BEFORE THE
OIL CONSERVATION COMMISSION
HOBBS, NEW MEXICO

IN THE MATTER OF:

Case No. 1637

TRANSCRIPT OF HEARING

APRIL 16, 1959

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
Phone CHapel 3-6691

NEW MEXICO OIL CONSERVATION COMMISSION

1206 East Scharbauer

Hobbs, NEW MEXICO

REGISTER

HEARING DATE APRIL 15, 1959 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
F. Norman Woodruff	El Paso Nat. Gas	El Paso
Ben R. Howell	"	"
M.T. Smith	Shell Oil Co.	Midland
J.F. Butterfield	Conoco	Ponca City
L.W. Selinger	Skelly	Tulsa
H.W. Nippert	Atlantic	Dallas
John Mills	The Texas Co.	Midland
R.L. McKeown	McWood Corp.	Midland
L.M. Bell	Phillips Pet. Co.	Midland
R.L. Bass	Gulf Oil	Houston
R.M. Bayer	" "	Ft Worth
B. Kastler	" "	Roswell
A.M. Bell	" "	Denver
J.E. Damewood	Indiana Oil Purch Co	Midland
Jason Kellahin	Kellahin & Fox	Santa Fe, N.M.
John L. Sanders	Magnolia Pet Co.	Hobbs
C.P. St. Laurent	Shell Oil Co.	Roswell N.M.
Bill Sullivan	El Paso Nat. Gas Prod Co	Farmington, N.M.
Ray Phillips Jr.	Northwest Prod.	Albuquerque

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NAME:	REPRESENTING:	LOCATION:
WARREN MANKIN	AZTEC O&G Co.	Dallas
REX C CRAWFORD	SHELL	Roswell
E.K. WRIDE	GULF	Hobbs
GUS ATHANAS	PAN AMERICAN	LUBBOCK
GUY BUELL	"	FT. WORTH
R.S. CHRISTIE	AMERADA	Tulsa
J.R. CURRY	Shell Oil Co.	Midland, Tex
R.E. Shook	Gulf Oil Corp.	Hobbs
Jack Schrenkel	Union Oil Co. of California	Midland, Tex
Grant L Adkins Jr	" "	" "
R L Denton	Magnolia	" "
B. G. Howard	The Ohio Oil Co	Hobbs, N. Mex
D. E. Morris	" " " "	" "
J H Hoover	Gulf Oil Corp	Roswell, N. M.
D D Ramey	Skelly Oil Co.	Hobbs N.M.
T R Mikesell	Skelly Oil Co	Hobbs N.M.
R.R. Vann	Schlumberger	Hobbs N.M.

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NAME:	REPRESENTING:	LOCATION:
W. G. Mead	Cont Oil Co.	Artesia
A. L. Fredrick	OCC	Aztec
Kenneth McPeters	John M. Kelly	Hobbs.
Mabel Williams	Gulf Oil Corp	Denver.
E. L. Pauli	Gulf Oil Corp	Hobbs.
O. C. McBryde, Jr.	Amerada	Midland
L. O. Lemay	N. M. I. M. T.	Socorro
Fred Weber	"	"
Ted Charlet	N. M. I. M. T	Socorro.
Harrell L. Childs	The Ohio O. & G. Co.	Hobbs
John W. Runyan	N. M. O. C. C.	Hobbs
Charlie Jagoman	El Paso	El Paso.
John M. Kelly	Independent	Roswell
Victor T. Lyon	Continental Oil Co	Eunice, N. M.
Raymond A. Beirne	Continental Oil Co.	Eunice

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NAME:	REPRESENTING:	LOCATION:
C. N. Rieder	General Petr. Inc	Hobbs.
Randy Reese	" " "	"
Walter Famariss Jr.	Famariss Oil	"
Jess H Robinson	" "	"
H P Bratton	Harvey Bratton [illegible]	[illegible]
J T Dunn	The Pure Oil Co	Ft Worth, Tex
D E Fish	—	—
Harry C Well	—	—
H.G. Wesberry	Tidewater	Midland
Robert N Miller	✓	Hobbs
Roy R. Ray	J. R. Cone	Hobbs
H.P. Shackelford	Tidewater Oil Co.	Hobbs.
E. J. Motter	Cities Service	Hobbs
John W. Hoggard	"	"
Raymond Lamb	Wilson Oil Co	Artesia
Neil S. Whitmore	Pan-American Petr. Corp.	Lubbock.
Paul S. Johnston	Gackle Oil Co.	Hobbs

NEW MEXICO OIL CONSERVATION COMMISSION

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NAME:	REPRESENTING:	LOCATION:
M. G. Shiring	Sinclair Crude Oil Co.	Midland
Frank D. Gordon	"	Tulsa
Charles T. Lucas Jr.	Cactus Pet., Inc.	Midland
Lonnie C. Smith	Gulf Oil Corp	Hobbs
W. F. Bridges III	Gulf Oil Corp.	Hobbs
W. T. VanDenburgh	"	"
D. L. Sweet	C.H. Sweet Oil Co	"
O. Hewitt	P.B. Pipeline Co	Midland
Dick Booker	CSO	"
V.M. Hollrah	Atlantic	Dallas
W.P. Tomlinson	"	Roswell
A.B. Tanco	"	Dallas Texas.
V.R. Cammack	"	Roswell N.M.
J. R. Chatenkerry	"	Midland
C. Salter	Sinclair	Tulsa
R. N. Hughes	Phillips	Hobbs.
R. L. Tuttle	Phillips	Hobbs
D. C. Sears	Gulf	"
Wm. B. King	Phillips	Bartlesville Okla
R M Anderson	Sinclair	Midland

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NAME:	REPRESENTING:	LOCATION:
H.W. Swaim	Continental Oil Co.	Hobbs, N.M.
R.L. Adams	" "	Roswell, N.M.
J A Queen	" "	" "
S.D. Dooley	" "	Hobbs "
L.O. Storm	Self	Hobbs
E.D. Cottingham	Continental Oil Co.	Artesia N.M.
James C Law	Amerada	Tulsa
[illegible] Jodom	Amerada	Tulsa
T.D. Hollis	Southwestern Gas	Hobbs.
J O [illegible]	Amerada	Tulsa
R E Sisk	Amerada	Midland
D.C. Capps	"	Monument, N.M.
W.L. Armstrong	Self	Artesia
E.C. Arnold	OCC	Aztec
L. L. Shoemaker	Indiana Oil Purch. Co.	Midland
[illegible]	El Paso Natural	Jal
R.L. Cagan	El Paso Natural	Jal
[illegible]	El Paso Natural	El Paso

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NAME:	REPRESENTING:	LOCATION:
Kenneth B Starks	El Paso Natural	Jal
Kenneth n Gordon	El Paso natural	Jal
L. L. McDonald	The Pure O.I Co	Ft Worth
B. L Griffith	The Pure O.I Co	Midland
Geo. Hinchfield	Moran	Hobbs, N.M.
J W Adams		Hobbs, N.M.
J.O. Felts	Conoco	Eunice, N.M.
Fowler Hix	Leonard Oil Co.	Roswell,
R.W. Byram	R.W. Byram & Co.	Austin

BEFORE THE
OIL CONSERVATION COMMISSION
HOBBS, NEW MEXICO

IN THE MATTER OF:

Case 1637 Application of The Atlantic Refining Company for an order combining the Allison-Pennsylvanian and the North Allison-Pennsylvanian Pools in Lea and Roosevelt Counties, New Mexico, and for the promulgation of special rules and regulations therefor. Applicant, in the above-styled cause, seeks an order combining the Allison-Pennsylvanian and the North Allison-Pennsylvanian Pools in Lea and Roosevelt Counties, New Mexico, and providing for the establishment of 80-acre proration units in said combined pool.

Hobbs Auditorium
Hobbs, New Mexico
April 16, 1959

BEFORE:

A. L. Porter, Jr.
Murray Morgan
E. S. Walker

TRANSCRIPT OF HEARING

MR. PORTER: The meeting will come to order, please. We are going to take up first this morning Case 1636. Before we begin this case, I would like for the record to show that Mr. E. S. Walker is sitting in place of Governor Burroughs this morning on the Commission.

MR. PAYNE: Case 1637, "Application of The Atlantic Refining Company for an order combining the Allison-Pennsylvanian and the North Allison-Pennsylvanian Pools in Lea and Roosevelt Counties, New Mexico, and for the promulgation of special rules and

regulations therefor."

MR. PORTER: Let me correct the record, please. I announced Case 1636, it should be case 1637.

MR. HINKLE: If the Commission please, Clarence Hinkle of Hervey, Dow and Hinkle, Roswell, appearing on behalf of the Atlantic Refining Company. We have one witness, Mr. Phil Tomlinson, that I would like to have sworn.

(Witness sworn in.)

W. P. TOMLINSON

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, please?

A W. P. Tomlinson.

Q By whom are you employed, Mr. Tomlinson?

A Atlantic Refining Company.

Q In what capacity?

A As Area Reservoir Engineer.

Q How long have you been employed in that capacity?

A Since 1954.

Q Have you previously testified before the Oil Conservation Commission?

A Yes, sir.

Q Have you made a study of the Allison and North Allison

areas?

A Yes, sir.

Q Are you familiar with the application of the Atlantic Refining Company in this case?

A Yes sir, I am.

Q One of the purposes of the application is to re-designate the Allison and North Allison Pools, is it not?

A Yes, sir.

Q And to combine those pools?

A Yes, sir.

Q Have you prepared a plat which shows the present designation and also your proposed designation and combination of the pools?

A Yes sir, we have.

(Thereupon, the document was marked as Atlantic's Exhibit Number One for identification.)

Q (By Mr. Hinkle) Would you refer to Atlantic's Exhibit One and explain it to the Commission?

A This is Atlantic's Exhibit Number One. This map shows the present and proposed boundaries of the Allison and North Allison Pools. The present boundary of the Allison Pool is shown in a dark blue dotted line, which I am outlining here on the map. The North Allison Pool is shown by a heavy blue solid line somewhat to the north of the Allison Pool. The proposed boundaries that

we have are shown as a hashed line and encompass most of the area of both pools and some area between. The color coding on the map represents different types of mineral interests. The purpose --

Q Do you have three characters of land involved?

A Yes, sir.

Q What are they?

A Federal, Fee and State land involved. Purple indicates Federal land, light green indicates State and orange shows the Fee land involved. Since we turned in our application, there's been occasion for revision of that. We have not revised our application, but at the present time, it should be changed in order that the Commission might adopt to include at least the west half of the northwest quarter of Section 12, Township 9 South, Range 36 East. On that tract is a well that was once completed as a dry hole by Magnolia Petroleum Company and now they have gone in and set pipe and completed it as an oil producer in the same pay as the other wells in the field.

(Thereupon, the document was marked as Atlantic's Exhibit Number Two for identification.)

A In general, the outlines of this map are based on our structural interpretations as shown on Exhibit Two.

Q (By Mr. Hinkle) Have you prepared a structural map of the area?

A Yes, sir.

Q Refer to Atlantic's Exhibit Two and explain to the Commission what it is and what it shows?

A Atlantic's Exhibit Two is a structure map of the Bough "C" Zone in the Pennsylvanian Formation. You will notice that our interpretation shows an elongated anticlinal structure and there are no saddles in between the Allison and North Allison Field. The Allison is a little lower than the North Allison in structure, but these contour intervals are ten-foot intervals, so there's very little relief there. Now, I might add that I have not used seismic, any seismic data in contouring this map; however, the seismic data that we have does reflect about the same thing structurally. It does indicate continuity definitely between the two zones.

Q Does it show that both pools are on the same structure?

A Yes, sir.

Q What are the lines "A" and "A" Prime and "B" and "B" Prime which you have indicated on the plat?

A The lines shown in red, "A" to "A" Prime and "B" to "B" Prime, are traces of cross sections that we prepared, which are Exhibits Three and Four respectively.

Q Before you get to those exhibits, what information did you use in preparing this structural map?

A We used geological tops as picked from electrical and radioactivity logs.

Q Did you examine electrical and radioactivity logs of

practically all of the wells in the area?

A All of the wells in the field were examined.

Q They were all available to you?

A Yes, sir.

Q Any other information used in preparing the plat?

A None at all, except that I might say the completions are shown as they are producing now, and the Magnolia dry hole in the northwest of the northwest of Section 12, Township 8 South.

Q Does this also show the locations of wells that applications have been applied for to drill?

A Yes sir, there are two additional wells which are spotted on the map as locations, the Cosden Sunray Number 1 in the north half of the south half of Section 11, Township 9 South, Range 36 East, it is shown as a location, and also the Cosden Sunray State 1-C in the west half of the northwest, pardon me, let me correct that, the west half of the northeast quarter of Section 36, Township 8 South, Range 36 East, that's also shown as a location. One of those wells is now drilling to the Allison and North Allison pay.

Q That's the Cosden well?

A Yes, sir. Now, both of those wells, the locations of both of those wells were staked after we turned in our application.

Q Did you mention the Cactus well in Section 2?

A Yes sir, the Cactus--no, I didn't mention the Cactus well in Section 2. That's the one in the east half of the northeast

quarter of Section 2, Township 8 South--pardon me, Township 9 South, Range 36 East, which I believe was also staked after we turned in our application, but it's within the field limits.

(Thereupon, the document was marked as Atlantic's Exhibit Number Three for identification.)

Q (By Mr. Hinkle) Now, refer to Atlantic's Exhibit Three, which is the cross section "A" and "A" Prime, and explain to the Commission what that shows?

A This cross section, "A" and "A" Prime and "B" and "B" Prime, are the same ones that the traces were shown for on Exhibit Two. They were constructed from electrical and radio-activity logs. We have shown the top of the Pennsylvanian Formation and the interval of the Bough "C" Zone in the Pennsylvanian and we have also shown on those wells the intervals of completion. Now, the significant thing about these cross sections is that the Bough "C" Zone shows up as a clean limestone formation on these logs, no shale breaks. You can trace that zone on "A" to "A" Prime all the way across as a clean formation. It also shows porosity on the neutron curves for these wells. The Atlantic State "AD" Number 1 has porisity, this little kick right here is for porosity, and I think there's some porosity in the bottom on the Bough "C" where we completed it and it is perforated, if you will notice, it is perforated opposite the porosity, and likewise in Atlantic's Federal Yates Number 1, it is perforated

opposite one of those porous intervals. The Cactus Sunray State likewise is completed in the same interval and so on across, you can see these porous intervals occurring.

Q Does this show a continuity of the Bough "C" Zone all the way through, throughout the length of the area?

A It definitely indicates continuity.

Q Does it show a pretty uniform pay section?

A It shows a very uniform pay section for it to be that thin, very uniform.

Q And porosity throughout the section?

A Yes sir, good porosity.

(Thereupon, the document was marked as Atlantic's Exhibit Number Four for identification.)

Q (By Mr. Hinkle) Now refer to Atlantic's Exhibit Four, which is the cross section "B" and "B" Prime, and explain it to the Commission?

A Atlantic's Exhibit Four is cross section "B" to "B" Prime. It cross the south end of our proposed field from west to east. It is constructed from the same information we used before on the other cross section and depicts essentially the same thing. There is good continuity laterally in the south part of the field. The one well, the Ohio State Number 1, did not have a log with the same scale that we used on these others so we had to leave it out, but the information that we obtained for that well

was from a log. It was the wrong scale; however, it was put in the cross section.

Q But the log that you did have of that well showed the same zone and the relative position you have on this cross section?

A Yes, sir.

Q And showed porosity the same as the others?

A Yes sir, both of those indicate good continuity between wells in the field, and I think they definitely indicate that the two pools, Allison and North Allison, are connected.

Q Have you accumulated any basic field data with respect to the North Allison and Allison Pools?

A We have accumulated quite a bit. There's several things that I believe are pertinent to this case that I would like to tell the Commission about. First, we have cores on four wells in the field and we obtained a weighted average porosity for those four cores; the average porosity is five and a half per cent. We also weighted the permeability that we obtained and it was a hundred and seventeen millidarcies indicated average basis. That's very good permeability, we do not ordinarily find it that good in this part of the country, and for the purposes of the work that we have done in connection with this field, we have used an estimated saturation for oil of 75 per cent. We have no laboratory data that we feel is very reliable in that respect, so that we used an estimated figure. Most of the storage space in the reservoir is contained in vugs, very large vugs, and Matrix

porosity. So far, I know of no water-oil contact that has been obtained in this field and defined as such. Now, one thing that sort of bears this out is the Trice Drilling Company well located in the east half of the northeast quarter of Section 10, which is quite low in relation to some of the other wells in the field. Now, that well does produce water, but it makes oil, too. I might say in that respect that other wells higher on the structure are also making water, so we believe that we haven't found water-oil contact.

One other thing that I failed to mention about these field limits that I think should be brought out at this time is that the field limits have not actually been defined in this pool except possibly in one direction. That's a dry hole that Atlantic drilled and known as the Pebworth Number 1 in the North Allison area. All other directions could be productive.

The gross pay thickness in the--I might say the net pay thickness in the Bough "C" Zone is from five to ten feet. For the purposes of work, for calculations, we have used, in this field, we have used a pay thickness of ten feet, some of it is less. The average oil gravity in this field is 48 degrees API.

MR. PORTER: Forty-eight?

A Yes sir, 48 degrees. The saturation pressure is 3,150 PSI, and the solution gas-oil ratio at that pressure was 1,517 cubic feet per barrel. The formation, in value factor, at the original reservoir pressure, which was somewhat higher than the

saturation pressure, is 1.821. One thing, we used all of those, several of those figures there in our calculation in regard to this reservoir. The one thing I might note here on the fluid in this field is that when we found we had a discovery in the North Allison area, we immediately, it immediately occurred to us that possibly the two pools were connected. And so with that in mind, we requested our laboratory to take some samples to determine if there was any difference, and definitely we did want to pin down a difference if there was a possibility that they had a different type of reservoir fluid in them. So I have the results of a couple of significant points. I won't go through all of our fluid data, but the two fluids are very similar.

Now, just for example, the fluid in the North Allison has a formation volume factor of 2,000 pounds of 1.53. The fluid in the Allison Pool at the same pressure of 2,000 pounds has a formation volume factor of 1.52 and probably that's about as-- laboratory accuracy may not be that good. In other words, it awfully close and we wouldn't expect it to get any closer. The gas and solution at 2,000 pounds in the North Allison Pool is 900 cubic feet per barrel, the gas and solution at the same pressure in the Allison is 890 cubic feet per barrel. So you can see from that that they are, for all practical purposes, we have the same fluid in both reservoirs.

Original reservoir pressure in the pool was 3,518 pounds. This was obtained in the Gulf Federal Mills Number 1 a discovery

well for the Allison. Now, the average pressure in January of 1959 is 2,710 pounds and that includes an average of pressure in the North Allison as well as the Allison.

We obtained some productivity indeces in these two pools, it averages 5.6 barrels of oil per pound drop in the bottomhole pressure. The range on those that we have is from 2.6 to 11.9. They are pretty close, I think, especially for as thin a pay section as we have in these wells. The production rate during January for both combined pools is about 47,000 barrels; the cumulative to February the 1st is 1,860,000 barrels, and that oil came from 14 producing wells and there are two locations or drilling wells, one dry hole and one that has been worked over within the past two or three days, and I mentioned it was formerly a dry hole and is now producing.

Most of the wells were completed by setting pipe to total depth and perforating. The total area that we have outlined in our proposed field limits amounts to 2,000 acres.

Q (By Mr. Hinkle) But that would be increased by reason of the well you mentioned originally that --

A I think it should be increased to include the Magnolia, former Magnolia dry hole.

Q You mentioned that some of the other wells other than the Trice well were making water. Are any of the wells that are up on top of the structure making water?

A The wells right in here do make water.

Q Is that a pretty good indication that it is not a water-drive field?

A I think it is, Mr. Hinkle. The pressures in these wells have been falling right on down and shown a steady decline over the years and is still declining in the area of the Allison, original Allison wells. Had we had a water-drive, I believe it would begin to show up by now. That water seems to be present in the pay and it is produced out with the oil as it comes along. Some of the wells started out making more water than they are now making, which is itself kind of interesting to notice that. The Atlantic State "AD" started out making water and I think now essentially it doesn't make any, and I believe the Magnolia, one of the Magnolia Childers Federal wells here had the same characteristic. Those wells were not worked over and the water disappeared and went down continuously.

Q Would that indicate then that there might be considerable acreage not shown on your map there, that is not included in your structure, that might be productive?

A Definitely it could be productive. As I mentioned before, there's a well, a low well on the southwest flange, that's Trice Production Company, I believe it's called the Merrill Number 1, is a very low well that makes water, but is also a commercial oil well. So we do not know that structural position is a limiting factor in this reservoir. In this particular location to the north, the Atlantic Refining Company Pebworth Number 1,

a dry hole on the edge of the North Allison Pool, was higher or as high as the discovery well in the North Allison. That well failed to produce because of porosity and permeability development in the pay rather than water. It simply had no porosity or permeability. At the present, we obtained a core and in that particular one, it definitely indicated it wouldn't produce.

(Thereupon, the document was marked as Atlantic's Exhibit Number Five for identification.)

Q (By Mr. Hinkle) Well, Mr. Tomlinson, will you refer to Exhibit Five and explain to the Commission what it shows?

A Exhibit Five is a graph showing reservoir performance versus time for the Allison and North Allison Pools combined. That would be the combined production of water and oil and gas, and also the number of wells on this graph. These heavy blue lines show oil production and it has risen as the number of wells producing has increased. It has reflected some purchasers' proration and allowable increases as they have been granted by the Commission. The number of wells has grown fairly steadily through the middle of 1956 and there was a leveling off period there until discovery took place in the North Allison area and before drilling was started. Per cent of water is demonstrated at the bottom of the page and you will notice that the per cent water was higher in the early life than it has been recently. Part of that decline occurred at a time when no additional drilling was occurring, so

it means that some water was being exhausted with the pay.

Q That's still another indication of it not being a water-drive pool, is it not?

A To me, it is. Now, we have shown in a light blue line at the top of the graph the gas-oil ratio by months from the beginning of the production, producing life in the pool. Generally, that ranges between about 1,100 and 1,500 cubic feet per barrel, 1,500 or 1,600 cubic feet and it is quite erratic, and the only way that I can account for that is that through much of the life, there has not been any market for the gas and I presume the operators didn't have their opportunity to measure their gas as often as they might had they been selling it. All of this information on this graph was obtained from the New Mexico Oil and Gas Engineering Committee Book, which reflects C-115 reports.

(Thereupon, the document was marked at Atlantic's Exhibit Number Six for identification.)

Q (By Mr. Hinkle) Now, refer to Atlantic's Exhibit Number Six and explain to the Commission what that shows?

A Atlantic Exhibit Number Six is a graph showing the bottomhole pressure history of several wells in the pool, and not all the wells are shown on here, but the ones where we had initial reservoir pressures were put on, and we have coded those wells as follows: The dots with a circle around them are the pressures for the Gulf Federal Mills Number 1--that was the discovery well,

by the way. The Ohio State "E" Number 1 pressures are shown by an "X," the pressures for the Atlantic State "AD" Number 1 are shown by a dot with a triangle around it, and the pressures for the Atlantic State "AE" Number 1, which is the discovery well in the North Allison area, is shown by a dot with a square around it, Atlantic's Federal Yates Number 1 is shown by a cross with a circle around it, and on this, I can't tell how the Sun Mills Number 1 is shown.

Q It's a square, I guess.

A A square with a circle around it.

MR. MORGAN: With a dot in the middle.

A Now, the significant thing here shown by this graph is that the original pressure in the reservoir is 3,518 pounds, and wells that were completed subsequent to that time came in with pressures less than the original pressure and that indicated to us that those locations had been drained prior to their drilling. That would seem to us to indicate continuity definitely from one well to the location of another and some of those locations are pretty far away, pretty far removed from the discovery wells or other development that might have occurred at the time the wells were drilled. These arrows on this graph indicate the first pressure obtained for each well.

Q Were those pressures all taken uniformly or --

A They all had forty-eight hour shut-in periods, each one of them did.

Q Is that a generally accepted method?

A All of those were taken by bottomhole pressure and corrected to the same datum.

Q So they are reliable?

A We think they are very reliable pressures. Now, I might point out here, looking at that, the second well in the pool is the Ohio State "E" Number 1, I believe. That well came in quite a bit lower than the original pressure, the third well was the Atlantic State "AD" Number 1, it came in at virtually the same pressure then existing in the Gulf well. Now, the locations of those two wells, I'll show you on Exhibit Two, the Gulf well is in the northeast quarter of the northwest quarter of Section 11, the Ohio well is in the southwest quarter of the southeast quarter of Section 2. Now, at that time, that was definitely 80-acre spacing between those two wells and it appears to us that the drainage influence of the Gulf well extended to the Ohio location. Now, the pressure for the Atlantic State "AD" Number 1 was very similar to that of the Gulf discovery well and it is 1,320 feet away from the Gulf well. Now, that would be the outer perimeter of drainage under an 80-acre spacing pattern, so it definitely means that the Gulf well in that direction was influencing drainage to the extent of 80 acres.

Q Does this show about as positively as can be shown that one well will drain 80 acres?

A Yes sir, it does show very positively that one well can.

Q And not only with respect to the situation which you mentioned there in the southern part, but also in the northern part, isn't that right?

A Yes sir, the north part of the field--northern part of the field had pressures several hundred--that is, the North Allison area, had pressures several hundred pounds below that of the discovery well in the Allison. Now, since they are all practically the same datum, or the pressures all refer to the same datum, we would have assumed that we would have had the same pressures but apparently they had been drained. Now, there was a second well drilled in the North Allison area, the Atlantic Federal Yates Number 1, and it came, it is shown at the end of this trace on the graph, depicting the pressures for the Atlantic State "AE" Number 1 as the second dot there with the square around it, it is almost superimposed. That's just identically the same pressure as we had at that time in the State "AE" Number 1, and those two wells are on 80-acre spacing. We think that this graph is just as strongly an indication as we could get that these wells are draining a wide area.

(Thereupon, the document was marked as Atlantic's Exhibit Number Seven for identification.)

Q (By Mr. Hinkle) Now, refer to Atlantic's Exhibit Number Seven and explain that to the Commission?

A Yes sir, Exhibit Seven shows the results of bottomhole

pressure surveys conducted in the field in December and January, December, '58 and January of '59, and at that time, we managed to get most of the wells in the field tested. I think most of them were bottomhole pressure and three of them, I believe, were tested with sounding devices. Now, on this map, which is Exhibit Seven, we have put in all of the pressures at the field datum and contoured it around those bottomhole, around the pressures obtained with bottomhole pressure bombs. Now, we have also shown the pressures as indicated by sonic devices, but we were a little uncertain as to how accurate those were because we didn't know about the gradient spacing in the wells, and also sometimes a sonic device gives a false reading as to the fluid level in the well. We thought we should show them, to show the information, but we didn't believe it was reliable enough to contour.

We haven't closed these contours on this map because we don't know the field limits, but in the area where we have contoured it, we believe is an accurate representation of pressures. You will notice that the pressures are lower in the original Allison producing area grade gradually higher as you go north, and that's without exception. The Allison area generally is 24 or 2,500 pounds, the lowest point is 2343, and as you progress north, you find continually higher pressures. For example, the Cactus State "A" Number 1 is 2,803 pounds, Atlantic's Federal Yates Number 1 is 3,108 pounds and the Atlantic State "AE" Number 1 is 3,115 pounds. Now, to us that means that the closer the acreage was to the

Allison area, the more it had been drained, and that's logically what you would expect. It also indicates definitely the fluid is flowing from north to south in this pool at the present time.

Q It also indicates that the Allison and North Allison is all one pool, does it not?

A Yes sir, it does indicate that, that gradual increase of pressures.

Q And that movement from north to south would also indicate that one well will drain 80 acres, too, is that right?

A Yes, sir.

Q Have you prepared any data with respect to the economics involved in the development of the Allison-North Allison area?

A Yes sir, we have.

(Thereupon, the document was marked as Atlantic's Exhibit Number Eight for identification.)

Q (By Mr. Hinkle) Refer to your Exhibit Eight and explain it to the Commission?

A Exhibit Eight is titled, "Economics of Drilling One Well Per 40 Acres in Allison and North Allison Pools." Before we get into the discussion of these economics, I would like to point out that the data that we used has been given to you, the data for reserves has been given to you in the basic data that I gave you earlier in discussion here, that all of the oil in place under a 40-acre tract, in the Allison Pool average tract, that say

would contain ten feet of pay, would be 70,000 barrels, and that's all that we could see to be there based on the data that we have.

Q What method did you use in arriving at that figure?

A That's volumetric calculation, sir.

Q And is that a generally accepted method in the industry?

A Yes sir, it is, and probably in this case, the most reliable that we could use.

Q Because of the data available?

A Yes sir, we have pretty good data. We realize that it could vary somewhat from this, but we believe that we are within fairly good, pretty good range of accuracy here. Now, in making this calculation, we assumed that everyone would be paying one eighth royalty, and I think it is indicated here on this exhibit as to what the oil price is and what taxes we assumed, and all of the total gross value or total gross revenue after we pay severance taxes would amount to $179.540.00. Now, our latest drilling estimates, cost estimate for cost of drilling wells is $175,000.00, and our production engineers say that pumping equipment for one well will cost $30,000.00, and that flow lines will average out about $1,600.00 a piece. All of this total is up to $206,600.00. That then would be a difference of $27,060.00 provided that you could get all of the oil and gas under that tract. Now, in practice we know we can't get, can't approach anything like all of the oil and gas under a tract, and one thing that was not

included on this cost estimate was operating cost. This calculation assumes that we would, after we get the well drilled, it wouldn't cost us anything to operate it, but in reality, there would be considerable cost for that.

Q Does it take into consideration taxes, you have severance, but there are other taxes involved, are there not?

A There are taxes which I didn't have any information on, but it would increase the amount of tax payments for the property.

Q So that shows a loss when you drill on 40 acres of $27,060, and that's not taking into consideration all of your taxes, all of your operating costs, and it is taking into consideration a hundred per cent recovery of the oil in place, is that right?

A That's right, sir. In reality, I believe the loss would be quite a bit more.

Q Do you have any further comments with respect to Exhibit Eight?

A It certainly shows that operators don't want to drill on 40 acres, shouldn't be drilling on 40 acres in that pool.

Q Now, has the field, or the Allison-North Allison areas, been developed so far so that 80 acres can be assigned to each well that has been drilled?

A Yes sir, we have.

(Thereupon, the document was marked as Atlantic's Exhibit Number Nine for identification.)

Q (By Mr. Hinkle) Will you refer to Exhibit Nine and explain to the Commission what that shows?

A Exhibit Nine is a map showing a possible arrangement of 80-acre proration units in the Allison-North Allison Pool areas. Now, all we have done on this map is go through it and show proration units for the area included in our proposed boundary. There are wells now either drilling or in existence outside of our proposed boundary, but they could also be allocated to 80 acres, and you will notice that there's, in several instances we have openings under our proposed rules as to how you could run your proration units and also be some openings, I suppose, to where you want to drill the wells. And there's a situation which may not be apparent at first, but in the northeast quarter of Section 2, Township 8 South, Range 36 East, some people might think that was indicating a need for a communitization, that is the Cactus acreage and the 40-acre Atlantic tract, that tract has already been communitized under a joint operating agreement at this time and the royalty, of course, in that quarter section is all common, it's State acreage.

Q You are not proposing to the Commission the arrangement shown on Exhibit Nine, are you, is it the definite pattern that must be followed?

A No sir, this is one possible arrangement. I think maybe the operators might want their options as to how they will arrange their units.

Q But under this suggested arrangement, it would not be necessary to communitize any acreage?

A No sir, not any.

Q That's the reason you have selected this particular pattern?

A Yes, sir. Well, there's quite a --

Q --as distinguished from others?

A There's a number of other combinations where you wouldn't have to unitize.

Q Do you have any opinion to express to the Commission as to whether or not the same amount or substantially the same amount of oil will be recovered if developed on 80 acres or if developed on 40 acres?

A I think that very substantially the same amount will be recovered.

Q Would the development on 40 acres, in your opinion, result in an economic loss to the operators?

A Yes sir, it would.

Q Do you have any recommendations to make to the Commission as to special field rules to be applied in this case?

A Well, yes, I do. First, I propose that these, that the Allison and North Allison Pools be combined and that their limits be extended between the two pools and also that it expand the pool from time to time as necessary; that I think, second, that the Commission adopt 80-acre proration units, and those proration

units should consist of two adjacent Governmental quarter quarter sections or lots within a single Governmental section and would constitute either the north half, south half, east half or west half of such quarter section, and that all wells drilled in the pool be located within one hundred feet off the center of either lot or quarter section in the proration unit. The third thing, I think we should, the Commission should do is that they should adopt the policy of granting each 80-acre proration unit situated in the pool, an 80-acre prorational factor for depth range between 9,000 and 10,000 feet as provided in the State-wide rules. I believe that's Rule 505 that takes that into account. And if any well is assigned less than 78 acres or more than 82 acres, its allowable should be in proration that that acreage bears to the 80 acres, and of course, in no event should any proration unit contain more than two lots or quarter quarter sections. And further, that if there are any wells--there are some already--that do not fall within these spacing requirements, if they have been drilled or started to drill before the effective date in the order that might be adopted, that they be granted an exception to the spacing requirements.

Q Is it your opinion that 80-acre spacing in this particular case and the special field rules you have recommended protect the correlative rights of all parties concerned?

A Yes, sir.

Q Including royalty owners?

A Yes, sir.

MR. HINKLE: That's all we have now.

MR. PORTER: Did you want to offer your exhibits at this time, Mr. Hinkle?

MR. HINKLE: Yes, we would like to offer Exhibits One through Nine inclusive, I believe it is.

MR. PORTER: Is there objection to the admission of Atlantic's Exhibits One through Nine?

They will be admitted.

Anyone have a question of Mr. Tomlinson?

MR. FISCHER: Mr. Tomlinson, that Pebworth et al Well Number 1 above your Atlantic "AE" Number 1, did it go to the Bough "C" Zone?

A Yes sir, that well is drilled to the Devonian as an exploratory well and we cored the Bough "C" as we went through it. We thought that probably we would get a discovery or might not, and it didn't indicate any production.

MR. FISCHER: You don't have any pressures on that zone, do you?

A I don't believe we tested that half after we got a look at the core.

MR. FISCHER: You have no pressures on it?

A No, sir.

MR. FISCHER: Thank you.

MR. PORTER: Mr. Utz?

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Tomlinson, am I correct in there being thirteen wells in this pool now, on your proposed outline of this pool?

A I thought I said fourteen. Let's see if I can count them here.

Q Well, thirteen or fourteen?

A I believe there's fourteen producers, Mr. Utz.

Q Do you have any other pressures on all of those wells?

A No sir, we don't. Now, for example, the Cactus well didn't have pressures taken right away on it, we didn't put pressures in for all of them.

Q How many of them do you have the initial pressures for?

A I believe there's six of them shown here on the graph.

Q Well, do you have pressures for any more than the six?

A Yes sir, we do. For example, on this recent survey, we have pressures for I believe all but two wells in the field.

Q Initial pressure?

A Oh no, I don't believe we do.

Q You only have initial pressure for six wells?

A Yes, sir.

Q Would any of the other operators have initial pressures for their wells?

A Well, yes sir, we obtained--this includes information for Gulf, Ohio, Atlantic and Sun. Now, I might say there's

a little more information here. In 1956, Magnolia was drilling a well, I believe it was the Childers Federal Number 2, and they got a drill stem test when they were drilling it. Now, that well in pay is not corrected to datum, but since it's very little relief, the correction would be probably less than twenty-five pounds in any event. That test was taken on March 20, 1956 and the pressure in that well was 2,985 pounds. It would be located just about, a little below the trace for the Ohio State Number 1 Well. This was considerably less than the original reservoir pressure and we checked into the matter of whether that pressure was better than the bottomhole pressure and it indicated a complete buildup on that pressure, so it's probably a reliable indication of pressure at that location.

Q Did you state what the datum was for the pressures shown on Exhibit Six?

A Oh, pardon me, which one?

Q On Exhibit Six.

A It is minus 5600 feet.

Q Mr. Tomlinson, on your Exhibit Nine, you have proposed certain 80-acre proration units which might be used. Do you believe that all of those units which have wells on them are productive throughout the unit?

A You mean are all those units which have had wells drilled on them --

Q Yes, sir.

A Is all of that productive acreage? Yes sir, in my opinion, it is. As a matter of fact, there's some that we didn't have included in here that's turned out to be productive now. The Magnolia Company has recompleted their dry hole in the southeast side of the field.

Q Let's look at Exhibit Number Two. What is your lease contour there which you feel is productive?

A Well sir, in my opinion, the field is productive beyond the lease contour that we have shown.

Q On what do you base that?

A We have not found that--the last well that we know of in the field is the Trice-Merrill Number 1 and it is producing oil and it is below the lease contour that we show here. Indications are now that the limits of the field may not be associated so much with structure as they are with just failure to develop porosity or permeability, and for example, here there's a high well in the North Allison area, that dry hole called the Atlantic Pebworth Number 1 located in the southwest quarter of the north--no, southwest quarter, southwest quarter of Section 25. That well was structurally high but didn't develop porosity and permeability and that's why we couldn't make a well.

Q Do you feel then that the south half of the northwest quarter of Section 10 is entirely productive, even though the well is on the east side of that 80-acre tract?

A I suspect it is. We --

Q But you have no definite proof of that, have you?

A We have no definite proof of that, but I suspect that that is true.

Q In regard to your Pebworth et al Number 1, did you suspect that that might be productive, too, when you drilled it?

A Did we suspect that it might have been?

Q Yes.

A Before we drilled it, we certainly did.

Q This 40-acre offset, is that your Number 1?

A Yes, sir. I might say that this did occur on the north end. I guess every field has to have a limit some place, and that seems to be it right there. Certainly we haven't, people haven't been having that experience in the acreage lieing to the south.

Q How much closer would you say on your Exhibit Number Two that you have throughout this structure, would you consider the 5640 to be the lowest contour that is presently known?

A No sir, I don't believe that's the lowest; I don't know what the lowest is, to be truthful about it.

Q The highest you know now is 5570?

A 5570, and on this map, I don't have a top for the Trice Well, but it's approximately a hundred feet lower than the nearest other well there. I can get that top for you if you are interested in finding out. I know it's productive that low.

Q No sir, that won't be necessary at the moment. Generally

speaking, this is a pretty flat structure, is it not?

A Yes sir, it's very flat and not much relief in this general area. Now, these are ten-foot contours and actually, we had to put in ten-foot contours to have much of a map. Had we contoured on a hundred feet, you couldn't have seen anything.

Q Do you have gravities on the individual wells in this pool?

A I have gravities that are reported in the New Mexico Oil and Gas Engineering Book. I notice that they vary from a degree or two on either side of 48, probably due in most instances to methods of separation and things of that nature, and I think they all average out around 48 or pretty close to it.

Q They are all within two degrees, you say?

A I think they are within two degrees of it, yes sir.

MR. UTZ: That's all I have.

MR. PORTER: Mr. Nutter?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Tomlinson, this production in this field has evidently, the oil production has gone along, the water production has in most cases gone down, is that correct?

A Not in all wells. I believe Gulf has a well that's still making water. I believe it's one of the first wells, probably the Gulf Mills Number 2. Let's see, I'll give you those water producers if you'll wait just a minute. The Gulf Mills

Number 2 makes 19 per cent water according to this report. Now, I think that well's been making water all along. Now, Mills 1 doesn't make any water and one of the Magnolia wells makes water, I think probably it's Number 2 in this report. I think they have both been making water, but I have some more recent information in gas-oil ratio reports. I thought I recalled one of them didn't make any water any more. Well, sir, on the most recent report, it looks as if the Magnolia Trice Federal 1 and 2 quit making water.

Q What is this water, is that connate water that's in place in the reservoir and moves right along with the oil?

A Yes sir, it is. Apparently, the amount of water existing in the reservoir was just a little more than capillary pressure would support on the walls or in the pore spaces, and when the oil began to move, it had to carry some of that water along with it. That would be my interpretation of how it occurs that they make water.

Q These wells that have made water and then quit making water by themselves without any workovers, it would appear that the water in place in the reservoir had been exhausted, possibly, wouldn't it?

A Yes sir, apparently in some of these wells in the area distributing oil on to these wells immediately around them, the water is being exhausted and then being replaced.

Q I won't argue that the water is exhausted, but it is still making oil, so wouldn't that mean that the relative

permeability of the water is not possibly greater than it is to the oil?

A Well, it was probably at one time, I would say, but the saturation of the water has gone down. However, in the areas near the well, probably the trend has been in the other direction, it has become more permeable to oil.

Q Isn't the relative permeability greater with respect to the water and always a possibility that these pressure decline curves reflect the withdrawal of water as well as oil?

A I am sure they reflect withdrawals of water, yes sir.

Q Do you have the production history for all of the wells in the pool, how many barrels of oil each has made?

A No sir, I don't have the cumulative for all the wells in the pool, I know that. As a matter of fact, we didn't obtain an individual tabulation, but I do know that a lot of them have made substantial amounts of oil.

Q As a matter of fact, they have made more than the 70,000 barrels of oil --

A Yes, sir.

Q --as shown on the map?

A Yes, sir.

MR. NUTTER: Thank you.

MR. PORTER: Mr. Fischer?

CROSS EXAMINATION

BY MR. FISCHER:

Q Mr. Tomlinson, does the Ada Adams Number 1 make any water, has it ever made water?

A It shows sixty barrels.

Q Sixty barrels?

A For one month, and I believe that's for the month of February. That's out of a total production of oil of 1527, which would make it, oh, less than one percent--well, no, beg your pardon, about four per cent water.

Q At four per cent water?

A I believe that's right.

Q Is that the only month that that well made water, do you know?

A I doubt it, I imagine its made some all along, but I don't have the figures here.

Q February is the last month that you have data from the Engineering Committee, is that right?

A It's all I have with me. Well, let me say this: I have the 1957 Annual Report here, that might have that.

Q I mean as far as 1959 is concerned, that's the last month that anyone would have data on?

A February is the latest month that I could get.

MR. FISCHER: Thank you.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Tomlinson, would you say that this reservior

that you have outlined in here is more than half depleted?

A Apparently the reservoir extends over a much wider area than that, exactly in which directions, I don't know, Mr. Porter. I would say that the oil that's been produced out of here represents a good portion of what may be all, I'm not sure, of what originally existed here, but it has been replaced, in my opinion, by other oil moving in.

Q I notice you have estimated the recoverable oil in place at 70,000 barrels here on 40 acres?

A Yes, sir.

Q And you give the cumulative production from the 14 wells now existing at 1,860,000 barrels?

A Yes, sir.

Q As I calculate that, that's an average recovery per well of 132,000 barrels?

A Yes, sir.

Q And on your exhibit under your proposed proration units here, that you would drill 12 more wells, making a total of 26?

A There would be a place for that many more wells.

Q Twelve more wells?

A Whether the operators will elect to drill all of them, I wouldn't know.

Q Which, if divided into the oil which has already been recovered, would be about 71,500 barrels, so that's what leads

to my question as to whether you think the reservoir is more than half depleted?

A This area --

Q Of course, that would --

A If it would have been closed in all places, it would have been depleted, and possibly more, with the production of oil that has occurred; however, it appears that oil has been moving in, replacing that that's taken out.

Q Of course, the assumption that the reservoir is more than half depleted would also have to assume that these would be, that there would be a total of 26 wells eventually in the pool?

A Yes, sir.

MR. PORTER: Does anyone have a question?

MR. MORGAN: I would like to ask Mr. Tomlinson a question.

MR. PORTER: All right.

CROSS EXAMINATION

BY MR. MORGAN:

Q Mr. Tomlinson, you indicated in explaining one of your exhibits, possibly Exhibit Number One or Two, I don't know which one, but it was the one, anyway, showing the well locations, and you denoted there a correlated pressure drop between one well in Section 2, I think it was Atlantic's State "AD" Number 1, and another well in Section 11 to the south, I think it was possibly Gulf Mills Federal Number 1. You stated that there was a

correlated pressure drop there that interested you and showed that there was communication between those two wells, and you also stated, I believe, that that would indicate an 80-acre pattern of drainage. I don't know, I don't believe I understand, that looks like those wells indicate a 40-acre area of drainage at the present because of their present proration?

A Yes, sir. Well, I wonder if I could use an area in this Exhibit Seven to illustrate what I am referring to? Actually, a well drilled 660 feet from all lines of this proration unit would have 40 acres assigned to it and its radius of draining on 40 would be 660 feet to its nearest line and if it were extended, it would be extended, if you extended it to 80 acres, in other words, another 660 feet away, its influence of drainage would occur to that point, and likewise an additional 660 feet in other directions, and that's what I meant when I was saying I thought that was on the outer perimeter of an 80-acre drainage pattern. So then if you apply that analgy to the location of the Gulf Federal Mills Number 1 in Section 11 and the Atlantic State "AD" Number 1, you can see that that drainage pattern could have existed and probably did exist around the Gulf well at that time.

Q Well, according to your Exhibit Twelve--I mean Nine, I think it's Nine, you seem to have a flexible pattern there in mind on your spacing?

A Well, the rules that we proposed, if you are talking about a flexible pattern, the rules that we propose allow people to

drill on either end of any proration unit.

Q In other words, just like has been done already in Sections 23 and 11, in other words, just offset from each other?

A Yes, sir.

Q Just offset wells?

A Yes, sir.

Q Supposing then you go up here into Sections 35 and 36 and 1 and you run another row of wells offsetting each other across the section line there. Supposing that you decided to do that, wouldn't you have a great deal of vacant space in between the existing wells and the new wells?

A Yes sir, we would have. However, some of that has already been solved. Cactus is drilling their well in the southeast of the northeast of Section 2 in the location shown there. That well is now drilling, so under 80-acre spacing, they couldn't come north and drill on the other end of their proration unit.

Q I see.

A I might answer this, that I think the operators originally didn't realize the situation in the Allison Pool was such and some of the wells were making water, so they felt they had to get as high on structure as they knew, and consequently they moved into the best area they knew of to drill at the time.

Q Now then, if they did go to that extreme pattern and everybody decided the same end of a row of 80's there, you would almost be operating in two pools in the north?

MR. PORTER: North Allison.

Q (By Mr. Morgan) North and the Allison Pool, wouldn't you? I mean, you are just practically disconnecting them, anyway, on that kind of a pattern?

A Well, if they were drilled in the way that you are talking --

Q I mean, that's an extreme possibility?

A It's an extreme possibility that you could have two lines of wells in that manner.

Q Yes.

A And --

Q And almost cut the pool in two? I mean, you call it a common pool, then you could still cut it in two in inactivity, no drilling?

A Yes sir, you could cut it through from appearances; I don't think you could cut it through from the drainage standpoint.

Q You are not going to get any radial pattern of drainage in this style of 80-acre spacing, are you?

A No sir, you wouldn't get radial in that drainage from one area to another, you would have to have linear flow. As you approach a well, it would become more radial, but it would be linear flow at the extreme end of the --

Q Would you place the proposed 80 acres in this manner because of the structure line to the--more or less in an elongated pattern from the northeast to the southwest?

A Not so much that as unfortunately, several of these wells were drilled in such a way that they--in the older Allison area, that they had to have acreage allocated in that way, and the other, it was simply convenient to start to continue the same pattern. However, I don't believe that this necessarily represents the outer edges of the pool; we could have just as well run them the other way.

Q Do you see any possibility in 80-acre patterns alternating with 40's in order for a fixed pattern for the remaining developments?

A Yes sir, that's possible for remaining development.

Q Do you think it would be wise to provide that?

A Well, from out standpoint, it wouldn't make much difference.

Q You don't think it would make any difference in the --

A I say from Atlantic's standpoint. We have an interest in this tract here, this one here, in fact, all across here and all of this acreage in here. Now, we have been considering drilling a well at that location, you see that these two are already on a pattern, this one is, this one, and likewise this one here. We don't plan to break an 80-acre pattern at any point if we can avoid it. Now, as far as other operators go, I don't know if their plans. It might be, it is a possibility and I don't know how our company would react, but for remaining development, it is a good possibility.

MR. MORGAN: I believe that's all, thank you.

MR. PORTER: Mr. Fischer?

CROSS EXAMINATION

BY MR. FISCHER:

Q Mr. Tomlinson, could you tell me how you would recommend to your company the development of the northwest quarter of Section 2, 9, 36?

A Yes sir, I know how I would like to have that well drilled, or that tract drilled. This doesn't reflect what our management wants to do, but what I would like to do is drill in the southeast of the northwest of Section 2.

Q All right, what about the next well then?

A Where? I mean, what --

Q If you developed the whole 160 acres there?

A Oh.

Q How much do you plan to develop of that 160 acres?

A Well, I don't have enough structural information to know.

Q I mean on the limits that might occur. I am not saying that your spacing --

A We don't have the control far enough to say that this is flat enough out here. It doesn't dip off, for example, any more than it does on this side for us to assume that. If it didn't, I think we probably would want to go to the northwest, but that's so hard to say right now.

Q If you drilled that well in the southeast of the northwest and it was productive, and all it showed or all it did was confirm these contours that you have shown there, where would you drill that other well, and I assume then that you would have to drill another well to develop the other 80 acres?

A Well, sir, we might not. If we went offset, you see, that is outside of the proposed limits that we had, and I think that we would have to get some indication of the reservoir extending out that far. We found, I might add we found us a dry hole on the north, and it is going to have to stop somewhere in all directions, so I think we probably would select some other locations we would rather drill.

Q If you drilled all those other locations, then you might extend it, might you not, and develop the 80 acres or 120 acres, we'll call it 80 now, remaining in this 160 acres?

A If we thought it were productive and we thought there was enough additional oil that we would recover, we would probably still be on an 80-acre pattern.

Q Where would you drill the well, however?

A Well, it would be on a 80-acre pattern, most likely, in the northwest, assuming there was enough oil and we thought it would be productive.

MR. FISCHER: Thank you.

MR. PORTER: Mr. Nutter?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Tomlinson, I believe there are twelve wells producing in what we might call the southern end of the field, is that correct?

A Yes, sir.

Q And Atlantic has one of those twelve?

A Yes, sir.

Q Now, up in what we might call the north portion of the field, Atlantic owns the bulk of the acreage, is that correct?

A That's an operator's unit and we've got about, a little over 60 per cent of it.

Q Well now, if the Commission authorized 80-acre spacing in here and assigned these wells in the south part of the field an 80-acre allowable, they would each receive an extra 36 barrels of oil, correct?

A Yes sir, and the twelve wells would thereby receive a total of 432 barrels of oil per day.

Q I can't understand why Atlantic up in the northern part of the field would want to make an application for eleven out of twelve wells in the south part of the field to receive this additional allowable when all this drainage is coming from the north end to the south end of the field. Aren't they going to be draining your oil now?

A We plan further development up there.

Q Still they will be--they are developed down there,

aren't they?

A Yes, sir. Well, it's unfortunate that we didn't get an even start in drilling this area.

Q But you are giving them an additional headstart now, aren't you?

A Our wells will get the same advantage when they are drilled. In other words, the two that we have now will get the extra allowable and any additional wells that we might drill will get the extra allowable, and it is true that we'll be helping these folks down here, but we would rather insure that the field would produce on 80-acre development than 40. In other words, we know we can't make money on 40-acre development.

Q But you might make money by losing 432 barrels of oil per day?

A Yes, sir.

MR. NUTTER: Thank you.

MR. PORTER: Mr. Fischer?

MR. FISCHER: I have one more question. I just want to know if Atlantic has or has seen seismic information showing anything in Section 26 or 8, 36?

A We have seismic information covering that area. I didn't examine that closely, principally because it looked as if the field might be trending in a northeasterly direction. I wouldn't know what to think about it.

MR. FISCHER: Thank you.

MR. PORTER: Mr. Hinkle, did you have any other questions?

MR. HINKLE: Yes sir, I have another question or two.

REDIRECT EXAMINATION

BY MR. HINKLE:

Q Referring back to the line of testimony of Mr. Morgan's here as to the drainage area, isn't it a fact that wherever a well will be located, whatever unit it is on, whether it would be a 40-acre unit or an 80-acre unit, that the unit doesn't necessarily drain that respective unit, but that there would be counter-drainage which would average out?

A Yes, sir.

Q The drainage radius, whatever it is, remains the same whether you locate a well on 40 or 80, isn't it true?

A Yes sir, its ability definitely does, its ability to drain is the same.

Q Whether you locate these wells on 40 or 80, if they have drained 80 acres, they are going to continue to drain 80 acres, are they not?

A Yes, sir.

Q I believe Mr. Porter, in referring to your Exhibit Number Eight, spoke about the recoverable reserves as being 70,000 barrels. You didn't intend that to indicate the recoverable reserves, did you?

A No sir, I didn't understand his question in that way, I thought he meant the oil in place, but the recoverable reserves

are not calculated.

Q You have calculated that from the characteristics of the reservoir, the basic data which you have, that there was originally in place 70,000 barrels of oil under each 40-acre unit and that is what is shown in Exhibit Eight?

A Yes, sir.

Q And on that basis, one well on 40 acres, if it is limited to recover the oil in place, would not pay out?

A Yes, sir.

RECROSS EXAMINATION

BY MR. MORGAN:

Q Mr. Tomlinson, your answer indicated just now that there would be a fair exchange of oil regardless of whether the wells were located on the 80 acres, is that what you think? In other words, if there were a well on each 80 throughout the pool, the wells that you wanted on 80, then there would be a fair exchange of oil from under one, from one 80 to another?

A If I understood Mr. Hinkle's question correctly, he meant that regardless of which end, which lot of the 80 acres you put your well on, it would have the ability to drain the other end of the lot.

Q For an equal area?

A For an equal area, yes sir.

Q In other words, the permeability and the porosity is uniform throughout the pool?

A Yes, sir. There's one thing I didn't bring out that I probably should have pointed out to you, Mr. Morgan. This Sun Mills Number 1, this had an initial pressure of 3,000 pounds. This was a development well and of course there wasn't any other development in the area at all except up here, and that still wasn't there, but it was half a mile away from Gulf's well and the initial pressure on it came in a lot less than the initial pressure on the Gulf well and that definitely --

Q You pointed that out.

A Did I?

Q Yes, sir.

A Well, I--so they will, I think, drain a wide area.

MR. HINKLE: Mr. Porter, I have another question here.

REDIRECT EXAMINATION

BY MR. HINKLE:

Q Mr. Tomlinson, have you any indication from the other operators in the Allison and North Allison Pools as to their attitudes toward this application and 80-acre spacing in the area?

A Yes sir, Mr. Hinkle, we have contacted all of the operators in the pool and several of them have sent us letters saying that they were in agreement with our proposed rules, and all indications from them in one manner or another have said that they would like 80 acres.

Q They favor 80-acre spacing?

A Yes, sir.

MR. HINKLE: That's all we have.

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

The witness may be excused.

(Witness excused.)

MR. PORTER: Does that conclude your testimony, Mr. Hinkle?

MR. HINKLE: That concludes our case.

MR. PORTER: Anyone else desire to present testimony in this case?

Any statements?

MR. PAYNE: Mr. Commissioner, we received a communication from Gulf Oil Corporation concurring in Atlantic's application.

MR. PORTER: Any statements in connection with the case?

There are apparently no statements, so --

MR. HINKLE: If the Commission please, I believe that we have established conclusively in this case that one well will effectively and efficiently drain 80 acres. There's no need for me to read the statute, of course, to the Commission, which you all are familiar with. If there's any, ever has been a case where 80 acres should be allowed, 80-acre spacing, I think it is this, and I think this case points out clearly a situation where there is need for a rule, a standing rule of the Commission, State-wide rule, to permit areas and fields upon discovery, to be developed on an 80-acre pattern at least temporarily for a relatively short time until a certain number of wells have been

drilled. In this area, as the witness has shown, it looked from the beginning, because of the wells making water, that the recovery might not be too high, and outside of the offset wells, which were naturally drilled to begin with, it soon appeared that it wasn't feasible to develop it upon 40 acres, and taking into consideration the economics of it as shown by the exhibit which has been introduced here, if it is limited to oil in place, clearly one well will not pay out on 40 acres. I think the enforcement of a 40-acre rule in this particular area will result in economic waste and will cause the drilling of unnecessary wells.

MR. PORTER: Anything further, anyone else have a statement, any comments?

We will take the case under advisement.

We are going to have a ten-minute recess, but before we do, it has been a pleasure to have Mr. Walker with us, who was a member of the Commission for four years. We are glad to have him back, even temporarily.

(Short recess.)

MR. PORTER: The meeting will come to order.

Counsel for Atlantic has requested that Case 1637 be re-opened for purposes of offering letters in evidence for the record.

MR. HINKLE: If the Commission please, Atlantic would like to file in support, in connection with Case 1637, letters which have been received from the Magnolia Petroleum Company,

the Cactus Drilling Company, Ada Oil Company, the Ohio Oil Company, the Sun Oil Company and the Cosden Petroleum Corporation showing in effect that they are in accord with the application of Atlantic, and they all agree with the 80-acre spacing and proration units.

MR. PORTER: Is there objection to the admission of these letters?

The letters will be made a part of the record, Mr. Hinkle.

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, JERRY MARTINEZ, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same contains a true record to the best of my knowledge, skill and ability.

DATED this 29th day of April, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Notary Public

My Commission Expires:

January 24, 1962