

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

10 May 1989

EXAMINER HEARING

IN THE MATTER OF:

Application of Bill Fenn, Inc. for an CASE
unorthodox gas well location and dual 9666
completion, Eddy County, New Mexico.
County, New Mexico,

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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1 MR. STOGNER: The hearing will
2 come to order.

3 We'll call now Case Number
4 9666, which is the application of Bill Fenn, Incorporated,
5 for an unorthodox gas well location and dual completion in
6 Eddy County, New Mexico.

7 At this time I'll call for
8 appearances.

9 MR. PADILLA: Mr. Examiner, my
10 name is Ernest L. Padilla, Padilla and Snyder, Santa Fe,
11 New Mexico, for the applicant, Bill Fenn, Inc.

12 MR. STOGNER: Thank you, Mr.
13 Padilla.

14 Any other appearances?

15 MR. HEDRICK: Michael Hedrick,
16 appearing for Musselman, Owen & King Operating, Inc. from
17 Midland, Texas.

18 MR. STOGNER: And you are here
19 for who?

20 MR. HEDRICK: Musselman, Owen
21 & King Operating.

22 MR. STOGNER; Are there any
23 other appearances?

24 MR. LOPEZ: Owen Lopez of the
25 Hinkle Law Firm in Santa Fe, New Mexico, appearing on be-

1 half of Hondo Oil & Gas Company.

2 MR. STOGNER: Mr. Hedrick, do
3 you have any witnesses today?

4 MR. HEDRICK: No. I'm just
5 appearing.

6 MR. STOGNER: Mr. Lopez, do
7 you have any witnesses?

8 MR. LOPEZ: No, sir, I don't
9 believe so. I have two in case I need them but I don't
10 think I will.

11 MR. STOGNER: Will the wit-
12 nesses please stand and raise your right hands?

13
14 (Witnesses sworn.)

15
16 MR. STOGNER: Mr. Padilla.

17 MR. PADILLA: Mr. Examiner,
18 as a preliminary matter I'd like to hand you what we've
19 marked as Exhibit Number One, which is simply a notice of
20 our application and was sent to all offset operators. That
21 was sent out of our firm.

22 Mr. Examiner, we would call
23 Mr. Brannigan to the stand at this time.

24
25

1 JAMES BRANNIGAN,
2 being called as a witness and being duly sworn upon his
3 oath, testified as follows, to-wit:

4
5 DIRECT EXAMINATION

6 BY MR. PADILLA:

7 Q For the record please state your full
8 name?

9 A I'm James Brannigan.

10 Q What do you do for a living, Mr. Branni-
11 gan?

12 A I'm a consulting geologist in Roswell,
13 New Mexico.

14 Q Mr. Brannigan, have you testified before
15 the Oil Conservation Division as a petroleum geologist in
16 previous cases and had your credentials accepted as a
17 matter of record?

18 A Yes, I have.

19 Q Have you prepared certain exhibits for
20 introduction today concerning this hearing?

21 A Yes, I have.

22 Q Let's start off with Exhibit Number Two
23 and have you identify that for the Examiner and tell the
24 Examiner what that contains?

25 A Exhibit Number Two is a land plat or a

1 lease map with all the offset operators surrounding our --
2 our location, our Section 7. They include Donahue Oil &
3 Gas, Hondo Oil & Gas, Musselman, Owen & King, Amoco, Amoco,
4 Yates, Yates, Petroleum Limited Partnership, and Amoco.

5 Q Now, in listing those offset operators
6 you started from Section 5 and went counterclockwise --

7 A Correct.

8 Q -- around Section 7.

9 A Right.

10 Q Do you have anything further concerning
11 this exhibit, Mr. --

12 A No, I don't.

13 Q Let me ask you one question. How many
14 acres does Section 7 have?

15 A I think it's just at a little bit more
16 than 617.something acres.

17 Q Okay. It's a nonstandard section. It's
18 not the 640-acre section.

19 A That is correct.

20 Q Okay, let's go to Exhibit Number Two and
21 have you identify that for the Examiner and tell him what
22 it is. I'm sorry, it's Exhibit Number Three.

23 A Exhibit Number Three is the Indian Basin
24 unorthodox locations. It's a lease map showing all the
25 wells and highlighted are the wells that are unorthodox and

1 we have -- approximately 40 percent of the wells in the
2 Indian Basin have been drilled on unorthodox locations to
3 date and the majority of which were drilled on -- for non-
4 topographic reasons.

5 Q How many of those wells are unorthodox
6 or what percentage?

7 A Approximately 40 percent.

8 Q And what is the red dot on that exhibit?

9 A The red dot on the exhibit is our pro-
10 posed location at 825 from the north line, 1650 from an
11 east line.

12 Q What else do you have to tell us about
13 that exhibit, Mr. --

14 A Nothing at this point.

15 Q Okay. Let's move on to Exhibit Number
16 Four and have you identify that for the Examiner.

17 A Exhibit Number Four is a production map
18 in the Indian Basin showing Cisco production highlighted in
19 blue; Morrow production highlighted in yellow; and when-
20 ever there's dual completions the hexagon is split in half.

21 Q What --

22 A And I might add that the code is where
23 -- for anywhere there's "C" that's Cisco production and if
24 you look in the well in Section 25 of 21, 23, as an example
25 where it says "C 9.5 and 84", that would be 9.5 BCF and

1 84,000 barrels of condensate.

2 Q What is the red dot there, Mr. --

3 A The red dot there is our proposed loca-
4 tion.

5 Q Okay. I notice that there has been an-
6 other Cisco well located in Section 7. Can you tell us a
7 little bit about that well?

8 A Yes. That well was drilled by Amoco in
9 the early 1960's and it's plugged and abandoned. It pro-
10 duced 14.2 BCF out of the Cisco and 124,000 barrels of
11 condensate.

12 Q Mr. Brannigan, is it common in this re-
13 servoir to drill second wells on proration units at this
14 time?

15 A Yes, it is. It's been done in the past.
16 In the last two or three years we've seen more and more in-
17 fill drilling. A case in point would be Musselman, Owen &
18 King's well in the south half of Section 1 of 22, 23.
19 There's already been a well drilled in the north half of
20 that section. In the last few months Marathon has drilled
21 a well in Section 22 of 21, 23 offsetting in the same south
22 half they had already had an existing well.

23 BHP has drilled a well in the south half
24 of Section 36 and that well -- that section already had a
25 well drilled in it.

1 Those are all Morrow -- those are all
2 Cisco examples. An example of Morrow would be Section 30
3 of 22, -- of 21, 24, excuse me. There is a well that is
4 drilled in the south half, a Morrow well that produced 7.9
5 BCF. There's currently a well in the north half of that
6 same section that's still producing and has produced in
7 excess of 2 BCF to date.

8 Q Mr. Brannigan, is the nearest Morrow
9 production in Section 31 in the township to the north of
10 the proposed location?

11 A Yes, it is.

12 Q What kind of production has been at-
13 tained, do you know, if you know, from that well in Section
14 31?

15 A The well in Section 31 has produced in
16 excess of 3.3-to-3.4-billion cubic feet and still producing
17 approximately 4-to-500,000 a day.

18 Q Would your proposed location under cur-
19 rent spacing rules and well location requirements be a
20 wildcat to the Morrow?

21 A Yes, it -- yes, it would.

22 Q Do you have anything further concerning
23 this exhibit, Mr. Brannigan?

24 A No, I don't.

25 Q Let's move on now to Exhibit Number Five

1 and have you identify that for the Examiner.

2 A Exhibit Number Five is a structure map
3 mapped on the top of the Upper Pennsylvanian, which would
4 be the top of the Cisco Reef.

5 Q Mr. Brannigan, in terms of the proposed
6 location, what significance does this structure map have?

7 A Well, the significance of this structure
8 map is that we want to move up dip from -- to the well in
9 Section -- in Section 7, and also up dip from the well that
10 was drilled and plugged in Section 8, and also try to get
11 as far away as we can for drainage purposes.

12 Q That is up dip from a standard location,
13 is that what you're saying?

14 A Yes, it is. It's approximately -- from
15 a standard location we'll be -- we'll be moving up approxi-
16 mately 30 to 35 feet from our standard location.

17 Q Can you tell us something about the two
18 wells in Sections 7 and 8 that have been drilled by Amoco
19 before?

20 A Yes. The well in Section 8 was plugged
21 in 1974; was an Amoco well; has produced 6 -- 6 -- over
22 6-billion cubic feet out of the Cisco.

23 The well in Section 7 was also drilled
24 by Amoco. It was plugged in 1983 and it made in excess of
25 14 BCF.

1 Q Would you be moving up dip in relation
2 to those two wells?

3 A Yes, we would. We'd be approximately
4 20-some -- 23 -- 28 feet up dip from the well in Section 27
5 and 62 feet up dip from the well in Section 8.

6 Q Based on this exhibit would Section 7 be
7 considered entirely productive?

8 A Yes, it would.

9 Q Will you have -- where is the water? Is
10 there anything that shows anything concerning water on this
11 exhibit?

12 A Well, one of the -- I guess one of the
13 key water -- one of the key wells or the key things about
14 water is that the well in Section 8, when it was plugged in
15 1974, the last total year of production the water was only
16 128 barrels.

17 The well in Section 7, the Amoco well,
18 in 1983 when it was plugged produced -- the last year of
19 production produced 119,000, in excess of 119,000 MCF and
20 30 barrels of water, so that was -- that was higher -- that
21 was out of -- out of the water.

22 There's also a well right now producing
23 in Section 13 of 22 South, 23 East, and the lowest perfor-
24 ations on that was -- it's also an Amoco well, and the
25 lowest perforated interval would put the oil -- would put

1 it, their interval at about a 3750 subsea and that well
2 last year only produced 259 barrels of water.

3 So based off of the two wells, the well
4 in Section 7 and the well in Section 8, that are now P&A'd
5 and the current production in the well in Section 13 that
6 is producing only 200 -- less than a barrel a day, we know
7 that the gas/water contact is below the 3750. We're esti-
8 mating somewhere below 3800.

9 Q So that would be -- in drawing a
10 gas/water contact line you would draw it below the 3800
11 contour line?

12 A Yes, we would, which makes it, the whole
13 of Section 7 productive.

14 Q Okay. In terms of the water, your
15 gas/water contact line, you still feel the need to move
16 your well north --

17 A Yes, we do.

18 Q -- from a standard location.

19 A That's correct.

20 Q Do you have anything further concerning
21 this exhibit, Mr. Brannigan?

22 A No, I don't.

23 Q Well, let me ask one more question be-
24 fore we move on.

25 Considering the fact that this Amoco

1 well in Section 7 has been plugged and abandoned, is it
2 your opinion that there still exist the reserves in that
3 section even though that well has been plugged and aban-
4 doned?

5 A Yes, we believe there are substantial
6 reserves left in this section. It's being proved more and
7 more by infill drilling that the one well per section does
8 not drain the entire proration unit.

9 Q Okay. Let's go on now to what we have
10 marked as Exhibit Number Six and have you identify that for
11 Mr. Stogner and tell us what it contains.

12 A Exhibit Number Six is a map done on the
13 Upper Pennsylvanian dolomite isopach map. It's revised
14 after Hugh Franzell (sic) -- it was a map that was pub-
15 lished in the Roswell Geological Society among other --
16 among other places.

17 What it is actually is the thickness of
18 the dolomite sequence in the Cisco Reefs.

19 Q Mr. Brannigan, I notice in Section 6 you
20 have a considerable curve in the 400 foot contour line.
21 Can you explain that to the Examiner, please?

22 A Yes. That's a well in the north half of
23 -- in the northeast quarter of Section 6. The well was
24 just drilled by Hondo Oil and Gas and which we had a piece
25 of. We had 45 percent of that well, and the well came in

1 about approximately 100 feet low to where we thought it
2 would come in. It was done by -- by doing some strati-
3 graphic work we think what would happen was we -- the upper
4 100 feet, 100 plus feet of dolomite reef was missing from
5 that well.

6 Q How about your proposed location? What
7 does this exhibit show with regard to your proposed loca-
8 tion?

9 A In regards to our proposed location it
10 shows the most optimum place to drill in Section 7. We
11 would probably, based on this map, obtain approximately
12 another -- an additional 50 feet on our proposed location,
13 or on our unorthodox location, or if we had drilled in our
14 orthodox location.

15 Q In terms of obtaining your fair share of
16 hydrocarbons at that standard location, how does that --
17 what's your opinion as far as obtaining your fair share of
18 hydrocarbons as it relates to the evidence you're trying to
19 portray in this exhibit?

20 A That we probably won't be draining Sec-
21 tion 6 as much as we had anticipated with the reef build-up
22 and we'll be doing a better job of draining the entire
23 Section 7.

24 Q Okay. Does moving up dip have anything
25 to do with better draining the rest of Section 7?

1 A Yes, it does. Yes.

2 Q Anything further on Exhibit Number Six,
3 Mr. Brannigan?

4 A No, sir.

5 Q Okay, let's go to Number Seven or --
6 Number Seven and have you identify that for the Examiner.

7 A Okay. Exhibit Number Seven is a struc-
8 tural cross section extending through the Indian Basin
9 Upper Penn Field. It goes from the Amoco well in the
10 northwest/northwest quarter of Section 6 down to the new
11 Hondo well in the northeast quarter of Section 6, down to
12 the plugged and abandoned Amoco well in the northwest
13 quarter of -- of 7, and then it comes back north to our
14 proposed location and that's the reason why, if you look on
15 the top of the Cisco Reef, I've got two lines there. One
16 is the datum which is at 3600 subsea, and then we have the
17 top of the Cisco Reef and it shows a little high over there
18 and what we're trying -- what I'm trying to show there is
19 that due to our top of structure that we will be structur-
20 ally as high as the Hondo Well in Section 6.

21 And then it goes from our proposed
22 location to the Amoco Well in Section 8, which is now plug-
23 ged and -- well, those -- those two wells are plugged and
24 abandoned. Then it goes down to the dry hole in Section
25 18.

1 Q The two wells on the -- on either side
2 of the proposed location as shown on that cross section are
3 actually east and west, you're really going east/west at
4 that point.

5 A That's correct. This cross section has
6 quite a few dog legs in it.

7 Q And that is why you show that --

8 A Yes, right, that's correct. If you went
9 ahead and looked at my structure map to see what we would
10 be -- where we anticipate being structurally, it's approx-
11 imately as high as the Hondo well, which is the reason I
12 showed that little hump coming in there, that we don't
13 expect to be -- if we were to expect we'd get regional dip,
14 we'd probably drill on down in our standard location, to
15 get regional dip to have this line come straight across
16 here.

17 Q So if you were actually going truly
18 north/south, then you might have some kind of a straight
19 line going across there.

20 A That's -- that's correct. That's cor-
21 rect.

22 Q Do you have anything further concerning
23 this cross section, Mr. Brannigan?

24 A I do not.

25 Q Let's go on to Exhibit Number Eight and

1 tell us what that is.

2 A Exhibit Number Eight is a structure map
3 done on the top of the Morrow formation.

4 Q Okay, go ahead, Mr. Brannigan, explain
5 -- explain Exhibit Number Eight.

6 A Exhibit Number Eight is a structure map
7 mapped on the top of the Morrow formation.

8 Q You've testified previously that the
9 Morrow is a wildcat as a proposed location. In terms of
10 what you'd expect to encounter in the Morrow insofar as it
11 relates to all of Section 7, what do you expect the pro-
12 ductivity of Section 7 to be?

13 A I expect the production of Section 7 to
14 -- to be -- we expect it would be, like you said, a wild-
15 cat well in the proposed location in the Morrow, but we
16 expect to be, based on where we would be drilling on our
17 proposed location -- at an orthodox location, we'll be ap-
18 proximately 15 feet up dip in our unorthodox location and a
19 little bit closer to production.

20 Q How about -- do you expect all of Sec-
21 tion 7 to be productive?

22 A Yes, we do.

23 Q Do you have any other data concerning
24 the Morrow formation in this -- in Section 7?

25 A No, I don't.

1 Q Is that because of lack of well con-
2 trol?

3 A That's correct. Very few of these
4 wells, there's only a handful of wells in this area that
5 have penetrated to the Morrow. You can see that on the --
6 on the production map.

7 Q Would you expect to be in a different
8 pool should you -- a possibility of being in a different
9 pool should you obtain production from the Morrow at this
10 location?

11 A I'm not exactly sure how the rules read
12 in this particular location, but I know when we drilled
13 wells in Lea County, if you were within a -- outside a one
14 mile radius of known production would be considered a new
15 field discovery, and we expect this to be a wildcat and a
16 new field discovery if we do make a Morrow well.

17 Q Anything further on Exhibit Number
18 Eight, Mr. Brannigan?

19 A No, sir.

20 MR. PADILLA: Mr. Stogner, we
21 -- well, we have -- we tender Exhibits One through Eight
22 and pass the witness -- well, before I do that --

23 Q Let me ask you, Mr. Brannigan, would
24 approval of this application at the proposed unorthodox
25 location be in the best interest of conservation and the

1 prevention of -- protection of correlative rights?

2 A Yes, it would.

3 Q Can you explain that for us, please.

4 A Well, the farther, we feel that the
5 farther up dip we get the better we will drain our acreage
6 and the thickest -- showing that isopach of the thickness
7 of the dolomite reef that we'd better drain the entire --
8 better drain and better produce out of Section 7 and our
9 proposed location, and also getting a little bit farther up
10 dip and closer to Morrow production in the Morrow forma-
11 tion.

12 MR. PADILLA: Mr. Examiner, we
13 pass the witness for cross examination.

14 MR. STOGNER: Thank you, Mr.
15 Padilla.

16 Mr. Hedrick? Mr. Lopez?

17 MR. LOPEZ: No questions.

18

19 CROSS EXAMINATION

20 BY MR. STOGNER:

21 Q Mr. Brannigan, your closing remarks in
22 your testimony, let me -- I want to go through why, simply
23 why you are seeking this unorthodox location.

24 A Okay.

25 Q It's essentially up dip in both the

1 Cisco and the Morrow.

2 A Both the Cisco and the Morrow and we
3 feel that the Cisco is our prime objective. That's -- it's
4 better well control up there and we feel that in our pro-
5 posed location, by going on that -- on that isopach map
6 that I revised after Franzell (sic), the best -- it's the
7 best location to drill to get the thickest part of the
8 reef.

9 We would be -- we would hope to obtain
10 an additional 50 feet by drilling our unorthodox location
11 versus the orthodox location.

12 Q And an orthodox location would put you
13 --

14 A 1650/1650. The well in Section 7, I
15 believe, is 1650/1650, so that would give you some idea of
16 -- of where the orthodox -- it is. It would give you some
17 idea of where our orthodox location would be.

18 If you'll look on the -- if you looked
19 at Exhibit Number Six, it would be -- it would put us ap-
20 proximately 450 feet of reef thickness at our proposed lo-
21 cation. I mean, excuse me, on our orthodox location.

22 Q And this well would put you in approxi-
23 mately, according to this map, 500 foot --

24 A 500 plus, that's correct. There's a --
25 there's a reason for that. The well, the old Amoco well in

1 Section 5 had 503 plus feet and then they quit drilling so
2 we don't know what the base of the reef is out there.

3 We do know it was at least 503 feet.

4 Q Now, of course, a well at a standard
5 location would also put you closer to your old plugged and
6 abandoned well.

7 A That's correct, and for drainage pur-
8 poses we'd like to get away. We feel like the well in
9 Section 7 has already produced over 14 BCF and by moving a
10 little bit farther away from that we'd do a better job of
11 draining the entire section.

12 Q Okay. Now the Amoco in Section 8. is
13 that plugged and abandoned?

14 A Yes, it is. Both wells in 7 and 8 are
15 plugged and abandoned.

16 Q Okay. When was that one P&A'd, the one
17 in Section 8?

18 A The well in Section 8 was plugged --
19 now, officially, I got these out of the Dwight's last year
20 of production. Now, officially I don't know if this was
21 the year, but the last year of production was 1974 and it
22 produced 16 -- a little over 16,000 MCF and 128 barrels of
23 water.

24 Q How many barrels of water?

25 A 128. And the well in 7 was P&A'd in

1 '83, and that -- the last year of production was 119,000
2 plus MCF and 30 barrels of water.

3 Q Well, when I get to looking to -- in
4 Section 5, those wells are P&A'd also, aren't they?

5 A Yes, they are. The well in 5, the wells
6 in 5, 6, 7 and 8 are all P&A'd. That's correct, except for
7 the Hondo well in the north half of 6, that's correct.

8 Q Now the wells in 17 and 18 --

9 A They -- they were P&A'd.

10 Q -- did they ever penetrate the Cisco and
11 the Morrow?

12 A I believe -- okay, the well in Section
13 18 only cut about 22 feet of Cisco pay. They didn't even
14 go to the Morrow.

15 The well in Section -- and they tested,
16 I believe they tested a little bit of water but they didn't
17 get into their main pay in that well in Section 18. The
18 well in Section 17 did go all the way to the Morrow and I
19 believe, I believe that well did test some water in the
20 well in Section 17 and, to be honest with you, I don't re-
21 member if it had Morrow sands in that well or not.

22 Q Okay. Now I'm going to refer to Exhibit
23 Five.

24 A Okay.

25 Q And from what you told me I tried to put

1 a gas/water contact in that.

2 A Right, well, it's not -- that's where we
3 know -- we know from the well in Section 13, the Amoco well
4 in the northwest quarter of Section 13, that well is still
5 producing somewhere between 400-and-500,000 a day. Last
6 year's production, 1988, the well made, I'm not sure what
7 its gas production was but it only made 259 barrels of
8 water. The lowest perforations that that well hit were at
9 37 -- approximately 3744, but when that well was originally
10 drilled they ran a drill stem test that was almost 100 feet
11 below that and did not get any water.

12 So that would, you'd say from the ori-
13 ginal drill stem test, that would put it back to at least
14 3850, but we know right now that that well is producing
15 from 3744-3750, and that is making less than a barrel of
16 water a day.

17 Q So where do you estimate --

18 A We estimate somewhere between -- I'm es-
19 timating somewhere below 3800, 3850, somewhere in there.

20 Q I thought I heard 3750.

21 A Well, I did say 3750. That's the lowest
22 control point we have out there. Nothing in that area is
23 producing from below that point that's on this map right
24 here.

25 Q We know that from at least 3750 up it's

1 water free, and we're estimating from drill stem test in-
2 formation that it goes down at least as deep as 3850.

3 Q Now you mentioned about water produc-
4 tion in the well in Section 7.

5 A Yes.

6 Q Did the perforations drop down into the
7 water zone?

8 A Well, it didn't make much water. I'm
9 not sure what the cumulative water production was. All I
10 know is -- the only information I have in front of me is
11 that the last year it produced only -- it only made 30
12 barrels of water, I don't have a calculator with me or
13 otherwise I could go ahead and do a little quick calcula-
14 tion to see where that lower perforation would be struc-
15 turally.

16 But you can see at a well on the cross
17 section, the lowest set of perforations, that essentially
18 was producing basically water free when it was -- when it
19 was P&A'd.

20 Some of these wells out here, I believe,
21 were -- that well in Section 7 you might think, well,
22 shoot, it's making 119,000 plus cubic feet of gas a year,
23 that's pretty economical, but a lot of these wells were
24 under that old gas contract, 18-20 cents an MCF, and it
25 wasn't economical.

1 Q When was this well --

2 A P&A'd?

3 Q -- drilled.

4 A Drilled, it would -- let's see, let me
5 look on the header here, 1965. Most of the wells, most of
6 the older wells in the Indian Basin were drilled in the
7 early to mid-sixties. It's just been in the last two or
8 three years that there's been infill drilling going on.

9 Q Now I realize the Morrow is somewhat
10 limited as far as control out there.

11 A Yes, it is.

12 Q So let's refer to Exhibit Number Eight
13 --

14 A Okay.

15 Q -- the structure top of the Morrow for-
16 mation.

17 A That's correct.

18 Q How would you classify the Morrow out
19 here, as -- this doesn't appear to be a channel type of a
20 structure.

21 A Well, I think what -- actually where the
22 structure map is showing it's just basically a -- from the
23 control I have in the Morrow, it just pretty much shows
24 regional southeast dip, and in this area, if you'll look at
25 the production maps, the production map, or Exhibit Four,

1 if you look at the yellow production, it looks like there
2 might almost be a (unclear) of two -- of two channels, one
3 coming from the northwest to the southeast; one coming from
4 the northeast to the southwest, converging on Section 6 and
5 possibly coming down to what -- the well -- yes, that's --
6 that's about, I guess, all we could say, is that that --
7 you've got two channels that appear to be coming down. Are
8 they two separate channels that are coming through the
9 area? Are there more channels out there? We just don't
10 know but we're hoping that, because just from regional dip
11 being to the southeast and we have that channel coming from
12 the northwest down and something that appears to be coming
13 almost northeast/southwest, or it's actually straight
14 south, that we have a pretty good shot in our location and
15 it's imperative that we move as far up dip, because we'll
16 be, according to the structure map, according to the struc-
17 ture map that I've shown here, Exhibit Eight, if we do get
18 into -- if we do encounter Morrow channels and we do pro-
19 duce, we're going to be the lowest well in this area that
20 produces in the Morrow and that's why we feel it's impera-
21 tive to move as far up dip as we can.

22 We don't want to drill in the northwest
23 quarter of Section 7 because we're going to dual complete
24 out of the Cisco and we feel that's probably somewhat
25 drained with that well that's already produced the 14 B.

1 Q Now when I look at Exhibit Number Four
2 --

3 A Yes.

4 Q -- let me make sure I get this straight.

5 A Okay.

6 Q When I look in Township 21, 24 --

7 A 21, 24, yes.

8 Q -- and that's to the upper left of the
9 map, now am I seeing a -- a stream bed or a channel depo-
10 sit --

11 A It's hard to really -- it's really hard
12 to go ahead and look at this map and try to draw any con-
13 clusions as far as -- as far as the environment of deposi-
14 tion. I think from some of the work I've done in the
15 Roaring Spring Area, we just drilled a well in Section 14
16 of 21, 23, it is, they are channel sands that are deposited
17 through this area, heading basically north, northwest-
18 southeast with regional dip.

19 Q And at the same time, when I look over
20 in Section 21, 23 -- I mean, I'm sorry, Township 21, 23,
21 there appears to be a -- coming from the northwest down
22 to the southeast trend.

23 A Well, some of the -- some of the well
24 control over here, though, in 22, 24 -- 21, 24, it appears
25 that this channel, by looking at the production map, is

1 coming down actually against regional dip, but part of the
2 reason for that is that there are Morrow wells that were
3 drilled over here but they were down, structurally down
4 dip.

5 Q When you say "over here" you're talking
6 about toward the east?

7 A Right, over here towards the east.
8 They're moving down dip, so our control -- there are sands
9 deposited over here, over in this area, but --

10 Q To the east.

11 A -- to the east, but they're not --
12 they're not productive because they're down dip.

13 Q Okay.

14 A Which -- which makes this probably a
15 little bit -- a little bit strange looking, they're going
16 against regional dip.

17 Q Now your cross section does not include
18 the Morrow.

19 A No, it does not; just a Cisco cross
20 section.

21 Q Have there been any Morrow tests in any
22 of the wells in Township 22, 24 or 22, 23?

23 A Yes, there have been. In fact, the well
24 in Section 8 did penetrate the Morrow. They ran two drill
25 stem tests. One, I would say, would be in the upper and

1 middle Morrow; did not have any sand development but they
2 did not report any water or gas under drill stem test.
3 They tested what I would call the Lower Morrow and did get
4 some water, but this map is on the top of the Morrow for-
5 mation and where they tested water, the upper part of the
6 drill stem test would be approximately 400 feet down dip
7 from the top of the -- top of the Morrow formation.

8 Q And so in your testimony earlier you
9 said that you were moving closer to production, you're not
10 necessarily moving closer to wells that are producing but a
11 trend that is --

12 A That's correct.

13 Q -- producing.

14 A We're moving closer, well, we're moving
15 closer by -- by going from our orthodox location to an un-
16 orthodox location. We're moving approximately 825 feet
17 closer to our only -- the closest production, which is in
18 the south half of Section 31.

19 Q And there again that is the base of the
20 trend or --

21 A That's correct.

22 Q -- at least --

23 A Right.

24 Q -- (unclear). On Exhibit Number Three
25 you testified to the Indian Basin unorthodox locations.

1 Are we talking Indian Basin Upper Penn or Indian Basin
2 Morrow, or both?

3 A Actually both.

4 Q Okay.

5 A Both.

6 MR. STOGNER: Mr. Padilla, do
7 you have any other questions of Mr. Brannigan?

8 MR. PADILLA: No other ques-
9 tions.

10 MR. STOGNER: Does anybody
11 else have any questions of Mr. Brannigan?

12 You may be excused.

13 Mr. Padilla?

14 MR. PADILLA: Mr. Examiner,
15 we'll call Mr. Thane Akins at this time.

16
17 G. THANE AKINS,
18 being called as a witness and being duly sworn upon his
19 oath, testified as follows, to-wit:

20
21 DIRECT EXAMINATION

22 BY MR. PADILLA:

23 Q Mr. Akins, for the record would you
24 please state your name?

25 A My name is Thane Akins, Consulting Pet-

1 roleum Engineer from Midland, Texas.

2 Q Mr. Akins, have you previously testi-
3 fied before the Oil Conservation Division as a petroleum
4 engineer?

5 A Yes, I have.

6 Q And your credentials have been accepted
7 as a matter of record?

8 A Yes.

9 Q Have you prepared for introduction cer-
10 tain exhibits here for this hearing?

11 A Yes, I have.

12 Q And you've made a study of the area in
13 the Indian Basin involved?

14 A I have.

15 MR. PADILLA: Mr. Examiner, we
16 tender Mr. Akins as a qualified petroleum engineering
17 expert.

18 MR. STOGNER: Mr. Akins is so
19 qualified.

20 Q Mr. Akins, let's turn now to what we
21 have marked as Exhibit Number Nine and have you identify
22 that for the Examiner, please.

23 A Yes. This is simply a base map with two
24 partial circles on the map north of the proposed location.
25 This is a diagram or demonstration of the so-called two

1 circle method where the arc of a circle with its center
2 at the proposed location is drawn and then a circle, a
3 partial circle with its center at the orthodox location is
4 also drawn that intersect the two sections in 5 and 6.

5 Q I take it the lower arc is the standard
6 location and the upper arc is the unorthodox arc.

7 A That is correct.

8 Q Okay. What else did you do with con-
9 cerning this exhibit?

10 A Well, the basis and background for this
11 has already been submitted this afternoon. It's obvious
12 it's not unusual to have unorthodox locations in this
13 field, since almost every other well is.

14 This particular location was selected on
15 the basis of geological information and to the best advan-
16 tage of producing the hydrocarbons from this particular
17 section. The thicker section is taken into account, the
18 regional dip and getting up dip from the gas/water contact,
19 and so forth, makes it imperative to make this move for
20 most efficient production for this particular property.

21 It is also, in our opinion, the optimum
22 location for completion in both zones that are targets in
23 this particular case.

24 I don't believe under the circumstances
25 that a Morrow test, for instance, would be economical by

1 itself. It could only be done in connection with drilling
2 the Cisco, which would have the less risk involved; there-
3 fore both from the standpoint of physical and economic
4 waste, we believe it would be lessened by moving to this
5 unorthodox location.

6 Q Let's go now to what why you drew the
7 two arcs. What's the purpose of drawing the two arcs on
8 this exhibit?

9 A Okay. As has also been submitted, we
10 believe the entire Section 7 is productive in both zones
11 and we do not see any reason for a penalty because of the
12 circumstances that have already been described; however, if
13 there is a penalty to be imposed because of this, we be-
14 lieve the two circle method presents the best and logical
15 way of doing that.

16 It has also been mentioned that we do
17 have an undersized section in this case, being 617.68 acres
18 instead of the standard 640, and the radii of the two cir-
19 cles do take that into account in drawing those.

20 I believe the -- under the circumstances
21 that have been described the two circle method has the most
22 merit of imposing a penalty upon this particular situation
23 simply because if the conditions were ideal, that is, the
24 reservoir were homogeneous, the reservoir fluids taken into
25 account, the pressures, et cetera, the drainage would be in

1 a radial fashion and the two circle method is based upon
2 that being the case. You assume that the well would drain
3 its proration unit, which we already know most likely is
4 not true with infill wells that are being drilled and the
5 performance of the second wells.

6 But even at an orthodox loca-
7 tion, as you can see from the circle, there would be some
8 overlap of 617 acre drainage into those sections to the
9 north and therefore the logical penalty would be calcu-
10 lating the difference that would occur between the standard
11 location and this unorthodox location, and I have shown
12 that calculation on what we'll call Exhibit Nine-A.

13 Q Would you explain Exhibit Nine-A, Mr.
14 Akins?

15 A Yes. This is simply the calculations
16 that are done by measurement of the area under these arcs
17 of the two circles and calculating the difference in per-
18 centages between those two circles, which comes out to
19 about 16.23 percent being the difference and the calcula-
20 tion then for illegal drainage are subtracting that from
21 100 percent allowable, would be 83.77 percent, being de-
22 fined as the legal drainage.

23 Q In other words, 16.2 percent would be
24 the amount of penalty that you're recommending in this
25 case.

1 A That's correct.

2 Q And 83.77 would be the acreage factor in
3 calculating the allowable.

4 A Yes. The circle method takes into
5 account radial drainage and takes into account the coordi-
6 nates from both section lines and, as already stated, even
7 in an orthodox location you have overlap into other sec-
8 tions if you assume an entire proration unit drainage
9 radius, so just from a logical standpoint, from even a
10 scientific standpoint, there is some basis with the two
11 circles, where I see no basis whatsoever for the other.
12 It's an arbitrary illogical way of doing things.

13 Q Mr. Akins, do you have anything further
14 concerning Exhibits Nine and Nine-A?

15 A Nothing except to again reiterate the
16 fact that the ownership in Section 7 also has 45 percent
17 ownership in Section 6.

18 Q Okay. Mr. Akins, we have also applied
19 in this case for a dual completion of the Morrow and the
20 Cisco formations. I'd like to have you refer to what we
21 have marked as Exhibit Number Ten and identify that for the
22 Examiner, please.

23 A This is just a schematic of the proposed
24 hookup of the downhole equipment for this particular well.
25 The depths are estimated and will depend upon where the

1 tops are actually found, but, as you can see, we'd have
2 7-inch casing run to about 7900 feet. There then would be
3 a 4-1/2 inch liner from about 7700 feet down to total depth
4 overlapping the Morrow formation.

5 The Morrow would have a packer, single
6 packer set in the 4-1/2 inch liner for the long string and
7 the red arrows simply show the path of the Morrow produc-
8 tion up the long string.

9 Then above that the perforations for the
10 Cisco is shown in the green arrows, showing the flow of it
11 up the short string of tubing through a dual packer set
12 above the Cisco with the equipment (unclear) to that.

13 Q Mr. Akins, would production be monitor-
14 ed separately for both formations in this case?

15 A Yes, it would.

16 Q In your opinion is this schematic --
17 does this form of schematic conform with the requirements
18 of the Oil Conservation Division in dually completing
19 wells?

20 A Yes, it does. It's standard oilfield
21 practice.

22 MR. PADILLA: Mr. Examiner, we
23 tender Exhibits Nine, Nine-A and Ten and we tender Mr.
24 Akins for cross examination.

25 MR. STOGNER: Are there any

1 objections?

2 Exhibits Nine, Nine-A and Ten
3 will be admitted into evidence at this time.

4 Mr. Hedrick?

5 MR. HEDRICK: No. questions.

6 MR. STOGNER: Mr. Lopez?

7 MR. LOPEZ: Yes, Mr. Examiner.

8
9 CROSS EXAMINATION

10 BY MR. LOPEZ:

11 Q Mr. Akins, what was the measurement of
12 the radius you used in calculating the two circles?

13 A Well, taking 617.68 times 42,560 and
14 dividing that by pi and taking the square root. I can cal-
15 culate that for you. I didn't show it here, but --

16 Q Okay.

17 A -- that's the way it was derived.

18 Q Okay. In discussing the linear method,
19 which you stated as far as you know has no rational basis,
20 is it true that if you were to move, let's say, 825 closer
21 to Section 8, that -- and say you were 825/825 from the
22 offsetting Sections 8 and 6, that using the linear method
23 you would result in the same penalty whereas using the
24 double circle method your penalty would be greater because
25 you'd be causing drainage to the adjoining sections at a

1 greater rate?

2 Do you follow my question?

3 A Well, be moving to that location, 825
4 from each line, that is half of the distance of the -- on
5 the diagonal to the corner, so you would be 50 percent from
6 each quarter in that case, so that would make more logic to
7 a 50 percent penalty than it would for this particular
8 case, if that's the question you put.

9 Q But as you understand it, under the
10 linear method that has been employed in the past by the
11 Division, --

12 A Yes.

13 Q -- the result in either case. of your
14 current location or even 825 closer to Section 8, would
15 result in the same penalty.

16 A That's correct.

17 Q And does that cause the basis for your
18 saying that approach really has no rational basis?

19 A Yes, that's -- that's part of it.

20 MR. LOPEZ; No further ques-
21 tions.

22 MR. STOGNER: Thank you, Mr.
23 Lopez.

24 Mr. Padilla?
25

REDIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Akins, I forgot to ask you whether approval of this application in your opinion would be in the best interest of conservation and protection of correlative rights?

A I believe it would.

MR. PADILLA: No further questions.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Akin, is the -- well, let me -- let me back up.

This proposed penalty that you're suggesting would be upon both production from the Morrow and the Upper Penn, is that correct?

A Well, really I had it only for the Cisco. The Morrow being a wildcat would by our study show that the entire section is productive, that it would seem to me that the Morrow would not require a penalty.

Q Mr. Akins, the advertisement for this was for the Undesignated Indian Basin Morrow Gas Pool. How that was derived was there is a practice in which if the --

1 if the pool boundary, if a well's proration unit, a pro-
2 posed well's proration unit is within a mile of a pool
3 boundary, then therefore it is a part of that pool; at
4 least that's the way it has been -- the nomenclature has
5 been extended in the past. That would put you in the
6 Indian Basin Morrow Gas Pool regulations, which calls for
7 640, same as the Indian Basin Upper Penn.

8 Now, I heard this with Mr.
9 Brannigan, but I knew that you were probably a little bit
10 more familiar with the pool rules and how pool boundaries
11 are established up there, and I didn't see or hear of any
12 suggestion of which way a 320-acre proration unit would be
13 formed in this particular section if indeed it is a wildcat
14 well.

15 MR. PADILLA: Mr. Examiner, if
16 I may respond. I guess what essentially would -- if -- if
17 there's Morrow production, the applicant here would essen-
18 tially have to come back and establish a new pool and set
19 320-acre spacing. Based on statewide rules the 320-acre
20 spacing would probably wind up with 660/1980 type of loca-
21 tions and so on, say, a laydown north half proration unit
22 you'd be orthodox for that portion. But, even so, before
23 that you would wind up having to come here before the Divi-
24 sion and establish a new pool.

25 MR. STOGNER; Okay.

1 MR. PADILLA: Should that --
2 should that come to be. I'm not prepared to address
3 whether or not we'd be included in the Indian Basin Morrow
4 Pool. Right mile we're a mile away from known production.

5 MR. STOGNER: And it would
6 really be up -- once the well, if it did produce Morrow, it
7 would be up for a geologist, he would be one of the play-
8 ers to establish if it was in a new pool or it would be ex-
9 panded in that pool.

10 If it was expanded into the
11 Indian Basin Morrow, would this penalty be proposed also?

12 MR. PADILLA: I suppose if we
13 had to accept a penalty, Mr. Examiner, we would probably go
14 with this linear type of penalty and, obviously, on the
15 basis that it would be a wildcat we're proposing no penalty
16 be imposed, but should a penalty be necessary, then we
17 would obviously opt for the linear, the dual circle method.

18 MR. STOGNER: Thank you, Mr.
19 Padilla.

20 Q In looking at Exhibit Number Nine-A, Mr.
21 Akins, this penalty is based just on the area and I'm re-
22 ferring to Exhibit Number Nine, now, which appears between
23 these two arcs, is that correct?

24 A Correct.

25 Q Now, is this area inclusive of the arc

1 which extends down where the two arcs meet or is it cut off
2 the section line of Sections 7 and 8?

3 A It cuts off at the section line.

4 Q Okay, so I can shade that in and that
5 would be the area in which you're requesting the penalty be
6 based.

7 A That's correct.

8 Q Mr. Akins, Mr. Brannigan had Exhibit
9 Number Three. Are you familiar with that particular map?
10 This is the one showing all the unorthodox locations in the
11 Indian Basin Area?

12 A I have seen it, yes, sir.

13 Q Are you very familiar with the other
14 unorthodox wells in here?

15 A Not all of them individually, no.

16 Q Do you know of any of the others in this
17 Indian Basin Area that have penalties assessed on them and
18 the production?

19 A I'm familiar with Enfield's Bonell Fed-
20 deral No. 2.

21 Q In what section is that?

22 A That's up in Section 18 of 21, 23.

23 Q And does that have a penalty assessed to
24 it?

25 A Yes, it does.

1 Q And do you remember what its penalty was
2 an how it was derived?

3 A As I recall it was a combination of
4 productive acres and distance to the line.

5 Q Okay, you wouldn't happen to recall the
6 order number, would you?

7 A No, I sure don't; back in 1984.

8 Q Is that the only Indian Basin producing
9 well with which you're familiar that has a -- or have
10 firsthand knowledge of --

11 A That was the only one that I've been
12 involved in directly, yes, sir.

13 MR. STOGNER: I have no fur-
14 ther questions of this witness.

15 Are there any other questions
16 of Mr. Akins?

17 If not, he may be excused.

18 Mr. Padilla, do you have any-
19 thing further?

20 MR. PADILLA: No, Mr. Exa-
21 miner, all I request is that the application be approved.
22 I've already talked enough about the nature of the penalty
23 that we think ought to be imposed in this case and due to
24 the geology here we feel that the dual circle method would
25 be approved as the basis for a penalty on crowding the line

1 to the north.

2 MR. STOGNER: Thank you, Mr.
3 Padilla.

4 Mr. Hedrick, do you have any-
5 thing further?

6 MR. HEDRICK: I'm here to make
7 a statement on behalf of Musselman, Owen & King Operating,
8 Inc.

9 In view of the fact that the
10 location is being move to the north half the distance to
11 the line, a lease line, purely on geological reasons, we
12 object to the location; however, we're willing to waive our
13 objection subject to the Commission accepting the 16.23
14 percent penalty as set forth by Mr. Akins.

15 We waive our objection if
16 there is a penalty imposed such as that.

17 MR. STOGNER: Thank you, Mr.
18 Hedrick.

19 Mr. Lopez?

20 MR. LOPEZ: Yes, Mr. Examiner,
21 on behalf of Hondo we want to state for the record that we
22 support the right of operators to locate their wells at
23 unorthodox well locations, subject, however, to a reason-
24 able penalty being assessed against the wells on a ration-
25 al basis.

1 We support the two circle
2 method of computing the penalty as one that's been tried
3 and proven correct in the past before the Commission and
4 therefore the way it was calculated in this case, we would
5 support the 16.23 percent penalty.

6 We object and find, as does
7 Fenn, no rational basis for the linear computation and we
8 feel it is important to the industry that we have a
9 rational method of computing the penalties that are going
10 to be assessed against wells that are located at unortho-
11 dox well locations.

12 With respect to the Morrow
13 location, if the well is successful on behalf of Hondo, we
14 would support statewide 320's and therefore were this a
15 laydown unit, it would appear that the location is at an
16 orthodox location and therefor would not be subject to
17 penalty; however, if it is determined that it is within the
18 Indian Basin Morrow, we would request that the same penalty
19 be imposed on the same basis.

20 MR. STOGNER: Thank you, Mr.
21 Lopez.

22 Does anybody have anything
23 further in Case Number 9666?

24 If not this case will be taken
25 under advisement.

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. 9666,
heard by me on 10 May 1989.

Michael H. Stoen, Examiner
Oil Conservation Division