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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
8 June 1983

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production Com- CASE
pany for rescission of Order No. R- ~~7597~~
6255, Lea County, New Mexico. 7897

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation W. Perry Pearce, Esq.
Division: Legal Counsel to the
Division
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant: Clyde Mote, Esq.
Amoco Production Co.
Houston, Texas

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TED GAWLOSKI

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LARRY SHEPPARD

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2 MR. STOGNER: Call next Case
3 Number 7897.

4 MR. PEARCE: That case is on the
5 application of Amoco Production Company for rescission of
6 Order No. R-6255, Lea County, New Mexico.

7 MR. MOTE: Mr. Examiner, I'm
8 Clyde Mote, an attorney, who in association with Bill Carr
9 represents Amoco Production Company, and we will have two
10 witnesses.

11 MR. PEARCE: Are there other
12 appearances in this matter?

13 (Witnesses sworn.)

14 MR. MOTE: I've got a short
15 opening statement to make this application a little bit more
16 understandable. While I'm making the statement Mr. Allen
17 will put something up on the wall we'll talk about later.

18 Division Order R-6255 was issued
19 after a hearing in Case Number 6756 on December the 12th,
20 1979. This was on the application of Amoco Production Com-
21 pany and the purpose of that hearing was to split the upper
22 and lower zones into two separate pools.

23 The purpose of this hearing is to
24 rescind that order which separated the upper and lower Air-
25 strip Bone Springs Pools and consolidate them into a single
regulatory horizon. *

1
2 Now, at the time of this
3 original application to establish these two separate pools,
4 there were only four wells completed in the entire Bone
5 Springs Airstrip Field, and the State Amoco FU No. 2 had en-
6 countered the lower zone and we believed that it was going
7 to be extensive and could be developed to the southwest. We
8 have been proven wrong in this belief.

9 We originally intended to es-
10 tablish three separate regulatory pools and the application
11 was made in this manner; however, we decided upon the
12 hearing that the -- what we called upper and middle zones
13 could not be economically developed as separate zones, so we
14 changed our application at the hearing and only asked for an
15 upper and a lower zone, with the upper and middle zones
16 being classified as one pool.

17 There was a sufficient
18 pressure differential between all three separate zones at
19 the time of the hearing, but we only asked for the two sepa-
20 rate zones, and that was granted.

21 Now, subsequent development of
22 the field has proven that the lower zone is a limited reser-
23 voir and it has not produced in appreciable quantities from
24 any well other than FU No. 2. If we had the knowledge in
25 1979 which we now have, we would not have asked for separate
pool designations for the upper and lower zones but would
have requested a discovery designation in the existing field
for the lower zone, as was done recently by applicant

1
2 O'Neill in Case Number 7849, held on April 13th, 1983.

3 Now, our experience in this
4 field requires us to conclude that the existence of the two
5 separate pools actually hampers production operations and
6 future field development and will result in both waste of
7 hydrocarbons and economic waste, which we will establish by
8 testimony in this case.

9 The only existing well
10 affected by the granting of our application would be the
11 Amoco State FU No. 2, and this would result in permitting
12 the simultaneous production of both the upper and lower
13 zones to an economic limit, preventing economic and physical
14 waste.

15 Now, Amoco previously, in Case
16 Number 7788, requested commingling of both zones in this
17 Amoco State FU No. 2 and the application was denied because
18 the data presented at that hearing was insufficient. We now
19 have additional data which we will show that not only the FU
20 No. 2 will benefit by being able to produce both the upper
21 and lower zones simultaneously, but that the granting of
22 this application may benefit other wells now drilling and
23 which have been authorized to be drilled in the Airstrip
24 which may encounter both zones.

25 The evidence will show that
the granting of this application will not result in waste,
but on the contrary will allow and permit the recovery of
reserves which would otherwise remain unproduced.

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3 TED GAWLOSKI,

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

6 DIRECT EXAMINATION

7 BY MR. MOTE:

8 Q Mr. Gawloski, would you please state
9 your name, by whom you're employed, and in what capacity and
10 location?

11 A I'm Ted Gawloski. I'm a petroleum geol-
12 ogist for Amoco Production Company in Houston.

13 Q And have you previously testified be-
14 fore the Division and your credentials as an expert in the
15 field of geology a matter of public record?

16 A Yes, sir.

17 Q And are you familiar with the subject
18 matter of this application?

19 A Yes, sir.

20 MR. MOTE: Is there any
21 question concerning the witness' qualifications?

22 MR. STOGNER: Could he spell
23 his last name, please?

24 A G-A-W-L-O-S-K-I.

25 MR. STOGNER: I or Y?

A I.

1
2 MR. STOGNER: Nothing wrong
3 with his qualifications.

4 Q All right. Now you've passed out to the
5 Examiner a small map in the packet, I believe, but you have
6 a larger map, which you only have one copy of, that you'd
7 like to go up and discuss with them, showing them a little
8 bit more detail what this small map shows, is that correct?

9 A That's correct.

10 Q All right. If you would, go up to the
11 front of the Examiners and spread out the map and identify
12 Exhibit Number One for the record.

13 A This exhibit is a map of -- a geologic
14 map in a 7-mile radius of the Airstrip Field, which is
15 located here in the middle, Section 18 South, Range 34 East,
16 and Sections 25, 26, and 35 and 36, and this shows the Bone
17 Springs pay zones within this 7-mile radius in the Airstrip
18 Field.

19 MR. STOGNER: Would you please
20 describe that; she won't pick up "this".

21 A Okay, these -- there are -- in this area
22 there are seven pay zones within the Bone Spring formation
23 and I can go through them, if you'd like.

24 There's an Upper Bone Springs section,
25 which has been delineated, and above the stratigraphic
marker of the 1st Bone Springs Sand there is another pay
zone we've found in the (inaudible), located over here.
There is another zone which we have named the Ora Jackson

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pay zone, which is -- some of it is in the Scharb Field and then down here in the Lea Field.

The Elcan pay zone, which has been developed down over here in the eastern portion of the Scharb Field; a zone beneath the Elcan pay zone in the Upper Bone Springs section, which has been delineated here in the Exeter Field and in the South Vacuum Field.

Then we have the Scharb and Crow Ridge Field pay zones in the Scharb Field and down here in the Crow Ridge Field.

Then we have a Lower Bone Springs zone which has been developed here in Airstrip Field and some development, recent development, over here in the Scharb Field.

Q Is your testimony, Mr. Gawloski, that each of the separate pools that you show on this exhibit have more than the one Bone Springs horizon but that the only one that has two separate pools regulated as such is the Airstrip?

A That's correct.

Q And all the others shown on here, or most of the others, have more than one Bone Springs horizon but it's all regulated and prorated as one horizon, is that correct?

A That's correct.

Q And the Airstrip is divided into both

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the upper and lower zones, is that correct?

A That's correct.

Q All right, now what's the purpose of this exhibit? Do you have anything other than what we've testified to?

A Well, the purpose is to show that there are fields within the vicinity of Airstrip Field that are producing out of -- out of more than one pay zone in the Bone Spring formation, but have been designated as one Bone Spring Pool. The Scharb Field, for instance, is to the southeast. It's producing out of three and possibly four Bone Spring pay zones, and the South Vacuum Field to the east is producing out of three pay zones.

Q All right, now, you've got electric logs attached to, it looks like, with arrows pointing to each one of these fields. What -- what does this show?

A That's correct. Up here in the Exeter Field I have a type log for the FU No. 2. The dots correspond to the legend over here, and the perms are the areas shown by the red squares.

There are three zones, two Bone Springs zones, in the Airstrip Field, that produce out of the Bone Spring, as well as a Wolfcamp zone.

You can see these type logs for the other fields. Many of the pay zones are developed in the other fields. Some of them have not yet been perfed.

Q Does that conclude your testimony with

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regard to this exhibit?

A Yes, sir.

Q All right. If you would, go up to the exhibit on the wall and identify this exhibit for the record.

A Okay, this is a stratigraphic cross section through all of the Amoco wells to date in the Exeter Field.

Q All right, and is your line of cross section shown on this exhibit?

A Yes, that's true. It's shown over here in the righthand corner.

Q And this includes all of the Amoco wells that have been completed in the Airstrip, correct?

A Up to date; up to the present.

Q All right, point out the upper and lower zones as shown on that FU No. 2 log.

A I'll go through these. The correlation zones within the Bone Spring here, I'll go from the top to the bottom. The yellow lines are going to represent the sand correlations within the Bone Spring, and the blue and the purple will represent carbonate correlations within the Bone Spring.

First, we have the First Bone Spring Sand and then this, the next blue line here is represented as the top of the Upper Bone Spring Sand -- Upper Bone

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2 Spring zone.

3 Then we have the Second Bone Spring Sand
4 and then we have the Scharb zone and then we have this blue
5 line down here represents the Lower Bone Spring zone, and
6 then we have the Third Bone Spring Sand and the lowermost
7 blue line here is the top of the Wolfcamp.

8 Q I notice you show the Scharb between the
9 Upper and the Lower Bone Spring in the Airstrip. Is that
10 productive in the FU No. 2?

11 A The Scharb zone is not productive in the
12 Airstrip Field. It's shaley.

13 Q Now, in -- on this exhibit is the State
14 FU No. 2 the only one that has both Upper and Lower horizons
15 in the Airstrip Bone Springs production?

16 A There have been three wells in the Air-
17 strip Field that have tested the Lower Bone Springs zone.
18 There's one over here, No. 9, the Amoco State HR No. 2-Y,
19 tested the lower zone here and there was no commercial
20 quantities of oil and gas at all in this well.

21 Then we have the FU No. 3 over here, the
22 first well. This well perfed the Lower Bone Spring but was
23 rapidly depleted and only at a combined cumulative
24 production of 1,800 barrels of oil.

25 Q The State FU No. 2 perfed the lower zone
and has produced at present up to 17,000 barrels of oil and
has been abandoned.

Q Did you expect it to be quite better

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2 than it has shown to be after having produced the FU No. 2
3 from the lower zone?

4 Q The initial rates on the well were very
5 significant but they declined very rapidly. This would in-
6 dicate that it is a limited reservoir, and as you can see
7 from wells that are immediately adjacent to it, these wells
8 are within forty acres, one to the north, one to the south,
9 of the State FU No. 2, the zone is very shaley and is very
10 tight, very little permeability or porosity has been devel-
oped in these two adjacent wells.

11 Q Now, below each log you have a cumula-
12 tive as well as a completion data for each one of those
13 wells, do you not?

14 A That's correct.

15 Q Do you have anything further to testify
16 concerning this exhibit?

17 A No, sir.

18 MR. MOTE: We offer Exhibits
19 Number One and Two into evidence.

20 MR. STOGNER: Exhibits One and
21 Two will be admitted into evidence.

22 MR. MOTE: And that concludes
23 our questions of this witness.

24 CROSS EXAMINATION

25 BY MR. STOGNER:

Q Mr. Gawloski, you show on your Exhibit

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2 One several dual completions. Are those indeed dual or
3 downhole commingling?

4 A These are -- this is just showing the
5 zones that have been productive in the field. I don't think
6 they have been producing at the same -- same time. Some of
7 the wells have been abandoned and then come to another zone,
8 upper or lower.

9 Q Thank you.

10 MR. STOGNER: I have no
11 further questions of this witness. Is there any further
12 questions of Mr. Gawloski? If not, he may be excused.

13 MR. MOTE: Our next witness is
14 Mr. Sheppard.

15 LARRY SHEPPARD,

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

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19 DIRECT EXAMINATION

20 BY MR. MOTE:

21 Q Would you please state your name, by
22 whom employed, in what capacity?

23 A My name is Larry W. Sheppard. I'm em-
24 ployed by Amoco Production Company in our Houston West
25 Region Proration Section, as a Staff Petroleum Engineer.

Q Have you previously testified before the

1
2 Division and your qualifications as an expert in the field
3 of engineering a matter of public record?

4 A Yes, sir, they are.

5 Q Are you familiar with the aspects of
6 this application?

7 A Yes, sir, I am.

8 MR. MOTE: Is there any ques-
9 tion concerning his qualifications?

10 Q Would you -- have the exhibits that you
11 will be asked to testify to concerning this application
12 either been prepared by you or under your supervision and
13 direction?

14 A Yes, sir.

15 Q All right, go to what has been marked as
16 Amoco Exhibit Number Three and identify this for the record.

17 A If it please the Examiner, let me just
18 open this for you all here on the table. It's rather large.
19 It would be difficult to see it individually.

20 Our Exhibit Number Three is a map of a
21 large portion of Lea and Eddy County, New Mexico, on which
22 we show all the separate Bone Spring oil producing pools
23 within those two counties.

24 Q And what's your purpose in showing this
25 exhibit?

A The purpose of this exhibit is to point
out the large number of Bone Spring fields within the two
counties, and also to relate the regulatory aspects of those

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2 fields to the field that is the subject of this hearing.

3 Q Approximately how many fields and wells
4 do you show on this exhibit?

5 A To my count there are 47 separate fields
6 shown on this map. Each field is denoted by a block to the
7 side of the field; there's an arrow then pointing to the
8 field.

9 On the field we have marked what we
10 estimate to be the outer productive limits of each field.
11 Within the block is contained the location of each well, the
12 cumulative production, and the current status of each well.
13 Within these 47 fields there's approximately 175 Bone Spring
14 Wells that are currently producing or have produced at some
15 time in the past.

16 Q All right. Now, out of these 47 fields
17 and 175 wells, have any of them broken out separate pool
18 characteristics for Upper and Lower Bone Springs?

19 A To the best of my knowledge upon exam-
20 ination of all the fields, only the Airstrip is a field in
21 which there have been vertical segregation of separate re-
22 servoirs within the Bone Spring.

23 Q All right, and what does the large square
24 shown on this exhibit, within the outer square, what does
25 the larger square represent? Area?

A The approximately 4-township square that
is highlighted by the dark shaded rectangle on this map is

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2 the area of predominant Bone Spring production in south-
3 eastern New Mexico. It's probably about 70 percent of all
4 Bone Spring production arises from this area.

5 This area is also -- encompasses the
6 area that we showed on our Exhibit Number One. Our Exhibit
7 Number One did not include the entirety of the area, but it
8 did include a large portion of that area.

9 Q All right, do you have anything further
10 in connection with this exhibit?

11 A The only thing further is that in, like
12 I said, in reviewing the regulatory aspects of all these
13 other fields and also in reviewing the engineering and geol-
14 ogical data with Mr. Gawloski, all of the Bone Spring
15 Fields, virtually all of the Bone Spring Fields, have more
16 than one pay member within the Bone Spring horizon; however,
17 all of them have been effectively regulated as a single pool
18 and only the Airstrip has been segregated into separate
19 pools.

20 Q All right, come back and take your seat
21 and get out your Exhibit Number Four.

22 Would you please identify this exhibit
23 for the record?

24 A Exhibit Number Four is a map showing the
25 Airstrip Field and all the wells that have been completed or
tested within the Airstrip Field.

Q All right. Explain what's shown on this
exhibit.

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2 A I'd like to direct the Examiner's atten-
3 tion to the lower portion of the map. The legend shows that
4 the red arrows indicate the proposed wells in which Amoco
5 intends to develop the Airstrip Field. The orange dots are
6 wells which have produced or tested the Wolfcamp. The brown
7 dots are wells which have produced from the Upper Bone
8 Spring, and the blue dots are wells that have produced from
9 the Lower Bone Spring.

10 Q What's your purpose in showing this ex-
11 hibit?

12 A The purpose of this exhibit is to again
13 point out the rather limited nature of the Lower Bone Spring
14 reservoir. As the Examiner can see, only the Amoco State FU
15 No. 2 and FU No. 3 have encountered the Lower Bone Spring as
16 being productive. Also, the Bass Airstrip State Well No. 2
17 in the southeast quarter of Section 23 has encountered the
18 Lower Bone Spring as productive. I would --

19 Q All right -- excuse me.

20 A -- again to reiterate the fact that the
21 FU No. 2, though, is the only well that has had production
22 of more than minor consequence from that lower zone. The FU
23 No 3 depleted after producing 1800 barrels of oil. The Bass
24 well has produced approximately 2000 barrels of oil to date
25 and is currently producing at a rate of around 2 barrels of
oil a day and therefor can be essentially considered as
being depleted.

Q I believe you previously testified that

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2 the three locations which have now been authorized by Amoco
3 to be drilled are shown by the arrows?

4 A Yes, sir, that is correct.

5 Q And which one is now drilling?

6 A The State FU No. 5 is now drilling.
7 Upon the completion of that well we plan to proceed with the
8 drilling of the FU No. 6 and the HQ No. 3.

9 Q Is the State FU No. 2 shut in in a lower
10 zone?

11 A Yes, sir, the lower zone in the State FU
12 No. 2 was abandoned in December of 1979 in order for us to
13 effect a completion in the Upper Bone Spring interval in
14 order to protect the correlative rights within that inter-
15 val from offset drainage.

16 Q And will it remain shut in unless this
17 application is granted?

18 A Yes, sir, it will remain plugged and
19 abandoned in accordance with Commission rules unless the ap-
20 plication is granted.

21 Q All right, go to your Exhibit Number
22 Five. Would you please identify this for the record?

23 A Exhibit Number Five are the calculated
24 drainage areas for the Amoco operated wells within the Air-
25 strip Field.

26 Q What's the purpose of this exhibit?

27 A The purpose of this exhibit is to again
28 show the rather limited nature of the Lower Bone Spring and

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2 to also show that it is predominantly the Upper Bone Spring
3 that is the main pay within this field and provides the pri-
4 mary economic incentive for development of the field, but it
5 also does show that the additional quantities of oil that
6 will arise from the other pay stringers does help add to the
7 economic attractiveness of developing this field.

8 Q What the radius of the -- I mean the
9 range of the drainage radius for these various wells as
10 shown on this exhibit?

11 A We show drainage radiuses all the way
12 from one acre up to 45 acres, the one acre being the Lower
13 Bone Spring in the State FU No. 3; the 45-acre being the
14 drainage radius in the State FU No. 2.

15 Q All right, what's your purpose in this
16 exhibit, Mr. Sheppard?

17 A What I would like to do is to point out
18 first of all, that the field is currently being effectively
19 regulated by 40-acre spacing, as shown by all these drain-
20 age radiuses, but secondly, I would like to use this to re-
21 late back to economic incentive for development within this
22 field.

23 Currently the cost to drill a well in
24 the Airstrip Field is on the order of \$1,000,000. In order
25 to generate sufficient economics to develop the field, we
26 have to generate reserves of approximately 80-to-90,000 bar-
27 rels of oil.

28 As the Examiner can see, none of the

1 Lower Bone Spring zones even come close to that; however, if
2 you add their potential in with the potential of the Upper
3 Bone Springs zones, it does help upgrade the economics to
4 the point that it's more than just a marginal project; it
5 does become a project that is economically feasible to de-
6 velop.

7 The other thing that I would like to
8 mention that is an economic consideration, by separately
9 completing and producing the two horizons, takes an -- takes
10 a completion cost of an additional \$50,000. Now that's not
11 considering operating costs for operating the two zones
12 separately; just to complete separately is approximately
13 50,000 barrels of oil.

14 To relate that back to a barrel recovery
15 basis, it takes nearly 3000 barrels of oil to pay out that
16 \$50,000 additional expenditure.

17 So it could be seen that if we encounter
18 rather thin zones that we didn't anticipate to produce on
19 the -- anywhere more than 3-to-4-5,000 barrels of oil, it
20 would be very unlikely that those zones would be attempted
21 to be completed and produce separately, because there would
22 be no economic incentive to do so. However, if those zones
23 could be completed simultaneously, with the upper zones, the
24 economic incentive would be there and that additional oil
25 could be recovered economically.

26 Q All right, go to your Exhibit Number Six
27 and identify it for the record.

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2 A Exhibit Number Six is a calculation of
3 bottom hole pressures for the State FU No. 2.

4 Q And what's your purpose in this exhibit?

5 A This exhibit is to show the difference
6 in the bottom hole pressures currently of the two zones at a
7 common datum.

8 Q And what is that -- what is the differ-
9 ential at a common datum?

10 A As you can see, the upper -- the latest
11 measurement on the Upper Bone Springs showed 990 psi at a
12 midpoint of the perf; the Lower Bone Springs zone showed
13 1721 psi. Taking both of these pressures and correlating
14 them back to the upper perforation zone, the Lower Bone
15 Spring pressure is 1422 psi, which would yield a maximum
16 difference in static reservoir pressures of the two hori-
17 zons of 432 psi.

18 Q All right, go to your Exhibit Number
19 Seven and identify it for the record.

20 A Exhibit Number Seven is a generalized
21 wellbore sketch of the production configuration should this
22 order be granted and the two zones in the FU No. 2 were pro-
23 duced simultaneously. It also would represent how other
24 wells that are currently drilling or to be drilled would be
25 produced if they encountered the lower zone as being pro-
ductive.

26 Q So if I understand your testimony, this
is not as the wellbore of FU Well No. 2 is today, but how

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2 it would be depicted and fixed if this application is
3 granted.

4 A That is correct. Currently the lower
5 zone is isolated by a cast iron bridge plug, which has been
6 capped with 35 feet of cement.

7 Q All right, in your opinion as a profes-
8 sional engineer, would an cross flow occur during pumping
9 operations between the two zones?

10 A No, sir, that is -- that is not a possi-
11 bility, the reason being is that the pump will be located
12 below the lowermost Bone Spring perforation. We have found
13 it typical in our operations that the producing bottom hole
14 pressure of a pumping well, such as these wells, would be on
15 the order of 100-to-150 psi; therefor, because the producing
16 bottom hole pressure would be significantly lower than the
17 reservoir pressure of either zone, there could be no cross
18 flow between zones. All of the fluid that entered the well-
19 bore would be produced to the surface.

20 Q Suppose something happened to the pump
21 or the tubing or casing?

22 A There is a possibility of mechanical
23 failure; however, in almost all instances the mechanical
24 failure would be repaired within 24 hours, and certainly not
25 in excess of two or three days, and it must be pointed out
that while these zones are being produced, their bottom hole
pressure surrounding the wellbore has been significantly
lowered, so before any cross flow could occur, the pressures

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2 of the reservoirs would both have to build back up to static
3 reservoir pressure; the fluid in the wellbore would have to
4 rise, and it is our opinion that that would take longer for
5 that to occur than it would be to repair the well and place
it back on production.

6 Q All right, go to your Exhibit Number
7 Eight. What's the purpose of that -- in this exhibit?

8 A Exhibit Number Eight is a calculation of
9 the estimated time for static reservoir pressure equaliza-
10 tion between the two zones. This is to show that if the two
11 zones were allowed to produce simultaneously, that it would
12 only take a very short period of time for the statis re-
13 servoir pressures of both zones to equal each other.

14 Q Please explain these calculations you've
15 made.

16 A The calculations were made in three
17 parts based upon fluid and reservoir parameters that we have
18 documented in a recent reservoir study of the Airstrip.

19 The first one, I have taken and assumed
20 that because the upper reservoir is much more extensive and
21 the lower reservoir is less extensive, that initially the
22 lower reservoir will deplete at a substantially faster rate
23 than the upper reservoir, which is a valid assumption;
24 therefor, I have held the upper reservoir pressure constant
25 and assumed that the lower reservoir pressure would -- would
deplete to a rate -- to a point that would equal that of the
upper, and placing that back at the midpoint of the perfor-

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2 ations in the lower zone, that shows a reservoir pressure of
3 1290 psi.

4 In the second part of my calculation, I
5 have used Darcy's flow equation in order to determine at
6 what rate that lower zone would produce at when its static
7 reservoir pressure equalled that of the upper zone, and
8 after going through the calculations, I've determined that
9 that rate would be approximately 88 barrels of oil per day.

10 In the third step of my calculation I've
11 used decline curve analysis in order to determine how long
12 it would take that lower interval to deplete from the rate
13 that we initially expect it to come in at to the 88 barrels
14 of oil a day, and that time is calculated to be approxi-
15 mately four months.

16 Q So then it's your testimony that within
17 about four months after this application is granted and the
18 facilities fixed to accommodate the simultaneous flow of
19 both zones, that the pressure would no longer -- differ-
20 ential would no longer exist.

21 A That is correct.

22 Q All right, if any cross flow should
23 possibly occur, if this application is granted, would any
24 waste result?

25 A No, sir, in my opinion it would not.

Q Why not?

A The reason would be is because of the

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2 fact of the limited volume of reserves in the lower Bone
3 Spring, but even if cross flow occurred, there could not be
4 a significant movement of fluid into the upper zone;
5 however, even that amount of fluid if it was moved into the
6 upper zone, would be produced back out as soon as the well
7 was place back on production. That would be the first oil
8 back out. We know that the fluids of both zones are compa-
9 tible and therefor there would be no reason for us to as-
10 sume that the oil, if it were cross flowed, would be re-
11 tained within that upper reservoir and for certain, the oil
12 could not migrate off lease.

13 Q All right, now if these pools are not
14 consolidated will any waste occur?

15 A In my opinion, I believe that it would.

16 Q Why?

17 A Two reasons: First of all, as we have
18 illustrated with the State FU No. 2, by having the two
19 separate zones broken out at separate reservoirs, we must
20 deplete each one of them independent and separately; there-
21 for given the current economic limit out here of approxi-
22 mately 2-1/2 barrels of oil per day, each zone would be de-
23 pleted to that level, then abandoned, and the other zone
24 produced.

25 If the zones were allowed to produce
simultaneously, then the individual economic limit of each
zone could be lowered to where the combined limit of the two
zones was the 2-1/2 barrels a day.

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2 Q How much additional oil do you believe
3 will be recovered by favorable action of the Division on
4 this request?

5 A In the State FU No. 2 it's , based on my
6 calculations, I would estimate between 1000 and 2000 barrels
7 of oil would be recovered -- additional oil would be recov-
8 ered there.

9 It should also be noted, though, that
10 because of the one well drilling and the two other wells
11 planned for drilling that have good potential of encount-
12 ering again stray stringers in this lower reservoir, that a
13 similar situation would occur in the future on those wells,
14 and we would again expect to see an incremental amount of
15 oil to be recovered from those similar to that -- what we
16 are showing on the FU 2.

17 Q All right, then is it your testimony
18 that -- that the granting of this application will prevent
19 waste, both physical waste and economic waste?

20 A Yes, sir, it is.

21 MR. MOTE: We offer Amoco's
22 Exhibits Three through Eight into evidence.

23 MR. STOGNER: Exhibits Three
24 through Eight will be admitted into evidence.

25 MR. MOTE: That concludes our
examination of this witness.

CROSS EXAMINATION

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3 BY MR. STOGNER:

4 Q Mr. Sheppard, are there any special pool
5 rules for the Upper or Lower Bone Springs pools at this time
6 that would be in conflict with each other?

7 A No, sir, there are no special pool
8 rules. To my knowledge, the only rule is the one in which
9 the vertical segregation of the reservoirs were made, and
10 both reservoirs do operate on statewide rules.

11 The only thing that would be different
12 that I could note would be the allowable because of the
13 lowermost perforation, I believe, the allowable of the up-
14 per pool is 275 barrels of oil a day, while the allowable
15 for the lower zone is 320 barrels of oil per day.

16 Q Is that what the allowable is on the --
17 the EK Field, or is that the field that's directly to the
18 north and west of the Airstrip?

19 A I'm -- I'm not familiar with that. I
20 will point out the one that I am familiar with is the Scharb
21 Field immediately to the southeast, which we've made a cor-
22 relation with and the allowable on that field is 400 bar-
23 rels of oil per day.

24 Q Do you see any problem in the compati-
25 bility of the production from both pools?

A No, sir, Mr. Stogner. We have -- we --
we did not obtain a detailed compositional analysis of the
lower crude before the interval was abandoned; however, we

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do have the run tickets that show that the crudes are essentially the same in all aspects. The gravity of the lower crude was 37.5 and the gravity of the upper crude averages around 37.1, and there appears to be no physical difference at all in the two crudes, nor in the waters from either zone.

Q Thank you, Mr. Sheppard.

MR. STOGNER: Is there any further questions of this witness? If not, he may be excused.

Do you have anything further to come before this case, Mr. Mote?

MR. MOTE: That concludes the Amoco show.

MR. STOGNER: Is there anything further in Case Number 7897? If not, this case will be taken under advisement.

(Hearing concluded.)

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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 was reported by me; that the said Transcript of Hearing 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. 7897, heard by me on June 8 1983.

Michael E. [Signature] Examiner
Oil Conservation Division