

Union Oil Company of California

205 EAST WASHINGTON AVENUE



LOVINGTON, NEW MEXICO

UNIT OPERATOR
SOUTH CAPROCK QUEEN UNIT

September 5, 1963

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Expansion of Waterflood Project Area,
South Caprock Queen Unit, Chaves
County, New Mexico (Case No. 2032,
Orders R-1729 and R-1729-A)

Dear Mr. Porter:

The Union Oil Company of California, as Operator of the South Caprock Queen Unit in Chaves County, hereby requests administrative approval for the expansion of the waterflood project area and approval to convert an additional four wells in the project area to water injection service. In addition permission is sought to drill three new wells and re-enter two wells for the purpose of completion as water injection wells. This request is submitted pursuant to the provisions of Rule 701-E, paragraph 5, of the Rules and Regulations of the New Mexico Oil Conservation Commission.

The wells proposed for conversion to water injection service are as follows:

1. Tract 7A, Well 15-33 located in SW $\frac{1}{4}$ of SE $\frac{1}{4}$, Sec. 33, T-14-S, R-31-E, NMPM
2. Tract 70, Well 11-33 located in NE $\frac{1}{4}$ of SW $\frac{1}{4}$, Sec. 33, T-14-S, R-31-E, NMPM
3. Tract 23, Well 4-29 located in NW $\frac{1}{4}$ of NW $\frac{1}{4}$, Sec. 29, T-15-S, R-31-E, NMPM
4. Tract 39, Well 8-30 located in SE $\frac{1}{4}$ of NE $\frac{1}{4}$, Sec. 30, T-15-S, R-31-E, NMPM

The new wells proposed for completion as water injection wells are:

1. Tract 40, Well 6-29 located in SE $\frac{1}{4}$ of NW $\frac{1}{4}$, Sec. 29, T-15-S, R-31-E, NMPM
2. Tract 29, Well 7-20 located in SW $\frac{1}{4}$ of NE $\frac{1}{4}$, Sec. 20, T-15-S, R-31-E, NMPM
3. Tract 69A, Well 5-33 located in SW $\frac{1}{4}$ of NW $\frac{1}{4}$, Sec. 33, T-14-S, R-31-E, NMPM

The wells proposed for re-entry and completion as water injection wells are:

1. Tract 51, Well 14-20 located in SE $\frac{1}{4}$ of SW $\frac{1}{4}$, Sec. 20, T-15-S, R-31-E, NMPM (Ex-Collier: Gulf State No. 2)
2. Tract 21, Well 11-X-20 located in center of NE $\frac{1}{4}$ of SW $\frac{1}{4}$, Sec. 20, T-15-S, R-31-E, NMPM (Ex-Penrose A. L. Estate No. 2)

Water injection commenced in the South Caprock Queen Unit on May 23, 1961. Ten wells situated along the contact between the gas cap and the oil zone were placed on injection at that time. The purpose of this initial pattern was to prevent the migration and loss of recoverable secondary oil into the gas cap. Since May, 1961, the project area had been expanded seven times. These expansions are listed below:

1. April, 1962 - Administrative Order No. WFX-102. (Seven new injection wells).
2. August, 1962 - Administrative Order No. WFX-116. (Five new injection wells).
3. December, 1962 - Administrative Order No. WFX-124. (Six new injection wells).
4. January, 1963 - Administrative Order No. WFX-127. (Three new injection wells).
5. March, 1963 - Administrative Order WFX-134 (Four new injection wells).
6. May, 1963 - Administrative Order WFX-136 (One new injection well).
7. June, 1963 - Administrative Order WFX-138 (Seven new injection wells).

As of August 1, 1963, 9,172,089 barrels of water have been injected into 43 wells.

Stimulation from the water injection program has recently been observed in six additional wells. Eight of the nine proposed injection wells are offsets to these stimulated wells. The ninth is a stimulated well. The location of the subject wells is shown on the attached plat (Exhibit I). These wells are a part of the master plan of operation for the project as presented at the hearing on Case No. 2032. This was Union's application for authority to institute a water-flood project in the South Caprock Queen Unit.

In support of this application, the following are attached:

Exhibit I: A plat of the South Caprock Queen Unit showing the present project area, the proposed expansion of the project area and the location of all injection and producing wells. The six newly stimulated wells, the four wells to be converted to injection service, the three new wells proposed for completion as injectors and the two re-entries are identified on the plat. Because this is a Unit operation, there are no offset operators who will be affected by this proposed expansion.

Exhibit II: Commission Form C-116 showing production tests of the six stimulated wells both before and after being affected by the waterflood.

Exhibit III: A table showing the casing program of the four proposed injectors (conversions).

Exhibit IV: A table outlining the proposed drilling program for the three new wells and two re-entries.

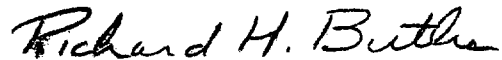
Conversion of the four wells, drilling of three wells and re-entry of two wells is recommended in order to continue to maintain proper control of the advancing flood front. This will permit a more efficient sweep of the reservoir in the project area.

Porter - 3

By copy of this application, the State Engineer is being advised of the proposed conversions. Attached is a copy of our transmittal letter to the State Engineer's Office.

Three copies of this letter and supporting data are transmitted herewith, as requested in Rule 701-E. Please contact me if any additional information is required for this application.

Very truly yours,

A handwritten signature in cursive script that reads "Richard H. Butler".

Richard H. Butler
Unit Engineer

RHB:am

Enclosures (4)

cc: Mr. Frank Irby
State Engineer's Office

Union Oil Company of California

205 EAST WASHINGTON AVENUE



LOVINGTON, NEW MEXICO

UNIT OPERATOR
SOUTH CAPROCK QUEEN UNIT

September 5, 1963

Mr. Frank Irby
Chief of Water Rights Division
State Engineer's Office
State Capitol Building
Santa Fe, New Mexico

Re: Casing Data on Proposed Injection
Wells, South Caprock Queen Unit,
Chaves County, New Mexico

Dear Mr. Irby:

Attached please find a copy of an application submitted by the Union Oil Company of California to the New Mexico Oil Conservation Commission requesting administrative approval to expand our waterflood project in the South Caprock Queen Unit. This expansion will include the conversion of an additional four producing wells to water injection service, drilling of three new water injection wells and the re-entry of two wells. The application is in accordance with the provisions of Rule 701-E of the Rules and Regulations of the New Mexico Oil Conservation Commission.

Exhibit III of the attached application is a table of casing information on the four wells to be converted to injection service. Exhibit IV is a summary of the completion techniques to be used in the proposed new and re-entered injection wells. All nine wells will be completed with plastic lined tubing and tension packers set just above the perforations or open hole in the Queen Sand. The annulus between the casing (oil string) and the tubing will then be filled with an inhibited water for protection against corrosion. The maximum anticipated surface injection pressure for the seven wells will be 1000 psig.

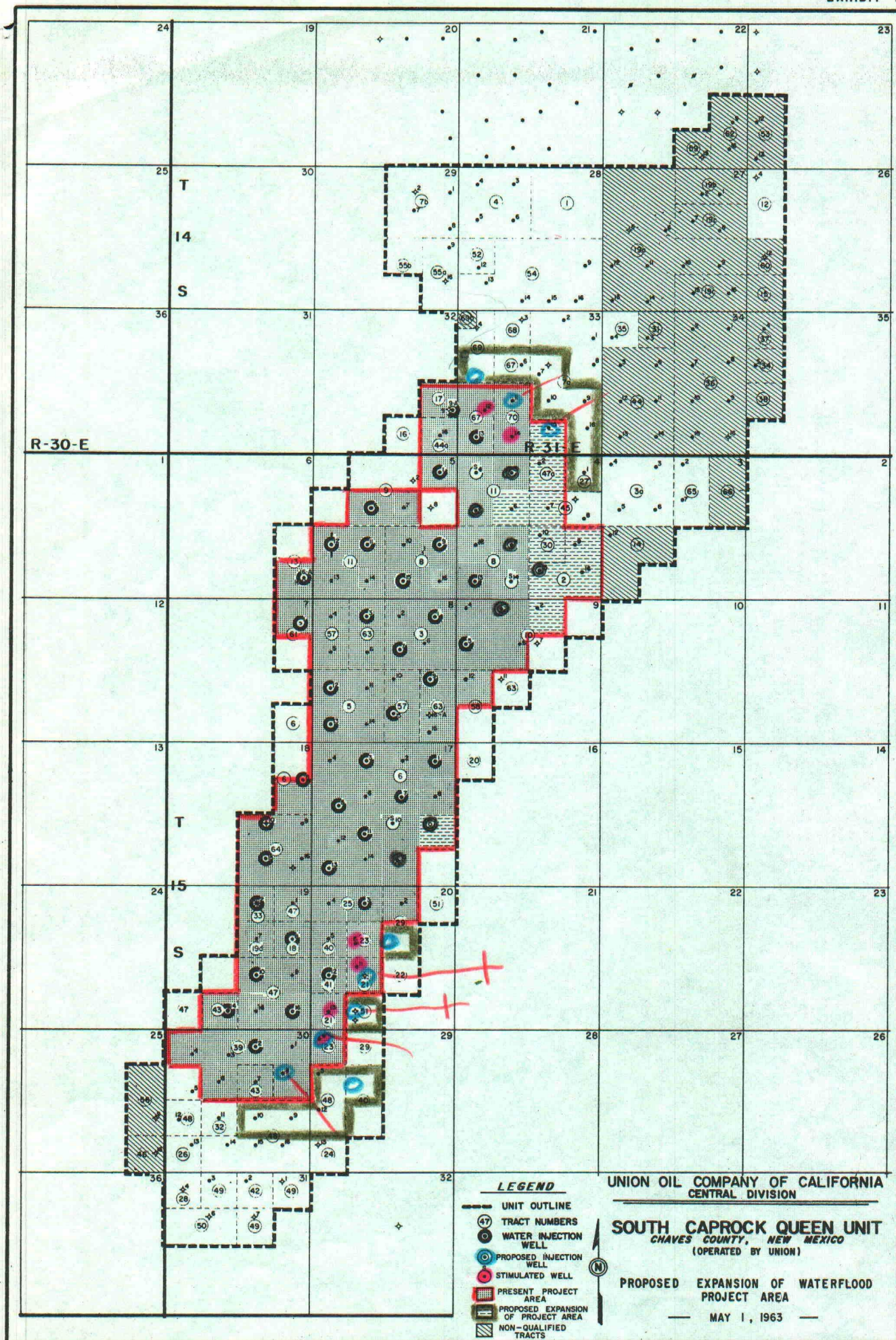
Data on the age, grade and condition of the various casing strings in the four wells to be converted are tabulated in Exhibit III.

If you are in agreement with this proposal, we would appreciate your so notifying the Secretary-Director of the New Mexico Oil Conservation Commission as soon as possible. Thank you for your consideration of this matter.

Very truly yours,

Richard H. Butler
Unit Engineer

RHB:am
Attachments (4)
cc: Mr. A. L. Porter, Jr. (3)



NEW MEXICO OIL CONSERVATION COMMISSION

GAS-OIL RATIO REPORT

Exhibit II

OPERATOR Union Oil Company of California POOL Caprock Queen (South Caprock Queen Unit)

ADDRESS 205 E. Washington, Lovington, New Mexico MONTH OF June, July, August, 19 63

SCHEDULED TEST..... COMPLETION TEST..... SPECIAL TEST XX (Check One)
(See Instructions on Reverse Side) (Tests to verify waterflood stimulation)

Lease	Well No.	Date of Test 1963	Producing Method	Choke Size	Test Hours	Daily Allowable Bbls.	Production During Test			GOR Cu. Ft. Per Bbl.
							Water Bbls.	Oil Bbls.	Gas MCF	
1. Tract 2	11-20	7-7	P	-	24	1	5	6	TSTM	-
Tract 2	11-20	8-14	P	-	24	10	4	38	TSTM	-
2. Tract 21	13-20	5-7	P	-	24	4	0	$\frac{1}{2}$	TSTM	-
Tract 21	13-20	8-21	P	-	24	30	14	167	TSTM	-
3. Tract 23	6-20	8-7	P	-	24	20	1	11	TSTM	-
Tract 23	6-20	8-28	P	-	24	20	1	23	TSTM	-
4. Tract 23	4-29	6-6	P	-	24	3	0	6	TSTM	-
Tract 23	4-29	8-29	P	-	24	30	0	78	TSTM	-
5. Tract 67	12-33	5-31	P	-	24	4	0	3	TSTM	-
Tract 67	12-33	8-24	P	-	24	3	0	12	TSTM	-
6. Tract 70	14-33	6-18	P	-	24	5	0	3	TSTM	-
Tract 70	14-33	8-4	P	-	24	5	0	17	TSTM	-

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60 degrees F. Specific gravity base will be 0.60.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission. In accordance with Rule 301 and Appropriate Pool Rules.

(I certify that the information given is true and complete to the best of my knowledge.)

Date September 5, 1963

Union Oil Company of California
CompanyBy Richard H. Butler
Richard H. Butler
Unit Engineer
Title

SOUTH CAPROCK QUEEN UNIT
Chaves County

Exhibit 111
9-5-63

CASING DATA FOR PROPOSED INJECTION WELLS

<u>Tract</u>	<u>Well</u>	<u>TD</u>	<u>ETD</u>	<u>Perforations</u>
70	11-33	3130	3130	3104'-3116'
7-A	15-33	3128	3128	3110' - 3116'
23	4-29	3163	3163	OH-3140' - 3163'
39	8-30	3159	3157	3140' - 3152'

SURFACE CASING

<u>Tract</u>	<u>Well</u>	<u>Size</u>	<u>Setting Depth</u>	<u>Cement Sacks</u>	<u>Circ.</u>	<u>Grade Pipe</u>	<u>Weight, Lbs/ft</u>	<u>Age, Years</u>	<u>Condition</u>
70	11-33	8 5/8"	313	275	Yes	J-55	36	8	New
7-A	15-33	8 5/8"	330	145	Yes	J-55	32	12	Good
23	4-29	12 3/4"	307	300	Yes	H-40	45	10	Good
39	8-30	8 5/8"	309	175	Yes	J-55	24	10	Good

OIL STRING

<u>Tract</u>	<u>Well</u>	<u>Size</u>	<u>Setting Depth</u>	<u>Cement, Sacks</u>	<u>Grade Pipe</u>	<u>Weight, Lbs/ft</u>	<u>Age, Years</u>	<u>Condition</u>
70	11-33	5 1/2"	3130	175	J-55	14	8	New
7-A	15-33	5 1/2"	3128	100	J-55	15 & 17	10	Good
23	4-29	7"	3140	125	J-55	23	12	Good
39	8-30	5 1/2"	3158	200	J-55	14	8	New

PROPOSED DRILLING PROGRAMS FOR NEW AND RE-ENTERED WELLS FOR INJECTION PURPOSES

Tract	Well	Operation	Abandoned Well Name (If Re-entry)	Location of Well	Proposed T. D.	Est. Top of Queen	Surface Casing	Oil String	Est. E.
40	6-29	New Well	-	1980' FNL, 1610' FWL, Sec. 29, T-15-S, R-31-E, NMPM	3210'	3162'	8 5/8" c 320' w/300 sacks	4 1/2" c 3210' w/200 sacks	318
29	7-20	New Well	-	1980' FNL, 2310' FEL, Sec. 20, T-15-S, R-31-E, NMPM	3200'	3152'	8 5/8" c 320' w/300 sacks	4 1/2" c 3200' w/200 sacks	318
69-A	5-33	New Well	-	2310' FNL, 660' FWL, Sec. 33, T-14-S, R-31-E, NMPM	3130'	3079'	8 5/8" c 320' w/300 sacks	4 1/2" c 3130' w/200 sacks	308
51	14-20	Re-entry	Collier-Gulf State No. 2	658' FSL, 1656' FWL, Sec. 20, T-15-S, R-31-E, NMPM	3210'	3160'	8 5/8" c 300' w/300 sacks	4 1/2" c 3210' w/200 sacks	318
21	11-X-20	Re-entry	Penrose A. L. Estate No. 2	1980' FSL, 1977' FWL, Sec. 20, T-15-S, R-31-E, NMPM	3160'	3140'	12 3/4" c 285' w/300 sacks	7" c 3138' w/300 sacks	314

All well will be completed with 2" EUE, 8rt, J-55 plastic lined tubing with tension packers on bottom (set just above perforations). Annulus between tubing and casing will be filled with inhibited water for corrosion protection.

All the listed wells are either direct or diagonal offsets to stimulated producing wells.

All casing to be run in wells will be new pipe.

NOTE: Tract 21, Well 11-X-20 already is cased to 3138' w/7". The well is presently temporarily abandoned. This is the second well on this 40 acre tract. Tract 21, Well 11-20 is a project area producing well.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

September 13, 1963

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Union Oil Company of California dated September 5, 1963 which seeks administrative approval for the expansion of water flood project area, South Caprock Queen Unit, Chaves County, New Mexico (Case 2032, Orders R-1729 and R-1729-A). On Exhibit IV titled "SOUTH CAPROCK QUEEN UNIT PROPOSED DRILLING PROGRAMS FOR NEW AND RE-ENTERED WELLS FOR INJECTION PURPOSES," the first two sentences following the tabulation state. "All wells will be completed with 2-inch EUE, 8 rt, J-55 plastic-lined tubing with tension packer on bottom (set just above perforations). Annulus between tubing and casing will be filled with inhibited water for corrosion protection." The fourth sentence states "All casing to be run in wells will be new pipe."

In view of these statements, it appears that no threat of contamination to the fresh water which may exist in the area will occur. Therefore, this office offers no objection to the granting of the application.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
cc-Mr. R. H. Butler

By: *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Division