ORDERED:

(1) That the 18.75 percent royalty of the Hannifin portion of the subject unit, being the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, and the 25.0 percent royalty for the Grace portion of the subject unit being the SW/4 of said Section 24, are independent and separate from each other and cannot be pooled or averaged at the discretion of the operator into a uniform royalty percentage for the purpose of determining the payout date of the Michael P. Grace II Grace-Atlantic Well No. 1, located 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(2) That the 18.75 percent royalty applicable to the SE/4 of said Section 24 shall be applied to one-half of the total production from the well, and the 25 percent royalty and overriding royalty applicable to the SW/4 of said Section 24 shall be applied to the other half of the total production from the well.

(3) That a tax rate of 6.419 percent of the production attributable to the SE/4 of said Section 24 shall be used in determining date of payout for the total share of well costs attributable to Hannifin and Cook through June, 1973.

(4) That the gas price to be used in determining the date of payout for the subject well shall be $0.52 per MCF plus $0.10036 per MCF BTU adjustment, for a total of $0.62036 per MCF of gas.

(5) That the original well costs for the subject well are $439,986.35, one-half of which, or $219,993.18, are to be borne by Michael P. Grace II and one-half of which plus a 25 percent charge for risk, or $274,991.47, are to be borne by D. L. Hannifin and Joe Don Cook.

(6) That additional costs incurred, totalling $25,694.75, are not subject to any charge for risk, and shall be shared equally by the two parties to this hearing, Michael P. Grace II, and Hannifin and Cook.

(7) That Michael P. Grace II's total share of original well costs and additional costs incurred shall be $232,840.56.

(8) That Hannifin and Cook's share of original well costs plus the 25 percent charge for risk, and their share of additional costs incurred, shall be $287,838.84.

(9) That $135.00 per month is a reasonable charge for supervision (combined fixed rates) for the subject well and totals $405.00 for the months of April, May, and June, 1973. That this charge for supervision shall be borne equally by Michael P. Grace II and by Hannifin and Cook, thereby making each party's share $202.50.

(10) That Michael P. Grace II's total share of reasonable well costs (defined as original well costs and additional costs incurred) and charge for supervision through June, 1973, shall be $233,043.06.

(11) That Hannifin and Cook's total share of reasonable well costs (as defined above) plus a 25 percent penalty on the original well costs, and charge for supervision through June, 1973, shall be $288,041.34.

(12) That $288,041.34, being the total share of reasonable well costs (as defined above) plus a 25 percent penalty on the original well costs, and charge for supervision through June, 1973, attributable to Hannifin and Cook, is hereby determined to have been paid out by production attributable to the SE/4 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, less royalty and taxes, at 7 o'clock on June 26, 1973, with an additional overpayment attributable to Hannifin and Cook of $661.09.

(13) That any funds derived from the sale of gas from the subject well after 7 o'clock a.m. June 26, 1973, attributable to D. L. Hannifin and Joe Don Cook, and held in escrow by American Bank of Carlsbad shall be released to said Hannifin and Cook subject to agreement in writing between Hannifin and Cook and Michael P. Grace II as to future arrangements, escrow, bonding or whatever may be satisfactory to the parties involved, covering the difference, if any, between the current sales price of gas from the subject well and the future sales price of gas.

(14) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

RECEIVED

Type Test: ☐ Initial ☒ Annual ☐ Special				Test Date: 7-3-73	
Company: Michael P. CORINNE GRACE ET AL		Connection: EL PASO NATURAL GAS CO.			Unit: U. S. G. ARTESIA, OFFICE
Pool: SOUTH CARLSBAD		Formation: MORROW			
Completion Date: 3-15-73	Total Depth: 11,768'	Plug Back TD: 11,740'	Elevation: 3174' GR.		Farm or Lease Name: GRACE ATLANTIC Com.
Csg. Size: 7" / Wt.: 32# / d: / Set At: 11,768'		Perforations: From 11,424' To 11,444'			Well No.: 1
Tbg. Size: 4½" / Wt.: 15.5# / d: / Set At: 11,000'		Perforations: From OPEN To ENDED			Unit: J / Sec.: 24 / Twp.: 22S / Rge.: 26E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: SINGLE		Packer Set At: 11,000'			County: EDDY
Producing Thru: TUBING	Reservoir Temp. °F: 208° @ 11,500'	Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2		State: NEW MEXICO
L: 11,000' / H: 11,000' / Gg: 0.580EST / % CO_2: / % N_2: / % H_2S: / Prover:				Meter Run: 6"	Taps: FLANGE

NO.	FLOW DATA: Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2219.0		PKR.	CHOKE	
1.	6" X 4.00"		1.0	94	2214.0	81		10/64	120MIN.
2.	6' X 4.00"		9.0	79	2181.0	82		18/64	70 "
3.	6" X 4.00"		16.8	70	2147.0	83		24/64	60 "
4.	6" X 4.00"		33.6	70	2062.0	86		30/64	60 "
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	85.37	17.87	319.2	0.9688	1.313	1.021	1,98
2.	85.37	56.92	360.0	0.9822	1.313	1.026	6,430
3.	85.37	80.36	384.4	0.9905	1.313	1.030	9,190
4.	85.37	122.81	448.9	0.9905	1.313	1.035	14,112
5.							

NO.	P_t	Temp. °R	T_r	Z
1	0.48	554	1.58	.960
2.	0.54	539	1.54	.950
3.	0.57	530	1.51	.943
4.	0.67	530	1.51	.934
5				

Clear

Gas Liquid Hydrocarbon Ratio: T.S.T.M. Mcf/bbl.

A.P.I. Gravity of Liquid Hydrocarbons: Deg.

Specific Gravity Separator Gas: 0.580 XXXXXXXXXX

Specific Gravity Flowing Fluid: XXXXX

Critical Pressure: 672 P.S.I.A. P.S.I.A.

Critical Temperature: 350 R R

P_c 2232.2 P_c^2 4982.7

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	4960.4			22.3
2	4814.5			168.2
3	4666.5			316.2
4	4306.5			676.2
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 7.3687$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 3.1658$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 44,676$

Absolute Open Flow: 44,676 Mcfd @ 15.025 Angle of Slope θ: 60.0° Slope, n: 0.577

Remarks: FRICTION IS NEGLIGBLE-
BASED ON 100"-1000# METER RANGE THE L-10 CHART READINGS CONVERTED TO CONVENTIONAL READINGS PRIOR TO CALCULATING VALUMES

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. TYSON	R. WEST	

8

FORM 2987

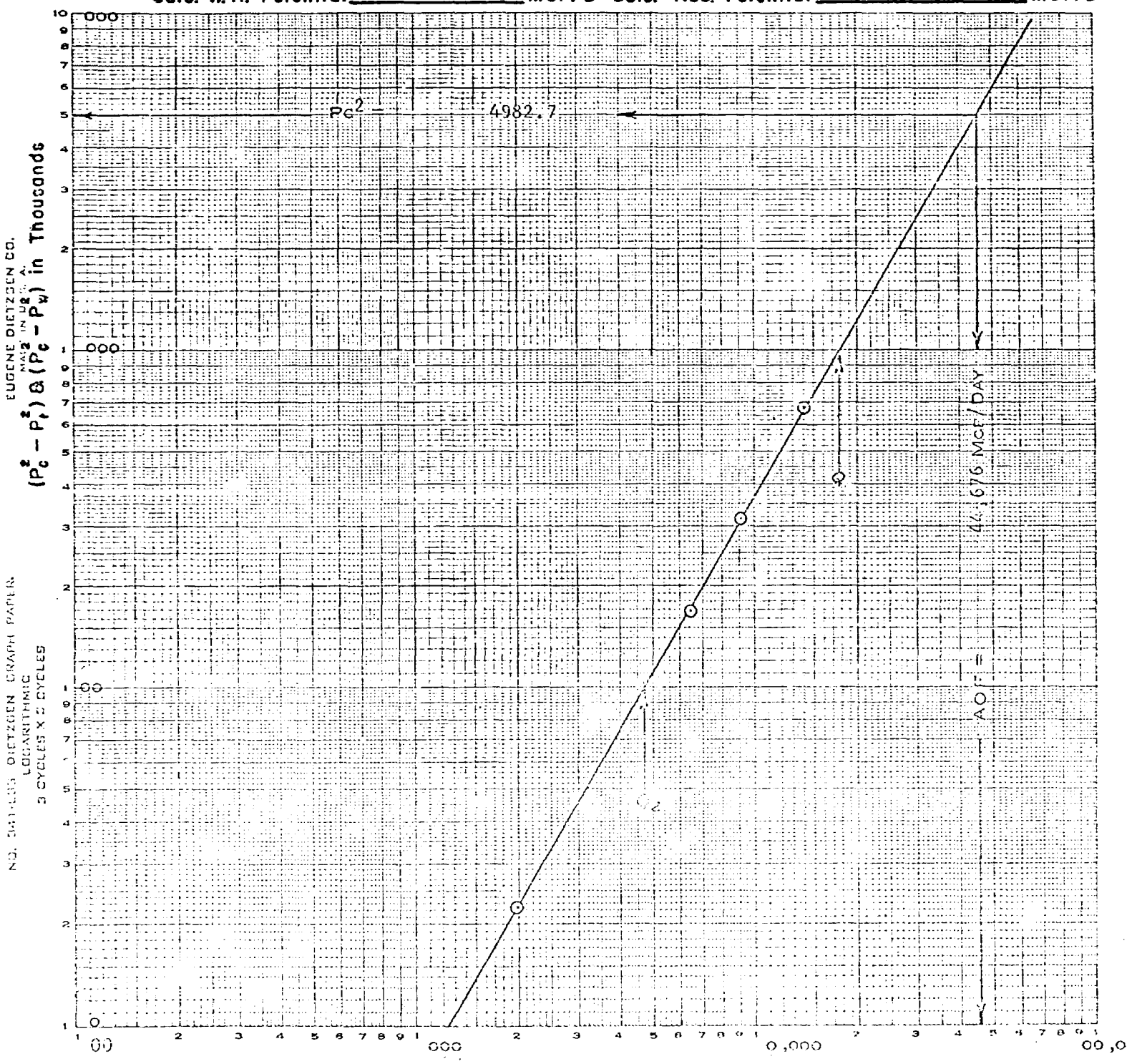
BACK PRESSURE CURVE

Operator CORINNE GRACE Lease GRACE ATLANTIC Well No. 1

County EDDY Field SOUTH CARLSBAD Location J, SEC 24, T22S, R26E

Date of Test 7-3-73 Slope "n" 0.577 W. H. _____ Abs.

Calc. W. H. Potential _____ MCF/D Calc. Abs. Potential 44,676 MCF/D



SLOPE (n) = Q_1 = 17750 = 8.2491984

Q_2 = 4700 = 7.6720979

(n) = 0.5771005

ABS. POT. = 14,112 $\left(\frac{4982.7}{676.2}\right)^{.577}$ = 44,676 MCF/D

9

NO. OF COPIES RECEIVED		5	
DISTRIBUTION			
SANTA FE		✓	
FILE		1	
U.S.G.S.			
LAND OFFICE			
TRANSPORTER	OIL	1	
	GAS	1	
OPERATOR		1	
PRORATION OFFICE			

NEW MEXICO OIL CONSERVATION COMMISSION
REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-111
Effective 1-1-65

RECEIVED
JUN 15 1973
O. C. C.
ARTESIA, OFFICE

I.

Operator: Michael P. Grace II

Address: P. O. Box 1418, Carlsbad, New Mexico 88220

Reason(s) for filing (Check proper box)

New Well ☐
Recompletion ☐
Change in Ownership ☐

Change in Transporter of:
Oil ☐ Dry Gas ☐
Casinghead Gas ☐ Condensate ☑

Other (Please explain): Add Transporter

If change of ownership give name and address of previous owner _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Grace Atlantic Com	1	~~Undes.~~ So. Carlsbad Morrow	State, Federal or Fee Fee	

Location

Unit Letter J ; 1980 Feet From The South Line and 1980 Feet From The East

Line of Section 24 Township T22S Range 26E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil ☐ or Condensate ☑	Address (Give address to which approved copy of this form is to be sent)
Navajo Crude Oil Purchasing Co.	P.O. Drawer 175, Artesia, New Mexico 88210
Name of Authorized Transporter of Casinghead Gas ☐ or Dry Gas ☐	Address (Give address to which approved copy of this form is to be sent)
El Paso Nat. Gas Co.	Box 1326 Sal[illegible] 88252

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
	J	24	22S	26E	Yes	April 16, 1973

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth
Perforations			Depth Casing Shoe

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

V. TEST DATA AND REQUEST FOR ALLOWABLE (Test must be after recovery of total volume of load oil and must be equal to or exceed top allow-
able for this depth or be for full 24 hours)

10

NO. OF COPIES RECEIVED	5	
DISTRIBUTION		
SANTA FE	1	✓
FILE	1	
U.S.G.S.		
LAND OFFICE		
TRANSPORTER OIL	1	
TRANSPORTER GAS	1	
OPERATOR	1	
PRORATION OFFICE		

NEW MEXICO OIL CONSERVATION COMMISSION

REQUEST FOR ALLOWABLE

AND

AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-11
Effective 1-1-65

APR 9 1973

O. C. C.
ARTESIA, OFFICE

MAY - 1 1973

OIL CONSERVATION COMM.
Santa Fe

I.

Operator: Michael P. Grace II

Address: P. O. Box 1418, Carlsbad, New Mexico 88220

Reason(s) for filing *(Check proper box)*

New Well [XX]
Recompletion [ ]
Change in Ownership [ ]

Change in Transporter of:
Oil [ ] Dry Gas [ ]
Casinghead Gas [ ] Condensate [ ]

Other *(Please explain)*: Add Com to Lease Name

If change of ownership give name and address of previous owner _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Grace-Atlantic Com.	1	~~Undes~~. So. Carlsbad Morrow	State, Federal or Fee Fee	

Location

Unit Letter J : 1980 Feet From The South Line and 1980 Feet From The East

Line of Section 24 Township T22S Range 26E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [ ]	Address *(Give address to which approved copy of this form is to be sent)*
Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ]	Address *(Give address to which approved copy of this form is to be sent)*
El Paso Natural Gas Company	El Paso Nat'l. Gas Bldg., El Paso, Texas

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
					~~No~~ Yes	4-16-73

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.
		XX	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
1/28/73	3/15/73	11,772	11,740
Elevations *(DF, RKB, RT, GR, etc.)*	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
3162 GR	Morrow	11,424	11,000
Perforations			**Depth Casing Shoe**
11,424 - 11,444 4spf			11768

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17 1/2	13 3/8	356	375 sks Class "C"
12 1/4	9 5/8	2100	

11

DISTRIBUTION			
SANTA FE		/	✓
FILE		/	
U.S.G.S.			
LAND OFFICE			
TRANSPORTER	OIL	/	
	GAS	/	
OPERATOR		/	
PRORATION OFFICE			

NEW MEXICO OIL CONSERVATION COMMISSION

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-11
Effective 1-1-65

APR 9 1973

O. C. C. ARTESIA, OFFICE

MAY - 1 1973

OIL CONSERVATION COMM. Santa Fe

I.

Operator: Michael P. Grace II

Address: P. O. Box 1418, Carlsbad, New Mexico 88220

Reason(s) for filing (Check proper box)

- New Well [XX]
- Recompletion [ ]
- Change in Ownership [ ]

Change in Transporter of:

- Oil [ ]
- Casinghead Gas [ ]
- Dry Gas [ ]
- Condensate [ ]

Other (Please explain): Add Com to lease name

If change of ownership give name and address of previous owner _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Grace-Atlantic Com.	1	~~Undes.~~ So. Carlsbad Morrow	State, Federal or Fee Fee	

Location

Unit Letter J ; 1980 Feet From The South Line and 1980 Feet From The East

Line of Section 24 Township T22S Range 26E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [ ] — Address (Give address to which approved copy of this form is to be sent)

Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ] — Address (Give address to which approved copy of this form is to be sent)

El Paso Natural Gas Company — El Paso Nat'l. Gas Bldg., El Paso, Texas

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
					~~No~~ Yes	4-16-73

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.
		XX	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
1/28/73	3/15/73	11,772	11,740
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
3162 GR	Morrow	11,424	11,000
Perforations			**Depth Casing Shoe**
11,424 - 11,444 1spf			11768

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17 1/2	13 3/8	356	375 sks Class "C"
12 1/4	9 5/8	5402	1250 sks Hal. lt.&400Cl
8 3/4	7	11768	100 Hal.lt. & 400 cl.H
	4 1/2	11000	

V. TEST DATA AND REQUEST FOR ALLOWABLE

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas - MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
65,737	4	0	
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
back pr.	2581	Pkr	variable

VI. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Commission have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Juanita L. Jones
(Signature)

Agent
(Title)

4/6/73
(Date)

OIL CONSERVATION COMMISSION

APPROVED APR 26 1973, 19 ____

BY W. A. Gressett

TITLE OIL AND GAS INSPECTOR

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.

All sections of this form must be filled out completely for allowable on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of owner, well name or number, or transporter, or other such change of condition.

Separate Forms C-104 must be filed for each pool in multiply

11

OIL CONSERVATION COMMISSION

BOX 1980

HOBBS, NEW MEXICO

RECEIVED
APR 26 1973
OIL CONSERVATION COMM.
Santa Fe

NOTICE OF GAS CONNECTION

DATE April 23, 1973

This is to notify the Oil Conservation Commission that connection for the purchase of gas from the Michael P. Grace II (Operator), Grace Atlantic Com (Lease),

#1 (Morrow) J (Well Unit), 24-22-26 (S.T.R.), Carlsbad Morrow South (Pool),

61-333-01 (Meter Code), 19000 4 (Site Number), El Paso Natural Gas Co. (Name of Purchaser),

was made on April 16, 1973.

El Paso Natural Gas Company
Purchaser

Travis R. Elliott
Representative
Travis R. Elliott

Gas Production Status Analyst
Title

TRE:bl
cc: To operator
Oil Conservation Commission - Santa Fe
Oil Conservation Commission - Artesia (2)
Proration
H. P. Logan
T. J. Crutchfield
File

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

April 17, 1973

Mrs. Juanita L. Jones
P. O. Box 1418
Carlsbad, New Mexico 88220

Administrative Order TX-39

Dear Mrs. Jones:

Reference is made to your application for an exception to Rules 107(d)(2) and 107(d)(3) for the Michael P. Grace Grace Atlantic Well No. 1, located in Unit J of Section 24, Township 22 South, Range 26 East, South Carlsbad Morrow gas pool, Eddy County, New Mexico, to permit the production of gas through 4 1/2-inch tubing set at 11,000 feet. The uppermost perforation is at 11,424 feet.

Inasmuch as the gas produced from this well is very dry (gas-liquid ratio reported TSTM on 4-point test), it appears that this well can be produced in the manner proposed without causing waste. You are therefore granted the requested exception. The Commission does reserve the right, however, to rescind this authority if at any time it appears that the producing characteristics of the well have so changed that this method of production is causing or may cause waste.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/dr

cc: Oil Conservation Commission - Artesia
Oil & Gas Engineering Committee - Hobbs

13

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Form C-105
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

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O. C. C.
ARTESIA, OFFICE

5a. Indicate Type of Lease: State ☐ Fee ☒
5. State Oil & Gas Lease No.:

1a. TYPE OF WELL
b. TYPE OF COMPLETION
OIL WELL ☐ GAS WELL ☒ DRY ☐ OTHER
NEW WELL ☒ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ OTHER

7. Unit Agreement Name:
8. Farm or Lease Name: Grace-Atlantic
9. Well No.: 1
10. Field and Pool, or Wildcat: South Carlsbad Morrow

DENVER
APR - 6 1973
OIL CONSERVATION COMM.
Santa Fe

2. Name of Operator: Michael P. Grace II ✓
3. Address of Operator: P. O. Box 1418. Carlsbad, New Mexico
4. Location of Well: UNIT LETTER J LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 24 TWP. 22S RGE. 26E NMPM
12. County: Eddy

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
1/28/73	3/11/73	3/15/73	3162 GR	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
11,772	11,740		→	0-TD	

24. Producing Interval(s), of this completion — Top, Bottom, Name: Morrow 11420-44
25. Was Directional Survey Made: Yes

26. Type Electric and Other Logs Run: Laterolog, Micro-Laterolog, Gamma Ray Neutron, BHC Acoustilog
27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8	61#	356	17 1/2	375 sks Class "C"	circl.
9 5/8	36 & 40#	5402	12 1/4	1250 sks Hal.lt.&400 Class"C"	circl.
7	23#,26#,29#,32#	11768	8 3/4	100 Hal.lt. & 400 Class"H"	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
4 1/2	11,000	11,000'

31. Perforation Record (Interval, size and number): 11,424 - 11,444 4spf

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
None	None

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping – Size and type pump)	Well Status (Prod. or Shut-in)
		Shut in

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil – Bbl.	Gas – MCF	Water – Bbl.	Gas – Oil Ratio
3/29/73	4			* From last 4 point rate			Dry Gas

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil – Bbl.	Gas – MCF	Water – Bbl.	Oil Gravity – API (Corr.)
2473	pkr.			65,737		

34. Disposition of Gas (Sold, used for fuel, vented, etc.): To be sold — CAOF 65,737
Test Witnessed By:

35. List of Attachments: all logs listed above

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Juanita R. Jones TITLE Agent DATE April 2, 1973

14

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Commission not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn		T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs		T. Penn. "D"	
T. Yates		T. Miss		T. Cliff House		T. Leadville	
T. 7 Rivers		T. Devonian		T. Menefee		T. Madison	
T. Queen		T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg		T. Montoya		T. Mancos		T. McCracken	
T. San Andres		T. Simpson		T. Gallup		T. Ignacio Qtzte	
T. Glorieta		T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb		T. Granite		T. Todilto		T.	
T. Drinkard		T. Delaware Sand		T. Entrada		T.	
T. Abo		T. Bone Springs		T. Wingate		T.	
T. Wolfcamp		T.		T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T Cisco (Bough C)		T.		T. Penn. "A"		T.	

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	700	700	Surface Sand & Shale				
700	1800	900	Salt & Anhydrite				
1600	1925	325	Lime & Sand				
1925	4935	3010	Sand				
4935	5250	315	Sand Shale Anhy.				
5250	6330	1080	Lime & Shale			Delaware Sd.	1925
6330	6525	195	Sand & Shale			Bone Spr.	5225
6525	6870	345	Lime			1st Sand	6245
6870	7010	140	Sand & Shale			2nd "	6870
7010	7860	850	Lime			3rd "	7860
7860	7980	120	Sand & Shale			Wolfcamp	8770
7980	8360	380	Lime & Shale			Canyon	9520
8360	8925	565	Sand & Shale			Strawn	10225
8925	10205	1280	Shale & Lime			Atoka	10533
10205	11250	1045	Lime & Shale			Morrow	11128
11250	11772	522	Sand & Shale			Barnett	11750

Big West Drilling Company

1714 COMMERCE BUILDING
FORT WORTH, TEXAS 76102

March 22, 1973

APR - 6 1973
OIL CONSERVATION COMM
Santa Fe

RECEIVED
APR 2 1973
O. C. C.
ARTESIA, OFFICE

TO: MICHAEL P. GRACE
CORINNE GRACE
POST OFFICE BOX 1418
CARLSBAD, NEW MEXICO 88220

WELL NAME AND LOCATION: Grace Atlantic Well No. 1,
1980' FSL 1980' FEL,
Sec. 24, T-22-S, R-26-E,
Eddy County, New Mexico

EASTMAN DEVIATION RECORD

Date 1973	Depth	Degree of Deviation
1-28	260'	1/2
1-29	375'	3/4
1-30	660'	3/4
1-31	1,370'	1
2-1	1,860'	1 1/4
2-2	2,300'	1
	2,600'	1
2-3	3,095'	1 1/4
2-4	3,550'	1
2-5	4,125'	1
2-9	4,490'	1
2-13	5,396'	1
2-16	5,871'	1 1/4
2-17	6,368'	1 1/4
2-19	6,860'	1/2
2-20	7,340'	3/4
2-21	7,800'	1 1/2
2-22	8,290'	1 1/2
2-23	8,520'	1 1/2
2-24	9,010'	1 1/2
2-25	9,510'	1 1/2
2-27	9,980'	1 1/2
2-28	10,450'	2
3-1	10,690'	1 1/2
3-4	11,165'	1 1/2
	11,260'	1 3/4
3-6	11,470'	1 1/2
3-10	11,770'	1 3/4

Continued

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Santa Fe

Grace Atlantic Well No. 1, Eastman Deviation Record, Page 2

I hereby certify that I have personal knowledge of the data and facts placed on this form, and that such information given above is true and complete.

J. E. Wilsher

JOHN E. WILSHER, Toolpusher
BIG WEST DRILLING COMPANY

Operator Affidavit:

Before me, the undersigned authority, on this day personally appeared Michael P Grace II, known to me to be the person whose name is subscribed hereto, who, after being duly sworn, on oath states that he is the Operator of the well identified in this instrument, and that such well was not intentionally deviated from the vertical whatsoever.

Michael P Grace II
Signature of Affiant

Operator
Title of Affiant

Sworn and Subscribed to before me, this 2nd day of April, 1973.

Juanita R. Rowe
Notary Public in and for
Eddy County, New Mexico.

Michael Grace II

D.S.T.'s GRACE-ATLANTIC # 1 S½ Section 24, T22S, R26E
Eddy County, New Mexico

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ARTESIA, OFFICE

#1 38' from 4462 to 4490. Tool open for I.F. gas to surface in 18 min.
w/strong blow gradually weakening to medium blow (45 min.) Tool shut for
I.S.I.P. tool open for second flow. (1½ hr.)
1½ hr. I.S.I.P. 1986
3 hr. F.S.I.P. 2052
I.F. 107 Hy.2304 Final Flow 444
Sampler: 300 cc water 600 cc oil 1.2 c.f.gas gas volume TSTM
Rec 300' good oil 642' oil & gas cut drilling fluid
Bottom hole temp 82°

#2 11479' Tool open for I.F. gas to surface in 32 min.
30 min pre-flow 3267
1¼ hr. I.S.I.P. 3419
1 hr. #2 Flow 3267
2 hr. F.S.I.P. 3419 temp. 188° stabilized on 1/2" ck. @ 1900#
appr. 12 mcf Sampler 3150 p.s.i. no fluid 14.05 cu.ft.gas
Hy 5545

#3 11477-620 143' 1/2 hr. open w/good blow inc. to strong blow
g.t.s. in 28 min 1 hr. s.i. 1½ hr. f.f. 375# on 1/4 ck.
1/2 m.c.f. 3 hr. f.s.i.p.
rec. 668' g.c.d.m. sampler 450# p.s.i. 4.0 cu ft. gas (dry) no fluid
I.S.I.P. 4808
F.S.I.P. 4808
I.F.P. 241
F.F.P. 745
Hy. 5653

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

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Type Test: ☒ Initial ☐ Annual ☐ Special				Test Date: 3-29-73	
Company: ~~CORINNE GRACE~~ Michael P. Grace		Connection: To Air			
Pool: South Carlsbad Morrow		Formation: Morrow			Unit
Completion Date: 3-15-73	Total Depth: 11,768		Plug Back TD: 11,740	Elevation: 3174 GR	Farm or Lease Name: Grace Atlantic
Csg. Size: 7" / Wt.: 32# / d / Set At: 11,768			Perforations: From 11,424 To 11,444		Well No.: 1
Tbg. Size: 4½" / Wt.: 15.5# / d / Set At: 11,000'			Perforations: From Open To Ended		Unit: J / Sec.: 24 / Twp.: 22S / Rge.: 26E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: Single			Packer Set At: 11,000'		County: Eddy
Producing Thru: 4½" Tubing	Reservoir Temp. °F: 190 @ 11,500'	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
Worn	Worn	0.580	0.01	0.003		-	4"	Flange

NO.	FLOW DATA: Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							2581.0		Packer	Choke	72.0
1.	4"	X	3.00"	565.0	8.0	93	2578.0	62		12/64	0.5
2.	4"	X	3.00"	560.0	13.5	85	2563.0	62		17/64	0.5
3.	4"	X	3.00"	700.0	25.0	72	2525.0	60		23/64	0.5
4.	4"	X	3.00"	980.0	32.0	66	2473.0	60		27/64	0.5
5.											

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	51.64	68.01	578.2	.9697	1.313	1.037	4637
2.	51.64	87.97	573.2	.9768	1.313	1.039	6054
3.	51.64	133.53	713.2	.9887	1.313	1.054	9435
4.	51.64	178.28	993.2	.9943	1.313	1.078	12956
5.							

NO.	P_t	Temp. °R	T_r	Z
1	0.85	553	1.58	.930
2.	0.85	545	1.56	.927
3.	1.06	532	1.52	.901
4.	1.48	526	1.50	.861
5.				

Gas Liquid Hydrocarbon Ratio: TSTM Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: 0.580 XXXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 672 P.S.I.A. P.S.I.A.
Critical Temperature: 350 R R

P_c 2355.2 P_c^2 11257

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		3346.2	11197	60.0
2		3332.2	11104	153.0
3		3295.2	10858	399.0
4		3259.2	10622	635.0
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 17.7276$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 5.0739$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 65,737$

Absolute Open Flow: 65,737 Mcfd @ 15.025 | Angle of Slope θ: 60.3° | Slope, n: 0.570

Remarks: BOTTOM HOLE PRESSURES MEASURED WITH AMERADA GAUGE @ 11,500 FEET
NOTE: MAXIMUM FLOW RATE LIMITED BY TEST EQUIPMENT, WHICH ACCOUNTS FOR SMALL PERCENTAGE OF DRAW-DOWN.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	M.C.T.	R.L.W.	J.W.W.

18

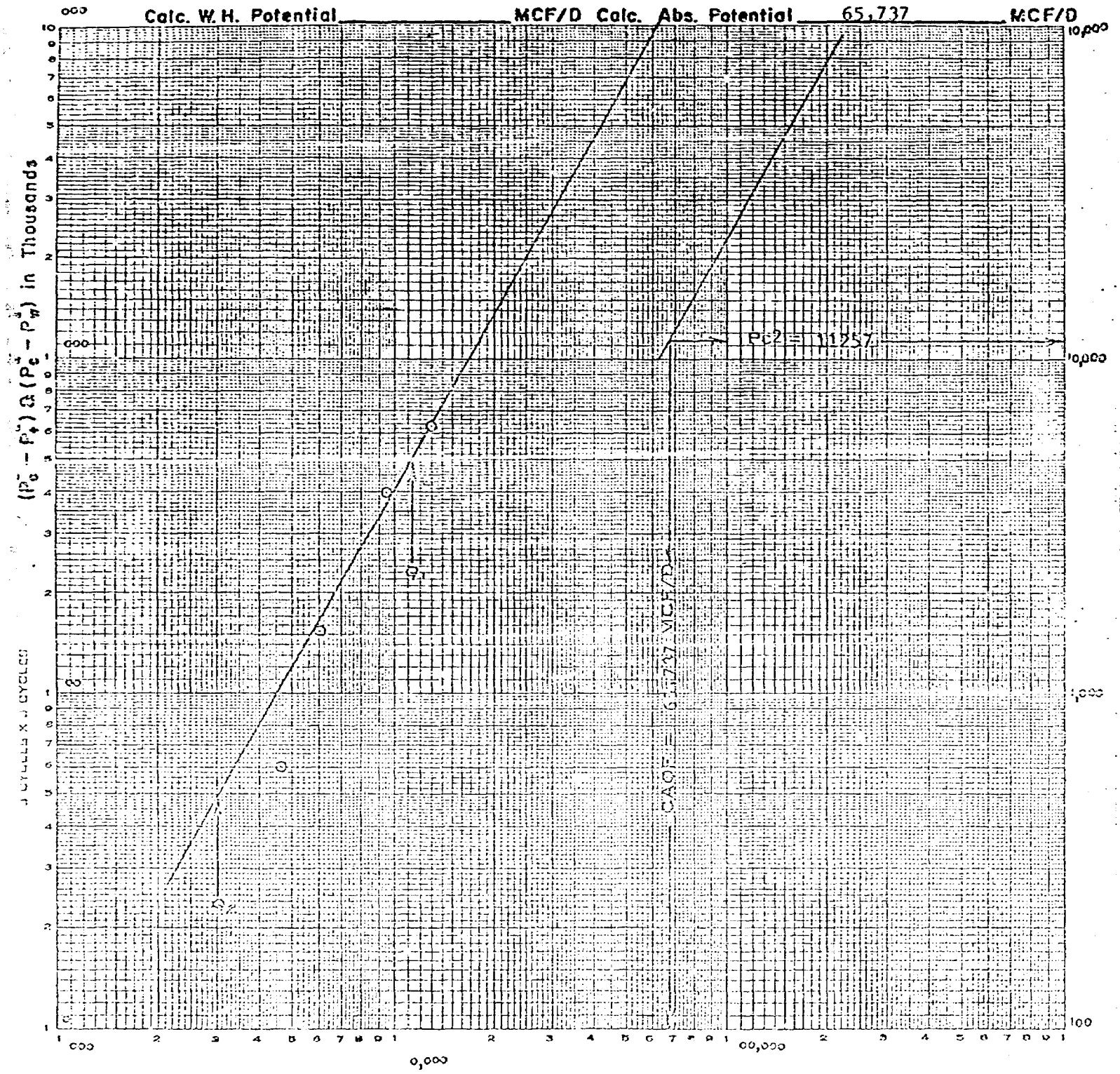
BACK PRESSURE CURVE

Operator ~~CORINNE GRACE~~ Michael V. Grace II Lease GRACE ATLANTIC Well No. 1

County EDDY Field SOUTH CARLSBAD Location J, SEC 24, T22S, R26E

Date of Test 3-29-73 Slope "n" 0.570 W.H. _____ Abs.

Calc. W.H. Potential _____ MCF/D Calc. Abs. Potential 65,737 MCF/D



$Q_1 = 11300 = 8.0530784$

$Q_2 = 3040 = 7.4828736$

$n = 0.5702048$

$$CAOF = 12956 \left(\frac{11257}{635.0}\right)^{.570}$$

$= 65.737$ MCF/DAY

17.72755

1.2374432

.7053426

19

OIL CONSERVATION COMMISSION

BOX 1980

HOBBS, NEW MEXICO

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APR 26 1973

O. C. C.
ARTESIA, OFFICE

NOTICE OF GAS CONNECTION

DATE April 23, 1973

This is to notify the Oil Conservation Commission that connection for the purchase of gas from the Michael P. Grace II (Operator), Grace Atlantic (Lease),

#1 (Morrow) J (Well Unit), 24-22-26 (S.T.R.), Carlsbad Morrow South (Pool)

61-333-01 (Meter Code), 19000 4 (Site Number), El Paso Natural Gas Co. (Name of Purchaser)

was made on April 16, 1973.

El Paso Natural Gas Company
Purchaser

Travis R. Elliott
Representative
Travis R. Elliott

Gas Production Status Analyst
Title

TRE:bl
CC: To operator
Oil Conservation Commission - Santa Fe
Oil Conservation Commission - Artesia (2)
Proration
H. P. Logan
T. J. Crutchfield
File

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NEW MEXICO OIL CONSERVATION COMMISSION

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MAR 22 1973

O. C. C.

ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

1. OIL WELL ☐ GAS WELL ☒ OTHER-

7. Unit Agreement Name

2. Name of Operator: Michael P. Grace II ✓

8. Farm or Lease Name: Grace-Atlantic

3. Address of Operator: P. O. Box 1418. Carlsbad, New Mexico

9. Well No.: 1

4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 24 TOWNSHIP 22S RANGE 26E NMPM.

10. Field and Pool, or Wildcat: Und. S. Carlsbad Morrow

15. Elevation *(Show whether DF, RT, GR, etc.)*: 3162 GR

12. County: Eddy

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☒	
OTHER ☐		OTHER ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

3/12/73 Ran 128 jts. 29#, 78 jts. 26#, 79 jts. 23# and 54 jts. 32# 7" casing and set @ 11,768'. Cemented With 100 sks. Halliburton lt. & 400 sks Class "H". Plug down @ 2 p.m. under 1250 psig. 128 bbls. slurry cmt. Height @ 8500' W.O.C. 24 hrs.

273jts4½" 15.50# C-75 PH6 Hydril Tubing set @ 11,000' Tested to 6000#

Baker 83 FA 47 Pkr seal assembly set @ 11,000'

Perforated 11,424' - 11,444' 4 spf.

RECEIVED
MAY - 1 1973
OIL CONSERVATION COMM.
Santa Fe

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Juanita L. Goodlett TITLE Agent DATE March 20, 1973

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE APR 26 1973

CONDITIONS OF APPROVAL, IF ANY:

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OPERATOR	1	

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NEW MEXICO OIL CONSERVATION COMMISSION

FEB 19 1973

O. C. C.
ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ OTHER-

7. Unit Agreement Name

2. Name of Operator: Michael P. Grace II

FEB 20 1973

OIL CONSERVATION COM. Santa Fe

8. Farm or Lease Name: Grace-Atlantic

3. Address of Operator: P. O. Box 1418 Carlsbad, New Mexico

9. Well No.: 1

4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 24 TOWNSHIP 22S RANGE 26E NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 3162GR

12. County: Eddy

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON ☐	REMEDIAL WORK	☐	ALTERING CASING ☐
TEMPORARILY ABANDON	☐		COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING	☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB	☒	
OTHER	☐		OTHER	☒	

Progress Report

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

2/14/73 Ran 50 jts. of 40#, 85 jts. of 36# and 3 jts. of 40# 9 5/8" J-55 8 rd. csg. to a depth of 5406' set @ 5396'. cemented with 1250 sx. of Halliburton Lt. Wt. cement followed w/400 sks Class C w/3# per sack gilsonite. Circulated out 41 sacks. Plug down.
W. O. C. 26½ hours. Test B.O.P. to 2000# O.K.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Granville A. Jones TITLE Agent DATE 2/16/73

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE FEB 20 1973

CONDITIONS OF APPROVAL, IF ANY:

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NEW MEXICO OIL CONSERVATION COMMISSION

JAN 31 1973

O. C. C.
ARTESIA, OFFICE

Form C-103
Supersedes Old C-102 and C-103
Effective 14-65

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

5a. Indicate Type of Lease: State ☐ Fee XX

5. State Oil & Gas Lease No.

1. OIL WELL ☐ GAS WELL XX OTHER-

7. Unit Agreement Name

2. Name of Operator: Michael P. Grace II

8. Farm or Lease Name: Grace-Atlantic

3. Address of Operator: P. O. Box 1418 Carlsbad, New Mexico

9. Well No.: 1

4. Location of Well: UNIT LETTER J, 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE, SECTION 24 TOWNSHIP 22S RANGE 26E NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (*Show whether DF, RT, GR, etc.*): 3162 GR

12. County: Eddy

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER Progress report ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

Spudded 1/28/73. Cemented 13 3/8" J-55 Buttress 61# casing at 356.65' GL with 375 sks. class "C" with 2# cacl/sk 14.8#/gal slurry (1.32 cu.ft./sk) and reversed out 30 sacks. Left 30' cement in pipe. Plug down at 6:30 a.m. W.O.C. 18 hours. Tested to 500# & held.

RECEIVED
FEB 7 - 1973
OIL CONSERVATION
ROSWELL, NEW MEXICO

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Juanita L. Jones TITLE Agent DATE 1/29/73

APPROVED BY W A Gressett TITLE OIL AND GAS INSPECTOR DATE FEB 6 1973

CONDITIONS OF APPROVAL, IF ANY:

23

city of carlsbad

PHONE·887-1191 · BOX 1569 · CARLSBAD, NEW MEXICO 88220
Mayor — Walter Gerrells City Administrator — Claude Tabor

January 16, 1973

Mr. W. A. Gressett
Oil Conservation Commission
Drawer DD
Artesia, New Mexico 88210

Dear Mr. Gressett:

This letter is to inform you that the City of Carlsbad has no objection to the following proposed location of Grace Oil Company Well in Section 24, Township 22 South, Range 26 East, N.M.P.M.:

A well site lying 1980' from the South line and 1980' from the East line of said Section.

I am informed that that location will not interfere with the operations of the Cavern City Air Terminal. As long as the well is drilled at the above location, the City of Carlsbad has no objection to drilling permits being issued.

Very truly yours,

Walter Gerrells
Mayor

WG:vg

cc: Mr. A. L. Porter, Jr., Oil Conservation Commission
Mr. Claude F. Tabor, City Administrator
Mr. Claude McCausland, Cavern City Air Terminal

24

30-015-20798

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NEW MEXICO OIL CONSERVATION COMMISSION

RECEIVED

JAN 17 1973

O. C. C.

ARTESIA, OFFICE

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease STATE ☐ FEE ☒

5. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work

b. Type of Well

DRILL ☒ DEEPEN ☐ PLUG BACK ☐

OIL WELL ☐ GAS WELL ☒ OTHER SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Unit Agreement Name

8. Farm or Lease Name: Grace - Atlantic

2. Name of Operator: ~~Corinne~~ Michael P. Grace II

9. Well No.: 1

3. Address of Operator: P. O. Box 1118 Carlsbad, New Mexico 88220

10. Field and Pool, or Wildcat: Wildcat

4. Location of Well: UNIT LETTER J LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE East LINE OF SEC. 24 TWP. 22S RGE. 26E NMPM

12. County: Eddy

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
12,100	Morrow	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
3162 GR	Blanket	Big West Drilling Co.	1/19/73

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
~~17 1/2~~	~~13 3/8~~	~~61#~~	~~375~~	~~350~~	~~circl~~
~~12 1/4~~	~~9 5/8~~	~~40.5#~~	~~5400~~	~~1700~~	~~circl~~
8 3/4	7	26# & 29#	11000	~~500~~	9100
6 1/8	4 1/2	13.5#	12100	100	11000

RECEIVED
JAN 19 1973
OIL CONSERVATION COMM.
Santa Fe

Blow out preventor: Remote Control, Triple Ram

APPROVAL VALID FOR 90 DAYS UNLESS DRILLING COMMENCED,
EXPIRES 4-18-73

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed Jeanette L. Jones Title Agent Date 1/16/73

(This space for State Use)

APPROVED BY W. A. Gressett TITLE OIL AND GAS INSPECTOR DATE JAN 18 1973

CONDITIONS OF APPROVAL, IF ANY:

25

W MEXICO OIL CONSERVATION COMM

RECEIVED
JAN 19 1973
OIL CONSERVATION COMM.
Santa Fe

Form C-102
Supersedes C-128
Effective 14-65

WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section

Operator: ~~SORINNE~~ Michael GRACE II			Lease: GRACE ATLANTIC	Well No. 1
Unit Letter: J	Section: 24	Township: 22 SOUTH	Range: 26 EAST	County: EDDY
Actual Footage Location of Well: 1980 feet from the SOUTH line and 1980 feet from the EAST line				
Ground Level Elev.: 3174'	Producing Formation: Morrow	Pool: ~~Wildcat~~ Und. Lo. Carlsbad Morrow		Dedicated Acreage: 320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

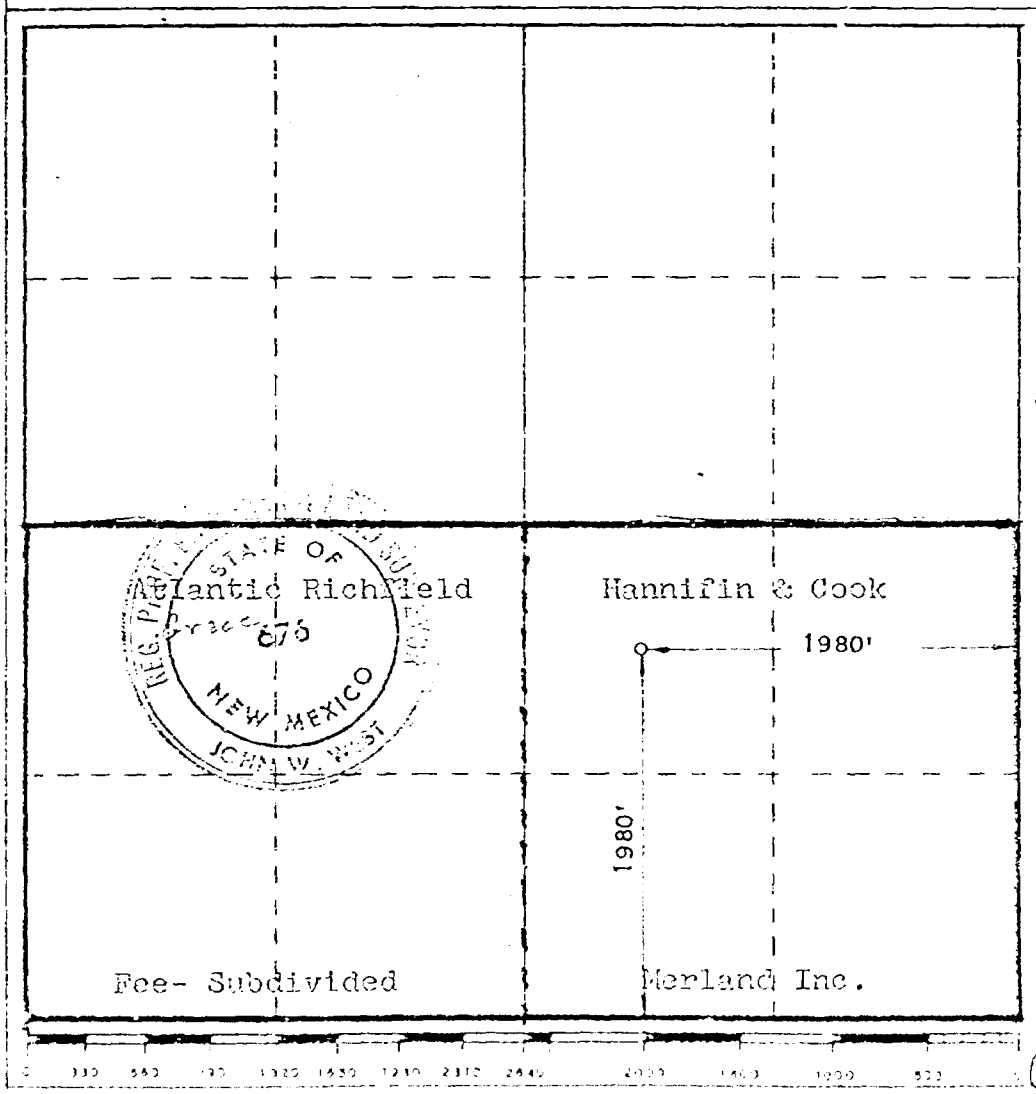
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☒ Yes ☐ No If answer is "yes," type of consolidation Force-pooling R-4432 11-8-72

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Juanita L. Jones

Position: Agent

Company: ~~Sorinne~~ Michael P. Grace II

Date: 1/16/73

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 1-6-73

Registered Professional Engineer and/or Land Surveyor

John W West

Certificate No. 675

26

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASES NOS. 4819 AND 4836
Order No. R-4432

APPLICATION OF D. L. HANNIFIN FOR
COMPULSORY POOLING, EDDY COUNTY,
NEW MEXICO.

APPLICATION OF MICHAEL P. GRACE II
AND CORINNE GRACE FOR COMPULSORY
POOLING, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 27, 1972, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of November, 1972, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That in Case No. 4819, the applicant, D. L. Hannifin, seeks an order pooling all mineral interests underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad Field, Eddy County, New Mexico, to form a standard 320-acre unit to be dedicated to a well to be drilled 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(3) That in Case No. 4836, the applicants, Michael P. Grace II and Corinne Grace, seek an order pooling all mineral interests down to and including the Morrow formation underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, to form a standard 320-acre unit to be dedicated to a well to be drilled at an orthodox location for said unit.

(4) That both applicants, D. L. Hannifin and Michael P. Grace II and Corinne Grace, seek to be named operator of the unit to be pooled.

(5) That Cases Nos. 4819 and 4836 were consolidated as both cases involve the same lands.

(6) That the evidence indicates that the entire S/2 of the above-described Section 24 can reasonably be presumed productive of gas from the South Carlsbad Gas Pool.

(7) That the evidence indicates that the entire S/2 of the above-described Section 24 can be efficiently and economically drained and developed by a well located at a point 1980 feet from the South line and 1980 feet from the East line of said Section 24.

(8) That there are interest owners in the proposed 320-acre proration unit who have not agreed to pool their interests.

(9) That to avoid the drilling of unnecessary wells, to protect correlative rights, and to afford to the owner of each interest in the unit the opportunity to receive without unnecessary expense his just and fair share of the gas in the pool, all mineral interests in the Morrow formation underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, should be pooled to form a 320-acre standard unit to be dedicated to a well to be drilled at a standard location in said Section 24.

(10) That Michael P. Grace II should be designated the operator of the proposed well and unit.

(11) That any non-consenting working interest owner should be afforded the opportunity to pay his share of estimated well costs to the operator in lieu of paying his share of reasonable well costs out of production.

(12) That any non-consenting working interest owner that does not pay his share of estimated well costs should have withheld from production his share of the reasonable well costs plus an additional 25% thereof as a reasonable charge for the risk involved in the drilling of the well.

(13) That any non-consenting interest owner should be afforded the opportunity to object to the actual well costs but that said actual well costs should be adopted as the reasonable well costs in the absence of such objection.

(14) That following determination of reasonable well costs, any non-consenting working interest owner that has paid his

share of estimated costs should pay to the operator any amount that reasonable well costs exceed estimated well costs and should receive from the operator any amount that paid estimated well costs exceed reasonable well costs.

(15) That $135.00 per month should be fixed as a reasonable charge for supervision (combined fixed rates) for the subject well; that the operator should be authorized to withhold from production the proportionate share of such supervision charge attributable to each non-consenting working interest, and in addition thereto, the operator is hereby authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to each non-consenting working interest.

(16) That all proceeds from production from the subject well which are not disbursed for any reason should be placed in escrow to be paid to the true owner thereof upon demand and proof of ownership.

IT IS THEREFORE ORDERED:

(1) That all mineral interest, whatever they may be, in the South Carlsbad-Morrow Gas Pool underlying the S/2 of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, are hereby pooled to form a 320-acre proration unit to be dedicated to a well to be drilled at a standard location in Section 24.

(2) That Michael P. Grace II is hereby designated the operator of the subject well and unit.

(3) That the operator shall furnish the Commission and each known working interest owner in the subject unit an itemized schedule of estimated well costs within 30 days following the date of this order.

(4) That within 30 days from the date the schedule of estimated well costs is furnished to him, any non-consenting working interest owner shall have the right to pay his share of estimated well costs to the operator in lieu of paying his share of reasonable well costs out of production, and that any such owner who pays his share of estimated well costs as provided above shall remain liable for operating costs but shall not be liable for risk charges.

(5) That the operator shall furnish the Commission and each known working interest owner in the subject unit an itemized schedule of actual well costs within 60 days following completion of the well; that if no objection to the actual well

costs are received by the Commission, and the Commission has not objected within 60 days following completion of the well, the actual well costs shall be the reasonable well costs; provided however, that if there is an objection to actual well costs within said 60-day period, the Commission will determine reasonable well costs after public notice and hearing.

(6) That within 60 days following determination of reasonable well costs, any non-consenting working interest owner that has paid his share of estimated costs in advance as provided above shall pay to the operator his pro rata share of the amount that reasonable well costs exceed estimated well costs and shall receive from the operator his pro rata share of the amount that estimated well costs exceed reasonable well costs.

(7) That the operator is hereby authorized to withhold the following costs and charges from production:

(A) The pro rata share of reasonable well costs attributable to each non-consenting working interest owner who has not paid his share of estimated well costs within 60 days from the date the schedule of estimated well costs is furnished to him.

(B) As a charge for the risk involved in the drilling of the well, 25% of the pro rata share of reasonable well costs attributable to each non-consenting working interest owner who has not paid his share of estimated well costs within 30 days from the date the schedule of estimated well costs is furnished to him.

(8) That the operator shall distribute said costs and charges withheld from production to the parties who advanced the well costs.

(9) That $135.00 per month is hereby fixed as a reasonable charge for supervision (combined fixed rates) for the subject well; that the operator is hereby authorized to withhold from production the proportionate share of such supervision charge attributable to each non-consenting working interest, and in addition thereto, the operator is hereby authorized to withhold from production the proportionate share of actual expenditures required for operating the subject well, not in excess of what are reasonable, attributable to each non-consenting working interest.

(10) That any unsevered mineral interest shall be considered a seven-eighths (7/8) working interest and a one-eighth (1/8) royalty interest for the purpose of allocating costs and charges under the terms of this order.

(11) That any well costs or charges which are to be paid out of production shall be withheld only from the working interests' share of production, and no costs or charges shall be withheld from production attributable to royalty interests.

(12) That all proceeds from production from the subject well which are not disbursed for any reason shall be placed in escrow in Eddy County, New Mexico, to be paid to the true owner thereof upon demand and proof of ownership; that the operator shall notify the Commission of the name and address of said escrow agent within 90 days from the date of this order.

(13) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

Case 5085

IN THE MATTER OF THE APPLICATION
OF MICHAEL P. GRACE, II, UNDER
RULES 15 (d), 15 (e), and 15 (g)
for a Moratorium on the shutting-in
of Well Number 1, Unit j, Section 24,
TWT 22S, RNG 26 S, South Carlsbad,
Morrow Pool.

COMES NOW Michael P. Grace, II, by his attorneys Samuel A. Francis, Frederick B. Howden, and Farrell L. Lines, and makes application to the Oil Conservation Commission for a moratorium of its shut-in order of October 2, Number SF-302, ordering that the Grace Atlantic Well, more fully described above, be shut-in as of October 2, 1973, and as grounds therefor states to the Commission as follows:

1. That the secretary-director of the Commission has been empowered under Rule 15 (d) as amended, to permit a well subject to shut-in to maintain limited production upon proper showing to the secretary-director that complete shut-in would cause undue hardship.

2. That attached hereto and made a part hereof is an affidavit by Kenneth F. Smith, the consulting engineer who has been familiar with the well since its first production, and who gives his professional opinion that undue hardship would accrue to the operator of the well because of the material damage that a complete shut-in will cause to the well.

3. That the Commission is under notice that the President of the United States declared this week a shortage of gas, and has prescribed drastic measures in an attempt to partially alleviate this crises; and that undue hardship will result to the general public if one of the largest producing wells in this State is shut-in during the very week of the national proclamation of gas shortage.

DOCKET MAILED

Date 1-11-74

4. That the Commission is empowered under Rule 15 (e) as amended, to allow overproduction to be made up at a lesser rate, upon a showing of a public hearing that the same is necessary to avoid material damage to the well.

5. That reference is again made to the affidavit attached hereto and made a part hereof, by Kenneth F. Smith, the consulting engineer, who is more familiar with the well than any other person in the State, and has given his professional opinion that material damage will be done to the well if it is shut-in completely.

6. That the applicant requests an immediate public hearing to produce further testimony that material damage will be done to the well if it is complete shut-in, as is authorized in Rule 15 (e) as amended.

7. That the secretary-director of the Commission is empowered under Rule 15 (g), as amended, to grant a pool-wide moratorium of up to 3 months on the shutting in of gas wells in a pool during periods of high demand energy upon proper showing that such emergency exists, and that a significant number of the wells in the pool are subject to shut-in.

8. The secretary-director of the Commission is under notice, after the declaration of the President of the United States, within the last week, that we are currently in a period of high-demand energy and that an emergency gas shortage exists, which is believed by the applicant to be proper showing of the existence of a gas shortage emergency.

9. That the south Carlsbad Morrow pool is at present significantly underproduced, and that all of the wells in the pool except for the subject well herein, and two others, are producing to capacity, and that if the underproduced allowables were not redistributed as they should be, and as they were in June, the subject well would not be more than six times over-produced.

10. That in addition to the subject well herein, that Go Pogo Well, more fully described as Well #2 Sec. 24, Township 225, Range 26E is also borderline subject to shut-in pursuant to the provisions of the Commission's rules, and the subject well herein, the Go Pogo Well, represents 11% of the total production from the pool, and as such represents the significant number of the wells in the pool with regard to production capacity.

11. That because of the above showing, applicant requests that the secretary-director might grant the pool wide moratorium of up to 3 months while allocations are being redistributed, so that the wells can be curtailed to bring them within their allowable.

12. Applicant further requests that the Commission order a stay of its October 2, 1973, shut-in order pending the mandatory public hearing provision of Rule 15 (e), as amended, and such other hearings as are necessary to protect the rights of the applicant under the rules above mentioned, and to protect the interest of the general public during the time of the gas shortage crises.

Samuel A. Francis

SAMUEL A. FRANCIS
FREDERICK B. HOWDEN
FARRELL L. LINES
Attorneys for Applicant
400 Seventh, N.W.
Albuquerque, New Mexico 87101

A F F I D A V I T

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

COMES NOW KENNETH F. SMITH, having been first duly sworn upon his oath, and deposes and states as follows:

1. That I am an employee of Paul E. Cameron, Jr., Inc., a Petroleum Engineering Consulting firm based in Houston, Texas.

2. That I have been retained for a number of months by Michael Grace as an oil consultant.

3. That I have previously been qualified as an expert witness before the Oil Conservation Commission and have testified before the said Commission on a number of occasions in the past year.

4. That it is my understanding that a Shut-In Order has been issued by the New Mexico Oil Conservation Commission against the M. P. Grace II, Grace-Atlantic well located in Section 24, Township 22 S, Range 26 E, Eddy County, New Mexico.

5. That I have been familiar with the well during its entire production history. I have deliberately reduced the choke size on this well in small steps, testing its reaction along the way.

6. That because of the aggravated energy crises, El Paso Natural Gas requested of the Graces a substantial amount of gas production from this well to assist during the coming winter months.

7. In my opinion, a complete shut in, followed by a return to full production to meet the request of El Paso Natural Gas, would amount to rocking the well and would cause damage to the well.

8. This well has been flowing at its present rate with a surface pressure only 125 pounds per square inch short of 2,000 P.S.I. I have good reason to believe that this is by far the highest pressure of any well in this area and zone with a like amount of production and production rates.

9. If the well is treated as a majority of the other wells in the field, a shut in would have an even more drastic impact on the well, and could create more danger to the well itself than like actions would do to lesser wells in this field.

10. I make these statements based on my knowledge of the expert testimony presented to the New Mexico Oil Conservation Commission proration hearing on April 19, 1972. The extent of the above mentioned damage can only be ascertained in its fullest extent by a complete reservoir study.

KENNETH F. SMITH

SUBSCRIBED AND SWORN TO before me this 4th day of October, 1973.

s/
NOTARY PUBLIC

My Commission Expires:

DRAFT

TWD/dr

Done - Ok
Need Cindy
Please

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5085
Order No. R- 4643

APPLICATION OF MICHAEL P. GRACE II
AND CORINNE GRACE FOR AN EXCEPTION
TO ORDER NO. R-1670, AS AMENDED,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 25, 1973, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of _____, 1973, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That applicants, Michael P. Grace II and Corinne Grace, seek an exception to Rule 15(B) of the Prorated Gas Pool Rules for Southeast New Mexico as promulgated by Order No. R1670, as amended, for the Grace-Atlantic Well No. 1 located in Unit J of Section 24, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, which well is more than six times overproduced with respect to its average monthly allowable and is subject to shut-in pursuant to said Rule 15(B).

(3) Pursuant to the provisions of Rule 15(E) of said Order No. R-1670, as amended, applicants seek an exception to said Rule 15(B) to permit overproduction to be made up at a rate less than by complete shut-in, alleging that material damage will result to said well if completely shut-in.

(4) That the applicants have submitted evidence for the purpose of showing that the Grace-Atlantic No. 1 well is not overproduced ~~over~~ more than six times its average monthly allowable if proration formulas are calculated in the manner ~~suggested~~ suggested by applicants.

(5) That applicants have failed to show that the Commission's method of calculating well allowables is incorrect or in contradiction or violation of Statutes, Rules, Regulations, or Orders relating to the Commission's prorationing functions and have failed to show why their method of calculating well allowables should be substituted for the Commission's method.

(6) That applicants' suggested method of calculating well allowables contains arithmetical errors which preclude its use in determining the overproduced status of the Grace Atlantic No. 1 well, even if its use were otherwise ~~appropriate~~ appropriate, which it is not.

(7) That applicants' Grace-Atlantic No. 1 well is more than six times overproduced with respect to its average monthly allowable.

(8) That applicants have failed to sustain their burden of proof to show that the well would be materially damaged by a complete shut-in.

(9) That applicants have failed to sustain their burden of proof in suggesting and justifying a minimum production level which would correct the well's overproduced status and prevent the alleged damage to the well.

(10) That substantial evidence has been presented to the effect that material damage would not occur to the well if it were properly shut-in.

(11) That the evidence preponderates in favor of the engineering viewpoint that the well will not be materially damaged if it is properly shut-in.

(12) That the correlative rights of the owners of other mineral interests in the pool could be adversely affected by the continued overproduction of the subject well.

(13) That in order to promote conservation, prevent waste, and protect correlative rights, the subject well should be shut-in upon the issuance of this order and should remain shut-in until such time that the Commission issues written notification to the applicants that the well is no longer more than six times overproduced with respect to its average monthly allowable according to the records of the Commission.

(14) That the Commission should immediately notify applicants when the well ~~is overproduction is corrected to below six times~~ is overproduced in an amount six times or less its average monthly allowable according to the records of the Commission in order that the well may at that time resume production.

language taken directly from Rule 15(B)

IT IS THEREFORE ORDERED:

(1) That applicant's Grace-Atlantic No. 1 Well be shut-in upon the issuance of this order and that it remain shut-in until such time as the Commission issues written notification to the applicants that the well is no longer more than six times over-produced with respect to its average monthly allowable according to the records of the Commission.

(2) That the Commission shall immediately notify the applicants when the subject well ~~is overproduction is corrected~~ is overproduced in an amount

~~to below~~ six times or less its ~~its average~~ monthly allowable according to the records of the Commission in order that the well may at that time resume production.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

ir/

Case No 5085
Order No ——

In the matter of the Hearing
Called by the Oil Conservation
Commission of New Mexico
for the purpose of Considering:

Application of Michael P.
Grace and Corinne Grace
for an Exception to Order
No. R-1670, as amended,
Eddy County, New Mexico.

9.00 AM, October 25, 1973 Before OCC.

(1) Notice...

(2) That Applicants Michael P. Grace III and Corinne Grace seek an exception to Rule 15(E) of the Prorated Gas Pool Rules for South-East New Mexico as promulgated by Order No. 1670, as amended, for the Grace-Atlantic Well No. 1, located in Unit J of Section 19, Township 20 South, Range 26 East, NMPM, Eddy County, New Mexico, which well is more than six times over produced will respond to the allowable assignable and is subject to cutback pursuant to said Rule 15(E)

3.) Pursuant to the provisions of Rule 15(E) of [illegible] R-1670, as amended, Applicants [illegible]

permit overproduction to be made up at a rate less than 6 barrels daily per acre. That material changes would need to be made if completed differently.

(4) That the Applicants have submitted evidence for the purpose of showing that the Grace-Allen Lse No. 1 well is not overproduced over six times its average monthly allowable if proration formulas are calculated in the manner suggested by Applicants.

(5) That Applicants have failed to show that the commission's method of calculating well allowables is incorrect or in contradiction or violation of Statutes, Rules, Regulations or Orders relating to the Commission's prorationing functions and have failed to show why their method of calculating well allowables should be substituted for the Commission's method.

[illegible] in accordance with the Grace Produced Water Gas Ratio [illegible] Lse No. 1 well, even if its use were disputed appropriate, which it is not.

(7.) That Applicants Grace-Allen Lse No. 1 well is more than six times over-produced with respect to its [illegible]

(8.) That applicants have failed to show [illegible] Rule [illegible] of the Rules [illegible] conflict with the Statutes [illegible]

(9) [illegible] have failed to sustain their burden of proof in suggesting and justifying a minimum production level which would correct the well's overproduced status and prevent the alleged damage to the well.

(10) That substantial evidence has been presented to the effect that no material damage would not accrue to the well if it were properly shut-in.

(11) That the evidence preponderates in favor of the engineering witnesses that the well would not be materially damaged if it is properly shut-in.

(12) That the correlative rights of the owners of the mineral interests in the pool would be adversely affected by the continued overproduction of the subject well.

14 ~~(13)~~ That the Commission should immediately notify Applicants that the well's overproduction is considered to [illegible] the amount [illegible] according to the terms of the Commission's Order and that the well may at that time resume production.

IT IS THEREFORE SO ORDERED

(1) That Applicant [illegible] Master Meter will be [illegible] the terms of this Order and that if meter tests until such time as the [illegible] the overproduction to the applicant that it will no longer [illegible] [illegible] with respect to its [illegible]

(2) That the Commission shall immediately notify the Applicants when the subject well's over-production is corrected to below six times its average monthly allowable according to the records of the Commission in order that the well may at that time resume production.

(3) Jurisdiction