

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

RECEIVED

OIL CONSERVATION DIVISION

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IN THE MATTER OF THE HEARING CALLED BY)
 THE OIL CONSERVATION DIVISION FOR THE)
 PURPOSE OF CONSIDERING:)

Oil Conservation Division

CASE NO. 12,776

IN THE MATTER OF CASE 12,776 BEING)
 REOPENED PURSUANT TO THE PROVISIONS OF)
 DIVISION ORDER NO. R-11,723, WHICH ORDER)
 PROMULGATED TEMPORARY SPECIAL POOL RULES)
 FOR THE EAST PENASCO DRAW-UPPER)
 PENNSYLVANIAN POOL IN EDDY COUNTY,)
 NEW MEXICO, INCLUDING PROVISIONS FOR)
 160-ACRE SPACING UNITS AND DESIGNATED)
 WELL LOCATIONS)

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGSEXAMINER HEARING

BEFORE: WILLIAM V. JONES, JR., Hearing Examiner

November 7th, 2003

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, WILLIAM V. JONES, JR., Hearing Examiner, on Friday, November 7th, 2003, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

STEVEN T. BRENNER, CCR
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I N D E X

November 7th, 2003
 Examiner Hearing
 CASE NO. 12,776

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<u>ROBERT L. DOTY</u> (Geologist)	
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* * *

A P P E A R A N C E S

FOR THE DIVISION:

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* * *

1 WHEREUPON, the following proceedings were had at
2 8:15 a.m.:

3 EXAMINER JONES: Okay, we'll go ahead and call
4 the first case, we'll call Case 12,776. It's reopened,
5 continued from the October 23rd Examiner Hearing.

6 Call for appearances.

7 MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of
8 the Santa Fe law firm of Kellahin and Kellahin, appearing
9 this morning on behalf of OXY, USA. OXY was the original
10 Applicant.

11 We're back before you this morning to ask you to
12 make these rules permanent, and I have one witness to be
13 sworn.

14 EXAMINER JONES: Okay, thank you. No more
15 appearances?

16 With that, go ahead, Mr. Kellahin.

17 MR. KELLAHIN: Swear my witness for me?

18 EXAMINER JONES: Yes, swear the witness.

19 (Thereupon, the witness was sworn.)

20 MR. KELLAHIN: Mr. Examiner, back in December of
21 '01 OXY presented this case to Examiner Stogner, and he
22 issued an order approving 160-acre oil well spacing for the
23 well we're about to discuss.

24 It's turned out to be a single oil reservoir.
25 The Cisco in this area is often a gas, but for this

1 particular well it has been a low-volume, low-producing oil
2 well.

3 Mr. Doty is back before you this morning on
4 behalf of OXY to ask you to make these rules permanent, and
5 he has some additional geologic and engineering evidence to
6 present to you in support of making these rules permanent.

7 I have handed out to you a copy of Mr. Stogner's
8 prior order.

9 In addition, I have taken from the transcripts in
10 the other case a stapled-together package that shows you
11 the engineering evidence, as well as a cross-section, and
12 with you permission we would like to incorporate by
13 reference the transcript and exhibits from the original
14 hearing in this case.

15 It's posted on the Internet, and I had to pull
16 these off the website for the Division, and in doing so,
17 I'll tell you, it's not easy. I could not find the hard
18 copies, so I duplicated Mr. Doty's cross-section to help
19 give you a visual reference.

20 And the portion of the transcript that you have
21 is the engineering portion that tells you the justification
22 for the 160-acre spacing. All that information is well
23 known to Mr. Doty, and he can speak with knowledge about
24 those calculations and his new calculations.

25 So with your permission, Mr. Examiner, we would

1 ask you to incorporate by record in this case the original
2 record.

3 EXAMINER JONES: Okay, let's incorporate the
4 original record for Case 12,776 into this record for Case
5 12,776.

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

9 DIRECT EXAMINATION

10 BY MR. KELLAHIN:

11 Q. Mr. Doty, for the record, sir, would you please
12 state your name and occupation?

13 A. My name is Robert Doty. I'm a petroleum
14 geologist with OXY USA in Midland, Texas.

15 Q. On prior occasions have you testified and
16 qualified as an expert witness before the Division?

17 A. Yes, sir, I have.

18 Q. Is this well your responsibility?

19 A. Yes, it is.

20 Q. And it continues to be so within the operation of
21 your company?

22 A. Yes, sir.

23 Q. Are you knowledgeable not only about the geologic
24 parameters involved in this case, but you're familiar with
25 the engineering components that went into this Application?

1 A. Yes, sir, I am.

2 Q. Under your direction have you had additional
3 calculations prepared concerning the performance of this
4 well?

5 A. Yes, sir.

6 MR. KELLAHIN: We tender Mr. Doty as an expert
7 witness.

8 EXAMINER JONES: Mr. Doty is so tendered.

9 Q. (By Mr. Kellahin) Mr. Doty, have you reviewed
10 the Order that Mr. Stogner issued in this case?

11 A. Yes, sir.

12 Q. Do you have a copy of that before you?

13 A. Yes, sir.

14 Q. When we turn to page 2 of that order, Mr. Doty,
15 the Division approved OXY's request for 160-acre spacing
16 based upon certain geologic evidence and conclusions?

17 A. Yes, sir.

18 Q. Have you re-examined that issue?

19 A. Yes, sir.

20 Q. Do those findings continue to be accurate and
21 true?

22 A. Yes, sir.

23 Q. When we turn to page 3, there is a summary of the
24 petroleum engineering evidence presented in the original
25 case?

1 A. Yes, sir.

2 Q. And have you examined all those components?

3 A. Yes.

4 Q. Do they continue to be applicable now?

5 A. Yes.

6 Q. What ultimately do you recommend to the Examiner?

7 A. Recommend that the temporary pool rules be made
8 permanent.

9 Q. Let's turn to Exhibit Number 1 for today's
10 hearing. Let's take a moment, Mr. Doty and have you
11 identify what we're looking at, and then we'll talk about
12 some of the details.

13 A. Yes, sir. Exhibit 1 is a nine-section plat
14 around the OXY Englebert Number 1, which was the well in
15 question for the original hearing. Color-coded are the
16 pool names for wells producing from the upper Penn
17 reservoir in this area. Upper Penn is sometimes called
18 Cisco, Canyon, Cisco/Canyon, more recently it's been lumped
19 into an upper Penn category, and there's several different
20 pool names.

21 All of the pools color-coded here are gas pools
22 on 320-acre spacing, with the exception of the Englebert,
23 which is identified in green, which is the one oil pool on
24 the temporary 160s.

25 In fact, if you look at a larger area, several

1 townships around here, all of the upper Penn gas wells are
2 indeed on statewide 320 acres. They're not really a superb
3 reservoir, but there's a lot of marginal or little bit
4 better than marginal gas, a lot of them. So the Englebert
5 is definitely an anomaly in this entire area to have a
6 unique oil pool surrounding an overall gas province.

7 Also identified on this map is the outline for
8 the approved 160-acre spacing unit that was approved at the
9 temporary pool rules, and also contoured is the net pay
10 that's the source of supply for the Englebert well. There
11 has been no additional drilling in this area since the
12 original hearing.

13 The Swinger Number 1 well -- the additional data
14 that is available, the Swinger Number 1 well was drilled
15 and we had a log on it at the time of the original hearing,
16 but the well had not yet been completed, and the subsequent
17 completion of that well, it wound up being a gas well on
18 statewide 320s so similar to hundreds of other wells
19 surrounding it, which again points to how anomalous this
20 Englebert well is.

21 Q. Let's talk about that relationship for a minute,
22 Mr. Doty.

23 A. Yes, sir.

24 Q. When you look at the cross-section that was
25 submitted at the original hearing -- we have one for the

1 Examiner, I think I've handed that out for him -- the
2 testimony at the original hearing described the
3 relationship between the Swinger and the Englebert well?

4 A. Yes.

5 Q. Is your testimony the same?

6 A. Yes.

7 Q. And what do you conclude?

8 A. It is the same overall gross carbonate interval
9 that's producing both in the Swinger and the Englebert.
10 Whether specifically it's the exact same porosity zone, we
11 really don't know. By observation the Swinger is a gas
12 well and the Englebert is an oil well. It's slightly
13 updip, not much, 23 feet updip. It's a low-volume gas
14 well. Its current rate is around 30 MCF a day.

15 Q. The gas well is 30 MCF?

16 A. Yes, sir.

17 A. And what is the current rates on the Englebert
18 well?

19 A. Englebert is around 26 oil, 26-30 oil, and around
20 80 to 100 MCF a day, fluctuating.

21 Q. Is there any apparent communication or
22 interference between the two wells?

23 A. There's none that we could identify, no.

24 Q. Do you see any reason to change the spacing for
25 the Englebert Number 1 well from 160 acres to something

1 else?

2 A. No.

3 Q. Are the engineering and geologic components that
4 went into the drainage estimates for the well at the
5 original hearing, are they still the same?

6 A. Yes, sir, they're still valid.

7 Q. Let's talk about the assumptions that were
8 originally made at that hearing in order to determine that
9 160-acre spacing was justified.

10 A. The original assumptions were based off of log
11 analysis on the Englebert, which had an average porosity of
12 4.5 percent, average water saturation of 25.5 percent,
13 formation volume factor is based off of producing GORs, and
14 from that volumetric reserves were calculated for 160-acre
15 spacing.

16 We did make some assumptions that possibly the
17 reservoir is exhibiting fractures. That might be what
18 makes this well unique, because based off of a pressure
19 buildup we did calculate a permeability of around 9
20 millidarcies, which is kind of high for a well with such
21 low porosity. So we can surmise that possibly that
22 fracture was enhancing the entire reservoir.

23 And those parameters -- nothing has changed, we
24 have no additional data to change those original estimates.

25 Q. Based upon those estimates, what was forecasted

1 to be the estimated ultimate recovery of oil from this
2 well?

3 A. Well, from the volumetrics we calculated an oil-
4 in-place number of around 173,000 barrels, and using a
5 rule-of-thumb-type recovery factor of 25 percent for a
6 solution gas drive reservoir, we came up with 43,000
7 barrels recoverable on 160-acre spacing.

8 Q. If we take those assumptions about the
9 performance of the Englebert well, what, in fact, has it
10 done in relation to that 43,000-plus barrels?

11 A. It's performed very close. From decline-curve --
12 We do have that.

13 Q. Let's do that, let's look at the decline curve.

14 A. Yes, sir. The other important piece of
15 information that's new is 18 months of production data on
16 the Englebert well, which is summarized by the decline
17 curve.

18 Q. Let's look at your Exhibit 2, which is that
19 decline curve.

20 A. If you see the blue line there, that vertical
21 blue line is distinguishing between actual data to the left
22 where that's actually reported, and then the forecasted
23 data is to the right.

24 The green line is the decline curve for the oil,
25 and the red line is decline for the gas. It has produced

1 almost 28,000 barrels to date and 56,000 cubic feet to
2 date. Also projected are reasonable declines, based on a
3 historical performance, which implies reserves of
4 additional 24,000 barrels and about 100 million cubic feet.
5 That results in an estimated ultimate recovery for the well
6 of around 52,000 barrels, which is very close to the
7 original volumetric estimate of 43,000 barrels.

8 Q. Let's set aside the production decline curve and
9 look at Exhibit 3. Starting again with the right side of
10 the exhibit, let's talk about the original estimates and
11 then make a comparison to what you've now calculated for
12 the EUR.

13 A. Yes, sir. If you look under the right side where
14 it's titled Original Estimate, the first group of numbers
15 there are the original estimates that went into the
16 volumetrics. These were log calculations that resulted in
17 an estimated oil in place number. And the next, under 160-
18 acre spacing, that's the 172,000-plus stock tank barrels of
19 oil in place that was calculated volumetrically.

20 And the following number on the right-hand side,
21 as you see, 43,000 barrels, that was the estimated ultimate
22 recovery based on a 25-percent recovery factor. So that
23 was just taking 25 percent of the original oil in place.

24 Down on the left-hand side, of course the
25 reservoir parameters have not changed, nor has the

1 calculated original oil in place. What we do know from the
2 18 months of production data is, we have a very good EUR
3 based on decline curve analysis of 52,000 barrels.

4 And if you just assume, okay, let's just
5 calculate what our recovery factor would be, given 52,000,
6 estimated ultimate recovery on 160-acre spacing, you wind
7 up with a 30-percent oil recovery factor, which does imply
8 very strongly that we are draining 160 acres with the
9 Englebert well.

10 Q. Is it reasonable, Mr. Doty, in your experience to
11 try to drill additional wells in this spacing unit for this
12 oil production?

13 A. At this point, the remaining reserves that you
14 would have to share with an additional well would not be
15 economic. You just couldn't afford to do it. Plus we
16 really feel that this well is adequately draining that
17 reservoir.

18 Q. Were Exhibits 1, 2 and 3 compiled by you or
19 prepared under your direction or supervision?

20 A. Yes, sir.

21 MR. KELLAHIN: Mr. Examiner, we move the
22 introduction of OXY's Exhibits 1, 2 and 3.

23 EXAMINER JONES: Exhibits 1, 2 and 3 admitted
24 into evidence.

25 MR. KELLAHIN: That concludes my examination of

1 Mr. Doty.

2 EXAMINATION

3 BY EXAMINER JONES:

4 Q. Okay, Mr. Doty, thanks very much for coming
5 today. I know you've got a real small well here. Why did
6 you drill this well?

7 A. It was a Morrow test. Most of the wells out here
8 are drilled as Morrow tests.

9 Q. Okay.

10 A. Yes.

11 Q. And there's no other potential in this well
12 besides this?

13 A. No, sir.

14 Q. And the other wells around it -- Who owns the
15 other acreage around this well, in this contoured porosity
16 interval?

17 A. Let me see, OXY operates the Swinger well, so we
18 own the north half of Section 15. The southwest quarter of
19 Section 15 was a base OXY lease. It was contracted to the
20 160 because it was drilled as a pooled Morrow test on -- as
21 a south-half Morrow spacing unit. There was no Morrow
22 sands in the well, so that southwestern portion of the
23 lease has expired and gone back to the original lessor.

24 Q. Okay. And the --

25 A. So it's open fee.

1 Q. Okay. And the vertical limits of this reservoir,
2 I take it, are defined by this well itself, right? And
3 that's probably in this Order.

4 A. It's in the overall Cisco/Canyon interval. It's
5 a larger interval than just that porosity zone, which again
6 is customary with what overall development in the area --

7 MR. KELLAHIN: The answer to your question is on
8 page 2, it's paragraph (5).

9 EXAMINER JONES: Okay, there it is.

10 THE WITNESS: It's larger than the green-colored
11 area on the cross-section. There's a number -- These
12 things repeat themselves up and down the hole, and
13 that's --

14 Q. (By Examiner Jones) Okay, but the other -- Let's
15 see, Exhibit 1, you've got the Atoka West (Upper Penn) as
16 for these other wells, and so how does the Atoka fit in
17 with the Cisco vertically?

18 A. Well, the Atoka West is just the pool name, the
19 reservoir still is upper Penn. And again on this cross-
20 section, there will be additional -- It's an overall very
21 shaly section with thin limestone banks that are
22 distributed, many up above and many below, and these other
23 wells are perforated in some of those other zones, or
24 several of those other zones. So overall, it's a series of
25 interbedded shales with thin limestone banks with tight

1 porosity in it, and all those pool designations all fit
2 into one of those others.

3 And that was really the style of regulation for
4 this area, which was why we propose that this well also
5 include those other zones. The anomaly, in fact, is
6 producing as an oil well.

7 Q. What's the gravity of the oil?

8 A. I don't have that number, but there's nothing
9 unusual about it. It doesn't appear to be condensate.

10 Q. Okay. And you measured 9 millidarcies on the --

11 A. Based off of the pressure buildup, yes. We don't
12 have any core so it's not a direct measured number, but if
13 you calculate a permeability from the buildup it was 8.9
14 millidarcies, on that order.

15 Q. And did you see a boundary on your pressure
16 buildup?

17 A. We didn't have sufficient data to really
18 interpret that kind of a conclusion, as far as length of
19 buildup time.

20 EXAMINER JONES: Okay, that's all my questions.
21 Gail, do you have a question on this?

22 MS. MacQUESTEN: No, I don't have any questions.

23 EXAMINER JONES: Okay. Well, thanks very much
24 for --

25 THE WITNESS: Yes, sir.

1 EXAMINER JONES: I know you've got a small well
2 here, but maybe you can hit some of the big ones next time.

3 THE WITNESS: Yes, sir. Thank you so much.

4 MR. KELLAHIN: Thank you, Mr. Examiner.

5 EXAMINER JONES: Okay, with that we'll take Case
6 12,776 under advisement.

7 (Thereupon, these proceedings were concluded at
8 8:33 a.m.)

9 * * *

10
11
12
13 I do hereby certify that the foregoing is
14 a complete record of the proceedings in
15 the Examiner hearing of Case No. _____,
16 heard by me on _____.

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_____, Examiner
Oil Conservation Division

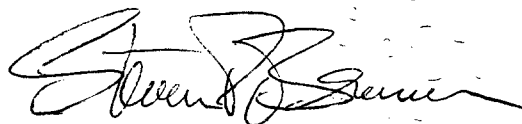
CERTIFICATE OF REPORTER

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

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

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

WITNESS MY HAND AND SEAL November 8th, 2003.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006