

**APPLICATION FOR AUTHORIZATION TO INJECT**

I. PURPOSE: \_\_\_\_\_ Secondary Recovery XX Pressure Maintenance \_\_\_\_\_ Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval? XX Yes \_\_\_\_\_ No

II. OPERATOR: EOG Resources, Inc.

ADDRESS: 4000 N. Big Spring Ste. 500; P.O. Box 2267 Midland, Texas 79705

CONTACT PARTY: Randy Cate PHONE: (915)686-3600

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 XX 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 geologic data on the injection zone including appropriate lithologic detail, geologic 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 sources 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 sources 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: Randy S. Cate TITLE: Project Reservoir Engineer

SIGNATURE:  DATE: April 10, 2000

### 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 the 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, 2040 South Pacheco, Santa Fe, New Mexico 87505, 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.

**APPLICATION FOR AUTHORIZATION TO INJECT  
VACA "13" FEDERAL NO.2**

III. WELL DATA

A. (1) Lease Name: Vaca "13" Federal

Well No.: 2

Location: Section 13-T25S-R33E

660' FNL & 1980' FEL

Total Depth: 12,600'

(2) Surface Casing: 14-3/4" Hole  
11-3/4" 42# H-40 ST&C set @ 657'  
351sx CL "C"  
Circulated 52sx of cement to pit

Intermediate Casing: 11" Hole  
8-5/8" 32# S-80/K-55 ST&S set @ 5,035'  
1487sx PSL/CL "C"  
Circulate 195sx of cement to pit

Production Casing: 7-7/8" Hole  
5-1/2" 17# P110 LT&C set @ 12,475'  
2225sx 50/50 POZ/CL "H"  
TOC @ 3,800' (temp. svy.)

(3) Injection Tubing String: 2-3/8" 4.7# J-55 EUE 8rd set @ 12,200'  
tubing to be internally plastic coated

(4) Injection Packer: 5-1/2" Baker AD-1 packer set @ 12,200'  
packer to be plastic coated

B. (1) Name of Injection Formation: 3<sup>rd</sup> Bone Spring  
Pool or Field Name: Red Hills

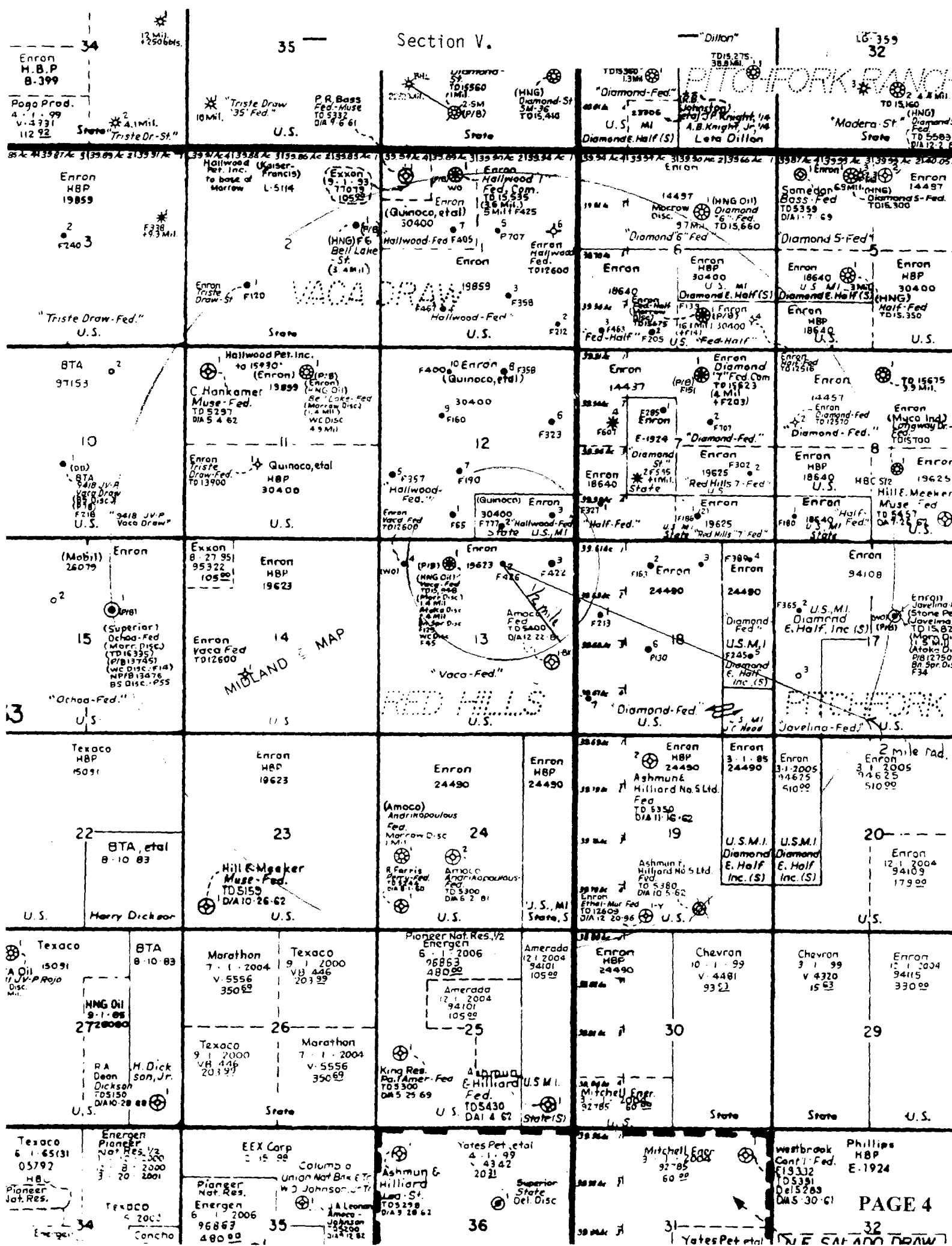
(2) Injection Interval: 12,240' - 12,264'  
Perforated or Open Hole: Perforated

(3) Original Purpose of Drilling Well: Bone Spring Test

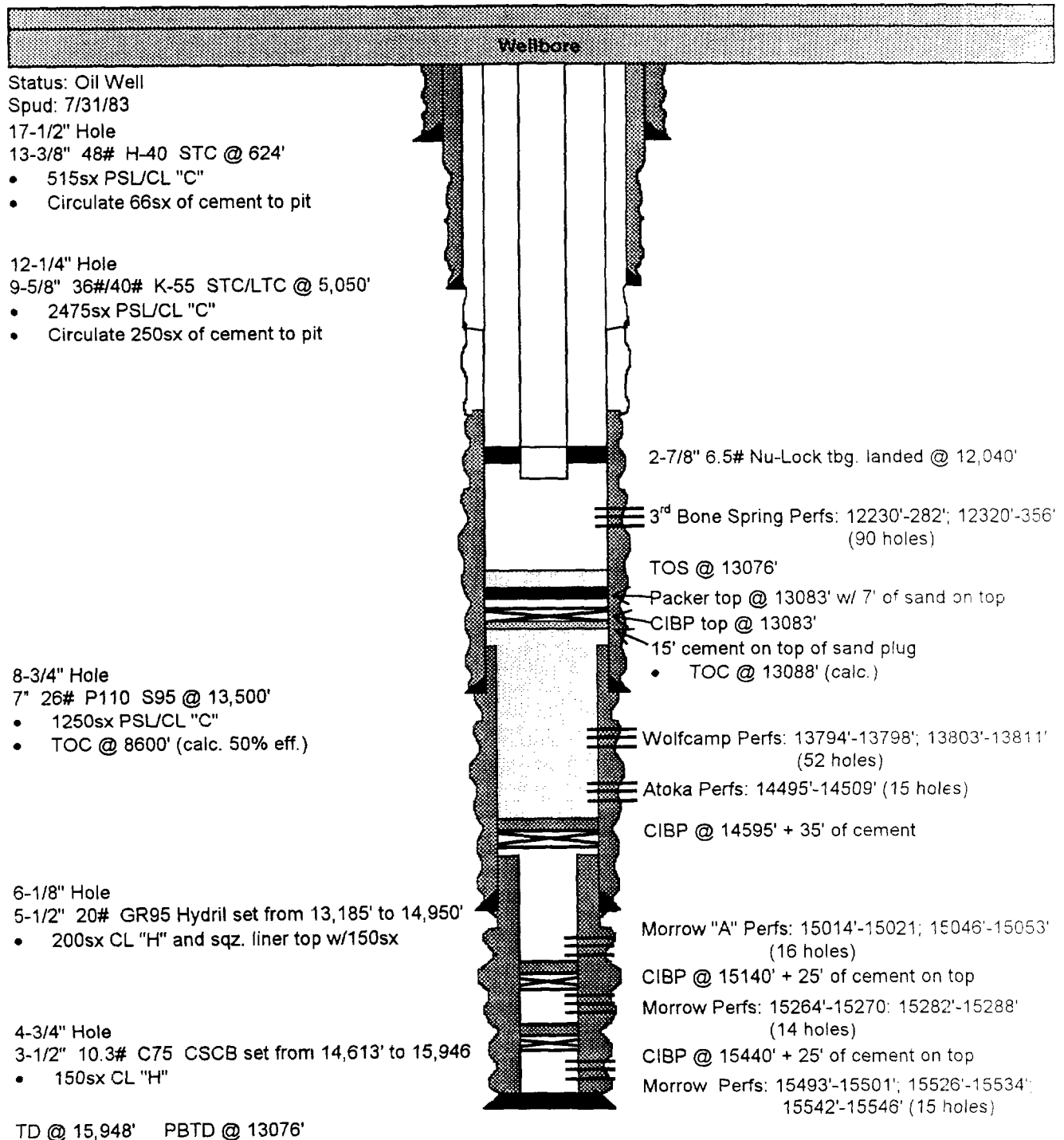
(4) Other Perforations: None

(5) Oil or Gas Productive Zones:  
Next Higher: Delaware (5,183'-9,260')  
Next Lower: Wolfcamp (12,284'-≈13,800')

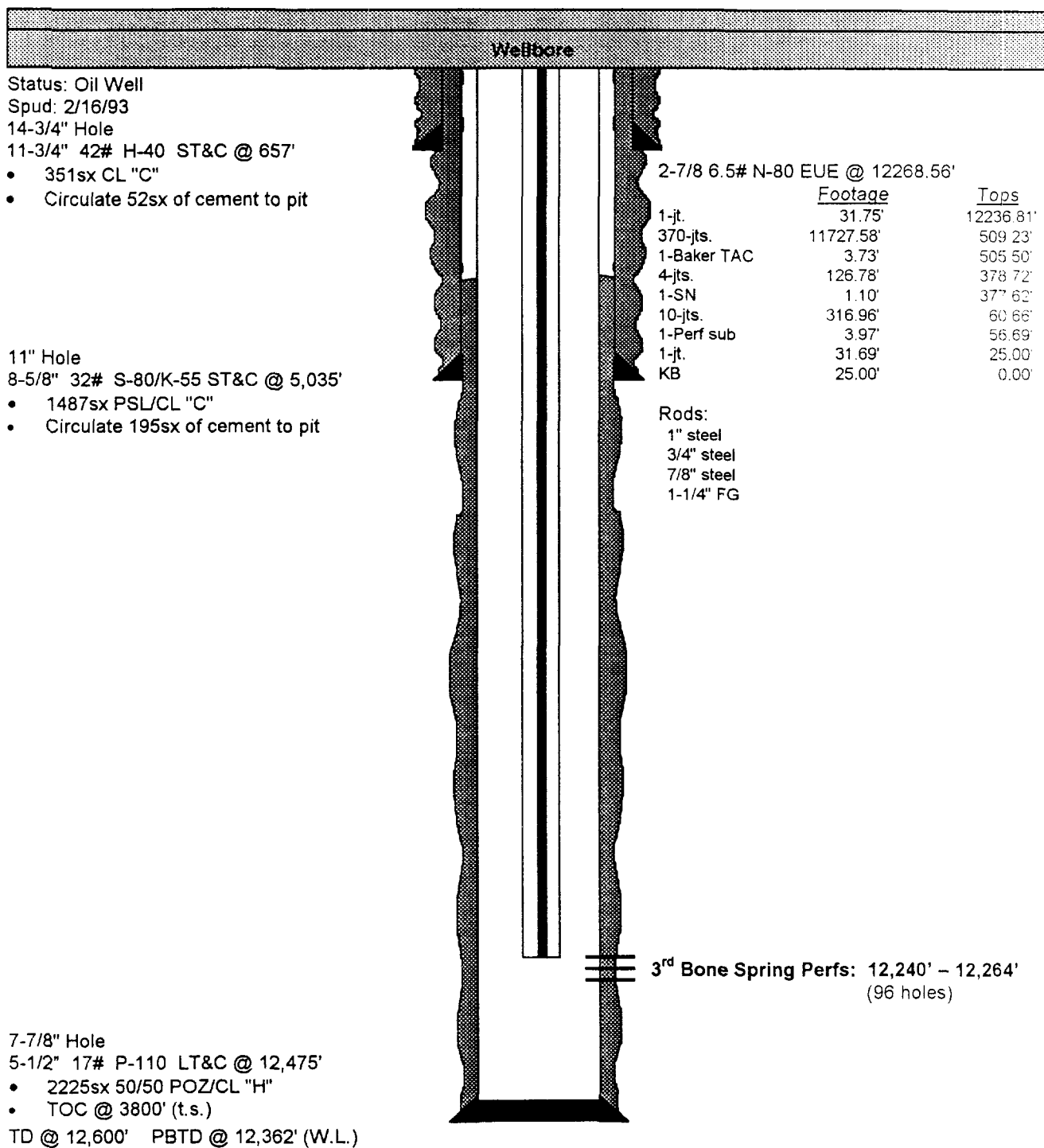
# Section V.



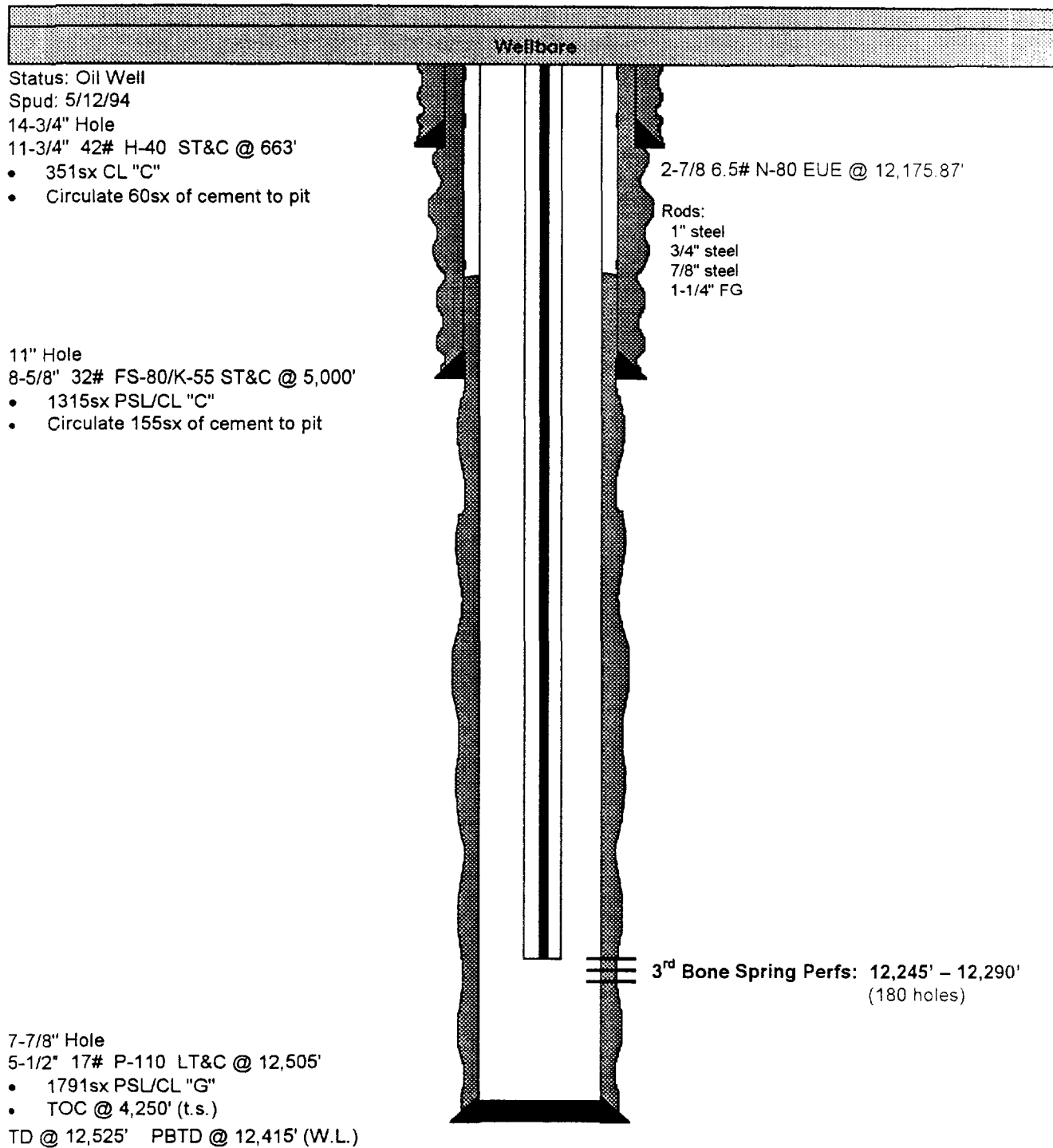
WELL SCHEMATIC



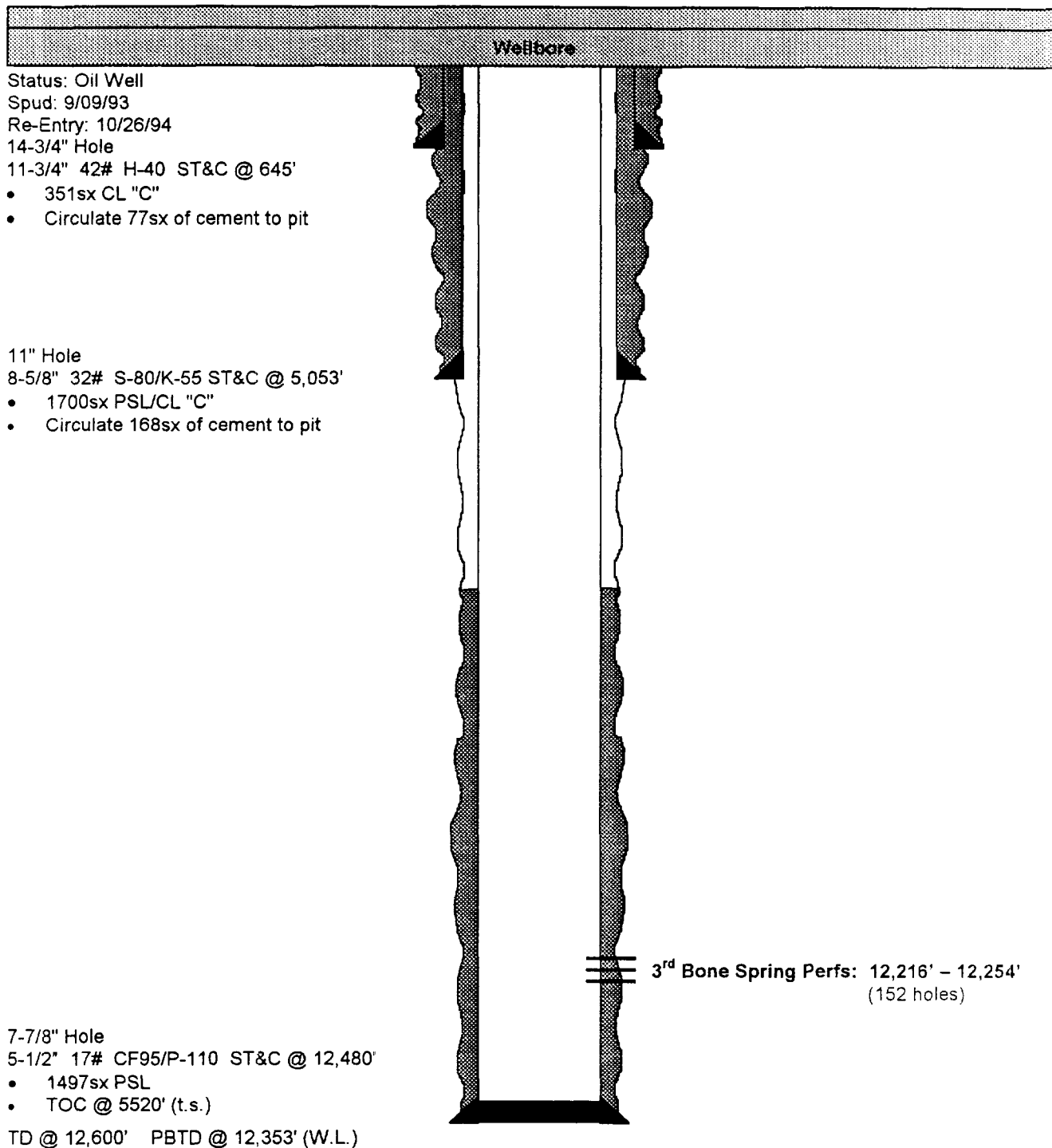
# WELLBORE SCHEMATIC



WELLBORE SCHEMATIC

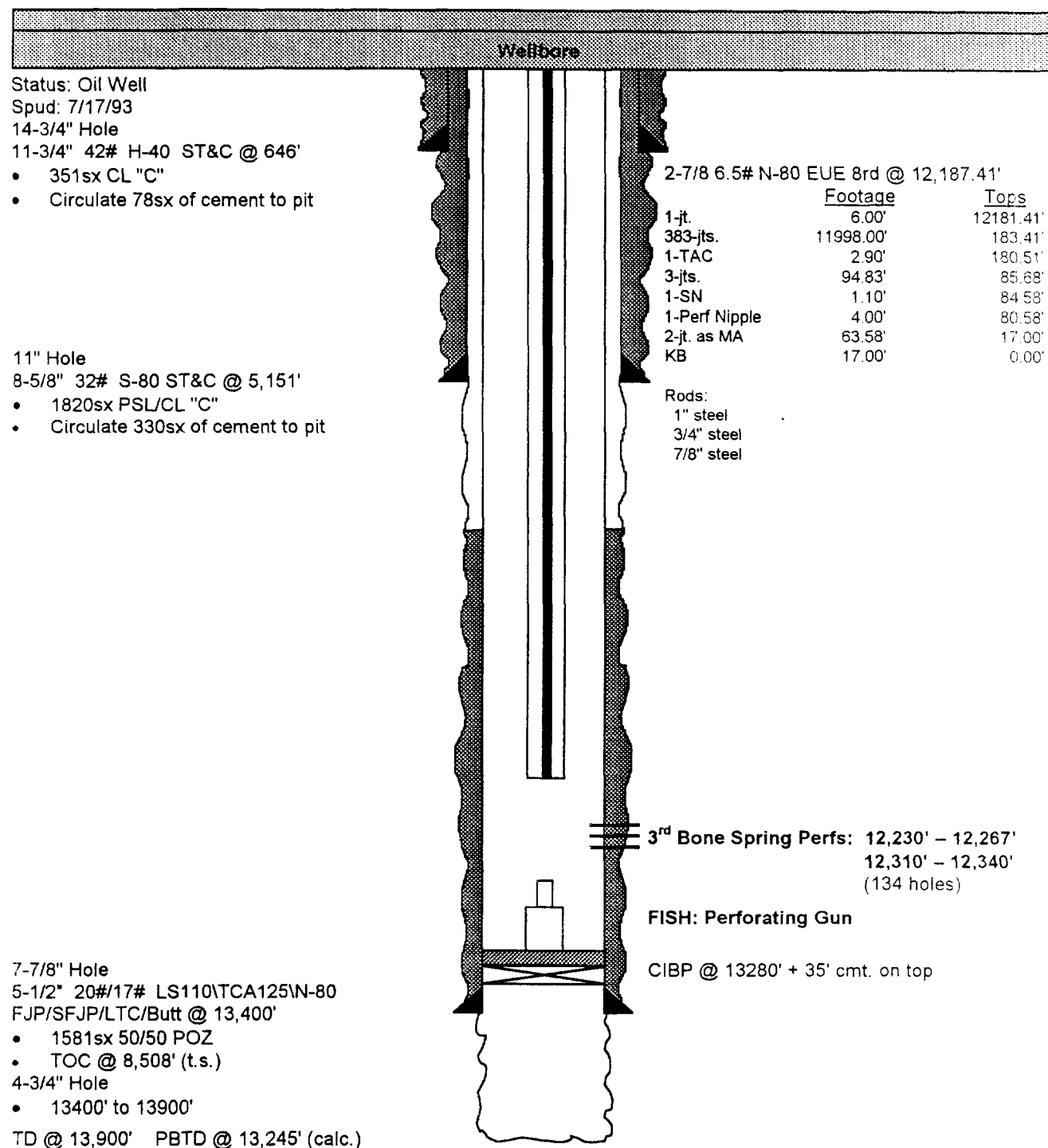


WELLBORE SCHEMATIC

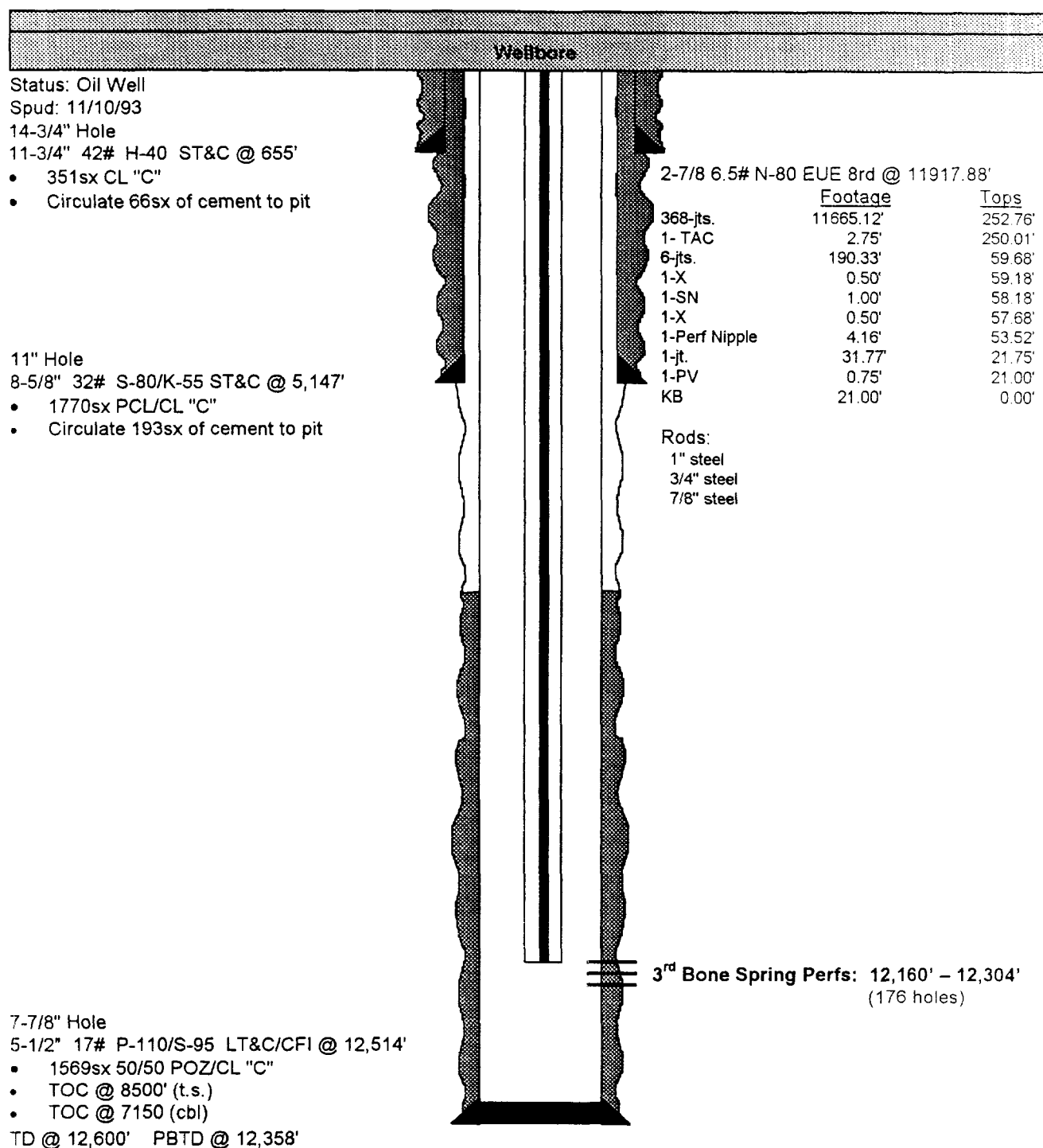




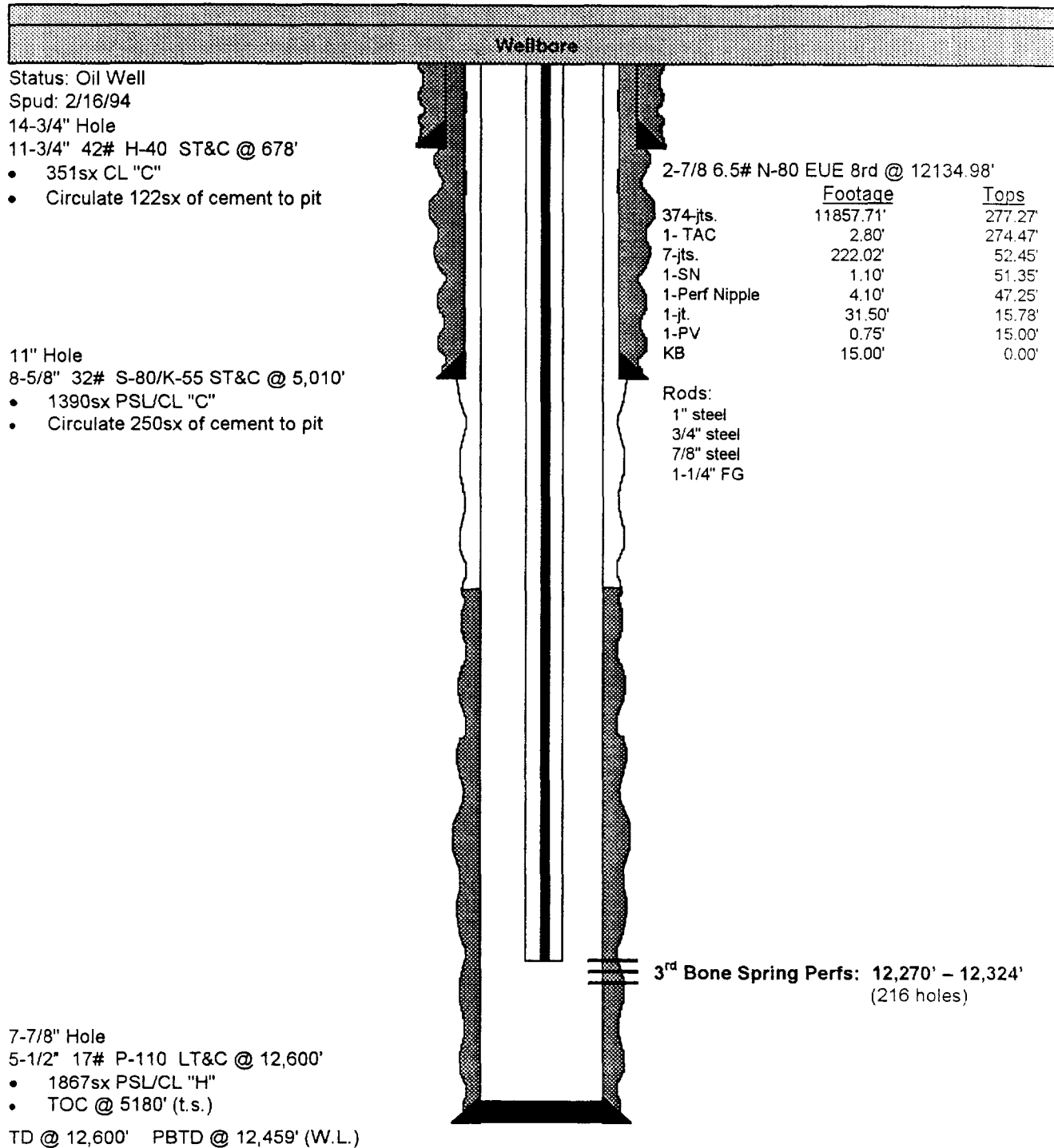
WELLBORE SCHEMATIC



# WELLBORE SCHEMATIC



WELLBORE SCHEMATIC



**APPLICATION FOR AUTHORIZATION TO INJECT  
VACA "13" FEDERAL NO.2**

**VII. PROPOSED OPERATION**

- (1) Proposed Average Daily Rate and Volume: 200 BPD  
Proposed Maximum Daily Rate and Volume: 500 BPD
- (2) Open or Closed System: Closed
- (3) Proposed Average Injection Surface Pressure: 3000 psi.  
Proposed Maximum Injection Surface Pressure: 3700 psi.  
Note: Original Bone Spring formation BHP 9500 psi.
- (4) Produced Bone Spring formation water: 250-300 BPD from Red Hills Field (Bone Spring) (see attached analysis)
- (5) N/A

**VIII. GEOLOGIC DATA ON INJECTION ZONE**

Injection Zone: 3<sup>rd</sup> Bone Spring

Lithologic Detail: Fine grain sandstone

Geological Name: 3<sup>rd</sup> Bone Spring

Thickness: Bone Spring - 3,204'  
3<sup>rd</sup> Bone Spring - 384'

Depth: Bone Spring 9,260' to 12,284'  
3<sup>rd</sup> Bone Spring 11,900' to 12,284'

Underground Sources of Drinking Water:  
Geological Name: Triassic  
Base: 600'

**IX. PROPOSED STIMULATION PROGRAM**

2500 gals. of 15% HCL acid

**X. LOGGING AND TESTING DATA ON INJECTION WELL**

Previously submitted (DLL,MLL,GR,CZDN)

**XI. CHEMICAL ANALYSIS OF WATER FROM FRESH WATER WELLS WITHIN ONE MILE OF INJECTION WELL**

No chemical analysis of fresh water wells within one mile of the proposed injection well can be found (as per phone conversation with Fred McMinn of the State Engineers Offices, State of New Mexico @ 3:55 p.m. on 4/4/2000).

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

**XIII. See attached proof.**