

## NEW MEXICO OIL CONSERVATION COMMISSION

## COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date OCTOBER 20, 1977Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
J. R. Cone	J. R. Cone	La Barge, Tex
Jim Cone	J. R. Cone	" "
Jack Markham	Jack Markham	" "
John C. Byers	J. R. Cone	" "
William F. Cline	ARCO	Mudlow, Tex
Bob Maloney	ARCO	" "
Ken Martin	Marathon	W. Va.
Goert Janis	"	"
Jimmy L. ...	ARCO	"
Ray Stall	U.S. ...	Rocky Mts.
Morris Todd	TEXACO	Midland
Pam White	Summit Energy, Inc.	Antonia, N.M.
H.R. Kendrick	El Paso Natural Gas	El Paso, Tex.
W. L. ...	Shell Int.	Wichita, Tex.
A. J. FINE	"	" "
Charles ...	Marathon	" "
Dennis Johnson	Union Texas Petroleum	Midland, Tex.
Jimmy ...	1111 ...	Hobbs
Ken ...	White ...	" "

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
October 20, 1977

COMMISSION HEARING

IN THE MATTER OF:

Application of Atlantic-Richfield Co.	)	CASES
for statutory unitization, Lea County,	)	6069
New Mexico; and Application of Atlantic-	)	6000
Richfield for a waterflood project, Lea	)	6070
County, New Mexico.	)	5998

BEFORE: Joe D. Ramey, Secretary-Director  
Phil Lucero, Member  
Emery Arnold, Member

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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1 MR. RAMEY: The hearing will come to order. I  
2 think it would be proper to call all four cases on the  
3 docket at this time.

4 MS. TESCHENDORF: Case 6069, Case 6070, they are  
5 both applications of Atlantic-Richfield for statutory  
6 unitization, Lea County, New Mexico.

7 Cases 6000 and 5998 are applications of Atlantic-  
8 Richfield for a water flood project also in Lea County New  
9 Mexico.

10 MR. RAMEY: Call for appearances at this time.

11 MR. HINKLE: Clarence Hinkle, Hinkle, Cox, Eaton  
12 Coffield and Hensley, Roswell, appearing on behalf of  
13 Atlantic-Richfield.

14 We have three witnesses I would like to have sworn  
15 and we would like to have all of the cases consolidated for  
16 purposes of taking testimony.

17 MR. RAMEY: They will be consolidated for purposes  
18 of taking testimony and separate orders will be issued for  
19 each case. Any other appearances?

20 MR. KELLAHIN: Tom Kellahin of Kellahin and Fox,  
21 Santa Fe, New Mexico, appearing on behalf of J. R. Cone and  
22 Summit Energy. I have two witnesses.

23 MR. BATEMAN: Ken Bateman of White, Koch, Kelly and  
24 McCarthy, Santa Fe, appearing on behalf of Texaco and I will  
25 have one witness.

1 MR. KENDRICK: H. L. Kendrick, El Paso Natural Gas  
2 Company.

3 MR. RAMEY: Are you going to say anything today,  
4 Mr. Kendrick?

5 MR. KENDRICK: I don't know.

6 MR. RAMEY: He sat with us all day yesterday and  
7 didn't say a thing.

8 Any other appearances? I'll ask for all witnesses  
9 to stand at this time and be sworn.

10 (THEREUPON, the witnesses were sworn.)

11 MR. HINKLE: If the Commission please, there are  
12 three bound volumes that contain all together about two hundred  
13 and sixty exhibits and we have marked them for convenience  
14 A, B, and C. Now, B is the logs of the wells and we only  
15 have two copies of it. But A and C refer to the exhibits  
16 in there and the witness will refer to the different exhibits  
17 as they are marked in those bound volumes.

18

19 BOB MALAISE

20 BY MR. HINKLE:

21 Q State your name, your residence and by whom you are  
22 employed?

23 A My name is Bob Malaise and I am employed by Atlantic-  
24 Richfield and my residence is Midland, Texas.

25 Q What is your position with Atlantic-Richfield?

1 A. I am an operations engineer.

2 Q. A Petroleum Engineer?

3 A. Yes, sir.

4 Q. Have you previously testified before the Commission  
5 and qualified as a Petroleum Engineer?

6 A. Yes, I have.

7 Q. Have you made a study of the East Blinebry and East  
8 Drinkard and the proposed unit area and of all of the wells  
9 that have been drilled within these areas and the surrounding  
10 areas around these units?

11 A. Yes, I have.

12 MR. HINKLE: Are his qualifications acceptable?

13 MR. RAMEY: Yes.

14 Q. (Mr. Hinkle continuing.) Are you familiar with the  
15 application of Atlantic-Richfield in these cases?

16 A. Yes, I am.

17 Q. What does Atlantic-Richfield seek to accomplish?

18 A. In the application of -- in the original case  
19 Number 5997, we filed for approval of the unit agreement  
20 covering the East Drinkard unit area that is comprised of  
21 approximately three thousand and thirty acres of both federal  
22 and fee lands in Sections 11, 12, 13, 14 23, and 24 in  
23 Township 21 South, Range 37 East, in Lea County.

24 In the original Case 5998, we filed for approval for  
25 water flood projects in the East Drinkard unit area and to

1 inject water into the Drinkard formation in approximately  
2 thirty wells.

3 In Case 5999, the original case, we filed for an  
4 application of approval of the East Blinebry Unit which is  
5 coexistent with the East Drinkard Unit Area.

6 In Case 6000, the original case, we filed for  
7 approval of a water flood project for the East Blinebry Unit  
8 Area by injecting into thirty-eight injection wells into the  
9 Blinebry formation.

10 Q Have you prepared or has there been prepared under  
11 your direction certain exhibits for introduction in these  
12 cases?

13 A Yes, I have.

14 Q And they are the ones that have been marked one  
15 through two hundred fifty-six?

16 A Yes.

17 Q Although there are two hundred sixty exhibits as  
18 previously explained a lot of these are diagrammatic sketches  
19 of the injection wells and they will be referred to as a  
20 group so we don't have to go through each individual exhibit  
21 unless there is some question about it.

22 Refer to Exhibit One and explain what this is and  
23 what it shows?

24 A Our Exhibit One in the Exhibit Book A, refers to and  
25 shows the outlined area of the proposed East Blinebry and

1 East Drinkard Units.

2 It also shows all of the wells that have been drilled  
3 within the proposed unit area and all of the wells that are  
4 surrounding the unit area.

5 The Exhibit One also shows the zones from which the  
6 wells are now producing, presently, and that portion of the  
7 land within the unit area which are federal lands and the  
8 lands which are fee lands.

9 It also shows those injections wells which we propose  
10 to complete as injections wells and they are shown as small  
11 dotted triangles.

12 Q Refer to Exhibit One A and explain what that is to  
13 the Commission?

14 A Exhibit One A is an exhibit which shows all formations  
15 that have produced from previous completions for those wells  
16 within the unit area and also within a two mile radius or  
17 a two-mile boundary of this same proposed unit.

18 Q How many acres are included in the proposed unit?

19 A There are three thousand and eighty acres.

20 Q What portion of these are fee and federal lands?

21 A Twelve hundred acres are federal land which is  
22 approximately thirty-eight point nine percent of the unit area.  
23 One thousand eight hundred and eighty acres are fee lands which  
24 is sixty-one point oh four percent.

25 Q Have these units been designated by the United States



1 Geological Survey as unit areas which may be unitized under  
2 the provisions of the mineral leasing act?

3 A. Yes, they have. I refer to Exhibit One B and One C,  
4 which are copies of letters from the regional conservation  
5 manager for the director of the U.S.G.S. and they are letters  
6 which approved the unit area as a logical area subject to  
7 unitization under the provisions of the mineral leasing act.

8 They also approved the proposal for of the unit  
9 agreement both for the East Blinebry Unit and the East Brinkard  
10 unit.

11 In these letters the U.S.G.S. also concurred in the  
12 supervisory's recommendation that the proposal for the basis  
13 of allocation of unitized substances was acceptable.

14 MR. HINKLE: If the Commission please, there are  
15 three copies of the unit agreement and the unit operating  
16 agreement in each of these cases filed with the original  
17 application so we are not going to introduce them, the unit  
18 operating agreement, because they are already filed and are  
19 a part of the record in these cases.

20 Q. (Mr. Hinkle continuing.) How, refer to Exhibit One  
21 D, and explain what that shows?

22 A. Exhibit One D is a structure map that was made on  
23 the top of the Blinebry marker and which is one of the formations  
24 that we are proposing to unitize.

25 You can see the Blinebry formation is defined

1 in the unit as that stratigraphic interval that is encountered  
2 in the Sinclair-Roy Barton No. 3, which is located nineteen  
3 hundred and eighty feet from the north line and six hundred  
4 sixty from the east line of Section 23, Township 21 South,  
5 Range 37 East, the top of which is shown -- well, it is a  
6 gamma ray neutron log dated August 17, 1963, and it is from  
7 a subsurface depth of five thousand five hundred fifty feet  
8 to the bottom which is shown as a subsurface depth of six  
9 thousand and seven feet.

10 Q Now, refer to Exhibit One E and One F and explain  
11 these?

12 A One E and One F are cross sections. One E is the  
13 north-south cross section across the Blinebry formation which  
14 is the formation we are proposing to unitize.

15 One F is the east-west cross section across the  
16 Blinebry formation and these two cross sections shows that  
17 the Blinebry formation is continuous and is substantially  
18 uniform over the entire unit area.

19 These run the entire interval of the proposed unit  
20 area and extend a couple of locations across the proposed  
21 area that we propose to unitize.

22 Q Refer to Exhibit One G and explain what this is?

23 A Exhibit One G also shows the proposed unit area and  
24 also shows a structure map that is contoured on the top of  
25 the Drinkard formation.

1           The Drinkard formation being that formation that is  
2 also defined in the Roy Barton Sinclair No. 3 as located  
3 nineteen eighty feet from the north line and six-sixty feet  
4 from the east line of Section 23, Township 21 South, Range  
5 37 East.

6           In this particular section of the Wellex log dated  
7 August 17, 1963, we find an interval from the subsurface  
8 depth of sixty-four fifty feet the bottom of which is located  
9 at a subsurface depth of sixty-seven thirty feet.

10           Q     Refer to Exhibit One H and explain that?

11           A     Exhibit One H shows an outline of our proposed East  
12 Blinebry and East Drinkard Unit water flood. Now, approximately  
13 one and a half miles to the southwest we show the Central  
14 Drinkard Unit and that is operated by Gulf Oil which is  
15 located -- I said one half mile to the southwest -- this is  
16 a Drinkard flood that is in operation to date, a flood which  
17 was installed in 1968.

18           It also -- I also might mention on this exhibit we  
19 show a proposed North Drinkard Unit that Sun Oil Corporation  
20 or Sun Oil Company has looked at and has studied and is still  
21 in the proposed state as far as the Drinkard secondary recovery  
22 project.

23           Also not shown on this exhibit -- but for a point of  
24 interest there is an additional area that is being studied  
25 by Shell Oil Company at this time for a Drinkard secondary

1 recovery project and it would include areas of Sections 10,  
2 15 and 22, in Township 21 South, Range 37.

3 Gulf Oil has indicated that they have also shown  
4 an interest in looking at a Drinkard secondary recovery  
5 project just south of the this East Blinebry and East  
6 Drinkard Units.

7 Q Now, refer to Exhibits One I and One J and explain  
8 these, please?

9 A One I and One J are also cross sections of the  
10 Drinkard formation being the north-south cross section, in  
11 Exhibit One I.

12 One J is an east-west cross section across the  
13 Drinkard formation over the interval that we propose to  
14 unitize.

15 These cross sections show that the unitized formation  
16 is continuous and has substantial uniformity over the proposed  
17 -- the entire proposed unitized area.

18 Q Do Exhibits One D through One J, being structural  
19 maps, support the boundaries of the proposed unit area?

20 A Yes, I feel they do.

21 Q Was this same information submitted to the Geological  
22 Survey that they designated were suitable areas for unitization?

23 A Yes, they were. If I can expand on this. I would  
24 like to point out that the Blinebry Pool lies on a north-  
25 south anticline and a central basin platform.

1           The production from this reservoir is at approximately  
2 fifty-seven hundred feet in the Blinebry Unit Area.

3           Exhibit One B, being the structure maps, shows that  
4 we have approximately three hundred feet of closure in this  
5 particular formation, in the unit area.

6           A gas-oil contact was originally at a subsea depth  
7 of minus twenty-two fifty. This contact was shown and marked  
8 on Exhibits One E and One F.

9           The completion progressed structurally or progressed  
10 up structure from the gas-oil contact and we saw that we  
11 were containing less of an oil column as we went up structure.

12           I might point out that as of April 1st, 1976, we  
13 had a cumulative recovery average, cumulative recovery, in  
14 Section 22, Township 21, 37 East, of approximately forty-five  
15 thousand barrels of oil per forty acre location.

16           On the down dip offset Section 23, we had an average  
17 recovery on a forty acre location of eighty-five thousand  
18 barrels of oil. This is as of April 1st, 1976.

19           I attribute the biggest part of this difference to  
20 the fact that we had less oil column as we went structurally  
21 up dip and to the west.

22           I might also point out that as we go to the east  
23 and as we can see in the cross section the Blinebry formation  
24 starts to pinch out or lose its ability to produce. The  
25 formation was defined by the fact that there is no Blinebry

1 production, or was none, to the east of this unit area.

2           There were several wells that were drilled but  
3 were not completed commercially.

4           The unit boundary, or Exhibit One F, points this  
5 out I feel like on the eastern side. The productive limits  
6 to the south are defined by what we would consider -- I would  
7 consider would be a lack of cumulative recovery on primary  
8 production to justify a secondary recovery project.

9           The Drinkard formation or the Drinkard Pool lies  
10 on the east flank of a large north-south anticline also and  
11 it's producing from, in this particular area, from approximately  
12 sixty-five hundred feet.

13           The structure compares reasonably well with the  
14 Blinebry within the area of the unit, proposed unit, boundary.

15           North of the proposed unit boundary the Drinkard  
16 formation has no development in Section 1, Township 21, 37  
17 East.

18           Section Two has a limited amount of Drinkard  
19 development. Outside the eastern boundary, there again, like  
20 we said on the Blinebry, we have not established production on  
21 the east of the proposed unit area.

22           The Drinkard development occurs both to the west and  
23 to the south of this proposed unit. As I said, these areas  
24 are being studied at this time by major companies in the  
25 hopes that a secondary recovery project can be put in. It is

1 still in a development type of study.

2 Because of the commingling provisions within this  
3 particular unit the final unit boundary we feel like would  
4 have to be limited to an area where both the Blinebry and  
5 the Drinkard formations can be considered floodable and exist  
6 in a coexistent manner as far as floodable reserves.

7 Q Does Atlantic-Richfield desire to be designated  
8 as the unit operator in both the unit agreement and the  
9 operating agreement?

10 A Yes, they do.

11 Q Are you familiar with all of the negotiations that  
12 have been carried on for the purpose of effecting the  
13 unitization of these areas in the water flood project?

14 A I participated in this particular unit since the  
15 latter stages of 1975, and worked -- and the work I did at  
16 that time required me to go back and study what had been  
17 done in the past.

18 These two units or this unit area has been studied  
19 and a unit has been trying to form of some sort starting back  
20 as far as 1969.

21 During this time -- we have another witness here  
22 today that would be able to expound on any unit operations  
23 or unit negotiations or studies that were done prior to 1975.

24 Q During this process of study of these areas was an  
25 engineering committee formed to study the area?

1 A. Yes, there was.

2 Q. Who was represented in the engineering committee?

3 A. The working interest owners that had an interest  
4 in the particular unit area.

5 Q. And meetings were held from time to time?

6 A. Yes, they were.

7 Q. And notice given to all of the working interest  
8 owners and an opportunity to participate in the meetings?

9 A. That's right.

10 Q. All right.

11 A. I might add here that since we have in the latter  
12 stages of negotiations and since 1975, that I know of, we  
13 have had approximately eight working interest owners' meetings.

14 There have been at five of these meetings proposals  
15 made on some type of a participation formula and I have on  
16 record from going through the minutes -- there have been  
17 approximately twenty-nine formulas that have been proposed at  
18 one time or another.

19 Q. Have all of the owners of the working interests had  
20 representatives at and given the opportunity to participate  
21 in the meetings?

22 A. Yes, they have.

23 Q. As a result of the meetings did the working interest  
24 owners reach substantial agreements as to a participating  
25 formula for the respective tracts in the unit?



1 A. Yes, sir.

2 Q. Do both unit agreements provide for a tract  
3 participation formula?

4 A. Yes, they do.

5 Q. Would you explain these?

6 A. The formula that is set out -- the participating  
7 formula is set out in Section 13 of the operating agreement.

8 Q. Are these formulas identical for both units?

9 A. Yes, they are.

10 Q. Okay.

11 A. In Section 13, the formula that was arrived at that  
12 is identical in both units is found on page 14 of the unit  
13 operating agreement for the East Blinberry Unit.

14 That participation called for tract participation  
15 during phase one of twenty-five percent of A, with A being  
16 defined as the ratio of the number of barrels of remaining  
17 primary reserves from each tract to the summation of barrels  
18 remaining of primary reserves of all tracts after April 1,  
19 1976, as accepted by the working interest owners.

20 It would call for twenty-five percent of B, B  
21 being defined as the ratio of the number of M.M.C.F. of  
22 remaining primary gas reserves from each tract. The summation  
23 of M.M.C.F. of remaining primary gas reserves from all tracts  
24 after April 1, 1976, as accepted by the working interest  
25 owners.

1 Twenty-five percent of C, C being defined as the  
2 ratio of oil production from each tract to the summation of  
3 oil production from all tracts during the period beginning  
4 October 1st, 1975, to April 1, 1976.

5 Twenty-five percent of D, D being the ratio of gas  
6 production from each tract to the summation of gas production  
7 from all tracts during the period beginning October 1, 1975,  
8 to April 1, 1976.

9 Five percent of E, with E being that ratio of  
10 surface acres for each tract the summation of surface acres  
11 to all tracts.

12 That would be the phase one formula.

13 The phase two formula --

14 MR. RAMEY: Let me interrupt. I am not sure but  
15 I think you said twenty-five percent of C?

16 A. I am sorry, it should be twenty percent of C.  
17 That would be phase one.

18 Phase two would defined as fourteen percent of F,  
19 with F being defined as the ratio of cumulative oil production  
20 from tract to the summation of cumulative oil production from  
21 all tracts to April 1, 1976.

22 Eighty-five percent of G, G being the ratio of  
23 remaining primary oil from each tract to the summation of  
24 ultimate primary oil from all tracts as determined by the  
25 working interest owners.

1 One percent of E, with E being the ratio of surface  
2 acres of each tract to the summation of surface acres of  
3 all tracts.

4 To clarify the phase change, phase one shall begin  
5 on the effective date of this agreement and continue until  
6 the first day of the calander month next following the date  
7 on which -- in the Blinebry each Blinebry unit would be  
8 one million thirty-eight thousand seven hundred and ninety-  
9 nine barrels of oil having been credit or allocated to the  
10 unit after April 1st, 1976, in accordance with Section 15  
11 hereof determined by the official production reports  
12 currently known as C-115 reports filed with the New Mexico  
13 Oil Conservation Commission.

14 I might add here that in the East Drinkard Unit the  
15 only change would be that the amount of oil credited on the  
16 phase one change would be five hundred and seventy thousand  
17 six hundred and forty-four barrels of oil.

18 Phase two would begin with the termination of phase  
19 one and continue for the remaining term of this agreement.

20 Q In your opinion is the participating formula which  
21 has been used in respect to these units fair, reasonable, and  
22 equitable?

23 A Yes, I believe it is.

24 Q Does the unit agreement and the unit operating  
25 agreement on the East Blinebry make any reference to the

1 unitization of the Drinkard formation and does the unit agreement  
2 and the unit operating agreement for the East Drinkard  
3 formation make any reference to unitization of the Blinebry  
4 formation?

5 A. Yes, it does and I would like to read Section 15  
6 of the agreement.

7 Section 15 of both agreements provide for the  
8 allocation of unitized substances of each unit referred to  
9 the other.

10 Section 15 provides that the parties of this agreement  
11 that production from the two units maybe commingled either  
12 in common well bores or surface facilities or both as the  
13 unit operator shall consider feasible.

14 For the purpose of allocating working interest and  
15 royalty interest production for all purposes all production  
16 from the two units is to be allocated and credited as if  
17 sixty-four point five four-four percent of production has  
18 been produced from the unitized formation for the Blinebry  
19 unit and thirty-five point four five-six percent has been  
20 produced from the unitized formation for the Drinkard unit.

21 Whether or not actual production therefrom and  
22 whether or not actual -- actually commingled, this allocation is  
23 to continue until the oil production from both units have been  
24 deemed uneconomical and both units have been terminated as  
25 provided for in Section 23 of both units.

1 Section 15 also provides that the production so  
2 allocated and credited shall be deemed to be unitized sub-  
3 stances produced and saved from each unit and shall be  
4 further allocated to each tract in accordance with the  
5 provisions of each respective unit.

6 Q Does each unit have a tract participating schedule?

7 A Yes, it does. This is attached to the unit as  
8 Exhibit C in a schedule provided for the allocation of these  
9 unitized substances for each respective tracts within each  
10 unit.

11 Q How are the royalties and overriding royalties to  
12 be determined and paid?

13 A Section 15 of the unit agreement provides that the  
14 unitized substances allocated to each tract shall be dis-  
15 tributed among or accounted for -- to the parties entitled  
16 to share in the production from each tract in the same manner  
17 and in the same proportion and upon the same conditions that  
18 we have participated in in shares in production from these  
19 tracts or in the proceeds thereof that have -- had the  
20 respective agreements not been entered into.

21 Q In other words the royalties and overriding royalties  
22 are to be paid on the basis of the production which is  
23 allocated to the respective tracts as shown on schedule C?

24 A Yes, that's correct. However, each working interest  
25 owner and the parties entitled thereto by virtue of ownership

1 of oil and gas rights shall have the right to receive their  
2 production or their respective share of allocated substances  
3 in kind.

4 Q In your opinion are the provisions of the respective  
5 unit agreements for the commingling and production from the  
6 Blinebry and Drinkard formations and the allocation thereof  
7 of sixty-four point five four-four percent to the Blinebry  
8 unit and thirty-five point four five-six percent to the  
9 Drinkard unit fair and equitable?

10 A Yes, I do. In expanding on the allocation, it  
11 was an allocation of the commingled allocation and was agreed  
12 to by the working interest owners.

13 The basis upon which this allocation was made was  
14 the summation between the Blinebry and Drinkard of remaining  
15 in each two zones -- would be the primary oil and gas  
16 equivalent plus the amount of secondary oil that was figured.

17 Q Was this allocation agreed upon in the various  
18 meetings held for the purpose of negotiating this unit  
19 agreement?

20 A Yes, it was.

21 Q Has the United States Geological Survey agreed to the  
22 allocation of production between the two units?

23 A Yes, they have.

24 Q Do the respective units provide for a plan of  
25 development?

1           A.     Yes, they do. Section 11 of both units recognizes  
2 that all of the lands subject to the agreement is reasonably  
3 proven to be productive of the unitized substances and that  
4 the object and purpose of the agreement is to formulate and  
5 put into effect an approved recovery project in order to  
6 effect additional recoveries of unitized substances and  
7 prevent waste and the conservation of natural resources.

8           Section 11 also provides for water injection for  
9 purposes of secondary recovery.

10          Q.     Are both unit agreements and unit operating agreements  
11 substantially the same form?

12          A.     Yes, they are.

13          Q.     Do they contain substantially the same provisions  
14 as was heretofore approved by the Commission in cases involving  
15 water floods?

16          A.     Yes, they have and they also are in the same form  
17 that has been approved by the U.S.G.S.

18          Q.     Is provision made for a voting procedure for a  
19 decision on matters to be decided by the working interest  
20 owners in respect of which each working interest owner shall  
21 have a voting interest equal to its unit participation?

22          A.     Yes. This is covered in Article IV of the unit  
23 agreement.

24                 Each operating agreement provides that each working  
25 interest owner shall designate a representative or an alternate

1 who is authorized to represent and bind each working interest  
2 owner with respect to unit operations.

3 Provisions are also made for meetings of representa-  
4 tives of the working interest owners for a voting procedure  
5 for each working interest owner.

6 They shall have the right to vote equal to its  
7 combined participation, unit participation, which is in  
8 effect at the time the vote was taken.

9 Q Is provision made for the supervision and conduct  
10 of the unit operation including the selection and removal  
11 or the substitution of a unit operator from among the working  
12 interest owners to conduct the unit operations?

13 A Yes. Section 7 of both unit agreements provide  
14 for the resignation and the removal of the unit operator.

15 Section 8 of each unit provides for a or assesses  
16 the unit operator to be selected from a working interest  
17 owner.

18 Article VI of each working or each operating agreement  
19 provides for the resignation and removal of the unit operator  
20 and the selection of a new operator from the working interest  
21 owners.

22 There is also a voting procedure that is connected  
23 with this.

24 Q Has provision been made for the credit and charges  
25 to be made in the adjustment among the owners in the area for



1 their respective investments in wells, tanks, pumps, machinery  
2 and materials and equipment to be contributed to the unit  
3 operation?

4       A.     Section 9 of both unit agreements covers this and  
5 provides for cost and expense incurred by the unit operator  
6 who is conducting the unit operations, it will be apportioned  
7 to the working interest owners in accordance with the unit  
8 operating agreement.

9             Section 9 also provides that the unit operating  
10 agreement shall provide for the manner in which the working  
11 interest owners shall be entitled to receive their respective  
12 proportion and allocated their share of the benefits accrued  
13 in conforming with other -- with their underlying agreement,  
14 leases and other contracts.

15            Section 10 of each operating agreement provides that  
16 upon the effective date of the unit the working interest owners  
17 shall deliver to the unit operator possession of all wells  
18 completed in the unitized formation together with lease  
19 equipment including casing and tubing in the wells.

20            Provision is also made for the working interest  
21 owners to make a determination as soon as practical after  
22 the effective date of the unit as to the property determination  
23 to be circled and the property is to be returned to the  
24 working interest owners.

25            Provision is also made for an inventory of all

1 property taken over for investment adjustment to be made  
2 among the working interest owners.

3 Q. Is provision made for governing the unit cost of  
4 operation including capital investment how it shall be  
5 determined and charged to each separate tract and how such  
6 costs shall be paid including the provision providing when  
7 and how and by whom the unit production allocated to an owner  
8 who did not pay the share of the cost of unit operation and  
9 how it is to be charged to such owner for the interest of  
10 such owner maybe sold and the proceeds applied to the payment  
11 of such costs?

12 A. Article XII of the respective operating agreement  
13 covers operating expense.

14 12.1 is the basis of charges of working interest  
15 owners. 12.1.1 is the capital costs and 12.1.2 is the capital  
16 costs of gas wells, only, and 12.1.3 is operating costs and  
17 expenses.

18 This Article also provides for making a budget,  
19 advance billing, commingling of funds and liens and securities  
20 of interest for the unit operator.

21 12.6 provides that if any working interest owner  
22 fails to pay its share of the unit expenses after sixty  
23 days of retention of his statement therefore by the unit  
24 operator each working interest owner agrees upon receipt of  
25 unit operator to pay its proportionate part of the unpaid share

1 of the unit expenses for the defaulting working interest  
2 owner.

3 The working interest owner<sup>part the</sup> that pays its share of  
4 the unit expense of the defaulting working interest owners  
5 shall be redeemed or reimbursed by the unit operator for the  
6 amount so paid plus any interest collected thereon upon  
7 receipt of the unit operator of any past due amounts.

8 All working interest owners so paying a defaulting  
9 working interest owner's share shall be subrogated to the lien  
10 *and other* of all rights granted to the unit operator.

11 Q Is the operator given a lien on the interest of each  
12 working interest owner to secure payment of the obligation  
13 of each working interest owner?

14 A Section 12.1 of the operating agreement provides  
15 that the operator shall have a lien upon the oil and gas  
16 rights of each working interest owner.

17 In the case of default the operator shall have the  
18 *from* right to proceed in the production of the party in default  
19 until the amounts due plus interest is paid.

20 Q Is provision made for carrying any working interest  
21 owner on a limited carry or net profit basis payable out of  
22 production?

23 A Both the unit operating agreements contemplates each  
24 working interest owner as to each forty acre subdivision that  
25 is committed to the unit shall furnish a well bore which is

1 in the opinion of the working interest owners is usable  
2 for production of unitized substances or for the injection  
3 of outside substances into the unitized formation.

4 This is covered by Section 11.1 of the respective  
5 operating agreements. This section also provides if any  
6 forty acre subdivision does not have a usable well bore the  
7 party or parties contributing the forty acres shall have the  
8 option for ninety days from the effective date within which  
9 to restore, redrill, plug back, drill deeper, clean out or  
10 use whatever means necessary to provide a usable well bore  
11 acceptable to the working interest owners.

12 At the end of the ninety-day period if a usable  
13 well bore has not been provided the working interest owners  
14 shall have the right but not the obligation to re-enter, redrill,  
15 or clean out any well bore not then producing hydrocarbons  
16 or take whatever action deemed necessary by working interest  
17 owners including the drilling of a new well to provide a  
18 usable well bore for each forty acre legal subdivision.

19 If the working interest owners approve by vote the  
20 drilling of a new well on any forty acre subdivision on which  
21 the unusable well bore is located the party or parties  
22 contributing each such forty acres shall bear all expense and  
23 cost in connection with the drilling of a new well up to and  
24 including two hundred thousand dollars.

25 The cost in excess of two hundred thousand dollars

1 shall be considered unit costs and shall be charged to  
2 working interest owners on the basis of their phase two  
3 combined participation -- unit participation.

4 In lieu of paying this two hundred thousand dollars  
5 in cash the party or parties contributing each such forty  
6 acres may notify the working interest owners that they desire  
7 to pay their proportionate part of the cost out of unit  
8 production.

9 In such case the working interest owners have the  
10 option but not the obligation to pay said party or parties'  
11 share of cost up to and including two hundred thousand  
12 dollars.

13 If the working interest owners elect to pay such  
14 cost the party or parties contributing the forty acres  
15 involved shall be deemed to have relinquished to the working  
16 interest owners their share of the production from such  
17 forty acres until the proceeds or market value thereof shall  
18 equal the amount paid by the working interest owners together  
19 with interest thereon at a rate specified by an accounting  
20 procedure as attached as Exhibit F to the unit operating  
21 agreement.

22 Q In the event that any working interest does not  
23 furnish a well bore as you have testified is necessary do you  
24 have an estimate of what the cost of drilling a new well  
25 might be?

1 A. A current cost estimate would be for a producing  
2 well of approximately three hundred and six thousand dollars  
3 and an injection well would be approximately three hundred  
4 and thirty-six thousand.

5 Q. Of that the working interest owner would pay two  
6 hundred thousand and all of the other working interest owners  
7 would pay the one hundred and sixty thousand, is that correct?

8 A. That's correct.

9 Q. Now, refer to Exhibit Number Two and explain what  
10 this is and what it shows?

11 A. Exhibit Number Two is a map of the proposed East  
12 Blinebry and East Drinkard unit areas.

13 This map shows all of the injection wells. The dual  
14 injection wells that are shown are double triangles and there  
15 are thirty injection wells within the unit area.

16 There are eight single injection wells in the  
17 Blinebry formation, only. They are shown as small single  
18 triangles.

19 Q. Refer to Exhibit Three and explain what this shows?

20 A. Exhibit Three is a list of the names and the  
21 locations of the proposed injection wells. All of these  
22 wells are now producing wells and in which will be our intent  
23 to convert into injection wells.

24 Q. Refer to Exhibit Four and explain this?

25 A. Exhibit Four is simply a list of all offset operators

1 and their addresses.

2 Q Refer to Exhibit B5 through Forty-two and explain  
3 what this is?

4 A Exhibits Five through Forty-two would be in the  
5 book marked B. It -- we have two copies of it and it is  
6 simply a full-length electric logs on the injection wells  
7 that we have proposed to convert in the unit.

8 These logs are labeled both as to the proposed unit  
9 names that we have proposed within the unit and also the  
10 names of the wells as it exists to date.

11 The dual wells we have indicated, the injection  
12 wells, the upper tubing would be a UT designation and would  
13 be in the Blinbry and the lower tubing would indicate the  
14 Drinkard completion.

15 All dual injections wells have two strings or are  
16 proposed to have two strings of tubing. The tubing would be  
17 plastic lined or plastic coated.

18 Q Refer to Exhibits Forty-three through Eighty and  
19 explain what these are?

20 A Exhibits Forty-three through Eighty are schematic  
21 diagrams, well bore diagrams, that were drawn on the thirty-  
22 eight injection wells that we propose to convert in the unit  
23 boundary.

24 These diagrams show the casing string that are in the  
25 wells at this time and they include the diameter and setting

1 depth of these casing strings.

2 Also is shown where the information was available  
3 the quantity of cement and the tops of the cement as we  
4 can best tell in these particular wells.

5 The diameter of the tubing, the two and three-eighths,  
6 in the single completions and the two and one-sixteenth inch  
7 in the dual completion and these injection packers have shown  
8 to be at a depth approximately seventy-five feet, plus or  
9 minus, above the perforations.

10 All tubing that is used in the injection wells will  
11 be plastic coated pipe.

12 Q In your opinion will the completion of the injection  
13 wells in the manner shown by the schematic drawings confine  
14 the injected water to the respective formations being unitized?

15 A Yes, I do.

16 Q In your opinion are the proposed injection wells  
17 located as to obtain the most efficient sweep and recover  
18 the greatest amount of secondary oil that would otherwise  
19 not be recovered?

20 A Yes.

21 Q Refer to Exhibits Eighty-one through One Hundred  
22 and Eighteen, please, and explain these?

23 A These are simply schematic diagrams of the producing  
24 wells within the producing area.

25 Again, these diagrams show the casing setting depth



1 and the top of the cement behind the pipe.

2 All tubing in the proposed injection wells will  
3 be two and three-eighths tubing with one string of tubing in  
4 the producing wells.

5 Q Refer to Exhibit One Hundred Nineteen through One  
6 Hundred Forty and explain these?

7 A These are all schematic drawings of any other well  
8 bores within the unit boundary to include wells with casing  
9 -- to show the casing -- and the diameter of the tubing  
10 and the setting depth and that they appear at at this time.

11 Q Refer to Exhibit One Hundred Forty-one through  
12 Two Fifty-two and explain these.

13 A These, simply, are all wells within a half a mile  
14 of the unit boundary. They are schematic drawings that, again,  
15 show all wells that have produced or are producing and  
16 injecting or that have been plugged and abandoned within a  
17 half a mile of the unit boundary.

18 They also show the depth of the casing and the  
19 quantities of cement that have been used to cement these  
20 wells.

21 Q Now, refer to Exhibits Two Hundred Fifty-three,  
22 Two Hundred Fifty-four, and Two Hundred Fifty-five and explain  
23 what these show?

24 A Two Fifty-three and Two Fifty-four are a diagram  
25 which shows a graph of our projected primary performance of

1 the East Drinkard or East Blinebry and East Drinkard unit  
2 respectively.

3 The total remaining primary reserves were calculated  
4 at an engineering committee study and an independent estimate  
5 was made of those working interest owners at these meetings  
6 and it is an extrapolation of the individual lease declines  
7 on oil production as of April 1, 1976. It was estimated  
8 that the Blinebry had nine hundred seventy-four thousand nine  
9 hundred and twenty barrels of oil and that the Drinkard had  
10 remaining six hundred and thirty-four thousand five hundred  
11 and twenty-two barrels of oil.

12 The diagram on Exhibit Two Fifty-five shows all of  
13 the Blinebry and Drinkard wells within the proposed unit  
14 area and their cumulative recoveries as of April 1, 1976.

15 At that particular time the Blinebry had recovered  
16 eight million nine thousand eight hundred and ninety-nine  
17 barrels of oil and the Drinkard had recovered four million  
18 three hundred and ninety-six thousand one hundred and forty-  
19 eight barrels of oil.

20 Q Do you have any estimate as to the additional oil  
21 which may be recovered by reason of the water flood project?

22 A From studies that were done in 1971 -- '70 and '71,  
23 we have an estimate that the secondary recovery from the  
24 Blinebry and Drinkard would be approximately nine million  
25 eight hundred and ten thousand eighty hundred and forty-five

1 barrels of secondary oil that would not be recovered without  
2 a unitized unit at this time.

3 The estimate is broken down that the Blinebry  
4 unit would recover an additional six million two hundred and  
5 eighty-seven thousand three hundred and seventy-four barrels.  
*none*

6 ~~seventy-three~~ The Drinkard unit would recover three million five  
7 hundred twenty-one thousand four hundred and seventy-one  
8 barrels.

9 This would be an approximate recovery, secondary  
10 recovery, of seven tenths to one, secondary to primary ratio.

11 Q Has Atlantic-Richfield made an estimate of projected  
12 costs of the installation and operation of the water flood  
13 projects throughout their anticipated life?

14 A The current estimate as of the middle of 1977 would  
15 be twelve point five million dollars of capital expenditure  
16 that would be required for both units.

17 Q Based upon the estimated additional secondary  
18 recovery of oil of nine million eight hundred ten thousand  
19 eight hundred and forty-five barrels and based upon the  
20 present price of oil and an estimated expenditure of twelve  
21 and a half million for operating equipment and so forth,  
22 in your opinion would the water flood project be an economic  
23 success by returning a reasonable profit?

24 A Yes, I think it would. I think the profit for tr  
25 total unit basis would be, before taxes, would be in the

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1 neighborhood of seventy-five to eighty million dollars  
2 undiscounted profits.

3 Q. Now, each of the operating agreements has attached  
4 a formal accounting procedure under which the joint accounts  
5 of the working interest owners is to be charged at the  
6 following rates per well per month: drilling well rates  
7 one thousand one hundred and eighty-eight dollars; producing  
8 well rates one hundred and fifty-five dollars; and injection  
9 well rates for each zone injected through separate tubing  
10 strings one hundred and fifty-five dollars.

11 In your opinion are these rates reasonable when  
12 compared to similar units in the immediate area?

13 A. Yes, I think they are. We have taken a look at other  
14 water floods, both of similar depth and shallower and deeper,  
15 in Lea County, New Mexico, and these charges are consistent  
16 with charges being recovered at this time.

17 Q. Have all of the wells in the proposed unit area  
18 reached an advanced stage of ~~completion~~ <sup>depletion</sup> and are they generally  
19 regarded as stripper wells?

20 A. Yes. Within the unit boundary as of June of 1977,  
21 the Blinbry had an average production of about five point  
22 five barrels of oil per well. The Drinkard's average production  
23 was approximately four point eight.

24 Q. Is Atlantic-Richfield requesting a project allowable?

25 A. Yes, we are and we would like a project allowable

1 established in accordance with Rule 701 of the Commission.

2 It would be helpful if we could establish this on  
3 an administrative procedure for all changes that would  
4 prove to be necessary in connection with the injection wells.

5 Q. Has Atlantic-Richfield formulated a plan of  
6 operation for the proposed water flood project?

7 A. Yes, we have. We propose to simultaneously water  
8 flood the Blinebry and the Drinkard formations and Atlantic-  
9 Richfield will operate both units by injecting water into  
10 the injection wells as shown in Exhibit Two.

11 Q. In your opinion is it more economical to water flood  
12 both the Blinebry and Drinkard formations at the same time  
13 or separately?

14 A. I think it would be more beneficial and more reserves  
15 would be recovered by flooding simultaneously.

16 Q. When do you anticipate getting the wells converted  
17 for the purpose of injecting water?

18 A. The proposal as shown in Exhibit Two as far as the  
19 conversion of the injection wells, we would begin a program  
20 once the water supply was completed and the majority of these  
21 injection wells would be converted so that we would have a  
22 conversion co-exist with the completion of the injection  
23 plans.

24 The total project as far as the final conversion would  
25 probably be scheduled or would be scheduled for approximately

1 eighteen months after we had initiated the unit, itself,  
2 the effective date of the unit.

3           It is conceivable that the last conversion to be  
4 made would probably be on the west side of the unit boundary.  
5 This is the side, the west and the north, would be the side  
6 where we would require the most lease-line injection,  
7 cooperative injection, so, it is estimated that these probably  
8 would be the last wells to be converted to injection.

9           Q.    Is Atlantic-Richfield aware of water flood problems  
10 which have been under study in several areas in southeast  
11 New Mexico?

12           A.    Yes, we are. These well bore diagrams were submitted  
13 to the Commission today and shows all of the wells in the  
14 unit boundary and all wells within a half a mile of the unit  
15 boundary.

16           We feel like these diagrams indicate that there is  
17 adequate cement to protect water at the surface as well as  
18 other zones within the unit, other non-unitized zones.

19           These schematic diagrams also point out other wells  
20 that have been plugged and abandoned and we feel like they  
21 have performed to the Commission's standards and would not  
22 be a detriment in the water flood project.

23           Q.    Is it intended that periodic step rate tests be made  
24 in connection with the injection wells?

25           A.    Yes. We plan to run step rate tests on the project.

1 We also plan to keep our injection pressure below fracture  
2 pressure and never in any instance to exceed one P.S.I. per  
3 per foot at the surface formation injection pressure.

4 Initially we request the ability to inject as  
5 surface pressure at least point two tenths per foot P.S.I.  
6 We also would make this request subject to increase as we  
7 could show the reservoir pressure was increasing due to --  
8 with step rate tests -- to show that as the reservoir pressure  
9 increases that we could increase our surface injection  
10 pressure.

11 Q What will be the source of water for injection  
12 purposes?

13 A The source of water will be the San Andres and we  
14 plan on drilling enough San Andres wells to meet our requirement  
15 of twenty-nine thousand barrels of water per day which would  
16 be used in the thirty-eight injection wells.

17 The San Andres -- we at this time would estimate  
18 would require approximately four water supply wells. These  
19 wells would be located at this time in Section 23, Township  
20 21 South, Range 37 East; two in Section 14, Township 21 South,  
21 Range 37 East; and one in Section 11, Township 21 South,  
22 37 East.

23 Q Have any other wells been drilled in the San Andres  
24 formation in the general area of the proposed unit for the  
25 purposes of obtaining injection water?

1           A.     The Gulf Central Drinkard unit which I referred to  
2 earlier their source of water is the San Andres and Exhibit  
3 Two Fifty-six is a water analysis of that particular water  
4 that is used in the Gulf Central Drinkard Pool.

5           Q.     What do you anticipate will be the deliverability  
6 of each water supply well?

7           A.     We would anticipate that the water supply wells would  
8 deliver between eight thousand and ten thousand barrels of  
9 water a day.

10          Q.     Do you also contemplate injection of produced water?

11          A.     Yes, and we would if it becomes available.

12          Q.     Do you anticipate any type of work-over program will  
13 be necessary for the producing wells?

14          A.     In our producing wells as I stated before we  
15 anticipate commingling the Blinebry and Drinkard formations  
16 and we feel like the proper utilization of these well bores  
17 in a commingling scheme that instantaneous injection will  
18 allow us to produce the maximum amount of reserves within the  
19 proposed unitized area.

20          Q.     Is time of the essence with respect to the  
21 inauguration of the proposed water flood project?

22          A.     Yes, I feel like it is. If there is a material  
23 delay over and above a year to eighteen months we feel like  
24 that it would be a detriment to this project.

25                   With the installation of equipment and the start of



1 injection there would be approximately an eighteen-month  
2 period before we would be in a position to convert the  
3 injection wells in a total development program.

4 Q If the water flood projects are not inaugurated  
5 as anticipated or the unit agreements are not approved what  
6 would be the result?

7 A I feel like that we would be jeopardizing approximately  
8 ten million barrels of potential secondary recovery in this  
9 particular area.

10 Q In your opinion will the unit agreement and the  
11 water flood project be in the interest of conservation,  
12 the prevention of waste, and the protection of correlative  
13 rights?

14 A Yes, I do.

15 MR. HINKLE: We would like to offer Exhibits One  
16 through Two Hundred and Fifty-six.

17 MR. RAMEY: Without objection they will be admitted.

18 MR. HINKLE: That's all of the direct. I would like  
19 to say at this time that the next witness will show the  
20 working interest and royalty interest that has been completed  
21 thus far in the unit.

22 MR. RAMEY: Any questions of the witness?

23 MR. KELLAHIN: Yes, I have some, Mr. Ramey, if I am  
24 next --

25 MR. RAMEY: You may proceed, Mr. Kellahin.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Malaise, I understand from your testimony that you are the primary employee of Atlantic-Richfield responsible for the implementation and operation of the water flood project, is that correct?

A. For the last two years, approximately.

Q. I thought I understood you before that you had examined the minutes of the operators' meetings for something like the past five years?

A. I have reviewed them from time to time.

Q. You have been active on this project for the last two years?

A. I came into the project at the end of '75, and my first active meeting was the first meeting held in January.

In '75, I was transferred into the area and familiarized myself with that particular unit operation.

Q. Who is the previous Atlantic-Richfield employee responsible for this project, do you recall?

A. The engineer that worked on the initial phase of the project was Mr. Jerry Tweed. Several engineers have worked on the project from time to time from the standpoint of operations and -- of the project. As far as conducting meetings, Mr. Tweed would be the one that would be the most knowledgeable within the unit operations.

1 Q Is Mr. Tweed still an employee of Atlantic-Richfield?

2 A Yes, he is.

3 Q And is Mr. Tweed available for cross examination  
4 concerning his work on this particular project?

5 A Yes, he is.

6 Q All right. So, since the fall of 1975, your primary  
7 responsibility has been to put together the water flood and  
8 to see that it is successful?

9 A Right.

10 Q Did you also -- you testified as to certain conclusions  
11 with regard to the economic feasibility of the water flood.

12 Are you the primary responsible employee of Atlantic-  
13 Richfield to make those determinations with regard to economics?

14 A That's correct.

15 Q As far as the practical engineering feasibility of  
16 the water flood, itself, you are also that same employee?

17 A I am to a point. I didn't do the original study.  
18 I reviewed the original study and the secondary reserves are  
19 based -- we have not changed our conclusions from that study  
20 any to date.

21 Q You have reviewed the previous studies and you see  
22 no reason in your opinion to change the previous conclusions?

23 A As far as the feasibility on the water flood  
24 economics, no.

25 Q Now, when you came on the scene of this project,

1 had the decision been made to confine the project to the  
2 Blinebry and the Drinkard formations?

3 A. When I first -- let me say this -- add one thing --  
4 when I first came on this project we were looking at that time  
5 to a four-zone unit.

6 Q. There are, in fact, four zones producing in this  
7 area are there not?

8 A. That's correct, within a reasonable amount of  
9 interval, vertical interval. There is the Blinebry formation

10 Q. The Blinebry formation is which?

11 A. The uppermost.

12 Q. The next formation is what one?

13 A. The Tubb formation.

14 Q. Then, the next formation?

15 A. Is the Drinkard formation and there is a Wantz Abo.  
16 I came into the project and the negotiations were such that  
17 four zones were being considered as a primary unit.

18 We weren't looking at an individual Drinkard and  
19 Blinebry formation at that time.

20 Q. What caused the engineering committee -- let me ask  
21 you, who was the chairman of the engineering study committee  
22 composed of all of these operators?

23 A. Atlantic-Richfield was the unit expediter.

24 Q. Why was the Tubb formation dropped from the proposed  
25 unit area?

1           A.     As I recall at the first of 1976, the unit  
2 negotiations were not getting anywhere. We had not received,  
3 or at that time we had no formula that I know of that had  
4 been able to come up with anymore than approximately thirty  
5 to thirty-five percent approval.

6                 They were at a standstill or a stalemate. Still,  
7 even with the four-zone unit we felt like statutory unitization  
8 would be required to get a unit together.

9                 Going under that basis when statutory unitization  
10 was looked into further it was found that for that statutory  
11 unitization we would be looking at unitizing each individual  
12 pool as recognized by the Commission as a separate unit.

13                It was also found that the Tubb gas zone was not  
14 a zone that secondary recovery could be initiated on. It  
15 would not qualify for statutory unitization.

16                At that point it was decided that to get a unit  
17 together and at that time the economic worth of the unit was  
18 such that the Blinebry and Drinkard were comprising  
19 approximately ninety percent of the total worth of the four-  
20 zone unit.

21                That to get a unit together that we would take the  
22 Blinebry and Drinkard which would apply under the statutory  
23 unitization provision and see if we could get an agreement  
24 on that type of unit.

25                Once we reached that point within a matter of two

1 working interest owners' meetings we had a formula that was  
2 agreeable.

3 Q To what percentage of the working interest owners?

4 A Well, at that time we had in hand a participation  
5 formula that would meet the seventy-five percent requirement  
6 of the Commission.

7 Q Would you look at -- I believe it is Exhibit Three --  
8 it shows a plat of the unit area and shows the location of  
9 different wells --

10 A Exhibit Number Two --

11 Q Exhibit Two, that's the one, yeah. Could you summarize  
12 for us, if you please, the number of wells that are currently  
13 producing from the Drinkard?

14 A I don't think I can from that exhibit.

15 Q All right. Do you have the information available  
16 so that you can tell us how many wells produce from the  
17 Drinkard?

18 A It would take a while to add it up. As of June, I  
19 have the wells that are currently producing and if you want  
20 I can get that. It will take a while to add it up. I don't  
21 have it in any exhibits that we put in the testimony.

22 Q Do you have information available with you as to  
23 how many wells are currently producing from the Blinebry?

24 A Let's see -- I think I have the Drinkard too --  
25 the last calculation I had and I believe it was in June, we

1 had forty-five wells producing in the Drinkard and approximately  
2 fifty-eight in the Blinebry.

3 Q How many wells within the proposed unit area also  
4 produce from the Tubb formation?

5 A I believe there are eight wells at this time and  
6 seven of them are Tubb gas wells and I believe there is one  
7 Tubb oil well.

8 Q How many wells within the unit area are currently  
9 producing in the Abo?

10 A I would say that that number would be between eight  
11 and ten. There, again, I would have to look it up.

12 Q Now, with regard to the Drinkard and the Blinebry  
13 how many of those wells are authorized to be commingled down  
14 hole?

15 A There, again, I have the data available -- I would  
16 guess -- you say the Drinkard and the Blinebry?

17 Q Yes, sir.

18 A There, again, I would have to look it up but in those  
19 two reservoirs I would think that there would be approximately  
20 fifteen wells that have commingling provisions granted.  
21 Somewhere in that neighborhood -- fifteen to twenty -- within  
22 the unitized area.

23 Q I see. Now, as I understand your testimony you have  
24 set these up as two separate individual water flood projects,  
25 one, for the Drinkard, and one, for the Blinebry?

1 A. Yes, that's correct.

2 Q. As a practical matter are you going to inject water  
3 separately into each of those zones?

4 A. The injection wells will have two strings of tubing.  
5 There will be thirty dual injection wells and they will be  
6 metered separately into the Blinebry and Drinkard.

7 There are eight, at this time, proposed Blinebry  
8 injections wells and they will be injecting into the Blinebry,  
9 only, through one string of tubing.

10 Q. You indicated in response to a question by Mr.  
11 Hinkle that in your opinion the injected water would stay in  
12 and be confined in each injected zone.

13 How are you going to control that water from going  
14 into the Drinkard or the Blinebry or from the Blinebry into  
15 the Drinkard?

16 A. I would say it would be very important from the  
17 standpoint of controlling your oil fronts to know where  
18 your water was going at all times.

19 As an operator of other water floods within the  
20 area we maintain a control over the water through periodic  
21 temperature surveys, tracer surveys et cetera. There will  
22 be production surveys that will be performed on these wells.

23 In regard to the pressure we also plan on running  
24 step rate tests and monitoring them to some extent with  
25 pressure surveys.



1 Q You indicated an allocation formula and that there  
2 were separate revisions in each of the agreements that allowed  
3 you to commingle production from the Blinebry and the  
4 Drinkard and you had an allocation formula.

5 I believe you said that the Drinkard was thirty-  
6 five point four-five percent and the Blinebry was sixty-  
7 four point five-five percent, something like that.

8 Tell me, again, how you reached that allocation?

9 A That allocation, I believe, was on remaining oil  
10 and gas equivalents in secondary recovery for the two units.  
11 It was the summation.

12 Here, again, this was another piece of equity that  
13 was agreed on by the working interest owners. Without some  
14 type of commingled allocation a unit of this such it would be  
15 impossible to maintain equity.

16 I think the one premise that you have to go in with  
17 is that you feel like these allocations will be fair and  
18 equitable to all involved.

19 Q Mr. Malaise, you told me that you were going to  
20 separately meter the injection water and you are going to  
21 keep track of the water separately. Why, then, do you need  
22 an allocation formula? Can you not also keep track of the  
23 oil production separately?

24 A Well, I think the production in the commingled oil  
25 will be a commingled production. I think what you have to go

1 into a unit of this such is that each of the zones has got  
2 to flood, essentially, the same. If you can agree on that  
3 and agree on the amount of reserves there then a commingled  
4 allocation to me would be fair and equitable.

5 Q Let me ask you how you determined the floodability  
6 of the Blinebry?

7 A The floodability of the Blinebry is based on a  
8 study. There, again, I would think you would want to direct  
9 your questions to Mr. Tweed since he did the original study  
10 on the Blinebry -- it was made under his supervision.

11 But it was from a study done, I believe, in 1970  
12 and 1971, the first study done in that area.

13 Q Based upon your earlier testimony you said that  
14 Arco had reached the conclusion that there was some kind of  
15 a floodability factor of zero point seven to one?

16 A Point seven to one.

17 Q All right. Do you have personal knowledge of how  
18 they reached that factor?

19 A Well, that, again, goes back to the original study.  
20 The original study -- would you like to bring Mr. Tweed to  
21 the stand at this time --

22 Q I'll ask him later on.

23 A Okay, but I would add that seven tenths to one is,  
24 in floods, have been successful in New Mexico.

25 I think in comparison to a sand, good clean sand-type

1 body that seven tenths to one would be a reasonable type  
2 of a recovery in a successful water flood in New Mexico.

3 Q In regard to this particular flood, if I understand  
4 you correctly, you are not in a position to give us expert  
5 testimony as to the floodability or how those figures were  
6 arrived at with regard to the Blinebry and the Drinkard?

7 A Well, I can but there, again, I am rehashing a study  
8 that was done and I feel reasonable comfortable with that  
9 study but any specific questions on that I think they can  
10 be answered by Mr. Tweed.

11 Q We will save those for Mr. Tweed, then. Now, you  
12 indicated that the wells in the area had reached a stripper  
13 stage. I forgot the exact question that Mr. Hinkle asked you  
14 but there was something in regards to the total well average  
15 of something like five barrels a day, is that correct?

16 A That's correct.

17 Q All right. Let me direct your attention to that  
18 particular problem.

19 First of all, how do you define a stripper stage?

20 A I think the stripper stage there, if you went  
21 strictly by the definition of stripper, it would be some stage  
22 that is in the last part of the primary life within a hydro-  
23 carbon bearing reservoir from the standpoing of producible  
24 primary reserves.

25 Q I gathered from your testimony that at about five

1 barrels of oil a day would be, in fact, in the stripper  
2 stage?

3 A. I think you have reached the stripper stage and  
4 that would go along with the definition that the federal  
5 government would define as far as giving stripper-type  
6 prices which would be an average of ten barrels a day for  
7 a twelve-month period.

8 Q. That's your understanding of the federal definition?

9 A. In general it is, yes.

10 Q. I see.

11 A. From the standpoint of oil prices.

12 Q. But with regard to your calculations you apparently  
13 had used a five barrel primary recovery cutoff?

14 A. As far as the economic limit?

15 Q. Yes, sir.

16 A. No, that's not correct. That is not what the curve  
17 is based on.

18 Q. What is the curve based on?

19 A. There, again, that is something that has been handed  
20 down and I wasn't in the original engineering committee but  
21 looking through the notes we based the original curves on  
22 one barrel of oil per day per well, was the economic limit  
23 that was used.

24 Q. One of your exhibits, Mr. Malaise, and I believe  
25 you will find it in the unit agreement and in the unit operating

1 agreement that was submitted with your application -- do you  
2 have a copy of those?

3 A. Of the Blinebry?

4 Q. Yes, sir.

5 A. Okay.

6 Q. I am looking at the plat that follows page number  
7 thirty-six. It is simply a plat designating different numbered  
8 tracts. Do you have that available?

9 A. Right.

10 Q. All right. What is the significance of the different  
11 numbers in the circles?

12 A. I believe those are the tract numbers, themselves.

13 Q. Do you know which of these tracts have not been  
14 committed to the unit?

15 A. I can think -- one of our other witnesses would be  
16 able to answer that better and to my knowledge at this time  
17 tract thirteen, the Eubank lease, and tract fifteen, the  
18 Summit lease had not been qualified at this time as far as  
19 approval of the unit agreement.

20 Q. Tract No. 13 is operated by who?

21 A. J. R. Cone.

22 Q. I interrupted you -- what were you going to say?

23 A. Well, that was it.

24 Q. Now, with regard to this five barrels of oil per  
25 day, can you identify for us on any of your exhibits which

1 of the wells in the unit area exceed these five barrels --  
2 average?

3 A. I have an exhibit that would have it on a monthly  
4 basis but I don't have it in my testimony.

5 Q. Do you have an exhibit prepared that would show --

6 A. As of June of this year.

7 Q. I wonder if we could have that? All right. Mr.  
8 Malaise, let me show you what Arco's counsel has marked as  
9 Exhibit Two Sixty-one and ask you to identify that document?

10 A. Okay. The exhibit that we have put into testimony  
11 at this time has the four zones that from production history  
12 for June of 1977, for the Blinebry formation and the Drinkard  
13 formation and the Tubb formation and the Wantz Abo, it lists  
14 those wells that are currently produced in that month and  
15 it lists on a monthly basis oil, gas and water.

16 MR. RAMEY: Is this a one-month production?

17 A. This is a one-month production and I believe it was  
18 June of '77. It is either May or June.

19 Q. (Mr. Kellahin continuing.) You have indicated  
20 earlier that there was still some wells producing from the  
21 Tubb formation?

22 A. Yes.

23 Q. Could you generally describe where those wells are?

24 A. As I said there are eight wells and what this exhibit  
25 shows, also, the cross-hatched -- it is kind of hard to follow

1 on this plat but the proration unit that they are producing  
2 out of is shown as cross hatched around the wells that I  
3 will identify.

4 If you will look in Section 14 in the northwest  
5 quarter there is a Mor<sup>on</sup>-On Well No. 1 that is producing  
6 in the Tubb formation.

7 Moving just south to the J. R. Cone Eubanks tract,  
8 Well No. 2, Eubanks No. 2, is producing in the Tubb formation.

9 Moving south from that particular tract to Getty-  
10 Williamson No. 2 well is producing from the Tubb.

11 South of that tract the Shell-Sarkeys tract has  
12 their No. 2 well producing from the Tubb formation.

13 Moving east the Arco Srkieys, their Well No. 5, is  
14 producing from the Tubb formation.

15 Just north of their the Roy Barton No. 1, is producing  
16 from the Tubb.

17 North of that tract Shell -- I guess it is the Gulf  
18 Keenan Well No. 2, is producing from the Tubb formation.  
19 The Lockhart B 14 Well No. 2 is producing from the Tubb  
20 formation.

21 Q As I understand you, Mr. Malaise, you are going to,  
22 if this application is approved, to commence some type of  
23 uniform simultaneous water flood in the Blinebry and Drinkard  
24 formations, I assume that is correct?

25 A We propose to flood the Blinebry and Drinkard

1 simultaneously.

2 A All right, sir. How are you going to protect  
3 the sub-zones that are sandwiched between the Drinkard and  
4 the Blinebry formations?

5 A There, again, on the injection wells we would control  
6 the injection water through the process of, as any prudent  
7 operator would in any particular water flood, would protect  
8 it by running periodic temperature surveys and tracer surveys  
9 and determine where our water was going.

10 Q Would you be willing to allow those operators  
11 who currently produce from the Tubb formation to deplete the  
12 Tubb formation before you inject water into the Blinebry and  
13 Drinkard formations within their lease or within their  
14 own particular well?

15 A I think there you are asking me to make a conclusion  
16 that the unit would have -- that the unit operators would  
17 have to rule on.

18 I don't think I could answer that question myself.  
19 I could give you an opinion but I don't think it would be  
20 a definite answer.

21 Q I would like to have your opinion?

22 A As to whether the Tubb could be depleted and this  
23 unit would be able to be formed?

24 My opinion on that would be that if the Tubb -- in  
25 all of the wells that are producing at this time, is that the



1 the question?

2 Q That's right.

3 A To it's economic limit?

4 Q Yes, sir.

5 A If we went to an economic limit in the Tubb we  
6 would get to the point that leases within this unit boundary  
7 would reach an economic limit at the jeopardy and the loss  
8 of some leases.

9 The operators to date, we have reached at this time,  
10 the highest approval on the formula that we have ever reached.  
11 I don't think that delaying the unit that long we would be  
12 able to continue to maintain the sign up among the working  
13 interest owners.

14 I don't think that the unit would be formed if we  
15 delayed the unit the full extent of the remaining life of the  
16 Tubb. That's my opinion.

17 Q All right, sir. As a practical matter, then, if  
18 we don't delay the formation of the unit and you go ahead  
19 and flood the Blinbry and Drinkard have you made any provision  
20 to compensate the operators, the working interest owners,  
21 and the royalty owners of those leases that will lose the  
22 Tubb production?

23 A Well, I don't know that we have to lose the Tubb  
24 production. Of the eight wells that we have producing at  
25 this time five of those wells have alternate well bores, a

1 well bore, that can be utilized to produce gas in.

2 Three of the wells, the Getty well, the Cone well,  
3 and the Moron well, do not have alternate well bores.

4 There is a provision within the unit agreement where  
5 a well could be drilled on that tract and the unit, itself,  
6 could carry the cost of two hundred thousand as is mentioned  
7 in this well bore provision.

8 Q Let's take a look at that now. Let's look at the  
9 unit agreement and that is paragraph 11.1, isn't it?

10 A Yes.

11 Q Tell me how that's going to work, again?

12 A Well, let me give you a little background on why  
13 I feel like we need a well bore provision within this unit.

14 We have a water flood operation where we feel like  
15 we have to maintain a certain amount of control in the patterns  
16 that we have for the proposed injection.

17 If we lose patterns, the more patterns we lose, the  
18 more reserves we feel like we will lose.

19 If the patterns -- if we can't control the patterns  
20 then we are obviously going to lose secondary recovery,  
21 secondary reserves, in this particular unit.

22 I think that was the main reason for having a well  
23 bore provision to control the water flood and try to produce  
24 nine point eight or approximately ten million barrels of  
25 secondary reserves.

1 If we didn't have control over the well bores and  
2 they were not turned over to the unit within a reasonable  
3 amount of time it would be impossible for us to operate  
4 the unit in the most efficient manner.

5 Now, in the provision you spoke of the well bore  
6 provision, the way it applies now the operator would have  
7 ninety days to turn over a well bore on each forty acre  
8 location.

9 If he didn't a well would be drilled with the approval  
10 of the working interest owners.

11 Q Now, those wells cost approximately what?

12 A The wells cost -- the two hundred thousand dollars --  
13 let me elaborate on that.

14 That was provided for by the working interest owners  
15 at the time that -- at that time the cost was approximately  
16 eighty percent of what a well would cost.

17 That was back in the early part of 1976. At this  
18 time we would estimate that a producing well would cost  
19 approximately three hundred and six thousand dollars.

20 Now, that would be a producing well. An injection  
21 well, I believe I said, three hundred and thirty-six thousand.

22 So, the costs have escalated during the last year  
23 and a half where now we are looking at a penalty of roughly  
24 sixty-seven or sixty-eight percent of what a well, total  
25 well, cost would be.

1 Q Let me see if I understand you correctly. Assume  
2 Mr. Cone has not depleted the Tubb formation in his particular  
3 well and therefore cannot tender you the well bore within  
4 the ninety days.

5 It is reasonable to assume, I guess, that the Tubb  
6 would not be depleted within the next ninety days?

7 A That's right.

8 Q Therefore, he cannot give you the necessary well  
9 bore and another well would have to be drilled?

10 A Well, the operating agreement states that one  
11 wouldn't have to be drilled. It says that the operators have  
12 the option of drilling the well, I believe.

13 Q Well, you would exercise that option in this case?

14 A I would think here in this case of Mr. Cone and  
15 that particular tract it would be exercised.

16 Q Okay. The option is exercised and the well is  
17 drilled and the unit operators prorate the two hundred  
18 thousand among themselves?

19 A Well, there are several options that are available.  
20 One, Mr. Cone could pay the first two hundred thousand dollars  
21 himself, the first two hundred thousand dollars, with the unit  
22 bearing the cost over the two hundred thousand.

23 Or, there is a carry provision within the unit  
24 agreement where the unit would carry that two hundred thousand  
25 dollars and take the tract's share out of the revenue of the

1 total tract.

2 Q Can you explain to me why this provision is not  
3 a detriment to Mr. Cone's economic interest?

4 A Well, we are in a position where Mr. Cone has a  
5 well bore and he can produce his remaining Tubb gas reserves  
6 and he will not lose any money off of those reserves.

7 The economics are such off that tract that as we  
8 estimate at this time the cash flow of the revenue will more  
9 than pay for the two hundred thousand dollars in a reasonable  
10 period of time.

11 He will be able to recoup the rest of his equity  
12 and that amount of remaining revenue off of the tract. The  
13 pay out would be in a reasonable period of time for the  
14 two hundred thousand dollars.

15 Now, I might add that other operators within this  
16 particular area, these provisions, everyone gives and takes  
17 in the negotiating. Some people had two wells out there in  
18 the particular unit. That second well cost them something  
19 somewhere down the line. Maybe not at this time but they did  
20 spend money on that particular well.

21 Q Let's go back to your Exhibit Two Sixty-one and if  
22 I may summarize what I believe that exhibit shows me, it  
23 appears that if you combine the Blinebry and Drinkard production  
24 that as you go in a westerly direction within the unit daily  
25 production gets better?

1 A. Yes, I think your cumulative recoveries would point  
2 that out also.

3 Q On the eastern side of the unit the production is  
4 not so good?

5 A. That's correct.

6 Q We talk in terms of this five barrels of oil a  
7 day. It appears as if Sections 11, 14 and 23 produce anywhere  
8 from in excess of five to something in the area of thirteen  
9 barrels of oil per day?

10 A. Are you talking about combined or total production?

11 Q. Yes, sir.

12 A. I think that would be correct.

13 Q All right. On the east side of the unit in Sections  
14 12 and 13 and portions of 24, those particular wells appear  
15 to produce something less than the five barrels a day?

16 A. That's correct.

17 Q Can we not conclude that Sections 11, 14 and 23  
18 have not reached their economic limit and still have substantial  
19 primary recovery?

20 A. Could I ask you a question on what you define as  
21 economic limit?

22 Q. Yes, sir, the five barrels of oil a day that we are  
23 talking about?

24 A. I am not sure that I would agree with the five barrel  
25 a day economic limit.

1 Q All right, why not.

2 A Because we still have over five barrels a day on a  
3 lot of these leases, on the average, and still making money  
4 after expenses are taken out. We are still in the position  
5 that we are economic.

6 Q You had some figures awhile ago about the volumes  
7 of oil left in the Blinebry and Drinkard for primary and  
8 secondary recovery. What were those figures, again?

9 MR. RAMEY: Mr. Kellahin, would you agree to a break  
10 after the witness answers this question?

11 MR. KELLAHIN: Yes, sir.

12 A I believe I said that the secondary recovery for  
13 the Blinebry we had anticipated <sup>SIX</sup> ~~nine~~ million two hundred eighty-  
14 nine thousand three hundred and seventy-four barrels of oil  
15 and for the Drinkard three million five hundred twenty-one  
16 thousand four hundred and seventy-one barrels of oil.

17 The remaining primary that was calculated by the  
18 engineering committee as of 4/1/76, for the Blinebry was  
19 nine hundred seventy-four thousand nine hundred and twenty  
20 barrels of oil for the Blinebry, and the Drinkard was six  
21 hundred thirty-four thousand five hundred twenty-three barrels  
22 of oil.

23 Q What was the last figure, again?

24 A Six hundred thirty-four thousand five hundred twenty-  
25 three.

1 MR. KELLAHIN: Thank you.

2 MR. RAMEY: Let's have a fifteen minute recess.

3 (THEREUPON, the hearing was in recess.)

4

5 MR. RAMEY: The hearing will come to order. Mr.

6 Kellahin, you may proceed.

7 MR. KELLAHIN: Thank you, sir.

8 Q (Mr. Kellahin continuing.) Mr. Malaise, before the  
9 break we were talking about the reserves that you had  
10 estimated for this particular unit and I believe the total for  
11 the secondary recovery reserves on the Blinebry and Drinkard  
12 was something around nine million eight hundred and ten  
13 thousand?

14 A That's correct.

15 Q All right, sir. How did you reach that reserve  
16 factor?

17 A Of secondary reserves?

18 Q Yes, sir?

19 A The secondary reserves that I used -- here again,  
20 they came out of the reports that I referred to earlier.

21 Q In that report they had certain parameters or certain  
22 factors that they used in regards to recovery, I assume. What  
23 percentage of recovery did they use?

24 A Well, here again, I would prefer that you would refer  
25 to these in your questions later on to Mr. Tweed, if that is



1 acceptable.

2 Q You said you had examined water flood projects  
3 operated by Gulf in the southwest portion of this area and  
4 I think that is the Gulf Central Drinkard, is that correct?

5 A Right.

6 Q What was your study of the Gulf Central Drinkard  
7 Unit?

8 A As far as looking at it in terms of this operation?

9 Q Yes.

10 A And our interest in it?

11 Q Right.

12 A I looked at it mainly to see several things. One,  
13 if the Drinkard could be successfully flooded -- what I mean  
14 by successfully flooded, a pilot was started on that project,  
15 a pilot was started in the ground I believe in 1968, in the  
16 two five spots.

17 The thinking at that time as has been related to me,  
18 since I wasn't in the profession at that time, but pilots were  
19 in vogue.

20 The thinking in a lot of the oil companies after  
21 looking at pilots are that pilots have not been that successful  
22 in extrapolating performance to a larger water flood.

23 I think one thing that you can determine from a  
24 pilot is one, can an oil bank be built up. Two, can water be  
25 injected into the ground.

1           So, from '68 to the end of '72, this is what Gulf  
2 essentially did in this unit. They looked at two five spot  
3 patterns. They did show that oil could be built up in the  
4 bank and could be swept and there were secondary reserves  
5 that could be recovered.

6           I think they did show that injection -- that water  
7 could be injected into the injection wells at a reasonable  
8 rate.

9           So, '73 came and they expanded that particular unit.  
10 On the expansion it wasn't a complete expansion at that time in  
11 terms of the original study.

12           Their study was based and their performance curves  
13 were based upon a one hundred percent of the unit being  
14 completed in so many five spot patterns.

15           This wasn't the case and there are several reasons  
16 why the unit could not be expanded at that time.

17           One, was that the fact that the lease line injection --  
18 they could not secure the necessary agreements on the offset  
19 operators.

20           Q. Let me break in -- the answer to this particular unit  
21 that we are discussing today, -- what arrangement, if any, have  
22 you made with the lease line operators on the west side of this  
23 unit?

24           A. Several of the lease line operators are the same  
25 operators that have interest in this unit. So, I would

1 anticipate in negotiating their equities that they took this  
2 in consideration. I would say several of the operators on  
3 the west and on the north and on the south.

4 The area is also being studied by Shell, as I  
5 understand at this time. We have supplied some reservoir  
6 data to them -- what we used as far as parameters et cetera  
7 and I would anticipate -- I have no knowledge of where they  
8 stand at this time -- but I anticipate that they are looking  
9 at a secondary recovery prospects in the Drinkard formation.

10 Now, as far as the Central Drinkard, to get back  
11 to that question, we also had in the Central Drinkard Unit  
12 at that time a gas zone or a part of the Drinkard zone had a  
13 separate gas zone.

14 The price of gas escalated. It required additional  
15 development. There were offsetting gas wells that were being  
16 drilled in the Central Drinkard Unit and these had to be  
17 offset to protect correlative rights.

18 So, part of the water flood -- getting back to this --  
19 was not expanded to the performance that was predicted when  
20 this original study was done in '65.

21 There are, in fact, today -- I would say there are  
22 at least eleven five-spot injection patterns that are not  
23 completed with probably another eleven half five-spot injection  
24 patterns that are not complete.

25 The project will recover a little over -- about

1 three point -- one point three million barrels of oil since  
2 the start of the project, as I recall, which when you go  
3 back and you take that oil and what has been flooded and  
4 what I would consider a water flood it would correspond to  
5 a reasonable flood in the Drinkard.

6 It would be one that would be successful.

7 Q. What percentage?

8 A. I would say that it would correspond to the percentage  
9 that we are talking about in the Blinebry and Drinkard units --  
10 for the Drinkard in comparison what we project in the  
11 Drinkard unit.

12 Q. What is that percentage?

13 A. The percent that we say is point seven to one.

14 Q. I see.

15 A. But here again, you have some things that you have  
16 that have masked the full performance of the unit when you  
17 compare it on the original studies and what they estimated  
18 they could recover from the entire unit.

19 Q. Let me ask you some more questions about your unit.  
20 I understand that you intend to inject water down dip and  
21 you probably -- I assume that you work from the east side  
22 of the unit?

23 A. I would assume that would be our plans at this time  
24 to start on the east side. There is a highway that divides  
25 the unit and I assume that is where we would start our

1 conversion first.

2 Q There is a gas cap in this unit is there not?

3 A The Blinebry formation has what we would consider  
4 a gas cap. The Drinkard formation is recognized as both  
5 oil and gas and it has a zone that due to an impermeable  
6 barrier between the gas zone and the oil zone has made it  
7 a separate gas zone as far as the engineering.

8 Q Would you generally describe for the Commission where  
9 this gas cap is found?

10 A The original studies indicated that it was  
11 approximately, I believe, twenty-two fifty subsea depth.

12 Q And where within the unit would it fall?

13 A Let's see, referring back to -- referring back to,  
14 I believe, One D, the gas cap we would show would run  
15 approximately down the middle of the proposed unit boundary,  
16 the minus twenty-two fifty subsea line on the structure  
17 map.

18 Q All right. Now, where on the surface plat -- in  
19 what sections would you find the gas cap?

20 A You find it in Sections 11, 14 and 23, primarily.

21 Q And it would be on the western half of those  
22 sections?

23 A That's correct. The western half of the unit.

24 Q All right, sir. As you inject water down dip how  
25 are you going to avoid moving that gas cap off this unit to

1 the offsetting operator's property?

2 A. Here again, if you could refer that question to the  
3 original study that was done. We have maps that would show  
4 where we intend to inject each particular interval of the  
5 Blinebry. I think that question could be answered more  
6 appropriately with these particular maps.

7 Q. To your own knowledge do you know if Atlantic-  
8 Richfield has any plans to drill any additional wells to  
9 produce gas out of this gas cap?

10 A. In January of '76, there was a gas development  
11 summary that was put out to the working interest owners and  
12 at that time it was estimated that three additional wells  
13 would be required within the unit boundary to recover those  
14 gas reserves in the Blinebry and the Drinkard gas zones that  
15 would be squeezed off once the injection was started.

16 Q. Where would you drill those wells?

17 A. This drilling plan on the gas wells was published,  
18 I believe, in January of 1976, and the drilling plan at that  
19 time called for any wells to be drilled within the unit  
20 area would be drilled for additional reserves in the Blinebry  
21 and the Drinkard to pick up infill or pick up reserves  
22 that would be squeezed off.

23 These wells would be located from -- I would say --  
24 from a prudent operator's standpoint so that they might be  
25 utilized at a later date as infill wells both for the water

1 flood, once the gas was completed, since most of the gas as  
2 you have pointed out from the structure map the gas-oil  
3 contact is on the west side of the unit.

4 It would be our intent to drill these wells in that  
5 particular area. The wells as it was pointed out in the drilling  
6 plan that was put out would be drilled on an individual  
7 basis depending on the success of each well.

8 It would not be drilled simultaneously. The outcome  
9 of one would predict and dictate the need and the necessity  
10 for additional wells.

11 At that time the gas that was remaining, estimated  
12 to be remaining, in the cap at the time the unit was to be  
13 -- we felt like could be put together -- we had three wells  
14 that would deliver the amount of gas that would be necessary  
15 in depleting the gas zones.

16 Q Do you have any knowledge as to where Atlantic-  
17 Richfield would specifically locate each of those wells?

18 A As I said, there again, it would be dictated on  
19 timing as far as when the gas zones were squeezed off in the  
20 injection wells and that would dictate the need for a well  
21 in a particular area.

22 But at this time from looking at the map and our  
23 present plans are to drill them on the west side of the  
24 unit.

25 Q Would you drill a well in the southwest quarter of

1 Section 14?

2 A. There is a possibility that one would be drilled  
3 there.

4 Q. You indicated that there was some water production  
5 out of this unit. Could you elaborate on this for me? Where  
6 do we find the water production?

7 That is, that relates to the west side of this unit?

8 A. I don't know that we have enough water production --  
9 are you speaking of the Blinebry-Drinkard at this time?

10 Q. Yes.

11 A. To really make a definition on where the most of the  
12 water is being produced at this time. I don't know if there  
13 is one particular area that would show up more water production  
14 than in the other.

15 Q. You mentioned that tract number fifteen in Section  
16 13 was operated by the Summit Energy, Inc., and had not  
17 consented to the unit?

18 A. That is correct.

19 Q. If Summit would agree with the unit to participate  
20 in some cooperative fashion so as to assist the unit with their  
21 water flood project, would you recommend that tract fifteen  
22 be excluded from the unit?

23 A. If their -- I will put it this way -- there, again,  
24 this is another question that is my opinion and an answer, I  
25 feel, would have to come from the working interest owners but



1 as it stands if you look at tract fifteen we have -- referring  
2 to Exhibit Two, that shows the proposed water flood pattern.  
3 The No. 2 well, I believe, we show it here now as producing  
4 as Summit No. 2 and as shown on this plat as No. 30, we have  
5 one injection well, a single injection well, in the Blinebry  
6 zone.

7           Around that particular tract we have indicated five  
8 other injection wells and from the standpoint of equity we  
9 do not feel that five injection wells to one injection well,  
10 as a prudent operator, we could justify.

11           I guess that has been a part of the problem on that  
12 tract from the standpoint of equity if we did go into a  
13 cooperative water flood program we would not be able to  
14 recommend to the working interest owners that we convert the  
15 five injection wells.

16           We would have to leave those wells off if we were  
17 having to convert five to one. In so doing there would be  
18 Blinebry and Drinkard reserves both in the immediate area of  
19 Summit's tract and by not closing the patterns in, would also  
20 be additional reserves that would be lost to the unit.

21           Q     Would the unit operation be economic if tract  
22 fifteen was deleted?

23           A     I will say this and there, again, we are looking at  
24 an amount of reserves that would be lost in that particular  
25 area.

1 Q. Lost to --

2 A. Lost to the unit. There, again, I don't know if  
3 we could recommend doing this to the unit operators.

4 Q. In regards to tract thirteen operated by J. R. Cone,  
5 would the unit be economical if tract thirteen was excluded  
6 from the unit?

7 A. This, again, if some type of an agreement could not  
8 be worked out I would not be able to recommend --

9 Q. Well, let's assume that Mr. Cone will, in fact, works  
10 out an agreement to cooperate and to participate for your  
11 mutual benefit in a water flood project. Would you recommend  
12 the deletion of tract fifteen?

13 A. Well, here again, we talk about cooperate. I think  
14 what we would have to look at is the timing, again. Would  
15 we be subject to, say, producing the Tubb gas well unit until it  
16 was uneconomic?

17 Here again, we are looking at delay and I think delay  
18 is reserves and is money.

19 Q. I don't understand that?

20 A. Well, here again, if we worked out some type of  
21 cooperation we would be in a situation where we would feel  
22 like one operator could maintain the injection wells as far  
23 as converting them at a time to maximize a flood front.

24 If there is no assurance that this can be done then  
25 until those wells were converted we would not be able to

1 convert the offsetting injection wells which would not  
2 affect Mr. Cone's tract but it would have affect in the  
3 patterns offsetting him -- there would be four or five  
4 additional patterns.

5 Q You are not going to lose any oil by delay are you?  
6 It is just that it would not be produced?

7 A There again, delay can cause a loss of reserves in  
8 secondary recovery if you cannot control your oil bank.  
9 You can sweep oil off of your tracts and if timing is not  
10 correct and if not all the five spots are not backed up  
11 completely can cause loss.

12 Q Well you are not going to sweep oil off of the unit  
13 on the west side in any event are you?

14 A There will be some back there with a cooperative  
15 injection. I don't know -- we would not convert these wells  
16 until we got cooperative injection.

17 We are trading one for one.

18 Q How about sweeping oil off of the north and the  
19 south ends of the unit?

20 A There again, we wouldn't convert these wells until  
21 we got cooperative injection.

22 Q I believe I have concluded correctly from your  
23 testimony concerning the Gulf Central Drinkard that Arco has  
24 dismissed the idea of a pilot water flood project on this  
25 particular unit?

1 A. That would be a correct assumption.

2 Q. You don't believe it would be reasonably necessary  
3 and prudent to operate a pilot project in, say, the northeast  
4 corner of the unit or in the southeast corner of the unit?

5 A. I don't think we could justify one.

6 Q. In what way could you not justify it?

7 A. Well, here again, on the basis of what a pilot would  
8 tell us. I think all we are looking at here is delay in so  
9 many floods. What people are looking at now in pilots is  
10 that it has been inconclusive. I don't think that we would  
11 anticipate putting a pilot project in this particular  
12 operation.

13 Q. You have introduced a number of exhibits showing  
14 a schematic diagram of the well bores in all of these wells  
15 and you concluded in response to a question by Mr. Hinkle  
16 that cement jobs were adequate and that the water injected  
17 would remain within the injected area.

18 Are you aware of any communication outside the  
19 pipe in any of these wells?

20 A. None to my knowledge today.

21 Q. With regards to the Eubanks No. 2 Well in tract  
22 thirteen, you are aware are you not that that well is open  
23 in all four zones, the Blinebry, Drinkard, Tubb and --

24 A. I am aware that it is commingled in the Blinebry and  
25 Tubb, yes.

1 Q And is it your testimony that you believe that the  
2 Blinebry and the Drinkard could be flooded without damage  
3 to the Tubb?

4 A That's correct.

5 Q You also indicated that there may be necessity to  
6 work over either the Blinebry or the Drinkard?

7 A Yes.

8 Q In the event of a workover for the Eubanks No. 2  
9 Well, how would you preclude water from damaging the Tubb?

10 A In that particular well we would have to pull the  
11 well and squeeze off the Blinebry zone in it, assuming that the  
12 unit was approved and went in as we stood today.

13 Q In your opinion, Mr. Malaise, would the unit be able  
14 to restore production to the Tubb if it were completed off  
15 in such a fashion?

16 A I didn't say that the Tubb would be squeezed off,  
17 I said that the Blinebry would be squeezed off.

18 Q I am sorry, the Blinebry. How would you restore  
19 production to the Tubb?

20 A There, again, it would be restored in the well bore  
21 once it was squeezed off.

22 Q I see. Let me ask you some questions about the  
23 overhead charges. There was an exhibit or some testimony with  
24 regards to the charges on overhead. What was that figure,  
25 again?

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1 A. I believe it is one hundred and fifty-five dollars  
 2 per well per month for producing well and one hundred and  
 3 fifty dollars per well month for injection. I believe that  
 4 is in the unit operating agreement.

5 Q. Is that one hundred and fifty-five dollars per well  
 6 per zone -- you have got two separate units?

7 A. What we are looking at is as it applies to the injection  
 8 wells -- the producing wells will be commingled and it will  
 9 be one hundred and fifty dollars per producing well.

10 For injections wells it would be one hundred and  
 11 fifty-five dollars per injected zone. There would be two  
 12 strings of tubing in each of the injection wells. It would  
 13 be metered separately and would not be commingled. It would  
 14 not be an allocation.

15 Q. What services will the unit perform for that charge?

16 A. To me any of the services that are performed in  
 17 any secondary recovery operation that Arco would operate.

18 Q. We talked about the recoverable reserves -- let me  
 19 save that for Mr. Tweed.

20 Your testimony indicated some stripper prices, Mr.  
 21 Malaise. How many wells within the particular unit are  
 22 currently getting stripper oil prices?

23 A. In wells -- I can answer that -- approximately  
 24 ninety percent to ninety-five percent of the wells apparently  
 25 are stripper wells -- to the best of our ability to determine

1 that.

2 Thank you, Mr. Malaise, that's all of the questions  
3 I have.

4 MR. RAMEY: Any other questions -- Mr. Bateman?

5

6 CROSS EXAMINATION

7 BY MR. BATEMAN:

8 Q Mr. Malaise, I just have a few questions and in the  
9 interest of time I'll try to be brief.

10 Most of the area has already been covered -- but  
11 my main concern about your testimony is with respect to the  
12 possible communication of water from one zone to the other.

13 You might look, again, at the gas caps in the Blinebr  
14 and the Drinkard. Am I correct in assuming that if you obtain  
15 optimum results or are able to, then again, you would inject  
16 throughout the entire unit area in both of those zone  
17 simultaneously, is that correct?

18 A That's correct, with an oil column.

19 Q Would that also involve substantial injection of  
20 water along the lease line on the west of the unit boundary?

21 A Before we would convert the wells --

22 Q Yes.

23 A Yes, it would require getting lease line cooperative  
24 agreements signed.

25 Q Along the west unit boundary would it involve the

1 injection of how much water -- would you inject?

2 A Well, I believe we were looking at around four  
3 hundred and fifty barrels of water a day, maximum injection,  
4 into the Blinebry and around four hundred a day in the  
5 Drinkard, maximum injection, so, it would be those equivalent  
6 amounts.

7 Q Is that because there is more oil in one of those  
8 zones?

9 A No, now, this I am speaking of terms of what is  
10 within the unit. This is what the average injection rate  
11 would be based on the studies of what we would try to maintain.

12 Q Would there be a higher volume on the west than  
13 on the east?

14 A There probably would be more pay open up in the  
15 west than in the east. I would estimate trying to get more  
16 water in to maintain the proper flood, though.

17 Q Trying to get more water in, would that be a function  
18 of the pressure?

19 A That would be part of it. The main part of the  
20 problem there would be permeability, how much negative  
21 permeability you would have in the rock you flooded.

22 Q Is it reasonable to assume that you would inject  
23 at a higher pressure on the west than you would on the east?

24 A No, I think we have more permeability on the west  
25 than on the east. The east has shown from the cumulative that



1 the zone has been less prolific and has required more treatment  
2 and I think it would be easier to get water in on the west  
3 side.

4 Q Now, if you would again review for the record what  
5 steps you would take particularly with regard to the west  
6 boundary of the unit to determine whether or not what water  
7 is going into the Tubb zone, for example?

8 A Well, I think what we are looking at here is --  
9 we submitted well bore diagrams and as indicated at this  
10 time we think we have cement across these zones. To our  
11 knowledge there isn't any communication of any type in any  
12 of these wells.

13 As a prudent operator I don't think any operator  
14 in the unit boundary would think any different at this time.

15 If we found we did have water going into it by  
16 temperature surveys and the like of that and as a prudent  
17 operator we would take precautions at that time and squeeze  
18 the zones off, if we did have water going out of zone.

19 I might indicate that there is evidence out there  
20 due to pressure differences between the Tubb and the Blinbry  
21 to indicate that there is some vertical separation between  
22 these zones due to impermeable barriers.

23 If we did have adequate cement jobs at this time  
24 we feel like at the present operations and going into this unit  
25 that we could keep the water out of the zones.

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1 Q But you obviously check to make sure, is that  
 2 correct?

3 A That's correct.

4 Q Now, if you discover that water from all zones  
 5 is going into the Tubb you will squeeze off all zones would  
 6 you not?

7 A If we had an injection well that was not putting  
 8 water into the right zone we would have to take remedial  
 9 steps to correct that.

10 Q Now, in the west and the southwest there are  
 11 offsetting Tubb gas wells that you propose to convert to  
 12 injection wells, is that correct?

13 A Yes.

14 Q One of them is one of your wells?

15 A On the west?

16 Q Southwest?

17 A Yes, -- are you talking about the Cone lease, Cone A?

18 Q I am talking about Section 23, the southeast  
 19 quarter?

20 A Is that the Sarkeys' lease?

21 Q Right, do you operate that one?

22 A Correct.

23 Q Do you have a Tubb gas well there in the southeast  
 24 quarter?

25 A Right, that is correct.

1 Q. That would be an area of concern would it not?

2 A. I think any area where we had Tubb gas producing  
3 would be an area of concern.

4 Q. Do you have cooperative lease line agreements in  
5 hand now?

6 A. No, we do not.

7 Q. Do you have any verbal commitments on them?

8 A. We have talked to several operators who have an interest  
9 in the unit and have indicated that they would cooperate. I  
10 think many of the operators took this into consideration  
11 in negotiating on this particular unit.

12 If they went to management and they were going into  
13 a negotiation and they were telling them that they were going  
14 to have to convert an injection well to offset that then  
15 it certainly was discussed at that time.

16 I don't think they would have signed the agreement  
17 going into this particular unit if it hadn't been taken into  
18 consideration.

19 Q. That's just an assumption on your part?

20 A. That's correct.

21 Q. There are other offsetting operators that have not  
22 in the unit?

23 A. That's correct.

24 Q. Have you talked to any of those people?

25 A. No, we have not.

1 Q Well, have you talked to enough offsetting operators  
2 on the west side to tell whether or not you are going to  
3 be able to do that?

4 A Yes, we would be able to fulfill that west side  
5 obligation.

6 Q All right. Now, you have also testified that the  
7 gas cap in the Blinbry and the Drinkard, principally on  
8 the west side of the unit -- and it is your testimony that  
9 the plan would be to produce the gas from the gas cap at the  
10 same time that you are injecting water into the oil zones  
11 below the gas cap, is that correct?

12 A That's correct.

13 Q Don't you, again, have a problem with the communication  
14 of water in the gas cap?

15 A There again, there seems to be -- in the original  
16 study, and there, again, Mr. Tweed will elaborate on it -- there  
17 was enough pressure difference to indicate that they were not  
18 in communication.

19 This was brought out when the plan of development  
20 was put before the working interest owners. The reserves  
21 that were figured in both -- well, one would be a gas cap and  
22 the other would be a gas zone -- were based on differences in  
23 pressure at that time.

24 Q Well, the gas zone would imply that there were  
25 impermeable barriers between?

1 A. Well, the gas zone in the Drinkard would be  
2 recognized as a gas cap. In the Blinebry you would recognize  
3 that as a gas cap but the performance has not been such.  
4 It has not produced exactly as a gas cap.

5 There was some pressure difference between the oil  
6 column that was producing at that time and the gas zone, or  
7 the gas cap.

8 Q. My question is, then, you are assuming then that  
9 there is an impermeable barrier --

10 A. In the Drinkard and you don't have substantial proof  
11 in the Blinebry but there is some proof and there is some  
12 pressure difference.

13 The wells that we would convert on the end, in this  
14 study, we would not convert into the gas cap. It would be  
15 squeezed off.

16 Q. I see.

17 A. In the injection well -- we would not be injecting  
18 water into it.

19 Q. But you would be injecting immediately below it?

20 A. Well, not immediately -- I think this can be brought  
21 out -- if you could save that question until we get to the  
22 study. I think from look at the wells we have converted and  
23 some of the logs I think it could be elaborated on and maybe  
24 explained a little bit better.

25 Q. Well, that would be fine. I think you can answer

1 this question, if there is not an impermeable barrier would  
2 it not be reasonable to assume that the gas area is going  
3 to be watered out rather rapidly once injection begins?

4 A. I don't know what you mean by rather rapidly. If  
5 you look at the reserves that are out there at this time  
6 there appears to be enough pressure difference -- I don't  
7 know whether you could say that -- how rapidly it would or  
8 would not -- we don't intend to get close enough to the gas  
9 zone in the Blinebry to get water into it.

10 Q Well, I recognize that you wouldn't do it intentionally  
11 but assuming the factors that you already assume are not  
12 present, principally, impermeability and the pressure  
13 difference --

14 A. Right.

15 Q -- and you do have communication into the gas area,  
16 you are going to lose the gas rather quickly?

17 A. Well, I might add that on the gas, itself, the  
18 calculations came out to something like seven billion cubic  
19 feet of gas remaining as of 4/1/76, in both the Blinebry and  
20 the Drinkard gas cap and gas zones.

21 This production with the wells that would be drilled  
22 a maximum amount of production would last something like seven  
23 years. The biggest part of the production we estimate would  
24 be produced within four years.

25 So, I think most of the gas could be recovered before

1 the water flood got completely into the what we would call the  
2 fillup state.

3 Q Well, what would be the effect of the communication  
4 of oil into the gas zone?

5 A Well, it would be a loss of reserves.

6 Q That is a potential as well?

7 A I would have to say that it would be.

8 Q Why was the unit boundary selected on the west side?

9 A Well, as I stated in the testimony before the  
10 Blinebry goes to gas rather rapidly and there is very little  
11 oil column. The Drinkard does have some flowable reserves  
12 which are being studied by other major oil companies.

13 To have a unit where you have simultaneous injection  
14 you would require development within both the Blinebry and  
15 the Drinkard.

16 So, if the Blinebry could not be flooded that would  
17 be one reason to cut the boundary off on the west side.

18 Q If the west offsets have no oil why would they  
19 cooperate?

20 A Well, in terms of the Blinebry?

21 Q Yes.

22 A Well, there is some oil. The west offsets on there  
23 in the Drinkard we anticipate getting cooperation in the  
24 Drinkard. In the Blinebry I don't know that we would have  
25 cooperation on that.

1 A. There again, we wouldn't be sweeping all if there  
2 is no oil in the Blinebry. We wouldn't be sweeping it off  
3 of our lease.

4 Q. Let's look at Article XI governing the requirements  
5 for a well bore.

6 First of all, isn't it true that the southwest-  
7 northwest quarters of Section 24, which is roughly in the  
8 southeast corner of the unit, exempted from the obligation?

9 A. That is correct.

10 Q. Why was it exempted?

11 A. There was no developed reserves in either the  
12 Blinebry or the Drinkard in that particular location. It  
13 was not anticipated that a well would be drilled in that  
14 location at this time under the current economics.

15 There is a possibility later on down the line if  
16 the price of oil rose high enough that the unit might want  
17 to add a well in that particular area. That is a probability  
18 that happens to be very low.

19 So, the working interest owners decided that tract,  
20 the worst of the unit, would be about the same percentage  
21 as what the formula would give it as far as surface acreage  
22 participation.

23 If you look at the formula in both phase one and  
24 phase two it had no equity. It contributed nothing to the  
25 unit. Equity is essentially determined from surface acreage.



1 Q Well, if it contributed nothing then there really  
2 is not reason for it to be there?

3 A Well, there is a small chance that later on down  
4 the line -- and the working interest owners figured that  
5 there was a chance there was enough to include that particular  
6 tract within the unit -- it is paying essentially nothing and  
7 it contributed very little equity.

8 Q Does it participate?

9 A Yes, it does on surface acres which is a small  
10 percentage of both phase one and phase two.

11 Q Doesn't that detract from the participation of other  
12 tracts in the unit that are actually contributing reserves  
13 and contributing well bores?

14 A In what sense?

15 Q In the sense of equity?

16 A It is receiving very little equity. Its equity is in  
17 proportion to what it is contributing to the unit. It is a  
18 small fraction. I don't have the fraction in front of me  
19 but it is very little equity that particular tract is getting.

20 Q Again, with respect to Article XI, the requirements  
21 for the contribution of a well bore what is the objection, if  
22 there is any, to a dual operation of that well bore from the  
23 existing operators?

24 A There, again, this is my opinion and it would be  
25 something that at this time we have eighty-five percent

1 approval on it as is, or more than eighty-five percent  
2 approval of the working interest owners, which is the highest  
3 approval that we have ever got on this particular unit.

4 As far as working -- the one problem I could see  
5 was allowing -- you are speaking of the Tubb or a non-  
6 unitized zone producing in the well?

7 Q That's right, the Tubb and Abo?

8 A The Blinebry formation the way it is set up as I  
9 said before is the uppermost formation. The Tubb is in the  
10 middle and the Drinkard is on the bottom.

11 If you are going to allow wells out there to produce  
12 in the same well bore, if you are looking from the Blinebry  
13 to the Drinkard standpoint, you would require three strings  
14 of tubing to keep these particular wells separated.

15 In most cases many of the wells would not accommodate  
16 three strings of tubing.

17 Q Assuming that they would what is the reason other  
18 than --

19 A Even with seven inch I don't know that you could  
20 get the size tubing in to produce the wells at the rates that  
21 would be required.

22 Q If you could that would eliminate, as you have said,  
23 the necessity of the drilling of another well to get to the  
24 non-unitized substances?

25 A If it was physically possible?

1 Q Yes.

2 A Yes, where they did not have to be commingled.

3 Q Not overlooking, of course, the Abo production which  
4 is the deepest, is that right?

5 A Yeah, the Abo is below the Drinkard.

6 Q Now, the twelve million dollar figure you gave for  
7 the cost of developing the unit includes the three gas wells  
8 is that right?

9 A Yes.

10 Q How much do those cost?

11 A The last estimate we have on those, I believe, about  
12 one point three million dollars.

13 Q What estimate do you have on the gas reserves that  
14 are going to be developed there?

15 A The estimate was made 4/1/76, and for the total  
16 Blinebry and Drinkard was seven point one -- you are speaking  
17 here of the three gas wells?

18 Q Yes.

19 A Seven point three one billion cubic feet of gas in  
20 both the Blinebry and the Drinkard.

21 Q Can you give a rough value to that?

22 A We would be looking at, well, possibly fifty-six  
23 cents per M.C.F., an average price of the gas in the field,  
24 so, what that figures out to.

25 Q I am told that the total estimate of cost of each

1 of those wells would be about four hundred forty-thousand,  
2 is that right, for each of those gas wells?

3 A. I assume that figures out to about that.

4 Q. Not the three hundred fifty that you previously  
5 testified to?

6 A. No. What I was testifying there to was just the oil  
7 wells that would be drilled. That was a replacement well  
8 that we had made the last estimate on in the unit -- replacement  
9 well within the Blinebry-Drinkard unit.

10 Q. Why is the differential?

11 A. Well, there is some difference in there -- we were  
12 looking at commingling the production in the five inch  
13 casing and the gas wells we are looking to running two strings  
14 of tubing and we would be looking at large casing.

15 The oil wells do not include the pumping equipment  
16 at the surface. The gas wells we were looking at additional  
17 money to put in separation units to tie these particular wells  
18 in. So, there is some additional cost.

19 MR. BATEMAN: Okay. That's all of the questions  
20 that I have.

21 MR. RAMEY: We will recess until one-thirty.

22 (THEREUPON, the hearing was in recess.)

23  
24 MR. RAMEY: The hearing will come to order. Mr.  
25 Bateman, I believe you indicated that you were through?

1 MR. BATEMAN: That's correct, thank you.

2 MR. RAMEY: Are there any other questions of the  
3 witness? Ms. Teschendorf?

4

5 CROSS EXAMINATION

6 BY MS. TESCHENDORF:

7 Q I just have a couple. I think you said that the  
8 cost of the project was twelve and a half million and the  
9 profit would be between seventy-five and eighty million?

10 A Yes.

11 Q Do you have any estimate of any additional cost of  
12 the unit over what it would have been if it remained un-unitized?

13 A If it had remained just a primary stage? As far  
14 as expenditure or how it would compare in profitability?

15 Q As far as the expenditures and how it would compare  
16 in profitability?

17 A Well, if we didn't form a unit there wouldn't be any  
18 additional capital investment. The capital investment of  
19 twelve and a half million would come to put in the secondary  
20 operations.

21 Q That would be in addition?

22 A But if you want to compare it on the basis of what  
23 the profit would be if we continued primary production versus  
24 what it would be if we had the unit, I can give you those  
25 numbers.

1 Q. Okay.

2 A. The approximate primary as we had estimated back  
3 in '76, would be approximately between eight and ten million  
4 dollars in the continued primary production. That would be  
5 an undiscounted profit.

6 Q. Have you made any estimates as to the value of  
7 additional hydrocarbons you will recover with the secondary?

8 A. That estimate is what we stated as secondary  
9 reserves and that would be approximately nine point eight  
10 million barrels of secondary oil, additional recovery.

11 Q. What would the value of that be?

12 A. Well, we estimated on our economics, since the  
13 biggest part of the unit was stripper prices in that unit  
14 at this time, I believe you are talking about thirteen dollars  
15 and eighty-four cents.

16 Q. So then, in your opinion the value of the additional  
17 oil and gas you would get out of there will exceed --

18 A. The twelve point five million investment, yes.

19 Q. I had one other question. You said that seventy-  
20 five percent, at least seventy-five percent, of the working  
21 interest owners had approved the participation formula. Have  
22 they also approved the entire unit?

23 A. This is correct. In terms of the participation  
24 formula I was speaking in terms of those people who had  
25 signed the unit agreement, as our next witness will testify,

1 depending on phase one or phase two, over eighty-five percent  
2 of the working interest owners have signed up.

3 Q What about the royalty interests?

4 A At this time it is comparable.

5 MS. TESCHENDORF: That's all I have.

6 MR. RAMEY: Mr. Stamets?

7

8 CROSS EXAMINATION

9 BY MR. STAMETS:

10 Q Mr. Malaise, I don't believe you have to turn to it  
11 but Exhibit Fifty indicates one injection well without a  
12 packer, is that an error in drafting?

13 A Yes, it would have been.

14 Q You are going to have packers in each injection  
15 well?

16 A That's correct.

17 Q All right. Then, in Exhibits Forty-three to Two  
18 Fifty-two, were you attempting to comply with Commission's  
19 Memorandum 3-77?

20 A Those are which ones, Mr. Stamets, are they -- what  
21 are those diagrams of?

22 Q Well, that's the diagram of all of the wells --

23 A Within the unit area?

24 Q Inside and out.

25 A All of those within the unit area?

1 Q And all of those within a half a mile.

2 A Yes, we were.

3 Q Now, I just scanned through those and it appears to  
4 me that those wells on the outside of the unit boundary do  
5 not have the cement tops shown. There were some wells that  
6 did not have the perforations shown. Some wells did not have  
7 the plug sizes or locations.

8 I presume that you would be willing to submit that?

9 A Yes, we would. Where we ran into problems there,  
10 of course, in getting that information from other operators.  
11 Sometimes we had the sources and sometimes we didn't. The  
12 wells within the unit boundary within the negotiations every-  
13 one has turned over schematics and that type of information  
14 and it was a little bit hard to get the information on the  
15 wells outside.

16 MR. STAMETS: That's all.

17 MR. RAMEY: Any other questions of the witness? Mr.  
18 Kellahin.

19

20 RECROSS EXAMINATION

21 BY MR. KELLAHIN:

22 Q An additional question -- in response to Ms.

23 Teschendorf's question let me make sure I understand what you  
24 said.

25 You anticipate nine million eight hundred ten thousand



1 additional barrels of oil to be recovered from the secondary  
2 operation?

3 A. That's correct, in the Blinebry and Drinkard as  
4 the sum total.

5 Q. All right. What portion of that reserve is  
6 attributable to tracts thirteen and fifteen?

7 A. That portion of the -- their interest, tract thirteen  
8 would be approximately -- there, again, I would have to refer  
9 back to the combined participation interest.

10 But it would be their combined participation interest  
11 in phase one and phase two of the project. We estimate phase  
12 one to last approximately four and a half years.

13 So, on a weighted average it would be somewhere  
14 close to eight percent times that eight point nine barrels  
15 of reserves.

16 Q. I made that calculation and I come up with one  
17 million one hundred twenty thousand three hundred eighty-  
18 three barrels of oil.

19 In your opinion is that approximately right?

20 A. I think that would be approximately correct. One  
21 second -- those numbers have been calculated on the Cone  
22 tract. I calculate something less than that -- that's in the  
23 neighborhood -- just under a million barrels -- I think where  
24 the difference would come in is how long you carry phase one  
25 and the combined interest but that is the approximate number.

1 Q Well, we are in the ball park with a million one  
2 hundred thousand.

3 If you subtract those reserves from tracts thirteen  
4 and fifteen that would leave you secondary reserves of  
5 eight million six hundred and ninety thousand?

6 A How many reserves were you putting for Summit?  
7 What did you get for them, roughly three percent?

8 Q For Summit I have got about three percent and for  
9 Cone I have got eight point four percent.

10 A So, the figures you gave awhile ago were for Summit  
11 and Cone?

12 Q That's right.

13 A Okay, that would be close. I was thinking in terms  
14 of Cone, only.

15 Q What would Arco's, as unit operator, profit be based  
16 on the exclusion of those two tracts? In other words what  
17 would be the profit based on secondary reserves of the eight  
18 million six hundred ninety thousand?

19 A It would be roughly if we were looking at seventy  
20 to eighty million it would be roughly eighty-nine percent of  
21 that. If we are looking at eleven percent.

22 This would not be Arco, it would be the unit.

23 Q I understand. With the exclusion of tracts thirteen  
24 and fifteen would not the unit still receive a reasonable  
25 return on its investment?

1 A. For that particular investment I would say, yes.

2 MR. KELLAHIN: All right. No further questions.

3

4 CROSS EXAMINATION

5 BY MR. RAMEY:

6 Q. Mr. Malaise, following up on Mr. Kellahin's line of  
7 questions, if you did drop those two tracts out would you  
8 still have the same efficiency in your flooding?

9 A. I think one would have to answer that on each tract  
10 answer each one individually.

11 I think on the Summit tract, there again, the way  
12 the pattern is set up Summit would be converting one injection  
13 well and if we fulfill our obligation we would be converting  
14 five injection wells around it.

15 We would be sweeping more oil to the Summit tract  
16 than we would keep in the unit and as far as the unit is  
17 concerned we would be losing reserves in that area.

18 If we did not convert those injection wells and  
19 laid off of five there would definitely be a loss of reserves  
20 within the unit boundaries.

21 If we look at the Cone tract I think on it assuming  
22 that some type of cooperative agreement could be reached,  
23 and I guess our feeling on this at this time is that it probably  
24 could not be reached, you would run into the same situation.

25 If you didn't convert the injection wells offsetting

1 it you would be running the risk there of losing the reserves  
2 within the unit boundary.

3 From the testimony that has been brought out this  
4 morning, I think it becomes apparent that in the zone like  
5 the Blinebry where there are several porous zones within it  
6 that from an efficiency standpoint one operator would be able  
7 to operate that particular unit and maximize the recovery.

8 Timing-wise as far as converting the injection wells  
9 to maintain the flood front and making sure the water is going  
10 into the zone it should be, the porous interval it should be  
11 going into in the Blinebry, and I think the same thing holds  
12 true in the Drinkard.

13 MR. RAMEY: Any other questions of the witness?  
14 Mr. Kellahin.

15  
16 RE CROSS EXAMINATION

17 BY MR. KELLAHIN:

18 Q I fail to see the difference between working out a  
19 lease line agreement with those operators on the west that are  
20 not participating in the unit and how that would differ from  
21 working out a lease line agreement with Mr. Cone on the west  
22 side?

23 A Well, on the west side with one well to five I don't  
24 see how you can possibly work out an equitable position.

25 In the situation of Mr. Cone's tract you would be

1 more or less on a one to one basis if a lease line agreement  
2 could be worked out.

3 Q We talked about these lease line agreements before  
4 and I don't want to belabor the point but I want to find  
5 out in your opinion will a reasonable and prudent operator  
6 as the unit operator want to have in his possession executed  
7 lease line agreements not only along the west perimeter but  
8 also along the south perimeter and along the north perimeter  
9 of this unit prior to the time the commencement of actual  
10 injection?

11 A I think any unit that you went into you would like  
12 to have this. What you run into is the fact that, there again,  
13 from a timing standpoint, not everyone is going to be able  
14 to get their studies done and their unit formed at the same  
15 time.

16 I think as a prudent operator is concerned this is  
17 to the point where you have made an attempt to get as many  
18 people in, there again, referring to those people who have  
19 an interest in this particular unit.

20 I start to see the situation of the tail wagging  
21 the dog. I don't think the unit could wait to get every  
22 lease line signed and every injection well signed up. I don't  
23 think that would be prudent.

24 Q How do you avoid, then, the potential risk of  
25 losing reserves across the lease line?

1 A. In which particular reservoir?

2 Q In the Blinebry and the Drinkard by moving it off  
3 the west side of the unit?

4 A. There, again, on the west side we wouldn't convert  
5 those injection wells in the patterns next to the lease line  
6 until we do have the lease line agreement signed.

7 That, I think, is a risk that you are going to be  
8 faced with in any unit that you form that has boundaries.

9 Q With that risk wouldn't it be reasonable and prudent  
10 to have the Oil Commission enter in its order a provision  
11 to require the execution of the lease line agreement from  
12 those areas prior to the offsetting injection?

13 A. I don't know that I would be qualified to answer  
14 that question.

15 MR. KELLAHIN: No further questions.

16 MR. RAMEY: Any other questions? He may be excused.

17 (THEREUPON, the witness was excused.)

18 MR. HINKLE: If the Commission please, I would like  
19 to offer into evidence Exhibit Two Sixty-one into evidence.

20 MR. RAMEY: It will be accepted into evidence, Mr.  
21 Hinkle.

22 MR. HINKLE: We would like to call Jerry Tweed.

23  
24 JERRY TWEED

25 was called as a witness by the applicant, and having been

1 first duly sworn, testified upon his oath as follow, to-wit:

2

3

DIRECT EXAMINATION

4 BY MR. HINKLE:

5 Q State your name, your residence, and by whom you  
6 are employed?

7 A I am Jerry Tweed. I work and live in Midland,  
8 Texas. I work for the Atlantic-Richfield Company.

9 Q What is your position with Atlantic-Richfield?

10 A District Petroleum Engineer.

11 Q Have you previously qualified before the Commission?

12 A Yes, I have.

13 Q Qualified as a Petroleum Engineer?

14 A Yes.

15 Q And have you made a study of the proposed area in  
16 the East Blinebry and East Drinkard?

17 A Yes, I have.

18 Q And of all of the wells in the unit and surrounding  
19 area?

20 A Yes.

21 MR. HINKLE: Are his qualifications acceptable?

22 MR. RAMEY: The witness is qualified, Mr. Hinkle.

23 Q (Mr. Hinkle continuing.) Are you familiar with the  
24 negotiations that have been carried on for the formation of  
25 this unit?

1           A.     Yes. I was involved with the negotiations from  
2 the outset.

3                   The first working interest owners' meeting was  
4 held, I think in 1969. At that time we looked at unitizing  
5 all -- unitizing four zones -- I think Mr. Malaise has  
6 testified -- the Blinebry, the Tubb, the Drinkard, and the  
7 Abo.

8                   Also at that time there was no statutory unitization  
9 bill in New Mexico. Those negotiations were carried on for  
10 a number of years and at various times it appeared that we  
11 would be unable to form a unit and that the potential of  
12 ten million barrels of secondary oil would not be recovered.

13                   With the passage of the statutory unitization act  
14 a new interest was shown by the working interest owners in  
15 forming the unit. They got back together with, I think, a  
16 more sense of cooperation and a determination to try to  
17 attempt to put the best secondary recovery unit together that  
18 they could.

19                   After that time the unit proceeded at a reasonable  
20 pace to this point.

21           Q.     This is the first time that you felt that the  
22 working interest owners felt it might be feasible to go ahead  
23 with the unitization?

24           A.     Well, at the outset they thought it could be  
25 worked out and we kept running into various problems. So,



1 at one time in the early 1970's, it appeared that the unit  
2 would not be able to be formed.

3 The first time after that period that it looked  
4 like it might be was after the statutory unitization act was  
5 enacted.

6 Q Who was represented at the various meetings that  
7 you held starting in 1969 and from there on?

8 A Practically all of the working interest owners  
9 appeared at at least one meeting.

10 Q Did you have a lot of meetings?

11 A Yes, we had quite a number.

12 Q Did you form an engineering committee to study the  
13 situation?

14 A Yes, our first assignment was an engineering sub-  
15 committee to make a reservoir study of the unit and to  
16 develop a participation parameter table to be approved by the  
17 working interest owners, which we did.

18 The report was issued in September of 1971, and was  
19 accepted by the working interest owners.

20 Q I believe you stated that there had been numerous  
21 proposals in connection with this matter to water flood the  
22 unitized four zones and then limited to the two zones and  
23 so forth?

24 Before the statutory unitization act was passed did  
25 you consider this cooperative flood as far as the lease

1 interest are concerned?

2 A. We have looked at the cooperative from time to  
3 time and I would like to draw your attention to Exhibit  
4 Two that has been submitted.

5 The problem with this is that Mr. Malaise has  
6 already testified to part of this but I would like to draw  
7 attention to it again.

8 There are a number of tracts in here that are not  
9 exactly uniform or, say, one hundred and sixty acre tracts.  
10 Summit's tract is one of them. It was previously testified  
11 that it would be offset by five injectors and he would  
12 convert one.

13 It is our interpretation of the engineering data  
14 that more cooperative flood here would result in more oil  
15 being swept to Summit's acreage than he would sweep to the  
16 remainder of the unit.

17 Therefore, we were opposed to a cooperative agreement  
18 for this tract.

19 Now, if that tract did not come into the unit the  
20 only equitable cooperative arrangement that you could make  
21 would be to convert less than the five proposed injection  
22 wells offsetting it.

23 If this was done you could obtain equity but you  
24 would lose ultimate reserves. We felt that it was a  
25 responsibility of the group to draw up plans that would

1 result in the most efficient recovery of the reserves  
2 underneath the unit boundary that we could.

3 That is one of the reasons that the working interest  
4 owners favored a unit for the entire area rather than a  
5 cooperative agreement on certain tracts.

6 Now, pertaining to the Eubanks, Cone operates the  
7 Eubanks, tract you could obtain equity if the two wells were  
8 converted versus the unit but there are two problems that  
9 are involved there which would affect your efficiency.

10 One of these is the timing. If he converted his  
11 injection well at the same time that the others were  
12 converted, then, you would have an efficient flood of sands  
13 and no loss of reserves.

14 However, if they were not converted they would have  
15 to delay conversions of wells offsetting him and would  
16 convert other wells in the unit.

17 This would lead to an uneven flood of sands in  
18 the portions of the unit which would result in oil being  
19 pushed into areas where it would not be recovered or lost  
20 off of the unit and would reduce the secondary recovery  
21 from the unit.

22 Also, I would like to refer to Exhibit One E and  
23 One F, which are cross sections of the Blinebry.

24 In our study we broke the Blinebry down into five  
25 producing zones or separate porous streaks. Each one of

1 these has a little different characteristics as far as  
2 porosity and permeability.

3 Also, as has been previously testified there is a  
4 gas cap in the Blinebry with certain zones on the west side  
5 going from the oil column into the gas cap.

6 So, I think one operator operating the entire unit  
7 could more efficiently determine which zones the water ought  
8 to be injected in and could more effectively conduct the  
9 water flood operations. It is a very complex reservoir.

10 Q Mr. Malaise made reference to another water flood  
11 project in the area.

12 Do you care to make any further comments with  
13 respect to this?

14 A I would state that the anticipated recovery and  
15 the secondary prospects for this particular unit are comparable  
16 to other water floods in New Mexico.

17 All of them have somewhat similar reservoir  
18 characteristics and they have about the same amount of risk  
19 involved and they have an anticipated recovery similar to  
20 what we anticipate here in the Blinebry unit.

21 So, in my estimation it is from an reservoir  
22 engineering standpoint, it is similar to other water floods  
23 in the southeastern New Mexico.

24 Q You think it will not be successful?

25 A No, sir, I think it will make the reserves that we

1 have estimated.

2 I would like to make one other point. I think  
3 Mr. Malaise has brought this up, but in reference to, say,  
4 the delaying the flood until the Tubb is depleted -- the  
5 greater portion of these wells were drilled between 1952 and  
6 1958, which is over twenty years ago, now.

7 We estimate that to deplete the Tubb reserves would  
8 require another four to eight years. If you start a water  
9 flood at that time the wells would be some twenty-five or  
10 twenty-six years old and we anticipate that the life of this  
11 flood will be some twenty-one years, which would mean that  
12 you would be using these wells and your equipment for some  
13 forty-six to fifty years of total life.

14 We think from an economical standpoint which, when  
15 you pick an economic limit, relates in total reserve recovery  
16 the quicker the flood is enacted the more our recovery will  
17 be. Because as these wells get older it is going to require  
18 more expense and the average oil production per well for an  
19 economic limit will increase.

20 Also, I would like to point out that there are  
21 provisions in the agreement that allow the operators to  
22 produce the Tubb under some means. Either go to an alternate  
23 well bore or he can pay a two hundred thousand dollar  
24 penalty and keep his well bore and produce the Tubb reserves  
25 through the existing well bore.

1           The economics of the water flood are such that  
2 he will, the operator will, make a profit -- it will still  
3 return him a profit by paying the two hundred thousand  
4 dollar penalty and joining the unit if he so desires.

5           Q     Mr. Tweed, you heard the testimony of Mr. Malaise.  
6 Do you agree with his testimony?

7           A     Yes, as a whole.

8           Q     Do you agree with his estimate of the secondary  
9 recovery and the amount to be recovered?

10          A     Yes, sir. The original secondary recovery report  
11 that was put out in September 1971, was done under my  
12 direction.

13               Essentially, the figures that are involved that  
14 Mr. Malaise has eluded to I was directly involved in  
15 calculating.

16          Q     You have already commented to some extent on this  
17 but what would happen if the Cone and Summit tracts are  
18 excluded as far as the ultimate recovery is concerned?

19          A     The way it appears to me it would be one or two  
20 things that would happen, I think.

21               The first thing is that we have had -- these  
22 negotiations for this unit has gone on for eight years. It  
23 has been very difficult. There have been times that it  
24 appeared that we would be unsuccessful in forming a unit  
25 here.

1           If these two tracts were excluded, I think it would  
2 add to our difficulty of forming a unit with the remainder  
3 of the acreage.

4           We have some eighty-five percent approval now  
5 and I think if those two tracts were excluded and we went  
6 back that we would have difficulty in duplicating that. We  
7 certainly would be running a risk that we could not obtain  
8 the seventy-five percent necessary for statutory unitization.

9           The other thing that would happen, I think, that  
10 if we did form a unit excluding this acreage I don't believe  
11 there would be any way that we could recover the total  
12 nine point eight million barrels of oil.

13           I think we would suffer a loss in recovery due to  
14 the fact, one, like I testified to that to obtain equity  
15 we wouldn't be able to convert all five wells offsetting  
16 Summit.

17           Also, I think we would have a problem with the two  
18 operators as to which zones they opened and how much water  
19 they would put into the injection wells and when they converted  
20 their injection wells.

21           All of these points are critical to the optimum  
22 recovery of the secondary reserves.

23           MR. HINKLE: That's all on direct.

24           MR. RAMEY: Any questions of the witness?

25           MR. KELLAHIN: Yes, sir, I have several.

CROSS EXAMINATION

1  
2 BY MR. KELLAHIN:

3 Q Mr. Tweed, does Mr. Malaise still work under your  
4 control and supervision?

5 A Yes, he does.

6 Q I'll talk to you about some questions he deferred  
7 to you earlier.

8 The first one was with regards to the allocation of  
9 production between the Drinkard and the Blinebry. He talked  
10 in terms of thirty-five percent in the Drinkard and sixty-  
11 four and a half percent to the Blinebry?

12 A Yes.

13 Q And I asked him how those allocations were reached.  
14 He said there were certain studies that you had done upon  
15 which he relied.

16 Would you tell me how you reached the floodability  
17 factor of zero point seven to one barrels on the Blinebry?

18 A First of all, I would like to answer the allocation  
19 of sixty-five -- thirty-five allocation --

20 Q Approximately --

21 A Yeah, approximately -- sixty-five -- thirty-five  
22 allocation. This was based on the ratio of remaining primary  
23 equivalent gas and secondary reserves in each zone.

24 In other words at the present time the Blinebry or  
25 Drinkard contains approximately thirty-five percent total



1 remaining reserves and the Blinebry approximately sixty-  
2 five.

3 This is what the allocation formula was based on  
4 which was the engineering committee's calculation of the  
5 total remaining reserves, both primary and secondary, along  
6 with the equivalent gas.

7 Q Let me ask you a follow-up question on the allocation.  
8 The previous testimony indicated that we had an attempt to  
9 create two separate floods, one, for the East Blinebry and,  
10 one, for the East Drinkard, but that when it came to the  
11 production we weren't going to separately monitor production,  
12 we were simply going to use the allocation formula.

13 Why is that necessary if you are going to separately  
14 handle the water flow into each zone?

15 A All right. The reason it is necessary to commingle  
16 the producing wells is that -- simply that you can lift more  
17 fluid out of a singly completed producing well.

18 We think that injecting the volumes that Mr. Malaise  
19 testified to that we would drive more fluids to the producing  
20 well than we could produce out of a dual completion.

21 The dual with two strings and producing under a  
22 packer you have a problem of producing gas from under a packer  
23 which we would have from the Drinkard zone and also it severely  
24 restricts the amount of total fluids you can lift.

25 This would either result in a loss of recovery

1 through driving the oil off to the Blinebry or to an  
2 unrecoverable area or else we would have to severely reduce the  
3 amount of injection and thus extend the life of the flood  
4 greatly which would result in some loss of recovery, also.

5 Therefore, it is more of a mechanical problem,  
6 really. We can put larger tubing and lift more fluid on  
7 the single producing wells.

8 Now, the reason we want a dual completion injection  
9 well is for better control of injected fluid into the two  
10 zones.

11 You could just set one packer and put water in both  
12 zones and it will be somewhat cheaper but we think with the  
13 two strings of tubing and the dual packer system that we  
14 will be better able to control the injection into each  
15 individual zone and thus improve the efficiency, the flood  
16 efficiency, of the unit.

17 Q I understand what you are telling me. As a practical  
18 matter we are going to treat the Drinkard and Blinebry for  
19 one purpose in the flood and yet we have got two sets of  
20 documents and I fail to understand why we have segregated the  
21 Blinebry and the Drinkard?

22 A The Blinebry and Drinkard were set up as two  
23 separate units. They were combined in the allocation formula  
24 and combined -- plans were made to commingle the producing  
25 wells down hole in an effort or in order to increase a

1 recovery from both units.

2 It appeared advantageous to both the units to  
3 enter into this agreement, this allocation agreement, in  
4 order to reduce costs and to increase the recovery from  
5 both the units.

6 Q Have you had any contact with the U.S.G.S. concerning  
7 the unitization of these two formations and the floodability  
8 of both of them?

9 A Mr. Malaise handled most of the contacts with the  
10 U.S.G.S.

11 Q What, if any, problems are created for the unproduced  
12 Tubb reserves by the implementation of this water flood  
13 project for the Blinebry and the Drinkard?

14 A It was testified that currently eight wells are  
15 producing from the Tubb. I think to put it in prospective, and  
16 these are just rough figures, there is about three billion  
17 cubic feet of Tubb gas reserves remaining.

18 I don't know what the price is but I would say that  
19 the value of that would be, I would say, a million five  
20 hundred thousand dollars.

21 The remaining secondary reserves in the Blinebry and  
22 the Drinkard are some ten million barrels with a value in  
23 excess of thirteen dollars a barrel which would give you a  
24 total gross value of reserves of one hundred thirty to one  
25 hundred forty million dollars.

1 So, in comparison to the stakes, certainly, the  
2 advantage can be seen to try to go after and recover the  
3 secondary reserves in the Blinebry and the Drinkard.

4 Now, it is not our intent that we leave any reserves,  
5 any economical reserves, in the ground either from the Tubb  
6 or any other formation.

7 However, it will cost some money and I think most of  
8 the eight operators will continue to produce the Tubb. I  
9 might add that all but the Cone tract have intentions of  
10 spending that money to produce it. That tract is not the only  
11 one involved in this problem.

12 Other people will have to go in and possibly squeeze  
13 off their Tubb in one well and go to another well bore that  
14 they have and open it and treat it and put it on stream  
15 which is a cost to them.

16 Also, the unit provides for a person, if they don't  
17 have a separate well bore, of keeping the well bore that they  
18 have and paying the two hundred thousand dollar penalty.

19 So, there are provisions -- we have made provisions  
20 to do it and I think -- now, we have thought -- Atlantic-  
21 Richfield Company has thought of other possibilities which  
22 would have to be approved by the working interest owners, of  
23 course.

24 Q I think what you are telling me is that there is a  
25 substantial risk that the Tubb would be watered out by the

1 Blinebry and Drinkard flood if the operator of the Tubb  
2 well doesn't take some action on his part to protect those  
3 reserves?

4 A. No, I don't believe I said that. What I was saying  
5 was in order to produce it -- well, he has to turn us a  
6 well bore, over. So, he has to turn over a usable well bore  
7 over to the unit. So, if he is currently producing the Tubb  
8 he would either have to shut off the other zones from  
9 production and continue to produce the zones in the Tubb  
10 in that well and pay the two hundred thousand dollar penalty  
11 or he would have to squeeze off the Tubb in that well and  
12 go to another well and open the Tubb zone up and treat  
13 it and bring it on production.

14 Q. You said it a different way but I am not sure it is  
15 anything different from what I said.

16 A. Well, it is just a mechanical means as to how he  
17 is going to continue to produce his Tubb reserves. It has  
18 nothing to do with the injection of water into the Blinebry  
19 and the Drinkard.

20 Q. You are telling me that the Blinebry and the Drinkard  
21 injection will not pose a substantial risk to the Tubb?

22 A. Are you asking in terms of water migrating into  
23 the Tubb?

24 Q. Yes, sir.

25 A. Yes, I would say that it will not pose a substantial

1 risk to the Tubb.

2 All of these wells have been cemented. One thing  
3 I would like to point out that at the present time it is the  
4 operators' responsibility to produce those wells unless he  
5 has a commingling provision so that they are separate.

6 So, he would be violating Commission regulations  
7 if they at the present time were in communication without a  
8 commingling order.

9 On June 22, 1977, Mr. Cone testified in a commingling  
10 hearing and requesting from the Commission approval to  
11 commingle the Blinebry and the Tubb zones. He had a leak in  
12 his tubing. I think he said that it would be uneconomical  
13 for him to repair that and asked for commingling.

14 He testified that as of August 1975, the bottom hole  
15 pressure in the Tubb zone was four hundred and ninety pounds  
16 and that the bottom hole pressure in the Blinebry zone was  
17 eight hundred and sixty pounds.

18 This difference in pressures would indicate that  
19 these two zones are separate at this time. With proper cement  
20 jobs there are dense zones in between where we would be  
21 injecting into the Blinebry and the Tubb formations.

22 Also, there is a dense zone in between where we would  
23 be injecting into the Drinkard formation and the Tubb. So,  
24 we plan to maintain our injection below the frack pressure.  
25 So, I don't think we have any problem with communication in

1 the reservoir from either the Blinebry or the Drinkard to  
2 the Tubb.

3 Q Let me ask you a question about what you just told  
4 me.

5 Did you attend an operators' meeting on March 10,  
6 1976, in regards to this proposed Blinebry unit?

7 A That, I couldn't answer. There was one meeting  
8 back in there someplace that I missed. I don't know if that  
9 is the one or not.

10 I would reiterate -- could I go ahead and answer  
11 your question that you asked?

12 Q Well, I thought you did, about the potential risk  
13 of watering out the Tubb zone.

14 A What you said was a substantial risk --

15 Q Yes, sir.

16 A -- to which I said no to. What I just testified  
17 to that on my analysis of the reservoirs that there would not  
18 be any communication in the reservoir.

19 If you have adequate cement jobs which I think  
20 practically all of the wells do have, then, we would not have  
21 any risk of communication behind the pipe.

22 Now, there are always possibilities that you can  
23 have communication in your cement jobs and that is one reason  
24 as a prudent operator we plan to run temperature surveys  
25 and injectivity profiles to see whether or not we are losing

1 any water out of the two unitized formations.

2 If we are it is costing us efficiency and money  
3 and it could cost us all.

4 If we are losing water out of these zones then we  
5 plan to go in and remedial squeeze between the Tubb and where  
6 we are injecting in the Drinkard to shut off any communication.

7 Really, I think it would be rare in any well that  
8 we would have any problem with. There could be some but we  
9 have provisions -- it would be very few and if we catch any  
10 of them we plan to correct them.

11 Now, if you get a small amount of water in the Tubb,  
12 it takes it awhile to migrate. I think the schedule that we  
13 have up, have planned to use, that we would catch any loss  
14 of water prior to there being any problem in the producing  
15 well, in the Tubb producing wells.

16 Q. Let's go back to that operators' meeting on March 10,  
17 1976, and I have a Xerox copy of the minutes from one of the  
18 pages of that meeting and a quote was attributed to you at  
19 that meeting, Mr. Tweed, and you said that this idea -- I'll  
20 let you read this --

21 Mr. Tweed said that this idea has been given  
22 consideration but it was vetoed by the legal considerations  
23 which emerged from the possibility of watering out the Tubb  
24 gas zones which is located between the two secondary recovery  
25 zones, the Blinbry and the Drinkard.



1           Would you look at entry number D there and refresh  
2 your recollection and tell us what you meant to say or what  
3 you, in fact, did say?

4           A.     I don't recall whether I said in the term "legal"  
5 that this was vetoed by legal consideration -- that, I  
6 probably couldn't comment on.

7           I think there is some remote possibility that you  
8 could have problems. You said substantial and that is how I  
9 answered the question.

10           I think that there is some remote possibility that  
11 you could have migration of water into the Tubb for some  
12 reason.

13           If there is still a remote possibility that it could  
14 reach the Tubb, a Tubb producing well -- I think this is very  
15 remote and I don't really anticipate it happening.

16           If you had your choice -- if you had your choice --  
17 I would have preferred to unitized all horizons. That way  
18 all horizons could be operated most efficiently to recover  
19 their reserves.

20           Q.     Why wasn't that done?

21           A.     It was impossible -- first of all, it would not  
22 apply under the statutory unitization provisions. Therefore,  
23 you would have to have one hundred percent approval of your  
24 agreements from your working interest owners.

25           Second, is that we were unable to -- when we were

1 trying to unitize all zones we were unable to get approval  
2 of a participation formula any higher than about forty  
3 percent. So, it just excluded unitizing all four zones.  
4 If I would have had my druthers I would have liked to have  
5 unitized them.

6 Q We are talking about the very remote possibility  
7 that the Tubb would be watered out.

8 Is it so remote, Mr. Tweed, that Arco is willing to  
9 guarantee to Cone that the operation of the water flood in  
10 fact will not jeopardize their Tubb production?

11 A I would say this -- I think the unit has the  
12 responsibility to see that we don't get water into the Tubb.  
13 If for some reason it gets in there and affects their wells  
14 then I think the unit is liable for it.

15 Q Let me ask you a question I asked Mr. Malaise about  
16 what efforts you are going to take to keep the gas and oil within  
17 the unit along the north, south, and west boundaries.

18 A As Mr. Malaise testified to we are attempting to get  
19 offset or cooperative injection agreements with the offset  
20 operators.

21 This won't be necessary in all areas. Obviously on  
22 the east there is not production offsetting there so it would  
23 not be necessary and impossible to get any.

24 As you go west I think as you can see from the Blinebry  
25 structure map your zone -- the predominant part of the Blinebry

1 goes from the oil column into the gas column.

2 So, it is not necessary to get offset injection  
3 all along the west line in the Blinebry since a predominant  
4 part of that interval would be in the gas column rather  
5 than the oil.

6 We are going to attempt -- so, what I think I am  
7 saying, really, is that we are going to evaluate every  
8 location and injection location offsetting this as to what  
9 we think we need in it and approach the operator to get it.

10 I couldn't say that we are going to uniformly  
11 have Drinkard and Blinebry injection offsetting every place.  
12 You get into the problem where if you, say, get ninety  
13 percent of so of the people agreeing to a cooperative  
14 injection, and if one person doesn't you either have the  
15 option of not offsetting him with injection wells in which  
16 case it costs reserves to the unit and just generally.

17 You will recover less total reserves from the  
18 project, both from the unit area and from the outside area,  
19 or --

20 Q Where are the areas of potential risk for driving  
21 the oil or gas production off?

22 A Well, the predominant risk is along the west  
23 Blinebry.

24 But I guess what I am saying or attempting to say is  
25 that you kind of have to balance if somebody is not willing

1 to do everything you would like to and whether or not you are  
2 willing to give up reserves and not convert some of your  
3 wells or whether you want to take the risk of driving some  
4 oil off of your property and the resulting -- and recovering of  
5 additional reserves.

6 Q Mr. Malaise indicated that the line agreements had  
7 not actually been executed and received in regards to those  
8 areas on the west line that you believe to be a potential  
9 problem.

10 Would it not be reasonable and prudent to have  
11 in your possession the executed lease line agreements prior to  
12 the commencing of the injection of water?

13 A Not prior to commencing and injecting water in the  
14 entire unit.

15 We would -- if we didn't get all of the lease line  
16 agreements we would just deal with that particular area rather  
17 than the entire unit.

18 We might have sufficient approval in other areas to  
19 go ahead and expand the flood to those lines or we could just  
20 back off the lease lines with our injection. But I think, as  
21 I have testified to, I think the delay, any substantial  
22 delay in initiating the flood, would result in the loss of  
23 reserves.

24 Q I understand what your thinking is with regard to the  
25 west line. How is that any different from the omission of

1 tract thirteen from the unit and working out the problem there  
2 as it occurs?

3 A. There is one obvious one and that is Mr. Cone is  
4 bordered on three sides by the unit and the offset lines on  
5 the west would have one border. That makes the problem about  
6 three times as large.

7 As I stated, I think you still have two problems.  
8 One is of timing and one is of volumes into the various zones.

9 If he converted his well at the same time as we  
10 converted the other wells and put in the proper amount of  
11 water in the proper zones, then, there would be no problem.

12 I think with two operators that would be difficult  
13 and I think we would have a problem with timing, both in  
14 timing and in volume of injection and zones that are open.

15 I think one operator in that area can more efficiently  
16 operate the entire area than having two operators in there.

17 It is not impossible, it is improbable in my  
18 opinion.

19 Q. Would you agree with Mr. Malaise's testimony with  
20 regards to the reserves under the secondary recovery of the  
21 eight million six hundred and ninety thousand barrels if we  
22 would exclude tracts thirteen and fifteen?

23 Remember, we were working with total secondary  
24 reserves and there was nine million eight hundred thousand --

25 A. I don't believe Mr. Malaise said that that much

1 oil would be recovered from the remainder of the unit if  
2 those two tracts were excluded.

3 What he said is that if they recovered that much  
4 oil it would be economical.

5 Now, I think the exclusion of these two tracts as  
6 I have stated previously will reduce the total recovery from  
7 the area.

8 Q I understand that but the statute requires does it  
9 not that the most efficient operation or that you recover all  
10 of the possible gas -- it simply says that you are going to  
11 effectively carry on a program that the estimated volumes of  
12 oil and gas you will recover plus a reasonable profit.

13 What I am getting to is if you exclude tracts  
14 thirteen and fifteen would you not still return a reasonable  
15 profit based on those reserves being recovered with the  
16 exclusion of those two tracts?

17 A First of all -- I can probably answer that in two  
18 ways and possibly three -- first of all, I would say that if  
19 the two tracts were excluded it would risk the formation of  
20 the unit, the remainder of the unit.

21 I think there is a substantial risk that the rest  
22 of that unit would not be put together. It has been a very  
23 difficult project to unitize and that would just add an  
24 additional problem.

25 If it were put together and adequate agreements were

1 worked out the unit would, the existing unit, would be  
2 economical but the total area would recover less reserves  
3 and therefore the result is waste due to two or three  
4 operators rather than one.

5 I think it is my responsibility from the working  
6 interest owners and as a Petroleum Engineer to try to design  
7 a project that is going to recover the optimum reserves.

8 Q Let's talk about the question I asked before and  
9 we never got to -- the floodability calculations on the  
10 Blinebry. I assume that was done by core analysis?

11 A What we did was we obtained all available core data  
12 and analyzed it and segregated it and analyzed it for the  
13 various porosity zones in the Blinebry.

14 We identified five porosity zones so we put the  
15 core data up into each one of those zones and analyzed it.

16 We, then, went to a reservoir computer model and  
17 entered our core data, fluid properties, and the geometry of  
18 the formation.

19 This particular reservoir model makes a secondary  
20 calculation of a five spot pattern when you feed the reservoir  
21 characteristics into it.

22 We ran twelve separate cases of this particular  
23 model to fully describe the reservoir. Some of the things  
24 varied. Not all of the patterns have the same distance in  
25 between the injector and the producer.

1 So, we ran three different distances between the  
2 injectors and the producers.

3 As you go to the west you have zone one going to  
4 gas and so you have different reservoir characteristics.  
5 So, we put in four different patterns of the reservoir  
6 characterists that best fit that area of the field.

7 So, we ended up with twelve runs on this particular  
8 computer and then we combined them -- we weighted those  
9 based on the amount of reservoir that that particular run  
10 was applicable to and hand combined them into one calculation.

11 With that and an analysis of the geology and  
12 reservoir characteristics we came up with the secondary recovery  
13 estimate as has been stated.

14 Q Did you run a similar study on the Drinkard?

15 A No, sir, we didn't. We did not have adequate core  
16 data to run this type of an analysis on the Drinkard.

17 Based on log analysis we felt like -- base on log  
18 analysis and geological analysis and the core data that we  
19 had we felt like the Drinkard would be substantially the same  
20 as the Blinebry.

21 Q What is the dollar value you place on the recoverable  
22 reserves here. I have got two figures here and I am not sure  
23 which one is the right one?

24 A Well, let's see, nine point eight million barrels  
25 times thirteen dollars and eighty-two cents, I believe, which



1 is what, around one hundred and thirty million dollars.

2 I could multiply that out if you would like.

3 Q On June 2, 1976, Arco provided the working interest  
4 owners with a figure of seventy-three million?

5 A The one hundred and thirty million dollars I just  
6 quoted is the gross value of the oil reserves.

7 That seventy-three million, I believe, is the net  
8 value of the reserves when you subtract out investment and  
9 operating costs -- of all expenses involved with water  
10 flooding, essentially.

11 So, it would be a net to the working interest owners  
12 of seventy-three million dollars, approximatetly.

13 Q All right. This seventy-three million dollar figure  
14 is as of June of 1976? I assume it is the undiscounted net  
15 income?

16 A Right.

17 Q And that still is your projection?

18 A Well, if you run it today there would be some small  
19 change but that is substantially correct.

20 Q In getting that dollar figure what price did you  
21 attribute to the stripper oil?

22 A I couldn't answer without looking at the economics  
23 at that time. I believe the current value we use is thirteen  
24 dollars and eight-two cents a barrel.

25 I can check the economics and see what price we

1 used.

2 One thing we did -- the price we used at that time  
3 was twelve dollars and fifteen cents a barrel.

4 I might say that what we do when we run economics,  
5 which I think is relatively standard, is that we run economics  
6 based on current prices -- unescalated oil price and un-  
7 escalated operating price.

8 Each company or each individual has their own  
9 inflation factors that they can use when they run their own  
10 economics. We do not include ours when we submit economics  
11 to the working -- to the other working interest owners.

12 That's why the difference between the twelve fifteen  
13 and the thirteen eighty-two. That's how much oil prices have  
14 escalated in that period of time.

15 Q What did you use for gas prices?

16 A Fifty-five cents.

17 Q Is that the average gas price for all of the gas  
18 within the unit?

19 A That was our best estimate. We just estimated it.  
20 As you may know contracts are confidential information between  
21 oil companies and we could not directly ascertain the prices  
22 of gas. We had to make an estimate based on our knowledge  
23 of what the average price of gas was. That is what that is.

24 Q You are aware that there are extremely low gas  
25 prices?

1           A.     Yes, sir, there are both. There are gas prices  
2 that are higher and there are gas prices that are considerably  
3 lower.

4           Q.     And this represents your best estimate of what  
5 that average is?

6           A.     Yes, sir.

7           Q.     All right. So, the seventy-three million is the  
8 net figure based upon the reserves of nine million eight  
9 hundred thousand?

10          A.     Yes, sir.

11          Q.     All right. The nine million eight hundred thousand  
12 figure I believe we were told earlier represents seventy  
13 percent recovery?

14          A.     That is the secondary to primary ratio of point  
15 seven -- or the secondary recovery would be seventy percent  
16 of what the primary recovery was.

17          Q.     And this is based on the life of over twenty to  
18 twenty-one years or something like that?

19          A.     Yes.

20          Q.     Arco operates similar water flood projects in the  
21 Blinbry and Drinkard doesn't it?

22          A.     We do not operate any similar projects in New  
23 Mexico. We are involved in a water flood in Texas that I am  
24 aware of -- there are probably others -- there are a number,  
25 three or four, floods that we are involved in. We also own

1 an interest in the Central Drinkard unit that Gulf operates.

2 Q You have some knowledge of the Gulf operated  
3 Central Drinkard Unit?

4 A Some knowledge.

5 Q What was their recovery ratio between the primary  
6 and secondary -- do you know what that percentage is?

7 A On the area affected it would be our estimate that  
8 their ultimate recovery would be somewhat higher than point  
9 seven ten -- in the neighborhood of seven to -- between  
10 seven and eight tenths -- that is on the affected area as  
11 Mr. Malaise testified to -- not the entire unit with offsetting  
12 cooperative -- cooperative injection has not been put on  
13 flood.

14 Q Would you consider the feasibility of operating a  
15 pilot project out of the northeast or the southeast quarters  
16 of this unit?

17 A It was considered by the working interest owners  
18 and rejected.

19 Q Why would that not be a reasonable and prudent  
20 method of the implementation of the water flood?

21 A Well, two reasons. As I pointed out these wells  
22 were drilled in 1952 to 1958, and the water flood is going to  
23 have some twenty-one years of life.

24 A pilot project would last in the neighborhood of  
25 four to five years before expansion occurred. That would add

1 an additional delay in the full unit production.

2 Also, there are a number of additional costs involved  
3 in putting a pilot in over going the straight-full unit  
4 injection.

5 So, it would be less economic and beneficial in  
6 putting the pilot in from also the delay standpoint and in the  
7 investment required.

8 Also, you would have an imbalance of flood from it  
9 around the pilot area which would have some affect on your  
10 recovery.

11 In addition the working interest owners had sufficient  
12 confidence in the reservoir calculations to feel like the flood  
13 would be successful and to go ahead and put these full  
14 injections in.

15 Q You have indicated just previously that you were  
16 anticipating a seventy percent recovery in the secondary as  
17 opposed to the primary?

18 A Yes, sir.

19 Q The seventy percent figure? Based on your knowledge  
20 and experience, Mr. Tweed, do you think that would be the  
21 optimum or optomistic figure?

22 A I don't think it is an optimistic figure. I think  
23 if you put in twenty floods of this nature that that would be  
24 the average.

25 It is possibly slightly conservative in my estimation

1 and we have purposely tried to look at all of the aspects  
2 of this thing and take into consideration anything that  
3 might affect the recovery.

4 Q Could you give me the upper and lower ranges of  
5 that percentage which you think might be within reason?

6 A Well, I'll do this -- if you put in twenty similar  
7 floods, just as an example, and this is just pure speculation  
8 based on just a guess on my part, I would estimate that  
9 the lower limits of recovery to be somewhere in the neighborhood  
10 of four and five tenths and the upper limit of recovery would  
11 be somewhere in the neighborhood one to one point to one  
12 to two point.

13 MR. KELLAHIN: Thank you, Mr. Tweed, I have no  
14 further questions.

15 MR. RAMEY: Any other questions -- Mr. Bateman?

16 MR. BATEMAN: I have just one.

17

18 CROSS EXAMINATION

19 BY MR. BATEMAN:

20 Q Having to do with the testimony regarding the  
21 profitability of the unit which apparently is considerable,  
22 one hundred thirty million total, I think?

23 A That's the gross income.

24 Q The gross income and profit in the neighborhood of  
25 eighty million?

1           A.     Seventy-three million, I believe, was the figure  
2 or the one I quoted.

3           Q.     You would consider that a reasonable return?

4           A.     I think it is a good economic project.

5           Q.     Now, if that is the case isn't there a latitude  
6 within that area of profitability to drill the necessary wells  
7 in the unit to avoid this problem of a penalty and permit  
8 individuals here participating in the unit to have un-unitized  
9 substances to continue to produce them through the existing  
10 well bores?

11                   I am saying, essentially, the case of an individual,  
12 Mr. Cone, who has a well which he would like to continue to  
13 produce and why wouldn't it be fair and still within the  
14 economic reason, reasonable economic limits, to drill on behalf  
15 of the unit offsetting wells to use in the operations without  
16 a penalty?

17           A.     Okay, I think I get your question. I only see two  
18 problems with that. The first thing is that this well bore  
19 penalty was a negotiated number and was probably part of  
20 what everybody felt their equity was and if they had more  
21 usable well bores they had more benefit to the unit.

22                   The second thing is I think you have to require  
23 a well bore to be submitted to the unit -- for instance, if  
24 there was no penalty for submitting a well bore somebody that  
25 just has strictly Blinbry and Drinkard wells might not choose

1 to submit them. You could have a large number of wells that  
2 would not be submitted to the unit and you would have to do  
3 one or two things.

4 They would either have to drill all of those well  
5 bores negotiated in this price and they negotiated those  
6 back into the unit at a price above two hundred thousand  
7 dollars and this would be detrimental to Mr. Cone's economics  
8 over what the current unit agreement called for.

9 Now, I would say that the unit could stand the  
10 drilling of a few additional wells like you elude to and the  
11 economics would still be good.

12 But it is a problem of equity and it is also a  
13 problem that if you don't have a penalty then what are all of  
14 the other operators going to do?

15 You have to treat all of the operators the same and  
16 if everybody chose to hold their well bores out you really  
17 would have a problem.

18 Q. I recognize that. But you can also conceive, I think,  
19 a circumstance where wells are productive in the unitized  
20 area would be required to be put in the unit and wells that  
21 are not productive could be excluded from the provisions, isn't  
22 that a possibility?

23 A. Well, Mr. Cone's well essentially is productive from  
24 the unitized interval.

25 Q. Yes, and the others are not? There are eight wells



1 that are productive from the Tubb?

2 A. That's correct.

3 Q. I believe your testimony was there were ten in  
4 the Abo, is that correct?

5 A. That's is correct.

6 Q. They are not all productive in the Drinkard or in  
7 the Blinebry, is that correct?

8 A. Most of them are dual completions or triples with  
9 one of the unitized intervals producing in them. Now, I  
10 don't know what percentage but I would estimate over half of  
11 them are. There are very few singles.

12 Q. That brings up the point on the dual and triple  
13 completion aspect and I am sure that is involved in these  
14 procedures and why wouldn't another way to solve that problem  
15 be to permit the dual and triple and multiple completions  
16 of these wells so that the well bore could be used for more  
17 than one purpose?

18 A. My position to that is to simply state that you  
19 are unable to lift a sufficient amount of fluid from a  
20 producing well if it is triple completed.

21 We would be faced with a problem of having a triple  
22 completion and most of the Tubb wells produce very small  
23 quantities, say, two hundred M.C.F. of gas a day.

24 If we had a triple completion producing, say, two  
25 hundred M.C.F. a day of Tubb gas and we would therefore be

1 restricting how much production we could obtain from the  
2 Blinebry and the Drinkard.

3           When the flood kicks, those two zones might be  
4 making a total of thirty barrels of each compared to a  
5 capacity of one hundred to one hundred and fifty barrels.  
6 We might be losing one hundred and fifty barrels of oil  
7 production per day at a value of -- what would that be --  
8 two thousand dollars in order to continue to produce the  
9 Tubb at two hundred M.C.F. with a value of one hundred dollars  
10 a day.

11           It would result in the loss of, I think, a loss of  
12 reserves in the flooded zones.

13           Q. Let me ask you a question on that. You continue  
14 to minimize the value of the the Tubb gas. When you compare  
15 that with the cost of drilling other wells to get to it there  
16 is a question of economics that comes into it, doesn't it?

17           A. I think the cost of drilling a well is a cost you  
18 would have to figure economics on based on your total  
19 economic picture which would include the unitized zones.

20           Q. So, if you got one hundred and seventy-five thousand  
21 dollars worth of gas there and you have got a two hundred  
22 thousand dollar penalty it doesn't make sense to drill  
23 another well does it?

24           A. Not for the Tubb alone. That could be part of the  
25 cost of being involved in the unit and that you could easily

1 bear that additional cost of.

2 Q Provided your computer is correct?

3 A Well, we think -- I think it is a good risk on  
4 this thing.

5 There are other possibilities. I might just throw  
6 these out. We would like to see the unit get together and  
7 we want to see the Tubb reserves produced as best we can.  
8 Anything we work out, of course, would be subject to the  
9 approval of the working interest owners.

10 As Mr. Malaise testified, his best estimate that  
11 it will take eighteen months before we start injection. I  
12 think as everybody is aware of you have quite long delays  
13 in equipment orders. When you order equipment you have a  
14 lot of long delivery items, nine months on some valves and  
15 pumps.

16 So, I think that there is a possibility, I think  
17 that certainly there is a possibility, and that has to be  
18 approved by the working interest owners, but there certainly  
19 is a possibility that we could make exceptions to having  
20 for a period, say, eighteen months until those wells were  
21 actually needed in the water flood to the unit taking the well  
22 over in the water flood.

23 In some instances, not all, but in some instances,  
24 they might allow the operator time to recover his Tubb  
25 gas reserves.

1           The other possibility which I think has been eluded  
2 to that I would like to throw out and it would certainly take  
3 a lot of negotiations is if any of these three gas wells  
4 are drilled on acreage that has this problem, then, I would  
5 certainly hope that the unit and the operators could come  
6 to some agreement to share that well.

7           Now, there are a lot of details that would have to  
8 be worked out on that type of a sharing plan which has not  
9 been approached.

10           MR. BATEMAN: That's all of the questions I have,  
11 thank you.

12           MR. RAMEY: Any other questions?

13  
14                           CROSS EXAMINATION

15 BY MR. RAMEY:

16           Q. Mr. Tweed, I have a couple of questions here. You  
17 show, I think, something like one hundred thirty million  
18 dollars as gross profit from the two units?

19           A. Yes, sir.

20           Q. Twelve million dollars total expenses for the two  
21 units?

22           A. Yes, sir.

23           Q. Is there some way you could break that down on a  
24 unit basis how much for the --

25           A. It is approximately sixty-five, or sixty-four point

1 five and thirty-five point five.

2 Q So, the best of your knowledge the recovery would  
3 be on that basis and also the investment?

4 A The investment expense would be on that same basis.

5 MR. RAMEY: All right. Any other questions? You  
6 may be excused.

7 (THEREUPON, the witness was excused.)

8 MR. HINKLE: If it please the Commission, we have  
9 one other witness to call.

10 MR. RAMEY: Why don't we take about a ten minute  
11 recess?

12 (THEREUPON, the hearing was in recess.)  
13

14 MR. RAMEY: Mr. Hinkle, will you continue with your  
15 next witness?  
16

17 WILLIAM L. COLEMAN

18 was called as a witness by the applicants, and having been  
19 first duly sworn, testified upon his oath as follows, to-wit:

20  
21 DIRECT EXAMINATION

22 BY MR. HINKLE:

23 Q State your name, your residence, and by whom you  
24 are employed?

25 A My name is William L. Coleman and I live in Midland,

1 Texas, and I am employed by Atlantic-Richfield Company.

2 Q What is your position for Atlantic-Richfield?

3 A I am the Petroleum Land Man.

4 Q And has Atlantic-Richfield assigned any duties to  
5 you as a land man in connection with the East Blinebry and  
6 East Drinkard units?

7 A My duty was to secure the ratifications of the  
8 royalty and working interest owners to the Blinebry and Drinkard  
9 units.

10 Q Have you contacted all of the working interest  
11 owners and all of the royalty owners?

12 A Yes, sir.

13 Q And invited them to commit their interests to the  
14 unit?

15 A Yes, sir.

16 Q Have you prepared or has there been prepared under  
17 your direction certain exhibits for introduction in this  
18 case?

19 A Yes, there have been.

20 Q Are they the ones that have been marked Two Fifty-  
21 seven to Two sixty?

22 A Yes.

23 Q Refer to Exhibit Two Fifty-seven and explain what  
24 that shows?

25 A Two Fifty-seven in an exhibit where I have broken

1 out the ratification to the working interest participation  
2 of the East Blinebry unit. I did the same for the East  
3 Drinkard unit and then I combined the two units together on  
4 the sixty-four point five and the thirty-five point four  
5 percent combined interest.

6 On my exhibits, for example, the East Blinebry unit  
7 I have it broken down into phase one and phase two. I have  
8 done that for all three of them.

9 Q Referring back, now, to Two Fifty-seven, what is your  
10 total commitment there as far as -- well, let's take the  
11 combined participation?

12 A The combined commitment of the East Blinebry unit  
13 and the East Drinkard unit, phase one I have eighty-nine point  
14 four six three four-three percent.

15 In phase two I have eighty-seven point nine seven  
16 eight six-one percent.

17 Q Now, refer to Exhibit Two Fifty-eight A, B, and  
18 C and explain these?

19 A Two Fifty-eight A and B, these two exhibits are  
20 -- I have broken the royalty interest per tract -- I have the  
21 royalty interest ratified by tract and then the interest  
22 that hasn't been ratified and then over on the right-hand  
23 side of the exhibit I have handled it by the participation  
24 factor.

25 So, I have taken the interest that has been ratified

1 times that participation factor and I have come up with a  
2 unit participation factor by tract of the ratified parties and  
3 the unsigned parties.

4 Q Two Fifty-eight is the Blinebry phase one and the  
5 Blinebry phase two?

6 A That's correct. Two Fifty-eight B, I have done the  
7 same for the Drinkard for phase one and for phase two.

8 Then, in Exhibit Two Fifty-Eight C I have taken the  
9 combined participation in phase one and in phase two and those  
10 figures for the combined participation is eight point seven  
11 two four nine seven-five percent that have ratified in phase  
12 one.

13 The royalty interest that have ratified in phase  
14 two is eighty-three point nine nine seven oh seven-one percent,  
15 roughly.

16 Q Now, refer to Exhibit Two Fifty-nine and explain  
17 what that shows?

18 A Two Fifty-nine is an exhibit that I have taken a list  
19 of the unsigned royalty interest by tract. I have just stated  
20 the parties that have not ratified the unit agreement. This  
21 is actually -- I am accentuating Exhibits Two Fifty-eight A  
22 and B. This is the same exhibit except I have taken the names  
23 that are there and am making up these interests and laid them  
24 out by tract.

25 Q Now, refer to Two Sixty?



1           A.     Exhibit Two Sixty is the combined participation of  
2 the unsigned working interest owners to the East Blinbry  
3 unit and the East Drinkard unit and in phase one the combined  
4 participation of the unsigned working interest owners is  
5 ten point five three six five five-seven percent.

6           In phase two the combined participation of the un-  
7 signed working interest owners is twelve point oh two one  
8 three-nine percent, approximately.

9           Q.     These figures when added to those others add up  
10 to one hundred percent?

11          A.     That's correct.

12          Q.     Do you have any further comment with respect to  
13 any of these exhibits?

14          A.     No, sir.

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

16                 MR. RAMEY: Any questions of the witness?

17

18                         CROSS EXAMINATION

19 BY MR. RAMEY:

20          Q.     Let me ask one question. Do you happen to know  
21 what the royalty interest of Roy G. Barton might be?

22          A.     Roy G. Barton, yes, I could find that out.

23          Q.     Would it make a difference? We have a telegram here,  
24 "I do not now support the unit proposed by Atlantic-Richfield  
25 even though I may have previously agreed to it."

1 Signed by Roy G. Barton as a royalty interest  
2 owner.

3 A. I can tell you what his interest would be if he  
4 now decides not to join --

5 Q. I am really just interested in knowing --

6 A. You want to know if that would materially affect  
7 the interests?

8 Q. It wouldn't drop it below the seventy-five percent?

9 A. No.

10 MR. RAMEY: Thank you. Any other questions? You  
11 may be excused.

12 MR. HINKLE: That's all we have and at this time. I  
13 would offer into evidence these last exhibits -- Exhibits  
14 Two Fifty-seven through Two Sixty inclusive.

15 MR. RAMEY: They will be admitted.

16 (THEREUPON, the witness was excused.)

17 MR. RAMEY: Mr. Kellahin, you may proceed.

18 MR. KELLAHIN: Mr. Bateman would like to go first.

19 MR. RAMEY: All right, Mr. Bateman, you may proceed.

20 MR. BATEMAN: I have one witness who hasn't been  
21 sworn.

22 (THEREUPON, the witness was sworn.)

23  
24 MORRIS TODD

25 was called as a witness by the protestants, and having been

1 first duly sworn, testified upon his oath as follows, to-wit:

2

3

DIRECT EXAMINATION

4 BY MR. BATEMAN:

5 Q State your name, please, and your employment?

6 A My name is Morris Todd and I work for Texaco in  
7 Midland, Texas.

8 Q And how long have you worked for Texaco?

9 A Oh, approximately twenty-eight or twenty-nine years,  
10 almost.

11 Q What position do you currently hold?

12 A Petroleum Engineer with a specialty in working  
13 toward unitizations.

14 Q Are you familiar with the two units in question in  
15 this application here today?

16 A I am fairly familiar with them, especially with  
17 respect to our interests.

18 Q Have you previously testified before the Commission  
19 and made your qualifications a matter of record?

20 A Yes.

21 MR. BATEMAN: Is the witness qualified?

22 MR. RAMEY: Yes.

23 Q (Mr. Bateman continuing.) State specifically for the  
24 record what your exposure has been to the negotiations for  
25 these two units?

1 A. Well, I have attended several of the operators'  
2 meetings. Not all of them and even, probably, a few of the  
3 engineering committee meetings and certainly not all of  
4 them and participated in some of the negotiations.

5 Q. Over what period of time?

6 A. In the last two or three years and it is kind of hard  
7 to say. I would say over the last couple of years, anyway.

8 Q. Are you thoroughly familiar with the proposal in  
9 the unit operating agreement which has been proposed by this  
10 application?

11 A. Yes.

12 Q. Would you refer to Arco's Exhibit One D, which is  
13 a structure map but for purposes of the record would you  
14 identify what interests Texaco has?

15 A. Texaco only owns a working interest in one tract  
16 and operated by Mr. J. R. Cone, that's tract thirteen, and  
17 we have a combined participation in phase one of two point nine  
18 four five-seven percent and a combined participation in phase  
19 two of three point four five two six-four percent.

20 That's the only working interest we have in this  
21 unit.

22 We do have a small royalty interest in tracts sixteen  
23 and seventeen, the Getty-Williamson lease, and the Atlantic-  
24 Richfield-Barton lease.

25 Q. Now, the Cone lease is currently productive is it

1 not?

2 A. Oh, yes, sir.

3 Q. And directing your attention to the Tubb gas that  
4 is produced, what well or wells is that produced from and  
5 what is the market for it?

6 A. Well, the Tubb gas is produced from the Eubanks  
7 No. 2 in the northwest forty acres of the lease. It is right  
8 on the unit boundary and the market for that gas -- we have  
9 a contract whereby we deliver it to El Paso Natural Gas and  
10 it further goes into the interstate gas sales.

11 Q. Is there any casing head gases produced?

12 A. Oh, yes, there is casing head gas from the other  
13 formations and they are delivered by contract, I think, to  
14 Warren Petroleum.

15 Q. Is any oil produced from the Tubb in the Eubanks  
16 No. 2 or is it all gas?

17 A. Well, that is credited to the production of --  
18 along with the Tubb gas, yes.

19 Q. State in general terms, then, what the objection  
20 of Texaco is to the proposed unit?

21 A. Well, Texaco objects to the terms of the wording of  
22 Article 11.1 of the unit operating agreement. That, in  
23 reality, is the only objection. These terms, I hate to be  
24 so blunt, gentlemen, but we just can't live with these terms.  
25 They are, to us, untenable.

1 Q Well, describe Article 11 and the particular  
2 provision that you object to?

3 A Well, I know that this article has been read in  
4 length by Mr. Malaise but in brief it is this that each,  
5 with the exception of one forty-acre tract, that has been  
6 accepted that each forty-acre tract must contribute a well bore  
7 usable in the Blinbry and Drinkard formation or in the  
8 absence of doing so must pay a penalty of two hundred thousand  
9 dollars and these wells by that article are restricted to  
10 the use of the unitized formation exclusively.

11 Now, it does provide that you can choose to be  
12 carried if you want to, if you want to withhold your well,  
13 and instead of paying the two hundred thousand dollars it  
14 provides that you can be carried but carried on a total  
15 tract basis which is another objectionable feature to us.

16 That, in essence, is our objection to -- that, in  
17 essence, to us is a summary of Article 11 and what our  
18 objection is.

19 Q When you say carried on a total tract basis would  
20 you extend your remarks with respect to that?

21 A Well, if -- I don't know that it would happen but  
22 if that would happen in event of this happening as to the  
23 terms of this part of the article, if this Eubanks No. 2 was  
24 not contributed to the unit and we did not choose to pay the  
25 two hundred thousand dollars, according to the terms of the

1 agreement if it is approved like it is we would automatically  
2 be carried but the entire tract would act towards carrying  
3 this two hundred thousand dollars plus interest, I believe,  
4 as quoted in the agreement -- something like ten percent --

5 Now, that means four wells on Mr. Cone's tract  
6 would participate in carrying this interest.

7 Now, this could be another unfair thing and by  
8 contrast would be up here in the vicinity of Section 12. It  
9 notes that the Shell operated leases, in fact, I don't have  
10 the tract numbers but I think they are four, five, six,  
11 seven, eight, and nine, something like that.

12 If one of those wells should be under the same  
13 circumstances and should be withheld that well, by itself,  
14 and the participation of that well, by itself, would act  
15 towards paying off the two hundred thousand dollars.

16 Whereas, I say again, if Mr. Cone's lease were  
17 subjected to these same terms, why, all four wells would be  
18 subject to paying the two hundred thousand dollars. We think  
19 that it is just a little bit unreasonable.

20 Q That's because one tract may be just forty acres  
21 and the other one hundred and sixty?

22 A That's one hundred and sixty acres.

23 Q Why, specifically, does Texaco object to Article 11?

24 A Well, we have a contract for the production and  
25 sale of this Tubb gas. We cannot get out of this contract

1 and we have no intention to try to do so so long as there is  
2 economic Tubb gas production.

3 Now, I know the engineering committee has made  
4 estimates, I think, in one table that they said that the  
5 remaining reserves for the Eubanks No. 2 were approximately  
6 after the date of April 1st, 1975, were approximately six  
7 hundred and thirty-nine million barrels -- M.C.F. -- six  
8 hundred and thirty-nine million cubic feet.

9 But our estimates lately and according to the  
10 trend of the well indicates that it is very likely that this  
11 well will last much longer and might produce as much as eight  
12 or nine hundred million cubic feet of gas.

13 Now, we don't believe that is is exactly fair --  
14 we know that there has been testimony put on here that we  
15 can contribute this well to the unit and pay our penalty of  
16 two hundred thousand dollars or drill a well for as testified  
17 was three hundred and six thousand dollars and, of course,  
18 that payment of two hundred thousand is supposed to be a bargain  
19 but we can't see it that way.

20 But we can't see why with something that we have in  
21 hand here, sales, a contractual obligation, for a profitable  
22 sale that for the sake of participating, being forced to  
23 participate, into a proposed unit that we should -- that the  
24 Tubb gas operation should be subjected to a two hundred thousand  
25 dollar penalty and make that an uneconomic venture.



1 We just can't -- it is just not palatable.

2 Q You said an uneconomic venture, what specifically,  
3 are the prospects of drilling other wells at today's prices  
4 to produce the Tubb gas to get the reserves?

5 A To do that or to pay the two hundred thousand  
6 dollars, either one, makes it uneconomical to us.

7 Q Isn't it true by contrast, you must produce the  
8 Tubb gas for sale to the purchaser on the contract?

9 A Yes, sir. We must comply with this contract.

10 Q So, you don't have an option of simply contributing  
11 a well bore and shutting in the Tubb gas, is that correct?

12 A No, sir, we must comply with our contract.

13 Q Are there Abo reserves also involved?

14 A Well, there is Abo potential.

15 Q Now, that potential, is that potential great enough  
16 to make it economically feasible to drill a new well?

17 A No, sir, at the present time we don't believe it is  
18 economically feasible to drill a well to the Abo.

19 But it would be economically feasible to deepen  
20 down and open the Abo for a test.

21 Q But to produce the Abo, if it were productive, would  
22 require at least a provision for dual completion would it  
23 not or multiple completion?

24 A Yes, this is right.

25 Q What is your opinion with respect to that possibility,

1 that is, the possibility of multiple completions?

2 A. We realize that every unit is different and has its  
3 own peculiarities and offers its own difficulties. But we  
4 further believe that this target of nine point eight million  
5 barrels, which has been testified to here, offers an attractive  
6 potential if it can be achieved.

7 We believe that dual completions are feasible and  
8 in spite of what the testimony has been we believe that  
9 cooperation is feasible.

10 We believe it is very highly feasible and is a  
11 solution, one solution, to this you might say dispute we have  
12 is to offer a dual completion privilege into the agreement.

13 Article 11 would have to be modified to provide  
14 for this. It would have to be modified and further in this  
15 particular case I know such provisions are often written into  
16 an agreement and it is more often that they are written into  
17 than they are written like this one where the wells must be  
18 contributed to the exclusive use of the unit.

19 Now, most of the time such provisions are put into  
20 agreements and they say that in the event of a conflict between  
21 the unit operation and the non-unit operation that the unit  
22 operations will prevail the non-unit operators have got to go.

23 In this particular case we would recommend highly  
24 that the provision be written which has also been done in  
25 many agreements, it is nothing new, that a dual completion

1 privilege be afforded but that the operator of the non-unit  
2 production have every right in the well bore just like the  
3 unit operator.

4 The non-unit operator doesn't have preference and  
5 the unit operator would not have preference and neither one  
6 could kick the other one out they must learn to get along  
7 and they can do it.

8 Now, this oil industry has surmounted a lot of  
9 problems and should present no difficulty to a company as  
10 experienced as Atlantic-Richfield.

11 Q. This has been your experience that this has been done  
12 successfully elsewhere?

13 A. Yes. If I had to I could name several units in west  
14 Texas. I cannot name one in New Mexico.

15 Q. Would such a modification interfere in your opinion  
16 with the unit operations, that is, the provision of dual or  
17 a multiple completion.

18 A. Well, it would probably make it a little more  
19 difficult in that it would require a little more close  
20 cooperation but it is not impossible by a long shot.

21 Q. Do you have any other recommendations with respect  
22 to the modification of Article 11?

23 A. Yes, which one thing I spoke of before, the carrying  
24 provision. We strongly think that it should be further  
25 modified that in the event a well bore even with the dual

1 completion privilege with the well bore not contributed --  
2 like to cite an example of Mr. Cone's lease --

3 If the Eubanks No. 2 were not contributed that we  
4 would have the privilege of setting that well, that forty-acre  
5 tract out as a separate tract and have it be carried on its  
6 own merits.

7 That way, if Mr. Cone's lease is forced into a unit  
8 then the other three wells can benefit from any benefit the  
9 unit has got to offer assuming that it is going to be  
10 successful and then the carrying would be done by the tracts  
11 around the Eubanks No. 2 which could be designated as tract  
12 thirteen A, for example, and there is an update within the  
13 engineering data to divide that participation up on the  
14 same formula with the total combined of thirteen and thirteen  
15 A equaling what the participation is today.

16 Q Now, getting back to the question of drilling another  
17 well to the Tubb, I may have asked you this but I want to  
18 be specific about it, do you have an opinion with respect  
19 to whether it would be economic to drill a new well based  
20 on the increased reserves you estimate which apparently is  
21 greater than the engineering committee's?

22 A Well, this is understandable on the gas reserves  
23 many times no two engineers come up with the same. They  
24 come close but they don't come the same.

25 I know it's not economical to drill a new well to

1 recover our Tubb reserves and comply with our contract.

2 Q How long do you think it would take to produce the  
3 balance of the reserves in the Eubanks No. 2?

4 A Well, continued operations can best tell that, of  
5 course, but I think Mr. Tweed testified four to eight years.  
6 I think Mr. Cone's well being one of the best wells would be  
7 on the eight-year side and we can see extrapolations as much  
8 as fiteen or sixteen years.

9 Q Now, let me draw your attention to the proposed  
10 unit operations.

11 Do you have any comments concerning the method,  
12 particularly, of production of the Blinebry and Drinkard gas  
13 caps?

14 A Well, we can't help but make an observation that in  
15 order to successfully flood any reservoir you are going to  
16 have to pressure that reservoir up.

17 Well, here on three spots which are as yet unlocated  
18 there was proposed to be up to three gas wells. I think it  
19 was testified that they would drill one and that that would  
20 dictate whether to drill another and then another.

21 But as yet they are just generally located on the  
22 west side. Well, at the same time, for example in the Blinebry,  
23 there will be a depletion of the gas up in the Blinebry gas  
24 cap at the same you are trying to pressure up the oil column  
25 and that just doesn't make sense.

1 Now, I know that the log says that the Blinebry is  
2 divided into six or seven zones. I think there was some  
3 testimony here that said that the gas cap in the Blinebry  
4 was separate because of some pressure differential. We are  
5 not familiar with the pressure differential, whether it is  
6 a differential of a thousand pounds or ten pounds, we don't  
7 know. And it wasn't quoted.

8 But from the looks of the logs and the observation  
9 of the pool that it is hard to believe that this is separated.  
10 It is hard to believe that mother nature knew that man drew  
11 those lines that said those zones are separated.

12 So, therefore, to us trying to pressure up that  
13 underlying oil column is immediately to go up into the gas  
14 cap and do two things; very likely water out your brand new  
15 gas well, which you are going to spend a million three hundred  
16 and sixty thousand dollars for; and lose oil from the oil  
17 column to the gas cap.

18 Now, the same thing is going to happen with the  
19 Drinkard, too. That they are not separate.

20 We think it would be better and we would propose  
21 along with the modification of Article 11 -- now, we realize  
22 to modify Article 11 that you are going to have to go around  
23 and sign up again, but for a target of nine point eight million  
24 barrels that shouldn't be -- this should be a welcome task.

25 You see, we think negotiations are very nearly

1 complete and why they are not complete is because all of  
2 the terms of all the agreements haven't been agreed to.

3 But we believe that the current wells producing from  
4 the west side could deplete that gas cap. We believe that  
5 there can be afforded dual completions, that is, without drilling  
6 the three wells.

7 We believe that there can be dual completion and with  
8 cooperation that can be done and we can deplete our Tubb gas  
9 reserves and comply with our contracts.

10 Furthermore, there is really nothing that we see  
11 that you start in the northeast one half or the west one half -  
12 or the east one half and begin your water flood there.

13 I know there was an objection to a pilot flood but  
14 what size is a pilot flood? Is it just four wells with one in  
15 the center with producers around, is that the pilot flood?

16 Why can't you develop half of this lease and let  
17 operations in the future determine when you progress from  
18 east to west. This way we could all share our contracts  
19 without a ridiculous penalty.

20 We could all share in the benefits of the unit, if  
21 this is not a high risk unit which we, incidentally, believe  
22 that it is better than average risk.

23 We believe the problems could be worked out with  
24 cooperation under the direction of the Commission, of course.

25 Q In your opinion will the approval of the unit

1 agreement as now proposed result in the waste of, potential  
2 waste, of the Tubb and Abo reserves?

3 A Well, if we should shut in, have to shut in, the  
4 Abo or not have the privilege of testing the Abo, then, of course  
5 it would be wasting it.

6 If we should have to shut in the Tubb gas, which  
7 we can't do, but assuming we did, it would be a physical waste  
8 of reserves there.

9 If we have to pay the two hundred thousand dollar  
10 penalty for the privilege of complying with our contract  
11 that is economic waste.

12 Q Do you have anything further to add?

13 A Well, there is one other thing in modifying Article  
14 11.1 or 11, generally, of the unit operating agreement which  
15 is our main objection -- in doing so as well as affording a  
16 dual completion privilege with the non-operator having equal  
17 rights with the unit in the well bore it ought to be also  
18 provided that you get the privilege of exploiting the Abo or  
19 any non-unitized reserves and those rights stay right there  
20 along with those that are producing now.

21 Like on our lease, the Tubb, this ought to be so  
22 provided and I know Atlantic-Richfield if they were agreeable  
23 and if it was agreeable to make this modification, from  
24 Texaco's viewpoint only, now, -- to this modification, now, I  
25 know that they have a lot of legal talent in writing agreements



1 and if not we can write it for them, and we will be glad  
2 to do so --

3 We want to say that we must be in a position  
4 because we operate so many units and we join so many units  
5 that we can't oppose unitization.

6 But one solution -- another solution to this thing  
7 would be and this is a more than average difficult situation  
8 we realize, especially if you are not willing to assume a  
9 cooperative attitude, is that the solution as presented today  
10 is essentially the only tracts that are not contributing and  
11 are not signed up at all are tracts thirteen and fifteen.

12 I don't know what the legal procedure would be but  
13 if this were changed to a voluntary application and omit  
14 thirteen and fifteen you could go about your business and get  
15 after eight point six million barrels instead of nine point  
16 eight or if you want to penalize that for all of the great  
17 losses you have testified to, or Atlantic-Richfield has  
18 testified to, you can penalize it down to eight million  
19 barrels and that is still going to offer a very attractive  
20 target.

21 I think Texaco would go after it were our positions  
22 reversed.

23 Also, I would like to say that if our positions  
24 were reversed I would hate to hear -- I have had enough  
25 experience myself in negotiating in over twenty years with

1 Atlantic-Richfield, including others, which have all ended  
2 very friendly, and we have all accomplished something  
3 every time, but I can just hear them squeal if our situations  
4 were reversed and we were going to pin that two hundred  
5 thousand dollar penalty on them.

6 MR. BATEMAN: Thank you. No further direct.

7 MR. RAMEY: Mr. Hinkle?

8

9 CROSS EXAMINATION

10 BY MR. HINKLE:

11 Q I believe you stated at the outset here that you  
12 had participated in some of the conferences and negotiations  
13 towards getting these units together?

14 A Yes, sir.

15 Q Were you the designated representative of Texaco?

16 A I negotiate for Texaco's Midland Division office,  
17 yes, which includes southeast New Mexico.

18 Q Did you attend all of the meetings?

19 A No, sir, I didn't attend all of the meetings because  
20 there is usually more than one of us working and somebody  
21 else attended some of them.

22 Q Has Texaco specifically disapproved the formula  
23 for participation under these units?

24 A We have not disapproved it but we have not approved  
25 it.

1 Q. You haven't disapproved it?

2 A. That's correct.

3 Q. Is that also true of the participation between the  
4 two zones?

5 A. We have not objected to the participation, sir. We  
6 have not objected to the participation at all.

7 Q. Okay, fine. Now, what interest does Texaco have  
8 in tract number thirteen?

9 A. Sixty-six one sixtieth of eight-eighths undivided  
10 working interest.

11 Q. What does that amount to percentage-wise?

12 A. In the participation in the unit?

13 Q. No, in the --

14 A. It is forty-one point two-five percent.

15 Q. I am talking about the ownership of tract thirteen?

16 A. We have forty-one point two-five percent.

17 Q. Now, I take it from your testimony that the main  
18 objection is that you want to continue to produce the Tubb  
19 gas well?

20 A. Sir, we have to.

21 Q. Because of your contract with El Paso?

22 A. Yes, sir.

23 Q. Of course, drilling a substitute well under the  
24 provisions of Article 11 would still permit you to continue  
25 to produce that gas and honor your contract?

1 A. But this is a ridiculous solution business-wise  
2 in our opinion, sir.

3 Q. That's your opinion?

4 A. Yes, sir.

5 Q. Now, I believe you stated that Texaco could not  
6 live with Article 11?

7 A. That's right.

8 Q. Now, if Texaco pays forty-one point eighty-five  
9 percent of what -- what is it -- of the two hundred thousand?

10 A. Forty-one point two-five percent.

11 Q. They would pay what?

12 A. Something like eighty-six thousand five hundred  
13 dollars or something like that.

14 Q. Now, if the evidence shows here that over the twenty-  
15 one years that these units will probably be in effect that  
16 tract number thirteen will probably net a profit of about  
17 seven million dollars.

18 Do you think that Texaco could live with the payment  
19 of eighty-three thousand seven hundred when they are going  
20 to get it back in a year or two?

21 A. Sir, we object to that entirely because we have  
22 this Tubb gas contract on the one hand and we have the Blinebry  
23 unit and the Drinkard unit on the other hand and when we can  
24 feasibly share both without an undue penalty --

25 Q. You are going to get it back --

1           A.     -- we hope we get it back if the unit is successful  
2 but at the same time why be penalized just for the sake  
3 because somebody says we must have the exclusive rights to  
4 these wells. That's an opinion in itself, sir.

5           Q.     Don't you think it is fair since about eighty-six  
6 percent of the working interest owners have agreed?

7           A.     No, sir, that doesn't mean anything, sir. I have  
8 been in the business a long time on unitizations and I have  
9 participated under the compulsory laws of putting units  
10 together and in the other two states north of the Red River  
11 and in Oklahoma and Kansas and I have seen one percent of  
12 the people that show that they have been treated unfairly --  
13 and this can defeat a unit.

14                     It's not unreasonable -- it is reasonable to think  
15 that eighty-seven percent can have a little different outlook  
16 than does tract thirteen.

17           Q.     Isn't that the purpose of the statutory unitization  
18 provision to take care of these situations?

19           A.     No, sir, it's to drag in reluctant dragons.

20           Q.     Now, I think your testimony indicated that you  
21 thought you could dual or triple these wells?

22           A.     Now, I didn't use the term "triple complete". I  
23 said dual.

24           Q.     Dual, okay. Would the dual completion reduce the  
25 amount of fluid a well would be able to produce from the

1 unitized formation?

2 A. Well, sir, just like putting this thing together,  
3 I think it was testified that they had some twenty-nine  
4 formulas before they got one.

5 There is a lot of give and take in these units and  
6 this would be another give and take situation to solve a  
7 problem here that exists.

8 Now, I don't know. I haven't heard any testimony  
9 as to what restricted volumes you would get if you had --  
10 there hasn't even been any plans for dual completion and what  
11 size tubing and what volumes you would be lifting and how  
12 you would be restricted. There have been no plans.

13 I am not here to offer you a dual completion plan,  
14 that is, a diagram. But I have noticed that there have been  
15 no plans testified to as to how it would restrict it.

16 Q. You made some reference to testing the Abo and  
17 producing from the Abo and deepening the well and when was  
18 Mr. Cone's well drilled, the one that Texaco owns?

19 A. I would rather they would testify to that but I  
20 think it was around in the early 1950's.

21 Q. Why wasn't the Abo tested in these wells?

22 A. There, again, you are getting to where I am not an  
23 expert but it has been produced there. I think there was one  
24 well that was credited to having produced for fifteen  
25 thousand barrels and was sealed off with the idea of meeting

1 an offset obligation in the Drinkard that had more prolific  
2 reserves and more profitable production -- you can't criticize  
3 a man for trying to make more money.

4 MR. HINKLE: That's all.

5 MR. RAMEY: Any other questions of the witness?  
6 He may be excused.

7 (THEREUPON, the witness was excused.)

8 MR. RAMEY: Mr. Kellahin?

9 MR. LUCERO: Mr. Kellahin, excuse me but in view of  
10 the time of day and I know that we can't anticipate how long  
11 cross examination will take but how long will you propose the  
12 rest of your case will take?

13 MR. KELLAHIN: Until about four-thirty.

14 MR. LUCERO: Is there any rebuttal or rebuttal  
15 witnesses that you can anticipate?

16 MR. HINKLE: If there are it will be very little.

17 MR. LUCERO: Well, the reason we are asking is because  
18 tomorrow we have an Energy Board meeting and we wanted to  
19 properly allocate our time -- if we had to go into tomorrow.

20 MR. KELLAHIN: I see no reason why we can't finish  
21 tonight, you know, around five o'clock.

22

23 JOHN C. BYERS

24 was called as a witness by the protestants, and having been  
25 first duly sworn, testified upon his oath as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Please state your name and by whom you are employed and in what capacity?

A John C. Byers of Lubbock, Texas, and I am employed by J. R. Cone as an engineer.

Q Mr. Byers, have you previously testified as an expert witness before the Oil Conservation Commission of New Mexico?

A Yes, I have.

Q And have your qualifications as an expert engineer been accepted and made a matter of record?

A Yes.

Q Mr. Byers, have you made a study of and are you familiar with the facts surrounding this particular application on behalf of Atlantic-Richfield?

A Yes, I have.

MR. KELLAHIN: If the Commission, please, are Mr. Byers' qualifications acceptable?

MR. RAMEY: Yes, they are, Mr. Kellahin.

Q (Mr. Kellahin continuing.) Mr. Byers, would you commence your testimony by giving us a brief indication of the particular wells operated by J. R. Cone within what we call tract thirteen and what their history has been?

A Tract thirteen of the proposed unit, as Mr. Todd has testified, was drilled in the early 1950's. The No. 1



1 Well was drilled to and completed in, it was a dual, in the  
2 Blinebry and Drinkard formations.

3 The No. 2 Well was initially completed in the  
4 Blinebry and Drinkard formations and subsequently was plugged  
5 back to the Drinkard to make a dual completion which is its  
6 current status of Drinkard and Tubb dual.

7 The No. 3 Well was completed in the Blinebry and  
8 Drinkard formations but upon initial completion for approximately  
9 one year that well was produced by gas lift and natural flow  
10 from the Abo formation.

11 During that year it produced in excess of fifteen  
12 thousand barrels, an average of some forty barrels a day. It  
13 was shut in for the purpose of plugging it back and completed  
14 in the Drinkard formation for economic purposes and to  
15 protect offset drainage.

16 The No. 4 Well was initially drilled and completed  
17 in the Blinebry and Drinkard formations but during the process  
18 of completion as evidenced on the Form C-105 filed with the  
19 Commission under the signature of L. O. Strong on February 1st,  
20 1960, set out an open hole untreated test of the Abo formation  
21 during which the well flowed six point five barrels of oil  
22 per hour with a three-quarters choke after having been treated  
23 with two thousand gallons of mud acid.

24 It was subsequently treated with twenty thousand  
25 gallons and a frack job and was again tested at the rate of

1 seven barrels an hour with a three-quarters choke. This  
2 is, evidently, a producible well.

3 This is an open hole section and the well was  
4 subsequently plugged back and completed and has been produced  
5 ever since from the Blinebry and Drinkard.

6 The Tubb formation for the No. 2 is presently  
7 producing approximately ten million M.C.F. a month, about one  
8 hundred twenty to one hundred thirty million a year.

9 The engineering subcommittee of the proposed East  
10 Blinebry and Drinkard units in their extrapolation of the P  
11 over Z curves has credited this well with approximately six  
12 hundred -- or seven or eight hundred thousand M.C.F.

13 We concur with Mr. Todd that in our opinion this  
14 well could well represent in excess of a billion M.C.F.

15 Our No. 4 Well initially was so completed that upon  
16 exploitation of the Blinebry and Drinkard zones we could  
17 plug it back and recomplete the well as a Tubb-Abo dual.

18 Q Let me direct your attention to paragraph 11.1 of  
19 the Arco proposed unit operating agreement and ask if you  
20 will direct your comments to that particular paragraph?

21 A Okay. That's the confiscation clause.

22 Q What, if any, objection does J. R. Cone have to that  
23 particular paragraph?

24 A In good faith, Mr. Cone and the other joint operating  
25 owners of this lease, have developed a lease for the purpose

1 of the exploitation of the natural resources therefrom in  
2 the most economical methods known to them at the time.

3 In good faith they have produced various zones.  
4 We have two remaining zones to be exploited, the Tubb and  
5 the Abo.

6 We are convinced that upon depletion of the Tubb  
7 gas from the No. 3 Well it may well be converted to a Tubb  
8 completion of the No. 4 Well and could yield an additional  
9 two to three billion feet of gas.

10 There is no reason to expect in the past history  
11 that a completion in the Abo formation from the No. 3 and the  
12 No. 4 well could not yield fifty to seventy-five thousand  
13 barrels each.

14 These reserves would definitely be denied the working  
15 interest owners of this tract if the provisions of Article  
16 11.1 are invoked.

17 Q. Would you elaborate for us in what way they would  
18 be denied?

19 A. We would be faced with a penalty of paying up to  
20 four hundred thousand dollars, at a minimum, for two wells  
21 to the unit to provide ourselves with two bore holes through  
22 which we could deplete these reserves.

23 The other alternative would be the drilling of at  
24 least two more holes at the cost of some three hundred thousand  
25 dollars.

1           Therefore, the reserves left here would not create  
2 a favorable economy on the basis of this cost. Therefore,  
3 this reserve would be denied the owners and in our opinion  
4 would be a loss of natural resources.

5           Q.     Let me direct your attention to what we have marked  
6 as Cone Exhibit Number Two and ask you to identify it and  
7 explain what information it contains?

8           A.     Exhibit Number Two was taken from the engineering  
9 subcommittee report dated, I believe, it was July of 1971, I  
10 believe, and probably it is on file in which we have simply  
11 set out on this typed section the Blinebry unitized formation  
12 in the interval fifty-five fifty through six thousand and seven  
13 feet and the unitized section for the Drinkard formation in  
14 the interval fifty-four fifty to sixty-seven thirty feet and  
15 show sandwiched in between the Blinebry and the Drinkard is the  
16 Tubb gas zone which is productive.

17                 Immediately below the Drinkard and separated by  
18 no more than seventy feet is the Abo formation which is  
19 productive of oil and gas.

20           Q.     You have heard the testimony today from the Arco  
21 witnesses with regards to the flooding of the Blinebry and  
22 the Drinkard formations. In your opinion, Mr. Byers, what,  
23 if any, risk is presented by that water flood with regard  
24 to the Tubb production?

25           A.     I think the techniques that Atlantic has proposed

1 are sound. If a leak has occurred in a string of casing or  
2 behind a string of casing or a crack in the formation this  
3 is a proposal of surveys to find this leak and are sound.

4 What happens -- how frequently are we going to  
5 operate these surveys? Once a month, every six months or  
6 every year?

7 In the process of injecting into one of these wells  
8 at the rate of four to eight hundred barrels a day and we lose  
9 half of that water over a six-month period, where does it  
10 go? In the Tubb.

11 With the spacing of wells that is necessary for the  
12 operation of this unit it is not unconceivable that we could  
13 drown out the Tubb gas, or essentially drown it out, in  
14 this period of time.

15 Q. What period of time are you referring to?

16 A. I am estimating from six months to a year surveys  
17 and I don't think it would be economically justified much  
18 more often than that.

19 Q. In order to avoid watering out the Tubb how often  
20 would you recommend that the surveys be run regardless of the  
21 economic factor?

22 A. From our point of view we would like them every  
23 day.

24 Q. Within a reasonable period of time, Mr. Byers, what  
25 would that be?

1 A. I would think at least once a month.

2 Q. I direct your attention to what we have marked as  
3 Cone Exhibit Number Three and ask you to identify it?

4 A. That is an economic prognosis prepared in my  
5 office in which we have generalized the economic potential  
6 of this lease to the working interest owners, seven-eighths  
7 working interest owners, from the remaining reserves, primary  
8 reserves, that are available -- a bird in the hand so to  
9 speak -- to these operators right now.

10 The result -- the recovery of these would probably  
11 require about twenty years. It would also result in a  
12 net profit to these people of about seven million two hundred  
13 thousand dollars.

14 Now, on the other hand under the proposed unitized  
15 operation plan and in accordance with the participation  
16 equation and the projected production schedule we have estimated  
17 what the implication is under unitization and we find that  
18 we end up with a net profit of ten million eight hundred  
19 and sixty-four thousand dollars, an increase of some two and  
20 a half million dollars, almost three million dollars.

21 But the cost of development reduces this to a net  
22 gain of one million point three million. We haven't yet  
23 introduced any risk in this operation.

24 What if the project fails by thirty-seven percent?  
25 This could happen even if we have to leave a twenty acre

1 border on the outside of the thing because of the failure to  
2 arrive at satisfactory offset injections agreements.

3 Q Let me make sure that I understand this eight and  
4 a half million dollar figure.

5 What parameters have you used? I assume you have  
6 used the same set of figures that Mr. Tweed and Arco used  
7 in deriving the reserves?

8 A Yes. I possibly used slightly different crude price  
9 numbers. I used the crude values of a little earlier date.  
10 I used eleven dollars and some odd cents for the oil value.

11 We used Arco's fifty-five cents gas value and  
12 eleven eighty-five for the oil value. We used the existing  
13 current values for the operation of the Cone Jalmat lease.  
14 We are currently receiving twelve dollars and sixty-one cents  
15 for the oil. We are receiving forty-seven cents for casing  
16 head gas. We are receiving eighty-seven and a half cents  
17 for gas well gas.

18 Q In these calculations did you use the nine point  
19 eight million barrels of recoverable reserves?

20 A No, we actually used a slightly larger figure that  
21 came out in an earlier report than the last one that I had.  
22 That was just under ten point -- I think it was ten point  
23 six million barrels.

24 Q Go ahead.

25 A We feel very well that it could be as much as

1 to thirty-five or thirty-seven percent risk factor in the  
2 failure to perform.

3 Q Upon what do you base your opinion that there is  
4 a reasonable chance of a thirty-seven percent risk factor?

5 A We looked at the projected production from this  
6 unit as proposed by Arco and I think it is a good projection  
7 and a very sound projection.

8 We placed that on a well production basis. We find  
9 that we anticipate the unit peaking out at a production of  
10 around thirteen hundred barrels per month per well.

11 We correlated the results of the Gulf Central  
12 Drinkard unit in time with this and we find that it reached  
13 a peak production of only two hundred and eighty barrels  
14 a well month and it is currently averaging less than two  
15 hundred.

16 We feel, then, this discrepancy between the actual  
17 performance of the Central Drinkard unit and this one even  
18 though it is not developed fully and it would certainly  
19 indicate that it has only performed about twenty-five percent  
20 of what we had hoped for on this.

21 Do we think that we are that much better than they  
22 are and can we develop that much more? I think we have got  
23 to ask ourselves the question before we spend the money.

24 Q I direct your attention to what we have marked as  
25 Cone Exhibit Number Four and ask you to identify that?



1           A.     That is a copy of the New Mexico Oil Conservation  
2 Commission Form C-105 in which is set out in the bottom of  
3 the first page the test of the Abo formation in open hole  
4 section of the well of our Eubanks Well No. 4.

5           Q.     Please refer to what we have marked as Cone Exhibit  
6 Number Five and identify it?

7           A.     That is a plat taken from the East Blinebry-Drinkard  
8 unit documents on which we have averaged essentially the same  
9 data that Arco did in their Exhibit One Hundred Sixty-seven  
10 or something like that -- set out production.

11                     We have set out the average production as barrels  
12 per well per day and connected this data with Iso production  
13 contour lines which indicates that a line approximately down  
14 the middle of this divides the wells on the east as producing  
15 less than five barrels per day and those on the west greater  
16 than five barrels a day.

17                     Our data curves are very close with Arco's. The  
18 only difference -- I see a vast difference between the west  
19 side production and the eastside production. The east side  
20 is approaching economic depletion. The west side is not.

21                     At the present rates of decline probably some six  
22 to seven to eight years might be required for the west side  
23 production to reach the average production level that the east  
24 is experiencing today.

25                     I think this plat dictates that Arco is absolutely

1 correct. We need to look for secondary recovery. We need  
2 to look for pressure maintenance in that area.

3 But we do not need to do it with high risk at the  
4 expense of known reserves in the western and southwestern  
5 portion of the unit.

6 Q In your opinion, Mr. Byers, does the unit area  
7 contain acreage for which it would be premature to commence  
8 water flood operations?

9 A Not if the process, itself, was proven and the risk  
10 was low.

11 Q In your opinion based on the information you have been  
12 told today and on your previous studies what, if any, adverse  
13 affect would the unit operation have on tract thirteen  
14 operated by J. R. Cone?

15 A It will adversely affect it if it is caused to be  
16 included in the unit under the plan of operation under the  
17 existing unit agreement --

18 It will cause the loss of proven primary reserves.  
19 It will cause us to become in violation of Federal Power  
20 Commission rules and regulations and laws requiring us to  
21 deliver Tubb gas, high pressure gas, to El Paso Natural Gas  
22 Company.

23 It will place us in a high risk, in our opinion, as  
24 to the ultimate success of this thing.

25 Q Redirecting your attention to Cone Exhibit Number

1 Three, what in your opinion is your best estimate of the  
2 economic loss that J. R. Cone would suffer if tract thirteen  
3 is included within the unit operations?

4 A. I think that if it is included and is successful  
5 to the extent of seventy-three percent of projected and  
6 that because of inaccessibility of the known producing  
7 remaining primary reserves in the Tubb and the Abo, we lose  
8 fifty percent of that, and we are going to end up in twenty  
9 years exactly with the same amount of money in our pockets  
10 that we would have had had we continued to operate this thing  
11 on the primary methods.

12 Q. All right. You have indicated a risk of loss of  
13 the water flood operations of fifty percent as the last entry  
14 on Exhibit Number Three. What do you mean by the entry?

15 A. If we are forced into this it has been indicated  
16 that eighteen months to three years, probably, can be expected  
17 before injection will start in the western portion of this  
18 unit.

19 I would be assume, then, that Arco would cooperate  
20 with us to the extent of allowing us to at least deplete our  
21 proven Tubb and a portion of our Abo reserves during that  
22 time through multiple completions.

23 If it requires us seven to ten years to deplete all  
24 of that, then, let's assume that we may get half of it during  
25 this grace period that they may grant us.

1 Q Let me direct your attention to Cone Exhibit  
2 Number Six and ask you to identify it and explain what it  
3 contains?

4 A We referred on the date on this Exhibit a few  
5 minutes ago. The upper dashed curve is taken from Arco's  
6 projected production history, anticipated production history,  
7 from this property and based on sixty wells and based on  
8 barrels of production per well month.

9 The bottom curve is simply a summation of the total  
10 production from the Gulf Central Drinkard unit on a barrel  
11 per month basis.

12 The total barrels produced divided by the number of  
13 barrels producing that month. The top curve peaks out at about  
14 thirteen hundred barrels per month per well and the bottom  
15 curve as evidenced peaks out at about two hundred and eighty --  
16 currently peaks out at about three hundred eighty to three  
17 hundred ninety, currently, and about two hundred eighty well  
18 barrels a month, indicating that the performance of the  
19 Central Drinkard unit of twenty-six hundred acres with fifty-  
20 three wells comparable with the three thousand acres that we  
21 are looking at here and sixty wells, is not real favorable.

22 Q I see.

23 A We have got some risk involved.

24 Q What is the significance -- I am having trouble  
25 reading my copy -- what is the significance of, I believe,

1 of twenty-five point five something percent?

2 A. That is simply the actual performance, summation  
3 of production, during that cross hatched period -- the  
4 summation of production under the dashed curve divided by  
5 the summation of -- divided into the summation of production  
6 of the solid curve.

7 Which is to say that during this period the Central  
8 Drinkard unit on a per well basis has recovered about twenty-  
9 five percent of what we hoped to get out of the Blinebry-  
10 Drinkard unit.

11 Now, it is also evident that they have not filled  
12 up in all of this time and I think we may well anticipate  
13 the same thing with respect to our gas cap.

14 They have been injecting for over five years and  
15 at this time have injected three barrels of water for every  
16 barrel of oil that was ever taken out of it.

17 They are getting seventy-five percent water cut in  
18 production now and they are still producing at twenty-three  
19 thousand to one G.O.R.

20 I think we have a long ways to go before we fill it  
21 up. I think it will work but I think it is going to take a  
22 lot longer than we are looking at.

23 Q. Now, how does the operation of the Gulf Central  
24 Drinkard unit compare to the proposed Blinebry-Drinkard unit  
25 to be operated by Arco?

1 A. I am not familiar with the operation of the  
2 Central Drinkard unit.

3 Q. This is just simply an indication --

4 A. An indication from raw production data.

5 Q. Would you refer to Exhibit Number Seven and identify  
6 it, please?

7 A. Exhibit Number Seven is essentially the same data.  
8 Curve No. 1 -- that is our projection, rate of income from  
9 the future, primary production -- just leave us alone with  
10 the Eubanks lease and this is the history that we are going  
11 to follow over the next twenty years.

12 Curve No. 2 is that which our revenue should follow  
13 if we are included in the East Blinebry and East Drinkard  
14 units in accordance with the participation percentages that  
15 are visualized and the operations hoped for which shows a  
16 very favorable economy.

17 If we reduce that economy by fifty percent, again,  
18 as risk, we turn out the losers.

19 Q. Go ahead --

20 A. The two numbers come out exactly the same.

21 Q. You heard Mr. Tweed's testimony earlier this after-  
22 noon that he anticipated a ratio of primary to secondary  
23 recovery of approximately seventy percent and that he  
24 indicated the upper and lower ranges of that projection could  
25 be anywhere from a low of forty to fifty percent to a high

1 as, I believe, a hundred percent?

2 A. Yes, I would concur because in the analysis of  
3 this I reviewed their data and I think they did a beautiful  
4 job. I think their numbers are right. But even though  
5 our numbers are in the machine and they are right they still  
6 have to prove this in the reservoir.

7 Q. What will be the economic impact on the J. R. Cone  
8 property if the unitized operation has a forty or fifty  
9 percent projected efficiency?

10 A. It will be an economic loss to us -- at the best  
11 a break even thing.

12 Q. At what point will it break even?

13 A. Oh, it will probably be some years before it will  
14 actually net anything because the expenditures because a  
15 successful -- the difference in this, I think we have all got  
16 to realize this, that if we were sitting here next to a  
17 proven successful flood our risk would be low and our  
18 expenditures would be low.

19 We get out here and get into this thing and find  
20 that we are not moving along in the fashion we had hoped for  
21 then our expenses immediately go up because we are going to  
22 start to look for the whys.

23 Therefore, our costs goes up and our production is  
24 not performing as hoped for and the red numbers get a little  
25 bit larger.

1 Q Please direct your attention to Exhibits Eight  
2 and Nine and tell us what those are?

3 A Exhibits Eight and Nine are from the engineering  
4 subcommitte work. Again, very good -- it constitutes an  
5 isopach map of the Blinebry gas cap and the Drinkard gas  
6 cap under the unit area respectively.

7 Q What significance do you draw from these two  
8 exhibits?

9 A We think that these both represent a substantial  
10 volume of gas. We certainly should recover all we can. We  
11 should also recover the oil that is underlying these.

12 But we concur with Mr. Todd that the prosecution  
13 of a vigorous injection program of down dipping this thing  
14 for the simultaneous production of the gas cap with the volumes  
15 that we see here will create a pressure differential at the  
16 oil-water contact wherever this is and regardless of how  
17 irregular it may be.

18 It is going to result in the migration of oil in  
19 the gas cap which will be lost to us.

20 It may well also result in the watering out of our  
21 gas wells. We think that the gas wells are a high risk.

22 Q Please refer to Exhibit Number Ten and identify it?

23 A Number Ten is a tabular summary of the operation  
24 expense by months for the seven wells for the last twenty-  
25 one months which shows that we are operating those wells,



1 all, is less than three hundred dollars per well month.

2 This is substantially less than the overhead and  
3 general field pumping anticipated in the economic prognosis  
4 of this unit.

5 Q And Exhibit Number Eleven is what?

6 A That Exhibit Number Eleven is operating expense --  
7 Ten and Eleven should be combined.

8 Q One is for '76, and the other is for '77?

9 A Yes, and combined they cover twenty-one months.

10 Q Identify Exhibit Number Twelve?

11 A Exhibit Number Twelve is a lease map and includes  
12 the right-hand portion, the outline, of the boundary of the  
13 proposed unit and shows that the center of that unit to  
14 the center of the Central Drinkard unit is approximately four  
15 miles.

16 So, we are closely related, geographically, as well  
17 as well as geologically -- this Drinkard section.

18 MR. KELLAHIN: Mr. Lucero. I said about four-thirty  
19 and let me see if I can't facilitate our summary of Mr. Cone's  
20 objection to the statutory unitization.

21 Q (Mr. Kellahin continuing.) I show you a Xerox copy  
22 of the statutory unitization act and I refer you to Section  
23 65-14-6. I want to ask you some specific questions as to  
24 some of these matters which are precedent to the Commission  
25 in the issuance of an order for statutory unitization.

1 Now, with regards to the J. R. Cone tract in your  
2 opinion looking at subparagraph one whether as it relates  
3 to the Cone tract whether the unitized management operations  
4 and further development of the oil and gas pool or a portion  
5 thereof is reasonably necessary in order to effectively  
6 carry on a pressure maintenance secondary recover operation,  
7 et cetera.

8 What, if any comments, can you make with regard to  
9 that precedent?

10 A. We concur with it wholeheartedly. We do not concur  
11 insofar as the phraseology of this or any other unit is  
12 concerned that this is the proper size.

13 We think it should be unitized and it should be under  
14 unitized management and the best plan for operation. That  
15 unit should be confined to the areas as set out in this unit  
16 agreement for modification of the unit lines, the unit  
17 boundary, to the extent that that portion of the unit area  
18 that is away from the producible recovery of the Abo and  
19 Tubb reserves.

20 That is be completed in the Blinbry and Drinkard  
21 and should be put under secondary recover under unitized  
22 management.

23 This is not to say that that unitized operation in  
24 the secondary recovery project should be expanded until proven  
25 into the other areas as outlined in this unit area.

1 Q If I may summarize, Mr. Byers, it appears that  
2 you are saying that there is a portion of the proposed unit  
3 area for which secondary recover operations are timely at  
4 this point and there is a portion that is premature?

5 A That's correct.

6 Q For which portion is it timely and for which portion  
7 is it premature?

8 A Generally, the east half certainly should be  
9 subjected to the quick review of secondary recovery and the  
10 institution of secondary recovery or some other pressure  
11 maintenance.

12 At the time that such operation, even perhaps at  
13 the expense of reserves, at the time those operations are  
14 proven and highly successful then they should be expanded into  
15 the rest of the area.

16 Q All right. With regard to that expansion what in  
17 your opinion or when in your opinion will the J. R. Cone  
18 tract, designated thirteen, be ready for secondary recovery?

19 A As we have indicated before probably at the optimum  
20 of seven to ten years. At the worst we may never be if  
21 the process of secondary recovery as we now conceive it in  
22 the Blinebry and Drinkard is unsuccessful.

23 Q Let me direct your attention to precedent two which  
24 is a statutory provision that requires a finding that the  
25 unitized methods will prevent waste. In your opinion, Mr.

1 Byers, will the unitized operation prevent waste regarding  
2 the J. R. Cone tract?

3 A. If instituted at this time it will cause waste.

4 Q. In what way, sir?

5 A. Because we will lose Abo and Tubb reserves.

6 Q. I see.

7 A. If deferred to a time as we indicated before the  
8 Tubb and Abo could be depleted to such a state that they  
9 are insignificant compared to the main reserves and the  
10 reserve processes proven, then, certainly it could prevent  
11 waste.

12 Q. Directing your attention to precedent three, in  
13 your opinion will the depletion of tract thirteen from the  
14 unit operation still allow the unit operator to return a  
15 reasonable profit on his investment?

16 A. I would see no reason that they should not. The  
17 depletion of tract thirteen going back to earlier testimony  
18 we are looking at a unit here with a -- by almost a six mile  
19 boundary exposed to producible Blinebry and Drinkard wells  
20 on the north, west, and south.

21 The deletion of tract thirteen will only decrease  
22 this by a mile. I don't see that it is that much difference.

23 Q. Let me direct your comments to precedent four, will  
24 the unitized operation benefit the working interest and  
25 royalty interest underlying the J. R. Cone tract?

1 A. Not at this time. Again, at some later date, yes,  
2 and in all probability substantially.

3 Q. Precedent six indicates that the participation  
4 formula contained in the unitization agreement must be fair  
5 and reasonable and equitable.

6 With regards to the J. R. Cone tract and the  
7 production from those tracts are there any inequities or  
8 unreasonable factors in that participation formula?

9 A. I do not disagree with the participation formula  
10 in general and I think probably I would not alter it  
11 materially.

12 I think there have been some oversights.

13 Q. Would you direct your remarks to what oversights  
14 may have occurred?

15 A. For instance, in the case of our No. 3 Well which  
16 you will recall was completed initially in the Drinkard and  
17 the Blinebry, for the last ten or fourteen years has been  
18 shut in in the Drinkard and has produced in the Blinebry and  
19 the Tubb.

20 At the time that that well was shut in in the  
21 Drinkard it was making six to eight barrels of oil a day.  
22 How much would it have made during this time that should have  
23 been credited to it? We don't know. It is a matter of  
24 conjecture.

25 But I think as long as this is based on reserves and

1 on production history and I think we represent reserves that  
2 we have not been credited with.

3 Q What reserves, specifically have you not been  
4 credited with? What well was that?

5 A The No. 3 Well, Eubanks.

6 Q Are there any other wells being operated on the  
7 Cone lease for which you believe you have not received  
8 proper credit for?

9 A No.

10 Q You indicated that that was the Eubanks No. 3 and  
11 I believe it is the No. 2?

12 A The No.2, I beg your pardon, yes, it is.

13 Q Do you have any further opinions or comments that  
14 you would like to express with regards to J. R. Cone's  
15 opposition to the statutory unitization?

16 A We are not opposed to unitization at this hearing.  
17 As we pointed out vigorously our opposition is simply based  
18 on our economics at this time as we see it in the remaining  
19 primary reserves and the risk that we see in developing  
20 the secondary reserves.

21 I think that the principals of forced pooling and  
22 forced unitization if we were dealing with a simple reservoir  
23 and one horizon with very low risk then I think probably  
24 they are very applicable and an order should be exercised.

25 But we are dealing with a complex factor and very

1 complex difference between individuals and a very complex  
2 reservoir one in which we have not proven the processes we  
3 plan to use.

4 In spite of the objections to pilot flooding I  
5 would like to see, very much, and I would support the  
6 creation of a section or a section and a half, initial flood,  
7 in the northern and eastern portions of this. We think it  
8 should be done -- and operated to a point that the operators  
9 of that unit and standing on its own can prove to us  
10 and this Commission that those processes should be expanded  
11 beyond the initial limits and into the other areas.

12 Q Except for those exhibits that we have sought to  
13 introduce, that came out of the Atlantic-Richfield unit,  
14 the unit agreement or their engineering data, were the  
15 other exhibits introduced by J. R. Cone prepared by you  
16 or prepared under your direction and supervision?

17 A Yes, they were -- no, I have to take that back really  
18 most of the printing and the beautiful job done by Atlantic,  
19 we interposed our data.

20 Q I see. That's what I am trying to refer to, the  
21 additions like the over-drawing and the daily production --

22 A Yes, sir.

23 Q On Exhibit Five was done by you based upon the --

24 A Superimposed data on the very nice job Atlantic  
25 did.

1 MR. KELLAHIN: If the Commission, please, I move  
2 the admission of Cone's Exhibits One through Twelve.

3 MR. RAMEY: They will be admitted.

4 MR. KELLAHIN: That concludes our direct examination  
5 of Mr. Byers.

6 MR. RAMEY: Any question of the witness?

7 MR. HINKLE: I have just a few.

8

9 CROSS EXAMINATION

10 BY MR. HINKLE:

11 Q Mr. Byers, I don't know whether I understood you  
12 directly or not but it is my understanding of your testimony  
13 that it might be several years before Mr. Cone is ready  
14 for secondary recovery, is that right?

15 A Depending upon the circumstances, yes, sir, it  
16 could be. He could be ready in a year. But the performance  
17 of the reservoir, itself, it has got to prove to us that  
18 these methods are applicable and that they are justified  
19 economically and we are justified in jeopardizing known  
20 existing oil and gas reserves, natural resources, for the  
21 benefit of greater resources.

22 Q Would it probably be more desirable from his stand-  
23 point to wait seven or eight years?

24 A It would certainly be desirable from our standpoint  
25 but we realize also that we are in conflict with your position



1 there.

2 Q In seven or eight years what is going to happen to  
3 all of the other wells in the pool?

4 A Well, I would suggest after updating the production  
5 curves that since the last update of July or June, I believe  
6 it was, of '76, actually our wells are producing a little  
7 better than the curve anticipated and most of the others,  
8 at least fifty percent of the others, are producing less than  
9 that.

10 I would suggest that they would give a little  
11 attention to this.

12 Q Isn't it a fact that some of those wells, some of  
13 those leases, will expire because of the wells being  
14 depleted?

15 A I would not think so.

16 Q Wouldn't that deny unitization of this entire thing?

17 A I would not think so if we instituted a secondary  
18 recovery program of some form in the northeast area, north-  
19 eastern part of this area.

20 Q Well, if a delay did jeopardize the unitization of  
21 these two pools it would cause a waste of an estimated nine  
22 or ten million barrels of oil would it not?

23 A No, as long as we do not apply any extraneous pressure  
24 to the crude oil in the reservoir it is not going to move  
25 anywhere. It is going to stay right there.

1 Q. You would never get it together again --

2 A. It's lost now -- it is right where it is going to  
3 be now if we start injection ten years from now.

4 Q. Is the purpose of the unitization is to save?

5 A. No, the purpose of unitization is to get it out of  
6 the ground quicker.

7 Q. Now, I believe you touched upon the fact that you  
8 might be prevented from developing your Abo formation?

9 A. Yes, we could be.

10 Q. Now, why haven't your present wells been deepened  
11 to the Abo? Why don't you drill other wells to the Abo  
12 at the present time?

13 A. Because until this time and even at this time we  
14 cannot afford to drill a well for fifty thousand barrels.  
15 We are talking in terms of drilling a three hundred fifty  
16 thousand dollar well for fifty or seventy-five thousand  
17 barrels of oil.

18 That is not a real good return. But we have two  
19 wells already penetrating that formation and all we lack  
20 is cleaning them up and putting them on production and we  
21 could still get that fifty or seventy-five thousand barrels.

22 Q. Isn't it a fact, Mr. Byers, that when these units  
23 are depleted as far as water flooding is concerned that  
24 these wells will all be turned back to the operators and  
25 they can then deepen to the Abo if you want to?

1 A. That is true and in the meantime what happens to  
2 the Tubb gas of Shell and Mr. Getty and the rest of them  
3 that are producing it vigorously along our west line?

4 Q. You mean outside the unit?

5 A. Outside of the unit, what happens to it?

6 Q. Our testimony shows the they intend to have border-  
7 line agreements --

8 A. Not in the Tubb and not in the Abo.

9 Q. Not in the Tubb gas but there is a provision in  
10 the unit, itself, for the protection of the Tubb. You  
11 can drill another well so that you could produce your Tubb  
12 gas and it will not affect that.

13 A. Yes, we can and we are being penalized by a minimum  
14 of two hundred thousand dollars for that privilege.

15 Q. And do you think that penalty is very material  
16 when Cone is going to realize maybe, from tract thirteen,  
17 is going to realize under Atlantic-Richfield's estimate  
18 seven million dollars for a two hundred thousand dollar  
19 penalty?

20 A. Sir, I don't think it is nearly as germane as to what  
21 you make as how you make it.

22 MR. HINKLE: I believe that's all we have.

23 MR. RAMEY: Any other questions? Mr. Byers, I  
24 would like to ask you a couple --  
25

CROSS EXAMINATION

1  
2 BY MR. RAMEY:

3 Q It seems like the Texaco man indicated, Mr. Todd,  
4 indicated that there were like six hundred thousand M.C.F.  
5 of gas in the Tubb?

6 A Yes.

7 Q And possibly nine hundred thousand?

8 A Yes.

9 Q And you come out with a figure of over a billion?

10 A Yes.

11 Q Your reserves up here show three point five billion?

12 A Yes, we have already produced -- we will ultimately  
13 produce four and a half billion out of the No. 3 Well and  
14 we see no reason why we should not complete the No. 4 Well  
15 and do likewise.

16 Those two wells are about -- almost seventeen hundred  
17 feet apart.

18 Q That was the reserves from the No. 2 Well that you  
19 are talking about?

20 A Yes, the No. 2 and the No. 4. Our logs are  
21 excellent in the No. 4 Well.

22 Q So, your gas on this tract, the remaining gas, in  
23 the Tubb is nearly four billion?

24 A Yes, we feel that it is.

25 Q And is it possible that the Abo well is fifty

1 thousand barrels?

2 A. Probably fifty to seventy-five thousand barrels  
3 in that space in the area.

4 Q. You couldn't afford to pay two hundred thousand to  
5 drill a well?

6 A. At fifty to seventy-five thousand we are talking  
7 about a gross revenue to the working interest at the best  
8 under the present market say ten dollars a barrel.

9 Q. You are talking about a dual to the Tubb?

10 A. Well, we would think in terms of dual, yes, if we  
11 had to do this.

12 Q. You are showing -- I am assuming that one well can  
13 drain the acreage?

14 A. I don't believe it can insofar as the Tubb. I  
15 think a prime example here, of course, we don't know what  
16 the drainage area is, but our well and the Duran-Owen well  
17 are two of the best gas wells in this area and they are  
18 about thirteen hundred and twenty feet apart.

19 Gosh, he has produced better than four million out  
20 of each of them, so, what is our real drainage area in that  
21 stuff?

22 Q. You show in excess of five million dollars worth  
23 of value in the Tubb and Abo combined?

24 A. Well, gas at eighty-five to ninety cents -- we are  
25 almost up the ninety-six cents now on our gas and up to

1 one hundred and fifteen to one hundred and fifty thousand  
2 barrels of crude oil with the present wells and it is  
3 available as assets, really.

4 Q It looks good enough that if the Commission approved  
5 this it would be good enough to entice you to drill a well?

6 Wouldn't you as a petroleum engineer recommend  
7 drilling a well that would cost you something in excess  
8 of two hundred thousand dollars to possibly pick up five  
9 million dollars worth of reserves?

10 A Probably would but again this is, to us, confiscation  
11 of property because we have already spent that initiation  
12 fee and had planned on it for the last twenty years of  
13 operation.

14 Now, if we set this thing up to do it this way  
15 fifteen or twenty years ago --

16 So, to us it is not whether or not it is logical  
17 or not but it is what we lose in the process at the expense  
18 of a property up here that is in need of some help now.

19 But they don't need our lease -- that extra mile  
20 of border really doesn't mean that much to them. It  
21 shouldn't, if they have got a viable project.

22 If this process works and if it does a good job  
23 then I don't think there will be any problem with cooperation  
24 down here.

25 Q Another question. You show much more remaining

1 reserves in the Abo than you have in the Drinkard?

2 A. We used the engineer subcommittee reserves in the  
3 Drinkard and in the Blinebry. We are not convinced that  
4 these are adequate but these are what we used, anyway.

5 Q. Do you think the reserves in the Drinkard would  
6 approach those in the Abo? I assume the Abo figures are yours?

7 A. Yes, they are. The Abo figures are essentially  
8 an extrapolation of what we might take from a forty-barrel-  
9 a-day well produced this way over a year with very little  
10 decline and applying this to what we might expect this No. 4  
11 Well to produce after a day's test.

12 All we have got to go on is that, plus history.  
13 Now, the history of the area, we have Abo wells in the area.  
14 I think the highest I have seen is one hundred and seventy-  
15 five to two hundred thousand recovery in the vicinity.

16 But I would say that the average is probably  
17 fifty to seventy-five -- would cover it. This, I think, we  
18 have to use.

19 Q. What I am getting around to is why haven't you  
20 plugged off the Drinkard and completed back to the Abo?

21 A. Making too much money out of the other.

22 Q. There are more reserves there.

23 A. Still making too much out of the other.

24 Q. Don't you think you would make more money out of  
25 the Abo?

1 A Not right now.

2 MR. RAMEY: Any other questions of the witness?

3 He may be excused.

4 (THEREUPON, the witness was excused.)

5

6 MR. RAMEY: Do you have another witness, Mr.

7 Kellahin?

8 MR. KELLAHIN: If the Commission please my next  
9 witness on behalf of Summit Energy will take a substantial  
10 period of time, I imagine.

11 MR. RAMEY: You may continue, Mr. Kellahin.

12

13 PAUL G. WHITE

14 was called as a witness for the protestants, and having been  
15 first duly sworn, testified upon his oath as follows, to-wit:

16

17 DIRECT EXAMINATION

18 BY MR. KELLAHIN:

19 Q Please state your name, by whom you are employed and  
20 in what capacity?

21 A My name is Paul White and I am employed by Summit  
22 Energy, Inc., as the Vice President of Production.

23 Q Mr. White, have you testified before the Oil  
24 Conservation Commission of New Mexico and had your qualifications  
25 accepted as an expert witness and made a matter of record?



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1 A. Yes, sir.

2 Q In what professional area of expertise do you hold  
 3 a degree in?

4 A. Petroleum Engineering.

5 Q Have you made a study of and are you familiar with  
 6 the facts surrounding this particular application by Arco  
 7 in your capacity as a Petroleum Engineer?

8 A. Yes.

9 Q Does Summit Energy operate oil and gas properties  
 10 within the designated proposed area by Arco?

11 A. Yes, sir, we do.

12 MR. KELLAHIN: If the Commission please, are the  
 13 witness' qualifications acceptable?

14 MR. RAMEY: He is qualified.

15 Q (Mr. Kellahin continuing.) Would you please refer  
 16 to what we have marked as Exhibit Number One and identify it?

17 A. Yes, we can quickly get through that one. It is  
 18 simply a plat showing our lease, the Gulf-Bunin lease, colored  
 19 in red and designated as tract fifteen by Atlantic-Richfield.

20 Q What wells to you operate on that lease?

21 A. We operate four wells there. We operate one Wantz-  
 22 Abo well and three Blinebry wells.

23 Q I direct your attention to what I have marked as Summit  
 24 Energy's Exhibit Number Two and ask you to identify that?

25 A. Exhibit Number Two we put together to -- I might

1 give a little background behind Exhibit Number Two.

2 I attended the first operators' meeting that was  
3 held on this Blinebry-Drinkard unit. At that time they were  
4 proposing a quadruple zone unitization.

5 I made the statement in the meeting, I don't know  
6 if it went into the record, but I made the statement that  
7 this would be completely unfeasible. It would be a mechanical  
8 nightmare to attempt to unitize the four zones in this area.

9 I attended one more meeting and then I wrote  
10 Atlantic-Richfield and told them that Summit Energy was not  
11 interested in joining the unit and participating in anything  
12 that they wanted to put together if that was the case.

13 Q That is the substance of your letter dated November  
14 7, 1975?

15 A Yes, sir. Now, subsequent to that Mr. Malaise and  
16 one of his associates came by my office -- this is a year  
17 later -- and they stated that they wanted me to come back  
18 to the meetings because they had the operation boiled down  
19 to where they were going to unitize only the Blinebry and  
20 Drinkard and they would be separate units.

21 Now, I attended a meeting, then, on the presumption  
22 that this was going to be done. Then, I could quickly  
23 determine that they had two units proposed, an East Drinkard  
24 and an East Blinebry, but the two booklets was just under --  
25 under the guise of one unit because there was going to be a

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1 commingling of the production in the bore hole and there  
2 would be a separation of the oil on the surface of the  
3 ground based on this sixty-five, thirty-five formula which  
4 I did not ever -- I never completely determined even how  
5 they came up with that nor did I feel like it was equitable  
6 because how can we say that we can separate this oil on  
7 the surface of the ground when we don't know how much water  
8 it going into the thing or how much oil is it going to  
9 produce -- how much water is going to go into the Blinebry  
10 and how much oil the Blinebry is going to produce.

11 Now, Atlantic-Richfield drew these lines on this  
12 plat and then they testified that I am in a non-negotiating  
13 position.

14 I feel like that this study has been going on for  
15 about six years and the reason for the long negotiations was  
16 because of the complexities and unknown in this operation.

17 I feel like that with all of the things they have  
18 ironed out between the number of operators in this field and  
19 determined these equities that they could certainly have gone  
20 in with Summit and tried to arrive at some cooperative  
21 effort because subsequent letters in Exhibit Two, copies of  
22 which went to the Commission, I repeat in each letter that  
23 we will cooperate.

24 There was no attempt made to say that we are going  
25 to put on well No. 2 and the unit put on the other five.

1 We realize that we have to do better than this. We  
2 realize that to cooperate we are going to have to pay some  
3 of the costs of these other five injection wells.

4 We certainly feel like there can be some kind of  
5 equity worked out just as there has to be some equities  
6 worked out on the lease lines to the west and to the north,  
7 particularly.

8 So, Exhibit Two points out for several years the  
9 attempts by Summit to delay the unit, first of all, and then  
10 if it did go in we wanted to cooperate and not join.

11 That, in essence is what Exhibit Two points out.

12 Q You have indicated in a letter of October 4, 1976,  
13 to Atlantic-Richfield that it was your desire to cooperate  
14 and support the necessary water flood injection?

15 A Yes, sir.

16 Q The next letter is June 14, 1977, in which you  
17 repeat your offer to cooperate in a manner to make the water  
18 flood successful?

19 A Yes, sir. At the bottom I outlined a couple of  
20 reasons why I do not feel that we want to join.

21 We do not like the multi-pay area. We don't like  
22 the way the distribution of the oil is being handled.

23 We feel like it should be handled different. We  
24 also feel that it will be very complicated.

25 Now, I also point out there that the operating costs

1 under the unit operation would not be as conservative as it  
2 would be under our operation.

3 I would like to say too, at this time, that the  
4 timing of the unit is our big objection. Unitization, we have  
5 no objection to but it is the timing of this unit and we will  
6 get into that in Exhibit Three.

7 Q All right sir. The next letter in Exhibit Number Two  
8 is dated July 18, 1977. What is the substance of that  
9 letter?

10 A Okay. I felt like -- I knew that there was going to  
11 be statutory pooling. I knew that it was going to be tried  
12 to be forced upon Summit Energy. I knew this way back in  
13 1975.

14 I felt like that I might help our cause by writing  
15 to some of the other operators in the area.

16 I think I was late in doing this. I think if I  
17 had gotten this out before they had studied this more  
18 carefully -- I don't know whether the sign up would have  
19 occurred or not. Possibly it would.

20 But in this letter I tried to point out some of the  
21 things that -- some observations which I feel like that will  
22 be wrong with this secondary operation.

23 Q Are the objections that you have made and summarized  
24 in your letter of July 18, 1977, the same objections that  
25 you now have made today?

1 A. Yes, sir.

2 Q. Okay, go ahead --

3 A. They are basically this, that the Tubb zone, the  
4 Abo zone, these other pools will be completely -- they will  
5 lose their identity if this flood takes place.

6 If they are damaged there will be no way that  
7 they can be recovered and brought back to life again.

8 We have a Blinebry-Tubb dual that we just recently  
9 worked on and all we did was pull the rod and tubing out of  
10 the well and the fluids from the top zone invaded the Tubb  
11 zone and it isn't back to its producing rate yet.

12 Q. You heard Mr. Tweed's testimony today that there  
13 was a remote risk that the water injection in the Blinebry  
14 and Drinkard would cause watering out of the Tubb?

15 A. I don't think it is remote. I think it is going  
16 to happen.

17 You know, there is a misconception about cementing.  
18 Cement doesn't mean anything unless it is placed in the  
19 right proportions and in the right place. One cupful of  
20 cement will keep water from going into the Tubb zone. But  
21 twenty-five tons of cement might not.

22 Once you get the invasion of water outside the  
23 bore hole into the Tubb zone -- there has been some talk about  
24 squeezing here -- you cannot squeeze cement with moveable  
25 fluid.

1           You can't hold cement in place as long as water or  
2 oil is moving. It will not set up under that movement and  
3 this is what would happen: the first workover that took  
4 place if they had to load the Blinebry zone and pull the  
5 tubing out and would get communication during the workover, then,  
6 your invasion of water into the Tubb zone would occur.

7           Then, when you tried to do some squeeze work you  
8 have got the problem of shutting off moving water.

9           So, I don't think that it is remote -- I wouldn't  
10 say that at all. Now, it is possible, of course, to get water  
11 into the Drinkard zone and water in the Blinebry zone without  
12 going into the Tubb zone but it is also highly possible that  
13 it would go into the Tubb zone.

14         Q.     Are any of these formations fractured?

15         A.     Oh, I have no idea. I don't know.

16         Q.     All right, sir. Let's go through your other  
17 objections here with regard to this unitization?

18         A.     Okay. I feel like a pilot operation is the only  
19 way to set this thing up if we are going to do it now.

20                Now, I think if the timing is proper that this  
21 unit can be put together. It can be put together when  
22 secondary recovery becomes necessary.

23                My Exhibit Three will point this out very clearly,  
24 I think. We still have a lot of property in this area  
25 that can make a profit and can make a good profit.

1           So, I think that as long as we have a primary  
2 operation that is economically feasible and is making a  
3 profit that we should if we want to put in a water flood  
4 put in a pilot operation at the present time or not put  
5 in any.

6           I think there is a very high risk involved in  
7 multi-zone flooding to say the least. It is high enough  
8 in single zone flooding.

9           With this risk involved and the money involved and  
10 the property and people involved, certainly, that this  
11 should be done -- at least get some idea of what the Drinkard  
12 is going to take and what fluids the Blinberry is going to  
13 take and what kind of a response time are we looking at.

14           I don't think that it would be time wasted. That,  
15 in essence, are my objections to the unit.

16           Q. I show you what has been marked as Summit's Exhibit  
17 Number Three and ask you to identify it and explain what  
18 information it contains?

19           A. All right. This is a present rate of income. Now,  
20 this is taken straight off the books of Summit Energy, Inc.,  
21 in the accounting department.

22           Our gross income is set out by the month from  
23 January '77, for the first six months of the year and our  
24 operating expense which by the way checks out very closely  
25 with Mr. Byers' testimony. We have an operating cost of



1 seven thousand six hundred eighty-five dollars for six months  
2 on four wells which approximates three hundred dollars a well  
3 per month.

4 That's about what Mr. Byers said they were operating  
5 for so that is pretty general.

6 Now, our net income, sixty-eight thousand dollars,  
7 that we are netting -- we are netting a little over eleven  
8 thousand dollars a month on this lease.

9 Now, this is an eastern lease. It has been testified  
10 that the rate of production is lower on the eastern side  
11 than it is anywhere in the unit and that the western side has  
12 a higher rate of production.

13 The western side has some gas producing. The east  
14 side has been categorized as being the part of the unit  
15 that is kind of in the economical limit.

16 Well, economic limit is relative to the persons  
17 operating the property and the persons doing the graphs and  
18 the persons who are projecting the economics.

19 This indicates that if our lease is operating at  
20 a profit of eleven thousand dollars a month that the Commission  
21 could check the profit picture of the leases in the unit  
22 and see what the western reserves are because if this profit  
23 is taking place on our lease it is obvious that on the  
24 western side there is a greater profit being made.

25 If these kinds of profits are being made then the

1 unit timing is bad because your reserves in the ground are  
2 worth more than they are on top of the ground.

3 We know that we are going to get some escalation  
4 in oil price. We know that we are going to get some new  
5 techniques in CO 2 flooding and we know that we are going  
6 to have a lot of things develop in that field in the next  
7 couple or three years.

8 The testimony has indicated that this eleven million  
9 or nine million barrels that if it isn't flooded next month  
10 it is going to be lost. This is not the case at all.

11 Nobody in this room is going to walk off and leave  
12 eleven million barrels down there, I'll tell you that.  
13 There is going to be somebody working out some water floods.

14 There may be three floods or there may be two or  
15 there may be ten but there is going to be some flooding done.

16 So, I think the timing of the unit is -- if this is  
17 the profit picture on the east side -- the timing of the unit  
18 is bad. We need to wait.

19 I think from the testimony that Mr. Byers gave that  
20 about seven years or eight years is about what we would  
21 project that we need, still, to produce our primary reserves.

22 We also have some Abo production, potential Abo  
23 production, beneath our Blinbry casing depths and we would  
24 like some day to deepen that.

25 One reason we haven't done this is because of the

1 price of crude seems to be going in the right direction and  
2 we feel like our reserves are important to us in place.

3 So, that in essence, if what Exhibit Three points  
4 out.

5 Q We are still on Exhibit Number Three, Mr. White,  
6 you heard earlier today that Mr. Malaise testified as to what  
7 he believed Arco's overhead would be for the operation of  
8 each of the wells in the unit and that he believed that  
9 to be a fair and reasonable charge.

10 Based upon your experience with this particular  
11 tract, number fifteen, in your opinion would the Arco overhead  
12 charges be fair and reasonable?

13 A Under unit operations with other major companies  
14 I think that they are in line with what a major company would  
15 charge.

16 I do think that it is obvious that on a four-well  
17 lease and one injector we would be faced with one hundred and  
18 fifty-five dollars per zone on the injector and one hundred  
19 and fifty dollars per well on the producers.

20 Now, that is just the overhead cost. That doesn't  
21 include the lease operating expenses or taxes.

22 Q I direct your attention to what has been marked  
23 as Summit Exhibit Four and ask you to identify that and  
24 explain what information it contains?

25 A Okay. We like to project our own economics. We

1 have just recently done an update on Summit's oil and gas  
2 reserves and we were in a position to bring this exhibit  
3 into the Commission to let them see it.

4 We made our projection of primary reserves based on  
5 our idea of what the rate-time curve will do and how long  
6 it will last.

7 Now, we escalated the oil price at six percent  
8 per year. We are a stripper lease.

9 I just recently called Texaco and they are going  
10 to fourteen eighty-five a barrel. We have already had fourteen  
11 dollars and eighty-five cents a barrel posted by Navajo and  
12 that is being paid as of August 1 and so is it posted by  
13 Cities Service.

14 So, before the typing was done on the exhibit the  
15 six percent raise was already in effect for this year.

16 I had two meetings with the refinery personnel  
17 at Navajo-Holly coporation and with Marisol Gas and Refining  
18 and they feel like that it is sensible to project your oil  
19 price on your stripper crude at six percent per year increase  
20 until you get to twenty dollars a barrel before taxes and  
21 then hold it there.

22 I escalated the operating costs, ten percent per  
23 year, because I feel like that is also going to be the case.  
24 It is going to run up about ten percent per year.

25 Now, attached to Exhibit Four, is the years and

1 rates at which we feel we will produce the oil and our  
2 income and our gas and so on and there, again, this exhibit  
3 points out that certainly in seven or eight years it is  
4 going to be profitable to Summit Energy -- a fairly nice  
5 profit.

6 We have cumulated net income and in seven or eight  
7 years our cumulative net primary income is going to be over  
8 seven hundred and ninety thousand dollars.

9 So, there, again, we feel that the timing of the  
10 unit is not good.

11 Q In your opinion then, Mr. White, the inclusion  
12 of tract thirteen in the unit water flood you believe is  
13 immature at this point since you still have significant  
14 primary reserves to recover?

15 A Yes, sir, that is right.

16 Q You heard Mr. Tweed testify earlier in response to  
17 questions about working out a cooperative agreement with  
18 Summit Energy and that he believes that there were at least  
19 two reasons why a cooperative water flood would not work  
20 and would be detrimental to the unit operations.

21 Have you in your correspondence offered on  
22 several occasions to enter into a cooperative water flood?  
23 In what way would you specifically enter into a cooperative  
24 water flood and would your curves agree with Mr. Tweed's  
25 summation that the property water flood would not work?

1           A.     I do not concur that a co-op flood would not work.  
2 I concur with Mr. Tweed that the unit operation cannot put  
3 on five injection wells and Summit one well.

4           One of my letters indicated that this is what we  
5 would do but at that early time in the unit planning we didn't  
6 know what all was going to take place so we projected to  
7 Atlantic the fact that we would cooperate and put on an  
8 injecting well.

9           Well, since then I told Mr. Tweed on the phone a  
10 year back that we did not intend to get by with putting on  
11 one well and the unit operator and the joint operators putting  
12 on five.

13           We know, as I stated before, we have to pay some  
14 of the costs of those other five wells in some fair and  
15 equitable way.

16           Now, we don't want the unit to go in at the present  
17 time. But if it has to go we feel like that we can sit down  
18 with the unit operator or the unit operating committee and  
19 work out some feasible workable plan because if we can work  
20 out the equity in this complicated situation that you all  
21 heard about today they can work out something with one  
22 lease.

23           So, I do not concur with Mr. Tweed on that but I  
24 think we can cooperate and I think we have been in the oil  
25 and gas operations for twenty-five years and we know what

1 we have to do to recover reserves.

2 We like to get them out of the ground and we have  
3 been pretty successful at it.

4 Q Let me direct your attention to what we have marked  
5 as Summit Energy's Exhibit Number Five and ask you to identify  
6 that and explain what information it contains?

7 A Exhibit Five sets out the secondary economics on the  
8 same lease and we did this exhibit based on seven tenths to  
9 one recovery of primary so it would match up somewhat with  
10 Atlantic-Richfield's projection.

11 Now, we have more primary oil than Atlantic-  
12 Richfield projected because we can simply operate that lease  
13 longer than they feel that we can and we feel like we can  
14 get more money for the crude.

15 I think we are justified in doing that. Now, we  
16 used an oil price of fourteen eighty-five per barrel for the  
17 life of the flood as opposed to Atlantic-Richfield's thirteen  
18 dollars and eighty-four cents, I believe.

19 But all of the other figures that we used -- I  
20 might point out that the development costs of three quarters  
21 of a million dollars -- that doesn't indicate that we were  
22 going to put on one injection well.

23 One injection well on our lease will cost us about --  
24 we can put it on for approximately fifty thousand dollars.  
25 So, we have got money allocated to either develop our own

1 water supply from the San Andres which is what the unit  
2 operator proposes to do and also to put some money or costs  
3 into these other injectors that the unit operator would  
4 be putting in.

5 So, that in essence, is the secondary economics.  
6 I used four dollars a barrel operating costs for the life of  
7 the flood.

8 Q. I show you Summit Exhibit Number Six and ask you  
9 to identify that and explain what information it contains?

10 A. Exhibit Number Six just combines Exhibit Number  
11 Four and Five and it very simply gives the Examiner the  
12 total of what we feel would be our net income, undiscounted,  
13 if we stay out of the unit.

14 We come up with the figure of four million two  
15 hundred twenty-nine thousand eight hundred fifty-one dollars.

16 Now, this compares with what the unit would award  
17 us with a roughly three percent in both phase one and phase  
18 two.

19 The figure that I projected there was two million  
20 seven hundred sixty thousand but since further testimony I  
21 have changed that to two million two hundred fifty thousand  
22 dollars.

23 That would be Summit's profit off of the roughly  
24 seventy-five million dollars profit that is projected by  
25 Atlantic-Richfield.



1 Q If tract fifteen stays out of the unit what is  
2 your profit?

3 A And cooperate our profit will be four million  
4 two hundred and twenty-nine thousand eight hundred and  
5 fifty-one dollars.

6 Q And if you are forced into the unit on statutory  
7 unitization?

8 A Our profit would be approximately two million two  
9 hundred and fifty thousand dollars.

10 Now, we have not projected the cost of debt service  
11 in there because in the early life of a water flood as you  
12 all know we have high investment costs.

13 So, a lot of times the individual has to borrow  
14 the money to carry his load, so to speak, and so we have not  
15 projected the cost of debt service which could very easily  
16 be put in here also.

17 There would, however, be some debt service if  
18 Summit cooperated and put in their own flood.

19 So, that in essence, combines the two exhibits.  
20 We hope that we can -- through looking at the profit picture  
21 of these leases -- we hope that we can convince the  
22 Commission that the unit as such we are not opposed to.  
23 We are opposed as to the timing of this unit.

24 Secondary reserves are identified as reserves which  
25 are necessary to produce when you reach the economic life

1 of the primary reserves.

2 Primary reserves are cheaper to produce than the  
3 secondary reserves. The secondary reserves that we are  
4 holding onto right now in that deal could very easily be worth  
5 a lot more money than they are worth right now on these  
6 projections that we have seen today just because of the  
7 escalation and the scarcity of oil or energy.

8 This is basically Summit's case.

9 Q In your opinion, Mr. White, if tract fifteen is  
10 included within the proposed Arco unit what, if any, economic  
11 waste would occur to the working interest and the royalty  
12 owners within that tract?

13 A Well, if we were forced into the unit, forced to  
14 join, we would incur about a two million dollar difference  
15 in future net income, undiscounted.

16 Now, if we joined the unit and cooperated we would  
17 not incur that much loss.

18 Q Were Exhibits One through Six prepared by you  
19 directly or under your direction?

20 A Yes, sir, directly by me.

21 MR. KELLAHIN: We move the introduction of Exhibits  
22 One through Six at this time.

23 MR. RAMEY: They will be admitted.

24 MR. KELLAHIN: That concludes our examination.

25 MR. RAMEY: Any questions of the witness -- Mr.

1 Hinkle?

2

3

CROSS EXAMINATION

4 BY MR. HINKLE:

5 Q I have just one question, Mr. White. I believe you  
6 said that Summit would like to get this oil out of the  
7 ground as quickly as possible?

8 A I know what you are leading up to here. We would  
9 like to get our oil out of the ground with the proper timing.  
10 Once we start to get it out -- what I am getting at there --  
11 we are not going to leave secondary reserves under that Gulf  
12 unit lease.

13 Q Isn't it a fact that the water flood, both of these  
14 water flood projects, would cause you to get your primary  
15 oil much earlier than you would otherwise, sooner?

16 A We would not be -- we would not get our primary  
17 out. Our primary oil would lose its identity in the commingling  
18 of Drinkard oil.

19 Q You would get a quantity equal to it much sooner  
20 than you would otherwise, isn't that true?

21 A Yes, you would get quantities equal to it.

22 MR. HINKLE: That's all I have.

23 MR. RAMEY: Any other question of the witness?

24 He may be excused.

25 (THEREUPON, the witness was excused.)

1 MR. RAMEY: Do you have anything further, Mr.  
2 Kellahin?

3 MR. KELLAHIN: Nothing further, thank you.

4 MR. HINKLE: We would like to put on Mr. Malaise  
5 on for about three questions and then Mr. Tweed for one or  
6 two.

7 MR. RAMEY: All right.

8  
9 BOB MALAISE, RECALLED  
10 was called as a witness by the applicants, and having been  
11 previously sworn, testified upon his oath as follows, to-wit:

12  
13 DIRECT EXAMINATION

14 BY MR. HINKLE:

15 Q Mr. Malaise, there has been some indication here  
16 in the testimony as to why it was necessary to unitize these  
17 zones separately, that is, the Drinkard and the Abo. Was  
18 that suggested by Atlantic-Richfield or by the U.S.G.S.?

19 A When we worked with the U.S.G.S. on the plan of  
20 operation and that was the suggestion we had as far as getting  
21 approval of federal lands within this particular unit.

22 Q So, the U.S.G.S. wanted it that way in the unit?

23 A Yes.

24 Q Did the operators give consideration to the  
25 suggestion that objections made by Summit as indicated by the

1 letters, by the correspondence, that they have written?

2 A. I have a letter dated January 20, 1976, which was  
3 sent to the Commission with a copy sent to Summit Energy  
4 and I would just like to take several minutes out and say  
5 that we did at that time -- I'll read verbatim the third  
6 paragraph, "Summit Energy, Inc., proposes to cooperate in  
7 a lease line injection agreement to be a viable alternative  
8 to the unit participation in normal circumstances where  
9 equity could be obtained.

10 "Under the proposed injection pattern," it says  
11 see attached diagram which is our Exhibit Two, "Atlantic-  
12 Richfield can see no equitable agreement which can be reached  
13 with Summit by their converting the Gulf-Bunin Well into an  
14 injection well for the proposed pattern and injecting an  
15 equal amount of water.

16 "Acting as a prudent operator of the unit we cannot  
17 recommend offsetting the Gulf-Bunin lease with injectors  
18 in five directions for the conversion of the Gulf-Bunin  
19 Well No. 2."

20 We also went on to state that in the second letter  
21 dated January 13, 1976, to the New Mexico Oil and Gas  
22 Commission, we made the statement that in performance the  
23 working interest owners would not treat them equitably.

24 At the time only one meeting had taken place in  
25 which only five formulas had been proposed at that time.

1 Summit was not present in the meeting when all  
2 the formulas failed to carry.

3 We went on to state that negotiations were still  
4 going on to arrive at a formula that would treat all parties  
5 equitably.

6 We would like Summit Energy to come into the unit and  
7 will continue to furnish them with all correspondence  
8 affecting the unit operations.

9 It was after this letter, I believe sometime in  
10 March, that I did meet with Paul White as he stated in the  
11 previous testimony.

12 Q Have you made an estimate of the amount of gas  
13 in place in connection with the Tubb Well No. 2?

14 A Yes, I have. We would like to enter that as  
15 another exhibit.

16 As far as the P over Z that was referred to earlier  
17 in the testimony by Mr. Byers, this was the P over Z that  
18 was used when we were in the four zoned unit.

19 The only difference between the P over Z and the  
20 one Mr. Byers eluded to is the fact that one additional point  
21 has been added, the last point on the P over Z.

22 That point we added to this particular P over Z  
23 after the Cone hearing on the Eubanks No. 2, Case Number  
24 5966, in which Mr. Cone applied for a commingling provision  
25 between the Blinbry and the Tubb.

1 He stated at that time that there had been a leak  
2 in the tubing in this particular well whereby the Blinebry  
3 formation was being -- was in communication with the Tubb.

4 At that time he stated that the last reading on  
5 which I would rely was August of 1975, when we had four hundred  
6 and ninety pounds remaining in the Tubb.

7 This point corresponds to that four hundred and  
8 ninety pounds on the P over Z. That P over Z at this time --  
9 we went back and figured what those reserves would be and  
10 at that time we calculated that the amount of production as  
11 of August 1, 1977, from the Eubanks 2 was four point one  
12 five billion cubic feet.

13 Using this corrected P over Z we would have four  
14 point five four billion cubic feet as an economic limit  
15 using the same P over Z which would have an estimated remaining  
16 reserves of three hundred and ninety million cubic feet in  
17 this particular well bore.

18 As I understand it the Tubb gas zone is a zone  
19 which is prorated at this time on one hundred and sixty  
20 acres and it is my assumption that the Commission recognizes  
21 this as a drainage area for the Tubb at this time.

22 So, I would question the fact that three billion  
23 or three point nine billion cubic feet of gas remains on the  
24 Tubb tract thirteen.

25 Q Mr. Malaise, if it should prove necessary to drill

1 a substitute well on tract thirteen, under Article 11 of  
2 the operating agreement, do you have any estimate as to  
3 the pay out of the two hundred thousand that would be  
4 necessary to be expended by the working interest owners?

5 A. I have one other exhibit that sums that up. What  
6 this exhibit shows is that the J. R. Cone tract -- what I  
7 did, I took the same economics that we used to project the  
8 unit economics that have already been put into the testimony,  
9 the seventy-three million before taxes, undiscounted present  
10 worth.

11 Those numbers -- I took Mr. Cone's -- not Mr. Cone  
12 but the Cone tract's unit participation which was seven  
13 point one four percent in phase one and eight point three  
14 seven percent in phase two and applied it to the projected  
15 oil and the projected gas that we were projecting at that  
16 time for the unit.

17 The first case I ran, the economics, if Mr. Cone  
18 would join the well and turn over all four wells, there are  
19 not any Tubb gas reserves in this calculation because it  
20 was my assumption that if Mr. Cone turned over all four wells  
21 he would still be in a position where his Tubb he would  
22 produce -- if he turned the well bore over -- if he didn't  
23 turn it over then my next case takes care of that.

24 Mr. Cone, in my assumption, was going to be able  
25 to produce his Tubb gas wells.



1           The first case I show his investment, net  
2 investment, to be a little over a million dollars, one  
3 million forty-six thousand dollars, roughly.

4           The expected undiscounted present worth of the  
5 unit operation in that case would return seven point four  
6 million dollars from the Cone tract which would be what I  
7 would consider an economic success.

8           Then, I looked at the case as if Mr. Cone turned  
9 over his -- or did not turn over the wells and I looked at  
10 what I considered the most pessimistic case and that is as  
11 if the unit carried the well.

12           What I did at that point I took out of the revenue,  
13 and I considered this non-taxable revenue, a minus two hundred  
14 and fifty-four thousand dollars -- where the asterisk is --  
15 and this would represent the two hundred thousand dollar  
16 penalty that Mr. Cone would have to pay.

17           It would also include the additional tract  
18 participation because we said that the unit was going to  
19 pay for -- or the unit would pay and I would assume they  
20 would pay for it -- and it also included that -- it is not  
21 shown in the summation -- another twenty-five thousand  
22 dollars to squeeze off the Blinebry or in this case it would  
23 be to squeeze off the Blinebry zone in the Tubb wells.

24           If the unit carried it then we would assume that  
25 the unit zone would be squeezed off and only produce the

1 Tubb reserves out of that well.

2           So, I burdened his revenue -- and there again we  
3 are talking about tract revenue -- with two hundred and  
4 fifty-four thousand dollars and I came up with an undiscounted  
5 present worth of seven point four million dollars undiscounted  
6 for that particular case.

7           Q.    You refer to the cost and so forth that Mr. Cone  
8 would have to pay. Now, isn't it a fact that tract thirteen  
9 is owned twenty-six point twenty-five percent by J. R. Cone;  
10 twenty-three point oh three by Markham; and forty-one point  
11 eight-five by Texaco; and five point two-nine by Redfern;  
12 and three point two-five by J. H. Hern?

13          A.    Yes, sir, that is the interest but my economics  
14 are based on the tract, itself.

15          Q.    I understand that but my next question is that the  
16 costs that you are referring to, these parties would pay that  
17 in proportion to their interests?

18          A.    That's correct.

19          Q.    It wouldn't be all Cone's expense?

20          A.    No.

21               MR. HINKLE: That's all I have.

22               MR. RAMEY: Any questions -- Mr. Kellahin?

23

24

CROSS EXAMINATION

25 BY MR. KELLAHIN:

1 Q It has been indicated that the two unit agreements  
2 were put together at the insistence of the U.S.G.S.

3 Did the U.S.G.S. give you any indication as to  
4 why they were opposed to having the two formations unitized  
5 under one set of documents?

6 A Their paragraph of their approval says that your  
7 proposed forms of the unit operating agreement will be  
8 acceptable. One copy of the proposed form is enclosed and  
9 one copy is sent to the Oil and Gas Supervisor, Albuquerque,  
10 New Mexico.

11 We hereby concur in the Supervisor's recommendation  
12 that the proposed basis of unitized substances will be  
13 accepted.

14 This is what we received from the U.S.G.S. We  
15 had several meetings with them and at that time -- prior to  
16 the two-zone unit, they had looked at four zones which they  
17 felt like was a complicated situation.

18 At that time when we first started negotiating prior  
19 to looking into the statutory unitization avenue of approach  
20 to get a unit together, they stated at that time that it would  
21 be hard for them to come up with a royalty -- to separate  
22 royalty for the federal government in four zones.

23 We looked at dividing up and having three separate  
24 royalty units and one working interest unit.

25 When we got the other two zones out they felt like

1 it would be acceptable and it could be worked out within  
2 the U.S.G.S. This was at the time it looked like not only  
3 did we have the U.S.G.S. to approve this particular unit  
4 but also the working interest owners as was stated before.

5 Q Referring to your last exhibit that was introduced,  
6 I believe it is Two Sixty-three -- that was your economics  
7 on tract thirteen?

8 A Yes.

9 Q This assumes the same success ratio of secondary  
10 recovery that Arco testified to the entire afternoon, the  
11 seventy percent?

12 A Yes. This is correct. What I did, I took the unit  
13 economics that we presented -- from the graph that was  
14 presented by Mr. Byers -- and this is the basis for the  
15 allocation of the unitized substances, the performance.

16 Q If your success ratio is something less than the  
17 seventy percent figure then the expected undiscounted net  
18 worth is going to drop depending on what the actual success  
19 is?

20 A I am looking at a ratio here where the investment  
21 of one million dollars and I am only looking at seven tenths  
22 and I am looking at seven point four as is and it would  
23 have to drop considerably to be in an uneconomic position.

24 MR. KELLAHIN: I have no further questions.

25 MR. RAMEY: Any other questions?

CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Malaise, refer to Exhibit Two Sixty-three and I notice the exhibit refers to tract fourteen, should that have been tract thirteen?

A I think that is a typographic error. It is the J. F. Cone tract.

MR. HINKLE: You can change this exhibit to thirteen.

MR. RAMEY: Mr. Hinkle, the graph is Two Sixty-two?

MR. HINKLE: That is Two Sixty-two and I have the original here for you, stamped, and I will give them to you now.

MR. RAMEY: You may be excused.

(THEREUPON, the witness was excused.)

JERRY TWEED, RECALLED

was called as a witness by the applicants, and having been previously sworn, testified upon his oath as follows, to-wit:

DIRECT EXAMINATION

BY MR. HINKLE:

Q Mr. Tweed, in your opinion would the formation of these units result in economic waste to the Cone tract and the Summit tract?

1           A.     In my opinion it would not. It would result in  
2 an economic benefit for both tracts.

3                 I would like to refer to Cone's economics just  
4 briefly and I believe that that is Exhibit Five -- that  
5 Mr. Byers presented --

6                 He shows essentially four billion cubic feet of  
7 gas reserves, Tubb gas reserves, under the Cone tract.

8                 I think Mr. Malaise has testified that the P over  
9 Z graph that is in evidence that there is possibly three  
10 hundred thirty million cubic feet of gas reserves under  
11 there.

12                It has been my analysis of the Tubb that it does  
13 cover drainange certainly over more than forty acres and I  
14 don't concur that the other wells that Mr. Byers said that  
15 they would complete in the Tubb would be in a virgin reservoir  
16 and undrained.

17                I would like to point out that if it were, you would  
18 have from two to three point six billion cubic feet of  
19 reserves and certainly it would be economical to drill a  
20 well for those reserves.

21                Also, he indicates that that location would have  
22 fifty thousand barrels of Abo reserves. It would be  
23 economical to drill a well and complete it in the Abo and  
24 the Tubb and recover those reserves if his estimate is  
25 right.

1           What I am objecting to is the comparison of his  
2 economics with what he says his primary is versus what he  
3 says it would be versus the unit because he has other  
4 alternatives from what he has presented in his economics.  
5 Also, I do question the reserves that he stated.

6           I would like to point out that upon completion of  
7 the unit the Cone tract would receive those well bores  
8 back and it is my opinion that the Abo reserves would still  
9 be in place and at that time he would have the opportunity  
10 to produce those Abo reserves albeit twenty years or twenty-  
11 one years down the line.

12           I contend that those reserves are not going to be  
13 lost.

14           Q.     Go ahead.

15           A.     Now, in reference to Mr. White's Exhibit Number  
16 Four, the economic exhibit, he compares the economics of  
17 him cooperating and getting the primary oil and cooperating  
18 on secondary versus what we propose.

19           He starts, I believe as I recall, at fourteen eighty-  
20 five a barrel. I could stand corrected on that and I believe  
21 we start at twelve eighty-five.

22           He escalated his oil prices at six percent a year.  
23 As I stated before I think it is logical that -- I think that  
24 there is nothing wrong with his starting point or his  
25 escalation of six percent a year.

1           However, if you use those same prices on our  
2 economics the difference in his staying out and not joining  
3 the unit is substantially less or essentially the same if  
4 you use the oil prices in both cases -- the economics would  
5 be substantially the same.

6           The reason we did not escalate the oil prices is  
7 that we show an oil price at the time we run the economics.  
8 There, again, oil price escalation is normally held to be  
9 confidential information and they are normally different,  
10 also, between each operator.

11           We feel like each operator should take our basic  
12 rates and reserve forecast and their own oil and gas prices  
13 and determine their own individual economics.

14           So, I think when you compare the two cases you  
15 should compare them on an equal basis.

16           I think his economics, other than that, I think  
17 they are quite correct. I would have no objection to them  
18 other than the fact that two different oil prices were used  
19 in the comparison.

20           I guess that's about it.

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

22           MR. RAMEY: Any questions? You may be excused, Mr.  
23 Tweed.

24           (THEREUPON, the witness was excused.)

25           MR. RAMEY: Anything further, Mr. Hinkle?



1 MR. HINKLE: I would at this time offer Exhibits  
2 Two Sixty-two and Two Sixty-three into evidence.

3 MR. RAMEY: They will be admitted.

4 MR. HINKLE: I will want to give a brief summary  
5 if they do --

6 MR. KELLAHIN: If the Commission please, the basis  
7 of the Cone and Summit Energy objections, I think, is  
8 quite apparent at this point but I will summarize --

9 It is our belief that the inclusion of tracts  
10 thirteen and fifteen are premature at this point and that  
11 there are substantial recoverable primary reserves in place  
12 on those tracts and that the institution of secondary recovery  
13 at this point would be premature to the extent and the  
14 detriment of the owners of tracts thirteen and fifteen.

15 Now, with regard to tract thirteen, our testimony  
16 has shown that there is a substantial risk of physical waste  
17 with regards to the Tubb formation and that there is a  
18 serious potential risk of economic loss both on tracts  
19 thirteen and fifteen.

20 We believe that Arco has failed to show in  
21 accordance with the statutory regulations that they are unable  
22 to operate this unit without participation by Cone and Summit  
23 and the participation of those tracts.

24 It has been shown through their own witnesses that  
25 it maybe something of a nuisance to exclude those two tracts

1 but that it is certainly feasible and it will be economic  
2 and it will return them a substantial -- not only reasonable  
3 but a substantial -- profit on their investment.

4 That, therefore, there is no reason to force these  
5 two parties and these two tracts into the unit without such  
6 a showing.

7 Furthermore, with regards to the Summit tract there  
8 has been proposed a method to insititute a cooperative water  
9 flood. I realize that Arco would prefer not to do it but  
10 we believe that Mr. White's testimony is persuasive and that  
11 that method can be worked out whereby he can operate his  
12 own properties without detriment to the unit, itself.

13 Regardless of those particular objections to the  
14 unit and our belief that Arco has failed in their burden of  
15 proof to support the statutory unitization -- should the  
16 Commission believe that statutory unitization is the only  
17 remedy in this situation we would request that the order,  
18 itself, include provisions to protect the Cone tract  
19 particularly from the migration of the gas and oil off of  
20 the west boundary.

21 What I am saying is that it would be reasonable  
22 and prudent to require the unit operator prior to the  
23 commencement of the water flood in this area to execute and  
24 enter into the boundary line agreements with the offset  
25 operators to insure that the participation of all tracts,

1 including the Cone and the Summit, are not disadvantaged  
2 by allowing oil and gas to migrate off the unit.

3 That isn't a small matter and it doesn't discount  
4 the fact that we are vehemently opposed to inclusion within  
5 the unit and we will make every reasonable effort to  
6 cooperate with the unit but we believe that they have failed  
7 to meet that burden and that accordingly the application for  
8 the statutory unitization ought to be denied.

9 MR. RAMEY: Mr. Bateman, do you have a statement?

10 MR. BATEMAN: Texaco concurs with Mr. Kellahin's  
11 remarks.

12 MR. RAMEY: Thank you. Mr. Hinkle?

13 MR. HINKLE: If the Commission please, the testimony  
14 here shows the negotiations to form these units has been  
15 carried on for approximately eight years.

16 It looked like it had come to an impasse and it is  
17 going to be impossible to unitize before the statutory  
18 unitization act was passed.

19 That gave the whole thing a different complexion  
20 and the operators wanted to go ahead and more than seventy-  
21 five percent felt that it should go ahead under the  
22 statutory unitization act.

23 Now, the statutory unitization act covers the  
24 exact situation it was intended to cover, the exact same  
25 situation that we have here.

1 We have a minority interest who can't agree with  
2 the majority.

3 The evidence shows that eighty percent of the  
4 working interest owners have agreed to this unitization and  
5 it is agreed to by the U.S.G.S. who found that it was  
6 reasonable and fair.

7 We think that there is substantial evidence that  
8 has been introduced to support every finding that the  
9 Commission is required to make under the statutory unitization  
10 act. I don't think that there is any doubt about it.

11 You won't have any trouble in supporting your  
12 decision because of the evidence that has been introduced  
13 because it was substantial on everything that the Commission  
14 is required to find -- it is supported by substantial evidence.

15 As I say, this is the exact type of case that the  
16 statutory unitization act was intended to cover. We think  
17 that it is clear and that if these applications are not  
18 approved it will stymie the unitization maybe forever which  
19 would mean the waste of eight or ten million barrels of oil.

20 As far as letting out the Summit tract and tract  
21 thirteen, the Cone tract, if you do that it means that you  
22 would have to go back to all of the working interest owners  
23 and you would have to start all over and start a new  
24 agreement which would be an impossible situation.

25 These two have been the fly in the ointment at the

1 present time and they would still be if you eliminated them.  
2 An elimination of these tracts, of course, would prevent  
3 the recovery of reserves which will be recovered under  
4 the formula that has been presented.

5 We submit that the application should be approved.

6 MR. RAMEY: Thank you, Mr. Hinkle. I am going to  
7 ask that each protestant, if they so desire, to submit  
8 substitute articles to the proposed unit agreement which in  
9 their opinion would make this thing fair, reasonable, and  
10 equitable.

11 This should reflect your testimony at the hearing  
12 today.

13 MR. KELLAHIN: Do you want to set a time limit on  
14 that, Mr. Ramey?

15 MR. RAMEY: Would the fifteenth of November be  
16 sufficient time?

17 MR. HINKLE: That only applies to you all --

18 MR. KELLAHIN: The fifteenth will be fine.

19 MR. HINKLE: You are going to get up a proposal?

20 MR. KELLAHIN: Yes, sir.

21 MR. RAMEY: For the record we have letters from  
22 Chevron, Getty and from -- a telegram from Continental  
23 supporting Atlantic's case today and then the previous  
24 mentioned telegram from Roy G. Barton saying that he as a  
25 royalty owner now doesn't agree.

1 Is there anything further in the case?

2 MR. KENDRICK: Mr. Ramey?

3 MR. RAMEY: Yes, Mr. Kendrick?

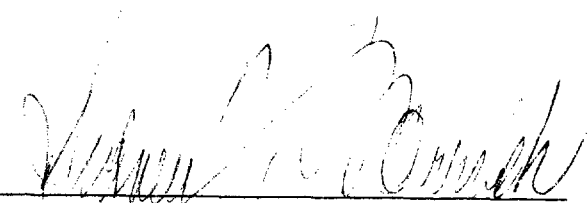
4 MR. KENDRICK: As has been heard today El Paso  
5 purchases gas from wells in this area and it is El Paso's  
6 desire to continue purchasing gas from these wells and not  
7 lose this gas that is dedicated to an interstate market.

8 MR. RAMEY: Thank you, Mr. Kendrick. The Commission  
9 will take the case under advisement and the hearing is  
10 adjourned.

11 (THEREUPON, the hearing was concluded.)  
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REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,  
do hereby certify that the foregoing and attached Transcript  
of Hearing before the New Mexico Oil Conservation Commission  
was reported by me, and the same is a true and correct record  
of the said proceedings to the best of my knowledge, skill and  
ability.

  
Sidney F. Morrish, C.S.R.

## NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARINGSANTA FE, NEW MEXICOHearing Date FEBRUARY 21, 1978 TIME: 9:00 A.M.

NAME	REPRESENTING	LOCATION
<i>H. L. Sandwith</i>	<i>El Paso</i>	<i>El Paso</i>
<i>H. W. Beneschek</i>	<i>Self Independent</i>	<i>El Paso</i>
<i>V. T. Lyon</i>	<i>CONOCO</i>	<i>HOBBS</i>
<i>Lowell B. Dickert</i>	<i>"</i>	<i>"</i>
<i>Mary O'Neill</i>	<i>NMCCA</i>	<i>Santa Fe</i>



BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
February 21, 1978

COMMISSION HEARING

IN THE MATTER OF:

Rehearings of the application of Atlantic	)	CASES
Richfield Company for two statutory unitiza-	)	5998
tions and two waterflood projects, Lea	)	6000
County, New Mexico, hearing upon the appli-	)	6069
cation of Texaco, Inc., J. R. Cone & Summit	)	6070
Energy, Inc.	)	

BEFORE: J. D. Ramey, Director  
Emery C. Arnold, State Geologist  
Phil R. Lucero, Land Commissioner

Daniel S. Nutter, Oil Conservation Commission  
Richard L. Stamets, Oil Conservation Commission

TRANSCRIPT OF HEARING

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1 MR. RAMEY: We will call, I think, the next two  
2 cases. They probably can be combined. Is there any objection  
3 to that?

4 MR. KELLY: None.

5 MR. RAMEY: Call the next two cases, please.

6 MS. TESCHENDORF: They are Cases 5998, 6000, 6069,  
7 and 6070, rehearings of the application of Atlantic Richfield  
8 Company for two statutory unitizations and two waterflood  
9 projects, Lea County, New Mexico, hearing upon the applica-  
10 tions of Texaco, Incorporated, Jr. R. Cone, and Summit Energy,  
11 Incorporated.

12 MR. RAMEY: Mr. Kelly, are you representing Texaco  
13 in this case?

14 MR. KELLY: That's right.

15 MR. RAMEY: Would it be agreeable for you to dismiss  
16 your portion of the case and become a party in the second case  
17 of this?

18 MR. KELLY: Well, I certainly want to become a  
19 party in both proceedings. I'm not sure that I would want on  
20 the record saying that I'm agreeable to dismiss it but I  
21 would like to be a party in both proceedings.

22 MR. RAMEY: In the alternative, would it be agreeable  
23 to have just one order to cover all of these cases?

24 MR. KELLY: All right, that will be fine.

25 MR. RAMEY: Okay, I will ask for appearances at this

1 time.

2 MR. HINKLE: Clarence Hinkle, Hinkle, Cox, Eaton,  
3 Coffield and Hensley, Roswell, appearing on behalf of Atlantic  
4 Richfield.

5 MR. RAMEY: How many witnesses do you expect?

6 MR. HINKLE: Three witnesses.

7 MR. KELLY: Booker Kelly, White, Koch, Kelly and  
8 McCarthy, Santa Fe. We will have one witness.

9 MR. KELLAHIN: Tom Kellahin, Kellahin and Fox,  
10 appearing on behalf of J. R. Cone and Summit Energy, Inc. I  
11 have two witnesses.

12 MR. RAMEY: How do you want to proceed?

13 MR. HINKLE: If the Commission please, of course,  
14 these are the applications filed by the protestants in these  
15 cases and I think that the Commission should approve that they  
16 have the burden of proof because the order stands as it is and  
17 they have requested that the hearing be limited to Tracts 13  
18 and 15 and it seems to me that the Commission should rule that  
19 they have the burden of proof and then, of course, we will  
20 follow with our evidence.

21 MR. RAMEY: Okay.

22 MR. KELLY: Well, I would object to that procedure.  
23 I think that this is a rehearing in front of the full Com-  
24 mission that has been granted. This isn't really a procedure  
25 for appeal in the situation and a rehearing is a de novo

1 hearing and it is just like you are hearing the whole thing  
2 over again except the issues are limited.

3 MR. KELLAHIN: I agree with Mr. Kelly, Mr. Ramey.  
4 It's not our burden to prove or disprove what Atlantic  
5 Richfield is seeking to accomplish. By granting the rehearing  
6 it is my opinion that the Commission has found probable cause  
7 for granting the application, that there perhaps is some merit  
8 to the matters raised in the application for rehearing and as  
9 Mr. Kelly has indicated, we will need to proceed as if this  
10 was a first rehearing and simply have Atlantic Richfield  
11 present their case again.

12 MR. RAMEY: All right, we will rule, Mr. Hinkle,  
13 that you will put on your case first and if you want to bring  
14 your witnesses back after--

15 MR. HINKLE: Well, is it all right for the record to  
16 show as far as these tracts are concerned, the evidence which  
17 was previously introduced on behalf of Atlantic Richfield in  
18 these cases. I don't see any use in encumbering the record  
19 with a whole lot of duplication here of this whole thing.

20 MR. KELLY: I would like to be heard on this. I  
21 sympathize with the Commission's concern and Mr. Hinkle's  
22 concern about putting everything on again but I think that  
23 the status of this case is that it has to be heard again.  
24 Now I wouldn't have any objections to incorporating the testi-  
25 mony to the extent that it doesn't relate to any of the issues

1 in this case as far as the basic proof or the waterflood  
2 or the unit other than where it conflicts with the issues that  
3 are in this case but anything that would pertain to the issues  
4 now I think has to be live testimony subject to cross examina-  
5 tion and it would be an error for the Commission to trim this  
6 into some sort of an appellant based on the earlier record.

7 MR. RAMEY: What concerns me is that I wonder if  
8 Atlantic Richfield can put on a case without covering the  
9 whole matter.

10 MR. HINKLE: That's our concern. We don't know just  
11 where to start and leave off on this thing. As the Commission  
12 well knows, we put on a full case before and it covered the  
13 whole unit and the waterflood and everything and it wasn't  
14 limited to just Tracts 13 and 15. Now I think that there is  
15 no use in duplicating all that we have put on before. We  
16 have some evidence which we will put on that relates directly  
17 to 13 and 15 and I think it will cover just what you want,  
18 with the understanding that all of the evidence that was  
19 previously introduced covering the whole unit and the water-  
20 flood, insofar as it relates to 13 and 15 will still go in.

21 MR. RAMEY: I think I will change horses in the  
22 middle of the stream and I think I will have the applicants  
23 in the case, being Cone and Summit and Texaco, put on their  
24 case first and then Atlantic put on theirs.

25 MR. HINKLE: I think it will be more orderly.



1 MR. KELLAHIN: May I ask for a clarification, Mr.  
2 Ramey, if you please? Does that also mean that you are ruling  
3 that the burden of proof is upon J. R. Cone, Summit Energy,  
4 and Texaco to prove the merits of their application for a re-  
5 hearing?

6 MR. RAMEY: I would think so, Mr. Kellahin.

7 MR. KELLAHIN: We would take exception with placing  
8 the burden of proof on J. R. Cone and Summit Energy, Inc., but  
9 we will proceed as you order.

10 MR. KELLY: For the record I would like to object on  
11 behalf of Texaco not only to the shifting of the burden of  
12 proof but as to the shifting of the presentation of evidence  
13 which is totally contrary to the whole concept of a hearing  
14 de novo which the Commission granted.

15 MR. RAMEY: Your objections will be noted.

16 Who wants to go first? Mr. Kelly, do you want to go  
17 first?

18 MR. KELLY: I would defer to Mr. Kellahin.

19 MR. RAMEY: I would ask at this time that all  
20 witnesses please stand and be sworn at this time.

21 (THEREUPON, the witnesses were duly sworn.)

22 MR. KELLAHIN: May I ask for one more clarification,  
23 Mr. Ramey? Have you in your comments incorporated the previous  
24 record in this case before the Commission for reconsideration?

25 MR. RAMEY: I think it would be proper to do so.

1 MR. KELLAHIN: I'm not making that motion, it was  
2 simply to inquire as to where we stand on the previous record.

3 MR. RAMEY: Does someone want to make that motion  
4 that we incorporate the previous record?

5 MR. HINKLE: I would so move.

6 MR. RAMEY: Any objections?

7 MR. KELLY: I would have to object on the basis of  
8 our previous statements. This is not an appellant procedure  
9 and it has not been approved in this hearing.

10 MR. KELLAHIN: We concur in Mr. Kelly's objections  
11 to the incorporation of the record, I will, however, in  
12 handling this case, based upon your decision, refer to that  
13 record and in doing so I want to make it clear that I am in  
14 no way waiving what we believe to be an error in the incorpora-  
15 tion of that record.

16  
17 JOHN C. BYERS  
18 called as a witness, having been first duly sworn, was  
19 examined and testified as follows:

20 DIRECT EXAMINATION

21 BY MR. KELLAHIN:

22 Q Mr. Byers, would you please state your name, address  
23 and occupation?

24 A John Byers, Lubbock, Texas, I am a professional  
25 engineer employed by J. R. Cone.

1 Q Mr. Byers, have you previously testified before this  
2 Commission and had your qualifications as an expert petroleum  
3 engineer accepted and made a matter of record?

4 A Yes, we have.

5 MR. RAMEY: Mr. Kellahin, I want to interrupt just  
6 a moment.

7 MR. KELLAHIN: Yes, sir.

8 MR. RAMEY: We will incorporate the record on the  
9 previous case.

10 Q (Mr. Kellahin continuing.) Mr. Byers, did you appear  
11 on behalf of J. R. Cone and provide testimony in the hearing  
12 in this case on October 20, 1977?

13 A Yes, I did.

14 Q Have you made a study of and are you familiar with  
15 the facts surrounding the application of Atlantic Richfield  
16 Company for statutory unitization and waterflood projects as  
17 they affect the J. R. Cone Company?

18 A Yes, I have.

19 MR. KELLAHIN: If the Commission please, are Mr.  
20 Byers' qualifications as an expert witness acceptable?

21 MR. RAMEY: Yes, they are.

22 Q (Mr. Kellahin continuing.) Mr. Byers, do you have  
23 a copy of the outlined proposed Arco unit in this case?

24 A I believe I do. Yes.

25 Q What tract has Atlantic Richfield designated by way

1 of number for the J. R. Cone interest?

2 A Tract Number 13.

3 Q And where is that Tract located?

4 A That consists of the southwest one quarter of Section  
5 14, Township 21 South, Range 37 East, Lea County, New Mexico.

6 Q Would you describe briefly for the benefit of the  
7 Commission what wells J. R. Cone operates on Tract 13?

8 A There are four boreholes on this Tract, each of which  
9 are multiply completed either in the Blinebry, Drinkard,  
10 Tubb or open but not completed in at this time, the Abo  
11 formation.

12 Q All right, commencing with the first well on that  
13 Tract, Mr. Byers, could you describe its location, its name,  
14 and its current status of completion?

15 A The No. 1 Well is located in Proration Unit M, I  
16 believe it is. It's in the southwest quarter of the southwest  
17 quarter of Section 14. It is a dually completed well in the  
18 Blinebry and Drinkard, both production.

19 Q All right, sir, and Well No. 2?

20 A Well No. 2 is located in Proration Unit L, Section  
21 14, being the northwest quarter of the southwest quarter.  
22 This well is dually completed in the Blinebry and Tubb.

23 Q And Well No. 3?

24 A No. 3 is located in Proration Unit K, I believe. It  
25 is the northeast quarter of the southwest quarter of Section

1 14, Township 21 South, Range 37 East. It is dually completed  
2 in the Blinebry and Drinkard.

3 Q Well No. 4?

4 A Well No. 4 is located in Proration Unit N of the  
5 southeast quarter of the southwest quarter of Section 14. It  
6 is dually completed in the Blinebry and Drinkard. It has a  
7 bridge plug set over tested production in the Abo.

8 Q All right. Has J. R. Cone received permission to  
9 commingle production in any of those wells?

10 A Yes, production is commingled in the Blinebry and  
11 Tubb of No. 2.

12 Q Are there any other wells in which the production is  
13 commingled?

14 A I believe it is commingled downhole in No. 3. I  
15 may be corrected on that.

16 Q All right, now, Mr. Byers, J. R. Cone is the operator  
17 of Tract 13, what interests does Mr. Cone represent in that  
18 Tract?

19 A Approximately thirty percent, I believe it is,  
20 working interest.

21 Q Can you identify for us the other working interest  
22 owners in Tract 13?

23 A Yes, Texaco has a mineral interest to the extent of  
24 forty-one percent of that quarter section. Mr. Jack Marcum  
25 has a working interest equal to twenty-three point three two

1 percent of the working interest. Redfern Oil Company, five  
2 percent; J. R. Hurd, three point five percent. Mr. Cone's  
3 interest is twenty-six point five percent.

4 Q Mr. Byers, have the working interest owners of  
5 Tract 13 agreed to voluntarily join in the formation of this  
6 unit for waterflood projects and unitization of the Blinebry  
7 and the Drinkard formations?

8 A No.

9 Q Would you state briefly the reasons why J. R. Cone  
10 has not sought to participate on a voluntary basis?

11 A The first reason, we are not convinced that there is  
12 not a high risk in secondary recovery, particularly with re-  
13 spect to our lease. During 1977 the production from the four  
14 wells in Tract 13 created a net profit to the working interest  
15 of four hundred and forty-four thousand, two hundred and twenty  
16 dollars. We hardly think this is a stripper lease. Our  
17 production is substantially greater than the average of the  
18 unit area. We concur with Atlantic that secondary recovery  
19 is probably imminent but it is not time.

20 Our second principal objection: We started into  
21 this thing and encouraged, if it had to be unitized, the  
22 unitization of all horizons underlying this lease. We do not  
23 see that we can physically separate them. Atlantic attempted  
24 this, failed, and then they came up with a gimmick in the unit  
25 operating agreements requiring, literally providing for them

1 the right to confiscate personal property. The right  
2 generates, I believe it's from Article Eleven of the operating  
3 agreement whereby we are required to deliver a well or wells  
4 located on each forty acre tract. In the absence of our  
5 delivery of satisfactory wells to the unit they are assessing  
6 a fine against us of up to two hundred thousand dollars a  
7 location. To me this is pure confiscation. We have valid,  
8 producing oil and gas rights in the Abo and also the Tubb.  
9 These are producing, generating good revenue. We have so  
10 completed our wells that we could exploit all four horizons  
11 throughout the history of this lease economically and do so  
12 orderly. Atlantic is asking us now to violate everything that  
13 we have done in the past.

14 Q In your opinion, Mr. Byers, will waste occur if  
15 Tract 13 is excluded from the unit?

16 A Waste will not occur. We have not seen a provision  
17 as to the protection of the boundary of this proposed unit.  
18 If we do not develop the secondary recovery program at this  
19 time oil is not going anywhere. Now if we do develop a  
20 secondary recovery program and we are required to shut in our  
21 Tubb gas production, our Tubb reserves are going directly to  
22 the offset operators who is producing the Tubb immediately  
23 up dip from us. We would either be forced with a recompletion  
24 of that well, an expensive well, or the loss of our reserves.

25 Q You mentioned the Tubb reserves, is there a loss of

1 any other reserves?

2 A I don't think we are talking about a loss of reserves  
3 as far as the reserve as it benefits production to the State  
4 or our country, we are talking about the loss of reserves to  
5 the individual owners.

6 Q In your opinion, Mr. Byers, will the inclusion of  
7 Tract 13 into the unit result in physical waste?

8 A It could well result in physical waste. We are  
9 producing both Tubb gas, a loss of reserves to us, we are  
10 producing Tubb and Blinebry gas, we started injecting into the  
11 Blinebry, we are going to move gas updip to be captured else-  
12 where, we are going to lose our Tubb rights and in all  
13 probability we will end up losing the Abo rights, reserves.

14 Q In your opinion, Mr. Byers, can the unit effectively  
15 carry on secondary recovery operations without the inclusion  
16 of Tract 13?

17 A Yes, I see no reason that they can't.

18 Q Upon what do you base that opinion?

19 A There is adequate room in this unit in the northern  
20 and eastern half of the unit area to develop to a reasonable  
21 degree, probably as much as two-thirds of this unit area,  
22 produce that to a point at which we may see that the method of  
23 operations is truly adequate and can result in the recovery of  
24 additional natural resources.

25 Q Have you had an opportunity to examine the unit



1 agreement and the unit operating agreement proposed by Arco?

2 A Yes.

3 Q And have you also had an opportunity to examine the  
4 injection pattern to be used for the waterflood project?

5 A Yes, I have.

6 Q Would you describe for us briefly the proposed in-  
7 jection pattern to be used?

8 A They are proposing a five-spot pattern based on  
9 injection wells on forty-acre locations such that in essence  
10 every other well will be converted to an injection well,  
11 either in the Blinebry and Drinkard or one of the other  
12 horizons.

13 Q Tract 13 is located on the west boundary of the  
14 proposed unit, is it not?

15 A That is correct.

16 Q Along the west boundary of the proposed unit how  
17 many of those five-spot patterns are open?

18 A By open you mean no injection offsetting the unit?

19 Q That's right.

20 A There are none, they have provided none.

21 Q What is the distance in miles along the west boundary  
22 of the unit?

23 A About six and a half miles, the open area, north  
24 and south and west, about six and a half miles.

25 Q If Tract 13 is excluded from the unit what will be

1 the increase in open area to which the unit is exposed?

2 A Increased about a half a mile.

3 Q Are you aware of any proposal by the unit to provide  
4 for lease line protection by way of injection wells on the  
5 unit?

6 A They have mentioned it but we have seen nothing  
7 concrete.

8 Q In your opinion, Mr. Byers, will the inclusion of  
9 Tract 13 into the proposed unit be premature at this time?

10 A Very.

11 Q Do you have any exhibits that you prepared, Mr.  
12 Byers?

13 A We offer our summary of net operating income for  
14 the year 1977 as taken from our books and based upon even the  
15 differential crude, natural gas prices received by Texaco and  
16 Cone.

17 Q Would you describe what information is contained on  
18 J. R. Cone Exhibit Number One to this hearing?

19 A From our books we have determined the net receipts  
20 from oil sales to Cities Service Oil Company for the calendar  
21 year 1977. This is shown in the first column. Less the  
22 taxes paid, this is, of course, production tax, leaving a net  
23 revenue of oil sales of two hundred and forty-four thousand,  
24 six hundred and eighty-two dollars and five cents. We have  
25 also entered similarly gas sales to El Paso and gas sales to

1 Gulf Warren Petroleum Company. These are two separate sales  
2 contracts, the one relating to high pressure the other to low  
3 pressure gas. The sum of the gross revenue from this lease  
4 during calendar year 1977 was five hundred and ten thousand,  
5 two hundred and sixty-three dollars and thirty-nine cents. We  
6 paid a gross production severance tax of thirty-eight thousand  
7 seven hundred and forty-one dollars and seventy-six cents,  
8 leaving a net revenue to the working interest of four hundred  
9 and seventy-one thousand, five hundred and twenty-one dollars  
10 and sixty-three cents. Our lease operating expense during  
11 that twelve-month period was twenty-seven thousand, three  
12 hundred and one dollars and sixteen cents, leaving a net profit  
13 for the year of four hundred and forty-four thousand, two  
14 hundred and twenty dollars and forty-seven cents.

15 Q Have you prepared any other exhibits?

16 A None that are viable.

17 Q Okay. In your opinion, Mr. Byers, is the inclusion  
18 of Tract 13 into the unit necessary for the unit in order for  
19 it to recover a reasonable profit?

20 A No, it is not. If this unit represents something  
21 less than ten percent or in the order of ten percent of the  
22 participation of the unit, the unit is anticipating seventy  
23 odd million dollar return on the project itself. If we reduce  
24 that by ten percent it seems to me there is still sixty odd  
25 million dollars which is a reasonable profit I would say.

1 Q In your opinion, Mr. Byers, will the unitization  
2 benefit the owners of Tract 13?

3 A Not at this time.

4 Q Indicating not at this time, are you able to antici-  
5 pate at what time in the future Tract 13 would be ready for  
6 secondary recovery?

7 A At such time that we could reasonably anticipate  
8 without doubt that secondary recovery as applied under these  
9 techniques to the Blinebry and Drinkard could be reasonably  
10 expected to be highly successful to the degree that Atlantic  
11 has indicated. At the present time the only corollary we  
12 see is the Gulf Central Drinkard Unit which has not performed  
13 to this degree and there is no indication that it ever will.  
14 If we are looking at a performance that low then it is our  
15 opinion that we should deplete our lease by primary methods  
16 because we are representing a substantial future revenue of  
17 primary depletion before we enter into a risk of development  
18 of secondary recovery on this thing.

19 Q Mr. Byers, do you have an opinion expressed in the  
20 number of years as to how long it will take the owners of  
21 Tract 13 to deplete the Blinebry, Tubb, and Drinkard?

22 A According to the decline curves extrapolated by the  
23 East Blinebry Drinkard Engineering Committee, approximately  
24 thirteen years. I believe that's in the order.

25 MR. HINKLE: Excuse me, is that the Tubb and

1 Blinebry both?

2 A No, Blinebry and Drinkard.

3 MR. HINKLE: Thank you.

4 Q (Mr. Kellahin continuing.) How many years will it  
5 take you to deplete the Tubb?

6 A Probably another nine years at present rates.

7 Q You made reference to the Gulf Central Drinkard  
8 Unit, are you familiar with the efficiency of that particular  
9 waterflood project?

10 A We are familiar with it to the extent that we have  
11 observed the production from it and also the development and  
12 have compared the rate of production on a barrels per month  
13 basis per well to that of this proposal.

14 Q Could you describe briefly how the proposed Arco  
15 unit and the Gulf Central Drinkard Unit compare in operation  
16 and proposed efficiency?

17 A Similar techniques have been employed. As Atlantic  
18 has pointed out, they did not develop the Central Drinkard  
19 Unit in its entirety initially yet they developed an adequate  
20 part of it to prove or disprove the feasibility of secondary  
21 recovery and it has been successful to a minor degree. The  
22 degree of success based on production or in terms of barrels  
23 per well month has only attained an efficiency of about thirty-  
24 five or forty percent, what Atlantic anticipates from this one.  
25 If we can't anticipate a greater degree of success than that

1 so far as barrels per day from our wells, revenue from our  
2 wells, then we are looking at a marginally economic project,  
3 particularly in view of the fact that we are here looking at  
4 last year's revenue of four hundred and forty-four thousand  
5 for this thing, operating our wells on an average of less than  
6 three hundred dollars per well a month. The minute we go into  
7 this unit we are going to increase our operating cost on these  
8 wells by almost three fold.

9 Q Do you recall, Mr. Byers, what Arco's testimony was  
10 with regards to the anticipated efficiency of their proposed  
11 unit?

12 A They anticipated a peak efficiency of about twelve  
13 hundred barrels per well per month average.

14 Q Can you express that in a percentage?

15 A A percentage of the Gulf Drinkard?

16 Q No, sir, a percentage as to one hundred percent full  
17 secondary recovery of the Drinkard and Blinebry.

18 A They have anticipated an average production of  
19 approximately thirteen hundred barrels per well per month  
20 average from the unit. This is under full development and  
21 I'm assuming that we have full backup of lease line injection  
22 patterns surrounding it. The Central Drinkard Unit has  
23 performed only to the extent of about forty percent of this.

24 Q What I'm getting to, Mr. Byers, was the percentage  
25 factor that Arco used in determining all of their numbers,

1 they were using a seventy percent figure, were they not?

2 A They are using ultimate recovery, they are anticipa-  
3 ting seventy percent recovery, barrel per barrel primary.

4 Q All right, they are using a seventy percent figure.  
5 Let's assume that Tract 13 is excluded from the unit and does  
6 not participate, can you express in dollars what the remaining  
7 reserves of the Blinebry, Tubb and Drinkard will represent to  
8 the unit?

9 A They are attributing approximately ten million  
10 barrels to the Blinebry and Drinkard. I think this reserve  
11 potential is in order. Tract 13 represents approximately ten  
12 percent of this, therefore, we must represent approximately a  
13 million barrels in their opinion. I think this is probably  
14 well in order also if the project can be operated with the  
15 degree of efficiency that their calculations have indicated.  
16 Now then if we remove Tract 13 from the Unit then it is  
17 evident that we reduce their potential reserves from the unit  
18 by about ten percent, instead of ten million they are looking  
19 at roughly nine million barrels.

20 Q The question was, Mr. Byers, if Tract 13 is excluded  
21 from the unit and does not participate and you continue to  
22 operate as you have and continue through secondary recovery,  
23 do you have a figure expressed in dollars as to what the  
24 value is of your reserves?

25 A We think that our future net revenue of continued

1 of continued primary operations in this thing and also  
2 apparently Atlantic concurs with us in this, approximately  
3 seven and a half to eight million dollars that we are going to  
4 recover. Through unitization, participation in this unit, if  
5 it is successful as has been indicated, through continued  
6 primary operations, depletion of the thing to its end product  
7 we see at this time, we are going to generate a revenue of  
8 six million, four hundred and fourteen thousand dollars.

9 Q All right, this six million, four hundred and  
10 fourteen thousand dollar figure represents what Tract 13 will  
11 realize if they do not participate in the unit?

12 A That's right, from continued primary.

13 Q All right, now, if we use the seventy percent  
14 figure that Arco is recommending as their success rate and  
15 Tract 13 is included, what then will be the value realized  
16 by Tract 13, expressed in dollars?

17 A Approximately eight million seven hundred thousand  
18 or about two point three million greater than primary.

19 Q Now that's based upon a seventy percent figure?

20 A That's right.

21 Q In your opinion, Mr. Byers, is that seventy percent  
22 efficiency figure a realistic figure to use for this project?

23 A Not at this time.

24 Q Why not?

25 A Because we have not seen a comparable performance in



1 any portion of the Central Drinkard Unit.

2 Q Assuming that the Arco project is no more efficient  
3 than this Gulf Central Drinkard Unit and that the success rate  
4 is somewhere between thirty-five and forty percent, what then  
5 would be the value expressed in dollars as to Tract 13?

6 A We would probably reduce our revenue under the unit  
7 by some three and a half million dollars, if so, we have re-  
8 duced our future revenue from the unit to a figure of approxi-  
9 mately five point two million or about a million less than we  
10 can obtain through continued primary.

11 Q Now you made a reference awhile ago to the allocation  
12 of costs, Mr. Byers, I would like to direct your attention to  
13 whether or not you feel Arco has provided figures that are fair  
14 and reasonable with regards to their anticipated costs of  
15 running this project?

16 A I think that they are a little bit excessive.

17 Q All right, let me ask you this, what are Cone's  
18 current cost of monthly operation for Tract 13?

19 A Less than three hundred dollars per well a month.

20 Q All right, if you participate or are forced to  
21 participate under the unit what will your costs be?

22 A We have no real control on this, the last economic  
23 prognosis, I believe, was put out in 1976. At that time it  
24 was indicated--the best I can determine that our average cost  
25 probably under the unit will probably be in the order of nine

1 hundred dollars per well a month.

2 Q Okay. So under your current operations you are  
3 operating at about three hundred dollars a well month?

4 A That's right.

5 Q And under the proposed unit operations it is possible  
6 that your costs would increase to something like nine hundred  
7 dollars a well month?

8 A That much.

9 Q With regard to these costs, Mr. Byers, have you made  
10 a comparison to see how the costs of operating Tract 13 within  
11 the unit would compare to the cost of the other tracts within  
12 the unit?

13 A Under the unit?

14 Q Yes, sir.

15 A There is a point that I'm concerned about and it has  
16 not been clarified as I can find anywhere in the plan of  
17 operation provided for the unit. We are looking at our wells,  
18 at least the producing side of our wells, being commingled  
19 under the plan of operation, commingled between the Blinebry  
20 and Drinkard, in which case the basic overhead costs I believe  
21 provide a hundred and fifty-five dollars per well month and  
22 the north and east, well, scattered throughout this unit, we  
23 see multiple wells completed in proration units and we presume  
24 that they will be retained on production, therefore, what are  
25 we looking at there as far as overhead costs, are we looking at

1 two overhead costs or just one as in the case of ours. Some of  
2 these proration units we see as many as three multiple wells  
3 completed, how are we going to handle that? It seems a little  
4 bit inequitable that we should be required to give up our Tubb  
5 or pay a fine and still assist in the workover if it's neces-  
6 sary of all of these other multiple completions or multipley  
7 drilled holes.

8 Q In your opinion, Mr. Byers, will a participation on  
9 that basis by Tract 13 be upon an arbitrary disproportionate  
10 basis with the other tracts within the unit?

11 A I think probably the participation equation was  
12 reasonably negotiated, certainly to the satisfaction of the  
13 majority of the interest owners, it would appear, and although  
14 it's not a major factor, I object to the inclusion of an  
15 acreage factor in this thing. We've got about a half section  
16 of goat pasture included on the east side of it.

17 Q Has the participation factor suggested by Arco for  
18 Tract 13 taken into consideration all of your Blinebry and  
19 Drinkard?

20 A Yes, it has.

21 Q Let me direct your attention to this two hundred  
22 percent penalty factor as expressed in Paragraph 11-1 of the  
23 operating agreement.

24 A Two hundred percent?

25 Q The paragraph number isn't 7.1?

1 A Two hundred percent non-participation?

2 Q I'm talking about the two hundred thousand dollars.

3 A Two hundred thousand, all right.

4 Q Would you express for the Commission J. R. Cone's  
5 position with regards to the two hundred percent provision in  
6 that agreement?

7 A The two hundred thousand dollars?

8 Q I'm sorry, I keep saying percent, it is two hundred  
9 thousand dollars, the factor.

10 A We think certainly that we developed the Blinebry,  
11 Tubb, and Drinkard in this hole and elected to produce the  
12 Blinebry and Tubb in order to protect the rights to this  
13 lease because of offset Tubb production. We are down to a  
14 point of probably some four hundred thousand MCF of reserves  
15 in this thing; we are producing about three hundred thousand  
16 a day, generating good revenue, and we are being asked to  
17 abandon this well or if we do not elect to abandon it, pay a  
18 fine of two hundred thousand dollars to the operators of the  
19 unit. This seems inconsistent. I think that if we are to be  
20 forced to abandon this well then the unit should make this  
21 reciprocal and they should pay us for abandonment costs and  
22 replacement cost just as though they are asking us to replace  
23 the well for them.

24 Q Let me direct your attention to a provision in the  
25 Commission Order with regards to certain wells within the Unit

1 boundaries which require certain remedial work, are you  
2 familiar with that provision?

3 A Yes, the Commission has found apparently through  
4 their records that we do not have available that there are  
5 indications of inadequate cement behind the pipe in several  
6 wells both in and adjacent to the Unit. They ordered that  
7 cement bond logs be run in these wells but if inadequate cement  
8 is found to protect the migration of water from the zone of  
9 entry that it should be re-cemented. However, if there is  
10 such a well inside of the unit and nowhere in the unit agree-  
11 ment or in the order is there a provision made for the  
12 offset of expenses to be required in doing this work. If such  
13 wells are inside of the unit then certainly to me, clearly,  
14 it should be the responsibility of the owner contributing that  
15 well to do all of this work. If it is outside of the unit  
16 then certainly I can justify the unit expense for doing it.

17 Now I think the order as written also is a little  
18 bit short sighted in that they refer, I believe, to the  
19 Blinbry as avoiding migration upward. If we are going to  
20 isolate the Blinbry we've got to isolate it from migration of  
21 waters both above and below and we've also got to isolate the  
22 Drinkard from migration both above or below or we are going to  
23 damage both the Tubb and the Abo.

24 MR. KELLAHIN: I believe that's all the questions  
25 I have for Mr. Byers at the moment.

1 MR. RAMEY: Any questions of the witness? Mr. Hinkle?

2 MR. HINKLE: I think I have a few.

3 CROSS EXAMINATION

4 BY MR. HINKLE:

5 Q Mr. Byers, my questions may not be exactly in the  
6 order in which you testified here to different things but I'll  
7 take them as they come here.

8 First, refer to your exhibit, Cone Exhibit Number One,  
9 which shows the revenue there. Now that's for the whole Byers'  
10 lease?

11 A That's for the whole Eubanks' lease, seven-eighths  
12 working interest.

13 Q And that's a gross income, you might say, because  
14 you do not take off taxes?

15 A Yes, we take off gross production tax, not income  
16 tax.

17 Q Now you testified, I believe, to the effect that  
18 the Gulf Central waterflood has been about forty percent  
19 efficient?

20 A Yes, forty percent of the efficiency anticipated for  
21 this unit.

22 Q How long has that been in operation?

23 A It's about 1968, I believe it was, the first  
24 reasonable expansion, I believe, was 1972, if I'm not mistaken.

25 Q What is the anticipated life of it?

1 A I haven't projected that.

2 Q Now the anticipated life of the Atlantic Richfield  
3 waterflood here is about twenty-one years.

4 A Here, Mr. Hinkle, I think we have got to anticipate,  
5 I'm not disagreeing with the end result, I think that the  
6 recovery of the oil from both the Atlantic proposal and the  
7 Gulf Central Drinkard probably are going to be comparable, the  
8 end result of barrels recovered. The whole purpose of secondary  
9 recovery is to shorten time. Now if the efficiency attained  
10 by the Central Drinkard Unit is only forty percent of that  
11 that we anticipate for the Blinebry Drinkard Unit then it is  
12 evident to recover comparable volumes of oil we are going to  
13 have to operate that unit two and a quarter times as long or  
14 fifty years instead of twenty-one.

15 Q Did they start this out as the pilot flood started  
16 out?

17 A I think they did.

18 Q Wouldn't that draw it out a little bit longer?

19 A Not necessarily.

20 Q How can you determine at this time that it is only  
21 forty percent efficient when you are just early in the life  
22 of it?

23 A If we take the wells affected and take the gross  
24 production from the profit, the monthly basis and we divide  
25 the gross monthly production by the number of wells producing,

1 we come up with barrels per well month. Then if we take the  
2 projected performance curve from the East Blinebry East Drinkard  
3 Unit and if we take the peak production in barrels per month  
4 and divide that by the anticipated number of wells to be pro-  
5 ducing we come up with a comparable barrels per well month.  
6 These two are comparable numbers.

7 Q Now I gather from your testimony that one of your  
8 personal objections is to try to replace Well No. 2 which is  
9 a gas well from the Tubb and Blinebry?

10 A It certainly is. Of this four hundred thousand  
11 dollars that we generated last year approximately a quarter of  
12 that came from gas out of this well.

13 Q Now that well is dually completed in the Blinebry and  
14 Tubb formations?

15 A Yes, it is.

16 Q What percentage of your gas being produced comes  
17 from the Blinebry?

18 A We allocate this based on annual tests. The Blinebry  
19 is about fifty-six percent, I think it is, the Tubb is about  
20 the remainder.

21 Q So you've got fifty-six and forty-four percent?

22 A Roughly.

23 Q Now in your previous testimony you testified that  
24 your principal reserves are in the Tubb, I believe?

25 A I believe they are.



1 Q What do you estimate the reserves to be?

2 A I think they are a little bit greater. Atlantic's  
3 Engineering Committee estimated approximately four hundred  
4 thousand MCF remaining and I don't vastly disagree with this  
5 even though we are seeing somewhat of a flattening in the  
6 pressure curve, we may have some influence because this well  
7 is commingled in the Blinebry and the Tubb. There may be some  
8 influence in this that we do not control.

9 Q By the replacement of this well you are contending  
10 you will lose your reserves in the Blinebry, is that right?

11 A No, we are losing the reserves in the Tubb.

12 Q In the Tubb?

13 A We would assume that our participation in this well  
14 will certainly offset the Blinebry gas reserves, I hope we  
15 operate efficiently. Now we also have available to us sub-  
16 stantial gas reserves and we see no reason they should not  
17 extend up to and including possibly three billion feet of gas  
18 from our No. 4 Well. We have not seen any discernible  
19 measure of interference between our Tubb production and that  
20 of Moran offsetting us to the north thirteen hundred and  
21 twenty feet. Why should we not then expect to the southeast  
22 some eighteen hundred feet away to produce similar reserves  
23 under the No. 4 Well when the section is comparable or better?

24 Q You mentioned the Moran Well to the north, it's,  
25 you might say, an offset to your No. 2?

1 A Yes, it is.

2 Q And you know Moran has consented to the unit?

3 A That's their problem.

4 Q And he is also producing about the same amount of gas?

5 A Yes, that's right.

6 Q Now I believe, I don't know whether you expressed it  
7 or not, but you did before, I believe, your concern that maybe  
8 there is a mixup in the completion or recompletion of the  
9 No. 2 Well there that you would plug off the Tubb formation?

10 A I don't think there is any doubt if you try to work  
11 on this well to recomplete it and isolate the Blinbry in  
12 order that we may retain just our Tubb rights in the thing, I  
13 don't think there is any doubt but we would probably also  
14 damage our Tubb.

15 Q Well, now, would your objections be met substantially  
16 if this 11.1 in the operating agreement were amended to pro-  
17 vide that you would have the option of drilling the replace-  
18 ment well and completing it in only the Tubb formation and let  
19 the unit rework the other well, that No. 2 Well and plug off  
20 the Tubb so that they would open the Blinbry and the Drinkard?

21 A We have that inherent right under the unit agreement  
22 as it is drawn and has been approved, this is one of our  
23 objections among others. We have the right to redrill any-  
24 where on the lease that is permissible by the Commission to  
25 recover our Tubb but we already have a well that is recovering

1 our Tubb and we are being denied this well through this order.

2 Q But under the terms of the unit you are to furnish  
3 a wellbore for each forty acre tract?

4 A That's right and this is what causes the conflict.

5 Q I'm just saying that if this were amended so that  
6 they could drill a Tubb gas well and give you the right to  
7 produce that and produce your Tubb reserves and so forth would  
8 that meet your objection?

9 A It would alleviate part of it.

10 Q Well, it wouldn't cost any more, in other words,  
11 all you would have to pay is two hundred thousand dollars  
12 toward it and the unit would pay the balance?

13 A That's the way the provisions are written now.

14 Q Yes, but the difference is that they would drill a  
15 new well to be produced from the Blinebry and the Drinkard.

16 A Yes.

17 Q If you amend it to say that you could drill a well  
18 to be produced, it would be your well, the owners of Tract 13,  
19 to be produced from the Tubb formation?

20 A We have that right, there would be no modification,  
21 we have that right now. In forming this unit we will not  
22 relinquish our rights to the Tubb or the Abo, only to the  
23 Blinebry and the Drinkard. If we contribute this well we still  
24 have the right to go out and drill another well but it is  
25 going to cost us.

1 Q That's right but I'm talking about the well that  
2 you are to furnish.

3 A It will still cost us two hundred thousand dollars.

4 Q That's right, but as I say the difference is there  
5 that you would modify it so that they could drill a gas well  
6 to the Tubb and turn it over to you to produce that Tubb. As  
7 I understand your principal objection is that you are being  
8 denied the right or possibly being denied the right to the  
9 Tubb reserves?

10 A That's right. I think this would alleviate part of  
11 our problem but we still have our problem, we are convinced  
12 that we have provided for further depletion of Tubb reserves  
13 in this area through our No. 4 Well. What are we going to do  
14 with it then, we have the same problem. If you relieve us on  
15 one side, pay us two hundred thousand dollars, you pick up the  
16 two hundred thousand instead of us, you still only solve half  
17 of the problem, we still have another well to concern us.

18 MR. KELLY: Mr. Commissioner, I'm wondering if this  
19 is a little bit unusual but may I ask counsel a question I'm  
20 not so sure about but I don't know whether this could be  
21 classified as deposal. Are you suggesting as a proposal that  
22 the unit would pay the cost of drilling a Tubb well to replace  
23 the--

24 MR. HINKLE: No, only, you see, 11.1 of the operating  
25 agreement provides that if they fail to furnish a wellbore that

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1 that is usable in the unit that they can drill another well  
2 and that they would pay two hundred thousand dollars of the  
3 cost of that well and the unit, working interest owner unit,  
4 pay the rest but that contemplates completing a well to be  
5 produced from the Blinebry and the Drinkard formations. Now  
6 my question to him was, would it answer his objections if that  
7 were amended to provide that that well could be drilled and  
8 completed as a Tubb gas well and they would only have to pay  
9 two hundred thousand and the unit would pay all of the differ-  
10 ence and that well be turned over to the Cones and these  
11 owners and they could produce it as a gas well.

12 MR. KELLY: All right.

13 MR. HINKLE: This is simply a suggestion to answer  
14 their objections that they are going to be denied their right  
15 possibly to produce their Tubb rights by working over this  
16 other well. I will just throw that out as a suggestion. We'll  
17 have some testimony along that line, this is just a prelude to  
18 it.

19 Q (Mr. Hinkle continuing.) I might ask you this,  
20 Mr. Byers, do you think that one well completed in the Tubb  
21 formation will effectively and efficiently drain the gas from  
22 a hundred and sixty acres?

23 A We think possibly it could.

24 Q Regardless of where it is located?

25 A No, I think it would have to be moved from the present

1 location, perhaps, in order to.

2 Q Well, the suggestion I made there would contemplate  
3 that you could drill that well anyplace you wanted to on this  
4 hundred and sixty acres.

5 A I understand this, Mr. Hinkle, but still it does not  
6 relieve us of anything, we are still spending the same two  
7 hundred thousand dollars and giving up our well simultaneously.  
8 We are giving up a well so I think we should receive something.

9 Q Do you have any objection to the fact that you  
10 would have to give up all of your revenue in connection with  
11 that two hundred thousand until it is paid?

12 A Yes, we do. It doesn't matter who is going to pay  
13 the bill. We have an objection basically as we suggested  
14 before even in this curved out production payment type in  
15 satisfaction of this two hundred thousand dollars, you will  
16 take all of our revenue just to settle that two hundred  
17 thousand dollars, to pay it out. We would still have operating  
18 expense, we are at the mercey of Atlantic in the operation of  
19 this thing, we have no control over our own business until we  
20 have restored that two hundred thousand dollars.

21 Q Would it further meet your objection if this was  
22 amended to provide that, say, one-half or one-fourth of the  
23 allocations to Tract No. 13 could be credited to the two  
24 hundred thousand dollar obligation?

25 A I would say it might be more palatable but, no, it

1 southwest part of this thing producing more than ten barrels.  
2 We are almost four times their production, our costs are  
3 substantially less than theirs, I see that they've got problems  
4 but we have also.

5 Q What constitutes a timely waterflood project?

6 A The time at which you can substantially show that  
7 you are going to gain both reserve and economically out of  
8 it. The purpose of the industry is to supply fuel to our  
9 nation but the way we maintain this purpose is through economy  
10 that generates through our own account. We have got to look  
11 at it strictly from the economic standpoint and as long as  
12 we look at it from the economic standpoint and follow this  
13 truthfully we will contribute reserves to our nation.

14 Q Now you indicated the two things, timely, that mean  
15 timely to you, are reserves, increased reserves and an in-  
16 crease in economics?

17 A That's right.

18 Q More money coming in?

19 A That's right.

20 Q All right, now, if Atlantic is successful on this  
21 project and they do actually get seventy percent primary,  
22 would that increase your reserves?

23 A Yes, but we've got to satisfy the "if".

24 Q Would that increase your economics?

25 A Yes.

1 Q Okay, what you have said then, I think as to that  
2 point, is that you are not convinced at this time that they  
3 can actually achieve that kind of recovery?

4 A In the period of time that we are looking at, yes,  
5 that is correct.

6 Q Now you talked about this two hundred thousand  
7 dollars for a wellbore as being a fine. In the normal unit  
8 agreement, in a voluntary unit agreement, what is the normal  
9 process for a tract that does not have a well on it?

10 A This is generally, I would say covering two fashions,  
11 one, similar to this. The operator will be given an opportunity  
12 to so provide a well for that tract but the fact that the well  
13 is there is taken into consideration generally in the partici-  
14 pation equation such that if he does drill the well he en-  
15 hances his participation and we are not providing here, we are  
16 being denied is my point. We are being denied a Tubb well.

17 Q Okay, but as far as the unit agreement is concerned,  
18 what Atlantic Richfield proposes is really no different than  
19 any other unit agreement?

20 A It is no different if the Tubb were missing, if it  
21 were not for the Tubb and the Abo potential of this lease.  
22 In that way we have elected, under the auspices of the Com-  
23 mission, to complete our wells. We have completed our wells  
24 multipley and have anticipated producing them on a timely  
25 basis. This was started back in 1954, I believe, when the



1 first well was drilled, '54 or '56, and we have followed this  
2 tenaciously to this time. So this is a time at which this  
3 well is dedicated to the Tubb and, therefore, is being denied  
4 us and the fact that we drilled another well does not enhance  
5 our participation at all, all it does is keep us from paying  
6 two hundred thousand dollars.

7 Q Now I understand your answer but for the purpose  
8 of the record and speaking only to the unitized formations,  
9 that two hundred thousand dollars which is included in the  
10 unit agreement is a strictly normal provision in the unit  
11 agreement?

12 A No, I really don't think so.

13 Q Well, now, tell me how it is different?

14 A I think that if it were different we would--in a  
15 normal unit agreement, if we try to put this thing in the same  
16 context, if we had to either pay the two hundred thousand or  
17 provide a well, we would assume first that there was not a  
18 well located there to start with.

19 Q Okay.

20 A And that when we drilled a well we would enhance our  
21 participation percentage by virtue of the fact that it was  
22 included in a well cap. In this case we are not enhancing our  
23 participation percentage. The fact that we provide a well or  
24 don't provide a well doesn't alter our participation percentage  
25 one iota. In a normal unit it would, we would get something

1 in return.

2 Q If I understood your original answer back a number  
3 of sentences ago, you indicated that in a regular unit agree-  
4 ment you either provide a wellbore or your participation would  
5 be altered in such a way that you would really be paying for  
6 that new well out of your income?

7 A No, you might consider it that, your participation  
8 might be diminished but it also would be enhanced if you did.

9 Q But in any event, that tract is going to pay for the  
10 well that is completed on that tract?

11 A That's right.

12 Q Okay.

13 A Everyone is going to pay for their own well so why  
14 pay for two, we are being asked to pay for two.

15 Q Isn't Atlantic really just asking you to supply one  
16 well in the unitized formations?

17 A Yes, they are, but also at the same time in order to  
18 provide that they are denying us the use of our Tubb well or  
19 assessing a penalty and this to me is confiscation.

20 Q Now you indicated later that you might lose as much  
21 as three and a half million dollars at forty-five percent  
22 efficiency?

23 A I think that we could lose as much as that over  
24 time.

25 Q Let's assume now that this unit doesn't go in and

1 you wait for ten years and finally put a waterflood in. If  
2 that has the same efficiency as the Atlantic Richfield project  
3 has or that you projected that it has, then your loss would  
4 be essentially the same at that time, would it not?

5 A Not necessarily because we may be dealing with an  
6 entirely different economy at that time. We are dealing with  
7 inflationary pressure and crude prices. In our opinion, crude  
8 is not going to get any cheaper, therefore, our revenue might  
9 be even better. Ten years ago it might have been doubtful  
10 but even in Atlantic's opinion that the attempt of this thing  
11 might have been marginally successful.

12 Q How many barrels of oil would be recovered, would  
13 they be essentially the same?

14 A Essentially the same. I don't think time makes much  
15 difference there.

16 MR. STAMETS: That's all the questions I have.

17 MR. RAMEY: Any other questions? Mr. Nutter?

18 CROSS EXAMINATION

19 BY MR. NUTTER:

20 Q Mr. Byers, now I think your No. 1 Well is a Blinebry  
21 Drinkard well?

22 A The No. 1 Well, yes, it is.

23 Q The No. 2 is a Blinebry Tubb?

24 A That's correct.

25 Q The No. 3 is Blinebry Drinkard?

1 A That's correct.

2 Q And the No. 4 is a Blinebry Drinkard?

3 A That's correct.

4 Q Okay, we are talking about three formations there  
5 and we are talking about a hundred and sixty acres?

6 A That's correct.

7 Q Now, with the Commission's spacing for these three  
8 formations and the types of wells we've got here, in order to  
9 fully develop the hundred and sixty acres in these three  
10 pools we need nine wells, is that correct?

11 A That is correct.

12 Q And you've got eight wells?

13 A That is correct.

14 Q So you are short a well?

15 A We are short one well, that is correct.

16 Q Now when you mentioned that the Gulf Central Drinkard  
17 Unit was achieving some thirty-five to forty percent efficiency,  
18 is that thirty-five to forty percent of the primary recovery  
19 that they had in there or is that thirty-five to forty percent  
20 of what they anticipated?

21 A No, sir, I would presume and I would have done like-  
22 wise probably, strictly from reservoir calculations and  
23 reservoir data, would probably anticipate a peak production  
24 in the Central Drinkard Unit on a per well basis very similar  
25 to what Atlantic has predicted here without any additional

1 knowledge. Now then, the fact is that so far this Central  
2 Drinkard Unit has attained a rate of production of only about  
3 thirty-five to forty percent of this. Now this doesn't mean  
4 that their reserves will not be equivalent, it means that it  
5 is going to take about two and a quarter times as long to get  
6 it.

7 Q Well now, you mentioned Atlantic here was anticipat-  
8 ing a recovery of about twelve hundred barrels?

9 A Barrels per well per month at peak.

10 Q What did Gulf anticipate would be their peak?

11 A I'm not familiar with their prognosis but I would  
12 have done approximately the same thing in my office that  
13 Atlantic has done and I would have ended up with this twelve  
14 hundred barrels a day projection and I assume that probably  
15 Gulf did but the fact remains that they have only attained  
16 over a short period of time some three hundred barrels per  
17 month as opposed to the twelve hundred. Now then, it is  
18 also evident that they have not fully developed that thing  
19 and, therefore, we are probably weighting down this number  
20 slightly because we have some ineffective wells included in  
21 our numbers but certainly we haven't got seventy-five percent  
22 of the wells ineffective.

23 Q Now their flood is Drinkard only?

24 A That is correct.

25 Q And these figures that you were producing awhile ago

1 about primary recovery being six million barrels or six million  
2 dollars worth and eight and a half million dollars worth  
3 unitized operations?

4 A Yes.

5 Q That's Blinebry and Drinkard both, isn't it?

6 A Yes, that is correct.

7 Q So you are applying a criteria for the parameter of  
8 Gulf's experience in the Drinkard to the Blinebry and the  
9 Drinkard both here?

10 A Yes, I am. The Engineering Committee has done simi-  
11 larly to this.

12 Q Have there been any floods in the Blinebry?

13 A No, not that I know of in the near area, none that  
14 I'm aware of. Now we can go to West Texas and pick up some  
15 equivalent Clear Fork waterfloods. That has experienced  
16 varying degrees of success, some good and some not so good.

17 Q Now during the primary life of the Gulf Central  
18 Drinkard area and the primary life of this proposed Atlantic  
19 area, were the producing characteristics in the Drinkard  
20 pretty much the same?

21 A I would say probably the Central Drinkard primary  
22 was equivalent or slightly better than the Drinkard of this  
23 area.

24 Q Now I understand that they are engaged in a program  
25 of a lot of infill drilling to get some gas wells in there.

1 Do you anticipate that is going to be necessary here?

2 A I don't see that it will be necessary, Atlantic  
3 anticipates the drilling of at least three Blinebry gas wells.

4 Q I'm talking about Drinkard gas wells, now Gulf is  
5 drilling Drinkard gas wells.

6 A No, I don't see that we would but Atlantic has  
7 anticipated the Blinebry gas wells. I have not seen anything  
8 in their prognosis relating to Drinkard gas wells.

9 Q Now at one point in your direct testimony you mentioned  
10 that the main purpose of secondary recovery is to shorten the  
11 length of time of production, it's also to increase reserves,  
12 isn't it?

13 A Yes, sir, we are doing this but we are recovering,  
14 we are moving reserves to the surface in a shorter period of  
15 time. We might say that we could sit here and produce these  
16 things if we could economically at a tenth of a barrel or a  
17 barrel a day for the next hundred years and we could get the  
18 same value.

19 Q But you couldn't do it economically?

20 A That's right, we couldn't do it economically.

21 Q So by secondary recovery we are increasing the  
22 reserves that can be economically produced?

23 A Yes, we are because we are shortening time.

24 MR. NUTTER: I believe that's all. Thank you.

25

CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Byers, let's do a little supposing. Suppose the Commission saw fit to grant this unit with the exception of the Cone tract and Atlantic immediately, say in six months, went into a full-scale waterflood, would Cone be willing at this time to have a lease line agreement for injection on there?

A Yes, we would, we would want to delay in this to such time that we could see that we could anticipate reasonable rates of recovery as a result of this secondary recovery program. We could actually see that we could materially gain from secondary recovery then we would be glad to execute a lease line.

Q At what stage would this occur?

A Atlantic is estimating some eighteen months to two years for institution of the water injection program. I would expect that if this thing operates according to what they say, and I see nothing wrong with their numbers, that we are looking at probably another two to two and a half years before we can see positive results without material break through of water. I think within that time we would be ready to go. We can see enough economy to say to ourselves, we can now afford to abandon this Tubb well or replace it and still be way ahead.

Q What would be the effect, say, of your waiting ten



1 years?

2 A I don't think it would bother materially. If it is  
3 going to do that then we are way premature in this thing because  
4 to this time we have not seen anything to the effect that we  
5 are going to offset injection along this six mile perimeter  
6 of this thing, so if we are going to be damaged by our little  
7 half mile or mile perimeter it seems to me we are going to  
8 suffer six times the damage in the gross perimeter of this  
9 thing.

10 Q What would be the effect if Cone decided not to  
11 inject? Say you got ten years down the line and said, well,  
12 I can't afford this, what would be the effect of the unit?  
13 Let's say the unit would not be able to immediately offset  
14 your tract with injection, with such a unit they could not do  
15 that.

16 A I think this is a real possibility. After all we  
17 are dealing here with Mr. Cone and the other small people who  
18 are independents and they represent a finite future, a finite  
19 economy, but also we have representing over half interest in  
20 this thing, Texaco, a corporate, and the purpose of a corporate  
21 is being perpetual so I don't think we would have any problem  
22 if at any time we can see that we have reduced the risk of a  
23 secondary recovery program to an order that we can live with  
24 then I think we would be willing to go. I don't think there  
25 would be a shortage of funds if we can continue to produce this

1 thing at the present rate. Part of the problem, when we go  
2 into the unit this is what we expect, we are giving up approxi-  
3 mately four hundred thousand dollars a year revenue and picking  
4 up almost an equal obligation to develop this thing. We are  
5 going to lose all of our revenue for two or three years anyway  
6 so whether we lose it now or ten years down the line doesn't  
7 really matter.

8 Q You are not willing to join the unit so the question  
9 would be, would you be willing to waterflood your own project?

10 A Yes, we would be.

11 Q At some future time?

12 A Maybe ten years down the line or committed to the  
13 unit at that time.

14 Q By that time maybe the unit has flooded all of the  
15 available flooded property?

16 A I don't think they will have if they are anticipating  
17 a twenty-year life and I suppose that really all of us who go  
18 into these projects, I haven't seen one, I haven't operated  
19 one, that I didn't at this point in time, I haven't had to  
20 extend the life by substantial numbers of years and I think  
21 that nearly everybody in the business does because we are  
22 improving our techniques.

23 Q What would be the effect if you did not choose to  
24 waterflood?

25 A I don't think it would materially diminish them,

1 it would diminish them approximately to the extent that we  
2 weren't there.

3 Q The unit then could not directly offset your property  
4 to protect the unit?

5 A No, with injection, no, they could not.

6 Q So they would have to move back a row?

7 A That's right.

8 Q All right, with ten percent of the reserves under  
9 your tract, what would be the effect of the unit having to  
10 move back another row of injection wells and not being able to  
11 secondary recover the wells around the perimeter of your  
12 lease within the unit?

13 A In effect it could result feasibly in the loss of  
14 recovery for approximately sixty acres of unit property as  
15 opposed to a hundred and sixty of ours.

16 Q Only sixty acres?

17 A That would be the approximate area bounded by a  
18 line joining the offset wells of this lease and the lease  
19 line and it comes up to--no, about a hundred and twenty acres.  
20 There are twenty acres between each well, roughly, offsetting  
21 us on our boundary.

22 Q About a hundred and twenty acres?

23 A About a hundred and twenty acres, yes.

24 Q Which would be ten percent?

25 A Ten percent or eight percent, something in this order,

1 but if it is that juicy at that time, why wouldn't we join is  
2 our contention. Now if it is marginal they probably don't  
3 want it anyway.

4 Q All right now, you say you have about six million  
5 dollars worth of primary left?

6 A We think we do.

7 Q Is that from the Tubb and Blinebry?

8 A Yes.

9 Q I mean from the Blinebry and Drinkard?

10 A Blinebry, Drinkard and Tubb.

11 Q How much of this do you allocate to the Tubb?

12 A About a billion feet of gas.

13 Q Which is how much?

14 A A dollar, so we've got a hundred thousand dollars  
15 worth of Tubb gas, at least. A million dollars worth of Tubb  
16 gas.

17 Q A million dollars worth of Tubb gas?

18 A Yes.

19 Q And how much would it cost to drill a well to the  
20 Tubb?

21 A Probably three hundred odd thousand, three hundred  
22 and fifty.

23 Q Of which the unit would pay two hundred thousand?

24 A No, they are asking us to pay two hundred thousand,  
25 they don't have to pay anything.

1 Q You would pay two hundred of the three hundred  
2 thousand then?

3 A No.

4 Q For a new well?

5 A No, we are talking about--if we do not deliver our  
6 No. 2 Well to them we can keep the well but pay them two  
7 hundred thousand dollars. What they are saying is that our  
8 maximum liability is two hundred thousand dollars, plus ten  
9 percent of any of the cost above that.

10 Q Or you can, as I understand, you can deliver the well  
11 to them, pay two hundred thousand dollars and they will drill  
12 you a well to the Tubb?

13 A No, there is no provision for that. Now, Mr. Hinkle  
14 touched on this but there is no provision in the unit to  
15 that effect.

16 Q You mentioned some half section of goat pasture on  
17 the east side?

18 A Yes.

19 Q Is this receiving participation in the unit?

20 A As I say, it is kind of arbitrary, it gives one  
21 percent per acre in the phase two participation.

22 Q I assume by goat pasture it is not--

23 A Not developed.

24 Q There are no wells?

25 A No wells. I understand the reason for it, it's

1 protection, it has got to be protected but if we go to the  
2 extent of protecting the down dip side, I think before we start  
3 this unit, before we go any farther with it, we've got to  
4 have protection on the up dip side, we have got to know what  
5 our offset operators are going to do. Is this unit of Shell,  
6 is it going together? I believe that's the unit that is pro-  
7 posed along the west boundary, is it going together, is it  
8 going together within the time that this unit as proposed may  
9 be damaged from lack of offset injection? Are they looking at  
10 delay, also looking at, what are you going to do, how is it  
11 going to get along? They are looking at the same thing we  
12 are really, are they not?

13 Q Let's dwell on this for a little bit, if Shell forms  
14 a unit, is it to the west?

15 A Yes.

16 Q Would you be willing to join their unit?

17 A It might be.

18 Q If they came out with a similar operating agreement  
19 as Atlantic?

20 A I don't think we would be if we were faced with the  
21 denial of a well or a penalty.

22 Q So we could visualize the Arco unit without you in  
23 it?

24 A That's right.

25 Q And visualize the Shell unit without you in it?

1 A No, I think we would--

2 Q So we could visualize a hundred and sixty acre  
3 window?

4 A We could visualize that but I think this is not the--  
5 the point of the whole thing is to recover economically and if  
6 we see this being done we are going to want to be a part of  
7 one unit or the other. If they are both formed then we have  
8 no choice but to go into one or the other.

9 Q And if you didn't join then the units would effect  
10 the waterflooding and perhaps push oil into your property?

11 A They could do it, it could be, and I've seen this  
12 done.

13 Q So it could be a great economic advantage to you not  
14 to join any unit?

15 A No, I don't think it would be that great of an  
16 advantage, if it were, if we could gain that much from it,  
17 then why don't we start with doubling the spacing in the unit  
18 if we can transmit energy that far across this threshold, see,  
19 because if we can transmit energy over our eighty acre water-  
20 flood five spot, we are asking in order to give us this sub-  
21 stantial benefit, we are requiring the transmission of water  
22 over twice the distance we are indicating is advisable in  
23 this. If this is the case then why don't we start with a  
24 larger spacing which might be even better.

25 MR. RAMEY: Any other questions of the witness? He

1 may be excused and we will take a fifteen minute recess.

2 (THEREUPON, the hearing was in recess.)

3

4 MR. RAMEY: The hearing will come to order. Mr.  
5 Kellahin, would you like to proceed, please?

6 MR. KELLAHIN: Mr. Ramey, at this time I would like  
7 to introduce an associate counsel on behalf of J. R. Cone.  
8 Mr. James Milam of Lubbock, Texas is general counsel for J. R.  
9 Cone, a member of the Texas Bar and I would appreciate his  
10 association in this case. Mr. Milam.

11 That concludes my witnesses for J. R. Cone. I believe  
12 Mr. Kelly has a witness next on the same tract.

13 MR. KELLY: Mr. Ramey, I discussed this with Mr.  
14 Hinkle during the break and Mr. Hinkle alluded to a new pro-  
15 posal. I think it would be helpful and if he is agreeable to  
16 go ahead and put that witness on who would detail this proposal  
17 and then we would put on our case.

18 MR. HINKLE: We would have no objection if it will  
19 assist them in doing it. We have Jerry Tweed here and we  
20 would like to put him on to testify to the proposal which I  
21 indicated we had to Mr. Byers.

22 MR. KELLAHIN: I understand his testimony would be  
23 limited only to that proposal.

24 MR. HINKLE: That's all and then after we get through  
25 you go ahead with your testimony and we will put on ours.



1 MR. RAMEY: All right, if that is agreeable to every-  
2 one.

3

4 JERRY TWEED

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

7 DIRECT EXAMINATION

8 BY MR. HINKLE:

9 Q State your name, your residence and by whom you are  
10 employed?

11 A Jerry Tweed, I live in Midland, Texas and I'm em-  
12 ployed by Atlantic Richfield Company.

13 Q What is your position with Atlantic Richfield?

14 A I'm the District Petroleum Engineer for New Mexico.

15 Q And you testified before the Commission in connection  
16 with this case at the previous hearing?

17 A Yes, I did.

18 Q And your qualifications are a matter of record?

19 A Yes, they are.

20 MR. HINKLE: Are his qualifications acceptable?

21 MR. RAMEY: Yes.

22 Q (Mr. Hinkle continuing.) Now, Mr. Tweed, you heard  
23 the testimony of my cross examination of Mr. Byers and the  
24 suggestion that we might have a proposal of amendment to 11.1  
25 of the operating agreement?

1 A Yes.

2 Q I have had marked here as Exhibit Eight this proposed  
3 amendment to 11.1 and I'm going to ask Mr. Tweed to comment on  
4 it and how it came up and just what the proposal is and how  
5 it would work.

6 A Well this proposal came about, I think, by Mr. Byers  
7 testimony in the previous hearing that there was a great deal  
8 of undrained Tubb reserves underlying his tract, and also he  
9 testified today, I think two things I would like to repeat.  
10 One of them, he said that a well in a proper location he  
11 believed would drain a hundred and sixty acres in the Tubb.  
12 Second, he testified that his existing Tubb well, Well No. 2,  
13 had about four hundred thousand cubic feet of remaining reserves  
14 and I believe he also testified that the No. 4 location has  
15 about three billion cubic feet of reserves. Therefore, we  
16 thought as the current wellbore provision stands, 11-1, the  
17 option the operator has if he wished to keep the well was if  
18 he would keep the existing well, say the Eubanks No. 2, and  
19 that the unit would drill a replacement well. He would pay  
20 a two hundred thousand dollar penalty and the unit would pay  
21 the remaining cost of drilling and completing that.

22 Due to Mr. Byers testimony, we thought it might be  
23 more acceptable to all parties and a reasonable compromise if  
24 the unit drilled and cased a well through the Tubb at a loca-  
25 tion of Mr. Cone's choice. A legal location, of course, on his

1 lease at his choice and that he pay the two hundred thousand  
2 dollar penalty and that the unit pay the additional cost of  
3 drilling the well. Now what our intention would be that the  
4 unit would drill a well and case it to the base of the Tubb,  
5 that the operator, Mr. Cone, would then take the well over and  
6 bear the completion costs and that expense and that the unit  
7 would take over the existing well and pay the expense of pulling  
8 the dual equipment out and squeezing the Tubb horizon in that  
9 well.

10 In order to accomplish that we submitted for the  
11 Commission's--well, one reason to propose this is, if it would  
12 alleviate the plaintiff's objection in this case. Certainly  
13 it would have to be approved by the operators. We polled  
14 certain of the operators and they are willing to agree to  
15 something like this if it will expedite the formation of the  
16 unit.

17 And so for the Commission's consideration this  
18 particular amendment was drawn up and I might read it. In  
19 line thirteen on page eighteen after the word "subdivision",  
20 change the period to a semicolon and add the following:

21 (Reading) provided, however, any well to be contributed toward  
22 the unit operation is completed as a gas well producing from  
23 the Tubb formation, the contributing party or parties shall  
24 have the option to request the unit operator to drill a new  
25 well to be cased to the base of the Tubb formations in any

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1 location designated by such party or parties, to be produced  
2 in lieu of the contributed well and the new well and the pro-  
3 duction therefrom shall not be involved in the unit operations.  
4 If working interest owners approve by a vote and exercise  
5 their right as above provided the party or parties contributing  
6 the forty acre subdivision on which the usual wellbore is  
7 located shall bear all cost and expense in connection there-  
8 with or in drilling a substitute gas well, as the case may  
9 be, up to and including two hundred thousand dollars. If the  
10 operation costs in excess of two hundred thousand dollars,  
11 the additional costs in excess thereof shall be considered unit  
12 costs and charged to the working interest owners on the basis  
13 of their phase two combining participation. In case the well  
14 drilled is to take the place of a Tubb gas well, the operation  
15 shall include the drilling and casing of said well to the base  
16 of the Tubb formations and running electric logs in connection  
17 therewith. All expenses incurred in connection with condition-  
18 ing so the contributed well could be used as a unit well shall  
19 be borne by the working interest owners. (End of reading.)

20 Q Now as I recall the testimony at the previous hear-  
21 ing, and I think Mr. Byers indicated it too, that if the  
22 No. 2 Well, which is completed in the Tubb and the Blinebry,  
23 that there would be some problem involved in connection with  
24 working that well over. What would be the problem that you  
25 would have?

1           A     I don't know that I totally agree that there would  
2 be a problem working the well over, however, when you have a  
3 low pressure formation it does take time to get the fluids  
4 back out of it and you kill the well, put oil or water in it,  
5 kill it to pull the equipment and block off the Blinbry and  
6 it would take a time to get the fluids back out of the well  
7 and some expense would be involved and as I understood it that  
8 was part of his objection.

9           Q     But if they kept that to use as a Tubb gas well their  
10 position would be that there is a good possibility, or they  
11 think there would be, of killing the Tubb or damaging the  
12 well?

13          A     You say that was his testimony?

14          Q     Well, I believe it was previously.

15          A     Yes.

16          Q     And this would avoid that situation?

17          A     Right.

18          Q     And place all of the obligation on the unit operator  
19 to condition that well for unit purposes if they drill a re-  
20 placement well as a Tubb gas well?

21          A     That is correct. Also it would provide a location  
22 I think which Mr. Byers has testified to, it would provide a  
23 location where he thinks additional Tubb reserves could be  
24 recovered.

25          Q     And as you have testified and he testified that this

1 one well would probably effectively and efficiently drain the  
2 whole one hundred and sixty acres?

3 A Right, in a proper location.

4 Q So there wouldn't be any loss of Tubb gas reserves?

5 A That is correct.

6 Q Do you have any further comments?

7 A No.

8 MR. HINKLE: That's all we have

9 MR. RAMEY: Mr. Kelly.

10 CROSS EXAMINATION

11 BY MR. KELLY:

12 Q Mr. Tweed, I've got some question which you may or  
13 may not be able to answer on this.

14 A Yes.

15 Q As I understand the proposal, the two hundred  
16 thousand dollars would be paid by Cone and Texaco in this  
17 situation and everything else would be paid by the unit?

18 A That is correct.

19 Q Now what actually would you do, what are you pro-  
20 posing that would be a shared cost?

21 A That the unit would pay for?

22 Q Yes.

23 A It is our estimate just in rough numbers that it  
24 would cost about three hundred and fifty thousand dollars to  
25 drill and complete a well in the Tubb. Now I think due to

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1 some--so normally, if you did it say normally, you could do it  
2 one way where the unit drilled and completed the well in the  
3 Tubb and it was Cone's and the completion would be at the  
4 unit's risk but then Cone would have the risk and expense of  
5 pulling the dual completion equipment out and shutting off,  
6 squeezing the Tubb formation. Rather than do that we felt  
7 like that it was, you know, a swap out in dollars, that the  
8 unit would drill and case the well to the base of the Tubb and  
9 that we would pay all costs above two hundred thousand dollars  
10 to do that and that we in addition would pay the cost to pull  
11 the--we take over the existing wellbore, the unit, as is, and  
12 we would pay the cost of pulling that equipment out of there  
13 and squeezing off the Tubb formation which would have normally  
14 fallen to Cone or to the operator under the agreement.

15 Q When would the new well be required to be drilled?

16 A Upon formation of the unit.

17 Q Which you estimate within the next several months?

18 A That is correct. If approved by the Commission it  
19 would take effect in approximately three or four months. We  
20 would then request the wellbores. The unit operator has ninety  
21 days to answer. If he elects to take this option then we  
22 would circulate an AFE for approval to other working interest  
23 owners in the unit and then we would proceed to drill the well.  
24 I would say all of that would take in the neighborhood of four  
25 months, barring any major problems in obtaining the rig.

1 Q During the time before the new well could be completed  
2 would you be willing to allow the Tubb production to continue  
3 in Well No. 2?

4 A Subject to--I tell you what I would recommend to  
5 the working interest owners and it would be subject to their  
6 approval, of course, I think it would be equitable that until  
7 such a well could be drilled that the existing well be allowed  
8 to produce and that the split out on production be the same as  
9 is currently set out by the Commission order for this well.  
10 In other words, a certain percentage of the total production  
11 would be credited to the Tubb which would go to the operator,  
12 Cone and his interest owners, and a certain percentage be  
13 credited to the Blinebry to go to their owners.

14 Q You have no plan to actually do anything with that,  
15 with the subject well, for some time at any rate, do you?

16 A It is our estimate that it would take about in the  
17 neighborhood of eighteen months after the effective date of  
18 the unit to start injection.

19 Q Now if the new Tubb well turned out to be dry what  
20 would be the situation?

21 A Well, I think it is real difficult to write an  
22 agreement or to make statements that would cover all happen-  
23 stance. Now certainly if the operator of the Cone tract  
24 elects to go--to take this well or go this route, then the  
25 completion would be at their risk. Now if it turned out dry



1 and they came back and said, well, we would like--well, I  
2 assume it would just have to be at their risk because for us  
3 to do anymore swapping at that point it would have to be  
4 mutually agreed upon by both parties and anything that we  
5 worked out from that point would be just by separate negotiation.

6 Q Could you envision the possibility of using the new  
7 wellbore for the unit well, then just switching back in effect?

8 A I could visualize that if the well was drilled on  
9 the same location as the No. 2 is on but I assume that there  
10 is a possibility that the operator might choose to drill it at  
11 some other location at which time it would not be suitable.

12 Q For your spacing problems?

13 A Right.

14 Q Would you have any objection to, say, a thirty day  
15 time period following this hearing to allow this matter to  
16 be considered by Cone and Texaco? Before an order would be  
17 entered?

18 A Is what you are requesting that you have thirty days  
19 in which to consider it and report back to the Commission  
20 whether you would--

21 Q Well, I think there would naturally be, if we worked  
22 out a satisfactory arrangement either on this proposal or  
23 perhaps some slight modification of it we would inform the  
24 Commission that there would be at least thirty days before  
25 an order be entered to see if a negotiated resolution could

1 be worked out.

2 (THEREUPON, a discussion was held  
3 off the record.)

4 MR. HINKLE: If the Commission please, maybe I can  
5 clarify this a little bit. I think that the Commission has a  
6 good deal of latitude in whether or not they want to accept  
7 this amendment as being in the interest of equity in carrying  
8 out the equities involved. We have no objection to the  
9 Commission incorporating this proposed amendment in the order  
10 of the Commission if they feel like it is going to be in the  
11 interest of balancing the equities among the parties. But  
12 now we would be opposed to any substantial time here to just  
13 consider the amendment by the parties. It would be just  
14 another element of delay. I think that they can state their  
15 position to the Commission, not only at this hearing but within  
16 a reasonable time afterwards and the Commission can decide  
17 whether or not it is in the interest of everybody concerned  
18 and will better carry out the equities involved, to incorporate  
19 this in the order. I think this is within the discretion of  
20 the Commission and I think the statutory unitization act is  
21 even broad enough that you could incorporate this in the order  
22 and it would not be absolutely necessary to go back and have  
23 this approved by all the working interest owners because this  
24 is just a change in the allocation of equities, formally you  
25 might say and I believe that the statute is broad enough for

1 that purpose but we oppose any appreciable delay just for the  
2 purpose of considering this amendment.

3 MR. KELLAHIN: May I be heard in support of Mr. Kelly's  
4 motion? This comes obviously as a surprise to the opponents,  
5 to the statutory unitization. This is by way of a proposed  
6 compromise to our objections and to present it here before the  
7 Commission and then give it to us on a take it or leave it  
8 basis at this hearing really doesn't give us any other choice  
9 but to reject the compromise. We have had no opportunity to  
10 examine the ramifications of the proposed modification of the  
11 plan. The implication or the placing of the burden of an  
12 economic Tubb well upon the Cone or the owners of Tract 13 is  
13 a substantial risk and to require us to make a quick decision  
14 on that I think is unfair.

15 I agree with Mr. Hinkle that if Arco wants to pro-  
16 pose this as an amendment to their application then it is  
17 entirely within the realm of the Commission's authority to  
18 rule on it as part of their application but I would concur  
19 with Mr. Kelly that if this is intended as a proposed solution  
20 in which we are asked to agree, that we cannot agree at this  
21 stage and we need a thirty day period.

22 MR. RAMEY: I agree with Mr. Kellahin, I don't  
23 think Mr. Kelly made a formal motion, I think he asked the  
24 witness if he would be willing to wait thirty days on this  
25 and so perhaps a motion would be in order at some future date,

1 maybe when Mr. Kelly puts on his witness.

2 MR. KELLY: I have nothing further.

3 MR. RAMEY: Any other questions of the witness?

4 MR. KELLAHIN: No, sir.

5 MR. RAMEY: The witness may be excused.

6 MR. HINKLE: I would like to offer this Exhibit  
7 Number Eight. This is out of order, our other exhibits are  
8 marked one through eight but I would like to offer this at  
9 this time.

10 MR. RAMEY: Okay, the Commission will accept the  
11 exhibit.

12 (THEREUPON, Arco Exhibit Eight was entered  
13 into evidence.)

14  
15 MORRIS TODD

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

18 DIRECT EXAMINATION

19 BY MR. KELLY:

20 Q Would you state your name, by whom employed and in  
21 what capacity?

22 A My name is Morris Todd. I'm employed by Texaco, Inc.  
23 in Midland, Texas as a Petroleum Engineer. I guess the offi-  
24 cial title is Division Unitization Engineer.

25 Q Mr. Todd, were you a witness at the first hearing in

1 this matter?

2 A Yes, sir, I was.

3 Q And in your capacity with Texaco, have you had the  
4 opportunity to participate in negotiations in the forming of  
5 unit agreements and unit operating agreements?

6 A Yes, sir, for about twenty years.

7 Q How many do you think you have participated in over  
8 those years?

9 A I would hate to count them, well over two hundred or  
10 more.

11 MR. RAMEY: Mr. Kelly, if I may interrupt, I think  
12 if you are trying to qualify the witness I'm sure he will be  
13 qualified and I would say the same to the rest of the people.  
14 These people who have previously testified in this case, I  
15 don't see any reason to go through the process of qualifying  
16 them.

17 MR. KELLY: That is all I wanted to just bring out  
18 his particular qualifications as far as unit agreements are  
19 concerned. I will tender the witness as an expert in the  
20 field of petroleum engineering.

21 Q (Mr. Kelly continuing.) Can you tell us what Texaco's  
22 interest in this unit is?

23 A Our only working interest in this unit is a non-  
24 operating working interest in Tract 13, operated by Mr. Cone.  
25 We have a forty-one point two five percent of eight-eighths

1 interest. Our interest in the unit under the combined partici-  
2 pation of the Blinebry Drinkard combined units under phase one  
3 is two point nine five percent and under phase two is three  
4 point four five percent. That's Texaco's participation.

5 Q All right, and what is Texaco's objection to the  
6 provisions in this unit agreement or unit operating agreement?

7 A Well, it is the same as we testified to during the  
8 October 20th hearing, its article eleven of the unit operating  
9 agreement of both agreements set for the Blinebry unit and  
10 the Drinkard unit.

11 Q Can you specify what the objection is?

12 A Well, the objection particularly is that if you must  
13 furnish a wellbore usable in either or both the Blinebry or  
14 Drinkard formations on each forty acre tract and in not doing  
15 so you must, if you decide to retain that well, you must pay  
16 a penalty of two hundred thousand dollars. We think this  
17 penalty is unreasonable and unfair.

18 Q All right, now, as to the necessity for drilling  
19 another well, what is Texaco's position about that as far as  
20 both the efficient production of the various zones involved  
21 and as to the economics involved?

22 A Well, if we were forced to drill another well to  
23 recover and comply with, what we have is a Tubb gas contract  
24 with El Paso Natural Gas where it goes into interstate sales.  
25 If we were forced to comply with, to drill another well in

1 order to comply with our contract, it would make it an un-  
2 economic situation, the production of our remaining Tubb gas  
3 reserves.

4 Q What is the price that Texaco is getting now?

5 A A very low twenty-one cents right now.

6 Q Now is there any reason that you can see why the  
7 existing wellbore which is completed in both zones cannot con-  
8 tinue to be used both as a unit well for the Blinebry and Tubb  
9 and for Texaco's production, I mean the Blinebry and Drinkard  
10 of Texaco's production, and the Tubb?

11 A We think this is entirely feasible. We realize that  
12 it would be a difficult situation but many times we face  
13 difficult situations in unitization efforts where you have  
14 situations of non-unit production and unit production. Some-  
15 times you face the situation where you have to or you are  
16 forced to cooperate whether you like it or not and it can be  
17 done successfully, we think this is a reasonable thing.

18 Q Certainly if the well continued to produce from the  
19 two zones there would be no additional expense either to the  
20 unit operation or to the operation of the Tubb zone.

21 A We don't believe there would be any appreciable  
22 expense, any at all.

23 Q And the two hundred thousand would be saved?

24 A That's right.

25 Q In addition, you would save the cost of working that

1 well over to either shut off the Tubb zone or to shut off the  
2 Blinebry, is that correct?

3 A Well, if a well were contributed to the unit we would  
4 have the expense of going in and squeezing off the Tubb zone  
5 and removing the dual completion equipment and providing the  
6 well in accordance with the unit agreement as a usable well in  
7 the Blinebry and Drinkard. We would save that expense.

8 Q Do you have any estimate of what that expense would  
9 be?

10 A Well, I heard that it could be done as low as thirty  
11 thousand dollars if you didn't have trouble, but I think Mr.  
12 Byers has testified to the potential of damage and that could  
13 go much higher.

14 Q Is there a real possibility in your mind that the  
15 working over of this well could damage the zone that it is not  
16 completed in?

17 A I don't think there is any doubt about this possi-  
18 bility. That possibility faces you every time you work over  
19 a well or enter a well and kill it and then try to re-establish  
20 production, you do face this possibility.

21 Q As a matter of fact, this well is not--it is a  
22 commingled well technically rather than a dual completion?

23 A Yes, I understand that it is.

24 Q You have actually a hole in your casing and received  
25 Commission approval?



1           A     I understand from Mr. Cone that there is a hole in  
2 the tubing, in one of the strings of tubing, and because of  
3 this it is a commingled well.

4           Q     What is the allocation formula that these two zones  
5 are on now?

6           A     According to the allocation formula that we understand  
7 the Commission permits and recognizes, it's fifty-eight percent  
8 of the gas goes to the Blinebry and forty-two percent to the  
9 Tubb.

10          Q     And would you recommend that that allocation formula  
11 be followed if this well were left alone but the Blinebry  
12 dedicated to the unit?

13          A     If we were allowed to continue the production of this  
14 well or Mr. Cone would be allowed to continue the production of  
15 this well, I think it would be a practical solution to a  
16 difficult and dangerous thing in the potential of losing your  
17 present zones to be able to continue it in its present alloca-  
18 tion with Mr. Cone operating the well entirely and fifty-eight  
19 percent of all of the gas by some agreement with the unit  
20 operator, either proceeds of the sales or they could take their  
21 share in kind, fifty-eight percent of it could go to the unit  
22 account and be disbursed in accordance with unit participation.

23          Q     All right, now, looking at the waterflood of this  
24 unit, do you see any danger in instituting a waterflood over  
25 the particular section that the Cone well is now located in as

1 an initial project?

2 A Well, the Cone well is in an area not only of Tubb  
3 gas production, I think it was testified to in the last hear-  
4 ing that there are eight Tubb gas completions and all of those  
5 Tubb gas completions are in Section 14 and 23, Mr. Cone's  
6 being in Section 14. Now, not only is there danger in water-  
7 ing out this Tubb gas through injection above it and below it  
8 into the Blinebry and Drinkard but also it has been testified  
9 to and exhibits presented that there are significant gas cap  
10 reserves in the Blinebry and significant gas cap reserves in  
11 the Tubb and development of the entire area, especially around  
12 the Mr. Cone lease, initially could run the risk of damaging  
13 these reserves.

14 Q You would water out those reserves?

15 A This is possible, highly possible.

16 Q Now do you feel that the present wells that are pro-  
17 ducing from this gas cap are capable of efficiently and  
18 economically draining that gas cap?

19 A Yes, we do.

20 Q Do you feel that there is any need as the unit agree-  
21 ment now contemplates, for the drilling of three additional  
22 gas wells to drain those gas caps?

23 A No, sir, we don't. As a matter of fact, we can't  
24 agree that it's sound engineering to do that.

25 Q Would you have a recommendation to the Commission as

1 far as phasing of the waterflood?

2 A Yes, sir, and I believe that we have previously  
3 made statements in this regard, is that it could be or would  
4 be our recommendation that the unit be phased in its develop-  
5 ment, not development in its entirety. We would recommend--  
6 now we know that the gas cap areas are on the west side, they  
7 even include Section 11 as well as 14 and 23, however, the  
8 predominance of the gas cap area has been mapped to be in  
9 Sections 14 and 23. Now it would seem logical to us and  
10 because of the inherent greater than average risk of this  
11 waterflood, to rather than take this thing developed over the  
12 entire area, to develop it in two stages. Now that's not  
13 pilot flooding. Stage one could be something like, agreed  
14 upon by the working interest owners, but something like in-  
15 cluding all of the unit area within Sections 11, 12, 13, and  
16 24. Now at some later date that the unit operator upon the  
17 recommendation of the working interest owners had decided  
18 that the flood is worthy of expansion to full scale operations,  
19 then upon a hearing before this Commission and upon approval  
20 and order by the Commission, then it could be ordered complete  
21 unit development, that it would cover down into 14 and 23.  
22 May I go on on this?

23 Q Yes.

24 A Now the reasons for this are principally this: we  
25 are not trying to argue a point or win a debate or anything

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1 like this, but, of course, we are working toward a solution  
2 to our difference of opinion and I believe it was testified  
3 to at the October meeting that the unit development costs  
4 totaled twelve million five hundred and seven thousand dollars.  
5 Now a part of that twelve million five hundred and seven  
6 thousand dollars is a million three hundred and twenty-six  
7 thousand dollars for three gas wells. Now I think in the unit  
8 operating agreement for both units in Section 10.5 and 10.6,  
9 it contemplates the drilling of these gas wells because it  
10 talks about adjustment of the equity in these gas wells. The  
11 gas wells are to first be shared in accordance with phase one  
12 participation. At the end of phase one they are to be shared  
13 according to phase two participation, but, however, we haven't  
14 talked to Atlantic Richfield since October 20th about this  
15 point but we asked many times before then where those gas wells  
16 were to be drilled; if we are to pay a share of them where are  
17 you going to be drilling? Well, even at the testimony the  
18 only testimony given was that the unit operator would prudently  
19 locate them in some strategic place, or words to that effect,  
20 and then the second and third well would be dictated by the  
21 completion of the first one.

22 Now there are supposed to be gas caps overlying the  
23 Blinebry, gas caps overlying the Drinkard, now the testimony  
24 the last time didn't tell us at all that there was any clear  
25 cut separation between the gas zones in the Blinebry and the

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1 oil zones and the gas zone in the Drinkard and the oil zone.  
2 I know we could argue this forever. No, we are not going to  
3 argue it forever because we have got to come to a conclusion,  
4 but I could find nothing in the testimony that told me that  
5 there was a separation between the gas and the oil. Now, I  
6 think the plan is something like this, it is as it presently  
7 stands, it is to develop the unit in its entirety on an eighty  
8 acre five spot waterflood. Now the oil zones are naturally to  
9 be waterflooded. You complete your injection wells in the  
10 oil zone below the gas cap, there is some speaking of squeezing  
11 off the gas cap, you complete your producing wells in the oil  
12 zone, the same treatment below the gas cap and you make an  
13 attempt to flood from the oil zone, from the injection well,  
14 straight across to the producing well. Now if this gas cap  
15 exists up here there is absolutely nothing to keep the injected  
16 water and the oil that advances ahead of it from going into  
17 the gas cap. Now there is no engineering testimony here on  
18 core data and so on about the relative saturations of oil in  
19 the gas cap or relative saturations of oil in the oil zone but  
20 I think it is pretty standard experience to think, varying  
21 with the reservoir, that after you sweep a reservoir with  
22 injected water that the residual oil saturation behind it  
23 could be in the neighborhood of eighteen, twenty, twenty-two  
24 percent or twenty-four percent. Also in a gas cap situation  
25 you have, on the average, many reservoirs, I mean I have turned

1 this up, on the average you have much less residual oil satura-  
2 tion or saturation in the gas cap.

3 Now if you are to inject in the oil zone in one well  
4 on an eighty acre five spot or any wells, there is absolutely  
5 nothing that we can see to keep that injected water and any  
6 oil bank that drives ahead of it from going into a low pressure  
7 zone, up into the gas cap, and re-saturating that gas cap and  
8 I think any reservoir engineer would testify that such action  
9 would cause considerable loss of reserves, lost to the unit,  
10 lost to the working interest owners, lost to the royalty owners,  
11 lost to the Federal who owns and lost to the State as royalty.  
12 Now this pressure sink in the gas cap is proposed to be further  
13 amplified by the fact that you are going to drill three gas  
14 wells in the gas cap and produce from the gas cap at the same  
15 time as you are flooding the oil zone below, all being con-  
16 nected or let me say this, there is no evidence that I've  
17 seen that they are not connected.

18 Well, this is not sound engineering and we are really  
19 rather surprised at the proposal. We think that if you took  
20 this thing in two stages that you could have an orderly de-  
21 pletion of the gas cap reserves and you could develop the  
22 stage one, eighteen hundred acres approximately, we wouldn't  
23 be fixed to that figure in acreage but say approximately sixty  
24 percent of the unit would be stage one and then you would  
25 waterflood it. By the time you proved your waterflood was

1 worthy of expansion into what would be stage two in our Sec-  
2 tions 14 and 23, at the time you prove this worthy of expansion,  
3 and upon order of the Commission to expand full scale expan-  
4 sion, after hearing, then it is very likely your gas cap would  
5 be depleted or near so and you wouldn't run a risk of foolishly  
6 spending a million three hundred and twenty-six thousand  
7 dollars, you wouldn't be running a risk of trapping gas re-  
8 serves, you wouldn't run a risk of driving them off to the  
9 west and losing them.

10 I might add one other thing. Normally with significant  
11 gas cap reserves if a gas cap in any normal waterflood, anybody  
12 knows, is depleted, in order to prevent, again I come back to  
13 the migration of oil in the gas cap and the loss of reserves,  
14 it is common practice to fill that gas cap with water because  
15 it is also common knowledge, and I know you gentlemen know  
16 this, there is no waterflood that succeeds until every pore  
17 space is filled up, until that reservoir is charged with fluid.  
18 Now, what's all the point of this? Well, of course, one is to  
19 protect our interest in three point four five percent of a  
20 million, three hundred and twenty-six thousand dollars we  
21 don't want spent but the most significant part of this pro-  
22 posal or this testimony that we are putting on, is that we  
23 might be through this way permitted to continue the production  
24 of our Tubb gas reserves without danger of being watered out  
25 and at the same time if such a proposal should be developed

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1 and instigated by the Commission, a two stage proposal, I feel  
2 sure at that time Texaco, speaking only for Texaco, we would  
3 be willing to give up our Tubb gas reserves and contribute the  
4 well to the unit at that time, hoping at that time that a con-  
5 tract that we can comply with, we must comply with now, hoping  
6 that conditions change in two or three or four years, that's  
7 all we are asking to delay this whole thing and I think the  
8 removal of the risk, element of risk, by proving it productive  
9 before you go ahead to the full scale development and the  
10 orderly depletion of the gas cap reserves, it only seems to  
11 me to be reasonable. I hope I'm making myself clear because  
12 I'm getting mixed up now.

13 Q Well, let me ask, now you are not suggesting that  
14 this particular section be removed from the unit?

15 A No, sir, not from Texaco's standpoint.

16 Q And the production as allocated to the Blinebry  
17 would, upon the unit becoming effective, be applied to the  
18 unit to the benefit of the unit?

19 A That's right. If we were able to continue the  
20 production of this Eubanks No. 2 and to comply with our gas  
21 contract, according to the established Commission order, I'm  
22 sure fifty-eight percent of those reserves produced from that  
23 well and gas, I'm sure Mr. Cone would pay to the unit account  
24 for distribution in accordance with unit allocations.

25 Q So the unit would stay the same as far as boundaries



1 but the waterflood would just be phased and until such time  
2 as the operator felt that it was appropriate to move into the  
3 second phase, then he would go to the Commission and put on the  
4 second phase of his work?

5 A Yes, sir, that would be our thoughts, that would be  
6 a logical sequence of events.

7 Q Now in your opinion does the project itself, the  
8 waterflood project hold high risk of not being a particularly  
9 successful project?

10 A We think this is a better than average risk. However,  
11 we have testified before, we have no objections to entering  
12 into it, we have no objection to running the risk with the  
13 other operators, we have no objection to participation of  
14 such.

15 Q But if it turned out that it was not a successful  
16 flood the unit participants would be saved the cost of changing  
17 all of the present producing wells into injection wells,  
18 wouldn't they?

19 A Yes, sir, I believe that twelve point five million,  
20 I think we have that schedule of development costs right here.  
21 That twelve point five million dollars includes four point  
22 three five five million dollars for workovers and well work  
23 and if you save forty percent of that, that saves two million  
24 dollars you would save the operator if you couldn't work a  
25 successful flood in the first stage.

1 Q Then you would also keep the production from those  
2 wells that would be turned into injection wells?

3 A Well, yes, that's true.

4 Q And you would save the million dollars for the new  
5 three gas wells?

6 A Yes, that is most important to us.

7 Q And would protect the Blinebry, the Drinkard, and  
8 the Tubb gas zones?

9 A Yes, sir, I think that would permit an orderly re-  
10 serve, you see, I think the last time it was testified to,  
11 I believe Mr. Malaise testified that there was over seven  
12 billion cubic feet of gas in the Blinebry and Drinkard gas  
13 caps.

14 Q Now, do you see any disadvantage as far as from the  
15 efficient secondary recovery project of phasing this develop-  
16 ment in the way you have suggested?

17 A Not from the recovery of oil, sir, I don't see any  
18 reduction of efficiency through phasing, not as far as the  
19 recovery oil. As a matter of fact, you might see an improve-  
20 ment in the recovery of gas, you probably would prevent the  
21 loss of many gas reserves.

22 Q Was this basic proposal submitted by Texaco to  
23 Atlantic by letter of February 3rd, 1978?

24 A Yes, we presented this very proposal to Atlantic  
25 Richfield.

1 Q In that proposal I think you had a particular time  
2 period for that delay?

3 A Well, we asked them, we said first of all, why don't  
4 you just delay contributing this well to the unit for four  
5 years and let us have a chance to get most of our Tubb gas  
6 reserves out? That is essentially what we said, but if this  
7 two-stage operation were accepted I think we would waive that.

8 Q You heard the testimony of Mr. Tweed that it would  
9 take eighteen months before you could even start injection,  
10 is that correct?

11 A Yes, I did. I think the testimony last time indica-  
12 ted that, when I read it again last night it says they would  
13 start injection on the east side and it would take eighteen  
14 months before they completed total unit injection, the  
15 mechanics of development as I understood it.

16 Q As I understand the unit agreement, upon it becoming  
17 effective you would be required to shut in that Tubb zone and  
18 dedicate that well to the Blinebry?

19 A The way the unit agreement is written now that is  
20 correct. We would be forced by the agreement and under the  
21 statutory unitization act to shut off the Tubb gas and to  
22 furnish the well to the unit operator as a usable well in the  
23 Blinebry and the Drinkard.

24 Q Even though nothing would be required of that well  
25 for at least eighteen months?

1           A       That's right, it would just set there, I would hope  
2 it would produce some unit fluids.

3           Q       Certainly there could be no reason that continuation  
4 of the present production during that period would not harm  
5 anyone?

6           A       Well, we can't see any reason why a continuation of  
7 the present production within the Well No. 2 now for a period  
8 of eighteen months plus another twelve months. It will  
9 probably be at least twelve months before they receive stimula-  
10 tion. It's to be three-sided injection anyway, it's not a  
11 complete five spot wrapped around it and three-sided injection  
12 is much more inefficient, I think any engineer will testify to,  
13 than a complete enclosed five spot and it is on the edge too.

14          Q       Now let me hand you what has been marked as Texaco's  
15 Exhibit Number One and ask you if you can state that is the  
16 letter you referred to that contained Texaco's proposal that  
17 you have testified to and have slightly modified by testimony?

18          A       Yes, it is.

19          Q       And did you receive a response from Arco on this?

20          A       Yes, we received a response from Mr. Tweed.

21          Q       Is that Exhibit Number Two?

22          A       Yes, dated February 10th, 1978.

23                 MR. RAMEY: What is the number?

24                 MR. KELLY: The response is marked Exhibit Number  
25 Two.

1 (THEREUPON, a discussion was held  
2 off the record.)

3 MR. KELLY: I think copies of these were sent to the  
4 Commission but we want to get them marked as exhibits.

5 Q (Mr. Kelly continuing.) And the response was a  
6 turn down?

7 A Well, it was a turn down, yes.

8 Q Now there was some testimony or questions from the  
9 Commission concerning how standard this particular paragraph  
10 eleven in the unit agreement was. Do you have some thoughts  
11 for the Commission on whether or not this is a standard  
12 agreement that would be in any unit agreement?

13 A Well, really I'm not trying to be argumentative but  
14 such provisions as article eleven, as they are written, are not  
15 standard in any way. Naturally I have seen many, many, many  
16 agreements. I doubt if you can really call any one particular  
17 provision a standard. That particular provision is sort of  
18 written to meet the conditions of this particular unit. We  
19 think that the conditions that are presented right here insofar  
20 as the Cone lease is concerned are harsh. Most generally such  
21 unit agreements will provide for dual completions, some will  
22 provide for dual completions upon the effective date and then  
23 thereafter there will be no more dual completions without  
24 approval of the unit operator. They also provide, where they  
25 do this most generally but not always, that the unit has prior

1 rights in the well and in the event of interference between  
2 the unit operations and the non-unit operations then the non-  
3 unit operator has got to go.

4           We have negotiated situations to where it would be  
5 like in itself to the Cone No. 2, to where you would except  
6 the Cone No. 2 from, in this instance, from these provisions  
7 and it would say that it permitted dual completions and it  
8 would say that as so long as either side or the non-unit opera-  
9 tions were economical that you couldn't remove it. You see  
10 the point I'm getting to is there is no standard and they are  
11 patterned after the conditions that are prevailing right here  
12 or prevailing in the particular unit and they take all shapes  
13 and forms. Now we know, if I might go on, we know that the  
14 unit operator wants complete control and we can understand  
15 why he does this because this is a difficult situation. This  
16 is difficult in that there are the Blinebry, the Drinkard,  
17 the Tubb in between and the Abo below. Because of the way he  
18 is operating the Blinebry and the Drinkard, individual injection  
19 and dual or commingled, that's the individual dual injection,  
20 and plans, as I understand it, commingle production, he feels  
21 like he must have complete control of the well and, of course,  
22 these provisions usually in these agreements if it does not  
23 adversely affect a particular operator he has already agreed  
24 to his unit participation and the inclusion of his unit within  
25 the boundary of the unit, if it doesn't adversely affect him

1 he's not going to object to these provisions.

2 Now you get right down to the situation of the Cone  
3 Eubanks No. 2, which is the heart of our objection and our gas  
4 contract. I think Mr. Malaise testified the last time that  
5 there were eight Tubb gas completions and I think he also  
6 testified that six of those completions had alternate wells.  
7 Well, you see those people that have the alternate well to use,  
8 that solves their problem with respect to the gas contract.  
9 So this particular provision in this agreement centers around  
10 the remaining two wells. Now the other one, aside from the  
11 Cone No. 2 is the north offset on tract 10 operated by Moran  
12 and Arco has an interest in it. So I feel like it centers and  
13 zeros itself, that provision does, unfairly on the Eubanks  
14 No. 2.

15 Now there have been several occasions where you make  
16 a provision like this in an agreement but you find that there  
17 is one particular operator or one particular lease where it  
18 adversely affects, where you bend your negotiations to take  
19 care of this situation. This has not been done here. As far  
20 as we know the unit operator decided he had eighty-seven  
21 percent sign up or agreement, he believed that the statutory  
22 unitization act is complete magic and he had his unit but he  
23 did not complete his negotiations and that's why we are here  
24 today.

25 So, no, sir, I would hate to be argumentive at all,

1 I really don't want to, but my experience has been that there  
2 is nothing standard about this particular provision. I'm sure  
3 you see it again and again but there is nothing standard about  
4 it.

5 Q Now the figure, eighty-seven percent sign up then, is  
6 misleading as far as the particular problem being addressed by  
7 this hearing?

8 A Well, the eighty-seven percent sign up, I believe at  
9 the last hearing Mr. Hinkle asked me if the eighty-seven percent  
10 sign up didn't have some indication of the fairness as to the  
11 agreements in total, every paragraph. Well, my answer to that  
12 has to be, from experience, no, it does not, it only indicates  
13 that eighty-seven percent of the interest met around the  
14 negotiating table and that the terms of the agreement came  
15 within the realm or boundaries of their standards and they  
16 agreed to it and signed it. That made them eligible to appear  
17 before this Commission for approval of their unit agreement  
18 and their unit operating agreement but they still have the  
19 burden of proof to prove that they were fair and equitable to  
20 every single party here one hundred percent and in our opinion,  
21 sir, that has not been done.

22 Q In your opinion there has not been a good faith  
23 negotiation of the dispute that centers around the Cone well?

24 A I hate to use the words "not good faith". I would  
25 rather use the word "incomplete", they just stopped short.



1 MR. KELLY: I would at this time tender Exhibits One  
2 and Two on the part of Texaco's case.

3 MR. RAMEY: They will be accepted.

4 (THEREUPON, Texaco Exhibits One and Two  
5 were admitted into evidence.)

6 MR. KELLY: That's all I have on direct.

7 MR. RAMEY: We will continue the hearing until about  
8 one-thirty.

9 (THEREUPON, the hearing was in recess.)  
10

11 MR. RAMEY: The hearing will come to order.  
12 Did you finish with your witness, Mr. Kelly?

13 MR. KELLY: I had just completed my direct, yes.

14 MR. RAMEY: You didn't think of anything else over  
15 the lunch hour?

16 MR. KELLY: Nothing.

17 MR. RAMEY: Are there any questions of Mr. Todd?

18 MR. HINKLE: I have some.

19 CROSS EXAMINATION

20 BY MR. HINKLE:

21 Q Mr. Todd, the way I interpret your testimony, you,  
22 Texaco, would consider committing its interest in Tract 13 to  
23 the unit provided Mr. Cone was permitted to produce Well No. 2  
24 with an allocation of fifty-eight percent to the Blinebry and  
25 forty-two percent to the Tubb, is that right?

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1 A Well, yes, sir, but that wasn't all of it.

2 Q Well is that substantially correct? Did you intend  
 3 that the unit operator produce the well or Mr. Cone produce  
 4 the well?

5 A Mr. Cone.

6 Q Mr. Cone?

7 A Yes, sir.

8 Q That would be an exception that would have to be  
 9 made to the unit?

10 A Yes, sir.

11 Q Only that one well?

12 A Well that's all that we are interested in.

13 Q Do you know how much gas is being produced at the  
 14 present time from the Blinebry?

15 A Well as I understand it the well is producing around  
 16 three hundred thousand cubic feet a day and I assume that  
 17 fifty-eight percent of it is allocating.

18 Q Just allocating that?

19 A Right.

20 Q But you don't know exactly how much gas is being  
 21 produced?

22 A We are in a commingled situation, I don't know how  
 23 anybody will know.

24 Q Now let's assume that happened, you committed your  
 25 acreage and this allocation started. Now sometime in the life

1 of this waterflood you are going to have a response to the  
2 waterflood and the fluids are going to increase, are they not?

3 A From the stimulated formations you would hope they  
4 would.

5 Q Yes. In this case it would be the Blinebry forma-  
6 tion?

7 A Yes, sir.

8 Q And suppose that it increased considerably and you  
9 are making a lot of oil, now would that fifty-eight percent  
10 and forty-two percent allocation be equitable in that case?

11 A We did not intend this to be a permanent thing.

12 Q But you didn't say how long you wanted it?

13 A I think we implied or stated how long. Of course,  
14 in the Arco letter which is a matter of record we stated four  
15 years.

16 Q You would like to have this go on for four years?

17 A No, that we could operate the well four years. I  
18 think we said that in the offer to Atlantic Richfield. Now if  
19 the unit is developed like we think it should be in order to  
20 protect the gas cap and realize the greatest potential from it  
21 and to minimize the risk by a stage operation, then I think we  
22 said at the time that the unit operator, whether it be two,  
23 three, four years or what have you, at the time he showed  
24 justification for full scale expansion, that is expand into  
25 stage two, that Texaco for their forty-one point two five

1 percent of the well would be willing to yield that well.

2 Q In other words your proposal is on the further con-  
3 dition that you go ahead with the stage of production that is-

4 A That is one avenue we see as a solution to this  
5 problem.

6 Q Well now you would have the same problem after you  
7 had a response to the waterflood and the pressure increased  
8 if you didn't turn it over to the unit operator of those  
9 fluids going into the Tubb formation, would you not?

10 A I think we by agreement would agree to turn it over.

11 Q Now I think you also proposed that a dual completion  
12 would be a partial solution to this situation?

13 A Yes, that's a possibility, yes, sir.

14 Q Do you know the size of the wellbores in the four  
15 wells that are on Tract 13?

16 A I can't quote it to you, I would have to consult  
17 with Mr. Cone, but I assume they are between four and a half  
18 and five and a half casing.

19 Q Well I'm informed that No. 2 and 3 and 1 are all  
20 five and a half inch casing?

21 A That's dual completions many times have five and a  
22 half.

23 Q The only one with seven inch casing is No. 4. Do  
24 you think you could get dual strings in the five and a half  
25 inch casing there that would produce the fluids that would be

1 required to produce under this unit?

2 A There would be some restriction but I think it could  
3 be done under a cooperative effort. I think you could also  
4 say that your negotiations aren't complete or ended, that the  
5 unit operator came to Mr. Cone and said, we are having a  
6 problem here, we can't pump these wells up, I'm sure down the  
7 line that problem can be worked out.

8 Q That could also prevent the Drinkard from being  
9 produced, would it not?

10 A I don't think so, no, sir.

11 MR. HINKLE: That's all I have on cross examination.

12 MR. RAMEY: Any other questions of the witness? He  
13 may be excused.

14 Does that complete your testimony, Mr. Kelly?

15 MR. KELLY: That's right.

16 MR. RAMEY: Mr. Kellahin, do you want to call your  
17 next witness?

18 MR. KELLAHIN: Yes, sir. Call Mr. Paul White.

19

20 PAUL G. WHITE

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

23 DIRECT EXAMINATION

24 BY MR. KELLAHIN:

25 Q Mr. White, would you please state your name and your

1 occupation?

2 A My name is Paul White, I live in Artesia, New Mexico  
3 and I'm Vice President for Summit Energy, Incorporated.

4 Q You are a petroleum engineer, are you not, sir?

5 A Yes, sir.

6 Q And you have previously testified before this  
7 Commission?

8 A Yes, sir.

9 MR. KELLAHIN: If the Commission please, may we  
10 tender Mr. White as an expert witness in the field of petroleum  
11 engineering?

12 MR. RAMEY: Yes, you certainly can.

13 Q (Mr. Kellahin continuing.) You have some exhibits  
14 there don't you?

15 A Yes, sir.

16 Q Mr. White, let me direct your attention to what we  
17 have marked as Summit Energy, Inc. Exhibit Number One and ask  
18 you to identify it and explain what information it contains?

19 A Mr. Kellahin, this Tract 15 in the proposed Atlantic  
20 Richfield unitization program, it is now operated by Summit  
21 Energy, Incorporated, it's our Gulf unit lease and this plat  
22 just shows the location of that lease in relation to the unit  
23 boundaries as proposed by Atlantic.

24 Q Would you identify the wells that you operate on  
25 Tract 15?

1 A Yes, sir, they are Wells No. 2, 3, and 4 which pro-  
2 duce from the Blinebry and Well No. 1 which produces from the  
3 Wantz-Abo formation, a hundred and twenty acres.

4 Q 1, 3, and 4 from the Blinebry?

5 A No, 2, 3, and 4 from the Blinebry and 1 from the  
6 Wantz-Abo.

7 Q All right. What is your second exhibit there?

8 A Okay, Number Two. We will have to get into some  
9 statements, Tom, to explain them.

10 Q All right, Mr. White, would you refer to what I have  
11 marked as Summit Exhibit Number Two and identify it?

12 A Yes, sir, with your permission, Mr. Ramey and Mr.  
13 Kellahin, I would like to make some statements prior to getting  
14 into Exhibit Number Two because I think they explain why we  
15 prepared this exhibit.

16 Q All right, sir.

17 A First of all, Summit's earlier position in this  
18 unitization thing needs to be reviewed. We, at one of the  
19 early meetings as brought out in the testimony in the previous  
20 hearing in this case, we decided that we did not want to be  
21 a part of this unitization. At that time the Atlantic Richfield  
22 Engineering Committee was proposing to unitize the Tubb,  
23 Blinebry, Abo, and Drinkard formations. The USGS at that time,  
24 as I understand, denied this type of unit. It has always been  
25 adverse to the New Mexico Oil Commission and the USGS, it is

1 adverse to their rules and regulations and rules to commingle  
2 and to combine separate and distinct reservoirs. We wrote  
3 several letters to Atlantic which were largely ignored and we  
4 became aware of the fact that statutory pooling would become  
5 a part of this hearing. Now in the interim of a year or two  
6 Atlantic Richfield came back and suggested to Summit that we  
7 attend some more meetings because they had decided that they  
8 would only unitize the Blinebry and Drinkard zones and these  
9 would be unitized separately. We attended the next meeting  
10 and it was evident that there would be two booklets published  
11 and there would be two units proposed but they in essence are  
12 one unit. Now I don't know if the Commission has really ever  
13 fully understood that. I hope they have. The Drinkard and  
14 the Blinebry are being treated separately in this unitization  
15 effort but there is really only one unit. We want to bring  
16 that out in future testimony.

17 Now timing has been a big factor and Mr. Stamets  
18 just spoke about time awhile ago and asked Mr. Cone some  
19 questions on it, as to when this unit should be formed. Well,  
20 statutory pooling as I understand the rule does not have to  
21 be invoked immediately, it could be utilized down the line,  
22 it could be utilized three years from now, as I understand it,  
23 if there is some economic injustice is being done, it can be  
24 utilized at that time to correct the situation. It seems to  
25 me that the timing of the unit has come about because Atlantic



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1 Richfield has convinced the Commission of two things: number  
2 one that the field is in an economically depleted state of  
3 affairs, and number two that this oil will be unrecovered if  
4 this unit is not put into effect immediately. We hoped in the  
5 last hearing to prove this to be untrue. We feel that we have  
6 in Exhibit Two and some further information here that the  
7 timing of the unit is not proper. We feel there will be no  
8 waste incurred. You see Atlantic Richfield cannot receive an  
9 Emmy Award, perhaps I should say an Oily Award for their efforts  
10 in recovering this oil in the frame of mind they are going  
11 about this because this oil will be recovered, there isn't  
12 going to be eleven million barrels of oil left in the field  
13 out there, that oil will be recovered and we hope to show here  
14 today how it could be recovered in various means and there is  
15 not going to be any waste and as to the timing of the unit, we  
16 can present Exhibits Two and Three and show that there is not  
17 a state of depletion that requires immediate institution of  
18 secondary recovery.

19 Now the Commission put out an order on Case Number  
20 6000, they said under their findings the the majority of the  
21 wells in the project area are in an advanced state of deple-  
22 tion and should probably be classified as stripper wells. Now  
23 there is a misconception as to what a stripper well is too.  
24 Stripper wells are some of the most profitable operations in  
25 the United States right now. We have leases which we wish were

1 in the stripper category as I'm sure everyone else has here.  
2 Stripper leases are the most, are right now the most profitable  
3 operations in the United States. So just because a lease is  
4 designated as a stripper lease doesn't mean that it is in a  
5 depleted state of affairs and needs a secondary recovery  
6 operation to keep it going.

7 Now getting to Exhibit Two. We took a Drinkard well  
8 analysis, we took every well in the Drinkard pool that is in  
9 this unit, the proposed unit, and we figured the gross income  
10 on oil based on fourteen dollars and eighty-one cents a barrel,  
11 which is the stripper price being paid in that field. We come  
12 up with a gross income on the oil, then we come up with a gross  
13 income on the gas. We used fifty-two cents per MCF, which I  
14 think is reasonable.

15 MR. NUTTER: The gross income over what period of  
16 time?

17 A In 1976, ending 1-1-77.

18 MR. NUTTER: These figures are for a full year then?

19 A Yes, sir, and, Mr. Nutter, they are for 1976. That  
20 is current as we could get on our statistical well.

21 MR. NUTTER: Okay, thank you.

22 A We took the barrels and gas from the New Mexico Oil  
23 Commission's statistical report. We used fifty-two cents per  
24 MCF to get a gas income which we feel is reasonable. There  
25 is some one dollar gas down there and some twenty-five cent

1 gas but we came up with a total income on each of these leases  
2 from the oil and gas produced.

3 Now our yearly operating costs, we used five hundred  
4 dollars per well per Drinkard well per month. We feel this  
5 five hundred dollars is excessive. We operate our lease for  
6 three hundred and eighteen dollars per well per month. Now  
7 subtracting out the operating costs we come up with a net  
8 income on each of those leases down there in the Drinkard pool  
9 only and we come up with a profit per well. Not one well in  
10 the Drinkard pool showed a net loss. If it shows a net loss  
11 you are a poor operator. We feel this way about it, those  
12 figures are realistic on the price we use for oil and gas and  
13 the price we use for lifting costs and at least they are rela-  
14 tive and consistent between the leases and the wells. We come  
15 up with right now a net profit per well of eleven thousand  
16 two hundred and eighty-two dollars in the Drinkard pool. This  
17 is a per year profit per well in the Drinkard pool. Certainly  
18 this is not as good as a ten million a day Morrow well over in  
19 Eddy County but it is better than an economic limit, it's  
20 better than saying this is in a depleted state of affairs.

21 It relates back to the timing and I might direct  
22 this comment to Mr. Stamets. If you can operate your lease  
23 now at a net profit under primary operations, I'm surprised  
24 that some of the major companies in attendance aren't being  
25 criticized by the management to hold off on this unit because

1 right now the price of oil will be twenty dollars a barrel in  
2 three years. That is five dollars a barrel more than it is  
3 now down there. So if your response occurred in twelve months  
4 from today or three years from today, you are going to be  
5 looking at fifty million bucks. Waste is not only--not only  
6 does waste have to be associated with waste of barrels, it has  
7 to be associated and tied back to waste of dollars and the  
8 Commission doesn't usually use any imagination when it comes  
9 to economics because they relate economics to barrels. The  
10 companies relate economics to dollars.

11 Q Exhibit Three?

12 A Okay, Exhibit Three--

13 MR. RAMEY: Mr. White, what was the dollar value you  
14 had on the gas and oil?

15 A I had fourteen dollars and eighty-one cents on the  
16 oil and fifty-two cents per MCF on gas and five hundred dollars  
17 a month per well on the operating costs.

18 By the way, those profits tie in closely with what  
19 Mr. Cone testified to from his actual book values on his  
20 property, on the Cone lease on these two deals, they tie in  
21 pretty close to what he had predicted or what he had as actual  
22 profits in 1976.

23 Q (Mr. Kellahin continuing.) Would you refer to Exhibit  
24 Number Three, identify it and tell us what it contains?

25 A Okay, Exhibit Number Three, Mr. Kellahin, does the

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1 same thing with the Blinebry wells that are in this proposed  
2 unit boundary, using the same dollar figure on oil, the same  
3 dollar figure on gas, the same dollar figure on operating costs,  
4 we again do not come up with any well in the field that's  
5 operating at a net loss and, in fact, we show a ten thousand  
6 six hundred and ninety-one dollar profit on the wells in this  
7 Blinebry pool. I might refer specifically to the Summit  
8 Energy lease, we show a total net income of a hundred and  
9 seven thousand dollars in 1976. That's our net income. I  
10 can't see where in the world the Commission could come up with  
11 the fact that the proposed, that the majority of the wells in  
12 the project area are in an advanced state of depletion and  
13 should probably be classified as stripper wells. They already  
14 have been classified as stripper wells, all of them I think  
15 except the Gulf. Gulf has a lease down there that isn't but  
16 all the rest were already declared stripper wells three or  
17 four years ago and those two exhibits, I hope to convince  
18 somebody that these two pools are not in that state of affairs  
19 where you have to unitize and certainly they are not in the  
20 state of affairs where you have to invoke the statutory pool-  
21 ing rule because it is unnecessary right now, it's completely  
22 unnecessary. If we are allowed to produce our wells for three  
23 more years at this rate of profit, unless we are destitute we  
24 should do so because then we are going to reap the benefits  
25 of twenty dollar a barrel oil and we are going to increase and

1 enhance the recovery of the oil. It is immaterial whether the  
2 recovery of the oil is started now or the recovery of the oil  
3 in 1980, that makes no difference to me at all because it's  
4 not going anywhere. It might go somewhere if you institute  
5 this secondary recovery program as outlined by Atlantic.

6 Q Let me ask you some questions, Mr. White. In reference  
7 to Exhibits Two and Three, you have no Drinkard production,  
8 your confined production on Tract 15 is to the Blinebry?

9 A Yes, sir, we have a little Wantz-Abo production, it's  
10 classified, I think, in the--it's Blinebry production for the  
11 most part, yes, sir.

12 Q All right. Do you want Tract 15 included in the  
13 unit?

14 A No, we do not.

15 Q In your opinion is the inclusion of Tract 15 in the  
16 unit at this time premature?

17 A Yes, the inclusion of Tract 15 in this proposed unit  
18 with the Blinebry and Drinkard both involved is premature  
19 and inequitable to Summit Energy.

20 Q Hand me your next exhibit, please?

21 A I've got a Four-A and a Four-B.

22 Q Fine, let's do it. Mr. White, would you identify  
23 Exhibits Four-A and Four-B for us and explain what you are  
24 seeking to accomplish with these two exhibits?

25 A Yes, sir, we prepared this exhibit in two parts and

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1 what we hope to do is comment and make some observations as to  
2 these windows which the Commission has been aware of or talked  
3 about and which Atlantic Richfield has stressed or insinuated  
4 would occur should this unit not include Tract 15. Mr. Nutter  
5 brought up the question as to the fact that there was not any  
6 Blinebry oil flood as such in this area. It has been kicked  
7 around as to why the unit stopped on the east side where it did  
8 and that's obvious because there is no more production but it  
9 hasn't been talked about too much as to why the unit stopped on  
10 the west side. I suspicion the reason it stopped there, Shell  
11 is going to form a unit over there and Atlantic is going to  
12 form a unit on this and we are going to be in the same position  
13 in this thing because we have a lease over on that west side.

14 Now look at it this way, I think at the second meet-  
15 ing that Atlantic Richfield had, I stood up and probably made  
16 a fool of myself but I said, well, let's form a unit on just  
17 the Section 12, 13 and 14, I mean 24, pardon me, 12, 13, and  
18 24, because that's where the Blinebry production comes from,  
19 that's where the Blinebry wells are, at least, that is where  
20 there are not Drinkard wells. That portion of the field is  
21 fairly--it's purely Blinebry.

22 Now if a unit had been proposed for the east half  
23 of those specific sections this would have eliminated this  
24 sixty-five, thirty-five percent division of commingled oil, which  
25 to me is really something else, I don't see how that came about,

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1 I didn't see any evidence, by the way, presented by anybody  
2 that said this is the way it should be done. They just said  
3 this is what is going to be done. This would have eliminated  
4 downhole commingling over a large portion of this unit, almost  
5 half of it. It would have allowed the participants on the west  
6 half of the unit to commingle and accept formulas or parameters  
7 based on a common Blinebry-Drinkard pool where they have both  
8 zones prevalent. It would not create any inequity in the  
9 injection pattern for the Blinebry or recovery. The five-spot  
10 pattern would continue, there would be no windows on the east  
11 side of it at all. It would not create an inequity in the  
12 injection pattern for Drinkard oil recovery. You know that  
13 the gentleman from Texaco testified as to the gas cap and the  
14 residual oil in place or oil saturation. All of these things  
15 enter into this complicated situation and this would eliminate  
16 the doubts of structural problems, gas caps, oil columns,  
17 gravitational movement of this oil, migration of waters, it  
18 would eliminate that structural problem if the operators on the  
19 west side were allowed to do their thing and on the east side  
20 do their thing.

21 The west half of the unit could then work out  
22 cooperative agreements as will be necessary, lease line agree-  
23 ments, without affecting the equity on the east side and all  
24 of the offset operators for the most part are on the north and  
25 west and the south side of the portion of this proposed unit



1 that contains both Drinkard and Blinebry products. It would  
2 not create any waste of oil or gas and, in fact, would probably  
3 recover more oil, at least from the Blinebry pool.

4 We heard testimony to the fact that the Gulf Central  
5 Drinkard Unit had recovered some forty percent of predicted  
6 seventy percent which they hoped to recover. The Drinkard zone  
7 in this area, I'm told, is equivalent and homogeneous and  
8 correlative to Drinkard zones elsewhere in Lea County, so this  
9 would not create any problem if the Drinkard performs like the  
10 Central Drinkard Unit is doing. The Blinebry would be set on  
11 its own, it would be a one on one deal for the east side of  
12 this unit and the plan would resist Arco's masquerade of pro-  
13 posing two separate units when in reality only one unit will be  
14 in effect if this is allowed by the New Mexico Oil Commission  
15 to go ahead. I'm surprised that this wasn't discovered and  
16 brought out in the order and time given for the operators to  
17 go back and attempt to form this thing in this framework  
18 because why would the Drinkard, would the operators of Drinkard  
19 wells, by the way some of it is in an undesirable position and  
20 we are one of the operators that have no production in the  
21 west side of this unit. We don't have any over there, so  
22 when you are going to sign these parameters that have been  
23 designated to you in the Drinkard and the Blinebry, we don't  
24 have any leeway. Continental has production on both sides,  
25 so does Shell. Atlantic doesn't have anything on the east side

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1 of this unit. Now I venture to say it would be difficult to  
2 sign up the west side if they left out the east side because  
3 it is going to hurt their equity. It is not going to be to the  
4 economic advantage of Summit Energy to join a unit that has  
5 all Drinkard wells loaded over on one side of the unit and  
6 none on the other and yet they are combined into it. Have  
7 you ever wondered why they didn't separate, well, we'll get  
8 into that later, but anyway I would wonder why, I have been  
9 wondering why.

10 Q Mr. White, does the inclusion of Tract 15, which is  
11 the Summit tract, in your opinion reasonably necessary for  
12 the unit to effectively carry out the secondary recovery  
13 operations in the Blinebry?

14 A If the unit, as proposed, goes into effect Tract 15  
15 will be needed to recover the Blinebry oil. If the Blinebry  
16 oil is recovered from Tract 15 as proposed by Atlantic  
17 Richfield it will create an inequity to Summit Energy and I  
18 think probably to some of the other east side operators. If  
19 Tract 15 were allowed to cooperate as we have suggested several  
20 times and, in fact, wrote the Commission to that effect in our  
21 follow-up letter after the last hearing, if they are allowed  
22 to cooperate then it would not be needed in the proposed unit  
23 proper, if we were allowed to cooperate with Atlantic in a  
24 lease line manner that we proposed to them.

25 Can I read that little piece right now, Tom?

1 Q Well, let's wait and get to it.

2 A Okay, but that answers your question, I hope, yes,  
3 it would be needed if you are going to recover the Blinebry oil  
4 out of this unit but the Blinebry oil, it would be inequitable  
5 to Summit to include it in the proposed unit.

6 Q Show me Exhibit Number Five.

7 A Now that's two parts also.

8 Q Please refer to what has been marked as Exhibits  
9 Five-A and B and identify them and state what information they  
10 contain?

11 A Okay, Five-A shows the proposed injection pattern  
12 for Drinkard wells in this waterflood as proposed by Atlantic  
13 Richfield. Five-B is just a series of statements which I want  
14 to comment on and relate back to Five-A, this map.

15 Now I want to point out and this will follow up my  
16 testimony for Exhibits Four-A and B, that on the entire east  
17 part of this unit, Sections 12, 13, and 24, that there are only  
18 eight Drinkard wells of a total of forty-eight Drinkard wells  
19 in this proposed unit outline, this boundary. There is not  
20 one injection well proposed by the unit operator and the  
21 Engineering Subcommittee for any of these eight Drinkard wells  
22 in the subject sections, none of the wells in 12 and 13 and 24  
23 are completed in the Drinkard will be used as injection wells  
24 unless they have changed the pattern.

25 Now the '76 production as we put this together out

1 of that statistical report and it totaled nine thousand three  
2 hundred and seventy-one barrels from the Drinkard zone in the  
3 subject sections, 12,13, and 24 as compared to eighty-two  
4 thousand nine hundred and eighty-seven barrels for the total  
5 Drinkard production in 1976. So eleven percent of the produc-  
6 tion came from 12, 13, and 24, the Sections 12, 13, and 24.

7 Now here is really a nice one for you. The cumulative  
8 oil production on these Sections 12, 13, and 24, totaled three  
9 hundred and two thousand nine hundred and forty-two barrels as  
10 of 1-1-77. The total Drinkard cumulative oil from this area  
11 approximates four million five hundred and ninety-nine thousand  
12 barrels. So six and a half percent, now six and a half percent  
13 of the oil, all of the Drinkard wells, was produced from this  
14 entire east side of this unit. There is not much Drinkard  
15 over there, is there? You would almost have to conclude that.  
16 Now they have proposed three producers in the Drinkard on this  
17 part of the unit. In Section 12 there are two and in Section  
18 24 there is one and I see no problem there if this unit comes  
19 about in time that they could still produce those Drinkard  
20 wells.

21 Further, most of your dual completions are on the  
22 west side of the unit, so you would just completely eliminate  
23 the problem for almost half of this proposed unit, create no  
24 waste, you would still have your equity, certainly you would  
25 have to work up parameters on the east half of the unit because

1 those people who have just Blinebry production deserve the right  
2 to look at that thing if it is workable, if we are not throwing  
3 out something that is not workable, it would be different if  
4 we were putting before the Commission something that was foolish  
5 or something with no basis of fact to it. It would be foolish  
6 to put before the Commission something like, we want to stay  
7 out of this unit, we don't want to do anything, we want to  
8 produce our leases is all we want to do, which we would sure  
9 like to do, but we aren't proposing that. We are proposing  
10 what looks like to me a fair and equitable thing.

11 Now if the unit operator, present unit operator,  
12 wanted to work up something and operate that side of the unit  
13 that's fine if they will separate it out. I don't see any  
14 problem in separating it out. Brother, the problems they had  
15 for the last two or three years, this is minor.

16 Q In your opinion, Mr. White, will the unitization  
17 proposed by Arco benefit the owners of Tract 15?

18 A No.

19 Q Have you made any calculations as to what the dollar  
20 amounts involved are for the participants in Tract 15 in  
21 relation to whether they are included in the unit or left out?

22 A Yes, sir.

23 Q Do you have that in the form of an exhibit?

24 A Yes, I do. It's Exhibit Six.

25 Q All right, Mr. White, let me direct your attention

1 to Exhibit Number Six and have you identify it?

2 A Exhibit Number Six is an economic appraisal if the  
3 Blinebry unit was framed up on Sections 12, 13, and 24, the  
4 east side of the unit, as compared to the Arco proposal as  
5 per the entire unit boundary on their plats.

6 We worked the economics in the previous hearing which  
7 pointed out what we were going to lose if we even unitized.  
8 Then we worked it up, what we were going to have if we cooper-  
9 ated and we worked it up then if Atlantic Richfield took the  
10 unit over and operated as proposed and as ordered by the Com-  
11 mission.

12 Now in Exhibit Six we took the total cumulative  
13 barrels that have been produced in Sections 12, 13, and 24.  
14 Now if we use cum oil as a parameter on that east half, which  
15 I think has got to enter into it, cum oil would probably be a  
16 big factor in establishing any kind of equity over there.  
17 Then we predicted on the secondary recovery, based on seventy-  
18 five percent to one hundred percent for this Blinebry east  
19 side, that we would have an equity, Summit would have an equity  
20 in these secondary barrels of two hundred and sixty-seven  
21 thousand, eighty-one barrels. That present worth is three  
22 million nine five five four seventy. The present worth of our  
23 primary oil, we think, is one two seven eight four one four, so  
24 the total Summit worth, present worth, undiscounted, would be  
25 five million two hundred and thirty-three thousand eight hundred

1 and eighty-four dollars. The same calculations are made with  
2 the supposition that we were in the Arco proposed unit and we  
3 would come up with a total Summit equity of three million six  
4 hundred and thirteen thousand four hundred and eighteen dollars  
5 or a difference of one million six hundred and twenty thousand  
6 four hundred and sixty-six dollars and that would be the dif-  
7 ference in Summit unitizing with a correct parameter in the  
8 east side where the Blinbry production is, in the absence of  
9 Drinkard production, and operating under the Arco unit.

10 These are gross figures and they really don't reveal  
11 the whole picture because we feel that the operating cost per  
12 well under the Arco proposal will be about eight hundred dollars  
13 per month per well and under our operation presently it is  
14 three hundred and eighteen dollars. We think it will double.  
15 It's not unusual under unitization to double.

16 I would like to make this observation that we still  
17 feel Summit's position is this: that we feel like we have  
18 plenty of time to recover these reserves. This position that  
19 these reserves are totally unrecoverable if we walk out of the  
20 room today and don't give Arco the right to go ahead with this.  
21 To me it is just completely without basis of fact, it is just  
22 a real strong insinuation that they are never going to be  
23 recovered if we don't do it tomorrow and this can't be right.  
24 It also points out that timing is not being taken into con-  
25 sideration by the Commission in their order because we felt

1 we had proven that it is not at its economic limit and I don't  
2 know how else we can go about proving this, I don't see any-  
3 thing else we can do to convince the Commission. First of all,  
4 the wells are not in that state where forced unitization is  
5 necessary.

6           You know, if this will set a precedent, if a company  
7 wants to run out and get seventy-five percent of the people  
8 to vote for them they could, I guess, statutory pool anything  
9 in the State whether it is economical or not and, you know,  
10 the signing of the majority of the people in a unit has a lot  
11 of psychology behind it. When you go to a lot of the working  
12 interest and particularly a lot of the royalty interest, you  
13 are going to kick around some pretty big figures. You are  
14 going to say, look here, we've got eleven million barrels of  
15 oil down there, there is no way you are going to get yours out  
16 unless we get it for you and look how much it's worth to you.  
17 So you start kicking around these big figures and I'm not say-  
18 ing that a majority of the people in this unit would not  
19 recognize this but there are a lot of people who sign because  
20 they like those numbers and they sign without any knowledge  
21 of what unitization is and what have you. There is always  
22 that thing involved in getting a majority of the people.

23           So these two things, the timing of the unit, and the  
24 fact that the oil will be recovered, the fact that we have  
25 presented an alternative that I can't for the life of me see



1 would take any more time than this has taken, we think stabilizes  
2 Summit's position.

3 MR. KELLAHIN: That concludes our direct examination.  
4 Thank you.

5 MR. RAMEY: Mr. Hinkle, any questions?

6 CROSS EXAMINATION

7 BY MR. HINKLE:

8 Q Mr. White, I notice on your Exhibits Two and Three  
9 that they are dated February 16, 1978. Are these figures for  
10 the last year up to February 16, 1978?

11 A No, sir.

12 Q What are they?

13 A I already said 1-1-77.

14 Q In other words, up to January 1977?

15 A Up to January 1st, 1977.

16 Q It would be 1976 that these figures are for?

17 A The figures are up to January 1st, 1977 for the  
18 year 1976.

19 Q For the year 1976?

20 A That's right.

21 Q That's all I wanted to know. Now, Mr. White, of  
22 course you realize, I'm sure, that the Commission can't leave  
23 out Tract 15 in its order and still order unitization of the  
24 remaining acreage. You understand that, don't you?

25 A No, sir, I do not understand it.

1 Q Because this would be changing the complete unit as  
2 to what eighty-seven percent of the people agreed to. If you  
3 left out Tracts 13 and 15 it means that you would have to start  
4 over again. You would have to go back to all of these people  
5 and it has taken eight years to do it and God only knows when  
6 we would get it done again.

7 A Yes, sir, this is okay with me if it takes that long.  
8 That's fine. I don't see why we shouldn't use the time because  
9 as I pointed out in testimony, it will be worth a lot more  
10 money then.

11 Q What do you base your twenty dollar oil on?

12 A I base my twenty dollar oil on the fact that I  
13 predicted back in 1972 that oil would go up six percent a  
14 barrel on the dollar price and it has and it will go up that  
15 much more, it will be twenty dollars three years from now.

16 Q Have you taken into consideration any price control  
17 that the Congress might--

18 A Well, price control--crude floated with the market  
19 price.

20 MR. RAMEY: I think Mr. O'Leary predicts twenty-five.

21 A I think it could very easily be more than that. We  
22 might be looking at thirty-five dollar oil by the time we got  
23 a response from this unit and that's a ton of money.

24 Q (Mr. Hinkle continuing.) What I'm getting at, your  
25 proposal is that you leave out 15 and we start over again and

1 we have two different waterfloods, one on the east side and  
2 one on the west side, in effect?

3 A My proposal is predicated by one thing prior to that.  
4 First of all, no unit because of the primary life left and  
5 then we form a unit and we take advantage of price increases  
6 and we take advantage of the things that are developing in the  
7 energy field. I don't think there is anyone in the room that  
8 thinks that oil is going to go down. Now then, if we cannot  
9 do it that way, if we can't get the thing quieted down and  
10 don't do the unit right, even though there has been a lot of  
11 work expended, they've got to do something and so I would like  
12 to put it this way: if we can't get the unit quieted down,  
13 not form the unit right now, right at the present time and I  
14 think if--

15 Q And hold it off for how long?

16 A I would like to hold it off for three years. I think  
17 then we could look at it again, we might want to hold it off  
18 three more years.

19 Let me point out a case that is relevant to this  
20 situation. The West Loco Hills flood which Summit owns a  
21 five percent interest in, is operated by Newmont Oil Company.  
22 They recovered about eleven or twelve million barrels of  
23 secondary oil. It has been a highly successful flood. At the  
24 first of 1977 we were through. There was still a million  
25 barrels of oil in the ground. At 1-1-77 we were through because

1 economically we could not produce the oil. They had produced  
2 under the old oil price of five dollars and fifty cents a  
3 barrel and we could see the economic limit, there was no more.  
4 Newmont and some associates went before the Federal Energy  
5 Administration and got some relief from this and they awarded  
6 them stripper price on the rest of the remaining crude. It  
7 put a whole new ballgame into effect. They had a million  
8 barrels at fourteen bucks a barrel so they went ahead flooding.  
9 What I'm bringing up is, three years from now we might not  
10 want it, no. Three years from now we might.

11 Q You might want to wait six?

12 A Yes, sir.

13 Q And when you did get ready you would probably want  
14 two waterfloods, from your indication here, one on the west  
15 side and one on the east side?

16 A Yes, sir, that is correct.

17 Q And what would the cost of those two waterfloods be  
18 as compared to one waterflood here where you are injecting in  
19 both the Blinebry and the Drinkard?

20 A The cost, if my experience tells me anything, the  
21 cost would be less on the east half of the unit by far because  
22 of the lack of dual completions and the cost on the west side  
23 would be comparable to what it would cost now, other than  
24 increases in supplies and services.

25 Q You would have to have one set up for the Blinebry

1 would you not, all of the equipment and so forth, and then  
2 you've got to have another for the Drinkard and you do these  
3 separately?

4 A It would be separately. The oil made from Sections  
5 12, 13, and 24 would go into tank batteries without the com-  
6 mingling effect of the separation of the sixty-five thirty-five  
7 oil. The oil on the west half of the unit would go into com-  
8 mingled batteries and be separated arbitrarily how ever the  
9 working interests wanted to work it out.

10 Q Does that mean you would have to have multiple  
11 completions in a lot of the wells?

12 A Not on the entire east side, no, sir, we could flood  
13 the Blinebry over there without any multiple completions.

14 Q What about the Drinkard?

15 A The Drinkard on the west half would continue to have  
16 the problem of commingling and the problem of separation of  
17 injection waters.

18 Q Was your proposal ever made to the committee that  
19 studied this at all of the meetings?

20 A It was only stated in a meeting when all of the  
21 working interests were there and I don't know if it went into  
22 the minutes or not, Mr. Hinkle, but I talked in these terms  
23 at, I think the third meeting of the operators' committee  
24 meeting, it was either the second or third meeting.

25 Q Do you know whether they considered it or not?

1 A No, sir, they did not. As far as I know it was  
2 never considered. I sure never did see anything on it.

3 MR. HINKLE: That's all I have.

4 MR. RAMEY: Any other questions of the witness?  
5 Ms. Teschendorf?

6 CROSS EXAMINATION

7 BY MS. TESCHENDORF:

8 Q Mr. White, you were talking a little bit about  
9 ultimate recovery, I think, of oil involved in the unit opera-  
10 tions, do you think that the unit operations will substantially  
11 increase ultimate recovery or will it be the same whether it is  
12 unitized or not?

13 A Unitization in the right and proper framework in-  
14 creases ultimate recovery of oil.

15 Q Do you think it will in this case, as the unit is  
16 proposed?

17 A Unitization by the Arco proposal will increase the  
18 recovery of the ultimate oil in this field. Unitization as  
19 proposed by Paul White will increase it even more and I might  
20 add, dollarwise it will increase it tremendously, the value of  
21 our product out there. I can't imagine not wanting to wait  
22 and buy their time. If I had four gas wells out there that  
23 weren't being drained presently I would produce them at the  
24 minimum rate and I wouldn't worry about whether the nation got  
25 energized or not, it's just part of the ballgame.

CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. White, you stated that you thought that the operating costs would go from your three hundred plus to about eight hundred and I think the Cone people said it would go to about nine hundred. What is going to cause this increase in operating costs, is that due to the secondary recovery?

A Yes, sir, Joe, to a certain extent it is due to secondary recovery plus overhead. Overhead rates that are being distributed, particularly major companies, not just Arco and Shell, Continental and what have you, when you expand your operational base which you have to do periodically and that's one reason they want to unitize right quick. You have to expand your operational base to take care of your people and so you want to increase overhead and it increases the overhead in a waterflood, particularly of this kind where you have dual injectors, you have an increase in operating costs. You have an increase in Christmas bonuses and payroll, compensation and sick pay and I'm telling you, there is a list that long that is on the joint billing. I should have brought one of those, it would have been a nice exhibit to show what goes into the-- and under our frame we don't, if you are sick you are just sick, you just don't get paid.

Q Could you give me a rough idea, you know, of what the operating costs of your leases versus one of Arco's leases

1 in the immediate area, do you have an idea?

2 A Presently?

3 Q Yes.

4 A I would say presently we are operating for, I believe  
5 it's three hundred and eighteen dollars per well per month  
6 and I would say Arco probably more nearly approaches five  
7 hundred dollars per month right now. You see, Arco adds over-  
8 head to their own stuff too and so with the number of people  
9 involved in the operation it is necessarily high. I'm not  
10 saying, Joe--an independent should operate cheaper than a  
11 major company, in fairness to the major company, an independent  
12 should operate cheaper.

13 MR. RAMEY: Thank you. Any other questions of the  
14 witness? He may be excused.

15 (THEREUPON, the witness was excused.)

16 MR. RAMEY: Anything further, Mr. Kellahin?

17 MR. KELLAHIN: That's all, Mr. Ramey.

18 I would like to move the introduction of my Cone  
19 exhibits and my Summit exhibits, please.

20 MR. RAMEY: They will be admitted.

21 (THEREUPON, Cone Exhibit One and Summit  
22 Energy Exhibits One through Six were  
23 admitted into evidence.)

24 MR. RAMEY: Mr. Hinkle, would you like to proceed,  
25 please?



1 MR. HINKLE: Yes.

2

3 BOB MALAISE

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

6 DIRECT EXAMINATION

7 BY MR. HINKLE:

8 Q State your name, your residence and by whom you are  
9 employed?

10 A My name is Bob Malaise, I'm employed by Atlantic  
11 Richfield and I live in Midland, Texas.

12 Q What is your position with Atlantic Richfield?

13 A I'm an operations engineer.

14 Q You were one of the principal witnesses in the  
15 original hearing before the Commission?

16 A That is correct.

17 Q And qualified as a petroleum engineer?

18 A Yes, sir.

19 MR. HINKLE: Are his qualifications acceptable?

20 MR. RAMEY: Yes, they are.

21 Q (Mr. Hinkle continuing.) Have you prepared or has  
22 there been prepared under your direction certain exhibits for  
23 introduction for this hearing?

24 A Yes, sir, there have.

25 Q Those are the ones that have been marked One through

1 Exhibit Seven?

2 A Yes, sir, they have.

3 Q I hand you Exhibit Number One, Mr. Malaise, explain  
4 what this is and what it shows?

5 A Exhibit One was prepared over the proposed unitized  
6 area of the Blinebry and the Drinkard and essentially what we  
7 have shown is the full development of the Blinebry and the  
8 Drinkard and we have thirty dual injection wells that are  
9 dualled in the Blinebry and dualled in the Drinkard formation  
10 and we have eight on the east side, eight single Blinebry  
11 injection wells. Now if one hundred percent of the tracts  
12 came into the unit boundary as we have proposed, this would be  
13 an estimation of what we would consider the areal sweep or the  
14 area affected by injection and it would assume to have full  
15 lease line cooperation but the area that is colored blue is  
16 the area that would be affected by the injection under the  
17 proposed operations.

18 Q In your opinion this will give an effective sweep of  
19 the whole area?

20 A Yes, sir.

21 Q Now refer to Exhibit Two?

22 A Basically what Exhibit Two shows is that we made the  
23 assumption that Tract 13, which is the Cone-Eubank Tract,  
24 would not form any type of cooperative agreement and would  
25 stay out of the unit. The Tract 15, the Summit Tract, we

1 assumed here that that tract would cooperate in the unit and  
2 that the injection well No. 30 would be converted as we have  
3 shown on our injection plan at this time.

4 The yellow areas are what we would consider would be  
5 areas that would not be swept.

6 Now looking more closely at Tract 13 and then Tract  
7 15, I'll try to explain how we came up with these areas. If  
8 Cone did not cooperate and stayed out of the unit and did not  
9 inject into either one of the two injection wells that we have  
10 proposed on the first plat, Well No. 48, unit wells, and  
11 Well No. 50, then we would have to back off of injection. The  
12 unit would not be able to convert those injection wells around  
13 that tract because we would be sweeping oil to that tract and  
14 we would not be getting compensating injection for it, so what  
15 this area shows is those wells numbered 34, 38, 46, 58, 64,  
16 and 62 would be the wells that we would have to convert. Here  
17 again we would assume that we would have lease line objection  
18 to the east and to the west of this area.

19 What I have done here is had this area converted in  
20 Exhibit Two-A to barrels of secondary oil.

21 Did everyone get a copy of Exhibit Two-A? It's a  
22 summation tabulation.

23 Now I broke the table down into an area around Tract  
24 13 and an area around Tract 15. Looking at the Tract 13 area  
25 what I did was go back in every lease that was affected in

1 this drainage area, or actually unswept area. I assumed or  
2 totaled the ultimate primary recovery as was projected by the  
3 Engineering Committee. To that number I applied a seven-tenths  
4 which was what we estimated the secondary recovery factor would  
5 be and this would give me secondary reserves. At that time I  
6 put down on each tract what the total number of acres were in  
7 that tract and then from the numbers in these areas I was able  
8 to come up with a swept and unswept area in terms of acres.  
9 Then proportioning each tract, the amount that was unswept, to  
10 the total amount of acres in that tract and applying that to  
11 what that total secondary ought to be for the tract, I came  
12 up with an unswept secondary reserve number.

13 Now what I'm saying is that around Tract 13 and in-  
14 cluding Tract 13, the total area that would be unswept would  
15 be an equivalent to almost ten million barrels of secondary  
16 reserves or one point nine six six point nine million barrels  
17 is the amount of secondary oil that would not be swept, in our  
18 estimation. Carrying it one step further in terms of Tract  
19 15, I'll say it here that Tract 15 would be included in the  
20 unit and Summit Energy would convert their Unit Well No. 30  
21 under the current injection plan. Well, there again we would  
22 have to back off Unit Well No. 26, 28, and 43 from the proposed  
23 injection pattern. There again I went through the same process  
24 of coming up with areas that would not be swept because of  
25 backing off of injection and for the Summit Energy Tract area

1 No. 15 we estimate there would be four hundred and eighteen  
2 thousand barrels of secondary reserves that would not be swept  
3 by the fact that we would have to back injection off that  
4 tract.

5 The total amount of secondary reserves that would  
6 be lost, both to the unit and both to the unit operator in  
7 this area we would estimate to be almost two point four million  
8 barrels of secondary reserves.

9 Q Do you have any further comments?

10 A No.

11 Q Now refer to Exhibit Three and explain what this is  
12 and what it shows?

13 A Basically what this exhibit shows, to the best of  
14 the ability we have and what records we had available, we made  
15 an estimate of the current status of the casing programs that  
16 were run in the wells within this unit boundary, the ones that  
17 we had put forth before the Commission in the first hearing  
18 as proposed unit wells and the green circle would indicate that  
19 the wellbore or the majority of the wellbores in these wells  
20 would be five and a half inch casing.

21 Q How many all together?

22 A I believe we have fifty-nine wells that have five  
23 and a half inch casing. There are seventeen wells that are  
24 indicated with a red circle that have seven inch casing and  
25 the point here being that if we are in a position to look at

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1 dual provisions within these wellbores, if we are going to  
2 maintain unit operations as we put forth before the Commission  
3 inside of five and a half inch casing, it would be virtually  
4 impossible to triple complete a wellbore and this would be one  
5 of the things we would have to do if we were going to allow  
6 the Tubb gas zone to be produced simultaneously with the  
7 Blinebry and the Drinkard waterflood. It is physically im-  
8 possible to get tubing into five and a half inch casing. They  
9 don't even make packers and other equipment for a triple  
10 completion within that kind of a wellbore.

11 We have said that in our engineering estimates we  
12 were looking at injecting possibly at a peak injection rate  
13 of around four hundred and fifty barrels a day into the  
14 Blinebry and possibly four hundred barrels into the Drinkard.  
15 If we assume that we reach these conditions later on into a  
16 unit operation and assuming that we were able to produce  
17 roughly fifty percent of that in a producing well we would be  
18 looking at or lifting in the neighborhood of four hundred to  
19 four hundred and fifty barrels of fluid a day.

20 If you go back and you look at what size tubing and  
21 what size pump you would need to lift this type of fluid in  
22 a situation where we would have a commingled zone of Blinebry  
23 Drinkard as we proposed, you would be looking at somewhere in  
24 the neighborhood of a two and a quarter inch pump and two and  
25 seven-eighths inch tubing to lift that four hundred barrels a

1 day so it virtually eliminates running two strings of tubing  
2 into five and a half inch casing, two and seven-eighths inch.

3 One other problem you get into, you can run smaller  
4 tubing in and we have run some calculations that show that  
5 smaller tubing, for instance, two and a sixteenth, a special  
6 tubing, the rod size that we could run within the tubing  
7 strings would be such that the stress--the rods would be so  
8 small that the stress would not allow us to lift four hundred  
9 barrels of fluid a day. So we start running into all kinds  
10 of mechanical problems when we start talking about triple  
11 and dually completed wells and I think the Commission can see  
12 in the case of the Tubb zone that if we were trying to produce  
13 it simultaneously with the Blinebry and Drinkard we would be  
14 looking at a triplely completed well and to maintain the type  
15 of withdrawal rates which we feel are necessary to operate a  
16 flood of this magnitude and produce at the rates without  
17 sweeping oil off our property once we hit peak response that  
18 we would be looking at at least two and seven-eighths inch  
19 tubing in the commingled wellbores.

20 Q Now refer to Exhibit Number Four and explain what  
21 this is and what it shows?

22 A Exhibit Four is an economic analysis on the Blinebry  
23 and the Drinkard waterfloods. The presentation shows before  
24 tax and after tax estimation of what we think the profit would  
25 be on these projects. Now before tax economics were presented

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1 at the last hearing. Since that time we have gone back and  
2 it was our testimony at that time that each company necessarily  
3 would go out and take their own projections and apply their  
4 own tax position to it. What we have done here is gone one  
5 step farther and shown after tax a situation based upon a  
6 company that would have a forty-eight percent equivalent tax  
7 rate and a ten percent investment credit and re-ran the  
8 economics after tax as well as before. I think that the  
9 before tax is the same thing that we presented at the first  
10 hearing. We ran a constant oil price of thirteen dollars and  
11 eighty-four cents and a constant gas price of fifty-three cents  
12 per MCF and our total investment being twelve and a half  
13 million dollars. There again we were looking at a pay out of  
14 a little over three years, about three and a third years, with  
15 an expected life on this project of twenty-one years.

16 Now the undiscounted present worth that we show  
17 before tax and we presented at the first hearing, was eighty-  
18 two point eight million dollars. After tax would give us  
19 forty-eight point six million dollars.

20 Q Any further comments?

21 A No.

22 Q Refer to Exhibit Number Five and explain what this  
23 is and what it shows?

24 A Exhibit Five is an economic analysis on the Tract 13  
25 that J. R. Cone operates and there again we have before and



1 after tax calculations and the before being the same calcula-  
2 tions that were shown at the original hearing and we have made  
3 three assumptions on Tract 13. The first assumption was the  
4 economics that the Cone Tract would be subject to if he turned  
5 over--joined the unit and turned over all four wellbores as  
6 proposed in the operating agreement. He would be looking at  
7 a phase one participation of seven point one four percent and  
8 a phase two participation of eight point three seven percent,  
9 which would give him an undiscounted or an expected undiscounted  
10 present worth of about seven point four million dollars before  
11 tax and three point nine million dollars after tax.

12 Now the second assumption was in the case of his  
13 No. 2 Well, the Eubanks 2, where we have the Tubb gas situa-  
14 tion commingled with the Blinebry. We made the assumption  
15 that Mr. Cone would go ahead and turn over three wellbores and  
16 keep the other well out, allowing the unit to drill a well and  
17 the unit would carry this particular well out of production  
18 and what I have done here is run the same economics only I put  
19 two hundred and fifty-four thousand dollars into nontaxable  
20 revenue. In other words, I have deducted this off the top of  
21 the revenue that has come in from the Cone Tract until it is  
22 paid out. The reason for the two hundred and fifty-four  
23 thousand dollars, two hundred thousand dollars was the penalty  
24 plus the recompletion cost in the old wellbore. The economics  
25 in this case, Mr. Cone would have an expected undiscounted

1 present worth of seven point one five million dollars before  
2 tax and roughly three point six six million dollars after tax.

3 And the third assumption was the worst case we could  
4 think of. If Mr. Cone wanted to keep all four wellbores out  
5 of the unit and produce his Tubb reserves and any Abo reserves  
6 that he has underneath his tract and he would be looking at  
7 paying a penalty four times what he paid in case two, which  
8 would be a little over a million dollars. Applying this there  
9 again to his economics we would be looking at an expected  
10 present worth of roughly six point four million dollars before  
11 tax and two point nine million dollars after tax.

12 The only other thing I would like to say or make in  
13 terms of economics, Mr. Byers testified this morning that the  
14 continued operations would recover roughly six million dollars  
15 or have a six million dollar profit. I really don't know what  
16 prices he used or how much Tubb gas was associated with those  
17 prices and whether he took into account that he would be able  
18 to produce his Tubb gas after the unit was formed, so I really  
19 don't know what basis his economics were evaluated on.

20 Q Now refer to Exhibit Number Six and explain this?

21 A Exhibit Number Six is the economic analysis for the  
22 Summit Tract, Tract 15.

23 Q Did you give out the wrong one?

24 A Yes, I think I did. Four and Six are backwards.

25 What has happened, Number Four was turned in to the Commission

1 as, or Summit was turned in as Exhibit Four and I read Four  
2 off as the total unit economics if you want to correct them  
3 and get them into the record straight. The exhibits were  
4 passed out incorrectly.

5 MR. RAMEY: Number Four is the total of the unit?

6 A Number Four is the total unit economics. Number  
7 Five is the economics of the Cone Tract and Number Six will  
8 be the economics of the Summit Tract.

9 (THEREUPON, a discussion was held off the record.)

10 A Well, going with Number Six as being the economics  
11 of the Summit Tract we show the Summit Tract to have approxi-  
12 mately, before tax, of two point five million dollars under  
13 unit operations and one point four six million dollars after  
14 tax, economics with the unit operation to continue.

15 Q (Mr. Hinkle continuing.) Now, Mr. Malaise, refer  
16 to Exhibit Number Seven and explain this?

17 A Exhibit Seven was basically touched on at the last  
18 hearing. The Exhibit Seven shows the current status of Tubb  
19 production in this field. There are eight Tubb wells that are  
20 currently producing.

21 Exhibit Seven shows the proration units that are  
22 assigned to these eight producing Tubb wells. We have the  
23 Moran Owen No. 1 as producing from the Tubb.

24 Q Where is that located?

25 A That is located in Section 14 in the northwest

1 quarter and is shown on the plat as a star with current gas  
2 production for the month of July of 1977. It is shown as  
3 ten point three million for the month and all of these figures  
4 will be for the month.

5 The Cone immediately south, the Cone Tract, one  
6 hundred and sixty acres, has the Eubanks No. 2 which is  
7 currently producing from the Tubb.

8 South of that Tract the Getty has their Williamson  
9 No. 2 which is producing from the Tubb and south of that Tract  
10 Shell operates the Sarkeys No. 2 from the Tubb.

11 Going back to Section 14 Gulf has the Keenum No. 2  
12 that is currently producing from the Tubb.

13 Q Where is it located?

14 A That is in Section 14. That is the hundred and  
15 sixty acres that is in the east half and it would be the west  
16 half of the east half.

17 South of that tract Atlantic Richfield operates the  
18 Borden No. 1 in the Tubb. South of that tract Atlantic  
19 Richfield will operate the Sarkeys No. 5 in the Tubb.

20 There is one other additional Tubb well. It is in  
21 Section 14 and operated by Continental. It's the Lockhart  
22 B-14 No. 2 which is in the east half of that section and it  
23 is a hundred and sixty acre proration unit.

24 I would like to elaborate on the condition of these  
25 wells. We have three wells rather than two that do not have

1 alternate wellbores. The Moran Owen No. 1 does not have an  
2 alternate wellbore. The Eubanks No. 2, Cone's Eubanks No. 2  
3 does not have an alternate wellbore and the Getty's Williamson  
4 No. 2 does not have an alternate wellbore. There was some  
5 mention to the fact that Mr. Cone was in a position that  
6 negotiations have not been complete on. I would like to point  
7 out that the other five wellbores in the Tubb that do have  
8 alternate wellbores, these people will be required to pay for  
9 the recompletion to that other well. So there are costs that  
10 are going to be involved and are going to be inflicted on these  
11 people.

12 I might point out too that the Moran well, their  
13 Owen No. 1, is roughly the same amount or probably half as  
14 much remain, Tubb reserves, as the Cone well does and they  
15 are a party to the agreement. In fact, the only tract that  
16 is producing from the Tubb that has not agreed to the unit  
17 is the J. R. Cone Tract.

18 Q Any further comments?

19 A No.

20 (THEREUPON, a discussion was held  
21 off the record.)

22 Q (Mr. Hinkle continuing.) Now refer to what has been  
23 marked as Exhibit Number Nine, explain what this is and what  
24 it shows?

25 A Well, we have made mention in previous testimony

1 today but there is another Drinkard flood in the area and we  
2 recognize that the Central Drinkard Flood is roughly two miles  
3 to the southwest of the proposed Blinebry and Drinkard water-  
4 flood. What I have here is a schematic of the Central Drinkard  
5 Unit area. I have shown, there again it is on a five-spot  
6 pattern, eighty acre five-spot, that is similar to what  
7 Atlantic Richfield is proposing as a pattern in the Blinebry-  
8 Drinkard Unit. We see two five-spots that are shaded. One of  
9 the five-spots has a producing well, No. 116, in the center of  
10 the five-spot and the other five-spot has a producing well,  
11 No. 124.

12 These were the first two complete five-spots that  
13 were established in this particular unit. The total project  
14 was not put in in an entirety, it was put in as a pilot. The  
15 pilot began in late 1967. The pilot, as I said, encompasses  
16 these two five-spots. The expansion into the area that Mr.  
17 Byers testified to this morning, in 1972, is shown as five-  
18 spots that are not shaded in and here we see possibly nine  
19 complete five spots is all we are looking at within the unit  
20 boundary, plus the two pilot areas.

21 If you will look around the boundary of the unit,  
22 the five-spots have not completed and there are as many five-  
23 spots uncompleted as there are within this unit. So what  
24 I'm saying, that the majority of the Drinkard has really not  
25 been flooded at this date. One reason that they have had a

1 delay in the expansion is, it was pointed out to this morning,  
2 and in more detail was that the gas cap or gas zone in the  
3 Drinkard was developed by offset operators to this unit and  
4 consequently the total expansion of the unit was not complete.  
5 They met the offset obligations by going in and drilling, the  
6 Central Drinkard Unit drilled unit wells to the gas zone and  
7 produced those independent of the waterflood.

8           One point I would like to make here is that these  
9 wells on the edge of the boundary of this project are completed  
10 in the gas zone. This gas zone has seen no adverse effects  
11 from the waterflood that I can tell. In fact, the Central  
12 Drinkard Unit has gone in and I cannot quote the number, it's  
13 four to six wells that have been drilled within the area that  
14 has been subject to waterflood within the enclosed five-spot  
15 areas I show on this plat and have completed gas wells in  
16 this area in the gas zone and they have shown no effects of  
17 any water from the waterflood in the oil zone and I agree with  
18 the testimony that was presented this morning that the Drinkard  
19 zone is continuous. It is the same type of lithology, we can  
20 map it across two miles and we see the same type of zone, so  
21 I would think within our area the problem of getting water up  
22 in the gas zone, or within the Drinkard, has already been sub-  
23 stantiated by Gulf that they have had no adverse effects within  
24 this particular unit and I can see no reason why we would have  
25 any effects in a properly controlled waterflood ourselves.

1 If you take a look at the area which I consider has  
2 actually been flooded, would be the two five-spots that we  
3 show as producing wells 116 and 124. These have been in since  
4 1967 and I took those and did a further analysis on those and  
5 the next three exhibits, I think we will have to hand out to  
6 go into a little more detail.

7 Q This is Ten?

8 A This is Number Ten, yes, sir.

9 MR. RAMEY: Let's take a break.

10 (THEREUPON, the hearing was in recess.)

11 MR. RAMEY: The hearing will come to order.

12 Q (Mr. Hinkle continuing.) Mr. Malaise, refer to  
13 Exhibits Ten, Eleven, and Twelve and explain these?

14 A Well, Ten and Eleven follow up on the two pilot  
15 five-spots. What I did was have the monthly production of all  
16 in water for these two five-spots plotted up on a monthly  
17 basis since 1965 and these are for Wells No. 116 and No. 124  
18 which were the pilot producing wells. The injection started  
19 on 9-67 in these two, around these two wells, and completed  
20 five-spots.

21 The solid line represents the oil for both wells,  
22 the monthly production, and the dotted line represents the  
23 total monthly water production. From these curves I extrapo-  
24 lated what I consider the remaining secondary reserves or  
25 remaining reserves for these wells from December of 1977 and



1 I'll get into that in Exhibit Twelve, but essentially Ten and  
2 Eleven are just a graphic summary of the production since  
3 water injection in Wells No. 116 and 124.

4 Exhibit Number Twelve is a performance analysis of  
5 these two five-spots and remember again that both five-spots  
6 have been injecting for approximately ten years. The five-  
7 spot number one, what I call the five-spot number one, is  
8 around Well No. 116 and there I took the four injection wells  
9 around that producing well, Nos. 109, 115, 117, and 123 and  
10 for each injection well around it I put what the cumulative  
11 primary production had been for these four wells and I divided  
12 this by four which would be essentially the amount of reserves  
13 that each well would be contributing to the potential secondary  
14 recovery for that eighty acre five-spot. And in the case of  
15 the number one I also added the total primary production from  
16 Well No. 116 which gave this full eighty acre five-spot a total  
17 primary recovery of two hundred and eighty-seven point eight  
18 thousand barrels of oil. These are barrels of oil in a tank  
19 and as primary production.

20 The total secondary production from the curve on the  
21 116 and from the production records show that the 116 has  
22 recovered a hundred and seventy-eight thousand barrels of oil.  
23 From the curve I project the total remaining secondary reserves  
24 of this well to be approximately one hundred and twenty-four  
25 point seven thousand barrels of oil, which would give an ultimate

1 primary to that particular well of three hundred and two point  
2 seven thousand barrels of oil. This is using the economic  
3 limit of approximately three barrels of oil per day from our  
4 projection.

5 This would give me an estimated secondary-primary  
6 ratio for that 116 of point seven eight to one. I went through  
7 the same type of analysis for Well No. 124 and there I got an  
8 estimated full primary recovery for the five-spot of three  
9 hundred and eighty-six point one thousand barrels of oil and  
10 a projected ultimate secondary of a hundred and eighty-six  
11 point two thousand barrels which would give a secondary to  
12 primary ratio of point four eight two to one. If I combine  
13 these two five-spots I will get an estimated secondary to  
14 primary ratio for both five-spots of point six three two to  
15 one which is a reasonable estimation of what the Drinkard  
16 formation or how the Central Drinkard Unit would perform.

17 I don't feel in my mind that these other five-spots  
18 have been injected long enough to project what their ultimate  
19 recovery would be and put it on a ratio but the two that have  
20 been injected on a full five-spot pattern estimate in my mind  
21 that we would recover almost point six four to one, which is  
22 not too far removed from what Arco is estimating in their  
23 Drinkard portion of their secondary project. I might add one  
24 other thing that to the north and to the east of both of these  
25 five-spots we do not have back up, adequate back up, looking

1 at the plat, so I don't think our projections from a reservoir  
2 standpoint would be too far out of line, point seven to one,  
3 based on this analysis.

4 Q Now is Atlantic Richfield a party to this Central  
5 Drinkard Unit?

6 A We have an interest of approximately seven percent.

7 Q And you have access to all of their information and  
8 from this information these exhibits have been compiled?

9 A That is correct.

10 Q Now refer to Exhibit Number Thirteen and explain  
11 what this shows?

12 A Exhibit Thirteen is what I call a sensitivity  
13 analysis of secondary to primary ratio and how it affects the  
14 total unit economics. On the left-hand side of this particular  
15 graph I have plotted after tax undiscounted present worth in  
16 millions of dollars. On the bottom is estimated secondary to  
17 primary ratio for the East Blinbry and East Drinkard Unit.  
18 What I'm saying here by this graph, this dotted line I have  
19 shown is if we were to perform as we expect and get a point  
20 seven to one secondary to primary ratio we would realize an  
21 after tax profit of around forty-eight point five million  
22 dollars. This is what our economics in a previous exhibit  
23 reflected. If you go down to your break even point, which  
24 would be zero present worth after tax, a zero, you could go  
25 down as low as approximately point three three secondary to

1 primary ratio and still have a break even situation in this  
2 unit.

3           What I tried to show here is the sensitivity if our  
4 point seven to one is lower than we projected how low we could  
5 go. We've shown here that the Central Drinkard Unit on the  
6 pilot has shown a possibility of recovering a point six three  
7 two so I don't think that our economics--I think we have some  
8 down-side potential and still make a profit on this project.  
9 Also there is a possibility that we would have some up-side  
10 potential and be able to recover more than seven-tenths to one  
11 and the profit could be substantially higher than forty-eight  
12 million dollars.

13           Q     Do you have anything further?

14           A     There were a few comments I would like to make in  
15 regard to some of the testimony, if the Commission will allow  
16 me, that have already been made today.

17           One of those comments is, I would like to talk about  
18 the Cone Eubanks No. 2. I believe it has been entered in the  
19 testimony that this well is a commingled well in the Blinebry  
20 and the Drinkard. We have also heard testimony that the Blinebry  
21 gas is being allocated in a commingled situation. Sixty-eight  
22 percent is being allocated to the Blinebry and I believe forty-  
23 two percent of the gas is to the Tubb. If I am correct, these  
24 allocations were made on two tests that were submitted to  
25 the Commission at the hearing that J. R. Cone requested a

1 commingled order be issued. One of the tests on the Blinebry  
2 oil was taken before it was shut in. I believe the shut in  
3 date on the Blinebry was January 1st of 1972 and it was shut  
4 in because it appeared in testimony it was a high ratio oil  
5 well and acreage to this well was dedicated to another well  
6 in that one hundred and sixty acre tract. The test that was  
7 submitted for this allocation when there appeared to be a  
8 leak in the tubing was based on a test taken in October 21st,  
9 1971, for the Blinebry.

10 The Tubb test and that test was twelve barrels of  
11 oil and three hundred and eighty-two MCF of gas in the  
12 Blinebry. There again that test was taken in 1971. The test  
13 that was submitted for the Tubb was in June 21st, 1976, and it  
14 was five barrels of oil for the Tubb and two hundred and eighty  
15 MCF of gas for the Tubb and this was the basis of the fifty-  
16 eight percent gas and forty-two percent for the Blinebry and  
17 forty-two percent for the Tubb.

18 There was another test that was taken on that well  
19 but I do not believe it was used in coming up with this com-  
20 mingled allocation.

21 At the same hearing Mr. Byers testified that the  
22 Tubb at that time, the test at that time, a pressure test,  
23 that they felt was reasonable in the Tubb prior to having a  
24 leak in the tubing was taken in August of 1975 and at that  
25 time we had four hundred and ninety pounds or ninety pounds

1 to have approval by all working interest owners before the  
2 wells could be drilled under the operating agreement. Along  
3 that same line, they would also have to be approved by the  
4 Commission, both as to the location and the fact that they  
5 could be justified.

6 One other thing along this same line, when we talk  
7 about the wells, the last projection was made early in 1976  
8 and that we had roughly seven billion cubic feet in both the  
9 Tubb combined with the Blinebry and the Drinkard gas formations.  
10 Since that time some of this gas has been produced. The calcu-  
11 lations or the rate projections at that time indicated and this  
12 is back in the first part of '76, that eighty percent of this  
13 gas cap or gas zone in the Blinebry and the Drinkard could be  
14 produced within a four-year period. Well, if we go back and  
15 if we look at this time at putting in a unit, assuming that  
16 it could be approved within three or four months, another  
17 eighteen month period before we started injection, possibly  
18 another year before we see any response, eighty percent of  
19 this gas is going to be produced and we are back in the same  
20 situation of trying to put water into the gas zone itself or  
21 the gas cap, you are still going to be faced with a situation  
22 of having to go in and flood the oil column and I don't think  
23 that we really have jeopardized the gas reserves that remain  
24 at that time substantially, both in the Blinebry and the  
25 Drinkard gas zones as opposed to going ahead and producing

1 those and delaying the waterflood.

2           The only other thing, as far as negotiations, I have  
3 not been connected with the negotiations on this unit from the  
4 very beginning. I have spent approximately, as I testified at  
5 the last hearing, a little over two years and in that two-year  
6 period have had several occasions to go back and review past  
7 correspondence and things that have happened within the unit  
8 operation. The negotiations have lasted in excess of ten  
9 years. It has not been a couple of months or just since  
10 statutory unitization took place that we have felt like that  
11 we had a unit. It has been long, it has been hard, and I  
12 feel like the eighty-seven percent approval has taken ten  
13 years to come by. I feel at this time, and this is my opinion  
14 only, that if the unit was denied at this time that it would  
15 be very difficult to duplicate this eighty-seven percent again.

16           Q     I believe Mr. Todd testified that during the latter  
17 negotiating period they weren't given an opportunity to really  
18 negotiate anything, is there anything to that?

19           A     Well, really the negotiations on this unit have the  
20 last three years been the most serious negotiations, I would  
21 say, and during that period there have probably been in excess  
22 of ten working interest owners' meetings and as we testified,  
23 I believe at the first hearing, there have probably been in  
24 excess of twenty-five formulas that have been proposed at one  
25 time or another with Texaco proposing several of these.

1 Q Do you have anything further?

2 A No.

3 MR. HINKLE: That's all on direct.

4 MR. RAMEY: Any questions?

5 CROSS EXAMINATION

6 BY MR. KELLAHIN:

7 Q Mr. Malaise, let me ask you some questions with  
8 regards to Exhibits One, Two, and Two-A.

9 With regard to Exhibit Number One, the sweep effi-  
10 ciency indicated on this plat is the seventy percent factor  
11 that you have been using?

12 A Yes, sir, this is the area that would be contacted  
13 by the flood, that's right.

14 Q Assuming the seventy percent efficiency, what is  
15 your estimate of the additional recoverable reserves with the  
16 inclusion of Tracts 15 and 13?

17 A Well, are you asking me what are the secondary re-  
18 serves that are associated with Tracts 13 and 15?

19 Q No, the total unit recoverable reserves, including  
20 Tracts 15 and 13 for the total unit?

21 A We testified at the last hearing that it was some-  
22 thing like nine point eight million barrels plus.

23 Q Your testimony today has not changed or altered that  
24 figure?

25 A No.



1 Q Let's look at Exhibit Number Two. Let's assume for  
2 the sake of the question that this is your success ratio with  
3 Tracts 13 and 15 excluded, what are your recoverable reserves,  
4 assuming that Exhibit Number Two is what in fact happens?

5 A I think what you have to do is take roughly the two  
6 point four million barrels we say won't be swept and subtract  
7 it from the nine point eight million barrels.

8 Q All right, we've got unswept barrels of two point  
9 four, you said?

10 A Yes, sir. I believe that is what Exhibit Two-A  
11 shows.

12 Q Okay. And assuming that your efficiency under  
13 Exhibit Number Two, with the exclusions of Tracts 13 and 15,  
14 the unit will recover seven point four million barrels, right?

15 A Right.

16 Q Subtracting two point four from nine point eight?  
17 What is the expected undiscounted present worth of that  
18 figure, seven point four million barrels?

19 A Well, you could ratio it out, the after tax, I  
20 believe we said, was forty-eight point three million dollars  
21 to the unit and if you take a ratio of two point four, divided  
22 by the nine point eight and applied it to it I think that  
23 would be reasonable.

24 Q Will you do that calculation for me and give me the  
25 figure?

1 (THEREUPON, the witness complies.)

2 A If I have calculated right, it ought to be roughly  
3 thirty-six four would be what the present worth would be for  
4 the amount of recovered reserves shown in the blue area.

5 Q (Mr. Kellahin continuing.) Okay. That is thirty-  
6 six point four million, is that correct?

7 A After tax, right, undiscounted.

8 Q And what is your undiscounted present worth after tax  
9 based upon the recovery of nine point eight million barrels?

10 A Well, it was forty-eight point three.

11 Q All right. If I understand you correctly, then with  
12 the inclusions of Tracts 13 and 15 we have an undiscounted  
13 present net worth after taxes of forty-eight point three  
14 million and that if those tracts are excluded the unit will  
15 still realize thirty-six point four million dollars, is that  
16 correct?

17 A That is correct.

18 Q In your opinion does that not represent a reasonable  
19 profit to the unit?

20 A Well, that will represent a reasonable profit but  
21 here again I don't think we are looking at the recovery of all  
22 of the reserves.

23 Q Well, that wasn't my question, Mr. Malaise. My  
24 question was simply directed to the fact of whether or not  
25 that represented a reasonable profit?

1 A That would represent a reasonable profit.

2 Q Now let's look at Exhibit Number Two. Why have you  
3 chosen not to place the following wells under injection:  
4 Numbers 26, unit well No. 28, and unit well No. 42?

5 A I think if you will look at Exhibit One I think I  
6 can explain it most clearly on that exhibit. If you take a  
7 look at that Summit tract, Summit would be converting injection  
8 Well No. 30 and Atlantic Richfield as operator of the unit  
9 would be converting 26, 28, 32, 40, and 42. We would be con-  
10 verting five injection wells to their one and it's obvious  
11 from looking at the diagram that more oil would be swept to  
12 the Summit tract than the Summit tract would sweep to the  
13 total unit, therefore, we would have to back off injection <sup>on</sup> and  
14 *at least* lease three of these wells to maintain equity for the unit.

15 Q So it is your testimony that you would back off and  
16 not inject into 26, 28 and 42 wells?

17 A Yes.

18 Q How many open five-spots, using Exhibit Number One,  
19 how many open five-spots in your injection pattern would you  
20 have under that proposed plan of injection?

21 A Along the east boundary?

22 Q Along all of the boundaries.

23 A Along the north and northeast and south you would  
24 have seven, assuming that you could not get lease line in-  
25 jection agreements.

1 Q Northeast and south would leave me seven open five-  
2 spots, along the west how many open five spots?

3 A I'm sorry, the northwest and south, along the east--  
4 I think what you have to look at there, I wouldn't consider  
5 those particular five-spots to be open. In other words, the  
6 reservoir on the unit boundary terminated, there is no perme-  
7 ability, there is no porosity and essentially you have a  
8 trapped or void space and really there would be no way to get  
9 injection into that boundary.

10 Q Now let's go to Exhibit Number Two and assuming the  
11 exclusions of Tracts 13 and 15, how many open five-spots do  
12 you have in your injection patterns?

13 A Well, that's what I gave you awhile ago, excluding  
14 13 and 15. Okay, 13 and 15, you would eliminate two patterns  
15 on the west side and on the east side-- you would possibly  
16 have two on the east side that would not be closed.

17 Q Okay, so it increases the open five-spots from seven  
18 to eleven, is that right?

19 A That is correct.

20 Q How come in the preparation of Exhibit Number Two  
21 you didn't include the unswept area that would be represented  
22 by the open five-spot along the north, south, and east boundaries  
23 of the unit?

24 A I would say like when I made my testimony that we  
25 would have injection, offset injection wells in that area

1 agreement.

2 Q All right, let's make the assumption that you have a  
3 cooperative agreement with J. R. Cone on Tract 13, what's  
4 that going to do to your--

5 A Well, that would enclose that area, we would be able  
6 to offset it.

7 Q All right.

8 A In other words, this area right here that is colored  
9 yellow you would not have, you would have it swept.

10 Q And that same proposition will apply truly to Tract  
11 Number 15 if Summit agrees?

12 A No.

13 Q That does not hold true?

14 A No, I can't agree with that because of the symmetry  
15 of that particular tract. I don't see how equity can be  
16 maintained on a hundred and <sup>twenty</sup> ~~eighty~~ acre tract. We would have  
17 to back off of injection there if he converted the one in-  
18 jection well and simply paying for additional conversion costs  
19 would not offset the amount of oil that would be swept by that  
20 tract over and above what we would have if all five injection  
21 wells were converted.

22 Q Do you currently have lease line agreements with  
23 the offsetting operators north, south, and west of the proposed  
24 unit?

25 A No, we do not.

1 Q All right. Let me refer you to Exhibit Number Five.  
2 If I understand your testimony correctly on Exhibit Number  
3 Five, Mr. Malaise, the difference in information contained  
4 under Items One, Two and Three varies, depending upon the  
5 number of wells to be carried by the unit?

6 A Basically that is correct.

7 Q Let's compare One and Three, the difference between  
8 One and Three is simply an indication of the economic impact  
9 on the Cone Tract that this two hundred thousand dollar factor  
10 will have on that tract?

11 A That's correct. What I'm saying in the third case  
12 is that if Mr. Cone decided that he had enough Tubb and enough  
13 Abo reserves that he wanted to keep those wellbores to produce  
14 those wells, he could still make a sizable profit by keeping  
15 those out and paying a wellbore penalty on all four wells and  
16 have the unit drill four more wells and the unit carry all  
17 four wells out of production.

18 Q And on the other hand, Mr. Malaise, we could simply  
19 eliminate the two hundred thousand dollar factor and the unit  
20 itself would still realize a reasonable profit, would it not?

21 A Well, there again you are looking at maintaining an  
22 equity for people who have already negotiated and been through  
23 the same thing Mr. Cone has and it wouldn't be reasonable to  
24 assume that you would treat one party any different than you  
25 would other parties to the operating agreement.

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1 Q Well, it's apples and oranges, isn't it, Mr. Malaise,  
 2 those people have made intelligent conscious choices to  
 3 participate in the unit and Mr. Cone has made the same conscious  
 4 choice not to participate, you know, I fail to see the compari-  
 5 son. Let me ask you with regards to Exhibit Number Seven, you  
 6 identified on Exhibit Number Seven the particular wells that  
 7 produced from the Tubb?

8 A That is correct.

9 Q Is there any offset production of Tubb on the west  
 10 of the proposed unit?

11 A I do not have that data with me, there possibly  
 12 could, I would not expect there would be.

13 Q So you would expect Tubb production on the west?

14 A I expect Tubb production on the west.

15 Q All right. If the unit takes in Tract 13 what is  
 16 to preclude the Tubb production from being drained off the  
 17 lease?

18 A I see no reason, there are alternatives available to  
 19 Mr. Cone to continue to produce his Tubb gas in the Eubanks  
 20 No. 2 or any other wellbore he has on his tract.

21 Q Subject to payment of the penalty?

22 A He still has an economic choice.

23 Q You haven't examined the offset Tubb production on  
 24 the west of the unit I take it?

25 A No, I haven't. I would not expect the Tubb produc-

1 tion on the west to be any different than what we have on any  
2 unit boundary from looking at the proration schedules as far  
3 as marginal versus nonmarginal wells though.

4 Q Would you look at Exhibit Two-A again for me, please?  
5 I want to clarify something on here. Your exhibits indicated  
6 as a unit area affected by the elimination of Tracts 13 and  
7 15, why have you included in the last column of that exhibit  
8 the Tract 13, the eight hundred and twenty point five million  
9 figure?

10 A Well, what I'm saying here is that if Mr. Cone  
11 doesn't cooperate that will be lost, maybe not to the unit  
12 but that will be lost reserves--well, eight hundred and twenty  
13 point five is the secondary reserves that are attributed to  
14 that tract and what I'm saying, if he does not inject into it,  
15 that is going to be lost because secondary recovery will not  
16 go or the energy will not get over to the Cone tract and  
17 unless he cooperates that tract is not going to be flooded  
18 because we will back off.

19 Q That doesn't represent a loss to the unit, does it,  
20 that's Mr. Cone's loss?

21 A I don't think this is what this exhibit was intended  
22 to show, it was intended to show the amount of secondary  
23 reserves within the unit boundary that would be lost.

24 Q Regardless of ownership?

25 A Regardless of who owned it.



1 MR. KELLAHIN: I have nothing further, thank you.

2 MR. RAMEY: Mr. Kelly?

3 CROSS EXAMINATION

4 BY MR. KELLY:

5 Q You were here this morning when Texaco presented its  
6 proposal for a two-phase operation here. Now with that pro-  
7 posal, of course, the Cone well would be part of the unit?

8 A And operated by Cone, I'm sorry, the No. 2 Well,  
9 Mr. Kelly, okay.

10 Q You would agree then that your exhibits, certainly  
11 Exhibits Two and Two-A would not apply to that situation?

12 A That is correct. That Cone Tract was part of it  
13 and all of the wellbores were.

14 Q Now your Exhibit Three, your casing exhibit, as I  
15 understand your testimony, your position is that the Cone  
16 well would have to be a triple completion because you are  
17 talking about Blinebry, Drinkard and Tubb?

18 A That is correct, the Blinebry formation is vertically  
19 at the top, the Tubb is the second formation and the Drinkard  
20 is below it.

21 Q Now there is no reason why you couldn't dual the  
22 Blinebry and Tubb, commingle that, I mean the Blinebry and  
23 the Drinkard and dual it with the Tubb?

24 A Except that you would be pumping the Drinkard under  
25 packer and you would also be restricted in that sense, you

1 would not be able to lift as much fluid under that mechanical  
2 condition in that particular wellbore.

3 Q But that is an alternative?

4 A That would be an alternative.

5 Q Now as I understand it, under the present unit  
6 arrangement, let's assume that it would go into operation in  
7 about three months, at the moment that unit went into  
8 operation under the unit agreement and the operating agreement,  
9 the Cone Tubb zone would have to be shut in?

10 A That's correct.

11 Q But you have testified that you expected it will be  
12 about eighteen months before you get to the point where you  
13 would be using that well in any way different than you would  
14 now?

15 A That is correct.

16 Q And then you also testified, I believe just a  
17 moment ago, that you might be going for another year or more  
18 beyond that before you got any kind of a response?

19 A Sizable response.

20 Q So all during that period of time which could go  
21 from three to, three years or possibly more, the Tubb zone  
22 would be unnecessarily shut in?

23 A Well, unnecessarily, he could be producing from  
24 another wellbore.

25 Q But he could also be producing from the Tubb zone

1 and not have any effect on your unit?

2 A Well, it would have an effect in that there are  
3 eight Tubb wells in the particular unit and if you start  
4 eliminating, picking out one individual well, the probability  
5 is that other operators are going to want the same conditions  
6 and the first thing you have is a situation where you have  
7 open spots because you would not be able to--well, once you  
8 receive response you would have a possibility of eight locations  
9 that you would not be able to lift the amount of fluid that  
10 we have talked about today at peak response.

11 Q As I understand it though, you have admitted that  
12 there are only--that of those eight wells five have alternate  
13 locations right now?

14 A That is correct, but these people are going to be  
15 out a certain amount of money to recomplete those. I don't  
16 think it is unreasonable to expect that they would want the  
17 same privileges here and not have to spend additional money.

18 Q But you are not testifying before this Commission  
19 that you are in a position to represent these other people of  
20 what their position would be if this matter were resolved?

21 A All I'm doing is give my opinion as attending two  
22 years of meetings and what peoples' opinions have been stated  
23 at the meetings, it is my opinion only.

24 Q It is your testimony that people have told you that  
25 they would expect some sort of different treatment if this

1 matter was resolved by--

2 A I know that Atlantic Richfield has interest in three  
3 of the wells you speak of and I feel like we would, speaking  
4 strictly for Atlantic Richfield, I think we would desire the  
5 same type of treatment.

6 Q For what wells?

7 A For the Roy Borden, the one on the Borden Tract, the  
8 Sarkeys Tract, and our interest probably in the Moran Owen  
9 Well.

10 Q Now you are talking about you would want what kind  
11 of treatment then?

12 A Any treatment as what you have possibly propose, any  
13 delay.

14 Q If the Tubb well could remain as is you would want  
15 some similar arrangement for yourself?

16 A Yes.

17 Q If this was phased you wouldn't need that though,  
18 would you?

19 A Well, first of all, I couldn't agree to--I think  
20 there are points on phasing, the two-stage operation, that I  
21 couldn't agree to to start with and if it were approved and  
22 if it were under the conditions of phase this gas would be  
23 able to be produced within a four-year period possibly.

24 Q All right.

25 A Can I make one more statement along that same line

1 of the Tubb gas? In a letter that Texaco brought out in  
2 testimony this morning, in Atlantic Richfield's answer, they  
3 took the position in that particular letter that we realize or  
4 recognize there would be a period of time that involved before  
5 these wellbores would actually be needed and we stated in that  
6 letter that we had no objection whatsoever of bringing up these  
7 Tubb wells to the working interest owners the possibility of  
8 letting them to continue to produce until such time as they  
9 were needed by the unit. Now we felt that four years was an  
10 excessive period of time. We stated that we had no objection  
11 and we would entertain such an option at a working interest  
12 owners meeting to be called thirty days after this rehearing.  
13 I think that ought to be pointed out.

14 Q But four years could well end up being an appropriate  
15 time under your time schedule?

16 A Give or take a year. Mr. Kelly, that is four years  
17 after the unit is formed and not four years from whenever, I  
18 mean, we could be in negotiations or in court or in a hearing  
19 for several months.

20 Q I understand.

21 A Okay.

22 MR. KELLY: That's all I have.

23 MR. RAMEY: Any other questions of the witness?

24 MR. HINKLE: Unless somebody else has one, I've got  
25 one or two more here.

REDIRECT EXAMINATION

1  
2 BY MR. HINKLE:

3 Q Mr. Malaise, in response to Mr. Kellahin's question  
4 as regard to reasonable profit if Tracts 13 and 15 were ex-  
5 cluded from the unit, you started to say something that also  
6 had a bearing on that, what was it that you had in mind?

7 A Well, I do agree with Mr. Kellahin that that would  
8 be a reasonable profit but I also feel like there would be a  
9 reasonable amount of reserves that would be lost both to the  
10 unit and to both of the tracts that were omitted from this  
11 particular unit area and I think it is our obligation to try  
12 to design and create a unit that would maximize the amount of  
13 reserves that would be recovered.

14 Q You also testified in response to Mr. Kellahin's  
15 question that you did not have offset or cooperative agree-  
16 ments around the unit at the present time. What makes you  
17 believe you will have no trouble obtaining these?

18 A Well, I'm not saying that we would be able to get  
19 a hundred percent agreements just by going out and approach-  
20 ing the people but I do think that we have two things that  
21 are operating in our favor. One of these is the fact that  
22 several of these offset tracts have interest in this unit and  
23 I think these people took the fact that they will be convert-  
24 ing wellbores to offset this unit in account when they  
25 negotiated their equities with our management, so these

1 people are not going to be a problem. They've already run the  
2 economics, they've already decided that it would be an  
3 economic venture.

4 The other thing is the fact that, and it has been  
5 mentioned prior at this testimony, that Shell Oil Company is  
6 contemplating a waterflood to the west and I think it would be  
7 reasonable to assume that if this unit went in that would  
8 expedite that particular unit.

9 MR. HINKLE: That's all I have.

10 MR. RAMEY: Any other questions of the witness? He  
11 may be excused.

12 MR. HINKLE: We would like to call Jerry Tweed in  
13 rebuttal.

14  
15 JERRY TWEED

16 recalled as a witness, having been previously sworn, was  
17 examined and testified as follows:

18 REDIRECT EXAMINATION

19 BY MR. HINKLE:

20 Q Mr. Tweed, you heard the testimony of Paul G. White  
21 for Summit Energy, Inc., do you have any comments with respect  
22 to his testimony?

23 A I would just like to make a few comments. First of  
24 all, according to our calculations for the month of July, 1977  
25 the Drinkard wells within the unit boundary were averaging

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1 approximately four and a half barrels of oil per day production  
2 rate and the Blinebry five and a half barrels of oil per day.  
3 I could conclude from a reservoir engineering standpoint that  
4 this is an advanced state of depletion of this reservoir. We  
5 do not disagree at all that the leases are still economical  
6 and I would agree with Mr. White that they are still economical  
7 but it is not a consideration necessarily of when to put the  
8 waterflood in is to wait until the leases are uneconomical or  
9 near uneconomical to put the waterflood in. That is not  
10 always a major consideration, in fact in some instances,  
11 depending on the reservoir, it could be more of a benefit to  
12 install secondary or enhanced recovery operations prior to  
13 depletion. In this case I think we would get some small  
14 increase in recovery the earlier that you put it in operation  
15 in that the residual oil saturation in the crude would not be  
16 shrunk as much, your Beta factor would be higher and you  
17 would have more gas saturation, gas in solution in the oil to  
18 take up space in the residual oil so you would get some small  
19 increases in recovery if we put it in a little earlier.

20 Also I would like to point out in Mr. White's  
21 Exhibit Four-A, I believe he stated that Atlantic Richfield  
22 Company did not have an interest on the east side of the  
23 unit and I would like to point out that we do have a twenty-  
24 five percent interest in all of the tracts operated by  
25 Continental Oil Company and these are in Sections 11, 12, and



1 13, among others, so we do have an interest in the east side  
2 as well as in the west side of this unit.

3 Mr. White also made the point that it might create  
4 economic waste because we would be initiating the flood at  
5 this time and the price of oil would go up in the future. I  
6 think everybody realizes, or at least believes, this is a  
7 belief and not normal fact that the price of oil will go up  
8 but to realize an economic advantage to waiting, one, the  
9 price of the oil would have to go up more than the price of  
10 goods and services or more than the inflation rate and also  
11 you have a present worth value of your money, so a dollar that  
12 you get today is worth more to you than you would get in the  
13 future and if anybody disagrees I would be happy to take their  
14 hundred dollars and give them a hundred dollar bond.

15 Just my point is that just the fact that you  
16 physically get more dollars in the future does not make it  
17 more economically attractive to do it in the future than to  
18 do it now and the price or the inflation of the cost of putting  
19 a flood in would have to be taken into consideration also and  
20 it certainly would not be Atlantic Richfield Company's position  
21 or I think any major company's position to deliberately delay  
22 the development of reserves on a potential increase of price  
23 in the future.

24 Just one other comment and that is on Summit's  
25 Exhibit Six. In his economics he predicted if he stayed out

1 of the unit or if the unit, excuse me, if just the Blinebry  
2 unit was formed on the east side he predicted that it would  
3 recover seventy-five percent to a hundred percent of the primary  
4 recovery on secondary and compared this economics to joining  
5 the unit where we are predicting a recovery of seventy percent.  
6 I think this is an unfair comparison in that if in actuality  
7 the unit did recover seventy-five or a hundred percent of the  
8 oil then Mr. White, as all the other operators, would share  
9 in the additional recovery and additional revenue.

10 Also there is not enough detail in his economics  
11 for me to tell whether I would agree or not agree with the  
12 primary economics comparison between waiting and having a  
13 separate Blinebry unit versus joining the current proposal.

14 Q Do you have anything further?

15 A Mr. White's Exhibit Five-A shows the proposed  
16 Drinkard waterflood development. This was a proposal that  
17 was made back when oil was selling at approximately three  
18 dollars and fifty cents a barrel a number of years ago. With  
19 the increase in the price of oil we had submitted to the  
20 working interest owners and they had agreed on an expanded  
21 Drinkard flood pattern and I believe we submitted that as an  
22 exhibit in the last hearing.

23 I might make just one other comment about the well-  
24 bore provision which I hope is helpful. The reason for a  
25 wellbore provision of this type is essentially it is trying to

1 obtain the best economics for the unit and every operator  
2 involved. If you had no penalty for wellbores, if an operator  
3 submitted you no wellbores and you didn't charge him, there  
4 was no penalty involved, you could get in the situation where  
5 none of the operators would submit a wellbore then the unit  
6 would have to bear the expense of drilling wellbores in order  
7 to flood the property. In a case like that, J. R. Cone is an  
8 operator and all of the other operators would end up paying  
9 more money than the two hundred thousand dollar penalty. I  
10 think this kind of a penalty is an attempt to insure that the  
11 major wellbores, that wellbores be given to the unit is in  
12 answer to economic conservation.

13 Q Anything further?

14 A No, that's all.

15 Q Mr. Tweed, assuming that the price of oil does go  
16 up to twenty dollars in the next three or four years, the  
17 unit is going to benefit by it, isn't it?

18 A Yes, sir, I can best give that in one example of a  
19 flood that we put in the Seven Rivers Queen Unit. We put it  
20 in in approximately 1972 and it was at a time when the infla-  
21 tion rate was low and we put it in and our development costs  
22 were considerably less than it is today and when we got  
23 response the oil prices went up and we kind of had a double  
24 benefit. It cost us less to develop it and then when the  
25 response came along we got the benefit of the higher oil price

1 but if this unit were put in in the near future and the price  
2 went up within the next three or four years when it was re-  
3 ceiving response we would similarly get that double benefit.  
4 If you put it in at a lower price due to today's dollars  
5 rather than inflated dollars three or four or six or eight  
6 years from now and yet when we got response we would receive  
7 the higher oil price.

8 Q The working interest owners stand to greatly profit  
9 by this increase?

10 A I think so, yes.

11 MR. HINKLE: That's all I have.

12 MR. RAMEY: Any questions, Mr. Kellahin?

13 CROSS EXAMINATION

14 BY MR. KELLAHIN:

15 Q Mr. Tweed, in your testimony before the Commission  
16 on October 20, 1977 you indicated in your response to a  
17 question by Mr. Bateman on behalf of Texaco, you indicated  
18 there certainly is a possibility that we could make exceptions  
19 to having for a period of time, say eighteen months, until  
20 those wells were actually needed, and you are making reference  
21 to the Tract 13 Cone well, actually needed in the waterflood  
22 to the unit, taking the wells over in the waterflood in some  
23 instances, not all, but in some instances they, meaning the  
24 unit operators, might allow the operator of the Cone Tract  
25 time to recover his Tubb gas reserves. Is that still your

1 position today, that is first of all that it is going to take  
2 eighteen months before the Cone wells are needed for the  
3 waterflood project?

4 A If you will indulge me, I would like to answer that  
5 in several different ways. First of all, I would like to  
6 refer to Texaco's letter. In their letter they requested that  
7 they be allowed to produce that well for a period of four  
8 years after the unit was formed. I think that is an excessive  
9 period of time and I think we would have received response  
10 and it would cause a loss of Blinebry and Drinkard reserves  
11 to delay that long.

12 Now it is still my opinion that the unit could, and  
13 I say could, forego actual operations on the Cone well for a  
14 period of eighteen months without it being particularly  
15 harmful. Of course, the unit does give up something in that  
16 they would not be producing in the Drinkard during that  
17 eighteen-month period, which they wouldn't be entitled to if  
18 they had a wellbore, however, we don't anticipate response  
19 within that eighteen-month period.

20 Q Okay. You have anticipated an efficiency of about  
21 seventy percent, I understand, for this particular unit?

22 A Yes.

23 Q Then Mr. Malaise' testimony with regard to the  
24 Gulf Central Drinkard Unit compared the two pilot wells and I  
25 forgot exactly what the efficiency factors were but they

1 averaged out to be about sixty-three percent, something like  
2 that?

3 A That's right. I would like to comment on that.

4 Q Yes, sir.

5 A One reason that we feel like the Gulf recovery  
6 factor is lower than what we are estimating is that it was a  
7 pilot and you did not maintain pressure surrounding it and this  
8 is kind of typical in a pilot operation where you are piloting  
9 in a reservoir that has some pressure depletion. This lack  
10 of pressure or lack of back up surrounding the pilot often  
11 results in the migration of secondary reserves out of the pilot  
12 area and we feel like taking that into consideration that had  
13 it been a full-scale unit development their recovery within  
14 that pilot area would have been larger than the sixty-three  
15 percent and would, in fact, been around seventy percent and  
16 maybe even slightly higher.

17 Q Wouldn't it be more prudent on the part of Arco to  
18 institute a pilot project for this particular unit so that we  
19 could establish some kind of track record, some efficiency, so  
20 that you could convince us reluctant owners of your ability to  
21 reach the seventy percent?

22 A We have a waterflood that we have testified to, the  
23 Central Drinkard Unit, which is within two miles of here which  
24 all witnesses have agreed has a similar reservoir character-  
25 istic of the Drinkard under this flood, so I think in essence

1 we have had a pilot project in the Drinkard in this area and  
2 we certainly think that is sufficient to prove the floodability  
3 of that zone. I think also if you put this pilot in in two  
4 stages, if the flood is put in in two stages, excuse me, you  
5 construct waterflood facilities to flood part of it and then  
6 you come back at a later date, four to six years, and expand  
7 it and build additional waterflood facilities, due to the  
8 inflation rate you are going to have to pay more money and due  
9 to the loss of efficiency in modifying your existing facilities  
10 over originally putting in the size of facilities you want  
11 it has cost you more money to initiate this waterflood in two  
12 stages than it would to do it all in one stage.

13 Also in the area that you are flooding, that you  
14 were flooding in the first stage, you would have some water  
15 migration toward the unflooded area and uneven flood front  
16 advances. In my analysis it would reduce your recovery because  
17 your flood front would be unevenly advanced in some areas.

18 Q If I understand you correctly you intend to simul-  
19 taneously commence injection in all of these injection wells  
20 in the unit?

21 A Yes.

22 Q What is to be the source of your injection water?

23 A There are several things being under consideration  
24 and at the present time what we would plan to do would be to  
25 drill wells, water supply wells, to the San Andres and use

1 San Andres water to flood the unit.

2 Q How many injection wells do you have?

3 A I would have to count them.

4 Q There are thirty--

5 MR. MALAISE: It's thirty-eight dual and eight single.

6 MR. KELLAHIN: What is to be your total volume of  
7 injected water?

8 MR. MALAISE: Inside the unit boundary I believe it  
9 is twenty-nine thousand barrels a day.

10 Q (Mr. Kellahin continuing.) And you plan for how  
11 many source wells in the San Andres?

12 A There again I would have to look it up. I believe  
13 it is three, to the best of my knowledge.

14 Q You don't have any San Andres wells yet?

15 A No, sir, the Central Drinkard Unit is receiving their  
16 water from that source.

17 Q And will this water or fluid be injected under  
18 pressure or will it be taken by vacuum?

19 A It will be injected under pressure.

20 Q Do you have any indication what that fluid is going  
21 to be?

22 A What we would plan as we have in the past in the  
23 waterfloods we operate, we would take a pressure parting  
24 test on the injection wells and maintain our surface injection  
25 pressure to be below parting pressure. That would roughly be



1 a surface injection pressure of four-tenths psi per foot and  
2 I believe we have a depth of approximately fifty-five hundred  
3 feet so that would be what, twenty-two hundred pounds surface  
4 injection pressure or something in that neighborhood. Four  
5 or five tenths, so it would be in the neighborhood of twenty-  
6 five hundred pounds injection pressure.

7 MR. KELLAHIN: Thank you. I have no further questions.

8 MR. RAMEY: Mr. Kelly.

9 RECROSS EXAMINATION

10 BY MR. KELLY:

11 Q Mr. Tweed, as I understand your objection to a phase  
12 waterflood here is that, one, it is going to cost more in the  
13 future than it is now?

14 A That is one of my objections, yes, sir.

15 Q Of course, that is a fact of life and in that case  
16 we should do everything today, I guess?

17 A No, it's two, the cost is in two phases, one of  
18 them is the inflation part of it, the other is the fact that  
19 you design and you put one system in and then you come back  
20 and modify that system. I think there is an inefficiency in  
21 coming back and modifying a system that you have in existence  
22 and where in current dollars it would cost you more money to  
23 do it that way than it would to put it all in at one time.

24 Q Certainly it is not unusual to start a waterflood  
25 with a pilot program, is it? In fact, the waterflood that

1 you were relying on that was comparable was started with a  
2 pilot, wasn't it?

3 A Pilots were more common in the past, I think for two  
4 reasons.

5 Q My question is: It is not unusual to use a pilot?

6 A It is less common today than it was fifteen years  
7 ago.

8 Q You would agree that a pilot normally denotes a very  
9 small individual project using like maybe in the Central  
10 Drinkard, I think there were two producing wells that con-  
11 stituted that pilot?

12 A There were two producing wells in that pilot and six  
13 injectors. I wouldn't condone that as being a good operation.

14 Q All right, but this would not be really classified  
15 as a pilot if you are talking about eighteen hundred acres  
16 under Texaco's plan under an initial stage, it wouldn't be  
17 considered a pilot under it?

18 A I wouldn't say it is exactly a pilot.

19 Q And any time you end a waterflood project you are  
20 facing a boundary situation where you are going to have some  
21 inequities, aren't you, and right now you have on your west  
22 side, you don't have any lease line agreements at the present  
23 time and wherever you eventually end a flood there is going to  
24 be some migration past some of your wells, isn't there?

25 A That is correct. I would point out one thing that

1 hasn't been pointed out today. I think Mr. Malaise did point  
2 out that on the north, south and west boundaries most of the  
3 operators involved there that we would be asking for lease  
4 line agreements also have an interest in the unit. We have  
5 not at this time and it is not customary to request lease line  
6 agreements prior to having the unit formed so we have reason to  
7 believe that we will be quite successful in getting lease line  
8 agreements.

9           You are going up dip in the Blinebry to the west so  
10 that the oil column is getting thinner and I think at some  
11 point in there, the fact that you don't have injection wells  
12 west of you, say, would not be a factor in reducing your  
13 recovery in the Blinebry. Also it has been testified that  
14 Shell is working on a unit west of ours, they will install a  
15 waterflood unit there. If they got it in in a reasonable  
16 length of time I think we would be optimizing recovery from  
17 that standpoint.

18           Q     But the main objection you have to a phased unit is  
19 that you possibly would be spending more money over the long  
20 run?

21           A     I have two objections, one that we would be spending  
22 more money over the long run and two, and here I am just con-  
23 cerned about within the unit boundary but we would have an  
24 uneven advance of flood water that when we put the second  
25 stage in, due to this uneven advance we would reduce our oil

1 recovery within the unit boundary.

2 Q You wouldn't be able to even that up in your second  
3 stage?

4 A I don't believe we would be able to; I wouldn't say  
5 that it would be totally impossible but I would say it is  
6 probably impractical and it is probably impossible in some  
7 areas. Also if you do this in stages and delay for six years  
8 or so, initiating your waterflood on the west side, your well-  
9 bores are six years older and all of your equipment is six  
10 years older and I think your operating costs also would increase  
11 due to the age of your equipment.

12 Q Now on the other side of that, though, you are by  
13 phasing it protecting any damage to the Blinebry and Drinkard  
14 gas caps, aren't you?

15 A I don't think so. I don't think that there is any  
16 more protection in phasing than there is in putting it--

17 Q Well, you are not going to be producing water that  
18 could migrate, or injecting water that could migrate to those  
19 gas caps?

20 A You mean in that period of time?

21 Q Yes.

22 A There again as Mr. Malaise testified to that in  
23 1976 we estimated that eighty percent of that gas would be  
24 recovered within the next four years. It will be that period  
25 of time, it will be 1980 before we are injecting water if the

1 unit is approved in the near future. Also as Mr. Malaise  
2 testified to in the Central Drinkard Unit, they have not had  
3 any problems with water entering the gas producing zone and I  
4 don't anticipate that we will here.

5 Q Of course, that only has to do with the Drinkard?

6 A Yes.

7 Q And I believe by your testimony you are saying you  
8 have no particular objection to a natural phasing just due to  
9 the delays but you are objecting to a phasing that would be  
10 imposed by the Commission requiring you to come back and  
11 extend your flood under an order?

12 A Well, I don't believe I understand your question.

13 Q I thought you testified that because of the natural  
14 delays in getting this going it is going to give the operators  
15 a chance to get that gas cap produced before you start flood-  
16 ing it?

17 A Yes, I did testify that due to natural delays they  
18 will produce eighty percent of the gas, quoting what Mr.  
19 Malaise said. They were his calculations.

20 Q Which is in effect an informal phasing, isn't it?

21 A Well, it is a delay of putting the unit in, it is  
22 an inadvertent delay. It is my opinion that had that unit  
23 been put in in 1976 we would still recover the gas reserves.

24 Q Now Mr. Malaise also testified that in his opinion  
25 you wouldn't need to do anything about that particular wellbore

1 in the Cone well for somewhere, I think he said give or take  
2 a year within four years, three to five years, would you agree  
3 with that?

4 A I'm not sure what he was saying in there, he may  
5 have been saying from this period of time.

6 Q I think he said from the formation of the unit.

7 A I believe what he inferred was that that was what  
8 was in Texaco's letter. It is my estimation that we will get  
9 response within two and a half years after that unit is formed  
10 and possibly quicker so I think that any delay in giving a  
11 well over would be excessive, I think if it is over eighteen  
12 months it would be excessive, eighteen to twenty-four months,  
13 any delay past that would be excessive in giving that wellbore  
14 to the unit. Also what I would like to point out again, that  
15 if the unit doesn't get that wellbore at the effective date of  
16 the unit we will be prevented from producing the Drinkard  
17 reserves or producing the Drinkard from the time that the  
18 unit is formed until it is turned over to us so there will be  
19 some loss to the unit. As I understand Texaco's recommendation  
20 it is that the well be produced as it currently is for a  
21 period of time and then turned over to the unit and if that  
22 is done, like I said, we would not be able to produce the  
23 Drinkard during that period of time.

24 Q But the Blinebry would go to the unit?

25 A Well, it would be allocated to the unit but there is

1 also testimony shown, I think there is no guarantee that that  
2 is an equitable allocation either to Mr. Cone or to the unit.  
3 It is a pretty rough guess as to what the amount of hydro-  
4 carbons is due to both operators and it is fine as long as the  
5 interest is the same in both zones but that is kind of split  
6 when you have a different interest, it gets to be a little  
7 more questionable.

8 Q If the Commission were to require you to phase this  
9 and come back in at some future time to expand it, based on  
10 your formulas, would you have any particular objection to that?

11 A Yes, I would. I guess the first one is that if the  
12 Commission required it, it would require us going back to the  
13 working interest owners and to the USGS, I might add the USGS  
14 has approved the final operations, contingent upon OCC approval,  
15 that we have submitted. If we submit another plan of opera-  
16 tion that would require them to reapprove it, which is no  
17 certainty, it would also require that we receive approval of  
18 Atlantic Richfield Company's management, which in my opinion  
19 certainly may or may not be approved. Also we would have to  
20 again get at least seventy-five percent approval of the work-  
21 ing interest owners to this new plan of operation prior to  
22 being able to institute it and certainly I wouldn't guarantee  
23 by any means that we would get more approval of that plan than  
24 we have of the current plan, in fact, it would be my estima-  
25 tion that we would get less approval.

1 Q I can tell you one approval that you would probably  
2 have a lot better chance of getting.

3 A Yes, three percent and there are other approvals  
4 that I doubt that we would get.

5 MR. KELLY: I have nothing further.

6 MR. RAMEY: Any other questions of the witness?

7 Mr. Nutter.

8 CROSS EXAMINATION

9 BY MR. NUTTER:

10 Q Mr. Tweed, what is the delay, the eighteen months  
11 from the date of unitization until you start injection, is  
12 that to develop your water supply and to lay the lines and  
13 convert the well and all that?

14 A Yes, sir, that is correct. There are certain items,  
15 at least in the past, that have had long delivery and it could  
16 be as much as six to nine months to get some injection pumps  
17 and then we would have the physical time involved in getting  
18 the equipment on and then converting the wells and building  
19 the injection plants.

20 Q And then when you said you anticipated response two  
21 and a half years after the formation of the unit, you meant  
22 in other words that it would take about a year to achieve fill  
23 up and get a response?

24 A Yes, sir, a year to receive response after we start  
25 injection.



1 MR. NUTTER: That's all I have. Thank you.

2 MR. RAMEY: Any other questions? The witness may  
3 be excused.

4 MR. HINKLE: We have one more witness.

5

6 TOM FURTWANGLER

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

9 DIRECT EXAMINATION

10 BY MR. HINKLE:

11 Q State your name, your residence and by whom you are  
12 employed?

13 A My name is Tom Furtwangler.

14 Q Would you spell that, please?

15 A F-u-r-t-w-a-n-g-l-e-r. I live in Midland, Texas and  
16 I'm employed by Atlantic Richfield.

17 Q What is your position with Atlantic Richfield?

18 A I'm a Landman working in the Land Department.

19 Q Has it been among your duties to look after this  
20 unit agreement as far as getting approval of extensions and  
21 so forth?

22 A I have recently taken over these duties. The person  
23 preceding me was transferred to Denver.

24 MR. HINKLE: Now I might state, if the Commission  
25 pleases, the purpose of this testimony is to show that the

1 time that was provided in the unit agreement has been extended  
2 and that another extension is contemplated.

3 Q (Mr. Hinkle continuing.) Now what does the unit  
4 agreement provide with respect to determination, effective date  
5 and term?

6 A In Section 23 of both unit agreements, under the  
7 original agreement, the unit would be placed into effect the  
8 first day of the month following approval, but no event after  
9 January 1, 1978. There is provision in there that would allow  
10 the working interest owners by ballot to vote for an extension  
11 not exceeding six months. The ballot was sent out in October  
12 and we did receive over seventy-five percent of approval for  
13 the working interest owners in both cases.

14 Q So it has now been extended to what date?

15 A July 1, 1978.

16 Q Now is any action contemplated as to any further  
17 extensions?

18 A We recently sent out a letter dated February 17,  
19 1978.

20 (THEREUPON, a discussion was held  
21 off the record.)

22 Q (Mr. Hinkle continuing.) Now you started to say  
23 that something had been sent out?

24 A A letter dated February 17, 1978, we sent out a  
25 letter explaining the situation that has occurred as far as

1 order providing that it should run concurrently with the pro-  
2 visions of the unit as far as the termination date is concerned.

3 That's all we have of this witness.

4 MR. RAMEY: Any questions of the witness?

5 CROSS EXAMINATION

6 BY MR. KELLAHIN:

7 Q When was this letter sent out?

8 A Last Friday.

9 Q You have not received any responses at this point,  
10 I assume?

11 A Well, I was not in Midland today.

12 (THEREUPON, a discussion was held  
13 off the record.)

14 MR. KELLAHIN: I'm through with this witness and I  
15 have a witness to recall.

16 MR. RAMEY: Mr. Hinkle, do you have anything else?

17 MR. HINKLE: Rested.

18 MR. KELLAHIN: I would like to recall Mr. White,  
19 please.

20 Did you move the introduction of your exhibits,  
21 Mr. Hinkle?

22 MR. HINKLE: If the Commission please, I would like  
23 to offer Exhibits One through Fifteen.

24 MR. RAMEY: Exhibits One through Fifteen will be  
25 accepted.

1 (THEREUPON, Arco Exhibits One through  
2 Fifteen were admitted into evidence.)  
3

4 PAUL G. WHITE

5 recalled as a witness, having been previously sworn, was  
6 examined and testified as follows:

7 REDIRECT EXAMINATION

8 BY MR. KELLAHIN:

9 Q Mr. White, I would like to direct your attention to  
10 Arco's Exhibit Number Two, if you have a copy of that exhibit?

11 A Yes, sir.

12 Q I would like you to direct your attention to the  
13 outline of Tract 15 which is the Summit tract and indicate for  
14 me in your opinion whether you believe that the unswept area  
15 as indicated in yellow on that plat will, in fact, occur?

16 A Mr. Kellahin, I don't know if the unswept areas are  
17 completely accurate and I imagine Mr. Malaise would admit that  
18 also. We don't know if this is exactly right or not. I do  
19 think that they do not have to occur, the unswept areas do not  
20 have to occur.

21 Q Why not?

22 A I think there are alternatives, I think first of all  
23 it goes back to the, and I keep hammering on this, but it goes  
24 back to the timing. Just a minute ago Mr. Tweed testified  
25 that in July of 1977 there were Drinkard wells making four

1 point five barrels of oil per day and Blinebry wells making  
2 five point five barrels a day. Now if you run the economics  
3 out based on fourteen dollar and eighty-one cent oil this  
4 exceeds, exceeds the profit per well picture which I presented  
5 in my earlier testimony. Now if the economic life which has  
6 historically in all of the other units that I have ever been  
7 associated with, other than some gas injection when gas at one  
8 time was being flared rather than wasted, was being injected  
9 in the reservoir. Other than those cases, historically all  
10 secondary recovery techniques were initiated when the economic  
11 life of the field became necessary to initiate it. Now there  
12 are reasons for that because primary oil is generally cheaper  
13 to produce than secondary oil.

14 Now looking at these unswept areas, it would not have  
15 to occur if the unit at the present time was not put together  
16 as proposed by Atlantic but if Summit was allowed to cooperate  
17 with Atlantic. Now you are in an unusual position when a  
18 company has meetings and draws a line around your lease and  
19 says, you are being unfair to us, this is really an unusual  
20 position to get in because you can have the operators' meetings  
21 and draw up all of the statistics and draw a line around a  
22 person's lease and say, you can't possibly be fair to us and  
23 then to put the burden of proof on Summit to prove that they  
24 are not being unfair is a little unusual to say the least,  
25 especially when Summit wrote to the Commission and said,

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Summit at their cost would convert the Gulf No. 2 Bunin Well. This is a letter written to the Oil Commission, dated October 31, 1977. Summit at their cost would convert the Gulf No. 2 Bunin injection well to water injection, gave the location of the well, and in addition Summit would pay the invoice cost for another one and one-half water injection well surrounding their lease. Summit would control and inject the appropriate water into the No. 2 Gulf Bunin Well, maintain proper injection pressure, maintain proper measurement of injection water and furnish the unit operator with monthly reports as required. Summit would retain the operation of the Gulf Bunin lease comprised of the Wells 1, 2, 3, and 4.

Now this has been denied by Atlantic as a method that they could live with in their unit operation. So we come back today and we propose, okay, we will take the east half of the unit, form a Blinebry unit, which does not create any unswept areas if the Blinebry unit is formed on the east side, properly put on injection, Summit will entertain the parameters as worked up by Arco if they want to operate that side of the unit and there will be no unswept areas. For these reasons we think these are unnecessary.

Q I show you what I have marked as Summit Exhibits Seven and Eight and ask you if you will identify those exhibits, explain where they were obtained and what information they contain?

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1           A       Okay, this information now came to me from Atlantic  
2 Richfield and the Engineering Committee worked up these numbers  
3 on the Blinebry oil and Drinkard oil and Wantz-Abo oil and this  
4 was updated as of April 1, 1976. And what this shows, and this  
5 is Atlantic Richfield's information, and the Engineering Com-  
6 mittee's information, it shows the primary life, as I under-  
7 stand this remaining, the primary remaining reserves. It gives,  
8 by the way, it gives the Summit lease seventy-one thousand  
9 eight hundred and fifty-five barrels of remaining primary which  
10 isn't too far off of Summit's prediction of eighty-six thousand  
11 barrels of primary. The reason for the extension in the primary  
12 oil is because of an increase in oil rates. You can extend  
13 your rate time curve to your economic life as your oil rate  
14 goes up a bit, so we are not that far off on our reserve  
15 figure for primary reserves and in this projection, if I am  
16 correct in the manner in which I understand this, there is  
17 life in months and years jotted down in one of the center  
18 columns there and it gives the Summit life in years of eighteen  
19 and a quarter years.

20                   I would like to ask whether this is just for primary  
21 or for primary and secondary oil. I don't know who to ask  
22 that. I would assume it is primary oil.

23           Q       What conclusions do you draw from this exhibit?

24           A       I draw this conclusion, I would have to say that  
25 you notice there where they have the final rate they projected

1 a thirty barrels of oil per month per well, which is the EL  
2 which stands for the economic limit of these leases, so they  
3 are saying the economic limit of these leases is one barrel  
4 of oil per day per well and we are presently producing on wells  
5 which have a very low rate of decline, we are producing four  
6 and a half barrels a day per well in the Drinkard and five  
7 and a half in the Blinebry so it all ties back to the fact  
8 that I still maintain the unit is premature, the unitization  
9 is premature.

10 I can't come up with any more numbers that I know  
11 of to show that it is but this is Atlantic Richfield's own  
12 numbers and I wanted to bring that out.

13 Now I brought up the fact that historically the  
14 secondary reserves are usually formulated and initiated based  
15 on economic life. We not only offered to pay the cost of  
16 those injection wells which is the only thing I knew to come  
17 up with. I didn't know of anything else I could offer Atlantic  
18 Richfield to cooperate. I didn't want the unit to begin with  
19 but I thought, well, this is the next best way out. Of course,  
20 they did not agree to that.

21 Well, the next thing we can do to create an equitable  
22 situation for Summit, and I don't think there is anyone in the  
23 room that could furnish me with the information that would  
24 basically prove that Summit Energy is not going to suffer in  
25 excess of a million dollars loss if we are forced into this



1 unit. I don't think statutory pooling was designed to prejudice  
2 an operator to this extent.

3 The fact that I did not have a current Drinkard  
4 injection well plat does not bother me at all, I wish I had.  
5 This Exhibit One, and I'm referring to it now, Tom, on--

6 Q Arco's Exhibit One?

7 A Yes, sir, I wanted to comment on that because we  
8 have a change there. I testified on a plat for Drinkard  
9 injectors that was not right, it is not correct. These  
10 Drinkard injectors that are proposed here, dual injectors,  
11 they don't violate anything, we are not opposed, in fact, we  
12 would emphasize that these be put on, they are back-up wells  
13 is what it amounts to, for the Drinkard. It emphasizes the  
14 fact that there is still a very limited if any reserves left  
15 in the Drinkard on this east side. The injectors themselves,  
16 if you will see on Exhibit One, are all back-up Drinkard  
17 injectors and so we have no objection to that, they could  
18 still be utilized as Blinebry injectors, the oil on the  
19 Blinebry side of the unit could still be identified as Blinebry  
20 oil and get away from the commingling provision.

21 I want to make a couple of comments on Mr. Tweed's  
22 testimony. The reason we use seventy-five percent instead of  
23 seventy percent in our projection, that is our prerogative.  
24 We feel like seventy-five percent is more realistic if just  
25 the Blinebry flood is initiated on the east side. We have

1 no comment to make on the seventy percent on the Drinkard. We  
2 feel it is a little high but we used seventy-five percent on  
3 that Blinebry because we think that is what our economics will  
4 be and we have the right to do so.

5 Starting the unit now, Mr. Tweed made a comment about  
6 inflation, and one of the best hedges I know of against in-  
7 flation is to try to create a situation where your product  
8 increases in value. We are going to have inflation and no  
9 one knows what rate it is going to be and I think if we put  
10 the flood on in the next six months we are going to have  
11 inflation, I think in the next three years we will have infla-  
12 tion, so I think they counteract each other to that extent but  
13 I do believe the discount rate of the dollar, I did a reserve  
14 report recently for a firm in Roswell and they did not even  
15 want me to discount because they felt like that the price  
16 increases in their gas, this was gas that I'm talking about,  
17 would offset any discount rate. So that part could be debated  
18 also for a long time.

19 I just wanted to make these observations. I wanted  
20 to see if I had anything else. When I get a rematch I better  
21 say all I'm going to say. I think that's all of my--

22 MR. KELLAHIN: Thank you, Mr. White. That concludes  
23 my redirect on Mr. White.

24 CROSS EXAMINATION

25 BY MR. RAMEY:

1 Q Mr. White, as I understand it, you would be willing  
2 to join a Blinebry unit comprising, say, the east half of the  
3 area?

4 A Yes, sir, we certainly would if we would, of course,  
5 see the parameters and the equity worked out but it wouldn't  
6 take long and we would, yes, sir.

7 Q You would do this immediately providing the equities  
8 were proper?

9 A Yes, sir, and we would also want to be sure and check  
10 operating costs. You know I get into that a little too much  
11 possibly but just the fact that on Mr. Malaise' exhibit where  
12 he shows the profit on the Summit tract, as I understand it  
13 on the Summit tract, this is Mr. Malaise' Exhibit Five, I  
14 believe, and it shows what Summit would be expected undiscounted  
15 worth. It shows two and a half million dollars to the Summit  
16 tract. Now I assume that is not net profit but undiscounted  
17 gross profit after taxes.

18 MR. KELLAHIN: That's Arco Exhibit Number Six.

19 MR. MALAISE: There is one before and one after. The  
20 one after taxes have been taken out, in both cases severance  
21 taxes and taxes on the oil have been taken into consideration.

22 MR. WHITE: Okay, have operating costs been taken  
23 out?

24 MR. MALAISE: They have been taken out. The only  
25 difference in the two is income taxes were applied to an after

1 tax situation. Now operating costs have been taken out,  
2 royalty taxes, your one-eighth royalty has been taken out.

3 MR. WHITE: This two and a half million is net to  
4 Summit?

5 MR. MALAISE: Correct.

6 MR. WHITE: In their tract. Now, if we look at  
7 Exhibit Thirteen and we show a point seven to one recovery of  
8 Blinebry-Drinkard oil, it shows an undiscounted profit of  
9 forty-eight point three million?

10 MR. MALAISE: Right.

11 MR. WHITE: So forty-eight point three million and  
12 Summit has approximately thirty percent, it shows us with a  
13 net profit of a million four.

14 MR. MALAISE: Well, the million four is after tax,  
15 and that's what that is.

16 MR. WHITE: This is after tax?

17 MR. MALAISE: Yes, and that's this column right  
18 here, we are showing a million four six.

19 MR. WHITE: So if we accept these figures as being  
20 accurate to Summit, then all of the numbers I have worked up  
21 show Summit would suffer to the amount of somewhat in excess of  
22 a million dollars and I would have to guess that any operator  
23 here who had the Summit tract, who had just the Summit tract,  
24 Blinebry oil, not identifiable Drinkard oil, not identified  
25 with the west side problems of commingling and that arbitrary

1 division of thirty-five sixty-five Drinkard-Blinebry commingled  
2 oil, I would say they would be sitting in my chair fighting  
3 it. I don't think we would be alone in this if we had--if  
4 someone else had that tract, they would also be here fighting  
5 the situation because we do feel we will suffer a dollar loss  
6 in that amount.

7 Q (Mr. Ramey continuing.) How does the picture change  
8 by forming a unit on just the east side?

9 A Well, Mr. Ramey, we would have a homogeneous forma-  
10 tion, we would have one formation to deal with so that the  
11 parameters would not have to be so complicated. The parameters  
12 of phase one and phase two are unreal in their complications  
13 because of so many different facets involved. Most of these  
14 exist on the west side and as Mr. Malaise testified there  
15 were some twenty-five formulas presented before they could get  
16 a majority vote, taking one of the formulas for phase one and  
17 one for phase two.

18 We feel that on the east side of the unit we would  
19 not be faced with this type of complication, we feel that that  
20 part of the flood would be associated with one oil zone and  
21 our own estimation, or our own guesstimation, is that it would  
22 be based primarily on cumulative oil and when we work that out  
23 as just one of the parameters, we are not saying that would  
24 be the only one, but when we work that out we come up with  
25 our Exhibit Six which showed us, I believe, in excess of five

1 million dollar gross profit.

2 MR. RAMEY: Any other questions of the witness? He  
3 may be excused.

4 MR. HINKLE: I would like to call Mr. Tweed again for  
5 a few rebuttal questions.

6

7 JERRY TWEED

8 recalled as a witness, having been previously sworn, was  
9 examined and testified as follows:

10 REDIRECT EXAMINATION

11 BY MR. HINKLE:

12 Q Mr. Tweed, you have heard the testimony of Mr. White  
13 for Summit in rebuttal, do you have any comments with respect  
14 to it?

15 A I would like to make a couple. Again, one thing he  
16 asked, this life and this is primary life on Exhibit Number  
17 Seven, he submitted.

18 Also he said that if they stayed out of the unit they  
19 would recover an additional million dollars. I would like to  
20 say if the Commission would--it would be physically impossible  
21 to run alternative cases ahead of time of economics. If the  
22 Commission wanted we could submit a case concerning certain  
23 reasonable assumptions that would show Summit making less  
24 profit if he stayed out of the unit than if he joined it. We  
25 could also submit a case that showed that he made more money

1 by staying out of the unit than joining it. We have testified  
2 that if we converted all five offset wells to injection and  
3 he converted the one that we would inequitably sweep oil to  
4 him, therefore, it would be my assumption that if he stayed  
5 out and we converted those five offsets that he would make  
6 more money by staying out than joining because the unit's  
7 correlative rights would not be protected, the unit would be  
8 sweeping more oil to his property than would be compensated  
9 by sweeping off the other direction.

10 Also when you run economics and operating cost you  
11 either have to make an assumption as to how much it would cost  
12 Summit to develop water injection facilities or what he would  
13 buy water for from the unit. Obviously if he drove a hard  
14 bargain and we sold him water at less than our cost then he  
15 would make more money by staying out, if we sold it for more  
16 than our cost then we are fully compensated for injection and  
17 he would make less money.

18 So there are a number of assumptions that can be  
19 made in an economic case and I guess just my point is, yes, he  
20 could make more money if he stayed out but it could easily be  
21 at the expense of the unit. I don't agree that joining the  
22 unit is an economic burden on Summit. That's all.

23 MR. HINKLE: That's all.

24 MR. RAMEY: Any questions? The witness may be  
25 excused.

1 MR. KELLAHIN: I move the introduction of Summit  
2 Exhibits Seven and Eight.

3 MR. RAMEY: They will be admitted.

4 (THEREUPON, Summit Exhibits Seven and  
5 Eight were admitted into evidence.)

6 MR. RAMEY: Anything further in the case? Mr. Kelly?

7 MR. KELLY: Mr. Ramey, I would like to formally  
8 move, as was suggested this morning, that since a proposal was  
9 made in the case which may or may not be acceptable, but it  
10 may be something that would lead to an agreement that would  
11 avoid having the statutory forced unitization, that the  
12 Commission consider giving some reasonable period of time and  
13 thirty days was suggested, before an order is entered so that--  
14 I think that the information that came out today may lead to  
15 some sort of negotiations and some resolution to the problem.  
16 I would suggest that it would be appropriate if we could report  
17 back to the Commission that it had been resolved, not in the  
18 spirit of delay, but in the spirit of working out a compromise  
19 because it does take time to look at these things and there  
20 may be some counter offers and it appears that there have been  
21 some at least closing their position here, so I would move  
22 that the Commission consider giving some time prior to the  
23 entry of an order for further negotiations of the question.

24 MR. RAMEY: Mr. Hinkle?

25 MR. HINKLE: Yes, I might comment, I don't think we



1 would object to thirty days to respond to this but I think that  
2 is sufficient and we have gone over a whole lot of things here  
3 and I think we ought to get on with it if we can't agree within  
4 thirty days.

5 MR. RAMEY: Well, that's agreeable, that's fine.  
6 Do you want us to keep the record open for thirty days?

7 MR. HINKLE: I think so.

8 MR. RAMEY: All right we will keep the record open  
9 for thirty days for comments.

10 MR. KENDRICH: H. L. Kendrick of El Paso Natural Gas.  
11 I would like to reiterate that El Paso Natural Gas has Tubb  
12 gas in this area dedicated to its interstate market and we  
13 would like to keep this gas available for our customers.

14 MR. RAMEY: Thank you, Mr. Kendrick. Any other  
15 closing statements?

16 MR. EMERICK: My name is Glenn Emerick, employed by  
17 Chevron U.S.A. in Denver. Chevron U.S.A. is a working interest  
18 owner in the proposed East Blinberry and East Drinkard Units.  
19 Chevron engineers have participated in the planning of these  
20 projects and agree that the projects as proposed will result  
21 in the recovery of oil that would otherwise be lost by altera-  
22 tion of the proposed plan. The field is now in an advanced  
23 stage of depletion and it is timely that the project be  
24 implemented for maximum ultimate oil recovery. Chevron supports  
25 Atlantic Richfield in the formation of the units and commence-

1 ment of the waterflood operation as proposed.

2 MR. RAMEY: Any other statements? Mr. Lyon?

3 MR. LYON: I'm V. T. Lyon with Continental Oil Company  
4 and Continental Oil Company has previously gone on record in  
5 support of this unit. We would like to reiterate that position  
6 and I would like to mention that we have some Tubb reserves  
7 that we are sacrificing in joining this unit, provided that  
8 it becomes legal to do so and that we feel that it is to our  
9 economic benefit and to the economic benefit of all of the  
10 working interest owners.

11 MR. RAMEY: Thank you, Mr. Lyon.

12 MR. LANDIS: I am Bruce Landis with Amoco Production  
13 Company and Amoco Production is also a working interest owner  
14 who is committed to this unit and we would like to reiterate  
15 our former support. Obviously we think it is time that we  
16 get on in view of the lengthy negotiations over the past ten  
17 years that it has taken to come to this point.

18 MR. RAMEY: Thank you, Mr. Landis. Any other state-  
19 ments?

20 MR. KELLAHIN: Mr. Ramey, I would like to clarify  
21 one point in response to some questions directed to Mr. Byers  
22 by the Commission earlier this morning and that was with  
23 regards to the effect of the exclusion of Tract 13. It would  
24 appear to me that under the statutory unitization that the  
25 Commission can pursuant to 65-14-11 approve an order which can

1 provide for unit operations on less than the whole of a pool  
2 where the unit area is of such size and shape as may be  
3 reasonably suitable for that purpose and the conduct thereof  
4 would not have adverse effect upon other portions of the pool.

5 In addition I believe that there is no reason, or at  
6 least the evidence we presented demonstrates that there is a  
7 substantial reason for the exclusion of Tract 13, that it is  
8 premature to include either Tract 13 or 15 at this point and  
9 there is nothing to preclude Arco from coming back on a sub-  
10 sequent date when the need arises to include either or both of  
11 those tracts for its waterflood project. We believe that the  
12 inclusion of those tracts at this stage will violate the  
13 correlative rights of the owners of Tract 13 and 15 and that  
14 is in direct conflict with the statutory unitization act  
15 provided for in Section 65-14-6, subparagraph C, which says  
16 that the Commission is obligated to protect and safeguard the  
17 respective rights and obligations of the working interest  
18 owners and the royalty owners within the proposed area.

19 We think that if the Commission enters the order or  
20 reaffirms the order as written that you have a substantial  
21 problem with regard particularly to the Tubb production off  
22 of Tract 13 and I am confident that the order as written con-  
23 stitutes a confiscation of that property or imposition of an  
24 unreasonable penalty. In either case I believe that the Com-  
25 mission ought to give regard to how they are going to handle

1 that Tubb production. The order as written, I think, is--it  
2 cannot be supported. In addition I think that we have demon-  
3 strated that the exclusion of Tracts 15 and 13 will result in  
4 a reasonable profit to the remaining owners of the unit, talk-  
5 ing terms of an undiscounted worth of forty-eight point three  
6 million dollars. Arco has indicated that it is going to be  
7 difficult to get the percentage signed up if those particular  
8 tracts are not included. I find that very difficult to believe  
9 that those other interest owners are going to simply forego  
10 the potential of realizing the kind of money for this project.

11 We have also shown that while Arco says it is more  
12 efficient to include Tracts 13 and 15, that is not what the  
13 statute requires. The statute simply requires that an effective  
14 waterflood project, one that is feasible, one that will result  
15 reasonably in the probability of the recovery of more oil and  
16 gas. It does not require that the Commission approve the  
17 absolute most effective perfect way to do this project and we  
18 contend that to include these tracts will do substantial  
19 damage to the rights of those owners and to exclude them and  
20 provide an order for the exclusion of those tracts will still  
21 be consistent with the statutory unitization act. Thank you.

22 MR. RAMEY: I think we have some correspondence.

23 I have a Mailgram from Texas Financial Consultants,  
24 Limited, who is a royalty owner: As a royalty interest owner  
25 we strongly encourage your Commission to approve Arco's pro-

1 interest owners and negotiating a new unit and the testimony  
2 is such that it has taken eight to ten years to get where we  
3 are today and if you exclude those tracts and go back, you are  
4 starting over again and nobody knows how long it would take  
5 or if it could ever be affected.

6           So I think you have got to keep in mind the purpose  
7 of this statutory unitization act, is to take care of a  
8 situation such as we have here today where you have got more  
9 than seventy-five percent of all of the interested parties  
10 have agreed to it, about eighty-six percent in this case, and  
11 this is the type of thing that the statute was intended to do  
12 to force those others who can't agree and who have been given  
13 every opportunity in the world to agree, to come in and  
14 participate. And I think it has been shown conclusively that  
15 it is going to be for the benefit of everybody to go ahead  
16 with this unit. If we do not go ahead with it and you eliminate  
17 Tracts 13 and 15 and the thing is delayed or unitization is  
18 affected, then you are going to lose eight to ten million  
19 barrels of oil.

20           I submit that the Commission should go along with  
21 us and approve the statutory unitization just as it did in  
22 its original order. I am glad to have the statement of Texaco  
23 that there is a possibility that they might come to some  
24 agreement. Now we do not mind making some minor adjustments  
25 as far as to balance equities, such as we proposed today, and

1 if anything can be worked out along that line I think the  
2 Commission under this statute has the right to do that but I  
3 don't think they can change basically the whole agreement  
4 that was entered in to by eighty-six percent of these working  
5 interest owners.

6 MR. KELLY: Mr. Ramey, I will try and be brief.  
7 Obviously the Commission has the power to do something at these  
8 hearings other than just approve the application of the appli-  
9 cant, if that was the case it would be a waste of time.

10 The statute specifically says that if the Commission  
11 makes decisions that change the unit agreement or the unit  
12 operating agreement that it goes back for ratification by the  
13 operators but it is ridiculous to assert to you that you have  
14 no power to do anything other than accept the word of the  
15 applicant.

16 Now Texaco's position, it is certainly midway between  
17 Cone and Arco. We are not asking that this particular section  
18 be eliminated from the unit, we are asking for what we consider  
19 a very reasonable provision that would allow this Tubb gas to  
20 be produced safely, to allow the Drinkard and the Blinebry  
21 gas caps to be produced safely, that would allow production  
22 without the necessity of drilling three additional gas wells  
23 and the cost, the two hundred thousand dollar penalty, the  
24 cost of reworking the Cone well and allow this flood to go in  
25 in a way that could be looked at by all of the operators to

1 see whether it should be expanded to the west. None of the  
2 objections that were brought up would be valid as far as the  
3 suggestions made by Texaco and certainly if the unit operator,  
4 Arco, can circulate at this late date an amendment that is  
5 going to extend the life of this agreement to 1980 then they  
6 can also consider any other reasonable provisions such as the  
7 type of provisions that Texaco has announced and certainly if  
8 the Commission decides that our approach is a reasonable one,  
9 I doubt very much that is going to defeat this vast unit.


10 MR. RAMEY: Thank you, Mr. Kelly. Anything further  
11 in the case?

12 The Commission will take the case under advisement  
13 and the hearing is adjourned.

14 (THEREUPON, the hearing was adjourned.)  
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REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,  
do hereby certify that the foregoing and attached Transcript  
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of the said proceedings to the best of my knowledge, skill and  
ability.

  
\_\_\_\_\_  
Sidney F. Morrish, C.S.R.