BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 3, 1961

IN THE MATTER OF:

Application of The Atlantic Refining Company for permission to commingle the production from two separate pools and for an automatic custody transfer system. Applicant, in the above-styled cause, seeks permission to commingle the oil proudction from the Denton-Wolfcamp and Denton-Devonian Pools from all wells presently completed or hereafter drilled on the State "T" Lease, comprising the SE/4 NW/4, E/2 SW/4 and SW/4 SW/4 of Section 2, Township 15 South, Range 37 East, Lea County, New Mexico. Applicant further seeks permission to install an automatic custody transfer system to handle said commingled production. Case 2209

BEFORE:

Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Case 2209.

MR. MORRIS: Application of The Atlantic Refining Company for permission to commingle the production from two separate pools and for an automatic custody transfer system.

MR. BRATTON: Howard Bratton, Roswell, New Mexico, appearing on behalf of the applicant. I have one witness and ask that he be sworn.

(Witness sworn.)

HAROLD T. FROST, JR.

called as a witness, having been previously duly sworn, testified

as follows:

DIRECT EXAMINATION

BY MR. BRATTON:

Q State your name, address, and occupation, please.

A Harold T. Frost, Jr. I am production engineer for Atlantic Refining Company in Midland, Texas.

Q Have you previously appeared before this Commission as an expert witness?

A I have.

Q Are you familiar with the area and the matters concerned in Case 2209 before the Commission?

A Yes, sir.

Q Referring to your Exhibit A, the plat of the area, will you explain the location of the area and the nature ofthe request in this case, Mr. Frost?

A We are requesting permission here to commingle production from the Wolfcamp and Devonian Pools on our State "T" Lease, shown on the plat. This lease comprises the SE/4 of the NW/4, E/2 of the SW/4 and the SW/4 of the SW/4 of Section 2, Township 15 South, Range 37 East.

Q On the plat that is marked as Exhibit No. 1, are the wells involved depicted there?

A The wells are depicted, the four Wolfcamp wells and the four Devonian wells are depicted with a small circle around the location.

Q Is there anything else you care to point out in connection with that plat?

A We are also seeking permission to install an automatic custody transfer system to transfer the oil to the pipeline.

Q In connection with the commingling of this production have you prepared a summary of production data showing the gravities and the selling prices of the oil separately and commingled?

A Yes, sir.

Q We ask that be marked as Exhibit No. 2, and will ask you to explain what it shows?

A We have listed here the average production from each zone for the months of July through December of 1960. We also show the gravity of the Devonian crude over a three-month period to be 45.2 and the average gravity of the Wolfcampt at 33.8. We have calculated the average gravity of the combined crude to be 44.9 degrees. With the selling price ofthe crudes we do not anticipate any loss will result.

Q Actually there would be a little increase in overall revenue, would there not?

A Yes, according to our calculations there will be an increase in the revenue from the Devonian due to removing the penalty for 45 gravity oil.

Q Referring, Mr. Frost, to your statement which you have prepared as Exhibit No. 3 in this case, and the attached figures, will you explain, first, the proposed commingling operation?

A Figure 1 shows the schematic of the proposed method of commingling. We have flow lines from each well coming into a test manifold. From there, each well may be produced into the test separator or into a separator for the Devonian, or a separator for the Wolfcamp. Check valves prevent commingling ahead of the separators. On the outlet of each separator we propose to install a meter and a sampler, and then combine the three streams into a common treating system. At such time as the water production becomes too high for accurate metering we can add a free water knock-out ahead of the meter and sampler. From the common treating system we produce into our power oil tanks, from which the produced oil over flows into the stock tank. From the power oil tanks we will draw our power oil for our hydraulic pumping through a battery of triplexes. On the discharge of the triplexes we will have a meter for each zone plus a test meter for testing individual wells. From the surge tank we will go into the custody transfer unit.

Q Referring to your proposed LACT unit, refer to your figure No. 2 and explain what it shows?

A This starts out with a surge tank. It has a low level and high level control switches to control transfer of the oil. The transfer pump delivers oil to the pipeline. Following that is a BS & W monitor and a three-way three-position diverting valve. At any time the crude contains more BS & W than is permitted by the pipeline, delivery to the pipeline will be automatically stopped and the crude will be routed back through the treating system.

Delivery to the pipeline will be recommenced whenever the crude meets pipeline specifications. Following the diverting valve is a strainer to remove any solid particles that might interfere with meter accuracy. Then, we have a sampler that is pulsed by the counter on the meter so that the samples obtained will be proportional to the amount of oil passed through the system. The samples will be contained in a pressure-type container. P.D. meter will be equipped with set stop counter to prevent overrunning a scheduled monthly allowable of the lease. This counter must be manually reset each month. The meter will also be equipped to stop transfer of oil in the event of a meter failure or if the flow rate drops below the preset minimum. This is also a lock-out function and must be manually reset. We have a four valve meter proving loop, two in-line valves with a vent valve between. A back pressure valve maintains pressure in the system above the vapor pressure of the crude, and a check valve prevents any back flow from the pipeline to the system.

Q How about your control panel; isthere anything you care to explain with reference to it beyond what is contained in your statement?

A The low level switch holds all circuits in the custody transfer system locked out until the oil level returns to the high level switch. At this time the pump will start and transfer oil again. Manual override will be provided to start the system if the level is between the two switches in the surge tank. We will pro-

vide an overflow tank in addition to the surge tank to be of sufficient capacity to handle all production during unattended operation in the event of failure of the transfer system.

Q Have you obtained the approval of the pipeline purchaser?

A Yes, they are agreeable to this custody transfer system.

Q That is depicted in Atlantic's Exhibit No. 4, letter from Gulf?

A From Gulf Refining Company.

Q Is there anything else you care to explain in connection with either your proposed commingling or proposed ACT unit?

A Maybe I better go back on the commingling and explain the allocation of oil. The custody transfer system will meter the total production from the lease during the month. We will meter all power oil used in the hydraulic pumping system by reservoir. We will obtain a metered volume of produced oil, water and power oil from each reservoir. We will also obtain samples proportionate to the rate of flow in each reservoir. From these meter readings we can then determine the amount of oil production from each reservoir. All meters will be capable of being calibrated against a test tank at any time.

Q Is there anything further you care to explain in connection with any of these exhibits, Mr. Frost?

A I believe not.

Q Were Atlantic's Exhbits 1 through 4 prepared by you or under your supervision?

A Yes, sir.

MR. BRATTON: We offer Atlantic's Exhibits 1 through 4 in evidence.

MR. NUTTER: Atlantic's 1 through 4 will be admitted in evidence.

MR. BRATTON: We have nothing further at this time.

BY MR. PAYNE:

Q What is the total daily production from these two pools?

A The oil?

Q Yes, sir.

A It is about a thousand barrels per day.

Q How much storage do you have?

A You mean under the proposed system?

Q Yes.

A We will have two 1,000 barrel tanks plus the additional storage in our two power oil tanks.

Q What is the maximum unattended period on this well?

A About 16 hours per day.

Q In the event of a malfunction, you are using your additional storage capacity to produce that oil; you are producing it into your additional storage?

A That's correct.

Q And you don't shut the wells in at the header, or at the wellhead?

A There is no provision for least shut in. They will pro-

duce into additional storage.

Q Are all your lines above ground?

A To the best of my knowledge, they are. I am not real positive of that.

Q As I understand it you are going to meter the production before separation; is that right?

A No, after separation, before treating for water removal.

Q You meter it before water removal or afterwards?

A Before water.

Q That is why your total oil is the metered volume times the percent oil?

A Yes, sir.

Q Does power oil shrink?

A I would think it would not. The shrinkage would have already taken place in the power oil tanks.

Q If it did shrink you might end up producing too much from either pool?

A That could be. At the present time all of the Wolfcamp are on pump and two of the Devonian are on pump. All will be hydraulic pumps.

Q Are any of the wells marginal?

A I believe one of the Wolfcamp wells is marginal.

Q Is there any way under your proposed installation that oil could inadvertently be coming from the Wolfcamp and be credited to the Devonian, or vice versa?

A No.

Q How about through this calibration line?

A It would already have been metered there. The only place I can see would be if the pumper gets mixed up on which zone he is testing through the test separator.

Q Has Atlantic considered the possibility of using a portable test separator rather than having the actual installation?

A We hadn't considered that in this case because all of the separators are already installed.

Q It is possible, then, that oil from one zone could be credited to another if he turned the wrong one, or when he was testing?

A If he wrote down the wrong zones on his test.

Q Are these fluids corrosive?

A They are not considered very corrosive, no, sir.

Q You don't propose to install corrosion resistant meters?

A No, sir.

BY MR. NUTTER:

Q Mr. Frost, the lines in the battery that are indicated on this exhibit, F gure No. 1 here, are these all of the lines that will be installed?

A I don't show the gas lines on here.

Q Are these all of the lines that will be carrying oil?

A That should be all of them.

Q You show this calibration line coming in right in the

middle of the meter. Where does that actually hook on?

A That is a mistake on there. That should come from downstream of the meter.

Q In other words, that ties in just downstream of the meter?

A Yes, sir.

Q What type of meters will those be?

A On the separators?

Q Downstream from the separator.

A The Devonian, it will be a turbine-type meter. Actually, both of them will be turbine-type meters.

Q Would you go into a turbine-type meter a little bit, please?

A It is basically, I consider it, similar to a P.D. meter except that it has a much higher capacity than a P.D. meter.

Q It is not actually a positive displacement meter though?

A No, it is not. It is a turbine set in the line, and then there are various mechanisms to convert the speed, rotation of the turbine, into barrels or gallons or whatever measurement is desired.

Q The density of the fluid would affect the number of rotations a turbine would have as the fluid passed through it, would it not?

A I think it would somewhat. I don't think it would as much as it will in a P.D. meter. It is based more on velocity of flow through it.

Q It would be a combination of velocity and density, wouldn't it?

A Yes.

Q This oil has not been treated yet when it passes through this meter, so it does have water in it?

A Water and oil.

Q Water plus dead power oil?

A And produced oil.

Q You mention that the set-stop counter which would be on the ACT unit would prevent the loss from over-producing its allowable. Is there any set-stop counter anywhere on that that would prevent either of the zones from overproducing its allowable?

A No, sir.

Q These turbine-type meters, are they non-reset meters?

A No. They were strictly a registering meter.

Q Can they be reset?

A Yes, they can. The counter on those will be essentially the same as the types used on the P.D. meters on custody transfer units without the non-reset feature.

Q You said you would have available space in your power oil tanks in event of a malfunction of the ACT. The power oil tanks normally are operating rather full and overflow from the power lines; that goes into the surge tank?

A Yes, sir. They will have about two to three feet in the top which is not full.

Q The overflow tank out here at the ACT is normally empty?

A It will normally be empty.

Q And the surge tank has capacity from the high level switch on up to the top of the tank, normally?

A Yes, sir.

Q The least amount of storage it has is from the high level switch on up?

A That is the minimum. Normally it will be more than that.

Q What level in this surge tank will the high level switch be installed?

A That will be in the center of the tank.

Q So you would have approximately 500 barrels of storage in there, and a thousand barrels in the overflow tank, total of 1500 and your production per day is approximately a thousand. Is this attended seven days a week, sir?

A Yes, sir.

BY MR. PAYNE:

Q Do you intend to complete any more wells on this lease?

A At the present time I don't know of any intentions to drill any more wells.

BY MR. NUTTER:

Q All the 40's have a Wolfcamp and Devonian producer on them, don't they?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Frost?

BY MR. MORRIS:

Q Your sampling procedure here is a pretty integral part of figuring the production of oil, is it not?

A Yes.

Q You state samples are to be taken at regular intervals. That is a statement here in Exhibit 3. I just wanted a little clarification by what you meant by regular intervals?

A The sampler will be paced by the counter on the meter, so that the sample will be proportional to the amount of fluid passing through the meter.

BY MR. NUTTER:

Q Are you referring to the sampler on the ACT or packer?

A I was talking then about the production meters. Actually, it would be true of all of them.

Q They are all pulsated by the meter itself.

MR. PAYNE: It is not continuous sampling, then?

MR. NUTTER: Continuous intermittent?

A If we have continuous flow it would be continuous sampling.

MR. NUTTER: Anything further of this witness? Do you have anything, Mr. Bratton? Witness may be excused. Does anyone have anything they wish to offer in Case 2209? Take the case under advisement and call 2210.

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

I, JUNE PAIGE, 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 10th day of March, 1961.

June Paige
Notary Public - Court Reporter

My Commission expires:

May 11, 1964.

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EXHIBITS

NUMBER	EXHIBIT	IDENTIFIED	OFFERED	ADMITTED
Ex.#1	Plat	2	7	7
Ex.#2	Production Data	3	7	7
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I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2209, heard by me on 3-3, 1961.

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