

## CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: ROBERT N. ENFIELD Well: HUDSON '31' FEDERAL NO. 1

Contact: O'BRIEN & ASSOCIATES Title: AGENT Phone: \_\_\_\_\_

DATE IN \_\_\_\_\_ RELEASE DATE \_\_\_\_\_ DATE OUT \_\_\_\_\_

Proposed Injection Application is for: WATERFLOOD Expansion \_\_\_\_\_ Initial \_\_\_\_\_

Original Order: R- \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_

**SENSITIVE AREAS**

SALT WATER DISPOSAL Commercial Well \_\_\_\_\_

WIPP Capitan Reef

Data is complete for proposed well(s)? YES Additional Data Req'd \_\_\_\_\_

### AREA of REVIEW WELLS

5 Total # of AOR

1 # of Plugged Wells

YES Tabulation Complete

YES Schematics of P & A's

YES Cement Tops Adequate

\_\_\_\_\_ AOR Repair Required

### INJECTION FORMATION

Injection Formation(s) QUEEN 4190-4230' Compatible Analysis YES

Source of Water or Injectate DELAWARE & BONE SPRING AREA PROD.

### PROOF of NOTICE

YES Copy of Legal Notice

YES Information Printed Correctly

YES Correct Operators

YES Copies of Certified Mail Receipts

YES Objection Received

\_\_\_\_\_ Set to Hearing \_\_\_\_\_ Date

NOTES: WITHDRAWN

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL? YES

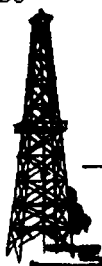
### COMMUNICATION WITH CONTACT PERSON:

1st Contact: \_\_\_\_\_ Telephoned \_\_\_\_\_ Letter \_\_\_\_\_ Date \_\_\_\_\_ Nature of Discussion \_\_\_\_\_

2nd Contact: \_\_\_\_\_ Telephoned \_\_\_\_\_ Letter \_\_\_\_\_ Date \_\_\_\_\_ Nature of Discussion \_\_\_\_\_

3rd Contact: \_\_\_\_\_ Telephoned \_\_\_\_\_ Letter \_\_\_\_\_ Date \_\_\_\_\_ Nature of Discussion \_\_\_\_\_



**HEYCO****PETROLEUM PRODUCERS****HARVEY E. YATES COMPANY**

P.O. BOX 1933

ONE SUNWEST CENTRE

505 / 623-6601

FAX 505 / 622-4221

ROSWELL, NEW MEXICO 88202-1933

July 22, 1996

Via Telefax

Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Application for Authorization to Inject  
Hudson 31 Federal #1 Well  
Robert N. Enfield, Operator  
T-18S, R-33E, N.M.P.M.  
Sec. 31: 2310' FNL & 330' FEL  
Lea County, New Mexico

Ladies and Gentlemen:

Harvey E. Yates Company (HEYCO) recently received a copy of Robert N. Enfield's Application for Authorization to Inject salt water into the Queen formation in the captioned well.

Please recall HEYCO's earlier objection to Mr. Enfield's application, dated November 10, 1995, to dispose into the Penrose Sand formation. HEYCO objected to the application at hearing on March 7, 1996 and the application was denied.

It is still HEYCO's opinion that injecting salt water into any formation in the Hudson 31 Federal #1 well could destroy HEYCO's ability to recover oil and/or gas reserves from its wells in Section 32, T-18S, R-33E.

This letter is notice to you that HEYCO objects the approval of Mr. Enfield's application, dated June 3, 1996. If you have any questions concerning this matter, please call me at 505-623-6601.

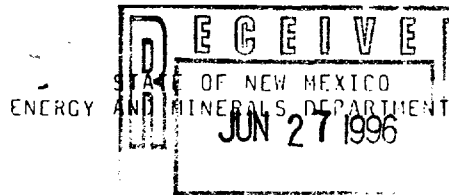
Very truly yours,

Steven M. Yates  
Vice President

/mvr

xc: Robert N. Enfield  
P. O. Box 2431  
Santa Fe, New Mexico 87501





OIL CONSERVATION DIVISION

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE NEW MEXICO 87501

FORM C-108  
Revised 7-1-81

SWL 7/12/96 636

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage  
Application qualifies for administrative approval? ☒ Yes ☐ No
- II. Operator: Robert N. Enfield  
Address: P.O. Box 2431, Santa Fe, New Mexico 87501  
Contact party: James F. O'Briant, O'Briant & Assoc. Phone: (915) 683-5511
- 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 ☒ 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: James F. O'Briant Title: Agent for Robert N. Enfield  
Signature: *James F. O'Briant* Date: June 3, 1996
- \* 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. November, 1992 & November, 1995

## 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.

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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**

**ROBERT N. ENFIELD HUDSON FEDERAL 31 NO. 1**

Lea County, New Mexico

June 18, 1996

- I. Answered on Form 108
- II. Answered on Form 108
- III. Well Data: See attached Exhibit A, page 1 & 2
- IV. Answered on Form 108
- V. Map attached Exhibit B shows two-mile radius and 1/2 mile radius
- VI. Exhibit C contains well data on wells within the area of review and a schematic of the plugged and abandoned well illustrating the plugging detail.
- VII.
  - 1. The proposed average daily rate is 250 BWPD, a maximum of 1500 BWPD.
  - 2. The system will be a closed system.
  - 3. The proposed injection pressure is estimated at 1000 psig with a maximum at 2500 psig.
  - 4. See Exhibit D for four pages of water analysis.
  - 5. The injection zone is not productive of oil or gas.
- VIII. See Geological Data Exhibit E attached.
- IX. Stimulation program: Acid as required; it may not require stimulation.
- X. Logging and test data should be on file in the appropriate district office.
- XI. Not applicable; there are no fresh water wells in the area.
- XII. See Exhibit F attached.
- XIII. Legal Notice and affidavit attached as Exhibit G.
- XIV. Answered on Form 108

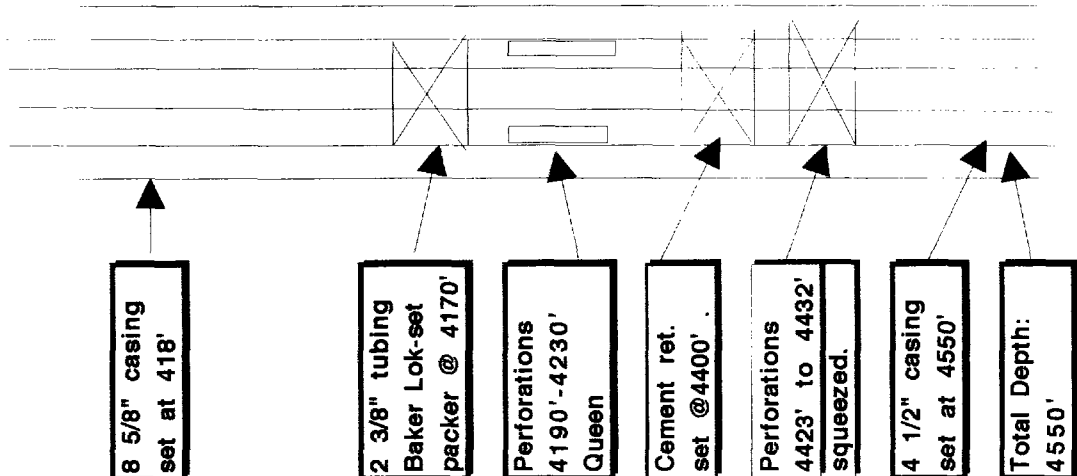
1



INJECTION WELL DATA SHEET

Robert N. Enfield		Hudson Federal "31"	
OPERATOR		LEASE	
No. 1	2310' FNL & 330' FEL	31 T-18-S	R-33-E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP RANGE

Schematic		Tabular Data	
<u>Surface Casing</u>			
Size:	8 5/8" Cemented with	275 Sx.	
TOC	Surface	feet determined by	Circulated 75 sacks
Hole Size	12 1/4"		
<u>Intermediate Casing</u>			
Size:	NA	Cemented with	Sx.
TOC		feet determined by	
Hole Size			
<u>Long String</u>			
Size:	4 1/2" Cemented with	1675 Sx.	
TOC	Surface	feet determined by	Circulated 30 sacks
Hole Size	7 7/8"		
Total depth	4550'		
Injection interval			
		4190 feet to	4230 feet
		(perforated or open-hole, indicate which)	





Tubing size 2 3/8" EUE 8rd J-55 lined with \_\_\_\_\_ Internally lined with plastic coating set in a \_\_\_\_\_  
 (Material)

Baker Lok-Set packer \_\_\_\_\_ packer at approximately 4170' feet  
 brand and model

(or describe any other casing-tubing seal).

Other Data

1.) Name of the injection formation Queen

2.) Name of Field or Pool (if applicable) Undesignated Buffalo Queen

3.) Is this a new well drilled for injection? ☐ Yes ☒ No  
 If no, for what purpose was the well originally drilled? \_\_\_\_\_

The well was drilled as an oil well and produced 3-4 BOPD.

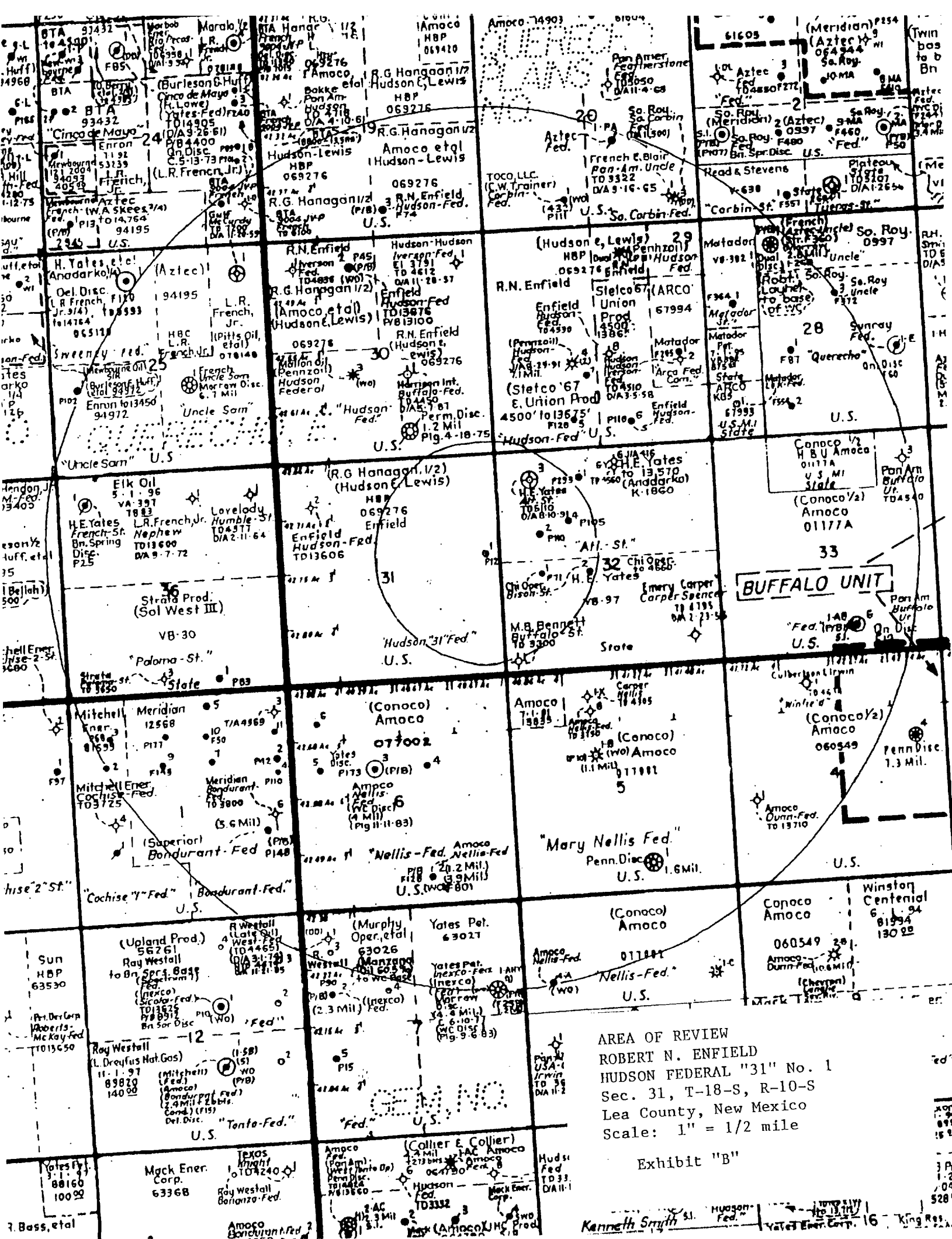
4.) Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) The Penrose zone perforations will be squeezed, and the

Upper Queen will be perforated, which is the zone of injection.

5.) Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area \_\_\_\_\_

The 1/2 mile review area contains Queen producers with perforations beginning at 4424' to 4465' overall.







APPLICATION FOR AUTHORIZATION TO INJECT  
ROBERT N. ENFIELD HUDSON 31 FEDERAL NO. 1

WELL DATA IN AREA OF REVIEW

All wells are located in Sec. 32, T18S, R33E except subject well in Sec. 31.

Operator Lease & Well No.	Type	Csg	Cem	Date	Location	Completion	Zone
Enfield Hudson 31 Fed. #1	Act	4.5	1675	12/92	2310'FN&330'FE	4423-32'	Qn
H.E. Yates Atlantic 32 St. #2	Act	5.5	1630	6/91	1980'FN&990'FW	4424-28'	Qn
H.E. Yates Atlantic 32 St. #3	P&A	*	*	8/91	660'FN&800'FW	5120'TD	D&A
H.E. Yates Atlantic 32 St. #4	Act	5.5	1800	10/91	1650'FN&W	4428-34'	Qn
Chi Oper. Bison State #1	Act	5.5	1580	6/92	2310'FS&990'FW	4448-56'	Qn
Chi Oper. Bison State #2	Act	5.5	1150	10/92	2310'FS&2100'FW	4458-65'	Qn

\* See schematic below.

Harvey E. Yates  
Atlantic "32" State No. 3

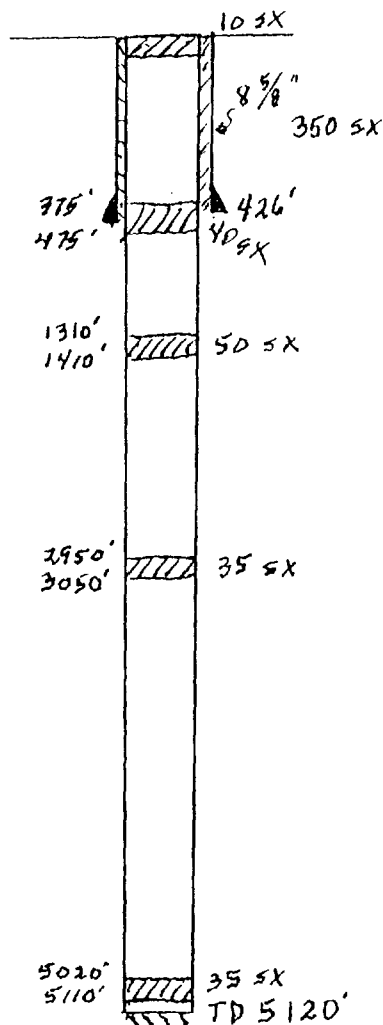


EXHIBIT "C"  
WELL DATA AREA OF REVIEW  
SCHEMATIC OF P&A WELL

1



LABORATORY NO. 291327  
SAMPLE RECEIVED 2-28-91  
RESULTS REPORTED 3-7-91

Waylon C. Martin, M.A.



# ILLEGIBLE

## HALLIBURTON SERVICES HOBBS, NEW MEXICO

To Robert Enfield

Sample Number 95

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management. It may, however, be used in the course of regular business operations by any person or persons and employees thereof receiving such report from Halliburton Company.

Briant Eng.

Submitted by Wayne Fletcher/Halliburton

Date Received 3-23-92

Well No. Hudson Federal #2

Depth 11104-18

Formation Wolfcamp

County Lea

Field

Source swab

10:30 AM 3-23-92

Resistivity..... 0.070 @ 72°F

Specific Gr..... 1.090

pH..... 6.0

Calcium\*..... 3500

Magnesium\*..... 2850

Chlorides\*..... 75000 mp1

Sulfates\*..... 2007

Bicarbonates\*..... 214

Soluble Iron\*..... 100

API Gravity Oil 35.9 @ 60°F

1000 LBS +2.6 ISD + 805FW

\*Milligrams per liter

EXHIBIT "D" PAGE 2  
WATER ANALYSIS

Respectfully submitted,

Analyst

J. L. BARK

HALLIBURTON COMPANY

By

CHEMIST

NOTICE

BY USE OF THIS REPORT, USER AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR

LOCATION

YOUR EXT. NO.

## THE WESTERN COMPANY

## WATER ANALYSIS

ANALYSIS NO.

## GENERAL INFORMATION

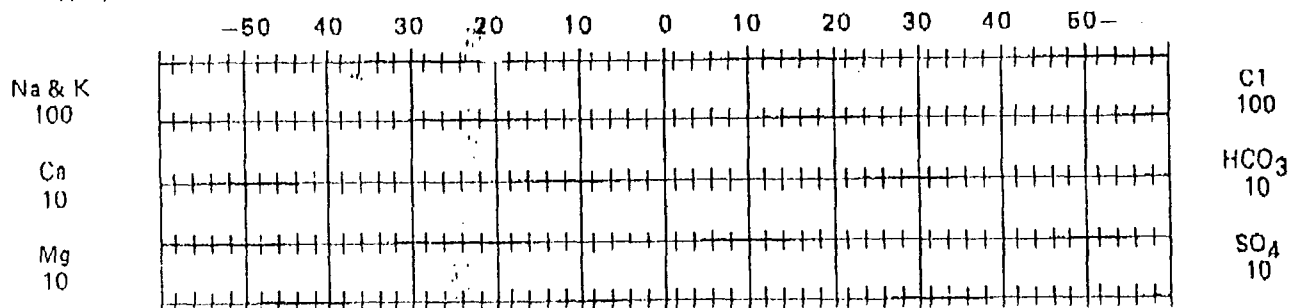
OPERATOR <i>Robert Enfield</i>	DATE SAMPLED <i>10-6-91</i>
WELL <i>Hudson fed NO.5</i>	DATE RECEIVED <i>10-6-91</i>
FIELD	SUBMITTED BY <i>Jim Wooten</i>
FORMATION <i>Penrose</i>	WORKED BY <i>Shepherd</i>
COUNTY <i>LEA</i>	SAMPLE DESCRIPTION:
STATE <i>NM</i>	<i>11:00 AM. Sample</i>
DEPTH <i>4398-4425</i>	

## PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY <i>1.061</i> AT <i>72</i> °F	TOTAL DISSOLVED SOLIDS	PPM
pH <i>6.15</i>	RESISTIVITY	PPM
IRON <i>100 PPM Fe2+</i>	SULFATE <i>2733</i>	PPM
HYDROGEN SULFIDE <i>0</i>	BICARBONATE <i>1494</i>	PPM
HARDNESS	CHLORIDE <i>47125</i>	PPM
CALCIUM <i>4750</i>	SODIUM CHLORIDE	PPM
MAGNESIUM <i>2129</i> PPM	SODIUM	PPM
SODIUM & POTASSIUM <i>22955</i> PPM	POTASSIUM	PPM
PHOSPHATE		

REMARKS: *± 1% oil in sample*EXHIBIT "D" PAGE 3  
WATER ANALYSIS

for Stiff type plot (in meq./l.)



1

THE WESTERN COMPANY OF NORTH AMERICA  
WATER ANALYSIS

ANALYSIS NO: 911113E

GENERAL INFORMATION

OPERATOR: ROBERT ENFIELD  
WELL: HUDSON FED. NO. 7  
FIELD:  
FORMATION: PENROSE  
COUNTY: LEA  
STATE: NM

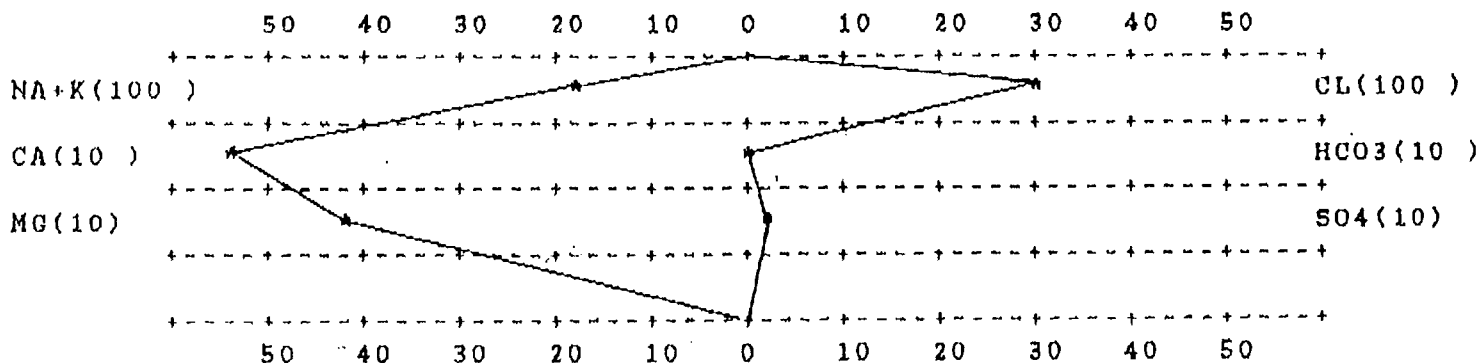
DEPTH: +/- 3000  
DATE SAMPLED: 11-11-91  
DATE RECEIVED: 11-12-91  
SUBMITTED BY: JIM WOOTEN  
WORKED BY: SHEPHERD  
PHONE: 505-392-5556

SAMPLE DESCR: WATER FOR ANALYSIS.

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY: 1.140 AT 76 DEG. F PH = 6.40  
IRON: NOT DETERMINED | SULFATE: 1118 PPM  
FE2+: 25 PPM  
SODIUM+POTASS: 51571 PPM | CHLORIDE: 111378 PPM  
| SODIUM CHLORIDE (CALC): 183607 PPM  
CALCIUM: 10537 PPM | BICARBONATE: 621 PPM  
MAGNESIUM: 4903 PPM | TOT. HARDNESS AS CaCO3: 46533 PPM  
PHOSPHATE: NOT DETERMINED | TOT. DISSOLVED SOLIDS: 211221 PPM  
RESISTIVITY (CALCULATED): 0.051 OHM/METER @ 75 DEGREES F.  
REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST

EXHIBIT "D" PAGE 4  
WATER ANALYSIS

EXHIBIT E  
**GEOLOGICAL DATA**

**ROBERT N. ENFIELD HUDSON FEDERAL 31 NO. 1**

Lea County, New Mexico

June 18, 1996

The application is to inject water into the upper Queen Sand.

The sand has an overall thickness of 40' from 4190' to 4230'.

There are no known underground sources of drinking water overlying or underlying the area of the proposed injection well.

A handwritten signature in black ink, appearing to read "G. Thane Akins". The signature is written in a cursive, flowing style.

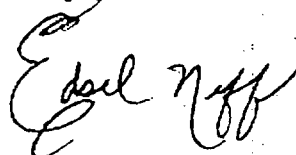
G. Thane Akins  
O'Briant & Associates

dpc

TO WHOM IT MAY CONCERN:

I have reviewed the geological and engineering data regarding the proposed disposal well in Section 31 - T18S - R33E. It is my opinion that the proposed disposal well will not have any effect on any underground source of drinking water.

Very truly yours,



Edsel B. Neff  
Geologist  
David Petroleum Corp.

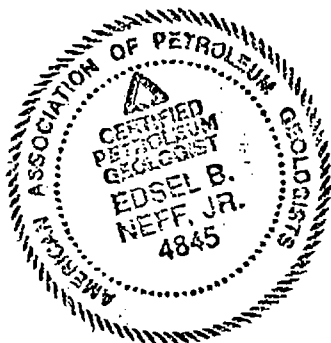


EXHIBIT F

**DAVID PETROLEUM CORP.**  
EDWARD K. DAVID, PRESIDENT  
Certified Petroleum Geologist  
Off. 505/622-8850  
Fax: 505/623-1801  
Res 505/622-5267  
116 West First  
Roswell, New Mexico 88201



AFFIDAVIT OF PUBLICATION

State of New Mexico,  
County of Lea.

I, Kathi Bearden

Publisher

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

of \_\_\_\_\_

1

weeks.

Beginning with the issue dated

June 7

, 1996

and ending with the issue dated

June 7

, 1996

*Kathi Bearden*

Publisher

Sworn and subscribed to before

me this 14<sup>th</sup> day of

June

, 1996

*Sandra Catlett*

Notary Public.

My Commission expires

August 29, 1999

(Seal)

LEGAL NOTICE

June 7, 1996

Robert N. Enfield hereby gives public notice that it is applying to the Oil Conservation Division of New Mexico, Santa Fe, for a permit to dispose of produced saltwater by injection into a subsurface formation.

The application proposes to inject fluid into Hudson Federal "31" Well No: 1, located 2310' FNL and 330' FSL, Section 31, T-18-S, R 33-E, Lea County, New Mexico. Fluid will be injected into strata in the subsurface depth interval from 4190' to 4230' in the Queen formation at a maximum rate of 1500 barrels of water per day and/or a maximum pressure of 2500 psi.

Any objections or requests for hearing by interested parties, who can show they are adversely affected, should be submitted in writing, within fifteen days of publication, to: Oil Conservation Division of New Mexico, Energy and minerals Department, P.O. Drawer 2088, Santa Fe, New Mexico 87501. For further information, contact G. Thane Akins, O'Brient & Associates, P.O. Box 10487, Midland, Texas 79702 - Telephone (915) 683-5511.

#14596

EXHIBIT G

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

SWD-636



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE

6/21/96

82

GOVERNOR

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88241-1980  
(505) 393-6161

OIL CONSERVATION DIVISION  
P. O. BOX 2088  
SANTA FE, NEW MEXICO 87501

RE: Proposed:

MC \_\_\_\_\_  
DHC \_\_\_\_\_  
NSL \_\_\_\_\_  
NSP \_\_\_\_\_  
SWD X \_\_\_\_\_  
WFX \_\_\_\_\_  
PMX \_\_\_\_\_

Gentlemen:

I have examined the application for the:

Robert N Enfield Hudson 31 Federal #1-H 31-18s-33e  
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton  
Supervisor, District 1

/ed