

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY)
THE OIL CONSERVATION COMMISSION FOR THE)
PURPOSE OF CONSIDERING:)
APPLICATION OF HARVEY E. YATES) CASE NO. 14,000
COMPANY FOR EXPANSION OF A UNIT AREA,) *de novo*
OTERO COUNTY, NEW MEXICO)

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REPORTER'S TRANSCRIPT OF PROCEEDINGS
COMMISSION HEARING

BEFORE: MARK E. FESMIRE, CHAIRMAN
JAMI BAILEY, COMMISSIONER
WILLIAM C. OLSON, COMMISSIONER

May 9th, 2008
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission, MARK E. FESMIRE, Chairman, on Friday, May 9th, 2008, 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.

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I N D E X

May 9th, 2008
Commission Hearing
CASE NO. 14,000, *de novo*

	PAGE
EXHIBITS	4
APPEARANCES	5
APPLICANT'S WITNESSES:	
<u>VERNON D. DYER</u> (Landman)	
Direct Examination by Mr. Bruce	7
Cross-Examination by Ms. Altomare	23
Examination by Commissioner Bailey	41
Examination by Chairman Fesmire	43
Redirect Examination by Mr. Bruce	50
<u>GORDON K. YAHNEY</u> (Geologist)	
Direct Examination by Mr. Bruce	52
Cross-Examination by Ms. Altomare	64
Examination by Commissioner Bailey	86
Examination by Commissioner Olson	91
Examination by Chairman Fesmire	92
Redirect Examination by Mr. Bruce	103
Further Examination by Commissioner Olson	108
<u>VERNON D. DYER</u> (Landman) (Recalled)	
Direct Examination by Mr. Bruce	110
Examination by Chairman Fesmire	111
OPENING STATEMENT BY MS. ALTOMARE	114

(Continued...)

DIVISION WITNESS:

GLENN von GONTEN (Senior Hydrologist,
Environmental Department, NMOCD)

Direct Examination by Ms. Altomare	116
Voir Dire Examination by Mr. Bruce	126
Direct Examination (Resumed) by Ms. Altomare	128
Cross-Examination by Mr. Bruce	133
Examination by Commissioner Bailey	142
Examination by Commissioner Olson	157
Redirect Examination by Ms. Altomare	158
Recross-Examination by Mr. Bruce	162
Further Examination by Commissioner Olson	164
Examination by Chairman Fesmire	165

CLOSING STATEMENTS:

By Mr. Bruce	166
By Ms. Altomare	172

REPORTER'S CERTIFICATE	182
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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	9	22
Exhibit 2	12	22
Exhibit 3	12	22
Exhibit 4	12	22
Exhibit 5	13	22
Exhibit 6	14	22
Exhibit 7	54	63
Exhibit 8	55	63
Exhibit 9	57	63
Exhibit 10	58	63

* * *

Division	Identified	Admitted
Exhibit A	125	127
Exhibit B	125	127
Exhibit C	125	127

* * *

Additional submission by the Division, not offered or admitted:

	Identified
Bennett Ranch, schematic cross-section	75

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1 of Case Number 14,000, that all three Commissioners are
2 still present, we still therefore have a quorum.

3 And I believe we were about to begin the cross-
4 examination of Mr. Yahney by Ms. Altomare.

5 MS. ALTOMARE: Thank you.

6 CHAIRMAN FESMIRE: Proceed.

7 CROSS-EXAMINATION

8 BY MS. ALTOMARE:

9 Q. Mr. Yahney, were you involved in the drilling of
10 the first well that was attempted on this unit?

11 A. Yes, I was.

12 Q. And can you explain to the Commission what
13 happened as to why that well was not completed?

14 A. That well was drilled to somewhere around 2600
15 feet, and in drilling through the bottom part of the
16 Wolfcamp into the Powwow formation we cut a shale, kind of
17 a greenish shale, that we later found out swelled
18 significantly on us. And when we attempted to run an
19 intermediate set of casing to isolate water that we
20 encountered, we could not get that casing down and ended up
21 junking that well. Couldn't get the casing down, couldn't
22 get it out, and had to plug and skid.

23 Q. Was any testing done on the water that was
24 encountered as you drilled that well?

25 A. Probably, yes.

1 Q. Do you recall whether that water was fresh or
2 what the nature of that water was?

3 A. The water encountered on the original well, I
4 guess most of it, if I remember right, would be considered
5 under the definition of the OCD as fresh, containing less
6 than 10,000 parts per million total dissolved solids.

7 Some of the water at TD, when we were having all
8 of our problems, tested in the range of 10,000 to 12,000
9 parts per million total dissolved solids.

10 Q. At TD on the first well or on the first --

11 A. On the first well --

12 Q. -- completed well?

13 A. -- the first well, the one that we junked.

14 Q. Okay. On the second well that was drilled, how
15 did you drill it differently to accommodate -- to overcome
16 the problem that was encountered in the first well?

17 A. We switched from a smaller rig to a bigger rig
18 with more compressed air capabilities, and we did not leave
19 the problem formation open to drilling fluids, formation
20 waters, for a length of time that would allow it to swell
21 and give us problems, and we cased it off.

22 Q. Okay. And at what point in that second well --
23 which is the 1V; is that right? --

24 A. That's correct.

25 Q. -- at what point in the drilling of the second

1 well did you encounter water?

2 A. We encountered water in roughly the same places
3 that we encountered water in the first well. A little bit
4 in the Abo, various little places in the Wolfcamp, and then
5 again at the base of the Wolfcamp, at the unconformity with
6 the Pennsylvanian section. We also had gas in those zones.

7 Q. Okay, so the gas and the water were adjacent to
8 one another?

9 A. In that area they were in close proximity to each
10 other, that's correct.

11 Q. Was the water that was discovered in the drilling
12 of the 1Y considered fresh by OCD standards?

13 A. I don't know that I've got any kind of analysis
14 on the waters that were tested in that upper part of the
15 1Y.

16 Q. Was any kind of fluid used to complete the
17 drilling of the 1Y well? Were muds used, drilling muds?

18 A. The 1Y was -- which ended up being completed as a
19 gas well in the Mississippian, was drilled with air until
20 we got through the big gas zone in the Mississippian. So
21 after that, it was -- after that zone was cased off, we
22 drilled ahead with a normal, conventional mud system.

23 Q. Okay, and what -- In a normal, conventional mud
24 system, what is comprised of the normal, conventional mud
25 system used by Yates -- by Heyco?

STEVEN T. BRENNER, CCR
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1 A. A second string that was intermediate, that was
2 set in the -- below the unconformity, and a -- somewhere
3 below the unconformity, and then a production string that
4 was run to TD.

5 Q. Were there any difficulties in running the casing
6 strings with the 1Y well?

7 A. I don't recall any.

8 Q. And drilling the third well, the 25-1, was that
9 drilled in the same way as the 1Y?

10 A. It was drilled with air to a point where we got
11 into the porosity development in the Fusselman, at which
12 time we switched to -- you know, a little bit past that, we
13 switched to water --

14 Q. Okay.

15 A. -- a mud system.

16 Q. And again, it would have been the same standard
17 mud system that you would have used in the 1Y?

18 A. It would probably have been quite similar.

19 Q. Do you recall at what point you encountered
20 waters in the 25-1 well?

21 A. We encountered water at approximately 3300 feet.

22 Q. And do you recall the nature of that water?

23 A. That water probably had total dissolved solids in
24 the neighborhood of 3000 to 4000 parts per million, and it
25 was soft. It had low hardness readings and higher

1 Q. Okay. But since 1995 a significant amount of
2 additional information has been acquired about this unit;
3 isn't that right?

4 A. There has been two additional wells, seismic
5 data, yes.

6 Q. So wouldn't it follow that the Commission and the
7 Division would not be unreasonable to expect a more
8 detailed exhibit of a schematic of this area, based on the
9 fact that you now have more information, not a less
10 detailed exhibit?

11 A. Well, I don't know that -- in my mind, that that
12 is necessary. I don't -- as an explorationist, I don't
13 particularly want to put in the public record things that
14 will allow my competitors to have the same competitive
15 advantage as I have.

16 Q. Okay. Would the inclusion of identification of
17 location of fractures in this area give any kind of an edge
18 to competitors?

19 A. I don't see any fractures identified on --
20 anywhere here. I see faults that do not penetrate the --
21 much beyond the base of the Wolfcamp. They do not come to
22 the surface.

23 Q. Okay, I apologize if I'm using the wrong
24 verbiage. Faults. There are faults depicted on the
25 schematic cross-section that I'm showing you that's been

1 labeled as Exhibit 4 to the original Application; isn't
2 that right?

3 A. That's correct.

4 Q. Okay. And they do permeate down beyond the
5 Fusselman, correct?

6 A. Yes, they would go down below the Fusselman.

7 Q. Okay, and the Fusselman is the area to which
8 Heyco is currently drilling?

9 A. Yes, that's correct.

10 Q. And there are no faults depicted at all on your
11 Exhibit 8 schematic for today?

12 A. That is correct.

13 Q. Okay. Were you involved in the submission of the
14 application or the statement of the -- the request for the
15 expansion that was submitted to the BLM originally in 2007?

16 A. I suppose so, yes.

17 Q. Okay. So what is your understanding of what the
18 reason for this expansion request is?

19 A. The expansion request is to develop the gas
20 reservoirs that have been proven by the two wells on --
21 that have been proven by the two wells, instead of on 160-
22 acre spacing or 40-acre spacing as the unit outline was
23 originally set out, but to develop that on 640-acre
24 spacing. And we supplied what information we had to
25 justify that to the BLM, and you should have obtained

1 copies of such.

2 Q. Okay. So the goal of this expansion, including
3 the expansion that's requested to the north, is to pursue
4 gas recovery at 640-acre spacing?

5 A. That would be part of it, yes.

6 Q. Okay.

7 A. Not necessarily all of it.

8 Q. Okay. The request that was submitted to the BLM
9 specifically stated that the expansion was being requested
10 to accommodate development of a probable gas resource,
11 which is yet to be fully delineated.

12 Where in that statement is there any kind of a
13 request for any other kind of justification for expansion
14 to the north, besides searching for gas?

15 A. I don't see where anything else is needed.

16 Q. Okay. What other information do you have to
17 justify expansion to the north, that there's gas to the
18 north?

19 A. As I stated earlier, in trying to describe the
20 Exhibit 8, we identified with the drilling of the Number 1
21 and the 1Y that there is gas, and to some extent a little
22 bit of oil, possible in a petroleum system associated with
23 the unconformity, which the crest of the structure takes it
24 off to the north and to the northwest.

25 As you pick up section that you did not see in

1 the Victorio Peak Shelf Reef section in the Dell City area.

2 Q. Are you familiar with the Salt Basin aquifer and
3 its attributes?

4 A. That's the aquifer that I'm talking about.

5 Q. Okay. Do you know what the significance is when
6 the State Engineer's Office designates a basin as an
7 aquifer?

8 A. I can't say that I do, exactly.

9 Q. Do you understand that there are water rights
10 associated with that body of water?

11 A. Yes, I do.

12 Q. Okay. Does Heyco have any plan as it proceeds
13 for ensuring that the aquifer is protected from the -- from
14 any contamination from any activity?

15 A. We don't expect any contamination from our
16 activities to get to the aquifer as we understand it. As
17 we understand the aquifer, it is limited to the lower part
18 of the San Andres and the Victorio Peak section. Those
19 formations aren't at Bennett Ranch.

20 Q. Okay. At this point would you say that the
21 primary target of this unit is natural gas?

22 A. It is a primary target. It's not the only
23 target.

24 Q. Okay. And as your colleague testified, you do
25 still intend to drill these wells to the Fusselman?

1 was where Heyco actually had gas, shown by this pink-
2 highlighted area here. That's not the name that they use.
3 And the Helms is their Mississippian production or gas
4 reserves, are shown in here in the Mississippian. So we
5 have gas in this interval.

6 And we also had water. Originally it was
7 supposed to be an oil-bearing interval that was predicted,
8 but in fact the Fusselman turned out to be water-bearing,
9 and I believe that there was testimony that there was
10 additional water-bearing zones, freshwater-bearing zones or
11 more salty water-bearing zones, below the Fusselman as
12 well.

13 This is from the Bennett Ranch 25-1, and again it
14 shows their tops, and this was just used to illustrate that
15 the Canyon has gas and that there were at least three
16 water-bearing zones, major water-bearing zones, at 3300.
17 And as Heyco's geologist testified, this is somewhat
18 different than other wells in the region, and different
19 from the original Y -- or 1 and 1Y wells, which encountered
20 shallow groundwater above 1000 feet.

21 And this is a summary of basically what these
22 graphics have tried to depict. We're talking in this
23 particular study about the role of fractures and regional
24 groundwater flow, and they summarize and say the region is
25 largely undeformed but is cut by many extensional faults,

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1 there's a broad fracture zone extending from the Sacramento
2 Mountains to the Salt Basin near Dell City.

3 Dell City, I believe, has been mentioned as an
4 area where there's fairly intensive agricultural
5 development, and it's using the water taken from the Salt
6 Basin or the Texas equivalent.

7 Most of the fractures and the faults would be
8 parallel -- Excuse me, the fractures parallel the major
9 faults and are oriented north 20 west, and there is this
10 intense fracturing which is known over -- as the Otero
11 Breaks on the east side of the Salt Basin, and there's
12 fresh water coming from the north to the south. And they
13 point out that their modeling or their study shows that
14 fracturing has created a high-permeability zone that
15 funnels recharge from the Sacramento all the way into
16 Texas.

17 This was a regional water plan. I'll be taking
18 some figures from this. This was prepared in accordance
19 with the State water plan, and this actually shows the
20 water quality in the Salt Basin, at least on the New Mexico
21 side.

22 And their estimates are that the recoverable
23 fresh water -- that is, fresher than 10,000 -- or
24 protectible groundwater would perhaps be a better way of
25 putting it -- is 28 million acre feet, and the Crow Flat

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1 diagrams, maps, cross-sections, things along that line that
2 would allow someone to make an objective opinion -- or form
3 an objective opinion about their Application.

4 Q. Is there any doubt in your mind that this unit
5 does indeed sit right on top of the Salt Basin aquifer.

6 Q. Okay. What is the significance of the State
7 Engineer designating the Basin as an aquifer?

8 A. Well, all the state of New Mexico has been
9 declared in one basin or another. The Salt Basin was
10 declared, I believe, in 2000. And the reason is, of
11 course, to protect New Mexico's resources.

12 Q. Do you have any recollection as to what led to
13 the designation, what precipitated that designation on the
14 Salt Basin aquifer?

15 A. I've seen some discussion on it. I have no
16 firsthand knowledge of what led to the State Engineer
17 making that determination.

18 Q. Okay. Do you have any opinion as to the
19 likelihood that waters below 2500 feet are hydrologically
20 connected with waters above 2500 feet?

21 A. I think that it hasn't been demonstrated one way
22 or the other. I would say that it is -- certainly
23 considering that there are a number of faults in the area,
24 it's extensional, I would think that it would remain to see
25 -- be seen whether these faults are sealing or if in fact

1 they would actually allow subsurface waters to percolate up
2 through the fault zone.

3 Q. And what is the significance of that in terms of
4 oil and gas exploration in this area?

5 A. Well, it generally means that there's -- in the
6 faulted area like this, it means that your regional seal is
7 not well known. It would have to be a combination seal
8 above -- a stratigraphic seal and a structural seal.
9 Therefore, any contamination could migrate up these fault
10 lines and contaminate groundwater, that could be an
11 explanation.

12 And that could be naturally occurring, as well as
13 something that occurs during drilling. For example, it was
14 noted that the shallow 3300-foot interval in the 25-1
15 actually, I believe, had gas as well as water. That would
16 indicate perhaps that there was a leaky fault and that some
17 gas from lower in the stratigraphic interval was migrating
18 up the fault line and being trapped below the regional
19 unconformity, which the Heyco geologist referred to.

20 Q. Okay. Have you formed any opinions or
21 conclusions based on the information you've been provided
22 with about the three wells that Heyco has drilled or
23 attempted to drill on this unit to date?

24 A. I'm not sure what you're asking.

25 Q. Any conclusions about wellbore issues, the

