YATES DRILLING COMPANY
PROPOSED DOYAL FEE LEASE WATERFLOOD PROJECT
CHAVES COUNTY, NEW MEXICO

NMOCD FORM C-108

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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 [X] no

II. Operator: Yates Drilling Company

Address: 105 South 4th Street, Artesia, New Mexico 88210

Contact party: Tobin L. Rhodes Phone: (505) 748-1471

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? [ ] yes [X] no
If yes, give the Division order number authorizing the project _____.

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: Tobin L. Rhodes Title Petroleum Engineer

Signature: Tobin L. Rhodes Date: 10-13-89

* 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.

OIL CONSERVATION DIVISION
FORM C-108 (Supplement)

Application of Yates Drilling Company
For a Secondary Recovery Project
Doyal Fee Lease Project
Chaves County, New Mexico

I. Purpose:

Application is made for authorization to inject water into the Queen formation underlying the Doyal Fee Lease. The proposed project consists of 160 acres, more or less, of Fee lands in Unit M, (SW/4 SW/4) Section 26, Units I, P, (E/2 SE/4) of Section 27, and Unit A, (NE/4 NE/4) of Section 34, Township 12 South, Range 31 East, Chaves County New Mexico. This project would be classified as a secondary recovery project with the objective of recovering hydrocarbons that will not and can not be recovered by primary means.

Many wells in the proposed project area are primary depleted or are very near primary depletion. Our studies show that the injection of water into selected wells will result in the recovery of oil in economic quantities not otherwise recoverable. This project should provide economic benefits to all parties holding any type of interest in the project acreage.

II. Operator:

Yates Drilling Company
105 South Fourth Street
Artesia, New Mexico 88210

Phone Number: (505) 748-1471

III. Injection Well Data:

A well data sheet is attached for each of the three wells proposed for water injection. Each injection well data sheet includes a downhole schematic of how each individual well will be configured if this application is approved.

IV. Existing Project:

The proposed project is not an expansion of an existing project and will be a totally new project.

V. Ownership:

A lease ownership map is attached which identifies all wells and lease ownership within two miles of any of the six proposed injection wells. A map is also attached on which the area of review has been identified by drawing a one-half mile circle around each injection well.

VI. Well Data:

There are presently fifteen wells including proposed injection wells that fall within the boundaries of the proposed project or within the area of review. Two of these wells has been plugged and abandoned, one well is temporarily abandoned, and the remaining twelve wells are active pumping oil wells producing from the Queen formation. Available data for each of the wells is included in the attached well data sheets. Additionally a downhole schematic has been drawn depicting each of the two plugged and abandoned wells.

VII. Project Data:

1. The proposed daily average water injection rate is approximately 200 barrels per day for each of the three proposed water injection wells. Total water injection for the project would be 600 barrels per day. The maximum injection rate for any individual well will be based on fracture pressure as determined by step-rate pressure tests to be conducted on each injection well.

2. Produced water will be stored in covered steel storage tank(s) and in open top fiberglass tanks making the produced water system an open system. Any fresh water will be stored in a covered steel tank. Produced oil will immediately be separated from produced water. The oil will be stored in a steel covered production tank until sold.

3. Initially the injection wells may take water on a vacuum, but as the reservoir fills a positive surface

injection pressure will be required to inject water. The maximum injection pressure will also be determined by proposed step-rate pressure tests. At no time prior to the step-rate tests will the injection pressure exceed a pressure limitation of 0.2 PSIG per foot of depth to the top of the injection interval.

4. The source of injection fluid will be produced water from the producing wells within the unit and fresh water from the Ogollala aquifer in the area. No commitment has been made but commercial sources of fresh water are available in the area.

5. No water compatibility problems are expected as Ogollala water has been successfully injected into the Queen formation, throughout the Caprock Queen Field, without excessive problems. Compatibility tests have been run commingling the produced water and fresh water and no adverse problems were observed.

VIII. Geologic Data:

The proposed project area produces from the upper sandstone member of the Queen formation, upper Guadalupian series, Permian system. The average producing depth in the field is approximately 2989 feet. The existing producing formation will be the interval into which water will be injected.

The productive/injection interval, as indicated from a whole core analysis on the DeLuna Federal #3 (330' FNL & 1980' FEL, 34-12s-31e) and sidewall core data from numerous wells, is fine grained, friable, gray, quartz sandstone. The grains are sub-angular to sub-rounded and well sorted. The cementing material is variously from anhydrite and dolomite. The exact depositional environment is unknown. Porosity and permeability are intergranular in nature. The sandstone is not naturally fractured.

The Cactus Queen Field is a stratigraphic trap. Cementation of the sandstone results in the loss of porosity and permeability, creating a barrier on all sides with the exception of the east. A tilted oil-water contact limits the production in that direction. The oil/water contact has been established at (+1440) in the southeast end of the field and (+1446) at the northeast edge.

The primary underground source of fresh water in this area is the Ogollala formation of Tertiary age, the base of which is estimated to be 300 feet below the

surface. This aquifer is protected behind the surface pipe and cement of all existing wells in the unit area. The Chinlee formation is also a fresh water aquiferü which immediately underlies the Ogollala formation. The Base of the Chinlee is estimated to be approximately 500 feet below the surface in the project area. The Chinlee is behind the production casing in all existing wells in the project area.

IX. Stimulation Program:

Each of the currently producing wells has previously received a fracture treatment. The details of these treatments are outlined in the data sheet for each individual well. There are no plans to stimulate any of the existing wells which will be producing wells in this project.

The wells which will be injection wells may require a small clean-up acid treatment prior to injection. We plan to treat each of the proposed injection wells with 1000 to 2000 gallons of 15% hydrochloric acid. This treatment should insure that existing perforations are open and that each well will accept water or gas at the lowest possible pressure.

X. Well Logs:

Well logs for each of the existing wells in the proposed unit have previously been submitted to the Hobbs office of the NMOCD.

XI. Fresh Water:

The Office of the State Engineer in Roswell has a record of six wells within one mile of the proposed project. The total depths of two of the wells are unknown, however all six wells are assumed to be producing from the Ogollala formation. Analysis reports for water taken from three of the wells are attached.

XII. Injection Zone Isolation:

Available engineering and geologic data has been examined and no evidence of open faulting or any other hydrologic connection between the injection zone and

any underground source of drinking water has been found.

XIII. Proof of Notice:

A listing of off-set leasehold operators within 1/2 mile of any injection wells and the surface owners that have received a copy of this application by certified mail is attached.

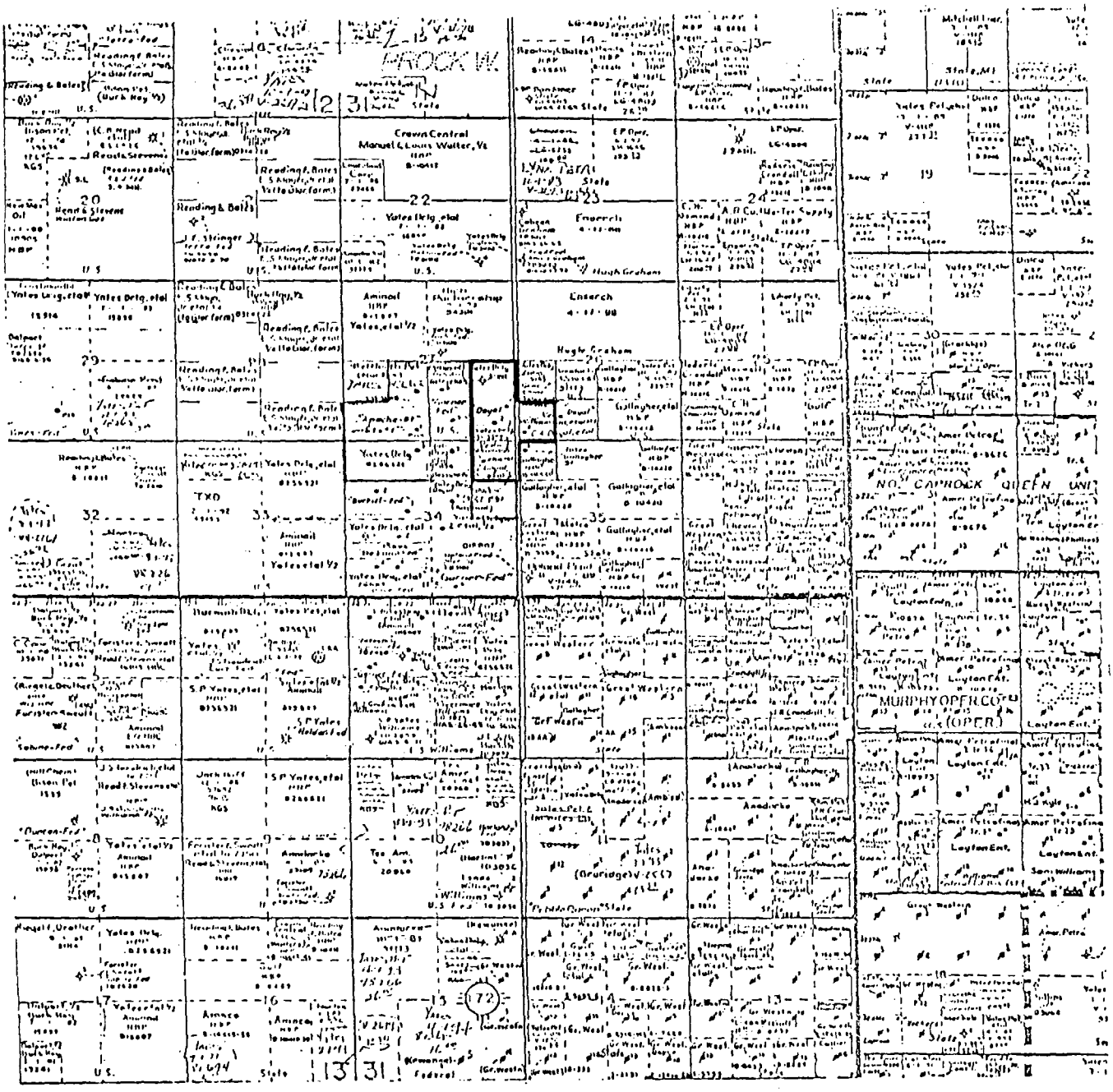
XIV. Certification:

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

Tobin L. Rhodes — Petroleum Engineer

Tobin L. Rhodes

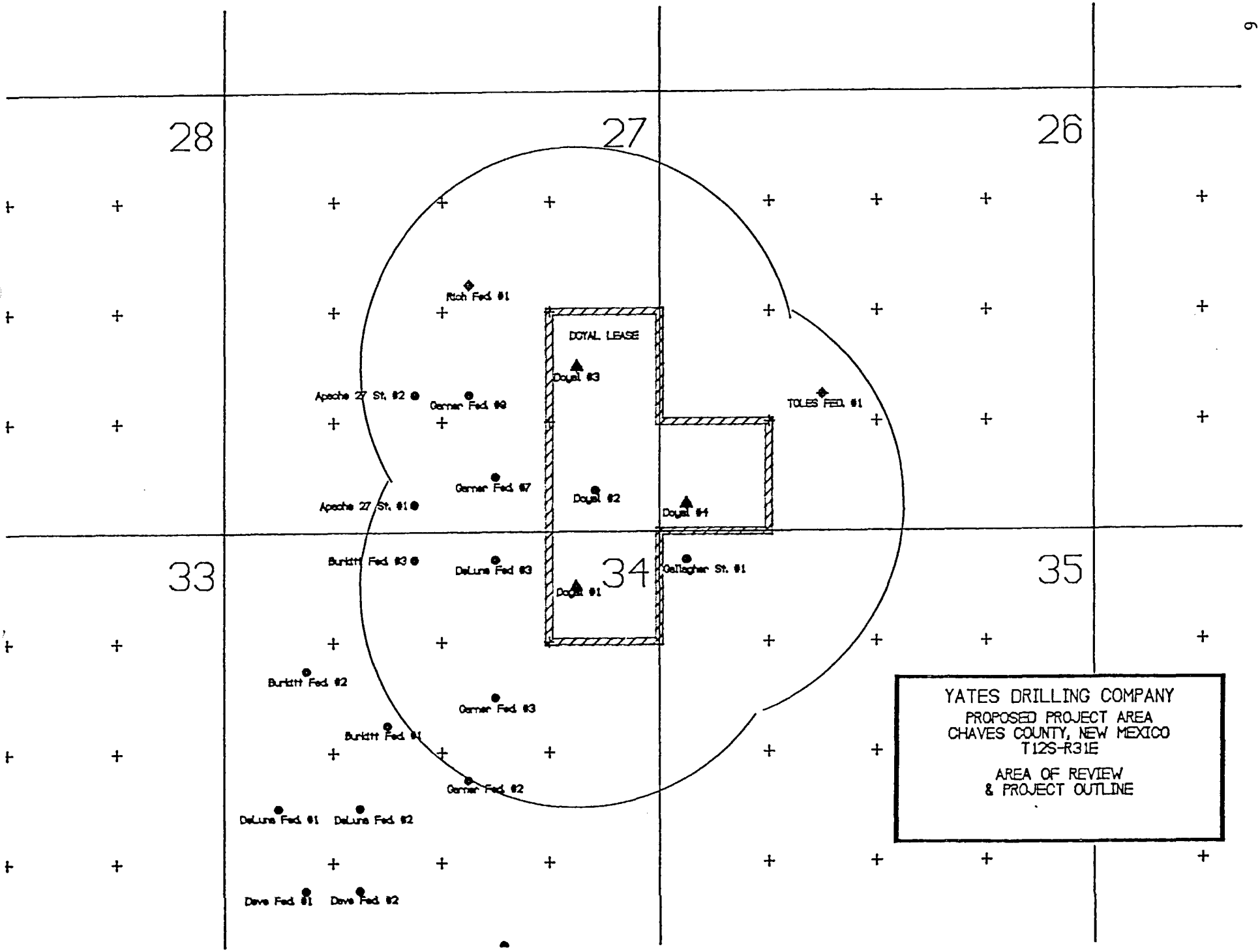
October 13, 1989



YATES DRILLING COMPANY

LEASE OWNERSHIP MAP
T12&13S-R31&32E

CHAVES AND LEA COUNTIES
NEW MEXICO



YATES DRILLING COMPANY
PROPOSED PROJECT AREA
CHAVES COUNTY, NEW MEXICO
T12S-R31E

AREA OF REVIEW
& PROJECT OUTLINE

INJECTION WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 1 FOOTAGE: 660'FNL- 990'FEL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 409.46

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 250 SX.
TOC: 2200' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3100'
TOTAL DEPTH: 3100'

INJECTION INTERVAL

2982' FEET TO 2989' FEET - PERFORATED

TUBING

TUBING SIZE: 2-3/8" LINED WITH: Plastic SET IN A
Baker AD-1 PACKER AT: 2932' FEET

OTHER DATA

1. NAME OF INJECTION FORMATION: Queen

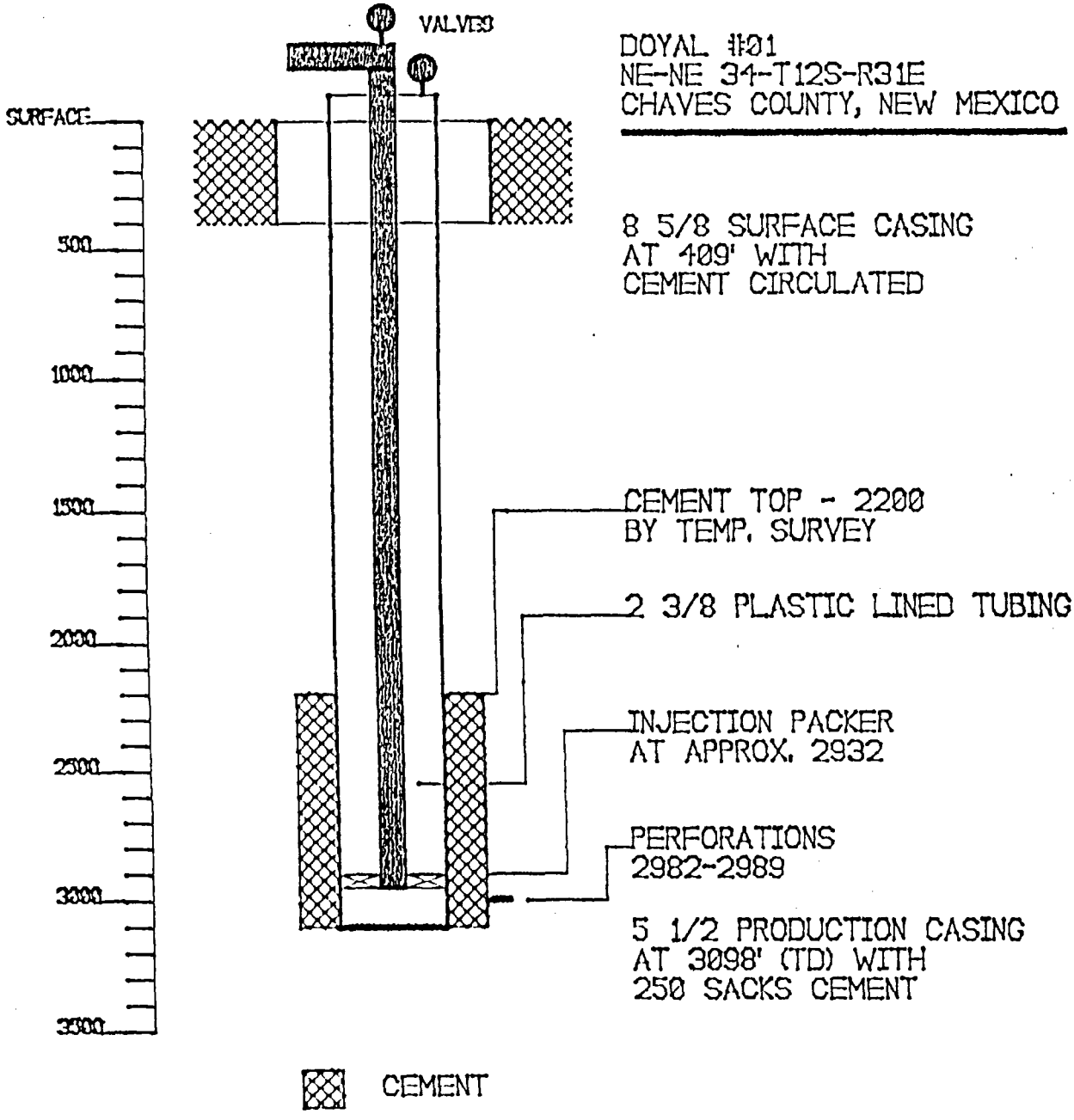
2. NAME OF FIELD OR POOL (IF APPLICABLE): SE Chaves Queen

3. IS THIS A NEW WELL DRILLED FOR INJECTION? No
   IF NO, FOR WHAT PURPOSE WAS THE WELL ORIGINALLY DRILLED?
   This well was drilled as a Queen producing well.

4. HAS WELL EVER BEEN PERFORATED IN ANY OTHER ZONE(S)? No
   LIST ALL SUCH PERFORATED INTERVALS AND GIVE PLUGGING DETAILS (SACKS OF CEMENT OR BRIDGE PLUG(S) USED):

5. GIVE DEPTH TO AND NAME OF ANY OVERLYING AND/OR UNDERLYING OIL OR GAS ZONES (POOLS) IN THIS AREA:
   None known.

WELL SCHEMATIC ATTACHED


VALVES
SURFACE
500
1000
1500
2000
2500
3000
3500
DOYAL #101
NE-NE 34-T12S-R31E
CHAVES COUNTY, NEW MEXICO
8 5/8 SURFACE CASING
AT 409' WITH
CEMENT CIRCULATED
CEMENT TOP - 2200
BY TEMP. SURVEY
2 3/8 PLASTIC LINED TUBING
INJECTION PACKER
AT APPROX. 2932
PERFORATIONS
2982-2989
5 1/2 PRODUCTION CASING
AT 3098' (TD) WITH
250 SACKS CEMENT
CEMENT

INJECTION WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doval

WELL NO.: 3 FOOTAGE: 1980'FSL & 990'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 260 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 409'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 850 SX.
TOC: 630' FEET DETERMINED BY: Cement Bond Log
HOLE SIZE: 7-7/8" SETTING DEPTH: 3099'
TOTAL DEPTH: 3100'

INJECTION INTERVAL

2991' FEET TO 2997' FEET - PERFORATED

TUBING

TUBING SIZE: 2-3/8" LINED WITH: Plastic SET IN A
Baker AD-1 PACKER AT: 2941' FEET

OTHER DATA

1. NAME OF INJECTION FORMATION: Queen

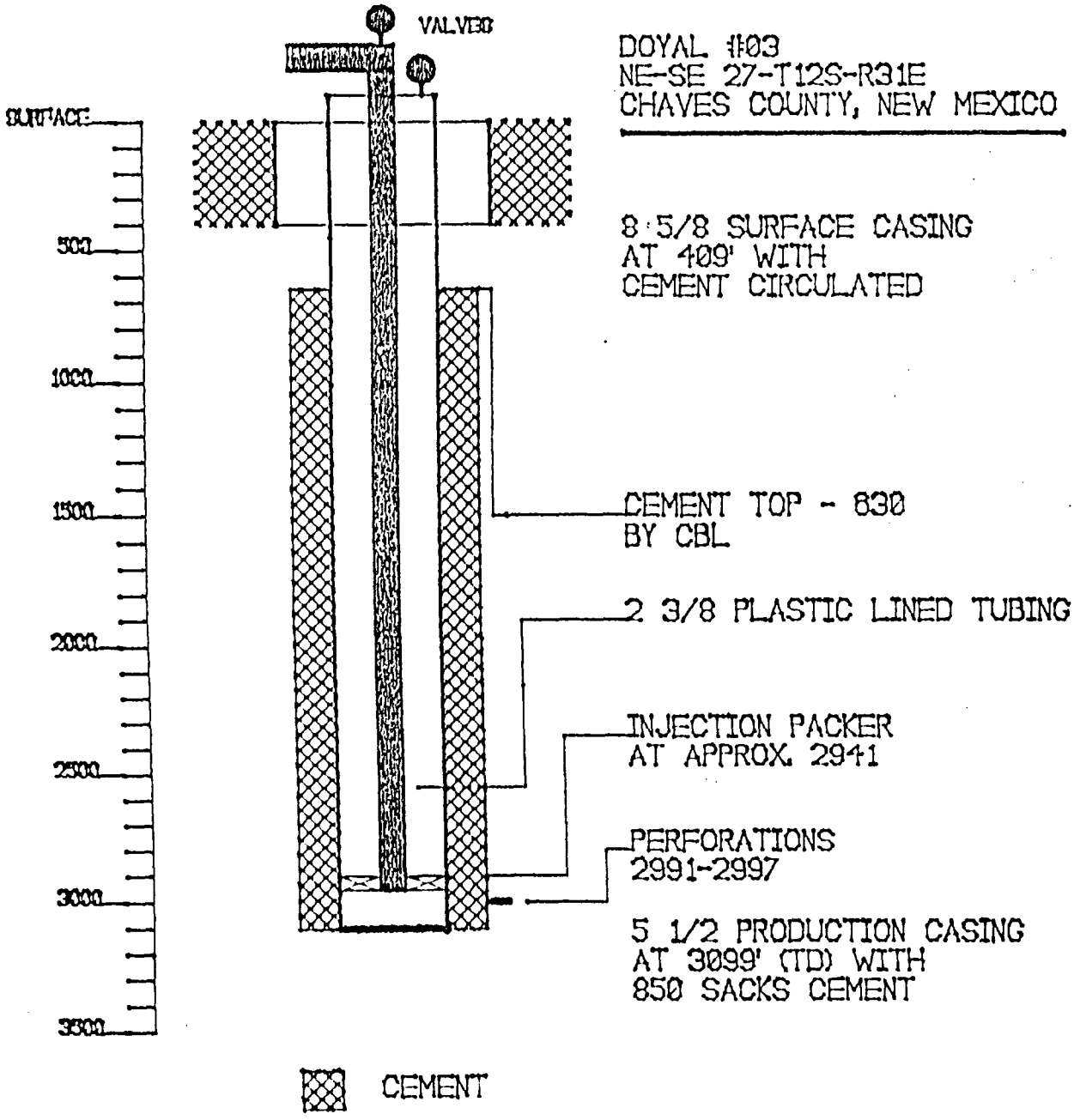
2. NAME OF FIELD OR POOL (IF APPLICABLE): SE Chaves Queen

3. IS THIS A NEW WELL DRILLED FOR INJECTION? No
   IF NO, FOR WHAT PURPOSE WAS THE WELL ORIGINALLY DRILLED?
   This well was drilled as a Queen producing well.
   This well is temp. aban. due to high water production

4. HAS WELL EVER BEEN PERFORATED IN ANY OTHER ZONE(S)? No
   LIST ALL SUCH PERFORATED INTERVALS AND GIVE PLUGGING
   DETAILS (SACKS OF CEMENT OR BRIDGE PLUG(S) USED):

5. GIVE DEPTH TO AND NAME OF ANY OVERLYING AND/OR
   UNDERLYING OIL OR GAS ZONES (POOLS) IN THIS AREA:
   None known.

WELL SCHEMATIC ATTACHED


VALVES
SURFACE
500
1000
1500
2000
2500
3000
3500
DOYAL #103
NE-SE 27-T12S-R31E
CHAVES COUNTY, NEW MEXICO
8 5/8 SURFACE CASING
AT 409' WITH
CEMENT CIRCULATED
CEMENT TOP - 630
BY CBL
2 3/8 PLASTIC LINED TUBING
INJECTION PACKER
AT APPROX. 2941
PERFORATIONS
2991-2997
5 1/2 PRODUCTION CASING
AT 3099' (TD) WITH
850 SACKS CEMENT
CEMENT

INJECTION WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 4 FOOTAGE: 330'FSL- 330'FWL SEC: 26-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 400

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 975 SX.
TOC: 310' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3000'
TOTAL DEPTH: 3100'

INJECTION INTERVAL

2902' FEET TO 2905' FEET - PERFORATED

TUBING

TUBING SIZE: 2-3/8" LINED WITH: Plastic SET IN A
Baker AD-1 PACKER AT: 2932' FEET

OTHER DATA

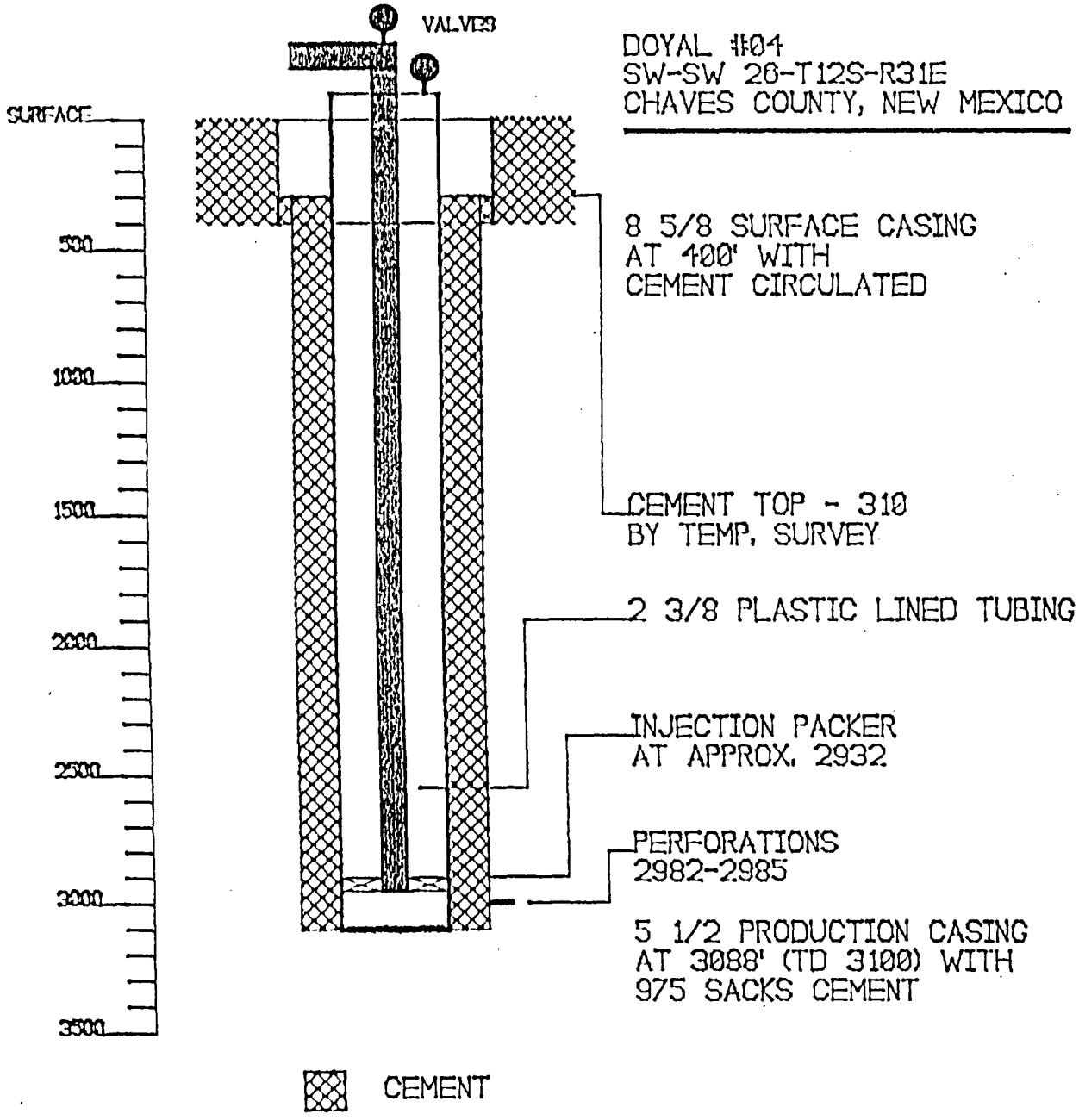
1. NAME OF INJECTION FORMATION: Queen

2. NAME OF FIELD OR POOL (IF APPLICABLE): SE Chaves Queen

3. IS THIS A NEW WELL DRILLED FOR INJECTION? No
   IF NO, FOR WHAT PURPOSE WAS THE WELL ORIGINALLY DRILLED?
   This well was drilled as a Queen producing well.

4. HAS WELL EVER BEEN PERFORATED IN ANY OTHER ZONE(S)? No
   LIST ALL SUCH PERFORATED INTERVALS AND GIVE PLUGGING DETAILS (SACKS OF CEMENT OR BRIDGE PLUG(S) USED):

5. GIVE DEPTH TO AND NAME OF ANY OVERLYING AND/OR UNDERLYING OIL OR GAS ZONES (POOLS) IN THIS AREA:
   None known.


VALVES
SURFACE
500
1000
1500
2000
2500
3000
3500
DOYAL #104
SW-SW 28-T12S-R31E
CHAVES COUNTY, NEW MEXICO
8 5/8 SURFACE CASING
AT 400' WITH
CEMENT CIRCULATED
CEMENT TOP - 310
BY TEMP. SURVEY
2 3/8 PLASTIC LINED TUBING
INJECTION PACKER
AT APPROX. 2932
PERFORATIONS
2982-2985
5 1/2 PRODUCTION CASING
AT 3088' (TD 3100) WITH
975 SACKS CEMENT
CEMENT

WELL DATA SHEET

OPERATOR: Yates Drilling Company LEASE: Apache "27" State

WELL NO.: 1 FOOTAGE: 330'FSL-2310'FWL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" CEMENTED WITH: SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 422'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 4-1/2" CEMENTED WITH: SX.
TOC: 210' FEET DETERMINED BY:
HOLE SIZE: 7-7/8" SETTING DEPTH: 3150'
TOTAL DEPTH: 3150'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 5-9-85 COMPLETION DATE: 6-27-85
PERFORATED: 2984 FEET TO 2991 FEET

STIMULATION: 100 gals. 15% HCl acid, 12000 gals. gel water
4000 gals. CO2, 10500# 20/40 sand, 10000# 12/20 sand

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Company LEASE: Apache "27" State

WELL NO.: 2 FOOTAGE: 1650'FSL-2310'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" CEMENTED WITH: SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 454'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 4-1/2" CEMENTED WITH: SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 7-7/8" SETTING DEPTH: 3150'
TOTAL DEPTH: 3150'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 7-29-85 COMPLETION DATE: 8-23-85
PERFORATED: 2976 FEET TO 3000 FEET

STIMULATION: 850 gals. 15% HCl acid, 16000 gals. gel water
25% CO2, 10500# 20/40 sand, 10000# 12/20 sand

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Burkitt Federal

WELL NO.: 3 FOOTAGE: 330'FNL-2310'FWL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 270 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 424'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 260 SX.
TOC: 1640' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3083'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 8-9-05 COMPLETION DATE: 10-1-05
PERFORATED: 2988 FEET TO 2992 FEET

STIMULATION: 750 gals. 15% HCl acid, 15000 gals. gel water, 24 tons CO2, 12000# 20/40 sand, 7000# 12/20 sand

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: DeLuna Federal

WELL NO.: 3 FOOTAGE: 330'FNL-1980'FEL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 300 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 433'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 410 SX.
TOC: 1900' FEET DETERMINED BY: Cement Bond Log
HOLE SIZE: 7-7/8" SETTING DEPTH: 3024'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 2-11-85 COMPLETION DATE: 3-20-85
PERFORATED: 2907-1/2 FEET TO 2993 FEET

STIMULATION: 750 gals. 15% hcl, 15000 gals. 30# gel, 23-1/2 tons CO2, 13000# 20/40 sand, 10000# 10/20 sand

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OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 1 FOOTAGE: 660'FNL- 990'FEL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 409.46'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" CEMENTED WITH: 250 SX.
TOC: 2200' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3098'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 7-31-84 COMPLETION DATE: 8-25-84
PERFORATED: 2982' FEET TO 2989' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel , 5000 SCF N2 per barrel, 10900# 20/40 sand, and 4200# 10/20 sand.

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well.

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 2 FOOTAGE: 500'FSL - 760'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 275 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 411'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" CEMENTED WITH: 250 SX.
TOC: 2200' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3090'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 9-7-84 COMPLETION DATE: 9-20-84
PERFORATED: 2981' FEET TO 2987' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel, 25% CO2 12000# 20/40 sand, 10000# 10/20 sand.

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well.

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 3 FOOTAGE: 1980'FSL- 990'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 260 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 409'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 850 SX.
TOC: 630' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3099'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 9-20-84 COMPLETION DATE: NONE
PERFORATED: 2921' FEET TO 2997' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel , 25% CO2 20000# 20/40 sand, 10000# 10/20 sand.

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Temp. Abandoned

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Doyal

WELL NO.: 4 FOOTAGE: 330'FSL- 330'FWL SEC: 26-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 400'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 975 SX.
TOC: 310' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3080'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 11-10-84 COMPLETION DATE: 1-24-87
PERFORATED: 2982' FEET TO 2985' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel , 22 tons CO2, 12000# 20/40 sand, 8500 # 12/20 sand.

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Gallagher State

WELL NO.: 1 FOOTAGE: 330'FNL- 330'FWL SEC: 35-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 433'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 900 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 7-7/8" SETTING DEPTH: 3084'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 10-28-84 COMPLETION DATE: 11-9-84
PERFORATED: 2902' FEET TO 2987' FEET

STIMULATION: 650 gallons of 15 % HCl, 15000 gallons 30# gel , 22 tons CO2, 120004 20/40 sand, 107504 10/20 sand.

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Garner Federal

WELL NO.: 2 FOOTAGE: 2310'FSL-2310'FEL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 410'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 550 SX.
TOC: 1992' FEET DETERMINED BY: Cement Bond Log
HOLE SIZE: 7-7/8" SETTING DEPTH: 3098'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 4-29-84 COMPLETION DATE: 6-1-844
PERFORATED: 2982 FEET TO 2990 FEET

STIMULATION: 750 gals. 15% HCl acid, 20000 gals. 30# gel, 25% CO2, 165000# 20/40 sand, 17000# 12/20 sand

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Garner Federal

WELL NO.: 3 FOOTAGE: 1980'FNL-1980'FEL SEC: 34-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 225 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 400'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 250 SX.
TOC: 1810' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3100'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 7-2-84 COMPLETION DATE: 8-12-84
PERFORATED: 2981 FEET TO 2986 FEET

STIMULATION: 750 gals. 15% HCl acid, 15000 gals. 30# gel,
5000 SCF N2 per barre, 1500# 20/40 sand, 1700# 12/20 sand

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Garner Federal

WELL NO.: 7 FOOTAGE: 660'FSL-1980'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 424'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 270 SX.
TOC: 1900' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3098.54'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 10-14-84 COMPLETION DATE: 10-30-84
PERFORATED: 2907' FEET TO 2993' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel , 1000 SCF/BBL CO2 13000# 20/40 sand, 9000# 10/20 sand

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OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Garner Federal

WELL NO.: 9 FOOTAGE: 1650'FSL-2310'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 420'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: 5-1/2" 14# CEMENTED WITH: 320 SX.
TOC: 1020' FEET DETERMINED BY: Temp. Survey
HOLE SIZE: 7-7/8" SETTING DEPTH: 3098'
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 11-11-84 COMPLETION DATE: 11-30-84
PERFORATED: 2985' FEET TO 2995' FEET

STIMULATION: 750 gallons of 15 % HCl, 15000 gallons 30# gel, 16 tons of CO2, 18000# 20/40 sand, 12500# 10/20 sand

---

OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Pumping oil well

IF P&A, LIST PLUGGING DETAILS:

WELL DATA SHEET

OPERATOR: Yates Drilling Co. LEASE: Rich Federal

WELL NO.: 1 FOOTAGE: 2310'FNL-2310'FEL SEC: 27-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" 24# CEMENTED WITH: 250 SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 412'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: SETTING DEPTH:

LONG STRING

SIZE: None CEMENTED WITH: SX.
TOC: FEET DETERMINED BY:
HOLE SIZE: 7-7/8" SETTING DEPTH:
TOTAL DEPTH: 3100'

PRODUCING INTERVAL

FORMATION: None POOL OR FIELD: SE Chaves Queen
SPUD DATE: 11-30-84 COMPLETION DATE: None
PERFORATED: FEET TO FEET

STIMULATION: None

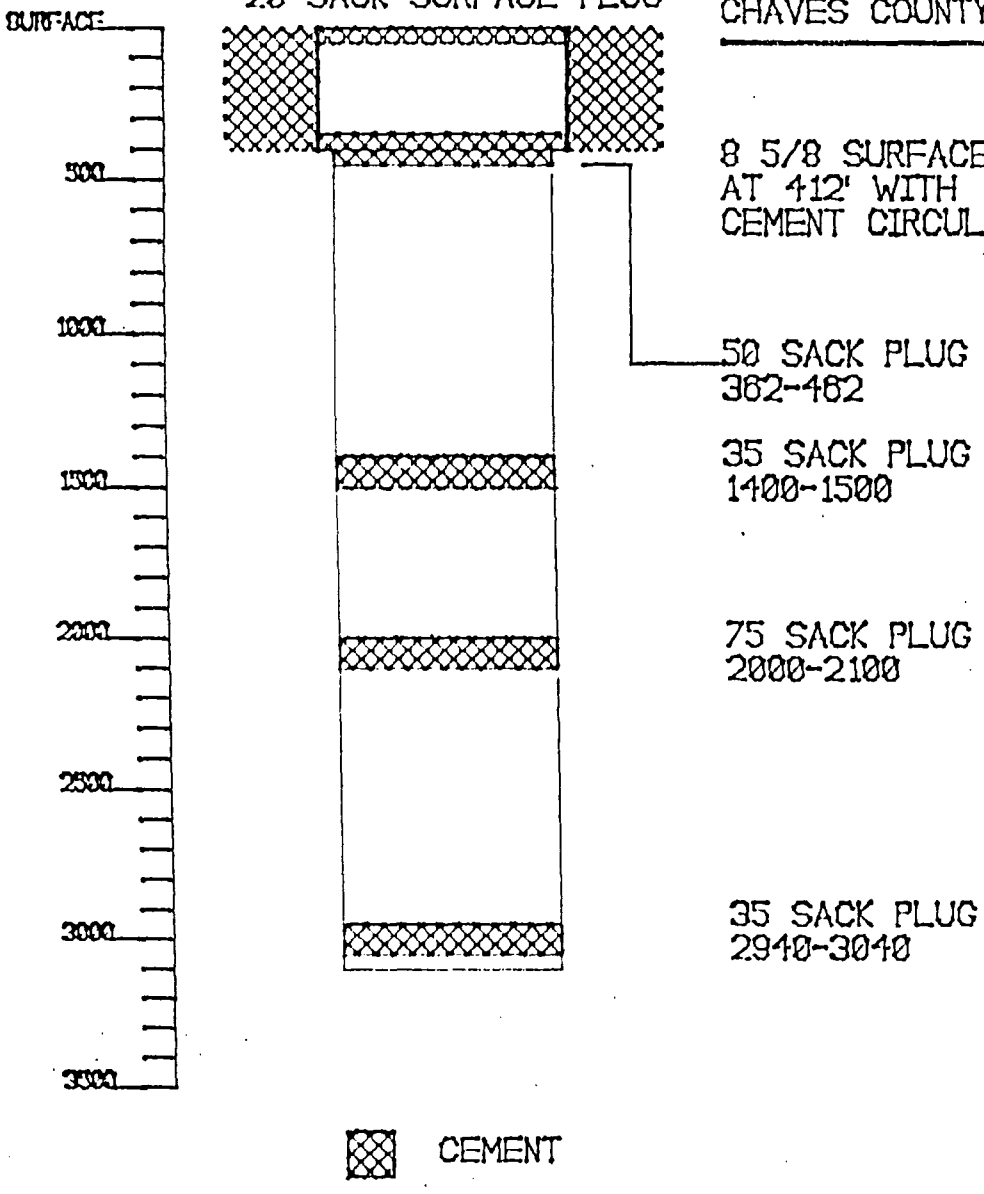
OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Plugged and Abandoned

IF P&A, LIST PLUGGING DETAILS: P&A 12-12-84
Plug 3040-2940' 35 sx Class "C" neat, Plug 2100-2000' 75 sx Class "C" w/2% CaCl2, plug 1500-1400' 35 sx Class "C" neat, Plug 462-362' 50 sx Class "C" w/2% CaCl2, Plug 50-Sur. 20sx Class "C" neat

RICH FED. #1
SW-NE 27-T12S-R31E
CHAVES COUNTY, NEW MEXICO



WELL DATA SHEET

OPERATOR: Snow Oil Company LEASE: Toles Federal

WELL NO.: 1 FOOTAGE: 1980'FSL-1650'FWL SEC: 26-T12s-R31e

TUBULAR DATA

SURFACE CASING

SIZE: 8-5/8" CEMENTED WITH: _____SX.
TOC: Surface FEET DETERMINED BY: Circulation
HOLE SIZE: 12-1/4" SETTING DEPTH: 473'

INTERMEDIATE CASING

SIZE: None CEMENTED WITH: _____SX.
TOC: _____FEET DETERMINED BY: _____
HOLE SIZE: _____SETTING DEPTH: _____

LONG STRING

SIZE: 4-1/2" CEMENTED WITH: _____SX.
TOC: 900' FEET DETERMINED BY: Estimate
HOLE SIZE: _____SETTING DEPTH: 3115'
TOTAL DEPTH: 3115'

PRODUCING INTERVAL

FORMATION: Queen POOL OR FIELD: SE Chaves Queen
SPUD DATE: 1-8-85 COMPLETION DATE: None
PERFORATED: 2344 FEET TO 2845 FEET

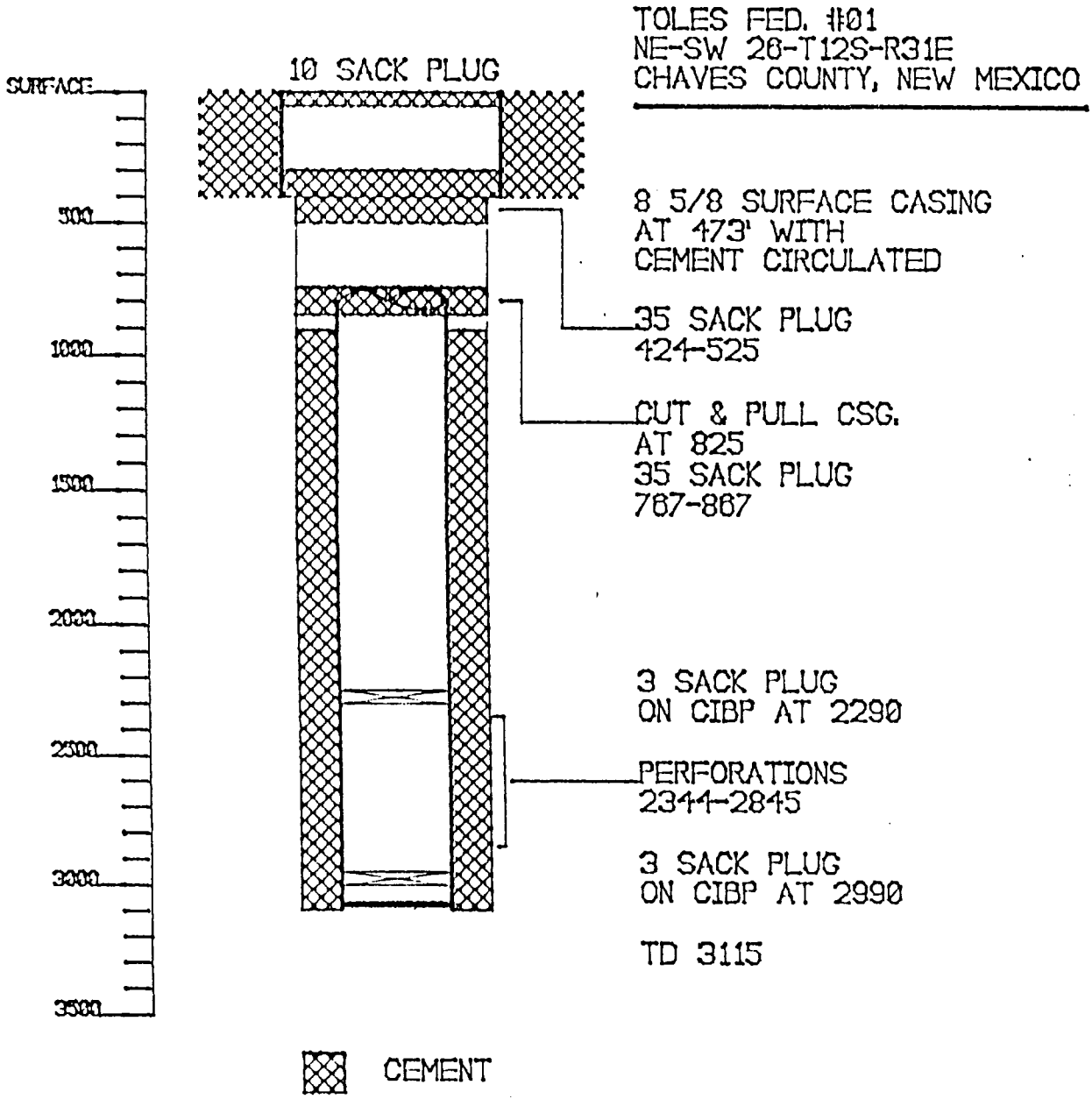
STIMULATION: _____

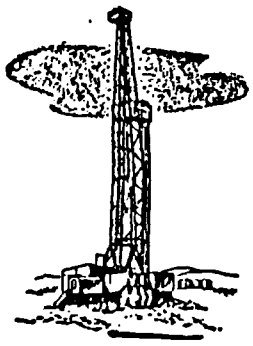
OTHER PERFORATED ZONES: None

CURRENT STATUS

WHAT IS CURRENT STATUS OF WELL? Plugged and Abandoned

IF P&A, LIST PLUGGING DETAILS: 3sx plug on CIBP @ 2990'
3sx plug on CIBP @ 2290', cut and pulled 4-1/2"casing @ 825
35sx plug @ 867', 35sx plug @ 524', 10sx plug @ surface


TOLES FED. #01
NE-SW 26-T12S-R31E
CHAVES COUNTY, NEW MEXICO
10 SACK PLUG
SURFACE
500
1000
1500
2000
2500
3000
3500
8 5/8 SURFACE CASING
AT 473' WITH
CEMENT CIRCULATED
35 SACK PLUG
424-525
CUT & PULL CSG.
AT 825
35 SACK PLUG
767-867
3 SACK PLUG
ON CIBP AT 2290
PERFORATIONS
2344-2845
3 SACK PLUG
ON CIBP AT 2990
TD 3115
CEMENT



YATES DRILLING COMPANY

105 SOUTH FOURTH STREET — (505) 746-9889

FAX (505) 746-6480

TELEX 508891 (YPCART)

ARTESIA, NEW MEXICO 88210

May 31, 1989

'89 JUN 1 AM 8 35
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

New Mexico State Engineer
District 2 Office
P.O. Box 1717
Roswell, New Mexico 88202

Attention: Glen Brim, District Supervisor

Centlemen:

Yates Drilling Company is proposing to waterflood the Queen formation underlying portions of Township 12 South, Range 31 East and Township 13 South, Range 31 East, Chaves County, New Mexico.

To insure the protection of fresh water aquifers in this area we would like to obtain the location, depth and geological name of the producing formation for any water wells located in either described township. Additionally, the identification of any commercial water wells in the area would be helpful.

Any information that your office can provide concerning this matter will be greatly appreciated.

Sincerely yours,

YATES DRILLING COMPANY

Tobin L. Rhodes
Petroleum Engineer

June 9, 1989

Yates Drilling Company
ATTN: Tobin L. Rhodes, Petroleum Engineer

Enclosed are well locations and some information pertaining to these wells. They were drilled and finished in the Ogallala Formation (TO). Record of other wells finished deeper on other water formations were found north of Township 12 South in Township 11 South, Range 31 East. These wells are finished in the Triassic Formation (TRC), depth of wells are between ± 200 feet to 300 feet.

Johnny R. Hernandez
Basin Supervisor

ction 24	Township 12 South	Range 31 East			
4993	NE¼SW¼	Dom.	T.D. 14c	5½" casing	- Shallow
-6649	SE¼SE¼	Dom & STK	T.D. 160'	4½" casing	- Shallow

ction 26	Township 12 South	Range 31 East			
-2117	NW¼SW¼	Irr.			
-6746	SW¼NW¼	Dom. & StK	T.D 166'	Not cased	- Shallow
-6749	SW¼SE¼	Comm. & DOM & STK	T.D. 198'	6" casing	- Shallow
L-9566	SW¼SE¼	COM, Oil & Gas	Same		
Well L-9566 is stock well L-6749**		Comm.			

Section 27	Township 12 S	Range 31 E.			
L-6650	SE¼NE¼	Dom & Stk	T.D. 160'	4½ casing	- Shallow

Section 35	Township 12 South	Range 31 East			
L-2932	SE¼	OWD			
L-4170	NW¼SE¼NW¼	Dom.	T.D. 55'	Casing 8"	Shallow
L-4296	NW¼NW¼	WF	cancelled	↑	
L-4296-X	SW¼SW¼	WF	cancelled	No wells	
L-4296-X-2	NE¼NE¼	WF	cancelled	↓	
L-4296-X-3	SE¼SE¼	WF	Cancelled		

Section 23	Township 13 uth	Range 31 East	
L-3914-X-10	SE¼SE¼	Ind.	
L-3914-X-11	SE¼NW¼	Ind.	
L-3914-X-12	NE¼NE¼	Ind.	Wells NOT Drilled
L-3914-X-13	SE¼SW¼	Ind.	
L-3914-X-14	NW¼SE¼	Ind.	

Section 24	Township 13 South	Range 31 East	
L-3914	N½ SE¼ ~~SW¼~~NE¼	Ind.	T.D. 176' 8 5/8" casing — Shallow
L-3914-X	NE¼SW¼	Ind.	
L-3914-X-2	NE¼NW¼	Ind.	
L-3914-X-3	SW¼SE¼	Ind.	
L-3914-X-4	SE¼NE¼	Ind.	
L-3914-X-5	NE¼SE¼	Ind.	Wells Not Drilled
L-3914-X-6	NW¼NE¼	Ind.	
L-3914-X-7	NE¼NE¼	Ind.	
L-3914-X-8	SW¼NW¼	Ind.	
L-3914-X-9	SE¼NW¼	Ind.	

Section 35	Township 13 South	Range 31 East	
L-2849	SW¼SE¼NW¼	Dom.	No well record info.

tion 1 Township 13 South Range 31 East

460	SE¼NE¼SW¼	WF	T.D. 14' 8⅝" casing - Shallow
461	SE¼SE¼SE¼	WF	T.D. 220' 8⅝ casing - Shallow
837	SW¼SW¼SW¼	Com. & Stock	Rptd TD 165' 6" casing - Shallow
837-X	SW¼SW¼SW¼	Com. & Stock	Rptd TD. 190' 7" casing - Shallow

tion 2 Township 13 South Range 31 East

306	SE¼SE¼SE¼	Stock	No well record info.
333	NE¼NE¼SE¼	Com.	with drawn no well
334	SW¼SE¼NE¼	Dec.	Rptd — TD 165', 6 7/8 casing - Shallow
835	SW¼SE¼NE¼	Dec.	Rptd — T.D 165' 6 7/8 casing — Shallow
295	SE¼NE¼	WF	
3914	NE¼SE¼NE¼	SRO	T.D. 196' 8⅝" casing - Shallow
2745	NE¼NE¼SE¼	SRO	T.D. 216' 6 5/8" casing - Shallow

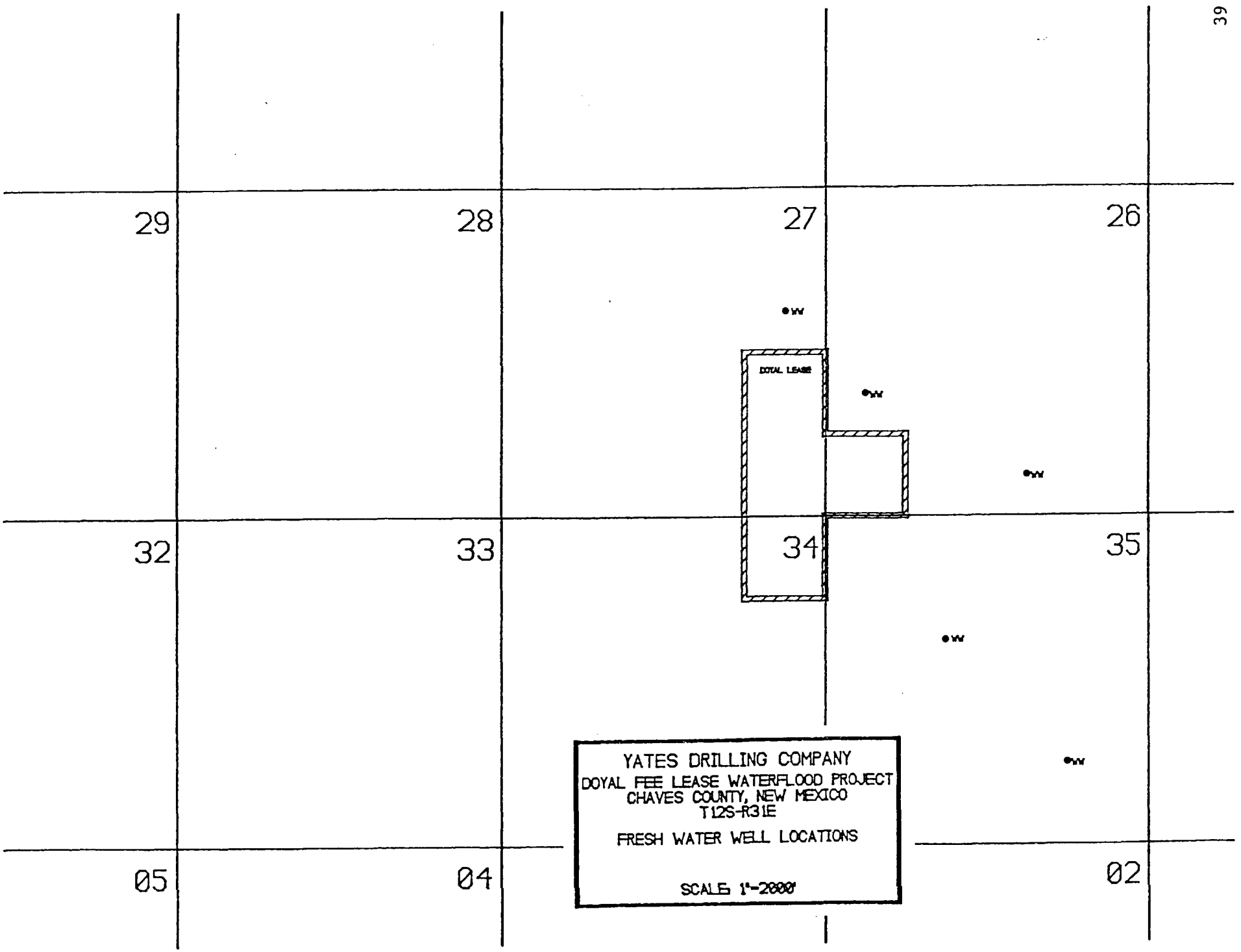
ction 12 Township 13 South Range 31 East

934	NE¼	OWD	No well record info.
-3460	NE¼NE¼	SRO	T.D. 217' — 8⅝" casing — Shallow

ction 13 Township 13 South Range 31 East

-2933	NE½	OWD	No well record info.

SEC	TWN	RNG	UNIT LTR	QTR OF UNIT	TD	TYPE	#
24	12S	31E	K	?	148	DOM.	L4993
24	12S	31E	P	?	160	DOM.	L6649
26	12S	31E	E	?	166	DOM. & STK	L6746
✓26	12S	31E	L	?	?	IRR.	L2117
✓26	12S	31E	O	?	198	COM. (OIL & GAS)	L9566
✓26	12S	31E	O	?	198	COM., DOM. & STK	L6749
✓27	12S	31E	H	?	160	DOM. & STK	L6650
✓35	12S	31E	F	NW	55	DOM.	L4170
✓35	12S	31E	IJOP	?	?	?	L2932
1	13S	31E	K	SE	190	WF	L3460
1	13S	31E	P	SE	220	WF	L3461
1	13S	31E	M	SW	190	COM. & STK	L3837X
1	13S	31E	M	SW	165	COM. & STK	L3837
2	13S	31E	H	SW	165	DEC.	L3834
2	13S	31E	H	?	?	WF	L4295
2	13S	31E	H	NE	196	SRO	L3914
2	13S	31E	H	SW	165	DEC.	L3835
2	13S	31E	P	SE	?	?	L3806
2	13S	31E	I	NE	216	SRO	L2745
12	13S	31E	A	?	217	SRO	L3460
13	13S	31E	ABCD	?	?	OWD	L2933
24	13S	31E	H	NE	196	IND.	L3914
35	13S	31E	F	SW	?	DOM.	L2849


39
29
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DOYAL LEASE
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YATES DRILLING COMPANY
DOYAL FEE LEASE WATERFLOOD PROJECT
CHAVES COUNTY, NEW MEXICO
T12S-R31E
FRESH WATER WELL LOCATIONS
SCALE 1"=2000'

PERMIAN
Treating Chemicals, Inc.

P. O. BOX 728
LOVINGTON, NM 88260
PHONE (505) 396-5674

WATER ANALYSIS REPORT

Company: Yates Drilling — Date Sampled: 1-22-88
Field: Caprock — County: Chavez
Lease: Graham Water Station — State: NM
Well: — Formation:
Type of Water: Fresh — Water, B/D:
Sampling Point: Water Tanks — Sampled By: Blackwell

DISSOLVED SOLIDS

CATIONS	mg/l		meq/l
Sodium, Na+(Calc)	230	÷ 23	10
Calcium, Ca++	120	÷ 20	6
Magnesium, Mg++	24	÷ 12.2	2
Barium, Ba++	neg	÷ 68.7	-
Iron, Fe (Total)			

ANIONS			
Chloride, Cl-	350	÷ 35.5	10
Sulfate, So_4=	120	÷ 48	3
Carbonate, Co_3=	0	÷ 30	0
Bicarbonate, HCo_3-	300	÷ 61	5

OTHER PROPERTIES

pH: 8.2
Specific Gravity: 1.000
H_2S: neg
Total Dissolved Solids: 1144
Total Hardness: 400

Remarks and Recommendations:

PERMIAN
Treating Chemicals, Inc.

P.O BOX 728
LOVINGTON, NM 88260
PHONE (505) 396-5674

WATER ANALYSIS REPORT

Company: Yates Drilling
Field: Caprock
Lease: Graham Water well (fresh)
Well: North of Lease
Type of Water: Fresh
Sampling Point: Well head

Date Sampled: 1-22-88
County: Chavez
State: NM
Formation:
Water, B/D: Blackwell
Sampled By:

DISSOLVED SOLIDS

CATIONS	mg/l		meq/l
Sodium, Na+(Calc)	115	÷ 23	5
Calcium, Ca++	120	÷ 20	6
Magnesium, Mg++	15	÷ 12.2	1
Barium, Ba++	Neg	÷ 68.7	
Iron, Fe (Total)			

ANIONS			
Chloride, Cl-	200	÷ 35.5	6
Sulfate, So_4=	55	÷ 48	1
Carbonate, Co_3=	0	÷ 30	0
Bicarbonate, HCo_3-	312	÷ 61	5

OTHER PROPERTIES

pH: 8.3
Specific Gravity: 1.000
H_2S: Neg
Total Dissolved Solids: 817
Total Hardness: 360

Remarks and Recommendations

ERMIAN
ating Chemicals, Inc.

P. O. BOX 728
LOVINGTON, NM 88260
PHONE (505) 396-5674

WATER ANALYSIS REPORT

Company: Yates Drilling Report — Date Sampled: 1-22-88
Field: Caprock — County: Lea
Lease: Williams Ranch — State: NM
Well: Williams Fresh Water — Formation:
Type of Water: Fresh Water — Water, B/D:
Sampling Point: Well head — Sampled By: Blackwell

DISSOLVED SOLIDS

CATIONS	mg/l		meq/l
Sodium, Na+(Calc)	70	÷ 23	3.0
Calcium, Ca++	80	÷ 20	4.0
Magnesium, Mg++	20	÷ 12.2	1.6
Barium, Ba++	Neg	÷ 68.7	
Iron, Fe (Total)			

ANIONS			
Chloride, Cl-	100	÷ 35.5	2.8
Sulfate, So_4=	40	÷ 48	0.8
Carbonate, Co_3=	0	÷ 30	0
Bicarbonate, HCo_3-	292	÷ 61	4.8

OTHER PROPERTIES

pH: 8.2
Specific Gravity: 1.000
H_2S: Neg
Total Dissolved Solids: 602
Total Hardness: 271

Remarks and Recommendations

PERMIAN
Treating Chemicals, Inc.

P. O BOX 72
LOVINGTON, NM
PHONE (505) 396

WATER ANALYSIS REPORT

Company	Yates Drilling	Date Sampled	1-22-88
Field	Caprock	County	Lea
Lease	Gallagher	State	NM
Well	1	Formation	Queens
Type of Water	Produced	Water, B/D	
Sampling Point	Treater	Sampled By	Blackwell

DISSOLVED SOLIDS					OTHER PROPERTIES	
CATIONS	mg/l		meq/l		pH	5.9
Sodium, Na+(Calc)	98100	÷ 23	4265		Specific Gravity	1.200
Calcium, Ca++	3750	÷ 20	188			
Magnesium, Mg++	12900	÷ 12.2	1057		H_2S	Neg
Barium, Ba++	neg	÷ 68.7			Total Dissolved Solids	314,240
Iron, Fe (Total)						
					Total Hardness	62,800
ANIONS						
Chloride, Cl-	198000	÷ 35.5	5577			
Sulfate, So_4=	1350	÷ 48	28			
Carbonate, Co_3=	0	÷ 30	0			
Bicarbonate, HCo_3-	140	÷ 61	2.3			

Remarks and Recommendations

PERMIAN
Treating Chemicals, Inc.

P. O. BOX 72
LOVINGTON, NM
PHONE (505) 396

WATER ANALYSIS REPORT

Company	Yates Drilling	Date Sampled	1-22-88
Field	Caprock	County	Lea
Lease	Doyle	State	NM
Well	12 & 4	Formation	Queens
Type of Water	Produced	Water, B/D	
Sampling Point	Treater	Sampled By	Blackwell

DISSOLVED SOLIDS					OTHER PROPERTIES	
CATIONS	mg/l		meq/l		pH	5.7
Sodium, Na+(Calc)	97900	÷ 23	4257		Specific Gravity	1.200
Calcium, Ca++	3800	÷ 20	190			
Magnesium, Mg++	13300	÷ 12.2	1090		H_2S	neg.
Barium, Ba++	0	÷ 68.7			Total Dissolved Solids	312,598
Iron, Fe (Total)	58					
					Total Hardness	64,900
ANIONS						
Chloride, Cl-	196,000	÷ 35.5	5521			
Sulfate, So_4=	1400	÷ 48	29			
Carbonate, Co_3=	0	÷ 30	0			
Bicarbonate, HCo_3-	140	÷ 61	2.3			

Remarks and Recommendations

PERMIAN
Treating Chemicals, Inc.

P. O. BOX 728
LOVINGTON, NM 88260
PHONE (505) 396-5674

WATER ANALYSIS REPORT

Company: Yates Drilling | Date Sampled: 1-22-88
Field: Caprock | County: Lea
Lease: Burkett | State: NM
Well: | Formation: Queens
Type of Water: Produced | Water, B/D:
Sampling Point: Treater | Sampled By: Blackwell

DISSOLVED SOLIDS

CATIONS	mg/l		meq/l
Sodium, Na+(Calc)	98000	÷ 23	4261
Calcium, Ca++	4100	÷ 20	205
Magnesium, Mg++	12800	÷ 12.2	1049
Barium, Ba++	Neg	÷ 68.7	
Iron, Fe (Total)			
ANIONS			
Chloride, Cl-	197,000	÷ 35.5	5549
Sulfate, So_4=	1200	÷ 48	25
Carbonate, Co_3=	0	÷ 30	
Bicarbonate, HCo_3-	120	÷ 61	2

OTHER PROPERTIES

pH: 5.9
Specific Gravity: 1.200
H_2S: Neg.
Total Dissolved Solids: 313,220
Total Hardness: 6300

Remarks and Recommendations:

ERMEAN
eating Chemicals, Inc.

Company Yates Drilling
Field
Lease Deluna
Well
Type of Water Produced
Sampling Point Treater

Date Sampled 1-22-88
County Lea
State NM
Location Queens
Owner, P/P
Sampled by Blackwell

DISSOLVED SOLIDS

	mg/l	meq/l
CATIONS		
Sodium, Na+ (Calc)	97600	4243
Calcium, Ca++	3960	198
Magnesium, Mg++	12900	1075
Barium, Ba++		
Iron, Fe (Total)	0	
ANIONS		
Chloride, Cl-	194,000	5465
Sulfate, $SO_4^=$	1200	25
Carbonate, $CO_3^=$	0	
Bicarbonate, HCO_3^-	88	1.1

OTHER PROPERTIES

pH	6.0
Specific Gravity	1.200
H_2S	Neg
Total Dissolved Solids	135,148
Total Hardness	63,000

Remarks and Recommendations

ERMIAN
eating Chemicals, Inc.

P O BOX 726

WATER ANALYSIS REPORT

Company Yates Drilling

Field

Lease Garner

Well 7

Type of Water Produced

Sampling Point

Date Sampled 1-22-88

County Lea

State NM

Formation Queens

Water, B/D

Sampled by Blackwell

DISSOLVED SOLIDS

CATIONS

	mg/l		me/l
Sodium, Na (calc)	105,000		4565
Calcium, Ca++	4,750	20	238
Magnesium, Mg++	11,900		975
Barium, Ba++			
Iron, Fe (Total)			

ANIONS

	mg/l		me/l
Chloride, Cl-	204,000	35.5	5746
Sulfate, SO_4	1,100		23
Carbonate, CO_3=	0		
Bicarbonate, HCO_3-	205		3.4

OTHER PROPERTIES

pH 5.8

Specific Gravity 1.200

H_2S Neg

Total Dissolved Solids 326,955

Total Hardness 60,700

Remarks and Recommendations:

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HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT

No. W539, W540 & W541-89

TO Yates Drilling

105 South Fourth Street

Artesia, NM 88210

Date October 17, 1989

Submitted by _____ **Date Rec.** October 16, 1989

Well No. _____ **Depth** _____ **Formation** _____

Field _____ **County** _____ **Source** _____

	SPEAR WW #1	GF #7	DEL FED. #3
Resistivity	0.74 @ 70°	0.052 @ 70°	0.054 @ 70°
Specific Gravity ..	1.006 @ 70°	1.1730 @ 70°	1.1571 @ 70°
pH	6.4	6.6	6.6
Calcium	1,686	6,744	7,418
Magnesium	546	10,230	7,979
Chlorides	5,000	159,000	143,000
Sulfates	Nil	Nil	Medium
Bicarbonates	305	214	183
Soluble Iron	Nil	10	3
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Remarks:

Eric Jacobson

Respectfully submitted

Analyst: Eric Jacobson - EIT

HALLIBURTON SERVICES

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT

No. W536, W537 & W538-89

TO Yates Drilling
105 South Fourth Street
Artesia, NM 88210

Date October 17, 1989

Submitted by ______ **Date Rec.** October 16, 1989

Well No. ______ **Depth** ______ **Formation** ______

Field ______ **County** ______ **Source** ______

	BUR FEDERAL #3	GALLAHAN ST. #1	AP STATE #1
Resistivity	0.051 @ 70°	0.051 @ 70°	0.058 @ 70°
Specific Gravity	1.1200 @ 70°	1.196 @ 70°	1.137 @ 70°
pH	6.5	6.6	6.8
Calcium	6,070	5,620	6,407
Magnesium	10,912	12,685	6,615
Chlorides	184,000	180,000	122,000
Sulfates	Heavy	Medium	Medium
Bicarbonates	214	183	305
Soluble Iron	10	25	0

Remarks:

Eric Jacobson
Respectfully submitted

Analyst: Eric Jacobson - EIT

HALLIBURTON SERVICES

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT

No. W542, W543 & W544-89

TO Yates Drilling

105 South Fourth Street

Artesia, NM 88210

Date October 17, 1989

Submitted by _____ Date Rec. October 16, 1989

Well No. _____ Depth _____ Formation _____

Field _____ County _____ Source _____

	Graham WW #1	Graham WW #2	Doy #1
Resistivity	0.60 @ 70°	0.91 @ 70°	N.A.
Specific Gravity ..	1.007 @ 70°	1.005 @ 70°	N.A.
pH	6.5	6.7	6.6
Calcium	1,124	1,124	4,946
Magnesium	477	614	14,186
Chlorides	6,000	4,000	198,000
Sulfates	Nil	Nil	Nil
Bicarbonates	214	214	153
Soluble Iron	Nil	Nil	75

Remarks:

Eric Jacobson

Respectfully submitted

Analyst: Eric Jacobson - EIT

HALLIBURTON SERVICES