STATE OF NEW MEXICO
ENERGY AND MINERALS DEPT.
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
25 April 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Wallace Oil & g Gas Inc. for an unorthodox well location, Roosevelt County, New Mexico.	CASE 8158 8159 8160

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	W. Perry Pearce Attorney at Law Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501
For the Applicant:	W. Thomas Kellahin Attorney at Law KELLAHIN & KELLAHIN P. O. Box 2265 Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. STOGNER: We'll call next Case Number 8158.

MR. PEARCE: That case is on the application of Wallace Oil and Gas, Inc. for an unorthodox well location, Roosevelt County, New Mexico.

MR. KELLAHIN: Mr. Chairman, I'm Tom Kellahin of Kellahin and Kellahin, Santa Fe, New Mexico, appearing on behalf of the applicant and I have one witness to be sworn.

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

(Witness sworn.)

MR. KELLAHIN: Mr. Examiner, with your permission we would propose to consolidate Case 8158 with Cases 8159 and 8160 for purposes of testimony.

MR. STOGNER: Okay, Mr. Kellahin, we'll now call Case Number 8159, which is the application of Wallace Oil and Gas, Incorporated for an unorthodox location in Roosevelt County.

And we'll also call Case Number 8160, which is also an application of Wallace Oil and Gas, Incorporated for an unorthodox well location in Roosevelt County, New Mexico.

Are there any other appearances in either case 8159 or 8160?

If not, Cases 8158, 8159 and 8160 shall be consolidated for purposes of hearing.

Please continue, Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Examiner.

JACK C. WALLACE, JR.,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Wallace, for the record would you please state your name and occupation?

A I'm Jack C. Wallace, Jr. I am Vice President of Exploration of Wallace Oil and Gas.

Q Mr. Wallace, do you hold any professional degrees either in petroleum engineering or in petroleum geology?

A Yes, sir, I do.

Q And in what field, sir?

A Geology, with a minor in engineering.

Q When and where did you obtain your degree in geology with a minor in engineering, Mr. Wallace?

A I studied at Colorado School of Mines for three years from 1970 to 1973 and I completed my work in 1974 at the University of Oklahoma.

Q Subsequent to your graduation have you been employed in the oil and gas profession as a geologist?

A I worked as a student geologist for Entex (sic) Corporation from 1970 to 1974. I worked for Wagner and Brown of Midland, Texas from '74 through '77, leaving as Chief Geologist of their Oklahoma City office, and have been with Wallace Oil and Gas the remainder of that time.

Q As a geologist for Wallace Oil and Gas, Inc. have you made a study of the geology in the North Chaveroo Canyon Pool in Roosevelt County, New Mexico?

A Yes, sir, I have.

Q And does your company have oil and gas interests within that pool?

A Yes, sir, we do.

MR. KELLAHIN: We tender Mr. Wallace as an expert petroleum geologist, Mr. Examiner.

MR. STOGNER: Mr. Wallace is so qualified.

Q Mr. Wallace, let me direct your attention, sir, to the ownership plat that we've marked as Exhibit Number One in the consolidated cases and ask you to identify for us in a general way what you propose to seek to accomplish with the three applications.

A Okay. Wallace Oil and Gas owns interest in Sections 4, 5, and 8, along with various interests in other surrounding sections.

We propose to drill three wells in Sec-

tions 4, 5 and 8 at a distance 660 from the south line and west line of Section 4, 660 from the south line and east line in Section 5, 660 from the north line and east line of Section 8.

Q All right, sir, for purposes of the North Chaveroo Canyon Pool, what is the acreage dedication per well?

A 320 acres.

Q And what will be the spacing unit you would propose to dedicate to each of the three wells?

A 320 acres.

Q All right, sir, and for the well in Section 4 what will be the orientation of that dedication?

A It will be a laydown 320.

Q It will be the south half.

A South half.

Q And for Section 5 will it also be the south half of that section?

A Yes, it will be.

Q And the north half, then, of Section 8.

A That's correct.

Q Let me direct your attention, Mr. Wallace, to Section 9 and to the well symbol in the far northwest of the northwest of that section and have you identify that well for me.

A Yes, sir. It's the Union No. 1 Roberts. It is 660 from the north line and 660 from the west line of

the unit.

Q All right, sir, that well is at an unorthodox location in terms of the statewide spacing rules that apply to this pool.

A That's correct.

Q And you're seeking locations for your three wells that correspond to similar positions in your proration units.

A Yes, sir.

Q All right, would you identify for us, Mr. Wallace, the producing wells in the North Chaveroo Canyon Pool?

A There is only one producing well in the Canyon, Chaveroo Canyon Pool and that well is the Union Roberts Well that was drilled in 4-14-76.

Q All right, sir, and who is the gas purchaser for the gas produced from that well?

A Cities Service.

Q And do you propose to use the same gas purchaser for your well?

A Yes, sir, we do.

Q Let's turn now, Mr. Wallace, to what we've marked as Exhibit Number Two, which is your structure map, and have you identify that structure map for me.

A Yes, I have. It's -- this is a structure map on top of the Canyon porosity zone.

Q Is this a map that you have prepared?

A I prepared this personally.

Q All right, sir, and why have you used the top of the Canyon as a point in which to map your structure?

A We felt that this trap is so subtle in the Canyon in this particular area, the lithology is so lenticular as to be necessary that we bring this kind of control, it's one inch to 1000 feet, to be accurate as to what we feel like water contacts might be within the reservoir, and oil contacts.

Q All right, sir, let's have you identify, if you will, the wells that you used as control points for mapping your structure.

A Okay, in Section 4 we used the Union No. 2 Tucker, which is in the southwest quarter of Section 4.

Q That corresponds to the wells that you've identified on Exhibit Number One?

A That's correct.

Q All right, sir, and does that Union No. 2 Tucker Well, has that produced any hydrocarbons from this pool?

A No, sir, that well was drilled in October of 1976 and was a dry hole.

Q All right, sir, what other wells have you used for control in mapping your structure?

A Okay, the Wallace Oil and Gas No. 1 Tucker in Section 5 that was drilled in October of '83.

Q That's the one in the southwest quarter

of 5.

A That's correct.

Q All right, sir.

A Another penetration was the Union No. 1 Tucker, which is in the northwest quarter of Section 8, and the Union No. 1 Roberts in the northwest quarter of Section 9, as well as the Pauley Petroleum No. 1 Tucker Federal in Section 9 in the southeast quarter.

Q In your opinion as a geologist, Mr. Wallace, does structure play any importance or significance to you in determining the location and the possibility of producing gas or oil in commercial quantities in this pool?

A Yes, I believe it does.

Q And why do you have that opinion?

A Our well in Section 5 encountered the Canyon zone at -4649 and although it wasn't our primary objective, we got a significant gas show upon drilling it.

On completion of the well we ran a straddle packer test of that particular zone and recovered gas and water.

The well in Section 8 by log analysis is abviously wet. So we feel like there's a water contact somewhere above and in close proximity to our No. 1 Tucker in Section 5.

Q All right, sir, let's go on to Exhibit Number Three, which is the Isopach, and have you identify that exhibit for me.

A Okay, this is an Isopach of the net porosity within the Canyon sandstone.

Q All right, sir. In addition to the net porosity Isopach you have a plastic overlay that goes over the porosity map, does it not, sir?

A It does. What we attempted to do is to estimate the water contact from the show in our well. Represented on the west side of the -- or the right side of that -- left side of that overlay is our estimated water contact within the zone itself. That comes directly off the structure map with the same scale.

Then we identified what we considered certain economic limits for producable deliverability within the field itself. We feel like that's the area of productivity in the Canyon in this particular region.

Q In your opinion, Mr. Wallace, is there sufficient well control and well information in the immediate area from which you can reasonably a net porosity Isopach map?

A Yes, sir. We have five wells in four sections. That's a high degree of control.

Q All right, sir, and the Isopach is your work product, is it?

A Yes, sir, it is.

Q All right, in terms of the Isopach, then, you have mapped what you think is the net porosity in the pool?

A Yes, sir, I do.

Q Based upon that study, sir, do you have an opinion as to whether Wallace Oil and Gas, Inc. gains any unfair advantage over Union of Cal in terms of well positions or their proportionate share of the reservoir?

A No, sir. If I may refer to the exhibit that's the computer printout, what we did here --

Q Let's look at that. It's Exhibit Number Five and it's --

A What we did is -- what I did is I put a planimeter to this particular reservoir above the water contact and underlying the drilling and spacing unit, as described, and calculated the bulk volume of the various reservoirs above the water contact with permeability, and what we derived was that under the Union Roberts Well there was recoverable gas of 484,000, 997 Mcf. The is recoverable oil of 40,416.5 stock tank barrels.

Q All right, using this let me go through that method with you, Mr. Wallace, on the Union acreage and tell me first of all what is the spacing unit for the Union Well. Is it the north half or is it the west half of the section?

A It's the west half of the section.

Q All right. Now using the Isopach and the gas/water contact overlay, you have taken that area within the Union proration unit --

A Correct.

Q -- spacing unit, and made a calculation based upon certain parameters.

A Yes, sir. Upon log calculations we determined that there's a water saturation of approximately 30 percent.

From the gas books themselves, and from their original tests, state tests, we determined that the gas gravity was .76 and the gas to oil ratio produced during the recent 12-month period was 12,000 to one.

The temperature at the separator is usually kept at 70 degrees, between 70 to 75 degrees, and the API measured gravity as reported to the State is 54 API. Porosity on their log is 12 percent and that gave us -- with a planimeter we determined that they had 1050 acre feet of bulk volume reservoir.

Simulating bottom hole conditions at a 60 percent recovery factor from the permeability in the zone, the implication is that they have approximately half a billion cubic feet of gas and approximately 40,000 barrels of oil underlying their proration unit.

Q All right, in setting up that criteria and those parameters, Mr. Wallace, all those factors are the same when you apply them to your acreage, except for the acre feet number and the thickness of the formation.

A Right. The thickness of the formation and the acre feet again come from a planimeter of the -- of the acreage underlying the proration units.

The -- in fairness, although the porosity does increase towards the Wallace oil and gas acreage position, specifically the well in Section 8 and our well in Section 5, the porosity ranges are higher on a cross plot porosity basis. We though in fairness that we would apply exactly the same porosity ranges for recovery factors, the same temperatures, gas/oil ratios, gas gravities, and water saturations. The only variation would be the actual bulk volume of the reservoir.

Q Mr. Wallace, is this a standard technique for determining the original oil in place in a reservoir?

A Yes, sir, it is.

Q And you've applied the same recovery factors for both ownerships?

A That's correct.

Q In your opinion is this a fair and reasonable and conservative recovery estimate?

A Yes, sir, it is.

Q All right. In your opinion, based upon your calculations and your examination of the data, are you gaining any unfair advantage over Union?

A No, sir. As a matter of fact, quite a coincidence, the reserves came out to be approximately one-quarter under the Roberts Well and three-quarters under our proration unit.

Q In terms of production from the Union Well, what portion of their recoverable oil and gas in place

underneath their tract have they now recovered?

A As of -- as of the first of December of 1983, which is the most recent information we have, they have recovered 168,200,000 Mcf of gas, 9953 barrels of oil, 28 barrels of water.

Q What percentage of the total recoverable oil and gas in place does that number represent?

A They've recovered approximately one-quarter of their oil and about one-third of their gas.

Q All right, sir. Mr. Wallace, let me direct your attention to Exhibit Number Four, which is the cross section, and have you identify that for us , please.

A Yes, sir. This cross section is a cross section of the four critical wells pertaining to this application.

The section numbers and locations, which are, you can see, down at the base of the various logs, the log in Section 4, the zone being colored there is the Canyon zone of interest.

As you can see in Section 4 the zone is developed but tight, which means it's most likely at the very edge of the reservoir.

In Section 9, which is the producing well, the Union Roberts, you can see it has developed porosity and a slight degree of gas effect.

In our well you can see the zone is thinner but the porosity ranges are higher but we don't have gas

effect, which would be consistent with our gas/water drill stem test.

In Section 8, which is the well that's obviously wet, the porosity ranges are much higher, in the range of 15 percent, and obviously wet on the resistivity log.

Q All right, sir, how did you correlate your logs in terms of picking a definable marker or datum point upon which to hang the logs?

A Well, we did a one-inch scale from -- all the way from the -- just below the P2 zone in the San Andres all the way to the Mississippian contact, but upon this cross section the most definable unit and an excellent marker is this tight carbonate that exists directly below the Canyon sandstone. As you can see, if you see the marker below the Canyon zone there, that particular tight limestone is developed in all those wells, although it breaks up slightly in the No. 2 Tucker on the left of the cross section.

Q In your opinion is there reasonable geologic continuity across the reservoir as we have projected it on your Ispach, Exhibit Number Three?

A Yes, sir, there is.

Q All right, sir. Were Exhibits One through Four, Mr. Wallace, prepared by you or under your direction and superivision?

A Yes, sir, they were.

Q And you prepared also Exhibit Number Five, didn't you?

A That's correct, sir.

Q In your opinion, Mr. Wallace, will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, sir.

MR. KELLAHIN: Mr. Examiner, we move the introduction of Exhibits One through Five.

MR. STOGNER: Exhibits One through Five will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Wallace, let's go back to Exhibit Number One.

A Yes, sir.

Q In Section 5 you show the Wallace No. 1 Tucker.

A Yes, sir.

Q Did that have any production from the zone in question?

A No, sir, it didn't. That's the one we produced gas/water on a drill stem test. We had excellent pressures indicating good permeability.

Q Okay. Let's drop down to Section 8, the

Union No. 1 Tucker. Do you know if that had any production at any time from the --

A No, sir. As a matter of fact, the Wallace Oil and Gas No. 1 Tucker was predicated on the Union No. 1 Tucker. They recovered 407 feet of free oil and a drill stem test in excess of 3900 feet of oil and gas cut salt water with exceptional pressures.

Unfortunately the zone truncated before it reached the Wallace No. 1 Tucker.

At present the Tucker is under completion in the San Andres P2 zone.

Q Let's go back over here to Section 9, the Pauley No. 2 in the east half --

A Yes, sir.

Q -- of that section. Did that have any production from the zone?

A No, sir. The zone was not developed in the Pauley No. 2 Tucker at all. The Pauley Well produces from the Bough C. It had a high potential of oil and water, produces a tremendous amount of water, I believe it was about 150 barrels a day and about 250 barrels of water a day.

It injects water into the well in Section 16 to the south of it.

Q On your Exhibit Number Five, the -- your acre feet, were they calculated by planimeter.

A Yes, sir, by planimeter.

Q Okay, could you go over that again, how

you -- what markers you used on your planimetering?

A We used for the planimeter, we used the boundary of the proration unit and planimetered each individual Ispach interval, all the way to 15, and everything above 15 was considered to be an average of 17-1/2 feet.

Q Did you take into account the water contact --

A Yes, sir, we did. That was the -- that was the westernmost boundary, was the water contact.

Q Okay.

MR. STOGNER: That's all the questions I have for Mr. Wallace at this time.

Are there any other questions of this witness?

MR. KELLAHIN: No, sir.

MR. STOGNER: If not, he may be excused.

Mr. Kellahin, do you have anything further in any of these cases this morning?

MR. KELLAHIN: No, sir, thank you.

MR. STOGNER: Does anybody else have anything further in Cases Numbers 8158, 8159 or 8160 this morning?

If not, these cases 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 Nos. 8158, 8159, 8160 heard by me on April 25 1984.

Michael E. Stogner, Examiner
Oil Conservation Division