

CASE 3124: Appli. of CONTINENTAL
to amend ORDER NO. R-2566, Lea
County, N. Mex.

CASE No.

3124

Application,

TRANSCRIPTS,

SMALL Exhibits

ETC.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

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

October 23, 1964

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

Re: CASE NO. 3124
ORDER NO. R-2793
APPLICANT Continental Oil Co.

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

Aztec OCC

OTHER

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. 3124
Order No. R-2793

APPLICATION OF CONTINENTAL OIL
COMPANY TO AMEND ORDER NO. R-
2566, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 13, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 21st day of October, 1964, 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 Order No. R-2566 authorized the applicant, Continental Oil Company, to institute a waterflood project in the Baish Pool by the injection of water into the Yates formation through four wells in the NE/4 of Section 21, Township 17 South, Range 32 East, NMPM, Lea County, New Mexico.

(3) That the applicant seeks amendment of Order No. R-2566 to authorize the injection of approximately 5000 barrels of propane and approximately 9 MMCF of natural gas into each injection well in conjunction with the waterflood project authorized by said order.

(4) That approval of the subject application should result in a more efficient secondary recovery operation, thereby preventing waste.

-2-

CASE No. 3124

Order No. R-2793

IT IS THEREFORE ORDERED:

(1) That Order No. R-2566 is hereby amended to authorize the injection of approximately 5000 barrels of propane and approximately 9 MMCF of natural gas into each injection well in conjunction with the waterflood project authorized by said order.

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

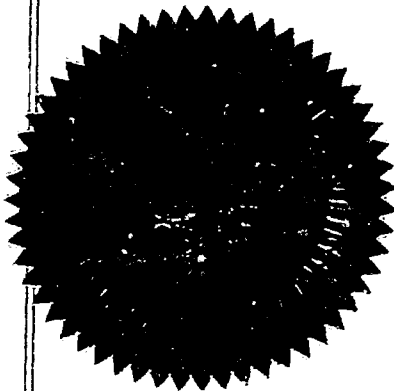
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

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



esr/

Case. 3124,
Heard 10-13-64
Rec. 10-15-64

Grant. Cont. an amendment to
R. 2566 to allow them to use a
propane natural gas wash their
Bain^{Pilot}waterfloor.

Thurs. 10-15-64

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. 2892
Order No. R-2566

APPLICATION OF CONTINENTAL OIL
COMPANY FOR A WATERFLOOD PROJ-
ECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 4, 1963, at Santa Fe, New Mexico, before Elvis A. Utz, 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 11th day of September, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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 authority to institute a waterflood project in the Baish Pool by the injection of water into the Yates formation through four wells in the NE/4 of Section 21, Township 17 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 is in the interest of conservation and should result in recovery of otherwise unrecoverable oil, thereby preventing waste.

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

-2-

CASE No. 2892
Order No. R-2566

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to institute a waterflood project in the Baish Pool by the injection of water into the Yates formation through the following-described four wells in the NE/4 of Section 21, Township 17 South, Range 32 East, NMPM, Lea County, New Mexico:

Baish "A" Well No. 10 to be located 990 feet from the North line and 990 feet from the East line

Baish "A" Well No. 11 to be located 990 feet from the North line and 2310 feet from the East line

Baish "A" Well No. 4 located 2310 feet from the North line and 2310 feet from the East line

Baish "A" Well No. 3 located 2310 feet from the North line and 990 feet from the East line

(2) That the subject waterflood project shall be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including the allowable provisions thereof, and including the provisions with respect to expansion of the waterflood project.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1119 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.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

S E A L

E. S. WALKER, Member

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

esr/

DOCKET: EXAMINER HEARING - TUESDAY - OCTOBER 13, 1964

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 3108: (Continued from the September 30, 1964 examiner hearing)

Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Dagger Draw Well No. 1, located in Unit O of Section 6, Township 20 South, Range 25 East, Eddy County, New Mexico, to produce gas from the Strawn and Morrow formations through the casing-tubing annulus and through tubing, respectively.

CASE 3115: Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Lowe-State Well No. 1 located in Unit F of Section 36, Township 21 South, Range 23 East, Eddy County, New Mexico, to produce gas from the Cisco Canyon and Lower Morrow formations through parallel strings of tubing.

CASE 3116: Application of Tex-Star Oil & Gas Corporation for force-pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Pearl-Queen Pool underlying the NW/4 NW/4 of Section 24, Township 19 South, Range 35 East, Lea County, New Mexico.

CASE 3117: Application of Tex-Star Oil & Gas Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin-Dakota Pool underlying the E/2 of Section 26, Township 30 North, Range 14 West, San Juan County, New Mexico.

CASE 3118: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Penrose Skelly Unit Area comprising 4,400 acres, more or less, of Federal, State and Fee lands in Township 22 South, Range 37 East, Penrose Skelly Pool, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

CASE 3119: Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Penrose Skelly Pool in its South Penrose Skelly Unit Area by the injection of water into the Grayburg formation through six wells in Sections 5 and 6, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 3120: Application of Dr. Sam G. Dunn for a Review of the Commission's Directive of August 27, 1964, concerning salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks a review of the Commission's Directive of August 27, 1964, prohibiting the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Pool and adjacent areas in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. Applicant specifically requests an extension of the November 1st deadline and a determination that salt water disposal in unlined pits in Sections 26, 27, and 34, Township 7 South, Range 26 East, among other areas, does not constitute a hazard to fresh waters and should be excepted from the Commission's directive.

CASE 3121: Application of Dr. Sam G. Dunn for a water injection project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a water injection project by the injection of water into the San Andres formation through one well located in Section 33, Township 6 South, Range 26 East, Linda-San Andres Pool, and by the injection of water into one well in Section 32 or 33, and one well in Section 27, Township 7 South, Range 26 East, all in Chaves County, New Mexico.

CASE 3122: Application of Continental Oil Company for an unorthodox location and a non-standard unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its Meyer B-4 Well No. 27 at an unorthodox location 5,610 feet from the South line and 660 feet from the East line of Section 4, Township 21 South, Range 36 East, Oil Center Blinebry Pool, Lea County, New Mexico. Said well would be dedicated to a 53-acre non-standard unit comprising that portion of Lots 1 and 8 of said Section 4 which is productive from the Oil Center Blinebry Pool.

CASE 3123: Application of Continental Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of special pool rules including a provision for 80-acre spacing and a gas-oil ratio of 6000 to 1 for the Monument-Tubb Pool in Township 20 South, Range 37 East, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

- CASE 3124: Application of Continental Oil Company to amend Order No. R-2566, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2566, which authorized the Continental Baish-Yates Waterflood Project, to also provide authority for the injection into each well of approximately 500 barrels of LPG.
- CASE 3125: Application of Shell Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Antelope Ridge Unit Well No. 4-1 in Unit B of Section 4, Township 24 South, Range 34 East, Lea County, New Mexico, to produce gas from the Antelope Ridge Pennsylvanian and Antelope Ridge Devonian Gas Pools through parallel strings of tubing.
- CASE 3126: Application of Murphy Oil Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Pool by the injection of water into the Gallup formation through five wells in Sections 17, 18 and 20, Township 32 North, Range 17 West, San Juan County, New Mexico. Applicant further seeks the promulgation of special rules for the operation of said project.
- CASE 2654: (Reopened)
In the matter of Case No. 2654 being reopened pursuant to the provisions of Order No. R-2349, which order established temporary 320-acre gas proration units for the Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, for a period of two years. (The Commission will consider indefinite extension of Order No. R-2349 in the absence of evidence to the contrary.)
- CASE 3127: Application of Shell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the China Canyon Unit Area comprising 7611 acres, more or less, of Federal, State and Fee lands in Township 23 South, Ranges 23 and 24 East, Eddy County, New Mexico.
- CASE 3128: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Grama Ridge Unit Area comprising 3052 acres, more or less, of Federal and State lands in Townships 21 and 22 South, Range 34 East, Lea County, New Mexico.

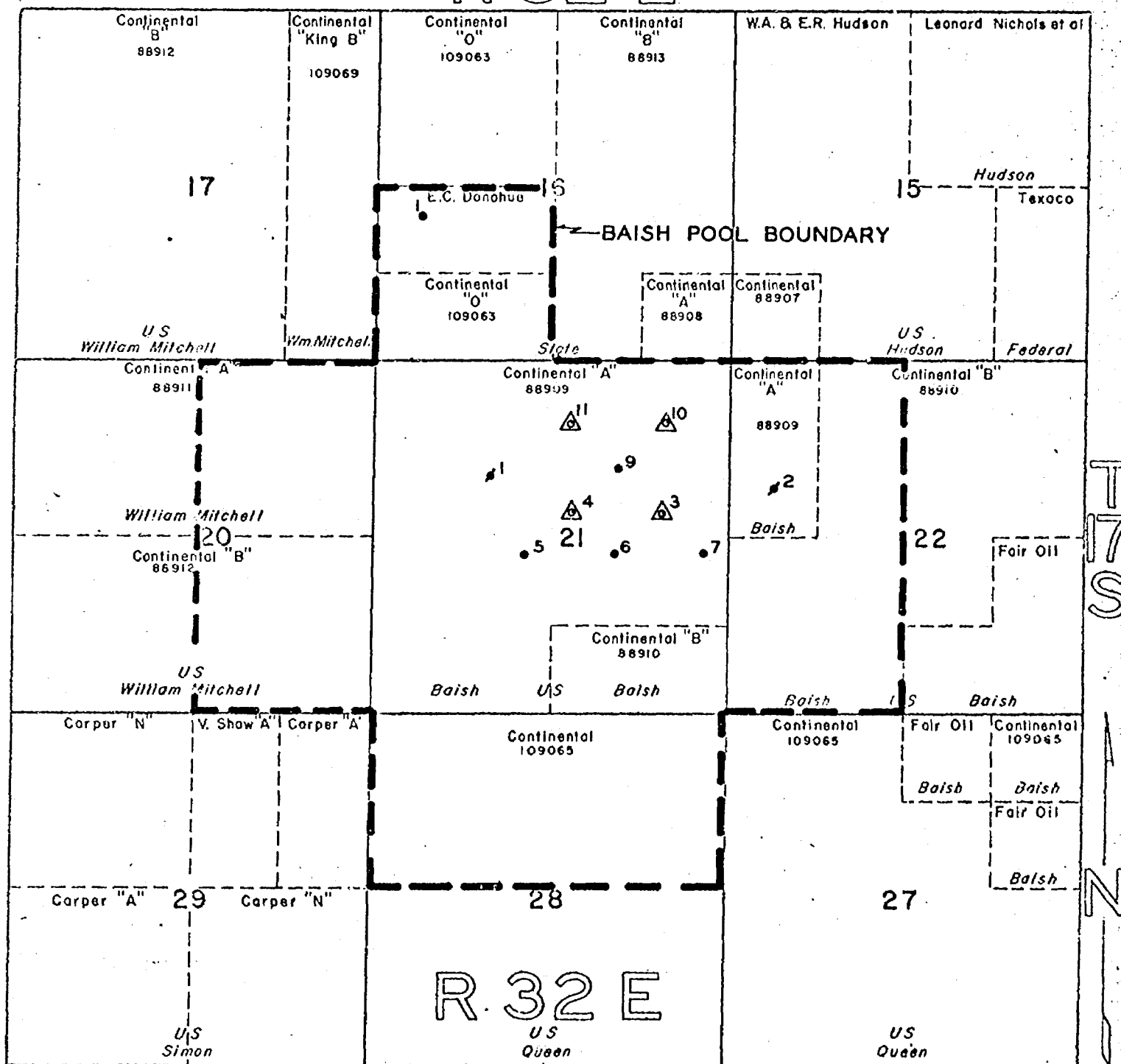
PAGE -4-

October 13, 1964 Examiner Hearing

CASE 3129: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Wilson Deep Unit Area comprising 3360 acres, more or less, of State and Fee lands in Township 21 South, Range 34 East, Lea County, New Mexico.

ir/

R 32 E



CONTINENTAL OIL COMPANY

Production Department

Hobbs District

BAISH YATES POOL

Exhibit No. 1

J. Boylan 10-7-64 RFM

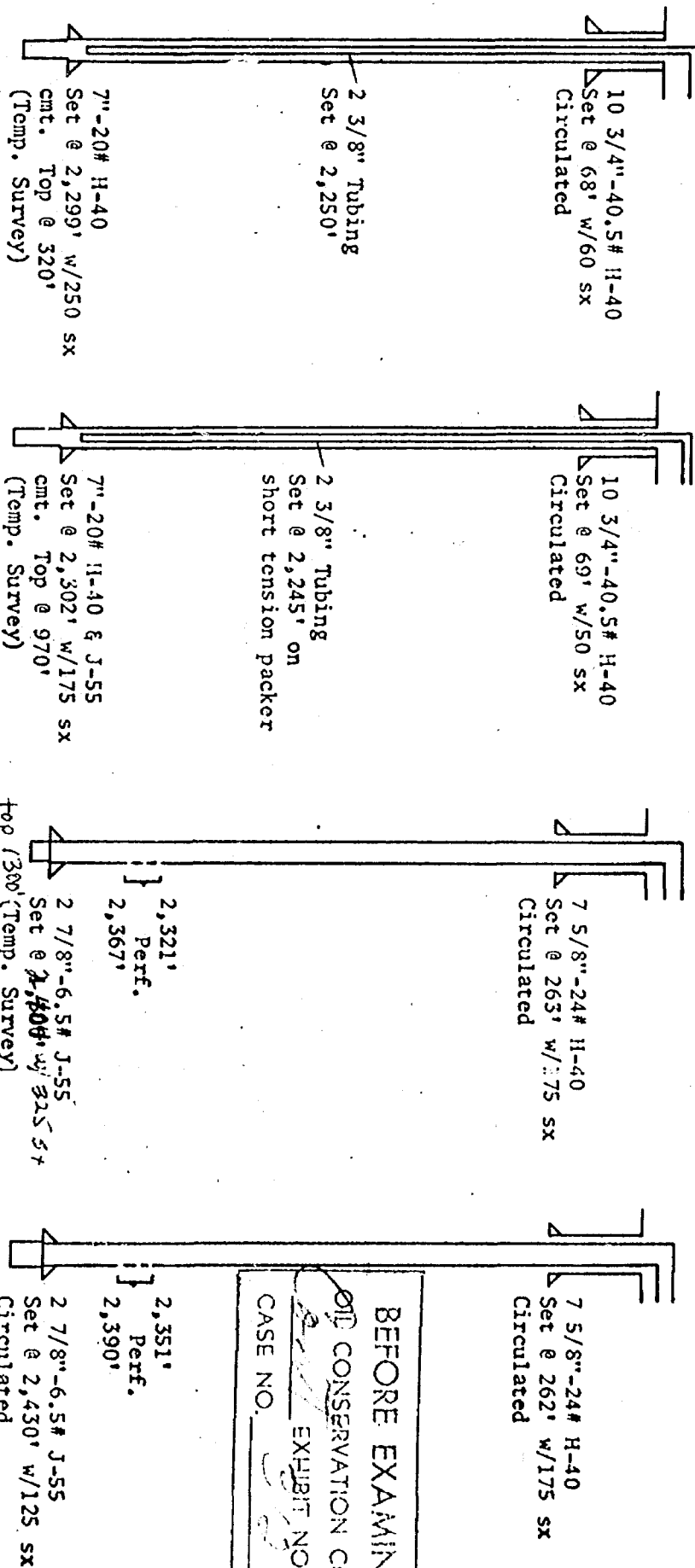
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3124
CASE NO. 3124

Baish "A" No. 3
2310' FNL & 990' FEL
Sec. 21-17-32
Elev. 4039' DF

Baish "A" No. 4
2310' FN & EL
Sec. 21-17-32
Elev. 4054' DF

Baish "A" No. 10
990' FNL & 980' FEL
Sec. 21-17-32
Elev. 4023' DF

Baish "A" No. 11
990' FNL & 2310' FEL
Sec. 21-17-32
Elev. 4056' DF



Completed: 6-26-48
OH: 2299-2387'
TD: 2387'

Completed: 4-16-48
OH: 2302-2380'
TD: 2510'

Completed: 10-30-63
Perfs: 2321-29, 2339-41' w/3
JSPF & 2363-67' w/5 JSPF
TD: 2410'

Completed: 10-8-63
Perfs: 2351-52 w/2 JSPF,
2363-66 & 2387-90' w/4 JSPF
TD: 2436'

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSIO
EXHIBIT NO. 2
CASE NO. 2024

BAISH-YATES WATERFLOOD
INJECTION WELL SCHEMATICS

10-7-64 J.B.

RFL

Exhibit 2



CONTINENTAL OIL COMPANY

P. O. BOX 460
HOBBS, NEW MEXICO

PRODUCTION DEPARTMENT
HOBBS DISTRICT
JACK MARSHALL
DISTRICT MANAGER
G. C. JAMIESON
ASSISTANT DISTRICT MANAGER

September 23, 1964

1001 NORTH TURNER
TELEPHONE: EX 3-4141

New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico

Attention of Mr. A. L. Porter, Jr., Secretary-Director

Gentlemen: Re: Application for Propane
Wash - Baish Yates Pool

As requested by your Mr. D. S. Nutter, we forward herewith an application for permission to use a propane wash in our Baish Yates Waterflood. It is still Continental Oil Company's position that this process should be considered as a well treatment rather than a modification of our waterflood. Under this interpretation, it should not be necessary to have a hearing. Since your office does not appear to concur in our opinion, we forward the application as requested.

It is our understanding that this matter will be placed on the October 13 docket for hearing with two other applications which we have filed.

Yours very truly,

Jack Marshall

JM-DFW

Enc.

cc: RGP GW JWK

DOCKET MAILED

Date 10-1-64

PIONEERING IN PETROLEUM PROGRESS SINCE 1875

BEFORE THE OIL CONSERVATION COMMISSION
OF THE
STATE OF NEW MEXICO

MAIN OFFICE

SEP 24 PM 1

IN THE MATTER OF THE APPLICATION OF
CONTINENTAL OIL COMPANY FOR AUTHORITY
TO EMPLOY A PROPANE WASH FOR INCREASING
INJECTIVITY IN THE BAISH YATES WATERFLOOD
PROJECT, LEA COUNTY, NEW MEXICO

Case 3124

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and respectfully requests permission to employ a propane wash for the purpose of improving injectivity in the Baish Yates Waterflood in Lea County, New Mexico, and in support thereof would show:

1. Applicant is the owner and operator of wells producing from the Baish Yates Pool.
2. That the Commission in Order No. R-2566 authorized a waterflood project on Applicant's Baish "A" Lease located in Section 21, T-17S, R-32E, Lea County, New Mexico.
3. That it has been shown that injection of moderate quantities of propane into injection wells provides a substantial increase in injectivity.
4. Applicant desires to inject propane into the injection wells of the said Baish Yates Waterflood Project in order to improve injectivity.
5. That the use of propane, as contemplated by Applicant, will neither cause waste nor impair correlative rights.

WHEREFORE, Applicant respectfully prays that this application be set for hearing before the Commission's duly-appointed examiner and that upon hearing an order be entered authorizing Applicant to employ a propane wash as described above.

Respectfully submitted,
CONTINENTAL OIL COMPANY

By: [Signature]
District Manager
of Production

JM-DFW

DRAFT
JMD/esr
October 20, 1964

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CF Subj. _____

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

CASE No. 3124

Order No. R-2193

APPLICATION OF CONTINENTAL OIL
COMPANY TO AMEND ORDER NO. R-
2566, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
October 13, 1964, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this _____ day of October, 1964, 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 Order No. R-2566 authorized the applicant, Con-
tinental Oil Company, to institute a waterflood project in the
Baish Pool by the injection of water into the Yates formation
through four wells in the NE/4 of Section 21, Township 17 South,
Range 32 East, NMPM, Lea County, New Mexico.

(3) That the applicant seeks amendment of Order No. R-2566
to authorize the injection of approximately 5000 barrels of pro-
pane and approximately 9 MMCF of natural gas into each injection
well in conjunction with the water ^{flood project} ~~injection~~ authorized by said
order.

(4) That approval of the subject application should result in a more efficient secondary recovery operation, thereby preventing waste.

IT IS THEREFORE ORDERED:

(1) That Order R-2566 is hereby amended to authorize the injection of approximately 5000 barrels of propane and approximately 9 MMCF of natural gas into each injection well in conjunction with the water ^{flood project} ~~injection~~ authorized by said order.

(2) 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.

dearnley-meier reporting service, inc.

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

1120 SIMMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 13, 1964

EXAMINER

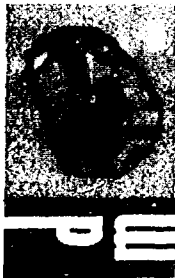
HEARING

IN THE MATTER OF: Application of Continental
Oil Company to amend Order No. R-2566, Lea
County, New Mexico. Applicant, in the above-
styled cause, seeks an amendment to Order
No. R-2566, which authorized the Continental
Baish-Yates Waterflood Project, to also
provide authority for the injection into
each well of approximately 500 barrels of
LPG.

Case No. 3124

BEFORE: ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING



MR. UTZ: Case 3124.

MR. DURRETT: Application of Continental Oil Company to amend Order No. R-2566, Lea County, New Mexico.

MR. KELLAHIN: Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, representing the applicant. I have one witness I would like to have sworn, please.

(Witness sworn.)

VICTOR T. LYON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

(Whereupon, Applicant's Exhibits 1 through 4 Marked for Identification.)

Q Would you state your name, please?

A Victor T. Lyon, L-y-o-n.

Q By whom are you employed and in what position, Mr. Lyon?

A I'm employed by Continental Oil Company as supervising engineer in the Hobbs District Office, Hobbs, New Mexico.

Q Have you testified before the Oil Conservation Commission and made your qualifications a matter of record?

A I have

MR. KELLIAHIN: Are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Kellahin) Are you familiar with the application of Continental Oil Company in Case No. 3124?

A Yes, sir.

Q Would you state briefly the nature of this application and how it came to be filed?

A Yes, sir. This is the application of Continental Oil Company for authority to employ a propane wash in the Baish-Yates Water Flood Project which was approved by Order No. 2566.

Actually, this propane wash process has almost been completed with the full knowledge and consent of the local office of the Commission in Hobbs.

Because of the question on the part of the Commission as to whether or not this was authorized under that Order 2566, they requested that we file this application and present the matter after notice and hearing.

MR. KELLAHIN: At this time I would like to ask the Examiner to take notice of the record in Case 2892 which resulted in the order approving the Water Flood Project Order No. R-2566.

MR. UTZ: Will do.

Q (By Mr. Kellahin) Referring to what has been marked as Exhibit No. 1, will you please describe what is shown on that exhibit?

A Exhibit No. 1 is a location and ownership plat showing the Baish Pool area. The boundaries of the Pool are shown by a heavy dashed line.

The wells completed and/or producing from the Baish Pool, or completed in the Baish Pool, are shown by the usual symbols.

The injection wells, Numbers 3, 4, 10 and 11, are shown with a triangle inscribed around the well, and the producing wells are shown by the normal symbol.

Well No. 1 is a dry hole in the Yates formation. No. 2 has been a dry hole, but I believe that the well will be converted to production.

Our producing wells are Numbers 5, 6, 7, and 9.

Q I see one of the wells, the State No. 1, is Donahue Gulf State No. 1; what formation is that producing from?

A That well is also producing from the Yates and is classified as a Baish-Yates Pool, but as covered in our previous hearing wherein this Water Flood Project was authorized, this well is completed in a different stratigraphic member of the Yates and is not a part of this reservoir.

Q On your Exhibit No. 1, have you shown wells completed

in any other horizon than the Baish-Yates formation?

A No, sir, we have not. There are wells producing from numerous other formations in this area and we have left them off for the purpose of clarity.

Q Is the entire Water Flood Project located within the boundaries of a single lease?

A Yes, sir, as shown on Exhibit No. 1, the entire Yates Pool Water Flood Project is within the boundaries of the Baish-A lease.

Q Had all of the wells shown on your exhibit been completed at the time of the hearing in Case 2892?

A No, sir. At that time we had informed the Commission that it was our intention to drill wells Numbers 9, 10, and 11, and those wells have now been drilled and completed, No. 9 as a producer and Numbers 10 and 11 as injection wells.

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit and discuss it, please?

A Exhibit No. 2 is a series of schematic diagrams of the injection wells which we are using in the Baish-Yates Water Flood Project. The exhibit shows the size and depth at which the casing was set, the amount of cement used, and the top of the cement.

Wells Numbers 3 and 4 are identical with the information shown at the original hearing. Wells Numbers 10 and

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

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11 are completed approximately as we had indicated they would be completed at the time of our previous hearing.

Q What are Exhibits 3 and 4, Mr. Lyon?

A Exhibits No. 3 and 4 are log tracings, or tracings of the logs, gamma ray sonic logs of the new injection wells. Exhibit No. 3 is the log for Baish-A No. 10; Exhibit No. 4 is the log of Baish-A No. 11.

Q At this time, does Continental propose a procedure in the Baish-Yates Water Flood Project that is different from that proposed at the original hearing?

A No, sir. We are not proposing a change in water flood procedure. We are proposing, however, a slight change in procedure as to the preparation of these wells for water injection.

This change is that we propose to inject a moderate quantity of propane into the injection wells for the purpose of increasing injectivity into those wells. We have considered that this procedure is similar in nature to acidizing or the injection of emulsion breaker or any other of a number of methods of increasing injectivity and considered a stimulation rather than an L.P.G. flood.

Q In your opinion, is the fact that you are injecting propane, does the fact that you are injecting propane into the formation change this from a water flood project to an L.P.G.

flood?

A Not in our opinion. As I stated, we consider this to be a stimulation treatment for the purpose of increasing injectivity rather than an L.P.G. flood which would be for the purpose of increasing the recovery of oil.

Q How does your procedure differ from that that would be used in an L.P.G. flood?

A Primarily the difference is one of quantity. L.P.G. floods involve normally five to ten percent of the pore volume of the area to be swept. In this instance, we are proposing to inject approximately 5,000 barrels of propane into each of our injection wells. This calculates to be approximately 1.5% of the pore volume.

Q What procedure was proposed in conducting this stimulation treatment?

A We propose to proceed as follows: --

Q And you have proceeded, is that correct?

A Most of this has been completed.

Q Yes.

A Number 1, conduct a water injectivity test of 5,000/1 to a thousand barrels.

Two, inject solution of propane and water until 5,000 barrels of propane and 600 barrels of water have been injected.

Three, inject solution of natural gas and water until

the total of 9,000,000 cubic feet and 900 barrels of water have been injected.

Four, place the operation on normal water injection.

Q Does this procedure as you have outlined it apply to each individual injection well, or is that for the project as a whole?

A This is for each individual well.

Q What purpose does the propane serve in this propane wash procedure?

A Laboratory tests have shown that the capacity of a core to conduct injected water is increased by decreasing the amount of residual oil. These tests have also shown that propane acts as a solvent for the residual oil. When the core is swept with gas after the injection of propane, the residual oil is found to have been substantially reduced.

The reduction of residual oil from the pore openings increases the permeability to water simply by enlarging the openings through which the water flows.

Q That is based on laboratory tests. Has the procedure been proven in the field?

A Yes, sir. This procedure was successfully employed in the Penn Pre-Cambrian Pool in Canada. It was found in this field, or in the field test conducted in this pool that the injection of propane, water and natural gas as described

above resulted in increasing injection rates two to seven fold. It was also observed that the tighter sections benefit to a greater degree than the more permeable sections.

Q What prompted Continental to apply the propane wash treatment in the Baish-Yates Pool?

A There are four basic reasons.

Number One, any increase in injection rates will proportionately shorten the life of the project and provide economic gain by reduced overall operating expenses.

Number Two, in coring the three water flood development wells, that is wells No. 9, 10 and 11, some of the pay was determined to be much less permeable than the main sand pay.

As stated previously, the propane natural gas treatment is more effective in tighter pay, therefore, the stimulation treatment should tend to balance the injection rates into all pay which in turn would provide additional oil which would otherwise be unrecoverable.

Number Three, a supply of propane and natural gas is readily available to conduct the stimulation treatment.

Number Four, any basic operating data developed on this small flood project could possibly be utilized in larger water flood projects.

Q In your opinion, will the use of the propane as proposed in this application result in a greater recovery of

oil from the Baish-Yates Pool?

A Yes, we expect recovery of oil to be increased at least to the extent of the volume of propane injected. In other words, we believe that the propane will mix with the residual oil. We further believe that the residual oil after water flooding will not be greater than had we not used the propane. Consequently, we believe that the propane will replace some of the oil which is left as residual oil, and the recovery of crude oil should be increased to this extent.

Q To sum up your testimony, in your opinion is there any basic change on Continental's part from the water flood project that has already been approved by this Commission?

A No, sir, we do not believe there is a basic change. We feel very strongly that the propane used in this flood is a preparation procedure and is a stimulation of the injection wells and should have little or no effect on the recovery of oil and it will be conducted, other than this particular feature, just as we had informed the Commission previously.

Q Were Exhibits 1, 2, 3 and 4 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 4 conclusive.

MR. UTZ: Without objection Exhibits 1 through 4 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits 1 through 4 were offered and entered into evidence)

MR. KELLAHIN: That's all I have on direct examination.

MR. UTZ: Any questions of the witness?

MR. DURRETT: I have a question, please.

CROSS EXAMINATION

BY MR. DURRETT:

Q Am I correct now, that what you are seeking is authority to inject how many barrels? That's my question coming at it backward. How many barrels are you going to put in each well?

A Five thousand barrels. I might mention that the advertisement shown on the docket furnished by the Commission is incorrect in that it states five hundred barrels. I believe also that the published advertisement in the Hobbs paper did state five thousand barrels.

Q It said five thousand.

A Yes.

Q One other question. Do I understand correctly that you will get your L.P.G. back at least in some hydrocarbon form, is that correct, it won't be lost forever, or will it be just lost as been utilized as a part of your flood system?

A We are not certain that all of the L.P.G. will be

recovered. As a matter of fact, we have asked the U.S.G. survey to consider permitting us to recover propane without paying additional royalty on it since we have paid royalty on it once.

It was their interpretation that this is not an L.P.G. flood, that we would not recover the L.P.G. per se from the well and consequently they would not grant us the right to avoid the double payment of royalty.

Q So, if it comes mixed up, if it comes up mixed with oil, you just pay right on the oil?

A Yes, sir.

Q One other question. I believe you stated you also wanted to put natural gas in?

A Yes, sir.

Q Is that in each well?

A Yes, sir.

Q How much gas, do you have an idea?

A Nine hundred million -- I had better check that. I believe it was nine hundred million cubic feet. Nine million.

Q Nine million cubic feet into each well?

A Yes, sir.

Q Then you will come in with water.

A Yes, sir. Nine hundred barrels of water.

MR. UTZ: Are there any other questions?

MR. DURRETT: I have just one other question. Mr. Lyon, referring to your Exhibit 1, these wells constitute the flood as you propose it now or in the future, is that correct?

A Yes, sir.

Q Were all of these wells specifically authorized, particularly your injection wells, by this order we're speaking of, 2566?

A Yes, sir. The injection wells which we proposed at that time and which were then existing were authorized and we were also authorized to drill three additional wells, two as injection wells and one as a producing well.

Q So it will not be necessary to amend the order as far as locations are concerned?

A No, sir.

MR. DURRETT: Thank you.

RE-DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Over what period of time has this injection taken place and how long will it take place?

A I don't have in my possession right now the date that this propane injection started, but it will be completed before the end of October.

Q Could you give an estimate over what period of time

the entire injection takes place?

A This is strictly a guess. I think the period of approximately 60 to 90 days.

MR. KELLAHIN: That's all.

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

(Witness excused.)

MR. UTZ: Any statements? The case will be taken under advisement.

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of 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.

Witness my Hand and Seal this 26th day of October, 1964.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3124, heard by me on Oct. 13, 1964.

Shirley J. [Signature], Examiner
New Mexico Oil Conservation Commission