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

19 September 1984

EXAMINER HEARING

IN THE MATTER OF:

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| Application of Amoco Production Company for an unorthodox carbon dioxide gas well location, Harding County, New Mexico. | CASE 8342 |
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BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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| For the Oil Conservation Division: | Jeff Taylor Attorney at Law Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501 |
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| For the Applicant: | Clyde A. Mote Attorney at Law Amoco Production Company P. O. Box 3092 Houston, Texas 77253 |
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I N D E X

JAMES C. ALLEN

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MR. STOGNER: We will call next
Case Number 8342.

MR. TAYLOR: This is the appli-
cation of Amoco Production Company for an unorthodox carbon
dioxide gas well location, Harding County, New Mexico.

MR. STOGNER: Call for appear-
ances.

MR. MOTE: Mr. Examiner, I'm
Clyde Mote, attorney from Houston, Texas, representing Amoco
Production Company in association with Bill Carr of Santa
Fe, and we'll have one witness, Jim Allen.

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

Will the witness please stand
and be sworn in?

(Witness sworn.)

MR. STOGNER: Please continue,
Mr. Mote.

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

DIRECT EXAMINATION

BY MR. MOTE:

Q Would you please state your name, by whom employed, in what capacity and location?

A My name is James Allen. I'm Regional Petroleum Engineering Supervisor for Amoco Production Company in Houston, Texas.

Q Have you previously testified before the Division?

A Yes, sir.

Q And are your credentials as an expert in the field of petroleum engineering a matter of public record?

A Yes, sir.

Q Are you familiar with Bravo Dome and have you previously testified in hearings concerning the Bravo Dome Gas Unit?

A Yes, sir.

MR. MOTE: Is there any questions concerning Mr. Allen's qualifications?

MR. STOGNER: There are none. He is so qualified.

Q Have you either prepared or had prepared under your supervision and direction the three exhibits which you'll testify concerning this case?

A Yes, sir.

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2 Q All right, if you would, please turn to
3 your first exhibit. Explain to the Examiner what is shown
4 by this exhibit.

5 A Exhibit Number One is a base map of the
6 Bravo Dome Carbon Dioxide Gas Unit. The unit outline is
7 shown in the heavy border. You will note that we have indi-
8 cated the wells that have been drilled and completed or
9 abandoned within the unit, utilizing conventional either gas
well or dry hole well symbols.

10 In addition, you will note in the lower
11 righthand corner of this exhibit numerous open circles.
12 These are authorized drilling locations which are part of
13 our 1984 31-well drilling program, which is now underway.

14 Q Where is your proposed unorthodox loca-
15 tion on this map?

16 A The proposed unorthodox location is lo-
17 cated 660 feet from the south and west lines of Section 24,
18 Township 18 North, Range 33 East in Harding County. It's
19 identified with a -- it's highlighted with a red dot on this
map.

20 I would also like to point out that we
21 have highlighted several other wells in this area. There
22 are six wells indicated with a blue dot. These are author-
23 ized locations which will be drilled in the very near future
24 and in addition there is one highlighted with an orange dot;
this well is currently being completed.

25 Q Is this in the 640-acre spaced area?

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A Yes, sir, it is.

Q And what is the reason for your -- this being an unorthodox location? Is it near to a lease line or quarter quarter section, or in what way is it -- does it not fit the field rules for the Bravo Dome Unit?

A 640-acre spacing in this area requires 1650 feet from lease lines and this well is only 660.

Q All right, the proposed location is a replacement well for another well, is it not?

A Yes, sir, it is. There is a well located in the northeast quarter of that section which was drilled and abandoned in August of this year. We failed to encounter Tubbs formation in that wellbore at all.

Q Is Amoco operator of this area of Bravo Dome?

A Yes, sir, we are the operator.

Q All right. Are there some royalty interests that are not committed to the Bravo Dome Gas Unit in the area of the proposed unorthodox location?

A Yes, sir, there are some mineral interests owned -- mineral interest which is not committed to the unit.

Q Are any of these leases -- I believe there are some leases and royalty interests that are not committed to the unit. Is that what you mean?

A Yes.

Q Are some of these leases expiring any

1
2 time in the near future?

3 A Yes, sir. The first one expiring that
4 I'm aware of is November 15th, 1984.

5 Q So it's somewhat essential that Amoco
6 drill a well on this section before that time, is that cor-
7 rect?

8 A That is correct.

9 Q All right, turn to your next exhibit, Mr.
10 Allen. By the way, on this first exhibit, what is the red
11 outline which you show on this exhibit?

12 A The red outline indicates the border of
13 the -- of Exhibit Number Two. It indicates the area of this
14 unit in which we will concentrate our next exhibit on.

15 Q All right, go to your Exhibit Number Two.
16 Explain what you show by this exhibit, Mr. Allen.

17 A Exhibit Number Two is a stratigraphic --
18 is a structure map that has been contoured on the top of the
19 Easement, of the Granite, in this area of the Bravo Dome
20 Unit.

21 You will note that the contour intervals
22 are 50 feet. It's bounded on the southwest and northeast by
23 indicated fault traces. I might point out that these traces
24 are essentially the same as those that have been shown on
25 previous exhibits at other hearings Amoco has held. I would
like to note, however, that these particular traces are on
the top of the Basement, the Granite, while the other traces
that were shown were on the top of the Tubb, so there may be

1
2 a slight discrepancy where these fault traces are shown.

3 Q All right, and how is the proposed unorthodox location shown on this exhibit?

4 A The unorthodox location is indicated by a
5 red dot and highlighted with a large red arrow.

6 Q What is the red dot to the northeast of
7 that location?

8 A This is the closest orthodox location in
9 the southwest quarter of Section 24.

10 Q And further on to the northeast, what is
11 the dry hole that's shown on this exhibit?

12 A This was the well which I previously mentioned
13 was drilled in August of this year and failed to encounter
14 any Tubbs formation.

15 Q It's all in Section 24, is that correct?

16 A Yes, sir.

17 Q Did you have any control? I notice that
18 you show a rather steep incline and crestal high here. Is
19 there any control for the drawing of this exhibit in this
20 manner?

21 A Yes, sir, there is.

22 Q Would you please relate what that control
23 is?

24 A All right. Besides the general area well
25 control that we have, you'll note that there is a well located
approximately one mile due north, that being in Section 13 of 18 North, Range 33 East.

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2 There is also a well due east in Section
3 19 of Township 18 North, 34 East. If you'll note, there's
4 approximately a 700-foot rise from both of these wells to
5 the dry hole located on the crest of this erosional high.

6 Also, about 5 miles to the east there is
7 a similar structure, again with a crestal high or an ero-
8 sional high is what we believe it to be, so using these con-
9 trol points and the general shape of the structure which we
10 have identified to the east, this particular interpretation
11 was prepared.

12 Q All right. How much Tubb was found in
13 the well over to the east which controls your crestal area
14 in that location?

15 A All right, sir, you're referring to a
16 well located in Section 26 --

17 Q Yes, sir.

18 A -- of Township 18 North, 34 East, and
19 this well encountered 150 feet, I believe, of the formation
20 at this location.

21 Q And when was it potentialized?

22 A This was, I believe, in December of '83.

23 Q And how much potential test did it make?

24 A This was a relatively low producer with
25 only 174 Mcf a day.

 Q And so from that experience you wish to
get off the crest as much as possible, is that correct?

 A That is correct.

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2 Q All right. Now, in your opinion as an en-
3 gineer, is the proposed unorthodox location necessary to in-
4 sure the optimum distance from the crest and to make sure
5 that you get enough Tubb formation encountered in the well-
6 bore to be able to make a commercial well at that location?

7 A Yes, sir, it is. I might point out that
8 as you move from the crest -- I would like to point out that
9 as you move from the crest of the well in Section 26, the
10 well just due north, in Section 23, potentialled for 23.6
11 million, so deliverability is considerably higher when you
12 get away from the crest in this structure.

13 Q Has this magnitude of crestal high been
14 experienced anywhere else in Bravo Dome so far that you know
15 of?

16 A No, sir, to the best of my knowledge this
17 is the first time we have seen this phenomenon.

18 Q All right, you've got a red line crossing
19 here, a line of cross section, I assume. Is that going to
20 be your line of cross section for your next exhibit?

21 A Yes, sir.

22 Q All right, go to that exhibit, if you
23 would.

24 Would you please relate what wells are
25 shown on this exhibit?

26 A Yes, sir, this cross section is a strati-
27 graphic cross section, which is hung on the top of the Yeso.
28 We, going from left to right, it connects the four wells

1
2 that were shown on the previous exhibit, those being Bravo
3 Dome Carbon Dioxide Gas Unit Wells Nos. 18-33-161G to the
4 west, and 18-34-191G to the east.

5 Q All right. What is the red line that you
6 have drawn across the bottom of this exhibit?

7 A The red line at the bottom is the top of
8 the Basement of the Granite in this area. The purpose of
9 this cross section was to demonstrate how rapidly the Base-
10 ment comes up in this area and why we need to move off
11 structure as far as we are proposing.

12 You'll note the relatively constant
13 thickness both to the west and to the east of this location.

14 Q And the Tubb is immediately above the
15 Basement, is that correct?

16 A That is correct. The top of the Tubb is
17 normally referred to also, the base, I guess, of the Cimar-
18 ron Anhydrite, and it's shown highlighted with orange on
19 this cross section.

20 Q With regard to this area and this exhi-
21 bit, what is the average feet of Tubb which has been located
22 -- found in these wells?

23 A Approximately 290 feet. I might just
24 walk through the three or four wells that are here.

25 Starting from the west, the well in Sec-
tion 16, encountered 260 feet of Tubbs pay. The well in
Section 15 encountered 301. Of course, the dry hole in 24
encountered no Tubbs formation, and the well to the east in

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Section 19 encountered 320 feet of Tubbs pay.

Q And the log that you show in Section 24, which is the second one from the right, is that the one that was a dry hole?

A Yes, sir, it is.

Q And you show the Basement coming up into the Tubb. In fact, it completely obliterates the Tubb in that well, is that correct?

A That is correct.

Q All right, now you show -- to the left of that you show a proposed unorthodox location. Is that the location which you are requesting in this hearing?

A Yes, sir, it is. It's identified on this map with a heavy black line essentially in the center of this exhibit.

Q And what number of feet of pay would you expect to encounter in the Tubb formation with a well drilled at that location?

A We're anticipating some 85 to 100 feet.

Q All right, and the dotted line to the right of that, you show as an unorthodox location. Would you expect to encounter any Tubb in a well drilled at that location?

A Based on this interpretation, we do not expect any at all and if we did encounter it, in my opinion it would be very thin and probably very low productivity.

Q All right, in your opinion would the

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2 granting of this application be in the best interest of con-
3 servation, prevent waste, and protect the correlative rights
4 of all parties?

5 A Yes, sir.

6 MR. MOTE: Mr. Examiner, we of-
7 fer Amoco's Exhibits One through Three into evidence and
8 tender the witness for cross examination.

9 MR. STOGNER: Exhibits One
10 through Three will be admitted into evidence.

11 CROSS EXAMINATION

12 BY MR. STOGNER:

13 Q Mr. Allen, does the Basement anywhere
14 else in the Bravo Dome change as abruptly as this? I'm not
15 suggesting that you have a dome-shaped, but do you notice it
16 anywhere else in the Bravo Dome?

17 A This is the first time we've seen any-
18 thing of this magnitude. It's my understanding that we had
19 seen some rise in the Basement in this area with seismic,
20 but nothing of the magnitude which we encountered in these
21 two crestal rises.

22 I have seen some pictured in geologic
23 textbooks which kind of show what this looks like and I
24 guess the best way to describe it from the pictures I've
25 seen, it looks like a bell pepper when you have an erosion-
al, or granite erosional high like we think this is.

Although I have not seen it, my geologist

1
2 tells me that there is some similar outcrops just west of
3 Austin in the hill country that I haven't seen.

4 Q Like a bell pepper.

5 A It's rather an odd-shaped looking --

6 Q And you just happened to hit it up on the
7 very center with the dry hole. I notice you all continued
8 drilling after you hit the Basement. What was your thinking
9 on that, may I ask?

10 A I'm not quite sure other than maybe we're
11 not running samples and just continued to go ahead to the
12 authorized TD.

13 On Exhibit Number One you will note,
14 though, that the -- we have moved surrounding locations that
15 are undrilled at this time further away from this crestal
16 high.

17 Most of our drilling, I think, had
18 previously been done in Unit G and we're now moving to Unit
19 --

20 MR. STOGNER: I have no further
21 questions of Mr. Allen. Are there any questions of this
22 witness?

23 If not, he may be excused.

24 MR. MOTE: Mr. Examiner, I have
25 a proposed order that I would like to submit to you for your
consideration.

MR. STOGNER: I will take it at
this time, if you have it ready.

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MR. MOTE: And I would like to just reiterate the fact that one of the leases is expiring on November 15th of '84, and any haste that we could get in granting this order would certainly be appreciated.

MR. STOGNER: Thank you, Mr. Mote.

MR. MOTE: Thank you, sir.

MR. STOGNER: Is there anything further in Case Number 8342 this morning?

Does anybody else have anything further in this case?

If not, this case will be taken under advisement.

(Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY
that the foregoing Transcript of Hearing before the Oil Con-
servation Division was reported by me; that the said tran-
script 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 correct and true copy of the transcript
filed in Case No. 8342
dated Sept. 19 1984.
Michael E. Hogner, Examiner
Oil Conservation Division