

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

19 March 1986

DIVISION HEARING

IN THE MATTER OF:

Application of Tenneco Oil Company  
for downhole commingling, San Juan  
County, New Mexico.

CASE  
8845 & 8846

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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1  
2 MR. CATANACH: All right, let's  
3 call next Case 8845.

4 MR. TAYLOR: The application of  
5 Tenneco Oil Company for downhole commingling, San Juan  
6 County, New Mexico.

7 MS. AUBREY: Karen Aubrey with  
8 the law firm Kellahin & Kellahin, representing the  
9 applicant.

10 Mr. Examiner, I'd ask that Case  
11 8845 and Case 8846 be consolidated for the purpose of  
12 testimony.

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

15 MS. AUBREY: I have two  
16 witnesses to be sworn.

17 MR. CATANACH: Will the  
18 witnesses please stand and be sworn in at this time?

19  
20 (Witnesses sworn.)

21  
22 KEVIN HERINGER,  
23 being called as a witness and being duly sworn upon his  
24 oath, testified as follows, to-wit:

25

1 DIRECT EXAMINATION

2 BY MS. AUBREY:

3 Q Will you state your name, city of resi-  
4 dence, occupation, and by whom you're employed?

5 A My name is Kevin Heringer. I live in  
6 Denver, Colorado. I'm employed by Tenneco Oil Company and I  
7 am a landman.

8 Q Mr. Heringer, have you testified before  
9 the Oil Conservation Division before?

10 A No, I have not.

11 Q Would you please state for the examiner  
12 what your educational background has been?

13 A I graduated in 1983 with a BBA from the  
14 University of Oklahoma, petroleum land management major.

15 Q After you graduated from the University  
16 of Oklahoma where were you employed?

17 A I was employed as a landman for Lario Oil  
18 and Gas Company in Denver, Colorado, for one year; then was  
19 employed for approximately three and half months for John K.  
20 (not clearly understood.) He is an independent landman  
21 based in Denver, and for the last, close to eleven months, I  
22 have been a landman for Tenneco Oil Company.

23 Q Do you have any special area for this you  
24 are responsible in Tenneco as a landman?

25 A Yes, I do. That would be the San Juan

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Basin.

Q Are you familiar with Tenneco's application in Cases 8845 and 8846 that we're hearing here today?

A Yes, I am.

MS. AUBREY: Mr. Examiner, I tender Mr. Heringer as an expert landman.

MR. CATANACH: Mr. Heringer is considered qualified.

Q Mr. Heringer, as a landman have you been responsible for compiling lease information and also information on the identification and location of offset operators in connection with the wells that Tenneco proposes to commingle?

A Yes, that is correct.

Q Let me have you look at the blue notebook. In the back there are two tabs, one Lease Interests, and one Offset Operators.

Is that the portion of this exhibit which you have prepared?

A Yes, that is correct.

MS. AUBREY: I'm referring to Exhibit Number Two, Mr. Examiner.

Q And in connection with the application for downhole commingling, have you reviewed waiver letters from the offset operators?

1           A           Yes, I have.

2           Q           Let me have you look first, Mr. Heringer,  
3 at the list of -- the map which shows the offset operators,  
4 which is in Exhibit Number Two at the back. This is a com-  
5 posite exhibit which refers to all seven wells, is that cor-  
6 rect, that we're talking about in the two cases today?

7           A           Yes, that is correct.

8           Q           Some of the wells are in Range 8 West and  
9 some of the wells are in Range 8 -- I'm sorry, Range 9 West.

10          A           Yes, that's correct.

11          Q           Can you take what we've marked as Exhibit  
12 One and look at it with Exhibit Two and explain to the exam-  
13 iner whether or not you have received waivers from all of  
14 the offset operators shown on your map?

15          A           Yes, we have, and I'd like to run down  
16 the list of all offset operators who have been notified.

17          Q           Please do that.

18          A           El Paso Natural Gas, Union Texas Petro-  
19 leum, R & G Drilling Company in care of Walsh Engineering,  
20 ARCO Oil and Gas Company, Southland Royalty Company, and R.  
21 C. Winn (sic).

22          Q           And those are all of the offset operators  
23 for all seven wells, is that right?

24          A           Yes, that is correct.

25          Q           Have you received waiver letters from all

1 of those offset operators waiving any objection to the down-  
2 hole commingling?

3 A Yes, we have.

4 Q Let me have you quickly look at Exhibit  
5 Number One. There are signatures from all the offset opera-  
6 tors on the attachments to Exhibit Number One.

7 A Yes, that is correct.

8 Q Let me have you turn now to your lease  
9 information, which again is in the back of Exhibit Number  
10 Two. I notice that Conoco (not understood) shows as 50 per-  
11 cent owner under all of these leases. Can you explain that  
12 for the examiner?

13 A Tenneco and Conoco share these interests  
14 equally, 50 percent of all these Federal leases.

15 Tenneco is the operator under a joint  
16 operating agreement dated September 1st, 1964.

17 I'd like to point out in addition that  
18 all overriding royalty owners are common throughout the --  
19 from the surface to the base of the Mesaverde, as is the  
20 leasehold ownership.

21 Q The Mesaverde is the deepest proposing  
22 comingling formation?

23 A Yes, that is correct.

24 Q Let me ask you some questions about the  
25 working interest.

1                   Have you made an examination of the own-  
2                   ership of the working interest to the base of the Mesaverde  
3                   for all seven wells?

4                   A            Yes, I have, and these are included on  
5                   this exhibit.

6                   Q            Is the working interest common between  
7                   Conoco and Tenneco in all the wells?

8                   A            Yes, that is correct.

9                   Q            And that is -- between their two inter-  
10                  ests that's a 100 percent interest.

11                  A            Yes, that's correct.

12                  Q            And I believe you just testified that the  
13                  overriding royalty interests were common between the two  
14                  zones in all seven wells.

15                  A            Yes, although they may vary as to separ-  
16                  ate leases, they are common.

17                  Q            So by that you mean in any particular --  
18                  you mean that the percentage may vary from well to well but  
19                  the percentages are equal between the Chacra and the Mesa-  
20                  verde in each wellbore.

21                  A            Yes, that's correct.

22                  Q            Your area maps identify the location of  
23                  each of the seven wells, is that correct?

24                  A            Yes, that is correct.

25                  Q            Now are these wells infill wells?



1           A           The Mesaverde is; the Chacra is not.

2           Q           So you're proposing to complete these on  
3 a 320-acre proration unit in the Mesaverde?

4           A           Yes, that is correct, and these are out-  
5 lined on the offset operator map as to the spacing unit for  
6 each individual well.

7           Q           And for the Chacra, since the Chacra's  
8 spaced on 160's, these will be the original wells in the  
9 area.

10          A           That is correct.

11          Q           Mr. Heringer, were the waiver letters,  
12 which are composed -- compose Exhibit Number One prepared at  
13 your direction?

14          A           Yes, they were.

15          Q           And did you prepare the documents which  
16 are in Exhibit Number Two, which are the lists of leasehold  
17 interests and the -- and the area maps?

18          A           That is correct.

19                       MS. AUBREY: Mr. Examiner, I  
20 tender Exhibit Number One into evidence and the portions of  
21 Exhibit Number Two which are composed of the list of offset  
22 operators and the leasehold interest.

23                       MR. CATANACH: Exhibits Number  
24 One and that portion of Exhibit Number Two will be admitted  
25 into evidence.

1 MS. AUBREY: I have no more  
2 questions of this witness.

3  
4 CROSS EXAMINATION

5 BY MR. CATANACH:

6 Q Mr. Heringer, the offset operators that  
7 were notified of your attempt to downhole commingle, these  
8 are operators who have interests in the Mesaverde and the  
9 Chacra formations?

10 A Yes, that is correct.

11 MR. CATANACH: I have no fur-  
12 ther questions.

13  
14 STEPHEN M. STRUNA,

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

17  
18 DIRECT EXAMINATION

19 BY MS. AUBREY:

20 Q Would you state your name, your city of  
21 residence, by whom you're employed, and what your occupation  
22 is?

23 A I'm Stephen Struna. I live in Denver,  
24 Colorado. I'm employed by Tenneco Oil Company as a petro-  
25 leum engineer.



1 tender Mr. Struna as an expert petroleum engineer.

2 MR. CATANACH: Mr. Struna is  
3 considered qualified.

4 Q Mr. Struna, before going into the details  
5 of your exhibit would you briefly explain for the examiner  
6 what Tenneco intends to do in connection with the seven  
7 wells that we're talking about today?

8 A Okay. Tenneco Oil Company currently plans  
9 to drill the captioned wells during the third or fourth  
10 quarter of 1986. These wells are anticipated to encounter  
11 productive sands in both the Mesaverde and Chacra forma-  
12 tions.

13 Tenneco Oil Company seeks to obtain the  
14 Commission's approval downhole commingle production from the  
15 Chacra and Mesaverde formations.

16 Q Let me ask you, Mr. Struna, what is the  
17 primary objective of -- of each well?

18 A The primary formation is the Mesaverde.

19 Q And you anticipate that you will encoun-  
20 ter Chacra production.

21 A That's correct.

22 Q Have you made a study from which you can  
23 conclude whether or not it would be economical to drill  
24 these wells as single completions in the Chacra?

25 A Yes, we have and we've determined that

1 these wells could not be completed as singles in the Chacra  
2 formation.

3 Q And why is that?

4 A The estimated reserve potential of the  
5 Chacra horizons in each of the seven wells is considered to  
6 be insufficient to justify that investment.

7 Q Mr. Struna, these are wells which have  
8 not yet been drilled, is that correct?

9 A That is correct.

10 Q In order to prepare your exhibits, would  
11 you explain for the examiner what data you have examined,  
12 particularly in terms of bottom hole pressures, to draw the  
13 conclusions which you have drawn in your exhibit?

14 A Okay. We've looked at surrounding Mesa-  
15 verde and Chacra wells in the vicinity of the subject wells,  
16 particularly recent Mesaverde infill wells. For example, if  
17 you'll look at the map in the blue book, there's one for the  
18 Chacra; it's in the first section of the blue book about  
19 five pages in.

20 Q And that's under the first tab? And  
21 you're going to have to say this for me, Mr. Struna.

22 A Okay.

23 Q The name of the well.

24 A It's the Schwerdtfeger A LS No. 14A.

25 We've looked at initial shut-in pressures

1 on surrounding Chacra wells and on surrounding Mesaverde  
2 wells. These initial shut-in pressures were normalized ac-  
3 cording to depth and an average Chacra, local Chacra pres-  
4 sure gradient and an average local Mesaverde pressure gra-  
5 dient was established.

6 For this particular well, the Schwerdt-  
7 feger A LS #14A, the estimated Chacra completed interval  
8 midpoint was 3,279 feet. The estimated Mesaverde completed  
9 interval midpoint was 4,6070 feet.

10 An average of the surrounding Chacra ini-  
11 tial shut-in pressures was 1,002 psi.

12 An average of the surrounding Mesaverde  
13 initial shut-in pressures is 867 psi.

14 Based on a Chacra pressure gradient of  
15 at the completed interval, is 1109 psi.

16 The anticipated Mesaverde shut-in pres-  
17 sure at the completed interval is 1001 psi.

18 When these are adjusted to a common  
19 datum, Chacra pressure would be 1129 psi and the Mesaverde  
20 shut-in pressure would be 983 psi.

21 The ratio of a lesser pressured Mesaverde  
22 formation to the higher pressured Chacra formation in this  
23 case is .8707, which would satisfy the 50 percent rule.

24 Q From your examination of the pressures in  
25 surrounding wells can you conclude that there will be no

1 cross flow between the zones?

2 A That's correct.

3 Q Let me take you through the documents be-  
4 hind your first tab.

5 A Okay.

6 Q To what you have marked as your exhibits  
7 one and two. Those are the maps which show the initial  
8 shut-in pressures which you've just described for the exam-  
9 iner.

10 A That's correct.

11 Q Okay. The next page, then, contains the  
12 assumptions that you've made in calculating the pressure  
13 calculations?

14 A That's correct.

15 Q Are these standard engineering assump-  
16 tions?

17 A Yes, they are.

18 Q The next page behind that, is that a list  
19 of the wells which you have examined in order to draw your  
20 pressure calculation conclusions for the new wells?

21 A That's correct. That was of recent Mesa-  
22 verde wells drilled since 1978.

23 At the bottom of the list are five Tenne-  
24 co Mesaverde infill wells drilled in 1985 and this demon-  
25 strates the shut-in pressures of these five wells is very

1 much in line with the averages seen and the averages used in  
2 the calculations.

3 Q And the next page is the same sort of a  
4 listing for the wells which you've examined in the Chacra.

5 A That's correct.

6 Q Let me take you to the next page now, Mr.  
7 Struna, which is the page on which you've calculated your  
8 estimated reserves for both zones. Would you describe that  
9 exhibit for the examiner?

10 A Yes. It's recommended that production be  
11 allocated on a strict percentage basis according to the  
12 fraction and total reserves contributed by each of the  
13 zones.

14 The Chacra reserves were estimated from  
15 an Iso-reserves map which is on the following page. I've  
16 labeled it as Exhibit Three. This map is contoured on 190-  
17 cubic foot contour intervals. The large black arrow locates  
18 the Schwerdtfeger A LS No. 14A. Based on its position on  
19 the map estimated Chacra reserves were 175-million cubic  
20 feet.

21 Mesaverde reserves were estimated using  
22 the net pay map, which is on the following page I've labeled  
23 as Exhibit Four. This map is a net pay composite Isopach  
24 over the Cliff House and Point Lookout formations, which are  
25 the primary producing members of the Mesaverde in this area.



1  
2           The estimated pay based on the Isopach  
3 map, Exhibit Four, was then taken and used on the figure  
4 labeled as Exhibit Five, which is a plot of feet of net pay  
5 versus reserves. For the particular well we're looking at,  
6 it's anticipated to encounter 10 feet of net pay. If you  
7 read 10 feet of net pay on the linear correlation, we're an-  
8 ticipating .6 BCF of reserves from the Mesaverde formation.  
9 This figure, Exhibit Five, was compiled from net pay thick-  
10 nesses encountered in recent Mesaverde wells drilled in this  
11 area, and reserves were estimated from decline curve analy-  
12 sis.

13           If you look back two pages, summarize the  
14 Chacra reserves to be for this well 175-million cubic feet;  
15 the Mesaverde reserves of 600-million cubic feet. Taking  
16 the ratio there, we'd anticipate Chacra production to be  
17 22.58 percent total and Mesaverde production to be 77.42  
18 percent of total.

19           Q           Mr. Struna, in the event that the Divi-  
20 sion requires it, will you be willing to work with the local  
21 District Office to -- in connection with testing these wells  
22 to confirm your proposed production allocation?

23           A           Yes, we would. We would anticipate -- we  
24 would plan on completing the Mesaverde zone, moving up the  
25 wellbore and completing the Chacra zone, and getting a sep-  
arate flow test on the Chacra, and then we could flow the

1 two zones together against the same back pressure and deter-  
2 mine a rate from each of the two horizons.

3 Q And in any event, the ownership is common  
4 between the two zones, is that correct?

5 A That is correct.

6 Q Mr. Struna, the reserves, the reserve  
7 numbers you have here for the two zones are very different.  
8 Do you have an opinion as to the total reserve life between  
9 the two zones?

10 A Yes, I do. In this area both formations  
11 have very similar decline curves. Looking at the decline of  
12 mature Chacra and Mesaverde wells in the area, it's been de-  
13 termined statistically that the hyperbolic decline can be  
14 described as 45 percent the first year, 30 percent the  
15 second year, 25 percent the third year, and 10 percent for  
16 the remaining life.

17 Based on these similar hyperbolic de-  
18 clines, the reserve life of both of the formations, for  
19 example, Mesaverde for this well, the initial rate would be  
20 anticipated to be 735 MCF per day. The reserve life asso-  
21 ciated with that initial rate is 31.7 years.

22 The Chacra horizon is anticipated to flow  
23 at 160 MCF per day. The reserves life associated with that  
24 type of initial rate is 31.2 years.

25 Based on this data the production alloca-

1 tion based on a fraction of reserves seems to be fair over  
2 the life of the well.

3 Q Do you have an opinion, Mr. Struna, as to  
4 whether or not the Chacra gas, that the fact that the gas is  
5 fairly dry will increase your Mesaverde reserves production?

6 A Yes, I do. The Chacra gas is extremely  
7 dry in this area. Chaca wells in the vicinity of the sub-  
8 ject well produce less than one barrel per million cubic  
9 feet of water and condensate combined on an average basis.

10 Local Mesaverde wells produce consider-  
11 ably more liquids than do Chacra wells.

12 Average condensate and water yields ap-  
13 proximately 5 barrels per million and 2 barrels per million,  
14 respectively, for the Mesaverde producers.

15 As the production capacities in the Mesa-  
16 verde zone decreases with time, it's ability to unload pro-  
17 duced fluids will also decrease. The increased volumes of  
18 commingled dry Chacra gas through the tubing will help to  
19 lift the produced Mesaverde liquids. Over the life of the  
20 well the commingled Chacra production will definitely im-  
21 prove the flow efficiency of the Mesaverde.

22 Q Have you had a water analysis or a fluid  
23 analysis performed on fluids from similar wells in order to  
24 conclude that the fluids will be compatible between the two  
25 zones?

1           A           Yes, we have. Smith Laboratories in Far-  
2           mington performed a compatibility test using produced Chacra  
3           water from a nearby offset well, the Dryden LS No. 1A, lo-  
4           cated in the southeast quarter of Section 28, Township 28  
5           North, Range 8 West, and produced Mesaverde water from an-  
6           other nearby offset, the Schwerdtfeger A LS #14, in the  
7           southwest quarter of Section 8, Township 27 North, Range 8  
8           West.

9                        The test indicated that no scale or pre-  
10           cipitate problems should result when production streams from  
11           these two horizons are commingled.

12                      Water analysis also indicated that cor-  
13           responding salinities were similar enough and that no forma-  
14           tion damage should occur due to the presence of produced  
15           water from another zone.

16           Q           Do you have an opinion as to whether or  
17           not that test data would be valid for all seven wells you  
18           are proposing today?

19           A           Yes. It would be valid. There is no  
20           reason to assume that the characters -- characteristic of  
21           the water would vary over this limited geographic area.

22           Q           And that test analysis is included in  
23           your Exhibit Number Two under the tab, Water Analysis, is  
24           that correct?

25           A           That's correct.

1 Q And that is applicable to all the wells.

2 A Yes, it is.

3 Q Let me have you look at the last page un-  
4 der the first tab on the first well, which is the wellbore  
5 diagram. Can you explain your completion proposal to the  
6 examiner?

7 A Yes. As a commingled well we would plan  
8 on setting surface casing, 9-5/8ths 36-pound casing, at ap-  
9 proximately 300 feet, 280 feet.

10 We'd then run an intermediate casing  
11 string made of 7-inch 23-pound per foot casing, 250 feet in-  
12 to the Lewis Shale.

13 We would then hang the 4-1/2 inch liner  
14 at the bottom of this intermediate casing string. This  
15 liner would extend beyond the anticipated Mesaverde inter-  
16 val.

17 We would perforate the Mesaverde for this  
18 example at 4670 feet, and we'd perforate and complete the  
19 Chacra at 3279 feet.

20 We would then run a production string  
21 composed of 2-3/8ths 4.7-pound per foot tubing and that  
22 string would be landed approximately one joint above the  
23 bottom Mesaverde perforation.

24 Q Mr. Struna, have you prepared as part of  
25 your exhibit an economic analysis which -- which supports

1 your application for commingling?

2 A Yes, I have.

3 Q Now yours is in a different place in the  
4 book than mine, so you'll need to tell the examiner where to  
5 find that.

6 A Yes. The page in front of the wellbore  
7 diagram.

8 As we said before, the Mesaverde forma-  
9 tion is the primary target of the captioned well. In light  
10 of current market conditions estimated reserves associated  
11 with the Chacra completion at this location are considered  
12 to be insufficient to justify the capital expenditure re-  
13 quired to separately produce these reserves and I've item-  
14 ized the incremental investment associated with a dual com-  
15 pletion in this wellbore.

16 In the event that approval to commingle  
17 production is not granted, the Chacra interval would not be  
18 completed. Downhole commingling is requested to prevent the  
19 waste of, in this case, 175-million cubic feet of Chacra re-  
20 serves.

21 Looking at the individual items and the  
22 associated cost savings, if we were to dual these wells, we  
23 would -- it would require a different wellhead, a dual well-  
24 head. Incremental costs there would be about \$5000.

25 We would need an additional separator

1 set-up to handle the Chacra zone separately. That would  
2 cost approximately \$5500.

3 We'd run a production string for the Cha-  
4 cra of inch and a quarter tubing. That would cost approxi-  
5 mately \$17,000.

6 We would have to set a packer to isolate  
7 the two zones. That would cost \$3500.

8 There would be associated blast joints  
9 and pup joints used in the completion, costing \$5000.

10 Miscellaneous plugs and hardware asso-  
11 ciated with the completion, \$2000.

12 The wellbore would be drilled differ-  
13 ently; therefore the casing would be more expensive in the  
14 dual. There would be more of the 7-inch casing and slightly  
15 -- or there would be less 7-inch casing and slightly more 4-  
16 1/2 inch casing.

17 Total incremental costs there would be  
18 \$5000.

19 Drilling miscellaneous, approximately  
20 \$2500 associated with the deeper intermediate hole.

21 Completion miscellaneous, about \$10,500,  
22 and we've included some contingency costs, miscellaneous, of  
23 \$2000, for a total of \$57,000, representing the additional  
24 capital required to complete the Chacra interval as a dual  
25 and produce it separately.

1           Q           Are these figures applicable to all seven  
2 wells that we're talking about?

3           A           Yes, they are. In light of current gas  
4 market trends, estimated demands, hook-up delay and asso-  
5 ciated risk, Chacra reserves are insufficient to justify  
6 this incremental \$57,000 investment.

7           Q           In the event that the -- your application  
8 for downhole commingling is not granted, does Tenneco have  
9 any intention of creating any kind of a program to obtain  
10 these Chacra reserves?

11          A           Not at present.

12          Q           So those would be -- remain unproduced.

13          A           That's correct.

14          Q           Mr. Struna, do you have an opinion that  
15 the value of the commingled production will not be less than  
16 the sum of the values of the individual streams in the event  
17 that your application is granted?

18          A           Yes, I do. As I mentioned previously,  
19 the dry Chacra gas will -- will aid in lifting produced li-  
20 quids from the Mesaverde. Early in the life of the well,  
21 while both zones are producing at a maximum rate, there will  
22 be a slight increase in friction loss in the tubing due to  
23 the additional volume of Chacra gas produced.

24                       Exhibit Nine, which is the third page,  
25 third page from the end of this section, shows that the



1 flowing bottom hole pressure increases from 390 psi for a  
2 well producing at 750 MCF per day, just the Mesaverde, to  
3 405. It increases to 405 psi for a well producing at 1250  
4 MCF per day.

5 This increased pressure drop of 15 psi  
6 compared to a total of 400 is very insignificant and would  
7 represent a maximum considering the initial rate of the  
8 Chacra production will be in the neighborhood of 200 MCF per  
9 day rather than 500 MCF per day used in this example.

10 So that 15 psi pressure drop would defin-  
11 itely be the most we'd see, and as the zones deplete, the  
12 amount of pressure drop due to the rate, would also  
13 decrease.

14 Q Now we have six more wells here, Mr.  
15 Struna.

16 A Uh-huh.

17 Q Can you describe for the examiner the  
18 similarities between the documents which are contained in  
19 your Exhibit Number Two for all the wells?

20 A Yes. The exhibits are essentially the  
21 same for the next six wells as they were in the example I  
22 just reviewed. The differences, of course, are the reserve  
23 estimates and the -- and the pressure ratios, but in all  
24 cases the pressure ratios easily satisfy the 50 percent  
25 requirements stipulated by the Commission.

1           Q           Are the conclusions that you have drawn  
2 for the other six wells similar, while the pressure numbers  
3 may be different, similar to the ones you've drawn for the  
4 first well?

5           A           Yes, they are.

6           Q           Let me have you look now at Exhibits  
7 Three and Four. These exhibits list reserves and antici-  
8 pated shut-in pressure for all seven wells, including the  
9 one well that we've just talked about.

10          A           That's correct.

11          Q           Do you have an opinion that the, looking  
12 at Exhibit Number Three, that the reserve estimates are  
13 within similar ratios for all the wells?

14          A           Yes, they are, and they were -- these re-  
15 serve estimates were obtained in the very same manner as  
16 they were in the previous exhibit.

17          Q           And a detailed analysis of the calcula-  
18 tion of these estimated reserves that is contained in Exhi-  
19 bit Three is also in Exhibit Two for each well, is that cor-  
20 rect?

21          A           That's correct.

22          Q           And with regard to the shut-in pressures  
23 for each of the other six wells, while they're listed on Ex-  
24 hibit Four, there is back-up data showing how you calculated  
25 those anticipated shut-in pressure for all six wells.

1           A           That's correct.

2           Q           Mr. Struna, do you have anything you want  
3 to add to your testimony?

4           A           No, I don't.

5           Q           Will granting Tenneco's application pre-  
6 vent waste and promote conservation?

7           A           Yes, it would.

8           Q           Mr. Struna, was Exhibit Number Two, with  
9 the exception of that portion which has already been admit-  
10 ted in evidence, and Exhibits Numbers Three and Four pre-  
11 pared by you or under your direction?

12          A           Yes, it was.

13                           MS. AUBREY: I have no other  
14 questions.

15                           I'll offer Exhibits Number Two,  
16 Three, and Four.

17                           MR. CATANACH: Exhibits Number  
18 Two, Three, and Four will be admitted into evidence.

19

20                           CROSS EXAMINATION

21 BY MR. CATANACH:

22           Q           Mr. Struna, you stated that the Chacra  
23 will not be produced if you don't receive approval to down-  
24 hole commingle.

25          A           That's correct.

1           Q           In your opinion it is uneconomical to  
2 produce the Chacra reserves separately?

3           A           Yes, it is, based on the incremental in-  
4 vestment required to do so.

5           Q           Mr. Struna, is Conoco in agreement with  
6 your proposal?

7           A           Yes, they are.

8           Q           You stated that Tenneco would be willing  
9 to run some production tests to determine if your  
10 calculations are correct?

11          A           Yes, we would test the well, the Chacra  
12 formation, initially, and then test the combined streams and  
13 subtract the Chacra production, compare that ratio, and if  
14 it's not -- if it doesn't -- if there's a large disparity  
15 between that ratio and the ratio we've recommended based on  
16 our reserve estimates, we would take steps to revise the  
17 production allocation.

18          Q           Is the rate of decline in the offset  
19 wells fairly consistent?

20          A           Yes, it is. I've included in this an  
21 example decline curve from two offset wells and they're in  
22 the blue book, and looking at a number of wells, the type  
23 decline used 45 percent the first year, 30 percent the sec-  
24 ond year, 20 percent the third year, and 10 percent the re-  
25 maining life, is an adequate description of production in

1 this area.

2 MR. CATANACH: I have no fur-  
3 ther questions of the witness.

4 MS. AUBREY: I have nothing  
5 further.

6 MR. CATANACH: Is there any-  
7 thing further in Case 8845 or 8846?

8 If not, they will be taken un-  
9 der advisement.

10

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(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 the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. ~~2045~~ <sup>2046</sup> heard by me on March 19, 1986.

David L. Catamb, Examiner  
Oil Conservation Division

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

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5 March 1986

DIVISION HEARING

IN THE MATTER OF:

Disposition of cases called on  
Docket No. 8-86 for which no tes-  
timony was presented.

CASE 8836,  
8837, 8838,  
8839, 8842,  
8845, 8846,  
8848, 8849,  
8826.

*Transcript in  
Case 8836*

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

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