EXAMINER HEARING
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 9, 1958

IN THE MATTER OF: Case No. 1418

TRANSCRIPT OF PROCEEDINGS

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IN THE MATTER OF:

Application of Shell Oil Company for an exception to Rule 309 of the Commission Rules and Regulations. Applicant, in the above-styled cause, seeks an order authorizing the transportation, prior to measurement, of oil produced on its E. W. Mudge No. 4 Lease, comprising All of Sections 21, 28, 33, and 34, to its L. M. Phillips No. 2 Lease, comprising the S/2, NE/4, and Lots 1 and 2 of Section 4, N/2 Section 9, SW/4 and E/2 Section 10, All Section 15, N/2 and SE/4 Section 22, and W/2 Section 27, all in Township 25 North, Range 12 West, San Juan County, New Mexico. Applicant further seeks authority to commingle the Production from each of said leases after separately measuring said production by means of positive displacement meters.) Case 1418

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: The next case on the docket will be Case 1418.

MR. PAYNE: Case 1418: Application of Shell Oil Company for an exception to Rule 309 of the Commission Rules and Regulations.

MR. SETH: We have two witnesses, please.

MR. KELLY: I would like to know what the procedure is going to be according to the docket from now on. What case will be heard next?

MR. UTZ: We had a request, due to previous engagements of the attorneys in Cases 1413 and 1418 and the Cities Service case

which I postponed this morning until after lunch, Case 1356; as soon as those cases are heard, we'll come back to 1412 and proceed from there. Are you in a hurry to get away?

MR. KELLY: No, I had some other things I could be doing.

MR. UTZ: You may proceed with swearing the witnesses, please.

(Witnesses sworn.)

DONALD JACOBSEN

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

DIRECT EXAMINATION

By MR. SETH:

Q Will you state your name, please, and your position?

A My name is Donald Jacobsen, division mechanical engineer, Shell Oil Company, Farmington Division.

Q Have you testified before the Commission at a previous hearing?

A No, I have not.

Q Would you give us a little background on your educational qualifications, your experience?

A I received a Bachelor of Science in Mechanical Engineering from the University of California. I have been employed by Shell approximately ten years, during which time I have been engaged in drilling, production, and field facility operations. Currently I'm the division landman in Farmington, and have been for three years;

previously I was in California.

Q Are you familiar with the application in this Case 1418?

A Yes.

Q Are you familiar with the mechanical system in the Bisti Field of which this is a part?

A Yes, these facilities were constructed under my supervision.

MR. SETH: May he testify as an expert?

MR. UTZ: His qualifications are acceptable.

Q Have you prepared a plat or map showing the proposed facilities?

A Yes, I have.

Q Will you tell us what this plat shows?

A This is a plat showing the two contiguous leases, the E. W. Mudge No. 4 Lease, and the L. M. Phillips No. 2 Lease. The Mudge Lease consists of all of Sections 21, 28, 33, and 34, in Township 25 North, Range 12 West, San Juan County, New Mexico.

The L. M. Phillips No. 2 Lease consists of Lots 1 and 2, the South Half, the Northeast Quarter of Section 4, the North one-half of Section 9, the Southwest one-quarter and East one-half of Section 10, All of Section 15, the North one-half and the Southeast one-quarter of Section 22, and the West one-half of Section 27.

Q Now referring to the application, would you state briefly what the proposal is with reference to Exhibit No. 1?

A We propose to transport the oil from a lone single well

on the E. W. Mudge 4 Lease to an existing point of shipment to the Four Corners Pipe Line through the means of a 4,000 foot 2-inch surface laid line. At the existing station we will install separate metering facilities and gas separating facilities for this one well, which is Government 41-21, and we'll commingle that with the production from the L. M. Phillips Lease and ship it to the Four Corners Pipe Line through our existing ACT installation.

Q Are both these leases Federal leases?

A That's right.

Q Are the royalties the same?

A To my knowledge, I have been informed they are the same.

Q What are you doing with the oil from the Mudge Lease well at the present time?

A We are presently trucking the oil to our Carson Unit Central Plant, and there we are shipping it to the Four Corners Pipe Line Company. We have a portable temporary 250-barrel tank located at the site of Government 41-21.

Q Has the Automatic Custody Transfer arrangement system been previously approved by the Commission?

A That is correct. It will be the same system approved by the Commission in the July hearing.

Q Is this an extension of the same manner of handling the oil, that is, by a closed system?

A That is correct. It will be very similar to the system we will employ for our non-participating wells going into the partici-

pating area in the Carson Unit.

Q How does it differ from that system?

A Well, the only difference is we are coming off two separate leases, rather than being from the participating to the non-participating of this certain unit.

MR. COOLEY: Would you repeat the answer?

A In this case we have two separate leases, the E. W. Mudge 4, and the L. M. Phillips 2. This is different from the non-participating and participating area of the Carson Unit.

Q Now in the proposed system --

A Do you want me to explain a little further?

MR. COOLEY: We can ask him on cross examination. I don't understand what he means by the latter statement.

Q This proposed system, the oil will be taken from Mudge lease and it will be metered off the lease, is that correct?

A That is right.

Q How does that compare with the proposal that was made in Case No. 1275 with reference to non-participating wells?

A Well, the 1275 Case, we took oil from outside the participating area and we took it into facilities which existed inside the participating area of the Carson Unit, whereas here we have two definite distinct leases involved. The other was somewhat hypothetical because it was formed by the area boundary line.

Q How many wells on the Mudge Lease?

A Just the 41-21, and we anticipate no drilling in the near

future.

Q Have you prepared a diagram showing the proposed location of the facilities?

A Yes.

Q Referring to what has been marked as Exhibit No. 2, would you state, please, what that shows?

A It shows the existing form of our central plant on our L. M. Phillips Lease with just the essential portions there. There are more facilities, but we left them out so it wouldn't be crowded on the drawing. In the dotted lines it shows the proposed system where we will bring the 2-inch flow line from the Mudge, and we will go through a testing station that will consist of a regulator, gas meter, separator, and sampler; and then this flow of oil will then go to the downstream side of the existing station at No. 15 L. M. Phillips. It will then go to the surge tanks, and if necessary to the heater treater, and then to the Automatic Custody Transfer installation to the Four Corners Pipe Line.

Q Under this proposal as shown on Exhibit 2, are there separate testing and metering facilities for the Mudge well?

A Yes, we will put in a distinctly independent separate metering station which Mr. Kempton will describe in further detail.

Q The difference being, and the exception is asked for the reason that these facilities, although separate, will be located on the Phillips Lease?

A Yes.

Q Adjacent to the existing facilities?

A Yes, that is correct, the reason being we will have an existing plant and we will therefore have a common place where the man can observe it. We have an existing connection to the Four Corners Pipe Line Company, and when we do make arrangements to sell the gas, we will have an existing point to sell the gas, rather than have both these companies extend their systems down to this one well.

Q Is there anything further you would like to mention?

A No, I think we should mention the United States Geological Survey.

Q I mean as to the mechanical system, is there anything further on that that you would like to state?

A No.

Q You mentioned, I believe, both these were Federal leases. Have you made application, or requested the United States Geological Survey to consider this proposal?

A Yes, we have made application and received their approval for the system.

Q Referring to what have been marked as Exhibits 3 and 4, state what those are.

A No. 3 is the letter to the United States Geological Survey in Roswell, in which we briefly describe the system I described here, asking their permission;and their return letter of March 3rd in which they grant this permission to meter and ship as indicated.

Q In your opinion will the use of this closed system as distinct from lease tanks and the trucking transfers, will it result in a conservation of oil and gas?

A Yes, sir.

MR. SETH: I believe that's all the direct we have.

MR. UTZ: Any questions of the witness? Mr. Nutter.

CROSS EXAMINATION

By MR. NUTTER:

Q Mr. Jacobsen, has the system which was authorized by the Commission last July for the Phillips No. 2 Lease been installed?

A The test station and the Automatic Custody Transfer have been. The test stations have been in operation, due to the use of them in line fill. The ACT have not because we have not shipped on a continuous basis.

Q You are using the test station but transferring the custody of the oil by means of tank, to date?

A That's right. We anticipate in the very near future to start full-scale operations to the Four Corners line, at which time we will use the ACT units.

Q You say the royalty ownership under the Mudge is the same as under the Phillips?

A That is correct.

Q For all practical purposes, could these be considered one lease, if Shell had so desired?

A That's right.

MR. NUTTER: I believe that's all.

By MR. UTZ:

Q Did that last statement include overriding royalties, too?

A The way I understand it is Federal leases with the cross filing of the overriding royalties.

Q So the overriding royalties are the same?

A Yes.

Q Do you anticipate drilling more wells on the Mudge 4 Lease?

A We at this present time do not; however, if we were to drill more wells, then it would enter into an economic problem as to how many wells we would need to have the Four Corners line extended down to the Mudge property.

Q All you are asking for is authorization to transport oil from one well to the Phillips Lease?

A That's right.

Q Is this Mudge 4 Well a flowing well?

A No, it is not. It has a pumping unit driven by a gas engine on it.

MR. UTZ: Any other questions?

By MR. NUTTER:

Q Is the Mudge Lease essentially completed as far as development is concerned?

A At this time I am not in a position to say it is. I don't think it is. I hope we have more production, but the well is a very small producer. It will be some time before we extend our

development on that property.

MR. UTZ: Any other questions?

By MR. COOLEY:

Q Mr. Jacobsen, will another witness testify as to the mechanics of the proposed installation?

A The details of the test station, yes, sir.

MR. COOLEY: I have no questions.

MR. UTZ: Does anyone else have a question of the witness? If not, the witness may be excused.

(Witness excused.)

MR. SETH: We would like to offer Exhibits 1 through 4, if the Commission please.

MR. UTZ: Is there objection to the entrance of Exhibits 1 through 4 in this case? If not, they will be accepted.

MR. SETH: I call Mr. Kempton.

LARRY C. KEMPTON

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

DIRECT EXAMINATION

By MR. SETH:

Q Will you state your name and position, please?

A Larry C. Kempton, mechanical engineer with Shell Oil Company.

Q Have you testified before the Commission --

A No, I have not.

Q -- in previous hearings? Tell us your formal education

and your experience, please.

Q I received a Bachelor of Science degree from the University of Arizona in June of 1953, and since that time have been mechanical engineer with Shell Oil Company; and the last five years that I have been with Shell, most of the time has been with field facility equipment similar to this case.

Q Have you had practical experience with similar facilities in California and elsewhere?

A Yes, I have.

Q What are your duties at the present time?

A Field facilities engineer for the Farmington Division, designing the facilities and equipment similar to this proposed here.

Q Have you participated in the design of this equipment?

A Yes, I did.

Q And the preparation of diagrams?

A Yes.

Q Are you generally familiar with the application in this case?

A Yes, I am.

MR. SETH: May he testify as an expert?

MR. UTZ: His qualifications are acceptable.

Q Have you prepared a drawing showing the facilities proposed to be installed?

A Yes, sir, I have.

Q I hand you what has been marked for identification as

Exhibit 5, and would you please state what that shows?

A This drawing shows the test facilities which will serve the Mudge 4 Well and which will be physically located at the L. M. Phillips central plant.

Q Exhibit 5, the facilities thereon relate only to the Mudge wells?

A This is separate facilities to serve only the Mudge 4 Well.

Q Would you describe briefly the flow?

A Well, on the flow diagram, the oil comes in the 2-inch flow line from the well directly into the spherical separator.

Q You are referring to the drawing in the upper left-hand corner?

A The upper left-hand corner. The oil comes into the spherical separator, the oil comes out of the separator into the automatic sampler; the automatic sampler that will be used, it is intended that this sampler will be an electrically operated MacFarland sampler piston and sample container. Then the oil comes into an A.O. Smith Model APM tube piston-type oil meter and on down the 2-inch line, and then is commingled with the oil from the test stations on the L. M. Phillips Lease.

Q Is this type of meter, is that one customarily used in an installation of this character?

A Yes. This is the meter that Smith makes for oil rates up to approximately 750 barrels per day, which will be well within the range of this well.

Q Is that the same manufacturer of meters that you were using and propose to use on the rest of the system?

A Yes, the custody transfer meters are larger size Smith meters.

Q Now, the sampling device and method, is that one that is customarily used in this type of facility?

A We propose to use the same sampling device that we will use on our automatic custody transfer installations.

Q Will you run through the gas flow, briefly?

A The gas comes from the top of the separator through a positive displacement gas meter and then the pressure is held on the separator by a back pressure regulator, and the gas flows into a common line with the gas from the L. M. Phillips 2 Lease.

Q Is this the type of separator that's in regular use at the present time?

A Yes, this is the common separator that we are using on all of our test station facilities. The gas meter is the positive displacement type. There are four compartments and two diaphragms in the meter, so that the four chambers are alternately filled and exhausted, giving a positive displacement and positive metering. It also has a pressure compensating device so that it reads directly in standard cubic feet.

Q Are these facilities over-all, then they are similar to those installed in the Bisti under Case 1275, is that right?

A The major components are the same as we will have for our

test facilities on our test stations, so that in addition to being useful here, if we do drill more wells on the Mudge 4 Lease at a later date and decide to expand the facilities for that lease, this equipment will be salvageable for use on that test station.

Q Is there anything further on that Exhibit 5 that you would like to mention?

A Well, we have meter prover connections so we can use a volumetric type prover tank similar to the one that is to be used on the custody transfer meters.

Q What about calibration of the meters, how frequently do you recommend that be done?

A Initially we plan to calibrate the meters once per month and then I think our experience can determine whether that is frequent enough or too frequent, after we got a few months experience.

Q Is there anything further on that exhibit you want to discuss?

A Let's see, about the only other thing, both the oil and gas meter have a direct reading counter installed on the meters themselves so that the pumper can read the production whenever he is there.

Q Are you familiar with the topography in this general area?

A Yes.

Q Describe it briefly, what it is, between this facility and Mudge No. 4.

A The topography between L. M. Phillips and the Government

41-21 Well on the Mudge 4 Lease is flat right through that particular area.

Q The proposed flow line is some 4,000 feet in length?

A Approximately 4,000.

Q Is that, would you say, an excessive length or average length?

A Longer than the average that we have in the Bisti Field, but we have several that would be longer. I don't think it is excessive.

Q Do you anticipate any mechanical problems in connection with the flow line or the metering facilities?

A No, I do not.

Q You have an additional diagram?

A Yes, I have one more diagram, which shows a detail of the gas meter.

Q Now, referring to what has been marked as Exhibit 6, would you describe what that shows, please?

A Well, referring to the drawing, in the lower left-hand corner it shows the gas flow coming from the top of the separator for the Mudge 4 Well through the positive displacement gas meter and on out the other side; on top is shown the Hemm corrector, which gives pressure compensated reading and also shows the counter, showing mcf per day, or just mcf going through the meter. The detail in the lower right-hand corner shows the automatic condensate traps which will automatically bleed any condensate from the meter,

so that we don't get inaccuracy due to condensate building up in the gas meter.

Q Does this show the direct reading feature of the meter on this diagram?

A Yes, it does.

Q Is there anything further on Exhibit 6 that you want to mention?

A I don't believe so.

Q Is there anything further in connection with the system as a whole you would like to explain?

A No, I don't believe there is anything else.

MR. UTZ: Any questions of the witness? Mr. Nutter.

CROSS EXAMINATION

By MR. NUTTER:

Q I note that this meter is called an A. O. Smith oil meter and sampler. How does this device sample the oil?

A The sampler that we intend to use is not mechanically connected to the meter. We will use a three-way cellunoid valve, which will be weighted by an impulse transmitter on the meter itself so that every barrel, approximately every barrel we will get an impulse to the three-way cellunoid, which will let a sample of oil be drawn from the line into the MacFarland piston, and then when the cellunoid is de-energized, the oil will be vented from the sampler piston into the sampler container by use of the three-way cellunoid valve.

Q You say a sample is taken for each barrel?

A On the custody transfer meters, that is the case. These will probably be the same.

Q In other words, this is an automatic size batch sampler, and the size of the batch is relatively small?

A It is adjustable, it is small.

Q What disposition is made of the condensate which accumulates in the gas meter?

A It's tied into our drain line from the test station, and at the present time is run to the counter.

MR. NUTTER: That's all.

MR. UTZ: Any other questions? Mr. Cooley.

By MR. COOLEY:

Q Mr. Kempton, this metering from the Mudge Lease will be after it is separated and after all foreign matters are extracted. Will the meter reading be 100 percent oil?

A No, it will not. The meter reading will be, the oil meter will read all total liquid produced from the well. The gas meter will read the total gas produced from the oil. The amount of clean oil will be determined by the sampler.

Q Are you aware whether any water is produced from the Bisti wells?

A The average cut on the Mudge 4 Well, this Government 41-21 Well, is approximately one to two-tenths of one percent at the present time. It has been produced only a short time.

Q Does Shell have any reason to anticipate that that cut will substantially increase?

A I don't think we could say at the present time. Some of the other wells are higher than that, although they are all quite low at the present time.

Q Would the meter measure water if it were produced?

A Yes, it would.

Q This wouldn't be a very effective set-up in the event the water cut was very large, would it?

A Yes, I think it would, because the sampler will tell you what percentage of the total liquid measured by the meter was clean oil and you can take your factor to determine how much clean oil was produced from the well.

Q They would have, the amount of oil would have to be calculated rather than actually measured as pure oil, would it not?

A It would be calculated.

Q Are any facilities set up in the automatic equipment to shut the well off when it makes its allowable? What provisions can be made to keep the well from overproducing?

A You mean automatic provisions?

Q Are there any automatic provisions at all to shut the well off when it makes its allowable?

A We don't have any facilities installed now that would do that. The pumper could watch the meter and shut the well down, since it is a low producer, or if we wanted to make it automatic,

decided that it should be automatic, that could be done by tying it in with the counter on the meter itself.

Q Since this is a pumping well, it will necessitate a pumper visiting the well about once a day, won't it?

A I don't know that it will need to be that often or not. It will have to be determined by practice. We don't have much experience in this field yet.

Q In answer to Mr. Seth's question a while ago, considering the relative lengths of the flow lines, you would say this was considerably longer than average, wouldn't you?

A I think the average in this field is somewhere around 2,000 feet.

Q How long is this one?

A Four.

Q Are there any provisions made in this automatic equipment which would indicate a break or malfunction or leak or something of that order in the flow line?

A A pressure switch could very easily be installed in the flow line which would shut down the pumping unit in the event of line break.

Q Would that be feasible in this case?

A Yes, it would. It probably would be a worthwhile thing to install.

Q Are you at liberty to commit Shell as to whether they would be willing to do so or not?

A We would be.

MR. COOLEY: That's all the questions I have. Thank you.

MR. UTZ: Mr. Kempton, can you adjust the pump on the Mudge No. 4 so that it will not produce 125 percent more than its daily allowable?

A Yes, I think we could.

MR. UTZ: Any further questions of the witness? If not, the witness may be excused.

(Witness excused.)

MR. SETH: I would like to offer Exhibits 5 and 6.

MR. UTZ: Is there objection to the entrance of Exhibits 5 and 6? If not, they will be accepted.

MR. SETH: We have nothing further.

MR. UTZ: Any further statements? If not, the case will be taken under advisement.

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C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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 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 3rd day of May, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1959.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1418, heard by me on April 8, 1958.

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