

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

APPLICATION OF MCKAY OIL)
CORPORATION FOR COMPULSORY) CASE NO. 10386
POOLING, EDDY COUNTY, NEW MEXICO.)
APPLICATION OF YATES PETROLEUM)
CORPORATION FOR COMPULSORY) CASE NO. 10363
POOLING, EDDY COUNTY, NEW MEXICO.)
-----)

REPORTER'S TRANSCRIPT OF PROCEEDINGS
EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner
September 19, 1991
1:37 p.m.
Santa Fe, New Mexico

This matter came for hearing before the Oil
Conservation Division on September 19, 1991, at 1:37 p.m.
at the State Land Office Building, 310 Old Santa Fe
Trail, Santa Fe, New Mexico, before Linda Bumkens, CCR,
Certified Court Reporter No. 3008, in and for the County
of Bernalillo, State of New Mexico.

FOR: OIL CONSERVATION
DIVISION

BY: LINDA BUMKENS CCR
Certified Court Reporter
CCR NO. 3008

I N D E X

September 19, 1991
Examiner Hearing
CASE NO. 10386 & 10363

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3

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A P P E A R A N C E S

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19 FOR MCKAY OIL CORPORATION: KELLAHIN, KELLAHIN & AUBREY
20 BY: MR. W. THOMAS KELLAHIN, ESQ
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Santa Fe, New Mexico
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1 EXAMINER CATANACH: At this time we'll call
2 Case 10386.

3 MR. STOVALL: Application of McKay Oil
4 Corporation for compulsory pooling, Eddy County, New
5 Mexico.

6 EXAMINER CATANACH: Are there appearances in
7 this case?

8 MR. KELLAHIN: May it please the Examiner I'm
9 Tom Kellahin of the Santa Fe law firm Kellahin,
10 Kellahin & Aubrey appearing on behalf of the
11 applicants, and I have three witnesses to be sworn.

12 MR. CARR: May it please the Examiner, my name
13 is William F. Carr with the law firm Campbell, Carr,
14 Berge & Sheridan of Santa Fe. I'm appearing in
15 opposition to the application of McKay in this
16 case.

17 I also have an application that's docketed
18 for hearing today. It is Case Number 10363 which is
19 the application of Yates Petroleum Corporation for
20 compulsory pooling. Some of the same lands are
21 involved in each of the pooling cases accordingly.

22 We would request that that case also be
23 called and they be consolidated for hearing at this
24 time.

25 MR. KELLAHIN: We join in that request,

1 Mr. Examiner.

2 EXAMINER CATANACH: We'll just go ahead and do
3 that then. We'll call Case 10363.

4 MR. STOVALL: Application of Yates Petroleum
5 Corporation for compulsory pooling, Eddy County, New
6 Mexico.

7 EXAMINER CATANACH: Are there any other
8 appearances in any either of these cases?

9 (No response)

10 EXAMINER CATANACH: Mr. Carr, how many
11 witnesses do you have?

12 MR. CARR: I have three.

13 MR. CATANACH: Can I get all the witnesses to
14 stand up and be sworn at this time?

15 (At which time Mecca Morrison, Roy Beck,
16 Pinson McWhorter, George Reddy, Charles Sanders and
17 Roy McKay were sworn.)

18 MR. CARR: I think I should go first. The
19 reason is I filed the initial application. We
20 haven't discussed that, but --

21 MR. KELLAHIN: I have no objection to Mr. Carr
22 presenting his technical case first. I'm prepared
23 to make a short statement, of course. If that's
24 appropriate you may go ahead.

25 MR. KELLAHIN: We're going to ask you,

1 Mr. Examiner, to resolve a dispute between Yates and
2 McKay that the parties have been unable to resolve
3 for themselves. The case has come before you in the
4 format of competing compulsory pooling cases, but
5 they are much more than that.

6 We're asking you to determine the optimum
7 least risky well location. In addition, we're
8 asking you to determine the appropriate orientation
9 of the spacing unit. Virtually every other issue
10 involved in compulsory pooling cases, I think, is
11 substantially uncontested. There is no question
12 that both operators are competent to be operators.

13 My understanding is that there is no
14 material difference with regard to the estimated
15 cost for drilling either one of these wells. It's
16 my understanding that the overhead charges are not a
17 subject of serious dispute, but what is is where you
18 put the well.

19 We're dealing in the South Dagger Draw
20 Associated Oil and Gas Pool. It's got its own
21 special rules that are grafted into the Associated
22 Oil and Gas Pool Rules. We're looking at a
23 particular section, Section 25. The development of
24 the South Dagger Draw has been substantially
25 accomplished in this pool by Yates Petroleum, and as

1 that development takes place it's moving southward
2 toward Section 25.

3 Section 25 is composed so that the
4 southwest quarter of the section, plus the 40-acre
5 tract being the southeast of the northwest are
6 controlled by Yates, and the balance of this section
7 is controlled by McKay.

8 Yates has been successful in the last few
9 weeks in completing a very nice Dakota Dagger Draw
10 oil well that reports indicate produces in excess of
11 450 barrels of oil a day. That well is located in
12 the southeast of the southeast of Section 23 which
13 is the direct diagonal offset to the well location
14 that Mr. McKay proposes for this well.

15 As the development has occurred, this
16 summer Yates proposed to McKay that a west half
17 spacing unit be formed and proposed. However,
18 instead of drilling the well in the northwest of the
19 northwest that this will be located in the southwest
20 of the southwest. We cannot resolve that among
21 ourselves.

22 It is our belief, and our belief the proof
23 will demonstrate to you, that the development
24 location of least risk is the McKay location. That
25 is one of the things you're going to be asked to

1 resolve.

2 In addition, it's important to us to lay
3 the units down. We think an appropriate solution in
4 this reservoir is to have the north half and south
5 half proration unit. Yates has proposed a west
6 half. We think that's wrong. The technical case
7 will be presented to you on behalf of Mr. McKay by
8 George Reddy. Mr. Reddy is an experienced geologist
9 who's been retained by Mr. McKay to make a thorough
10 and complete study of the geology and to come up
11 with his own independent recommendation as to where
12 to place the well within this section, which is now
13 free of being dedicated to any well in the pool.

14 So we have the choice and the flexibility
15 not only of the well location, but of the
16 orientation, and it will be Mr. Reddy's independent
17 geologic conclusion and recommendation that we
18 locate the well in the northwest of the northwest.

19 In addition, we'll present to you a
20 petroleum engineer, Mr. Charles Sanders.
21 Mr. Sanders has done his own independent study. It
22 is his conclusion, and my clients belief, that
23 unless a well is drilled immediately in the
24 northwest of the northwest, this acreage and
25 Mr. McKay's interest is going to be drained by the

1 Yates operated well to the north and to the west,
2 and so there's a drainage component to this case.

3 It is our belief and conclusion, and we
4 hope the evidence demonstrates to you that at the
5 end of the presentation you will agree with us, and
6 that you will grant our compulsory pooling order
7 dedicating the north half to our well at our
8 location and allow us to go forward with the
9 development of what we think are oil and gas
10 reserves in this section that ought to be developed.

11 We are opposed to Yates and their location,
12 their orientation. We've expressed that to them
13 repeatedly, and the parties cannot solve it for
14 themselves, so you must do it for us. And that is
15 our case.

16 EXAMINER CATANACH: Mr. Carr, would you like
17 to --

18 MR. CARR: I'm going to waive opening. I'm
19 ready to call my first witness, Mecca Morrison, an
20 expert witness in petroleum land matters.

21 EXAMINER CATANACH: Okay.

22 MR. CARR: And I have to pick up the exhibits
23 which are in the next room.

24 MECCA MORRISON,
25 the Witness herein, being duly sworn, was examined

1 and testified as follows:

2 DIRECT EXAMINATION

3 BY MR. CARR:

4 Q. Will you state your name and place of
5 residence?

6 A. My name is Mecca Morrison and I reside in
7 Artesia, New Mexico.

8 Q. By whom are you employed and in what
9 capacity?

10 A. I'm employed with Yates Petroleum
11 Corporation as an associate landman.

12 Q. Have you previously testified before the
13 Oil Conservation Division?

14 A. No, I have not.

15 Q. Could you briefly summarize your
16 educational background, and then review your work
17 experience?

18 A. I have a bachelor of business
19 administration degree from West Texas State
20 University, and in the last eight-and-a-half years
21 I've worked for Yates Petroleum Corporation Land
22 Department. The last four years I've been doing
23 technical and landman work.

24 Q. Are you familiar with the application filed
25 in this case on behalf of Yates Petroleum

1 Corporation?

2 A. Yes, I am.

3 Q. And are you familiar with the application
4 filed also by McKay?

5 A. Yes, I am.

6 Q. Are you familiar with the area and the
7 acreage that is involved in each of these
8 applications?

9 A. Yes, I am.

10 MR. CARR: We tender Miss Morrison as an
11 expert witness in petroleum land matters.

12 EXAMINER CATANACH: She is so qualified.

13 Q. (By Mr. Carr) Would you briefly state what
14 Yates seeks with this application?

15 A. Yates Petroleum is seeking to compulsory
16 pool all the mineral interest in the west half of
17 Section 25, 20 South, 24 East, and we're also here
18 in opposition to McKay Oil Corporation force pooling
19 Case Number 10386.

20 Q. Have you prepared certain exhibits for
21 presentation in this case?

22 A. Yes, I have.

23 Q. And would you refer to what has been marked
24 for identification as Yates Exhibit Number 1?

25 A. Exhibit Number 1 is a land map that shows

1 our proposed location in the southwest southwest of
2 Section 25 and also shows our spacing unit as being
3 the west half of Section 25.

4 Q. And what does the yellow shading indicate?

5 A. The yellow shading is acreage that Yates
6 Petroleum either has an interest or is an operator
7 of.

8 Q. Okay. What is the primary objective in the
9 proposed well?

10 A. To test the Canyon formation at
11 approximately 8100 feet.

12 Q. And could you identify what has been marked
13 as Yates Exhibits Number 2?

14 A. Exhibit Number 2 is the operating agreement
15 we've prepared under which to drill this well. It's
16 our standard form that we use to operate most of our
17 wells under, and it's on APL form of 1977.

18 Q. And this is the operating agreement that
19 has been joined in by all the Yates entities that
20 are involved in the tract?

21 A. Yes, sir.

22 Q. That has not been accepted or agreed to by
23 McKay?

24 A. No, it has not.

25 Q. Okay. And what percentage of the acreage

1 under the west half unit -- proposed unit -- has
2 been voluntarily committed to the well?

3 A. We have 61.25 percent committed.

4 Q. And is this a regular or an irregular
5 section?

6 A. It's a regular section.

7 Q. Could you identify what has been marked as
8 Yates Petroleum Corporation Exhibit Number 3?

9 A. Exhibit Number 3 is our AFE that we've
10 prepared to drill and equip our proposed well.

11 Q. And on this exhibit, could you just review
12 the cost for a dry hole and also for a completed
13 well if successful?

14 A. Okay. A dry hole will cost approximately
15 \$240,000. A completed well will be approximately
16 \$504,000.

17 Q. Are these costs in line with what's charged
18 for wells to this depth in this area?

19 A. Yes, it is.

20 Q. Now, Miss Morrison, would you refer to
21 Yates Exhibit 4 and 5 together.

22 A. Okay.

23 Q. And with these exhibits just briefly
24 summarize the efforts made by Yates Petroleum
25 Corporation to reach a voluntary agreement for the

1 development of the west half of Section 25?

2 A. Okay. July of 1990 we first contacted
3 Mr. McKay regarding this area, and since then we
4 have sent approximately 17 letters to all the other
5 working interest owners and had approximately 22
6 phone conversations.

7 Q. At this point in time you have not been
8 able to reach a voluntary agreement for the
9 development of a west half unit?

10 A. No, we have not.

11 Q. Could you identify what has been marked as
12 Yates Petroleum Corporation Exhibit Number 6?

13 A. Yes, sir. It's the application filed with
14 the New Mexico Oil Conservation Division.

15 Q. Is this an affidavit showing that letters
16 giving notice of the hearing were provided to all
17 interest owners in the west half as required by OCD
18 rules?

19 A. Yes, it is.

20 Q. Okay. Had you also identified what is
21 marked as Exhibit Number 7?

22 A. Exhibit Number 7 is a letter from
23 Mr. Christopher Echols who is an oil right royalty
24 owner on Mr. McKay's tract that was sent to the
25 State Land Office in our behalf agreeing to our

1 being operator and also an agreement with our
2 proposed location.

3 Q. Does Yates Petroleum Corporation seek to be
4 designated operator of the well that it is proposing
5 in the west half of Section 25?

6 A. Yes, they do.

7 Q. Will Yates also be calling geological and
8 engineering witnesses to testify as to the technical
9 portions of this case?

10 A. Yes, we will.

11 Q. Were Exhibits 1 through 7 either prepared
12 by you or compiled under your direction and
13 supervision?

14 A. Yes, they were.

15 MR. CARR: At this time, Mr. Catanach, we move
16 the admission of Yates Exhibits 1 through 7.

17 EXAMINER CATANACH: Exhibits 1 through 7 will
18 be admitted as evidence.

19 (Yates Petroleum Corporation Exhibits 1
20 through 7 were admitted in evidence.)

21 MR. CARR: That concludes my direct
22 examination of this witness.

23 EXAMINER CATANACH: Mr. Kellahin.

24 CROSS-EXAMINATION

25 BY MR. KELLAHIN:

1 Q. Miss Morrison, will you refer to Exhibit 1
2 which is the land plat with the yellow shading on
3 it?

4 A. Yes, sir.

5 Q. When we look at Section 25, am I correct in
6 my opening statement when I look at the southwest
7 quarter of that section, is the working interest 100
8 percent Yates and the Yates entities?

9 A. Yes, sir.

10 Q. And then you pick up the additional 50-acre
11 tract out of the northwest quarter which is the
12 southeast of the northwest?

13 A. Yes, sir.

14 Q. And apart from that, the balance of the
15 working interest in the section is controlled by
16 McKay?

17 A. Yes, sir.

18 Q. Okay. If the proration unit is turned to a
19 south half proration unit in that instance then,
20 Yates entities would have a 50 percent working
21 interest, would they not?

22 A. That would be correct.

23 Q. Okay. Your map shows adjoining interest to
24 the west in Section 25. As a land person with
25 experience in this area, can you tell us what the

1 percentage working interest the Yates entities had
2 in Section 25 -- I'm sorry, 26?

3 A. In 26?

4 Q. Uh-huh.

5 A. We own 100 percent of that section.

6 Q. Okay. And as we go into the 23 to the
7 north?

8 A. Yes, sir.

9 Q. What's the percentage in that section for
10 the Yates?

11 A. It's also 100 percent Yates entities.

12 Q. Okay. I haven't had a chance to look at
13 your documents on the correspondence and the
14 tabulation, but show me the first -- or tell me the
15 date of first written communication to Mr. McKay in
16 which this particular well at this location with
17 this west half orientation was submitted to him for
18 his consideration?

19 A. You want the actual letter?

20 Q. Yes.

21 A. I believe we talked about it first, but the
22 actual letter?

23 Q. Uh-huh.

24 A. That would be on July 8, 1991, is when we
25 sent the actual proposal.

1 Q. Had discussions prior to that centered
2 around potential farm outs of his acreage to join
3 Yates in developing this section?

4 A. We had discussed that, yes, sir.

5 Q. When we get down to the specifics of this
6 particular well that's now the subject of
7 Mr. Catanach's decision, the first written
8 communication is the July 8th letter?

9 A. Yes, sir.

10 Q. Okay. At that time, were you aware of
11 Mr. McKay's desire to have the northwest of the
12 northwest as the additional well -- as the initial
13 well location for this well?

14 A. Yes, sir. On July 3rd of 1991, I talked to
15 Mr. McKay on the phone and he did relay that, and
16 that's also the first time we had a location picked
17 and where our spacing was going to be.

18 Q. So during this period of time both
19 companies are talking to each other about resolving
20 their differences in terms of the well location?

21 A. Yes, sir.

22 Q. And that was never resolved?

23 A. No, sir, it was not.

24 Q. In addition to the well location there is a
25 continuing difference of opinion on the orientation

1 of that spacing unit, isn't there?

2 A. Yes, there is.

3 Q. And until those are resolved then, the
4 question of the operating agreement and reaching
5 other terms really is premature?

6 A. Yes, sir.

7 Q. Subsequent to the Yates request then, I
8 think this shows that Mr. Carr on the 12th of July
9 filed the compulsory pooling application?

10 A. That's correct.

11 Q. Okay. And then subsequently I believe, in
12 August, Mr. McKay made his well proposal formally to
13 Yates with an AFE and also his compulsory pooling
14 application?

15 A. That's correct.

16 Q. Okay. At this point in time, is it a fair
17 characterization that it's impossible to reach an
18 agreement unless the Examiner decides what to do
19 about well locations and orientation of the spacing?

20 A. I believe that's correct.

21 MR. KELLAHIN: Nothing further. Thank you.

22 EXAMINATION

23 BY MR. CATANACH:

24 Q. Miss Morrison, in the west half of
25 Section 25 besides the Yates and McKay, are there

1 any other working interest entities that you're
2 dealing with here?

3 A. There are other Yates entities involved.
4 There is also -- besides McKay Oil Corporation
5 there's a Sanders Petroleum Corporation, and that
6 would be all the entities involved.

7 Q. Have you consolidated all the interest with
8 the exception of McKay?

9 A. We've consolidated all the Yates entities.
10 McKay Oil and Sanders Petroleum have not been.

11 Q. Sanders has not been?

12 A. No, sir.

13 Q. Do you know why they have not been
14 consolidated?

15 A. I think for the same reasons that McKay has
16 not been.

17 Q. Do you know what percentage they own?

18 A. Jointly they own 38.5, or 38.75 percent.

19 Q. When were the Sanders interest -- when were
20 they first contacted?

21 A. I did not learn of their interest until
22 August 1st of '91 when I talked to Mr. Dan Sorenson
23 who had been an interest owner, and he informed me
24 that he had sold his interest to Sanders Petroleum a
25 year before.

1 The assignment was not filed until July
2 22nd of this year, and so I went and checked records
3 at that point and that's when I came across the
4 assignment, and I notified them. I sent the same
5 AFE to Sanders Petroleum on August 1st of '91, once
6 I learned of their interest.

7 Q. And what was their response to your letter?

8 A. I had no response.

9 EXAMINER CATANACH: That's all I have.

10 MR. CARR: At this time we call Ray Beck.

11 RAY BECK,
12 the Witness herein, after being previously duly
13 sworn, was examined and testified as follows:

14 DIRECT EXAMINATION

15 BY MR. CARR:

16 Q. Would you state your full name for the
17 record, please?

18 A. Ray Beck.

19 Q. Mr. Beck, where do you reside?

20 A. Artesia, New Mexico.

21 Q. By whom are you employed and in what
22 capacity?

23 A. Yates Petroleum Corporation. I'm chief
24 geologist.

25 Q. Have you previously testified before this

1 Division?

2 A. Yes, I have.

3 Q. And during your prior testimony, have your
4 credentials as an expert witness in petroleum
5 geology been accepted and made a matter of record?

6 A. Yes, they have.

7 Q. Are you familiar with the applications
8 filed in each of these cases?

9 A. Yes, I am.

10 Q. And have you made a geological study of the
11 area that is involved in these cases?

12 A. Yes, sir, I have.

13 MR. CARR: Are the witness's qualifications
14 acceptable?

15 EXAMINER CATANACH: They are.

16 Q. (By Mr. Carr) Have you prepared certain
17 exhibits for presentation here today?

18 A. Yes, sir, I have.

19 Q. Would you refer to what has been marked for
20 identification as Yates Exhibit Number 8? Identify
21 this and review it for the examiner.

22 A. Exhibit Number 8 is a map of a portion of
23 the South Dagger Draw Upper Pennsylvania Associated
24 Pool. The map exhibit is a combined Canyon or Upper
25 Penn dolomite structure map and top of big water

1 structure map.

2 The solid contour show the structural
3 configuration on the top of the Canyon dolomite
4 reservoir in 100-foot contours, and the dotted
5 contours show the structural configuration of the
6 big water contact dipping to the northeast in
7 50-foot contours. I can show on the cross-section
8 here, solid contours along the top of this dolomite
9 mass.

10 Q. And that's indicated on your Exhibit 9 by
11 the --

12 A. Solid contours.

13 Q. The line at the top of the structure that
14 you've drawn?

15 A. The question?

16 Q. The question is, you've just moved now from
17 Exhibit 8 to Exhibit Number 9, correct?

18 A. Right.

19 Q. And what you've indicated are the solid
20 contours are the top line across the structure that
21 you've indicated on this exhibit?

22 A. Yes. The solid contours on this big water
23 surface here, so you can more or less understand the
24 map. This bend in here, don't worry about that.
25 That's just because the cross-section extended out

1 of the dip, and it really dips to the northeast.

2 The solid contours on the map exhibit,
3 again, are limited to east and west by 0 dolomite
4 pinch-out lines. Circle well spots are Canyon or
5 deeper penetrations. Green color well spots are
6 South Dagger oil wells. Red-colored spots are gas
7 wells or sour gas wells. Uncircled gas well spots
8 indicate sweet gas production from zones
9 stratigraphically lower than the Canyon such as
10 Strawn, Atoka or Morrow.

11 The standard proration unit of the west
12 half of Section 25 is outlined in red, and Yates
13 standard well location in the southwest of the
14 southwest is shown. Also shown is the small hexagon
15 in the northwest of the northwest of 25 indicating
16 location stake, and that's by McKay Oil Corporation.

17 Q. All right. Now, Exhibit Number 9 is the
18 cross-section?

19 A. Yes, sir. Exhibit Number 9 is the
20 cross-section in the east to west cross-section
21 depicting the depth dimension across the South
22 Dagger Draw. The Frosty logs are hung on at 100
23 feet sea level. The vertical scale is two and a
24 half inches equals 100 feet, and horizontal distance
25 between the logs is proportional to mapped

1 distances.

2 Shown is the top of the Canyon limestone
3 called the Upper Penn by some workers. Featured are
4 the limits of the Dagger Draw Dolomite reservoir
5 facies and the hydrodynamically southwest to
6 northeast tilted big water surface.

7 Q. Now, Mr. Beck, I think at this time we
8 should first focus on the opposing well locations
9 that are before David Catanach for decision, and so
10 if you could perhaps start by describing the general
11 production in the field and then relate that to the
12 alternative well locations that are being proposed?

13 A. All right. Daggar Draw field produces
14 sweet oil, sour gas and brackish sulphur water and
15 combine stratigraphic hydrodynamics and structural
16 trap.

17 Lithologically the reservoir is dolomite
18 with intercrystalline, vuggy and fractured
19 porosity. No dolomite, no reservoir. From the
20 stratigraphic standpoint the dolomite reservoir
21 pinches-out updip and to tight ceiling limestone on
22 minor shales and pinches out down dip at a tight
23 limestone and basinal -- interbedded basinal field
24 classics, and this can be seen by examining the well
25 logs on the cross-sections.

1 The following addresses the hydrodynamic
2 portion of this complex trap. There's no water-free
3 production in this field. Oil wells produce sweet
4 oil, sour gas and brackish sulphur water. Gas wells
5 produce sour gas condensate, and brackish sulphur
6 water.

7 However, there is a mappable
8 hydrodynamically tilted surface below which the
9 dolomite reservoir is virtually all water filled.
10 This surface which is hydrodynamically tilted, is
11 southwest to northeast is referred to as the "big
12 water." The familiar situation of the horizontal
13 plane of gas/oil and oil/water contact does not
14 exist in this field.

15 The Indian Basin Upper Penn field two to
16 three miles southwest of our Section 25 here is also
17 an Upper Penn dolomite reservoir with a southwest to
18 northeast hydrodynamically tilted gas/water contact.

19 Q. Are you ready now to move to your Exhibit
20 Number 10?

21 A. Yes, sir.

22 Q. Would you identify that for Mr. Catanach?

23 A. I offer Exhibit Number 10, which is a copy
24 of a short paper by Hugh Frenzel, the geologist, on
25 the discovery well at the Indian Basin field to the

1 south, which attest to the hydrodynamically tilted
2 gas/water contact in that nearby field, and certain
3 pertinent words are highlighted for your
4 convenience.

5 Q. Let's now go on, and if you can explain
6 what it takes in this field to make a well focusing
7 on the structure of the dolomite in the area?

8 A. Okay. Structure on the top of the dolomite
9 reservoir is especially important on the eastern
10 most side of the reservoir, which we are concerned
11 with here. To make an oil well in this field, the
12 top of the dolomite reservoir must come in
13 structurally higher than the tilted big water
14 surface. This surface must come in higher than this
15 one in order to get any hydrocarbons out. The
16 contact comes down here. You can get the dolomite
17 reservoir which is strictly all water.

18 Q. Why don't you go through to Coquina RS
19 Federal Number 1 and relate that to this general
20 statement?

21 A. Okay. The Coquina RS Federal Number 1 well
22 in Unit C of Section 25, which is also shown on the
23 cross-section, is a dry hole which encounters the
24 top of the dolomite reservoir at or slightly below
25 the "big water" contact.

1 Coquina RS Federal Number 1 has 192 feet of
2 dolomite. However, all the dolomite is below the
3 big water surface and water wet is shown by a
4 drill-stem test that was taken on the way down. The
5 top 85 feet of the dolomite yielded a pipe recovery
6 of 1,457 feet of sulphur water with no mention of
7 gas to surface or any other show.

8 One can see the interval tested and 85 feet
9 of dolomite tested on the log of the RS Federal on
10 the cross-section exhibit.

11 Q. Could you now go to Exhibit Number 11 and
12 identify that, please?

13 A. Exhibit Number 11, which is a copy of the
14 drill stem test chart. I offer Exhibit Number 11,
15 which is a copy of the drill stem test chart. No
16 where on the chart is there any mention of any
17 shows, either the surface action or the recovery.

18 Q. Would you go now to Exhibit Number 12?

19 A. In addition, I offer Exhibit 12, which is a
20 copy of a portion of the chronological well history
21 of the RS Federal Number 1 which covers the DST
22 Number 1 entries. Here again, there is no mention
23 of any gas to surface or any other shows.

24 Therefore, the Coquina Federal RS Number 1
25 borehole encountered the top of the dolomite

1 reservoir structurally below. The big water surface
2 is water wet in the dolomite reservoir and is not a
3 producer in the South Dagger Draw field. Please
4 note the Coquina RS Federal is located one 40-acre
5 location east of the location that's asked by McKay
6 in the northwest of the northwest of Section 25.

7 Q. And this would be located in the central
8 portion of the north half which McKay is proposing?

9 A. Yes, sir.

10 Q. And it would be located in the extreme
11 northeastern portion of the west half unit which
12 Yates is proposing?

13 A. That's true.

14 Q. Now, if we look at this structure map, it
15 appears that it tends to drop off or end fairly
16 abruptly east and, I guess, the west side. Could
17 you relate that to the general development of this
18 field?

19 A. It also should be pointed out how steeply
20 the structure on top of the dolomite reservoir drops
21 off on the east side of the reservoir, and how this
22 steep loss of structure materially affects
23 production.

24 Please observe the wells drilled on either
25 side of the boundary between Section 14 and 13 to

1 the north of our area of interest here in Section
2 25. Note that the top of the dolomite in the Hill
3 View Number 7 well in Unit M of Section 13 had
4 dropped off 157 feet from the Hill View 8 and Unit P
5 of Section 14 just one 40-acre location, or 1300
6 feet away.

7 I'm going to read some numbers here. I
8 wouldn't worry about writing them down because
9 they're going to be compiled on a later exhibit, so
10 you don't kind of have to worry about taking notes.

11 The initial production on the High Hill
12 View 8 well was 250 barrels of oil per day plus 570
13 MCF per day, plus 992 barrels of water per day.
14 Whereas the initial production on the Low Hill View
15 7 well was 91 barrels of oil per day, 394 MCF per
16 day and 2,083 barrels of water per day.

17 Recent production on the High Hill View 8
18 was 190 barrels of oil per day, plus 1,026 MCF a
19 day, plus 1,635 barrels of water per day. Whereas
20 the recent production on the Low Hill View Number 7
21 was 20 barrels of oil per day, 261 MCF per day and
22 1,028 barrels of water per day.

23 Along the same section line note the Yates
24 in these are three in Unit E of Section 13 has
25 dropped off structurally 167 feet from the John

1 Number 4 in Unit H of Section 14, again, just one
2 40-acre location away.

3 The John Number 4 initials 5 or 1500
4 barrels of oil per day plus 1800 MCF per day, plus
5 750 barrels of water per day and the Ceniza
6 Number 3 initials for 71 barrels of water per day,
7 171 MCF per day and 1371 barrels of water per day.

8 Recent production for the John Number 4 was
9 756 barrels of oil per day plus 2,588 MCF of gas per
10 day, plus 726 barrels of water per day, whereas
11 recent production for the Ceniza 3 was 21 barrels of
12 oil per day but 305 MCF per day, plus 1,158 barrels
13 of water per day. This is a remarkable difference
14 in production for such closely spaced wells.

15 Q. Let's go now to Yates Exhibit Number 13,
16 and I'd ask you to identify and review that?

17 A. At this time I offer Exhibit 13 which shows
18 the stated above production figures and other
19 figures from pertinent wells. Figures to the left
20 of the well spot show the initial production --
21 initial potential of the well, and figures below the
22 well spot show recent September production.

23 Q. And, again, this just sets out the
24 information contained in exhibits -- or that you've
25 just testified to, and it shows the sharp disparity

1 or difference in production between closer spaced
2 along the edge of the formation?

3 A. Yes, sir, that's correct.

4 Q. What basic conclusions can you reach about
5 the significance of structure in this area?

6 A. The point of all this is that a significant
7 loss of structure with closely spaced 100 foot
8 contours occurs on the east side of the Dagger Draw
9 South Field, and a very good well can be offset with
10 a poor well in just one location to the east.

11 There's also closely to 100 foot contours
12 in Section 25. The lesson that the wells in 13 and
13 14 teach is that the east side of the Dagger Draw
14 pickings is on the east side of the Dagger Draw
15 picking locations by just close odds. It may be
16 economically dangerous.

17 Q. Now, Mr. Beck, one of the primary issues
18 here is the location that Yates is proposing as
19 compared to the location proposed by Mr. McKay.

20 Could you review these two locations and
21 evaluate them for us?

22 A. Using this combination map, still Exhibit
23 Number 8 here, one can calculate the gross potential
24 thickness of the hydrocarbon bearing column for any
25 location in the Dagger Draw dolomite reservoir.

1 Thus, for the Yates Staghorn AGJ Federal Number 1
2 location in the southwest of the southwest of
3 Section 25, the top of the Canyon dolomite reservoir
4 is minus 3908 feet. That's 3,908 feet. You
5 subtract it from the top of the big water a minus
6 4,062 for a gross hydrocarbon bearing column of 154
7 feet.

8 Q. Now, this is the location proposed by
9 Yates?

10 A. Yes, sir, it is.

11 Q. Okay.

12 A. And I could show that on the cross-section.
13 When you measure it off on the cross-section it's
14 154 feet. I'll be talking about this one basically.
15 So the Yates location has 154 of hydrocarbon bearing
16 column. It is very probable that a large portion of
17 this gross interval will have enough dolomite
18 porosity and permeability to result in an
19 economically successful oil and gas well.

20 For the McKay location in the northwest of
21 the northwest of Section 25, the top of the dolomite
22 is minus 4047 subtracted from the top of the big
23 water. A minus 4127 gives a gross potential
24 hydrocarbon column of 80 feet or only 52 percent of
25 the gross potential hydrocarbon column in the Yates

1 proposed location.

2 If enough of the predicted 80 feet of the
3 gross potential hydrocarbon column is taken up by
4 nonporous and permeable rock, it will, if drilled at
5 the McKay location, be uneconomic.

6 Please note that for each 40 acre location
7 I have calculated the gross potential hydrocarbon
8 column with the resulting number posted to the right
9 of the well spot.

10 Q. And this is on Exhibit?

11 A. Same Exhibit 8.

12 Q. Exhibit 8. All right.

13 A. For instance, the northwest of the
14 southwest immediately, or Staghorn location, is 143
15 feet, and the southwest of the northwest, north
16 again, is 122 feet, and the southeast of the
17 southwest is 78 feet, and the northeast of the
18 southwest is only 25 feet of gross potential
19 hydrocarbon column. All the other 40 acre locations
20 in Section 25 at zero feet of gross potential
21 hydrocarbon column. Thus, for the Dagger Draw
22 Reservoir the map indicates that the west half of
23 Section 25, the proration unit proposed by Yates, is
24 75 percent potentially productive.

25 The east half of the Section 25, on the

1 other hand, has zero potential for production. The
2 map also indicates the north half of Section 25 is
3 25 percent potentially productive, and the south
4 half is 50 percent potentially productive.

5 Strongly corroborating the map
6 interpretation are the two wells already drilled in
7 Section 25. The Coquina R.S. Federal Number 1 in
8 Unit C, which has already been discussed with
9 exhibits, has no Dagger Draw potential by virtue of
10 water-wet DST taken on the upper 85 feet of the
11 dolomite reservoir. Also already drilled in
12 section 25 is the McKay (formerly drilled by Sun Oil
13 Company) Charolette McKay Federal Number well in
14 Unit H, which encountered no Canyon or Upper Penn
15 Dagger Draw dolomite at all.

16 One may observe that the Charolette McKay
17 Federal Number 1 has no dolomite reservoir by
18 examining the Compensated Neutron-Formation Density
19 log of the well on the cross-section exhibit already
20 admitted. So, two drilled wells in the north half
21 have already proven to be nonproductive as far as
22 the Dagger Draw dolomite reservoir is concerned.
23 One well is wet, and the other had no Dagger Draw
24 Canyon dolomite reservoir at all.

25 Q. Well, what conclusion can you reach about

1 the two locations that are being proposed here
2 today?

3 A. Therefore, the standard proration unit
4 proposed by Yates consisting of the west half of
5 Section 25 most efficiently surrounds the
6 potentially productive portion of Section 25.

7 Geologically, the Yates Staghorn AGJ
8 Federal Number 1 location in the southwest of the
9 southwest of Section 25 is the best allowable
10 location in the west half of the proration unit and
11 indeed, the best allowable location in all of
12 Section 25 for drilling a well which would produce
13 economic volumes of oil and gas in the Dagger Draw
14 Canyon dolomite reservoir.

15 Q. Now, Mr. Beck, I believe you've also
16 prepared testimony concerning the geological risk
17 associated with the development of these properties?

18 A. Yes, sir.

19 Q. Could you briefly summarize what risk is
20 associated with the development of this type of a
21 reservoir?

22 A. The Daggar Reservoir is a carbonate
23 reservoir, and like all carbonate reservoirs it's
24 complex in geometry and variable in reservoir
25 quality from place to place. That is, there is

1 always geological risk in drilling for and
2 developing carbonate reservoir.

3 An example of how the Dagger Draw dolomite
4 reservoir can abruptly thin to zero dolomite
5 reservoir in a short distance may be seen on the map
6 in Section 34 of 20024, Exhibit 8 there on the main
7 map.

8 Conoco drilled their Preston Federal Number
9 2 well at a 40-acre location north of an older
10 Standard of Texas Federal Number 1 well. The Old
11 Standard Texas well had encountered 351 feet of
12 Daggar Draw dolomite reservoir whereas the new
13 Conoco well encountered zero dolomite reservoir.

14 As may be noted on the map, there is a
15 large Eastward pinch-in of the dolomite reservoir.
16 On the Eastern side of the reservoir, which we are
17 concerned with here, the reservoir not only thins
18 going East, but carbonates begin to interfinger with
19 nonreservoir basinal clastics, principally shales,
20 light sandstones and silt stones.

21 This relationship must be seen on
22 cross-section between the Yates Conoco AGK Number 2
23 and Coquina RS Federal Number 1, this well here and
24 this well right here. You see on this one here and
25 this one here, the productive Yates Conoco AGK

1 Number 2 has only 44 feet of nonreservoir limestone
2 cap, whereas the dry hole Coquina well, to the right
3 over there, has 185 feet of limestone cap plus a
4 wedge of 900 feet of basinal clastics above the
5 dolomite reservoir.

6 These East side facies changes resulted in
7 the dolomite reservoir being at or below the big
8 water surface at the Coquina location, and further
9 resulted in the nonproductive water well in the
10 Dagger Draw dolomite reservoir.

11 As previously mentioned, the Standard Texas
12 Smith Federal Number 1 well in Section 34, which has
13 351 feet of Dagger Draw dolomite reservoir, should
14 have made a productive oil and gas well according to
15 logs and drill stem tests.

16 However, the original attempt was evidently
17 disappointing to the operator and the well was
18 sidetracked a short distance. The sidetracked hole
19 apparently had no better log or DSTs in the
20 operators evaluation, therefore, no second
21 completion was attempted and the well was plugged.

22 This well is an example of the risk in
23 completing carbonate reservoirs. The Yates engineer
24 witness will testify in more detail about the high
25 drilling, the equipping, infrastructure and lease

1 operations costs in this field.

2 Q. Okay. Can you summarize your conclusions
3 that you've reached about the risks associated with
4 this well?

5 A. To summarize about risk, the map, the
6 cross-section, and experience of drilling in the
7 Dagger Draw Field show that there is geological risk
8 in drilling and especially near the edges of this
9 complex carbonate reservoir.

10 Q. And what risk penalty do you recommend be
11 assessed against any interest owner who does not
12 participate in developing the west half with the
13 well you have proposed?

14 A. I recommend a risk penalty of 200 percent.

15 Q. Mr. Beck, were Yates' Exhibits 8 through 13
16 prepared by you or compiled under your direction?

17 A. Yes, they were.

18 MR. CARR: At this time, Mr. Catanach, we
19 would move the admission of Yates' Exhibits 8
20 through 13.

21 EXAMINER CATANACH: Exhibits 8 through 13 will
22 be admitted as evidence.

23 (Yates Petroleum Corporation Exhibits 8
24 through 13 were admitted as evidence.)

25 MR. CARR: And that concludes my examination

1 of Mr. Beck.

2 EXAMINER CATANACH: Mr. Kellahin.

3 CROSS-EXAMINATIN

4 BY MR. KELLAHIN:

5 Q. Mr. Beck, have you only prepared one
6 cross-section line through this vicinity?

7 A. Yes, sir.

8 Q. And that's what you're looking at on
9 Exhibit 9?

10 A. Yes, sir.

11 Q. When we look structurally at the
12 relationship between the Yates location and the
13 McKay location, the big water top looks to be higher
14 structurally in the Yates location?

15 A. You shouldn't be misled by that big water
16 top there. This cross-section was meant just to
17 show, first of all, you know, the top of the Canyon
18 line there and how it is just recently dipping from
19 west to east, and where the dolomite is on the log,
20 and how we picked the top of the -- for the solid
21 contours on the top of the dolomite, and how we
22 picked the dotty contours on the big water surface.

23 The reason -- if you look at the
24 cross-section trace on the map, you can see that
25 the -- if I'm going through the third well to the

1 next -- to the Staghorn there, we're going southeast
2 which is recently updip against that big water, so
3 it caused that bulge in it. It really doesn't have
4 anything to do with the configuration of the
5 structure on that big water. You have to look at
6 the map to see that.

7 Q. When I look at Exhibit 8, the structure
8 map?

9 A. Yes, sir.

10 Q. It's mapped on top of what feature?

11 A. Okay. The solid contours are mapped on top
12 of the dolomite.

13 Q. And on your cross-section that's the line
14 that you've identified by the words Canyon Limestone
15 Upper Penn?

16 A. No, sir. No, sir.

17 Q. Okay.

18 A. It's mapped on this feature here.

19 Q. You're identifying for the record the line
20 that is shaded -- the top portion of the line that's
21 shaded in the what? Lime color?

22 A. Well, it's lime-colored on the left, and it
23 goes into blue on the right, but it doesn't extend
24 beyond where you have no dolomite. See, we're just
25 mapping on top of the dolomite. We're not mapping

1 on the structure of the Upper Pennsylvania so that's
2 the reason it dips to the west to east. It really
3 doesn't have much to do with the production.

4 Q. Have you attempted to construct a structure
5 map on the base of the dolomite?

6 A. No, sir. It didn't seem to be meaningful.
7 However, we do know how thick the dolomite is.

8 Q. On Exhibit Number 8, I can understand the
9 structural contour lines, but I'm not certain I can
10 find how you have mapped and contoured the gross
11 thickness of the dolomite. Is that displayed on
12 Exhibit 8?

13 A. No, sir, it's not.

14 Q. Did you prepare what I would call a gross
15 isopach to demonstrate the distribution of this
16 gross dolomite thickness?

17 A. No, sir. We have one at the office, but
18 here, again, it turns out that this doesn't turn out
19 to be too meaningful because just like in the
20 Coquina R.S. Federal well, you can count up 192 feet
21 of dolomite in the thing, but, you know, by the
22 drill stem test, which it shows to be water wet, so
23 it doesn't mean anything to have 192 feet.

24 You might have a well in there that's 100
25 feet, or half of that much, and it can still make a

1 well, but if it's got hydrocarbon bearing column
2 above that big water.

3 Q. I can have half of the 190 feet and make a
4 well?

5 A. Right.

6 Q. As long as I'm above the big water?

7 A. Yes, sir.

8 Q. Well, that's what I have at McKay's
9 location, don't I? I've got 80 feet?

10 A. You have 80 feet? You've got 80 feet, but
11 as we pointed out, we have 154. According to my
12 interpretation, twice as much.

13 Q. When you look at the southwest quarter it's
14 going to be a gas well, isn't it?

15 A. No, sir.

16 Q. What tells you it's not going to be a gas
17 well?

18 A. Well, the closest wells are in Section 26
19 there, and the well in -- the two colored green
20 wells in Section 26? The well to the west there has
21 a GOR of 1,961 and 42 gravity oil, and the other
22 well has a GOR of 2640 and 47 gravity, and they're
23 called oil wells there, but that was the initial
24 completion.

25 Now, these red dots over to the west here

1 are gas wells, and those wells produce a condensate
2 that's got a gravity of 55 to 63, considerably
3 higher.

4 Q. When we look in 26?

5 A. Yes, sir.

6 Q. The rest of those symbols in there are
7 proposed locations?

8 A. Yes, sir. Undrilled, but proposed
9 locations.

10 Q. In order to give a sense of your analysis
11 of the gross dolomite thickness, I can look at
12 Section 25 on Exhibit Number 8 and you have put some
13 of these gross thickness values on a 40-acre basis
14 within that section?

15 A. Well, here again, I think we're not using
16 the same terminology.

17 Q. Okay.

18 A. What I've done with these numbers in
19 Section 25 there is the amount of dolomite above the
20 big water only, see. So that's what we're showing
21 there and not gross thickness of the dolomite.
22 That's the important thing.

23 Q. How do you map and determine the top of the
24 big water?

25 A. We've done that through perforations --

1 perforation history -- drilled stem test data, and
2 also we don't have that, we use mud logs where the
3 gas -- when they're drilling through the pay section
4 you'll start carrying gas in the dolomite if it's
5 above the big water, and then you'll carry it down
6 and it will start diminishing right near around the
7 big water top, and some of that information is on
8 this cross-section.

9 For instance, this well here, three drill
10 stem tests here, and all of them produced free oil
11 with reservoir-type pressures right down to this
12 point right here, and so that's what we've used as a
13 point there.

14 Here they had two drill stem tests with
15 free oil, but they even perforated lower, so you've
16 got to take that -- at least as low as the bottom
17 perforation there, and here they drilled into it --
18 Coquina drilled into it -- they stopped and ran a
19 drill stem test, which I won't go into great detail
20 on, and got only water.

21 So you've got to conclude that big water
22 surface is at or above this. So I used a mental
23 point there of minus 4135. By picking together this
24 sort of information together on a map, you can map
25 it.

1 Q. And that's what I'm getting to, Mr. Beck.
2 I want to understand the methodology by which you
3 have come to the conclusion about the location of
4 big water, and as I understand it, you simply map
5 the space of the perf on the well at the point where
6 you find indications to you of big water?

7 A. Well, you can utilize a number of them
8 where they perforated starting off at the bottom and
9 they'll get water and then they'll move up the hole
10 and perforate, and so you take the bottom
11 perforation of which you start getting significant
12 oil out of.

13 So some of these things they would do that
14 way. They would start at the bottom and march up
15 the hole until they got into oil production. So
16 then all you can do is take the bottom perf there
17 and that gives it really kind of a maximum number
18 downward for the very big water, and that's the very
19 best information.

20 The next best information is drill stem
21 tests. On all the wells that they had drill stem
22 tests in the dolomite section above the big water
23 you get free oil on the test. Gas to surface, and
24 wells that are in the virtually water filled part
25 just get all water. So in piecing that information

1 together you come up with a map that's close. It's
2 not as good as picking the top of the dolomite
3 because you can do that precisely on the electric
4 logs, but it can be mapped.

5 Q. When we're looking at the dolomite above
6 the big water?

7 A. Yes, sir.

8 Q. Can that be divided into different zones or
9 intervals within the dolomite?

10 A. It can be, and you can trace them for short
11 distances, but as you go over the large part of the
12 field you usually get bogged down and can't -- I
13 can't seem to make much sense in subdividing it.

14 Q. So to understand your number then, when I
15 look at 25 at the McKay location I'm looking at
16 gross dolomite above the big water when I get 80
17 feet?

18 A. Yes, sir.

19 Q. When we look over at the Prickly Pear in
20 the southeast of the southeast of 23?

21 A. Yes, sir.

22 Q. What was your gross dolomite above big
23 water in that well?

24 A. 225 feet.

25 Q. Where is the Hill View Number 1 well? Is

1 that on your display?

2 A. I don't believe the Hill View Number 1 is
3 on the display.

4 Q. It's up in the Section 12, isn't it?

5 A. It's up north, right.

6 Q. Okay. You talked with the Coquina drill
7 stem test?

8 A. Yes, sir.

9 Q. And that was of significance to you?

10 A. Yes, sir.

11 Q. Because based only on the drill stem
12 test -- I guess, the operator didn't attempt to
13 complete or produce, he simply took the drill stem
14 test and left it at that?

15 A. Yes, sir, that's right. He evidently got a
16 drilling break there and tested it, but the results
17 of it when he drilled the well on down to the
18 Morrow, he didn't consider the well to be economic
19 either in the Morrow where the well was plugged and
20 abandoned without any attempt for completion of
21 anything including the Canyon dolomite reservoir.

22 Q. Did you run a drill stem test on the
23 Prickly Pear?

24 A. No, sir. We considered an inside location
25 and didn't have to.

1 Q. Do you know the Hill View Number 1 well?

2 A. Yes, sir.

3 Q. There was a drill stem test on that well
4 wasn't there?

5 A. Right.

6 Q. What did that well show on a drill stem
7 test?

8 A. Drill stem test showed water in one of
9 them.

10 Q. Yates went ahead and completed it despite
11 the fact that it had a drill stem test that showed
12 only water?

13 A. Well, we tested a lower section of it. The
14 drill stem test was not at the top of it, so the --
15 and the very top of the thing. We just tested a
16 lower section to see what we would get there. It
17 was just for our own purposes. There was an upper
18 part of it that wasn't tested in the reservoir if
19 which we assume that most of the oil that well is
20 coming out of, and it's another one, those east side
21 wells, that's down significantly from the well
22 immediately to the west, and it's not a very good
23 well.

24 Q. When we look in 13 -- did you sponsor
25 Exhibit 13? Did we get that far? That's the

1 production information on this?

2 A. Yes, sir.

3 Q. Up in the northeast of the northeast of 23,
4 I don't have a well name for that one, is that the
5 Hill View?

6 A. That's the Hill View Number 5.

7 Q. Okay.

8 A. You can tell by looking on Exhibit 8.

9 Q. Again, in order to try to understand the
10 display, where's the big water contact in that
11 general area of that well?

12 A. In that well there -- in that well there,
13 is one that I don't have a big water top on because
14 I considered it too hard to pick, and I had to -- I
15 had to rely on nearby wells for that one. I did not
16 try to pick that one. I didn't think I could pick a
17 good number on that one. That happens on a few of
18 these wells in here where the mud log wasn't
19 conclusive or something and we didn't run a drill
20 stem test, of course, and perforations didn't
21 indicate a good number.

22 Q. How much dolomite do you have in that
23 well? The gross dolomite in that well?

24 A. On the gross dolomite in the well in
25 Unit A, we had 255 feet gross. That's everything

1 good and bad.

2 Q. When I followed the big water line just to
3 the north of the Coquina well in 25, is that the
4 dotted line at minus 4150?

5 A. Yes, sir.

6 Q. Everything below 4150 is big water?

7 A. Right. At that point you see the Coquina
8 R.S. Federal well I figured at minus 4135, so that
9 line is only 15 units, see, so you can -- there are
10 50 foot contours you can see it approximately right.

11 Q. Am I correct in understanding the display?
12 As I look to the north of that line I'm going to be
13 in big water?

14 A. It depends on where you run into the
15 dolomite, yes, you would. You'd be at minus --
16 right there at the section line right above the R.S.
17 Federal there. It looks like approximately like the
18 big water is approximately 4150 and the structure in
19 the dolomite is also 4150, so there it would be
20 dry -- I mean, it would be wet.

21 Q. And as we move to the Prickly Pear location
22 we're slightly up out of the big water because we're
23 south and west of that dotted line?

24 A. That's right, but it means that you've got
25 to -- in order to construct these numbers -- like

1 225 for that well -- you have to subtract, you know,
2 the top of the dolomite, the bottom number there
3 minus 3917 from a minus -- big water number -- minus
4 4142, and let's see if I have greater thickness of
5 that.

6 Q. Perhaps you can tell me --

7 A. Excuse me, I found it. The well -- the
8 Prickly Pear -- had a gross thickness of dolomite of
9 274 feet, and there was 225 feet of that before the
10 big water, so there was some wet dolomite below in
11 our opinion.

12 Q. Well, bear with me. As we follow the line
13 of big water at minus 4150 and move up northward
14 into Section 23, I get to the well in the northeast
15 of the northeast. Exhibit 13 shows me that produces
16 620 barrels of oil, I guess, on a daily basis, and
17 it appears to be below the big water?

18 A. No, sir. That's not what we're coming
19 from. You have to take the number there for the
20 well in Unit A of 23. You've got a top of the
21 dolomite at minus 2930, okay?

22 Q. Uh-huh.

23 A. Now, the big water by well -- we didn't
24 pick one in this particular well, but by using other
25 wells around there you can see that thing comes in

1 about a minus 4155 or so. So you take minus 4155,
2 you estimate it, and subtract 3937. 218 above the
3 big water. See, you have to use it in conjunction
4 with both of the contours. You can't just go by the
5 big water.

6 Q. I'm trying to understand how you reach your
7 display. Can't we simply solve this, Mr. Beck, by
8 laying this spacing unit down and you get your well
9 location, Mr. McKay gets his, and everybody is just
10 happy?

11 A. Well, sir, we believe that our proration
12 unit most efficiently fits the geology, and that our
13 location in that proration unit is the best. If
14 you're going to drill a well, you know -- and the
15 rules in this field down here at 320-acre spacing
16 and 1400 barrels of oil a day from the hole, so you
17 can drill as many wells as you can and stay 660
18 within all boundaries, so you start with the best
19 location and then work from there.

20 Q. And that has been the pattern with Yates in
21 Section 23 is those wells are getting drilled up on
22 40-acre spacing, aren't they?

23 A. Yes, sir.

24 Q. And you get to produce that allowable under
25 these rules provided you continue to be classified

1 as oil wells. You can produce it in any combination
2 between the wells, can't you?

3 A. Well, if I understand what you're saying,
4 you know, the 320 acres spacing, and you can drill
5 as many wells as you want, you get up to 1400
6 barrels a day, and then if production drops off
7 substantially, you can go up and drill it up until
8 you get to drill up on forties in the oil leg here.

9 Q. But if you have a gas well in this pool,
10 you can't simultaneously dedicate that acreage to
11 your well?

12 A. We're not asking to drill any gas wells,
13 and even, you know -- hypothetically you drill a gas
14 well, and then we wouldn't be anywhere near the 1400
15 barrels, and you try to drill somewhere where you
16 can get the oil out. That's a hypothetical.

17 MR. KELLAHIN: Pass the witness,
18 Mr. Examiner.

19 MR. CARR: Nothing further.

20 EXAMINATION

21 BY MR. CATANACH:

22 Q. Mr. Beck, you've stated that in your
23 opinion the west half is 75 percent productive. Is
24 there a way to show me which 75 percent is
25 productive in that west half?

1 A. Yes, sir. What I'm saying there is if you
2 look in the west half, you start with the Staghorn
3 location down in the southwest southwest, it's got
4 154 feet above the big water. The well immediately
5 to the right has got 78. It's still enough to be
6 counted.

7 The well to the north of the Staghorn is
8 143, and the well to the right of that gets down to
9 only 25. We include it. Then, the well to the
10 north -- well there in the northwest quarter -- the
11 southwest of the northwest quarter. You see that?
12 It's 122 and then you move up to the McKay location
13 it's 80, include that.

14 What we don't include is the Coquina R.S.
15 Federal Number 1 there, the dry hole that had the
16 DST wet, and the location immediately south of it.
17 So you've got six of eight possible locations which
18 is 75 percent.

19 Q. So, approximately everything to the right
20 of the 4100 foot contour line is probably
21 nonproductive acreage?

22 A. Well, sir, here again, what you've got to
23 do on all of these to get to talk about productive
24 acreage, and that means above the big water you've
25 got to subtract the structural top of the dolomite

1 number from the big water number.

2 For instance, you take the location there
3 in the northwest quarter, the southeast of the
4 northwest quarter, there's a zero there. The
5 structure there you can see is a minus 40 -- it's
6 just a little over minus 4100 -- minus 4105, and the
7 big water you see coming across there is also that
8 minus 4105. So I think there's just a coincidence
9 you would have the top of the dolomite sitting on
10 the big water and you drill a water there and you
11 get zero, so I don't count it.

12 You have to always subtract the solid
13 contour value from the dotted contour value. You
14 can't just look at either one of those contours by
15 themselves and follow what I'm trying to say here.

16 Q. Would you consider any dolomite above the
17 big water one, two, three feet, would that be
18 productive?

19 A. Probably not. It would probably take a
20 little more than that.

21 Q. At what point would you reach where you
22 think it would be productive?

23 A. Well, we will probably try it if it had 25
24 feet or more, but it probably wouldn't be a very
25 good well, and like I said, on the east side of this

1 field here, if you watch what happens, you get these
2 facies changes rapidly, and the top the dolomite
3 drops down and some of the dolomite is taken up with
4 classtic wedges, and so the total amount of dolomite
5 is reduced and you get to the point where the well,
6 even though it maybe had 80 feet, would not be
7 economic.

8 We'd probably try it. We'd try it
9 probably, but it might not be economic. So you try
10 for the most of the dolomite you can to get above
11 that big water, and then after you drill a well you
12 see what happens, and if it works out, well then,
13 you go right on with your program.

14 Q. Are your producing rates in this field, are
15 they pretty much proportional to the amount of
16 dolomite above of the big water?

17 A. That and other things like vagaries of
18 permeability. Sometimes we drill wells where we
19 loose circulation in the big water -- I mean, above
20 the big water, in the good part -- and that's always
21 good.

22 When you get up close to maybe 1,000
23 barrels a day or 800 barrels a day to begin with.
24 On the other hand, if you get that lost --
25 circulation bits drops or something down in the big

1 water, you want to stay away from it because it will
2 make enormous amounts of water and so much you
3 cannot move enough fluid to get the oil out.

4 Q. Is there a gas cap on this reservoir?

5 A. The gas cap is -- see on the west side of
6 the field where the red dots are on Exhibit 8, right
7 between where the green and the red are, if you take
8 that on down into, say, Section 35 there that would
9 be approximately where the gas contact is. Of
10 course, we tried to develop an oil leg because
11 that's where the economics are, and we found out
12 that these other -- drilled some of these other gas
13 wells, some of them because of expiring leases, and
14 in the early days we wanted to find out what was out
15 there.

16 Q. Okay. At what depth would you consider the
17 gas/water contact, do you know?

18 A. That's the thing. This reservoir is --
19 you've got this big wad of dolomite extending north
20 of there, and the west side of the -- the high west
21 side of it has got gas above big water, and in the
22 middle part of it has got oil above big water, and
23 the portion of the east side over there just got big
24 water. It's a complex deal. It's not an ordinary
25 thing. It's hydrodynamically tested all the way

1 from this big field two or three miles down to the
2 south called Indian Basin which has the same sort of
3 tilted north -- southwest to northeast tilt on it
4 just as it does here.

5 EXAMINER CATANACH: I believe that's all I
6 have.

7 DIRECT EXAMINATION

8 BY MR. STOVALL:

9 Q. I have just one question for Mr. Beck.
10 You're recommending this location because you feel
11 it's a higher probability of drilling a successful
12 oil well; is that correct?

13 A. Yes, sir.

14 Q. Do you still feel it's a maximum risk
15 location?

16 A. I believe that, you know, we're taking the
17 risk, and that would be a reasonable number because
18 you never really know until you get out there and
19 drill it.

20 We believe that based on the geology here,
21 the subsurface control, and in our experience,
22 that's the best location, but on the other hand we
23 think that anyone that wouldn't join should be
24 penalized for it to that amount because we're
25 dealing with a complex carbonate reservoir.

1 MR. STOVALL: That's all I have.

2 FURTHER EXAMINATION

3 BY MR. CATANACH:

4 Q. Mr. Beck, does Yates have any wells with
5 gross dolomite thickness of approximately 80 feet?

6 A. Probably do somewhere up to the north. I
7 don't know whether it's on -- well, let's see.
8 Right. There's one well there -- one there in the
9 southwest of the southwest of 13 that's got --
10 between minus 4120 and 4187 you've got 67 feet, and
11 that's a poor well.

12 In fact, we talked about it in the -- on
13 the -- you can see the production on that well on
14 the Exhibit Number 13 where we compiled production
15 figures, and it's now making 20 barrels oil a day,
16 1,028 barrels of water, and 261 MCF. The well just
17 immediately to the west is making a 198 barrels of
18 oil, 1,635 barrels of water, and 1,026 MCF.

19 EXAMINER CATANACH: That's all I have. The
20 witness may be excused.

21 MR. CARR: All right. At this time we call

22 PINSON MCWHORTER

23 the Witness herein, being previously duly sworn, was
24 examined and testified as follows:

25 DIRECT EXAMINATION

1 BY MR. CARR:

2 Q. Will you state your name and place of
3 residence?

4 A. My name is Pinson McWhorter. I live in
5 Artesia, New Mexico.

6 Q. By whom are you employed, and in what
7 capacity?

8 A. I'm employed by Yates Petroleum Corporation
9 as a petroleum engineer.

10 Q. Have you previously testified before this
11 division and had your credentials as a petroleum
12 engineer accepted and made a matter of record?

13 A. Yes, I have.

14 Q. Are you familiar with the applications
15 filed in each of these cases, one by Yates, one by
16 McKay?

17 A. Yes, sir.

18 Q. Have you made an engineering study of the
19 area that is the subject of these applications?

20 A. Yes, sir, I have.

21 Q. And are you familiar with this pool?

22 A. Yes, sir, I am.

23 Q. About what portion of your time do you
24 actually devote to this particular pool?

25 A. I spent about 75 percent of my time working

1 this pool and the pool just north of that.

2 Q. And you were previously qualified as a
3 petroleum engineer?

4 A. Yes, sir.

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

7 EXAMINER CATANACH: They are.

8 Q. (By Mr. Carr) Have you prepared certain
9 exhibits for presentation here today?

10 A. Yes, I have.

11 Q. Would you refer to what has been marked as
12 Yates Exhibit Number 15 and identify that for
13 Mr. Catanach?

14 A. Yes. This exhibit depicts an estimate of
15 oil recovery for oil well locations within the map
16 confines here in the South Dagger Draw Pool Upper
17 Penn Pool in Eddy County, New Mexico. What it shows
18 in thousands of barrels -- the legend shows
19 thousands of barrels and the numbers represent --.

20 For instance, in the northeast of the
21 northeast of 14 there's a well that has a projected
22 ultimate oil recovery at 310,000 barrels. As we go
23 to the south we see that there are wells in
24 Section 13 that have substantially lower recoveries
25 than wells directly offsetting to the west.

1 For instance, wells producing oil here will
2 be projected to have 18,000 barrels of oil as
3 compared to 405,000 barrels of oil directly to the
4 west. As we proceed to the south we see that I have
5 estimated the reserve recovery -- oil reserve
6 recovery -- for a Staghorn location at a 165,000
7 barrels.

8 Q. What general conclusions can you reach
9 about the recovery along the eastern down dip flank
10 of this reservoir?

11 A. Well, this -- the recovery -- the daily
12 production and the declines on the wells along the
13 east versus the further west up dip structural
14 section, as shown by Mr. Beck's cross-section and
15 more vividly, by his structure map, that's been a
16 point of discussion here for some time now. It
17 shows as we get on those wells that are very low
18 dipwise to the east, they have very poor
19 recoveries. That very poor recovery, of course, is
20 related to -- directly related to the amount of
21 reservoir quality dolomite -- hydrocarbon bearing
22 dolomite -- in any given well.

23 The best example of the two wells in
24 Section 13, the one to the north, the 18,000 barrel
25 recovery well is the Ceniza Number 3. The one to

1 the south, the Hill View Number 7, is projected to
2 have 25,000 barrels of oil recovery. Due west of
3 that is a well -- the Hill View 8 -- which we
4 projected to have 295,000 barrels of oil recovery,
5 but has significantly more dolomite which is
6 hydrocarbon bearing.

7 Q. So, Mr. McWhorter, if I understand what
8 you've done here, the reserve numbers that you have
9 obtained, the 165 NBO for the Staghorn location,
10 you've got that by projecting the net thickness and
11 then comparing it to water wells with comparable
12 thickness in the area?

13 A. That's correct.

14 Q. Does Yates Petroleum Corporation seek to be
15 designated operator of this well?

16 A. Yes, we do.

17 Q. And what experience has Yates had with the
18 development of the Upper Pennsylvania in this area?

19 A. Well, Yates Petroleum Corporation has
20 drilled and operated eighty wells in the Upper
21 Pennsylvanian in this area. We operate -- have
22 drilled and operated 33 wells in the north pool and
23 47 wells in the south pool. Currently we have three
24 rigs running in this field, drilling three more
25 locations at this time.

1 Our current oil production is in excess of
2 13,000 barrels of oil per day. We have production
3 of gas in excess of 50 million cubic feet of sour
4 production per day, and we have excessive water
5 production, which is commensurate with the Upper
6 Pennsylvanian here and the hydrodynamic nature of
7 the trap, and we produce right now and dispose of
8 some 45,000 barrels of water per day.

9 Q. Do you happen to know how many wells are
10 operated by McKay in this field?

11 A. In this pool there are none operated by
12 McKay.

13 Q. Let's look at Exhibit Number 16. And I'd
14 ask you to identify that for the Examiner?

15 A. Okay, sir. Exhibit 16 depicts the gas and
16 water gathering system that was put in place by
17 Yates Petroleum Corporation and is still a dynamic
18 entity. It's still an ongoing thing. We're still
19 laying more water and gas gathering systems, buying
20 more compression.

21 The necessity of this extensive water
22 gathering system is depicted in the blue lines, and
23 the blue dots are disposal wells that we have in the
24 system, and the red lines depict the main arteries
25 of the gas gathering system, but what necessitates

1 this is the nature of the gas production, which is
2 sour gas, in the extensive water production in the
3 field which averages at least 600 barrels of water
4 per day per well, and for many wells even higher
5 than that, and so this field, as far as the
6 recognition of the hydrocarbon bearing pay zone, has
7 been known for quite some time.

8 However, prior to mid-1980 operators never
9 invested the money necessary to develop the water
10 disposal system that would be commensurate with the
11 excessive amount of water production and the ability
12 to move the sour gas to sweetening plants to be
13 sweetened, and the petroleum was instrumental in the
14 development of an extensive system to do that as an
15 operator.

16 Q. Does Exhibit 16 show just basically the
17 trunk lines in this system; is that what it's
18 designed to show?

19 A. That's correct. These are the main
20 arteries of the system. They do not depict the
21 extensive lines of just flow lines from the well
22 heads into the main arteries.

23 Q. Will you refer to Yates Exhibit Number 17?
24 Identify that and review it, please?

25 A. Yes, sir. This exhibit highlights some of

1 the statistics concerning the gas gathering and
2 water gathering system that we have installed. As I
3 said, we're delivering right now in excess of 50
4 million a day in our gas gathering system. By mid
5 November with the advent of another compressor that
6 we'll bring on line, we'll have capacity for 57
7 million a day. By the end of December with addition
8 of more compression that we have ordered, we will be
9 up to 67 million a day capacity.

10 Currently we have 52 miles of gas gathering
11 main artery gathering systems, and we're now looking
12 at the design of a 10-inch loop down in the southern
13 part of the field. That would be 11 miles of
14 10-inch loop down there, which would be an
15 additional amount of gathering in the field.

16 Currently we have on line 10,000 horsepower
17 of compression. We have another 2500 horsepower of
18 compression on order.

19 The other part of the exhibit indicates
20 data -- statistics -- concerning the water disposal
21 system. We dispose -- as I said -- 45,000 barrels
22 of water a day is our current disposal, and we
23 actually have capacity to dispose of 50,000 barrels
24 of water a day.

25 We have eight active salt water disposal

1 wells distributed throughout the field. We have two
2 salt water disposal wells that are currently being
3 converted, and those will be on line shortly. At
4 that time I project that we will have in the
5 neighborhood of 60,000 barrels of water disposal
6 capacity.

7 Q. Now, is there any water-free production in
8 this area?

9 A. No. There's no water-free production in
10 the Canyon in this area.

11 Q. Could you make an estimate as to what might
12 be the average water production per day?

13 A. Yes, sir. As I said, it averages around
14 600 barrels a day per well -- average water
15 production per well.

16 Q. And does Yates have excess capacity and
17 would be able to handle any water that would be
18 produced in conjunction with hydrocarbons in its
19 proposed Staghorn allowable?

20 A. Yes, we do.

21 Q. The gas that would be produced with the
22 oil, would that be, in your anticipation, sour or
23 sweet gas?

24 A. No, this would be sour gas.

25 Q. And what would you propose to do with sour

1 gas produced from the Staghorn?

2 A. Well, we would -- as we are testing the
3 well as we initially complete it, and again, the
4 test phase, we'll hook it right up into our sales
5 line and begin gas sales. The gas goes to basically
6 one of three outlets. It will either go to a
7 TransWestern sweetening plant, or it would go to a
8 northern sweetening plant in Hobbs, or could
9 potentially go to a Phillips sweetening plant. We
10 do send some of our gas over to Phillips' sweetening
11 plant.

12 Q. But you would have the ability to sweeten
13 the gas, whatever it would produce?

14 A. That is correct.

15 Q. When you are testing the well, what would
16 you do with the gas during testing? Would you flare
17 it, or would you be able to put it into the line?

18 A. No, sir. We would put it right into the
19 sales line.

20 Q. Based on the facilities that Yates has in
21 place in the area, is it well equipped to handle all
22 the production that it would be able to obtain from
23 the proposed well?

24 A. Yes, sir.

25 Q. Were Exhibits 15 through 17 prepared by

1 you?

2 A. Yes, they were.

3 MR. CARR: At this time I would move the
4 admission of Yates 15 through 17.

5 MR. CATANACH: Exhibits 15 through 17 will be
6 admitted as evidence.

7 (Yates Petroleum Corporation Exhibits 1
8 through 17 were admitted in evidence.)

9 MR. CARR: That concludes my direct
10 examination of this witness.

11 MR. CATANACH: Mr. Kellahin.

12 CROSS-EXAMINATION

13 BY MR. KELLAHIN:

14 Q. Mr. McWhorter, on Exhibit 15 when we look
15 at the Marathon well in 36?

16 A. Yes, sir.

17 Q. Which is southeast of your proposed
18 location?

19 A. Yes, sir.

20 Q. That's a sour gas well that's currently
21 shut in, isn't it?

22 A. Yes, sir, it is.

23 Q. That well's not being produced, is it?

24 A. No, it's not.

25 Q. Is it completed in this dolomite that

1 Mr. Beck was describing for us?

2 A. They have -- let me say this, they have
3 perforated throughout the dolomite. There seems to
4 be some question as to what they're actually finally
5 producing from is in the dolomite or not, but if it
6 is it's at the very, very top of the dolomite
7 section itself.

8 Q. Is it the information from that Marathon
9 well that causes you to believe that your location
10 is going to produce sour gas?

11 A. The information that causes me to think
12 that we're going to produce the sour gas is that
13 we've drilled 80 wells in this dolomite out here,
14 sir, and it's produced sour gas each and every time.

15 Q. I guess I'm confused. Mr. Beck was talking
16 about as you move north you produce sweet gas. Did
17 I misunderstand?

18 A. Not within the dolomite section I don't
19 think you produce sweet gas. Where you produce
20 sweet gas is when you move up the hole and into the
21 limestone section. Very frequently if you perforate
22 the limestone section you will produce sweet gas
23 with them.

24 Q. I guess I don't understand the point of
25 your discussion about the water disposal facilities

1 utilized by Yates in this field. Is not that water
2 disposal facility a separate entity within the Yates
3 structure of companies?

4 A. Yes, it is.

5 Q. And don't those companies in which Yates
6 has a working interest in these particular wells on
7 a well-by-well basis pay a fee to the disposal
8 company?

9 A. Yes, sir, they do. As you well know a fee
10 would be charged by any company to dispose of water.
11 The fee to dispose of that is less than a third of
12 what it would cost to truck the water --

13 Q. I understand.

14 A. -- which is the other option.

15 Q. And regardless of who operates or how you
16 configure the proration unit for Section 25, Yates
17 is going to have a working interest in the well?

18 A. Yes.

19 Q. And with that working interest then, that
20 well's production is eligible to have the water
21 produced going into the Yates system for a fee?

22 A. That could probably be worked out. It
23 would be an item that probably could be worked out.

24 Q. When we look at Section 26 there's some
25 well spots in here for which you've not calculated

1 cumulative oil production?

2 A. Estimated ultimate oil production?

3 Q. The estimated ultimate oil recovery?

4 A. Yes, sir, that is correct.

5 Q. Why not?

6 A. Well, what I did was, I calculated the ones
7 that -- for the ones that Mr. Beck has on his daily
8 production map that he showed earlier.

9 Q. You haven't calculated the estimated
10 ultimate oil recovery for either of the wells in 26?

11 A. No, sir. I don't have those with me.

12 Q. Okay. In 24 Yates has got an acreage
13 position in the south half, don't they?

14 A. I'm not familiar with that. They may or
15 may not. I'm not familiar with the acreage.

16 Q. Are there any well locations proposed in
17 24?

18 A. I think -- well, I don't know that there's
19 an acreage or a location proposed, I do know that
20 near where we're producing is working on developing
21 a location in there in the west half of 24. Whether
22 it's north or south in that section I do not know.

23 Q. Okay. As a petroleum engineer, have you
24 done any pressure studies or reservoir studies that
25 would support Mr. Beck's interpretation of this big

1 water?

2 A. Well, sir, the things that support
3 Mr. Beck's interpretation of the big water is the
4 fact that we have a hydrodynamically tract
5 reservoir. The thing to indicate that we have a
6 hydrodynamically reservoir are three: One, the
7 whole system from the Indian Basin down through
8 Dagger Draw when it was initially found and
9 penetrated was subnormally pressured reservoir. It
10 was the first clue right there that it could be
11 related to hydrodynamics and potential surface --
12 actually below the surface of the ground. We had
13 subnormal pressure reservoir.

14 The second clue that it's a
15 hydrodynamically tract reservoir i.e. and tilted
16 water contact, is the fact that we produce
17 essentially fresh water. We produce water that have
18 chlorides anywhere from 6 to 7,000 parts per
19 million, which are extremely atypical for formation
20 brines in the Permian Basin.

21 Fresh water typically indicates some sort
22 of recharge. Where did the fresh water come from in
23 other words. And a recharged system is most
24 definitely to the west and through the high angle
25 faults in the Guadalupe and the water moves down

1 through the Pennsylvanian here, and it's a
2 hydrodynamic trap.

3 When you see a hydrodynamic trap you see --
4 no longer do you see water, oil and then a static
5 oil gas column sitting conformably on top of the oil
6 and water column. You will see fluids distributed
7 off of one another and that relates, if you do a --
8 draw just a simple force diagram with a vector of
9 water and the buoyancy effect of water and gravity
10 effects of water, and put that under motion and in
11 conjunction with the same vectors for oil and the
12 buoyancy effect of oil, which is more buoyant than
13 water, less gravity, less gravity effects, and the
14 gas, which is even more buoyant than the oil -- when
15 you get a hydrodynamic situation, they all want to
16 move to different points. They no longer migrate to
17 the same point over one another in the reservoir,
18 and they're distributed differently.

19 Sure enough, if we look at distribution of
20 reservoir fluids within this reservoir, we see that
21 down dip and to the east we have oil distributed.
22 We have a gas cap distributed to the west, and
23 they're displaced off of one another just as you
24 would expect in a hydrodynamic trapping and the
25 tilting of the oil/water contact and, therefore, the

1 distribution of the big water. You find no water
2 free production. You can even perforate at the top
3 the dolomite and you're still going to make water.

4 Q. My question, sir, and perhaps I didn't make
5 it clear, have you applied all of that
6 information --

7 A. Yes.

8 Q. -- to a specific study to independently
9 confirm for each well Mr. Beck's contouring of his
10 location of the big water?

11 A. Not independently for each well, but for
12 the two pools as a whole, yes.

13 Q. In this general way to see as a reservoir
14 engineer how this is supposed to work?

15 A. That is correct.

16 Q. But when it comes to specifically locating
17 the actual contact in the dolomite with the top of
18 the big water, you've not independently done that as
19 a reservoir engineer?

20 A. Yes, I have. Not as a reservoir engineer,
21 but I'm also the completions engineer, and I'm the
22 one that has been testing the location of this big
23 water contact from well to well.

24 Of these of these 80 wells that we have
25 drilled and completed, I have completed all but 19

1 of them that Yates operates, and we have done some
2 experimenting with the locations of this big water
3 contact in various wells by perforating and
4 production testing the lower zones to see if they do
5 have oil entrained in the water.

6 Q. Okay. When we apply that expertise and
7 knowledge to the west half of 25 using Mr. Beck's
8 Exhibit Number 8?

9 A. Yes, sir.

10 Q. You believe that you can make a commercial
11 well at your proposed location?

12 A. Yes, I do.

13 Q. We move to the north, and we go down to 143
14 feet of gross dolomite above the big water, will
15 that make a commercial well?

16 A. That would probably be commercial, yes.

17 Q. We move further north to the next location,
18 122, is that going to make a commercial well?

19 A. That will start to get marginal there as
20 far as being commercial.

21 Q. And the 80 feet above big water at the
22 McKay location, will that make a well?

23 A. Okay, sir. If I interpret by what you mean
24 "by make a well," if it makes oil, gas and water,
25 it will make a well, but it will probably not be a

1 very economic well with only 88 feet of hydrocarbon
2 bearing dolomite above the big water.

3 Q. In the absence of a well at McKay's
4 location, where are those oil reserves going to
5 migrate to?

6 A. Well, sir, I'm not sure that they're going
7 to migrate to any place in the immediate production
8 future of this reservoir.

9 Q. Have you done any drainage calculations on
10 the Prickly Pear well to see what areas it's going
11 to effect in the reservoir?

12 A. Well, the Prickly Pear -- well, I've not
13 done any drainage area calculations mainly because
14 drainage area calculations within this area of the
15 reservoir are difficult at best, and nebulous in the
16 results of what they really mean, but I've got some
17 data that shows something better than just putting
18 together a drainage area calculation, and as you
19 have yourself pointed out --

20 Q. What is that?

21 A. As you yourself have pointed out, that
22 wells have been drilled pretty close in a 40-acre
23 spacing in Section 23, and, if any place, there is a
24 well -- there's an area -- where there's a lot of
25 porosity feet of hydrocarbon bearing porosity feet

1 above the big water, and if any place that you would
2 expect that there would be some effects of drainage,
3 that's an area that we would see it.

4 Q. What area are you talking about?

5 A. The northeast quarter of Section 23.
6 Northeast quarter of Section 23. Within that --
7 confines of that quarter -- we have the Hill View 5,
8 which is in the northeast of the northeast. We have
9 the Hill View 6, which is in northwest of the
10 northeast, and Hill View 2, which is in the
11 southwest of the northeast, and the Hill View 10,
12 which is in the southeast of the northeast.

13 Now, the Hill View 2 is a well that we took
14 over from Conoco and originally they drilled it and
15 it was called the Penny Fed. Number 2, and they --
16 when we took that well over we had a sundry notice
17 in to plug the well. Because of the cumulative
18 production on that well, they have not been able to
19 make a very good well. It cumed 65,000 barrels of
20 oil, 373 million cubic feet of gas, and 1.1 million
21 -- yes. 1.1 million barrels of water.

22 Subsequently, we have come in there -- during 1990
23 we came in there and retreated the well, added a few
24 more perforations, and used submersible pump
25 technology to lift the fluids, and since then alone

1 we've produced 49,000 barrels of oil. Almost as
2 much as they produced in their whole production
3 history.

4 177 MCF of -- million cubic feet of gas
5 that is, and 126,000 barrels of water, and it's
6 still producing today 166 barrels of oil and 700 MCF
7 a day at 4200 GOR, which is an oil well, and it
8 makes 1500 barrels of water a day. However, after
9 that amount of depletion with that reservoir, I
10 would think that a 40-acre location directly
11 offsetting it would show some effect of depletion,
12 and when we drilled the Hill View 5, the Hill View 6
13 and the Hill View 10, the Hill View 5 and the Hill
14 View 6, as you can see on Mr. Beck's map, had
15 significantly high IPs and still have very high
16 rates and they're not affected by drainage by wells
17 that are 40-acre offsets.

18 By the way, the Hill View 6 is really the
19 same story, only it's not quite as strong as the
20 Hill View 5 or Hill View 10.

21 Q. Can you confirm that with pressure
22 information? Is there any pressure studies
23 available to demonstrate that wells are not
24 interfering with each other?

25 A. No, sir. We don't have any pressure

1 information specifically in that quarter section of
2 the field, and the reason we don't are some
3 operational reasons as far as testing the wells, but
4 the manner in which one has to test these wells is
5 really to submersible pump test the well.

6 Swabbing does not do much for the well, and
7 by the time you put it on submersible pump, then the
8 access to running pressure work is gone before your
9 eyes because at that point you cannot go in and do a
10 buildup because you can't shut the well in when
11 there's a submersible pump in the hole.

12 Q. Let me have you apply that knowledge to
13 Section 25. When we look at the northwest quarter
14 of that 40-acre tract?

15 A. Yes.

16 Q. Is it your opinion that the oil reserves
17 underlying that 40-acre tract are not going to be
18 drained by Prickly Pear?

19 A. That's my opinion. In the immediate
20 producing life of that well that we will not be
21 effected.

22 Q. When we look at 26 and look at the
23 northeast of the northeast of 26, that is a proposed
24 location?

25 A. That's a proposed location.

1 Q. When is that well to be commenced?

2 A. I have no idea. I do not know when that
3 well is scheduled to be drilled.

4 Q. If we accept your analysis that these wells
5 are draining limited areas?

6 A. Yes, sir.

7 Q. How many wells in Section 25 are going to
8 be necessary in order to fully develop that section?

9 A. In Section 25?

10 Q. Yes, sir. That's the one we're worried
11 about today.

12 A. Yes, sir. Within Section 25 I can see that
13 perhaps we would drill anywhere from at least the
14 one well Staghorn location to perhaps -- perhaps
15 three to four wells maybe along that western line
16 perhaps, but that's still speculative right now. As
17 far as how many we might drill would be based upon
18 the success and the geological result of drilling
19 each well.

20 Q. I'm just trying to apply the knowledge that
21 you've developed in this area to this particular
22 section.

23 A. Yes, sir.

24 Q. And based upon what you know now, it's
25 probable that the section could support four wells

1 in the pool?

2 A. No. What I said was, that right now I
3 believe with the current base of knowledge, I know
4 that one, possibly two wells can be supported. A
5 third and a fourth well along that western line
6 would only be provisional and be based upon the
7 results of drilling.

8 Q. Okay. The first two choices of preferences
9 for you are the Staghorn location and then the one
10 immediately north of that?

11 A. Yes, sir.

12 Q. Okay.

13 MR. KELLAHIN: No further questions.

14 EXAMINER CATANACH: I have no questions of the
15 witness. Anything further?

16 MR. CARR: Nothing further.

17 EXAMINER CATANACH: The witness may be
18 excused.

19 MR. KELLAHIN: I call Mr. George Reddy.

20 GEORGE R. REDDY,
21 the Witness herein, being previously duly sworn, was
22 examined and testified as follows:

23 DIRECT EXAMINATION

24 BY MR. KELLAHIN:

25 Q. Would you please state your name and

1 occupation?

2 A. My name is George Reddy. I'm a geologist.

3 Q. Give us some background information on you,
4 Mr. Reddy. When and where did you graduate?

5 A. The University of New Mexico in 1957,
6 bachelors degree. 1961, masters.

7 Q. In what discipline?

8 A. Geology.

9 Q. Subsequent to graduation, summarize for us
10 your employment experience.

11 A. After graduation I went to work for Exxon.
12 Worked for them 12 years and about a year and a half
13 with Desoro and in 1974 moved to Roswell, and since
14 that time I've worked as a consulting geologist in
15 the Permian Basin area.

16 Q. Do your consulting duties include
17 examination of not only gas reservoirs but oil
18 reservoirs in southeastern New Mexico?

19 A. Yes.

20 Q. Prior to the first -- prior to the current
21 employment by Mr. McKay, have you had prior
22 occasions to visit the Dagger Draw?

23 A. Yes, I have. I worked in it in the
24 mid-70s.

25 Q. What were you retained by Mr. McKay to

1 accomplish as a geologist?

2 A. To evaluate his lease.

3 Q. Were you given any preconditioned ideas
4 from Mr. McKay about when and where and how to
5 develop this tract in the South Dagger Draw?

6 A. No, I wasn't.

7 Q. You were totally independent on your own to
8 analyze the data and come to your own conclusions?

9 A. That's right.

10 Q. On prior occasions, have you rendered
11 expert geologic opinions to the Oil Conservation
12 Division?

13 A. Yes.

14 Q. And based on your studies, do you have
15 opinions as a geologist with regard to items of
16 issue in this case?

17 A. Yes.

18 MR. KELLAHIN: We tender Mr. Reddy as an
19 expert petroleum geologist.

20 EXAMINER CATANACH: He is so qualified.

21 Q. (By Mr. Kellahin) Let me ask you to give us
22 some background, Mr. Reddy, of the kinds of things
23 that you have done to assimilate sufficient data
24 from which then to make your interpretation. Where
25 did you start?

1 A. Well, I started with the previous --
2 knowledge gained from the previous study of the area
3 for one thing, but I used data from several
4 sources. All of the available open hole logs, scout
5 tickets, sample logs.

6 Q. In addition, have you reviewed the
7 transcripts and exhibits that were provided to you
8 from the earlier Yates presentation that established
9 special rules for the South Dagger Draw?

10 A. Yes.

11 Q. And you were present today during their
12 technical presentation in this case?

13 A. Yes.

14 Q. In addition, have you reviewed and examined
15 the data that Yates voluntarily shared with us on
16 the Prickly Pear well?

17 A. Yes.

18 Q. The production data and the log
19 information, and you have analyzed that data?

20 A. Yes.

21 Q. Were you working with modern geologic tools
22 in terms of well information by which to make your
23 interpretation?

24 A. Now, we are for the most part -- Well,
25 they're more sophisticated now than they were, say,

1 in the mid-70s, some of the newer data, of course.

2 Q. For addressing the specific issues within
3 Section 25, are you satisfied that you have had an
4 opportunity to evaluate all available data?

5 A. Yes, sir.

6 Q. One of the issues is to determine the
7 optimum or the least risky location in Section 25 in
8 which to locate this first well. Based upon your
9 studies, do you have a conclusion about that issue?

10 A. I believe to make an oil well the most --
11 the least risky location is the northwest quarter.

12 Q. Do you have a recommendation to the
13 Examiner as to the orientation of the spacing unit
14 for production in this pool that allows for the full
15 development of this section for pool production?

16 A. Yes.

17 Q. And what is that recommendation?

18 A. East west units, that is, lay down units.

19 Q. Okay. Give us a brief summary and then
20 we'll go into the specific display and the details,
21 but give us a brief summary of the key elements as
22 you see them as a geologist that caused you to
23 conclude that the northwest of the northwest was the
24 best location to pick in this section.

25 A. Well, the two elements, of course, is the

1 distribution of the host rock, the reservoir rock,
2 which is the dolomite that has previously been
3 discussed, and within that key elements are the
4 distribution of porosity within that dolomite, and
5 the third would be the oil/water and the gas/oil
6 contacts.

7 In that regard I tend to agree with
8 previous testimony that these are indeed, tilted
9 contacts, and tilted by a hydrodynamically active
10 system. The tilt of which is predominantly from
11 west to east.

12 Q. Wherein do you differ with Mr. Beck
13 concerning the geologic interpretation?

14 A. Well, what we've seen and from previous
15 hearings, and what we see today, is their big water
16 map. As best I can tell from looking at the
17 previous one and checking this one today, we're
18 talking about basal perfs. You can draw a basal
19 perfs map anywhere you want to, but -- and you can
20 call it what you want to, and I like that name, big
21 water, but they're making a lot of big water above
22 those perfs in many wells, so I don't really feel
23 like we've defined the hydrodynamic surface that
24 they refer to by mapping basal perforations.

25 Perforations are picked on porosity.

1 Porosity is distributed erratically within this
2 carbonate reservoir, and the hydrodynamic surface
3 that they're referring to is not necessarily with
4 the basal perfs.

5 Q. Mr. Beck chose to describe for us this
6 gross dolomite interval before his pick of the big
7 water. What have you done to give yourself an
8 interpretation of the distribution of that dolomite?

9 A. Well, you refer to structure, and I would
10 agree that's a good name to call the top of that
11 stratigraphically rising and falling surface, the
12 contact between limestone and dolomite. You call
13 that a structure. That is in that since it is. You
14 can map the top of this host reservoir, but there is
15 another structure alone that needs to be considered,
16 and that is the stratigraphic horizons, as he did
17 mention that these predominantly are east -- west to
18 east dip, but if you break the total unit down, you
19 can subdivide it within the field.

20 Q. Let's talk about the subdivision so that we
21 have a usable nomenclature. How have you chosen to
22 subdivide this gross dolomite?

23 A. Well, I've just broken it into three zones,
24 A, B, and C going down section. They're based on
25 correlations of the logs within the field. And

1 within the field itself I feel that they can be
2 correlated very well. As you get out onto the
3 flanks it becomes more difficult because some of
4 these thicken, especially on the east side, but it
5 overall represents top to bottom -- top to base of
6 the carbonate reservoir.

7 Q. How does that help that division of the
8 reservoir into zones or sections? How does that aid
9 you as an exploration geologist in picking the
10 optimum location to recommend for the drilling of
11 the well in Section 25?

12 A. Well, you can map the porosity patterns
13 within each zone. You can pick net feet of porosity
14 above a given cutoff, and you can map that, and in
15 doing so you can get some idea as to where within
16 any location which of those three zones you are apt
17 to most find porous dolomite in, and that's where
18 we're wanting to go. We want to find porous
19 dolomite above water, big water.

20 Q. Let's proceed through your displays and how
21 you went about doing this study. Let me direct your
22 attention to the index map marked as McKay
23 Exhibit 1. What is indicated on the index map?

24 A. Well, it's kind of the general map for the
25 lines of section that were drawn there. I think six

1 lines of section, one of which is on the wall. The
2 others are on these ledger-size exhibits. It shows
3 the location in the northwest quarter from
4 Mr. McKay's proposed wells, and it shows the
5 location -- it was shown as a location on the map in
6 the southeast of 23 of the Prickly Pear well, and
7 there also are some reference wells indicated, which
8 are on -- or are referred to -- on the big Section F
9 F' on the wall. Well two in the southwest of the
10 northeast quarter of 23, I believe that's the --
11 I've forgotten the name of the well. It's the old
12 Conoco -- Conoco well.

13 Q. Let's go about building the structural
14 description of the reservoir by looking at the
15 various cross-sections, and let you describe for us
16 what the cross-sections show you. And let's start
17 with the A A', and first of all, orient us. We're
18 starting at the south end of the reservoir as
19 currently developed and looking north as we move up
20 towards the North Dagger Draw?

21 A. Yes. On the north -- or the south end --
22 there is the Roger -- well drilled by Roger Hanks,
23 the Preston Fed 1, which was completed as a gas well
24 in the lower portion, and what I'm calling Unit C of
25 the total section. The vertical bars on each well

1 represents the perforate -- overall perforated
2 intervals in each of the wells shown on the line
3 section.

4 Q. What does it tell you?

5 A. The lighter line at the top shows the
6 facies change from dolomite to limestone, so on the
7 previous structure map that we've seen it would
8 be -- that would be the surface that will be mapped
9 using Mr. Beck's parameters that he is showing, as I
10 understood it. On the far end of -- on the north
11 end of it is the Yates Hill View AG Fed Com. 1,
12 which has low oil by perfs.

13 This section minus 4205, and that's shown
14 as references three and five on the larger
15 cross-section on the wall. Most of the rest of
16 these -- well, all of them -- are west east
17 cross-sections to show the cross-sectional view of
18 the reservoir facies, so B B' shows that in the
19 Conoco Preston Fed. 2 on the west side, or the left
20 side of the diagram --

21 Q. I haven't left Exhibit 2 yet, which is the
22 A A'. Let's start with that one, the A A'. What
23 are the major components of the structure that are
24 of importance to us as we try to decide how to
25 resolve this case?

1 A. Well, the sub units show north dip. The
2 dolomite on that line of section shows north dip and
3 then south dip on a portion of it, a good portion of
4 the east half of it.

5 Q. So, as we look north south then you've
6 identified a structural control point that you can
7 now run cross-sections perpendicular to this control
8 line and begin to get a sense of the size and the
9 shape of the structure as we move to the east and
10 the west side of this control point?

11 A. Yes.

12 Q. Okay. Let's do that now and let's go to
13 the B B', and begin to see what the southern part of
14 the structure looks like as we look at it from east
15 to west. What does it show you?

16 A. Well, it shows, again, only the Roger Hanks
17 Preston Fed. well to be the highest well on this
18 structure, both in terms of the top of the dolomite
19 and in terms of -- well, in terms of dolomite. The
20 other well to the west is slightly higher
21 structurally than the Preston Federal on the two
22 upper zones.

23 Q. You have in the center of the cross-section
24 this Marathon well that we've talked about
25 previously in the hearing?

1 A. Right.

2 Q. What are the important elements from that
3 Marathon well that you need to describe to us?

4 A. Well, the completion in the Marathon well
5 is in the upper most of these vertical bars above
6 the -- Upper Penn Unit A. That BP showing on the
7 diagram is a bridge plug that was reported. They
8 perfered lower zones prior to that, they acidized, and
9 it's a light -- it was a light treatment by acid of
10 those zones, and there's no record that I could get
11 of the recoveries in that part of the well.

12 Another thing on this line of section is
13 this shale wedge of Unit B that is encountered in
14 the Indian Hill State Com. That's not seen on every
15 line of section, but it does extend beyond -- or
16 into the massive portion of the dolomite reservoir,
17 or toward it, from that well.

18 Q. What does this wellbore tell you about the
19 C Zone?

20 A. Well, it tells me that it -- well -- on
21 this diagram it tells me that it's very thick.

22 Q. Was it tested for production?

23 A. Yes, it was.

24 Q. All right. As we move then -- this is
25 giving you your structural pattern in the southern

1 portion of the reservoir as we move up to the C C'.

2 That's Exhibit Number 4?

3 A. Yes.

4 Q. Identify and describe what you're seeing
5 here?

6 A. Well, referring that back to Exhibit 1,
7 which is the index map, again, it goes from the
8 Conoco Preston Fed 2, which is a dry hole on the
9 southwestern corner of the mapped area, and I have
10 some of the older names on these, but the Roger
11 Hanks Robin Fed 1 and the Dagger Draw Conoco Vicki
12 Fed 1, and the -- then we go to the Wildcat -- the
13 Coquina R.S. Fed 1, that would be the third well
14 from the right, and I'm showing Mr. McKay's proposed
15 location on this diagrammatic representation of the
16 reservoirs.

17 Q. And this is the first cross-section we come
18 to in which we have the Coquina well as one of the
19 wells for controlling your interpretation of the
20 structure?

21 A. Yes.

22 Q. And in terms of the structural position of
23 McKay's location to the Coquina well, you're moving
24 up structure?

25 A. Sorry?

1 Q. You're moving up structure at the McKay
2 location on the Coquina well?

3 A. Yes. In both cases, in terms of the
4 dolomite top of the dolomite, and in terms of these
5 three units that I'm mapping.

6 Q. All right. When we get to Exhibit 5 which
7 is the D D' cross-section?

8 A. Yes.

9 Q. Describe for us what's happening in the
10 reservoir structurally?

11 A. D D' starts on the southwest quarter of
12 Section 22 on the west side. It has a low proven
13 gas minus 3893 in that well.

14 It's the Yates HT Hagar Carl TP Com 2. It
15 goes through the Saquaro HGS Fed Com 5, which is
16 perforated in my B and C Zones. The Conoco Penny Fed
17 2, which, again, was perforated in the B and C
18 Zones, and on this line of section that would be the
19 lowest perfs shown.

20 On the next well in 24, it goes through
21 Monsanto Mayer which had a rather thick section of
22 dolomite, but mostly in the C Zone, and I picked a
23 little bit in the Nix IT Com 1 in that zone. So the
24 dolomite reservoir, as I see it, extends throughout
25 this side until you get beyond the NIX IT Com. 1

1 eastward.

2 Q. Okay. Then we get to the northern portion
3 of the interpretation. Exhibit 6 is the E E'?

4 A. Yes.

5 Q. Describe that one for us.

6 A. Again, it starts up on the west Saguaro AGS
7 Fed Com 2. We perforated down to minus 4,008. It
8 was shown on the books as an oil well, but had a
9 very high gas/oil ratio. The next one is the
10 Saguaro AGS Fed. Com. 1 which was perforated in the
11 B and C sub units. Looks like at the very top of
12 that same -- well at minus 4008.

13 The Saguaro AGS Fed. Com. 6 is the next
14 well along the line as completed in the B and C
15 Zones, mostly B., and the Hill View HE Fed. Com. 1
16 low perfs at minus 4208 and was completed in the A
17 and B portions of the total mass.

18 Q. Having prepared your cross-sections, did
19 you then prepare a gross isopach of this dolomite?

20 A. Yes.

21 Q. Let's turn to that. It's Exhibit Number 7?

22 A. Yes.

23 Q. What's the purpose of mapping this gross
24 dolomite?

25 A. Well, it is, as mentioned, the -- it's the

1 host rock for the reservoir and South Dagger Draw
2 field, and it would be good to see what it's limits
3 are.

4 Q. This gives us a distribution both
5 horizontally and vertically of the thickness of the
6 gross dolomite?

7 A. Of the gross thickness. Now, on the east
8 side it would include, as I mentioned, that shale
9 wedge that comes up through the Marathon well, and
10 so you're going to see that thickness included in
11 portions of it, but yet it's the gross thickness.

12 Q. At this level of geologic investigation,
13 can you make any conclusions about well locations or
14 orientations of the spacing units based upon the
15 gross isopach?

16 A. No.

17 Q. You had to take your level of geologic
18 investigation a further step?

19 A. Yes.

20 Q. What did you do?

21 A. Well, in conjunction with this -- are we
22 ready to go to Exhibit 8?

23 Q. Yes, sir.

24 A. Okay. I made a map, I think, that's
25 similar to the one that Mr. Beck was showing, and, I

1 mean, it was on the same data. That is the top of
2 the dolomite -- Upper Penn dolomite -- and that's
3 what this is showing. It's contoured on an interval
4 at 25 feet, and I've just taken the contours out to
5 the limits that are shown on the previous map. It
6 shows the axis of this feature starting down in
7 about the southwest quarter of 35 and curving
8 northward right on the oil trends.

9 Q. Having now given yourself a contour map of
10 structure on the top of this dolomite, having
11 developed a gross isopach, did you then attempt to
12 develop isopach on the individual members of that
13 dolomite?

14 A. Yes.

15 Q. The top one you've identified as the A
16 carbonate?

17 A. That's right.

18 Q. Let's look at that map.

19 A. Okay. Now this is net feet of dolomite
20 that has a porosity of two percent or greater.
21 Greater than two percent, I should say.

22 Q. So your porosity cutoff is greater than two
23 percent?

24 A. Right.

25 Q. So you're mapping everything that shows on

1 the log to have a porosity higher than two percent?

2 A. That's right.

3 Q. For the A carbonate?

4 A. For the A Zone only.

5 Q. Okay. What does this show you?

6 A. Well, it shows that the A Zone is thick
7 relatively speaking in the Marathon well, and also
8 to the north in this area where in some of the wells
9 they've completed in the A Zone.

10 Q. Well, the Marathon well is completed in
11 this A Zone. It is, is it not?

12 A. Yes.

13 Q. That's the sour gas well that Marathon has?

14 A. Right.

15 Q. Geologically, what does that begin to tell
16 you about the south half of Section 25 in the A
17 Zone?

18 A. Well, it's beginning to tell me that in
19 this zone -- at least in this zone -- it would be
20 more gas prone at the southwest location than in the
21 north location.

22 Q. Okay. As we move down into the carbonate
23 now and get into the next zone, the B Zone?

24 A. Yes.

25 Q. Isn't the object of the exercise to find

1 oil?

2 A. Well, that seems to be what's been
3 happening out there.

4 Q. Can you find it in the B Zone?

5 A. Yes.

6 Q. How have you mapped it?

7 A. Well, I must say that prior to receiving
8 the data on the Prickly Pear well I didn't have
9 quite as much of a thickness for the B Zone mapped
10 into Section 25, but I find porosity in the B Zone
11 there, and it's created a porosity thick with
12 respect to wells on the west, and it's logical to
13 draw then the zero line farther west in Section 25,
14 and what it shows me is that there's about -- by
15 mapping -- there's about 15 feet -- well, 15 -- 10
16 to 15 feet of porosity of porous dolomite in the B
17 Zone.

18 Q. Let's go down to the C Zone.

19 A. That's -- pardon me.

20 Q. I'm sorry. Go ahead.

21 A. That's at the McKay location.

22 Q. Yes.

23 A. At the Yates location I'm showing about 60.

24 Q. McKay Exhibit 11.

25 A. Okay.

1 Q. You're mapping the C Zone dolomite?

2 A. I'm mapping the porosity greater than two
3 percent in that C Zone dolomite.

4 Q. What's your conclusion?

5 A. My conclusion is that the Coquina well is
6 in a porosity thick within the C Zone. The only
7 zone that is present in that well that is dolomite,
8 and it is on trend in that thick with some very good
9 wells that are back to the northwest, and that the
10 Yates location in the southwest southwest of 25 is
11 in a -- relative to that -- it's in a porosity thin
12 of about 33 feet.

13 Q. The Yates location is 33 feet, and up in
14 your location it's what, 70?

15 A. No. I stated that that way, but at the
16 location itself I'm mapping in a 50-foot thickness.

17 Q. Okay. Having prepared isopachs on these
18 three zones now, what is the next thing that you
19 want to have investigated before you decide what is
20 the optimum location in which to propose the well in
21 Section 25?

22 A. Well, knowing that there is associated gas,
23 and that some of the wells were completed in that
24 zone, not many of them, but some out on the west
25 side were, I'd like to know as best I could, where

1 the low gas would encounter each of these zones, and
2 where the oil -- oil prone area is within each of
3 these zones.

4 Q. And have you prepared a map that
5 demonstrates that?

6 A. Yes.

7 Q. Let's go to Exhibit 12?

8 A. This is a structure map primarily on that A
9 Zone showing east dip, and it's -- in addition to
10 that are the limits to the dolomite, the dolomite
11 porosity, that occurs in the A zone. It's contoured
12 on 20-foot contour intervals. It's showing me that
13 both locations are in a gas prone area in
14 Section 25 in this zone only.

15 Q. What have you used to control the limits of
16 this dolomite porosity that's placed in the darker
17 line on each side?

18 A. Oh. Well, those would be from the previous
19 maps. In part it would be the limits shown on the
20 total dolomite isopach, and where the porosity
21 pinch-out diverges from that inside the field, it
22 traces the edge of the A Zone porosity, a pinch-out.

23 Q. Okay. As we go to the B dolomite, what did
24 you want to know with this display?

25 A. Well, may I go back here a moment?

1 Q. Sure. Which one?

2 A. To Exhibit 12.

3 Q. All right.

4 A. I've shown the oil prone area too that I
5 think may occur, and I've based it on the low perms
6 in this well in the northwest quarter of the
7 northwest quarter of Section 12 where actually this
8 falls below the low perms that were in that well
9 minus 4,000.

10 Q. All right. And that's shaded in the green,
11 and this is for A carbonate?

12 A. Uh-huh.

13 Q. All right. As we move into an examination
14 of the oil prone versus the gas prone areas in
15 looking at the B dolomite, you've prepared
16 Exhibit 13?

17 A. Yes.

18 Q. Okay. What's your conclusion?

19 A. Well, the B dolomite looks like it would be
20 in the oil leg to me in the northwest location and
21 in the southwest location, but very near that minus
22 4,001 which is the -- I'm sorry -- the base of --
23 basal perms in the Preston Fed. 2.

24 Q. Then finally, let's look at Exhibit 14 and
25 see what your opinions are concerning the oil

1 potential in the area in that C dolomite. What do
2 you conclude?

3 A. Well, I can say that both wells will
4 encounter -- they're in the oil prone location.
5 Both locations are in the oil prone interval, but
6 having already looked at the isopachs in these
7 zones, it appears to me that we would a lot more --
8 we would have more net pay in the northwest quarter
9 of Section 25 than in the southwest quarter.

10 Q. Mr. Beck has placed great emphasis on the
11 drill stem test in the Coquina well?

12 A. Yes.

13 Q. From which he has concluded that that is a
14 reference point for establishing control for big
15 water, and that you cannot expect to have production
16 in the dolomite that is down structure from the
17 position of that well. Have you examined that
18 topic?

19 A. Yes.

20 Q. Can you illustrate for us on Exhibit 15 the
21 conclusions you reach about the data derived from
22 the drill stem test on the Coquina well?

23 A. Well, the drill stem test tested --

24 Q. We're going to have some trouble here,
25 George. You're going to have to figure out how to

1 stand so that you don't block everybody. All
2 right. Try again.

3 A. Okay. The drill stem test tested across
4 the upper part of this dolomite. It was an hour and
5 15 minute test. It had 2887 initial and final shut
6 in. It recovered 1457 feet of sulphur water that
7 would amount to be, I believe, about 21 barrels of
8 oil. It was a very short test.

9 Q. Have you gone back and calculated water
10 saturations from that well?

11 A. Yes, I have.

12 Q. Give us a general range of the values that
13 you've calculated for the water saturation in that
14 well?

15 A. Well, I've compared it with the well up dip
16 here, the Prickly Pear.

17 Q. That's the one that Yates just completed in
18 the southeast of the southeast of Section 23?

19 A. That's correct.

20 Q. And have you done a similar analysis of
21 that well and made water saturation calculations
22 based upon those logs?

23 A. Yes, I have.

24 Q. Make the comparison.

25 A. Okay. The first big question is, as

1 mentioned earlier and I agree, it's fairly fresh
2 water, but in earlier testimony on previous
3 hearings, data was furnished that indicated it
4 ranged from about a .48 to a .26 among the wells
5 that were presented in that formation temperature.

6 In trying to use those I found that where
7 it looked like it was the wettest, which can be
8 assumed to be mostly, or almost likely to the water
9 zone among the ones tried, about a .3 seems to be
10 the proper RW to use at formation temperature, so
11 that's what I used in this area.

12 And now to show you in the Prickly Pear to
13 begin with, up in this area, I have a water
14 saturation of 23 percent, 41, 59, 44, 68 percent,
15 30, 20, 20, 19, 19, 42. There's a 17, also a 74
16 percent water, 78, 41, and 39, and this one here 73
17 percent.

18 Now, this is a modern log. I made the
19 corrections to get maximum resistivity. This one
20 is -- it wasn't as complete a log. We had a dual
21 lateral log, and this is in that density. And I
22 have water saturations calculated here 31 percent,
23 28, 35 23, 42, 38, and 34 percent, and they get
24 higher here, 59 percent and 58.

25 Q. Was does that tell you?

1 A. Well, it tells me that as far as you can
2 use log analysis, that this is a comparable well in
3 terms of water saturation. It's a little higher but
4 not much, and we've already agreed, I believe, that
5 this is a common reservoir. Well, not very much in
6 there that salinity throughout the reservoir within
7 this area, at least that we're looking, and so I
8 would rely to some extent on this and certainly
9 wouldn't condemn it on the basis of that one hour
10 and fifteen minute drill stem test.

11 Q. Are there examples in this pool where a
12 drill stem test will show nothing but water or a
13 small or slight show of oil and gas and subsequently
14 result in a well that produces substantial oil?

15 A. I don't have the volume of the oil that
16 it's producing, but one of the wells that's referred
17 to here, the Hill View AHE Fed Com 1 perfed down to
18 4207 feet, and I've just plotted this number three.

19 It would be the lowest perms where it would
20 show here. It was drill stem tested and recovered
21 similar amounts of water. There were no details
22 given on the PI report as to what pressures were,
23 but it was later perfed in that same interval.

24 Another well, the Cezina AGZ Com 3, is a
25 producing well indicating the data is producing and

1 it's been perped down to below minus 4256, which is
2 this line, and to me, even though I've shown these
3 horizontals here, this represents what's earlier
4 been said that we do have probably a lower oil/water
5 contact on the east side than we do on the west
6 side.

7 Then there's a log analysis and AHE Fed
8 Com 1 minus 43336 near the base of the carbonate,
9 and it is treated the same way as these others. It
10 had a water saturation of 30 percent calculated.

11 Q. When you put this all together as an
12 exploration geologist, Mr. Reddy, and if you were to
13 invest your money in one of these wells, where would
14 you put your money?

15 A. I would put it in the northwest quarter.

16 Q. Would you put it in the southwest quarter?

17 A. No, no.

18 Q. Summarize for us the elements then that
19 have caused you to reach the conclusion about the
20 northwest quarter?

21 A. Okay. Going back to the tilted oil/water
22 contact, it's got -- definitely got a west to east
23 tilt on it, but I do question that any of us can pin
24 that down with a data that's been relied upon to
25 describe it at this point. So I would stay with the

1 west to east tilt on the water table through most of
2 this.

3 And then for that reason I will rule out
4 Upper Zone A as big oil productive in this southwest
5 location. I think you'll have some B but it would
6 be very thin in terms of porosity, and you won't
7 have as much net feet of pay in the Z Zone, so I
8 think you can get a thicker pay zone in the
9 northwest quarter of Section 25 than you can in the
10 southwest in terms of oil production.

11 Q. Is there a sufficient difference in
12 structural position to make that difference critical
13 in picking the location?

14 A. When looked at on top of the dolomite
15 there's quite a bit of difference, but when you look
16 at it on top of the dolomite, you're climbing up
17 through these stratigraphic horizons in the gas cap
18 or into the associated gas prone portion of the
19 section. When you look at it on the sub unit
20 structure there's not a substantial -- there is a
21 little bit higher -- it's a little higher at the
22 southwest location by about 20 feet.

23 Q. Is that enough of a difference in the
24 structural point sub structure reservoir that you
25 would want to choose a point that was 20 feet higher

1 but not as thick?

2 A. If we were just talking about oil that
3 would be -- that would be indeed, but because we're
4 getting up into a more gas prone area with two of
5 the three zones -- well, perhaps three of them
6 although I would say that C is not as apt to be --
7 it's kind of a trade off structure against staying
8 in the oil column.

9 Q. In applying that criteria, are the
10 objectives to stay in the oil column the best
11 location then in all of 25 is 660 out of the north
12 and west of the section?

13 A. Yes.

14 Q. And any other 40-acre tract is less
15 favorable than that location?

16 A. Yes.

17 Q. How do you deal with the orientation of the
18 spacing? You have two choices. You've got a west
19 half, east half, or you can lay them down have north
20 half, south half. What's your choice?

21 A. Lay them down north half south half.

22 Q. And why would you make that choice over
23 standing up a west half unit?

24 A. I believe the reserves that are in
25 Section 25 can best be produced most efficiently in

1 that arrangement.

2 Q. If you stood the spacing units up, are
3 there oil reserves in the east half of the unit that
4 would be contributing to production in the west
5 half? You've shown on some of your displays some
6 potential in various zones in the east half, have
7 you not?

8 A. Yes. Yes, there would be some contribution
9 from the east half. If you drilled in the southwest
10 quarter there is the risk, though, that you would
11 not be able to produce the oil in this Unit C,
12 particularly if it's classified as an associated gas
13 well. And you've really ruled out more drilling, I
14 believe, in that arrangement.

15 Q. I'm going to reserve the question of the
16 penalty to Mr. McKay to address because he has to
17 make that judgment about the penalty factor, but in
18 assessing geologic risk, you've described
19 preference. Have you reduced that to trying to
20 quantify it in terms of a percentage, and if not,
21 fine, and if so, what is it?

22 A. I can't put it in terms of a percentage,
23 but for Unit C I would say that the chances -- I
24 mean, I cannot do it for all units -- but in Unit C
25 the chances in the south of the northwest quarter

1 are very high. Something on the order of 90 to a
2 100 in the southwest quarter in that same unit. I
3 give it more chance than any of the other two for
4 getting oil. I give it 70 to 88 to make it
5 commercial.

6 Q. If the unit is laid down, then both
7 competing operators, or working interest owners
8 competing for operation, would have the opportunity
9 to drill their location of preference, would they
10 not?

11 A. Excuse me, Mr. Kellahin, I think I
12 misstated that last -- can I make a correction?

13 Q. Well, we were talking about trying to put a
14 percentage if you wanted to on the risk of either a
15 dry hole or a commercial well. However, you want to
16 define it as we look at the various zones between
17 the two locations.

18 A. Well, when I said commercial I would give
19 it 70 to 80 percent that, yes indeed, they'll make
20 some oil, but they'll make a lot of gas in that
21 location if they complete as they have to in the
22 north where they're completing throughout down to
23 wherever they consider the base of the top of big
24 water, and if they do that they're going to have a
25 very high ratio well in my opinion, so my statement

1 of putting that percentage on it as being commercial
2 in terms of oil, it was not right.

3 Q. If the spacing units are laid down, that
4 would give each working interest owner that is
5 competing for a well location the opportunity to
6 drill their location of first preference, wouldn't
7 it?

8 A. Yes.

9 Q. And if we stand it up on the west half, the
10 examiner has to choose one or the other, doesn't he?

11 A. Yes.

12 MR. KELLAHIN: That concludes my examination
13 of Mr. Reddy. We move the introduction of his
14 Exhibits 1 through 15.

15 EXAMINER CATANACH: Exhibits 1 through 15 will
16 be admitted as evidence.

17 (McKay Oil Corporation Exhibits 1
18 through 15 were admitted in evidence.)

19 CROSS-EXAMINATION

20 BY MR. CARR:.

21 Q. Mr. Reddy, when were you retained to
22 conduct your study of the South Dagger Draw Upper
23 Penn field?

24 A. I was first approached -- I did not know
25 Mr. McKay had a lease down there, but he first

1 approached me in September of last year, and he
2 retained me in May of this year, early May.

3 Q. I believe you stated that you had
4 previously worked on this field?

5 A. Yes.

6 Q. And when was that?

7 A. 1977.

8 Q. Have you worked on it since 1977 until
9 Mr. McKay contacted you?

10 A. No, but it was nice revisiting it because
11 it seemed to fit the old picture very well.

12 Q. Part of your review, if I understood
13 Mr. Kellahin's questioning, was reviewing certain
14 transcripts and exhibits that related to the actual
15 promulgation of the pool rules for this pool; is
16 that right?

17 A. Yes.

18 Q. Wasn't there testimony in those transcripts
19 that indicated the spacing in this pool really
20 wasn't based on the number of acres that the well
21 would be expected to drain in the reservoir, or do
22 you recall?

23 A. I reviewed the geological portions of it
24 and I do not recall that part.

25 Q. If we look at your exhibits and we go --

1 let's go to Exhibit Number 3 -- and we look at the
2 Marathon well in the center of that cross-section
3 that's on the zone B B'?

4 A. Okay.

5 Q. Do the black lines on the right-hand side
6 of the wellbore indicate zones that were tested?

7 A. Yes.

8 Q. And so, apparently they tested low in the
9 well?

10 A. Right.

11 Q. Do you know if that tested wet or not at
12 that interval?

13 A. No. As I mentioned, I don't know. I
14 couldn't -- I could not tell from the --

15 Q. But do you know which of these intervals
16 they actually completed in?

17 A. Yes. It's that uppermost vertical bar.

18 Q. And so they were completing just in the top
19 of the dolomite as it appeared in this well?

20 A. That's right.

21 Q. And isn't it typical throughout this field
22 that you get gas in the top of the dolomite?

23 A. Yes.

24 Q. Okay. Now, if we go to your next
25 exhibit --

1 A. Not throughout the field.

2 Q. But generally when you're perforating a
3 zone in the dolomite, if you get right at the top of
4 it, isn't that where you would expect to get your
5 gas?

6 A. You would find the gasiest portion --
7 gasiest -- if that's a good word -- portion of it in
8 that uppermost perf, yes, but I don't want to go
9 over that further.

10 Q. Do you want to go to Exhibit 4 with me?

11 A. Yeah.

12 Q. By looking at Exhibit Number 4?

13 A. Okay.

14 Q. And on this -- this is the cross-section on
15 which you've placed the proposed McKay location?

16 A. Right.

17 Q. And at that location you have -- just as we
18 move from east to west, moving from the Coquina
19 well -- you all of a sudden see a thickening in the
20 dolomite; is that what that shows?

21 A. Yes.

22 Q. Now, this interpretation is constructed
23 just on well control; is it not?

24 A. That's true.

25 Q. And isn't it possible that based on well

1 control that that build up might be somewhat farther
2 to the west, not right there?

3 A. It is not possible that that well -- well,
4 it's possible, but it's not likely because of your
5 new well, which is not on this line of the section,
6 but it has shifted the crest of that dolomite top.

7 Q. And when you talk about the "new well,"
8 you're talking about the Prickly Pear?

9 A. Yeah, Prickly Pear.

10 Q. Now, was this exhibit prepared prior to the
11 time you had any information on the Prickly Pear?

12 A. Yes.

13 Q. And whereabouts on this plat would the
14 Prickly Pear actually be located?

15 A. Well.

16 Q. Would it be as far -- we don't have to get
17 exact to it -- but as far to the west as, say, the
18 difference between the Coquina and proposed
19 location, or would it be closer to that?

20 A. Well, in terms of where I show the crest
21 here, it would be located just west off the crest.

22 Q. Do you agree with Mr. Beck that moving just
23 40 well locations you may see a very pronounced
24 change in the dolomite that you encounter in this
25 reservoir?

1 A. I would agree with that.

2 Q. And isn't it possible the new Prickly Pear
3 location is a 40 location, or at least west of the
4 proposed McKay location; isn't that right?

5 A. Yes.

6 Q. And it is possible that you could see this
7 change in the dolomite somewhere to the west of the
8 McKay well; isn't that correct, their proposed well?

9 A. Very unlikely. You're going to see most of
10 what you saw in the Prickly Pear.

11 Q. But you would agree that if we go to the
12 north, say up to the -- I don't have the names of
13 the wells. You go north to the wells, the wells
14 between, say, section -- the easternmost wells in
15 Section 11 and the westernmost wells in 12, there
16 was a sharp difference in the formation between
17 those. All right. Without the names on these I'm
18 scrambling, but there's a well in the southeast
19 southeast of 14?

20 A. Yes.

21 Q. And if you move to the 40-acre offsetting
22 location to the east of there being in the southwest
23 of the southwest of the 13, there was a dramatic
24 change in the dolomite; was there not?

25 A. Well, let's see. Let's look at the top of

1 that dolomite structure.

2 MR. KELLAHIN: Give us an exhibit number,
3 Mr. Reddy.

4 A. I'm sorry. It's Exhibit Number 7. No, it
5 isn't. That is the isopach.

6 Q. (By Mr. Carr) We're talking about the Hill
7 View Number 7 well.

8 A. In the southeast of 14, southeast
9 southeast.

10 Q. Yes. As compared to the well immediately
11 offsetting it to the west being the Hill View
12 Number 8?

13 A. Well, you have me there. I don't have that
14 well. That's still tight I guess.

15 Q. Was Mr. -- But you did state you didn't
16 disagree with Mr. Beck that you could find dramatic
17 changes in the amount of dolomite available between
18 wells on offsetting 40-acre locations.

19 A. Now we're talking about the thickness of
20 dolomite; is that right?

21 Q. Yes.

22 A. Yes. Yes. Well, especially on this west
23 side, which I believe you used as an example where
24 you go -- I show 292 feet to zero. I'm on Exhibit 7
25 now, and I think that's the same one he showed.

1 Q. Do you agree that also -- that dramatic
2 change occurs on the east side of the reservoir?

3 A. It probably does in places, although I
4 don't see an example of that sharp a change in the
5 data I have available to me.

6 Q. And yet, even if that did occur, you don't
7 believe it would occur between your proposed
8 location and the offsetting Prickly Pear?

9 A. I don't believe it would. I don't believe
10 it's likely to occur that quickly because you were
11 coming up on this feature between these two --
12 between the -- we're back on -- no, we're not. I'm
13 showing on the wrong map. We're back on Exhibit 8.
14 You're coming up structure to this one. I've shown
15 it turning off pretty close, but it doesn't --
16 we've got the dolomite here. We've got a point
17 there. We're going to be between them in this C
18 Zone.

19 Q. And is there any control other than the
20 Coquina well and the Prickly Pear that you could
21 look to identify where this abrupt change may occur?

22 A. No, I don't have seismic.

23 Q. Okay. If we go to your Exhibit Number 7?
24 This is your gross isopach map. We look at your --
25 the proposed location. You've also indicated, if I

1 can read the numbers here, that we're what, 192 feet
2 in the Coquina well that immediately offsets the
3 proposed location to the east; is that what that
4 says?

5 A. I'm having trouble reading those too.
6 Let's see. That's right. That would be 192 feet.

7 Q. And they were unable to make a well. They
8 did not make a well; is that correct, in the
9 Coquina?

10 A. Other than the test, they didn't attempt a
11 well in this zone.

12 Q. And then you have run your own calculations
13 on the well, and if I understood those, it was that
14 perhaps it might be comparable two wells further to
15 the east, and if so, it might be able to be
16 produced?

17 A. If I said further to the east I misspoke.

18 Q. I'm sorry. I misspoke. I mean further to
19 the west.

20 A. Yes.

21 Q. And that it might be commercial based on
22 the calculations and analysis that you performed?

23 A. To the extent -- and I acknowledge that
24 you've got to rely on other things, but to the
25 extent that you can compare log analyses in this

1 area, yes.

2 Q. Does McKay have any plans if his
3 application should be granted to reenter and try to
4 recomplete that Coquina well based on log analysis?

5 A. We've discussed it.

6 Q. Would you recommend that on the log
7 analysis alone?

8 A. I would recommend drilling rather than
9 reentering in this leg based on what we find in the
10 log analysis. This location meaning the northwest
11 northwest.

12 Q. The proposed location?

13 A. Yes.

14 Q. As opposed to relying on the log analysis
15 for reentry?

16 A. Yes, sure.

17 Q. Now, if we look at the information you have
18 on Exhibit Number 7 in 25, we look at a well in the
19 southeast of the northeast of 25. That's shows no
20 dolomite; isn't that correct?

21 A. That's right.

22 Q. Now, if we take a look at your last three
23 exhibits where you have indicated the gas and the
24 oil producing zones?

25 A. Yes. I know the ones you're referring to.

1 Q. Let's go to Exhibit Number 14. This is the
2 last one?

3 A. Okay.

4 Q. You disagree with that lower portion of
5 this reservoir off in the dolomite is wet and there
6 are portions of the lower dolomite that therefore,
7 cannot contribute production to a well?

8 A. I'm sorry. Would you ask that again?

9 Q. Do you agree with me that lower portion of
10 dolomite in this pool is often wet?

11 A. I agree with that.

12 Q. And that when it's wet it wouldn't
13 contribute production?

14 A. When it's 100 percent water saturated it
15 would not contribute production.

16 Q. And that we find the water primarily in the
17 lower zones?

18 A. Yes.

19 Q. And so in the C Zone, that's almost likely
20 to be wet?

21 A. You really can't say that. It depends on
22 where you are structurally.

23 Q. What about -- let's look at 25 on
24 Exhibit 14.

25 A. But you've perfed in the C Zone in many

1 wells out here.

2 Q. My question is, in Section 25 as you've
3 depicted on Exhibit 14, that's the lowermost zone;
4 is it not?

5 A. Yes, it is.

6 Q. And that would be the zone that would most
7 likely be wet if we encountered water in this area?

8 A. No, I can't say that.

9 Q. You would say that it is just as likely
10 that the B zone would be wet?

11 A. In Section 25?

12 Q. Yes.

13 A. Let me look at the B Zone. It's just as
14 likely that the B Zone will be gone in most of 25,
15 but where it's present it will be -- most likely to
16 be oil.

17 Q. But would it be water saturated?

18 A. No, it won't be water saturated.

19 Q. You don't think -- do you think C might be
20 water saturated?

21 A. No.

22 Q. And you don't think --

23 A. I don't think -- if you mean by that 100
24 percent water saturated, no, I don't.

25 Q. You don't know this side of 100 percent?

1 A. Well, I'll use what I calculated. It would
2 be somewhere --- where I've colored in green up
3 there I'd have to look at them again, but I believe
4 they range from somewhere between 21 and maybe 45
5 percent.

6 Q. When you were doing the calculations, did
7 you integrate -- you integrated into that
8 calculation, I guess, on the Coquina well, the drill
9 stem test information, or is this just a separate
10 set of data that you used to evaluate the well?

11 A. It's a separate set of data. I studied the
12 drill stem test data, and in studying that with
13 other tests that had been made in the field,
14 concluded that it's not conclusive. We can't rule
15 out --

16 Q. Is there any mud log information or
17 anything else you could use to establish this?

18 A. I had none. I looked for mud logs in the
19 library.

20 Q. Any information on perforations that might
21 shed information on that area?

22 A. No, it wasn't perforated.

23 Q. You don't discount perforation as being
24 something you would consider in determining where
25 the water would be, would you?

1 A. If you perforated and all you get is water,
2 then you can say that you're in big water, but you
3 cannot say that's the top of big water. And if you
4 go up the hole a few feet or several hundred feet
5 and you perforate again and get some water, I don't
6 believe you can say that -- that you're at the top
7 of big water. Perforations in themselves will not
8 define hydrodynamic surface.

9 Q. If you could scientifically pick big water,
10 that's an assumption, you wouldn't perforate into
11 it, would you?

12 A. No, you wouldn't.

13 Q. I thought that was an obvious question, but
14 the perforation and the zones that are perforated is
15 a factor that you would consider in trying to pick
16 the oil/water water contact in the reservoir?

17 A. Please ask that again.

18 Q. You would consider information from
19 perforations if you were attempting to find the
20 oil/water contact in a reservoir?

21 A. Yes, you would.

22 Q. That would be one of the tools you would
23 look to. If we look at your Exhibit Number 12,
24 which is your map on Zone A, how much of the north
25 half of Section 25 would you estimate to be capable

1 of contributing production to the well?

2 A. To the well in the northwest quarter?

3 Q. Yes, sir.

4 A. In Zone A it's maybe 100 acres, or 120
5 acres perhaps.

6 Q. And that would be just gas contribution?

7 A. Yes.

8 Q. And in the south half of that section we'd
9 have almost 100 percent of it could contribute in
10 the south half to a south well, right?

11 A. Yes, but in a lay down situation 100
12 percent of the 320 acres would be much closer to a
13 100 percent in that arrangement.

14 Q. If we have a stand up west half unit, how
15 much of the acreage dedicated would at least be able
16 of commercial or production? 300 acres something
17 like that? 270?

18 A. Well, I'm showing approximately what you
19 stated. I guess as being gas prone, yes. Whether
20 it would contribute that to one well, I'll leave
21 that for the engineer.

22 Q. Okay. In terms of the map on the B Zone,
23 how much of the north half unit would you estimate
24 would be underlying with production in Section 25?

25 A. Perhaps 90 to 100 acres of the north half.

1 Q. And what about in the south half?

2 A. About the same.

3 Q. And in a west half unit?

4 A. About 160 I suppose. Something on that
5 order.

6 Q. There's nothing in the B Zone that would
7 contribute to a well in the west half; isn't that
8 correct?

9 A. I'm sorry?

10 Q. There's -- this doesn't indicate that
11 there's any production potential in the B Zone in
12 the east half?

13 A. In the east half, true.

14 Q. So, if we look at these three zones and you
15 were asked to define the area that was productive in
16 this reservoir, what 320 would you select?

17 A. I'm sorry. I'm not getting your -- it's
18 not you. I didn't --

19 Q. It probably is me. If we were trying to
20 pick one 320 tract in Section 25, either a north
21 half south half, east half, or west half; isn't it
22 true that the west half is the 320 that would appear
23 to be most likely to conform with the producing
24 zones in this reservoirs?

25 A. I would say that the 320, as I have it

1 mapped -- the west half of 320 I'm showing 320 acres
2 in that zone. Is that what you're getting at?

3 Q. Yes, sir.

4 A. I can't deny that.

5 Q. Okay.

6 MR. CARR: That's all I have.

7 EXAMINER CATANACH: I don't have any
8 questions.

9 CHARLES SANDERS,
10 The Witness herein, being previously duly sworn, was
11 examined and testified as follows:

12 DIRECT EXAMINATION
13 BY MR. KELLAHIN.

14 Q. Mr. Sanders, for the record, will you
15 please state your name and occupation?

16 A. I'm Charles Sanders, engineer.

17 Q. Mr. Sanders would you summarize your
18 educational background and your employment
19 experience as a petroleum engineer?

20 A. I graduated from Texas Tech University in
21 1950 with a BS in petroleum engineering geophysics
22 option. Worked for three years for -- I'll call
23 these companies by their present names so that
24 people will know who they are -- for Ork Energy in
25 Breckenridge, Texas, west -- north central Texas

1 area. After three years there of drilling and
2 completion work, I moved to west Texas and worked
3 for what is now Bass Brothers Enterprises for 16
4 years, and during this time we worked all over west
5 Texas and southeast New Mexico.

6 I was hired primarily to go into New
7 Mexico, but some of our acreage didn't develop so
8 that didn't pan out, but I still worked southeast
9 New Mexico, and after 16 years I moved to
10 Albuquerque in 1969 and worked for the Pueblo
11 Petroleum for four years at which time Mr. Boone
12 Pickens made Pueblo his first conquest, and so
13 Pueblo was no more.

14 I worked briefly for Coke Oil Company for
15 about six months in the Wasatch Basin in Denver
16 area; Wasatch Basin of Utah, and had an opportunity
17 to come back to Albuquerque. And I worked for
18 Petroleum Development Corporation from 1973 to
19 1987. I was vice president in charge of engineering
20 for Pueblo and we had vast operations in the
21 southeast New Mexico.

22 And then in 1980 I went independent, and
23 for 9 years I did my own thing, by drilling,
24 exploration, turning deals. In 1989 I was squeezed
25 out by economics so I became a consultant, and I now

1 teach. And so I'm vice president of World Petroleum
2 which is a drilling, completion, and well control
3 technology company, and I teach -- I teach a course
4 in well completion and work over for Merchanson
5 drilling schools, and I also teach well control
6 operations for both completion and drilling for
7 Merchanson.

8 Q. Mr. Catanach wants to know why you didn't
9 go to school in Soccoro?

10 A. Well, it hadn't been invented then.

11 MR. KELLAHIN: I tender Mr. Sanders as an
12 expert petroleum engineer.

13 EXAMINER CATANACH: He is so qualified.

14 MR. CARR: He would object if he had gone to
15 school in Socorro.

16 Q. (By Mr. Kellahin) Mr. Sanders, I don't want
17 to scare everybody, including you and me, with the
18 volume of information you've put in your exhibit
19 book. I don't intend to cover it all with you. I
20 would like to go into the key components of your
21 efforts to analyze this reservoir for Mr. McKay.

22 Let me ask you, sir, to focus generally on
23 your comments and observations as a petroleum
24 engineer in terms of what you assessed to be the
25 least risky, if you will, the optimum location in

1 which you would recommend to a client to put their
2 funds to drill for the South Dagger Draw production
3 in Section 25?

4 A. All right. I centered my initial study on
5 the Number 2 and Number 4 Hill View unit because
6 they had longer production histories, and because
7 they were the northwest adjoining and offsetting
8 acreage to the proposed McKay location and looked to
9 me similar geologically.

10 The comparison of the areas, I think, is
11 obvious in terms of porosity -- as Mr. Reddy has
12 pointed out -- proximity. Certainly, if I am trying
13 to sell a prospect I want to be as near offset
14 production as possible, so nearology is sometimes
15 pretty good when you're talking about drilling a
16 well and spending half a million dollars or more.

17 I looked at the gas/oil ratios for those
18 two wells and ultimate production, and I concluded
19 that the Hill View Number 2 would make an ultimate
20 of 375,000 barrels of oil from a net porosity of --
21 net feet porosity of 56 feet, and this is on
22 Exhibit 16, that would give a barrels of ultimate
23 production for foot of pay of 6,678 barrels, and I
24 found that the beginning and ending gas/oil ratios
25 were in that old well on production for nine years,

1 pretty much the same, a little over 3,000.

2 There was some period in the interim when
3 the well was on and off operated by Conoco, I
4 believe, in which gas/oil ratio shot up
5 periodically, but by and large we saw real gas
6 breakthrough and I like that.

7 Water production was fairly constant
8 starting at slightly under a 1,000 barrels a day,
9 and currently it varies a lot but it still is
10 perhaps averaging somewhere around 1200 barrels a
11 day over a two or three-month period.

12 Q. Isn't this the same area that Yates'
13 engineer was describing had justified some infield
14 drilling and some reentries?

15 A. Yes.

16 Q. It was his conclusion that you could, or he
17 did not see drainage between the two wells this
18 close together?

19 A. He mentioned drainage between wells in the
20 northeast quarter of Section 23, but he didn't
21 mention drainage elsewhere, but when I analyzed the
22 Hill View Number 2, which is direct south offset of
23 the Number 4, that would be the J location of
24 Section 23, I found the trend, and I used the same
25 method as I used on the Number 4. The trend points

1 to about 214,000 barrels of ultimate from 52 feet of
2 net porosity, and an ultimate recovery of only 4115
3 barrels per foot of pay.

4 And ratio wise this is pretty much the same
5 as Mr. McWhorter calculated. He had lower ultimates
6 than I did, but I was trying to get a handle on a
7 production decline from old production that would
8 give me something as a basis for projecting
9 production declines and ultimate production from
10 these newer wells.

11 Q. Do these two wells demonstrate any drainage
12 by the Number 2 well from the Hill View Number 4
13 well?

14 A. I think it's fairly obvious that the Hill
15 View Number 2 drains some of the area on which the
16 Number 4 is sitting. It will not project as much
17 ultimate yet it only has four feet less pay. The
18 gas/oil ratios are similar, however, the Hill View 4
19 starts out a little higher. It started out around
20 7,000. It came down gradually to around a 3,000
21 average, and water production is similar. So, yes, I
22 concluded that there was drainage going on, and, in
23 fact, with the development and the continuity of
24 porosity between Section 23 and 25, I have often
25 referred to that as a northwest passage because this

1 area in Section 23 is being drained and drawn down
2 pressure wise by fairly high density of drilling,
3 whereas the Section 25 is sitting there undrilled.

4 So I believe that there is a question of
5 correlative rights protecting that drainage by
6 offset drilling.

7 Q. In your opinion, can we first drill the
8 southwest of the southwest of the 25, postpone
9 drilling further wells in Section 25 with the
10 expectation that those reserves will stay in place
11 until you get to them?

12 A. I would be afraid of that for a couple of
13 reasons. Number 1, as the summary at the bottom of
14 the exhibit 16 shows, the Hill View 2 and Hill
15 View -- I'm sorry. At the top of page Exhibit 16,
16 the Saguaro Number 1 which is the F location in the
17 middle of the Section 26 and the Conoco Number 2
18 which is the G location, have reached ultimate
19 production. They're there. They are now gas wells.

20 The F location, Saguaro Number 1, produced
21 an ultimate, or total of 39,000 barrels of oil,
22 while the Conoco 2 produced 24,000 barrels of oil,
23 and this is from a porosity -- total porosity
24 feet -- of 50 feet from the Number 1 and 30 feet
25 from the Number 2, and if you look at your barrels

1 of ultimate per foot of pay, you're looking at in
2 the 700s versus the 6,000s for the wells up in
3 Section 23, 700 barrels ultimate per foot of pay
4 versus an average between those two wells in Section
5 23 of 5396 barrels per foot of pay.

6 And I have used that average for projecting
7 the possible productive ultimate from the McKay oil
8 location in the northwest northwest of 25, also in
9 the northeast northeast of 23 in the new Hill View
10 Number 5 well, and I did it mentally for the Prickly
11 Pear because by the time we got the information I
12 didn't have time to prepare anything on that, but
13 the thickness of pay and everything would indicate
14 it would do about the same and obtained the
15 production of 325,000 barrels, I believe it was, for
16 the -- for the Hill View Number 5 in the northeast
17 northeast using this same method, and about 375,000
18 for the Prickly Pear, and 386,000 for the McKay well
19 in the northwest northwest.

20 Now, going back to the two Saguaro wells,
21 or the Saguaro and the Conoco in Section 26, these
22 wells have a lot of feet of porous pay below the
23 minus 4,001 one which we have used as trying to stay
24 below gas production at minus 4,001, but they are in
25 contact -- the rock is in contact with the gas cap,

1 and it's been proven in this reservoir that we have
2 vertical migration within the reservoir and the
3 onlapping of these rocks that are in the gas cap
4 with the ones in Section 25 that are not subject to
5 gas cap, provides a path for the gas to travel
6 vertically into your produced area, and, of course,
7 this is one of the basic principles of petroleum
8 engineering that once you start this to happen it
9 accelerates rapidly by the rule of relative
10 permeability.

11 In other words, if your gas saturation
12 increases, your relative permeability to oil
13 decreases, and, of course, while this is going on,
14 the permeability to the gas increases more and, of
15 course, more gas keeps feeding in, and I think that
16 is exactly what happened in Section 26.

17 Now, the Yates location in the southwest of
18 25 is half way between roughly these two wells in
19 Section 26, and the Marathon well in Section 36,
20 which they have tested and perforated and tried to
21 make an economical well, or commercial well, in the
22 lower zones, and they have failed to do this.

23 So here you are proposing a well between a
24 defacto dry hole and two gas wells, and you have the
25 same laser geology in there as far as porosity feet

1 is concerned. To me it looks risky. I don't see
2 that this would be wise when you have -- when you
3 have a wet place to drill where you're near
4 proximity to known production with good porosity,
5 good permeability, low ratios, normal water
6 production, and all those good things beside the
7 question, of course, of protecting correlative
8 rights.

9 Now, if you drill the Yates location and
10 that well goes to gas, what do you have? You have a
11 320 on the west half that's condemned because you
12 have a gas well. You can't drill any more wells up
13 there. So what's going to happen? The wells in 23
14 are going to continue to drain because you are --
15 you do have an active -- partially active -- water
16 drive. Not fully but partially active because the
17 ultimate recoveries -- the recovery factors -- are
18 substantially higher than you would expect from just
19 normal solution gas production, which would be in
20 the 15 to 20 range, and we're talking in this area.

21 We're talking about 25 to 30 percent
22 recovery of original oil in place. And studies done
23 about six miles to the north of Mr. Loogenville
24 indicate that they're getting recovery factors of
25 about forty percent original oil in place, so you do

1 have considerable water expansion. You do have an
2 aquifer, as everybody has pointed out, you have an
3 aquifer.

4 That aquifer expands, and as it expands it
5 maintains pressure. You draw down the pressure in
6 Section 23, the oil moves from 25 into 23, and
7 there's a simple differential pressure
8 relationship.

9 Let me give you an example. We think of
10 water as being incompressible, but if you take a
11 5,000 foot and you set 5/8ths intermediate casing at
12 5,000 feet, and you are ordered to pressure test
13 that casing to 3,000 psi. It would take five
14 barrels -- if that casing is full when you start --
15 it will take five barrels of pumping new water into
16 that casing to take care of compressibility before
17 you reach your 3,000 psi.

18 Now, you look at that piddling -- let's
19 see, about 300 barrels of water being compressed
20 versus the, you know, the tons of water you have
21 available to -- that is compressed at a bottomhole
22 pressure now of close to 3,000 psi all over this
23 area, and you're going to have this expansion which
24 is going to maintain pressure and push that oil
25 out. So it would be a disaster. It would not pay

1 the investors, it would not pay Yates, it would not
2 pay McKay, it will not pay the BLM or MMS, or the
3 State. And I would -- You know, you get back to the
4 -- am I rambling too much?

5 Q. No, sir. But let me ask you now, having
6 concluded that the reserves in Section 25 are at
7 risk because they're going to be drained towards the
8 Section 23 wells unless they're protected, what do
9 you do? Where do you put your well?

10 A. In the northwest northwest of 25.

11 Q. Do you have a recommendation as to how to
12 orient the spacing unit?

13 A. Well, I still like the horizontal primarily
14 because you -- number one, as has been pointed out,
15 you let each company drill their preferred
16 locations. Number two, you remove the risk of what
17 I was just talking about establishing a 320-acre gas
18 proration unit in the prime oil area of this entire
19 section and stopping recovery from this section.

20 Q. Have you made an engineering evaluation of
21 the oil in place and the recoverable reserves within
22 Section 25?

23 A. Yes, sir.

24 Q. Can you summarize for us what you've done?

25 A. Yes. If you turn to Exhibit 17?

1 Q. Yes, sir.

2 A. I divided the Section 25 into four
3 quarters, and using the grid overlay system I
4 measured the area between adjacent contour lines and
5 took the net porosity feet, and by the way, I guess
6 we should be looking at the same time at Exhibit --

7 Q. 25?

8 A. Yes, sir. Which is the porosity feet of
9 Upper Penn dolomite below minus 4,001 feet. And I
10 find that the northwest quarter has -- actually has
11 about six and a half acres more than the other
12 quarters because of a little bit of misshapen
13 section here, but it has 479.41 acre feet of
14 porosity, and the original oil in place in stock
15 tank barrels of oil is 1 million five hundred and
16 forty-nine thousand, six hundred and ninety-three
17 barrels. And that comes out to be 3232.5 barrels
18 per acre foot of porosity. And, of course, an acre
19 foot of porosity would be just like an acre foot of
20 water, it would be 7,758 barrels.

21 The northeast quarter has only 115.32 acres
22 which is within the zero -- within the zero dolomite
23 line, and that gives 126.85 acre feet of porosity
24 for 410,043 barrels of stock tank oil originally in
25 place.

1 The southwest quarter is very good, 160
2 acres, 447,35 acre feet of porosity, and oil in
3 place 1 million 446,059, and the southeast quarter
4 155.57. Again, we lost part of that because the
5 zero line doesn't cover the full quarter. This was
6 248.91 acre feet of porosity with original oil in
7 place of 804,602 barrels, so regardless of where
8 your tilted water table is, there's a lot of oil
9 here.

10 Now, I took these figures of original oil
11 in place and then calculated recovery factors.
12 First I used the Hill View Number 2 since that was
13 the first well I looked at, and assuming that that
14 well will ultimately recover 375,000 barrels of oil,
15 which was my projection which I think is valid, you
16 will have a recover factor of 29 percent or .29
17 decimal percent of original oil in place.

18 The McKay northwest quarter of Section 25,
19 and I declined that well. I started it at 500
20 barrels. I figured it should be as good as the well
21 in the northeast quarter of 23 and probably as good
22 as the Prickly Pear, so I started at 500 barrels a
23 day and that pointed to 386,000, and when you use
24 the little formula for the recovery factor down at
25 the bottom of the sheet, you come out with a 25

1 percent recovery factor.

2 Now, I did all of this to compare -- not
3 only to see what the recovery factor is because I
4 was interested because I was expecting it if there
5 were not an active water drive, for it to be in the
6 range of 15 to 20 percent, but it is not, it is much
7 higher.

8 Then the Saguaro Number 1 well recovered
9 only 39,000 barrels of oil, and from the porosity
10 feet that that well exhibited, which was 1.90
11 porosity feet, I calculated 4 percent oil in place
12 recovered by that well, and the Conoco Number 2, the
13 twin well in Section 26, did worse.

14 And by the way, the one that did worse, the
15 G location, the Conoco Number 2, is perforated lower
16 than the Number 1 well.

17 Q. When you look at the division of oil in
18 place within the confines of Section 25 and divide
19 it into the four quarter sections, that's what
20 you've done, you've given us the oil in place for
21 each of those quarter sections?

22 A. Uh-huh. Well, this is stock tank barrels
23 of oil, shrinkage factors taken into account. I've
24 used a shrinkage factor of 1.56 just for the record.

25 Q. Let's play some "what if" games with the

1 orientation of the spacing unit. If we take it and
2 stand them up with the west half, the greatest
3 amount of reserves are allocated to the west half
4 under that configuration?

5 A. Right.

6 Q. From your understanding of the geology and
7 engineering for this section, there is reserve value
8 in the east half?

9 A. Even though we don't know for sure where
10 the water contact is there is some oil there, yes.

11 Q. And the owners of the oil in the reservoir
12 in the east half may not be able to share in
13 production unless they're lay down spacing units?

14 A. That's correct.

15 Q. Because the optimum location in which to
16 produce those reserves is going to be well locations
17 in the west?

18 A. Right, exactly.

19 Q. So with a stand up west half the reserves
20 in the east half are going to be enjoyed only by the
21 owners in the west half?

22 A. That's right.

23 Q. Summarize for us what these decline curves
24 are? I assume that's what they are from 18 through
25 24 so that the record indicates what you're saying.

1 A. Let's look at -- jump around a little.

2 Let's look at 19 first, Exhibit 19. The first page
3 of 19 --

4 Q. What are these? What are these documents?

5 A. They are production decline curves for --
6 this one as shown on the bottom of the graph is for
7 the Hill View AG Number 2.

8 Q. And you have utilized this information then
9 in your analysis of reservoir including establishing
10 the declines by which you have then calculated
11 recoveries?

12 A. Yes, that is correct.

13 Q. Okay.

14 A. I took the production history portion of
15 the AHE Number 2 from about the beginning of 1983
16 until what? Middle of 1986 as a fairly good
17 indication of what might be expected. This came out
18 to be a 17 percent decline. I couldn't -- I
19 couldn't argue with this 17 percent. If somebody
20 wanted to call it 19 or 15, but I think it's pretty
21 well establishes what a normal production decline
22 would be after the initial flush production is off
23 for a fairly good well.

24 Q. And this is a conventional way for
25 engineers to establish a decline for production that

1 they use then in other calculations?

2 A. Yes. And since this is an old well, I
3 shifted the 17 percent up to the present production
4 which was initiated after Yates worked the well over
5 and placed it on electric submersible pump.

6 And by the way, the last two months
7 production, which are not here, are all actually on
8 or above the line that I have projected at 17
9 percent. So, I feel that it is a valid decline
10 curve.

11 Now, I took this same method with a little
12 bit of liberty to analyze the production from the
13 AHE Number 4, the Hill View AHE Number 4, which is
14 Exhibit 20. And by the way, the remaining pages of
15 this is just supporting information. I include also
16 the gas.

17 Q. And you've done that for all 4 of these
18 wells. You used decline curves?

19 A. Yes, sir.

20 Q. All right.

21 A. Exhibit 20, if you'll notice that, I took
22 the initial production when the good production
23 started after a number of months when the wells was
24 placed on submersible, and put this on -- because it
25 was a fairly new well -- I placed it on hyperbolic

1 curve with the exponent factor of .5 so that you
2 would compensate somewhat for this initial flush
3 falloff, and then leveled it off and let the curve
4 level itself off to 17 percent straight line or
5 exponential decline, and this is one that projected
6 to 200, and Exhibit 16 was 214,000 barrels of oil.

7 Q. Are you satisfied the entire procedure is
8 one that's reasonable and fair for the standards of
9 your profession?

10 A. I do because when I applied the same
11 procedure for the Hill Number 5 I got 325,000 to the
12 McKay which is -- McKay location -- which is in the
13 northwest northwest of 25, and the Prickly Pear
14 which we are projecting to be about the same, I
15 gather, around 375 to 386,000 barrels of oil. So I
16 think this is a fair projection with the amount
17 of -- limited amount of data we have for this area
18 with history available.

19 Q. Thank you, Mr. Sanders.

20 MR. KELLAHIN: That concludes my examination
21 of Mr. Sanders. We move the introduction of his
22 Exhibit 16 through 25.

23 MR. CATANACH: Exhibits 16 through 25 will be
24 admitted as evidence.

25 (McKay Oil Corporation Exhibits 16

1 through 25 were admitted in evidence.)

2 CROSS-EXAMINATION

3 BY MR. CARR:

4 Q. Mr. Sanders, you are a consulting engineer
5 working for McKay on this matter?

6 A. Yes, sir.

7 Q. When were you retained by Mr. McKay?

8 A. A week ago last Tuesday. That's why I have
9 circles under my eyes.

10 Q. Prior to this assignment, how much of your
11 time have you devoted to this particular pool?

12 A. To this particular pool, zero. I have
13 worked in the general area. I've worked in the
14 Indian Basin, but this particular pool, zero.
15 George Reddy did an excellent job of catching me up
16 and bringing me up to speed.

17 Q. And that's why he has circles under his
18 eyes?

19 A. That's why he does.

20 Q. We look at your Exhibit Number 16. If I
21 understand this exhibit, the top part of it shows
22 the two Conoco wells which offset the proposed Yates
23 location in the southwest of 25; is that right?

24 A. Right.

25 Q. And based on this you've concluded that

1 they are pretty poor wells; is that fair?

2 A. Yes.

3 Q. All right. If we go down now and look at
4 the bottom half, you've set out information on the
5 Hill View Number 2 and Hill View 4J well. You have
6 a production decline curve which is your Exhibit 19
7 on that Hill View Number 2, do you not?

8 A. Right.

9 Q. And if I look at this, sometime in '87 the
10 well was -- you've got a 17 percent figure. What
11 does that indicate on that?

12 A. 17 percent per year. That's an annual
13 decline rate, and it's put on the semi log because
14 it is an exponential type thing.

15 Q. And does this show what the well was
16 actually doing in say mid-1988 I guess it is?

17 A. Let me turn to that.

18 Q. It's Exhibit 19.

19 A. In mid-1988 you say?

20 Q. Yes, sir.

21 A. No, it does not. This is just a projection
22 which would be close to what you would get if you
23 applied all the production figures that you have and
24 used the method of leased squares. I did not use
25 that. I have a program which does this

1 automatically, so this would be just using the
2 actual production figures kind of averaging there to
3 get that decline. It doesn't mean that you did make
4 oil. In fact, the well was apparently shut down for
5 a couple of years there.

6 Q. Basically what this shows, though, this is
7 a poor performance for the well?

8 A. 17 percent decline is not a really poor
9 performance. Of course, the well was probably at or
10 near economic limit as your Mr. McWhorter testified.

11 Q. Well, are these -- are these just plots of
12 the production -- actual production from the well?

13 A. Actual production by month, yes.

14 Q. And then -- so, we have then in 19 -- I
15 guess, '90, production plots begin again. These are
16 both decline curves on oil, are they not?

17 A. Yes. Well, the solid black is oil, the
18 hollow squares are gas, and the Xs are water. I
19 should have pointed that out.

20 Q. Okay. So the line that we have that has
21 the 17 percent figure at the end of it running
22 through '82, '87, or '88, that is the oil production
23 decline and production rate during that period of
24 time?

25 A. Yes, right.

1 Q. And then we have it jump up in 1990 and
2 another decline take off at that time?

3 A. Right.

4 Q. And isn't it true that when the production
5 jumped up to the higher rate in 1990, that's when,
6 in fact, Yates took over this well?

7 A. That's my understanding, yes.

8 Q. And so what we have is we have a situation
9 were Conoco had given up on the Hill View Number 2,
10 Yates took it over and was able to make the kind of
11 well out of it you show on the bottom of your
12 Exhibit 16?

13 A. Yes. By applying good engineering and
14 getting the oil to moving.

15 Q. If they were taking over the two Conoco
16 wells in 26, would you anticipate with good
17 engineering they might do the same?

18 A. Those wells are already Yates, I believe.

19 Q. And is it possible that by applying some
20 engineering techniques they could also take over
21 Conoco wells and get that kind of a response?

22 A. No, sir. I don't believe so because, as I
23 pointed out, once you get this gas breakthrough you
24 saturate. It's similar to a water block. You can
25 do the same thing with a water block and you can

1 block production.

2 Q. Do you know what kind of engineering
3 techniques --

4 MR. KELLAHIN: Did you complete your answer?

5 THE WITNESS: Sorry?

6 MR. KELLAHIN: Did you complete you answer?

7 MR. CARR: And I'm sorry if I cut you off.

8 MR. KELLAHIN: Don't step on my answer.

9 A. I covered that a while ago.

10 MR. CARR: If I start cutting you off you
11 raise your hand and I'll go into retreat on that.

12 THE WITNESS: All right.

13 Q. (By Mr. Carr) Do you know what kind of
14 engineering techniques employed on the Hill View
15 Number 2 well to get that kind of change in
16 response?

17 A. Yes.

18 Q. And you believe that would not be available
19 and they could not do that on other wells?

20 A. No, I do not because the Number 2 well had
21 not been subjected to gas breakthrough. You had
22 some -- intermittedly you had some ratios as high as
23 5,000 and some lower. I think you're running a
24 little lower than the 3,00 now. So you did not have
25 that gas breakthrough to increase the saturation and

1 the poor spacing. Of course, that's what happens
2 you get another -- whether it be fluid or gas -- the
3 saturating medium as you increase the percent of
4 that saturating medium, the permeability to that
5 medium increases and to all others the permeability
6 decreases.

7 Q. When you made your comparison for
8 Exhibit 16 on your Hill View Number 4 well, did you
9 have any information on any kind of production
10 problems that Yates might be having with that well?

11 A. No, I did not.

12 Q. Did you have any information on, say,
13 sulphate scaling in the well?

14 A. No, I did not.

15 Q. And resulting problems in pumping the well?

16 A. No. I feel Yates is capable of handling
17 those. I've known Yates for a long time.

18 Q. Those sorts of problems could effect the
19 production from a well, could they not?

20 A. Yes.

21 Q. If you had those in one wellbore and not
22 another, the wellbore without those problems might
23 perform better?

24 A. That is right. However, I would not expect
25 such a scaling problem. I have never encountered

1 where such a scaling problem caused a well to jump
2 to 30, 40, 80,000 gas/oil ratio as is the case of
3 the Saguaro Number 1 which is pretty astronomical.

4 Q. When we look at your Exhibit 17?

5 A. 17. All right.

6 Q. This was based on Mr. Reddy's geology?

7 A. Yes. I asked Mr. Reddy to prepare me a
8 porosity foot map, and as an engineer that's what
9 I'm primarily interested in, and I wanted all of the
10 dolomite porosities below minus 4,001 so that I
11 could get a volumetric which I could get my hands
12 on.

13 Q. In this calculation have you factored in a
14 water table anywhere?

15 A. No.

16 MR. CARR: That's all I have.

17 EXAMINER CATANACH: I just have one question.

18 EXAMINATION

19 BY MR. CATANACH:

20 Q. Mr. Sanders, based on the reserve
21 calculations for the east half of Section 25, which
22 are over a million stock tank barrels. I'm sorry,
23 original oil in place?

24 A. Right.

25 Q. Would the east half -- would a stand up

1 east half unit justify the drilling of a well on the
2 east half to cover up those reserves?

3 A. I don't know the answer to that question
4 because as we mentioned a while ago, we have not
5 defined definitely where the oil/water contact is in
6 that area, and I do not consider that the drill stem
7 test in the Coquina Number 1 in the northwest
8 quarter -- let's see, that would be C location in
9 the northwest quarter -- would be enough to say this
10 is water because we have seen other DST, as was
11 pointed out, where water was obtained and later the
12 well was perforated in that same interval for
13 production.

14 In fact, the Prickly Pear Number 1, the
15 first three hours that that well was swabbed -- now,
16 keep in mind the Coquina well we made a total of 21
17 barrels of water on that drill stem test, and we had
18 the same initial and ending bottom hole pressure,
19 so, you know, you do have permeability there.

20 You possibly had a little bit of formation
21 damage from filtrates because your flowing pressure
22 did increase during the test, but getting back to
23 the Prickly Pear well, the first three hours, and
24 this is one and a quarter hour drill stem test --
25 the first three hours that well was swabbed they

1 swabbed 43, twice as much water with a skim of oil,
2 that's it.

3 The next 24 hours they produced 520 barrels
4 with no mention of any oil, and in the next 24 hours
5 they recovered 634 barrels with three percent oil
6 cut.

7 Now, with a reservoir that is so water
8 dominated, as Yates has proven, you have to get that
9 water moving for a period of time before things
10 level out and you know what you have. Now, a drill
11 stem test will not cut it, and neither would a
12 24-hour production test, which is what I suspect
13 happened possibly in the case of Marathon down in
14 Section 36.

15 We're not able to get the details, I wish
16 we were, of what all went on there. We know they
17 perforated the right porous zones, but we don't know
18 what they recovered. So with this kind of
19 information on the Prickly Pear well, I would say we
20 don't know where that water/oil contact is.

21 I haven't seen any evidence from either
22 geologist actually, or your -- or Yates side --
23 which would say where that water/oil contact is. So
24 it is entirely possible that you could justify
25 drilling on the east half but only after you had

1 progressed and proven some of these points as to
2 rock development and water table.

3 EXAMINER CATANACH: That's all I have.
4 Anything further?

5 MR. KELLAHIN: No, sir.

6 EXAMINER CATANACH: The witness may be excused

7 ROY MCKAY,
8 the Witness herein, being previously duly sworn, was
9 examined and testified as follows:

10 DIRECT EXAMINATION

11 BY MR. KELLAHIN:

12 Q. Mr. McKay, for the record, would you please
13 state your name and occupation?

14 A. Roy McKay. I'm an independent oil producer
15 in Roswell, New Mexico.

16 Q. The name of your company is McKay --

17 A. Oil Corporation.

18 Q. -- Oil Corporation. And you're the
19 president of that corporation?

20 A. Yes.

21 Q. Summarize for us the level of involvement
22 you have in southeastern New Mexico as an
23 independent oil and gas operator?

24 A. I operate over 100 wells. I control over
25 100,000 acres of properties, leases. I've been in

1 business for 22 years as just a small-time operator.

2 Q. When we look at your lease hold position in
3 Section 25 in the South Dagger Draw Pool, from your
4 perspective, tell us how you envisioned its
5 development as you've watched the South Dagger Draw
6 being developed?

7 A. To be real brief, I acquired this lease in
8 the '70s with the ideas of drilling a Morrow well of
9 which -- at that time I was not an operator and got
10 assigned to be the operator by Sun Oil Company, and
11 we drilled a well which had a better zone in the
12 Atoka than it did in the Morrow, and so we have been
13 producing that well since -- since that time.

14 I have been watching the Dagger Draw
15 develop as well as realizing that we had a Morrow
16 zone, and we still have not produced in what we call
17 the Charolette McKay Fed. Number 1.

18 About, oh, middle of last year, one of
19 Yates land people called me and wanted to buy one of
20 the holes, or the hole -- actually, they wanted to
21 buy the lease. I thought they were wanting to buy
22 it for a water disposal well, and I thought well, --
23 I didn't think a whole lot about the idea, but went
24 ahead and discussed and thought, well, I had heard
25 some pretty good prices on water disposal wells and

1 maybe if they come up and offer some money for it
2 then there may be some advantage to it.

3 We have been looking at -- a lot of things
4 that I do is I don't have a geologist on staff. I
5 do a lot of McKayology, which is my own thinking of
6 what happens, close in deals, and things of that
7 sort, but I've had geology in college.

8 By the way, I'm a graduate of New Mexico
9 States University 1967 class. I also happen to have
10 a BBA, bachelor of business administration. I was
11 also a petroleum landman-trained-typed person which
12 took in geology, and I was a pre-engineering student
13 before that. So I'm a jack of all trades as it
14 turns out in this business. So I do a lot of my own
15 geology.

16 I had done some ideas or thinking about
17 what was taking place down here aside from question
18 mark, what are we going to do with the lease, the
19 Morrow recompletion in it? And I went about getting
20 with my partners, and they basically did not want to
21 do anything.

22 . So I went about, and it took about a
23 year to buy them all out, and as of right now I
24 think I own 100 percent of the lease of the 440
25 acres that's here.

1 Q. How would you like to see this section
2 developed at this time with the information that's
3 been provided to you by your consultants?

4 A. Well, my whole idea was that we were either
5 going to reenter the Coquina well. As I saw the
6 Dagger Draw coming down through here, I had done my
7 Kayology which indicated that some of these wells in
8 Section 26 is as possibly gassy situation, but as
9 the development of the oil well was coming on
10 through originally, I thought well, these wells may
11 be in the 100, 200 barrel bracket. Question mark,
12 do you drill a new well in the northwest of the
13 northwest, or do you reenter the Coquina?

14 It was our opinion that possibly the
15 Coquina had not been totally tested to our
16 satisfaction. Negotiations continued with Yates
17 and, of course, by that time a lot of oil companies
18 were discussing deals with us, and it got -- almost
19 got out of hand as to what are we going to do with
20 the situation.

21 The buy -- this summer -- well, I had also
22 talked last year with George Reddy and found out
23 that he had done work in about '77 for Roger Hanks
24 and knew quite about the area from the old place,
25 and therefore, I knew at some point in time I would

1 hire him.

2 So I talked to him in May of this year
3 about, hey, this is going to have to get a little
4 more serious. We're going to have to get some real
5 detailed geology before I start drilling a well, or
6 before I farm out to somebody, which is the case of
7 a lot of people wanting to do.

8 And the geologic maps, as you have seen,
9 turned out to make my property look a whole lot
10 better than I'd ever even dreamed of. I had not
11 really ever done anything that detailed. The first
12 part of this year Marathon had drilled a well south
13 of us, and it showed up as a PI -- as a gas well
14 about a million a day. So, I started looking at
15 that, and then I looked at the wells in 26, and this
16 was all happening about simultaneous -- about the
17 time Yates comes in and says we want to drill a well
18 in the southwest of the southwest, and my initial
19 reaction why would you want to drill a well in the
20 southwest southwest?

21 The best I could do with McKayology was
22 draw a straight line across all that and see gas.
23 My initial reaction to this thing was, Hey, we can't
24 have a -- and the proposal was Yates wanted a west
25 half proration unit, and my understanding of the

1 rules, I've been told, and checked, and everything I
2 can come out with, if you have a gas 320-acre
3 proration unit, you cannot have a simultaneous oil
4 proration in the same proration unit.

5 Therefore, I said, well, heck, I'm going to
6 get my oil and it's not going to be produced. So we
7 were trying to get these things worked out. Well
8 all of a sudden after the mist of conversations and
9 probably the bulk of what has been presented by
10 Mecca, and timewise I didn't get that detail on all
11 of this, but there was a lot of talk going on
12 between them and us and other companies. And it
13 finally changed from a water disposal well to that
14 they absolutely wanted the lease, and after that
15 what was the terms going to be.

16 Q. Let's summarize the fact that we could not
17 agree on terms.

18 A. It all come together and we could not come
19 to terms on anything, and we wanted an absolute
20 northwest northwest location by the time we got
21 through with all our geology.

22 Q. And they did not?

23 A. And they did not.

24 Q. And there was a disagreement about the
25 orientation --

1 A. Orientation of the spacing unit was
2 basically the whole deal. Many, many calls and
3 never would Yates give me a northwest northwest
4 guarantee that they would drill that well.

5 Q. Let's document for the record the AFE that
6 you've submitted to Yates so the examiner, if he
7 chooses to approve your application, will have it in
8 the record as a reference point. Have you included
9 it as part of the package of well proposals to
10 Yates? I think it's marked as the package
11 Exhibit 27. There should be some --

12 A. They should be in there, yes. And also
13 some transmittals letter August 5, 1991 to Mecca at
14 Yates on August -- that happened -- that was an
15 agreement to go ahead and farm out the southeast
16 quarter to them under Yates' terms if they would go
17 ahead and do a south half unit. We then had the
18 proposing of wells in the northwest quarter. That
19 was under letter August 5, 1991, again. That was to
20 Mecca.

21 Q. That included the AFE, did it not?

22 A. And that included the AFE. That was from
23 Jim Schultz vice president of land for McKay Oil.

24 Q. Did you have any disagreement with Yates
25 about the overhead charges that ought to be applied

1 regardless of which party is selected to operate?

2 A. No. We did not have any major problems
3 that could not have been resolved or anything like
4 that. The major problem was we did not feel that we
5 were getting a fair shake in the drilling of the
6 well. In fact, it went so far as they wouldn't even
7 allow us to participate.

8 We said we will participate with you, that
9 was not acceptable and they wanted to farm out, and
10 my conclusion at that point in time was, their whole
11 intention was to drill the southwest of the
12 southwest, and based on every bit of geology that I
13 had done and what everybody else has come up with
14 that I've hired to do this job, that's going to be a
15 gas well.

16 That gas well would preclude any oil
17 production out of the northwest quarter, and from
18 that viewpoint I'm had. And based on the
19 calculations we come up with there was 1.5 million
20 barrels of oil in place by outside engineer
21 evaluation, and a total of 2.5 billion -- 2.5
22 million barrels of oil in place on the whole north
23 half, and, again, I have agreed to participate, farm
24 out the south half, do whatever is necessary.

25 It was my whole intention before I got this

1 force pooling thing that they came up with -- that
2 we conceivably would do the north half, they could
3 do the south half.

4 Q. And we've not been able to resolve that?

5 A. And we've not been able to resolve that.

6 Q. Let me ask you to identify for me the
7 display and the significance of the color codes for
8 Exhibit 26. What is shown on this?

9 A. The green dots represent the proposed
10 location by Yates. The yellow indicates producing
11 gas wells. And if you take notice, the northeast
12 quarter and the northwest quarter, both have two
13 wells that are designated now as gas wells.

14 Q. The Examiner has, under the pooling
15 applications, asked to make an assessment of the
16 penalty factor. Mr. Beck earlier today requested a
17 200 percent penalty factor for the approval of his
18 application.

19 A. I can understand that because that is a
20 very risky location.

21 Q. What is your recommendation to the Examiner
22 for a penalty factor to apply if the Examiner
23 approves your well location and a north half spacing
24 unit?

25 A. I'd have no problem with 125 percent. I

1 don't see that there's much risk at all in that
2 well.

3 MR. KELLAHIN: That concludes my examination
4 of Mr. McKay. We move the introduction of his
5 Exhibits 26 and the correspondence contained in
6 Exhibit 27?

7 A. I didn't point out, we do own 87 and a half
8 percent of that. So, therefore, they're located to
9 the east. Whether they want to participate or not
10 would be up to them.

11 EXAMINER CATANACH: Exhibits 26 and 27 will be
12 admitted as evidence.

13 (McKay Oil Corporation Exhibits 26
14 and 37 were admitted in evidence.)

15 EXAMINER CATANACH: Mr. Carr?

16 CROSS-EXAMINATION

17 BY MR. CARR:

18 Q. Mr. McKay, you indicated you operated a
19 number of wells in New Mexico. Approximately how
20 many did you say you operated?

21 A. I think it's probably over 100.

22 Q. How many of those wells or in the Dagger
23 Draw?

24 A. None.

25 Q. This would be --

1 A. Well, question, we do operate the Morrow
2 there.

3 Q. But not in the -- the Morrow is not part of
4 the South Dagger Draw Upper Penn?

5 A. No.

6 Q. So this would be your first well?

7 A. Yeah.

8 Q. You do operate that Morrow well in the --

9 A. It's actually in the Atoka right now.

10 Q. And that is the well in the northeast of
11 25?

12 A. Yes.

13 Q. And what acreage is dedicated to that well
14 right now?

15 A. East half.

16 Q. So you've got east half dedication. That's
17 a federal lease?

18 A. Yes.

19 Q. Is the whole section federal, or is the 80
20 acres on the extreme west fee land?

21 A. The southwest of the northwest, and the
22 northwest of the southwest is fee acreage that
23 Yates, I believe, has the lease on.

24 Q. All right. So what we'd have -- if your
25 proposal is granted and east half dedication in the.

1 Atoka and north half dedication in this Upper Penn?

2 A. Yeah. I don't see that that would be a
3 problem from the severance of the horizons that
4 exist there. At least not from the BLM's viewpoint.

5 Q. Now, in terms of operating a well in this
6 area, you would agree with me, wouldn't you, that
7 all the wells produce some water in this Upper Penn?

8 A. Yes.

9 Q. What arrangements have you made for the
10 disposal of water from the wells you would operate
11 in the Upper Penn?

12 A. At this point in time I haven't made any
13 arrangements. I have ideas what I may do. As you
14 know, there is a water disposal well -- maybe you
15 don't know -- in the north half of 24 that I may
16 make a deal on that, or if Yates wants to work
17 something we can work out a fee for them.

18 Q. But at this time you don't have any plan on
19 the water disposal?

20 A. I have not totally decided which way I'm
21 going. I don't even know who my partner is going to
22 be for drilling this thing.

23 Q. Okay. The gas that would be produced would
24 probably be sour gas and there would be some gas
25 produced?

1 A. Yes.

2 Q. Have you made any arrangements with anyone
3 concerning the sweetening or processing of this gas?

4 A. Not totally. We'll probably go with
5 Phillips if we don't make a deal with Yates or make
6 a deal with Newberg.

7 Q. Okay. And have you satisfied yourself that
8 there's capacity in the Phillips system to take the
9 gas at this time?

10 A. I have not myself, no.

11 Q. Okay.

12 A. I will point out to that particular point
13 there are two locations. You all do not know them
14 but they're in the west half of the west half of the
15 north -- west half of the northwest quarter of 24.

16 Newberg has staked two more locations and
17 they should be drilling within the next week or
18 two. They're going to have a system that goes up to
19 their wells that are up in Section 6 and Section 5
20 of 1925, so if I want to sell through them that's
21 just going to be just a matter of who's going to be
22 around that wants to take it.

23 Q. And have you discussed that with Newberg?

24 A. Oh, yeah.

25 Q. Is Newberg one of your partners in the

1 acreage which is involved in this --

2 A. They could be but they're not now.

3 Q. Now, in terms of moving the gas, who's
4 gathering system would you tie into? Have you
5 decided that yet?

6 A. No. Again, it may be a tie in with
7 Newberg, or else we'll go over to Phillips.

8 Q. Are those gathering systems high pressure?

9 A. I really don't know. I haven't
10 investigated that part.

11 Q. In completing the well, would you
12 anticipate putting a submersible pump in the well?

13 A. Yeah.

14 Q. And if you were confronted with a high
15 pressure system you'd also have to put compression
16 on the well, would you not?

17 A. That would be up to the engineers. I'm
18 sure that's what --

19 Q. Do you know if cost for compression was
20 considered in the AFE at all, or are we just not
21 that far along in the planning?

22 A. I haven't gotten that far really from
23 engineering. I mean, that's -- consultants can take
24 care of that.

25 Q. All right. You've put a gold dot, I think,

1 over the Coquina well; is that correct?

2 A. Yes.

3 Q. Have you made a decision yet on whether or
4 not you're going to go into that?

5 A. Well, I would already be drilling except
6 the OCD told me not to, so I waited on this hearing
7 to get over with. I had a rig ready to go. We're
8 pretty -- right now I guess what we do is drill the
9 northwest to northwest once we get approval. Right
10 now we're just sitting letting it drain us. I take
11 that back. Yates is doing, I think, doing their
12 thing. I'm sorry. I didn't mean to say that.

13 Q. When you drill a well and complete it you
14 need to test that well, do you not?

15 A. I'm sorry, I didn't hear the question.

16 Q. After drilling the well you test it.
17 That's what is happening on the Prickly Pear I
18 gather?

19 A. I don't have Carl. Let me back up. I
20 didn't finish up the deal. In terms of gas
21 gathering systems and such, I, at least, need to put
22 this on the record. We do operate over 60 miles of
23 pipeline anyway. It's not something new we can't do
24 ourselves. I mean, it's a matter of economics,
25 okay?

1 Q. Okay.

2 A. That takes care of that pipeline part. We
3 are -- we do have that part taken care of if we had
4 to.

5 Q. How far would you have to lay a line if you
6 were just laying it yourself?

7 A. I haven't investigated that yet.

8 Q. Do you have a line in close proximity to
9 these wells?

10 A. No.

11 Q. So you'd have to lay and --

12 A. Yeah, uh-huh.

13 Q. And so the longer the line the greater the
14 economic consideration would be?

15 A. Uh-huh.

16 Q. Okay.

17 A. It almost makes us have is tie in with
18 Newberg if Yates don't play with us.

19 Q. Yates is one of the parties you're
20 considering tying in with?

21 A. If they own part of it -- they're going to
22 own part of it either way we cut it.

23 Q. How soon do you plan to go forward with the
24 drilling of the well should you prevail? Right
25 away?

1 A. As soon as they say yes.

2 Q. And when you're drilling and complete the
3 well, would you have a gathering line present at the
4 time you completed -- before you test the well?

5 A. I'm not sure of that.

6 Q. Would you consider flaring the gas at that
7 time while testing?

8 A. I'm not sure what we'd do at that time.

9 Q. Your plans just aren't that definite?

10 A. We don't even know if we're going to get to
11 drill it.

12 Q. In terms of flaring gas of this nature --

13 A. I wouldn't think you would want to do that
14 with sulphur gas, you know, but I don't know the
15 whole game down there.

16 Q. And why is that, air quality problems?

17 A. I would think that would be a problem.

18 Q. If that was a problem, wouldn't you want to
19 have a gathering line in there before you
20 actually --

21 A. You'd have to have before hand. Typically
22 most of the gathering systems in the well I drill,
23 which is mostly in the Abo, I have a pipeline there
24 when I fract the well one way or the other.

25 Q. And if you don't you can say that. Have

1 you gotten to the point where you know whether you
2 have a pipeline in here?

3 A. No, uh-uh.

4 MR. CARR: That's all I have.

5 EXAMINER CATANACH: Just one, Mr. McKay.

6 EXAMINATION

7 BY MR. CATANACH:

8 Q. If your application is approved, are you
9 going to reenter that Coquina well, or are you going
10 to drill a new well?

11 A. After looking this over, I think I probably
12 would go ahead and drill a new well first, and I say
13 that because the data that I saw on the current
14 production of the offset well, I almost have to get
15 on with it, you know.

16 EXAMINER CATANACH: Mr. Kellahin, did we get
17 those overhead rates in?

18 MR. KELLAHIN: I thought there were --

19 THE WITNESS: There were 5400 drilling in 540
20 monthly. That's what's Yates, and there's no
21 problem with that.

22 EXAMINER CATANACH: That's all I have.

23 MR. STOVALL: Don't run away Mr. McKay. I
24 want to look at something if Mr. Kellahin can find
25 it.

1 EXAMINER CATANACH: The witness may be
2 excused. Brief closing statements, gentlemen?

3 MR. KELLAHIN: Well, one cleanup matter. I
4 have neglected to bring my certificate on the
5 notice. With Mr. Carr's permission I'd like to
6 submit it posthearing.

7 EXAMINER CATANACH: Absolutely.

8 MR. STOVALL: Is there a notice probable?

9 MR. CARR: I'll waive notice. We're here and
10 we'll stipulate we have no reason that we certainly
11 don't -- would not assert that probably --

12 MR. KELLAHIN: There's no notice asserted
13 either side. I'm happy to waive closing,
14 Mr. Examiner. I would like to take the opportunity
15 to submit a proposed order for you to consider as
16 part of our presentation. I think the issues are
17 obvious and what you're asked to do is apparent, and
18 I don't know that I can add anything to the
19 discussion by giving a layman's point of view of the
20 technical data that you need to decide.

21 EXAMINER CATANACH: I appreciate it.

22 MR. CARR: Well, you're not going to
23 appreciate me. I'm not going waive closing. If Tom
24 would like to have a closing knowing that I'm going
25 to?

1 MR. KELLAHIN: I've listened to you before.

2 MR. CARR: Mr. Catanach, after more than a
3 year of attempting to reach agreement with other
4 owners in this section for the development of this
5 particular Upper Penn Pool, we had to come to you
6 and seek an order force pooling the lands. So we
7 filed our application.

8 At the request of Mr. McKay we continued it
9 to this day when we could all come before you. A
10 lot of things, as Mr. Kellahin pointed out in his
11 opening statement, are not at issue, but the
12 critical issues are lay down versus standup units,
13 and we believe on this record the evidence is very
14 clear, as Mr. Reddy pointed out, the west half is
15 where the productive acreage is, and we submit to
16 you that and that alone should dictate which
17 particular application you ought to approve.

18 Mr. Kellahin, on the other side has come in
19 and said, yes, that there are reserves over in the
20 east half of the section. Our data shows that the
21 east half of the section is wet, and that there are
22 not reserves there that could be produced.

23 You see, the problem we have here today is
24 we seem to be talking different pools. Yates is
25 operating 80 wells in the pool, going out there with

1 Mr. Beck and Mr. McWhorter drilling and developing
2 the reservoir have concluded that we have what we
3 call big water in that reservoir, and that you have
4 to be above it.

5 Even if you've got the dolomite if you're
6 not above the water you don't have a well, and yet
7 when we go to the engineering information presented
8 and the geological information presented by McKay,
9 that perhaps one of the very most critical correct
10 facts from a reservoir point of view is simply
11 forgotten. It's simply overlooked. We have reserve
12 calculations. They don't take into account the
13 water. We have geology which ignores the water, and
14 to deal with the water to the extent that they did.
15 They did some log calculations.

16 On the other hand, Mr. Beck has worked with
17 drill stem test information, perforation
18 information, mud logs. In fact, we come to you and
19 stand before you with better data and substantially
20 more experience. We find water there and we think
21 that's a controlling thing that must be considered.
22 When we do that we have a better location.

23 We have a 154 feet above the water in the
24 dolomite. The McKay location has only 80 feet. So
25 we submit we stand in a better position there.

1 And as to drainage, I would submit when you
2 look at this record you will see that the experience
3 in the northeast quarter of 23 is correct, it is
4 controlling, and it shows that we are not in a
5 situation where we're going to be draining the
6 reserves from Mr. McKay. That's nothing more than
7 just waving a bloody shirt in front of you to try to
8 deflect it from, I think, the real issue in this
9 case.

10 We think we stand before you entitled to a
11 pooling order pooling the west half. We are
12 entitled to it because of our experience, because of
13 the 80 wells we operate, because we have facilities
14 in place and a plan and ability today to handle the
15 water, to gather the production, to process it and
16 to operate this as a first rate operation.

17 We filed first, we were the moving force in
18 developing the area. It was, as Mr. McKay said, it
19 was only after we started looking at it that they
20 started looking at it. We think a standup unit is
21 consistent with the geology. It's consistent with
22 how this pool is developed throughout the area, if
23 you will look.

24 And for all of these reasons we submit that
25 you can carry out your duty to prevent waste,

1 protect correlative rights only by granting the
2 application of Yates Petroleum Corporation and
3 denying the application of Mr. McKay.

4 EXAMINER CATANACH: Mr. Carr, did you also
5 want to submit a rough order?

6 MR. CARR: I do get to do that. This is not
7 take turns. We will submit a proposed order,
8 Mr. Catanach.

9 EXAMINER CATANACH: Is there anything further
10 in these cases? There being nothing further, Case
11 10363 and 10386 will be taken under advisement, and
12 this hearing is adjourned.

13 (The foregoing cases were concluded at the
14 approximate hour of 5:55 p.m.)
15
16
17
18

19 I do hereby certify that the foregoing is
20 a complete record of the proceedings in 10386
the Examiner hearing of Case No. 10363,
heard by me on September 19, 1991.

21 David R. Catanach, Examiner
22 Oil Conservation Division
23
24
25

1 STATE OF NEW MEXICO)
) ss.
2 COUNTY OF BERNALILLO)

3 REPORTER'S CERTIFICATE

4 BE IT KNOWN that the foregoing transcript of
5 the proceedings were taken by me, that I was then
6 and there a Certified Shorthand Reporter and Notary
7 Public in and for the County of Bernalillo, State
8 of New Mexico, and by virtue thereof, authorized to
9 administer an oath; that the witness before
10 testifying was duly sworn to testify to the
11 whole truth and nothing but the truth; that the
12 questions propounded by counsel and the answers of
13 the witness thereto were taken down by me, and that
14 the foregoing pages of typewritten matter contain a
15 true and accurate transcript as requested by counsel
16 of the proceedings and testimony had and adduced
17 upon the taking of said deposition, all to the best
18 of my skill and ability.

19 I FURTHER CERTIFY that I am not related to
20 nor employed by any of the parties hereto, and have
21 no interest in the outcome hereof.

22 DATED at Bernalillo, New Mexico, this day
23 November 12, 1991.

24 My commission expires
25 April 24, 1994


LINDA BUMKENS
CCR No. 3008
Notary Public