STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

20 January 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Virginia P. Uhden, Helen Orbesen, and Carroll O. Holmberg for eight non-standard gas proration units, San Juan County, New Mexico. CASE 9129

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

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I N D E X

STEPHEN H. PERLMAN

I N D E X CONT'D

E X H I B I T S

MR. CATANACH: We will reconvene and we will call next Case 9129, which is the application of Virginia P. Uhden, Helen Orbesen, and Carroll O. Holmberg for eight nonstandard gas proration units, San Juan County, New Mexico.

Are there appearances in this case?

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Law Firm in Santa Fe, representing the applicants in this matter.

MR. CATANACH: Are there any other appearances in this case?

MR. CARR: May it please the Examiner, my name is William F. Carr with the law firm of Campbell & Black, P. A., of Santa Fe.

I represent C&E Operations, Inc., W. P. Carr, and other members of the Carr family that are identified on the written entry of appearances filed in the case.

MR. CATANACH: Any other appearances?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin from Santa Fe, New Mexico, appearing on behalf of Meridian Oil Company.

MR. LUND: Mr. Examiner, Kent Lund, attorney for Amoco Production Company, in association with Mr. Carr.

MR. CARR: The record might also note that Mr. Pearce who previously had entered an appearance for Amoco has withdrawn.

MR. CATANACH: Are there any other appearances?

How many witnesse are we going to have, gentlemen?

MR. BRUCE: I have one, Mr. Examiner.

MR. CATANACH: Mr. Carr?

MR. CARR: I'm not intending to call a witness.

MR. CATANACH: Mr. Kellahin?

MR. KELLAHIN: At this time I don't intend to call a witness.

MR. LUND: We may have two, depending on how things go, Mr. Examiner.

MR. CATANACH: Okay.

MR. CARR: I have just one question at the begining. The case is advertised as for eight nonstandard gas proration units. The application as filed was seeking an order vacating the spacing rules for

this pool, and I just wonder exactly what we're here for today. Is it for the -- only the (not clearly understood)?

MR. BRUCE: No, Mr. Carr. The applicant is seeking, as in the order, vacating -- or as in the application, amended application, vacating 320-acre spacing as to the applicants.

MR. CARR: So it's broader than what is advertised or in the docket.

MR. BRUCE: That is correct, and one correction, Mr. Carr, is that we are seeking a non-standard spacing for six units, omitting the east half of Section 33.

I would like to amend it at this time.

MR. CARR: May it please the Examiner, at this time we would move to dismiss the application as it relates to vacating the order which establishes special pool rules.

The application for the creation or the establishment of the special pool rules was originally heard in July of '84. It came back on for hearing in the early part of 1986. We would submit that proper notice was given of the application in '84 under the rules of the Division and when the case was reopened no further advertisement was required in '86.

We submit that the notice rules were appropriate and that now to come in and attempt to attack the rules is nothing more than a collateral attack on final spacing orders of the Division.

MR. BRUCE: Mr. Examiner, I think I would at this time request that the Division take administrative notice of the proceedings in Case Number 8014 and 8014 reopened.

As Mr. Carr said, the only advertisement -- the only notice in those cases was by advertisement or publication in -- in the newspaper. The applicants in this case are asserting that such notice was constitutionally deficient. We believe that state and federal law on this issue requires some type of personal notice to the applicants -- or to an owner, mineral interest owner when their addresses are -- are known, and I would direct the attention of the Division to the case of Floyd Edwards versus Jerome McHugh, which is Cause No. RA 85-373C in the District Court of Rio Arriba County, which concerned the Gavilan Mancos Pool, in which the District Court held that publication notice was constitutionally deficient as a matter of law.

And therefor, I would request that the Division deny Mr. Carr's motion and continue with this case.

MR. CATANACH: Okay, Mr. Carr's motion will be denied and we will proceed with this case at this time.

MR. CARR: At this time I would concur, though, I think, with what Mr. Bruce suggested in that statement and that is that the record in both of the prior cases be incorporated and included in the proceedings.

MR. CATANACH: Any disagreement with that?

MR. KELLAHIN: No, sir.

MR. LUND: We would move that, also, Mr. Examiner.

MR. KELLAHIN: Mr. Examiner, point of clarification before I make a motion, am I correct in understanding that the case as advertised today, the way it appears on this docket, is not in fact the relief the applicant seeks to have today? Seeking to vacate 320-acre spacing for the entire pool?

MR. BRUCE: As to -- no, not as to the entire pool. As to applicants only, the three applicants only.

MR. KELLAHIN: Mr. Examiner, I think the case is significantly and materially misadvertised and we came here for an entirely different purpose than what is perceived by the applicant and we can either hear his

presentation, at which point we would ask for a continuance in which to come back and prepare our presentation on that question or we can simply have you grant a motion now, which I will make, to have the case dismissed and refiled so that we all can have appropriate notice of what is intended to take place.

MR. BRUCE: Mr. Examiner, notice was given to Amoco, Mr. Carr's clients, and to Meridian by certified mail. That certified mail contained an amended application in this case, which was filed with the Division on December 29, 1987, which clearly states therein that the applicants were requesting that the -- were requesting the 320-acre spacing be vacated as to them and therefor, I think Meridian had sufficient notice of the relief being sought by the applicants in this case.

The applicants, obviously, had no say in how the Division worded the publication notice, but I think the case should go on and if necessary the case would be readvertised, but I would intend to put on my witness today.

MR. CATANACH: Mr. Kellahin, did your clients in fact receive the notice of this hearing?

MR. KELLAHIN: I do not know, Mr. Examiner. I'll have to find that out.

MR. BRUCE: Mr. Examiner, if I

may right at the beginning hand you an affidavit regarding notice marked as Exhibit Number Two.

MR. CARR: Mr. Examiner, if I might, we do have -- Amoco has a witness that they intend to present today. We're here also to present some testimony and we don't actually object to presenting that as long as the record is kept open.

MR. BRUCE: I have no problem with that whatsoever, Mr. Examiner.

MR. KELLAHIN: If all counsel will concur, Mr. Examiner, and allow us an opportunity to make submittals after the hearing or to call additional witnesses when the case is readvertised, we have no objection, then, to going forward.

MR. CATANACH: Okay, if we're all in agreement, well, let's -- let's go forward with the case.

MR. CARR: And, Mr. Examiner, have the records in prior cases been incorporated?

MR. CATANACH: The record of the original case --

MR. BRUCE: 8014.

MR. CATANACH: -- 8014, those are the cases?

MR. CARR: Yes, sir.

MR. CATANACH: Yes, those -- Case 8014 will be incorporated into the record in this case and 8014 reopened.

MR. BRUCE: Before we begin, I did hand you what is marked as Exhibit Number Two regarding notice and I would request that this be incorporated in the record. I don't know if there's any objection.

MR. CARR: I have no objection.

MR. CATANACH: Will you have somebody testifying on this?

MR. BRUCE: Well, I am -- I'm the one who gave the notice.

MR. CATANACH: Okay. If there are no objections, Exhibit Number Two will be admitted into evidence in this case.

STEPHEN H. PERLMAN,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Perlman, would you please state your full name, address, and occupation?

A My name is Steve, Stephen H. Perlman. I

live at 3377 West Hayward Place, in Denver, Colorado. I'm a geological consultant.

Q And have you been employed by the applicants in this case?

A I am a consultant to the applicants.

Q Have you previously testified before the Oil Conservation Division?

A No.

Q Would you please give a brief statement of your educational and work background?

A I have my Bachelors of Science degree from Colgate University in geology and a Masters degree in science from the University of South Carolina.

I've worked for the U. S. Geological Survey for 3 and a -- 2/1/2 years. Basically I started working in 1975 as a professional geologist; worked with Amoco from the latter part of 1979 until the beginning part of 1981; developed a coal bed methane program.

After that I worked with Walter Duncan Oil Properties and since '83 I've been an independent consultant.

Q And have you previously conducted a study of the pool which is the Fruitland Basal Coal Pool, which is the subject of this application?

A Yes, I have. I gave a talk at May '86

AAPG in Denver on the Cedar Hills Field, basically talking about the water/gas pressure analysis, differences between the Fruitland sand, Fruitland coal, and Pictured Cliffs sandstone reservoirs located in the field.

Q And are you therefor familiar with the geological matters involved in this application?

A Yes, I am.

MR. BRUCE: Mr. Examiner, is the witness considered qualified?

MR. CARR: Just a couple of questions.

VOIR DIRE EXAMINATION

BY MR. CARR:

Q Just a couple of questions. Mr. Perlman, when were you employed by the applicants in this case?

A About the end of December. I think it was maybe right after Christmas or something in there.

Q And that was last year, of 1986?

A '87.

Q Of '87?

A Yes.

Q Did you do any work for them prior to that time?

A No, I did not.

Q Had anyone else done any work on this area that you looked at in preparation for your testimony here today?

A A Mr. McCory?

MR. BRUCE: McCoy.

A An engineer named Mr. McCoy, yes.

Q And is Mr. McCoy a geologist in Santa Fe?

MR. BRUCE: Engineer.

Q An engineer from Santa Fe, or do you know?

A I don't know and I'm not going to use any of his information.

Q You didn't rely on any of that?

A I did not.

Q And was Mr. McCoy the technical witness who was unavailable during '86 that delayed the hearing?

A Yes, sir.

Q And so you have only been working for the applicants since December of 1986 -- 7?

A Correct.

MR. CARR: I have no further questions.

MR. KELLAHIN: May I ask a question before we qualify the witness, Mr. Examiner?

MR. CATANACH: Yes, sir.

VOIR DIRE EXAMINATION

BY MR. KELLAHIN:

Q Mr. Perlman, I understand your educational background to be as a geologist?

A That is correct.

Q And state for me again, in what is your degree, sir?

A I have a Bachelors of Science in geology and a Masters of Science in geology.

Q Do you have any particular educational background in the field of petroleum geology?

A I have worked as a petroleum geologist for a number of years and had, I think, two or three or four course at Amoco while I was employed there in reservoir techniques, you know, understanding wells, completions, things of that nature.

Q Is the nature of your degree broad enough, sir, that it would encompass the field of petroleum geology?

A Yes, I think it would. I am not a reservoir simulation speciality or anything in that (inaudible).

Q So you don't propose to present us a geologic presentation of reservoir simulation for the pool?

A I do not.

Q And you have not utilized any petroleum engineering calculations or studies in your geologic workup?

A The calculations and workup that I have used have been take out of the texts for the case hearings that have been presented, 8014. I've also looked over Cases 7898, 7899, 7900, and 8015.

Q Specifically have you reviewe the geologic exhibits and the transcript for the hearing in Case 8014 that resulted in Order R-7588? Now that was the July 9th, '84, order that originally set up the spacing on a temporary basis?

A That hearing I (not clearly understood.)

Q Are you also familiar with the geologic exhibits and presentation made for the February '86 hearing which resulted in the March '86 order that made the temporary 320-acre spacing rules permanent?

A No, I am not.

Q You did not look at that.

A I was just this morning given a very brief view of some of the exhibits. I have not seen anything elsewhere.

Q Have you examined data or geologic information that was generated prior to the February 19th, 1986, hearing that resulted in the March '86 order that made the rules permanent?

A Would you please repeat that?

Q Yes, sir. I'm talking about the data that is generated after the hearing in which the rules were made permanent.

A Yes, I have.

Q Additional geologic information from whatever sources.

A Yes, I have.

Q What generally, without specifics, Mr. Perlman, is the information you've examined subsequent to that last hearing?

A Information from Petroleum Information Services related to more wells in the field, production data, that's basically it.

MR. KELLAHIN: Thank you, Mr. Examiner.

MR. LUND: Mr. Examiner.

VOIR DIRE EXAMINATION

BY MR. LUND:

Q Real quickly. During what time period have you specifically worked on coal seam gas production in your work experience that you referenced earlier?

A Okay. I was in the Western Division for Amoco Production Company some time, I think November '79 un-

til February, March of 1981. I ran a coal bed methane program for most of that time and initially worked with Gary Harrison for the first six months (not clearly understood) and basically was responsible for all the coal bed methane work in the Rocky Mountain region for Amoco Production Company at that time.

I subsequently left that, left Amoco, and went to work for Walter Duncan Oil Properties, did not do any coal bed (unclear) there.

When I left Walter Duncan in January of '83 I became a consultant and worked with Gas Research Institute, helping them to characterize sites for the deep steam project which they had in the Piceance Basin.

Subsequently I was a consultant with REI on the deep steam project (unclear). I worked with Energetics helping drill the well, wells in the Piceance Basin, and I've been involved with a number of independents in Denver, helping them both set up plays and set up prospect maps, and do on site work coal bed methane, and more specifically, in the San Juan Basin.

Q So as your work beginning in '83 you've been working full time in coal seam methane --

A No, I have not. I have kept current with it. I right now do about, I'd say, 40 to 50 percent of my work is geology; other 50 percent is commercial real estate

appraisal work, do that as a subcontractor also; and of the geology work the last number of years, the last two years, it has primarily been coal bed methane work.

Q So all of that 40 or 50 percent of your geology work would be coal seam methane?

A Most of it.

MR. LUND: Nothing further.

MR. CATANACH: The witness is considered qualified and before we go on, can I get all the witnesses to stand and be sworn in, or any possible witnesses.

(Witnesses sworn.)

DIRECT EXAMINATION CONT'D

BY MR. BRUCE:

Q Mr. Perlman, would you please briefly describe the Cedar Hill Fruitland Field?

A Well, Cedar Hills Field is located in Township 32 North, Range 10 West, and 31 North, 10 West, in San Juan County, New Mexico.

To date there are fifteen to sixteen producing wells, at least three observation wells, with three operators being involved in the field, Amoco Production Company, which drilled the field discovery well; subsequently,

Union Texas and Meridian have drilled wells since '84.

The first well was spudded in February of 1977, which is the Amoco Cahn No. 1, located in the northwest of Section 33. The well was tested starting May of '77 on up till sometime in '79 when it was put on actual production. The well to date has cumed 2.48 BCF of gas to November, 1987.

In 1981 two wells were drilled as offsets. They're the Schneider BS No. 1 is a production well and the State BW No. 1.

Before the Schneider and the State BW wells were put on production, testimony has been given about the interference created by the Cahn No. 1 in its production from '79 until 1981.

There are three observation wells surrounding, or I should say, not surrounding, they were three observation wells. There's the Cahn No. 2 Well, which is 937 feet, if I remember correctly, from the Cahn No. 1 production well in Section 33 and there's the Schneider Gas Com No. 1, southwest quarter of Section 28, and the Leeper Gas Com B No. 1 in the northwest quarter of Section 34.

From that testimony given by Amoco Production Company in the information presented in the 8014 hearing, Amoco gave a case that there was communication on a 160 because there was an interference and dropdown in the

Schneider observation well from the Cahn production, which is a 160 offset north.

The Leeper B, the Leeper Gas Com B No. 1, which is located a mile east, did not show any kind of production interference. It has a reservoir pressure estimated at 1,562 psi, which is very close to the initial, virgin reservoir pressure in the Cahn No. 1 production well.

From this, and other information presented, basically 320 spacing was thought to be acceptable within the field. We're not saying that it's not ultimately going to be on 320's. All that I did want to also point out for the hearing, was that there were a number of situations that warranted further looking at the information presented. One is that the Cahn No. 1 is, or is considered by Amoco by pressure transient tests, and a letter that, Jim, you have, that basically shows and states that the Cahn, through pressure transient tests, is possibly atypical of the field, that it has higher permeabilities than the Schneider Gas Com B No. 1 has, or the Salum C No, 1 Well, which is in the northeast quarter of Section 33, and basically the thesis presented here was that the Basal Fruitland Coal is not like other reservoirs. The reservoir rock properties can vary areally. It is common to find wells in established fields that produce at different rates and possibly also have different -- I'm sorry, that last part is not from their letter

-- significant different rates due to variations in reser voir rock properties.

Amoco has performed pressure transient testing on each well in the Cedar Hills Field to determine the permeability of the coal. The data from these tests confirm that the permeability of the coal in the Cahn Gas Com No. 1 is higher than it is in the offsetting Schneider G No. 1-S and the Falum C No. 1 Well, which allows it to produce higher volumes of gas.

Our reason for mentioning that to the commission is the fact that most of the information presented related to 320 field spacing in Cedar Hills Field has drawn very heavily on the Cahn, its producability characteristics, the interference created by production from the Cahn Well, and it just wants to be pointed that possibly the Cahn is atypical of the field and may be skewing the information that 320 spacing in Cedar Hills Field are based on are towards the high end and possibly best case scenario in terms of drainage.

Q Could you discuss briefly the variations in coal bed reservoirs versus sandstone reservoirs?

A Sandstone reservoirs typically -- well, are characteristically produced via Charles and Boyle's Law expansion of the gas laws.

The coal bed methane fields, the coal it-

self is not a noninteractive container for the coal. The coal is a complex methane molecule. Coal (unclear) fields have the ability to adsorb coal gases, particularly methane, onto their surface, and a tremendous amount of permeability and porosities that are found in coals that are more than sands, and basically the coals, as you produce them, the characteristics and producability of the coal reservoir increases based on dewatering and desorption of the gas in the coal.

The spacing of a coal well, as shown by a lot of studies in Alabama, where now there's statewide regulation for 40-acre spacings, showed that interference between coal wells is beneficial to the whole field productivity and that it is advantageous to affect an area drawdown within the coal reservoir as opposed to a single well (unclear) drawdown to help diffusivity of the adsorbed gas in the coal into the fracture and hence into the wellbore.

Q In the Fruitland, Cedar Hills Fruitland Pool, has water production decreased as gas production has cumulatively increased?

A I would say yes overall. The Cahn No. 1 shows that in its very early history, very increased water production and then decreasing down to about 60 barrels a day from over 200 barrels a day.

Q Could you discuss volumetric, your volumetric studies with respect to this field?

A Brad Boyce in his testimony in Case 8014 showed volumetrics where basically he used as an average in place gas content of 450 cubic feet per ton. His volumetric analysis came out with the fact that there's 10.4 BCF of gas in place in a 20-foot coal reservoir. Using the volumetrics for Cedar Hills Field that relates to 5.2 BCF on a 320-acre spacing and 2.6 BCF on a 160-acre spacing.

The Cahn No. 1 Well to November of 1987 has produced approximately 2.5 BCF of gas, which is more than the anticipated recovery on a 160.

The Cahn has, if you look at it areally and not because of a legal spacing order, there's an offset 160 acres to the north and east and to the west and the well to date has produced 2.5 BCF of gas as opposed to the 2.6 BCF of gas in place.

That also assumes that the Cahn No. 1 has 20 feet of coal in the producing reservoir and testimony has shown to be -- or presented that the coal in the Cahn Well is between 17 to 19 feet.

So we're looking at close to 100 percent recovery on this 160-acre spacing. The model simulation mentioned by Brad Boyce in the 8014 hearing basically shows a modeling on 320's for the coal gas reservoir to take 30 to

35 years and produce 77 to 87 percent of the gas with produced gas being 4 BCF of gas of the 5.2 BCF on a 320 in place.

The production from the Cahn possibly shows that on 160-acre spacings we would be getting greater amount of the in-place gas being produced and it may well be a more effective way of producing the reservoir.

Q So in short, drilling on 160's may give a greater recovery.

A That's correct.

Q And therefor, drilling on 160's may be -- may help to prevent waste and conserve the resources in this field.

MR. KELLAHIN: Mr. Examiner, I'm going to impose an objection to this question and ask that the response to the last question be stricken. This witness has testified on behalf of his client as a geologic expert. He's expressing engineering conclusions with regards to drainage. He specifically told us in his voir dire that he was not relying upon the engineering data from which he now expresses an engineering opinion and I would move that his opinion be stricken, and that my objection to the current pending question is the same.

MR. BRUCE: Mr. Examiner, the strict rules of evidence do not apply in OCD proceedings and

he's giving a response based upon his study of the field.

MR. CATANACH: I'm going to allow both questions.

MR. BRUCE: Did he answer my last question?

THE REPORTER: I don't think so.

Q I believe my question was somewhat to the extent that in your opinion, Mr. Perlman, would drilling on 160's prevent waste in this field?

A It may well be the case.

MR. BRUCE: I have no further questions of the witness at this time and would pass him to Mr. Carr.

MR. CATANACH: Mr. Carr.

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Perlman, as I understand your testimony, the information you have on the particular wells in this pool comes from the testimony that's previously been presented at Oil Commission hearings, is that correct?

A With some updated information on production and number of wells in the field; i.e. some --

Q And --

A -- like penetraton reports with Petroleum

Information.

Q Did you look at the individual well files on wells in the field?

A I have in the past.

Q And in preparation for this case did you?

A Briefly.

Q Are you aware of the current producing status of the Cahn No. 2 Well?

A No.

Q Are you aware of any recent problems that that well has experienced?

A The Cahn No. 2?

Q Yeah.

A No, I'm not.

Q Isn't this the discovery well?

A Excuse me? No, the Cahn No. 1 is the discovery. The No. 2 is the observation well.

Q Okay, what about the Cahn -- the discovery well in the pool, what is it, the --

A The Cahn No. 1, northwest quarter section, 33.

The Cahn No. 2, the well you mentioned, is 900 some odd feet away.

Q Okay, the Cahn No. 1, are you aware of any current producing problems with that well?

A Yes. It has been mentioned to me that there's been some hole instability problems in the lower part. The Cahn No. 1 was drilled to the top of the coal zone. Casing was run, completed. The bottom plug was drilled out and the coal was open hole completion.

Q And what was the source of that information?

A The source of that information? I think it could be substantiated from a number of sources, both with the testimonies from the case (unclear) and I also worked at Amoco and I think it's public record.

Q And those are problems that have existed with that well for some period of time?

A No, that was just the completion. It was an open hole completion.

Q All right.

A The -- I've heard, and that is maybe more hearsay, that there's been bottom hole problems in the well and hole stability problems. There were two instances in 1987 where the well was reworked.

Q I'm just trying to find out what the soure of your information is, what you've looked at from which you get that information.

A We have orders from the Conservation Commission hearing, 103 orders on two instances.

Q Okay.

MR. BRUCE: Two C-103's in the Cahn Well file (unclear).

Q So you reviewed the well files at the Oil Commission?

A No, I looked at synopses of those two reports and I've also spoken with geologists, Colorado State Geological Survey and Bruce Kelso (sic) and Ernie Bush in New Mexico Oil and Gas Commission about the Cahn Well and they both, also, presented to me that there were problems with the well.

Q You have not reviewed the well files on -- at the Commission on the well, is that right?

A That is correct. I live in Denver and I've used the public information up there.

Q All right. Mr. Perlman, you talked about the interference information on certain -- certain wells in the pool that had been presented at the original Commission hearings, is that correct?

A Yes.

Q What sort of a time frame was there in seeing a pressure response in these wells? Was it a relatively short time period?

A The Cauhn was put on production, substantial production in 1979. The data that was presented showed

production information up to, I think it was sometime in May, '81 --

Q And how --

A -- and in that period of time it did show communication.

Q And how long did it take for communication to be seen in the well to, let's see, the well to the west?

A The well to the west is a production -- producing well, sir, and did not --

Q Was there any pressure response between the two that you saw?

A To the west?

Q Yes.

A I studied most of the stuff in the observation well. I'm not sure what the initial pressure was on the State BW No. 1 Well because of its initial bottom hole pressure.

Q What about the Schneider Well to the north? Did you see, was there any pressure response indicated between those wells?

A About 30 pounds.

Q And how long did it take for a pressure response to be evident?

A In the Schneider B No. 1 Well, which is

observation well, there shows a response when it was first pout on, I think, in 1980. In January of 1980 the well basically showed 1,525 psi, which is about 37 pounds difference from the production going on in the Cahn No. 1, which is south, and that is January, '88, seems like a half of a year.

Q Okay, so in six months time there was that much pressure response.

A Correct.

Q Was there any pressure response to the Leeper Well in Section 34?

A At that period of time, as far as I can see back, you know, July, '83, no.

Q And how long a period of time was that, July '85, did you say?

A '83.

Q And when was the original well put on?

A Sometime the middle part of '79, so that would be about four years.

Q So there was no response in that period of time.

A Right, and I'm not arguing that at all.

Q Okay, and are you arguing that over time there would not be a pressure response over a distance like that?

A All I can say is that from the data presented here there was not a pressure difference in that four year period of production.

Q Do you know if any additional work has gone on since that time?

A I'm sure there has been additional work.

Q Now I believe you testified that you were not here to conclude that 320-acre spacing would not ultimately be the appropriate spacing in the pool. Is that what you stated?

A Yes, and what I was basically trying -- all the information that we have here is from the Cahn No. 1; it's production, interference created by its production, and drawdown areally around it. My point is that the Cahn No. 1 may very well be an atypical well in the field and that it, by the pressure transient tests that Amoco has done, that it shows that it has greater permeability than two of the other wells in the field, and possibly more of the other wells.

Q If additional data is developed it would be your testimony that it might be that 320-acre spacing would be appropriate for the field?

A I am aware of the fact that the New Mexico Oil and Gas Commission and Ernie Bush are involved with a number of discussions with the petroleum industry and de-

velopment of the Fruitland coals throughout the San Juan Basin and that presently there are a number of committees set up to deal with a number of the problems related with coal bed methane, one of which is spacing, and at the present time I think a subcommittee has been established with Amoco, Meridian, Mesa, NCR, and the Ute Tribe to discuss parameters for determining spacing in coal bed methane fields. I'm not sure that presently parameters have been set up to look at coal bed methane fields. A lot of the testimony and implications I was getting from the testimony was that people were still more comfortable with classical, traditional sandstone reservoirs and production and were not taking into consideration the special characteristics of the coal's producability, its need for dewatering, how it changes areally over the field, and so I don't think, you know, I think that things will be coming out of the subcommittees that will help define what should be the spacing.

Q All right, but I'm asking now your opinion. You're the person testifying, not Mr. Bush.

A Yes.

Q And my question is, isn't it possible that 320-acre ultimately might be the appropriate spacing when all these committees have done --

A It may be; it ultimately might.

Q And if we develop this on 160-acre spac-

ing we're going to have too many wells in the pool, are we not?

A If the other is true, yes.

Q And so right now -- and spacing is a function of drainage, isn't it?

A Yes.

Q And if what we're talking about is what a well will drain and it's later determined that these wells will drain 320 acres, those who are in the first 160 and taking all the production gain an advantage, don't they?

A Question, in --

Q I'm asking the questions. my question to --

A Will you please repeat that, sir?

Q My question to you, sir, is simply this: If 320-acre spacing is ultimately the area one well will drill -- will drain, then 160 is inappropriate, isn't it?

A That would be correct.

Q And if you dedicate only 160 acres the people in that 160 acres dedicated to a well take all the production, don't they?

A That is correct.

Q And your client would be in the original 160 acres dedicated to the well if your application is granted, isn't that right?

A That is correct.

Q And if later the spacing is changed to 320, they would have derived a substantial advantage, would they not?

A That is correct.

Q And if you stay with 320-acre spacing and later decide that 160's are needed, you could infill, couldn't you?

A Yes.

Q And then the equities would stay the same, wouldn't they?

A I'm not sure about that.

Q But the correlative rights would not be impaired of those interest owners that were initially cut out, would they? It would not initially be cut out.

A Correct.

Q Okay. I have no further questions.

MR. CATANACH: Mr. Kellahin, any questions?

MR. KELLAHIN: Thank you, Mr. Catanach.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q In response to Mr. Bruce's last question

I believe you have told us that it may well be the case that drilling on 160 acres would prevent waste, and I believe Mr. Bruce used the phrase "waste". Do you recall?

A I -- what I was referencing was the volumetric analysis done in the model simulation by Amoco where they were saying that if you drilled the 320, in 30 to 35 years production 77 or 78 percent of the gas in place would be recovered. Of the -- of the 5.2 BCF of gas in place you would recover 4 BCF of gas.

My only question that I wanted to ask was that the Cahn right now in terms of spacial relationships looks to be -- to have a 160 offset to the north and a 160 offset to the east, a 160 offset to the west, and in a sense could possibly be seen as 160-acre spacing. The well to November, 1987, has produced 2.48 BCF of gas, which is very close to the 2.6 BCF of gas presented by Mr. Boyce as being in place on a 160. If that is the case, then you're looking at closer to 100 percent recovery, and I think that that's where Mr. Bruce mentioned less waste.

Q Mr. Boyce's modeling was presented at the Commission hearing in 1984, was it not?

A The model was never presented. He just mentioned a model.

Q The testimony to which you have referred --

A Okay, right, yes.

Q -- is the '84 hearing, is it not?

A That is correct.

Q And you have taken the information Mr. Boyce testified to and compared it to the cumulative production from the Cahn 1 Well.

A Correct.

Q And you have seen that it is outperforming the modeling expectations that Mr. Boyce saw for that well.

A That is correct.

Q And based upon that, then, you have concluded that 320-acre spacing is not suitable for these spacing units that your clients have interests in?

A I did not say that. All I'm saying is that the Commission should also not throw out the possibility that 160's might be appropriate in terms of increasing the amount of percentage of in-place resources in the field, that that should be taken into consideration.

Q Other than what we have just described, are there any other studies or information you have utilized to support your opinion with regards to the spacing units?

A No.

Q Can you use the information upon which you have relied to determine whether ultimately the

appropriate spacing should be something less than 160 acres?

A No, at this point I couldn't say that.

MR. KELLAHIN: Thank you, Mr. Examiner.

MR. CATANACH: Mr. Lund?

CROSS EXAMINATION

BY MR. LUND:

Q Mr. Perlman, I'm just trying to understand your testimony, so I'll try to ask you a few quick questions.

I think you testified that you agreed that there is pressure interference or communication on 160's, is that correct?

A Correct.

Q And I believe, was the focus of your testimony that Amoco has over-emphasized the data obtained from the Cahn?

A I wouldn't say they've over-emphasized it. I would say that that is the place we have most of the data from and the only well in the field that by itself produced for a period of time having observation wells around it. Once you get past May '81, there are now three wells in the field and it's getting harder to discern the data. I'm not sure if there are more than three observation wells in

the field; don't know of any others; and all that I'm saying is that most of the initial data was from production of the Cahn and that's more just because of where it was and the observation wells are.

Q But are you familiar with the current producing information from like the Leeper B No. 1-R Well?

A Just in terms of the fact that it was re-drilled and I think to date it's produced a half a BCF of gas.

Q It's currently making about 1800 MCFD? Are you familiar with that?

A No, I was -- well, I've seen the data. I don't have it in front of me right now.

Q And what about the State BX No. 1 Well, are you familiar with the current producing data on that?

A State BX. The State BX Well I have a cum of 1.3 BCF of gas. I've looked at the daily production. I don't have it here with me but I have looked at it and that was -- it was between -- I can't say right offhand.

Q Well, it's currently making about 1500 MCF a day.

A Okay.

Q Does that surprise you?

A No.

Q Well, the point I think I'm trying to

make is that I think in your testimony, and correct me if I'm wrong, you're making the point that the Cahn is necessarily going to be a much better well than any other in the field and I don't think that's true.

I mean isn't it true that it's necessarily a fact that the Cahn is going to be far and away the best well in the pool?

A It may not be the best well in the field.

Q Now the Cahn was breaking new ground, wasn't it, in terms of coal seam production?

A That's correct.

Q And not much was known about coal seam production -- gas production at the time the Cahn was drilled.

A Yes.

Q And so we've learned and moved along based on other information from other wells nearby, isn't that right?

A Yes.

Q Now, the Alabama situation that you mentioned is a little different than Rocky Mountain coal seam, isn't it?

A Yes.

Q Now, in your opinion did you talk about -- or in your testimony have you talked about increased

ultimate recovery in different spacings? In other words, do you think that --

A I said there's a possibility of it, yes.

Q Okay. Your testimony was that there's a possibility that increased ultimate recovery would result in spacing around 160's as opposed to 320's?

A Yes.

Q And what is the basis of that testimony?

A Basically volumetrics that Brad Boyce presented, the production that has come from the Cahn based on a 160-acre possible spacing, in terms of the 160 spacing to the north presently occupied now by the producing well, the Schneider BS No. 1; the well to the east, which is the Ealum C; and the State BW to the west. It's basically in that portion of the field without having a 160-acre to the south, the well appears to be surrounded on three sides by 160-acre spaced wells and if you look at some of the drainage, possibly on the 160 we've produce most of the gas in place based on Mr. Boyce's figures.

Q But isn't it equally fair to say that 160's would just result in rate acceleration as opposed to increased ultimate recovery?

A I don't know. The model simulation presented by Mr. Boyce presented that 77 to 78 percent of the gas in place on a 320 would be recovered in 30 to 35 years.

All I can say is the Cahn to date, you know, to November of '87, which is more like eight years of production, has produced what could be considered close to 100 percent of the gas on a 160.

Q So you're basing your conclusion --

A That's all, right.

Q -- based on Mr. Boyce's testimony.

A Absolutely. I am not saying that I'm reinventing anything else.

Q And you agree that there's no pressure response on 640's.

A From the period of time that I looked at the data in terms of the Leeper Gas No. 1 Well in July '83, from the Cahn production there was no pressure communication.

Q Now, I didn't hear in any of your testimony that there's any geologic difference in the two sections, 28 and 33, that are subjects of the application. Is that correct?

A Yes.

Q There are no anomalies or anything you've noticed from a geologic standpoint that would make Sections 33 and 28 different than the rest of the pool.

A Well, I've seen information in Sections 28 and 33 and 34 that show those areas are over-pressured;

that they have a greater downhole bottom pressure than in the areas further away.

Q But there's no -- talking from a geologic standpoint, you don't see any geologic differences in those two sections as opposed to the rest?

A That is correct.

Q Now, in coal seam production it's very significant as to the dewatering of the coal seam, isn't that right?

A That is correct.

Q And since the Cahn was the first well producing from that coal seam member, the Cahn has dewatered a signficant portion of this pool, has it not?

A I wouldn't -- I don't know about a significant portion of the pool because that's 16 square miles, but it has created a drawdown in its location and the surrounding area.

Q Have you reviewed the cumulative (unclear) water production from the Cahn Well?

A I've looked at it briefly.

Q Isn't it fair to say that the dewatering that has been done by the Cahn Well has significantly assisted gas production from other wells in the pool?

A Yes.

Q And if you shut in or reduce production

in a coal degas well, don't you run the risk of future production problems, such as coal fines going into the wellbore and either reducing production or even eliminating production from that well?

A Possibly, yes.

Q So there can be some harmful effects from either reducing production in a coal degas well or shutting it in, isn't that right?

A There can be.

Q Now, you don't contend that Amoco didn't present evidence that you need to evaluate coal degas wells differently than conventional wells, do you?

A Would you repeat that again, please?

Q Sure. You were talking a little earlier about some of the Amoco testimony and I don't think that you testified that Amoco presented evidence which would indicate that coal degas wells should be treated or analyzed the same way as traditional --

A No. In fact, in one of the testimonies, I think the words that were used by one of the Amoco witnesses was that they were unique, and I think it's just a question of understanding what that uniqueness is.

Q All right. Now, for example, you can't look at traditional drainage patterns on a coal degas well as you may find in a conventional reservoir, could you?

A That could be true.

Q Well, could it or couldn't it?

A Say the question again.

Q Okay, I'm sorry. That wasn't clear. Sometimes in conventional reservoirs you would assume radial drainage. It may not necessarily be so but often you'll look at radial drainage, isn't that right?

A In a typical, conventional gas well, yes, that's right.

Q And you really can't view that in a coal gas well, can you?

A That not be the case in a lot of situations, yes. Fracture orientation may well give you a large skew as to that radial pattern.

Q There are a lot of factors, cleats, and other things, that would affect the drainage pattern, isn't that correct?

A That is correct.

Q And that's exorbitant in those fields, isn't it?

A Yes.

Q Now, would you say that it was prudent for Amoco to go to the expense of drilling these pressure observation wells to help figure out what was happening in the field?

A Yes.

MR. LUND: Nothing further, Mr. Examiner.

MR. CARR: I have one more short question.

RECROSS EXAMINATION

BY MR. CARR:

Q Mr. Perlman, in response to a question Mr. Lund asked, I think it was your statement that you didn't necessarily assume radial drainage in this pool, is that right?

A His questions about generic coal bed methane and there may well be situations that coal bed methane wells would be more oriented towards the major cleat direction in the coal.

Q So you wouldn't necessarily have radial drainage in this pool, is that correct?

A That may well be right.

Q I think you testified the Cahn No. 1 was draining at least -- or was draining 160 acres, isn't that right, and --

A No. What I said was that based upon the cumulative production of the Cahn and if you looked at the numbers presented by Amoco for in-place gas resources on

160-acre spacings, it appeared that 100 percent of the gas in place on a 160 could have been produced by that well.

Q And isn't it possible that it also might be draining from, say, the southwest quarter of Section 33 as well?

A Yes.

Q And that in this reservoir, even though we have development around the Cahn No. 1 with one well on three offsetting 160's, that those wells might in fact be draining reserves from properties other than just the 160 right around each of those wells.

A Yes.

Q Thank you.

MR. CATANACH: Mr. Bruce, any questions?

MR. BRUCE: A couple of quick questions.

REDIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Perlman, you mentioned that in reviewing the Boyce model presented in Case 8014 that there was a prediction of 70+ percent, I'm not sure how much, recovery in 30 to 35 years, and that it looked like based on 160 acres there was about -- approximately 100 percent

recovery in eight years. Is that a correct statement?

A Again, that was the same question that I think I just -- just asked, is it appears that way or could be looked at that way based upon the ultimate recovery or the present recovery of the Cahn for the 2.5 from, if you look at the in-place gas resources on a 160.

Q Could that mean that the Amoco model is incorrect?

A I -- it may need some revision. They have probably done some revision to it, I imagine, since that period of time it was presented in (unclear) of '84, and that's an assumption.

MR. BRUCE: Nothing further, Mr. Examiner.

MR. CATANACH: I don't have any questions of the witness.

MR. LUND: Nothing further, Mr. Examiner.

MR. CATANACH: He may be excused.

MR. BRUCE: I have nothing further at this time, Mr. Examiner.

MR. CATANACH: Okay. Mr. Kellahin, are you going to put a witness on?

MR. KELLAHIN: I'd like to hear

the Amoco presentation first, if that's all right, Mr. Examiner.

MR. CATANACH: That would be fine.

MR. LUND: May we just have a quick recess and --

MR. CATANACH: Sure.

MR. LUND: -- try to cut down what we are going to do?

MR. CATANACH: Sure, let's take a fifteen minute recess.

(Thereupon a recess was taken.)

MR. CATANACH: Okay, we'll call this hearing back to order and if I understand right, opposing counsel has no witnesses to present at this time.

MR. LUND: That's correct, Mr. Examiner.

MR. CATANACH; Okay, Mr. --

MR. KELLAHIN: Mr. Examiner, I earlier requested additional time to prepare witnesses with this case. I've had an opportunity during the break to review the correspondence that Mr. Bruce has served on Meridian and we believe insofar as our company is concerned,

we were properly notified, notwithstanding the advertisement.

I am concerned, however, that the advertisement for this case is in fact defective; however, Meridian does not propose to present witnesses now and if Mr. Bruce proposed not to present witnesses in the event the case is readvertised, we don't intend to come back. We assume this our opportunity to make our presentation.

And if Mr. Bruce will concur in that, then we will, for all practical purposes, consider our presentation made today.

MR. BRUCE: Yeah, I will agree with Mr. Kellahin. I will not put on any more witnesses, but I think the case should be readvertised just to make it technically correct.

MR. CARR: I can also state for C & E that we won't be putting on a witness, either.

MR. CATANACH: Okay, and Amoco won't be putting on a witness, either?

MR. LUND: No, Mr. Examiner.

MR. CATANACH: Okay. Then what we'll do is we'll readvertise this case for February 20th, 1988, and at that time there being no witnesses, we'll just take the case under advisement at that time.

Would counselors like to make

closing statements at this time?

MR. CATANACH: Mr. Carr, go ahead.

MR. CARR: Mr. Catanach, on behalf of W. P. Carr, et al, C & K Operations, Inc., we oppose the application in this case.

As you will note, the amended application is seeking an order vacating Division Order Nos. R-7588 and R-7588-A. Those are the orders that establish the pool rules.

They're seeking that those orders be vacated as to the applicant, as to the people that Mr. Bruce represents. In other words, they want to be treated differently and if you grant that application, you're going to have an interest in the spacing units, Mr. Bruce's clients, who are going to be treated differently and are going to paid on 160-acre spacing while the rest of the unit continued to be developed on 320, because that's all they're seeking; they want special treatment for themselves.

If you treat them differently, if you give them special treatment, you also affect the rest of the interest owners in those spacing units and you don't treat us -- you treat them better, you don't treat us as well, and you impair our correlative rights.

They're seeking something, I

submit, that has never been done because you cannot do it, for to grant that application and vacate these orders as to these applicants alone you are on the face of that order impairing the correlative rights of other interest owners in the spacing units.

As to their request for non-standard spacing or proration units, the Carrs own an interest in the southwest quarter of Section 33 that is dedicated to the Cahn No. 1 Well. They participated in the well, they've borne part of the costs, and now what is being sought is a spacing order that would cut them out, that would leave them with nothing; leave them with nothing when Mr. Perlman has also admitted that the Cahn Well may be draining reserves from that property, and if you grant the application, you cut them out of a valuable property interest and you deny them their correlative rights.

The only opportunity left for them in that scenario is to drill a well in the southwest quarter of Section 33. The problem doesn't end there; you start a domino sort of effect because the Carrs also own interest in the south half of 32 to the west. Their property immediately adjoins Section 33 and they would be offset with a new well and would have to drill to protect against drainage and what you create here is de facto 160-acre spacing in this pool; spacing which Mr. Perlman himself has admitted

may not be needed.

If in fact there is some day data which shows that different spacing is appropriate, that's the time to bring it forward, but not today, and not to do it in a fashion which denies people property interests, properties in which they've invested, in which they've shared the benefits.

We submit that granting the application will result in wasteful drilling. It will impair correlative rights of interest owners in the properties affected, and also, in offsetting properties, and therefor you should deny the application in total.

MR. CATANACH: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

On behalf of Meridian Oil Company, we would request that the application be denied. Our clients are very much in the position that Mr. Carr's client is in in the north half of Section 28 if the nonstandard proration unit is granted and Meridian, who currently participates in that one well, will no longer participate and they will be compelled to drill what I think is going to be an unnecessary well.

Mr. Perlmen has not provided us, despite his efforts, with any significant geologic dif-

ference to make these particular spacing units unique unto themselves.

There is no way to quantify any of the things that he's told us to determine whether or not ultimately 320-acre spacing is going to be right or wrong.

We urge you to continue the practice of the Commission, which is to err, if at all, on the side of being conservative, whereby we drill wells with large acreage dedicated to it and as these ongoing studies may eventually prove, if additional wells are needed, then we'll drill those wells. It would be impossible now to drill additional wells to recover what may be speculative reserves that may be recovered by the current wells. We've got nothing from the applicant that demonstrates that it would be prudent to change the established spacing pattern for his clients or for anyone else.

Accordingly, we'd request that the application be denied.

MR. CATANACH: Mr. Lund?

MR. LUND: Mr. Catanach, I echo those statements by previous counsel.

We were prepared today to come in and present additional technical evidece to update the information that was presented in the two prior hearings that have been discussed, and based on the evidence, there's

just -- there's just -- there's nothing been shown to us, no technical reasons why the application should be granted.

The Cahn is not atypical and drainage is not necessarily radial in this particular area and it's not necessarily true that the Cahn is draining from Section 33.

There was some discussion about Mr. Boyce's conclusions earlier and I submit that the point that was made was that since you don't know exactly where the gas is coming from and drainage pattern varies in these types of reservoirs, in the coal seam reservoirs, the points about the Boyce study are invalid. There's no basis for any technical or practical reason to treat the two sections separately; that is, Sections 33 and 28. And the evidence that's been presented shows that Amoco has been timely and prudent in its actions. When it got information about the fact that -- that the spacing pattern was too small, 160's were too small, we came to the Commission in a timely fashion and asked for increased spacing.

In short, Mr. Examiner, the elements of the statute on spacing, 70-2-17B, have been met and the effective date of the spacing should be enforced, which is 70-2-18A.

The bottom line here is that the applicants make much of the fact that, you know, gee, if

we had a chance to argue about it, we would have come in and done so. Well, it would have been futile. There's no evidence that would refute the spacing that has been adopted by this Division and we respectfully request that the application be denied.

MR. CATANACH: Mr. Bruce?

MR. BRUCE: Mr. Examiner, the applicants in this case seek to vacate the 320-acre spacing provisions of Division Order Nos R-7588 and R-7588-A as to themselves for two reasons.

First, we assert that the data Amoco relied on does not suffice to justify 320-acre spacing and as a result, 160-acre spacing should be reinstated for the nonstandard units in Sections 28 and 33.

Second, the applicants were not given constitutionally sufficient notice of Case Number 8014 and Case Number 8014 reopened, which resulted in the two orders. As a result, as a matter of law, these orders are void as to the applicants.

Mr. Carr says there's no reason to do this. Well, other than United States and State of New Mexico constitutions, perhaps.

As to the spacing, Amoco's testimony in the previous cases shows that the reservoir is not like usual reservoirs in the San Juan Basin; thus normal

rules to not apply in determining well spacing. In fact, the testimony shows that what you need to do is drill wells, dewater the whole pool, so that more gas may desorb and be produced from the full pool.

Apparently, when wells are more densely spaced there is better dewatering and the greater the ultimate recovery. I think it's been referred to that Alabama, which also has coal gas fields, spaces wells on a 40-acre basis.

Furthermore, the simulation used by Amoco in 1984 is apparently incorrect. It predicted that a well on 320-acre spacing would produce a fixed amount of gas in 30 to 35 years; however, as testimony has shown it has already in eight years produced approximately the amount of gas predicted. Obviously there's something wrong with the simulation and which means there may be a different mechanism in the field and therefor you can't use traditional measures.

We all know that the Division often, as Mr. Carr has asserted, errs on the -- or -- and Mr. Kellahin -- errs on the side of caution and increases spacing and then infills.

Well, first, statewide rules of 160 acres are presumptively correct and should be adhered to unless there's some compelling reason to change them. Thus

there's no reason to jump the gun and and prescribe 320 acres for everything.

An example of this is in the San Juan Basin, the Basin Dakota formation was spaced on 320 acres thirty-five years ago and over the last decade or more is now being infilled on -- or two wells on 320 acres. I think this shows that there's no real, great need to go ahead and increase spacing at the drop of a hat.

In short, we believe that Amoco presented in its hearings a one-sided version of events without adequate notice to the interest owners to give them a chance to come in and protect their rights. We believe the only way to protect the interest owners is to reinstate 160 nonstandard units, as we previously requested in the amended application.

Furthermore, even if 320-acre spacing is retained, it cannot be effective as to the applicants until they were notified at the very least by Amoco of the 320-acre spacing. This occurred in August of 1986.

As I previously stated, there is -- there are court orders regarding the necessity of giving proper notice to royalty interest owners and we should follow that precedent in this case.

Mr. Carr did state that there is no instance of orders being vacated as to certain par-

ties; however, one case from Oklahoma, a case called Luthan versus Amoco Production Company, 652 Pacific 2d, 308, did that very thing, where Amoco was -- where spacing was increased from 160 acres to 640 acres without notice to Amoco. Amoco then later came back in and said, hey, we didn't receive notice, and as a result the spacing was decreased as to Amoco from 640 back down to 160 acres.

I think in short, what's good for the goose is good for the gander and if Amoco can come back in based on constitutionally deficient notice and avoid the results of an increase in spacing, I think that is also good for the royalty owners in this case.

Thank you.

MR. CATANACH: Thank you. Can I get both sides to submit a brief on the adequate notice question and if you would present that to the Division before February 20th when this case comes up next.

At that, we'll leave the record open in this case and continue it and readvertise it for February 20th, 1988.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9159, heard by me on Jan 20 1988.

David R. Catanach, Examiner
Oil Conservation Division