BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

IN THE MATTER OF:

Case No. 1753

TRANSCRIPT OF PROCEEDINGS

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
Phone CHapel 3-6691

September 2, 1959

I N D E X

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 2, 1959

IN THE MATTER OF: Application of Joseph I. O'Neill, Jr., for an oil-oil dual completion and for permission to commingle the production from two separate pools. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Federal "E" Well No. 3, located 1980 feet from the North line and 660 feet from the East line of Section 1, Township 19 South, Range 30 East, Eddy County, New Mexico, and for permission to commingle the production from the two zones of the said dually completed well.	CASE NO. 1753

BEFORE:
Elvis A. Utz, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: The next, Case 1753.

MR. PAYNE: Case 1753. Application of Joseph I. O'Neill, Jr., for an oil-oil dual completion and for permission to commingle the production from two separate pools. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Federal "E" Well No. 3, located 1980 feet from the North line and 660 feet from the East line of Section 1, Township 19 South, Range 30 East, Eddy County, New Mexico, and for permission to commingle the production from the two zones of the said dually completed well.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe, New Mexico, representing applicant. We will have one witness, Mr. Anderson.

(Witness Sworn.)

ED ANDERSON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name please?

A Ed Anderson.

Q By whom are you employed and in what position, Mr. Anderson?

A I'm employed by Joseph I. O'Neill as his Drilling and Production Superintendent.

Q Have you had any particular training in Petroleum Engineering or allied fields.

A Yes, I have. I am a graduate of Oklahoma University in petroleum engineering, since that time I've followed the profession and have been with O'Neill for the last ten years.

Q When did you graduate, Mr. Anderson?

A In 1940.

Q And you have been working in the oil business since that time?

A Yes.

Q In connection with your work with Joseph I. O'Neill have you had anything to do with the particular area involved in this application?

A Yes, I have. We've drilled three wells to date.

Q Have you supervised the drilling of those wells?

A Yes.

Q Have they been under your direction?

A Yes.

Q Are the witness's qualifications acceptable?

MR. UTZ: Yes, they are.

Q Mr. Anderson, are you familiar with the application in Case 1753?

A Yes, I am.

Q Will you state briefly what is proposed in this application?

A We drilled a discovery well in this area, actually it was not a discovery well, it was a well drilled many years back by Culwin and established. This well was abandoned and at a later date, some six or eight months ago, we drilled another Queen well. Following this we drilled the number two and the number three. All were drilled with cable tools and only in the number three did we encounter production in the Yates zone. Following this we completed number three, in the Queen, potentialled the well, and have held up potentialling the Yates pending the outcome of this hearing. We then decided to ask for a dual completion.

Q Is the well presently being produced?

A The well is being produced from the Queen, the Yates is shut in.

Q Do you have an initial potential on the Queen formation?

A I do, it was forty-seven point twenty-five barrels of oil and nine barrels of water, twenty-four hours. This potential actually flowed,, however, the well is now on pump.

Q Now, as I understand it, you have not made a potential of the Yates formation?

A No.

Q Do you have any information on the Yates formation in this well?

A Yes, we have information in the form of Exhibits, would you like to give those out?

Q Well --

A The well flowed initially at the rate of three or four barrels an hour with a small water cut. In all likelihood, we would start off flowing the well, and I'm sure it would be on the pump before long. The well, at the conclusion of the clean-up test, was making about fifteen percent water.

Q At that time, as I understand you, you shut it in?

A Yes.

Q Now, referring to what has been marked as Exhibit 1, Mr. Anderson, would you discuss that Exhibit please?

A Exhibit number 1 is a contour map on twenty-five foot

intervals on the top of what we are calling the Middle Yates zone. As you will note, about the only relief we have to date would be on this number three well. Well number one and well number two, cable tool holes had little or no shows in the Yates. If the field is present, it undoubtedly is to the east or the south.

Q Does the Exhibit likewise reflect the lease ownership and offsetting wells?

A Yes.

Q What is the area covered in yellow?

A Those are the leases at present owned by Joseph I. O'Neill.

Q Now referring to what has been marked as Exhibit number two, discuss that Exhibit please.

MR. UTZ: Mr. Kallahin, may I interrupt. I'm trying to find well number one and number two that he spoke of.

A Well number one is in the northeast, northeast of the yellow; well number two is northwest southeast, both in Section one. Well number three is southeast northeast, same Section.

Q Well number three is the well that is the subject of this application?

A Yes. Exhibit number 2 is a contour map on a twenty-five foot interval on the top of the Queen pay. As you'll note from these contours, there is no more surface indication than in the usual Queen field, most of the reservoir depending on sand deposition and perhaps a little nosing or terracing.

Q Now have you prepared a cross section of the area involved in this application?

A Yes, we have, Exhibit number 3. As you can see from the Exhibit, both the Queen pay zone and the middle Yates exhibit the typical lack of structure that is found in this part of Eddy County, the interval between all these wells, the trace of which is shown on the lower part of the Exhibit, show about the same interval, and the only reason that we have a well number three probably over any of the other wells is simply a little better sand deposition and formation of a stratographic trap.

Q Are those, is that Exhibit drawn on a common datum, Mr. Anderson?

A It must be, I can't answer that for sure, I'm sure it, yes, it is. Yes.

Q Now, do you find the Yates formation present throughout the zone?

A Yes, we do. The zone is present in all the wells drilled even in the old dry holes.

Q But is not productive in the other wells?

A No, sir, those, at the most it could be called a show.

Q Was the Queen present in all the wells shown on the Exhibit?

A Yes.

Q Now, does the Exhibit indicate the wells on which the cross section was made?

A Yes.

Q I mean do you have a plat showing the cross section?

A I do at the bottom, yes.

Q Now have you made any study of the Yates reservoir?

A Yes, we have, both reservoirs.

Q Would you have that marked as Exhibit number four please? Now, referring to what is marked as Exhibit number four, will you discuss that Exhibit please?

A This, the engineering data is outlined and I will be as brief as I can. The average porosity in the Yates was taken from the gamma ray neutron logs since there were no cores, and it is in the magnitude of twenty-two percent. We have no permeability information, nor oil and water saturations. We have no evidence of water oil contact all through, all wells to date on our property do produce some water, the water is probably contained within the producing zone itself. We also have no evidence of a gas cap. The net effective pay thickness from cable tool is as much as twenty-two feet and the pay dips at approximately one hundred feet per mile. Gravity of the oil is thirty-six degrees, salinity of the water approximately sixty-seven thousand parts per million chlorides. We have no information as to the bubble point viscosity and so forth. Corrosion should be very limited. This is based on our experience in other Queen fields. The only reservoir pressure and temperature was taken in well number three and was nine hundred pounds at a plus nine fifteen after half hour

shut in, bottom hole temperature is eighty degrees at twenty-five twenty. We have no productive indices.

Q No oil production?

A The average gas oil ratio was eleven hundred seventeen to one and the water production twenty percent. This one Yates well has been completed by being fractured with sand and oil. We estimate the proven average at one hundred sixty acres, and believe the well should be drilled on a basis of forty acres per well. We have no evidence of gas or water coning or of water drive. That concludes the information we have on this Yates reservoir.

Q Have you compiled the same type of information on the Queen formation?

A We have, sir.

Q Will you have that marked as Exhibit 5 please?

A In the Queen there were no cores taken except a few chips from a cable tool core barrel, our porosity was determined from gamma ray neutron logs at eighteen percent. We have no information as to permeability or oil and water saturations. We have no information as to water oil or gas oil contacts, and the average net effective pay thickness from cable tool samples is as much as twenty-seven feet. The dip producing formation like the Yates is one hundred feet per barrel, gravity of the oil is thirty-six point four at sixty degrees and sixty-eight parts per million chlorides. There is no information as to bubble point and so forth. Original reservoir pressure was taken in the Federal "E"

number one north offset to this well and was ten hundred and sixty p.s.i. at a plus four twenty-five. This well was shut in seventy-four hours before the survey, bottom hole temperature was seventy-four degrees at thirty-nine oh nine. Production on the Federal "E" one cumulative to July one, sixty-two hundred and fifty-three barrels. "E" number two cumulative to July one, twenty-three thirty-nine, and well "E" number three potentialled at forty-seven point twenty-five barrels of oil and nine barrels of water. Total production from our three wells, eighty-five ninety two. The gas oil ratio of the Queen, two hundred sixty-five to one, and water production approximately thirty percent. All wells are pumped. These wells were set through perforated and factured with ten thousand gallons of oil and ten thousand pounds of sand. We estimate the proven acreage at six hundred forty and believe the well should be drilled at forty acres per well. We have no evidence of water or gas coning or of water drive. That concludes the information on the Queen.

Q Now this application is for a dual completion. Do you have a diagrammatic sketch of the proposed dual?

A Yes, I do. I have a simplified diagram.

Q Will you have that marked as Exhibit number 6 please? Would you discuss Exhibit number 6?

A At the time that we had the show in the Yates, we felt there was some possibility that could be a dual so seven inch casing was run and set at thirty-one forty-one feet which was the

total depth of the well. We perforated the Queen zone three oh nine oh to three one one eight and perforated the Yates zone two five eight two to two six eight four and set a Baker Model "D" permanent type packer at twenty-six thirty. Two strings of two and three-eighths inch "E.U.E." tubing were run, the lower string landed at thirty-one eighteen, the upper at twenty-six oh four, or in effect, to the base of both producing horizons. The top of the cement was at nineteen hundred and eighty-three feet.

Q Now, this type of dual completion, in your opinion is adequate to protect the producing horizons from commingling?

A Yes, it is.

Q Does it enable you to make any necessary tests or work overs that may be indicated in this well?

A Yes, we can, short of large tool work overs in the lower zone. Of course, at that time we would have to drill out the permanent type packer.

Q You stated that the Queen is presently being pumped. Does this type of completion enable you to operate your pump equipment satisfactorily?

A Yes, it does.

Q Now, in your opinion, is this an economical completion and in the interest of conservation and the prevention of waste?

A Yes, I believe it is. These wells in the Queen are at the best a little more than just commercial. Their production now is about thirty barrels a day with about fifteen barrels of

water and I believe that there will be more Queen wells produced and more Queen oil produced if these duals are allowed in the area.

Q Now, what production do you anticipate from the Yates?

A Yates at the present time has indicated an ability to flow; however, history of the Yates in the area would indicate that after a short period of time we should follow the usual decline and be on the pump.

Q Now the application is also an application for the commingling of the production from these two zones in this well, is that correct?

A Yes.

Q Is the lease ownership common throughout?

A It is, sir. It is a Federal lease.

Q Are the overriding royalties common?

A Yes, sir, they are.

Q And how do you propose to handle your commingled production from these wells?

A With both zones producing some water, we will install two heater treaters and we propose installing a single Dump meter and measure the other zone.

Q In which zone would you install the Dump meter?

A I believe it would be installed probably in the Queen zone because I believe there would be more stability to the oil with the low gas oil ratio.

Q Go ahead and and discuss your --

A We felt in the interest of economy that going through these heater treaters at the treating temperatures we use which would be something between one twenty and one thirty degrees, we would have an effect of fairly stabilized oil and shrinkage in the tank would be of such small amount it wouldn't cause inequality in production between the two zones; so we propose to install this single Dump meter and measure the other zone in the tank.

Q It be measured in the tank?

A The difference, yes.

Q Now, with that type of completion, or commingling set-up, would you be able to make tests of your two zones?

A Yes, we could.

Q And would you be willing to test the meter for accuracy as required by the Commission?

A Yes.

Q Now in the event the Commission did not see fit to approve the proposal for use of one meter only, are you willing to install meter equipment on both zones?

A Yes, we are.

Q Would you accept an order from this Commission?

A Yes.

Q Setting forth that?

A Yes.

Q In connection with your operations, do you anticipate any

difficulty on account of corrosion?

A No, we do not. The history of corrosion has been rather light in the Queen and Yates production. These crudes are very dark but a fair gravity and I would not class them as sour crude.

Q The crude characteristics of the two zones are substantially, are the same, are they not?

A Yes.

Q Commingling would have no effect on the gravities, would it?

A Very little.

Q What do you propose to do in the disposal of gas in this area?

A We have not made an analysis of the gas; however, Quees gas in the area carries a pretty heavy nitrogen content, and unless it was considerably different than the usual, I would think that we are faced with venting all the gas in this field.

Q There would be no market available for it, that is correct?

A No, sir.

Q Do you have anything to add, Mr. Anderson?

A No, sir, I believe not.

Q Were Exhibits 1 through 6 prepared by you or under your direction?

A Yes, they were.

Q At this time we would like to offer Exhibit 1 through 6.

MR. UTZ: Without objection, Exhibit 1 through 6 will be

entered into the record.

MR. KELLAHIN: That completes the direct examination.

MR. UTZ: All right.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Anderson, I believe you said what the initial potential was of the Queen zone, did you not?

A Forty-seven point twenty-five, I believe.

Q Did you take a drill stem test on the Yates zone?

A No, sir, we drilled it with cable tools and we did test it with cable tools. We recovered approximately fifteen gallons of oil per barrel on a Bayler test.

Q You know it will make at least that much, but how much more you are not sure?

A No, sir.

Q Are both of these crudes sour?

A I wouldn't, I don't know exactly what the pipeline, how the pipeline classes them, but I would not class them as sour.

MR. PAYNE: They are less than forty degrees, aren't they?

A Yes, they are.

MR. UTZ: You wouldn't class them as sweet either, would you

A No, I wouldn't. Off the record.

(Discussion off the record)

Q Do you plan to use corrosive resistant meters?

A Yes, we do, plastic lined.

MR. UTZ: Any other questions of the witness?

MR. PAYNE: Yes.

BY MR. PAYNE:

Q Mr. Anderson, would you give me a brief resume of the evidence that you have that indicates to you that these are two separate common sources of supply?

A That there are two separate zones?

Q Yes, with no communication between them?

A You mean naturally, or did you mean with this hook-up?

Q Well, there is going to be communication, of course, at the well bore when you drill a well, but I mean naturally, what leads you to believe there is separation between these two producing horizons?

A Well, the well was drilled with cable tools and we had this free oil in the Yates at approximately twenty-six hundred and we tested it at considerable length because we were a little surprised to find it, and we went ahead and drilled to the Queen, and we had a slight increase in oil in the Queen, and then when we completed, we completed the Queen first, and if we had been in connection with the Yates which seems to be the stronger of the two zones, we would have yielded more oil than we did from Queen

because the Yates proved to be the stronger of the two zones; so I would conclude from that that our cement was, had effected the shut off between the two zones.

Q The gravities are very similar, are they not?

A They are and so are the waters although you will note that the bottom hole pressures are different.

Q And the gas oil ratios?

A And the gas oil ratios.

Q Are there any other duals in this area producing from these two?

A No, in the drilling of the wells which include four wells, in the section to the north, one well in the section to the northeast and one well in the section to the southeast, there have been, there has been nothing more than just a show in the casing, this is the only well that had any quantity of Yates oil.

Q So that none of these other adjacent wells, none of them are perforated in the Yates and the Queen?

A No, two old abandoned wells to the west and number six both had shows in the Yates but not of sufficient quantities to test.

Q You feel this is just a small undesignated Yates pool?

A I do, sir. I can't see how -- We will make something like that, just about, probably not to exceed one hundred sixty acres.

Q You say the Yates is stronger in this well?

A Yes, the porosity is greater on the neutron log than the

Queen, and I have not figured the gradient, but I believe the bottom hole gradient is higher. I believe it is, I would have to take time to work it out.

Q Mr. Anderson, could you tell me generally speaking what the lithology is between these two zones?

A From the top of the Yates to the Penrose or lower Queen, as you can see from the well logs, there are series of shales and sand, some little dolomite stringers, the reservoir, of course, as usual in the sand are evident by the development of sand beds as you can see. On these gamma ray neutron logs, as the sand develops it is very noticeable, and that's where you find the oil field in the Queen. If you can just get the sand development usually, if you can get nice sand development, it will carry oil, just a small amount of structure. Now the well in section seven did have a hole full of water in the upper Queen, but didn't test the lower Queen; so you might feel that in any place up dip from these wells that do have water, if you can get sufficient sand development, you will have a good field in the Queen.

Q Has it been your experience generally that there is a pretty tight barrier between the Queen and the Yates.

A Certainly. A lot of competent rock between the two. Some very dense stringers as evidenced by these neutron logs.

Q What do you propose now in the way of surface casing?

A The original wells were drilled with cable tools and drilled to the top of the salt, rather into the top of the salt,

and eight and five-eighths casing set with fifty sacks of cement. We will then drill eight inch hole to the bottom and run either four and a half or, in the case of this well, seven inch. I might add that section number one was a part of the base lease wherein an assignment was made - strike that. Section number one is a part of the large base lease, a portion of which is in the potash area, and in the course of the assignments, this section one was drawn into the potash area although it is not actually within the prescribed limits, but through the leasing angle, it because potash land and we have an exception from the potash section for entire section one so we were not required to follow the potash cashing program.

Q It is in the potash area as defined by the United States Geological Survey rather than by this Commission?

A Well, it fell into this area through a legal technicality, that an assignment from a base lease that is in the potash area throws the whole base lease under the jurisdiction of the potash area, while it is not potash productive so there was an exception granted.

Q By the United States Geological Survey?

A Yes, which brought us to this casing program which is common to the areas outside the potash area.

Q Now, in the event there are other wells drilled in this lease, you are only proposing to commingle the Queen production and the Yates production from this one well?

A Yes. I'll correct that, from the three Queen wells and this one Yates well.

Q I see. You couldn't anticipate any more Yates wells?

A Well, we hope for some more. And if we did, we would, of course, wish to commingle those wells also.

Q Now in this Culwin Pool, the producing horizon is the Queen?

A Correct. The Culwin Pool was originally established many years ago by a Karper Vandergriff in Section six produced some twelve thousand barrels of oil and was abandoned.

Q Now, would you explain to me again why you expect a very small amount of shrinkage?

A Well, generally speaking, when you pass crude through a temperature and pressure change, you tend to stabilize the crude, you release most of the entrained gas. Of course, it depends upon how much temperature and how much pressure, but if you were stacking high volatile crudes, that's the way you do it, by taking the pressure drops and by heating the crude you liberate the gas and the final liquid that comes off is what you would call a stabilized liquid. You reduce the shrinkage in the tanks. Low gravity crudes isn't enough of a problem or economic enough to do anything about it, and I personally feel, or we feel, that in going through a heater treater at one hundred twenty or thirty degrees with a small amount of production which gives you considerable time lag in the meter, by the time it reaches the dump type valve, it is

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript by me and/or under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal, this, the 12th day of September, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1753, heard by me on Sept. 2, 1959.

Examiner
New Mexico Oil Conservation Commission