STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

9 May 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Union Texas Petroleum Corporation for downhole commingling, Rio Arriba County, New Mexico.

CASE 8184 & 8185

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce
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# I N D E X

MICHAEL R. HERRINGTON



# E X H I B I T S

MR. STAMETS: We'll call next Case 8184.

MR. PEARCE: That case is on the application of Union Texas Petroleum Corporation for downhole commingling, Rio Arriba County, New Mexico.

MR. CARR: May it please the Examiner, my name is William F. Carr with the law firm Campbell, Byrd and Black, P. A., of Santa Fe, appearing on behalf of Union Texas Petroleum Corporation.

We would request at this time that you also call Case 8185 and consolidate them for the purposes of testimony.

MR. STAMETS: Okay, let's call that and we will consolidate those cases.

MR. PEARCE: That case is also on the application of Union Texas Petroleum Corporation for downhole commingling, Rio Arriba County, New Mexico.

MR. CARR: Mr. Stamets, our witness will be Michael R. Herrington and I would request that the record show that he has been sworn and remains under oath and that his qualifications as an expert witness in petroleum engineering have been accepted.

MR. STAMETS: The record will so show.

MICHAEL R. HERRINGTON,

being called as a witness and having been previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q Mr. Herrington, are you familiar with the application filed in this case?

A Yes, I am.

Q Are you familiar with the wells that are the subject of this application?

A Yes, sir, I am.

Q Would you briefly state what Union Texas Petroleum Corporation seeks to accomplish with this application?

A Yes. By this application Union Texas Petroleum Corporation is requesting an order from the New Mexico Oil Conservation Division to give us approval to commingle the Gallup and Dakota production in our proposed Jicarilla G No. 1-E, located in Unit E of Section 1, Township 26 North, Range 5 West, and our proposed Jicarilla G Well No. 8-E, located in Unit I of Section 2, Township 26 North, Range 5 West. Both wells are located in Rio Arriba County, New Mexico.

Q Have you prepared or has there been prepared under your direction and supervision certain exhibits for introduction in this case?

A Yes.

Q Would you refer to what has been marked for identification as Union Texas Petroleum Corporation Exhibit Number One, identify this exhibit and review it for Mr. Stamets?

A Exhibit Number One is a plat showing Union Texas Petroleum Corporation operated acreage in the subject area.

The proposed Jicarilla G Wells 1-E and 8-E are identified by the dark green dots in Sections 1 and 2, Township 26 North, Range 5 West.

The plat further shows existing commingles already approved in the area. Mesaverde-Dakota commingles are indicated in red and Gallup-Dakota commingles are shown in green.

Two geologic cross sections, A-A' and B-B', are identified on this plat by the broken lines and will be discussed in later testimony.

Q What pools do you propose to downhole commingle in this area?

A Referring to Exhibit Number Two, we can see that the existing -- the existing pools in relation to the subject wells. We propose to commingle the Undesignated Gallup, B. S. Mesa Gallup Extension, the Basin Dakota Pool in both the G 1-E or excuse me, the Jicarilla G 1-E is located in the extension area of the B. S. Mesa Gallup Pool, as shown on that exhibit.

Q Is the ownership common in each of the zones to be downhole commingled?

A Yes, the Gallup and Dakota have common ownership in the proposed commingled wells.

Q Will you now refer to your Exhibit Number Three and review this for the Examiner?

A Yes. Exhibit Three is a wellbore schematic of Amoco's Jicarilla Apache 102 Well No. 10 in which Gallup and Dakota are successfully commingled and produced up the tubing using the Dakota gas for lifting energy.

The No. 10 Well is located in Unit M of Section 9, Township 26 North, Range 4 West.

This well was completed by perforating the selected pay zones, breaking each zone down with acid and isolating the two zones while fracing with sand and gelled water during the completion operations.

Q Would you now refer to your Exhibits Four and Five and review these?

A Exhibits Number Four and Five show typical decline curves for the Gallup and Dakota in commingled wells located near the proposed Jicarilla G Wells No. 1-E and 8-E.

In Exhibit Number Four Amoco's Jicarilla Apache 102 No. 10 is shown on the top curve and Consolidated's Hoyt No. 1 is shown on the bottom.

In Exhibit Five our Jicarilla H No. 7 is shown on the top curve and Amoco's Jicarilla 102 14-E is

shown on the bottom curve. Gallup production is shown on the left and Dakota production on the right of each of these exhibits.

We can see that both zones remain constant or increased in production after commingling.

Q Will you now review Exhibit Six?

A Exhibit Six shows the proposed downhole commingling of the Gallup and Dakota in the Jicarilla G Wells No. 1-E and 8-E.

Q All right, Mr. Herrington, would you refer now to your cross sections, Exhibits Seven and Eight, and review these for Mr. Stamets?

A Yes. These geologic cross sections are constructed using electric logs in the area of the application.

These two cross sections demonstrate the continuity of the producing intervals from the area of application to areas where commingling of these reservoirs has been permitted.

We can see the Gallup and Dakota producing intervals occur and correlate throughout this area.

Q Will you now refer to Exhibit Nine and explain that?

A Exhibit Nine shows typical gas/oil ratios in the subject area. It can be seen that the Gallup and Dakota have similar pressure gradients and nearly identical pressures when compared at a common datum.

Q Have you prepared a compilation of bottom hole pressure data for each zone to be commingled in this area?

A Yes. Again referring to Exhibit Nine, we believe that the bottom hole pressures for the Gallup and Dakota presented are consistent with data presented in offsetting wells for commingling.

Q What does this exhibit show as far as the pressures and the differential pressures that you expect will be experienced across the perforatons in each of these zones?

A This exhibit shows a very small difference in pressure gradient in the subject zones and nearly identical bottom hole pressures when corrected to a common datum.

Q Will these pressure differentials result in the migration of gas between zones?

A No. The bottom hole producing pressure should be below any of the individual reservoir pressures, which will not allow cross flow to occur.

Again, if the well is shut in some cross flow may occur as pressure stabilizes in the wellbore, but any gas involved would be recovered when the well is returned to production.

Q Are both the zones to be commingled in the subject wells capable of only marginal production?

A No; however the Dakota proration unit of

the Jicarilla G No. 1 Well is classified as marginal and the proration unit of the Jicarilla G No. 8 Well is underproduced by 12 months under its present -- under its current nonmarginal status and allocation.

Exhibit Number Ten shows production records for wells in the vicinity of the subject wells and indicates average daily rates of 67.7 Mcf and 4/10ths of a barrel of oil per day for the Gallup; 106.7 Mcf per day and 6/10ths of a barrel of oil per day for the Dakota.

Q Are the zones flowing or being artificially lifted?

A These zones both tend to flow and if there were any problem removing produced liquids from the wellbore, plunger lifting or pumping would be easily affected in the commingled well.

Q Have you taken production data and calculated an average rate of production from each zone?

A Yes. In Exhibit Ten we show the average daily rates for the Gallup and Dakota production in the vicinity of the proposed commingled wells.

Q Are you prepared to make a recommendation to the Examiner today as to the allocation of production to each of the commingled zones?

A Yes. Again referring to Exhibit Ten, we show an approximate allocation split, but there again I would recommend that the District Supervisor be consulted and that an allocation be drawn up after drilling and test-

ing of each of the two wells.

Q Would you describe the characteristics and make a comparison of the compatibilities of the fluids produced from each zone?

A Exhibit Number Eleven is a recent laboratory analysis of oil samples from the wells in the area.

It can be seen from the analyst's remarks that no detrimental effects are expected in commingling of the oils and in Exhibit Number Nine we can see that the BTU content of the gases is also very similar and no detrimental effects have been observed in the offsetting wells that have been commingled.

Q Are the reservoir characteristics of these pools such that underground waste will not be caused by the proposed downhole comingling?

A Because of the marginal nature of the Dakota and the Gallup in this area, the proposed commingling will result in additional recovery of hydrocarbons.

Q In your opinion will granting this application result in the increased recovery of hydrocarbons?

A Yes, most definitely. First, the reserves which would be left undeveloped otherwise can be produced, and second, based upon the offsetting wells in which commingling has been approved, increases in production rate have been observed upon commingling.

Q Will the value of the commingled production exceed the sum of the values of the production from

each of the individual zones?

A Yes, it should.

Q Will economic savings result from the proposed downhole commingling?

A Yes.

Q In your opinion will granting this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, it will.

MR. CARR: At this time, Mr. Stamets, we would offer into evidence Union Texas Petroleum Corporation Exhibits One through Eleven.

MR. STAMETS: These exhibits will be admitted.

MR. CARR: I have nothing further on direct of this witness.

MR. STAMETS: Questions of the witness?

CROSS EXAMINATION

BY MR. STAMETS:

Q I presume you're still aware that if you get six times overproduced you have to shut the wells in?

A Yes, sir. We'll be running 5-1/2 inch casing in these wells and if that becomes a significant problem we'll still have the option of doing a conventional slim hole dual in the area.

MR. STAMETS: Any other questions? The witness may be excused.

Anything further in these cases?

MR. CARR: Nothing further, Mr. Stamets.

MR. STAMETS: They will be taken under advisement and if there is nothing further, the hearing is adjourned.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8184, 8185 heard by me on 5-7 1984.

Richard L. Stamets, Examiner
Oil Conservation Division