Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731
mailing address: P. O. Box 671
Midland, Texas 79702

UNION 76

Midland District

November 28, 1984

New Mexico Oil Conservation Commission
Hobbs District Office
P. O. Box 1980
Hobbs, New Mexico 88240

SUBJECT:
Union Oil Company of California
Application for Administrative Approval
Reentry of the South Caprock Queen Unit
Well No. 16-30 Water Injection Well
Caprock Queen Field
Chaves County, New Mexico

Gentlemen:

Enclosed is one copy of our application for administrative approval to reenter the South Caprock Queen Unit Well No. 16-30, Section 30, T-15-S, R-31-E, Chaves County, New Mexico. This application was submitted to the NMOCC office in Santa Fe on November 8, 1984. Mr. Gilbert Quintana of the Santa Fe office has advised that the Hobbs district office also requires a copy of this application for review prior to granting approval of the project. We are proposing to reenter the subject well and use it to inject water into the Queen Sand for secondary recovery purposes, which is how the well was utilized prior to abandonment.

Should your office have any questions concerning this application, please do not hesitate to contact us. Thank you for your cooperation in this matter.

Very truly yours,

L. F. Thompson

TLP:dr
Enclosures

L. F. Thompson
District Operations Manager

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731
Mailing Address: P. O. Box 671
Midland, TX 79702

union 76

Midland District

November 6, 1984

New Mexico Oil Conservation Commission
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Gentlemen:

SUBJECT:
Union Oil Company of California
Application for Administrative Approval
Re-entry of the South Caprock Queen Unit
Well No. 16-30 Water Injection Well
To Use for Produced Water Injection

Union Oil Company of California respectfully requests administrative approval to re-enter the South Caprock Queen Unit Well No. 16-30, Section 30, T-15-S, R-31-E, 990' FSL and 990' FEL, Chaves County, New Mexico. We are proposing to re-enter the subject well and use it to inject water into the Queen Sand for secondary recovery purposes. The injection fluid will be produced water from the Queen Sand. Prior to abandonment in 1972, the well was being used for this same purpose.

In support of this application, we enclose the following:

1. Completed Forms C-101, C-102, and C-108.

2. A tabulation of well data for the proposed injection well including a schematic diagram of its present and proposed conditions.

3. A map identifying all wells and leases within a two-mile radius of the subject well.

4. A tabulation of well data on all wells within the one-half mile radius area of review, including schematic diagrams of all plugged wells illustrating plugging details.

5. Data concerning our proposed operation parameters for the well.

6. Water analysis of the injection fluid taken from the producing zone in the area. This is the same zone as the proposed injection zone.

7. A water analysis of a fresh water well located within one-mile of the proposed injection well.

8. A copy of the letter sent to the surface owners notifying them of our application to inject.

9. Copies of letters sent to offset leasehold operators notifying them of our application to inject.

10. A copy of the legal advertisement of our application, published in the Roswell Daily Record.

Should you require any further information concerning this application, please contact us. Thank you for your consideration in this matter.

Very truly yours,

J. C. Merritt
District Production Superintendent

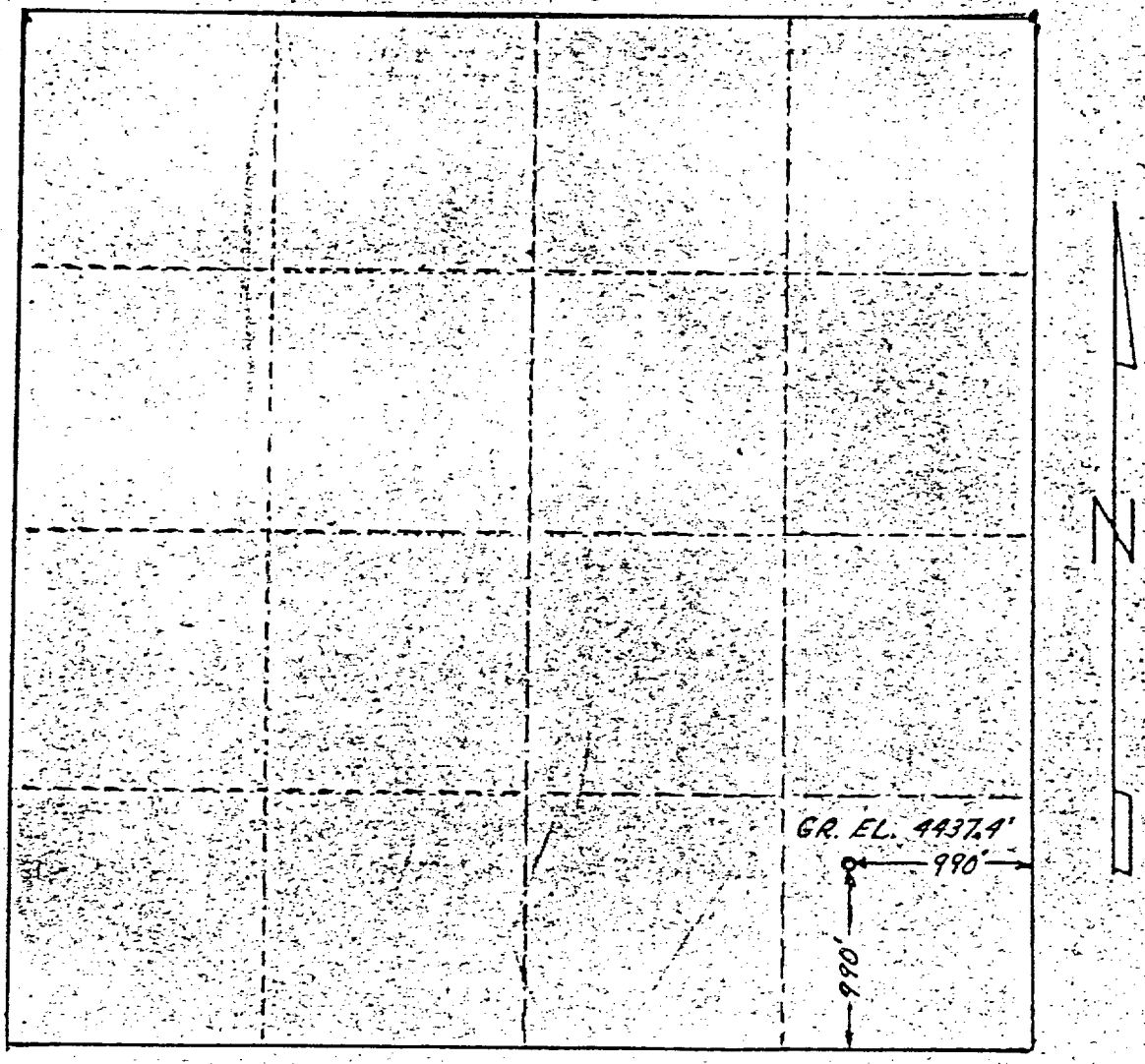
TLP:pd
Enclosures

WELL LOCATION SURVEY PLAT

OPERATOR UNION OIL CO. of CALIFORNIA

LEASE S. CAPROCK QUEEN UNIT

WELL NO. TRACT 48 Well [redacted] 16



SEC. 30, TWP. 15 S., RGE. 31 E., N.M.P.M.

I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD BY ME AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

John W West

JOHN W. WEST, PE & LS NO. 676 AUGUST 2, 1955

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [X] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [ ] no

II. Operator: Union Oil Company of California

Address: P. O. Box 671; Midland, Texas 79702

Contact party: John Merritt Phone: (915) 682-9731

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? [X] yes [ ] no Original Auth. No. R-1729
If yes, give the Division order number authorizing the project Expansion Auth. No. R-2660

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: John Merritt Title District Production Superintendent

Signature: J C Merritt Date: November 6, 1984

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Form C-108
South Caprock Queen Unit Well No. 16-30

III. Well Data

A. (1) Lease Name: South Caprock Queen Unit
Well No.: 16-30
Location: 990' FLS and 990' FEL, Section 30, T-15-S, R-31-E, Chaves County, New Mexico

(2) Casing Record: 8-5/8" casing set at 305' in 12-1/4" hole, cemented with 100 sacks. Top of cement calculated at surface.

5-1/2" casing set at 3195' in 7-7/8" hole, cemented with 175 sacks. Top of cement calculated to be 1862' (100% efficiency).

Plug No. 1 in 5-1/2" casing: 25 sacks from 3100-2853' (calculated).

Plug No. 2 in 5-1/2" casing: 5 sacks at surface.

(3) Tubing: 2-3/8" 4.70# J-55 8rd EUE internally plastic-coated set at approximately 3100'.

(4) Packer: Guiberson Unipacker VI, set at approximately 3100'.

B. (1) Injection Formation: Queen
Field: Caprock Queen Field

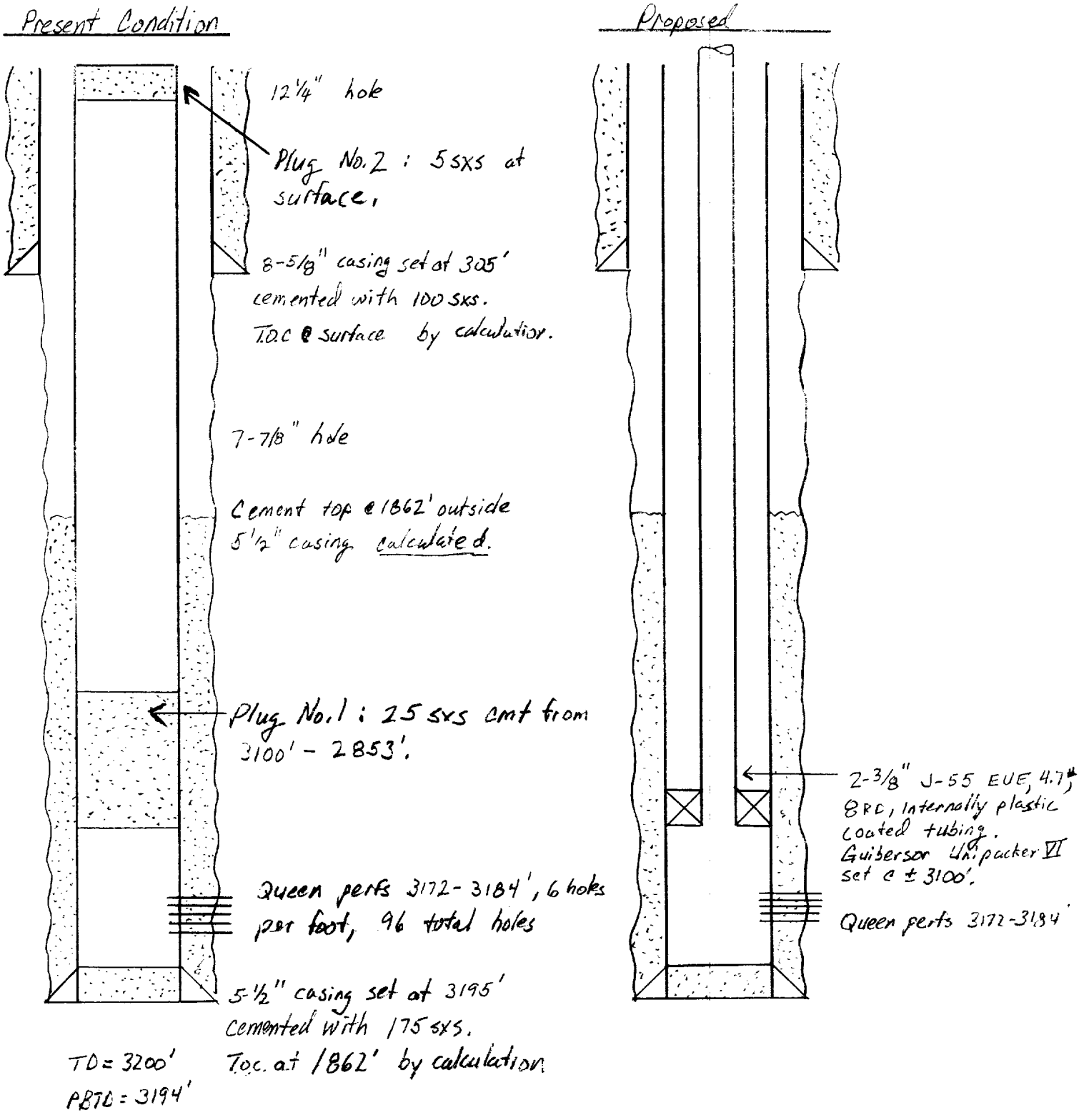
(2) Injection Interval: 3172-3184' perforated

(3) This well was originally drilled as an oil well. It was converted to water injection April 18, 1966 and plugged and abandoned March 24, 1972.

(4) There are no other perforated intervals.

(5) There are no known higher or lower oil or gas zones in the area of the well.

South Cuprock Queen Unit Well No. 16-30



Form C-108
South Caprock Queen Unit Well No. 16-30

VI. Tabulation of Well Data Within Area of Review

Well No.	Description	
South Caprock Queen Unit (SCQU) 11-29	Location:	3210' FNL & 1400' FWL, Section 29, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	July 23, 1964 - August 2, 1964
	Construction:	8-5/8" 24# J-55 csg set at 353' cmt'd w/250 sks regular, 4% gel, 2% $CaCl_2$. 4-1/2" 9.5# J-55 csg set at 3245' cmt'd w/250 sks regular, 4% gel, 18% salt, 0.75% friction reducer; followed by 50 sks Incor, 18% salt, 0.75% friction reducer. TD = 3245'
	Completion:	Perf 3187-3201' w/2 SPF Placed on injection August 2, 1964.
	Plugged and abandoned March 1972 (schematic attached).	
South Caprock Queen Unit (SCQU) 12-29	Location:	2310' FSL & 330' FWL, Section 29, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	September 7, 1955 - September 23, 1955
	Construction:	8-5/8" csg set at 325' cmt'd w/200 sks 5-1/2" csg set at 3185' cmt'd w/175 sks TD = 3188'
	Completion:	Perf 3154-3167' w/6 SPF Frac'd w/10,000 gals lease oil Potential flowed 66 BOPD thru 16/64" ck
	Converted to water injection July 20, 1965. Injected 405 BWPD at 1280 psi	
	Plugged and abandoned August 12, 1971.	
South Caprock Queen Unit (SCQU) 13-29	Location:	990' FSL & 330' FWL, Section 29, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	November 18, 1956 - December 28, 1956
	Construction:	12-3/4" csg set at 300' cmt'd w/250 sks 8-5/8" csg set at 1325' TD = 3187' Plugged and abandoned December 28, 1956
	Convert to water injection August 1, 1964 and deepen to 3235'. 4-1/2" 9.5# csg set at 3234' cmt'd w/250 sks Perf 3188-3203' w/2 SPF	
	Plugged and abandoned August 12, 1971	

Form C-108
South Caprock Queen Unit Well No. 16-30

VI. Tabulation of Well Data Within Area of Review - Continued

Well No.	Description	
South Caprock Queen Unit (SCQU) No. 7-30	Location:	1980' FNL & 1980' FEL, Section 30, T-15-S, R-31-E
	Type:	Oil Well
	Date Drilled:	July 31, 1955 - July 24, 1955
	Construction:	8-5/8" csg set at 315' cmt'd w/330 sks 5-1/2" csg set at 3137' cmt'd w/150 sks Open hole - 3137-3159' TD = 3159'
	Completion:	Frac'd open hole 3137-3159' w/20,000 gals oil Potential - flowed 70 BOPD on 16/64" ck
	Plugged and abandoned March 24, 1972.	
South Caprock Queen Unit (SCQU) 8-30	Location:	1650' FNL & 990' FEL, Section T-15-S R-31-E
	Type:	Water Injection Well
	Date Drilled:	July 13, 1955 - July 24, 1955
	Construction:	8-5/8" csg set at 309' cmt'd w/175 sks 5-1/2" csg set at 3158' cmt'd w/200 sks TD = 3159'
	Completion:	Perfed 3140-3152' w/3 SPF Frac'd w/8000 gals oil Potential - 188 BOPD on 1/2" ck
	Convert to water injection October 1, 1963	
	Plugged and abandoned March 24, 1972	
South Caprock Queen Unit (SCQU) 9-30	Location:	1980' FSL & 660' FEL, Section 30, T-15-S R-31-E
	Type:	Oil Well
	Date Drilled:	July 26, 1955 - August 16, 1955
	Construction:	8-5/8" csg set at 314' cmt'd w/200 sks 5-1/2" csg set at 3203' cmt'd w/175 sks TD = 3205'
	Completion:	Perf 3157-3169' w/8 SPF Natural completion Potential - Flowed 144 BOPD on 16/64" ck
	Plugged and abandoned March 24, 1972	

Form C-108
South Caprock Queen Unit Well No. 16-30

VI. Tabulation of Well Data Within Area of Review - Continued

Well No.	Description	
South Caprock Queen Unit (SCQU) No. 10-30	Location:	1980' FSL & 1980' FEL, Section 30, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	June 8, 1955 - June 20, 1955
	Construction:	9-5/8" csg set at 315' cmt'd w/200 sks 5-1/2" csg set at 3195' cmt'd w/75 sks TD = 3195'
	Completion:	Perf 3153-3160' w/8 SPF Natural completion Potential - Flowed 140 BOPD on 1/2" ck
	Converted to water injection January 1, 1964. Injected 1000 BWPD on vacuum.	
	Plugged and abandoned March 24, 1972	
South Caprock Queen Unit (SCQU) No. 11-30	Location:	1980' FSL & 1962.8 FWL, Section 30, T-15-S R-31-E
	Type:	Oil Well
	Date Drilled:	May 19, 1955 - June 8, 1955
	Construction:	9-5/8" csg set at 315' cmt'd w/200 sks 5-1/2" csg set at 3181' cmt'd w/175 sks TD = 3182'
	Completion:	Perf 3143-3151' w/8 SPF Natural completion Potential - Flowed 144 BOPD on 16/64" ck
	Plugged and abandoned March 24, 1972	
	Re-entered March 27, 1984. Perf 3143-51' w/2 SPF. Acidized w/1200 gals 15% HCl acid. Potential (May 14, 1984) - Pumped 7 BOPD + 266 BWPD.	
South Caprock Queen Unit (SCQU) No. 14-30	Location:	990' FSL & 2293' FWL, Section 30, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	May 30, 1955 - June 20, 1955
	Construction:	9-5/8" csg set at 322' cmt'd w/200 sks 5-1/2" csg set at 3185' cmt'd w/175 sks TD - 3186'
	Completion:	Perf 3184-3160' w/8 SPF Frac'd w/10,000 gals oil Potential - Flowed 296 BOPD on 30/64" ck
	Converted to water injection February 27, 1964. Injected 700 BWPD on vacuum.	
	Plugged and abandoned March 24, 1972	

Form C-108
South Caprock Queen Unit Well No. 16-30

VI. Tabulation of Well Data Within Area of Review - Continued

Well No.	Description	
South Caprock Queen Unit (SCQU) 15-30	Location:	1980' FEL & 990' FSL, Section 30, T-15-S, R-31-E
	Type:	Oil Well
	Date Drilled:	August 3, 1955 - August 31, 1955
	Construction:	8-5/8" csg set at 322' cmt'd w/200 sks 5-1/2" csg set at 3186' cmt'd w/175 sks TD = 3187'
	Completion:	Perf 3165-3176' w/8 SPF Frac'd w/10,000 gals oil Potential - Flowed 372 BOPD on 16/64" ck
	Plugged and abandoned March 24, 1972	
	Re-entered April 3, 1984. Perf 3163-3176' w/2 SPF. Acidized w/2000 gals 15% HCl acid. Potential (May 14, 1984) - 5 BOPD + 275 BWPD.	
South Caprock Queen Unit (SCQU) No. 1-31	Location:	330' FNL & 990' FEL, Section 31, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	May 1, 1956 - May 31, 1956
	Construction:	9-5/8" csg set at 327' cmt'd w/204 sks 5-1/2" csg set at 3217' cmt'd w/125 sks TD = 3220'
	Completion:	Perf 3187-3191' w/4 SPF Squeezed perfs w/100 sks Reperf 3185-88' w/4 SPF Frac'd w/10,000 gals oil Potential - Pumped 48 BOPD + 50 BWPD
	Converted to water injection July 1964	
	Plugged and abandoned August 12, 1971	
South Caprock Queen Unit (SCQU) No. 2-31	Location:	330' FWL & 2310' FEL, Section 31, T-15-S, R-31-E
	Type:	Water Injection Well
	Date Drilled:	October 25, 1956 - November 21, 1956
	Construction:	13-3/8" csg set at 255' cmt'd w/100 sks 8-5/8" csg set at 1242' 5-1/2" csg set at 3087' cmt'd w/100 sks Open Hole 3087-3095' TD = 3095'
	Completion:	Frac'd open hole 3087-3095' w/10,000 gals oil Potential - Pumped 47 BOPD
	Converted to water injection June 27, 1966. Injected 490 BWPD at 1000 psi. Plugged and abandoned March 1972	

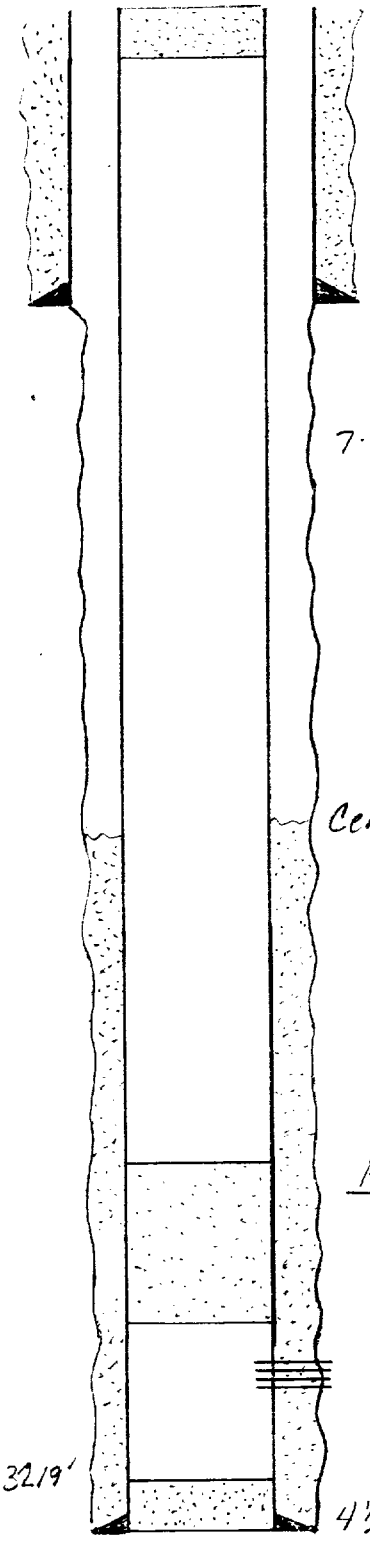
Form C-108
South Caprock Queen Unit Well No. 16-30

VI. Tabulation of Well Data Within Area of Review - Continued

Well No.	Description	
Pubco Drickey-State No. 3-A	Location:	Unit A, Section 31, T-15-S, R-31-E
	Type:	Oil Well
	Date Drilled:	Unknown
	Construction:	9-5/8" surface csg 5-1/2" csg set at 3252' TD = 3252'
	Completion:	Perfs 3185-3191'
	Plugged and abandoned June 30, 1956	

South Cuprock Queen Unit Well No. 11-29 Plugged March 1972

Current Well bore schematic



Plug No. 2 5 sxs cement at surface

12-1/4" hole

8-5/8" 24# J-55 casing set @ 353' cemented w/ 250 sxs regular, 4% gel, 2% $CaCl_2$ .. Cement circulated.

7-7/8" hole

Cement top calculated at 1728' outside 4½" casing

Plug No. 1 25 sxs cement in 4½" casing from 3100'-2738'

Queen Sand perfs
3187-3201' w/ 2 bullets/ft

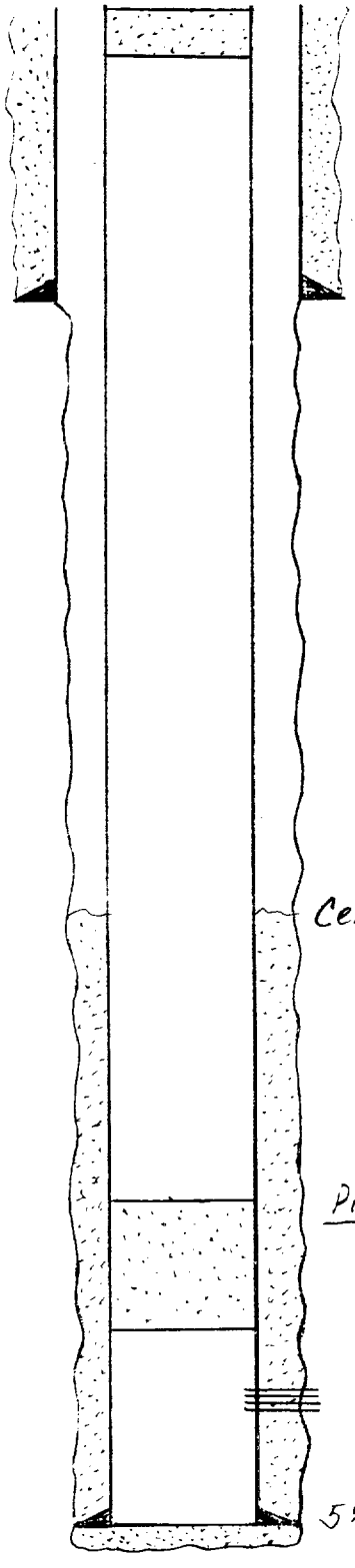
PBTD 3219'

4½" 9.5# J-55 casing set at 3245' cemented w/ 250 sxs regular, 4% gel, 18% salt, 0.75% friction reducer, followed by 50 sxs incol, 18% salt, 0.75% friction reducer.

TD 3245'

South Caprock Queen Unit Well No. 12-29 Plugged 8/12/71.

Current Wellbore Schematic



Plug No. 2 5 sxs cmt at surface.

8-5/8" casing set at 325' cemented with 200 sxs. Cement circulated.

Cement top calculated at 1852' outside 5½" casing

Plug No. 1 25 sxs cement in 5½" casing from 3100'-2853'

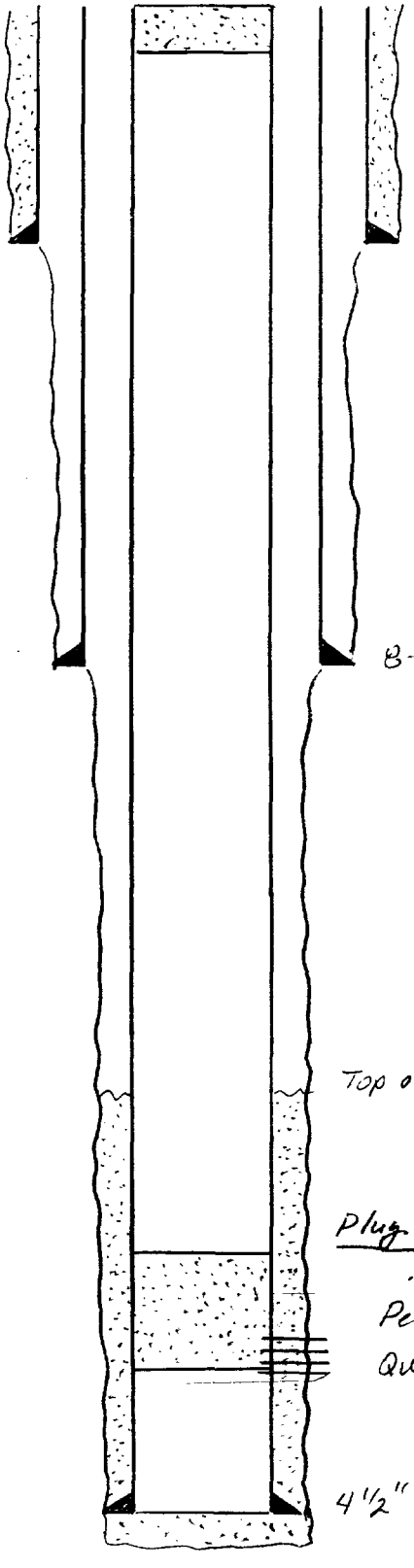
Queen Sand perfs 3154-3167' w/ 6 holes per foot

5½" Casing set at 3185' cemented with 175 sxs.

TD = 3188'

South Caprock Queen Unit Well No. 13-29 plugged 8/12/71

Current Wellbore schematic



Plug No. 2 5 sxs cement at surface

12-3/4" casing set at 300' cemented w/ 250 sxs. cement circulated

8-5/8" casing set at 1325'

Top of cement outside of 4½" casing ± 1794'

Plug No. 1 20 sxs cement in 4½" casing from 3200-2910'

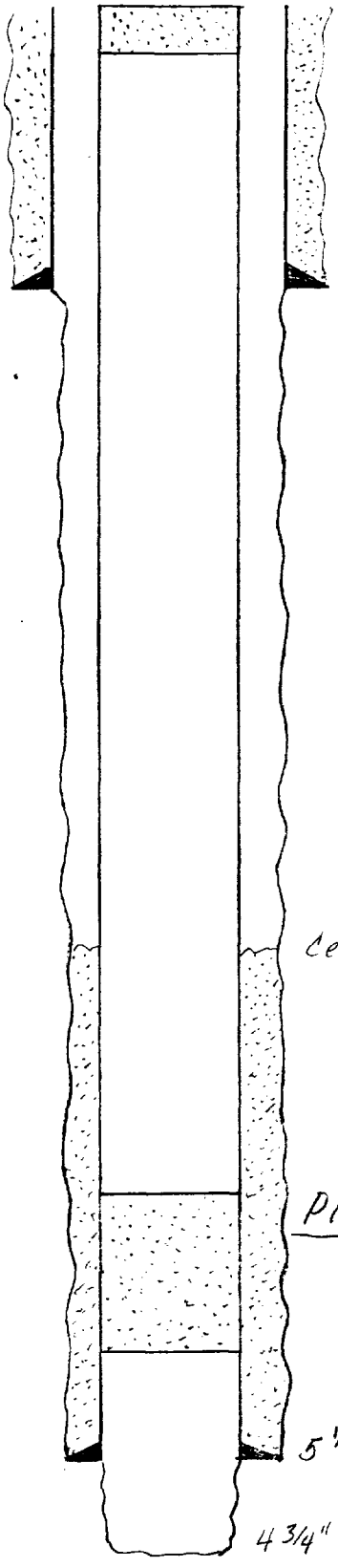
Perfs
Queen Sand 3188-3203' w/ 2 holes per foot

4½" 9.5# casing set at 3234' cemented w/ 250 sxs.

TD - 3235'

South Caprock Queen Unit Well No. 7-30 Plugged 3/24/72

Current Wellbore Schematic



Plug No. 2 5 sxs cement at surface

8-5/8" casing set at 315' cemented with 330 sxs. Cement circulated.

Cement top calculated at 1994' outside of 5½" casing

Plug No. 1 25 sxs cement in 5½" casing from 3100' - 2853'

5½" casing set at 3137' Cemented w/150 sxs

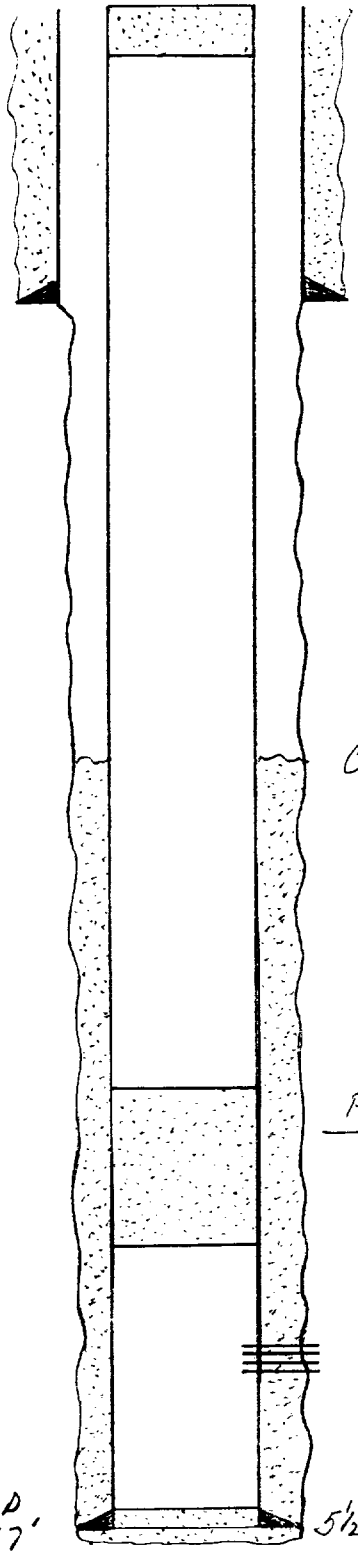
4¾" open hole 3137 - 3159' Queen Sand.

TD = 3159'

South Caprock Queen Unit Well No. 8-30

Plugged 3/24/72

Current Wellbore Schematic



Plug No. 2 5 sxs cement at surface.

8-5/8" casing set at 309' cemented w/ 175 sxs. Cement circulated.

Cement top calculated at 1635' outside of 5½" casing.

Plug No. 1 25 sxs cement in 5½" casing from 3100'-2853'.

Perfs Queen Sand 3140-3152' w/ 3 holes per foot

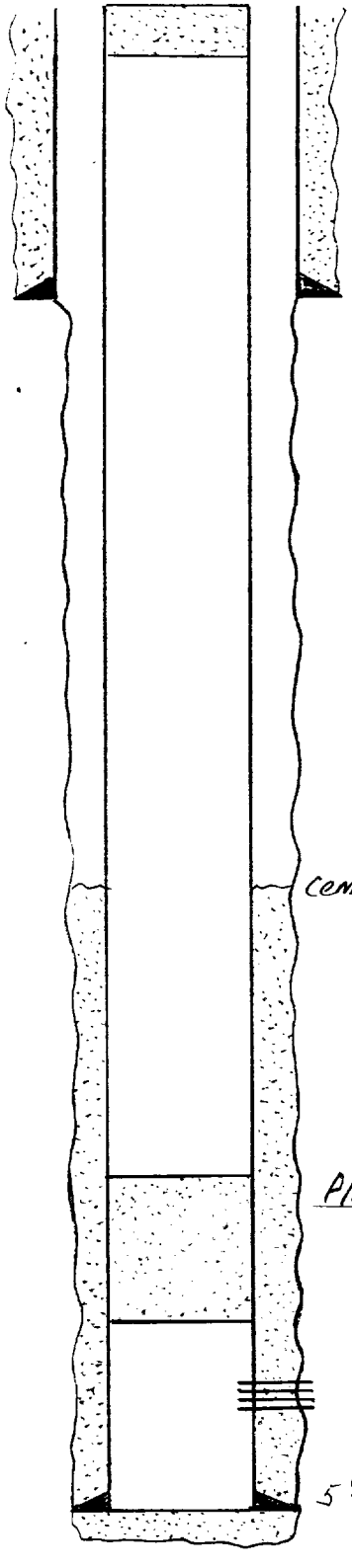
PBTD 3157'

5½" casing set at 3158' cemented with 200 sxs

TD: 3159

South Caprock Queen Unit Well No. 9-30 plugged 3/24/72

Current Wellbore Schematic



Plug No. 2 5 sxs cement at surface

8-5/8" casing set at 314' cemented with 200 sxs. Cement circulated.

cement top calculated at 1870' outside 5½" casing

Plug No. 1 25 sxs cement in 5½" casing from 3100'-2853'.

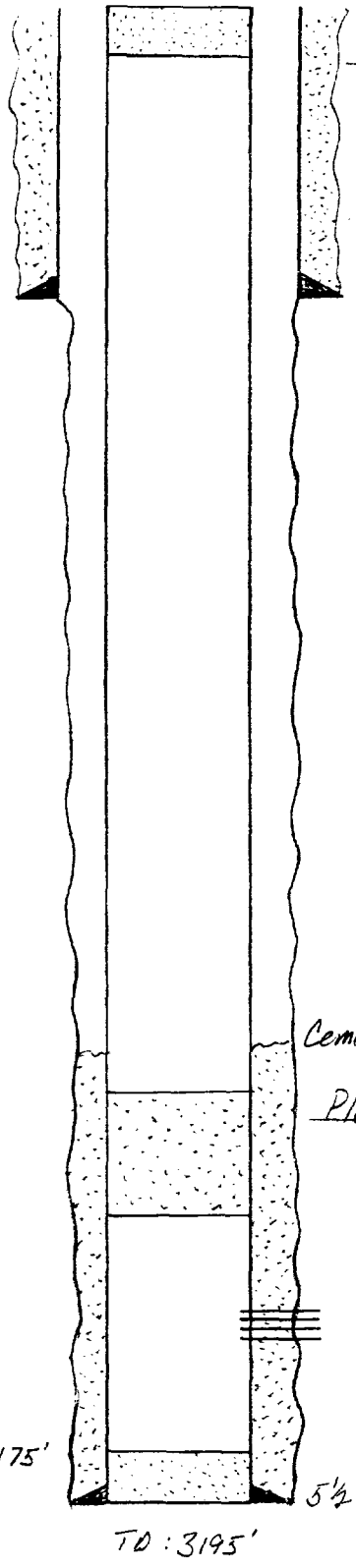
Perfs
Queen Sand 3157-3169' w/ 8 holes per foot

5½" casing set at 3203' cemented with 175 sxs

TD: 3205'

South Caprock Queen Unit Well No. 10-30

Plugged 3/24/72



Plug No. 2 5 sxs cement at surface

9-5/8" casing set at 315' cemented with 200 sxs. cement circulated.

Cement top calculated at 2639' outside of 5½" casing.

Plug No. 1 25 sxs cement from 3100'-2853' in 5½" casing.

Perfs
Queen Sand 3133-3160' with 8 holes per foot.

PBTD 3175'

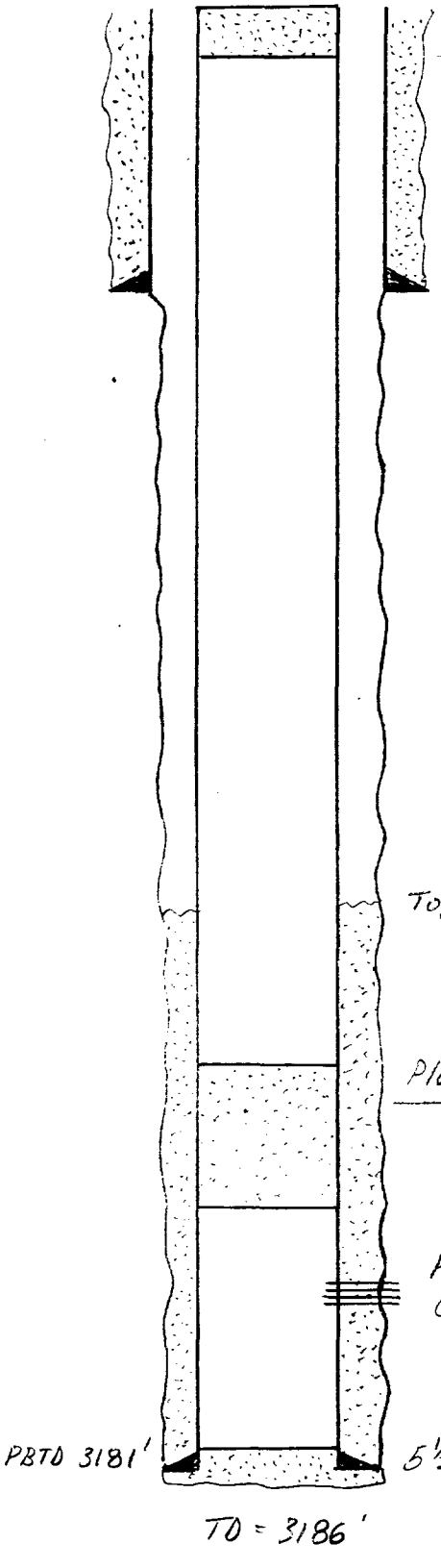
5½" casing set at 3195' cemented with 75 sxs.

TD: 3195'

South Caprock Queen Unit Well No. 14-30

Plugged 3/24/72

Current wellbore schematic



Plug No. 2 5 sxs cement at surface

9-5/8" casing set at 322' cemented w/ 200 sxs. Cement Circulated.

Top of cement outside 5½" casing at 1852'

Plug No. 1 25 sxs cement in 5½" casing from 3100'-2853'.

Perfs
Queen sand 3148-3160' w/ 8 holes per foot

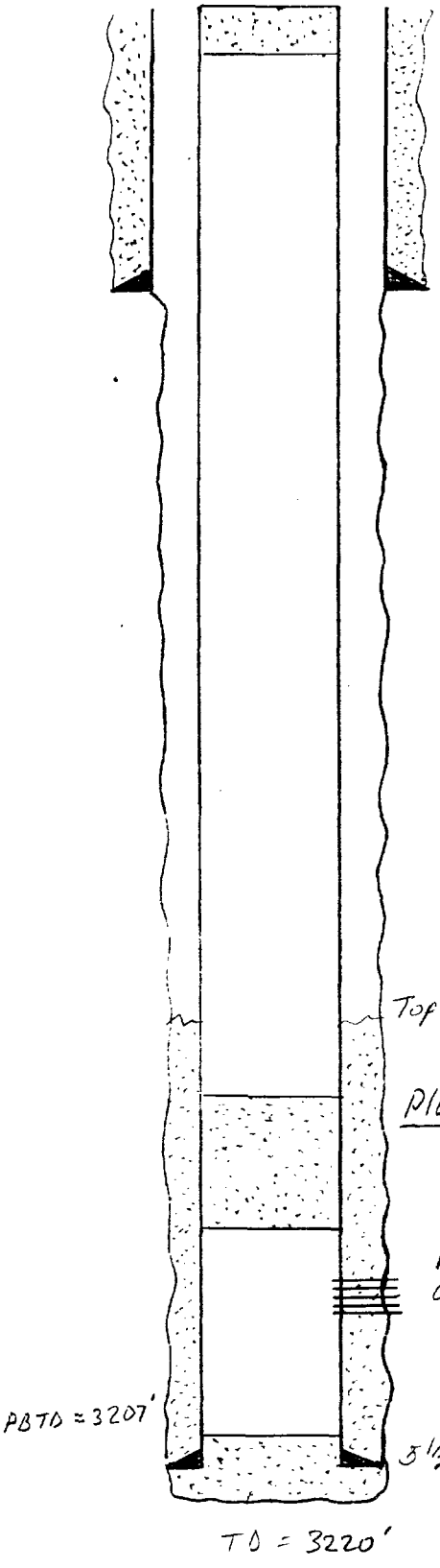
PBTD 3181'

5½" casing set at 3185' cemented w/ 175 sxs.

TD = 3186'

South Caprock Queen Unit No. 1-31 Plugged 8/12/71

Current Wellbore Schematic



Plug No. 2 5 sxs cement at surface.

9-5/8" casing set at 327' cemented w/ 204 sxs. Cement Circulated

Top of cement outside of 5½" casing at 2265'.

Plug No. 1 20 sxs cement in 5½" casing from 3100' - 2822'.

Perfs Queen sand 3187-3191' w/ 4 holes per foot - squeezed w/100 sxs cement
3185-3188' w/ 4 holes per foot.

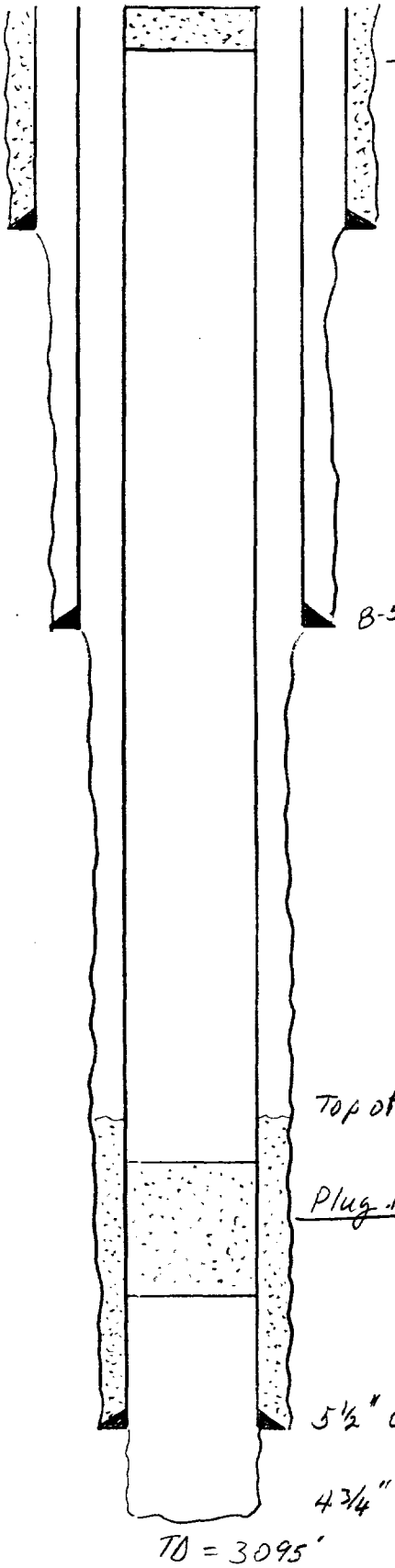
PBTD = 3207'

5½" casing set at 3217' cemented w/ 125 sxs.

TD = 3220'

South Cuprock Queen Unit Well No. 2-31 Plugged 3/72

Current wellbore schematic



Plug No. 2 5 sxs cement at surface

13-3/8" set at 255' cemented w/100 sxs. Cement circulated.

8-5/8" casing set at 1242'.

Top of cement outside of 5½" casing at 2325'

Plug No. 1 25 sxs cement in 5½" casing from 3000' - 2753'

5½" casing set at 3087' cemented w/ 100 sxs.

4¾" open hole 3087-3095 (Queen Sand)

TD = 3095'

Form C-108
South Caprock Queen Unit Well No. 16-30

VII. Proposed Operation

1. Proposed average daily injection rate - 800 BWPD
   Proposed maximum daily injection rate - 1000 BWPD

2. This will be a closed system.

3. Proposed average injection pressure - 1100 psi
   Proposed maximum injection pressure - 2000 psi

4. Source of injection fluid is water produced from the Queen Sand. Analysis is attached.

5. Injection is for waterflood purposes into the same zone it is produced from.

VIII. (Attached)

IX. Proposed Stimulation Program:

The well will be acidized with 1500 gallons 15% HCl acid with an aromatic solvent. Maximum treating pressure will be 2000 psi.

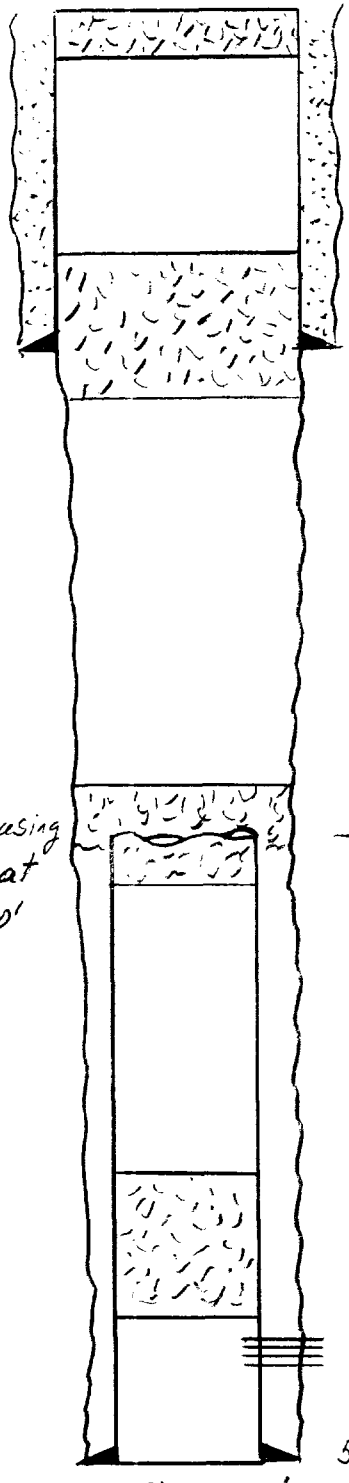
X. Logging data on well is attached.

XI. Analysis from fresh water well attached. Well is located in the N/2 of the NE/4, Section 32, T-15-S, R-31-E, Chaves County, NM (only one well within one mile).

XII. We have examined available geologic and engineering data and find no evidence of open faults or other hydrologic connection between the injection zone and any underground source of drinking water.

Pubco Drickey - State Well No. 3-A plugged 6/30/56

Current Wellbore Schematic



Plug No. 4 10 sxs cement at surface

Plug No. 3 80' cement in bottom of 9-5/8" casing

Plug No. 2 50' cement in 5½" casing stub at 2400'.

Plug No. 1 50' cement in 5½" casing over perforations

Perfs
Queen 3185-3191

5½" casing set at 3252'

Form C-108
South Caprock Queen Unit Well No. 16-30

VIII. The proposed injection zone in the South Caprock Queen No. 16-30, Section 30, T-15-S, R-31-E, Chaves County, New Mexico, is in the Shattuck (Sandstone) member of the Permian Queen formation, which is the uppermost 100' of the Queen formation. The top of the Queen formation is at 3170' (+1277') and the bottom of the sand is at 3188' (+1259'). The proposed injection zone is in the interval 3172' to 3184'. The proposed injection is in an arkosic sandstone and siltstone with small amounts of sandy anhydrite and sandy dolomite, which was deposited in a shallow marine, shelf-lagoon environment. There are no apparent faults or fractures in the field which would permit the migration of oil out of the Shattuck reservoir.

The only known source of drinking water in the area is at a very shallow depth, less than 300' in the Tertiary "Ogallala" formation, of the Lea County underground basin.

BAKER OIL TREATING
A Baker Oil Tools Company

WATER ANALYSIS REPORT

COMPANY		ANALYSIS NUMBER
UNION OIL OF CALIFORNIA		0564
COMPANY ADDRESS		DATE
		10/22/84

FIELD	COUNTY OR PARISH	STATE
CAPROCK QUEEN	CHAVES CO.	N.M.

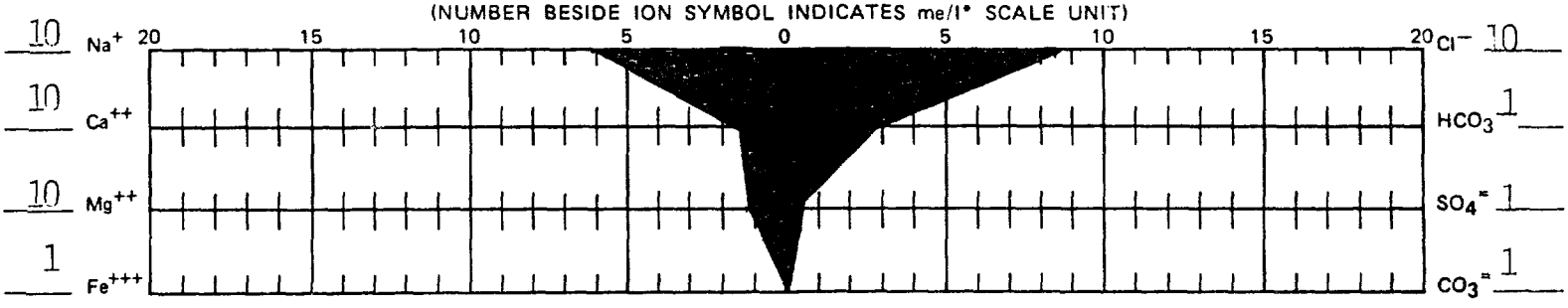
LEASE OR UNIT	WELL(S) NAME OR NO.	WATER SOURCE (FORMATION)
SOUTH CAPROCK QUEEN UNIT	Fresh Water Stock Well in NE/4 Sec. 32 T-15-S R-31-E	

DEPTH, FT.	BHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
		WATER PUMP				

DATE SAMPLED: 10/22/84

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

WATER ANALYSIS PATTERN
(NUMBER BESIDE ION SYMBOL INDICATES me/l* SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l*	mg/l*
Total Hardness	26	
Calcium, Ca^{++}	14	280
Magnesium, Mg^{++}	12	146.4
Iron (Total) Fe^{+++}	-0-	-0-
Barium, Ba^{++}	---	---
Sodium, Na^{+}(calc.)	61.9	1424.2
ANIONS		
Chloride, Cl^{-}	84.5	3000
Sulfate, $SO_4^{=}$	.42	20
Carbonate, $CO_3^{=}$	-0-	-0-
Bicarbonate, HCO_3^{-}	3.0	183
Hydroxyl, OH^{-}	-0-	-0-
Sulfide, $S^{=}$	-0-	-0-

TOTAL SOLIDS (QUANTITATIVE): 5053.6

DISSOLVED GASES

Hydrogen Sulfide, H_2S	-0-	mg/l*
Carbon Dioxide, CO_2	4.0	mg/l*
Oxygen, O_2	5.0	mg/l*

PHYSICAL PROPERTIES

pH	6.70	
Specific Gravity	1.012	
Total Dissolved Solids (calc.)	5053.6	mg/l*
Stability Index @ 20 °C	-.54	
@ ____ °C		
$CaSO_4$ Solubility @ 20 °C	27.4	me/l*
@ ____ °C		me/l*
Max. $CaSO_4$ Possible (calc.)	.42	me/l*
Max. $CaSO_4$ Possible (calc.)		me/l*
Residual Hydrocarbons		ppm(Vol/Vol)

REMARKS AND RECOMMENDATIONS:

@ 20° C MODERATELY CORROSIVE TENDENCY IS INDICATED.

@ 20° C CALCIUM SULFATE SCALING IS UNLIKELY.

*NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BAKER OIL TREATING REPRESENTATIVE	ADDRESS	TELEPHONE OFF:	RES:
J. LEWIS			
ANALYZED BY: RITA BETTY	DATE: 10/22/84	DISTRIBUTION	

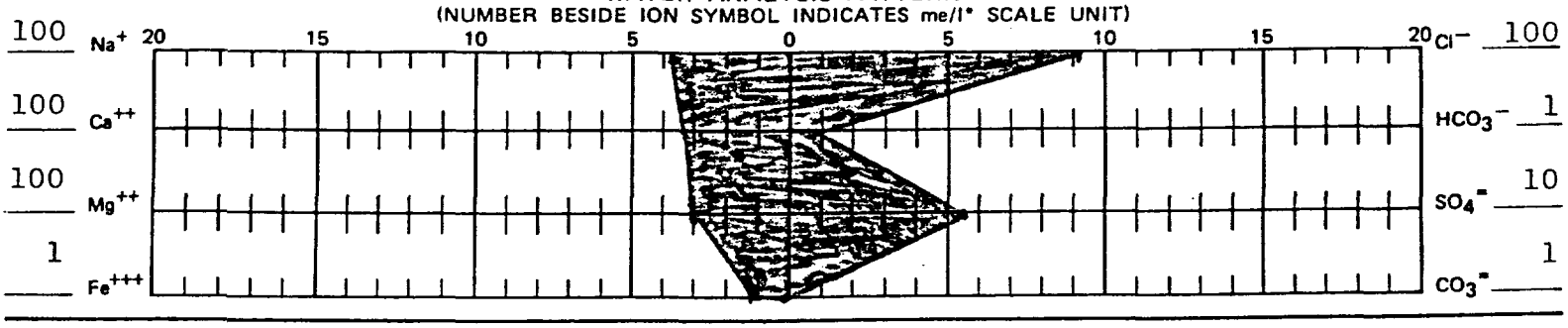
BAKER OIL TREATING
A Baker Oil Tools Company

WATER ANALYSIS REPORT

COMPANY: Union Oil of California			ANALYSIS NUMBER: 0527
COMPANY ADDRESS:			DATE: 9/26/84
FIELD: CAPROCK QUEEN	COUNTY OR PARISH: CHAVES CO.		STATE: N.M.
LEASE OR UNIT: ~~West~~ South Caprock Queen	WELL(S) NAME OR NO.: #15-30	WATER SOURCE (FORMATION): QUEEN SAND	
DEPTH, FT. / BHT, °F / SAMPLE SOURCE / TEMP, °F		WATER, BBL/DAY / OIL, BBL/DAY	GAS, MMCF/DAY
DATE SAMPLED: ø 9/26/84	TYPE OF WATER: ☑ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL		

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES me/l* SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l*	mg/l*
Total Hardness	636	
Calcium, Ca^{++}	334	6680
Magnesium, Mg^{++}	302	3684.4
Iron (Total) Fe^{+++}	1.2	22
Barium, Ba^{++}	---	---
Sodium, Na^{+}(calc.)	358	8142
ANIONS		
Chloride, Cl^{-}	935.2	33200
Sulfate, $SO_4^{=}$	55.2	2650
Carbonate, $CO_3^{=}$	-0-	-0-
Bicarbonate, HCO_3^{-}	.8	48.8
Hydroxyl, OH^{-}	-0-	-0-
Sulfide, $S^{=}$	-----	----

TOTAL SOLIDS (QUANTITATIVE) 54427.2

DISSOLVED GASES

Hydrogen Sulfide, H_2S	-0- mg/l*
Carbon Dioxide, CO_2	190.1 mg/l*
Oxygen, O_2	1+ mg/l*

PHYSICAL PROPERTIES

pH	6.95
Specific Gravity	1.147
Total Dissolved Solids (calc.)	54405.2 mg/l*
Stability Index @ 20 °C	-.46
@ ____ °C	
$CaSO_4$ Solubility @ 20 °C	31.2 me/l*
@ ____ °C	____ me/l*
Max. $CaSO_4$ Possible (calc.)	55.2 me/l*
Max. $CaSO_4$ Possible (calc.)	____ me/l*
Residual Hydrocarbons	____ ppm(Vol/Vol)

REMARKS AND RECOMMENDATIONS:

@ 20° C SLIGHTLY CORROSIVE TENDENCY IS INDICATED
@ 20° C CALCIUM SULFATE SCALING IS POSSIBLE

*NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BAKER OIL TREATING REPRESENTATIVE	ADDRESS	TELEPHONE OFF:	RES:
J. LEWIS			
ANALYZED BY: RITA BETTY	DATE: 9/27/84	DISTRIBUTION	

BAKER OIL TREATING
A Baker Oil Tools Company

D

WATER ANALYSIS REPORT

COMPANY		ANALYSIS NUMBER
UNION OIL OF CALIFORNIA		0526
COMPANY ADDRESS		DATE
		9/26/84

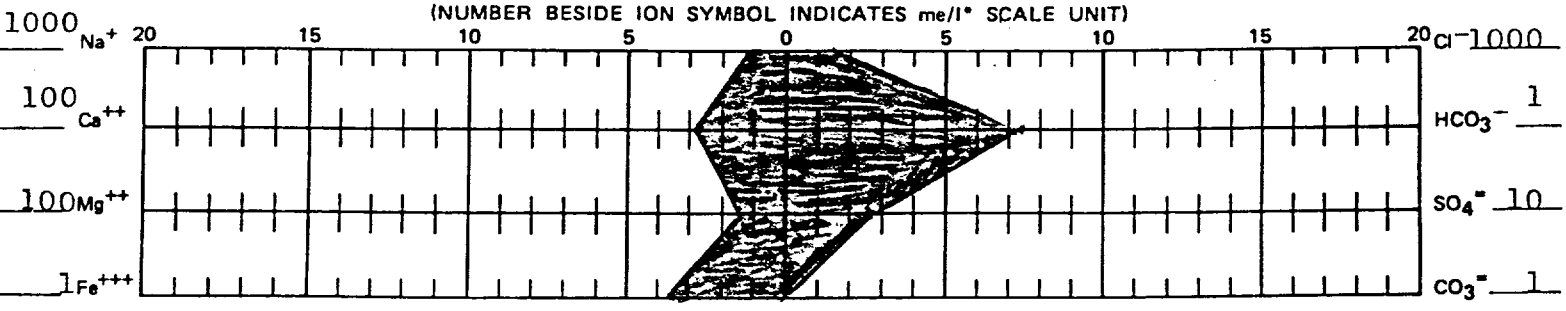
FIELD	COUNTY OR PARISH	STATE
CAPROCK QUEEN	CHAVES COUNTY	N.M.

LEASE OR UNIT	WELL(S) NAME OR NO.	WATER SOURCE (FORMATION)
~~SOUTH~~ WEST CAPROCK QUEEN UNIT	#5-30	QUEEN SAND

DEPTH, FT.	BHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY

DATE SAMPLED	TYPE OF WATER
9/26/84	☑ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

WATER ANALYSIS PATTERN
(NUMBER BESIDE ION SYMBOL INDICATES me/l* SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l*	mg/l*
Total Hardness	410	
Calcium, Ca^{++}	288	5760
Magnesium, Mg^{++}	122	1488.4
Iron (Total) Fe^{+++}	3.4	63
Barium, Ba^{++}	---	---
Sodium, Na^{+}(calc.)	1170.3	26916.9
ANIONS		
Chloride, Cl^{-}	1549.3	55000
Sulfate, $SO_4^{=}$	27.1	1300
Carbonate, $CO_3^{=}$	-0-	-0-
Bicarbonate, HCO_3^{-}	7.3	445.3
Hydroxyl, OH^{-}	-0-	-0-
Sulfide, $S^{=}$	---	---
TOTAL SOLIDS (QUANTITATIVE)		90973.6

DISSOLVED GASES

Hydrogen Sulfide, H_2S	-0- mg/l*
Carbon Dioxide, CO_2	114.8 mg/l*
Oxygen, O_2	1+ mg/l*

PHYSICAL PROPERTIES

pH	7.00
Specific Gravity	1.102
Total Dissolved Solids (calc.)	90910.6 mg/l*
Stability Index @ 20 °C	-.52
@ °C	
$CaSO_4$ Solubility @ 20 °C	35.6 me/l*
@ °C	me/l*
Max. $CaSO_4$ Possible (calc.)	27.1 me/l*
Max. $CaSO_4$ Possible (calc.)	me/l*
Residual Hydrocarbons	ppm(Vol/Vol)

REMARKS AND RECOMMENDATIONS:

@ 20° C MODERATELY CORROSIVE TENDENCY IS INDICATED

20° C CALCIUM SULFATE SCALING IS UNLIKELY

*NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BAKER OIL TREATING REPRESENTATIVE	ADDRESS	TELEPHONE OFF:	RES:
J. LEWIS			
ANALYZED BY: RITA BETTY	DATE 9/27/84	DISTRIBUTION	

TLP

RECEIVED

NOV 5 1984

LCM

AFFIDAVIT OF PUBLICATION

County of Chaves
State of New Mexico, }

I, R.M. Higginbotham

Manager

Of the Roswell Daily Record, a daily newspaper published at Roswell, New Mexico, do solemnly swear that the clipping hereto attached was published once a week in the regular and entire issue of said paper and not in a supplement thereof for a period

of One

Time weeks

beginning with the issue dated

November 1, 1984

and ending with the issue dated

November 1, 1984

R.M. Higginbotham
Manager

Sworn and subscribed to before me

this 1st day of

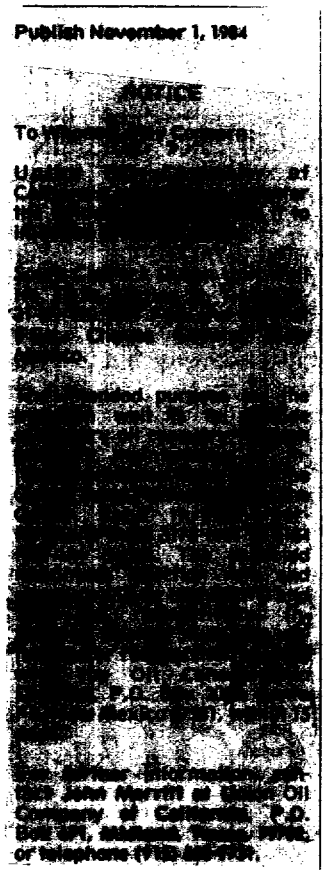
November, 1984

Notary Public

My commission expires

October 21, 1987

(Seal)


Publish November 1, 1984

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731
Mailing Address: P. O. Box 671
Midland, TX 79702

union 76

Midland District

October 26, 1984

State of New Mexico
P. O. Box 1148
Santa Fe, New Mexico 87501

Gentlemen:

SUBJECT:
Re-entry of Union Oil Company of California's
South Caprock Queen Unit Well No. 16-30
To Inject Produced Water

This is notification to you, as owner of the surface land and as a leasehold operator within one-half mile of the proposed injection well location, that Union Oil Company of California proposes to re-enter the South Caprock Queen Unit Well No. 16-30, Section 30, T-15-S, R-31-E, 990' FSL and 990' FEL of Section, Chaves County, New Mexico, and use it to inject produced water. Injection will be into the Queen Sand through perforations from 3172' to 3184', with water produced from the Queen Sand. The well was being used in this manner prior to abandonment in 1972. Attached are copies of the applications for approval to inject. Any objections or requests for hearing of administrative application must be filed with Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 85701, within 15 days from the date this application was mailed to you.

Very truly yours,

J. C. Merritt
District Production Superintendent

TLP:pd
Enclosures

mailed "certified, return receipt requested"
10/26/84:dr (certified no. P397 479 682)

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731
Mailing Address: P. O. Box 671
Midland, TX 79702

UNION 76

Midland District

October 26, 1984

Sun Exploration and Production Co.
P. O. Box 1861
Midland, Texas 79702

Gentlemen:

SUBJECT:
Re-entry of Union Oil Company of California's
South Caprock Queen Unit Well No. 16-30
To Inject Produced Water

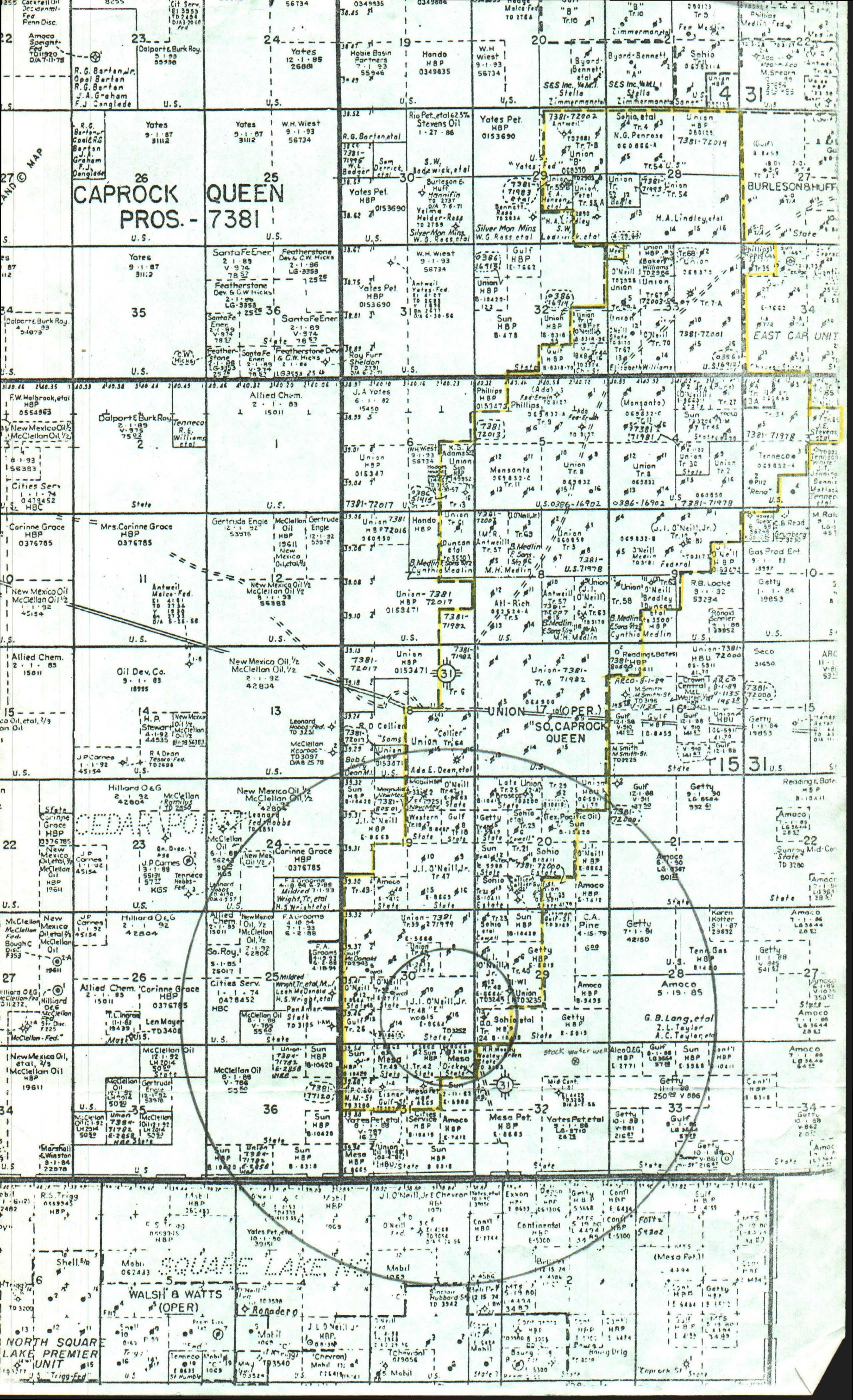
This is notification to you, as a leasehold operator within one-half mile of the proposed injection well location, that Union Oil Company of California proposes to re-enter the South Caprock Queen Unit Well No. 16-30, Section 30, T-15-S, R-31-E, 990' FSL and 990' FEL of section, Chaves County, New Mexico, and use it to inject produced water. Injection will be into the Queen Sand through perforations from 3172' to 3184', with water produced from the Queen Sand. The well was being used in this manner prior to abandonment in 1972. Attached are copies of the applications for approval to inject. Any objections or requests for hearing of administrative application must be filed with Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501, within 15 days from the date this application was mailed to you.

Very truly yours,

J. C. Merritt
District Production Superintendent

TLP:pd
Enclosures

mailed "certified, return receipt requested"
10/26/84:dr (certified no. P397 479 683)


CAPROCK QUEEN
PROS. - 7381
BURLESON & HUFF
EAST CAP UNIT
UNION 17 (OPER.)
"SO. CAPROCK QUEEN"
WALSH & WATTS
(OPER)
NORTH SQUARE
LAKE PREMIER
UNIT
stock water well

PS Form 3811, July 1982

● **SENDER:** Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - [X] Show to whom and date delivered ..... ____¢
   - [ ] Show to whom, date, and address of delivery .. ____¢
2. [ ] RESTRICTED DELIVERY..... ____¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Sun Expl & Prod Co
P. O. Box 1861
Midland, Texas 79702

4. TYPE OF SERVICE:
   - [ ] REGISTERED
   - [ ] INSURED
   - [X] CERTIFIED
   - [ ] COD
   - [ ] EXPRESS MAIL

ARTICLE NUMBER: P397 479 683

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE [ ] Addressee [X] Authorized agent

5. DATE OF DELIVERY

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS *(Only if requested)*

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593

PS Form 3811, July 1982

● **SENDER:** Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - [X] Show to whom and date delivered ..... ____¢
   - [ ] Show to whom, date, and address of delivery .. ____¢
2. [ ] RESTRICTED DELIVERY..... ____¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
State of New Mexico
P. O. Box 1148
Santa Fe, New Mexico 87501

4. TYPE OF SERVICE:
   - [ ] REGISTERED
   - [ ] INSURED
   - [X] CERTIFIED
   - [ ] COD
   - [ ] EXPRESS MAIL

ARTICLE NUMBER: P397 479 682

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE [ ] Addressee [ ] Authorized agent

5. DATE OF DELIVERY

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS *(Only if requested)*

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593