

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: )  
APPLICATION OF MALLON OIL COMPANY FOR )  
APPROVAL OF A PILOT PROJECT INCLUDING )  
UNORTHODOX WELL LOCATIONS AND EXCEPTIONS )  
TO DIVISION RULE 104.C.(3) FOR THE )  
PURPOSE OF ESTABLISHING A PILOT PROGRAM )  
IN THE PICTURED CLIFFS AND TERTIARY )  
FORMATIONS TO DETERMINE PROPER WELL )  
DENSITY REQUIREMENTS FOR PICTURED CLIFFS )  
AND TERTIARY FORMATION WELLS IN RIO )  
ARRIBA COUNTY, NEW MEXICO )

CASE NO. 12,892

COPIES OF THIS REPORT  
DATE: JUL 11 2002

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

July 11th, 2002

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, July 11th, 2002, at the Aztec City Council Chamber, Aztec City Hall, 201 West Chaco, Aztec, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

\* \* \*

STEVEN T. BRENNER, CCR  
(505) 989-9317

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 Examiner Hearing  
 CASE NO. 12,892

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\* \* \*

## ALSO PRESENT:

STEVEN HAYDEN  
Geologist  
Aztec District Office (District 3)  
NMOCD

WAYNE TOWNSEND  
Petroleum Engineer  
Farmington Field Office, BLM

\* \* \*

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1           WHEREUPON, the following proceedings were had at  
2           9:32 a.m.:

3           EXAMINER STOGNER: This hearing will come to  
4           order. At that time I'll call Case Number 12,892. This is  
5           the Application of Mallon Oil Company for approval of a  
6           pilot project including unorthodox well locations and  
7           exceptions to Division Rule 104.C.(3) for the purpose of  
8           establishing a pilot program in the Pictured Cliffs and  
9           Tertiary formations to determine proper well density  
10          requirements for wells in these formations in Rio Arriba  
11          County, New Mexico.

12          At this time I'll call for appearances.

13          MR. CARR: May it please the Examiner, my name is  
14          William F. Carr with the Santa Fe office of Holland and  
15          Hart, L.L.P. We represent Mallon Oil Company, and I have  
16          three witnesses.

17          EXAMINER STOGNER: Any other appearances?

18          Will the witnesses please stand to be sworn?

19          (Thereupon, the witnesses were sworn.)

20          MR. CARR: Mr. Examiner, I have several copies of  
21          our exhibits, extra copies, if anyone would like a copy.

22          May it please the Examiner, Mallon Oil Company is  
23          here today seeking approval of a pilot project for the  
24          purpose of determining proper well-density requirements for  
25          the Pictured Cliffs and Tertiary formations in certain

1 areas in Rio Arriba County, New Mexico.

2 At the outset I think there's one point that  
3 needs to be addressed.

4 Mallon is seeking approval of a pilot project in  
5 the East Blanco-Pictured Cliffs pool and also in the  
6 Cabresto Canyon-Tertiary Pool. Mallon now operates all the  
7 producing wells in the areas which are the subject of this  
8 Application. The area, as you will see, has been developed  
9 by Mallon for many years, first with wells to the Pictured  
10 Cliffs, later in other Tertiary formations, the Ojo Alamo,  
11 the Nacimiento and the San Jose.

12 Initially, when wells were going to be completed  
13 in additional horizons -- I'm talking here about the Ojo  
14 Alamo and the Nacimiento -- the Pictured Cliffs wells were  
15 dually completed. The casing was large enough, and that  
16 was an economic and an appropriate way to do it.

17 Later, when other horizons looked prospective and  
18 there were attempts to complete in the San Jose, the casing  
19 was simply too narrow, and so an additional well, a twin  
20 well, was drilled, a shallow well, to complete in the San  
21 Jose. At the time all of this was done, there was one well  
22 per pool.

23 By Order Number 11,445, three pools were  
24 abolished, the Cabresto Canyon-Ojo Alamo Pool, the Cabresto  
25 Canyon-Nacimiento Pool and the Cabresto Canyon-San Jose

1 Pool, and a new pool was created called the Cabresto  
2 Canyon-Tertiary Pool, which combined all of these zones  
3 into one pool.

4 That resulted in a situation where in certain  
5 spacing units there were twin wells, one to the PC and  
6 perhaps Nacimiento or Ojo Alamo, and a twin well that was  
7 completed in the San Jose.

8 We contacted the Oil Conservation Division. The  
9 order that consolidated these pools provided if there were  
10 changes in the spacing units, that there were forms to be  
11 filed, that it was our understanding based on those  
12 conversations that nothing needed to be done in these  
13 twinned-well situations.

14 So when the Application was filed, and the way  
15 the style, you will note that we are seeking authorization  
16 for 25 pilot wells, and we are seeking pilot project wells  
17 and an exception to 401.C. It doesn't seek a second well,  
18 and I didn't ask for a second well because in some  
19 circumstances there are more than two wellbores as a result  
20 of this historical situation.

21 And so to avoid confusion as the presentation  
22 goes forward, you need to know that that's how the  
23 development stands as of this time.

24 Now, as to what we're here for today, as you will  
25 recall, Mr. Examiner, on May 2nd of this year Burlington

1 Resources and others presented a case to the Division, and  
2 they were seeking authorization for a pilot project in the  
3 Pictured Cliffs formation. The purpose of that was to  
4 determine the most effective way to develop this pool, and  
5 then to come back to you and recommend regulatory changes  
6 to accomplish these goals.

7 There were pilot wells that were being proposed  
8 in the central portion of the Basin in the Pictured Cliffs  
9 formation, and that is where Burlington and the other  
10 applicants, BP and Energen, had large leasehold provisions.

11 At that hearing, there were discussions and  
12 questions from you concerning how the Pictured Cliffs  
13 formation would be dealt with in other areas out of this  
14 central portion of the Basin. We were talking at that time  
15 about what were called for the purpose of that hearing  
16 peripheral pools.

17 And the response to your questions was that in  
18 the next year or so Burlington and others would talk to  
19 operators in those areas and determine whether or not by  
20 analogy the general conclusions that would be in the core  
21 of the pool would extend to these peripheral areas.

22 But what we have here is a pool, the East Blanco-  
23 Pictured Cliffs, that clearly, as you'll see, is located in  
24 what we would call the peripheral area, or would be a  
25 peripheral pool.

1           Our purpose today is to implement a pilot project  
2 in four areas within this area to acquire data and study  
3 the results so we can determine and make an informed  
4 decision on whether or not additional regulatory changes  
5 are needed to efficiently and effectively produce the  
6 reserves from the Pictured Cliffs formation, using the best  
7 technology now available.

8           But our Application covers much more than just  
9 the Pictured Cliffs. We are looking at a situation in an  
10 area where approximately 80 percent of the production comes  
11 from the Tertiary formation and not from the PC,  
12 approximately 20 percent from the Pictured Cliffs. And as  
13 you will see, the pilot is designed to obtain information  
14 on the Tertiary formation to get data needed to make sound  
15 future development plans so that what we do in the future  
16 will be conducted in an efficient way.

17           We're seeking approval of 25 pilot wells. But  
18 while the number seems great, remember we're looking at  
19 four distinct areas, and we have four separate formations  
20 or zones that we need to evaluate.

21           Furthermore, we will show you that we're not  
22 intending to drill each and every one of these wells, that  
23 what we're going to be doing will, of necessity, be an  
24 evolving process.

25           The wells are to be located in an area which is

1 within the Jicarilla Apache Nation, it is extremely  
2 complex. We will present a copy of an administrative order  
3 obtained from the Division a year or two ago that  
4 recognized these complexities in terms of attempting to  
5 pick exact well locations, and we're going to ask you to  
6 approve the pilot project on terms that are similar to what  
7 was approved in that administrative order.

8 I will call three witnesses. I will call Don  
9 Erickson, the senior vice president and general manager of  
10 Mallon. He will provide general background information on  
11 Mallon and generally orient us as to the area involved in  
12 this Application.

13 We will then call Steve [sic] Coryell, a  
14 geologist, who's going to review the geological  
15 characteristics of each of the formations and zones which  
16 are the subject of this hearing. As we've been looking at  
17 the last couple of days, we're going to see a reservoir  
18 that is complex and highly discontinuous.

19 Reed Ferrill will then be called, a reservoir  
20 engineer, who's going to provide information on the  
21 individual zone properties, the zone performance, recovery  
22 factors, recoverable reserves, things of that nature, and  
23 show the location of the pilot areas and the pilot wells.

24 And then I'm going to recall Mr. Erickson, who is  
25 going to be able to explain to you how Mallon proposes to

1 implement the proposed pilot project.

2 And with that, and with your permission, at this  
3 time we're ready to call Mr. Erickson.

4 EXAMINER STOGNER: You may continue.

5 DONALD M. ERICKSON,

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

8 DIRECT EXAMINATION

9 BY MR. CARR:

10 Q. Would you state your name for the record, please?

11 A. Donald Erickson.

12 Q. And Mr. Erickson, where do you reside?

13 A. Highlands Ranch, Colorado.

14 Q. By whom are you employed?

15 A. Mallon Oil Company.

16 Q. And what is your position with Mallon Oil  
17 Company?

18 A. I'm senior vice president and general manager.

19 Q. Have you previously testified before this  
20 Division?

21 A. No, I have not.

22 Q. Could you review for Mr. Stogner your educational  
23 background and work experience?

24 A. I received a two-year degree from the Central  
25 Nebraska Community College, I attended the University of

1 Denver, Colorado, for two years in 1978 through 1980, and I  
2 have been employed in the oil and gas business for the last  
3 26 years.

4 EXAMINER STOGNER: Okay, you're going to have to  
5 speak, because he's going to have to hear you also.

6 THE WITNESS: Okay.

7 Q. (By Mr. Carr) Following your formal education,  
8 for whom have you worked?

9 A. I was employed as a drilling technician with  
10 Kansas-Nebraska Natural Gas Company. Following that I was  
11 employed as a drilling engineer with Davis Oil Company,  
12 Denver, Colorado. After that I was manager of operations,  
13 Riphett Oil Corporation in Denver, Colorado. Following that  
14 I was manager of operations at Valex Petroleum, V-a-l-e-x,  
15 in Denver, Colorado. After that I was self-employed as a  
16 consulting engineer and also as an independent oil  
17 producer. Following that, I became the manager of  
18 operations, the district manager, for Presidio Oil Company.  
19 I was also the manager of operations and district manager  
20 for Tom Brown, Incorporated. And for the last five years  
21 I've been senior vice president and general manager of  
22 Mallon Oil Company.

23 Q. Are you familiar with Mallon Oil Company's  
24 efforts in the San Juan Basin to develop the area which is  
25 the subject of this hearing?

1 A. Yes, I am.

2 Q. And are you familiar with the proposed pilot  
3 project in both the Pictured Cliffs and Tertiary  
4 formations?

5 A. Yes.

6 MR. CARR: We tender Mr. Erickson as an expert  
7 petroleum engineer.

8 EXAMINER STOGNER: Mr. Erickson is so qualified.

9 Q. (By Mr. Carr) Mr. Erickson, initially would you  
10 summarize for the Examiner what it is Mallon Oil Company  
11 seeks with this Application?

12 A. We're seeking approval of a pilot project to  
13 authorize the drilling of up to 25 wells within the pilot  
14 area. The project will be to evaluate the complex geology  
15 and reservoir characteristics of the producing formations,  
16 and we would also ask in the approval that we have the  
17 latitude to relocate certain wells within the pilot spacing  
18 areas to allow for topographic, cultural and archaeological  
19 considerations.

20 Q. Mr. Erickson, what rules currently govern the  
21 development of the Cabresto Canyon-Tertiary pool, as well  
22 as the East Blanco-Pictured Cliffs Pool?

23 FROM THE FLOOR: Could you speak up just a little  
24 bit? I can't hear everything you say.

25 MR. CARR: That may help.

1 EXAMINER BROOKS: No, I don't think the sound  
2 system -- The microphone that the witness has in front of  
3 him is a part of the reporter's recording system, so it  
4 won't help amplify at all.

5 MR. CARR: Well, the air conditioning is off, and  
6 if you'll try --

7 THE WITNESS: I'll try to speak louder.

8 MR. CARR: -- to speak as loudly as you can,  
9 please.

10 THE WITNESS: Okay.

11 Q. (By Mr. Carr) Mr. Erickson, could you just  
12 explain what rules currently govern the development of  
13 these pools?

14 A. Currently Rule 104.C of the General Rules and  
15 Regulations of the Oil and Gas Conservation Division, and  
16 that provides for 160-acre spacing units and proration  
17 units, with the wells to be located at least 660 feet from  
18 the outer boundary of the dedicated quarter section.

19 Q. Are you familiar with the Application recently  
20 filed by Burlington and others for the implementation of a  
21 pilot project in the Pictured Cliffs formation?

22 A. Yes, I've reviewed the transcripts and the  
23 exhibits.

24 Q. Where is the area that was the subject of that  
25 case located, generally speaking, in regard to the property

1 that we're talking about here today?

2 A. Generally, it is north and east of the area that  
3 we're dealing with, and it was over quite an extensive,  
4 large area, across the Basin.

5 Q. And this would be a peripheral pool, as that term  
6 was used in that hearing?

7 A. Under the definition of that Application, yes.

8 Q. Is the testimony you're going to present today,  
9 is it going to overlap with the testimony previously  
10 presented?

11 A. No, it's not.

12 Q. So what we're doing is going to be providing  
13 supplemental or additional information on another portion  
14 of the Pictured Cliffs to the extent we discuss the PC?

15 A. That's correct, yes.

16 Q. Now, the Pictured Cliffs formation is a  
17 significant part of what we're talking about here today; is  
18 that a fair statement?

19 A. Yes, it is.

20 Q. It's only a portion of it, isn't that right?

21 A. Yes.

22 Q. What, in addition, are we -- define exactly what  
23 we're looking at in terms of the formations in addition to  
24 the PC.

25 A. In addition to the Pictured Cliffs, we're looking

1 at the three main members of the Tertiary Pool, the Ojo  
2 Alamo, the Nacimiento and the San Jose.

3 Q. And Mallon has drilled and completed wells in all  
4 of those formations?

5 A. Currently across the area we are the operator of  
6 52,000 contiguous acres. There are currently 136 wells  
7 located on that acreage, and that acreage is in and around  
8 the proposed pilot areas.

9 Q. Is it fair to say that in terms of your  
10 development of these resources, you have reached a point  
11 where, if you're to make meaningful decisions about how to  
12 go forward from this point in time, you have to really step  
13 back and collect some additional data?

14 A. Yes.

15 Q. Let's go to what has been marked for  
16 identification as Figure 1 in the exhibit book, and just  
17 briefly explain what that is and what it shows.

18 A. Figure 1 is an oil and gas depiction of oil and  
19 gas deposits within the San Juan Basin. As you can see,  
20 our increased density pilot project area is on the eastern  
21 to slightly northeastern edge of the San Juan Basin and  
22 encompasses parts of four separate townships on the  
23 Jicarilla Nation.

24 Q. And all of the acreage is on the Jicarilla  
25 Nation?

1 A. Yes, it is.

2 Q. And the area that was covered by the Burlington  
3 Application was in an area that trended generally  
4 northwest-southeast toward the center of the area shaded in  
5 red on this figure?

6 A. That's correct.

7 Q. Let's go to Exhibit Number 2. Would you identify  
8 that?

9 A. Exhibit Number 2 is the current existing spacing  
10 units in and around the proposed pilot areas. On the  
11 exhibit we have identified the four separate pilot areas  
12 with a shading of yellow, green, blue and brown.  
13 Currently, the current spacing units for Pictured Cliffs  
14 and for Tertiary within those proposed pilot areas is 160  
15 acres.

16 Q. And you indicate with the information provided in  
17 each square the wells that are drilled on those spacing  
18 units at this time?

19 A. Yes, we have the well names, the producing  
20 horizons.

21 Q. So if we have -- For example, in Section 30 of 30  
22 North, 3 West, in the southwest quarter, we have the well  
23 464 Number 1. Do you see -- Are you with me?

24 A. Yes.

25 Q. And below that it says PC?

1 A. Yes.

2 Q. And then we have 464, and below that we have SJ.  
3 That means it's a San Jose wellbore?

4 A. Yes, this is the spacing unit that had the  
5 previously mentioned twin wells.

6 Q. Okay. Let's ask you to just generally provide us  
7 with an overview of Mallon's history and effort to develop  
8 this area.

9 A. Mallon's been involved with this property over  
10 the last 16 years and acquired the operations in the are  
11 through acquisition of the remaining working interest  
12 owners in December of 1996. In the last five years, Mallon  
13 has drilled 109 wells on the property, within the last five  
14 years, with production predominantly coming from the  
15 tertiary section. There is PC production also in those  
16 wells.

17 Across the entire property our working interest  
18 ranges from the mid-70-percent range to many times as high  
19 as 100 percent. Across the entire 52,000 acres, though,  
20 our average working interest is 94 percent. And a  
21 substantial remainder of that 6 percent that Mallon is not  
22 the owner of is controlled by a limited partnership that  
23 was formed by Mallon Oil in 1987, and Mallon is the general  
24 partner of that partnership.

25 Q. Were Exhibits 1 and 2 either prepared by you or

1 have you reviewed them and can you testify as to their  
2 accuracy?

3 A. I've reviewed both Figure 1 and 2, and they are  
4 accurate.

5 MR. CARR: Mr. Stogner, at this time I'd move the  
6 admission of Mallon Exhibits 1 and 2.

7 EXAMINER STOGNER: Exhibits 1 and 2 will be  
8 admitted into evidence.

9 Q. (By Mr. Carr) Mr. Erickson, will Mallon call  
10 geological and engineering witnesses to review the  
11 technical portions of this presentation?

12 A. Yes.

13 MR. CARR: That concludes my examination of Mr.  
14 Erickson.

15 EXAMINER STOGNER: Will you be covering the  
16 notification of this issue at a later time?

17 MR. CARR: Well, I have a notice affidavit. I  
18 could address that now if you'd like that now.

19 EXAMINER STOGNER: Was this witness involved in  
20 that?

21 MR. CARR: I actually did the notice affidavit,  
22 Mr. Stogner, and I can tell you who it is and who we  
23 notified. But we notified all PC and Tertiary operators in  
24 the area that is shown in Figure 2.

25 EXAMINER STOGNER: Anybody else notified?

1 MR. CARR: No, just -- we notified -- Let me see  
2 here. No, I notified all operators. I got the list from  
3 the Oil Conservation Division for the operators for those  
4 pools, and that's who I limited it to.

5 EXAMINER STOGNER: Okay, let's go ahead and hear  
6 the rest of the testimony before we address that issue.

7 MR. CARR: Okay.

8 EXAMINER STOGNER: Any questions of this witness?  
9 You may be excused at this time. I may recall.

10 MR. CARR: Thank you, Mr. Stogner. I will recall  
11 him at the end also to talk about long-term plans for the  
12 project.

13 At this time we call George Coryell.

14 GEORGE F. CORYELL,

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. CARR:

19 Q. Would you state your name for the record, please?

20 A. George Coryell.

21 Q. Mr. Coryell, where do you reside?

22 A. Parker, Colorado.

23 Q. And by whom are you employed?

24 A. Geocorps, Inc. providing geological consulting  
25 services to Mallon Oil Company.

1 Q. And are you the geologist that has worked on this  
2 matter and developed the data for Mallon Oil Company?

3 A. Yes, I am.

4 Q. Have you previously testified before the New  
5 Mexico Oil Conservation Division?

6 A. Yes, I have.

7 Q. At the time of that testimony, were your  
8 credentials as an expert in petroleum geology accepted and  
9 made a matter of record?

10 A. Yes, they were.

11 Q. Are you familiar with the Application filed in  
12 this case on behalf of Mallon Oil Company?

13 A. Yes, I am.

14 Q. Have you made a geological study of the area  
15 which is involved?

16 A. Yes, I have.

17 Q. You're the primary prospect geology on this  
18 prospect?

19 A. Yes.

20 Q. For how long have you actually been working on  
21 this project?

22 A. Five years.

23 Q. And were you the geologist involved in the  
24 efforts to initiate the Tertiary development in this area?

25 A. Yes, I was.

1 Q. Are you prepared to share the results of your  
2 work and experience with Mr. Stogner?

3 A. Yes, I am.

4 MR. CARR: Are the witness's qualifications  
5 acceptable?

6 EXAMINER STOGNER: They are.

7 Q. (By Mr. Carr) Mr. Coryell, let's go to what has  
8 been marked as Exhibit 3 -- or Figure 3 in Exhibit 1, the  
9 booklet, and I'd ask you to identify and explain the  
10 information on this exhibit.

11 A. Yes, this is a map of the area identified in  
12 Figure 1. It shows all the wells, all the drilled wells in  
13 the area. The four pilot areas are identified, 1 through  
14 4, yellow, green, blue and brown. The type log location,  
15 which I will discuss, is also shown, up in the northwest  
16 corner.

17 Cross-section lines are shown, which will be  
18 discussed, one each for the Pictured Cliffs and the three  
19 Tertiary formations, the Ojo Alamo, Nacimiento and San  
20 Jose. These cross-sections will be used to illustrate the  
21 formation characteristics in the four pilot areas. And  
22 please note the sequential wells in the cross-sections are  
23 generally direct offsets.

24 Q. Anything further with Figure 3?

25 A. No.

1           Q.    Let's go to Exhibit Number 4, or Figure 4, the  
2 type log.  Would you review the information on this  
3 exhibit, please?

4           A.    This is a type log in the area as located on  
5 Figure 3.  It shows the formations in question.  In  
6 general, it shows a section of multiple stacked sandstone  
7 reservoirs.

8                   Starting with the Pictured Cliffs on the right-  
9 hand side of the page, working up the section, the Pictured  
10 Cliffs, Cretaceous in age, deposited in a marginal marine  
11 environment, prograde sandbar, generally north-south-  
12 trending in the area.

13                   The next formation is the Paleocene Ojo Alamo  
14 formation, interpreted to be deposited in an alluvial- and  
15 fluvial-type environment.  It is a fine-grained to medium-  
16 grained sandstone.

17                   The next formation is the Nacimiento in the  
18 center section of the log.  It is also Paleocene in age.  
19 Lithology is a stacked sequence of fluvial sandstones.

20                   The next formation is the Eocene, shown on the  
21 left-hand side is the Eocene San Jose formation.  The San  
22 Jose does outcrop in the area.  What is shown is from about  
23 900 feet down, from 900 feet to about 2000 feet.

24                   Identified, then, the lower San Jose and the  
25 middle San Jose, which are informal members used by Mallon

1 Oil Company in the area. Both zones are productive.  
2 Again, you see a stacked sequence of sandstones. The  
3 lithology is much coarser-grain -- or medium to coarse --  
4 medium-grain to coarse-grain sandstone in the pay zones.

5 As you can see, the lower San Jose has quite a  
6 bit of sandstone content, the middle -- the lower San Jose,  
7 excuse me. And the middle San Jose does not show as much  
8 sandstone content but does vary greatly, and as you go to  
9 the southeast in the area it develops much more sand  
10 content and is a very good reservoir.

11 In conclusion, what you need to see from this  
12 type log is the multiple target pays in the single  
13 wellbore.

14 Q. Let's go to Figure 5. What is this?

15 A. Figure 5 is an interpreted structure on the top  
16 of the Ojo Alamo formation. It's located on the east flank  
17 of the Basin and displays a west dip, generally west dip.

18 Also shown in the small symbols are the strike  
19 and dip at the surface in the San Jose formation for  
20 reference.

21 Also note the northwest -- north-northwest-  
22 trending dikes. Those are shown with the diamond shapes on  
23 the lines where you have surface expression of these dikes.  
24 These are post-depositional intrusives of miocene age.

25 The structure itself is believed to be a result

1 of the two Laramide events at the Cretaceous-Tertiary  
2 boundary and the Paleocene-Eocene boundaries, and also Rio  
3 Grande rifting of Miocene age.

4 Primary extensional directions in this area is  
5 north-south, where the dikes are preferentially intruded  
6 into zones, and the secondary extensional direction is  
7 thought to be northeast-southwest. You can see some  
8 northeast-southwest features across the area.

9 Also note the red-circled wells which are  
10 connected by the red lines. Those are on the left-hand  
11 side of the map. These are well pairs which have shown  
12 production communication in the Pictured Cliffs. The  
13 Pictured Cliffs is a very fine to fine-grain sandstone,  
14 which would be unlikely to communicate to a 160-acre offset  
15 without permeability enhancement from fracturing.

16 Note that the orientation of these pairs is  
17 parallel to the surface dikes, which is the primary  
18 extensional direction in the are.

19 There's also evidence for fault-sealing in the  
20 area. At the 28 Number 1 well, which is located in the  
21 southwest quarter of Section 28, just to the right of the  
22 Number 2 area there -- it's in the southwest quarter of  
23 Section 28 -- pressure buildup data in the Ojo Alamo there  
24 indicates multiple no-flow boundaries, possibly more than  
25 two, probably more than two. And as you note, it is

1 interpreted to be bounded by three separate faults.

2 Both the Pictured Cliffs and the Ojo Alamo  
3 generally rely on permeability enhancement, for fracturing  
4 for economic production.

5 The north-south orientation of the primary  
6 fracture direction suggests a possible stepout to the east  
7 or west from existing Pictured Cliffs or Ojo Alamo  
8 production, may encounter potentially undrained portion of  
9 the reservoir.

10 Q. All right, let's continue looking at the  
11 deposition and the stratigraphy of these zones, and move to  
12 Figure Number 6, which is the cross-section for the  
13 Pictured Cliffs. The trace of this is shown on Exhibit 3.

14 A. Figure 3.

15 Q. Figure 3.

16 A. Right, this is cross-section K-K', that's how  
17 it's identified on Figure 2. It's located in area 2, I  
18 believe.

19 The Pictured Cliffs in the study area is a north-  
20 south-oriented marginal marine progradational sandbars.  
21 The higher-porosity bar areas, which this section is  
22 entirely within the westernmost bar in the area, are  
23 separated by lower porosity, more clay-rich inter-bar  
24 areas.

25 Fracturing is important to economic production,

1 Pictured Cliffs. Log-indicated porosity and crossover,  
2 while necessary for reservoir do not -- the degree of log-  
3 indicated porosity and crossover do not necessarily display  
4 a direct relationship to well performance, indicating the  
5 importance of fracturing in producibility.

6 Drainage areas therefore are thought to be  
7 elongated along the primary fracture orientation,  
8 suggesting stepouts should be in a perpendicular direction  
9 to that orientation.

10 Q. Go to Figure Number 8 and take a look at the  
11 Nacimiento.

12 A. Figure 7?

13 Q. I'm sorry, I'm jumping ahead of you. Go to  
14 Figure 7 and look at the Ojo Alamo.

15 A. Figure 7 is a cross-section in the Ojo Alamo,  
16 again located on Figure 3, H-H'. The Ojo Alamo in the area  
17 is interpreted to be a coalescing set of alluvial and  
18 fluvial sands. Current production is from the uppermost  
19 sand, formally named the Ojo Alamo U2, the more golden  
20 uppermost sand there on cross-section. Note the variations  
21 in thickness from well to well of that unit.

22 Drainage areas in Ojo Alamo may be irregular and  
23 potentially limited by lateral porosity/permeability  
24 variations due to fracture orientations, depositional  
25 lithologic discontinuities and sealing faults. The Ojo

1 Alamo itself is relatively tight sand, does rely in most  
2 cases on some fracture enhancement and with porosity  
3 ranging from 7 to 14 percent in the pay zones.

4 Q. All right, now let's go and take a look a look at  
5 the Nacimiento.

6 A. This is a cross-section of the Nacimiento  
7 formation in this study area. Again, it's located on  
8 Figure 3, it's cross-section G-G'.

9 One thing to note on this cross-section, that  
10 Wells Number 1 and Number 2 on it are only 1300 feet apart,  
11 and that was due to topographic considerations at the time  
12 they were drilled, and note the rapid changes between 1 and  
13 2.

14 The cross-section displays discontinuous fluvial  
15 sandstone reservoirs with limited areal extent due to rapid  
16 lateral depositional changes. This suggests that increased  
17 drilling -- increased density drilling may encounter  
18 untested reservoir sandstones.

19 Q. So what we have here is a number of discontinuous  
20 producing sands that may not be continuous beyond the  
21 individual wellbores?

22 A. That's correct.

23 Q. Okay.

24 A. Or between 160-acre offsets.

25 Q. Let's take a look now at the last of these

1 subject formations, the San Jose, and I would direct you to  
2 Figure Number 9.

3 A. Figure Number 9 is a cross-section of the San  
4 Jose, Section J-J'. It's located, again, on Figure 3.  
5 Again in here, some wells are closer than the standard 160-  
6 acre spacing, and this is originally -- this is due to, at  
7 the time, various topographic and other considerations.

8 The cross-section shows, again, stacked alluvial  
9 and fluvial sandstones with lateral discontinuities similar  
10 to the Nacimiento formation.

11 Q. Let's go now, and I'd ask you generally to  
12 summarize your conclusions from your geologic work on the  
13 reservoir.

14 A. Well, given the evidence of complex geology in  
15 the proposed pilot areas, selective offset drilling within  
16 existing 160-acre spacing units is recommended in order to  
17 determine the well-density requirements for optimum  
18 recovery efficiency.

19 Will Mallon be calling an engineering witness to  
20 review --

21 A. Yes.

22 Q. -- that portion of the case?

23 Were Mallon Exhibits -- or Figures 2 -- 3 through  
24 9 prepared by you?

25 A. Prepared by me or under my supervision.

1 Q. And have you reviewed those?

2 A. Yes, I have.

3 Q. And can you testify as to their accuracy?

4 A. Yes, I can.

5 MR. CARR: Mr. Stogner, at this time we'd move  
6 the admission of Mallon Figures 3 through 9.

7 EXAMINER STOGNER: Three through what?

8 MR. CARR: Nine.

9 EXAMINER STOGNER: Three through 9 --

10 MR. CARR: Yes, sir.

11 EXAMINER STOGNER: -- will be admitted into  
12 evidence at this time.

13 MR. CARR: And that concludes my direct of Mr.  
14 Coryell.

15 EXAMINATION

16 BY EXAMINER STOGNER:

17 Q. Mr. Coryell, how long have you been a geologist  
18 with Mallon?

19 A. I started consulting with them in late 1996, and  
20 I was employed full-time with them from 1998 to early this  
21 year.

22 Q. Okay, I'm -- Help me get a little straight here  
23 on this. Okay, the case today involves the Cabresto  
24 Canyon-Tertiary Pool, and when was that formed?

25 A. I'm not certain of the exact time. I believe it

1 was in -- I'm not certain, but within the past couple  
2 years. I think that's a question I think can be better  
3 answered by Mr. Erickson.

4 MR. CARR: Mr. Stogner, it was, I believe, in  
5 September of 1999. I can check that, the order is here  
6 somewhere. But it was in 1999.

7 MR. HAYDEN: No, it was in 2000. I did that.

8 MR. CARR: Was it?

9 Q. (By Examiner Stogner) Okay. Well, was pool --  
10 are you aware -- or how was it formed? Was there some  
11 existing pools out there that were vertically put together  
12 to form this pool?

13 A. Yes. Originally these were essentially new  
14 producing formations in the area, and originally there was  
15 an Ojo Alamo Pool, a Nacimiento Pool, along with a separate  
16 San Jose Pool. These three formations were combined  
17 together to form the Cabresto Canyon Tertiary Gas Pool.

18 Q. Okay. Now, when you say the complexity of this  
19 pool, at one time it was three pools that allowed you three  
20 different wells, one in each of the three formations that  
21 you've discussed in the Tertiary; is that correct?

22 A. Yes, a twin was -- yes, twins were permitted  
23 to --

24 Q. Now, when you say twins, what do you mean twins?  
25 I'm not familiar with this word twins. And this is not a

1 prorated pool, nor have all the others been prorated, have  
2 they?

3 A. I don't know the answer to that. But I could  
4 tell you -- I will answer the first question.

5 Originally, no downhole commingling was allowed  
6 of any of the formations. So wells were completed through  
7 the Pictured Cliffs. Pictured Cliffs -- There was evidence  
8 of more than -- in many cases more than two, sometimes  
9 three, sometimes four pay zones. Often, historically, we  
10 found production that we wished to complete in the Pictured  
11 Cliffs and the Ojo Alamo. Typically, we might -- so a dual  
12 completion would have been done in the -- in 5-1/2-inch  
13 casing in the Pictured Cliffs and the Ojo Alamo.

14 But also the evidence was being developed that  
15 the San Jose would be a very strong producing zone, and so  
16 to -- since the wellbores would not allow additional  
17 completions in a single wellbore, a twin was permitted -- a  
18 separate wellbore was drilled about 150 feet away from the  
19 existing wellbore to about 2000 feet and completed in the  
20 San Jose as a separate producing horizon.

21 Q. You're telling me a twin well is a second well on  
22 a spacing unit?

23 A. It is -- yeah, it is a second well only about 150  
24 feet away.

25 Q. In the same formation?

1           A.   No, typically the twins were all in the San Jose  
2 formation, the uppermost formation, where the well next  
3 door was completed -- dual-completed in perhaps the  
4 Pictured Cliffs and the Ojo Alamo. At this time they were  
5 separate pools.

6           Q.   Okay.

7           A.   Yeah.

8           Q.   So when you say a twin well, you're talking about  
9 a twin well that has become a second well in the new pool,  
10 this Tertiary Pool, and not a twin well in each of the  
11 formations?

12          A.   At the time the twin was drilled and completed  
13 in, they were all separate pools. And so production was  
14 out of a different formation from the original well.

15          Q.   And you kept those separated in the spacing unit,  
16 only one well in each of the formations. Even if it might  
17 have been commingled between two formations, there was not  
18 a twin well in a particular formation anywhere?

19          A.   That's -- If I understand you correctly, yes,  
20 that's the case, even after the combination of the three  
21 formations into one pool was done.

22                   Those wells that had Pictured Cliffs -- or  
23 Pictured Cliffs and Ojo Alamo, for example, and the twin  
24 had the San Jose production, that commingling was only done  
25 in the producing formations in the original well, and San

1 Jose, for example, was not added and commingled in the  
2 first well.

3 So you did not have two wells side by side, in  
4 other words, producing from the same zone within the  
5 Tertiary.

6 Q. And I guess I should use the word completion per  
7 spacing unit --

8 A. Right --

9 Q. -- in this instance.

10 A. -- that would be --

11 Q. We're talking about the -- Now, when in 1999 this  
12 pool was formed, this Tertiary pool, those pools were  
13 eliminated and one pool was formed; is that correct?

14 A. That's correct.

15 Q. Now, we had a situation where more than one well  
16 in that pool existed in the spacing unit?

17 A. Yeah, as a product of combining the formations  
18 all of a sudden had two wells side by side that were both  
19 producing from Tertiary, but they're very different zones  
20 in the Tertiary.

21 Q. But it's in the same pool. You're taking this  
22 very casual when you're looking at a situation where you're  
23 only allowed one well per spacing unit, and you're taking  
24 it very casual that you're having more than one, very  
25 casual indeed. But that's the situation that has occurred;

1 is that correct?

2 A. Yes, that is what happened, yes.

3 Q. Why didn't you shut one of those wells in?

4 A. Well, this is what Mr. Carr referred to earlier,  
5 that there was a discussion with the OCD. Am I correct in  
6 saying that?

7 MR. CARR: I think --

8 Q. (By Examiner Stogner) Well, I'm asking you. If  
9 you're not involved in those discussions --

10 A. I'm not particularly -- I was not involved with  
11 that at all, at those discussions.

12 Q. Okay, so I'm assuming the next witness will have  
13 been involved --

14 MR. CARR: We'll follow with a witness who can  
15 explain how --

16 THE WITNESS: Yeah, Mr. Erickson could really  
17 discuss that.

18 EXAMINER STOGNER: And hopefully there will be  
19 some paperwork to support this, because this is an  
20 exception to the Rule, and usually that comes out of the  
21 Santa Fe Office, so I'm really curious of what this  
22 exception -- how it came about. And I'm assuming it was an  
23 R order. If not, it's probably not going to have any  
24 validity whatsoever. And what I've heard, you've been  
25 violating the rules for the last two years. This is going

1 to be a very interesting document that you will hand me.

2 MR. CARR: Mr. Stogner, I did put the order in  
3 front of you that did do -- and Mr. Hayden is correct, it  
4 is in September of 2000, not 1999.

5 EXAMINER STOGNER: Okay, this is Case Number  
6 12,481, Order Number R-11,445, and it was approved on  
7 September the 5th, the year 2000.

8 MR. CARR: Right.

9 EXAMINER STOGNER: And this was the order that  
10 created the Cabresto Canyon-Tertiary Pool, abolished the  
11 Cabresto Canyon-Nacimiento, the Ojo Alamo and the San Juan  
12 [*sic*] Pools. I'll take administrative notice of this  
13 order.

14 Q. (By Examiner Stogner) Okay, when I look at your  
15 cross-sections -- and I'm referring now to cross-section  
16 H-H', that's Figure Number 7, now I show the Ojo Alamo,  
17 your predominant perforations is in the Ojo Alamo U2; is  
18 that correct?

19 A. Yes.

20 Q. Okay, is the U1 and the Alamo L, that's a  
21 nonproductive sand?

22 A. We have a few wells that we are producing out of  
23 the U1 in combination with the U2.

24 Q. Okay, now, referring to that cross-section G-G',  
25 there are -- you have a situation here it looks like to me

1 you're representing different lenses in identifiable  
2 members of the Nacimiento; is that correct?

3 A. Yes, these members are informal members for  
4 mapping purposes, trying to understand reservoir geometry,  
5 and -- yes.

6 Q. What's the limitation of these lenses? How big  
7 area they areawise?

8 A. Well, there are a few -- For example, you can see  
9 down at the bottom there, the two right wells in the lower  
10 Nacimiento L1 zone that are fairly thick and appear to  
11 extend between two wells.

12 In other cases the extent -- You know, these are  
13 lenticular, they're overlapping, different sediment flow  
14 directions. But the areal extent of a good portion of them  
15 -- and you can see in Well Number 3 there, there's a stack  
16 of sands, and this is quite a good well -- that are not  
17 correlative to wells on either side in essentially a 160  
18 pattern.

19 And I think based on some of the reservoir  
20 engineering work, they appear to be effectively 80 acres in  
21 size, as far as drainage goes, at least, if not less than  
22 that.

23 Q. When I refer to your J-J' cross-section, Figure  
24 9, is that San Jose L2 -- is that a productive member of  
25 this formation?

1           A.    To date it has not been -- we have not attempted  
2 completions in it.

3                    Strike that, there may be one that we have  
4 perforated a few perforations in it, along with primarily  
5 San Jose L3 and San Jose M1. Those are the two predominant  
6 formations. But very few formations have been attempted in  
7 there. However, there are potential zones that we have  
8 noted and would like to go look at, at a future date in the  
9 L2.

10           Q.    Of these productive intervals in these three  
11 formations, can you comment on water production or water  
12 saturation in these zones? Is that something that you  
13 would know?

14           A.    It is, although I believe that the next witness,  
15 Mr. Ferrill, can speak very directly to that, and there are  
16 some exhibits, or figures, that talk about exactly that.

17           Q.    Okay.

18           A.    So I can comment now or...

19           Q.    Maybe in a more general -- are some of these  
20 lenses and different formation production intervals, are  
21 they -- have more water saturation than some of the others?

22           A.    There are a -- There are variability, yes,  
23 especially in the Nacimiento, in sand lenses.

24           Q.    Now, the ones that are drier, do they tend to --  
25 or have you seen any water sensitivity? Now, perhaps that

1 might be the other witness's expertise.

2 A. In general, from my knowledge, no. And perhaps  
3 Mr. Ferrill could comment on that, but as far as I know,  
4 there has been no --

5 Q. Are these producing lenses, are they more  
6 sandstone with little or no clay, or...

7 A. They're relatively clay-rich. It varies. You  
8 can -- for example, in the Ojo Alamo you can have clay  
9 contents as high as 20 percent.

10 In fact, that is part of the definition of pay,  
11 is the clay content is defined by neutron density curves.  
12 That's part of the factor, of previously tight rock versus  
13 reservoir rock.

14 Q. Were there any cores out here? Did you have any  
15 cores available to you to review or look at?

16 A. Yes, we've taken two conventional cores in the  
17 Ojo Alamo, and we have three wells where we have taken  
18 sidewall cores in the Ojo Alamo, Nacimiento and San Jose.

19 Q. Now, the matrix between the -- and I'm going to  
20 refer back to Figure 8. This is the G-G' cross-section.  
21 The matrix of the formation rock between the productive  
22 intervals, what's the primary makeup of that?

23 A. The matrix?

24 Q. Yes.

25 A. Again, there is clay content. Porosities -- This

1 is fairly high-quality reservoir rock, however. I mean,  
2 the porosities range from -- we used a 10-percent cutoff,  
3 but good reservoir rock is going to range from 14- to up to  
4 20-percent porosity, probably averaging more in the 15-  
5 percent range.

6 There's some, probably, detrital plays and that  
7 sort of thing, and some cement.

8 We don't have any specific petrography work in  
9 the Nacimiento. All our petrography has been done in  
10 the --

11 Q. Is there --

12 A. -- Ojo Alamo.

13 Q. -- a vertical migration between the lenses, or --

14 A. Not that we can tell.

15 In fact, we have individually tested in a couple  
16 instances sands that were fairly -- within 50 feet of each  
17 other, and there doesn't appear to be communication between  
18 the two.

19 EXAMINER STOGNER: Very good. Any other  
20 questions of this witness?

21 MR. CARR: No further questions.

22 EXAMINER STOGNER: Thank you. You may be  
23 excused.

24 MR. CARR: At this time, Mr. Stogner, we call  
25 Reed Ferrill.

1                                   REED W. FERRILL, JR.,

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

4                                   DIRECT EXAMINATION

5       BY MR. CARR:

6           Q.     Would you state your name for the record, please?

7           A.     Reed W. Ferrill, Jr.

8           Q.     Where do you reside?

9           A.     Golden, Colorado.

10          Q.     By whom are you employed?

11          A.     Ferrill and Associates.

12          Q.     And what is the relationship of Ferrill and  
13       Associates to Mallon Oil Company?

14          A.     We are a consulting engineering company providing  
15       services under a consulting contract.

16          Q.     How long have you been actually working on this  
17       area or for Mr. Mallon?

18          A.     Since 1999.

19          Q.     Have you previously testified before the Oil  
20       Conservation Division in New Mexico?

21          A.     I have not.

22          Q.     Could you summarize your educational background  
23       for Mr. Stogner?

24          A.     I have a degree in petroleum engineering from the  
25       Colorado School of Mines in 1968 and a degree of master of

1 engineering from the Colorado School of Mines in 1995.

2 Q. Could you review your work experience for the  
3 Examiner?

4 A. I spent four years with Amoco Production Company  
5 in Casper, Wyoming, and six years with two independent  
6 companies in Denver, in reservoir and production  
7 engineering. Since 1979 I've been a consulting engineer.

8 Q. Are you familiar with the Application filed in  
9 this case on behalf of Mallon?

10 A. Yes.

11 Q. Have you made an engineering study of the area  
12 which is the subject of this Application?

13 A. I have.

14 Q. Are you prepared to share the results of that  
15 work with Mr. Stogner?

16 A. Yes, sir.

17 MR. CARR: We tender Mr. Ferrill as an expert  
18 witness in petroleum engineering.

19 EXAMINER STOGNER: Mr. Ferrill is so qualified.

20 Q. (By Mr. Carr) Let's go to the exhibit book and  
21 turn to Figure 10, and I'd ask you, Mr. Ferrill, to review  
22 the information in that Exhibit.

23 A. This table summarizes the formation properties of  
24 the four zones that are the subject of the Application,  
25 showing average depth, the thickness, average porosity.

1           As you were questioning George, the water  
2 saturations are estimated. There have been three different  
3 groups that have attempted to come up with reliable water-  
4 saturation calculations. We found that there is a  
5 variation from zone to zone in water resistivities and  
6 pretty wide variation in clay contents that have prohibited  
7 us from making accurate water-saturation calculations, so  
8 we pretty much had to rely on estimates of water  
9 saturation.

10           Below that are the average permeabilities. We  
11 see the Pictured Cliffs as something less than half a  
12 millidarcy. The two pressure buildup analyses we've done  
13 on the Ojo Alamo indicate a range from 1 to 5 millidarcies.

14           The Nacimiento, we have no pressure buildup, but  
15 we anticipate it will be similar to the San Jose, which is  
16 shown, a range of 25 to 50 millidarcies.

17           The next line down shows initial pressures. The  
18 Ojo Alamo and the Pictured Cliffs are fairly typical of the  
19 San Juan Basin, with gradients in the .32 range.

20           When we move up into the Nacimiento, it's less,  
21 has a lower pressure gradient, in the .25-.26 range, and  
22 the San Jose is even lower than that.

23           Also below that are shown the average formation  
24 temperatures and some of the gas properties.

25           Q. Let's move to Figure Number 11, and let's look at

1 the average performance of these individual producing  
2 intervals. Start with the Pictured Cliffs.

3 A. What we've done here is start with the first  
4 month of production for each one of the wells and added  
5 together the production and divided by the number of well  
6 counts to give us an average well performance.

7 What we see with the Pictured Cliffs is typical  
8 of a tight reservoir with natural fracturing. There is a  
9 rapid early decline, followed b a very long period of  
10 shallow decline.

11 What's shown on the graph is both the average  
12 performance -- in this area the wells originally produce  
13 something like 400 MCF a day and decline down to decline  
14 rate of 4 to 5 percent per year.

15 Q. Let's go to Figure 12, the Ojo Alamo.

16 A. The Ojo Alamo tends to show an initial rate of  
17 something like 700 MCF per day. It does show some harmonic  
18 flattening, which is typical of a tight zone with natural  
19 fracturing.

20 This zone, by the way, does produce some water.  
21 It averages about 80 barrels per million, but there is a  
22 very wide variation. Some wells produce a higher rate than  
23 that, and some produce almost none. There is -- To our  
24 knowledge, there is no particular regional area. This is  
25 not associated with a gas-water contact. We believe that

1 it's probably coming through fractures from the lower zone.

2 Q. Go to the Nacimiento.

3 A. We don't have very much individual well history  
4 on the Nacimiento. The more current production has been  
5 commingled, so we don't have monthly rates. This figure is  
6 prepared from the two wells that were separately metered in  
7 the Nacimiento. It does show a more exponential decline,  
8 perhaps with some harmonic flattening. It's difficult to  
9 interpret too much because there's such a small well  
10 sample.

11 Q. Finally Figure 14, the San Jose.

12 A. The San Jose again shows an initial production  
13 rate averaging around 400 MCF per day. There is some  
14 harmonic or hyperbolic flattening, but it's closer to being  
15 an exponential-type decline. This would be expected from a  
16 higher-permeability zone.

17 The hyperbolic flattening probably results from  
18 individual layers that are declining at slightly different  
19 rates. The San Jose also does produce water, although its  
20 rate tends to be more in the range of about 10 barrels per  
21 million. Once again, it does vary quite a bit. Some wells  
22 produce no water at all, and some produce much higher than  
23 10 barrels per million.

24 Q. All right, let's now go to Figure 15, the  
25 volumetric original gas in place versus decline EUR for the

1 Pictured Cliffs. You've got several exhibits like this.

2 Explain what this exhibit shows.

3 A. What we're showing here is the volumetric  
4 original gas in place along the horizontal axis. This is  
5 based on the isopach mapping that Mallon has done, together  
6 with the average properties we showed earlier on the  
7 property table.

8 The vertical scale is the decline ultimate  
9 recovery. So this is what we anticipate the recoverable  
10 reserves will be.

11 The object of this is to show that for many of  
12 the wells we are doing a pretty poor job of draining a 160  
13 with the existing well.

14 On Figure 15 the few wells that are along the top  
15 are recovering something on the order of 50 percent of gas  
16 in place, and that would be acceptable. However, a large  
17 number of the wells are much lower than that, indicating  
18 that they are not adequately draining a 160.

19 Q. And in the Pictured Cliff you are draining -- or  
20 recovering approximately what percentage of the reserves?

21 A. Something like 20 percent. The fit line here is  
22 close to being an estimate of the average recovery  
23 efficiency. We have forced that through zero, so it's not  
24 exactly an average recovery-efficiency number, but it's  
25 suggesting that on the average we're about 20 percent of

1 gas in place for a recovery factor.

2 Q. All right, let's go to Figure 16, the Ojo Alamo.

3 A. Once again, we have the same horizontal and  
4 vertical axis, and again we have a very wide scattering of  
5 the data points. The best well up here is going to be 60-  
6 percent-plus recovery efficiency, but that's the exception  
7 rather than the rule. For the most part, the wells look  
8 like they're draining much less than a 160. Average  
9 recovery efficiency is going to be in the low 20-percent  
10 range.

11 Q. Okay. Let's go now to Figure 17.

12 A. The Nacimiento, even though it is a much higher  
13 permeability zone, we would anticipate recovery factors in  
14 this zone of 80 percent or more, we're averaging something  
15 like 23 percent. This probably goes back to the lenticular  
16 nature of the sands that simply don't exist over a full  
17 160.

18 Q. And now let's go to the San Jose, Figure 18.

19 A. The San Jose is giving us the best recovery  
20 efficiency. It averages in the high 40-percent range. And  
21 as you can see along the top of the figure, there are some  
22 wells in here that are recovering more than our interpreted  
23 volumetric gas in place. This does happen sometimes with  
24 volumetric calculations where the wellbore does not  
25 encounter the thickest part of the sand that it's draining.

1           There also may be some limitations in the method  
2 that was used in contouring the sands where it doesn't give  
3 full credit to the sands that are contributing.

4           Even given that, we see that roughly half of the  
5 wells are recovering less than 40 percent of the gas in  
6 place, which suggests there may be recoverable gas in the  
7 adjoining 80 acres that is not being drained by the  
8 original wellbore.

9           Q.    All right.  Let's go now to Figure 19, and I'd  
10 ask you to explain to the Examiner what this information  
11 shows.

12           A.    Figure 19 summarizes the total gas in place,  
13 volumetric calculation and the decline EUR from all of the  
14 completions in all of the zones and gives the actual  
15 average recovery efficiency for each zone.

16                   What we see is, the San Jose is completed in 78  
17 spacing units, the Nacimiento in 19, 51 for the Ojo Alamo  
18 and 22 for the Pictured Cliffs.

19                   Overall for the total zones, there are 99  
20 completions included in this table, and the average  
21 recovery efficiency is about 25 percent of gas in place.

22           Q.    And now let's go to the bubble map, Figure 20.

23           A.    The bubble map is based on the total of four  
24 zones.  The size of the bubble -- a quarter-section would  
25 be a 100-percent recovery efficiency.  And as I had pointed

1 out, there are some wells that show greater than 100  
2 percent. But for the most part the circles are much  
3 smaller than that. They average, of course, about 25  
4 percent.

5 The open circles show the 25 proposed pilot well  
6 locations. They are spread out through the area to try to  
7 encounter each of the zones several times in each of the  
8 four pilot areas, as the geology has shown that from  
9 northwest to southeast there are some differences in the  
10 zones.

11 Q. And so although you're asking for 25 pilot well  
12 approvals, you're going to be actually drilling  
13 substantially or completing substantially less than that in  
14 each of the subject intervals; isn't that correct?

15 A. As we currently see it, the Pictured Cliffs would  
16 be the most frequently completed in perhaps 15 of the 25.  
17 The Nacimiento, at this time we'd anticipate as few as  
18 eight of those 25. So each of the 25 wells will not hit  
19 all of the zones.

20 Q. And why have you decided to do it in four  
21 separate areas? Why have you picked four pilot areas  
22 across the reservoir?

23 A. I think George would be the one to ask that. I  
24 was not involved in picking the pilot areas.

25 Q. All right. In terms of what you are -- Summarize

1 for me your engineering conclusions.

2 A. What I see at this point is that the bottom two  
3 horizons are relatively tight reservoirs showing low  
4 recovery efficiencies probably due to fracture orientation.  
5 The higher -- the upper two reservoirs, the Nacimiento and  
6 the San Jose, are showing limited recoveries, probably due  
7 to the limited areal extent of the reservoirs. There may  
8 be some faulting that limits recovery in all of the zones.

9 Q. Were Exhibits 10 through 20 prepared by you?

10 A. They were.

11 MR. CARR: Mr. Stogner, at this time we would  
12 move the admission of Figures 10 through 20 in Exhibit Book  
13 1.

14 EXAMINER STOGNER: Exhibits 10 through 20 will be  
15 admitted into evidence at this time.

16 Q. (By Mr. Carr) Mr. Ferrill, will Mallon be  
17 recalling Mr. Erickson to review exactly how we intend to  
18 go forward and implement this program?

19 A. Yes, sir.

20 MR. CARR: That concludes my examination of Mr.  
21 Ferrill.

22 EXAMINATION

23 BY EXAMINER STOGNER:

24 Q. Mr. Ferrill, I'm going to refer to Figure Number  
25 10, and looking at the initial pressures, the Ojo Alamo

1 seems to be pretty high compared to the San Jose; is that  
2 correct?

3 A. Yes, it is.

4 Q. Okay. If I have perforations that include all  
5 three of them, is there enough pressure differential that  
6 I'm going to have a thief zone in the San Jose from the Ojo  
7 Alamo?

8 A. As long as the wellbore pressure is lower than  
9 the average pressure in any zone, the flow is always going  
10 to be in. If the well is shut in for a long period of  
11 time, there is the potential that you would flow from a  
12 high zone to a low zone. But as long as the pressure sink  
13 is the wellbore, everything is going to flow in.

14 Q. Okay, assuming that this is not a perfect world  
15 or a perfect industry and the pipeline has to shut in for  
16 various reasons, what occurs in the formation in this well?

17 A. To the extent that the lower zones can build up  
18 pressure fast enough, they might crossflow.

19 Q. They might crossflow. How about the water  
20 sensitivity between the Ojo Alamo and the San Jose?

21 A. So far, it would be my interpretation that the  
22 quality of the Nacimiento and the San Jose, being high-  
23 perm, high-porosity zones, are probably not particularly  
24 sensitive to water. There is the potential that the  
25 Pictured Cliffs might absorb some water that it would take

1 a while to get back out.

2           There is some scale that occurs in some of these  
3 wells from water. I don't know that there has been any  
4 evidence of permanent water damage in any of the zones.

5           Q. Now, you identified yourself as a consulting  
6 engineering firm. Were you consulting engineering as a  
7 reservoir engineer or a production engineer or a  
8 combination of both?

9           A. I have done drilling and production, I have  
10 specialized in reservoir for the last 15 years.

11          Q. Okay, how about your work with Mallon in this  
12 instance?

13          A. It has been limited to reservoir engineering.

14          Q. Reservoir. To ease your mind, I won't go into  
15 any production, drilling techniques in this field.

16                 Now, what stands out in the information that you  
17 give me, you have separated out all three formations, but  
18 still the Tertiary is one pool. How come you didn't  
19 combine this information into a Tertiary well performance?

20          A. The pooling is pretty much a regulatory issue.  
21 For reservoir engineering purposes, we do see enough  
22 difference in the performance of the zones that I feel they  
23 should be treated separately. There are geologic  
24 differences, we have seen differences in the decline  
25 performance and the water performance.

1           From a reservoir-engineering standpoint, I  
2 believe it's appropriate to treat them separately.

3           Q.    Okay.  On Figure 19 we have a number of spacing  
4 units, and then total of the four zones is then 99.  
5 Clarify that for me.  Does that take into account downhole  
6 commingles?

7           A.    It does.

8           Q.    Okay.  And the numbers on this Figure 19 are  
9 restricted to the horizontal area or the geographical area  
10 that's configured on Figure 3, 1, 2, 3 and 4?

11          A.    No, sir, this is throughout the entire area.  
12 This includes all of the wells that we have enough decline  
13 information to have a pretty good idea of what the decline  
14 EUR is going to be.  There are more completions like this,  
15 but like Mallon said, there are 136 wells that they've  
16 drilled.  Some are so new that we don't have a very good  
17 idea yet what their decline performance is going to be.

18          Q.    Then is it better to say if I go to Figure 20,  
19 that the information on Figure 19 is representative on this  
20 map?

21          A.    There's a dot for each one of the --

22          Q.    Okay.

23          A.    -- the wells.

24          Q.    Back to Figure 10, your average porosity, was  
25 that taken just over the perforated interval, or how was

1 that figure comprised?

2 A. Actually, the Mallon geologic staff has done a  
3 foot-by-foot analysis of the zones. We've been dealing  
4 with a porosity-foot number. When you compare that with  
5 the thickness, we come up with a typical average number.

6 Q. Okay, when you say porosity-foot, is that for the  
7 perforated interval?

8 A. No, sir, that's the entire pay interval.

9 Q. Okay, when you say pay interval, is that the --  
10 like if I look at Figure 7, for instance, all the Ojo Alamo  
11 or the Ojo Alamo U2, U1 and L?

12 A. It would encounter -- For example, if you look at  
13 Well Number 4 on the cross-section, the perforated interval  
14 is shown in red. The actual pay interval is probably the  
15 entire gold interval, although only the center portion of  
16 it has been perforated.

17 Q. Okay, so if I switch back over here to your  
18 Figure 10, that average thickness and any time -- or the  
19 numbers that are given me would include the gold area, as  
20 you call it?

21 A. The entire gold area, not just the perforated  
22 interval.

23 Q. And not inclusive of the other Ojo members?

24 A. That's correct.

25 Q. The CO<sub>2</sub> content, that jumps quite a bit. Do you

1 have any idea or any explanation of that?

2 A. No, sir, I don't.

3 Q. Okay.

4 A. What I generally see from the gas properties are,  
5 there's probably not vertical communication between the  
6 zones. There seems to be some differences that separate  
7 the zones.

8 Q. I thought your temperatures would be more the  
9 same, because we're not talking about a very thick  
10 interval. Have you seen this before?

11 A. Actually, as I recall, looking at the gradients,  
12 it's a fairly consistent gradient --

13 Q. Is it?

14 A. -- from -- there's a, you know, 2500-foot  
15 difference between the top of the San Jose and the Pictured  
16 Cliffs.

17 Q. So what would that come out to? The temperature  
18 gradient would be what? Five degrees per --

19 A. Let's see.

20 Q. That can be figured out.

21 A. I need a hand calculator.

22 Q. But that's essentially how you would calculate  
23 it?

24 A. Yes.

25 Q. You're talking about a 2000-foot difference

1 between the lowest and the highest there.

2 A. Yeah.

3 EXAMINER STOGNER: I cannot figure in my head  
4 anymore either.

5 Are there any other questions of this witness?

6 MR. CARR: No further questions.

7 EXAMINER STOGNER: Thank you, Mr. Ferrill, you  
8 may be excused.

9 MR. CARR: Mr. Stogner, at this time we'd recall  
10 Don Erickson.

11 DON ERICKSON (Recalled),  
12 the witness herein, having been previously duly sworn upon  
13 his oath, was examined and testified as follows:

14 DIRECT EXAMINATION

15 BY MR. CARR:

16 Q. Now, Mr. Erickson, as general manager of Mallon,  
17 you're going -- you're basically responsible for this pilot  
18 project, are you not?

19 A. Yes, sir.

20 Q. Could you summarize for Mr. Stogner the types of  
21 data that Mallon is hoping to obtain with a pilot project?

22 A. What we look to do with the pilot project  
23 increased drilling is to confirm our hypothesis that the  
24 acreage within the current spacing units contains undrained  
25 hydrocarbon and that additional increased-density drilling

1 within the current spacing units would be justified.

2 We would also expect that we would confirm that  
3 the geologic discontinuity that we see in the shallower  
4 members of the Tertiary Pool do show that there are  
5 potential for undrained and undiscovered zones between  
6 current spacing.

7 And then finally, I think that when we have the  
8 observation of our reservoir pressures and do some  
9 production history analysis, that we'll be able to evaluate  
10 the reservoir for evidence of depletion and also come up  
11 with a plan to mitigate the effective drainage and  
12 production of the reservoir.

13 Q. It will also give you information to evaluate the  
14 general orientation of drainage in the Pictured Cliffs;  
15 isn't that correct?

16 A. Yes, sir.

17 Q. And with this data, then, you will be able to  
18 come forward with a comprehensive development program that  
19 is really based on science -- a lot more on science and a  
20 lot less on guessing and --

21 A. Yes, sir, if the results would warrant that, yes.

22 Q. And you'll have a bank of information --

23 A. Yes.

24 Q. -- that will enable you to make important  
25 decisions?

1           How do you intend to actually operate this  
2 project? You don't have all the locations identified at  
3 this point in time precisely?

4           A. We've identified areas in the map that we feel  
5 contain potential for undrained acreage within the spacing  
6 units. The latitude to move that is solely based on the  
7 need for the surface topography, cultural and  
8 archaeological concerns on the property.

9           Topography is a significant influence out here,  
10 as is cultural, and to determine -- we can determine from a  
11 scientific point of view where we believe that we have  
12 undrained acreage, but in practical matters, without doing  
13 a significant survey and inspection of the surface site out  
14 there, it may be a moot point, it may be an undrillable  
15 location.

16          Q. And so what you're going to do is go out, and as  
17 you drill wells -- actually, the project is going to be  
18 sort of an evolving effort. The data that you get may  
19 dictate exactly how you go forward with it; is that  
20 correct?

21          A. Initially, we would identify a number of  
22 locations that were acceptable to be drilled through normal  
23 permitting procedures for surface use and exposure, and  
24 then the data collected from the results of those wells  
25 will be used to modify the second phase, and so on.

1 Q. In 1999 Mallon was able to obtain from the Oil  
2 Conservation Division an administrative order, NSL-4355,  
3 and that order authorized Mallon to drill at unorthodox  
4 locations in an area defined as the Mallon-Jicarilla  
5 Consolidated Contract Area; is that correct?

6 A. That's correct.

7 Q. And it recognized the considerations that come to  
8 bear on placing these wells, terrain, archaeology, geology,  
9 as well as the cultural considerations in the Jicarilla  
10 Nation; is that right?

11 A. That's correct, yes.

12 Q. That order authorized and gave you substantial  
13 flexibility within spacing of the units to move wells, and  
14 it was -- Is all of the acreage that is involved in these  
15 pilot projects within the area defined in that  
16 administrative order as the Mallon-Jicarilla Consolidated  
17 Contract Area?

18 A. Yes, it is.

19 Q. And that order provided that it would stay in  
20 place as long as there were no changes as to the operator  
21 or significant changes in the oil, gas and mineral  
22 ownership within the area. Have there been changes in  
23 either operator or ownership of the oil, gas and mineral  
24 ownership?

25 A. No, there have not.

1 Q. Does Mallon request that the flexibility provided  
2 in this order also apply to the infill pilot project in  
3 this acreage?

4 A. Yes.

5 Q. Mr. Stogner had questions of Mr. Coryell  
6 concerning what transpired when the pools were  
7 consolidated.

8 A. Uh-huh.

9 Q. At that time, in the Tertiary zones particularly,  
10 you had an existing wellbore that was a dual PC and  
11 Nacimiento or Ojo Alamo well?

12 A. Yes.

13 Q. And when you started your development of the San  
14 Jose the wellbore was too small, and so you -- in the  
15 approximate distance of 100 feet from the wellbore drilled  
16 an additional shallower well?

17 A. Yes, we permitted those wells through normal BLM-  
18 BIA-Jicarilla --

19 Q. And you had proper regulatory approval --

20 A. Yes.

21 Q. -- from the affected agency?

22 A. Yes.

23 Q. And then you had the consolidation of the pool?

24 A. Yes.

25 Q. And you were aware at that time of this well

1 situation?

2 A. Of the twin?

3 Q. Twin wells.

4 A. Yes.

5 Q. And what did you do?

6 A. At that time the two wells that appeared in each  
7 spacing unit were producing from different horizons within  
8 the section out there.

9 At that point we continued to report those wells  
10 to the MMS and to the State as separate production, as they  
11 had been in the past.

12 Q. Was the situation discussed with any  
13 representative of the OCD?

14 A. At some point I know there was a conversation  
15 with our district manager for the area regarding the two  
16 wellbores per spacing unit.

17 Q. And was that with the District Office in Aztec?

18 A. Yes, it was.

19 Q. And was it your understanding that because of the  
20 historical situation, that no further permitting or  
21 approvals were required?

22 A. Yes.

23 Q. Was that ever reduced to a writing that you're  
24 aware of?

25 A. And there was no order on that?

1 A. Not that I'm aware of.

2 Q. And so that problem -- or that situation and  
3 problem exist today?

4 A. Yes, it does.

5 Q. When the order is entered in this case, if the  
6 project is approved, how soon could Mallon commence the  
7 pilot project, which is the subject of the Application?

8 A. We would initiate with initial inspection of the  
9 lands and permitting almost immediately.

10 Q. Is Mallon Exhibit 2 just a copy of Administrative  
11 Order NSL-4355?

12 A. Yes.

13 MR. CARR: Mr. Stogner, at this time I'd move the  
14 admission into the record of this case Mallon Exhibit 2.

15 EXAMINER STOGNER: Exhibit 2 will be admitted  
16 into evidence.

17 I'll take administrative notice of Administrative  
18 Order Number NSL-4355 and everything that's within that  
19 file, and that's a very thick file --

20 MR. CARR: Yes, sir.

21 EXAMINER STOGNER: -- I can sure --

22 MR. CARR: There are a very large number of  
23 related orders that are identified in the exhibit.

24 And with that, that concludes my examination of  
25 Mr. Erickson.

## EXAMINATION

1  
2 BY EXAMINER STOGNER:

3 Q. Mr. Erickson, were you involved with Mallon when  
4 administrative NSL-4355 was issued?

5 A. Yes.

6 Q. And how were you involved?

7 A. I was vice president of the company at the time,  
8 and the technical presentation request for the data came  
9 from petroleum engineers who had -- in the Durango office.

10 Q. Did you work directly with the staff there at  
11 Mallon that put this Application together?

12 A. I was aware of the request and the Application.  
13 I didn't have a working knowledge of preparing the  
14 Application.

15 Q. Now, you said you were aware when the pools were  
16 consolidated into one, that this twin situation occurred.  
17 Is that what I understood you to say.

18 A. Yes.

19 Q. And you took it upon yourself to go to the  
20 District Office to address this issue?

21 A. How the chain or the actual communication  
22 occurred, I'm not -- I was not involved with that. I do  
23 know there were discussions between the area office here  
24 and also our production office in Durango.

25 Q. But you were not directly involved with it?

1           A.    I was not directly involved in those  
2 conversations, no.

3           Q.    Was there any written communications between  
4 Mallon's -- your people at Mallon and the District Office  
5 at the OCD that you are aware of?

6           A.    Not that I'm aware of, no.

7           Q.    Now, were you -- Did you realize that there was  
8 an infraction in the Rule, or were you made aware of it by  
9 your people?

10          A.    I was not aware that there was a question about  
11 the shallower wellbores as an issue until today.

12          Q.    Now, were you involved whenever Mallon sought the  
13 consolidation of these pools, or was that somebody else in  
14 the district office, or in your area office here in --

15          A.    I was involved, yes.

16          Q.    You were involved.

17                    What are the limiting factors in an unprorated  
18 pool? How many wells can you have in a 160-acre spacing in  
19 northwest New Mexico?

20          A.    I'm not intimately familiar with the rules.

21          Q.    Who would be?

22          A.    Within --

23          Q.    In Mallon.

24          A.    Within our office, that would probably be in our  
25 revenue and taxation department, also my land department.

1 Q. Would you venture to take a guess how many wells  
2 are allowed in a spacing unit?

3 A. I would guess one.

4 Q. Correct guess. Were you involved in the last two  
5 days of hearing up in Farmington with the coal gas?

6 A. No, I was not.

7 Q. Okay, whenever your Application -- or your  
8 Application asks for 25 pilot wells. Do these take into  
9 account the existing twinned wells, as you call them?

10 A. There are no twinned wells that we're proposing  
11 in these 25 wells. They would be substantially greater  
12 distance of offset to the existing producing wells.

13 Q. Okay, how many of these twins exist?

14 A. I do not know offhand, but I believe there's  
15 about 20.

16 Q. So that's 20 infill wells -- I'm going to call  
17 them infill wells. I'm not going to call them twins, I'm  
18 going to call them infill wells, because that's what they  
19 are.

20 Okay, the way I'm understanding it, there are 20  
21 sets of spacing units out there that have more than one  
22 well?

23 A. That's correct, yes, sir.

24 Q. And they're not included in your request today?

25 A. They are not, no.

1 Q. How do you propose to handle the existing 20?

2 A. As I stated earlier, I was just recently brought  
3 to the attention of this. We will need to discuss this  
4 internally and in conjunction with the OCD on how to  
5 mitigate this.

6 EXAMINER STOGNER: With that answer, Mr. Carr --

7 MR. CARR: Yes.

8 EXAMINER STOGNER: -- I would like to see Mallon  
9 do whatever it has to do, to amend NSL --

10 MR. CARR: Okay.

11 EXAMINER STOGNER: -- 4355. And let me remind  
12 you, and Mallon at this point, this took a significant  
13 amount of my time when this administrative order was  
14 issued. I probably will not be allowed to do that again.  
15 So that's going to be -- Mallon's going to have to do the  
16 legwork this time. I will not do it again.

17 And I can assure you, Mallon did not provide the  
18 information that you will find issued in this order. You  
19 have one hand in there that did a lot of work, and she  
20 helped me tremendously, but there was also a lot of work on  
21 my part. So between me -- I believe her name was Christina  
22 -- Christa -- Christie Serrano helped the bulk of this  
23 application together. I will not do it again.

24 MR. CARR: Yes, sir. We'll --

25 EXAMINER STOGNER: Also, we need to address these

1 20 wells. I'm not going to order a shut-in. I could, but  
2 I won't.

3 Also, I'd like for Mallon to review Order Number  
4 R-11,445 with the District Supervisor and the District  
5 Geologist. I want them to review this pool. Should it go  
6 back to three separate pools? Because what I'm hearing  
7 now, I'm wondering.

8 So I'm going to order that particular question to  
9 be addressed with the District Office. And whatever comes  
10 out of that, we need to amend NSL-4355 accordingly --

11 MR. CARR: I understand.

12 EXAMINER STOGNER: -- and of course address these  
13 20 wells.

14 MR. CARR: Yes, sir.

15 Q. (By Examiner Stogner) Now, the way I understand  
16 it, there are 25 proposed pilots. Now, when we say -- Let  
17 me ask you this question:

18 You're proposing a 25-pilot-well program. Are  
19 these 25 new drills, or are some of them existing wells  
20 with completions?

21 A. No, they're 25 new drills.

22 EXAMINER STOGNER: New drills.

23 Mr. Carr --

24 MR. CARR: Yes, sir.

25 EXAMINER STOGNER: -- can you think of anything

1 else?

2 MR. CARR: Yeah, I want to address the notice  
3 issue.

4 EXAMINER STOGNER: Okay.

5 MR. CARR: I've checked my notes, and I can tell  
6 you who we notified. We notified all operators in the  
7 Pictured Cliffs. They were Energen, Bayless, Schalk  
8 Development, J.M. Huber, Burlington Resources, and then  
9 Mallon being the other. Those are the operators in the  
10 Pictured Cliffs, in the East Blanco-Pictured Cliffs. I  
11 obtained that from the OCD.

12 Mallon is the only operator in the Cabresto  
13 Canyon-Tertiary Pool.

14 In addition to that, we notified the -- really,  
15 the mineral owner is the Jicarilla Apache Nation, and we  
16 notified Mr. Velarde of that.

17 The additional names -- and there are about 20 of  
18 those -- are other owners of mineral interest in this area,  
19 and I mean the area encompassed by these two pools. And so  
20 I believe we notified those who are required or who are  
21 affected parties as defined by the Oil Conservation  
22 Division. I did that work, and it is my affidavit that is  
23 attached to this list.

24 There are some return receipts that are not shown  
25 in the attached material, and part of that is because I put

1 this together about a week ago in anticipation of the  
2 hearing today, and I'll be happy to supplement it with the  
3 additional receipts that I suspect have come in.

4 But that's who we did notify.

5 The other interest owners were given to me by  
6 Mallon's land people, but the operators and the scope of  
7 the notice was my responsibility.

8 EXAMINER STOGNER: Okay, did you look at NSL  
9 Order 4355? And particularly there were some findings in  
10 there --

11 MR. CARR: Yes, I've read the order.

12 EXAMINER STOGNER: -- about the partial  
13 ownership.

14 MR. CARR: I have read it, and I thought we  
15 covered that, because the partial owners -- when there is  
16 partial ownership, they are in here. And there are people  
17 like -- and we went back through that. Kevin Fitzgerald  
18 being one of those, becomes mine because I know him. But  
19 we picked up these other people trying to -- When we didn't  
20 own it all, we notified those people.

21 EXAMINER STOGNER: Those are the parties that  
22 were notified of this order, and you're referring to which  
23 tab, or which exhibit?

24 MR. CARR: Well, I'm talking -- the area that we  
25 notified, Mr. Stogner, were the pool boundaries for the two

1 pools, the operators, and then it was all Jicarilla land,  
2 so we went to the Jicarillas, and we identified the other  
3 interest owners in those properties, non-Mallon and  
4 otherwise.

5 And the list is small for such a large area, but  
6 it is all in the Jicarilla Nation, and that took care of a  
7 fair part of it. But we went back and checked this twice,  
8 and that's who we did notify, and that's who's covered in  
9 this notice affidavit.

10 EXAMINER STOGNER: And it's smaller because  
11 there's a smaller area --

12 MR. CARR: Correct.

13 EXAMINER STOGNER: -- than what NSL-4355 --

14 MR. CARR: That is correct. Partial owners, I  
15 believe we've covered every one of them.

16 EXAMINER STOGNER: Okay.

17 MR. CARR: And so I would like to include the  
18 notice affidavit in the record of the case. I've marked it  
19 as Mallon Exhibit 3.

20 EXAMINER STOGNER: Exhibit Number 3 will be  
21 admitted into evidence at this time.

22 EXAMINER BROOKS: I understand this is all in the  
23 Jicarilla --

24 MR. CARR: Yes, sir.

25 EXAMINER BROOKS: -- Apache Nation, so I believe

1 this would be covered, would it not, under the memorandum  
2 of understanding --

3 MR. CARR: Yes, sir.

4 EXAMINER BROOKS: -- just as we were talking  
5 about --

6 MR. CARR: That we discussed yesterday, that's  
7 correct.

8 EXAMINER BROOKS: -- except that in this case it  
9 would be the entire -- we would not be entering an order at  
10 all prior to BLM's approval, we'd just be doing a tentative  
11 order --

12 MR. CARR: That's right. And I'm not an expert  
13 on your memorandum of understanding, but that's how I  
14 understand it works.

15 EXAMINER BROOKS: That's correct. Okay, well, I  
16 do have a separate set of the exhibits, so we have the  
17 information that we need to furnish to BLM.

18 EXAMINER STOGNER: Mr. Carr, could you, along  
19 these same lines -- it's not for this same case, but  
20 identify these 20 twins?

21 MR. CARR: I will.

22 EXAMINER STOGNER: I need you to have Mallon  
23 provide me that listing of those 2 wells --

24 MR. CARR: I will.

25 EXAMINER STOGNER: -- and also a review of this

1 area to see if there are any additional ones.

2 MR. CARR: We'll do that.

3 EXAMINER STOGNER: Are there any BLM people in  
4 the audience?

5 MR. TOWNSEND: Yes, there is.

6 EXAMINER STOGNER: Would you like to make a  
7 statement or have any questions?

8 MR. TOWNSEND: I have a question.

9 EXAMINER STOGNER: Okay, why don't you come  
10 forward, sit here if you would, identify yourself, and who  
11 is the questions addressed to, or should be addressed to?

12 MR. TOWNSEND: I really don't have any questions  
13 to be addressed to -- my name is --

14 EXAMINER STOGNER: Okay, so I'll --

15 MR. TOWNSEND: My name is Wayne Townsend, I'm a  
16 petroleum engineer with the BLM in Farmington. The  
17 Farmington Field Office does diligence and drainage on the  
18 Jicarilla Reservation, so our trust responsibility portion  
19 of it is here in the Farmington Office.

20 My question is, with the 25 wells, what would you  
21 learn after, say, if you only drilled five or ten of them?  
22 What is the additional information you're going to learn?

23 THE WITNESS: Well, I think if you look at the  
24 selection of the four pilot areas, that there are different  
25 geological and reservoir concerns with each one, whether

1 they are more focused towards the upper Tertiary, lower  
2 Tertiary or the Pictured Cliffs. Geologically, it's not  
3 just a continuous sand across the entire Basin. There is  
4 within the pilots that we've selected that we think that  
5 there is evidence that there's minimal recovery from the  
6 different zones.

7 Mr. Ferrill would probably be a better --  
8 probably more eloquently answer your question than I can.

9 MR. TOWNSEND: Additional question is, what type  
10 of test are you going to run on each well? Are you going  
11 to do vertical isolation and gather pressure data from each  
12 sand, or --

13 THE WITNESS: Initially that would encompass part  
14 of the -- or that coupled with the observation of  
15 historical production.

16 MR. TOWNSEND: I couldn't hear you, sir.

17 THE WITNESS: That accompanied with the  
18 observation of historical production over time, yes.

19 MR. TOWNSEND: I've got one additional question  
20 about one of your exhibits, just for -- and maybe you  
21 cannot answer this, but on Figure 14 you start with -- you  
22 show that your average producing number of wells goes from  
23 50 to approximately 12 in 36 months. What happened to the  
24 other wells?

25 MR. FERRILL: It's the other way around.

1 EXAMINER STOGNER: I'm sorry, I'm going to need  
2 you to come forward.

3 MR. CARR: Ferrill Reed can answer the question.

4 MR. FERRILL: I'm Reed Ferrill.

5 MR. CARR: Sorry.

6 MR. FERRILL: There are 50 wells that have at  
7 least six months of production history. There are ten  
8 wells that have four years of production history.

9 MR. TOWNSEND: Okay, I see what you did here. I  
10 was reading it wrong then.

11 MR. FERRILL: It kind of goes backwards. So  
12 yeah, the --

13 EXAMINER STOGNER: Does that answer your  
14 question?

15 MR. TOWNSEND: Yes, that answered my questions.

16 EXAMINER STOGNER: Do you have any other  
17 questions?

18 MR. TOWNSEND: No, that's my questions at this  
19 time.

20 EXAMINER STOGNER: Any other questions of the BLM  
21 staff?

22 Okay, how about the OCD here in Aztec?

23 EXAMINER BROOKS: First of all, could I ask one  
24 thing of Mr. Townsend here?

25 You said that the trust responsibility for the

1 Jicarilla Reservation was in the Farmington Field Office?

2 MR. TOWNSEND: A portion of it. We do the  
3 diligence and drainage. The operational portion of it is  
4 in the Albuquerque office.

5 EXAMINER BROOKS: Okay.

6 MR. TOWNSEND: And the inspection and enforcement  
7 portion of it also is in the Albuquerque field office.

8 EXAMINER BROOKS: The memorandum of understanding  
9 that exists between the OCD and the BLM on these matters  
10 indicates that our proposed order and copy of the record is  
11 to be furnished to the Santa Fe District Office. Now, I  
12 assume that -- to the Santa Fe Office. I assume the Santa  
13 Fe Office will coordinate that with whatever offices are  
14 appropriate to consult in that matter; is that correct?

15 MR. TOWNSEND: That is correct, the Santa Fe  
16 Office is the State Office.

17 EXAMINER BROOKS: Okay, so we go ahead and  
18 furnish this material to the Santa Fe Office?

19 MR. TOWNSEND: Yes, that is correct.

20 EXAMINER BROOKS: Thank you.

21 EXAMINER STOGNER: If there's no other questions  
22 of the BLM, Mr. Hayden, if you'll come up here and take a  
23 seat and for the record identify yourself, your position  
24 and the office of where you work.

25 MR. HAYDEN: I'm Steve Hayden, I'm the District

1 Geologist in Aztec. I had basically a couple of questions.

2 One is, are you familiar with the LaJara Canyon-  
3 Tertiary Pool?

4 THE WITNESS: Yes.

5 MR. HAYDEN: Okay, and do you realize that Area 4  
6 is not in the Cabresto Canyon, it's in the LaJara Canyon-  
7 Tertiary?

8 THE WITNESS: I did not realize that, no.

9 MR. HAYDEN: No. Anyway, I wanted to make that  
10 point.

11 THE WITNESS: Thank you.

12 MR. HAYDEN: Then looking at this map, Figure 20,  
13 it looks like this is more of an actual infill program than  
14 a pilot program to me, and I just wondered if that was --  
15 what would be the difference between an infill program here  
16 and this pilot program?

17 THE WITNESS: Well, I think that -- We can get  
18 caught up in the semantics here, but I think it's our  
19 intent that we have proposed these areas, and we have  
20 identified these locations as being potentially undrained.

21 MR. HAYDEN: Most of the pilot programs we see  
22 involve just a few wells scattered over a broad area.

23 THE WITNESS: And again, I would say these areas  
24 were picked because of the geologic consistency or  
25 inconsistencies that we see, and they are relative in the

1 geologic interpretation, they are not uniform across the  
2 area.

3 MR. HAYDEN: Okay, I guess that's all I had.

4 EXAMINER STOGNER: Well, in light of this, Mr.  
5 Carr, I see that the ad talks about the overlying Tertiary  
6 formation, but it references the Cabresto --

7 MR. CARR: Correct.

8 EXAMINER STOGNER: -- yes, the Goat Canyon-  
9 Tertiary Pool.

10 MR. CARR: And I don't know where the LaJara is.

11 EXAMINER STOGNER: I'm not sure where it is  
12 either. But it does talk about the Tertiary formation.  
13 And just by looking at this, I don't feel there's a need to  
14 readvertise. Maybe we just need to be more careful next  
15 time.

16 MR. CARR: Yes, sir.

17 EXAMINER STOGNER: Anything further, Mr. Hayden?

18 MR. HAYDEN: No, sir.

19 EXAMINER STOGNER: Now, I've specifically allowed  
20 the BLM and the OCD District Offices to ask questions.  
21 Would either one of you like to make a statement at this  
22 time, the BLM and/or the Aztec District?

23 MR. HAYDEN: Not that I know of at this time.

24 EXAMINER STOGNER: Okay, the BLM?

25 MR. TOWNSEND: No, BLM does not wish to make a

1 statement at this time.

2 EXAMINER STOGNER: Okay. Is there anything  
3 further that you'd like to present, Mr. Carr?

4 MR. CARR: No, sir.

5 EXAMINER STOGNER: Okay, I'm going to ask you,  
6 Mr. Carr, to be in touch with me on these other matters.

7 MR. CARR: I'll coordinate that, and I will be in  
8 touch with you next week on each of the matters that you  
9 raised.

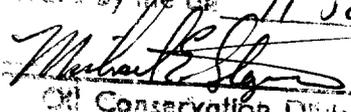
10 EXAMINER STOGNER: Okay. And also, without --  
11 I'll go ahead and state this. Don't make any other  
12 recompletions at this point.

13 MR. CARR: Yes, sir.

14 EXAMINER STOGNER: With that, Case Number 12,892  
15 will be taken under advisement accordingly, and we'll take  
16 a ten-minute recess at this time.

17 (Thereupon, these proceedings were concluded at  
18 11:25 a.m.)

19 \* \* \*

20  
21 I hereby certify that the foregoing is  
22 a complete record of the proceedings of  
23 the Examiner hearing of Case No. 12892  
24 heard by me on 11 July 2002  
25  Examiner  
Oklahoma Conservation Division

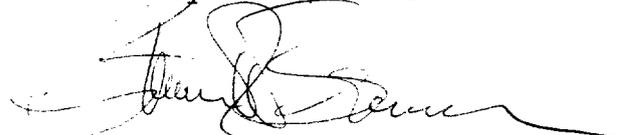
## CERTIFICATE OF REPORTER

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 July 27th, 2002.



STEVEN T. BRENNER  
 CCR No. 7

My commission expires: October 14, 2002