

STATE OF NEW MEXICO  
 ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
 OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING	)	
CALLED BY THE OIL CONSERVATION	)	
DIVISION FOR THE PURPOSE OF	)	
CONSIDERING:	)	CASE NOS. 10,869
	)	10,881
CASE NOS. 10,869 AND 10,881,	)	(Consolidated)
(REOPENED)	)	
	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: DAVID R. CATANACH, Hearing Examiner

September 21, 1995

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, September 21st, 1995, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

\* \* \*

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## I N D E X

September 21st, 1995  
 Examiner Hearing  
 CASE NOS. 10,869 and 10,881

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\* \* \*

## A P P E A R A N C E S

FOR CONOCO, INC.:

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 By: W. THOMAS KELLAHIN

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 By: WILLIAM F. CARR

\* \* \*

1           WHEREUPON, the following proceedings were had at  
2   2:36 p.m.:

3           EXAMINER CATANACH: At this time I'm going to  
4   call Cases 10,869 and 10,881, which is in the matter of  
5   Case Numbers 10,869 and 10,881 being reopened in accordance  
6   with provisions of Division Order Number R-10,050, which  
7   amended the special pool rules and regulations for the  
8   South Dagger Draw-Upper Pennsylvanian Associated Pool in  
9   Eddy County, New Mexico, providing for a limiting gas-oil  
10   ratio of 7000 to 1, cubic feet of gas per barrel of oil.

11           Are there appearances in this case?

12           MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of  
13   the Santa Fe law firm of Kellahin and Kellahin, appearing  
14   on behalf of Conoco, Inc., and I have two witnesses to be  
15   sworn.

16           MR. CARR: May it please the Examiner, my name is  
17   William F. Carr with the Santa Fe law firm Campbell, Carr  
18   and Berge. We represent Yates Petroleum Corporation in  
19   this matter. I do not intend to call a witness.

20           EXAMINER CATANACH: Okay, any additional  
21   appearances?

22           Will the witnesses please stand to be sworn in?  
23           (Thereupon, the witnesses were sworn.)

24           MR. KELLAHIN: Mr. Examiner, when you heard this  
25   case back in December of 1993, the issues for discussion

1 were two items.

2 One, whether or not in this associated pool we  
3 would delete the preclusion of simultaneous dedication in  
4 the pool. It's difficult to say, but under the associated  
5 rules, you cannot have simultaneous dedication of an oil  
6 well and a gas well.

7 As a result of that hearing, we deleted that  
8 requirement. And so in this reservoir, as of January of  
9 1994, operators could in fact dedicate in a spacing unit  
10 both oil and gas wells. You may remember that we're on  
11 320-acre spacing, that the oil allowable for a spacing unit  
12 is 1400 barrels of oil a day, and that you have a  
13 limiting -- special limiting gas-oil ratio of 7000 to 1.

14 The 7000-to-1 GOR limit was the other issue that  
15 you heard back in December of 1993. At the time of the  
16 hearing, the GOR in the pool was 10,000 to 1, and you  
17 directed that it be reduced to 7000 to 1.

18 Conoco is here to support making those two  
19 changes permanent. We're here to illustrate the positive  
20 response of the operators in the pool to those changes and  
21 so that you can see that a substantial amount of additional  
22 oil has been produced that might not otherwise be produced.  
23 So we're here to present a geologic presentation and an  
24 engineering presentation to confirm making those two  
25 changes permanent.

1           To aid you in your review of this matter, I've  
2           got a copy of the prior order that was issued in this case  
3           that dealt with these two topics. It's the 10,050 order.

4           All right, sir, with your permission I'll call  
5           Mr. Bill Hardie.

6                               BILL HARDIE,  
7           the witness herein, after having been first duly sworn upon  
8           his oath, was examined and testified as follows:

9                               DIRECT EXAMINATION

10          BY MR. KELLAHIN:

11               Q.    Mr. Hardie, for the record, sir, would you please  
12               state your name and occupation?

13               A.    I'm a senior geologist with Conoco, Inc., in  
14               Midland, Texas.

15               Q.    On prior occasions have you testified as a  
16               petroleum geologist?

17               A.    Yes, I have.

18               Q.    In fact, you were the petroleum geologist that  
19               testified on behalf of Conoco in the last hearing on this  
20               topic, were you not?

21               A.    That is correct.

22               Q.    Have you continued to be involved in that  
23               capacity with your company for the development of  
24               production in the South Dagger Draw Associated Pool?

25               A.    Yes, I have.

1 MR. KELLAHIN: We tender Mr. Hardie as an expert  
2 geologist.

3 EXAMINER CATANACH: He is so qualified.

4 MR. KELLAHIN: Mr. Hardie, let's turn to Exhibit  
5 1.

6 Mr. Examiner, I think as we go through the  
7 discussion, you may find it helpful to keep Exhibit 1  
8 available. It serves as a good locator map for our  
9 discussion this afternoon.

10 EXAMINER CATANACH: All right.

11 Q. (By Mr. Kellahin) Identify for us the data  
12 that's shown on Exhibit 1, Mr. Hardie.

13 A. Exhibit 1 is a base map of the South Dagger Draw  
14 Pool. The outline of the pool is shown with the heavy blue  
15 line.

16 Also shown on the exhibit are all the wells  
17 currently producing from the pool. The operators for each  
18 of the proration units are also labeled in red type. There  
19 are 320-acre spacing for each proration unit.

20 Q. The blue outline represents the current boundary  
21 of the pool?

22 A. That is correct.

23 Q. All right, sir. It has other data on here.  
24 There's some production data on here?

25 A. Yes, there is. This particular exhibit shows the

1 average daily production over the last month that was  
2 available from *Dwight's*, and that's shown in blue. The  
3 first number is oil and gas production, and then the gas-  
4 oil ratio is shown. And that is again an average daily  
5 production, over the last month.

6 Q. When we look north of the north boundary of the  
7 pool, we're moving into -- What pool is that?

8 A. To the north of the South Dagger Draw Pool is the  
9 North Dagger Draw Pool.

10 Q. Okay. And as we move into the southwest portion  
11 of the southern boundary of this pool, what are we moving  
12 into?

13 A. We move into the Indian Basin Gas Pool.

14 Q. On this display, if it's a gas well or an oil  
15 well and they're shaded black, what does that mean?

16 A. That means that the well was drilled at the time  
17 when the pool rule changes were made back in November of  
18 1994.

19 Q. I think it was --

20 A. I'm sorry, that's actually --

21 Q. -- actually ordered in January of 1994.

22 A. -- January of 1994. That's correct, I'm sorry.

23 Q. When I look at the gas well symbols and oil-well  
24 symbols that are in red, what do those represent?

25 A. Those are wells that have been drilled or staked



1 subsequent to Order Number R-10,050 on January 26th of  
2 1994.

3 Q. There is one single exception to that general  
4 statement, is there not? If you'll look in Township 20  
5 South, Range 24 East, and look down in Section 35, up in  
6 the northeast quarter of Section 35 there's the Preston 5  
7 well?

8 A. Six.

9 Q. I'm sorry, is that a "6"?

10 A. Yes, the Preston 6 is a deviated well. It is  
11 currently producing from the Morrow formation.

12 Q. Other than that, everything else is this  
13 Cisco/Canyon production?

14 A. That is correct.

15 Q. All right. Let's set that aside then as a  
16 locator map and turn to Exhibit Number 2 and have you  
17 identify that, please.

18 A. Exhibit Number 2 is essentially the same map as  
19 Exhibit 1, with the only difference being that the  
20 production shown is cumulative production for each of the  
21 proration units. And again, it's shown -- first, the oil  
22 production, then the gas, and then the gas-oil ratio.

23 This exhibit shows -- By comparing the numbers,  
24 you can see that by far the highest cums are from the  
25 older, established portion of the South Dagger Draw Pool

1     which lies to the north. The newer wells, of course, are a  
2     year or less old and haven't cum'd nearly as much.

3           Q.     When we look down in the area where the recent  
4     drilling has taken place, in the southern portion of the  
5     display, there is a difference in the shape of the well  
6     symbols. There's a red circle, and then there's a red  
7     square. What's the difference?

8           A.     The red squares are wells that have been drilled  
9     and completed, but the production data is not yet  
10    available. So they are not included in the cum data that  
11    you see posted within that proration unit.

12          Q.     But they do represent drilled and completed  
13    wells?

14          A.     They have been drilled and completed.

15          Q.     All right, let's go to the first of your geologic  
16    displays and have you turn to the structure map which is  
17    marked as Exhibit 3.

18                 We've heard a great many cases about South Dagger  
19    Draw, but I think it's always helpful to have you take a  
20    minute or two, Mr. Hardie, and give us the deposition and  
21    the word picture of how we are positioned in South Dagger  
22    Draw, particularly in relation to the gas pool, the Indian  
23    Basin Gas Pool, and North Dagger Draw, the oil pool to the  
24    north.

25          A.     Okay. This structure map is on top of the

1 dolomite reservoir, which produces in South Dagger Draw.

2 In general, the structural elevation increases as  
3 we move to the south along the dolomite fairway, and that  
4 increase in elevation coincides with changes in the  
5 reservoir fluids, namely that you produce oil in the lower  
6 portions of the reservoir. Particularly up at the northern  
7 end of the map, at North Dagger Draw, you produce oil in  
8 the northern portions of South Dagger Draw, and then as you  
9 continue moving south you gain elevation until at some  
10 point you pass from the oil column into the gas cap, which  
11 comprises the Indian Basin gas field. And that begins at  
12 the southern part of this map and continues beyond the  
13 boundaries of this map.

14 Q. The eastern boundary of production is controlled  
15 by what components, Mr. Hardie?

16 A. The eastern-end production is controlled by an  
17 oil-water contact. And you can tell by looking at the row  
18 of sections in 20 South, 24 East, the north-south row  
19 comprising Sections 12, 13, 24 and 25, that there's only  
20 wells developed on the western half of those sections, and  
21 that's because you move downdip as you go to the east and  
22 into the water-producing portion of the reservoir.

23 Q. What determines the western boundary of the  
24 reservoir?

25 A. As you move to the west, you also gain structural

1 elevation, and you enter a gas cap. As you can see, the  
2 wells, particularly in the northern half of the pool -- As  
3 you move from east to west, they start out as oil wells,  
4 and gradually you start to encounter gas wells. And then  
5 ultimately the dolomite itself pinches out to the west, and  
6 that is the limit of the field.

7 Q. Is the South Dagger Draw Associated Pool properly  
8 designated as an associated pool?

9 A. Yes, it is.

10 Q. Within the same common source of supply, there  
11 are a combination of gas wells and oil wells?

12 A. Yes.

13 Q. Summarize for us whether or not in your opinion  
14 as a geologist you see any positive benefit from having the  
15 rule deleted whereby operators in the pool are now allowed  
16 to simultaneously dedicate a spacing unit between gas and  
17 oil wells. Has that been a good thing?

18 A. Yes, it has. There have been several important  
19 developments that have occurred as a result of the pool  
20 rule change, namely, all of the wells that you see  
21 highlighted in red were drilled, and they probably wouldn't  
22 have been drilled if not for the pool rule change.

23 Q. Describe for us why you have that opinion.

24 A. Because of the simultaneous -- or the lack of  
25 simultaneous dedication an operator was forced to choose to

1 produce either oil or gas, but not both, from a single  
2 proration unit. Therefore, as one encounters a thinner oil  
3 rim moving updip, the risk of finding oil becomes greater.  
4 And should one drill a well that had uneconomic oil  
5 production, the obvious alternative would be to complete in  
6 the gas cap, thereby leaving that oil in the ground. So...

7 Q. With the deletion of that limitation, then, the  
8 operator has the flexibility to assume the risk of drilling  
9 the well and has therefore the opportunity to complete it  
10 both as a gas and/or oil well?

11 A. That is correct.

12 Q. And that's happened, hasn't it?

13 A. It has.

14 Q. Can you give us an illustration of where that  
15 represents a situation in any of these spacing units?

16 A. There are actually several spacing units where  
17 that has occurred. An example, it would be the case that  
18 Conoco brought forth initially and that is in the south  
19 half of Section 35 of 20 South, 24 East, where our Preston  
20 Federal Number 1 gas well had been drilled. I believe that  
21 was drilled in the early Seventies.

22 Conoco wished to come in and develop the eastern  
23 portion of that proration unit, and we suspected there  
24 would be oil production there. So we had to choose: Do we  
25 shut in the Preston 1 and drill the oil wells? Or do we

1 drill additional gas wells? And we sought to have the  
2 simultaneous dedication clause removed. It was, and we  
3 drilled two -- subsequently drilled two oil wells, the  
4 Preston 7 and the Preston 10.

5 There are numerous other examples.

6 The irregularly shaped -- or the irregular  
7 sections south of that, Section 35 and 36, each have gas  
8 wells and oil wells. And there are other examples we could  
9 document all over the South Dagger Draw Pool.

10 Q. Let's turn now to Exhibit Number 4. What are we  
11 looking at, and why is it important?

12 A. Exhibit 4 is a color-fill contour map of the  
13 isopach of the dolomite reservoir. The color notation is  
14 such that the thinner the reservoir, the darker blue the  
15 color is. And then as we get thicker and thicker, we go  
16 from dark blues to greens and ultimately to yellow,  
17 indicating the thickest portion of the reservoir. And it  
18 varies from zero at its outer edges to upwards of over 400  
19 feet along its axis.

20 Q. When you're talking about thickness, what are you  
21 measuring and are you using any cutoffs?

22 A. We are measuring only a lithology, and that is  
23 dolomite. In Dagger Draw, dolomite is the reservoir.  
24 There are no porosity or permeability cutoffs applied to  
25 this map.

1           Q.    When you look at thickness and compare it to rate  
2 or cum, is there any correlation between thickness and  
3 those characteristics of the reservoir?

4           A.    Yes, there are, and you can actually see that on  
5 this map, in that virtually all the wells -- or the vast  
6 majority of the wells are drilled along the thickest  
7 portion of the reservoir.

8                   As you encounter thinner dolomite pay, the odds  
9 of drilling an uneconomic well increase greatly. So  
10 there's just not enough oil or gas in the thinner portions  
11 to justify development.

12          Q.    And as you move south, into the southwest, you're  
13 moving higher on structure and therefore higher into the  
14 gas?

15          A.    That is correct, the oil -- the oil rim becomes  
16 gradually thinner as you move to the south.

17          Q.    Describe for us the role the water component of  
18 the reservoir plays.

19          A.    The entire reservoir is water-productive,  
20 irregardless of where one completes. As you move  
21 downstructure there comes a point at which you pass from  
22 the oil-producing part of the dolomite into 100-percent  
23 water production. But there is virtually no well in this  
24 field that is water-free, productionwise.

25          Q.    Having looked at the thickness of the reservoir,

1 let's turn now to Exhibit 5 and look at the oil column in  
2 that reservoir. Describe for us what we're seeing on  
3 Exhibit 5.

4 A. Exhibit 5 is again a color-filled isopach map of  
5 the portion of the dolomite reservoir that lies within the  
6 oil column.

7 Q. Describe for us how you make that interpretation.

8 A. That's based on mud-log shows which would  
9 indicate that -- the bottom portion of the reservoir, which  
10 contains oil -- and completion information, which indicates  
11 position of the gas-oil contact.

12 This -- Again, the color-coding scheme on this  
13 goes from light greens to the thinner portion and darker  
14 greens indicating progressively thick portions. The oil  
15 column in the pool ranges from, of course, zero at the  
16 outer edges to just over 100 feet along its axis.

17 Q. When you examine the oil column, you're  
18 identifying a thickness for the oil column?

19 A. We're identifying only that portion of the  
20 dolomite which lies within the oil column. And again,  
21 there are no porosity cutoffs, no permeability cutoffs.  
22 You couldn't necessarily pick locations based on this map,  
23 because it doesn't say anything as to whether or not the  
24 dolomite will have enough porosity and permeability to  
25 produce oil.



1 Q. At the time of the hearing in December of --  
2 1993? I lost track of my dates.

3 A. 1993, that's correct.

4 Q. 1993. -- what was the extent of the reservoir in  
5 terms of a pool boundary?

6 A. At that time, our best interpretation of the  
7 position of the oil column is shown by the dashed -- the  
8 heavy dashed red line that you can see passing through the  
9 boundary between Township 20 South and the irregular row of  
10 sections there. That's basically pulled straight off of  
11 the exhibits that we presented at that hearing in December  
12 of 1993.

13 Q. The southern pool boundary of this pool at that  
14 time was approximately at the transition line between the  
15 townships?

16 A. That is correct.

17 Q. It was not generally believed that the oil column  
18 at that point would extend this far to the south, was it?

19 A. Well, it wasn't that it wasn't believed. There  
20 was just no evidence to actually make a map of the oil  
21 column extending that far, because there were no wells  
22 drilled.

23 Q. All right. So there was an absence of data and  
24 therefore no conclusion one way or the other?

25 A. Right, we strongly suspected that the oil column

1 continued southward, but that wasn't to be discovered until  
2 the wells were drilled.

3 Q. Can you use this map to illustrate the importance  
4 of the change of the rule on simultaneous dedication?

5 A. What the change in the rule allowed were for  
6 operators to begin drilling and exploring for oil. And --  
7 in this portion of the reservoir that was thought to be  
8 gas-productive.

9 And by drilling those, they indeed proved up the  
10 oil column and proved up an additional six sections of oil  
11 production.

12 And in fact, if you were to take from Exhibit  
13 Number 1 and total up all the oil production on a daily  
14 basis, those six sections that were proved up as a result  
15 of that pool rule changing currently produce about 5500  
16 barrels of oil per day. And we contend that that oil  
17 production would have never occurred, had it not been for  
18 the removal of the simultaneous dedication clause.

19 Q. Okay. Let's turn and look at the gas column now,  
20 if you'll turn to Exhibit 6. All right, if you'll turn to  
21 Exhibit 6, would you identify this display, tell us how  
22 you've constructed it, and give us the major points of  
23 conclusion?

24 A. Exhibit 6 is similar to Exhibit 5, except this  
25 time we're looking at an isopach or a thickness map, the

1 portion of the dolomite reservoir that is gas-filled.  
2 Again, the color scheme goes from thinner portions, being  
3 indicated by yellow colors, and then they become  
4 progressively more red as the gas column becomes thicker.  
5 And it varies from zero at the outer edges to upwards of  
6 350 feet thick in the Indian Basin gas field, or at least  
7 the portion of the Indian Basin gas field shown on this  
8 map.

9 Q. Again, you're dealing with gas quantity as  
10 opposed to some kind of quality?

11 A. We're speaking strictly in terms of quantity of  
12 dolomite within that gas cap. There are no porosity or  
13 permeability cutoffs applied, so that this is not  
14 necessarily an indication of how productive a well may be.

15 Q. Again, it's characteristic in this reservoir,  
16 which has really been separated into two separate pools  
17 politically by the Division. You've got the North Dagger  
18 Draw, South Dagger Draw and Indian Basin, is really one  
19 reservoir, is it not?

20 A. In a regional sense that is correct, they are the  
21 same reservoir, although there are reservoir zonations  
22 within the overall dolomite fairway that --

23 Q. And we have a narrow reservoir that's two or  
24 three miles wide and approximately how long?

25 A. That's a good question. It's been mapped for at

1     least 50 miles. It extends a great distance.

2           Q.     And we are in a reservoir that is complicated  
3     because you can move into the gas column and still have  
4     water production that may be at rates even higher than the  
5     water production of an oil well?

6           A.     That is correct.

7           Q.     Okay.

8           A.     This map clearly shows what would have happened  
9     were it not for the removal of simultaneous dedication.  
10    There's ample thickness of dolomite within the gas cap,  
11    which would have justified operators going in and  
12    completing these as gas wells.

13          Q.     Had they done that, it would have precluded the  
14    recovery of oil that might otherwise have been produced?

15          A.     That is correct.

16          Q.     Okay. All right, sir, let's turn -- On a number  
17    of these displays you've shown a line of cross-section  
18    which runs through that irregular township. Is it 20 1/2?  
19    Do they call it Township 20 1/2 South?

20          A.     20 1/2 South.

21          Q.     And it's that row of short sections from 32  
22    through 36?

23          A.     That's correct.

24          Q.     In that area, then, within the reservoir portion  
25    you've got a line of cross-section?

1           A.    Yes, it passes --

2           Q.    Let's look at that.

3           A.    -- in an east-west direction from the Mojave  
4   Number 2 to the Stinking Draw Number 1 well.

5           Q.    All right, let's take a minute and unfold the  
6   display and then I'll have you talk about it.

7                    You've constructed this from east to west, you've  
8   got five wells shown on the display. Describe for us why  
9   we're looking at this. What's the importance?

10          A.    I constructed this cross-section to document why  
11   within an individual proration unit you would get both gas  
12   and oil wells.

13                   And if I could go through each one of these  
14   completions and explain why the well was either produced --  
15   or completed as a gas well or an oil well, I think that  
16   will become apparent.

17          Q.    Let's start on the east side at A' and take the  
18   Marathon Stinking Draw 1, and take a moment and show us how  
19   you've color-coded the log so we understand what your  
20   method is.

21          A.    Okay. The color-coding relates to the lithology.  
22   Colored shales in brown, dolomite is colored purple. That  
23   would be the Cisco reservoir. And then limestone, which is  
24   nonreservoir rock, is shown in blue.

25          Q.    Within the dolomite portion, you have subdivided

1 the dolomite into Cisco subdivisions, have you not?

2 A. That is correct. Those are correlable markers  
3 within the Cisco reservoir.

4 Q. And then across the center portion, at least on  
5 the log for this well, is a red line, a horizontal red  
6 line. What does that mean?

7 A. That is a reference elevation at minus 4000 feet  
8 subsea, which approximates the gas-oil contact for this  
9 portion of the reservoir.

10 So we know, based on production history and  
11 completions, that if you're completing above that line it's  
12 more than likely going to be a gas well, if you complete  
13 below that line, you have a good opportunity for making it  
14 an oil well.

15 However, the oil rim here is very thin -- it's  
16 generally about 50 feet thick -- so that the opportunity to  
17 produce oil is only available in a narrow window of the  
18 reservoir.

19 Q. Let's start, then, with the Marathon well, using  
20 the reference line, and have you tell us whether we have a  
21 gas well, oil well or some other creature.

22 A. Okay. The Marathon Number 1 Stinking Draw was  
23 one of the first wells that were drilled after the change  
24 in the pool rules. It was completed as a gas well after  
25 numerous attempts to complete in the oil column.

1 Marathon began their completion attempts in the  
2 lower portion of the reservoir and produced high rates of  
3 water and small amounts of oil. But the well was economic  
4 and they began adding pay higher up, above the minus-4000-  
5 foot reference elevation.

6 And ultimately, this well was completed as a gas  
7 well, simply because the water cuts in the lower portion  
8 were too high to be economically produced.

9 This well has cum'd within about a two-year  
10 period only 13,000 barrels of oil, but about 400 million  
11 cubic feet of gas.

12 Q. As Marathon goes to its next well in that same  
13 spacing unit, we get the Stinking Draw Number 2?

14 A. Yes.

15 Q. Do you recall its sequence with the 1 and 2? Is  
16 this Number 2, in fact, drilled as the second well?

17 A. Yes, it was.

18 Q. So Marathon's got what is a gas well in Number 1?

19 A. Right.

20 Q. And they move to the Number 2, and that turns out  
21 to be an oil well?

22 A. That's correct, they surmised that by moving  
23 updip they would encounter the oil column in a more  
24 favorable reservoir condition, better porosity, better  
25 permeability, and they were correct.

1           The Number 2 Stinking Draw has the advantage of  
2     the fact that the bottom of the reservoir gains elevation,  
3     and essentially it passes into the oil column, so that  
4     everything below the minus-4000-foot reference elevation to  
5     the base of the dolomite in that well was within the oil  
6     column.

7           Q.     All right, sir. Now they've got an oil well, but  
8     under the old rule they would have had to shut in the  
9     Number 1 well?

10          A.     That was correct.

11          Q.     All right. And so as we move, then, to the third  
12     well, which is the next one on the cross-section, what do  
13     we find with that well?

14          A.     Before we move to the third well, I'd like to  
15     explain why Marathon has completed pay up higher.

16                 Initially, they completed down low, produced it  
17     until the oil became uneconomic in terms of rate, and then  
18     they began adding pay higher up in the section. The  
19     general idea is to keep the well economic and gradually add  
20     gas pay in order to do that. Although it is still an oil  
21     well, it does have a relatively high GOR of 10,000 to 1.

22          Q.     And as they moved, then, to the west, they  
23     drilled the Number 3 well?

24          A.     The Number 3 well was another attempt to complete  
25     in the oil column. And as you can see, they gained



1 elevation.

2 But there was an unfortunate circumstance in  
3 that, if you look at the reference elevation line of minus  
4 4000 feet subsea to the bottom of the reservoir, you can  
5 see that in the gamma-ray character the dolomite is getting  
6 fairly shaly, so that the reservoir quality was very poor  
7 where the oil column happened to be. And to date this is  
8 an uneconomic well. It produces low amounts of oil and low  
9 amounts of gas. I suspect Marathon will very soon begin  
10 completing uphole in the gas portion.

11 Q. Again, the rule change gives Marathon the  
12 operational flexibility to maximize the hydrocarbon  
13 recovery in this combination of gas-oil zone?

14 A. That is correct.

15 Q. Okay. As we move to the Yates Mojave well,  
16 what's the importance of that well?

17 A. The Yates Mojave well, as you can see by its  
18 relationship to the base of the reservoir, with the  
19 reference elevation of minus 4000 feet, there is no oil  
20 column within this well, or at least no significant amount  
21 of oil column within the well.

22 Yates tested several zones throughout the  
23 dolomite when they completed this well and ultimately ended  
24 up completing it in the very uppermost portion as a gas  
25 well.

1 Q. Again, Yates has benefitted by the rule change?

2 A. Yes, not in this particular well but elsewhere.

3 Q. Okay.

4 A. Yes.

5 Q. So this example is not unique in the reservoir?

6 A. No, it's not. I take that back, Yates has  
7 actually benefitted in this proration unit --

8 Q. Yes.

9 A. -- by the rule change.

10 Q. And then finally, the last of the Yates wells on  
11 this cross-section, the Mojave 2?

12 A. Right, the Mojave 2 is in the same proration unit  
13 as the Mojave 1 and documents the benefit Yates has seen by  
14 the pool rule change. They drilled their Number 2 Mojave  
15 past -- through the gas-cap portion of the dolomite and  
16 then picked up a lower buildup in the Cisco that Conoco  
17 calls the Cisco C-5 zone. And the C-5 zone appears to be  
18 separated from the rest of the reservoir by a thin shale  
19 zone, and it is the source of the vast majority of the oil  
20 production that has been discovered as a result of the pool  
21 rule change.

22 That is a -- The lower zone is actually very  
23 economic in terms of oil production. This is a newly  
24 drilled well. On September 16th of 1995, this well was  
25 producing 289 barrels of oil per day and about 1.1 million

1 cubic feet of gas.

2 Yates completed both in the reservoir -- the C-5  
3 reservoir in the oil zone and, in the upper portion, the  
4 gas zone.

5 Q. In summary, Mr. Hardie, your geologic conclusions  
6 as they affect this issue?

7 A. The conclusions are fairly simple. The change in  
8 the pool rule, particularly the dropping of the  
9 simultaneous dedication, has allowed a considerable amount  
10 of development in a relatively thin oil rim in the southern  
11 portion of the South Dagger Draw Pool. So it's provided a  
12 mechanism by which operators can go in and develop that oil  
13 without the excessive risk that simultaneous dedication  
14 clause would have created.

15 It provides a mechanism by which a newly  
16 discovered oil pool can encroach upon an established and  
17 existing gas field, namely the Indian Basin gas field.

18 It's allowed protection of correlative rights by  
19 operators here. For example, should an operator be offset  
20 on one flank by somebody completed in the gas cap and on  
21 another flank by somebody completed in the oil column, he  
22 can now compete for both the gas and the oil, due to the  
23 dropping of that clause.

24 And I think the evidence that will be presented  
25 by our reservoir engineer, Mr. Beamer, will show that

1 there's really no evidence that the simultaneous  
2 dedication, coupled with the new limiting GOR, has created  
3 any adverse effect on oil production.

4 MR. KELLAHIN: That concludes my examination of  
5 Mr. Hardie.

6 We move the introduction of his Exhibits 1  
7 through 7.

8 EXAMINER CATANACH: Exhibits 1 through 7 will be  
9 admitted as evidence.

10 MR. CARR: No questions.

11 EXAMINATION

12 BY EXAMINER CATANACH:

13 Q. Mr. Hardie, what kind of further development do  
14 you anticipate in the southern portion of this pool?

15 A. Currently, our best guess is that the oil column  
16 will continue to be pushed southward. I strongly suspect  
17 that Sections 3, 10 and 15 of Township 21 South, Range 23  
18 East, will contain oil. That hasn't been proved up. You  
19 can see in that, that there are gas wells in those  
20 sections. Those were drilled back in -- probably the  
21 Sixties, and they are producing out of the Indian Basin gas  
22 field.

23 But at the time those were drilled, everyone  
24 suspected that it was a gas reservoir with a gas-water  
25 contact. Nobody knew there was a thin oil rim. So those

1 haven't been tested yet.

2 Q. Do you anticipate that oil column being pushed  
3 much further than the south of Section 15? 14, 15?

4 A. My best guess to that would be that we're looking  
5 at about -- that would be about the limit of it, because  
6 you continue to gain elevation. And the wells that are at  
7 the very highest portion in the Indian Basin gas field are  
8 completed from the very top to the very bottom of the  
9 dolomite, and they do not produce oil. Typically, these  
10 flanking wells were produced only in the upper portion of  
11 the dolomite.

12 Q. In the existing -- Sections 1, 2, 11, 12 and 14,  
13 there certainly is -- Is there a potential for more  
14 drilling of oil wells in those sections?

15 A. Yes, there is, and I'm sure that's ongoing. You  
16 can see the open circles, red circles, indicate staked  
17 locations that have yet to be drilled. Most of that, or --  
18 if not all of that, I believe, is operated by Marathon.

19 Q. How about for gas wells? Is there much potential  
20 for more gas well drilling?

21 A. By the time you've developed the oil column,  
22 you've actually overdeveloped the gas cap, so that you  
23 really don't need that many well locations to deplete the  
24 gas cap.

25 But that number of wells would be necessary to

1 develop that thin oil, then. So by the time everybody has  
2 drilled up their oil wells, it will just be a matter of  
3 recompleting upsection to the gas cap, once the oil has  
4 been depleted.

5 I think it's important to note also that the  
6 Indian Basin gas field was discovered, I believe, in the  
7 1950s, and has produced an enormous amount of gas -- I  
8 believe 1.5 TCF -- before anybody ever discovered that  
9 there was an oil rim at the bottom of it. And any  
10 subsequent damage to the oil rim was probably caused a long  
11 time ago before we ever knew the oil existed. So it's  
12 difficult to say that we are damaging anything now, because  
13 it's so late in the game already.

14 Q. So you think the gas production from the Indian  
15 Basin had some effect on this area in terms of the oil  
16 column in these wells?

17 A. It undoubtedly pulled down the reservoir  
18 pressure. It may or may not have caused a migration of the  
19 oil column updip. We can't document that.

20 Q. Do you have any instances where these pool rules  
21 have, in fact, protected correlative rights?

22 A. There's a good example in the Mojave Number 2, I  
23 believe. The Mojave 2, as you can see on the cross-  
24 section, was completed in both the oil column and the gas  
25 cap. And I believe the reason that Yates shot the gas cap

1 there was because Marathon had also completed the gas cap  
2 in some wells to the south. So they were in that case  
3 protecting their correlative rights in the oil column and  
4 in the gas cap.

5 EXAMINER CATANACH: I have nothing further of  
6 this witness.

7 MR. KELLAHIN: Mr. Examiner, my next witness is  
8 Bob Beamer. He spells his last name B-a-e- -- ?

9 MR. BEAMER: B-e-a- --

10 MR. KELLAHIN: B-e-a-m-e-r.

11 Mr. Beamer has compiled a wealth of information  
12 on the reservoir. We will mark it and introduce it as the  
13 various exhibits. We're going to touch the highlights and  
14 look at one or two specific examples to illustrate this  
15 matter, but there is an amazing amount of information that  
16 can be used as a reference to this issue in the case file,  
17 but it's certainly not our intent to fully explore all the  
18 information.

19 BOB BEAMER,

20 the witness herein, after having been first duly sworn upon  
21 his oath, was examined and testified as follows:

22 DIRECT EXAMINATION

23 BY MR. KELLAHIN:

24 Q. Mr. Beamer, for the record would you please state  
25 your name and occupation?

1           A.    My name is Bob Beamer.  I'm a reservoir engineer  
2   with Conoco out of Midland, Texas.

3           Q.    Mr. Beamer, on prior occasions, have you  
4   testified as a reservoir engineer before the Division?

5           A.    Yes, I have.

6           Q.    Have you made an engineering investigation of the  
7   South Dagger Draw Associated Pool with regards to the issue  
8   of trying to determine whether or not there's any adverse  
9   effects apparent or perceived with maintaining the gas-oil  
10   ratio at 7000 to 1?

11          A.    Yes, I have.

12          Q.    And what conclusion have you reached?

13          A.    We see no detrimental effect from the change in  
14   the pool rule.

15          Q.    Let's turn to Exhibit Number 8, then, and have  
16   you identify what you're showing to the Examiner, and then  
17   we'll look at some of the items.

18          A.    Exhibit 8 is a summary of the performance of each  
19   well in the South Dagger Draw Field.

20          Q.    And what's the source of the data?

21          A.    The source of the data is primarily from *Dwight's*  
22   database, queried on September the 11th of this year, a few  
23   instances from PI scout reports and also from operators'  
24   reports.

25          Q.    You started in the north end of the pool with the



1 tabulation and worked your way to the south till you got to  
2 the end --

3 A. Yes.

4 Q. -- is that how it's organized?

5 A. That's correct, from north to south, and it's  
6 ordered by proration unit. The left-hand column designates  
7 the 320-acre spaced unit and then shows each lease and well  
8 number within that unit, gives the location, an indication  
9 of the status, and then simply a current cumulative  
10 production of liquid and gas. And then what I've done is  
11 compute the cumulative GOR from that data.

12 The next columns show last month's daily average  
13 production of oil and gas and a computed GOR from that  
14 data.

15 The final two columns, then, refer to the last  
16 month of data available and then the first month of data  
17 available.

18 Q. That first well, then, the first month was April  
19 of 1991?

20 A. April of 1991, yes, sir.

21 Q. You've gone through and on some of these you've  
22 indicated low oil or you identify it with a highlight of  
23 "gas well"?

24 A. Yes.

25 Q. What's your reason for doing that?

1           A.    In the heading, you'll notice, my GOR columns, I  
2   have a single asterisk, and that's noted at the -- page 6,  
3   the final page of this exhibit. And by definition, a gas  
4   well is defined as a GOR in excess of 30,000 to 1.

5           So what I've done here is, any well that has a  
6   GOR in excess of 30,000 to 1, I have shaded in dark with  
7   bold numbers so that all gas wells, then, are designated in  
8   that manner.

9           Another designation that I've made on this  
10  spreadsheet, tried to make it easier to see the total  
11  proration unit, gas production, is to bold those numbers  
12  within the boxed outline.

13          Q.    All right, sir. Let's turn now to Exhibit Number  
14  9. What's contained in the package of documents that are  
15  shown as Exhibit 9?

16          A.    These are development history plots, production  
17  curves, if you will, by pool and by operator --

18          Q.    All right.

19          A.    -- within the South Dagger Draw-Cisco Pool.

20          Q.    Okay, let's turn behind the identification page  
21  for Exhibit 9 and look at the first display.

22          A.    The first display is a performance plot of the  
23  total South Dagger Draw-Cisco Pool from 1990 through 1994,  
24  and it shows, from the bottom up, the stepstair curve is  
25  the number of wells, and we can see a gain of about 23

1 wells from the beginning of 1994 through the end of that  
2 year.

3 The bold solid line, next curve up, is the oil  
4 production curve.

5 The next curve up, the dashed, is the gas rate in  
6 MCF per day for the total field. And then the topmost  
7 dotted curve is the -- No, I'm sorry, that middle curve,  
8 the dashed curve, is water rate in barrels per day.

9 And the final curve, then, the dotted, is the gas  
10 rate, MCF per day.

11 Q. For purpose of this display, you stopped the data  
12 as of December of 1994?

13 A. I did that because the *Dwight's* database is not  
14 fully consistent for each operator. For instance,  
15 Marathon's data is carried active through May of 1995.  
16 Conoco's data is current only through February. Yates'  
17 data is only through February. And it creates quite a  
18 disruption in the curve to show that plot.

19 However, on the subsequent displays on this  
20 exhibit, I've shown each major operator's performance  
21 curve, and I think you can better see the impact of the  
22 change in the rule.

23 Q. Let's do that, let's turn to the next display and  
24 look at the Marathon-operated wells in South Dagger Draw,  
25 have you demonstrate what you've just concluded, that you

1 don't see an adverse consequence from either the  
2 simultaneous dedication provision or the GOR rule.

3 A. Well, first of all, picking up from what Bill  
4 just testified to, it's obvious that there has been a  
5 continuity of development in the South Dagger Draw field.  
6 Marathon alone has drilled 22 wells since January of 1994,  
7 and the response in the oil production is pretty  
8 significant, about 3000 barrels a day above what they were  
9 producing in January of 1994.

10 Also, from this plot, they're producing about 25  
11 million cubic feet of gas per day, in excess of what they  
12 were making in January of 1994.

13 Q. Marathon's oil production went from about 500  
14 barrels a day to 3500 barrels a day? Was that it?

15 A. Actually, it looks like in January of 1994 their  
16 production was about 200 barrels a day.

17 Q. Okay.

18 A. So that would be more like 3300 barrels a day  
19 increase.

20 Q. All right. Let's look at the next operator, the  
21 Conoco-operated.

22 A. Conoco-operated, we've added about three wells  
23 since the pool change. However, we have been able to  
24 maintain our production rate level, approximately 200  
25 barrels a day greater than the January, 1994, level. Our

1 gas production has increased about 3 million a day above  
2 the January level. We think it's been a successful  
3 program.

4 Q. If the GOR was resulting in too high a gas  
5 withdrawal rate from the reservoir, would you see any  
6 effect of that on any of these curves or plots in this set  
7 of exhibits?

8 A. Within the time frame that we're talking about,  
9 I'm not sure that we would. It is possible if that gas  
10 rate were too high, that it could draw down the pressure  
11 where we might see a decline, but we haven't noticed any  
12 adverse effect.

13 Q. What this does, then, is, you're able to look at  
14 this and satisfy yourself that the rule change has resulted  
15 in a substantial amount of additional oil now being  
16 produced?

17 A. Yes.

18 Q. All right. Whether or not the gas has had any  
19 effect on that oil recovery, we can leave to later displays  
20 then?

21 A. Yes.

22 Q. All right. You've looked at the Conoco. Let's  
23 look at the Yates-operated wells.

24 A. Yates-operated wells, of course, Yates operates  
25 primarily in the northern half of the pool, and really they

1 have not been affected to the degree that Marathon or  
2 Conoco has been affected. They simply were pretty well  
3 developed, even back at the end of 1993.

4 Q. Okay, and then the last display?

5 A. The last display is the remaining operators  
6 within the field, which is Santa Fe, McKay and I believe  
7 Nearburg, and this shows little additional development and  
8 essentially a relatively flat gas production rate and a  
9 slight decline in their oil production, which is probably  
10 typical from what we'll see later.

11 Q. All right. Let's turn now to Exhibit 10, have  
12 you describe for us what you've packaged in this exhibit  
13 set, and then let's pick out some examples that illustrate  
14 what conclusions you're going to make.

15 A. The front sheet identifies what's within this  
16 packet, and they are production plots by proration unit for  
17 the south end of the Dagger Draw -- of the South Dagger  
18 Draw field. And essentially what we're looking at is from  
19 the irregular sections in 20.5 South, going south. So all  
20 proration units from that point south.

21 Q. Okay, let's turn to the first page, then. If we  
22 look at the east half of 34, just so we see how you've set  
23 up the information, you've got a dashed line and an  
24 indication of the maximum gas allowable for the spacing  
25 unit of the 9.8 million a day?

1 A. Yes, that's correct.

2 Q. And production has been below that ceiling, has  
3 it not?

4 A. Yes.

5 Q. All right. What does this curve show you? Is  
6 there any other conclusion you can reach?

7 A. Well, I see no evidence of any interference from  
8 any offsetting wells. We've been able to maintain our  
9 production from this -- Actually, this is one well within  
10 the proration unit, our Preston Number 5. We did a  
11 successful remedial frac job in early 1994, which brought  
12 our production back up to about 200 barrels a day, and  
13 we've been able to maintain that. Our gas rate has been  
14 relatively flat, and we see no evidence of any  
15 interference.

16 Q. Okay. I'd like to take you to page 3 of this  
17 exhibit set, and look at the south half of Section 35.  
18 Here within this spacing unit there are multiple wells, are  
19 there not?

20 A. Yes, and this happens to be another Conoco-  
21 operated proration unit on our Preston Federal lease.

22 Q. Let's have you show us which one is the gas well  
23 and which are the two oil wells.

24 A. The Preston 1 is the gas well, and it's been on  
25 production since the early 1970s. I show its production

1 only starting in 1993, mainly so that we could spread this  
2 display out and see any effects, if there were any, from  
3 offsetting wells.

4 In January of 1994 we drilled our Preston Number  
5 10, which from the map is quite a ways removed from our  
6 Preston 1. It was completed as an oil well in the  
7 southwest corner of that proration unit.

8 And then in June of 1994 we drilled the Preston  
9 Number 7, also as a gas well, within that proration unit.

10 Q. If you're looking at the locator map, Mr. Beamer,  
11 you can see that the south half of 35, that Conoco spacing  
12 unit, has got this 7 and 10, your oil wells, on the  
13 southern boundary of that spacing unit, and you're offset  
14 to the south by the Marathon Stinking Draw wells, and then  
15 there's a gas well --

16 A. Yes.

17 Q. -- in 36?

18 A. Yes. And I --

19 Q. When you compare the performance of these wells  
20 one to another, do you see any adverse effect on your oil  
21 wells by the Marathon gas well to the south?

22 A. No, we haven't. And in fact, on the display I  
23 show the timing sequence of the Stinking Draw wells'  
24 completions, and there is no obvious effect to date on our  
25 production.



1 Q. Okay. Are there any other examples in Exhibit  
2 Set 10 that are important to you to bring to the Examiner's  
3 attention?

4 A. We might look at page 4, which is the north half  
5 of Section 36. It's a Marathon-operated proration unit  
6 just east of our Preston Federal lease, where they had  
7 production established early in 1993.

8 Subsequent to that, we drilled two wells  
9 offsetting them, the Preston 8 and 9, both as oil wells.  
10 There is no evidence on this plot of any detrimental effect  
11 to the Marathon production from these two wells.

12 Q. The slope on their decline on their oil  
13 production didn't change when you brought the Preston 8 and  
14 9 on line?

15 A. Not noticeably, no.

16 Q. Okay.

17 A. And again, the gas rate is well below the maximum  
18 allowed gas rate.

19 Q. Okay. Anything else on Exhibit 10?

20 A. Nothing of significance. I think that all of the  
21 spacing units are producing within the maximum allowed gas  
22 rate.

23 Q. And if the Examiner follows this same method of  
24 analysis that you've illustrated with those two examples,  
25 then he can see for himself the performance of these other

1 wells in the pool?

2 A. I think so.

3 Q. All right, sir. Let's turn to Exhibit 11.

4 Describe for us what you have packaged together in Exhibit  
5 11.

6 A. These again are production plots for several 320-  
7 acre spacing units or producing units, trying to show some  
8 comparisons of performance.

9 First of all, on page 1 of this exhibit, I've  
10 selected an area within the North Dagger Draw-Cisco  
11 field --

12 Q. Why would you want to go way up in North Dagger  
13 Draw for an example?

14 A. Well, I selected an area that is fully developed  
15 on oil spacing, simply to show what the -- what a typical  
16 North Dagger Draw-Cisco performance is.

17 Also, keep in mind that in this portion of the  
18 reservoir, thinking in terms of a common reservoir,  
19 although different designation of pool limits, pool  
20 outlines, we're looking at a considerably thicker oil  
21 section in this area of the reservoir. And we see a  
22 somewhat typical established decline of about 45 percent  
23 for a mature producing unit on the North Dagger Draw.

24 Q. Let me understand your method. You went into  
25 North Dagger Draw, found you would have to have taken two

1 spacing units in North Dagger Draw?

2 A. That's correct.

3 Q. Because that's on 160s?

4 A. Yes.

5 Q. So you formed a hypothetical west-half spacing  
6 unit in Section 19?

7 A. Yes.

8 Q. Which would contain six wells?

9 A. Yes.

10 Q. You then plotted all that data and established,  
11 in the mature part of the oil pool, what would be a typical  
12 decline percentage in an area that would be unaffected by  
13 gas withdrawals?

14 A. Yes, that's right.

15 Q. And you got about a 45-percent decline?

16 A. Yes.

17 Q. So now you have an example by which you can  
18 compare what oil wells will do when you move closer to the  
19 gas cap?

20 A. Yes, we're looking at this as more or less a  
21 prototype.

22 Q. Okay. Taking that as a benchmark, if you will,  
23 let's turn to Exhibit 2, and now look down in South Dagger  
24 Draw in the north half of 14, where your oil column is  
25 substantially thinner, and yet you're using the same size

1 of unit for comparison. What do you see?

2 A. Well, we see similar performance. Again, this is  
3 a mature development in this spacing unit. The declines  
4 established are somewhat greater, but again we're in a  
5 thinner oil section than would be anticipated. But there's  
6 nothing abnormal indicated by these trends.

7 Q. The change of the rules in the GOR and the  
8 dedication don't appear to show any exhibited effect on the  
9 performance of the wells in the north half of 14?

10 A. Well, that's true. But again, this is in the  
11 older area of South Dagger Draw, and it was pretty much  
12 developed at the time of the rule change.

13 Q. Okay, let's look down a littler farther south,  
14 then, and move into another area of South Dagger Draw.  
15 We're now in the east half of 23.

16 A. 23.

17 Q. Yes, sir. Tell us what you see with those wells.

18 A. Again, this is a mature developed area. We see a  
19 shallow rate of decline, relatively shallow, through the  
20 completion of the last well in this proration unit, at  
21 which time, then, we do begin to see the effects of a fully  
22 developed proration unit, and the decline then becomes  
23 steeper but well established. And again, we're looking at  
24 -- Again, we're moving south, or we're moving into a  
25 thinner oil column, and the steeper declines are about what

1 would be expected.

2 Q. And those expectations on a steeper decline are  
3 attributable to the reservoir conditions, as opposed to a  
4 change in the pool rules?

5 A. That's my opinion, yes.

6 Q. All right, sir. Exhibit Number 11, page 4, we're  
7 now in the south half of 26. What do you see here?

8 A. South half of 26?

9 Q. Am I on the same --

10 A. Yeah, I'm wondering -- I may have mislabeled  
11 this, because the south half of 26 is not a designated  
12 proration unit. So that's what's confusing me.

13 Q. Well, could it be of 36?

14 A. Yes, it would be Section -- South half of Section  
15 36.

16 Q. All right. So if you'll correct page 4 and  
17 change the "2" to a "3" in the caption, we're going to have  
18 the right spacing unit, right?

19 A. Yes.

20 Q. All right. Show us what you see.

21 A. And I show this primarily to show a possible  
22 effect of drilling the Preston 8 and 9 wells -- I am sorry,  
23 Mr. Examiner, there's obviously a problem with this  
24 exhibit, and I would have to --

25 Q. Let's cross this sucker out and say that doesn't

1 look right. All right?

2 A. Well, there's something wrong here, because I  
3 don't have -- as an identified proration unit, and I'm  
4 trying to make a case for Preston 8 and 9, which would  
5 influence either the north half of 36 or the southeast of  
6 26. So I apologize for the confusion on this one.

7 Q. Let's turn to the last display, which is page 5.  
8 Now, on page 5, in 36, this has got to be the north half of  
9 36, because the spacing units are laydowns?

10 A. Well, I do recall this is the proper designation,  
11 and this does not relate to a given proration unit. I  
12 specified this only to show the results of offset drilling  
13 on our Preston Federal lease.

14 Q. All right. So when I look at the west half of  
15 Section 36, that's what you intended?

16 A. This is what I intended to show, yes.

17 Q. All right. Describe the conclusions and what you  
18 see.

19 A. Well, on this plot, then, is the combined  
20 production from those wells within the west half of 36.  
21 And then I have also labeled the completion dates of four  
22 Preston Federal wells.

23 And my conclusion from this is that there is no  
24 damaging influence on the Marathon-operated Indian Hill  
25 States wells.

1           Q.    Based upon your search of comparisons and looking  
2           at the performance of the wells throughout the pool, from  
3           the north end all the way down to the south end, do you see  
4           any documented evidence or data by which you can infer as a  
5           reservoir engineer that there has been an adverse result  
6           from the two rule changes that took place in January of  
7           1994?

8           A.    No, I have not seen any detrimental effects as a  
9           result of that pool rule change.

10          Q.    As a reservoir engineer, what is your  
11          recommendation to the Division Examiner?

12          A.    Well, I would recommend that the rules be made  
13          permanent and --

14          Q.    Do you see any reason not to make them permanent  
15          at this time?

16          A.    No, not from our analysis of the data.

17               MR. KELLAHIN: That concludes my examination of  
18          Mr. Beamer. We move the introduction of his Exhibits 8  
19          through 11.

20               EXAMINER CATANACH: Exhibits 8 through 11 will be  
21          admitted as evidence.

22               MR. CARR: I have no questions of Mr. Beamer.

23                               EXAMINATION

24          BY EXAMINER CATANACH:

25          Q.    Mr. Beamer, when you're looking at these

1 proration units and you're analyzing the decline on  
2 these --

3 A. Yes.

4 Q. -- how do you know what the decline that you've  
5 plotted is attributed to? How do you know that it's not --  
6 that -- Say you go from a 28-percent decline to a 70-  
7 percent decline. How do you know in your analysis that  
8 that's not due to excessive gas withdrawals?

9 A. Well, in this particular case, this is in an area  
10 of the reservoir that is completely within the oil zone.  
11 Any gas-cap production is quite far removed, if I remember  
12 the plot that you're referring to.

13 Q. Well, I'm looking at Exhibit Number 11.

14 A. Yes, page 3.

15 Q. Yeah.

16 A. Yeah, the east half of 23. I really wouldn't  
17 anticipate any noticeable effect from gas-cap withdrawals  
18 because of the significant distance.

19 In other words, you go over about a mile and a  
20 half to the Carl Number 3 -- well, about a mile to the Carl  
21 Number 4. That well has been on production for quite some  
22 time before the rule change, and -- My interpretation of  
23 the data is that the decline simply has been affected by  
24 the completion of the development of that proration unit.

25 We've seen in North Dagger Draw, for instance,



1 that 40-acre spacing is more than sufficient. In other  
2 words, a Cisco oil well should typically drain more than  
3 the 40-acre drainage radius.

4 Q. Well, did you analyze any proration units where  
5 there was some gas wells located on it?

6 A. The one -- The best example, I think, that I had  
7 was that of our Preston Federal lease, the south half of  
8 35, and as I remember, that's shown in Exhibit 10, page 3,  
9 where we had the existing fairly prolonged production  
10 history of the Preston Federal Number 1 gas well.

11 We have drilled and completed the Preston 7 and  
12 10 in 1994, and to date -- Although I don't show the  
13 production curve for the Number 1 well alone, I can tell  
14 you that we have seen no substantial change in its decline  
15 rate.

16 Q. The Number 1 being an oil well and --

17 A. The Number 1 being a gas well.

18 Q. Gas well.

19 A. And the Number 7 and 10 being oil wells.

20 To get other proration units with the combination  
21 gas wells and oil wells within them, you pretty much get  
22 into the newer developed area to the south, and I think the  
23 history available to us is a little bit too early for us to  
24 see any trends.

25 Q. So is it possible to say in that newly developed

1 area that you're not having any kind of adverse effect on  
2 ultimate oil recoveries, either as a result of the high GOR  
3 or allowing gas wells?

4 A. Are you asking do we see any detrimental effect?

5 Q. Well, is it -- Yeah, do you see any at this  
6 point, and is it possible to conclude at this point that  
7 there isn't any detrimental effects?

8 A. We have not seen any to this time, and our  
9 conclusions are based, again, on what we see primarily from  
10 established production trends up in 35, and I'm assuming  
11 that we will see a similar performance to the areas to the  
12 south.

13 Q. So you're saying based on the data you have right  
14 now, you can conclusively state that there's not going to  
15 be a reduction in ultimate oil recovery by --

16 A. By the simultaneous dedication.

17 Q. Okay.

18 A. Yes, I think I could say that.

19 Q. That's based on the data you have right now?

20 A. That's right.

21 Q. You don't think additional data is necessary to  
22 reach that conclusion?

23 A. I don't think so.

24 Q. Is there going to be much more development, do  
25 you think, in these sections down to the south?

1           A.    We show by the open circles those wells which are  
2   staked.  I can speak for Conoco -- I can't speak for  
3   Conoco, because I can't speak for Conoco's management.

4                I know that we would like to drill some  
5   additional development wells, and we plan to push those.  
6   But the time frame on our development, I can't really say  
7   for sure.

8                If the open locations are drilled, that will  
9   pretty much develop the reservoir, in our opinion.

10           EXAMINER CATANACH:  Okay, I don't think I have  
11   anything else.

12           MR. KELLAHIN:  That concludes our presentation,  
13   Mr. Examiner.

14           EXAMINER CATANACH:  Mr. Carr, I believe you had a  
15   statement or something?

16           MR. CARR:  May it please the Examiner, I have a  
17   brief statement for Yates Petroleum Corporation.

18                As you know, Yates is a major operator in the  
19   South Dagger Draw-Upper Pennsylvanian Associated Pool.  
20   Based on Yates' operations in this pool under the temporary  
21   rules it is the experience of Yates that adoption of the  
22   temporary rules on a permanent basis will not adversely  
23   affect this reservoir by reducing the ultimate recovery of  
24   oil and gas therefrom, and that it will enable operators in  
25   the pool -- adoption of these rules will enable operators

1 within the pool to produce the oil and gas therefrom in a  
2 manner that will protect the correlative rights of all  
3 interest owners in the pool.

4 And I have a copy of a letter from Randy  
5 patterson, Land Manager for Yates Petroleum Corporation,  
6 requesting that the temporary rules be adopted on a  
7 permanent basis.

8 EXAMINER CATANACH: Okay, that letter will be  
9 admitted as evidence in this case.

10 Is there anything further?

11 MR. KELLAHIN: Mr. Examiner, there should be a  
12 letter directly in your file from Marathon Oil Company  
13 demonstrating support for the same conclusion, that they're  
14 prepared to have these rules made permanent.

15 EXAMINER CATANACH: Okay. There being nothing  
16 further, this case, Case 10,869 and 10,881, will be taken  
17 under advisement.

18 (Thereupon, these proceedings were concluded at  
19 3:48 p.m.)

20 \* \* \*

21 I do hereby certify that the foregoing is  
22 a complete record of the proceedings in  
23 the live hearing of Case No. 10869, 10881  
24 heard by me on 8/21 1998.  
25 David R. Catnach, Examiner  
Oil Conservation Division


## CERTIFICATE OF REPORTER

STATE OF NEW MEXICO    )  
                                  )    ss.  
COUNTY OF SANTA FE    )

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL October 1st, 1995.

  
\_\_\_\_\_  
STEVEN T. BRENNER  
CCR No. 7

My commission expires: October 14, 1998