

CASE 4236: Appli. of CONTINENTAL
OIL COMPANY FOR A WATERFLOOD
PROJECT, LEA COUNTY, NEW MEXICO

Case Number
4236

Application

Transcripts

Small Exhibits

ETC



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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 22, 1969

EXAMINER HEARING

IN THE MATTER OF:)

Application of Continental Oil)
Company for a waterflood project,)
Lea County, New Mexico.)

CASE NO. 4236

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We'll call Case Number 4236.

MR. HATCH: Case 4236. Application of Continental Oil Company for a waterflood project, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, let the record show the same appearances as in Case 4235 and reflect that the witness has been sworn.

(Whereupon, Applicant's Exhibits 1 through 9 were marked for identification.)

VICTOR T. LYON

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please, sir?

A Victor T. Lyon.

Q Are you the same Mr. Lyon who testified in the preceding case?

A I am.

Q Mr. Lyon, are you familiar with the application of Continental Oil Company in Case 4236?

A Yes, sir.

Q And briefly, what's proposed by Continental in this application?

A Case Number 4236 is the application of Continental

Oil Company for authority to install and operate a water-flood project in the Anderson Ranch-Wolfcamp Pool within the boundaries of the Anderson Ranch unit, which is located in Lea County, New Mexico.

Q Now, referring to what has been marked as Exhibit 1, would you identify that, please?

A Yes, sir. Exhibit Number 1 is a location and ownership map showing the proposed injection wells, the outline of the Anderson Ranch unit, and the ownership location of wells within an area two miles in each direction from the proposed injection wells. As shown, the Anderson Ranch unit consists of the southwest quarter of Section One, the south half of Section Two, all of Section 11, the west half of Section 12, the west half of the northwest quarter of Section 13, and the north half of Section 14, all in Township 16 south, range 32 east, Lea County, New Mexico.

The two proposed injection wells are shown with a red triangle inscribed around them. Well Number Four is located 660 feet from the north line, 1980 feet from the east line of Section 11, and Well Number Five is located 1980 feet from the south line and 1980 feet from the east line of Section 11. We also show by a letter symbol the formations from which each of the wells is producing or has produced.

Q The exhibit also appears to show a salt water disposal well in Section Two; is that correct?

A Yes, sir. Anderson Ranch unit Number 16, located in Unit T, is presently a salt water disposal well.

Q Will that be part of the water injection system in the waterflood project?

A No, we propose to maintain this well on a standby status, but injections into this well will be stopped except for emergency situations.

Q And your injection will be confined to the two injection wells shown on the exhibit, then?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit Number Two, could you identify that exhibit?

A Yes, sir. Exhibit Number Two is a schematic diagram showing the construction of Anderson Ranch Unit Number Four. The size and setting depth of the casing strings is shown, the perforations, the present condition of the well as far as tubing, packers, and so forth, are shown on the left hand side.

The right hand side shows how the well will be equipped when it is equipped for injection. The diagram shows a retrievable bridge plug at 9810. This bridge plug will be pulled. The cast iron bridge plug shown at 9845 will

remain in place so that injection will be into the interval from 9670 to 9828. There will be a packer and 2 7/8 inch tubing, to be plastic lined, set at approximately 9580. Then, we'll load the annular space above the packer with inhibited water and will install a pressure gauge at the surface.

Q Now, referring to what has been marked as Exhibit Number Three, would you identify that exhibit?

A Exhibit Number Three is a schematic diagram of Well Number Five, showing the same information on this well that was shown for Well Number Four on Exhibit Two. In this particular case 2 3/8 inch plastic lined tubing will be set on a retrievable packer at approximately 9650. Injection will be into the interval 9742 to 9884.

Q And, again, the well will be completed with the plastic lined tubing and the annular space will be filled with inhibited water?

A Yes, sir.

Q And the pressure gauge set at the surface?

A Yes, sir.

Q Now, referring to Exhibit Number Four, would you discuss the information shown on that exhibit?

A Exhibit Number Four is a copy of a portion of the radioactivity log on Well Number Four. It shows the top of the Wolfcamp at 9960, and it shows the perforated intervals

by the rectangular symbols to the left of the center of the log.

Q Now, is Exhibit Number Five the same information shown for the Anderson Ranch Unit Number Five Well?

A Yes, it is. And in this well, the top of Wolfcamp, it's shown at 8960, and the perforated intervals are shown by the rectangular symbols.

Q Now, referring to what has been marked as Exhibit Number Six, would you identify that exhibit?

A Exhibit Number Six is a structure map which shows the structural configurations of the Saunders Limestone in this particular area. As shown, the Wolfcamp structure here has three localized peaks or closures. There is one centered around Well Number Four, and a second one embracing Wells 14, 17, and Number Six, and a third one, which is north of the Anderson Ranch Unit. It seems that these get progressively higher as we move from south to north.

The Well Number Four is located at the peak of the south closure. Well Number Five is located at the southern extremity of this structure.

Q Now, referring, again, to your Well Number 16, you are presently injecting water into that well, are you not?

A Yes, sir. We are.

Q Is the injection interval the same as you propose to use in the waterflood project?

A No, it is not. The injection interval in Number 16 is below the oil water contact. The injection interval in Wells Number Four and Five is the intervals which have produced oil during their producing lives. Now, these two wells were chosen out of several considerations. First, because of their current producing rate. Number Five is shut in and Well Number Four is nearing its economic limit.

Secondly, the wells are more or less centrally located so that injection into them will affect the largest number of wells at the earliest time. Also, they are located in approximately the center of the Anderson Ranch Unit, so that there should be no impairment of correlative rights as a result of injecting into the pay in these wells.

Q Now, referring to what has been marked as Exhibit Number Seven, would you identify that exhibit?

A Exhibit Number Seven is a two-part exhibit. The top portion shows some of the reservoir data and the estimated primary recovery, to July 1, 1969. The bottom portion shows the production by well for the months of July and August, so that by adding the production in July and August to the production through July 1, we have production to September 1, accumulative from this portion of the

reservoir, which is 1,861,800 barrels.

Q Now, at the present stage of completion, would you consider this reservoir at a stripper stage?

A Yes, sir. It's very rapidly approaching its economic limit.

Q Referring to what has been marked as Exhibit Number Eight, would you identify that exhibit?

A Exhibit Number Eight is a decline curve showing the production from the Anderson Ranch-Wolfcamp Pool, or that portion which is within the Anderson Ranch Unit, beginning in 1964. Now, this was not the beginning of production, but this is just the part of production we have shown on this exhibit through June of 1969, and then we have shown by a dash line the projected primary production without water flooding.

At approximately the beginning of July -- excuse me -- at the beginning of 1971, there is a solid line, which departs from the projected decline, which shows our projected performance under secondary recovery as we propose in this application. The area between these two curves is the amount of additional oil which we expect to recover as a result of this waterflood project.

Q Now, what is the source of the water you propose to inject?

A We propose to inject the produced water from the Anderson Ranch-Wolfcamp and Anderson Ranch-Devonian reservoir, which are produced within the unit.

Q Now, what volume of water will you inject?

A We expect to average approximately 3,000 barrels per day. This is about the amount of water which is being injected at this time, and it appears that this will be a reasonable average in the future.

Q Now, referring to what has been marked as Exhibit Number Nine, would you identify that exhibit?

A Exhibit Number Nine is a three-page exhibit. Sheet Number One shows an analysis of the Wolfcamp reservoir or of the Wolfcamp water. Sheet Number Two is an analysis of the Devonian water, and Sheet Number Three is a report of a laboratory test showing the laboratory results of mixing the water and it indicates that the waters are compatible.

Now, each of the waters has some scaling characteristic, and we do plan to do whatever inhibitions and treatment with acid that is required to maintain proper injection.

Q Now, throughout your testimony, you have referred to this as the Anderson Ranch Unit. Is this area already unitized?

A Yes, sir. This was an exploratory unit and was -- the Devonian and Wolfcamp production was discovered in about

1953. And it has been producing from these two formations ever since then.

Q So, nothing further needs to be done in order to have a common ownership underlying your proposed waterflood project; is that correct?

A That is correct.

Q In your opinion, will the granting of this application result in the prevention of waste and recovery of oil that would not otherwise be recovered?

A Yes, it will.

Q Were Exhibits One through Nine prepared by you or under your supervision?

A Yes, sir.

Q At this time, I offer into evidence Exhibits One through Nine, inclusive.

MR. NUTTER: Exhibit Nine is the three-page deal, then?

MR. KELLAHIN: Yes, sir.

MR. NUTTER: Applicant's Exhibits One through Nine will be admitted into evidence.

(Whereupon, Applicant's Exhibits 1 through 9 were offered and admitted in evidence.)

MR. NUTTER: Are there any questions of Mr. Lyon?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lyon, the Devonian and Wolfcamp Pools under the unit are presently producing about 3,000 barrels of water per day?

A Yes, sir.

Q And you expect that this rate of production will remain constant?

A Yes, we do. As we begin to have water break through the Devonian and abandonment of wells in the Devonian and so forth is expected to counterbalance this, so that we expect 3,000 barrels per day to be a pretty good average of what we will be injecting.

Q Do you suppose you are going to submit this 3,000 barrels pretty equally -- about five, ten barrels into each well?

A I would expect this to be the case. Of course, it will depend on how readily the two wells accept it.

Q And I presume you are expecting, then, about a one-year period of time to achieve fillup, because you showed on your estimate for secondary recovery, you showed that line taking off about one year after injection started?

A Right.

Q Now, as I understand it, the symbols on your

Exhibit 1, the Number Five well would have a Wolfcamp well directly west, one to the northwest, and one to the northeast. The Number Four well would have a Wolfcamp producer to the southwest, to the southeast, to the northeast, and to the northwest, then?

A Yes, sir. And there is under consideration at this time the plugging back of Number Two as a Wolfcamp producer.

Q It's shut in at the Devonian at the present time?

A Yes, sir. And it's quite possible that as Devonian wells are completed, they will be recompleted in the Wolfcamp.

Q I see. Particularly, if some of these existing wells show some response?

A Yes, sir.

Q I see.

MR. NUTTER: Are there any further questions of the witness? You may be excused.

(Witness excused.)

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

MR. KELLAHIN: That's all, Mr. Examiner.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4236? We'll take the case under advisement and call Case 4237.

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
VICTOR T. LYON	
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EXHIBITMARKEDOFFERED AND
ADMITTED

Applicant's 1
through 9

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STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, DAVID BINGHAM, a Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

David Bingham
 COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4236 heard by me on 10/22 1969.
James Examiner
 New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

October 29, 1969

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Dear Sir:

Reference is made to Commission Order No. R-3863, recently entered in Case No. 4236, approving the Continental Anderson Ranch Wolfcamp Waterflood Project.

Injection is to be through the two authorized water injection wells, each of which is to be equipped with 2 3/8-inch or 2 7/8-inch plastic-lined tubing set in a packer approximately at 9600 feet; the casing-tubing annulus in each well is to be loaded with an inert fluid and equipped with a pressure gauge at the surface.

As to allowable, our calculations indicate that when both of the authorized injection wells have been placed on active injection, and pending recompletion of any other wells in the Wolfcamp formation, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1113 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

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Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

October 29, 1969

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir

cc: Oil Conservation Commission
Hobbs, New Mexico

Mr. D. E. Gray
State Engineer Office
Santa Fe, New Mexico

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. 4236
Order No. R-3863

APPLICATION OF CONTINENTAL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 22, 1969, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 28th day of October, 1969, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, 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, Continental Oil Company, seeks permission to institute a waterflood project in its Anderson Ranch Unit Area, Anderson Ranch-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through its Anderson Ranch Unit Wells Nos. 4 and 5, located, respectively, in Units B and J of Section 11, Township 16 South, Range 32 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

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CASE No. 4236
Order No. R-3863

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to institute a waterflood project in its Anderson Ranch Unit Area, Anderson Ranch-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through the following-described wells in Section 11, Township 16 South, Range 32 East, NMPM, Lea County, New Mexico:

Anderson Ranch Unit Well No. 4, located in
Unit B;

Anderson Ranch Unit Well No. 5, located in
Unit J.

(2) That the subject waterflood project is hereby designated the Continental Anderson Ranch Wolfcamp Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) 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


DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

esr/

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 22, 1969

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, Alternate Examiner:

CASE 4213: (Continued from the September 10, 1969, Examiner Hearing)

Application of Texo Oil Company for pool redelineation, creation of a new gas pool, an unorthodox gas well location, and non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the redelineation of the vertical limits of the South Corbin-Queen Pool to permit the creation of a new basal Penrose gas pool for its Buffalo Unit Well No. 11 located at an unorthodox gas well location 2310 feet from the South line and 330 feet from the West line of Section 35, Township 18 South, Range 33 East, Lea County, New Mexico. Applicant further seeks approval of an 80-acre non-standard gas proration unit comprising the N/2 SW/4 of said Section 35, to be dedicated to the above-described well.

CASE 4230: Application of Dalport Oil Corporation for an exception to Order No. R-3221, as amended, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Edgley, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicant's AMCO Federal Well No. 2 located in the SW/4 NW/4 of Section 31, Township 14 South, Range 30 East, Double L Field, Chaves County, New Mexico. Applicant seeks authority to dispose of salt water produced by said well in an unlined surface pit located in the vicinity of said well.

CASE 4231: Application of Western States Producing Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from 4174 feet to 4388 feet in its State "30" Well No. 3, located in Unit B of Section 30, Township 7 South, Range 33 East, Chavero-San Andres Pool, Roosevelt County, New Mexico.

- CASE 4232: Application of Pan American Petroleum Corporation for a pressure maintenance project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project on its Baskett "D" Lease by the injection of water into the San Andres formation through its Baskett "D" Well No. 4 located in Unit I of Section 11, Township 8 South, Range 30 East, Cato-San Andres Pool, Chaves County, New Mexico.
- CASE 4233: Application of Aztec Oil & Gas Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates-Seven Rivers formations in the open-hole interval from 3929 feet to 3990 feet in its State SR Well No. 1 located in Unit G of Section 16, Township 24 South, Range 36 East, Jalmat Field, Lea County, New Mexico.
- CASE 4234: Application of Gulf Oil Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the upper Morrow and lower Morrow formations underlying Section 12, Township 23 South, Range 24 East, Eddy County, New Mexico. Said acreage to be dedicated to a well to be drilled at a standard location 1650 feet from the North and East lines of said Section 12, and within one mile of the Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.
- CASE 4235: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Jack A-29 lease by the injection of water into the Seven Rivers-Queen formations through its Jack A-29 Wells Nos. 2 and 4 located, respectively, in Units 1 and 0 of Section 29, Township 24 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 4236: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Anderson Ranch Unit Area by the injection of water into the Wolfcamp formation through its Anderson Ranch Unit Wells Nos. 4 and 5, located, respectively, in Units B and J of Section 11, Township 16 South, Range 32 East, Anderson Ranch-Wolfcamp Pool, Lea County, New Mexico.

CASE 4237: Application of Continental Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Monument-Tubb and Weir-Blinsbry Pools in the well-bores of the following four wells located in Township 20 South, Range 37 East, Lea County, New Mexico:

Britt "B" Well No. 18 - Unit N - Section 10
Britt "B" Well No. 19 - Unit B - Section 15
Britt "B" Well No. 20 - Unit L - Section 10
Britt "B" Well No. 21 - Unit J - Section 10

CASE 4238: Application of McCasland Disposal System for the amendment of Order No. R-3781, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3781, to permit the disposal of produced salt water in the Yates formation, in addition to the previously authorized Seven Rivers formation, in its Getty Oil Company J. H. Day Well No. 2 located in Unit D of Section 6, Township 22 South, Range 36 East, Jalmat Pool, Lea County, New Mexico. Overall disposal interval would be from 3543 feet to 3939 feet.

CASE 4239: Application of Amini Oil Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above styled cause, seeks an order pooling all mineral interests in the Upper Pennsylvanian formation underlying the SE/4 of Section 8, Township 14 South, Range 34 East, Lea County, New Mexico. Said acreage to be dedicated to a well to be drilled at a standard location in said quarter section and within one mile of the Cerca-Upper Pennsylvanian Pool. Also to be considered will be the costs of drilling said

Case 4239 - Continued from Page 3 -

well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4240: Application of Pan American Petroleum Corporation for an exception to Order No. R-3221, as amended, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks exceptions to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exceptions would be for applicant's Smernoff Federal Well No. 1 located in Unit B of Section 24 and LaRue Federal Well No. 1 located in Unit D of Section 25, both in Township 15 South, Range 29 East, Sulimar-Queen Pool, Chaves County, New Mexico. Applicant seeks authority to dispose of water produced by said wells in two unlined surface pits located in said Units B and D.

CASE 4241: Application of Pennzoil United, Inc., for a non-standard gas proration unit or the creation of a new gas pool, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 320-acre non-standard gas proration unit comprising the E/2 of Section 21, Township 24 South, Range 26 East, White City-Pennsylvanian Gas Pool, Eddy County, New Mexico, said unit to be dedicated to applicant's Allied Federal 21 Well No. 1 located at a standard location in Unit J of said Section 21. In the alternative, applicant seeks the deletion of said Section 21 from the White City-Pennsylvanian Gas Pool and the creation of a new Morrow gas pool for said Allied Federal 21 Well No. 1.

CASE 4242: Application of Pennzoil United, Inc., for a non-standard gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C II, to permit the recompletion of its Mescalero Ridge Well No. 1 at a non-standard location 660 feet from the South and West lines of Section 20, Township 19 South, Range 34 East, and within one mile of the Quail Ridge-Morrow Gas Pool, Lea County, New Mexico.

October 22, 1969 - Examiner Hearing

Docket No. 29-69

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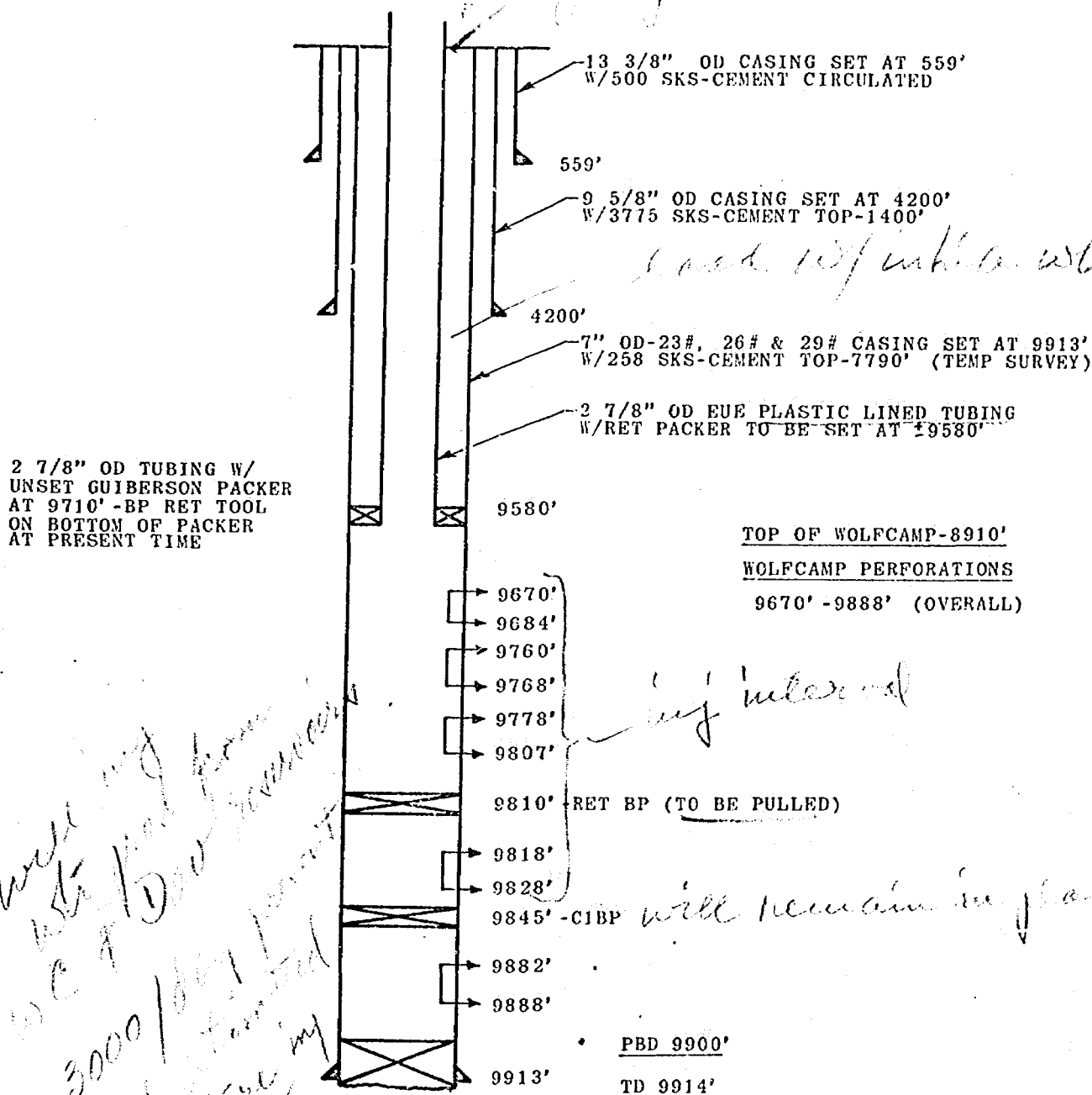
(Continued from the October 8, 1969, Examiner Hearing)

CASE 4223: Application of Resler and Sheldon for two waterflood projects, Lea County, New Mexico. Applicants, in the above-styled cause, seek authority to institute two waterflood projects by the injection of water into the Grayburg, and possibly other formations in the perforated interval from approximately 3555 feet to 3617 feet in their Kelly Well No. 3 and into the Queen, and possibly other formations in the perforated interval from approximately 3439 feet to 3689 feet in their Steeler Well No. 1, said wells being located, respectively, in Unit M of Section 16, and Unit I of Section 20, Township 23 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. In the alternative, applicants seek authority to dispose of produced salt water in said wells in the intervals as described above.

ANDERSON RANCH UNIT NO. 4

UNIT 'B' 660' FNL & 1980' FEL SEC. 11-T16S-R32E

ELEV-4304' GL
-4315' DF



PROPOSED PROCEDURE

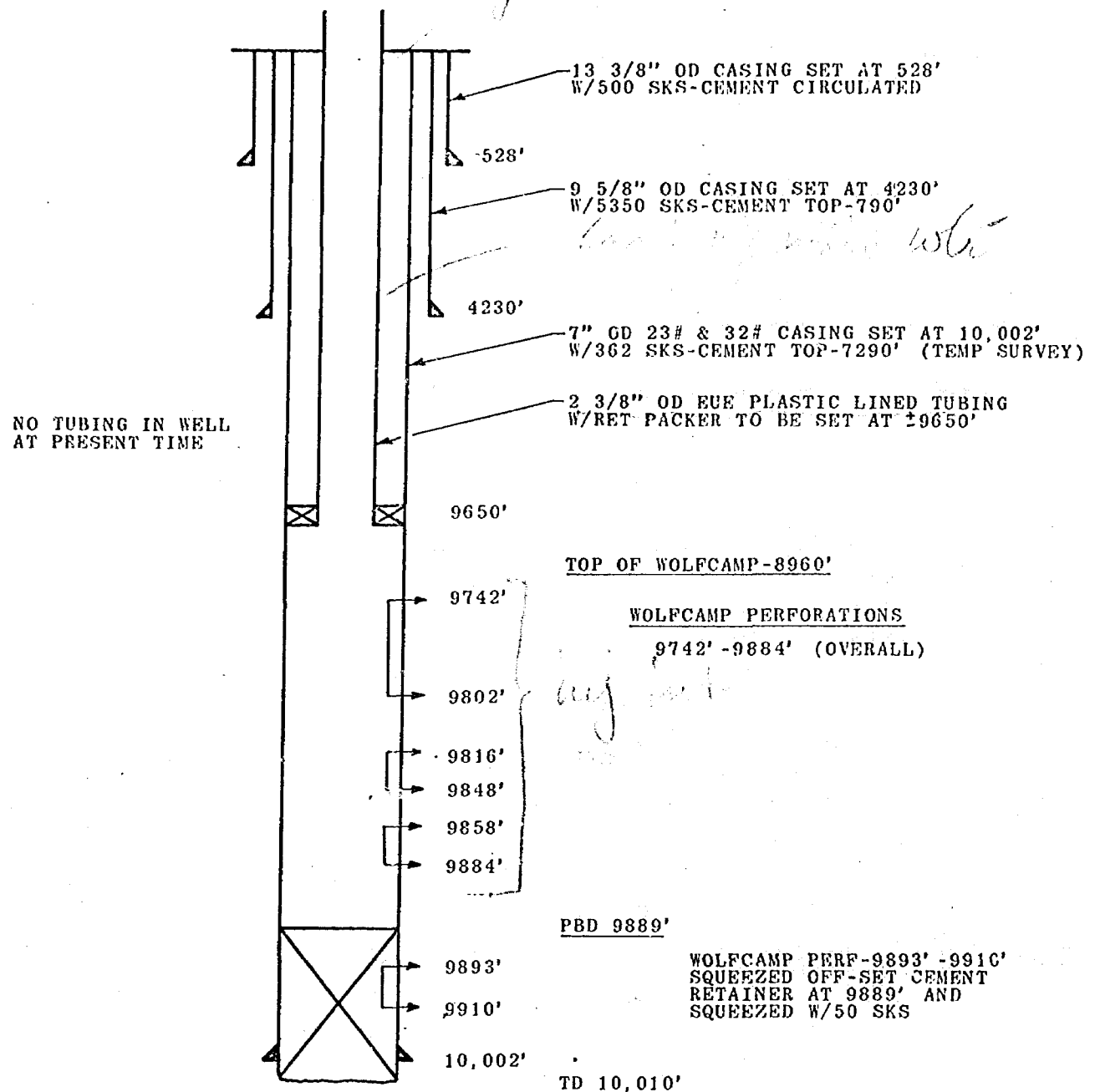
1. PULL RODS & PUMP.
2. LOWER TUBING AND RETRIEVE BRIDGE PLUG SET AT 9810' IF POSSIBLE.
3. PULL TUBING, PACKER & BRIDGE PLUG.
4. RUN 2 7/8" OD EUE N-80 PLASTIC LINED TUBING WITH RET BAKER LOK-SET PACKER TO BE SET AT 9580'.
5. HOOK-UP WELL FOR WATER INJECTION.

NOTE:
CASING TUBING ANNULUS TO BE LOADED WITH TREATED FRESH WATER
(APPROX 300 BBLs)

JAG 9/22/69:erw

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 4236

ANDERSON RANCH UNIT NO. 5
UNIT '3' 1980' FSL & 1980' FEL SEC. 11-T16S-R32E
ELEV-4297' BHP
-4309' DP



PROPOSED PROCEDURE

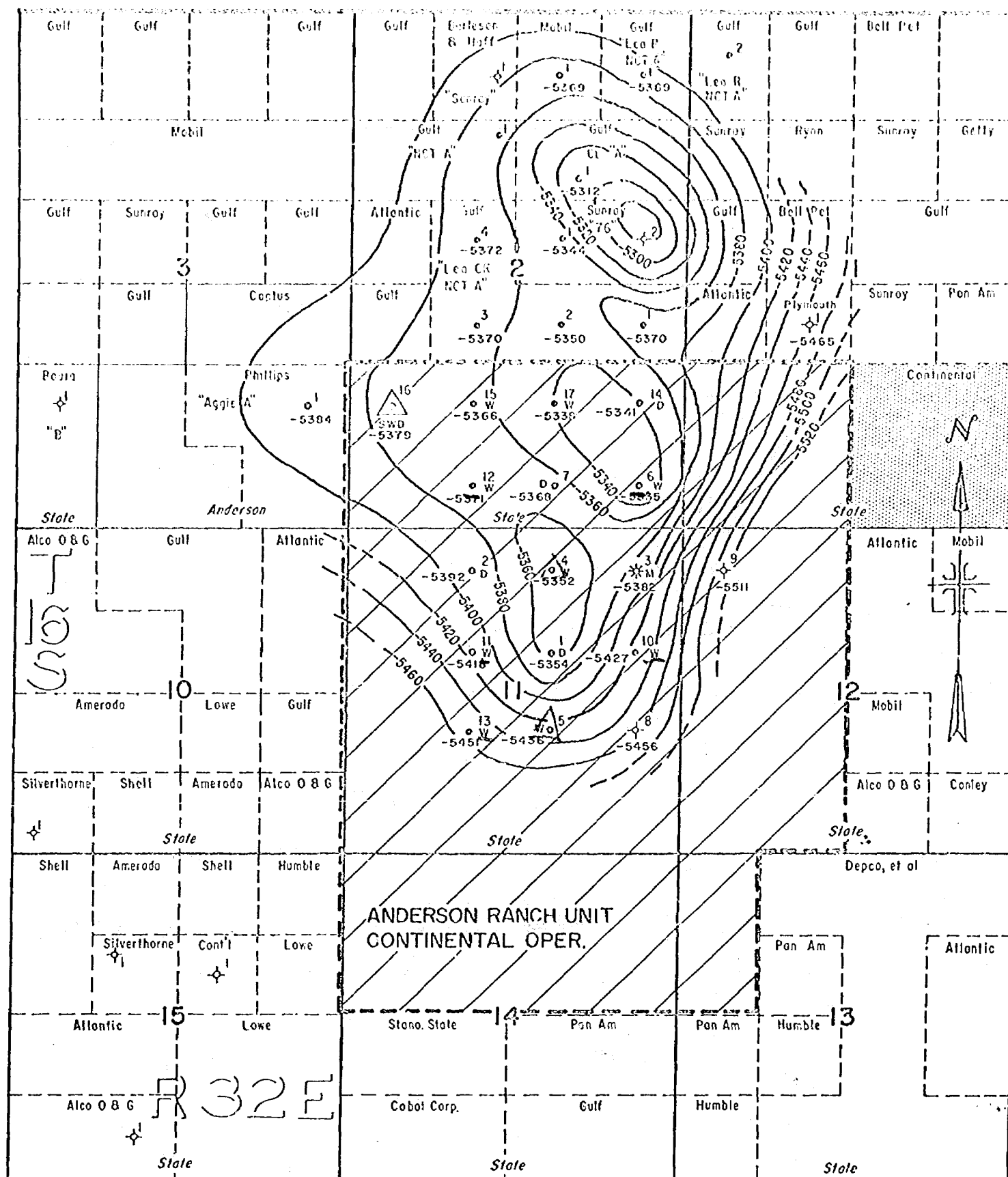
1. KILL WELL W/PRODUCED WATER.
2. RUN 2 3/8" OD EUE-N-80 PLASTIC LINED TUBING W-RET BAKER LOK-SET PACKER TO BE SET AT ±9650'
3. HOOK UP WELL FOR WATER INJECTION

NOTE:

CASING TUBING ANNULUS TO BE LOADED WITH TREATED FRESH WATER (APPROX 310 BBLs)

JAG 9/22/69:erw

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 4236



W-WOLFCAMP PRODUCER
D-DEVONIAN PRODUCER
M-MORROW PRODUCER

BEFORE EXAMINER INITIALS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 4236

CONTINENTAL OIL COMPANY

PRODUCTION DEPARTMENT - HOBBS DIVISION

ANDERSON RANCH UNIT
LEA COUNTY, NEW MEXICO
STRUCTURE MAP
TOP OF SAUNDERS LIMESTONE
WOLFCAMP FORMATION
CONTOUR INT: 20'

SCALE
0' 1000' 2000'

ANDERSON RANCH VOLCANO POOL

Reservoir Data
(Anderson Ranch Unit Only)

Estimated reservoir volume	26,542 ac ft
Average porosity	9.6%
Estimated I. W. S.	21 %
Formation Volume factor	1.86
Original BHP (mid pay)	3655 psi
Estimated original oil-in-place	8,395,900 barrels
Cumulative recovery to 7-1-69	1,856,733 barrels
Estimated ultimate primary recovery	2,085,750

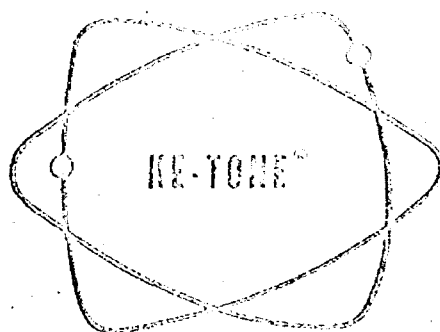
July and August, 1969 Production

Well	July Production			August Production		
	Oil	Water	Gas	Oil	Water	Gas
4	345	5918	182	198	4512	104
5	0	0	0	0	0	0
6	171	2052	680	106	1692	424
10	0	0	0	0	0	0
11	0	0	0	66	0	226
12	655	0	4372	408	0	2729
13	683	0	97	484	0	70
15	0	0	0	287	0	461
17	1024	3157	194	640	2017	123
Total	2878	11,127	5525	2189	8821	4137

Cumulative Production to 9-1-69: 1,861,800 Barrels

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 4236

TELEPHONE: HOBS 393-6215



UNITED CHEMICAL CORPORATION
OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBS, NEW MEXICO 88240

Company Continental Oil Company

Field Wolfcamp West Sep.

Lease Anderson Ranch

Sampling Date 9-30-69

Type of Sample _____

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	73.85	1,480
Magnesium (Mg++)	30.43	370
Sodium (Na+) Calculated	861.55	19,807
Carbonate (HCO ₃ -)	12.20	744
Carbonate (CO ₃ -)	NOT FOUND	
Hydroxide (OH-)	NOT FOUND	
Sulphate (SO ₄ -)	48.41	2,325
Chloride (Cl-)	905.22	32,100
7.3% c 68° F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	104.28	5,214
Carbonate Hardness as CaCO ₃ (temporary)	12.20	610
Non-Carbonate Hardness as CaCO ₃ (permanent)	92.08	4,604
Alkalinity as CaCO ₃	12.20	610
Specific Gravity c 68° F	1.035	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 9
CASE NO. 4236

Mohr Water Works

TELEPHONE HOORS 393-6215



UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOORS, NEW MEXICO 88240

Company Continental Oil Company

Field Devonian East Sep.

Lease Anderson Ranch

Sampling Date 9-30-69

Type of Sample _____

WATER ANALYSIS

IONIC FORM		me/l *	mg/l *
Calcium (Ca++)		74.25	1,488
Magnesium (Mg++)		42.02	511
Sodium (Na+)	Calculated	734.78	16,893
Carbonate (HCO ₃ -)		10.70	652
Carbonate (CO ₃ -)		NOT	FOUND
Hydroxide (OH-)		NOT	FOUND
Sulphate (SO ₄ -)		33.83	1,625
Chloride (Cl-)		806.52	28,600
7.3 ^{ph} c 68°F			
Dissolved Solids on Evap. at 103°-105° C			
Hardness as CaCO ₃		116.27	5,814
Carbonate Hardness as CaCO ₃ (temporary)		10.70	525
Non-Carbonate Hardness as CaCO ₃ (permanent)		105.57	5,279
Alkalinity as CaCO ₃		10.70	525
Specific Gravity c 68° F		1.030	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Makes Water Work



TELEPHONE: HOBBS 393-7751
Area Code 505

UNITED CHEMICAL CORPORATION
OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

October 3, 1969

Continental Oil Company
P. O. Box 460
Hobbs, New Mexico 88240

Attention: Mr. J. D. Storts

Dear Mr. Storts:

Attached is the water analysis data on a sample submitted from the Anderson Ranch Unit, Devonian and Wolfcamp waters.

Dick McReynolds came by the laboratory and filtered both of these waters through a 1.2 micron millipore filter, and made a 50 - 50 mixture of the filtrate. There was no visible or filterable precipitation formed. These waters appear to be compatible.

If further information is needed, please let us know.

Very truly yours,

UNITED CHEMICAL CORP. of N.M.

Wayne Roberts
Manager of Technical Services

WR/lt

cc: Mr. L. D. Johnson

Attachments

Makes Water Work

BEFORE THE OIL CONSERVATION COMMISSION

OF THE

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
CONTINENTAL OIL COMPANY FOR AUTHORITY
TO INSTALL AND OPERATE A WATERFLOOD
PROJECT ON THE ANDERSON RANCH UNIT,
ANDERSON RANCH-WOLFCAMP POOL LOCATED
IN SECTIONS 2 AND 11, TOWNSHIP 16 SOUTH,
RANGE 32 EAST, LEA COUNTY, NEW MEXICO

Case 4236

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and respectfully requests authority to install and operate a waterflood on its Anderson Ranch Unit in the Anderson Ranch-Wolfcamp Pool, located in Sections 2 and 11, T16S, R32E, Lea County, New Mexico, and in support thereof Applicant would show:

1. That the attached plat, marked Exhibit 1, shows the Anderson Ranch Unit, the wells thereon, the proposed injection wells and the area two miles radius therefrom.
2. That production from the Anderson Ranch-Wolfcamp Pool is at an advanced stage of depletion and that recovery by primary methods is at or near the economic limit.
3. That engineering investigations indicate that waterflooding the Anderson Ranch-Wolfcamp Pool will be physically and economically feasible.
4. That applicant proposes to inject water into the following wells:

<u>Wells</u>	<u>Location</u>
Anderson Ranch Unit No. 4	Unit B-11-16S-32E
Anderson Ranch Unit No. 5	Unit J-11-16S-32E

5. That the proposed injection wells will be equipped as shown on the schematic diagrams attached hereto and marked Exhibits 2 and 3.

DOCKET MAILED

Date *10-9-69*

6. That applicant proposes to inject a total of approximately 3200 barrels of produced water per day into the two proposed injection wells on a modified crestal pattern. Said water is being produced from the Anderson Ranch-Devonian and Anderson Ranch-Wolfcamp Pools.
7. That the said waterflood will be installed and operated in conformance with Rule 701E.
8. That the proposed secondary recovery will result in the recovery of hydrocarbons which would not be recovered by primary methods and is therefore in the interest of conservation and prevention of waste.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing before the Commission's duly appointed Examiner and that upon hearing, an order be entered granting authority to install and operate a waterflood within the Anderson-Ranch Wolfcamp Pool as described hereinabove.

Respectfully submitted,



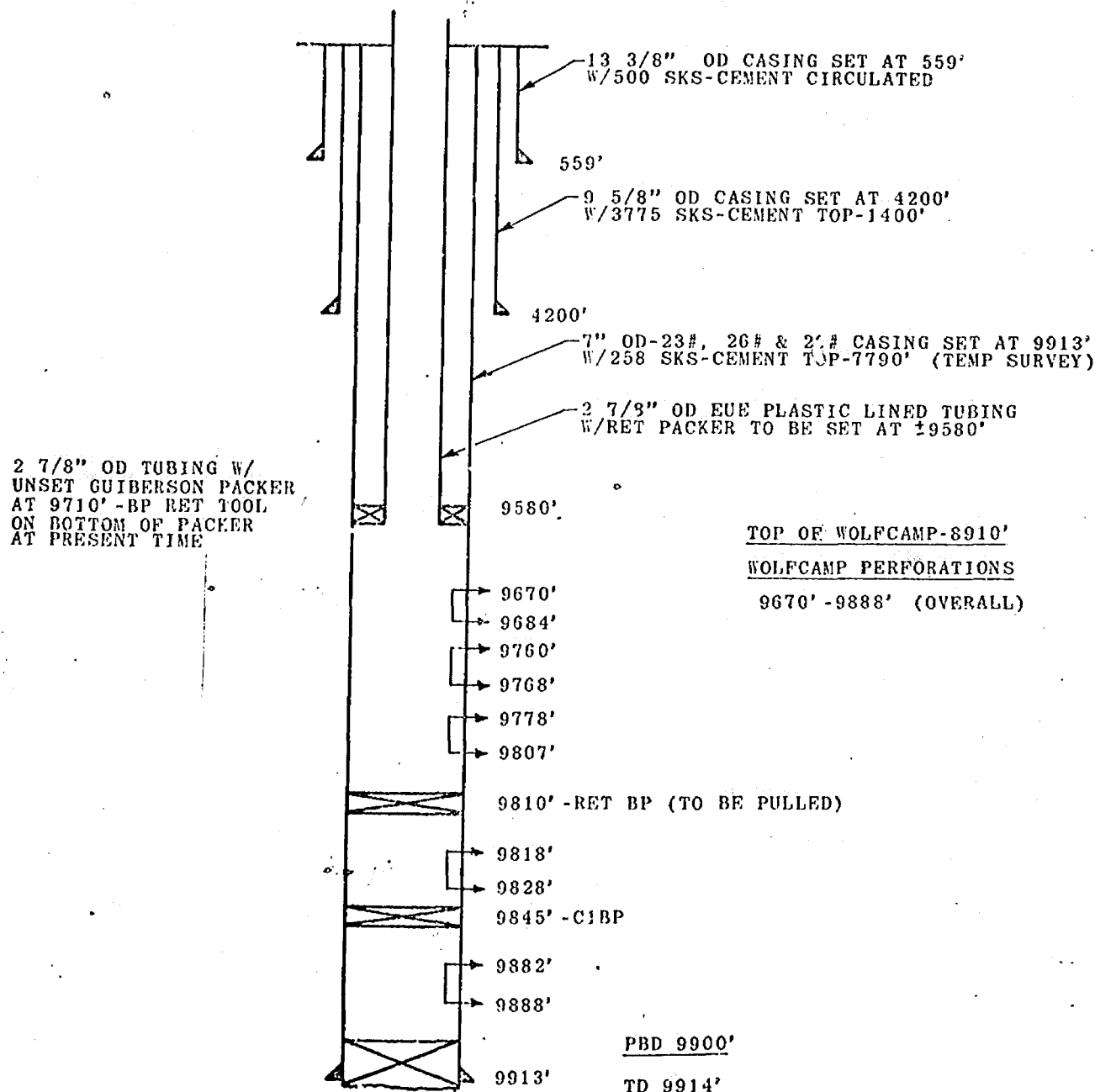
G. C. JAMIESON
Assistant Division Manager

VTL-JS

ANDERSON RANCH UNIT NO. 4

UNIT 'B' 660' FNL & 1980' FEL SEC. 11-T16S-R32E

ELEV-4304' GL
-4315' DF



PROPOSED PROCEDURE

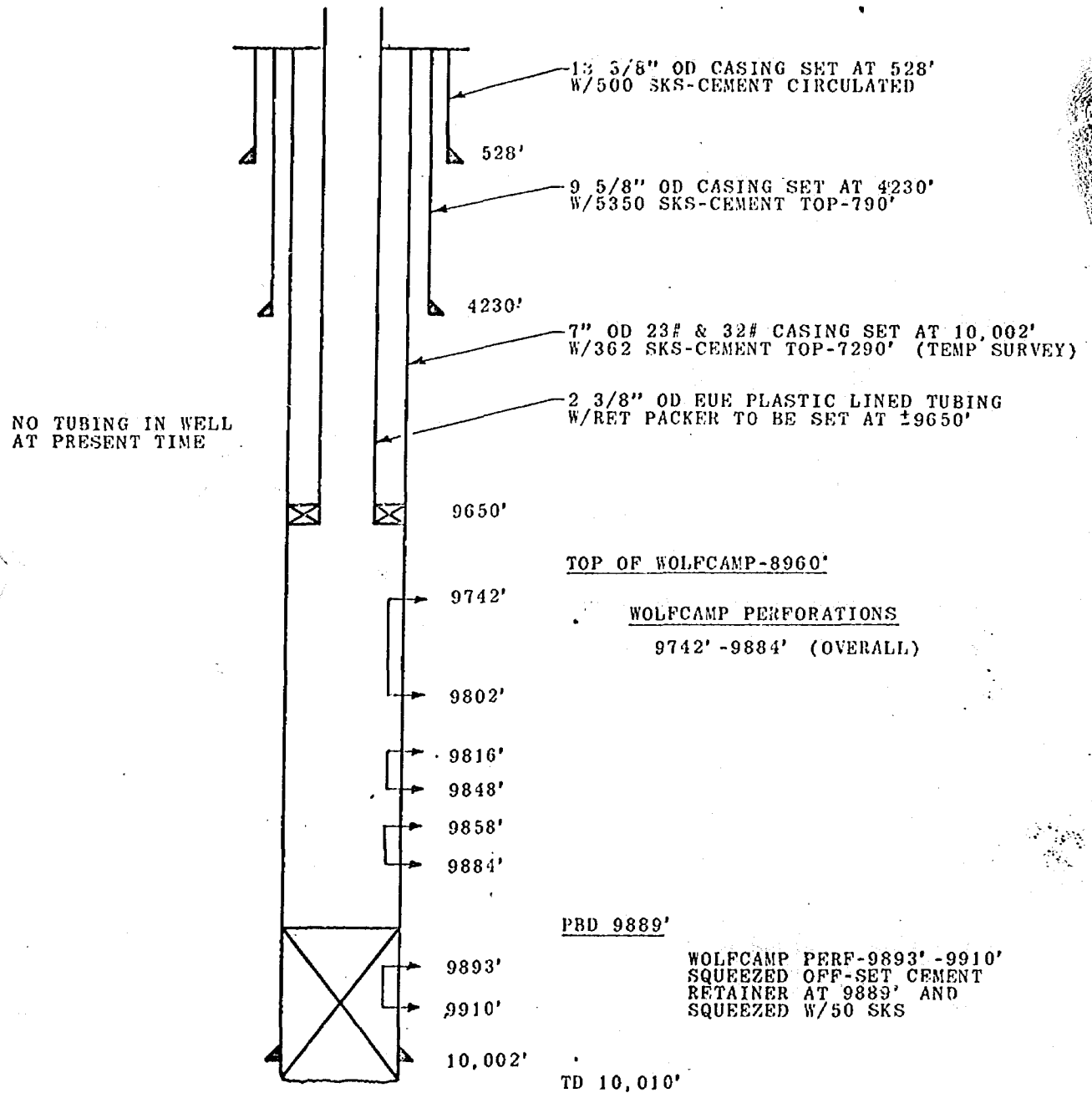
1. PULL RODS & PUMP.
2. LOWER TUBING AND RETRIEVE BRIDGE PLUG SET AT 9810' IF POSSIBLE.
3. PULL TUBING, PACKER & BRIDGE PLUG.
4. RUN 2 7/8" OD EUE N-80 PLASTIC LINED TUBING WITH RET BAKER LOK-SET PACKER TO BE SET AT 9580'.
5. HOOK-UP WELL FOR WATER INJECTION.

NOTE:
CASING TUBING ANNULUS TO BE LOADED WITH TREATED FRESH WATER
(APPROX 300 BBLs)

JAG 9/22/69:erw

4236

ANDERSON RANCH UNIT NO. 5
 UNIT '3' 1980' FSL & 1980' FEL SEC. 11-T16S-R32E
 ELEV-4297' BHP
 -4309' DF



PROPOSED PROCEDURE

1. KILL WELL W/PRODUCED WATER.
2. RUN 2 3/8" OD EUE-N-80 PLASTIC LINED TUBING W-RET BAKER LOK-SET PACKER TO BE SET AT ±9650'
3. HOOK UP WELL FOR WATER INJECTION

NOTE:

CASING TUBING ANNULUS TO BE LOADED WITH TREATED FRESH WATER (APPROX 310 BBLs)

JAG 9/22/69:erw

Case 4236

ROUGH DRAFT FOR WATERFLOOD LETTERS

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Dear Sir:

Reference is made to Commission Order No. R-3863, ^{recently} entered in Case No. 4236, approving the Continental Anderson Ranch Wolfcamp Waterflood Project.

Injection is to be through the two authorized water injection wells, each of which is to be equipped with $2\frac{3}{8}$ -inch or $2\frac{1}{2}$ -inch plastic-lined tubing set in a packer approximately at 600 feet; the casing tubing hangers in each well is to be loaded with an inert fluid and equipped with a pressure gauge at the surface.

As to allowable, our calculations indicate that when ^{one} ~~all~~ of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1113 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

cc: OCC: Hobbs x
Artesia
Aztec

USGS

Mr. Frank Irby, State Engineer Office, Santa Fe, New Mexico

Mr. D. E. Gray

and pending completion of any other wells in the Wolfcamp formation,

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to institute a waterflood project in ~~the~~ its Anderson Ranch-
Anderson Ranch Unit Area, Wolfcamp Pool, by the injection of water into the Wolfcamp formation
Section 11 through the following-described wells in Township 16
~~North~~ South, Range 32 ~~West~~ East, NMPM, Lea
County, New Mexico:

Anderson Ranch Unit Well No. 4, located in
Unit B;
Anderson Ranch Unit Well No. 5, located in
Unit J.

(2) That the subject waterflood project is hereby designated the Continental Anderson Ranch Wolfcamp Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) 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.

DRAFT

GMH/esr

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. 4236

Order No. R- 3563

APPLICATION OF CONTINENTAL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 22, 1969,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this day of October, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, 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, Continental Oil Company,
seeks permission to institute a waterflood project in ~~the~~ its
Anderson Ranch Unit Area, Anderson Ranch-
Wolfcamp Pool, by
the injection of water into the Wolfcamp formation
through its Anderson Ranch Unit Wells Nos. 4 and 5, located,
respectively, in Units B and J of Section 11, Township 16 South,
Range 32 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as "stripper"
wells.

(4) That the proposed waterflood project should result in
the recovery of otherwise unrecoverable oil, thereby preventing
waste.