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2267

Application, Transcript,
and Exhibits, Etc.

**BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO**

**IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:**

**CASE No. 2267
Order No. R-1980**

**APPLICATION OF BYARD BENNETT
FOR PERMISSION TO INSTITUTE
A WATERFLOOD PROJECT IN THE
CAPROCK-QUEEN POOL, CHAVES
COUNTY, NEW MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 4, 1961, at Santa Fe, New Mexico, before Daniel S. Hutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 17th day of May, 1961, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Hutter, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Byard Bennett, seeks permission to institute a waterflood project in the Caprock-Queen Pool in an area comprising the E/2 SE/4 of Section 20 and the SW/4 of Section 21, all in Township 14 South, Range 31 East, NMPN, Chaves County, New Mexico, by the injection of water into the Stella Zimmerman Well No. 2, located in the SE/4 SE/4 of said Section 20.

(3) That a majority of the producing wells in the area to be waterflooded have reached an advanced state of depletion and are properly to be classified as "stripper" wells.

(4) That the proposed waterflood project should be authorized and should be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowables and expansion of the project area, provided however, that injection of water should not be commenced until such time as further administrative approval has been obtained from the Secretary-Director of the Commission.

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CASE No. 2267
Order No. R-1980

(5) That a procedure should be established for obtaining administrative approval to convert to injection wells the Stella Zimmerman "A" Well No. 1, located in the SE/4 SW/4 of said Section 21 and the Stella Zimmerman "A" Well No. 4, located in the SW/4 SW/4 of said Section 21.

IT IS THEREFORE ORDERED:

(1) That the applicant, Byard Bennett, is hereby authorized to institute a waterflood project in the Caprock-Queen Pool in an area comprising the E/2 SE/4 of Section 20 and the SW/4 of Section 21, all in Township 14 South, Range 31 East, EDPN, Chaves County, New Mexico, by the injection of water into the Stella Zimmerman Well No. 2, located in the SE/4 SE/4 of said Section 20.

(2) That injection of water shall not be commenced until such time as further approval has been obtained from the Secretary-Director of the Commission upon application to the Secretary-Director and notice to offset operators.

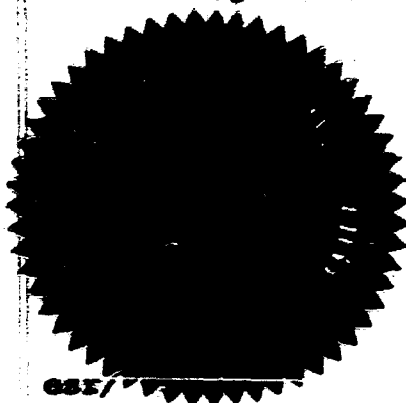
(3) That the Stella Zimmerman "A" Well No. 1, located in the SE/4 SW/4 of said Section 21 and the Stella Zimmerman "A" Well No. 4, located in the SW/4 SW/4 of said Section 21, may be converted to water injection wells upon receiving administrative approval from the Secretary-Director of the Commission.

(4) That the operation of the waterflood project shall be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowables and expansion of the project area, except as provided for in Paragraph 3 above.

(5) That monthly progress reports on the waterflood project shall be submitted to the Commission in accordance with Rule 701 and Rule 1119 of the Commission Rules and Regulations.

(6) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

E. L. Mechem
EDWIN L. MECHEM, Chairman

E. S. Walker
E. S. WALKER, Member
A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

May 18, 1961

Re: CASE NO. 2267

ORDER NO. B-1980

APPLICANT:

Byard Bennett

Mr. Jack Campbell
Campbell & Russell
P. O. Drawer 640
Roswell, New Mexico

Dear Sir:

Enclosed herewith are two copies of the above-referenced
Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC X
Artesia OCC X
Aztec OCC

OTHER

Case 2267

BYARD BENNETT
207 West 3rd Street
Roswell, New Mexico

April 8, 1961

Oil Conservation Commission
State of New Mexico
Post Office Box 871
Santa Fe, New Mexico

Gentlemen:

The applicant, Byard Bennett, is operator of 240 acres in the Caprock Queen Pool, Chaves County, New Mexico. It is purposed to initiate a pilot waterflood upon the lands outlined on the accompanying plat, being the E/2 of the SE/4 of Section 20, and the SW/4 of Section 21, Township 14 South, Range 31 East, Chaves County, New Mexico. The lessee of these lands is Stella Zimmerman and ownership is common to both tracts.

It is purposed to inject approximately 300 barrels of water per day into the Byard Bennett # 2 Stella Zimmerman which is located 990 feet from the South line and 330 feet from the East line of Section 20. This well was completed 6/2/58, pumping 18 barrels of oil and 2 barrels of water per day after sand oil fracture through perforations in 5 1/2" casing from 2867' to 2873'. The total depth of the well was 2882', plug back 2878' and 5 1/2" casing was set at 2879' and cemented with 100 sacks.

The zone of injection, being the Queen formation, is common to all six wells included in these leases.

At the present time it is purposed to purchase water for injection purposes from one of the other water floods adjacent to this area. If a hearing is required prior to approval of this proposal, it is requested that such hearing be given consideration at your earliest convenience.

BYARD BENNETT

By

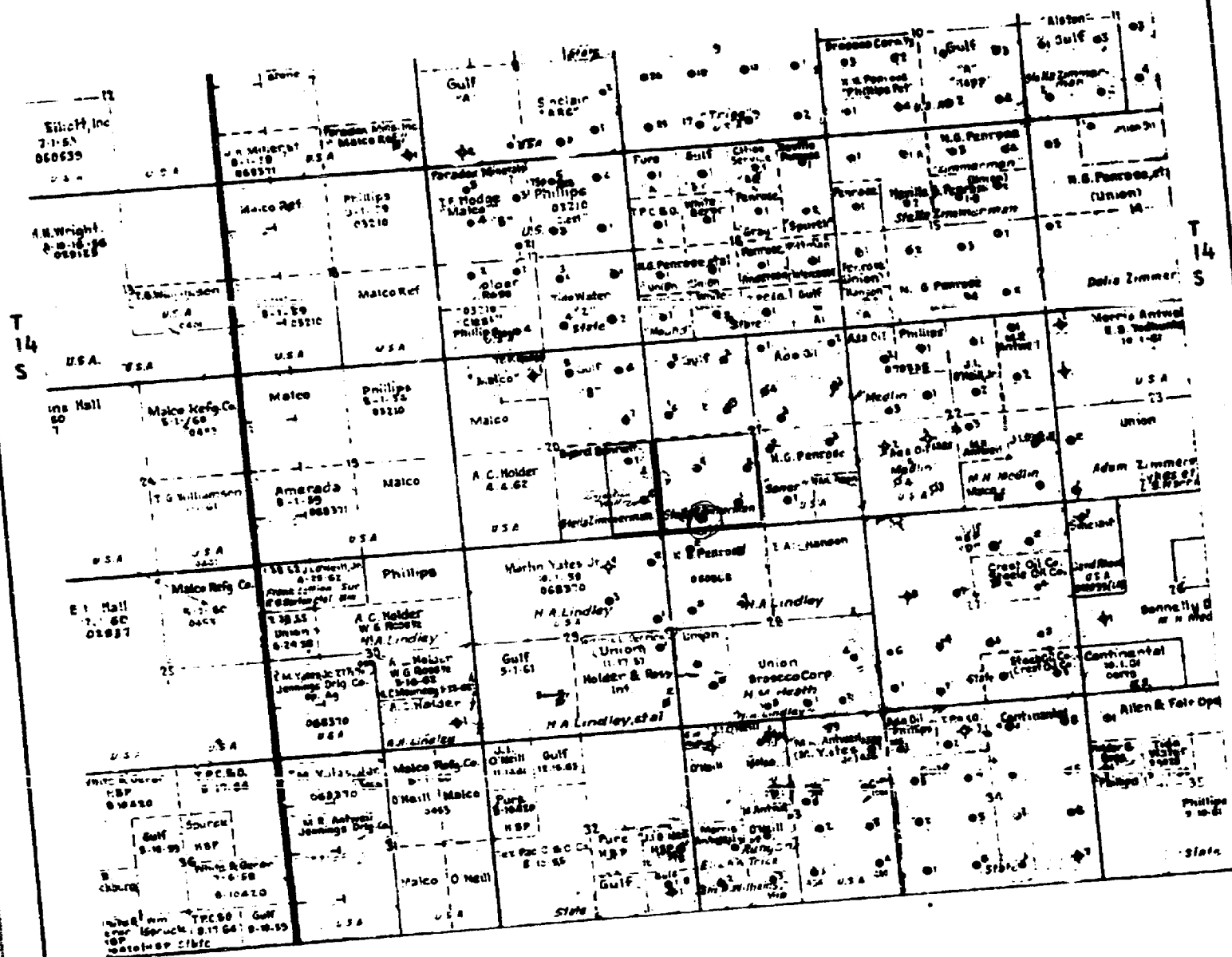

Guy A. Swartz

GAS/sw
Encls.

CC: Mr. Byard Bennett

Handwritten: Received
4-21-61

R 31 E



DOCKET: EXAMINER HEARING THURSDAY, MAY 4, 1961

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, as alternate examiner:

CONTINUED CASE

CASE 2234: Application of Kay Kimbell for an order force-pooling a
320-acre gas proration unit in the Basin-Dakota Pool.
Applicant, in the above-styled cause, seeks an order force-
pooling all mineral interests in the Basin-Dakota Pool in
the E/2 of Section 22, Township 29 North, Range 11 West,
San Juan County, New Mexico, including those of Roy L. Cook
as lessee and various other parties as lessors in the E/2
NW/4 NE/4 of said Section 22.

NEW CASES

CASE 2261: Application of Continental Oil Company for two non-standard
gas proration units. Applicant, in the above-styled cause,
seeks the establishment of a 480-acre non-standard gas
proration unit in the Eumont Gas Pool consisting of the
S/2 and the NE/4 of Section 24, Township 20 South, Range
37 East, Lea County, New Mexico. Said unit is to be dedi-
cated to the SEMU Eumont Well No. 67, located 1980 feet
from the South and West lines of said Section 24.

Applicant further seeks the establishment of a 480-acre
non-standard gas proration unit in the Eumont Gas Pool
consisting of the NW/4 of Section 24, and the SE/4, the SW/4
NE/4, the S/2 SW/4 and the NW/4 SW/4 of Section 13, all in
Township 20 South, Range 37 East, Lea County, New Mexico.
Said unit is to be dedicated to the SEMU Eumont Well No. 69,
located 1980 feet from the North and West lines of said
Section 24.

CASE 2262: Application of V. S. Welch for an unorthodox oil well
location. Applicant, in the above-styled cause, seeks
approval of an unorthodox oil well location in the Culwin-
Yates Pool for a well to be drilled at a point 330 feet
from the South line and 2590 feet from the West line of
Section 29, Township 18 South, Range 31 East, Eddy County,
New Mexico.

CASE 2263: Application of Collier Drilling Company for an exception to Rule 309 (a). Applicant, in the above-styled cause, seeks an exception to Rule 309 (a) to permit the transportation of oil from the Western Yates Lease, comprising the SE/4 NW/4 of Section 20, Township 18 South, Range 28 East, Eddy County, New Mexico, to a separate tank battery located on its Amerada Lease, comprising the NE/4 NW/4 of said Section 20.

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.

Applicant further proposes to commingle the production from both of said pools in said well after metering only the Pennsylvanian pool production.

CASE 2265: Application of Nash, Windfohr and Brown for an unorthodox well location. Applicant, in the above-styled cause, seeks approval of an unorthodox location in an undesignated Abo pool for its Jackson Federal Well No. 23-B, located 1420 feet from the South line and 1980 feet from the East line of Section 24, Township 17 South, Range 30 East, Eddy County, New Mexico.

CASE 2266: Application of Nearburg & Ingram for permission to commingle the production from two separate leases, and from two separate pools. Applicant, in the above-styled cause, seeks permission to commingle, after separate measurement, the Southwest Gladiola-Pennsylvanian Pool production from all wells on its Keating lease, comprising the NE/4 of Section 34 with Southwest Gladiola-Pennsylvanian and Southwest Gladiola-Devonian production from all wells on its Midhurst Lease, comprising the NW/4 of Section 35, all in Township 12 South, Range 37 East, Lea County, New Mexico.

CASE 2267: Application of Byard Bennett for permission to institute a waterflood project in the Caprock-Queen Pool, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a waterflood project in the Caprock-Queen Pool in an area comprising the E/2 SE/4 of Section 20 and the SW/4 of Section 21, all in Township 14 South, Range 31 East, Chaves County, New Mexico, by the injection of water into the Stella Zimmerman Well No. 2, located in the SE/4 SE/4 of said Section 20.

CASE 2268: Application of Humble Oil & Refining Company for an exception to Rule 303 (a). Applicant, in the above-styled cause, seeks an exception to Rule 303 (a) to permit commingling, without separate measurement, of the production from the Paddock, Penrose-Skelly and Drinkard Pools on the J. L. Greenwood Lease, comprising the S/2 of Section 9, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 2269: Application of Great Western Drilling Company for an oil-salt water dual completion. Applicant, in the above-styled cause, seeks authorization to dually complete its Federal MM Well No. 2, located in the SE/4 NW/4 of Section 8, Township 9 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Bough C formation adjacent to the East Allison-Pennsylvanian Pool and the injection of salt water into the San Andres formation.

CASE 2270: Application of Pan American Petroleum Corporation for an oil-oil dual completion. Applicant, in the above-styled cause, seeks authorization to dually complete its Greenwood Unit Well No. 3, located in Unit H, Section 27, Township 18 South, Range 31 East, Eddy County, New Mexico, in such a manner as to permit the production of oil from an undesignated Bone Springs pool and the production of oil from an undesignated Wolfcamp pool through parallel strings of 2-inch tubing.

CASE 2271: Application of Pan American Petroleum Corporation for two non-standard oil proration units and for an unorthodox oil well location. Applicant, in the above-styled cause, seeks the establishment of a 70.58-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool consisting of Lots 8 and 9 and the S/2 of that portion of the San Juan River channel lying in the S/2 NE/4, all in Section 18,

CASE 2271 (Cont.)

Township 29 North, Range 14 West, San Juan County, New Mexico, said unit to be dedicated to the Navajo Tribal "G" Well No. 7, at an unorthodox location 2545 feet from the North line and 1670 feet from the East line of said Section 18, and of a 46.75-acre non-standard oil proration unit in said pool consisting of Lot 6 and the S/2 of that portion of the San Juan River channel lying in the SE/4, all in Section 16, Township 29 North, Range 14 West, San Juan County, New Mexico, said unit to be dedicated to the Navajo Tribal "E" Well No. 10, located 660 feet from the South line and 1980 feet from the East line of said Section 16.

CASE 2272:

Application of Pan American Petroleum Corporation for two non-standard oil proration units and for two unorthodox oil well locations. Applicant, in the above-styled cause, seeks the establishment of an 89.62-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool consisting of Lots 2, 3 and 4 of Section 8, Township 28 North, Range 13 West, San Juan County, New Mexico, said unit to be dedicated to the C. J. Holder Well No. 11, at an unorthodox location 493 feet from the North line and 660 feet from the West line of said Section 8, and of an 89.22-acre non-standard oil proration unit in said pool consisting of Lot 1 of Section 8 and Lots 3 and 4 of Section 9, all in Township 28 North, Range 13 West, San Juan County, New Mexico, said unit to be dedicated to the C. J. Holder Well No. 12, at an unorthodox location 493 feet from the North line and 660 feet from the West line of said Section 9.

CASE 2273:

Application of El Paso Natural Gas Company for an exception to Rule 309 (a). Applicant, in the above-styled cause, seeks an exception to Rule 309 (a) to permit the transportation of oil produced on Federal Lease LC-064198-A, comprising the SE/4 of Section 18, prior to measurement, to tank batteries located on Federal Lease No. 025566, comprising the E/2 of Section 19, all in Township 19 South, Range 32 East, Lea County, New Mexico.

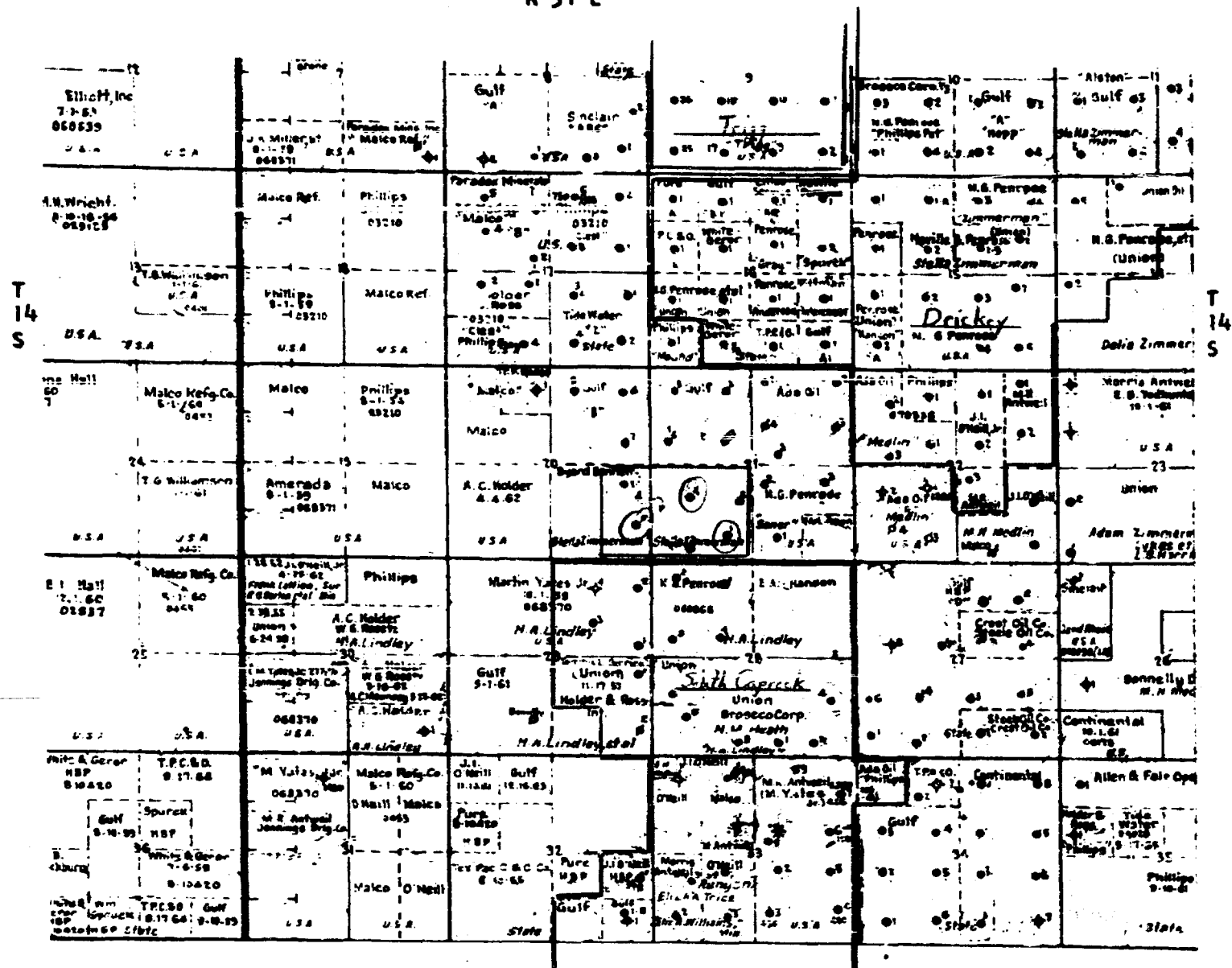
Docket No. 19-61

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CASE 2274:

Application of El Paso Natural Gas Company for an oil-gas dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Lusk Deep Unit Well No. 2, located in Unit O, Section 18, Township 19 South, Range 32 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Strawn formation adjacent to the Lusk-Strawn Tool and the production of gas from the Morrow formation in an undesignated pool through parallel strings of 2 3/8-inch tubing.

R 31 E



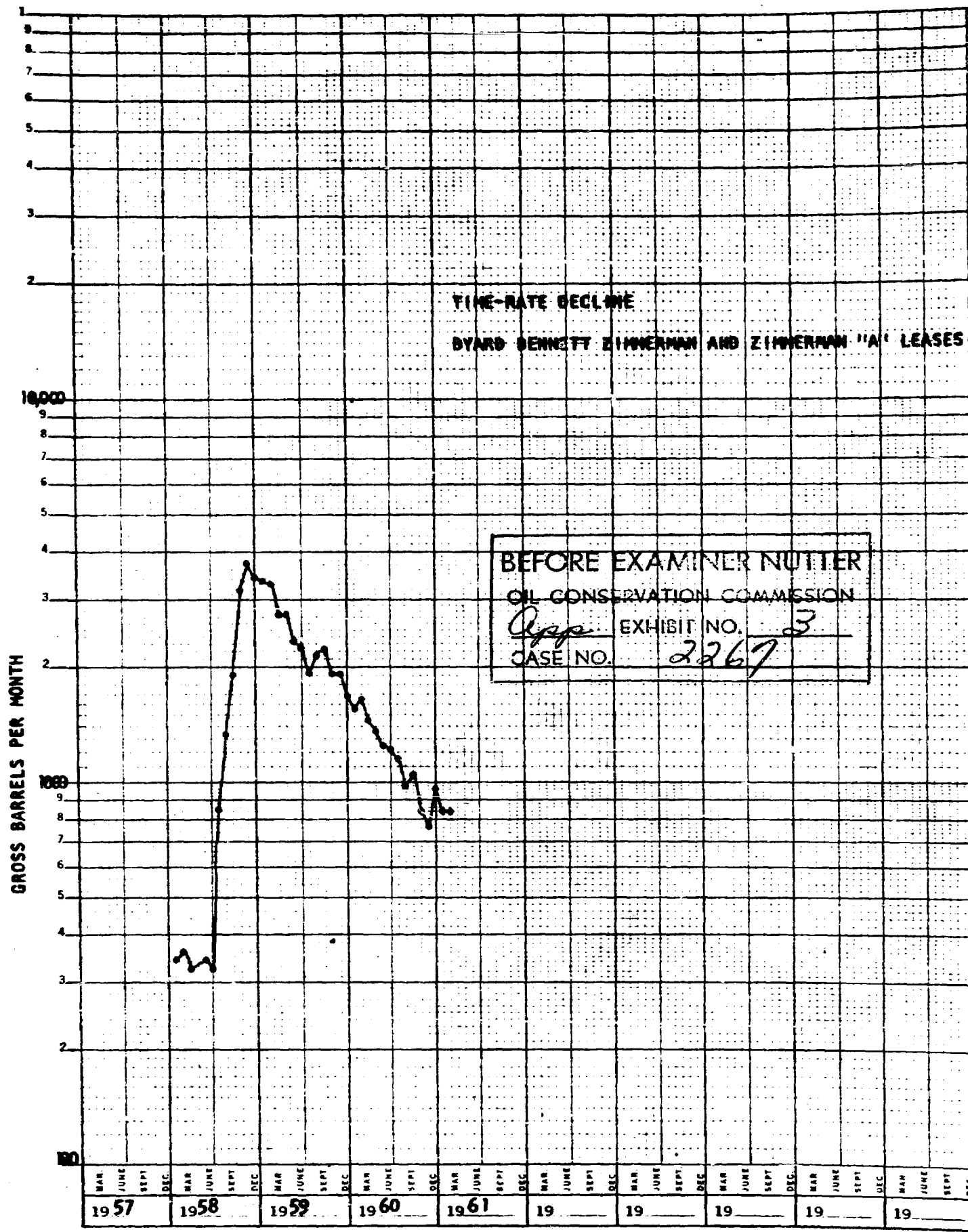
PROPOSED PILOT WATER FLOOD

CAPROCK POOL

CHAVES COUNTY, NEW MEXICO

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 226
CASE NO. 226

K-E 20 YEARS BY MONTHS 358-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.



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

EXAMINER HEARING

IN THE MATTER OF:
CASE 2267

TRANSCRIPT OF HEARING

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

EXAMINER HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO

IN THE MATTER OF:

CASE 2267 Application of Byard Bennett for permission to :
institute a waterflood project in the Caprock- :
Queen Pool, Chavez County, New Mexico. Appli- :
cant, in the above-styled cause, seeks permiss- :
ion to institute a waterflood project in the :
Caprock-Queen Pool in an area comprising the :
E/2 SE/4 of Section 20 and the SW/4 of Section :
21, all in Township 14 South, Range 31 East, :
Chaves County, New Mexico, by the injection of :
water into the Stella Zimmerman Well No. 2, lo- :
cated in the SE/4 SE/4 of said Section 20. :

BEFORE:

Daniel S. Nutter, Examiner.

T R A N S C R I P T O F P R O C E E D I N G S

MR. NUTTER: We will take next Case 2267.

MR. MORRIS: Case 2267. Application of Byard Bennett
for permission to institute a waterflood project in the Caprock-
Queen Pool, Chaves County, New Mexico.

MR. CAMPBELL: Jack M. Campbell, Campbell & Russell,
Roswell, New Mexico, appearing on behalf of the applicant. I have
one witness, Mr. Swartz.

(Witness sworn)



GUY A. SWARTZ,

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

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please?

A My name is Guy A. Swartz.

Q Where do you live?

A Roswell, New Mexico.

Q What is your profession?

A I'm a consultant geologist.

Q Have you previously testified before this Commission in your professional capacity?

A Yes, sir, I have.

MR. CAMPBELL: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir.

Q What is your position or capacity with the Applicant in this case, Byard Bennett?

A In this particular case I am representing him as a technical witness on his behalf on this proposed waterflood unit.

Q Are you acquainted with the properties belonging to Mr. Bennett, that are involved in this application?

A Yes, sir. I have performed several duties in the drilling and completion operations of several of Mr. Bennett's wells, and also on some of the adjacent Gulf Oil Corporation properties.



(Whereupon, Applicant's Exhibit No. 1 was marked for identification)

Q I hand you what has been identified as Applicant's Exhibit No. 1, and ask you to state what that is, please?

A Exhibit No. 1 is a plat which shows Mr. Bennett's lease outlined in red, and the adjacent waterflood units which have been approved and which are now in operation in the immediate area. It also shows an area of approximately two miles around Mr. Bennett's lease, and all the leaseholders and mineral interests.

Q Lying immediately to the south of the lease involved here, is there an approved waterflood project?

A Yes, sir. That is the South Caprock unit, which is operated by Union Oil of California.

Q Is there presently any injection of water in or near the lease boundaries of the Bennett lease?

A To my knowledge, the injection is proceeding several miles to the south of Mr. Bennett's lease, and is rapidly approaching Mr. Bennett's lease.

Q At the time that the injection of water is commenced near the boundary, the south boundary of the Bennett lease, in your opinion, will it be necessary for Mr. Bennett to flood his properties in order to protect his correlative rights?

A Yes, sir, it will be.

Q How many wells are there on this 200 acres

A Mr. Bennett's lease comprises 240 acres, and there are



six wells included, three of which are proposed to be made injection wells.

Q You stated it contained 240 acres. Isn't it just 160 and an 80? Yes, 240 acres; you are right.

A Yes.

Q And there are six wells on the properties?

A Yes, sir, that's correct.

Q Which wells, if this project is approved, would you propose to use as injection wells, ultimately?

A The Bennett No. 2 Zimmerman, is located 990 feet from the South line and 330 feet from the East line of Section 20, 14, 31; the No. 4 "A" Zimmerman Well, which is located 1650 from the South line and 990 feet from the West line of Section 21; and the Bennett No. 1 "A" Zimmerman, which is located 660 feet from the South line and 1980 feet from the West line of Section 21, 14, 31. These wells were chosen to conform with the pattern which is set throughout the entire Caprock area by the various floods now in force.

(Whereupon, Applicant's Exhibits Nos. 2(a), 2(b) and 2(c) were marked for identification)

Q I hand you what will be identified as Applicant's Exhibit 2 (a), 2 (b) and 2 (c), and ask you to state what those are, please?

A These Exhibits are gamma ray neutron logs which were run on each proposed injection well, and shows the various formations,

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PHONE CM 3-6691

ALBUQUERQUE, NEW MEXICO



with the top of the Queen indicated, and also the various perforations of the pay on the detailed section of each log.

Q Do you have any information with regard to the original potentials of these wells and their production history?

A The subject wells, the six subject wells were completed from the period February 26, 1958 to December 2, 1958. The potentials averaged slightly over 61 barrels per day per well. The wells followed the same pattern in completion and drilling, and approximately 150 feet of surface casing was cemented and circulated in each well. All wells, with the exception of one well, which has $4\frac{1}{2}$ -inch casing, all wells have $5\frac{1}{2}$ -inch casing cemented on bottom with 150 sacks of cement, which offers approximately 1,000 feet of fill-up behind the casing, and each well has been perforated opposite the pay section. All wells were sand fractured with treatments varying between 4,000 and 15,000 gallons, and each well is now producing by pumping method.

Q What is the average daily production from the wells involved in this application?

A The production, since the initiation of drilling operations, have ranged from approximately, well, slightly over 3800 barrels to a present production of 691 barrels per month, which averages approximately 3.8 barrels per well per day. And this is rapidly approaching the estimated economic limit, which would be approximately $2\frac{1}{2}$ barrels per day.

Q Are there any wide variations between the present produc-

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ALBUQUERQUE, NEW MEXICO



ing capacities of the six wells, or are they all in the stripper stage?

A There is some variation between the productive capacity of the wells. The wells in the center of the lease are slightly better than those on either side. This can be seen by the cross-section Exhibit.

Q In your opinion, have these wells on this lease reached their stripper stage?

A Yes, sir, they have.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification)

Q I hand you what has been identified as Applicant's Exhibit No. 3, and ask you to state what that is, please?

A Exhibit No. 3 is a production curve showing the production in gross barrels per month for the combined Byard Bennett leases, the Zimmerman and Zimmerman "A" leases. It has the production plotted in gross barrels, production versus time per month. This production curve shows the steady rate of decline since the early part of 1959 into the present state.

Q Mr. Swartz, in your opinion, is the zone of proposed water injection common and continuous over the area involved here?

A Yes, sir, it is.

(Whereupon, Applicant's Exhibit No. 4 was marked for identification)

Q I hand you what has been identified as Applicant's Ex-



hibit No. 4, and ask you to state what that is?

A Exhibit No. 4 is a structure contour map of this immediate area, and shows the structure on top of the Queen pay in this area. It also shows the proposed injection wells in the immediate area, and the proposed injection wells on Mr. Bennett's lease, which are indicated in red.

Q Does it also show the proposed injection wells on the waterflood project to the south of the Bennett properties?

A Yes, sir.

Q Does this Exhibit tend to confirm your conclusion that the zone of injection is common and continuous throughout this area?

A A cross-section has been constructed from the Union No. 4, which was originally drilled as the Antwell No. 4 Federal, and I believe that will bear that out.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification)

Q I hand you that Exhibit, which has been identified as Exhibit No. 5, and ask you to state what that is, and how it tends to confirm your conclusion that the proposed zone for injection is common and continuous throughout this 240 acres?

A Exhibit No. 5 is a cross-section, and includes the wells as indicated on the line AA Prime on the structure contour map, and shows the continuity of pay as shown by the various individual gamma ray neutrons on the noted wells. This cross-

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ALBUQUERQUE, NEW MEXICO



section also shows a thinning or a pinching out of the pay to the west or in this case updip. It might be noted or mentioned that this porosity and permeability pinches out below the normal nitrogen gas cap of the Caprock-Queen Pool in this area.

Q To your knowledge, have waterflood projects in this same pool proved to be successful from the point of view of ultimate recovery and from the point of view of the economics involved?

A Yes, sir. I believe that the waterfloods throughout the Caprock have been considered highly successful to this date.

Q In the event you are granted the authority to initiate this waterflood, where would you obtain your water?

A The water contract, as such, has not been negotiated. Negotiations have been in process, and the water would be obtained either from Mr. Zimmerman, who is the mineral owner on this particular property, or from one of the adjacent waterfloods, which do have excess water available.

Q Do you anticipate there will be any difficulty obtaining a sufficient amount of water to flood this 240-acre area?

A No, sir.

Q How much water do you consider may be required?

A It has been proposed to inject approximately 300 barrels of water per well per day, or between 900 and a thousand barrels of water per day.

Q In the event this application is approved, when would you contemplate initiating the injection of water?

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A The initiation of injection would probably not proceed until such time as the adjacent flood to the south projected and began injection, forcing some action on this lease.

Q In other words, you anticipate that this particular waterflood project will be, in effect, a defensive operation, and that you will not immediately begin the injection of water and trigger the project to the south?

A Yes, sir, that's correct.

Q In the event the application is granted, and you do inject water and obtain waterflood production, are you prepared to comply with the provisions of Rule 701 of the Commission in connection with the limitation upon allowables?

A Yes, sir.

MR. CAMPBELL: I would like to offer Applicant's Exhibits 1 through 5.

MR. NUTTER: Applicant's Exhibits 1 through 5 will be entered in evidence.

(Whereupon, Applicant's Exhibits 1 through 5 were received in evidence)

MR. CAMPBELL: That's all the questions I have at this time.

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

MR. MORRIS: No, sir.

CROSS-EXAMINATION

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO



BY MR. NUTTER:

Q Mr. Swartz, first of all, which is the "A" lease, and which is the "B?"

A I'm sorry. The Zimmerman lease is the east half of the southeast quarter of Section 20, 14, 31, and the Bennett Zimmerman "A" lease is the southwest quarter of Section 21, 14, 31, all in Chaves County, New Mexico.

Q Now, the two wells on the Zimmerman lease are producing at what rate at the present time, Mr. Swartz?

A I don't have the present production figure exactly on that. They are producing at a very low rate, however,

Q How about the GORs on those two wells? Are they comparable with the GORs on the wells on the Zimmerman "A" lease?

A The gas produced on either lease from each well is too small to measure in each case.

Q So you haven't penetrated the gas cap or any highly saturated gas sands with any of these wells?

A No, sir.

Q The gas cap must lie farther to the west?

A It is believe that in this particular case that the porosity and permeability pinch out to the west before any gas cap is encountered. I believe in this area that the gas cap is at a sea level datum of approximately 1450, 1445 or 1450. It's in that vicinity, which is just about off this structure contour map.

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PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO

Q Quite a ways to the west, then?

A Yes, sir.

Q I think you referred to it as the Union No. 4 Well --

A Yes.

Q -- the westernmost well on your cross-section?

A Yes. It was drilled originally as the Morris and the Well No. 4 Yates Federal.

Q Did that just find a real tight sand, or did it encounter gas?

A No, sir. It encountered a very thin zone of possibly pay, and they elected to plug the well rather than to complete it, because of the pay being too thin for commercial development.

Q How about permeability? Do you know about what that encountered there?

A So far as I know, they had no shows, to speak of. I can count about a foot and a half on a gamma ray neutron log.

Q So it was evidently a pinchout of the porosity --

A Yes, sir.

Q -- that they encountered there. You believe that this same pinchout extends along the west side of the Zimmerman lease, then?

A Yes, sir. In the northeast of the northwest quarter of Section 20, there is also a dry hole which was the Hodge No. 1 Malco Federal, and to my recollection that well had approximately one to one and a half foot of pay. The pay thickness increased



steadily to the east, and, as I recall, it was approximately 22 feet thick in the Gulf No. 2, which is located in the northeast of the northwest quarter of Section 21, 14, 31.

Q You mentioned the conversion of three wells, being the Zimmerman No. 2, and the A-1 and 4 to water injection. However, in this application you are only requesting authority for the one well, is that correct?

A Yes, sir.

Q The Zimmerman 2?

A At the time the application was made, it was thought that it would be best to see if the zones would respond adequately to water injection. However, because of the various rates of efficiency of the one well injection as against a five spot program, it was felt that perhaps it would be better to ask for the approval of all three wells to conform with the adjacent lease to the south, and thereby afford a little better protection to the mineral interests.

Q You are aware that the advertisement of this case limits the scope of the thing to the injection of water into the Stella Zimmerman No. 2 Well?

A Yes, sir. That will probably be the initial process.

Q Has Mr. Bennett discussed this proposed water injection program with Union California Company, the operator to the south?

A I believe they are cognizant of this.

Q Has the agreement between those two parties, Mr. Bennett

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and Union, been such that Mr. Bennett won't commence injection of water until such time as Union's flood has proceeded up into this northern area of the south Caprock unit?

A I don't believe that there has been any definite arrangement worked out, but Mr. Bennett will probably not inject water until he is offset and forced to. It's a little difficult at the present time to foresee the time of development of the south Caprock unit to this area adjacent to Mr. Bennett's lease.

Q Now, the Drickey unit, which is to the northeast, is presently on water injection, is it not?

A Yes, sir.

Q Is that the Cities Service unit?

A Yes, sir, it is.

Q Then, there seems to be a zone in between Mr. Bennett's acreage and the Cities Service unit, which doesn't belong to any unit, is this correct?

A That is correct.

Q Are you aware of any plans for the injection of water in that zone between Mr. Bennett's acreage and the Cities Service unit?

A To my knowledge, there have been several proposed units. However, in this area, I believe that both Continental and Phillips entertain programs on units in this area. However, to my knowledge, neither of these, the area to the north or to the southeast, have been unitized at this present time. There hasn't been any definite

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plan formulated as yet.

Q And you don't have the individual production records of the wells on these two leases?

A No, sir. I can obtain those.

Q I think our records will have that production. Now, Mr. Swartz, I notice on the logs of the three proposed injection wells, the surface pipe on the No. 4-A is shown to be at 154 feet.

A That's probably correct.

Q That is Exhibit 2 (a)?

A Yes, sir.

Q How much cement was used on that string of surface pipe?

A I believe that in each well, each well on either lease, 150 sacks was the amount of cement used.

Q On surface pipe as well as long string?

A No, sir. I'm sorry about that. On the surface casing, I don't have the exact figures of the amount of cement used. However, in each case, the surface pipe was circulated.

Q Okay. Now, on the 4-A, then, we have 454 feet of surface pipe circulated?

A Yes, sir.

Q And I think this log indicates there's 2910 feet of 5½-inch pipe. Would that be correct?

A On the Commission form, as filed, it was shown as 5½-inch casing at 2911.

Q We won't quibble about a foot. And 150 sacks?

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A In this particular case, it was 125 sacks.

Q Do you have a top for that cement?

A No, sir. I have calculated there would be, on 125 sacks, there would be approximately 900 feet fillup.

Q Calculated fillup 900 feet. Now, on the Zimmerman 1-A, the log doesn't give the surface pipe. Could you give me the surface pipe and the cement used there or the top of the cement?

A Yes, sir. On the 1-A, 8 5/8-inch casing was set at 165 feet, and in this particular case, 150 sacks of cement was used.

Q Was that circulated?

A Yes, sir.

Q And the long string, the 5 1/2?

A The 5 1/2-inch casing was set at 2933, and in this case, 125 sacks were used.

Q What's your calculated fillup there?

A Approximately 900 feet.

Q Now, in the case of the Zimmerman No. 2 Well, the surface pipe is indicated as 156 feet, is that correct?

A That is correct.

Q Cement circulated?

A Yes, sir.

Q How about the production string?

A The production string was 5 1/2-inch casing set at 2879 feet with 150 sacks.

Q What's your calculated fillup behind the pipe?



A I believe that's 970 feet, as I recall.

Q 970?

A I believe that's correct. It would be approximately that.

MR. NUTTER: Are there any other questions of Mr. Swartz? He may be excused.

(Witness excused)

MR. NUTTER: Do you have anything further, Mr. Campbell?

MR. CAMPBELL: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2267? We'll take the case under advisement, and recess the hearing until 1:30.

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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

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. 2267, heard by me on 5.4, 1961.

[Signature], Examiner
New Mexico Oil Conservation Commission

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