

## NEW MEXICO OIL CONSERVATION DIVISION

EXAMINER HEARINGSANTA FE, NEW MEXICOHearing Date MARCH 16, 2000 Time 8:15 A.M.

NAME	REPRESENTING	LOCATION
Paul R. Owen	CAMPBELL, CARR, BERGE + SHROEDAN	SANTA FE
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
MARTIN EMERY	MATADOR	DALLAS, TX
GARY CHANDLER	MATADOR	DALLAS, TX
BARRY OSBORNE	MATADOR	DALLAS, TX
Raye Miller	Mar bob	Artesia
Martin Loyie	Mar bob	Artesia
Dean Chambers	Mar bob	Artesia

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 NO. 12,355  
)  
APPLICATION OF MATADOR E&P COMPANY )  
TO ESTABLISH INFILL WELL PROCEDURES )  
AND TO AMEND WELL LOCATION REQUIREMENTS )  
FOR THE RED HILLS-WOLFCAMP GAS POOL OR, )  
IN THE ALTERNATIVE, FOR SIMULTANEOUS )  
DEDICATION, LEA COUNTY, NEW MEXICO )

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

March 16th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, March 16th, 2000, 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.

\* \* \*

OIL CONSERVATION DIV.  
CO MAR 30 AM 11:45

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March 16th, 2000  
 Examiner Hearing  
 CASE NO. 12,355

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

## FOR THE DIVISION:

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## FOR THE APPLICANT:

KELLAHIN & KELLAHIN  
 117 N. Guadalupe  
 P.O. Box 2265  
 Santa Fe, New Mexico 87504-2265  
 By: W. THOMAS KELLAHIN

\* \* \*

1           WHEREUPON, the following proceedings were had at  
2   8:20 a.m.:

3           EXAMINER CATANACH: Call the hearing to order  
4   this morning for Docket Number 08-00. We'll call the  
5   continuances and dismissals at this time.

6           (Off the record)

7           EXAMINER CATANACH: And at this time we'll call  
8   first case, 12,355, which is the Application of Matador E&P  
9   Company to establish infill well procedures and to amend  
10   well location requirements for the Red Hills-Wolfcamp Gas  
11   Pool or, in the alternative, for simultaneous dedication,  
12   Lea County, New Mexico.

13          Call for appearances in this case.

14          MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of  
15   the Santa Fe law firm of Kellahin and Kellahin, appearing  
16   on behalf of the Applicant, and I have three witnesses to  
17   be sworn.

18          EXAMINER CATANACH: Any additional appearances?  
19          Will the three witnesses please stand and be  
20   sworn in?

21          (Thereupon, the witnesses were sworn.)

22          MR. KELLAHIN: Mr. Examiner, Matador is before  
23   you today seeking to modify the rules for the Red Hills-  
24   Wolfcamp Gas Pool.

25          You'll note on Exhibit Number 1, there is a plat

1 that contains a number of items of information. The  
2 information I want to direct your attention to is the red  
3 outline. To the best of our knowledge, that represents the  
4 current pool boundary for the pool. This is a Wolfcamp  
5 pool that was adopted by the Commission back in June of  
6 1966. It's Division Order R-3073. It provides for 640-  
7 acre gas spacing and for standard well location, 1650 from  
8 the outer boundary of the section.

9           You'll see from the evidence that the Wolfcamp  
10 Gas Pool is only a part of the Wolfcamp. We're dealing  
11 with the lower portio of the Wolfcamp. You'll see from the  
12 cross-sections what the interval is for the pool.

13           What we're asking permission to do is to adopt an  
14 infill program for the pool which would allow Matador and  
15 the other operators in the pool to have an optional second  
16 well. That optional second well would be located on a 160-  
17 acre tract, that does not include the original well.

18           In addition to providing improved flexibility for  
19 well locations, to take advantage of the optimum position  
20 geologically we would ask that you relax the footage  
21 requirements and conform them to Rule 104, principally  
22 relaxing the outer boundary requirement and making it 660  
23 feet.

24           You'll see from the evidence that there are  
25 numerous unorthodox locations. In fact, the discovery well

1 and the second well, when the pool was adopted, were at  
2 unorthodox locations.

3 We have three witnesses to present. Mr. Barry  
4 Osborne is our first witness. He will describe the status  
5 of the operators, who they are, and compliance with the  
6 notice requirements of the Division.

7 Mr. Martin Emery, then, will testify as a  
8 geologist. He will describe for you the geology, describe  
9 for you the circumstances where we believe it's appropriate  
10 to have an infill program, for two principal reasons:

11 One, you're going to see from the cross-section  
12 that there is a Wolfcamp interval that has substantial gas  
13 opportunity, that is not present in wells that might be  
14 immediately adjacent to that opportunity. So you can see  
15 that there is a discontinuity in the reservoir itself.

16 In addition, you're going to find that there is a  
17 portion of the Wolfcamp which is correlative among wells,  
18 but in fact has substantial pressure differential between  
19 wells very close together. So you're going to see that  
20 it's necessary to have additional wells in order to recover  
21 gas that would not otherwise be produced.

22 Mr. Gary Chandler is our last witness, he's a  
23 petroleum engineer. He will describe the pressure  
24 information, he will go through his drainage calculations  
25 with you so you can see what has happened in this pool over

1 some 35 years.

2 And at the conclusion of the presentation, we  
3 would ask that you take this case under advisement and  
4 issue an order that approves our Application.

5 In the event you choose not to do that, we would  
6 ask that you afford us the opportunity in Section 5 to  
7 simultaneously dedicate two wells. We'll describe those  
8 two wells to you during the course of the testimony. That  
9 is our least preferable solution. But should you choose  
10 not to change pool rules, then we would ask that you give  
11 us the opportunity to complete an existing well into this  
12 correlative interval in the Wolfcamp so that we might have  
13 two wells producing in the section.

14 BARRY OSBORNE,

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

17 DIRECT EXAMINATION

18 BY MR. KELLAHIN:

19 Q. Mr. Osborne, for the record, sir, would you  
20 please state your name and occupation?

21 A. My name is Barry Osborne, I am the land manager  
22 and general counsel for Matador E&P Company in Dallas,  
23 Texas.

24 Q. Pursuant to your employment and responsibilities  
25 on behalf of Matador, have you caused Exhibit 1 to be



1 prepared?

2 A. Yes, I have, it was prepared under my direction.

3 Q. As part of that preparation, have you had scribed  
4 on this exhibit what Matador believes to be the current  
5 boundary of this pool, which we've identified as the Red  
6 Hills-Wolfcamp Gas Pool?

7 A. Yes, I have.

8 Q. Describe how that pool boundary is indicated.

9 A. That is indicated by the red outline consisting  
10 of nine sections in Township 25 South, Range 33 East and  
11 Township 26 South, Range 33 East, in Lea County, New  
12 Mexico.

13 Q. There is a complexity to the map, Mr. Osborne,  
14 that I would like you to help me explain to the Examiner.  
15 First, is it possible for you to identify for us those  
16 wells that are currently producing from this lower Wolfcamp  
17 interval that is within the vertical limits of the Red  
18 Hills-Wolfcamp Gas Pool?

19 A. Yes, there are currently five producing wells in  
20 the pool.

21 There's the Red Hills 28 Federal Number 2, which  
22 is located up in Section 28, on the northwest quarter.

23 There is the Red Hills Unit Number 1, which was  
24 the discovery well, that's located in the southeast quarter  
25 of Section 32.

1           Then down in 26-33, there is the Red Hills Unit  
2       Number 2 well, which is located in the northeast quarter of  
3       Section 5.

4           All of those wells are operated by Matador.

5           Then in the northeast quarter of Section 6 of  
6       26-33, there is a Kaiser-Francis well.

7           And then down in the northwest quarter of Section  
8       7 of 26-33, there is a BTA Oil Producers well.

9           All of those are producing out of the pooled  
10      interval.

11          Q.    As part of the research that you've had  
12      conducted, were you able to find any Wolfcamp wells within  
13      this correlative interval that are outside the pool but  
14      within a mile of that boundary that are not dedicated to  
15      another Wolfcamp pool?

16          A.    No, there's not, not that we have found.

17          Q.    Pursuant to the Division notice requirements,  
18      then, have you complied with those requirements by sending  
19      notice to the two other operators in the pool?

20          A.    Yes, the Kaiser-Francis and the BTA Oil  
21      Producers.

22          Q.    Have you had conversations or communications with  
23      these other two operators?

24          A.    Yeah, we have exchanged correspondence with  
25      Kaiser-Francis, and they have voiced no objection.

1           BTA Oil Producers, we've had extensive  
2       discussions and they are, in fact, very much in support of  
3       our Application today.

4           Q.    Let me focus on Section 5.  Within Section 5,  
5       within that 640-acre spacing unit for the pool, does  
6       Matador currently have producing a well in this pool?

7           A.    In Section 5 there is the Red Hills Unit Number 2  
8       well, which is producing in the pool.

9           Q.    In addition, there is a second wellbore that  
10      penetrates to and through the Red Hills-Wolfcamp Gas Pool  
11      and was drilled to the Devonian, was it not?

12          A.    That's correct, originally.

13          Q.    What are you seeking to obtain in the event the  
14      Examiner agrees to change the pool rules?

15          A.    What we would like to do is move up and produce  
16      the Red Hills Unit Number 3 well, which is located in the  
17      southwest quarter of Section 5, in the pooled interval, and  
18      dedicate that as the second well to the 640-acre unit.

19          Q.    Just to the north of Section 5, in Section 32,  
20      does Matador have operations in that section?

21          A.    Yes, we do.

22          Q.    And what is the current status of wells in the  
23      pool for that section?

24          A.    Well, the Red Hills Unit Number 1 is still  
25      producing.  We are currently in the process of completing

1 the Red Hills Unit Number 4 well in the Siluro-Devonian  
2 formation.

3 Q. The Red Hills Number 1 well is the discovery well  
4 for the pool; is that not true?

5 A. That's correct.

6 Q. And when we look just to the west of the  
7 discovery well in Section 32, the open circle that has the  
8 number 4 associated with that, that is the Red Hills Unit 4  
9 well that is currently drilling to the Devonian?

10 A. That's correct. I believe we've TD'd that one  
11 when we were in the process of -- in the completion  
12 process.

13 Q. Within this particular area, are there any  
14 consolidations of interest ownerships by way of cooperative  
15 agreements or by unit configurations?

16 A. Yeah, the unit -- Well, the unit was originally a  
17 massive 28,000-acre unit when it was formed, back in 1962.  
18 It has shrunk down to, now, a relatively modest four  
19 sections, comprised of Section 32 and 33 in 25-33, and then  
20 Sections 4 and 5 in 26-33. And the wells we're talking  
21 about are the Red Hills Unit Number 4 well and Number 3  
22 well that we're discussing within the boundaries of that  
23 unit, and there is a consolidation of ownership there.

24 Q. In addition to asking the Examiner to give you an  
25 optional second well in the section, are you also seeking

1 to have the Division relax the footage location  
2 requirements for new wells in the pool?

3 A. Yes, we are, we think that's appropriate.

4 MR. KELLAHIN: Mr. Examiner, that concludes my  
5 examination of Mr. Osborne.

6 EXAMINATION

7 BY EXAMINER CATANACH:

8 Q. Mr. Osborne, the acreage shown in yellow, that's  
9 all Matador's acreage?

10 A. Yes, on the -- The yellow acreage is just  
11 Matador's leasehold interests out there. We don't have a  
12 sub outline of the actual unit. We have the pool outlined,  
13 and then we have Matador's acreage, the unit, like I had  
14 mentioned earlier, Sections 32, 33, 4 and 5. That's the  
15 Red Hills Unit.

16 Q. Okay, Matador is the operator of the Red Hills  
17 Unit?

18 A. That's correct.

19 Q. And within those four sections, the interest is  
20 all identical or consolidated or somehow --

21 A. Well, it varies from well to well. There were  
22 nonconsents and partners that were brought in. However,  
23 within -- The base of ownership in the unit is consistent,  
24 although it is different on a well-to-well basis, in fact,  
25 on a zone-to-zone basis.

1           We spent a fortune on the title opinion on the  
2       Number 4 well, I'm telling you.

3           Q.    So the interest within Sections 29 and Twenty- --  
4       the one to the east --

5           A.    Yeah, that's 28.

6           Q.    -- is not the same as the interest in the unit;  
7       is that right?

8           A.    That's correct.

9           Q.    And this was originally an exploratory unit?

10          A.    Yes, it was.

11          Q.    Will the infill drilling program -- How will that  
12       affect the interest ownership within this unit? Some of  
13       the interest owners will have the option to go nonconsent  
14       in these wells?

15          A.    They'll have the same rights that they do under  
16       the unit operating agreement. It will give them the  
17       opportunity to participate or to go nonconsent. And  
18       there's a relatively modest nonconsent penalty of 200  
19       percent in the unit agreement.

20          Q.    Do you know how many interest owners there are in  
21       the unit?

22          A.    I should know that. There are approximately  
23       seven or eight total.

24          Q.    Working interest?

25          A.    Yes.

1 Q. And this -- What type are these? Federal leases?

2 A. Yes, sir. Say of the interest owners. Many of  
3 those are Bass entities, so although there may be three or  
4 four, those are all under one umbrella. The actual  
5 interest owners that are actively involved are actually  
6 only about three or four.

7 Q. Does the operating agreement for the unit have a  
8 provision for subsequent wells?

9 A. Yes, it does.

10 Q. It does.

11 A. It has a provision for subsequent wells, it has a  
12 provision for -- It's the old 1955 Rocky Mountain Mineral  
13 Law Institute form, which is a little nebulous in parts,  
14 but it does provide for subsequent wells. It provides for  
15 plugging -- abandoning zones and plugging back and moving  
16 back uphole, and it has procedures outlined, voting  
17 procedures, percentage requirements for approvals by the  
18 working interest owners.

19 Q. So the current plan is to recomplete the well in  
20 the southwest of Section 5, from the Devonian back up to  
21 the Wolfcamp?

22 A. Yes, sir. Well, from the -- The Red Hills Unit  
23 Number 3 is currently completed in the upper Wolfcamp.  
24 What we want to do is go down and complete it in the lower  
25 Wolfcamp, which is the pooled interval. The upper -- The

1 Wolfcamp out here is differentiated. The upper Wolfcamp  
2 isn't in the pool, the lower Wolfcamp is, and that's the  
3 zone that we'd like to go and, you know, complete it in.

4 Q. Let me get this straight.

5 A. I'm sorry.

6 Q. The Number 2 well is currently a Wolfcamp  
7 producer?

8 A. The Number 2 well is currently a Wolfcamp  
9 producer, yes, sir. The Number 1 well is currently a  
10 Wolfcamp producer.

11 The Number 3 well is currently a Wolfcamp  
12 producer, but it's not a Wolfcamp producer in the pooled  
13 interval. It's an upper Wolfcamp producer, it's not a  
14 lower Wolfcamp producer.

15 Q. In the pooled interval?

16 A. In the pooled interval, right.

17 Q. What pooled interval are you talking about?

18 A. Okay, the lower Wolfcamp is what's pooled out  
19 here. The upper Wolfcamp is not pooled. The Number 3 is  
20 currently completed in this upper Wolfcamp interval. The  
21 lower Wolfcamp is what we'd like to be able to move down  
22 and perforate the well in.

23 The geological exhibits that we have that Mr.  
24 Emery from our company is going to be putting on will, I  
25 think, pretty graphically illustrate how the Wolfcamp is



1 differentiated out here, and the different intervals that  
2 the wells are completed in.

3 Q. So you've already got two wells in Section 5 that  
4 are producing from the Wolfcamp?

5 A. Well, we have -- Well, yes. We don't have two  
6 wells that are producing from the lower Wolfcamp, and the  
7 upper Wolfcamp and lower Wolfcamp are not in communication.  
8 They might as well be called the Smith and the Jones  
9 interval.

10 Q. But the Wolfcamp formation is all in the same  
11 pool; is that correct?

12 MR. KELLAHIN: No, sir, it's not.

13 THE WITNESS: No, sir.

14 Q. (By Examiner Catanach) Oh, it's not?

15 A. No, only the lower Wolfcamp is the pooled  
16 interval.

17 Q. So the Red Hills-Wolfcamp Pool is limited to  
18 the --

19 MR. KELLAHIN: -- lower Wolfcamp.

20 EXAMINER CATANACH: -- lower, okay.

21 MR. KELLAHIN: And the Number 3 well is above the  
22 top of the Red Hills-Wolfcamp Pool, still in the Wolfcamp  
23 formation. So it's on 320 gas spacing.

24 Q. (By Examiner Catanach) Do you know what the  
25 other pool name is?

1           A.    I don't believe there is a pool.

2                   MR. KELLAHIN:  We don't believe there's a name  
3   associated with that.  There should be, but if so, we don't  
4   know what it is.

5                   THE WITNESS:  I think it will be fairly clear  
6   from the exhibits and the other evidence that we'll be  
7   putting on that the pressure regimes are completely  
8   different, and there isn't communication between the upper  
9   and the lower Wolfcamp.

10           Q.    (By Examiner Catanach)  Okay.  You've spoken to  
11   the only two other operators in the pool, and they've got  
12   no problem with this Application?

13           A.    Yeah, Kaiser-Francis has expressed no objection.  
14   BTA is, in fact, in support of our Application and will be  
15   paying part of Tom's bill.

16                   MR. KELLAHIN:  As small as that may be.

17           Q.    (By Examiner Catanach)  As far as the acreage,  
18   the remaining acreage in the pool, is that all currently  
19   held by either BTA or Kaiser-Francis?

20           A.    I believe that -- Well, the two sections that  
21   those wells are in are held by BTA and Kaiser-Francis.  I  
22   can't -- Which is Section 6 and Section 7.  I honestly  
23   can't speak to what's holding Section 31.  I know that  
24   there's one plugged well in 31, according to my map.

25           Q.    Well, it looks like in Section 21 there's an

1 inactive Wolfcamp well?

2 A. Yes, that's correct, there's an inactive well  
3 that Enron was the -- at least on the list -- at least on  
4 the map, the list is an operator of.

5 I can't -- I don't know what the status of that  
6 well is. Mr. Emery can probably speak to that. I don't  
7 know if it's TA'd or -- I imagine it's just TA'd.

8 Q. But no notice was given to that operator?

9 A. No notice was given to that operator.

10 EXAMINER CATANACH: Okay, that's all I have. The  
11 witness may be excused.

12 MR. KELLAHIN: Mr. Examiner, Exhibit Number 2 is  
13 my certificate of compliance with the notice requirements  
14 for sending notice to the operators of current producing  
15 wells in the pool. It indicates on our Exhibit B that our  
16 research shows there's no Wolfcamp wells within a mile of  
17 the outer boundary of the pool.

18 Mr. Examiner, our next witness is Martin Emery.  
19 Mr. Emery is a geologist.

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

23 DIRECT EXAMINATION

24 BY MR. KELLAHIN:

25 Q. Mr. Emery, for the record, sir, would you please

1 state your name and occupation?

2 A. My name is Martin Emery. I'm a geologist for  
3 Matador E&P Company in Dallas, Texas.

4 Q. Mr. Emery, have you made a geologic investigation  
5 of the issues that are before the Examiner today in this  
6 request by Matador to amend the pool rules for the Red  
7 Hills-Wolfcamp Gas Pool?

8 A. Yes, I have.

9 Q. Are you familiar with all the available geology  
10 for the various wells in the pool, whether they're  
11 currently plugged and abandoned, or if they're still  
12 producing those?

13 A. Yes.

14 Q. Based upon that research and review, have you  
15 reached any conclusions and recommendations concerning the  
16 matters before the Examiner this morning?

17 A. Yes --

18 MR. KELLAHIN: Before you do so, Mr. Emery, I  
19 would like to tender Mr. Emery as an expert geologist in  
20 this matter, Mr. Catanach.

21 EXAMINER CATANACH: He is so qualified.

22 Q. (By Mr. Kellahin) Let me have you describe for  
23 the Examiner what your ultimate conclusions are, Mr. Emery.

24 A. Our conclusions are that due to the heterogeneity  
25 of the lower Wolfcamp reservoir and also the reservoir

1 characteristics, namely low permeability, that one well per  
2 640 acres does not sufficiently drain the hydrocarbon  
3 reserves from this reservoir system.

4 And we have some well evidences of that, the most  
5 recent one being our Red Hills Unit Number 4, which was  
6 drilled to the Devonian, is currently completing in the  
7 Devonian, but on the way to drilling to that objective and  
8 going through the lower Wolfcamp, we encountered reservoir  
9 in the lower Wolfcamp which isn't present in the Red Hills  
10 Unit Number 1, the discovery well for the pool, which has  
11 been producing for 35 years. We found additional reservoir  
12 at virgin pressure with what we think are significant  
13 producible reserves. And that well is only 1450 feet away  
14 from the discovery well, the Red Hills Unit Number 1.

15 Q. In your opinion, Mr. Emery, if the Division  
16 provides for an optional second well in each of these  
17 spacing units, would that afford the opportunity to Matador  
18 and the other operators in the pool to produce Wolfcamp gas  
19 from this pool interval that might not otherwise be  
20 produced?

21 A. Correct.

22 Q. In addition, is there an opportunity to maximize  
23 your well locations if the current Division rule  
24 requirements for well locations be relaxed from 1650 to 660  
25 to the outer boundary?

1           A.    Yes, that would allow us to maximize the well  
2           locations to the best geologic position to encounter the  
3           most optimum lower Wolfcamp reservoir.

4           Q.    Let's begin to look, Mr. Emery, at the data and  
5           the evidence that you have accumulated that support those  
6           conclusions. Let's start, sir, for Mr. Catanach's benefit,  
7           having you identify and describe what is marked as Exhibit  
8           Number 3.

9           A.    Exhibit Number 3 is a gross lower Wolfcamp pay  
10          interval isopach map. The contour interval is 25 feet.  
11          And through the center of the map, coincident with the pool  
12          boundary, is a general thick of that isopached interval.

13                 Highlighted are the wells that produce from the  
14          lower Wolfcamp, and those wells are either in or about that  
15          general isopach thick.

16          Q.    Let's look at the cross-section that's marked as  
17          Exhibit 4. Set aside Exhibit 3 for a moment and let's  
18          first look at Exhibit 4, and identify the interval that is  
19          being mapped on your gross isopach, which was Exhibit  
20          Number 3.

21          A.    Exhibit Number 4 is cross-section A-A'. It's a  
22          stratigraphic cross-section. The datum is the top of the  
23          lower Wolfcamp pay interval as we define it. The base is  
24          the unconformity that you see below the dark blue color  
25          fill. And those two boundaries demark the isopached

1 interval that is represented by Exhibit 3, the isopach map.

2 All right. Let's make sure we can use this  
3 display to identify for Mr. Catanach the top of the Red  
4 Hills-Wolfcamp Gas Pool. How would that be indicated on  
5 this display?

6 A. It's the datum, it's the bold orange line near  
7 the top of the cross-section.

8 Q. If we get above the orange horizontal line that  
9 has the word "datum" written, if we get above that, we are  
10 in the Wolfcamp, but it's the upper Wolfcamp, right?

11 A. Correct.

12 Q. And the upper Wolfcamp is subject to 320 gas  
13 spacing, is it not? You're outside of the vertical limits  
14 of this pool, right?

15 A. Correct.

16 Q. all right. When we look at the base of the Red  
17 Hills-Wolfcamp Gas Pool, how is that indicated on this  
18 display?

19 A. By the kind of wavy orange line, the  
20 unconformity, like I said, at the base of the darker blue  
21 color fill.

22 Q. Okay. Let's go back to Exhibit Number 3, and  
23 identify on Exhibit Number 3 where we find the two wells  
24 that are the subject of the two-well cross-section, Exhibit  
25 4.

1           A.    The two wells are located in Section 28 of  
2    Township 25 South, Range 33 East.  They are the Red Hills  
3    28 Fed Com 1 and 2 wells.  The westernmost well, the well  
4    in the northwest of Section 28, is the Number 2.  The well  
5    in the northeast quarter is Well Number 1, the 28 Number 1.

6           Q.    All right.  Let's go to Exhibit 4 now.  How far  
7    apart are these two wells?

8           A.    These two wells are 2322 feet apart.

9           Q.    The Number 1 well was completed when?

10          A.    The Number 1 well, originally drilled in 1985,  
11    was completed in 1985 in the lower Wolfcamp.  Subsequent to  
12    that, the well has been sidetracked, deepened to the  
13    Devonian, and is currently producing from the Devonian.

14          Q.    The Number 2 well was completed when?

15          A.    It was completed in December of 1995.

16          Q.    And is currently producing --

17          A.    And is currently producing from the lower  
18    Wolfcamp.

19          Q.    All right.  Let me have you identify the evidence  
20    that supports your first conclusion, which is that  
21    generally available in the pool there is a lower portion of  
22    the lower Wolfcamp within this pool that requires more than  
23    one well per section in order to properly develop that  
24    interval.  Can you show us the interval in question?

25          A.    Yes.



1 Q. How do we see that?

2 A. Well, within the lower part of the lower Wolfcamp  
3 -- So those would be the darker blue color fills on the  
4 cross-section, especially, you can see that in this  
5 reservoir system, which consists of relatively thin  
6 carbonates within a package of shale, that there is  
7 discontinuity of the thin clean carbonate intervals.

8 And for example, some of the darker blue color  
9 fills present in the Red Hills 28 Fed Com Number 2 do not  
10 occur or are not present in the Number 1 well.

11 Q. When we look at the dark blue coloring for the  
12 Number 1 well, was this interval ever tested in this well?

13 A. It was -- Yes, it was. It was completed open  
14 hole across the whole lower Wolfcamp interval.

15 Q. So that would have afforded the opportunity to  
16 whoever completed this well to have accessed that lower  
17 Wolfcamp if it would produce hydrocarbons?

18 A. Correct.

19 Q. And what result?

20 A. The well produced for approximately seven years,  
21 resulting in 1.3 -- approximately 1.3 BCF of gas production  
22 and about 12,000 barrels of condensate production.

23 Q. Then some 10 years later the Number 2 well is  
24 drilled?

25 A. Correct.

1           Q.    And what happens in this correlative lower  
2    Wolfcamp interval that we're discussing?

3           A.    The Number 2 well was completed in the same lower  
4    Wolfcamp pay interval.  Some of the interval that was  
5    completed and perforated, which is highlighted by the red  
6    in the wellbore track, is correlative to the Number 1 well,  
7    and this well had an initial flowing tubing pressure which  
8    was on the same size choke or orifice as the Number 1 well,  
9    even though the Number 1 well had seemingly been depleted.

10          Q.    Your conclusion is, then?

11          A.    That the Number 1 well did not, you know,  
12    pressure drain even correlative units to the Number 2 well  
13    during its producing life.

14          Q.    Let's move up the log to the turquoise-shaded  
15    intervals, which are generally identified as this upper fan  
16    complex.

17          A.    Correct.

18          Q.    Make the comparison here in the Number 1 well and  
19    the Number 2 well.

20          A.    The comparison is that in general there's more  
21    correlation between the two wells of these clean carbonates  
22    in what we've labeled the upper fan complex.  But once  
23    again, seemingly they were not pressure depleted -- or  
24    severely pressure depleted by the production from the  
25    Number 1 well.

1 Q. Is there evidence on this display that supports  
2 that opinion?

3 A. Yes, in that some of those intervals were  
4 perforated. And as I stated, the initial flowing tubing  
5 pressure for the Number 2 well was almost 4000 pounds,  
6 compared to initial flowing tubing pressure of only about  
7 3000 pounds in the Number 1 well, at the same size choke, a  
8 12/64-inch choke.

9 Q. Had these correlative intervals in the upper fan  
10 complex been in communication, what would have happened to  
11 the pressure in the Number 2 well?

12 A. We would have expected pressure similar to the  
13 pressure at the end of the producing life of the Number 1  
14 well.

15 Q. And you did not?

16 A. And we did not.

17 Q. It was higher?

18 A. It was higher.

19 Q. By how much, higher?

20 A. Almost 1000 p.s.i.

21 Q. Is there a geologic explanation for the fact that  
22 wells 2300 feet apart are not in pressure communication in  
23 this upper fan complex?

24 A. Yes. I think the main explanation for  
25 correlative intervals not experiencing the pressure

1 depletion are the permeabilities and, if you note on the  
2 Number 2 well, there's some annotation, RSWC. Those are  
3 rotary sidewall cores that were taken from some of these  
4 clean carbonates.  $\phi$  is the porosity,  $k$  is the  
5 permeability.

6 All of these samples exhibited permeabilities of  
7 less than 1 millidarcy.

8 Q. When we go back to Exhibit Number 3, you have  
9 described a two-well example within Section 28. Is the  
10 example you've used to support your conclusions unique to  
11 Section 28?

12 A. No.

13 Q. Is there other examples in the pool that  
14 illustrate this same evidence for which you have support  
15 for your conclusions?

16 A. Yes.

17 Q. Let's turn to Exhibit Number 5 and look at  
18 another area of the pool. Is Exhibit Number 5 color-coded  
19 and prepared using the same methodology as you used to  
20 prepare Exhibit Number 4?

21 A. Yes, same annotation scheme.

22 Q. You have four wells on this cross-section for  
23 this display, right?

24 A. Correct.

25 Q. Starting from right to left, let's orient the

1 Examiner and have you identify each of the wells and give  
2 us a short summary.

3 A. Okay. This is stratigraphic cross-section B-B'.  
4 Starting from right is the Red Hills Unit Number 2 well,  
5 which is situated in the northeast quarter of Section 5 of  
6 Township 26 South, Range 33 East.

7 Progressing to the left is the Red Hills Unit  
8 Number 1 in the southeast of Section 32, the township to  
9 the north. This well is also the discovery well for the  
10 pool.

11 The next well to the left is the Red Hills Unit  
12 Number 4. It's a well we recently drilled, currently  
13 completing in the Devonian.

14 And finally is the Red Hills Unit Number 3 on the  
15 left side of the cross-section, which is in the southwest  
16 quarter of Section 5 of Township 26 South, Range 33 East.

17 Q. Okay, let's start with the one on the far left,  
18 the Red Hills Unit 3. This well is drilled through all the  
19 Wolfcamp intervals, originally was drilled to the Devonian,  
20 I believe?

21 A. Correct.

22 Q. It currently produces from what interval?

23 A. From the upper Wolfcamp, you can see on the very  
24 far left of the cross-section the perforated interval in  
25 the Number 3 is from 13,017 to 13,292 feet, selected perfs

1 within that gross interval.

2 Q. Those current perforations are above the top of  
3 the vertical limits for the Red Hills-Wolfcamp Gas Pool,  
4 correct?

5 A. Correct, they're above the bold orange line,  
6 which is also labeled "Datum".

7 Q. Okay. You have not tested the Wolfcamp pool  
8 interval in this well, have you?

9 A. No, sir.

10 Q. You have the modern log that you have annotated  
11 and correlated?

12 A. Correct.

13 Q. All right. Let's go to the Number 4 well. This  
14 is the well in Section 32 that is only 1458 feet west of  
15 the discovery well, correct?

16 A. Correct.

17 Q. The discovery well is the Number 1. It commenced  
18 producing when?

19 A. It was completed in 1964 as a dual Atoka-Lower  
20 Wolfcamp producer. It's currently producing only from the  
21 lower Wolfcamp.

22 Q. When we look at the total accumulated gas  
23 production from the Wolfcamp for the discovery well, what  
24 total volume do you have reported?

25 A. The cumulative production is 13 BCF and 436,000

1 barrels of condensate.

2 Q. Moving back to the Number 4 well, this well is  
3 the well that's being drilled now, and you're testing or  
4 trying to complete in the Devonian?

5 A. Correct.

6 Q. During the course of drilling that well, did you  
7 take advantage of the opportunity to test in any fashion  
8 the Wolfcamp interval in the Red Hills-Wolfcamp Gas Pool?

9 A. Yes, we did.

10 Q. What did you do?

11 A. Well, a number of things happened. While  
12 drilling the well, we experienced very strong gas shows in  
13 the lower part of the lower Wolfcamp pay. So in this  
14 darker blue interval right above the base of the pay  
15 interval, the unconformity line.

16 Subsequent to drilling that section of the hole,  
17 we took wireline pressure test measurements as well as  
18 rotary sidewall cores from within the lower Wolfcamp  
19 interval.

20 Q. Let's compare the 1 and the 4 well and go back to  
21 your first geologic conclusion, which is that in the lower  
22 Wolfcamp portion of this pool there are Wolfcamp intervals  
23 that have sufficient gas accumulation to be produced by an  
24 optional second well that were not available for production  
25 in the parent well. True?

1           A.    True.

2           Q.    Show us how this illustrates that.

3           A.    This zone at the very base of the lower Wolfcamp  
4   in the Red Hills Unit Number 4 -- so the lowest, most dark-  
5   blue color fill -- is not present or is not correlative --  
6   the correlative unit doesn't exist in the Red Hills Unit  
7   Number 1.

8                   We experienced very strong gas shows while  
9   drilling from this interval. The RFT pressure  
10   measurements, which are valid, measured 10,574 p.s.i.,  
11   which is practically virgin pressure, that the Red Hills  
12   Unit Number 1 well experienced in different intervals  
13   within the lower Wolfcamp.

14                   And that same unit also exists in the lower part  
15   of the lower Wolfcamp in the Red Hills Unit Number 3, but  
16   not tested.

17           Q.    Okay, go back to the discovery well, the log for  
18   the Number 1. Look above the base of the pool, which is  
19   the red squiggly line, and you see an interval that has a  
20   perforation symbol in red?

21           A.    Correct.

22           Q.    That lower Wolfcamp interval has been accessed  
23   and produced for what, some 35 years?

24           A.    Correct.

25           Q.    When we move over to the Number 4 well and look



1 at that correlative interval, despite the discovery well  
2 producing for some 35 years, what did you find the pressure  
3 to be in the interval in the Number 4 well?

4 A. Our RFT measurements in that correlative interval  
5 were all greater than 6200 p.s.i. Those pressure  
6 measurements -- We did not reach a stabilized reservoir  
7 pressure. If you look across the log track at the rotary  
8 sidewall core permeabilities, very low permeability, .027,  
9 .018 millidarcies. It would have taken an exorbitant  
10 amount of time for us to allow the pressure buildup to  
11 reservoir pressure.

12 But what we can state is that the minimum  
13 pressure in that reservoir, which is correlative to the  
14 Number 1 well, exceeds 6200 p.s.i.

15 Q. Okay. In your opinion, is it necessary to have  
16 the Number 4 well available for production in this zone, in  
17 order to recover gas that might not otherwise be produced  
18 by the discovery well?

19 A. Yes, it is.

20 Q. And this pressure differential over that 1400  
21 feet is of sufficient magnitude to support that conclusion?

22 A. Yes.

23 Q. Let's continue up the wellbore and make the same  
24 comparison in the 1 and the 4 well when we get to the  
25 turquoise-coded intervals. What's occurred here?

1           A.    These intervals, like with the previous cross-  
2    section, are more correlative between the two wells.  And  
3    you can see in the Red Hills Unit Number 1, coded again by  
4    the red boxes, intervals that were perforated, we tested  
5    and cored some of those intervals in the Red Hills Unit  
6    Number 4, pressure-tested.  And like with the lower part of  
7    the lower Wolfcamp, we witnessed pressures exceeding 6000  
8    p.s.i. from those intervals that are correlative to  
9    intervals in the Number 1 well.

10          Q.    Is there a geologic explanation for the pressure  
11   fact that the discovery well in this interval on average  
12   has slightly over 2100 pounds?  You move 1400 feet away,  
13   and you get a pressure that's about 2 1/2 time higher.

14          A.    I think the explanation is, the permeability of  
15   these reservoirs is quite low, and so we have witnessed  
16   some pressure drawdown, but it's very inefficient.

17          Q.    Geologically, what is your conclusion, then,  
18   about the optimum opportunity to develop this resource in  
19   terms of the number of wells per section?

20          A.    Well, because of the reservoir characteristics,  
21   low permeability, the lenticular nature of some of these  
22   clean carbonate beds, my conclusion is that you need at  
23   least two wells per section to capture the reserves in this  
24   lower Wolfcamp reservoir system.

25          Q.    Let's turn to Exhibit Number 6 and have you

1 identify and describe Exhibit Number 6.

2 A. Exhibit Number 6 is also an isopach map. The  
3 contour interval is ten feet. And this is a summation --  
4 This map represents a summation of the clean carbonates  
5 within this lower Wolfcamp interval, pay interval. So  
6 within the interval that was mapped on the previous isopach  
7 map, we are now being discrete as just counting clean  
8 carbonate beds.

9 You can see the values range from about zero to  
10 70-plus feet. And like with the other map, there's a  
11 general thick depicted through the center part of the  
12 mapped area, in or about which most of the production is  
13 centered.

14 Q. What's the criteria that causes this to be called  
15 a net map?

16 A. The criteria are mainly just clean carbonate. We  
17 did not apply a porosity cutoff because typically the  
18 porosities are low.

19 Q. So in order to have a value for contour purposes,  
20 let's take the Number 2 well in Section 5. On Exhibit 6 it  
21 shows 65 feet?

22 A. Correct.

23 Q. That is your sum total of the net clean carbonate  
24 that you have added up from looking at the log that is  
25 shown on Exhibit 5 for that well?

1           A.    Correct.

2           Q.    And so --

3           A.    Applied a gamma-ray cutoff of approximately 50  
4 API units.

5           Q.    And so when we look at the Number 2 well on  
6 Exhibit 5, the one on the far right, within the vertical  
7 limits of the pool what are you adding together to give you  
8 the 65 feet?

9           A.    Basically the darker blue and turquoise-shaded  
10 intervals, the clean carbonates depicted by that shading.

11          Q.    Once you sum those totals and provide an isopach  
12 of this fashion, then it becomes a data point by which the  
13 petroleum engineer can make some assessments using  
14 volumetric calculations of hypothetical drainage areas?

15          A.    That is correct.

16          Q.    Let's look at your Exhibit Number 6 and have you  
17 describe for us future opportunities in the pool that may  
18 be made more convenient if the well-location requirements  
19 are relaxed.

20          A.    Well, certainly a well in Section 33, the most  
21 optimal location would be as far as we could get in the  
22 northwest quarter of the section, to be as proximal or near  
23 to the isopach thick as we could achieve.

24          Q.    So would you use this isopach for this pool in  
25 the same way we would use a net-pay isopach? You would

1 look for the thickest point?

2 A. Correct.

3 Q. Is there a structural component to the reservoir  
4 that matters to you?

5 A. No, structure is very subtle, and none of these  
6 wells that are completed in the lower Wolfcamp produce  
7 appreciable water. There doesn't seem to be a water leg.

8 Q. So there's no water factor or component to  
9 influence your decision about locations?

10 A. No.

11 Q. Are there already a number of unorthodox well  
12 locations in the pool?

13 A. Yes, there are five unorthodox locations in the  
14 pool.

15 Q. Out of a well population of -- What was it,  
16 seven?

17 A. Seven completions in the lower Wolfcamp.

18 Q. So five of the seven are at unorthodox locations?

19 A. Correct.

20 Q. And some of them are more aggressive than 660,  
21 are they not? I believe the discovery well is closer,  
22 isn't it?

23 A. It's 330 from the south line, 2310 from the east  
24 line.

25 Q. All right, Mr. Emery, summarize for us your

1 conclusions, why you think it's appropriate to modify the  
2 pool rules for this pool at this time.

3 A. Our summary is that because of the reservoir  
4 quality within -- of the clean carbonates within the lower  
5 Wolfcamp pay interval, that being the low permeabilities we  
6 witness -- and these are all core permeabilities -- as well  
7 as the lenticular nature or heterogeneity of the clean  
8 carbonates, that one well per 640 acres does not  
9 efficiently drain the hydrocarbons from the lower Wolfcamp  
10 pooled interval.

11 MR. KELLAHIN: That concludes my examination of  
12 Mr. Emery. We move the introduction of his Exhibits 3  
13 through 6.

14 EXAMINER CATANACH: Exhibits 3 through 6 will be  
15 admitted as evidence.

16 EXAMINATION  
17 BY EXAMINER CATANACH:

18 Q. Mr. Emery, I was looking at Exhibit Number 4, and  
19 specifically at the Number 2 well, and there's an interval  
20 in the lower fan complex that apparently was not -- Was it  
21 not perforated? Or there's two intervals, the second and  
22 third from the bottom.

23 A. That is correct.

24 Q. Do you know why those were not produced in that  
25 lower interval?

1           A.    To some degree, yes. We took over operations  
2    from Unocal in approximately -- or Spirit 76, approximately  
3    the end of 1997. When they drilled this well, they had  
4    some drilling difficulties, and at that particular point in  
5    the well, they set a cement plug and sidetracked.

6                   And some annotations in the file and on some of  
7    the logs that are in the file indicated that that was  
8    across the sidetrack interval, and that was the reason that  
9    they did not perforate and try to produce that particular  
10   interval in the 28 Number 2.

11           Q.    Doesn't have anything to do with the productive  
12   capability of that interval?

13           A.    To my knowledge, no. There was a rotary sidewall  
14   core taken from one of those intervals, which demonstrates  
15   permeabilities that are low, but no worse than some other  
16   things that were perforated.

17           Q.    So would you expect that interval to be  
18   productive?

19           A.    Yes.

20           Q.    Some of the other intervals in the -- what you're  
21   calling the upper complex, appear to be fairly thin zones  
22   that are not correlatable from well to well. Would you  
23   expect some of those zones to be productive?

24           A.    Yes. I'll call your attention to the Red Hills  
25   Unit Number 1. There is a drill stem test that covered a

1 long interval but tested some of those relatively thin  
2 upper fan complex clean carbonates only, and at the end of  
3 the test it was flowing at a rate of approximately 12  
4 million cubic feet per day. The final shut-in pressure was  
5 10,400 p.s.i. We think that evidences some of the  
6 productive capabilities of these relatively thin, tight  
7 carbonate units.

8 Q. That DST was just of the upper complex?

9 A. Correct. The base of the DST interval is at the  
10 base of the kind of red-orange box that you see in the  
11 wellbore track at 13,499.

12 Q. On that same exhibit, the lowermost zone, it  
13 appears that that zone was not produced in the Red Hills  
14 Unit Number 2; is that correct?

15 A. That is correct.

16 Q. Do you know why that may not have been produced?

17 A. I have no knowledge as to why that was not  
18 perforated. I think you're pointing at something that  
19 was -- in the Number 2, was perforated on either side, but  
20 not perforated above and below.

21 Q. Do you know what the original reservoir pressure  
22 generally would have been in this interval?

23 A. Our best guess is the drill stem test from the  
24 Red Hills Unit Number 1. The initial pressure was 11,280  
25 pounds, the final shut-in pressure was 10,400 p.s.i.



1           We witnessed in the Red Hills Unit Number 4, in  
2           its lowestmost interval, 10,574 p.s.i.

3           So somewhere between 10,400 and 11,000 p.s.i. is  
4           probably the original reservoir pressure.

5           Q.    So in the Red Hills Unit Number 4, that lowermost  
6           interval, you think that that's virgin pressure?

7           A.    Yes.

8           Q.    So you don't feel like that zone has been  
9           produced by any other well?

10          A.    No.

11          Q.    Tell me what you think the potential is for  
12          drilling wells out here. Is there going to be two wells?  
13          And in which sections, do you think?

14          A.    Depending on the completion -- Well, to begin  
15          with, we would like to recomplete the Red Hills Unit Number  
16          3 into this reservoir system. We think that's an  
17          opportunity that we have a wellbore in already.

18                At some later date we would like to have the  
19          ability to produce things we already seen in the Red Hills  
20          Unit Number 4 also, either by recompleting in this well or  
21          drilling a close offset to this well to capture those  
22          reserves that we see in this well.

23                Section 33 is undrilled, but if successful with  
24          the first well in the northwest of Section 33 we would  
25          certainly strongly consider a second well, probably in the

1 southwest of Section 33.

2 Q. Do you know why 33 -- Was there never a well  
3 drilled in 33?

4 A. No, sir.

5 Q. Do you know why not?

6 A. The Red Hills Unit Number 1 and 2 wells have  
7 produced, combined, almost 32 BCF of gas, and the fear was  
8 that -- or Unocal's interpretation was that those two wells  
9 had drained a substantially large area and that a well in  
10 33 would probably experience depletion due to that  
11 production.

12 Also, I think until recently, establishing the  
13 trend or orientation of the thick within this Wolfcamp has  
14 only been achieved by some of the recent well activity,  
15 especially to the north.

16 Q. So do you think there's any potential up in  
17 Sections 28 or 21?

18 A. Yes, sir. We do not currently have any  
19 leaseholds in Section 21, but it certainly seems to me that  
20 there is an opportunity in the northern half of Section 21  
21 for a well location.

22 Twenty-eight, another possible well location in  
23 the southwest. And a well location in the southeast of  
24 Section 29, which is outside of the pool.

25 Q. Do you know of any geologic reason why the upper

1 and lower Wolfcamp were segregated?

2 A. By pressure. The lower Wolfcamp is  
3 overpressured, as you've witnessed, and the upper Wolfcamp  
4 typically has a lower pressure gradient, almost a normal  
5 pressure gradient, .45 p.s.i. per foot.

6 EXAMINER CATANACH: I have no further questions.

7 Mr. Kellahin?

8 MR. KELLAHIN: Mr. Examiner, our last witness is  
9 Mr. Gary Chandler. Mr. Chandler is a petroleum engineer.

10 GARY CHANDLER,

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

13 DIRECT EXAMINATION

14 BY MR. KELLAHIN:

15 Q. For the record, sir, would you please state your  
16 name and occupation?

17 A. My name is Gary Chandler. I am a reservoir  
18 engineer for Matador E&P Corporation in Dallas, Texas.

19 Q. As part of your employment responsibilities for  
20 Matador, have you looked at the production and pressure  
21 information that's available from the various wells in the  
22 Red Hills-Wolfcamp Gas Pool?

23 A. Yes, sir, I have.

24 Q. And based upon your study of that information,  
25 are you able to reach engineering conclusions which support

1 the geologic conclusions that Mr. Emery just expressed for  
2 us?

3 A. Yes, sir.

4 MR. KELLAHIN: We tender Mr. Chandler as an  
5 expert reservoir engineer.

6 EXAMINER CATANACH: He is so qualified.

7 Q. (By Mr. Kellahin) Let's talk generally, Mr.  
8 Chandler, about the reservoir, and one of the first topics  
9 is to ask you whether or not you took Mr. Emery's net clean  
10 carbonate isopach and attempted to do some simple  
11 volumetric calculations?

12 A. Yes, I did.

13 Q. And you've completed that work?

14 A. Yes.

15 Q. Let's look at it. Have you formatted it in the  
16 form of a display?

17 A. Yes, I have.

18 Q. And how is that display identified?

19 A. I believe it's --

20 Q. Number 7, I believe it is?

21 A. -- Number 7, yes.

22 Q. All right. For each of the sections within the  
23 pool, you have information with regards to how many wells,  
24 and you've gone through a various summary of data points?

25 A. Yes, sir.

1           Q.    When we look at the far right side, if you assume  
2           a 75-percent recovery factor, then the numbers in that far  
3           right column will represent estimated areas drained by the  
4           wells in that section?

5           A.    Correct.

6           Q.    All right.

7           A.    Also, it's from the GUR, not just the cum  
8           production, it's the GUR.

9           Q.    All right.  You're estimating the ultimate gas  
10          recovery for those wells?

11          A.    Estimating -- Right, yes, sir.

12          Q.    Let's start in Section 28.  This is the two-well  
13          comparison that Mr. Emery had for us of the 28-1 and -2  
14          well.  These wells are 2300 feet apart.  When you do your  
15          volumetric calculation, those two wells, using this  
16          analysis, have drained approximately how many acres?

17          A.    Approximately 78 acres.

18          Q.    When you look up in Section 1 that is the  
19          abandoned well that has the Enron name associated with it,  
20          in Section 21 --

21          A.    Section 21, yes.

22          Q.    Yeah, that's the well, the data point for that  
23          well?

24          A.    Yes.

25          Q.    And you calculated it was so poor it barely

1 recovered one acre?

2 A. Right.

3 Q. All right. So for that general area of the pool,  
4 what is your engineering conclusion about the necessity for  
5 a second optional well in a section?

6 A. I think it's fairly conclusive that you need a  
7 second optional well to develop the reserves.

8 Q. When we look at Mr. Emery's cross-sections, there  
9 is a lot of pressure data on those exhibits, is there not?

10 A. Yes, sir.

11 Q. And that's information that you're ultimately  
12 familiar with and have participated in evaluating; is that  
13 not true?

14 A. Yes, sir.

15 Q. When we look at the comparison between the wells  
16 in Section 28, the 1 and the 2 --

17 A. Yes.

18 Q. -- there, in fact, is a substantial difference  
19 with regards to the pressure between correlative zones in  
20 those two wellbores, is there not?

21 A. Yes, sir.

22 Q. That leads you to what engineering conclusion?

23 A. That at the abandonment of the Number 1 well its  
24 pressure had been depleted, and when the Number 2 well was  
25 drilled you came in at essentially virgin pressure, and

1 that 2300 feet away.

2 Q. That tells you what with regards to the necessity  
3 for additional wells within a section?

4 A. That in this case you needed at least two wells  
5 to drain the reserves.

6 Q. You have tabulated estimated drainage areas for  
7 nine sections, right?

8 A. Yes, sir.

9 Q. And of the nine sections, only two of those  
10 sections have had wells that would produce more than 320  
11 acres of gas using this analysis; is that true?

12 A. That's correct.

13 Q. Let's look at those two wells. One has 580 acres  
14 associated with it. It's in Section 32. That is the  
15 discovery well, isn't it?

16 A. That's correct.

17 Q. When we look immediately to the south, the Number  
18 2 well in Section 5 has, using this method, an acreage  
19 drained associated with it of 965 acres?

20 A. That's correct.

21 Q. So those wells are how far apart now? They're  
22 about 1480 feet apart?

23 A. About -- That's correct.

24 Q. So in combination, those two wells have enjoyed  
25 the opportunity to drain approximately 1400, 1500 acres?

1           A.    1500 acres, more or less, yes, sir.

2           Q.    Yet 35 years later, Matador can come along and  
3   test the Number 4 well, which is 1458 feet away from the  
4   discovery well, and get a substantial pressure differential  
5   in these intervals that are supposed to be drained?

6           A.    Correct.

7           Q.    And the Number 4 well would have been within the  
8   hypothetical drainage area of the Number 1 and Number 2  
9   well?

10          A.    Correct.

11          Q.    Well, how do you explain this?

12          A.    There is perhaps a permeability barrier, a  
13   baffling, between the Number 1 well and Number 4 well.

14          Q.    Would the fact that you can calculate 965 acres  
15   drained by the Number 2 well in Section 5, would that cause  
16   you to believe that you shouldn't also explore the  
17   opportunity for a second well in that section?

18          A.    No. Again, this is a very simplistic volumetric  
19   calculation, assuming only a net clean carbonate. There's  
20   a possibility that more of the interval is contributing  
21   than that.

22          Q.    Okay, let's look at that interval on Exhibit  
23   Number 5. Mr. Emery's got lots of pressure information  
24   available to us.

25                Describe for us, Mr. Chandler, the type of data



1 that you utilize as a reservoir engineer to come to your  
2 reservoir engineering conclusions about the necessity for a  
3 second well within these sections.

4 A. Well, the first thing I did -- or one of the  
5 things I did was, from the Red Hills Unit Number 1, in  
6 March of 1994 there was a buildup performed by Unocal at a  
7 maximum shut-in bottomhole pressure of 2158 p.s.i. after  
8 164 hours. If you correct that to the midpoint of perfs,  
9 it gives a max shut-in bottomhole pressure of 2714.

10 If you do the calculations to come up with  
11 average reservoir pressure at that time, it was 2750 p.s.i.  
12 And this, again, was March of 1994. In the zones that are  
13 open in the 1 and -- or that are correlatable to the 1 and  
14 4, that would be essentially to those 6200- to 6700-p.s.i.  
15 zones from the RFT points.

16 So we're over twice as high from a 1994 data  
17 point that should be lower than that by now, since the well  
18 has been producing since then.

19 And also, a pressure buildup analysis was done on  
20 the Red Hills Number 2 in August of 1998. At that point in  
21 time, in the Number 2, the average reservoir pressure  
22 showed 1890 p.s.i., again from the -- this is from the  
23 total zone, obviously, since it's -- you know, total  
24 perforated zone. But that would compare to the 6200 to  
25 6700 p.s.i. from the RFTs.

1           Q.    What does that tell you about the necessity to  
2   have an optional second well in the section?

3           A.    That at this point, that at 1400 feet away,  
4   you're not efficiently draining it, and you need a second  
5   well in the section.

6           Q.    Would that second well afford the opportunity to  
7   recover gas that might not otherwise be produced?

8           A.    Yes, sir.

9           MR. KELLAHIN: That concludes my examination of  
10   Mr. Chandler. We move the introduction of his Exhibit  
11   Number 7.

12           EXAMINER CATANACH: Exhibit Number 7 will be  
13   admitted as evidence.

14   EXAMINATION

15   BY EXAMINER CATANACH:

16           Q.    Mr. Chandler, have you an explanation why those  
17   two wells in Section 32 -- the one in Section 32 and the  
18   one in Section 5 -- drain such a large area?

19           A.    Kind of. As Mr. Emery said, this is an  
20   overpressured zone, and it's so overpressured that it looks  
21   very close to frac gradient. It seems to me there's a  
22   possibility that in localized spots in this reservoir, you  
23   kind of fractured that whole gross interval, and instead of  
24   just the net clean carbonate contributing, you've got a  
25   fracture system that's extensive enough that allows the

1 whole system to contribute into these fracture systems,  
2 which may pick up another one to two percent porosity over  
3 the whole 360-foot interval. That would cut these acreages  
4 by more than half, if you look at it that way.

5 That's one explanation. And Martin is still  
6 working on that to -- you know, to see if that's a valid  
7 kind of assumption.

8 Q. Well, why would that just have an effect on those  
9 two wells?

10 A. My guess is that there's only spots in the  
11 reservoir that this happens, that you develop this -- as  
12 you're developing this overpressuring, that the rock breaks  
13 at certain points and doesn't at other points. Otherwise,  
14 I would expect all the wells to have been, you know,  
15 boomers.

16 That's -- it kind of fits -- or to my mind, it's  
17 fitting together that if you have kind of a low matrix  
18 permeability and where you're getting this extra  
19 fracturing, you can get very, very good wells. Where you  
20 get just a little bit of that fracturing you can get, you  
21 know, certainly economic wells, but you aren't going to get  
22 anything like 25-BCF wells, but certainly economic to  
23 drill.

24 So that's what we're hoping for.

25 Q. It's fairly odd that the first well that you're

1 hoping to recomplete, the Number 3, is in the section  
2 that's supposedly drained 965 acres.

3 A. Yeah.

4 Q. Do you anticipate that there are substantial  
5 reserves in Section 5 that remain to be recovered?

6 A. Yes, based on the -- I mean, the Number 4 being  
7 so close to the 1 and 2 wells, before you drilled it you  
8 wouldn't have thought you could have had, you know, one  
9 zone with basically virgin pressures and the others with,  
10 you know, still up to 6500 p.s.i. So we're certainly  
11 hopeful that there's substantial reserves yet to be  
12 recovered there.

13 Q. Have you done any kind of estimation on those  
14 reserves?

15 A. I have for the zone on the Number 4, the high  
16 pressure zone, the 10,574-p.s.i. zone. That's about 3.4  
17 BCF.

18 On the 6500-p.s.i. zone from the Number 4 well  
19 it's about 3 BCF.

20 Q. But you haven't done any estimates for the Number  
21 3 well?

22 A. I have not done any estimates for the Number 3,  
23 no.

24 Q. Now, the Number 4 well, it's a Devonian well?

25 A. Yes, sir.

1 Q. You just finished drilling it?

2 A. We've just finished drilling it. It is not  
3 completed yet in the Devonian, but it's drilled and cased  
4 at the Devonian, yes, sir.

5 Q. Well, do you anticipate producing the Devonian  
6 for --

7 A. As long as we -- Yes. Yes, sir.

8 Q. Before you come up and recomplete?

9 A. Before we come up and recomplete to the Wolfcamp,  
10 yes, sir.

11 Q. You're not going to attempt to dual complete or  
12 anything like that?

13 A. No, sir. I should say, not at this point. We're  
14 going to start off with a single in the Devonian, and  
15 depending what that looks like, there's the possibility of  
16 a dual. But most likely, we'll just wait and produce it  
17 from the -- You know, after the Devonian is completed.

18 EXAMINER CATANACH: I believe that's all I have  
19 of the witness, Mr. Kellahin.

20 FURTHER EXAMINATION

21 BY MR. KELLAHIN:

22 Q. Let me ask you for purposes of the record to  
23 estimate for us what your recollection is of the current  
24 producing rates on the discovery well. What's that current  
25 rate?

1 A. On the discovery well it's about 250 MCF per day.

2 Q. And on the Number 2 well in Section 5, it's still  
3 producing at what rate?

4 A. About 750 MCF per day.

5 EXAMINER CATANACH: In Section 5, that would be  
6 the --

7 MR. KELLAHIN: -- the Number 2.

8 THE WITNESS: -- Number 2.

9 EXAMINER CATANACH: I'm sorry, 7?

10 THE WITNESS: 750, yes, sir.

11 MR. KELLAHIN: Mr. Examiner, the only matter  
12 remaining is the introduction of the certificate of  
13 notification. It's Exhibit Number 2. We would ask that  
14 that exhibit be admitted at this time.

15 EXAMINER CATANACH: Exhibit Number 2 will be  
16 admitted as evidence.

17 MR. KELLAHIN: That concludes our presentation.

18 EXAMINER CATANACH: Okay. Mr. Kellahin, the only  
19 problem I see remaining is the operator in Section 21. I  
20 don't know who that is.

21 MR. KELLAHIN: I don't know the status of the  
22 well. I assume by inactive that it didn't require notice,  
23 but I'll recheck that to see what the status is of that  
24 section.

25 EXAMINER CATANACH: Well, apparently it's not

1 plugged, so if it's still out there and it is a Wolfcamp  
2 well, that operator probably should be provided notice.

3 MR. KELLAHIN: We'll check into it and advise  
4 you, Mr. Examiner.

5 EXAMINER CATANACH: So why don't we -- Let me go  
6 ahead and continue the case for two weeks, and then you can  
7 advise me as to the status of that in a couple of weeks.  
8 If you do provide notice to somebody, we may need to  
9 continue it an additional, two weeks after that.

10 MR. KELLAHIN: Let's see what happens to the  
11 research, and if it's still a wellbore in the Wolfcamp,  
12 we'll contact Enron and see if they have any objection to  
13 what we're doing.

14 EXAMINER CATANACH: Okay. There being nothing  
15 further, we'll continue the case for two weeks.

16 (Thereupon, these proceedings were concluded at  
17 9:39 a.m.)

18 \* \* \*

19  
20  
21 I do hereby certify that the foregoing is  
22 a complete record of the proceedings of the  
23 the Examiner hearing of Case No. 12355,  
24 heard by me on May 16, 1990.

25  
David R. Catnach  
Off Conservation Division

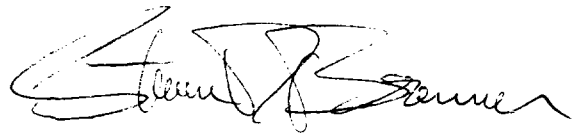
## CERTIFICATE OF REPORTER

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 March 18th, 2000.



STEVEN T. BRENNER  
CCR No. 7

My commission expires: October 14, 2002