

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

15 July 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of Santa Fe Energy Oper- CASE
ating Partners, L. P., for special 9175
pool rules and an unorthodox oil well
location, Lea County, New Mexico.

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

For the Applicant: James G. Bruce
Attorney at Law
HINKLE LAW FIRM
P. O. Box 2068
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GARY GREEN

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MR. STOGNER: I'll now call Case Number 9175, which is the application of Santa Fe Energy Operating Partners, Limited, for special pool rules and an unorthodox oil well location, Lea County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Law Firm in Santa Fe, representing the applicant.

I have two witnesses to be sworn.

MR. STOGNER: Are there any other appearances in this matter?

Will both witnesses please stand to be sworn at this time?

(Witnesses sworn.)

Mr. Bruce.

GARY GREEN,
being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

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DIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Green, would you please state your full name and your city of residence?

A My name is Gary Green, Midland, Texas.

Q And what is your occupation and who are you employed by?

A I'm employed as a landman by Santa Fe Energy Company.

Q And have you previously testified before the OCD as a petroleum landman and had your credentials accepted?

A Yes, I have.

Q And are you familiar with the land matters involved in Case 9175?

A Yes, I am.

MR. BRUCE: Mr. Examiner, are the witness' credentials acceptable?

MR. STOGNER: They are.

Q Mr. Green, would you please briefly state what Santa Fe seeks in this application?

A The OCD created a North Hume Wolfcamp Pool in nomenclature Case Number 9102. The pool consists of Lots 1, 2, 7, and 8, 16 South, 34 East, Section 5, in Lea

1 County, New Mexico.

2 The discovery well for the pool is Santa
3 Fe's NH 5 Fed No. 1 Well in Lot 7.

4 Santa Fe seeks the adoption of special
5 pool rules primarily to institute 80-acre well spacing and
6 wells to be located in either quarter quarter section.

7 Our next witness will discuss the 80-acre
8 spacing.

9 Santa Fe also seeks a special rule allow-
10 ing administrative approval for nonstandard units for ease
11 of operations.

12 Finally, the NH 5 Fed Well was originally
13 located as a gas well but it was completed as an oil well
14 and as a result it has an unorthodox oil well location.
15 Santa Fe requests that its location be grandfathered into
16 this pooling without penalty.

17 Q Would you please now refer to Exhibit
18 Number One and discuss its contents briefly for the
19 Examiner?

20 A Exhibit Number One is a land plat on a
21 scale of 1-to-1000, showing Santa Fe's acreage in yellow and
22 the offset operators. There is a circle showing a one mile
23 boundary from the pool and it shows the discovery well North
24 Hume Wolfcamp Pool is indicated in Lot 7, Section 5. We
25 show VF Petroleum Chevron State No. 1 Well in the southwest

1 quarter of the southwest quarter, which is primarily for the
2 Woflcamp, and located in Section 36.

3 Q Were all offset operators or unleased
4 mineral interest owners within one mile of the current pool
5 notified of this hearing?

6 A Yes.

7 MR. STOGNER: Before we go any
8 -- I'm sorry.

9 A Okay.

10 MR. STOGNER: I just -- before
11 we go any further, could you tell me what the pool
12 boundaries for this particular pool is at this time?

13 A The pool boundaries are Lots 1, 2, 7, and
14 8.

15 MR. STOGNER: In Section --

16 A Section 5.

17 MR. STOGNER: Section 5. Okay.
18 I'm sorry to interrupt you there.

19 Go ahead, Mr. Bruce.

20 Q And are your certified return receipts of
21 that notification submitted as Exhibit Number Two?

22 A Yes, they are.

23 Q In addition to the offset operators were
24 the royalty and overriding royalty interest owners in Lot 7
25 underlying the discovery well notified of this hearing?

1 A Yes, they were.

2 Q And are those certified return receipts
3 also attached?

4 A Yes, they are, Exhibit Two.

5 Q Would you please now turn to Exhibit Num-
6 ber Three and describe that?

7 A Exhibit Number Three is a land plat on a
8 scale of 1-to-8000 feet. It shows the North Hume Wolfcamp
9 Pool, Santa Fe's acreage in light yellow. It shows other
10 Wolfcamp pools in the vicinity. Most of the Wolfcamp ac-
11 reage is developed on eighties, on 160 spacing. Several of
12 the Wolfcamp 40-acre pools are one well pools and this map
13 also indicates the Wolfcamp -- or the name, pool name, and
14 the date of discovery for each pool, and it's got the Ken-
15 mitz just to the south of our acreage; the Anderson Ranch,
16 east; to the west Anderson Ranch North; to the west the
17 Buckner Wolfcamp; and to the north the Shoe Bar North to the
18 east.

19 Q Were Exhibits One through Three prepared
20 by you or compiled from the company records?

21 A Yes, they were.

22 Q And in your opinion will the granting of
23 this application be in the interests of conservation and the
24 prevention of waste?

25 A Yes.

1 MR. BRUCE: Mr. Examiner, we
2 move the admission of Exhibits One through Three.

3 MR. STOGNER: Exhibits One
4 through Three will be admitted into evidence.

5 MR. BRUCE: No further ques-
6 tions at this time.

7

8 CROSS EXAMINATION

9 BY MR. STOGNER:

10 Q Mr. Green, did you receive any objections
11 or any negative comments from your mail out of looks like --
12 appears to be June 18th?

13 A No, sir, I did not. I did have some in-
14 quiries seeking well information on this particular well but
15 I had no objections to the pool.

16 Q And Exxon was the other party that re-
17 ceived application for the unorthodox location, is that cor-
18 rect?

19 A Exxon and CNG Production Company are
20 partners in a 960-acre working interest unit that comprises
21 the north 640 acres of Section 5, and the northwest 320 ac-
22 res of Section 4. They're working interest partners in that
23 working interest unit.

24 Q Okay, I was looking for their notifica-
25 tion. Do you have that?

1 A It's on -- I believe you will find --

2 Q Well, did they get a copy of that parti-
3 cular letter dated June 18th or 16th?

4 A If you'll look at the, I believe it's the
5 second letter, addressed to addressees named on the attached
6 list, June 16th is a listing of the parties that were
7 notified.

8 Q And did you mention in that particular
9 letter about the the unorthodox location?

10 A No, sir, I did not.

11 Q Were they aware of the unorthodox
12 location or were you talking with them or anything?

13 A Yes, sir, I'm sure they are because
14 they're working as part of the unit. They receive all well
15 information, drilling information, logs, and so forth.

16 Q Okay.

17 MR. STOGNER: I have no further
18 questions of this witness at this time.

19 Mr. Bruce, do you have any
20 further questions?

21 MR. BRUCE: No, sir.

22 MR. STOGNER: Mr. Green may be
23 excused.

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NORMAN GARRETT,

being called as a witness and being duly sworn upon his
oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Garrett, would you please state your
full name, city of residence, occupation, and employer?

A My name is Norman Garrett, Midland,
Texas. I'm employed as a reservoir engineer with Santa Fe
Energy.

Q And have you previously testified before
the OCD?

A No, sir.

Q Would you please state your educational
and work background?

A Yes. I have a BS in mechanical
engineering and an MS in petroleum engineering from USC and
I worked for Getty Oil Company in California for thirteen
years as a petroleum engineer. reservoir production and
property, economic evaluations and environmental matters.

And for Amerada Hess for four years from
1979 to 1983 in Seminole, Texas, in engineering supervisor,
including economic evaluations and reserves for oil wells

1 and also for their CO2 wells.

2 Since 1983 I've worked for Santa Fe as
3 supervisor of the Permian Basin Reservoir Group, including
4 all well economics and reserves in the Permian Basin.

5 Q And are you familiar with the engineering
6 matters related to this application?

7 A Yes.

8 MR. BRUCE: Mr. Examiner, are
9 the witness' credentials acceptable?

10 MR. STOGNER: Mr. Garrett's
11 qualifications are so acceptable.

12 Q Mr. Garrett, would you please refer to
13 Exhibit Four and very briefly describe it for the Examiner?

14 A Yes. Exhibit Four is an AFE for a well
15 permitted in Lot 9 of Section 5. It's an up-to-date well
16 cost estimate and shows a completed well cost of approxi-
17 mately \$670,000, which is the figure which we used in our
18 subsequent economic discussion.

19 Q Okay, why don't you move right on to Ex-
20 hibit Five?

21 A Okay. Exhibit Five contains both a volu-
22 metric and decline curve analysis showing the basic well da-
23 ta and the conclusions on the volumetrics of original stock
24 tank oil in place of 71,500 barrels of oil; decline curve
25 analysis showing a gross ultimate recovery of approximately

1 16,000 barrels.

2 Q Would you please move on to the Exhibit 6
3 decline curve and describe that briefly?

4 A The decline curve is daily production
5 rates since the well has been put on production in February.
6 It shows at the top the flowing tubing pressure, gas produc-
7 tion and oil production for the -- up to the -- the last da-
8 ta points we have on this one are the 12th of July.

9 Q For a period the well was shut-in. What
10 was done during that period?

11 A That was a pressure build-up test to --
12 so we could define reservoir parameters.

13 Q Okay. Would you please then move on to
14 Exhibit Number Seven and discuss your analysis there?

15 A Exhibit Number Seven shows the economic
16 conclusions for both 40 and 80-acre spacing. It shows that
17 the volumetrics and well costs. A well drilled on 40 acres
18 will never pay out and 80-acre spacing is necessary to
19 develop this field.

20 In reference, without going farther, the
21 zero line on that, I want to explain it, is the payout.
22 Above it is profit; below it, the well will not pay out.

23 Q So based on drilling wells every 40 ac-
24 res, insufficient reserves would be recovered to make the
25 well pay out.

1 A Yes.

2 Q Okay. Would you please move on to the
3 structure map marked as Exhibit Eight and discuss its con-
4 tents?

5 A The structure map is on top of the Wolf-
6 camp Double X marker and shows that the structure trends
7 north/south and it also indicates the location of the well
8 under consideration here, the North Hume No. 5, and it's
9 location on the structure.

10 It also indicates that to the west are
11 dry holes that indicate an up structural limit to the well.
12 It also indicates to the south wells that have penetrated
13 the zone and do not have the zone of interest with hydrocar-
14 bons bearing with the exception of one which has not been
15 tested at this time, which is the Moncrief, and it shows
16 separation essentially from two wells which are indicated at
17 the -- marked in green in the lower part of the map.

18 Q Referring back to Exhibit 3, are the
19 reservoir characteristics of the North Hume Wolfcamp similar
20 to those of the Kennitz Wolfcamp Pool?

21 A Yes, they are similar; they're very simi-
22 lar.

23 Q Were Exhibits Four through Eight prepared
24 by you or compiled from company records?

25 A Yes.

1 Q And is the granting of this application
2 in the interest of conservation and the prevention of waste
3 and the protection of correlative rights?

4 A Yes.

5 MR. BRUCE: Mr. Examiner, I
6 move the admission of Exhibits Four through Eight.

7 MR. STOGNER: Exhibits Four
8 through Eight will be admitted into evidence.

9 MR. BRUCE: I have no further
10 questions at this time.

11

12 CROSS EXAMINATION

13 BY MR. STOGNER:

14 Q Mr. Garrett, when was this particular
15 well drilled?

16 A This well was drilled during the latter
17 part of 1986.

18 Q So the production limit -- I mean the
19 production that you do have appears like it didn't start
20 until February, is that correct, of '87?

21 A That's correct. It was put on
22 production, well, the best as I can remember, that was about
23 February the 17th or 18th, I think it was on the 18th. So
24 the first point you show is the -- that period of time
25 recorded 7:00 a.m. the next morning.

1 Q Does Santa Fe have any other plans to
2 drill some offset wells to this at this time?

3 A Yes, sir. If you will refer to the exhi-
4 bit with the structure, which is Number Eight, it shows the
5 location that we currently have permitted, to be No. 2 Well.
6 That's in Lot 9.

7 Q One thing that wasn't covered in your ap-
8 plication, if 80 acres is granted for this pool, what would
9 be the dedicated acreage to your present well?

10 A Are you speaking of whether it would be a
11 stand-up or laydown?

12 Q Yeah.

13 A Okay, this one would be, the best I
14 remember, it would be a laydown.

15 Q Okay, laydown. And how many acres is
16 that laydown consisting of, Lots 7 and 8, do you know?

17 A Those -- let me see, Lots 7 and 8, --

18 MR. BRUCE: I believe it's 80
19 acres, Mr. Examiner.

20 A I was looking for the -- the other exhi-
21 bit.

22 Q It's the top layer that I believe is more
23 than 40 acres apiece, isn't it? Can you remember that much?

24 MR. BRUCE: It might be all
25 lots because it's a 960-acre section.

1 A I was looking for the large -- I do not
2 seem to have that one.

3 Q Okay, we've got that on record here but I
4 believe that they're both, Lots 7 and 8 do consist of 40-
5 acres apiece. It's Lots 1 and 2 that do --

6 A Oh, yes, sir, yes.

7 Q -- have a little bit more.

8 A I was looking for the large --

9 Q So your proposed well, your proposed well
10 would consist of unorthodox -- that would be a nonstandard
11 proration unit for 80 acres.

12 A Yes.

13 Q Do you have any suggestions on what the
14 limited location should be for an 80-acre proration unit?

15 A Sir, I'm not sure I understand that.

16 Q Usually our 80-acre proration units, a
17 standard location would be 150 foot from the center of a --

18 A Oh, yes, yes.

19 Q And with this only being one well with a
20 limited amount of geological data presented today, do you
21 think it would be beneficial to have these rules temporary
22 at this time and then come in in two more years when there's
23 more -- when there's more evidence to present whether this
24 pool should continue being developed on 80 or should be rol-
25 led back to developed on 40-acre spacing?

1 A Yes, sir, that's our -- that's our inten-
2 tion.

3 Q Two years?

4 A Yes, sir.

5 Q Temporary period?

6 MR. STOGNER: I have no further
7 questions of this witness.

8 Are there any other questions
9 of Mr. Garrett?

10 MR. BRUCE: No, sir.

11 MR. STOGNER: He may be ex-
12 cused.

13 Mr. Bruce, do you have anything
14 further in this case?

15 MR. BRUCE: No, Mr. Examiner.

16 MR. STOGNER: If not, this case
17 will be taken under advisement.

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19 (Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY
CERTIFY that the foregoing Transcript of Hearing before the
Oil Conservation Division (Commission) was reported by me;
that the said transcript is a full, true, and correct record
of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 9175,
heard by me on 15 July 1987.

Michael E. Stogner, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

26 July 1989

EXAMINER HEARING

IN THE MATTER OF:

In the matter of Case 9175 being re-
opened pursuant to the provisions of
Division Order No. R-8476, which pro-
mulgated temporary special rules and
regulations for the North Hume-Wolf-
camp Pool, Lea County, New Mexico, and

CASE
9175

In the matter of Case 9354 being re- 9354
opened pursuant to the provisions of
Division Order Nos. R-8476 and R-8476-A
which promulgated temporary special
rules and regulations for the North
Hume-Wolfcamp Pool, Lea County, New
Mexico.

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

Robert G. Stovall
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Legal Counsel to the Division
State Land Office Building
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For Santa Fe Energy
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I N D E X

GARY GREEN

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DENNIS BUTLER

Direct Examination by Mr. Bruce 8

Cross Examination by Mr. Catanach 13

GEORGE B. NELSON

Direct Examination by Mr. Bruce 15

Cross Examination by Mr. Catanach 19

E X H I B I T S

Santa Fe Energy Exhibit One, Land Map 5

Santa Fe Energy Exhibit Two, Map 8

Santa Fe Energy Exhibit Three, Structural Map 9

Santa Fe Energy Exhibit Four, Cross Section W-W' 9

Santa Fe Energy Exhibit Five, Calculations 17

Santa Fe Energy Exhibit Six, Calculations 17

Santa Fe Energy Exhibit Seven, Calculations 17

Santa Fe Energy Exhibit Eight, Calculations 17

1 MR. CATANACH: Call Case 9175.

2 MR. STOVALL: In the matter of
3 Case 9175 being reopened pursuant to provisions of Division
4 Order No. R-8476, which promulgated temporary special rules
5 and regulations for the North Hume Wolfcamp Pool, Lea
6 County, New Mexico, including the provision for 80-acre
7 spacing rules.

8 MR. CATANACH: Are there ap-
9 pearances in this case?

10 MR. BRUCE: Mr. Examiner, my
11 name is Jim Bruce from the Hinkle Law Firm in Albuquerque,
12 representing Santa Fe Energy Operating Partners, L. P..

13 We have three witnesses in
14 this case and we would ask that it be consolidated with
15 Case 9354, since they involve the same pool.

16 MR. CATANACH: Okay. At this
17 time we'll call Case 9354.

18 MR. STOVALL: In the matter of
19 Case 9354 being reopened pursuant to provisions of Division
20 Order No. R-8476 and R-8476-A, which promulgated temporary
21 special rules and regulations for the North Hume Wolfcamp
22 -- Wolfcamp Pool, Lea County, New Mexico, including provi-
23 sion for 160-acre spacing units.

24 MR. CATANACH: Are there any
25 other appearances in either one of these cases?

1 You may proceed, Mr. Bruce.

2 MR. BRUCE: Thank you.

3 MR. STOVALL: Want me to swear
4 your witnesses in, Jim?

5 MR. BRUCE: Yes.

6
7 (Witnesses sworn.)

8
9 MR. BRUCE: My first witness
10 is Mr. Green.

11
12 GARY GREEN,
13 being called as a witness and being duly sworn upon his
14 oath, testified as follows, to-wit:

15
16 DIRECT EXAMINATION

17 BY MR. BRUCE:

18 Q Mr. Green, would you please state your
19 full name and city of residence?

20 A My name's Gary Green. I live in Mid-
21 land, Texas.

22 Q And what is your occupation and who are
23 you employed by?

24 A I am employed as a landman by Santa Fe
25 Energy Operating Partners, L.P.

1 Q And have you previously testified before
2 the OCD as a landman?

3 A Yes, I have.

4 Q And are you familiar with the land mat-
5 ters regarding the North Hume Pool?

6 A Yes, I am.

7 MR. BRUCE: Are Mr. Green's
8 credentials acceptable, Mr. Examiner?

9 MR. CATANACH: Yes, sir.

10 Q Mr. Green, what is Santa Fe's position
11 in these hearings?

12 A Santa Fe requests that 160-acre spacing
13 be made permanent for the North Hume Wolfcamp Pool.

14 Q And were both of these cases originally
15 started at the request of Santa Fe Energy?

16 A Yes, they were.

17 Q Referring to Exhibit Number One, would
18 you describe its contents, please?

19 A Exhibit Number One is a land plat, a
20 location map, on a 1-to-1000th scale.

21 Q Okay.

22 A It shows the acreage colored in yellow
23 is the Santa Fe acreage. It identifies the wells in the
24 North Hume Wolfcamp Pool, Santa Fe's wells in the North
25 Wolfcamp Pool. The discovery well in Section 5 was drilled

1 in October of 1986; the NH-35 No. 1 in the southeast quar-
2 ter of Section 35 was drilled in December of '87; the
3 Humble Hume State No. 1 in the southeast quarter of Sec-
4 tion 5, drilled in January of '88, are the three producing
5 wells.

6 Santa Fe has drilled the North
7 -- the NH-5-A State No. 1 over in Lot 11 of Section 5 in
8 May of '88. It's a dry hole.

9 They have drilled the Humble
10 Hume 5-A State No. 1 in the southwest quarter of Section 5.
11 It's a dry hole, was drilled in June of '88.

12 In the southwest quarter of
13 Section 35 they drilled the NH-35 No. 1 in July of '88. It
14 was also a dry hole.

15 Q And for the record, what were Santa Fe's
16 costs for a completed Wolfcamp well in the North Hume Pool?

17 A Approximately \$700,000.

18 Q And were AFEs and other data submitted
19 at prior hearings in this matter?

20 A Yes, they were.

21 MR. BRUCE: Mr. Examiner, we
22 move the admission of Exhibit Number One.

23 MR. CATANACH: Exhibit Number
24 One will be admitted as evidence.

25 MR. BRUCE: No further ques-

1 tions of the witness.

2
3 CROSS EXAMINATION

4 BY MR. CATANACH:

5 Q Just one, Mr. Green. In the yellow ac-
6 reage you have Flag Redfern and (unclear) Oil. Do you have
7 farmouts from those companies?

8 A No, they were under lease; leases have
9 since expired, so we've listed them as mineral -- mineral
10 owners.

11 We did have other acreage, undivided
12 interest in the lease.

13 Q What is the orange boundary that you
14 have?

15 A Those are the proposed -- the 160-acre
16 spacing unit for each of the producing wells.

17 MR. BRUCE: The current.

18 A Current, current producing wells, Yes.

19 MR. CATANACH: That's all I
20 have.

21
22 DENNIS BUTLER,
23 being called as a witness and being duly sworn upon his
24 oath, testified as follows, to-wit:
25

DIRECT EXAMINATION

BY MR. BRUCE:

Q Will you state your name, please, and place of residence?

A My name is Dennis Butler and I live in Midland, Texas.

Q By whom are you employed?

A Santa Fe Energy Corporation.

Q And what is your current job with Santa Fe?

A I'm the District Geophysicist in the Permian Basin.

Q And have you previously testified before the OCD and had your credentials accepted?

A Yes, sir.

Q And are you familiar with the geology of the North Hume Pool?

A Yes.

MR. BRUCE: Mr. Examiner, are the witness' credentials acceptable?

MR. CATANACH: Yes.

Q Mr. Butler, first refer to Exhibit Two. Would you describe that briefly?

A This is a map of the net porosity for the pay interval in the North Hume Wolfcamp Pool. We used

1 a 6 percent porosity cutoff for the net pay in each well.
2 This was determined by core analysis and drill stem tests
3 to be the lower limit of producable reservoir. You can see
4 that we have a large area of porosity development ranging
5 from as little as 3 feet of porosity up to a maximum of 17
6 feet of porosity in these wells.

7 When we get to the cross
8 section we can see how this zone is correlative over the
9 area.

10 Q Would you move on to Exhibit Number
11 Three?

12 A Exhibit Number Three is a structure map
13 on top of that porosity. The dotted outline around the
14 edge is the same as the zero contour line on the net poro-
15 sity map and the structural contours are inside where the
16 porosity exists.

17 The wells that are currently completed
18 in the pool are colored in the solid green color. Wells
19 that have tested water are in solid blue. Other wells that
20 by either drill stem test or log calculations would appear
21 to be oil bearing or water bearing have also been annota-
22 ted.

23 Q Before you describe this further, would
24 you please discuss the cross section and what that shows?

25 A Yes. The cross section is W-W' hung

1 upon the wall. Starting at the north end of the field, the
2 V-F Petroleum Well is the northeasternmost limit of the
3 field.

4 Further to the south the Santa
5 Fe Energy NH-35 No. 1 Well. Then (unclear) cross section
6 is the discovery well for the (unclear) field, the Santa Fe
7 Energy NH-5 Federal No. 1.

8 Then one of the dry holes that
9 was drilled in the area, which we'll discuss in a little
10 more detail, the NH-5-H State, a west offset to the dis-
11 covery well produced only water.

12 And then, continuing to the
13 south, the Humble Hume 5 No. 1 Well, which was also com-
14 pleted in the Wolfcamp Pool.

15 So you can see from the cross
16 section the porosity within a carbonate group in the Wolf-
17 camp, which we have used in the name of the HG Carbonate in
18 this area is just a marker that we can correlate for a
19 group of carbonates which correlate through the area. We
20 see porosity development approximately 50 feet into this
21 (not clearly understood) -- held up, you know, under the
22 history of the wells.

23 The only anomalous thing on
24 the maps and cross sections is the NH-5-A State, if you'll
25 look back at the structure map, actually came in 13 feet

1 high to the discovery well in the field. It has the same
2 correlative porosity zone and that well was also cored and
3 had oil and water in the core, and although the logs would
4 indicate that it was wet, Santa Fe chose to run pipe and
5 test the well and we produced some 15,000 barrels of water
6 with just a barrel or two of oil.

7 After analyzing the field as a
8 whole, it's apparent that the three wells to the north have
9 a small structure which has trapped oil and that those
10 three wells, the -- the V-F Petroleum Well, the 35 No. 1,
11 and the discovery well, the NH-5 Federal No. 1, are pro-
12 ducing oil from that structural closure.

13 Then you have a small saddle
14 between (unclear) and you're in a water leg for the balance
15 of the oil, which is productive in the Humble Hume State
16 some 100 feet higher.

17 We know that this is a con-
18 nected reservoir because as we testified in earlier cases,
19 we saw pressure drops when the VF Petroleum well was drill-
20 ed, and the 35 No. 1. And when the 5-A State Well was
21 drilled we had lost approximately 1200 pounds of bottom
22 hole pressure.

23 Subsequent testing in the well
24 indicated no barriers between the 5-A State and the NH-5
25 Federal.

1 So we know we're in a connec-
2 ted pressure system, and this was the most reasonable in-
3 terpretation we could come up with to explain the water in
4 the up-dip well.

5 Q So in your opinion the wells in the
6 cross section are, first, geologically correlative, and,
7 second, they are pressure connected.

8 A Yes, sir.

9 Q Just briefly would you give the outline
10 of the order in which the wells were drilled in this field?

11 A Yes. The chronological order, the dis-
12 covery well was the NH-5 Federal No. 1, in the northeast of
13 Section 5.

14 Subsequent to that V-F Petro-
15 leum drilled their well in the southwest quarter of Section
16 36.

17 Then Santa Fe drilled their
18 NH-35 No. 1 in Section 35, southeast quarter.

19 Then we moved to the southeast
20 corner of Section 5 and drilled the Humble Hume 5 State
21 Well.

22 Then we drilled the NH 5-A
23 State, in which we had difficulty explaining our water
24 problems, and that's in the west half of Section 5.

25 Then we moved to the south and

1 drilled the Humble Hume 5-A State in the southwest quarter
2 of Section 5. That well had no reservoir.

3 Then we attempted the NH-35
4 No. 2 in the southwest quarter of Section 35 and again that
5 well had no reservoir development.

6 Q Thank you, Mr. Butler. Were Santa Fe
7 Exhibits Two through Four prepared by you?

8 A Yes, they were.

9 Q And in your opinion is the continuation
10 of 160-acre spacing in the interest of conservation and the
11 prevention of waste and the protection of correlative
12 rights?

13 A Yes, I do.

14 MR. BRUCE: I have no further
15 questions of the witness at this time, Mr. Examiner.

16
17 CROSS EXAMINATION

18 BY MR. CATANACH:

19 Q Mr. Butler, I show a producing well in
20 Section 8. Whose is that?

21 A Moncrief drilled the State 8 No. 2 in
22 the northeast quarter of Section 8 and that well, as you
23 can see from the porosity map, has about 5 feet of poros-
24 ity. The well was potentialled, I don't have the card in
25 front of me, on the order of 20 barrels a day. We could

1 not find any records in the state production history to see
2 what that well has actually done.

3 In talking with Moncrief, they
4 initially had some oil and were having a depleting pres-
5 sure situation in the first couple days that they put it on
6 production and had not decided whether it was economic to
7 put on pump.

8 We would interpret that well,
9 from our limited amount of information, to just be a little
10 too thin and near the edge of the reservoir, that they do
11 not have good permeability development away from the well-
12 bore, but we don't have a lot of data on that well.

13 Q And what about the two wells south of
14 there in the east half of Section 8? Do you look at those
15 as being productive or potentially productive?

16 A We'd say indicated productive by log
17 calculation or drill stem test. Both of those wells appear
18 to be productive by log calculation. They were -- neither
19 well was tested in the correlative zone. That's strictly
20 our interpretation.

21 Q Where are those wells producing from?
22 Do you know?

23 A The Moncrief 8 No. 1 in the southwest of
24 the northeast is a Devonian producer and the Moncrief 1-Y
25 in the northeast of the southeast, although we show that as

1 a gas well on this map, it was producing from the Morrow
2 and I believe that well has subsequently been recompleted
3 in the Pennsylvanian.

4 But it has not been recom-
5 pleted in the Wolfcamp.

6 Q So is it your opinion that the area
7 shaded in green on Exhibit Number Three is the (unclear)
8 extent of the producing area in those wells?

9 A Yes, that's our best interpretation.

10 MR. CATANACH: I have no fur-
11 ther questions at this time. The witness may be excused.

12
13 GEORGE B. NELSON,
14 being called as a witness and being duly sworn upon his
15 oath, testified as follows, to-wit:

16
17 DIRECT EXAMINATION

18 BY MR. BRUCE:

19 Q Will you please state your full name
20 and place of residence?

21 A George B. Nelson, Midland, Texas.

22 Q And who do you work for and in what cap-
23 acity?

24 A I'm currently the District Reservoir En-
25 gineer for Santa Fe Energy.

1 Q And have you previously testified before
2 the OCD as an engineer?

3 A No, I have not.

4 Q Will you please outline your educational
5 and employment background?

6 A I have a Bachelor of Science degree from
7 Bucknell University in 1977.

8 I have twelve years experience in en-
9 gineering with Gulf Oil and Petro Lewis Corporation and
10 Santa Fe Energy in California, and also Santa Fe Energy in
11 the Permian Basin.

12 Q And what are your responsibilities for
13 Santa Fe in the Permian Basin?

14 A As I said, I'm the District Reservoir
15 Engineer over the southeast New Mexico and west Texas
16 areas.

17 Q And are you familiar with the hearing
18 matters involved in the North Hume Pool?

19 A Yes, I am.

20 MR. BRUCE: Mr. Examiner, are
21 the witness' credentials acceptable?

22 MR. CATANACH: They are.

23 Q Mr. Nelson, would you please refer to
24 Exhibits Five through Eight and describe their contents for
25 the Examiner?

I would like to indicate that throughout these wells I've used a straight -- straight line decline based on what current past history has been, which -- which I think is a a little bit conservative since we see these wells level out over time, but for the basis of these calculations I've stayed with a straight line decline.

The next exhibit is the Humble Hume 5 State No. 1. This well has cumulative production to date of 118,000 barrels; currently making 168 barrels a day at approximately 55 percent decline. This calculates to a gross ultimate recovery of 194,000.

Going through a similar drainage calcu-

1 lation shows this well to drain approximately 157 acres.

2 The next exhibit is the North Hume 35
3 No. 1 in Section 35. This well has cumulative production
4 of almost 25,000 barrels to date; currently making 50 bar-
5 rels a day at a 28 percent decline.

6 The gross ultimate estimated on this
7 well is 79,000 barrels of oil.

8 The drainage calculation for this well
9 indicates and area of approximately 77 acres drained.

10 The next exhibit is the Chevron State
11 No. 1 in Section 36. This well has cumed close to 9000
12 barrels of oil; currently making 15 barrels a day at a 25
13 percent decline. Estimated ultimate on the well is 24,000
14 barrels of oil. Associated drainage for that well is about
15 19 acres.

16 Q And that is the poorest producing well
17 in the field, is it not?

18 A Yes, it is.

19 Q In your opinion will the North Hume 5
20 Fed No. 1, the North Hume 35 No. 1, and the V-F Chevron
21 State No. 1 Wells drain the northern portion of this pool?

22 A Yes, I believe that they will.

23 Q And in your opinion as an engineer, is
24 it economically feasible to drill additional wells in this
25 pool? Has it been geologically defined based upon 40 or 80

1 acre spacing?

2 A I don't believe that it is, no.

3 Q In your opinion will one well economic-
4 ally and efficiently drain 160 acres in the North Hume
5 Wolfcamp Pool?

6 A I believe it will, yes.

7 Q And do you recommend that 160-acre
8 spacing be maintained in this pool?

9 A I do.

10 Q Were Exhibits Five through Eight pre-
11 pared by you, Mr. Nelson?

12 A Yes, they were.

13 Q And in your opinion is 160-acre spacing
14 in the best interest of conservation, the prevention of
15 waste, and the protection of correlative rights?

16 A I think it is, yes.

17 MR. BRUCE: I move the admis-
18 sion of Exhibits Five through Eight, Mr. Examiner.

19 MR. CATANACH: Exhibits Five
20 through Eight will be admitted as evidence.

21

22 CROSS EXAMINATION

23 BY MR. CATANACH:

24 Q Mr. Nelson, how do you explain the two
25 small drainage areas for the two northern wells?

1 A Basically what I've shown in the calcu-
2 lations is that it is an area of oil drainage. If you look
3 at the previous maps provided by Dennis Butler, you can see
4 that both of these wells are very near the oil/water con-
5 tact and both produce large quantities of water. I think
6 the small area of oil drainage is due to the position that
7 they're in in the reservoir and it's -- it's the available
8 oil contained in the area that can be drained for these
9 wells.

10 Q The reservoir data that you used in your
11 equations, did those come from actual well data, from ac-
12 tual porosity and water saturations?

13 A Yes. They were taken off of the poro-
14 sity resistivity logs. As testified in previous hearings
15 the log porosity was adjusted due to some core data that we
16 have and actually increased from the log porosity and those
17 are the porosity and saturation numbers for our net pay in
18 the wells.

19 Q Are either of these two, the wells in
20 Section 5, producing any water?

21 A Which wells?

22 Q The wells in Section 5?

23 A The -- the North Hume 5 Federal No. 1 is
24 producing water at a much lower cut than the wells in the
25 north area.

1 The Humble Hume 5 State No. 1 is cur-
2 rently essentially water free.

3 Q Does -- do you know if Santa Fe plans to
4 drill any additional wells in the area?

5 A No, we don't.

6 Q You don't.

7 MR. CATANACH: I have no fur-
8 ther questions of the witness. He may be excused.

9 MR. BRUCE: I have nothing
10 further in this case, Mr. Examiner.

11 MR. CATANACH: Being nothing
12 further in this case, Case 9175 and 9354 will be taken un-
13 der advisement.

14

15 (Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY
CERTIFY that the foregoing Transcript of Hearing before the
Oil Conservation Division (Commission) was reported by me;
that the said transcript is a full, true and correct record
of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 9175, 9354
heard by me on July 26, 1988.
David R. Catamb, Examiner
Oil Conservation Division