BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1667

TRANSCRIPT OF HEARING

MAY 12, 1959

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

BY MR. BRATTON:

Q Will you state your name, by whom you are employed?

A T. O. Davis, with the Atlantic Refining Company.

Q And in what capacity are you employed, Mr. Davis?

A Regional petroleum engineer of Atlantic Rocky Mountain region, headquarters at Casper, Wyoming.

Q As such, do you have jurisdiction over San Juan County, and over the particular lease in question?

A Yes, we do.

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

A Yes, I have.

Q In this case, Mr. Davis -- excuse me --

MR. BRATTON: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir.

Q In this case, you are asking, Mr. Davis, for lease automatic custody transfer facilities covering Atlantic's Navajo lease in Township 31 North, Range 16 West?

A That is correct.

(Whereupon, Atlantic's Exhibits were marked for identification.)

Q Referring to what has been marked Atlantic's Exhibit A, will you explain what that is and what it shows, Mr. Davis?

A Well, the area outlined in red is Atlantic's Navajo

Lease and Horseshoe-Gallup Field. This lease is comprised of Sections 29, 30, 31, and 32, and portions of Sections 28 and 33, which lie within the Navajo Indian Reservation. This is a four-section lease. Atlantic is the only working interest owner, and the Navajo Indian Reservation is the only royalty owner. There is no overriding royalty on the lease.

Q Is all the production from the Horseshoe-Gallup on the lease, Mr. Davis?

A All the production is from the Gallup formation.

Q Is development taking place on this lease currently?

A Yes, we have two rigs working now. We have completed around 35 wells and development is taking place on 40-acre spacing. We are presently completing around three or four wells per week.

Q Are all the wells on the lease now producing into a central tank battery?

A Yes, all of the wells on this lease are producing into one tank battery. The Commission's Order No. R-1288, Case No. 1542, allowed us to produce all these wells into one battery. We do have three separation and test stations on the lease. One is located just adjacent to the central storage. Test station two is located in the approximate center of this four-section lease, and test station No. three is up in Section 30, on the northeast side. At present, the flow lines from individual wells enter these separation and test stations, gas is separated at the test stations, and crude oil passes down to the central storage

facility. We do have adequate facilities for testing wells. At present, we can test three wells per day, which would be 90 tests a month, and at the most we could have 64 wells on this lease.

Q Where do you plan to install the automatic custody transfer facilities?

A This LACT unit we propose to install will be located at the central storage battery in Section 32.

Q And will your automatic custody transfer unit have any effect on your test station?

A No, it will have no effect whatsoever on the test station. It will only concern the method in which oil is moved to the pipeline. We propose to do it automatically instead of manually, gauging tanks as we do at present.

Q I refer now, Mr. Davis, to Exhibit B, and ask you to explain what it is and what it shows?

A Exhibit B is a schematic diagram of the proposed LACT installation. At present, at our central battery, we have four one-thousand barrel tanks and one two-thousand barrel tank. We propose to use the two-thousand barrel tank as a working tank and to use the four one-thousand barrel tanks as wet oil storage tanks. On this drawing, oil from the separation stations will enter the two-thousand barrel tank, and this is shown as green lines entering from the right and left side of the drawing. Also, from the bottom of this tank oil will leave the working tank and will pass through the LACT unit to the pipeline. In the

event the LACT units detect wet oil, the well oil will be automatically routed back to the four one-thousand barrel tanks, and then recirculated through a treater. That is shown as a red line on this drawing. At present, we don't have any wet oil problem on the lease. All the wells produce pipeline oil, so the wet oil possibility is something that will come up in the future. Now, if you will look at Exhibit C, Exhibit C is a schematic diagram of the LACT unit proper. The two-thousand barrel tank, as I mentioned, is the working tank. This tank has three switches on it. The switch in the middle, switch F3 is used to start delivery of oil to the pipeline. When the oil level reaches F3, delivery will start. Then when the oil level in the tank is pulled down to F4, delivery will stop, and the fluid will fill up again to F3, and the cycle will be repeated. In the event F3 doesn't work, or in the event the pump is not pumping oil to the pipeline as fast as oil is entering the working tank, the fluid level will continue to rise in this tank and switch F2 will be actuated. When that happens, approximately one half of the wells in the field will be shut down electrically. Now, you might ask why we are only shutting in half of the wells, and the reason we are doing this is to maintain full gas pressure for treaters, for various valves and controls and for power-driven equipment. In the event the fluid level continues to rise above F2 with only half the wells producing, there is an equalizer line not shown on this drawing, but there is an equalizer line above F2 which will equalize over into the four one-thousand

barrel tanks. We have adequate storage in the four one-thousand barrel tanks for approximately two and a half days with half the wells producing, so this will be no problem, particularly since a pumper will be on duty every day.

Now, to go on through the LACT unit; oil leaves the bottom of this tank and passes through the unit. This is a PD meter type installation. It has the same basic components as other installations of this type which have been approved in New Mexico. It is essentially the same as the one Shell Oil Company obtained approval for in the Permian Field. To save time, I won't go into detailed description of all the components, but I will mention them briefly. Going from left to right, a pump is provided to deliver this oil to the pipeline, a strainer will take out large particles from the well stream to prevent plugging the meter. An air eliminator is provided to remove any free air or gas that might be in the stream. A BS&W probe detects water in the oil stream, and this will be diverted back to wet oil storage in the event that is detected. We have in this unit we are proposing two PD meters in parallel. The reason for that is to have one meter as a standby in event of malfunction of the other meter. These are temperature compensated meters. This is a sweet crude in this field, and we don't anticipate any corrosion difficulties. I mentioned that one meter is a standby, and that doesn't mean that we intend to produce oil through only one meter all the time and let the other one stand idle. In practice, we will probably produce one meter one

week and the other one week to maintain both meters in adequate working order. We have provided a calibration loop, and we will suggest that the meters be calibrated monthly as the Commission has specified in other places. A sampler is provided, a proportional sampler, which will take a small sample out of the stream for every ten barrels that pass through the unit. A back pressure valve is provided to maintain a small pressure in the meters and to govern the rate of the centrifical pump.

Now, back to the meters. We do have several safety features on the meters. Right above each meter, between the meter and its counter, we have a transmitter which will transmit pulses back to a control panel, and on the control panel we do have an allowable set stop counter where the month's allowable can be set, and the unit will shut down when this allowable is made. We don't necessarily think this is necessary, but this is the first unit that Atlantic has put in, and we are providing this on this first unit. We have a cumulative non-reset counter on the panel. The purpose for that is to provide another counter in the event we had mechanical difficulty with one on the motor. We also have a low flow safety shutdown; if the rate through the meter is below its accuracy range this unit will automatically shut down.

I would like to mention that this will be an electrically operated lease, and all the controls and equipment will be electrically operated.

Q So that if you have a power failure, the whole lease

will shut down?

A That is correct. It will shut down, and then when the power comes back on, the lease will start right up where it left off.

Q Is there anything further you'd like to say with regard to the installation itself?

A I can't -- no.

Q Have you taken this matter up with the U.S.G.S.?

A Yes, I have. I have a letter which -- a photostat of the letter from John Anderson, which is Exhibit D, in which they approve of this installation.

Q Why are you proposing this installation, Mr. Davis? What are the advantages of it?

A Well, we have three main reasons why we want to install this unit. One, we think we will get greater accuracy from the LACT unit than we presently obtain by manually gauging tanks. Two, we think we will get at least a one degree API gravity increase. We will get this because the oil will not stay in storage as long as it ordinarily would, and we reduce evaporation. Also, with a gravity increase, there is a volume increase, and this benefits the operator and royalty owner, and it prevents waste and, therefore, is a conservation measure. Three, we think there will be some labor savings benefits.

Q All of this production is coming off of the same lease?

A Yes, sir, only one lease is involved.

Q In your opinion, will the granting of this application prevent waste and protect correlative rights?

A Yes, sir.

Q Were Exhibits A, B and C prepared by you, Mr. Davis?

A Yes, they were.

MR. BRATTON: We would like to offer Exhibits A through D in evidence.

MR. NUTTER: Atlantic's Exhibits A through D will be admitted in evidence in this case.

(Whereupon, Atlantic's Exhibits were received in evidence.)

Q (By Mr. Bratton) Do you have anything further you would like to say in regard to the application?

A No, I can't think of anything.

MR. BRATTON: No further questions.

MR. NUTTER: Does anyone have any questions of Mr. Davis?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Davis, I didn't quite understand how your low pressure shutoff switch works in the event of a line break or malfunction.

A Actually, we don't have a low pressure shutoff switch in the event of a line break. Actually, the LACT unit does not affect any of the supervision in the other parts of the field. We will continue to have the same pumper supervision over wells and flow lines and test stations, et cetera, that we would under a manual operation. The LACT unit affects only the method in which oil is transmitted to the pipeline.

Q Let me ask you this, are these flowing wells?

A No, sir, these are all pumping wells. They are low pressure wells, and it's been our experience that you very seldom have a flow line break on a pumping well. I think probably Atlantic operates something over two thousand pumping wells, and we've never seen any justification for installing a low pressure shutdown switch for line breakage; it is something that very seldom happens.

MR. PAYNE: Thank you.

QUESTIONS BY MR. NUTTER:

Q Well, Mr. Davis, you stated that if switch F2 were activated by a high fluid level in the surge tank, that you would shut down one half of the wells on the lease?

A Yes, sir.

Q Now, where are these wells shut down, at the well itself or at the header where they come into the test station?

A We will install an electrical generator right near this tank battery. This generator will generate electricity for

all the wells on the lease, and F2 will break a circuit to half of the wells right at this generation station.

Q And these wells will be operated by electric motors?

A Yes, sir.

Q And you will just cut the power to the electric motor at the generation panel?

A Yes, sir.

Q So there is no pressure buildup, when the wells are shut down, there is no pressure buildup on the flow line, is there?

A No. We are cutting the primary prover off to the wells, so there would be no pressure buildup.

Q Would you explain how this meter calibration leg works, Mr. Davis?

A Yes, sir. If you will see the meter loop on Exhibit C, the valve down stream of the riser will be closed, and a prover tank, a portable prover tank will be connected to the line going down toward your right.

Q Yes, sir, I see it on your drawing.

A So that to calibrate a meter, we will close the down stream valve and open the valve on the riser and deliver oil into this prover tank.

Q What volume of prover tank will you use for calibrating these meters?

A We will contract all of our calibrations. The pipeline requested that a third party do this work, and I'm not

sure what volume the prover tank is. I think it is ten barrels.

Q I see.

A It's the same company that performs calibrations on the Shell unit in Bisti, I believe.

Q Are there any warning signals or such that can warn the pumper on the lease in the event that trouble occurs in here?

A Yes. First of all, we have a panel board, a master panel board in the pumper's dog house, which has indicating lights on it, and the pumper can determine by looking at these lights if the unit is working as it should. In the event he is not in the dog house but is on another part of the lease, in the event of malfunction, there will be a rotating beacon light, an elevated light which will come on and the pumper can see this light from any position on the lease. If the pumper is not present when a malfunction occurs, the unit will shut down. It has various safety guards to shut itself down.

Q Now, you presently have these four one-thousand barrel tanks installed there, is that correct?

A That is correct. We also have the two-thousand barrel tank installed.

Q And even though you are making pipeline quality oil now, these four one-thousand barrel tanks will be hooked into this system immediately, is that right?

A That is correct.

Q And the normal status of those tanks will be empty?

A That is correct.

Q So you will have four thousand barrels of storage there in the event of failure of the LACT unit?

A Yes, sir.

Q What does a test station actually consist of, Mr. Davis?

A A test station consists of two separators and two meters. One separator, which we call the production separator, will normally handle all the wells entering that test station except one. That separator will remove gas and send the oil through a meter to the central storage facility. The other separator, with meter, is for testing individual wells. Again, the gas is vented and the oil passes through the test separator meter on to the central storage facility.

Q How many wells could flow into each of the three test stations?

A Approximately twenty. However, we are considering, and I think we will install one more test station, which would be about four, would be four test stations for sixty wells.

Q And you plan to divide the wells up more or less equally among the four test stations?

A We would try to do that, yes.

Q At any rate, it will be possible to get a test on each well that is connected to each test station at least once a month?

A Yes, sir, very easily.

MR. NUTTER: Are there any further questions of Mr. Davis? If there are no further questions, he may be excused.

(Witness excused)

MR. NUTTER: Does anyone have anything further they wish to offer in Case 1667? We will take the case under advisement and the hearing is adjourned.

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 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 18th day of May, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph G. 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. 1667, heard by me on 5-12, 1959.

..., Examiner
New Mexico Oil Conservation Commission