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

25 July 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Western E & P, Inc. for an unorthodox gas well location, Lea County, New Mexico. CASE 8272

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

E X H I B I T S

MR. STOGNER: We will now call Case Number 8272.

MR. PEARCE: That case is on the application of Shell Western Exploration and Production, Inc. for an unorthodox gas well location in Lea County, New Mexico.

MR. FREDETTE: Mr. Examiner, my name is Mike Fredette. I'm appearing today in association with the Montgomery - Andrews Firm of Santa Fe on behalf of Shell Western Exploration and Production, Inc., a subsidiary of Shell Oil Company and the applicant in this case.

Shell Western is seeking approval of an unorthodox gas well location for its proposed Antelope Ridge Unit No. 9 Well.

The Antelope Ridge Unit is a Federal unit located in Lea County, New Mexico, and is currently developed by three participating areas, the Atoka, Morrow, and Devonian.

The primary objective of the proposed well is the Antelope Ridge Devonian Gas Pool. We also plan to test the Ellenburger underlying the Devonian. We do not have exhibits today depicting the Ellenburger but it is anticipated that the structure is similar to that of the Devonian and that the basis of the unorthodox location for the Ellenburger will be similar to that for the Devonian.

We will have one witness to be sworn. We will introduce three exhibits.

MR. PEARCE: Are there other appearances in this matter?

(Witness sworn.)

PHILLIP FAIR,

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

DIRECT EXAMINATION

BY MR. FREDETTE:

Q Please state your name and business address for the record.

A My name is Phillip Fair.

Q And your business address, Mr. Fair?

A It's 200 North Dairy Ashford, Houston, Texas.

Q By whom are you employed and in what capacity?

A I'm employed by Shell Western as a reservoir engineer.

Q Have you previously testified before the Division or one of its examiners?

A No.

Q In that case, would you briefly describe

your educational background and work experience?

A I went to the University of Houston from fall of 1970 to the spring of 1980; transferred to the University of Texas, Austin; went from the fall of 1980 to December of 1981 and received a Bachelor of Science in petroleum engineering.

In December of 1981 I began work with Shell and have worked with them for two and a half years as a reservoir engineer.

Q Are you familiar with the application of Shell Western and more particularly the Antelope Ridge Field and Antelope Ridge Devonian Gas Pool?

A Yes, I am.

MR. FREDETTE: Mr. Examiner, are Mr. Fair's qualifications acceptable?

MR. STOGNER: They are.

Q Mr. Fair, have you prepared exhibits for today's hearing?

A Yes.

Q I'll ask you then to describe the Antelope Ridge Devonian Gas Pool and the necessity for the proposed unorthodox location, and I direct your attention first to what has been marked as Shell Western's Exhibit Number One.

A Okay. Exhibit Number One is a structure map on top of the Devonian of the Antelope Ridge Field in southeast Lea County, New Mexico. The field was discovered

in 1962. The depth of the Devonian is approximately 14,700 feet deep.

The Devonian participating area is the six sections that are highlighted by the blue line. These six sections totally encompass the Devonian reservoir.

The contour interval on the structure is 50 foot. Control comes from the three penetrations of the Devonian that were highlighted in yellow and from seismic data, also.

The two existing producers in the pool are the Antelope Ridge No. 2 Well, located in the northeast quarter of Section 4, and the Antelope Ridge No. 3 Well, located in the southwest quarter of Section 34. There's two locations marked in the southeast quarter of Section 33. The proposed location is -- for Antelope Ridge No. 9 Well -- is the large black dot located at the crest of the structure. The best orthodox location is a smaller dot located to the west.

This reservoir is an active water drive. The original gas/water contact was at 11,400 feet subsea as indicated by the hatched marks on the contour.

The present day water, gas/water contact is at 11,150 feet subsea, as indicated on the hatched marks on that contour. The water is uniformly encroaching. We can see the effects of water in Antelope Ridge No. 3 Well, which is located, again, in the southwest quarter of Section 34.

The Antelope Ridge No. 2 Well and the best orthodox location are structurally equivalent. The proposed location at the crest, however, would recover attic gas trapped up dip of the current producers and the best orthodox location after those locations would water out.

Q Mr. Fair, do you expect the Ellenburger to have a similar structure to that in the Devonian?

A Yes. The anticlinal feature shown here is thought to be a Basement uplift feature; therefore the Ellenburger would have a similar structure.

Q And you would anticipate then that a well at the proposed unorthodox location would have a similar structural advantage over a well at the orthodox location.

A Yes.

Q I direct you now then to what has been marked for identification as Shell Western Exhibit Number Two.

A Exhibit Number Two is a Devonian cross section showing the Antelope Ridge No. 2 Well, the best orthodox location, the proposed unorthodox location, and the Antelope Ridge No. 3 Well, as projected on the east/west line as shown in the inset at the bottom of the exhibit.

Antelope Ridge No. 2 is structurally higher than Antelope Ridge No. 3. At the time Antelope Ridge No. 2 waters out there will remain about 3-1/2 Bcf of gas trapped up dip, which is the objective of the proposed Antelope Ridge No. 9 Well, and this is highlighted as the

blue and the gray areas.

At this time if a well was drilled after Antelope Ridge No. 2 waters out, a proposed location being the best orthodox location would only recover a half a Bcf of gas, which is highlighted in the blue.

A well at this -- it would recover that before it waters out and a well with only half a Bcf would be uneconomical.

A well drilled at the proposed crestal location would recover 3-1/2 Bcf of gas, which would consist of the half Bcf contained at the best orthodox location and an incremental 3 Bcf due to penetrating higher on the structure.

Q Mr. Fair, would you describe the method you used to arrive at the reserve estimates, and I direct your attention in that to Shell Western's Exhibit Number Three.

A Exhibit Number Three contains the reserve estimate which is based on standard volumetric calculations of the undrained areas. This exhibit includes the rock and fluid properties used in the calculations.

Q Mr. Fair, is it your opinion that a well at the proposed unorthodox location is necessary to recover approximately 3.5 Bcf of gas which otherwise would not be recovered?

A Yes.

Q Is it your opinion, then, that a well at

that location is necessary to prevent waste and protect Shell Western's correlative rights?

A Yes.

Q Mr. Fair, were Shell Western's Exhibits Numbers One through Three prepared by you or under your supervision?

A Yes.

MR. FREDETTE: Mr. Examiner, we tender Shell Western's Exhibits One through Three and our witness for questions.

MR. STAMETS: Exhibits One through Three will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Fair, what is the spacing in the Antelope Ridge Devonian Gas Pool?

A It's 320 acre.

MR. FREDETTE: I believe, Mr. Examiner, it's 640-acre standard proration units. The special rules require a well to be drilled in a 160-acre square area consisting of the four central quarter quarter sections.

The proposed location is in the southeast quarter of the southeast quarter of Section 33 and closer than the permitted 330 feet to the quarter quarter section line.

MR. STAMETS: So there will be 640 acres dedicated to this well if it's completed in the Antelope Ridge Devonian?

MR. FREDETTE: Yes, sir.

Q If the Ellenburger test is -- is successful, what does Shell propose to dedicate to its -- its production?

MR. FREDETTE: The south half of Section 33, 320 acres under the statewide rules.

Q Mr. Fair, what -- at what depth do you anticipate the top of the Ellenburger?

A Roughly 17,400 feet.

Q What's the total depth of your proposed well?

A I believe it's close to 18,000 feet or until we penetrate the Basement.

Q Has there been any other well in this area to go to the Basement?

A There was one drilled back in 1962, the Antelope Ridge No. 2 Well. It was drill stem tested but there was not enough conclusive evidence to say whether it is a good test or not of commercial quantities.

Hydrocarbons were found during that test.

Q The Well No. 5 on the west side of Section 33 shows to be plugged and abandoned.

A Right, it was a dry hole.

Q Did that test in the Devonian, Antelope

Ridge Devonian?

A I don't think it did. I think it went through the Morrow formation and found that it had been downthrown so they cut it short.

Q And when was that drilled? Roughly?

A I believe it was in the middle seventies.

Q Okay, Mr. Fair.

MR. STOGNER: I have o further questions of this witness.

Are there any other questions of Mr. Fair? If not, he may be excused.

Is there anything further in Case Number 8272 this morning?

MR. FREDETTE: No.

MR. STOGNER: Does anybody else have anything further in Case Number 8272?

If not, this case will be taken under advisement.

(Hearing concluded.)

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 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. 8272, heard by me on July 25 1984.

Michael E. Stogner Examiner
Oil Conservation Division