BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
MAY 4, 1961

EXAMINER HEARING

IN THE MATTER OF:

CASE 2264 Application of United States Smelting Refining and Mining Company for an oil-gas dual completion and for permission to commingle the production from two separate pools. Applicant, in the above-styled cause, seeks authorization to dually complete its Federal 11-20-34 Well No.1, located 1980 feet from the North line and 2130 feet from the West line of Section 11, Township 20 South, Range 34 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Bone Springs formation adjacent to the Lea-Bone Springs Pool and the production of gas from an undesignated Pennsylvanian pool through parallel strings of 2-inch tubing.

BEFORE:

Daniel S. Nutter, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: We will call next Case 2264.

MR. MORRIS: Case 2264. Application of United States Smelting Refining and Mining Company for an oil-gas dual completion and for permission to commingle the production from two separate pools.

MR. WHITE: Charles White of Gilbert, White & Gilbert,

appearing on behalf of the applicant. We have one witness to be sworn at this time.

(Witness sworn)

(Whereupon, Applicant's Exhibits Nos. 1 through 7, were marked for identification)

WILLIAM C. DAUGHERTY,

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

DIRECT EXAMINATION

BY MR. WHITE:

Q Mr.Daugherty, would you state your full name, for the record, please?

A William C. Daugherty.

Q By whom are you employed and in what capacity?

A I am employed by United States Smelting Refining and Mining Company. I am manager of production.

Q Have you previously testified before the New Mexico Oil Conservation Commission or one of its Examiners as a petroleum engineer?

A No, sir, I never have.

Q Will you briefly state your educational background and your professional qualifications?

A I was graduated from the University of Tulsa in 1942 with a B.S. degree in petroleum engineering. I have worked fifteen and a half years for two oil companies in the capacity of engineer

and production supervisor. I can break that down a little bit more, if it's necessary. I worked fourteen years for Mobil Oil Company, five years in the capacity of engineer and district engineer, and then nine years in various production supervisor's jobs, and I have been a year and a half in my present employment.

Q Are you familiar with the subject application?

A Yes, sir.

MR. WHITE: Are the witness' qualifications acceptable?

MR. NUTTER: Yes. Please proceed.

Q (By Mr. White) Will you briefly state what the applicant proposes in the subject application?

A We propose, or would request to commingle two producing zones in our Federal No. 1 Well in Lea County, New Mexico. We would like to commingle the Bone Springs crude oil production with the Pennsylvanian gas production.

Q Will you refer to your ownership plat, marked Exhibit 1, and describe the location of the subject well and the acreage dedicated to it?

A The subject well in question is the Federal No. 1. It is located 2130 feet from the West line, 1980 feet from the North line of Section 11, Township 20 South, Range 34 East. Our acreage covers the west half of that Section, and it is approximately 320 acres.

Q What acreage is dedicated to the well?

A The acreage dedicated to the well, it's the south half

of the northwest quarter, which will be 80 acres.

Q Will you refer to Exhibit No. 2 and explain your proposed dual completion?

A On Exhibit No. 2, we drilled our well to 14,619 feet, and had hoped to make a Devonian well, but on drill stem test, though, we recovered 14,000 feet of sulphur water, so we plugged back to 13,300. First of all, we set casing, 7-inch casing, at 14,360, and that casing was cemented with 1150 sacks of cement, and was sufficient cement to come back to the D.V. Collar at 10,562. When we opened the Collar, we did get some trace of cement back to the surface, so I feel that the cement is very close to the D.V. Collar. Then, we cemented the second stage with 650, and the top of that cement came back to 6750, and that was by temperature survey. Since we didn't have any Devonian zone, why, we perforated our Bone Springs zone from 10,158 to 10,166. There's 8 feet of perforations there. When we completed the well, we set it up in such a manner that should the Commission grant us this request, we will be in a position to go down and perforate the Pennsylvanian zone from approximately 13,034 down to 13,094. Those are the extreme limits. We have not perforated yet. Like, I say, depending on the outcome of the hearing.

The well is now completed with a Baker Model "D" production packer at 12,850, and a Baker Model "K" double grip packer at 10,000 feet, and is completed with two strings of 2 3/8-inch tubing parallel strings. We have a Cameron dual Christmas Tree head

on top of the well.

Q How much money have you expended on this well at the present?

A We have approximately seven hundred thousand dollars in the well to date.

Q Is the Bone Springs presently producing?

A Yes, sir, Bone Springs is presently producing through the perforations shown.

Q Is it able to make its present daily allowable?

A And is making its present daily allowable of 167 barrels a day.

Q Will you refer to Exhibit 3, and explain the reservoir characteristics of both zones?

A The potential tests on the Bone Springs, it flowed 205 barrels of new oil in twenty-four hours on a 40/64 choke, with tubing pressure 75 pounds. The initial gas-oil ratio was 340 to 1. However, we have a current ratio now of 5,042, which, I feel, is a more reliable gas-oil ratio, because we have checked it two or three times. It is a sweet crude and is producing through perforations 10,158 to 10,166. Bottom hole pressure on the zone taken from drill stem test in thirty-minute shut-in was 3097.

The only information I have on the Pennsylvanian zone is from a drill stem test we took from 13,018 to 13,109. The tool was opened one-half hour, and we had gas and water blanked to the surface in twenty minutes. It flowed 7.336 million cubic feet of

gas per day at that rate, 7.3 million. That was on a 1-inch choke, and tubing pressure, 22[illegible]. We did recover 38[illegible] feet of distillate in the drill pipe, so we feel sure that it will probably produce somewhere in the range of 7[illegible] to 100 barrels of distillate, probably, a day. We took a seventy-five minute shut-in pressure, and it was 67[illegible].

Q Considering the pressure differential between the two reservoirs and the equipment and the method of installation that you propose, is it your opinion that there will be no communication between the zones?

A Yes, sir.

Q How do you intend to test your packers for any leakage?

A We will take what I consider probably a conventional packer leakage test. We would shut both zones in and let them come to equilibrium and then put a dual pen recorder on the surface, and then flow one zone and let it stabilize and observe the pressure on the other zone, and then shut both in again, and let that one zone build back up and flow the other zone and see if there is any communication flowing one zone with the other one shut-in. We'll have a dual pen recorder chart to offer as evidence at the time.

Q Will you refer to Exhibit 4, and briefly explain that, please?

A On our sonic log, on the small scale, I have all the tops in the well zones, of course, briefly, the two we're

interested in will be the Bone Springs. It just shows our perforations from 10,158 to 10,166, and then our proposed perforations down here just below 13,000. There's almost some 3,000 feet difference between the two zones. However, all the tops in the well are marked on the log.

Q Now, referring to the commingling aspect of the case, what fluids do you propose to commingle and from what zones?

A We propose to commingle production, crude oil production, from the Bone Springs zone, and distillate from the Pennsylvanian zone.

Q Will you explain your proposed installation by referring to Exhibit 5?

A On Exhibit 5 you will notice some dotted lines and also some solid lines. The solid lines are what we now have presently installed at the well location, and our Bone Springs zone now is producing through the low pressure separator shown, and then into the two 400-barrel tanks. What we would do, if we were granted this request, we would come out of our Pennsylvanian zone with our high pressure gas, and go through a high pressure separator. The liquids from the high pressure separator then would go through a metering separator, and then into a header with the Bone Springs zone, and that would give us flexibility to where we could either mix our Bone Springs production and distillate, and put them in one tank, or we could, by manipulating our header, could run them in separate tanks. It would give us a check on the meter any time

that there was any doubt about the meter or check the meter out periodically by means of the header. Of course, we could put each zone in separate tanks, and would have positive check against the meter. The gas from the high pressure zone, we hope to have an outlet for it, a gas sale outlet. We have two people that have given us firm offers. Warren Petroleum Company and Phillips both are interested in buying the gas, and then, too, we plan to use part of it to gas lift the Bone Springs, but rather than pump from that depth, why,we would run gas lift valves on our string so we're in a position to gas lift when the time comes.

Q In conjunction with Exhibit 5, will you explain Exhibit 6, please?

A Exhibit 6 is a type of separator that we propose to install on the Pennsylvanian zone. It's manufactured by Black, Sivall & Bryson, and it's known as a vertical metering separator. I think it's been widely used in the industry for several years.

Q Have you found it satisfactory?

A Yes, I have.

Q In your opinion, will there be adequate tankage facilities?

A Yes, sir. I believe we have adequate tankage.

Q Do you anticipate the production in the Bone Springs to remain approximately the same, subject, of course, to formation depletion?

A Yes. It's making top allowable now, and it, of course,

won't be any greater, and probably will fall off, as time goes on.

Q What economic savings will be accomplished by commingling these fluids?

A On Exhibit 7 there, I have estimated what it would cost us to put in separate storage facilities for the Pennsylvanian zone to handle that distillate, and have estimated it to be in excess of forty-five hundred dollars. However, if we could commingle and use this metering separator, we could probably put that installation in for, say, twelve hundred dollars, and there would be a saving of thirty-three hundred seventy-two dollars, estimated. Naturally, we feel that we should try to save every dollar we could since the well will probably never pay out, and one of our strong reasons for wanting to commingle is to just save this additional expense and money since we have so much invested in it already.

Q Are the royalty interests common throughout?

A Yes, sir, they are.

Q How about the working interests?

A The working interests are common throughout.

Q Will the selling price of the commingled crudes equal or exceed the separate selling price of the crudes?

A The selling price will equal the present price we have. There will be no change in price. We are being paid on a fixed firm price now, and even though the gravity of our crude will go up, why, it will not benefit any in price.

MR. WHITE: At this time we offer the Exhibits.

MR. NUTTER: Your applicant's Exhibits 1 through 7 will be entered in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 7 were received in evidence.)

MR. WHITE: That completes our examination on direct.

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

MR. MORRIS: Yes, sir, I have a couple.

MR. NUTTER: Mr. Morris.

CROSS-EXAMINATION

BY MR. MORRIS:

Q You don't propose any metering of the Bone Springs production, is that correct?

A Yes, sir, that's correct.

Q How much expense would be involved in placing a meter on the Bone Springs?

A About six hundred twenty dollars. To meter the Bone Springs we would need what they call a metering chamber, that's five hundred forty dollars, and then the labor and materials to install it. So, approximately six hundred twenty dollars.

Q In the event the Commission should grant this application, but require a meter on the Bone Springs line, would you be willing to install such a meter?

A Yes, I'd be willing to install it. I might reiterate again, though, with our two tanks, we can probably have almost a

constant check on the Bone Springs, except when we need to top one out and put both zones together. I feel like even though we had just a metering separator on the Pennsylvanian, the production on the Bone Springs is going to be real constant, and, of course, we can have a check on it just every few days, if necessary. But, to answer your question, we would put it in if it were required.

Q As you may be aware, Mr. Daugherty, the Commission, at present, has appointed a committee to study all phases of commingling, an industry committee. Would you be willing to conform your installation to the minimum requirements that might be adopted following the report of this committee?

A Let me see if I understand you correctly. In other words, when the committee comes out with the regulations, would we change to adapt to it?

Q I'm assuming, for the moment, that the Commission has granted the application in some form or another with certain restrictions.

A Yes.

Q Additional restrictions may be placed on your installation as a result of the committee's recommendation. Would you be willing to conform at that time or forego the authorization?

A Yes, sir. We'd be happy to cooperate in any manner, because I understand your problem too.

Q Now, Mr. Daugherty, how much shrinkage do you anticipate in handling the Pennsylvanian distillate as it goes through this

set-up, as you have got it here --

A Oh, --

Q -- percentagewise?

A I can't answer your question. I'm afraid.

Q There will be some, though, will there not?

A Yes. I will say this, that we will be operating our high pressure separator 1500, and then it will go through the low pressure meter separator. The gravity of the distillate on the Pennsylvanian is not high, it's not as high as a lot of distillate. It's about a 47.2 distillate. There will be some weathering of it, I'm sure, percentagewise, though. I really can't answer your question.

Q So any loss in the distillate, presumably, you are going under this set-up; as you propose it, you are going to make up from what would amount to overproduction of your Bone Springs, would it not?

A No --

Q In other words, you are going to sell your allowable. Any shrinkage that comes along, you are going to have to make up from somewhere, and it's going to have to be made up from the Bone Springs?

A Of course, I am assuming the Pennsylvanian zone will be a gas, and that we will be permitted to have an allowable of whatever distillate it produced, and not have a fixed figure.

Q That's correct. But you are going to have an allowable

on your Bone Springs production?

A Yes, sir.

Q Here's what I'm getting at, how are you going to hold back your Bone Springs allowable to the figure of the allowable without a meter on your Bone Springs line?

A Well, I see your question. Of course, that's where we could run it into a tank. I mean that would be where we would produce straight from the separator into a tank by itself. We'll know from its flowing characteristics, it should be pretty constant. Now, on the shrinkage on the Pennsylvanian zone, of course, when we install this metering separator, why, it will be necessary to run the fluids through the metering separator against the tank, and then calibrate the meter, you know, on the metering separator after the weathering takes place over here in the tank. If you end up with 50 barrels over here, then you have to keep checking and calibrating your metering separator until it checks out against your tank extrapolation. I feel that the Bone Springs should be real steady and should produce at a constant rate, and that, of course, the oil we get from the Bone Springs, well, then, the distillate from the Pennsylvanian zone will just be added to it.

MR. MORRIS: Thank you. I have no further questions.

BY MR. NUTTER:

Q Mr. Daugherty, the gravity on the distillate from the Pennsylvanian is 47.2, you say?

A Yes, sir.

Q How about the Bone Springs, what's the gravity there?

A 42.

Q So this Bone Springs oil is getting top price, I presume, is that correct?

A No. We're only being paid on the basis of sour crude price. It's an intermediate price, 34 degree gravity. It's West Texas sour crude posting is the price we're being paid.

Q Well, is it top price for sour crude?

A Yes, sir, I believe that's right.

Q With no penalty for --

A We're being paid at 34 degrees.

Q There's no penalty for high gravity, however, is there, on 42 gravity?

A No, sir.

Q How about the distillate from the Pennsylvanian? Will you get a penalized price on that due to the 47.2 gravity there?

A No, sir, I don't believe so.

Q Who will the purchaser of the distillate be?

A Tidewater.

Q Into Texas-New Mexico Pipeline?

A Into Texas-New Mexico Pipeline. See, the price is based at 40 degrees, and then, of course, they penalized us down to 34 degrees, and that's the price they're paying us, and it is just for 34 degree crude.

Q For the distillate as well as the crude?

A Yes, that is what it will be when the time comes. The gravity is run 41, 42, but we are getting a 34 degree price on it.

Q How about the distillate? Are they going to pay you a 34 degree price on the distillate also?

A Yes, sir.

Q On that drill stem test that you took in the Pennsylvanian, did that cover both of the proposed perforated intervals?

A Let me check that just to see. That was from 23,018 to 109. Yes, it was inclusive of what we planned to perforate.

Q So you won't have any zones open that haven't been tested yet?

A No, sir.

Q What did the calculated GOR on that Pennsylvanian come out to be?

A Just about 100,000 to 1.

Q 100,000?

A Yes.

Q And you estimated that the drill stem flow was 7 million a day or approximately?

A Yes, 7 plus.

Q And the Pennsylvanian will go through a two-stage separation?

A Yes, sir.

Q You stated that in producing this thing, that you would

be able to flow into separate tanks. Actually, you wouldn't be commingling if you flowed into separate tanks, would you?

A No. The only time we would be commingling is when we want to top a tank out and sell it, why, then we would have to put both zones, you know, in the other tank, but there will be quite a large number of days when each zone could be flowed into separate tankage. Not many, because you are always continuing the process of topping out a tank.

Q You propose the installation of two 500-barrel tanks?

A Yes, and I have those on the lease. That's my present storage.

Q Do you propose to drill any more Bone Springs wells?

A No, sir. This 3 feet that we have is the only flowing drill stem test we had in the Bone Springs. There are some sections on the log up the hole which we tested, and didn't get anything but just some oil cut mud, and we'll use them for salvage. But on the basis of this 3 feet, though, we just couldn't afford to drill another well.

Q And this is located, more or less, at the extreme side of your lease, is it not?

A On the east side of our lease.

Q Isn't that right along side that Lee unit?

A Yes, sir, up against the line.

MR. NUTTER: Any further questions of Mr. Daugherty? He may be excused.

(Witness excused)

MR. MUTTER: Do you have anything further, Mr. White?

MR. WHITE: That's all. Thank you.

MR. MUTTER: Does anyone have anything they wish to offer in Case 2264? We will take the case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, 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 machine shorthand 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, the 7th day of May, 1961, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My Commission expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2326, heard by me on 5-4, 1961.

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