BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 11, 1961

IN THE MATTER OF:	
Application of The Ohio Oil Company for a dual completion, Lea County, New Mexico. Applicant in the above-styled cause, seeks permission to complete its Lea Unit Well No. 6, located in Unit J of Section 11, Township 20 South, Range 34 East, Lea County, New Mexico, as a dual completion (conventional) adjacent to the Lea-Pennsylvanian Gas and Lea-Devonian Pools, with the production of gas from the Pennsylvanian formation and the production of oil from the Devonian formation through parallel strings of 2 3/8-inch tubing.	CASE NO. 2451

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Cases 2450, 2462 will be moved to the end of the docket. They will appear just before 2458. The next case will be 2451.

MR. WHITFIELD: Case 2451: Application of The Ohio Oil Company for a dual completion, Lea County, New Mexico.

MR. COUCH: Terrell Couch, attorney for The Ohio Oil Company.

MR. MORRIS: Any other appearances in this case? If

not, you may swear the witness.

(Witness sworn)

MR. COUCH: Mr. Examiner, my name is Terrell Couch. I'm appearing for The Ohio Oil Company. I believe the records of the Commission show that an appearance has been entered in this case by Atwood and Malone stating that I'm associated with them in the case.

(Whereupon, Applicant's Exhibits 1 through 3 marked for identification.)

MR. UTZ: That letter is in the file.

THOMAS O. WEBB,

called as a witness, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. COUCH:

Q Will you please state your name, by whom you are employed, and reference to your qualifications?

A My name is Thomas O. Webb. I am employed by the Ohio Oil Company in the capacity of Area Petroleum Engineer in Hobbs, New Mexico.

Q Have you previously testified before the Commission on one of its examiners, Mr. Webb?

A Yes, I have.

Q Are your qualifications a matter of record in other hearings?

A Yes, they are.

MR, COUCH: Are the qualifications of the witness acceptable?

MR. UTZ: Yes they are, Mr. Couch.

Q (By Mr. Couch) Mr. Webb, this application this morning is for approval of the dual completion of The Ohio Oil Company Lea Unit Well No. 6, is that correct?

A That's correct.

Q Will you refer to your first exhibit, please? Please briefly describe Exhibit No. 1, and state what it shows.

A Exhibit No. 1 is a plat of the Lea Unit area. The unit has been outlined in red, and contains approximately 2560 acres. The Ohio Oil Company is operator of the Lea Unit and owns approximately 4.44 per cent working interest therein.

Q Have the working interest owners in this Unit been made aware of the application?

A Yes, sir, all the working interest owners in the unit are aware of this application and have authorized the dual completion for which we seek approval in this case.

Q Have you indicated on this Exhibit 1 the offset operators to the best of your knowledge?

A Yes, sir. I might also add that the pool designation for each individual well is being shown on Exhibit 1.

Q And the subject well of this application is circled in red, is it not?

A Yes, it is.

Q What is its location?

A The Lea Unit Well No. 6 is located 1980 feet from the South line and 1830 feet from the East line of Section 11, Township 20 South, Range 34 East, Lea County, New Mexico.

Q Will you please refer to what has been marked Exhibit 2 in this case?

MR. UTZ: What was that distance from the East line?

A From the East line it is 1830 feet.

Q (By Mr. Couch) That's from the East line of Section 11, is that right?

A That's correct.

Q Do you have the distance from the unit line, Mr. Webb?

A No, sir, I do not.

MR. UTZ: Is it a standard quarter-quarter section?

A That's correct. It's 1980 from the south.

Q (By Mr. Couch) Please refer to what's been marked Exhibit 2 in this case. Tell us what that is and briefly refer to some of the information you show on it, please.

A Exhibit No. 2 is a gamma ray neutron log of Lea Unit No. 6 with the total depth, the tops of the producing zones and the respective intervals of perforation indicated thereon.

Q What was the date Well No. 6 was spudded?

A Well No. 6 was spudded on July 6, 1961.

Q Had an application been previously filed for dual

completion of this Well No. 6 as Devonian-Bone Springs dual?

A Yes, it had.

Q Was that granted administratively by the Commission?

A Yes, sir, it was.

Q In the drilling of this well subsequent to encountering Bone Springs formation, did our management and the other working interest owners conclude it to be more reasonable to attempt the completion in the Pennsylvanian Gas Pool?

A Yes, after looking at the Bone Springs formation this decision was made.

Q This application was subsequently filed asking for this hearing?

A Yes, it was.

Q Mr. Webb, these changes occurred after the drilling of the well had commenced?

A That's correct.

Q Considerably afterward?

A Yes.

Q With the rig over the hole, under those circumstances, did we then proceed to carry out the dual completion in this case?

A Yes, sir.

Q Before releasing the rig?

A Yes, sir.

Q It is for that reason that the work was performed

pursuant to your indicated method of dual completion prior to this hearing?

A Yes, sir, that's correct.

Q For the record, the well has been shut in as far as the Pennsylvanian Gas is concerned since completion and preliminary testing, is that correct?

A That's correct.

Q With reference to the drilling of this well, will you give us the pertinent information concerning the Devonian formation as encountered here?

A Yes, sir. The top of the Devonian formation was encountered at a depth of 14,341 feet; 7 inch OD, 29 pound casing was set at 14,358 feet. The well was then drilled to total depth of 14,472 feet. The Devonian section is completed in the open hole interval. The Devonian open hole interval potentialed on December 2, 1961 after treatment, with a total of 2,000 gallons of spearhead acid for 363.98 barrels of oil and no water in seven and a half hours flowing through an 11-66 inch choke with a GOR of 279 to 1. The gravity of the crude was 58.2 degrees API at 60 degrees Fahrenheit. The Devonian zone was assigned top 80-acre allowable of 352 barrels of oil per day effective the date of the potential test or December 21, 1961, and the well remains on top allowable from the Devonian zone at the present time.

Q Do you have any information on the initial static

bottom hole pressure of the Devonian zone in this well?

A Yes, sir, the initial static bottom hole datum pressure of the Devonian zone in this well was 6,065 pounds per square inch gauge. Now, that pressure was measured on December 6, 1961.

MR. UTZ: What was the datum?

A The datum is minus 10,744.

MR. UTZ: Okay.

Q (By Mr. Couch) Give us briefly a description of the Lea Devonian reservoir as encountered here in this well and as observed by our information to date.

A Based upon the available subsurface data, all indications are that the Lea Devonian Pool is an anticlinal structure with a northwest-southeast trend. The pay section is a fine crystalline dolomite containing pinpoint to vugular porosity. It is my opinion that the mechanism for the zone is a water drive.

Q What can you tell us about the Lea Pennsylvanian Gas Pool pertinent to this hearing?

A The Lea Pennsylvanian Gas Pool was created by Commission Order R-2101 and consists of the Northwest Quarter of Section 11, Township 20 South, Range 34 East.

Q That's the present designation of the limits by the Commission?

A Yes, sir, those are the horizontal limits. This pool contains one producing well, the U. S. Smelting, Mining, and

Refining Company's Federal No. 1. I believe the distance from the U. S. Smelting Well to the Lea Unit No. 6 is 1867 feet in the Southeasternly direction. Based on the available data it appears that the Lea Pennsylvanian Gas Pool is also an anticlinal structure with a northwest-southeast trend. Production is from the Benz sands which are described as very friable and consisting of coarse to very coarse angular to sub-rounded clear quartz grains.

Q What is the cumulative gross production from the U.S. Smelting Well No. 1 from this Lea-Pennsylvanian Gas Pool?

A The cumulative gross production to November 1st, 1961 from the U.S. Smelting Well was 31,124 MCF of gas and 1334 barrels of condensate.

Q This is according to Commission records?

A Yes, it is, based upon these productions, the cumulative average gas liquid ratio is 23,331 cubic feet of gas per barrel of condensate.

Q Will you describe briefly the Pennsylvanian completion in the Lea Unit Well No. 6?

A Yes, sir. The Pennsylvanian perforations in Unit Lea Well No.6 are at 12,834 to 839, and 13,162 to 172. A four and a half hour production test of this section was conducted on December 3, 1961, at which time the well was produced at the rate of 4204 MCF gas per day through a 15/64 inch choke with 2880 pounds flowing tubing pressure. The gravity of the

condensate was 50.91 API at 60 degrees Fahrenheit. An accurate measurement of the condensate was not obtained, however, it is my opinion that the gas liquid ratio of the Pennsylvanian section of the subject well will approximate the pool average of 23,000 to 1.

Q What is the total production from your Lea Unit No. 6 in the Pennsylvanian Gas zone?

A We have produced a total of 1575 MCF of gas for test purposes, and incidentally this volume is not included in the previously mentioned pool production figures.

Q Those figures that you previously gave related solely to the Smelting Well?

A That's correct.

Q You previously verified that the Pennsylvanian completion in the Lea Unit No. 6 remains shut-in, that's right, is it not?

A That's correct.

Q What is your expectation as to the initial static bottom hole pressure in this well in the Pennsylvanian zone?

A I anticipate that the initial static bottom hole pressure of the Pennsylvanian zone will be approximately 6700 pounds per square inch gauge.

Q Is it your opinion that the Lea Unit Well No. 6 would be capable of top allowable production from it?

A Yes, sir.

Q I'll ask you please to refer to your Exhibit No. 3 what has been so marked as Exhibit No. 3. Mr. Webb, what is this document marked as Exhibit No. 3?

A Exhibit No. 3 is a diagrammatic sketch of the dual completion illustrating the down hole equipment which was used in the drilling of the well.

Q Is this diagrammatic sketch identical with the one that was attached to your application for authority to dual the well?

A Essentially it is the same.

Q Will you just briefly describe the differences?

A The difference is that on the exhibit or the diagrammatic sketch embodying what has been done in the well since this time?

A That is correct.

Q And this diagrammatic sketch that you now introduce as Exhibit No. 3 does show the actual equipment and the actual setup of the dual with one minor exception, is that right?

A That is correct.

Q What is that exception, please?

A The exception is that subsequent to the preparation of this exhibit a blanking plug was set in the Otis types landing nipple.

Q This is near the bottom of the diagrammatic sketch in the Devonian area, is it not?

A Yes. It is in the Devonian tail pipe.

Q All right.

A During the dual completion work on the Pennsylvanian gas section and after rerunning the Devonian tubing strings, we were unable to retrieve this blanking plug.

Q So what did you do then, that leaves the blanking plug in the hole where the landing nipple is shown, is that right?

A Yes, there is a blanking plug there.

Q What did you do then when that difficulty was encountered?

A It was necessary to perforate the Devonian tail pipe immediately above the blanking plug, which we did. We perforated this tail pipe at 14,361 to 1802 feet.

Q That, of course, is substantially below the Baker Model D production packer shown on the sketch.

A Yes, it is.

Q How will you then be able to blank off the Devonian zone in the event that becomes necessary in production or reworking of this well?

A It will be possible to run a wire line blank choke which can be set in the tail pipe beneath the Model D packer and above the present tubing perforations.

Q There's adequate room to do that?

A Yes.

Q And this would be a retrievable blank choke?

A Yes, sir, it would be a wire line operation.

Q With the differences that you have testified, Exhibit No. 3 represents the actual dual completion, does it not?

A Yes, sir.

Q Will you proceed to tell us about this diagrammatic sketch and discuss it in more detail for us?

A First, Exhibit No. 3 illustrates the casing program which was utilized in the drilling of the well. This program conforms with the provisions of Rules 106, 107 of the General Rules and Regulations of the Oil Conservation Commission and adequately protects all oil, gas, and fresh water-bearing strate encountered in the well.

Q You anticipate that the casing program will continue to do so?

A Yes, I do. As indicated on Exhibit 3, the Devonian open hole is 14,358 to 14,372. A Baker Model D production packer is set in the 7-inch casing at 14,290 feet. The Devonian tubing string is two and three-eighth inch OD, 4,7 pound EUE tubing. This string is equipped with two-inch tailpipe and Otis types landing nipple, a Baker and koroseal assembly unit and a Baker Model 3-C receptacle unit, and anchored into the Model D packer.

Q That is, the receptacle unit is anchored into the packer?

A It is anchored to the Model D. Packer.

Q What about the tubing string for the Pennsylvanian Pool?

A A string of two and three-eighth inch OD, 4.7 pound Hydril CS tubing is provided for gas production from the Lea Pennsylvanian zone. I believe the I.D. of the Hydril tubing is the same as that of the regular two-inch EUE or 1.995 inches.

Q Mr. Webb, was this installation designed in accordance with sound engineering practices and principles in your opinion?

A Yes, it was.

Q In your opinion will it effectively prevent communication between the two zones of production, the Devonian and Pennsylvanian pools?

A Yes, sir, it will.

Q Using this equipment, will it be possible to measure the reservoir pressure for each of those separate zones of production, using a bottom hole pressure gauge?

A Yes, sir, that is possible. Also these reservoir pressures can be measured in each separate zone without the necessity of shutting in the zone which is not being tested.

Q Is the well equipped with all necessary connections to conduct packer leakage tests?

A Yes, sir, it is.

Q What about the surface equipment to be installed on the well in connection with it?

A The surface equipment will be such that the oil and

gas production from each separate zone can be accurately and separately measured.

Q Do you anticipate any corrosion problems in production from either of thse zones in this well?

A No, sir, we anticipate no corrosion problems of any consequence from either zone. Now, this fact is based upon the known fact that Devonian crudes in general offer little or no corrosion problems, and the Devonian production is the Lea Unit has displayed no corrosive characteristics to date. Also we have an analysis of the Devonian gas from our Lea Unit Well No. 1 which reflected an HTS content of only .25 per cent. We also have an analysis of the Pennsylvanian gas from the U.S. Smelting Well which showed this gas to be sweet with no HTS present. We, therefore, anticipate no corrosion from the Pennsylvanian gas zone.

Q In your opinion what is the producing mechanism of the Lea-Devonian Pool?

A As I previously stated, it is my opinion that the producing mechanism for the Lea-Devonian Pool is a water drive.

Q Do you therefore anticipate that the Devonian Pool in the subject well will have a long flowing life or not?

A Yes, sir. The reservoir of this type, it is reasonable to deem that the subject well will have a long flowing life in the Devonian zone.

Q Is it your opinion that this well will, from what you

know about it?

A Yes, sir, it is.

Q When and if artificial lift becomes necessary from the Devonian zone, what is your present thinking concerning the feasibility of artificial lift from the Devonian Pool in this well?

A When and if artificial lift does become necessary, it's my opinion that the production from the Devonian zone can be efficiently lifted by gas lift. You will note on Exhibit 3 that we show a Baker Model K double grip dual string packer in the 7-inch casing. Now the installation of gas lift valves in the Devonian tubing string above this packer will enable us to gas lift the Devonian production.

Q Do you anticipate there will be a sufficient supply of gas available for gas lift purposes?

A Yes, sir, we anticipate that there will be a sufficient supply of gas.

Q Give us your opinion as to whether the Devonian zone can be safely depleted by this method of gas lift?

A It's my opinion that the Devonian zone can be safely, efficiently, and effectively depleted by this method.

Q It is your opinion that the Pennsylvanian gas zone will support a completion?

A Yes.

Q That is the Pennsylvanian zone you are referring to

now?

A Yes.

Q In your opinion will the ultimate recovery from the Pennsylvanian Pool and the Devonian Pool in this well be just as great, or less than the ultimate would be realized from separate wells drilled from these two pools in this area?

A It is my opinion that the ultimate recovery from both zones of this dual completion would be just as large as the production that could be from separate wells in these zones.

Q How long did it take to complete this well in the Devonian?

A 149 days.

Q Can you give us the pertient information on actual well costs and expected costs of the operations involved here?

A The time, as I stated, the time required was 149 days. Based upon actual well costs on the Lea-Devonian Pool; the average cost for drilling a single well to the Devonian section and completing therein is $510,000.

Q That's average cost in the Lea Unit for a single well?

A Yes, it is.

Q What was the estimated cost of dualling the Lea Unit No. 6 into the Lea-Devonian-Pennsylvanian gas zone?

A The cost of dualling the Lea Unit No. 6 into the Lea-Devonian-Pennsylvanian gas zone was estimated to be $28,320.

Q What information do you have as to the cost of drilling

a new well, a separate well to the Lea-Pennsylvanian Pool, and completing it in that pool?

A I estimate that the cost of drilling a single well to the Pennsylvanian section and completing therein would be approximately $410,000.

Q Based on those calculations, what would be the net saving to the operators of the Lea Unit for dual completion of this character as distinguished from drilling a well separately to the Pennsylvanian Pool?

A The cost of dualling Lea Unit No. 6 in the Pennsylvanian gas section is calculated to be approximately $381,680 less than the cost of drilling a single well to the Pennsylvanian gas section.

Q That's based on those previous figures that you gave as to the cost of drilling a well?

A Yes, it is.

Q Is it your opinion that the application for approval of this dual completion is in the interest of conservation?

A Yes, it is.

Q Will it protect correlative rights, in your opinion?

A In my opinion it will.

Q This dual completion as you have described it to be, will this cause waste or not?

A No, sir, it will not cause waste in my opinion.

Q Will it prevent the drilling of unnecessary wells?

A Yes, it will.

Q Were Exhibits 1 through 3 prepared either under your supervision or direction, or by you?

A Yes, they were.

MR. COUCH: We offer in evidence Exhibits 1 through 3.

(Whereupon, Applicant's Exhibits 1 through 3 offered in evidence.)

MR. COUCH: That concludes our direct examination, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Webb, what is the top of the cement on your seven-inch?

A I believe that's shown on Exhibit No. 3 to be at 7640. This cement top was determined by temperature survey.

Q All right. I just couldn't find it. No producting formations between the bottom of the nine and 5/8ths and 7640 that you know of?

A No, sir.

Q Did you give the potential of the Devonian completion?

A The potential test of the Devonian completion?

Q Yes.

A Yes, sir, I did. The Devonian section potentialed on December 2, 1961, flowing for 362.98 barrels of oil and no water

in seven and a half hours through an 11-46 inch choke with a GOR of 279 to 1.

MR. COUCH: I believe you said 362 and it's 363, just so it will be in accordance with the report filed with the Commission.

A 363.

MR. COUCH: 363.98 in each case.

Q (By Mr. Utz) The gravity of the liquid?

A 58.2, I believe.

MR. PORTER: Was that the Devonian liquid?

A Yes, sir.

Q (By Mr. Utz) Do you consider the U.S. Smeltering well to be a gas well or oil well?

MR. COUCH: In the Pennsylvanian?

MR. UTZ: Yes, sir.

A I consider it to be a gas well.

Q With a ratio of 2331?

A Yes, sir.

Q What do you base that on, the gravity of the liquids?

A It's based on the gravity of the liquid and upon the fact that we have run static bottom hole pressure gradients in Benz gas wells in the past and have found no fluid in the well bore. To cite the example, this would be our State NPA Well No. 1.

MR. COUCH: Mr. Examiner--Well, go ahead.

Q Then you believe it's a retrograde thing?

A Yes, sir, I do. I might also point out that there are several other Benz pools in Southeastern New Mexico which produce with comparable gas-liquid ratios.

Q What well was this that you took a bottom hole sample in?

A We didn't take a bottom hole sample.

Q What was it that you determined there was no liquid in the well bore with?

A The State NPA Well No. 1. This was done with a bottom hole pressure gauge wherein we ran static gradients in the well bore and found no fluid level within the tubing string.

Q That was under shut-in conditions?

A Under shut-in conditions, yes, sir.

Q What's the location of that well?

MR. COUCH: Mr. Examiner.

MR. UTZ: What pool is it in?

MR. COUCH: If the witness knows, I will be glad for him to tell you. The Commission having classified this as a Pennsylvanian gas pool, we were not anticipating going into the classification. I didn't ask him to prepare himself. If he knows the location of that well, I'll be happy for him to give it to you. I am sure we can supply it to you later.

A The well is located in the Scarb Pennsylvanian Pool. I do not recall the location exactly.

Q Are there other questions of the witness?

MR. PORTER: You referred to the Benz; that's a zone in the Pennsylvanian formation?

A Yes, it is.

MR. PORTER: That's all I have.

A Just off the record, I was advised to call this the Pennsylvanian through this hearing, but it is nevertheless a member of the Benz which is a member of the Pennsylvanian.

MR. COUCH: The terminology is just for the purpose of the Commission records.

MR. PORTER: That's right, I was trying to clarify it for the record.

MR. UTZ: Any other questions? The witness may be excussed.

(Witness excused)

MR. UTZ: Any other statements in this case?

MR. COUCH: Mr. Examiner, I have some letters from some of the working interest owners in this case, but, of course, they were all advised of the hearing and as we have testified, they have all approved of the thing we are trying to do. I think it's unnecessary to burden the record with these letters unless you desire them.

MR. UTZ: Do you think it's necessary?

MR. MORRIS: No.

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission, at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill, and ability.

IN WITNESS WHEREOF, I have affixed my hand and notarial seal this 11th day of December, 1961.

Ada Dearnley
COURT REPORTER-NOTARY PUBLIC

My commission expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2451, heard by me on Dec. 11, 1961.

....., Examiner
New Mexico Oil Conservation Commission