

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY)
 THE OIL CONSERVATION DIVISION FOR THE)
 PURPOSE OF CONSIDERING:)
)
 APPLICATION OF MANZANO OIL CORPORATION) CASE NOS. 11,674
 FOR COMPULSORY POOLING, LEA COUNTY,)
 NEW MEXICO)
)
 APPLICATION OF MANZANO OIL CORPORATION) and 11,675
 FOR POOL CREATION AND SPECIAL POOL)
 RULES, LEA COUNTY, NEW MEXICO)
) (Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: DAVID R. CATANACH, Hearing Examiner

December 19th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, December 19th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

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December 19th, 1996
 Examiner Hearing
 CASE NOS. 11,674 and 11,675 (Consolidated)

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* * *

A P P E A R A N C E S

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FOR THE APPLICANT:

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By: WILLIAM F. CARR

* * *

1 WHEREUPON, the following proceedings were had at
2 8:33 a.m.:

3 EXAMINER CATANACH: Call Case 11,674.

4 MR. CARROLL: Application of Manzano Oil
5 Corporation for compulsory pooling, Lea County, New Mexico.

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

8 MR. CARR: May it please the Examiner, my name is
9 William F. Carr with the Santa Fe law firm Campbell, Carr,
10 Berge and Sheridan.

11 We represent Manzano Oil Corporation in this
12 matter and also in the following case. They are
13 interrelated, and I would request that they be consolidated
14 for the purposes of hearing.

15 EXAMINER CATANACH: At this time we'll call Case
16 11,675.

17 MR. CARROLL: Application of Manzano Oil
18 Corporation for pool creation and special pool rules, Lea
19 County, New Mexico.

20 EXAMINER CATANACH: Are there any additional
21 appearances in either of these cases?

22 Do you have witnesses in this case, Mr. Carr?

23 MR. CARR: Yes, I do. I have two witnesses.

24 EXAMINER CATANACH: Okay. Will the witnesses
25 please stand to be sworn in?

1 (Thereupon, the witnesses were sworn.)

2 MR. CARR: May it please the Examiner, Case
3 11,616, heard on November 7th of this year, was the
4 Application of Manzano Oil Corporation for the force-
5 pooling of all mineral interests in the south half of the
6 northeast quarter of Section 11, Township 16 South, Range
7 36 East, in Lea County, New Mexico. That is the identical
8 tract that is the subject of Case 11,674.

9 Although the 80-acre unit in the Strawn formation
10 that was requested in that case, on November the 7th was
11 pooled, the portion of the case that related to 80-acre
12 pooling in the Wolfcamp formation was denied by the
13 Division because there was no Wolfcamp formation within a
14 mile developed on 80-acre spacing, so a 40-acre tract was
15 pooled.

16 Manzano's presentation here today in Case 11,674,
17 the pooling case, will be identical to the presentation
18 made to you on November the 7th in support of its
19 application to pool that acreage. We have provided new
20 notice, to each of the small interest owners who would be
21 affected by pooling, of the hearing here today and the new
22 Application, and we would request that the record made in
23 Case 11,616 be incorporated into the record of this
24 hearing. All the parties that are affected have been
25 notified, and if that record can be incorporated, then we

1 can focus our presentation on the 80-acre spacing issue and
2 the pool creation in question.

3 EXAMINER CATANACH: Okay, the record in Case
4 11,616 will be incorporated into this case.

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

8 DIRECT EXAMINATION

9 BY MR. CARR:

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

11 A. My name is Mike Brown.

12 Q. Where do you reside?

13 A. Roswell, New Mexico.

14 Q. By whom are you employed?

15 A. I'm employed by Manzano Oil.

16 Q. And what is your position with Manzano Oil?

17 A. I'm a geologist.

18 Q. Mr. Brown, have you previously testified before
19 this Division?

20 A. Yes, I have.

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

24 A. Yes, they were.

25 Q. Are you familiar with the Application filed in

1 this case on behalf of Manzano Oil Corporation?

2 A. I am.

3 Q. And have you made a geological study of the area
4 which is the subject of this case?

5 A. I have.

6 Q. Are you prepared to present the results of that
7 study to Mr. Catanach?

8 A. Yes, I am.

9 MR. CARR: Are the witness's qualifications
10 acceptable?

11 EXAMINER CATANACH: They are.

12 Q. (By Mr. Carr) Mr. Brown, would you briefly state
13 what Manzano is seeking with this Application?

14 A. Manzano is seeking the creation of a new pool for
15 production from the Wolfcamp formation, to be initially
16 comprised of the south half of the northeast quarter and
17 the north half of the southwest quarter of Section 11,
18 Township 16 South, Range 36 East.

19 This Application is a result of a discovery of
20 production in the Wolfcamp formation from our recently
21 drilled "SV" Double Eagle Number 1 well, located at the
22 previously approved unorthodox well location of 1500 feet
23 from the north line, 2148 feet from the east line of
24 Section 11 -- and that's from Order Number R-10,708 -- and
25 our "SV" Chipshot Well Number 1, located at a previously

1 approved unorthodox well location of 2164 feet from the
2 south line, 1362 feet from the west line of Section 11.

3 Manzano is seeking the promulgation of special
4 rules and regulations for this pool, to include 80-acre
5 spacing.

6 Q. The unorthodox location for the Chipshot well was
7 Order Number R-10,602?

8 A. That is correct.

9 Q. What are the primary objectives for the wells
10 that are drilled in this particular area?

11 A. There are two primary objectives. These are the
12 Strawn and the Wolfcamp.

13 Q. And what are the spacing rules which govern
14 development of both the Strawn and Wolfcamp formations in
15 this immediate area?

16 A. Currently the Strawn is on 80-acre spacing, and
17 this comes from Order Number R-3816, which adopted special
18 pool rules for the Lovington Northeast-Penn Pool. The
19 Wolfcamp is currently on statewide 40s.

20 Q. Could you briefly review for Mr. Catanach the
21 history of this case?

22 A. Manzano has drilled two unorthodox locations
23 which were brought before the OCD and were previously
24 approved. Manzano sought the promulgation of special pool
25 rules for the Wolfcamp in Case 11,617, which was presented

1 on September 26th, 1996.

2 This Application was denied by Order R-10,602-A
3 for the following reasons: It was stated no geologic
4 evidence was presented, that this was a separate reservoir
5 in the Wolfcamp formation, it was said that no geologic
6 evidence was given showing that the porosity and
7 permeability in this reservoir was significantly different
8 than reservoirs in the Wolfcamp that are currently
9 developed under 40-acre spacing rules, it was stated that
10 no bottomhole pressure was given for the Wolfcamp, as was
11 no preliminary production data for the Wolfcamp for wells
12 in this pool, no preliminary volumetric reserve
13 calculations and drainage areas were presented, and there
14 was no drilling economics shown.

15 Q. Now, since that time you've completed your Double
16 Eagle well; is that not -- You've drilled the Double Eagle
17 well --

18 A. That is correct --

19 Q. -- is that not right?

20 A. -- that is correct.

21 Q. And have you prepared exhibits for presentation
22 here today that attempt to address the concerns raised in
23 that earlier order?

24 A. Yes, I have.

25 Q. Let's go to what has been marked for

1 identification as Manzano Oil Corporation Exhibit Number 1.

2 What is this?

3 A. This is a land plat showing the location of the
4 "SV" Chipshot Number 1 and the "SV" Double Eagle Number 1.
5 Those well locations are shown in red. Both wells were
6 drilled in Section 11 of 16 South, 36 East, in Lea County,
7 New Mexico. You'll note we're directly offsetting the town
8 of Lovington.

9 I've also shown the spacing units that we propose
10 to place in the new field creation. These are shown in
11 yellow.

12 Q. Generally the ownership in the area is shown?

13 A. Yes, this is an ownership map.

14 Q. Other wells are shown?

15 A. That is correct.

16 Q. Do you have additional -- plans to drill
17 additional wells in these formations, in the Wolfcamp, in
18 the immediate future?

19 A. Yes, sir, in the first half of 1997, we'll drill
20 two additional wells in Section 11.

21 Q. Let's go to Exhibit Number 2. Could you identify
22 and review this?

23 A. This is a regional field map of the Lovington
24 area. Once again, I've shown the 80-acre proration units
25 of the "SV" Chipshot Number 1 and the Double Eagle Number 1

1 in yellow, with the well locations shown in red.

2 This exhibit shows the location of other Wolfcamp
3 fields and Strawn fields in this area. Three of these
4 fields, of the Wolfcamp fields, produce from a correlative
5 interval in the Wolfcamp, which has been labeled the Lower
6 Wolfcamp Beta Reef, and those fields are the Shoe Bar-
7 Wolfcamp North, the Lovington Wolfcamp Northeast, and the
8 Dean Permo-Penn.

9 The field directly offsetting us is the Lovington
10 Wolfcamp Northeast. It produced from the Beta Reef. There
11 were two wells drilled and produced. One is in the
12 northwest quarter of Section 12, the northwest of the
13 northeast, and the second well was in the northwest quarter
14 of Section 7 of 16-37.

15 Effectively, this field was developed on 80s.
16 There were no 40-acre location spacing units drilled,
17 producing units drilled. The whole field, both wells
18 produced 80,000 barrels together, so its average cum per
19 well was only 40,000 barrels.

20 The field whose production characteristic is
21 closest to ours, at least in its early stages, is the Shoe
22 Bar-Wolfcamp North, located to the west of your map. It is
23 on 160-acre spacing with 510-foot setbacks. There were
24 three wells drilled that are Beta Reef producers, and those
25 are the two wells in Section 7, the south half of the south

1 half of Section 7, and the well that you see in the
2 northwest of the northwest of Section 18. The rest of the
3 wells are in other Wolfcamp pays, but the three wells there
4 that drained the Beta Reef were essentially drilled on 80-
5 acre spacing.

6 The second field that our production
7 characteristics are somewhat similar to is the Dean field,
8 and that's the field we see to the far north. It is on 80-
9 acre spacing, with 330-foot setbacks. This field produced
10 190,000 barrels per well. It's commingled with other
11 Wolfcamp zones in the Strawn, so the production is a little
12 difficult to get a handle on. But in both cases, the
13 production was well over three times the production seen in
14 the 40-acre field, the Lovington Wolfcamp Northeast.

15 Also, for the record, I'll just point out, the
16 Lovington Wolfcamp 40-acre spacing field, due south of the
17 Chipshot, produces from other Wolfcamp pays, but it only
18 produced 80,000 barrels as well -- it was 85,000,
19 actually -- from two wells, one drilled in Section 23, the
20 southwest quarter of 23, and another well drilled in the
21 southwest quarter of Section 24, separated by over a mile.
22 And once again, no 40-acre productive spacing units were
23 drilled.

24 Q. Mr. Brown, how did you go about preparing this
25 exhibit and determining what these existing pool boundaries

1 are?

2 A. I drew this to approximate the reservoir
3 boundaries and not the land boundaries for the pool.

4 Q. You just identified wells in the pool and then
5 pulled them together --

6 A. Yes, sir, that is correct.

7 Q. -- as indicated on this exhibit?

8 A. That is correct.

9 Q. All right. Let's go to Exhibit Number 3. Can
10 you identify and review that for Mr. Catanach?

11 A. Exhibit Number 3 is a stratigraphic cross-section
12 that runs from the North Shoe Bar-Wolfcamp field to the
13 west, through the Chipshot Number 1 in our proposed Augusta
14 (Wolfcamp) field, through the Kim Harris Number 2 in the
15 Lovington Wolfcamp Northeast, and then lastly over to two
16 wells in the Dean Permo-Pennsylvanian field. What I'm
17 showing with this exhibit is that each of these fields
18 produces from the same interval, the Beta Reef, Lower
19 Wolfcamp Beta Reef.

20 The well on the far west side of the map is out
21 of the North Shoe Bar-Wolfcamp field. This is the Mesa
22 Petroleum Gilmore Number 1, in Section 7 of 16-36. It was
23 completed in 1974. It had a DST in the Beta Reef,
24 indicated on the cross-section, that had gas to surface in
25 five minutes and recovered 11 barrels of oil. Shut-in

1 pressure was 4073 feet.

2 This well was perforated in the Beta Reef from --
3 on the perforations shown there in red in the Beta Reef
4 interval. Initial production was 604 barrels of oil per
5 day, 72 barrels of water per day. It produced about
6 373,000 barrels of oil before some additional perfs were
7 added in 1981. You'll see those at the very top of the
8 well log. That's what I consider the Lower -- or the Three
9 Brothers pay. The well was perforated and commingled with
10 the Beta Reef, but in looking through the production it
11 only added 12 barrels a day to the production in the first
12 year, and by the second year it looked like the Three
13 Brothers zone was no longer contributing. The well cum'd
14 454,000 barrels of oil, of which probably at least 425,000
15 is attributed to the Lower Beta Reef. It is still
16 producing. It produced 1300 barrels of oil in 1995.

17 The North Shoe Bar Pool, of which this well is a
18 part, includes the Lower Wolfcamp Beta Reef. There are
19 some assorted Wolfcamp pays, lower and upper, that are
20 included in this field, and also the Three Brothers pay.
21 The field is on 160-acre spacing with 510-foot setbacks.
22 It was discovered in 1973. It had an original Lower Beta
23 Reef pressure of 4120 p.s.i.

24 The estimated oil-water contact is at minus 6585,
25 and that's based on the well in the southeast of the

1 southeast of Section 7 that was wet in the Beta Reef zone.
2 That contact is over 200 feet higher than the top of the
3 Chipshot Number 1, so you have structural separation with
4 the known oil-water contact.

5 If you center in on the three wells in the field
6 that are Beta Reef producers, those are the two wells in 7
7 and the one well in Section 18. Those three wells alone
8 made 1.1 million barrels of oil, or 382,000 barrels per
9 well. And as I stated before, most of this production is
10 from the Lower Wolfcamp Reef, Beta Reef, and only minor
11 production from the Three Brothers pay.

12 The next well that I'm showing on the cross-
13 section is the Manzano "SV" Chipshot Number 1. As you can
14 see, the perforations that have been perforated are in the
15 Beta Reef and similar in character to the Gilmore Number 1,
16 slightly thicker as far as the reef section itself, but
17 comparable. Perforated from 10,578 to -90 at a flowing
18 potential of 253 barrels of oil per day. Currently we're
19 proposing that this be on 80-acre spacing. The field was
20 discovered on August 29th of his year.

21 Our original pressure, bottomhole pressure, was
22 3656 p.s.i., and that comes from the DST that's noted on
23 the well log. Right now, we do not know where our oil-
24 water contact is. We have not produced any water in any of
25 our tests or perfs. If I was to guess, I would say that we

1 probably have about a 60-foot column. But right now we
2 have not produced any water, and none of the calculations
3 in the Chipshot well show it to be wet.

4 The next well log over is the Bridge Oil Kim
5 Harris Number 1. That's the discovery well for the
6 Lovington Wolfcamp Northeast field. It also produced from
7 the Beta Reef, you can see, very similar in character to
8 the other wells. It was completed in 10 of 1990. It DST'd
9 Beta Reef, recovering oil and water, and had a shut-in
10 pressure of 3863 p.s.i.

11 They perforated the upper part of the reef from
12 10,590 to 10,600. It had an initial potential flowing of
13 180 barrels of oil a day and five barrels of water. The
14 well cum'd 63,000 barrels of oil and depleted, did not
15 produce in 1995. And in the field -- Both of the two wells
16 in this field are currently pressure-depleted. So we have
17 both pressure depletion and, we'll show with our next
18 exhibit, we're also structurally separated from this field.

19 As I stated earlier, the cumulative production
20 was 80,000 barrels from the two wells in this field, so
21 your average production per well is only 40,000 barrels.

22 The last two logs are from the Dean Permo-
23 Pennsylvanian field, and this pool includes the Lower
24 Wolfcamp Beta Reef. There's assorted Wolfcamp pays. You
25 have the Three Brothers pay, and you also -- they're also

1 allowed to commingle the Strawn. So it's very difficult to
2 get a firm handle on how much each of the wells made.
3 However, there were a couple wells that we can get some
4 idea of the productivity of the Beta Reef.

5 You can see the -- I've got the Cities Service AW
6 Number 4 perforated in the lower part of the Beta Reef, and
7 then I show the W.A. Moncrief Dean State, show this log for
8 correlation purposes to show that they are, in fact, the
9 same zones.

10 This field was discovered in 1955. Most of the
11 wells were drilled over the course of the next five to ten
12 years, so the well logs are old and most cases where I
13 could not find most of the wells.

14 The original Beta Reef pressure was 4134 p.s.i.,
15 and that's reported in the Roswell Geological Society's *Oil*
16 *and Gas Fields of Southeast New Mexico* book. It's
17 published in 1960. Its oil-water contact for the field is
18 established at 6860, and that's 130 feet lower than the
19 oil-water contact of the Lovington Wolfcamp Northeast and
20 probably much -- also similar, lower than the Chipshot
21 Number 1's oil-water contact.

22 This field produced 6 million barrels of oil from
23 32 wells, so its cumulative production is 190,000 barrels
24 per well from all the zones.

25 Q. All right, Mr. Brown, let's go now to Manzano

1 Exhibit Number 4, your structure map. Will you review that
2 for Mr. Catanach?

3 A. Exhibit Number 4 is a structure map on the top of
4 the W-2 marker, and the W-2 marker is the regional mapping
5 horizon. It's a very consistent pick, and it reflects all
6 the lower underlying horizons quite well.

7 The structure in our area is a nose. It's coming
8 out of the -- It's called the Lovington nose, pretty
9 prominent feature in all horizons. It -- In our area --
10 and I've shown the two -- our two 80-acre proration units,
11 spacing units that we're proposing in yellow -- our two
12 wells are essentially flat to each other, and as I've
13 stated, no oil-water contact seen as yet.

14 We're in a fairway of the Reef, which I've shown
15 in purple. The Hudgens Number 1 well, which is due east of
16 the Chipshot Number 1, did not have reservoir rock in the
17 Beta Reef, in the four-reef zone, as did the LCC State well
18 in the northeast of the southeast. So you have a
19 permeability barrier updip. The well I'm showing in the
20 northwest of the northwest quarter of Section 11 is the
21 Manzano Brownfield Trust Number 1, and it's a back-reef
22 well. It was also tight. So you have permeability
23 barriers, both updip and downdip, and you have a narrow
24 fairway of Lower Wolfcamp Beta Reef.

25 The Northeast -- The Lovington Wolfcamp Northeast

1 field is shown there in Section 12. The Kim Harris Number
2 1 is shown. The Kim Harris only had about 10 feet of
3 productive reef, and that's shown on the previous exhibit.
4 It started with water immediately and really never had much
5 production due to water, and it also pressure-depleted.

6 The well to the due east of it is the Kim Harris
7 Number 2, drilled about four years after the Kim Harris
8 Number 1 came on, and that well was wet. It was only 14
9 feet low. So you have a very small oil-water contact, and
10 that's the reason why the field didn't produce very much.

11 As you move northwest of the Kim Harris
12 production, you have the Henderson Number 1, and that has
13 nice Beta Reef section in it, but it's wet. And it's
14 downstructure, over 50 feet, or right at 50 feet from the
15 oil-water contact, definitely wet.

16 So you move around to the other side towards the
17 Double Eagle. Somewhere in Section 2 we'll have another
18 oil-water contact. But we are structurally separated from
19 the Lovington Wolfcamp Northeast, by virtue of the known
20 oil-water contact in the Kim Harris wells, and also from
21 the -- shown by the Henderson Number 1 that's obviously on
22 a saddle. And that's also one of the reasons why the --
23 The Kim Harris Number 1 is pressure-depleted, just had a
24 very small reservoir. So we're also pressure separated
25 from --

1 Q. Now, Mr. Brown, are the two wells that are the
2 subject of this case, in your opinion, are they completed
3 in a separate reservoir within the Wolfcamp formation?

4 A. Yes, they are.

5 Q. If we look at the cross-section, we see
6 permeabilities and porosities that are relatively similar
7 across this area in the Beta Reef, do we not?

8 A. You do, all four of the fields that I show had
9 very similar porosities and perms. Some varied in
10 thickness, but it's a very highly productive horizon.

11 Q. And we have separate reservoirs because of the
12 water contact throughout the area; is that not correct?

13 A. Yes, sir. As stated before, the North Shoe Bar
14 Wolfcamp was -- its oil-water contact was 200 feet above
15 the top of the Beta Reef in the Chipshot Number 1. The Kim
16 Harris Number 1, had an oil-water contact that is
17 apparently different from the Chipshot Number 1. And then
18 the Dean field was the lowest of all, and it was another
19 130 feet lower than the oil-water contact from the Harris
20 Number 1.

21 So you have similar rock that's being trapped in
22 little structural traps; while the rock is similar, they
23 are separated with different oil-water contacts.

24 Q. Will Manzano call an engineering witness to
25 review for the Examiner the data that Manzano has acquired

1 on this part of the Wolfcamp formation, in response to the
2 concerns previously raised by the Division in this earlier
3 order?

4 A. Yes, we will.

5 Q. Is Manzano Exhibit Number 5 an affidavit
6 confirming that notice of this hearing has been provided as
7 required by Division Rules?

8 A. Yes, it is.

9 Q. And to whom was notice provided?

10 A. It was provided to all interested parties.

11 Q. Were all operators of Wolfcamp wells within a
12 mile of the proposed pool notified?

13 A. Yes, they were.

14 Q. And Manzano operates both wells in the current
15 pool?

16 A. Yes, they do.

17 Q. Manzano will be the operator of the two
18 additional wells that will be drilled during the first half
19 of next year in this section; is that right?

20 A. That is correct.

21 Q. And if 80-acre spacing is adopted for the
22 Wolfcamp, it would then be consistent with the spacing
23 pattern for the Strawn formation in this reservoir as well;
24 is that right?

25 A. That is correct.

1 Q. Were Exhibits 1 through 5 either prepared by you
2 or compiled under your direction?

3 A. They were.

4 MR. CARR: At this time, Mr. Catanach, we would
5 move the admission into evidence of Manzano Oil Corporation
6 Exhibits 1 through 5.

7 EXAMINER CATANACH: Exhibits 1 through 5 will be
8 admitted as evidence.

9 MR. CARR: And that concludes my direct
10 examination of Mike Brown.

11 EXAMINATION

12 BY EXAMINER CATANACH:

13 Q. Mr. Brown, is the Shoe Bar field in the same
14 fairway as this?

15 A. Yes, it is. This appears to be a regional narrow
16 reef trend, very similar to the Townsend Kemnitz trend,
17 which -- by the way, that trend is in the Alpha interval on
18 your cross-section, the equivalent for the Townsend, so
19 we're -- Yes, and that's a known narrow fairway, runs
20 across the -- southeast New Mexico.

21 Q. Do you feel like this reservoir that you've
22 discovered is effectively isolated from the pool to the
23 west and to the east?

24 A. It is by oil-water contacts, and it's
25 structurally separated.

1 Q. Was the Chipshot well tested in the Wolfcamp?

2 A. Yes, what I have shown as DST Number 1 was our
3 drill stem test, and we recovered oil to surface with a
4 shut-in pressure of 3656. It was subsequently perforated
5 there, and those perforations are shown in red. And it
6 IP'd flowing of 253 barrels of oil per day, and it's
7 currently producing.

8 Q. From the -- ?

9 A. -- Beta Reef, Lower Wolfcamp Beta Reef.

10 Q. Okay. Is it not -- Is it completed in the Strawn
11 as well?

12 A. It is -- we made -- It was 100 barrels of oil a
13 day and around two hundred and -- It was 200 barrels of
14 water per day in the Strawn, flowing. And right now it's
15 currently temporarily abandoned, but it was very productive
16 in the Strawn.

17 Q. Are your intentions to dually produce the well?

18 A. Right now our intentions are to drill the
19 Chipshot Number 2 in an updip location on the Strawn and
20 hopefully get some of the water off. At some point we may
21 attempt to dual or commingle the production, similar to
22 what happened in Dean where they've commingled the Strawn
23 and the Wolfcamp. But for right now, we'll be in the
24 Wolfcamp for some time.

25 Q. What about the Double Eagle 1?

1 A. The Double Eagle Number 1, we're -- we've been
2 trying to get -- establish production in the Strawn. It's
3 marginally productive right now in the Strawn, so I think
4 very soon we'll be moving up to also place that into the
5 Wolfcamp. As a matter of fact, I think that was perforated
6 a couple days ago. So temporarily abandon the Strawn.

7 Q. Where are you going to drill your Chipshot Number
8 2?

9 A. That will be in the south half -- south half of
10 the southwest quarter.

11 Q. And you mentioned one additional well?

12 A. We will drill the north offset to the Chipshot in
13 the south half of the northwest quarter.

14 Q. You say that -- You've examined the permeability
15 and porosity in this pool and in the offset pools, and you
16 say that they're similar?

17 A. Similar. Our -- We did core our Double Eagle
18 Number 1, and they recorded -- our core permeabilities
19 matched some of the published data on the North Shoe Bar.
20 Our permeability was in some cases measured in the Darcies.
21 So it's very permeable rock.

22 EXAMINER CATANACH: That's all I have of the
23 witness.

24 He may be excused.

25 MR. CARR: At this time, Mr. Catanach, we would

1 call Donnie Brown.

2 DONNIE E. BROWN,

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

5 DIRECT EXAMINATION

6 BY MR. CARR:

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

8 A. Yes, my name is Donnie Brown.

9 Q. Where do you reside?

10 A. I reside in Roswell, New Mexico.

11 Q. By whom are you employed?

12 A. I'm employed by Manzano Oil Corporation.

13 Q. And what is your position with Manzano?

14 A. As a petroleum engineer.

15 Q. Mr. Brown, have you previously testified before
16 this Division?

17 A. Yes, I have.

18 Q. At the time of that testimony, were your
19 credentials as an expert in petroleum engineering accepted
20 and made a matter of record?

21 A. Yes, they were.

22 Q. Are you familiar with the Application in this
23 case?

24 A. Yes, I am.

25 Q. Have you made an engineering study of the

1 Wolfcamp formation in the area of the proposed new pool?

2 A. Yes, I have.

3 Q. And you're prepared to share the results of that
4 study with Mr. Catanach?

5 A. Yes, I am.

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

8 EXAMINER CATANACH: Yes, they are.

9 Q. (By Mr. Carr) Mr. Brown, let's go to what has
10 been marked for identification as Manzano Oil Corporation
11 Exhibit Number 6, your bottomhole pressure data. Would you
12 review that exhibit for Mr. Catanach?

13 A. Yes, I've listed data for the Chipshot and the
14 Double Eagle -- both wells are in our Beta Reef reservoir
15 -- listed the reef characteristics and the bottomhole
16 pressures as we have measured them.

17 Total thickness of the Reef in the Chipshot is
18 130 feet versus 166 feet for the Double Eagle. The
19 continuous porosity thickness is 72 feet for the Chipshot,
20 94 feet for the Double Eagle.

21 Net pay -- with net pay being porosity and all
22 pay being porosity above 4 percent -- is 50 for the
23 Chipshot and 75 feet for the Double Eagle.

24 We have perforated in the Chipshot the top 12
25 feet, and we propose to perforate the top 15 feet in the

1 Double Eagle.

2 Q. Has that been accomplished as of this time?

3 A. No, we're starting at the bottom and testing some
4 zones below the Beta Reef, and we haven't got up there yet.

5 Q. Okay.

6 A. Our DST in the Chipshot, our original
7 extrapolated pressure, taken on 7-5-96, was 3656 pounds.
8 Production came on in September of this year. We took
9 another bottomhole pressure test in December the 6th of
10 this year, at which time we produced some 18,430 barrels of
11 oil and 29,627 MCF of gas. Our extrapolated bottomhole
12 pressure was 3646. In that same time period we had DST'd
13 the Double Eagle in the same zone. Its extrapolated
14 bottomhole pressure was 3646, which indicated that both
15 wells were common -- in a common reservoir.

16 With the production of 18,430 barrels, we had a
17 pressure drop of 10 pounds from original. That's 0.27 of
18 one percent pressure drop.

19 Putting that on a per-p.s.i. pressure drop, we've
20 produced 1843 barrels per p.s.i. pressure drop in this
21 reservoir.

22 Q. Mr. Brown, what is the reservoir drive mechanism
23 in this Wolfcamp pool?

24 A. It's -- Since being on production for four
25 months, it appears that it's established a reservoir drive

1 mechanism of a solution gas drive. We see no water. To
2 date the GOR has been relatively constant in the early,
3 initial life of this reservoir.

4 Q. All right, let's go to Exhibit Number 7, and this
5 consists of two curves, the first one being by Calhoun and
6 the second one by Pinson. Could you just identify these
7 and explain them to the Examiner?

8 A. Yes, basically I just wanted to demonstrate that
9 this is a typical performance curve for a solution drive
10 reservoir, where you have pressure versus cumulative
11 production, you have a constant pressure drop, a linear
12 pressure drop in the early life of the field, your GOR is
13 relatively stable, and as your relative permeability comes
14 into play, your GOR comes up and your pressure drop
15 deviates from a linear relationship.

16 The second curve in the second exhibit
17 demonstrates the same thing; I just wanted to point out
18 that in this particular curve, 2500 to a pressure drop of
19 2000, that's a pressure drop of 20 percent. You have a --
20 basically a linear relationship between pressure versus
21 cumulative production. If you extrapolate that on a linear
22 relationship, you're looking at recoveries somewhere
23 between 16 and 18 percent of primary. And when you do that
24 you usually extrapolate a conservative ultimate recovery
25 compared to the final results, based on more data.

1 Q. All right, let's go to Exhibit Number 8, the
2 graph of pressure versus cum production. Could you review
3 that, please?

4 A. Yeah, this is based on our original pressure of
5 the reservoir from our DST and from our pressure -- 82-hour
6 pressure buildup test, transient test, after the production
7 of 18,400 barrels had been produced.

8 I plotted this as a percent pressure drop from
9 original pressure versus cumulative production. And as
10 I've explained on this -- previous exhibits, in the early
11 life of a solution gas oil reservoir with pressure drops of
12 20 percent from original or less, you have a straight-line
13 relationship, and this is a straight-line relationship.

14 What it shows is, with a pressure drop of 3
15 percent, based on this current production characteristic,
16 we can recover some 200,000 barrels. With a pressure drop
17 of 15 percent, still in a linear relationship phase of the
18 solution gas drive performance, you can recover as much as
19 a million barrels from this reservoir.

20 Q. Let's go now to Exhibit Number 9 and look at the
21 pressure drop as compared to the drainage area.

22 A. Yes, this is basically the same curve as the
23 previous exhibit, only I've converted cumulative production
24 into areal drainage, areal drainage based on the reservoir
25 properties that was determined from log analysis, with a

1 net pay of 50 feet, a porosity of 8 percent, water
2 saturation of 20 percent, and a primary recovery factor of
3 17 percent.

4 I've converted, as I say, on the previous
5 exhibit, barrels into areal drainage. And what this shows
6 is that with a 40-acre drainage area, we can achieve that
7 with less than a 2-percent pressure drop.

8 With 80 acres, we can achieve that with something
9 like a 3-percent pressure drop. And with as little as a
10 16-percent pressure drop, we can drain as much as 500
11 acres.

12 Q. Okay. Let's now go to the Schlumberger test
13 validation. Can you review that for Mr. Catanach?

14 A. Yes, this is our Horner buildup where we
15 extrapolated our final shut-in pressure and also the
16 derivative curve. We had Schlumberger use their model
17 verification, interpretation, to match our data with
18 various models, and this is their results.

19 I've highlighted in yellow their conclusions.
20 Basically they said no indication of boundaries within the
21 test radius of investigation, and the data was modeled as
22 being from an infinite homogeneous system.

23 Now of course, radius of investigation is
24 dependent upon net pay. I've demonstrated what the radius
25 of investigation and areal extent is, based on various net

1 pays for -- if you assume what I have in my study, 50 feet
2 of net pay, the radius of investigation was 1944 feet. It
3 saw no boundaries, that is, an areal extent of some 253
4 acres.

5 Q. Now, Mr. Brown, with these figures, why is
6 Manzano at this time only at this time requesting 80-acre
7 spacing?

8 A. Well, as you can see, we have produced a mere
9 18,000 out of a potential reservoir that's capable of
10 producing a million or more barrels. Our pressure drop is
11 something less than .3 of one percent of the original, so
12 right as of this moment we have very limited data.

13 I believe with our future development plans and,
14 say, six more months of data, we can have a better handle
15 on our areal drainage. I feel quite confident that this
16 will drain a minimum of 80-acres, and I feel like come six
17 months from now, I can come back and either request 80
18 acres on a permanent basis, or as much as 160 acres.

19 If I do ask for 160 acres, due to the nature of
20 the acreage and the field, it will be, in effect, developed
21 on 80 acres anyway. So I don't think I'm giving up much by
22 requesting 80 acres at this time.

23 Q. If we look at like the Shoe Bar off to the west,
24 the wells that are in the Beta Reef, although it's spaced
25 on 160 --

1 A. That's correct.

2 Q. -- the wells in the Beta Reef are actually on 80-
3 acre spacing --

4 A. That's correct.

5 Q. -- anyway, isn't that correct?

6 A. That's correct.

7 Q. And you will be drilling these two additional
8 wells within the next six months?

9 A. Correct.

10 Q. Do you request that temporary rules, if approved,
11 remain in place for that period of time -- be called back
12 to either justify 80 or adjust the rules to conform to the
13 then-known characteristics of this reservoir?

14 A. Yes.

15 Q. Were Exhibits 6 through 10 prepared by you or
16 compiled under your direction?

17 A. Yes, they were.

18 MR. CARR: At this time, Mr. Catanach, we would
19 move the admission into evidence of Manzano Exhibits 6
20 through 10.

21 EXAMINER CATANACH: Exhibits 6 through -- what?

22 MR. CARR: Ten.

23 EXAMINER CATANACH: Exhibits 6 through 10 will be
24 admitted as evidence.

25 MR. CARR: And that concludes my direct

1 examination of Donnie Brown.

2 EXAMINATION

3 BY EXAMINER CATANACH:

4 Q. Mr. Brown, how did you guys get your initial
5 pressure on this -- on the well?

6 A. From DST, extrapolated pressure from buildup from
7 our DST.

8 Q. And you're fairly certain that that's an accurate
9 number?

10 A. Yes.

11 Q. And the second pressure --

12 A. It was a straight-line buildup, and it was very
13 little -- It was less than 20 pounds from bottomhole
14 pressure to extrapolated pressure.

15 Q. The second pressure was, again, a buildup
16 pressure?

17 A. Yes, it's buildup pressure, and on its Horner
18 time plot you can see it on that last exhibit. See, there
19 was very little buildup from the last pressure point to our
20 last extrapolated pressure. It's the top graph.

21 Q. Based on your current data, what do you think
22 this well will drain?

23 A. Based on the current data, it's obviously -- It
24 can drain 80 acres. It's looking like it can -- it can
25 drain 500 acres. But I feel like when we put the Double

1 Eagle on, they will start interfering with each other.

2 Probably within six months I can pretty well
3 verify that they will drain 160 acres and interfere with
4 each other.

5 Q. Do you feel like these large drainage areas are a
6 function of the permeability in the reservoir?

7 A. Permeability and porosity, yeah. Both DSTs were
8 similar. The flowed 30 barrels per hour with a surface
9 pressure in excess of 900 pounds. Our core had very high
10 permeability, in excess of 1.5 Darcies. That's...

11 Q. Did you look at any of the wells in the Shoe Bar
12 field, and do they show --

13 A. No, I didn't look at any.

14 Q. That was effectively drilled on 80-acre spacing,
15 did you say?

16 A. According to the map, yes. They were on 160s,
17 but they, in effect, was drilled across Section lines on 80
18 acres.

19 Q. Do you have any ideas as to what the limits of
20 this reservoir may be?

21 A. Not at this point. We haven't seen any, and
22 that's what the -- that's what our buildup pressure test,
23 after an 82-hour buildup pressure, our buildup didn't see
24 any boundaries.

25 Q. What is your -- What is the well currently

1 producing at in the Wolfcamp? At what rate? Do you know?

2 A. Yes, it's -- We have it pinched back. We're
3 currently producing about 226 barrels a day, at a flowing
4 pressure of 975. That's on a 13/64 choke.

5 Q. What is it capable of producing?

6 A. It's -- could probably produce as much as 500
7 barrels a day. I've had it pinched back. I don't want to
8 take a chance of coning in water from fractures.

9 Q. When do you guys plan on completing the Double
10 Eagle?

11 A. We're in the process of completing it now. We're
12 testing some zones from the Strawn and between the top of
13 the Wolfcamp reef. We should be within -- completing in
14 the reef within a couple of days. We're working on it
15 right now.

16 Q. Are you going to wait to commence drilling the
17 other two wells until maybe after -- sometime after you
18 complete the double eagle?

19 A. They will be drilled after we complete the Double
20 Eagle. We should be through with our Double Eagle within a
21 week. Rig availability and -- dictates that we have to
22 wait till probably December the 28th before we can start
23 the next well.

24 Q. These -- If the Double Eagle exhibits similar
25 producing characteristics as the Chipshot, do you feel like

1 the two other wells that you plan on drilling are still
2 necessary?

3 A. Well, as I say, they will be on -- they will be
4 -- If it does produce like the Double eagle, probably not,
5 probably those two would drain the whole field.

6 Q. So you may alter your plans based on the
7 performance of the other well?

8 A. Yes.

9 Q. Do you know if most of the acreage in Section
10 11 -- Is that owned by Manzano, or you don't really know
11 that?

12 A. I don't know.

13 Q. And you've seen no evidence of water production
14 in the well?

15 A. Not a drop. Neither did -- on the DSTs where we
16 tested more interval than we perforated, we didn't see any
17 water on the pipe recovery or the sampler recovery in
18 either well.

19 Q. Do you feel like six months would give you enough
20 time to gather some more data with regards to the pool
21 rules?

22 A. Yes, we should have production from the Double
23 Eagle and see what its interference will be to the
24 Chipshot, and by that time we should have at least one,
25 possibly two wells drilled.

1 Q. Your estimate of a million barrels of recoverable
2 oil from this reservoir, that is from the reservoir and not
3 simply --

4 A. That is for the -- Well, that is from the
5 reservoir.

6 Q. From the whole reservoir, not simply from this
7 well?

8 A. Well, it's based on that well. But see, that
9 well has been producing from this reservoir by its
10 lonesome. I feel like when the Double Eagle comes on,
11 they'll start interfering with each other's reserves.

12 EXAMINER CATANACH: Okay, I think that's all I
13 have of the witness, Mr. Carr.

14 MR. CARR: Mr. Catanach, at this time I'd like to
15 move the admission of my notice affidavit in the pooling
16 case, just to confirm that we re-notified the interest
17 owners of the hearing today in that matter. And you'll
18 note from the file, those who have not voluntarily
19 committed represent less than two percent of the interest
20 in that well and could not be located -- did not respond.
21 I mean, we have addresses, but we received no responses.

22 EXAMINER CATANACH: With regards to the pooling
23 case, Mr. Carr, are you proposing the same overhead rates?

24 MR. CARR: Yes, everything would be identical to
25 what we presented last time, same overhead rates,

1 everything.

2 EXAMINER CATANACH: Risk penalty?

3 MR. CARR: Yes, sir.

4 EXAMINER CATANACH: And there are still some
5 outstanding interests that haven't committed to that well?

6 MR. CARR: Yes, and they are the parties to whom
7 notice has been given, and as was presented on the 7th of
8 November, we have not received responses from them, and
9 they are small interest owners that date back many years,
10 and they own less than 2 percent of the total working
11 interest in the tract -- in the spacing unit.

12 EXAMINER CATANACH: Is there anything further,
13 Mr. Carr?

14 MR. CARR: Nothing further.

15 EXAMINER CATANACH: Okay, there being nothing
16 further in these cases, Case 11,674 and 11,675 will be
17 taken under advisement.

18 (Thereupon, these proceedings were concluded at
19 9:28 a.m.)

20 * * *

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CERTIFICATE OF REPORTER

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

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

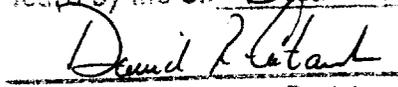
I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL December 23rd, 1996.


STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998

I do hereby certify that the foregoing is a complete record of the proceedings in the examiner hearing of Case No. 11674, 11675 heard by me on December 19, 1996.


David R. Galt, Examiner
Oil Conservation Division

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