DAKOTA RESOURCES, INC
310 W Wall, Suite 814
Midland, Texas 79701

Big Eddy Federal #100

Sec 8 - 21S - 28E
Eddy County, NM

Stimulation Recommendation

Prepared for: Mr. Chris Morphew

3/16/1992

Version
1

Prepared by:
Eric Jacobson
Halliburton Services
P.O. Drawer O
Artesia, NM 88210
505-746-2757

Halliburton Wants a Safer World

Well Information

Casing	5 1/2"
Tubing	2 7/8"
Existing disposal zones	2886' - 2906'
	3022' 3028'
	3044' - 3050'
	3074' - 3082'
	3197' - 3210'
3712'	
New zones of interest	4140' - 4180'
in the open hole	4195' - 4202'
	4272' - 4286'
	4322' - 4330'
	4334' - 4339'
	4345' - 4346'
	4355' - 4390'
New zones of interest	3322' - 3359'
in the cased hole	3383' - 3400'
	3422' - 3462'

Acidize Formation

Job Recommendation

OPEN HOLE

1. Drill out bottom of casing at 3,712' and clean out to ±5,700'.
2. Set packer at ± 3,700' with 300' of tail pipe below the packer.
3. Rig up injection pump and begin pumping produced water to establish an injection profile.
4. Evaluate results based on pressure and rate.
5. If necessary, pump 4,000 gallons of 7 1/2% NeFe acid.
6. Put well back on injection pump and evaluate.

CASED HOLE Do this first, before DRILLING O.H.

1. Perforate from 3,322-3,359'; 3,383'-3,400'; 3,422'-3,462'
2. Set packer above perforations at ± 3,300'
3. Acidize with 4,000 gallons of 7 1/2% NeFe acid. Drop ballsealers to divert the acid.
5. Put well back on injection pump.

7 1/2% NEFE ACID DETAILS: (4,000 gal)

Base Fluid	7.5% Fe Acid
Clay Stabilizer	2 gal/M Cla-Sta® XP
Corrosion Inhibitor	1 gal/M HAI-65
Surfactant	3 gal/M LOSURF-300

Rent 5,000'

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Revised 7-1-81

OIL CONSERVATION DIVISION

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no

II. Operator: Dakota Resources, Inc. (I)

Address: 310 W. Wall, Suite 814 Midland, TX 79701

Contact party: Roy Hopper/Pam Morphew Phone: 915 687-0501

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: Roy Hopper Title Sec.-Treasurer

Signature: Roy Hopper Date: 1/23/92

* 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. When well was drilled and tested, May, 1984

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

Application for Authorization to dispose of produced water into Commercial Disposal System

Dakota Resources, Inc. (I)

III A.

1. Big Eddy Federal #100
3291' FSL & 483'FWL, Section 8, Unit Letter L,
Township 21 South, Range 28 East, Eddy County,
New Mexico

2. 13 3/8" 54# casing set at 347' with 400 sxs cl "C" cement. Circulated.
8 5/8" 24, 28, 32# casing set at 2579'. Cement with 1500 sxs light and 150 sxs cl "C". Circulated 250 sxs.
5 1/2" # casing set at 3712'. Cement with 250 sxs 50/50 poz and 100 sxs cl "H".

3. Plan to run 2 7/8" plastic coated tubing at approx. 3100'.

4. Plan to run a plastic coated Lok-set packer (5 1/2" x 2 7/8") set at approximately 3100'.

III B.

1. The injection interval is the Delaware sand, Northwest Fenton Delaware field.

2. Injection interval is through perforations at 3197' to 3210'.

3. The well was originally drilled as an oil well.

4. None

5. Higher-none, Lower-Bone Springs (oil)

VII.

1. Proposed average rate of injection will be approximately 1500 BPD, with a maximum of 3000 BPD.

2. Closed system

3. Average injection pressure will be 600 PSI with a maximum of

PSI.

4. Reinjected produced water.

5. Attached-formation water from Big Eddy #98 producing from the Fenton Delaware.

VIII. Geological Data

1. Geological Name-Delaware

2. thickness-150'

3. Depth-approximately 3200'

4. Geologic Name and Depth of drinking water sources-Quarterarnary Alluvium-surface water

IX. No stimulation program proposed.

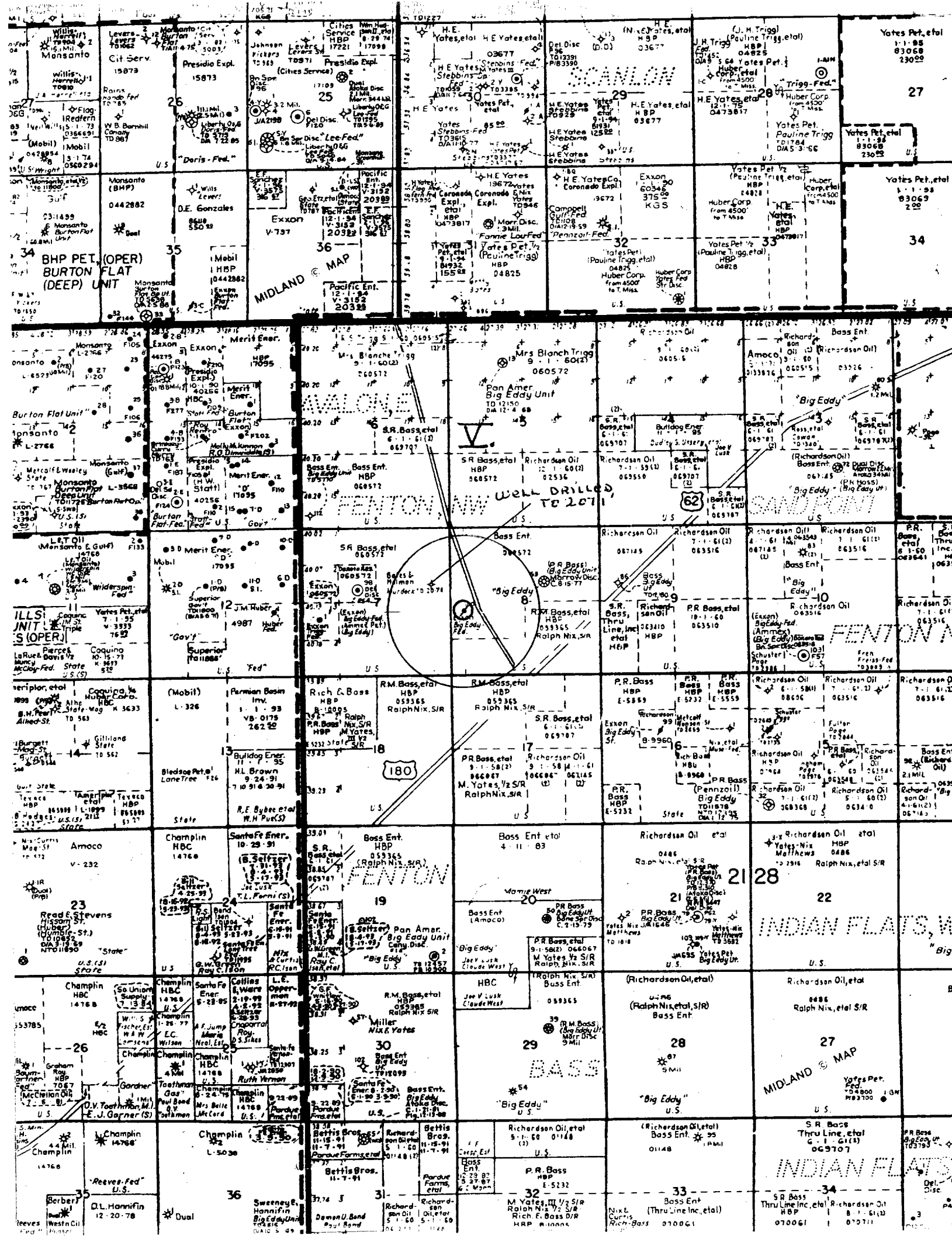
X. Previously submitted. (submitted when well drilled. Test date May 7, 1984.

XI. No fresh water wells within a one mile radius of proposed site.

I, Roy Hopper 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.

Roy Hopper

Roy Hopper


Monsanto
Presidio Expl.
Cities Service HBP
H.E. Yates, etal
SCANLON
Yates Pet., etal
Huber Corp.
Trigg-Fed.
Pauline Trigg
25
26
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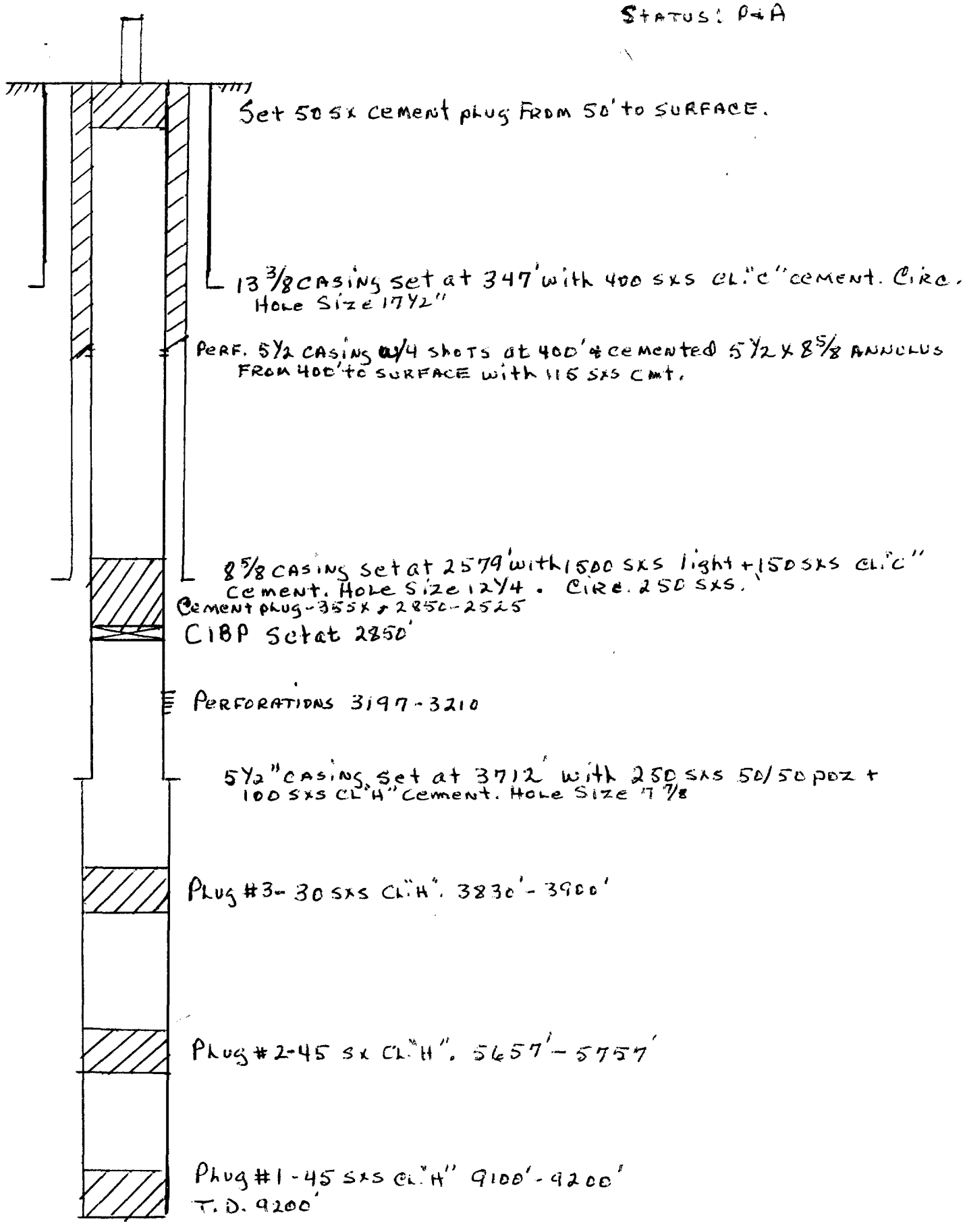
36
BHP PET. (OPER) BURTON FLAT (DEEP) UNIT
MIDLAND © MAP
Exxon
Mobil HBP
D.E. Gonzales
Coronado Expl.
Fannie Lou Fed.
Pennzoil-Fed.
Pacific Ent.
Merit Ener.
Burton Flat Unit
AVALON E
FENTON, NW
Mrs. Blanch Trigg
Pan Amer. Big Eddy Unit
S.R. Bass, etal
Bass Ent.
Richardson Oil
Bulldog Ener.
Big Eddy
SAND POINT
WELL DRILLED TO 2071
62
8
9
10
12
Superior
J.M. Huber
"Gov't"
R.M. Bass, etal
Ralph Nix, S/R
P.R. Bass
FENTON N
Big Eddy Fed.
Rich & Bass
Permian Basin Inv.
13
14
15
16
17
18
180
Bledsoe Pet.
Amoco
Texaco
State
Champlin HBC
Santa Fe Ener.
B. Seltzer
FENTON
19
20
21
22
23
24
Read & Stevens
Mamie West
Richardson Oil etal
Ralph Nix, etal S/R
INDIAN FLATS, W
Big Eddy
Miller Nix & Yates
BASS
Champlin
Ruth Vernon
Bettis Bros.
Pardue Farms, etal
31
32
Reeves-Fed.
D.L. Hannifin
Sweeney E. Hannifin
Dual
M. Yates, III ½ S/R
Rich. E. Bass D/R
Bass Ent. (Thru Line Inc., etal)
S.R. Bass Thru Line, etal
INDIAN FLATS
U.S.

VI.

OPERATOR		DATE
Exxon Co. USA.		12-4-91
LEASE	WELL NO.	LOCATION
Big Eddy Federal	#100	Sec. 8 - T 21 S - R 28 E.

STATUS: P&A



Chemicals and Services

[redacted]

16010 Barker's Point Lane • Houston, Texas 77079
713 558-5200 • Telex: 4620348 • FAX: 713 558-4737

Reply to: P.O. Box 5250
Hobbs, New Mexico 88241
(505) 392-6711 Phone
(505) 392-3759 Fax

WATER ANALYSIS REPORT

Company : DAKOTA RESOURCES
Address :
Lease : BIG EDDY
Well : # 98
Sample Pt. : TANK BATTERY

Date : 1/23/92
Date Sampled : 1/22/92
Analysis No. : 54

	ANALYSIS		mg/L		* meq/L
1.	pH	5.9			
2.	H2S	3 PPM			
3.	Specific Gravity	1.120			
4.	Total Dissolved Solids		181212.5		
5.	Suspended Solids				
6.	Dissolved Oxygen				
7.	Dissolved CO2				
8.	Oil In Water				
9.	Phenolphthalein Alkalinity (CaCO3)				
10.	Methyl Orange Alkalinity (CaCO3)		209.0		
11.	Bicarbonate	HCO3	255.0	HCO3	4.2
12.	Chloride	Cl	108789.0	Cl	3068.8
13.	Sulfate	SO4	1900.0	SO4	39.6
14.	Calcium	Ca	4280.5	Ca	213.6
15.	Magnesium	Mg	768.2	Mg	63.2
16.	Sodium (calculated)	Na	65193.8	Na	2835.7
17.	Iron	Fe	26.0		
18.	Barium	Ba	0.0		
19.	Strontium	Sr	0.0		
20.	Total Hardness (CaCO3)		13852.5		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

214	*Ca <----- *HCO3	4
	/------->	
63	*Mg -----> *SO4	40
	<----------/	
2836	*Na -----> *Cl	3069

Saturation Values Dist. Water 20 C
CaCO3 13 mg/L
CaSO4 * 2H2O 2090 mg/L
BaSO4 2.4 mg/L

Compound	Equiv wt	X meq/L	= mg/L
Ca(HCO3)2	81.0	4.2	339
CaSO4	68.1	39.6	2693
CaCl2	55.5	169.9	9425
Mg(HCO3)2	73.2		
MgSO4	60.2		
MgCl2	47.6	63.2	3009
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	2835.7	165721

REMARKS: WARD HAWKINS
ACID ENGINEERING

Petrolite Oilfield Chemicals Group

Respectfully submitted,
ROZANNE JOHNSON

Schlumberger

COMPENSATED NEUTRON-LITHO DENSITY

APR - 5 1986

HOBBS OFFICE

COMPANY ANNEX PETROLEUM CORPORATION

WELL BIG EDDY #108

FIELD WILDCAT

COUNTY EDDY STATE NEW MEXICO

LOCATION 2291'FSL & 483'FWL

API SERIAL NO. | SEC. 8 | TWP. 21-S | RANGE 28-E

Other Services: DLL/MSFL

Permanent Datum: GL | Elev.: 3178

Log Measured From: KB 13 Ft. Above Perm. Datum | Elev.: K.B. 3191

Drilling Measured From: KB | D.F. | G.L. 3178

Date	4-23-84				
Run No.	ONE				
Depth—Driller	9200				
Depth—Logger	9202				
Btm. Log Interval	9200				
Top Log Interval	SURFACE				
Casing—Driller	8 5/@ 2600	@			@
Casing—Logger	2580				
Bit Size	7 7/8				
Type Fluid in Hole	CUT BRINE				
Dens. / Visc.	9.0 / 28				
pH / Fluid Loss	7.0 / ml	ml		ml	ml
Source of Sample	PIT				
Rm @ Meas. Temp.	.078@75 °F	@ °F	@ °F		°F
Rmf @ Meas. Temp.	.078@75 °F	@ °F	@ °F		°F
Rmc @ Meas. Temp.	@ °F	@ °F	@ °F	@	°F
Source: Rmf / Rmc	M				
Rm @ BHT	.042@144°F	@ °F	@ °F	@	°F
TIME: Circulation Stopped	0800				
TIME: Logger on Bottom	1300				
Max. Rec. Temp.	144 °F	°F		°F	°F
Equip. / Location	8141 / RSWL				
Recorded By	GREER				
Witnessed by	MERRICK				

The well name, location and borehole reference data were furnished by the customer.

FEB 28 1986

FEB 07 1986

MAR 13 1986

REPRODUCED BY
Petroleum Information
Corporation
MIDLAND, TEXAS 79701

61

REFERENCE Y 2806M

25 COMPLETION RECORD

MADE FROM BEST COPY AVAILABLE

SPUD DATE

COMP DATE

DST RECORD

API NO. 30-015-24824

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

I P

GOR GR

T P C P

REMARKS

RUN NO.	ONE				
Service Order No.	413353				
Program Tape No.	LEP				
Fluid Level					
EQUIPMENT DATA					
Module	342				
Telemetry Cart	2738				
Dens. Cart.	2731				
Dens. Skid.	2976				
Dens. Sonde	3946				
Dens. Source	7146				
Dens. Calibrator					
Neut. Cart.	347				
Neut. Source	4196				
Neut. Calibrator	3356				
GR Cart	426				
Centralizers, Rigid Spring, Bowsprings, Knuckle Joint or None	Type: BOWSPRING				
	No.: ONE				
	S O — Inches				

Type Log	Depth		

REMARKS:

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 04/04/23
PROGRAM FILE: LEP (VERSION 26.2 00/00/00)

CNTH TOOL CHECK

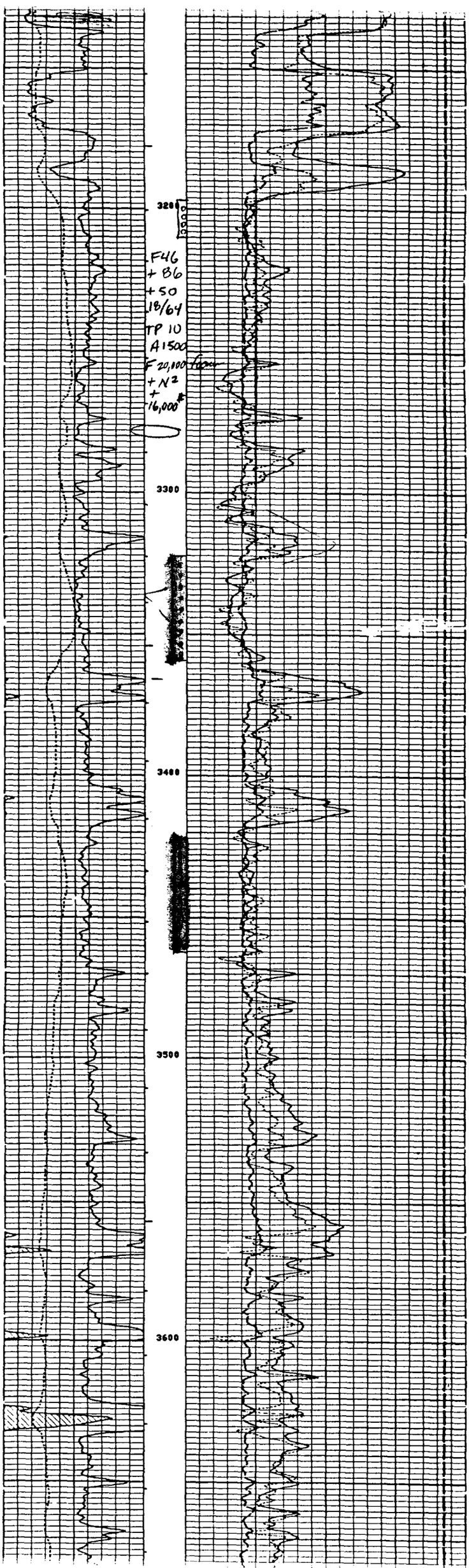
JIG

	BEFORE	AFTER
MRAT	2.995	2.990

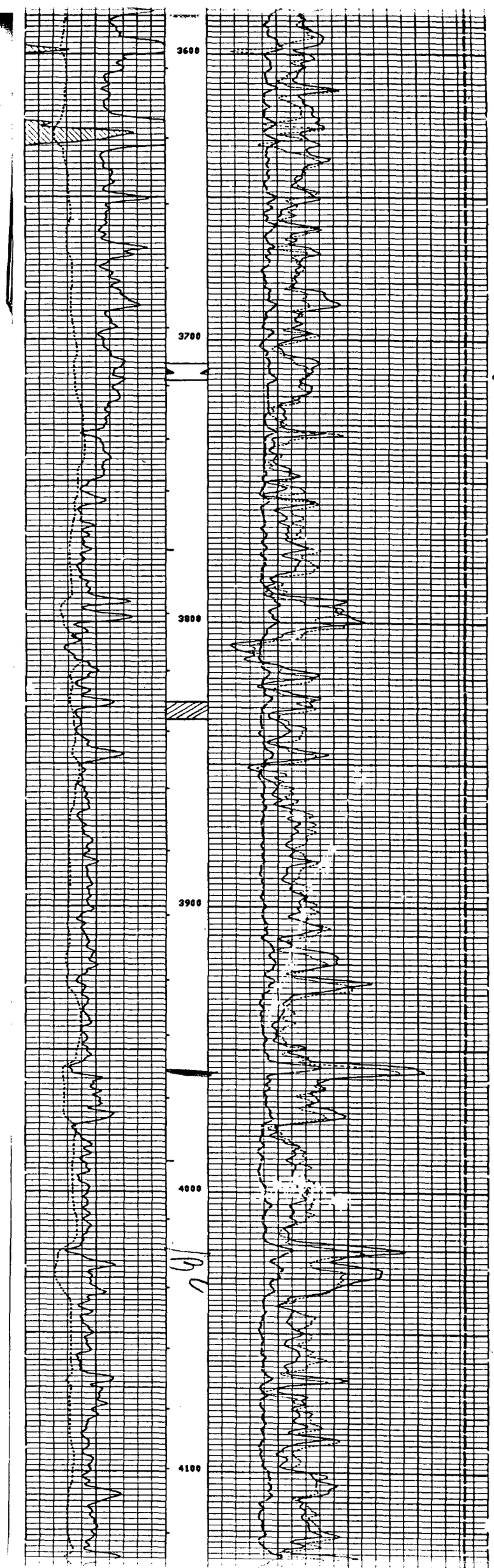
POROSITY CHANGE (LIME): -.001

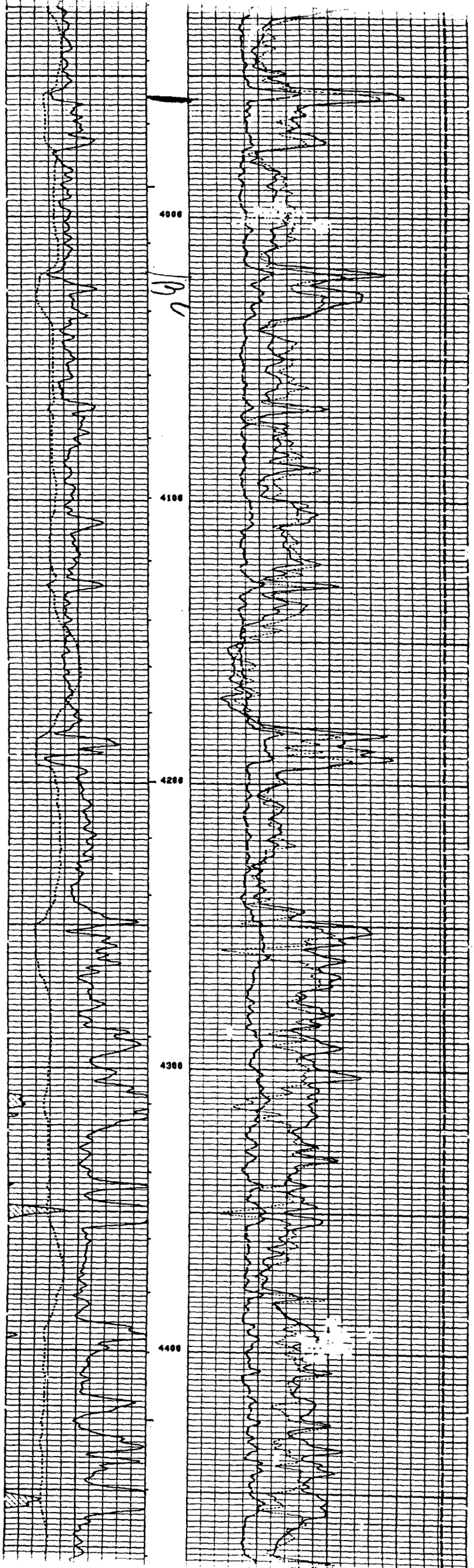
LDTC TOOL CHECK

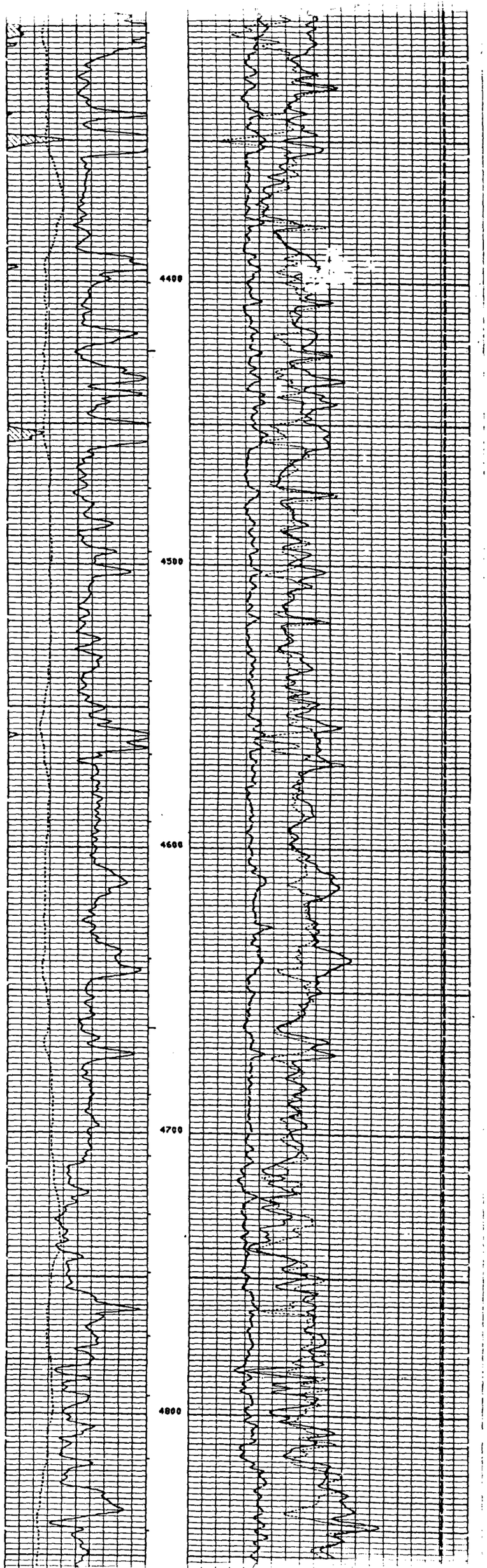
DRS SONDE NUMBER	:	3946
NUCLEAR SERVICE CARTRIDGE NUMBER	:	2731
POWERED DETECTOR HOUSING NUMBER	:	2976
POWERED GAMMA-GAMMA DETECTOR NUMBER	:	2971
LDT LOGGING SOURCE NUMBER	:	7146
LDT CALIBRATION MODE	:	WATE
MUD DENSITY	:	8.88888

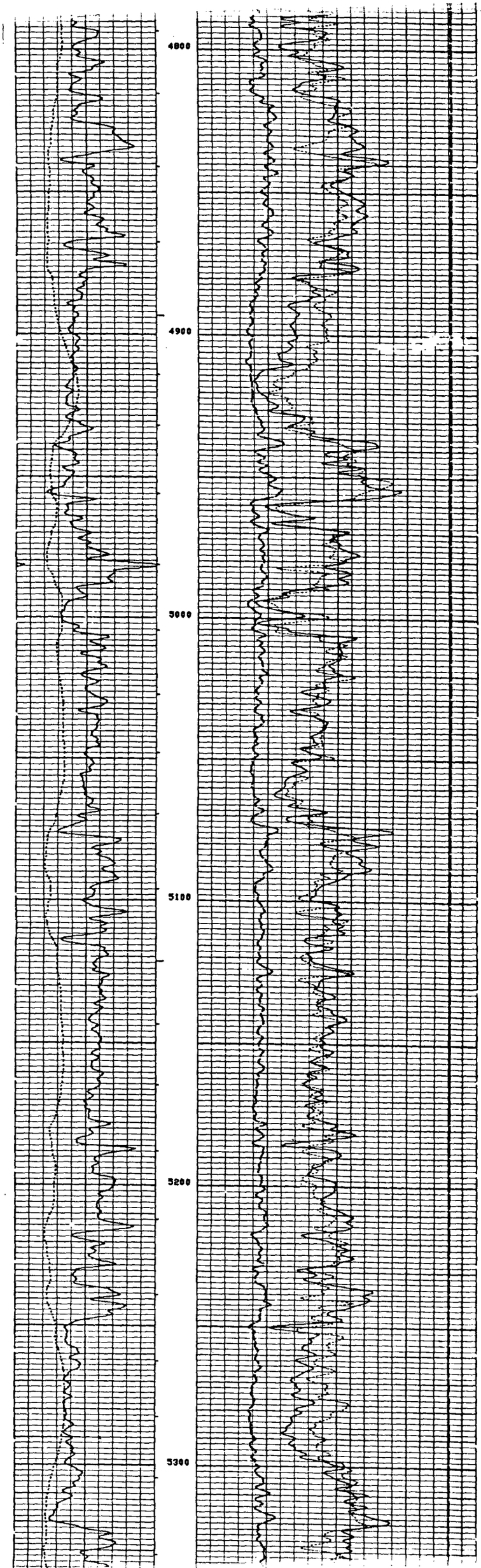


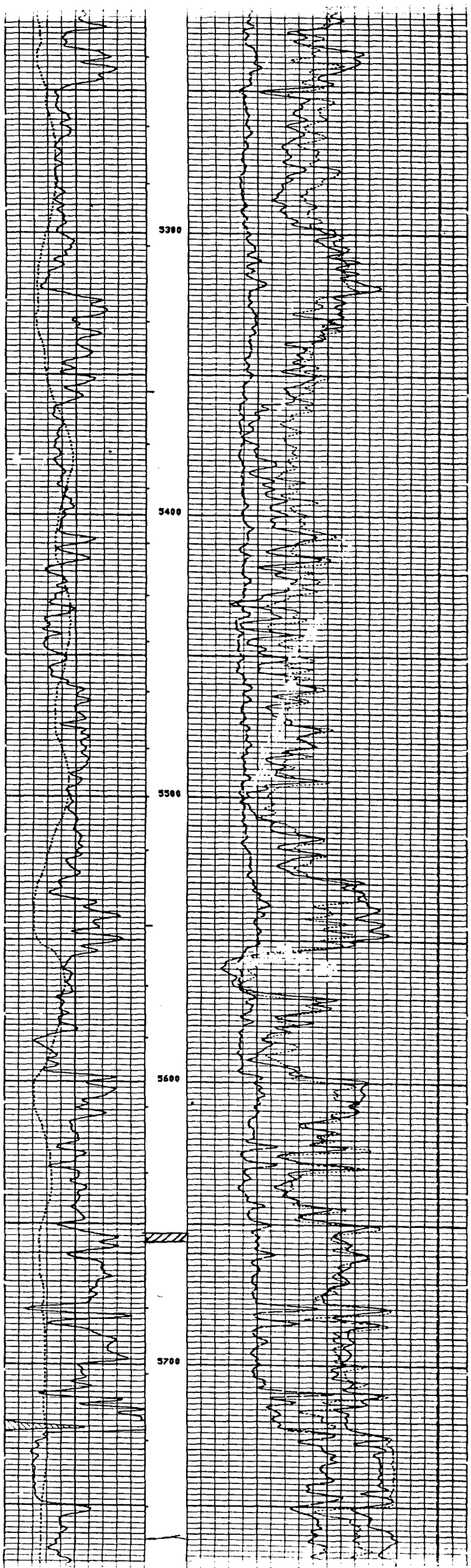
New perforations in 30 cal hole


3600
3700
3800
3900
4000
4100
← Bottom of casing
← Cement Plug - 30 SXS
Open hole Section


4000
4100
4200
4300
4400


4400
4500
4600
4700
4800


4800
4900
5000
5100
5200
5300



Cement plug - 45 sxs

XIV.

№ 13712

Affidavit of Publication

State of New Mexico,
County of Eddy, ss.

E. C. Cantwell, being first duly sworn, on oath says:

That he is publisher of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

DECEMBER 31 , 19 91

, 19 ____

, 19 ____

, 19 ____

that the cost of publication is $ 9.13 , and that payment thereof has been made and will be assessed as court costs.

E C Cantwell

Subscribed and sworn to before me this

31 day of DECEMBER , 19 91

Notary Public

My commission expires 6/01/92

December 31, 1991

NOTICE OF APPLICATION FOR SALT WATER INJECTION WELL PERMIT

Delaware Resource, Inc., 310 West Wall Suite 814, Midland, Texas 79701, can be contacted by calling (915) 682-0187 or Pam Mon[illegible] to the Oil Conservation Division of New Mexico for permit to inject fluid into a formation which is productive of oil or gas.

The applicant proposes to inject produced fluid into the Delaware Sand in the Big Eddy Federal Well #100. The well is located 2081 FSL and 483 FWL of Section 6,T21S,R28E, Eddy County, New Mexico, Northwest Fenton Field. Fluid will be injected through perforations from 3197-3209. Maximum injection rate will be 1000 BWPD with a maximum injection pressure of 1,100 psi.

AFF.

№ 13712

Affidavit of Publication

State of New Mexico,
County of Eddy, ss.

E. C. Cantwell, being first duly sworn, on oath says:

That he is publisher of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

DECEMBER 31 , 19 91

, 19 ____

, 19 ____

, 19 ____

that the cost of publication is $ 9.13 , and that payment thereof has been made and will be assessed as court costs.

E C Cantwell

Subscribed and sworn to before me this

31 day of DECEMBER , 19 91

Dorella Taylor

My commission expires 6/01/92

Notary Public

December 31, 1991

NOTICE OF APPLICATION FOR FLUID INJECTION WELL PERMIT

Dakota Resource, Inc., 310 West Wall, Suite 814, Midland, Texas 79701, can be contacted by mailing (915) 687-0501 and asking for Pam Morphew. Notice is given to the Oil Conservation Division of New Mexico for a permit to inject fluid into a formation which is productive of oil or gas.

The applicant proposes to inject produced fluid into the Delaware Sand in the Big Eddy Federal Well #100. The well is located 220' FSL and 1833' FWL, Unit L, Section 8, T21S, R28E, Eddy County, New Mexico. Northwest Fenton Field. Fluid will be injected through perforations from 3197-3230. Maximum injection rate will be 1500 BWPD with a maximum injection pressure of 1,100 psi.