

GTHT - 1

**WELL WORKOVER
REQUESTS
(G-103)**

**DATE:
2010**

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, July 01, 2010 7:55 AM
To: 'Ben Barker'
Cc: Jamie Robinson; Del Fortner; Layne Ashton; VonGonten, Glenn, EMNRD; 'Mike_Smith@blm.gov'; Phillips, Haddy L., OSE; Jackson, Charles L., OSE
Subject: RE: Lightning Dock TDS and Fluoride (GTHT-1)

Ben:

Approved.

I notice you refer to "surface discharge" in your submittal. Please be advised under the discharge permit no discharges are allowed to "Waters of the State." A National Pollutant Discharge Elimination System (NPDES) Permit would be required to allow this.

You may share your submittal with Bureau of Land Management and Office of State Engineer. Please contact me if you have questions. Thank you.

Please be advised that NMOCD approval of this plan does not relieve Raser Technologies of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve Raser Technologies of responsibility for compliance with any other federal, state, or local laws and/or regulations.

File: OCD Online GTHT-1 (Thumbnail: "Well Workover Requests (G-103) 2010")

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
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Website: <http://www.emnrd.state.nm.us/oqd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Ben Barker [mailto:Ben.Barker@rasertech.com]
Sent: Thursday, July 01, 2010 3:09 AM
To: Chavez, Carl J, EMNRD
Cc: Jamie Robinson; Del Fortner; Layne Ashton
Subject: Lightning Dock TDS and Fluoride

Hello Carl,

Attached is our new data submittal from well TFD 55-7 and a request for approval to proceed. Please allow me to call your attention to the maps of Attachment B, which could easily be lost behind the voluminous Analytical and QC report in Attachment A.

I think Jamie's maps display very nicely the close relationship of the group of 11 wells we nominate as defining the relevant background.

As we discussed, we will refrain from passing this on to OSE or BLM until you've had a chance to evaluate it.

Thanks,
Ben

VP Resource Management
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2010

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TECHNOLOGIES

June 30, 2010

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Fluoride and TDS Values at the Lightning Dock Geothermal Area

Dear Mr. Chavez:

This is a follow up report to our letter of June 17, 2010. At that time we sent you lab reports showing that 46 of 49 water quality parameter values specified in Condition 3 of the approved G-103 were met by water produced from well TFD 55-7 during testing on June 8. We have since added radium to the list of satisfactory results under 20.6.2.3103 NMAC.

Continuing operations in the well allowed us to collect significantly cleaner water samples than in our first report. We received the analyses of those samples for F and TDS today and have included the laboratory report as Attachment A. They show somewhat lower values of both concentrations, which we attribute to less contamination by residual drilling mud and better sampling conditions.

We made reference in our initial report to a substantial body of prior work indicating that the values for Fluoride (F) and total dissolved solids (TDS) were within the normal background for the area. An attachment to the June 17 letter included a data base of 199 analyses from the Animas Valley. That document is unwieldy and we have extracted from it the population of neighboring wells in the thermal anomaly for inclusion in this letter as Attachment B. That attachment also displays the spatial relationship of the measurements on maps.

Raser personnel have also located important additions to the data base, including a lab report for the closest analog of TFD 55-7. That well is the 2220-ft deep TG 52-7, drilled in 2003, and whose water quality results are included as Attachment C.

The geochemical data base for Section 7 and the adjoining sections includes twenty wells, for which seventeen have recorded values of F and/or TDS concentration. Among those seventeen wells, thirteen are within Section 7 and eleven may properly be regarded as neighbors on the thermal anomaly. Among those neighbors, the average value of [F] is 11.83 mg/l. The latest average sample value for TFD 55-7 is 9.53 mg/l. The same group of neighbors has an average [TDS] of 2096 mg/l, compared with a value of 1180 mg/l for TFD 55-7. A fuller discussion follows, but we conclude that the data shows the water from TFD 55-7 meets the background standard of G-103 Condition 3 for surface discharge.

A great many wells have been drilled in the Lightning Dock area for a variety of commercial and domestic purposes. Chemical data is unavailable for the majority. We are fortunate that the scientific interest over several decades in Lightning Dock has resulted in enough analyses in the thermal area to define a background water quality with reasonable certainty. The table below lists all the wells within a section of well 55-7 for which [F] and/or [TDS] are available.

ID	Section No. T25S, R19W	Data Base Reference	SOURCE description	All Wells (17)		Section 7 (13)		Thermal Anomaly (11)	
				Fluoride mg/l	TDS mg/l	Fluoride mg/l	TDS mg/l	Fluoride mg/l	TDS mg/l
C	12	4	Well	7.3	1608				
D	13	37	Well	3.5	1184				
E	12	131, 138	Beall water well, OCD-2	2.0	443				
F	12	5	Well	3.6	1660				
G	7	62, 183	Folk well	7.80	539	7.80	457		
P	7	95, 96	Well	-	385	-	385		
H	7	135	Burgett grnhouse discharge	11.70	1115	11.70	1115	11.70	1115
I	7	133	Burgett geowell	12.50	1195	12.50	1195	12.50	1195
J	7	136	Beall grnhouse well	-	1092	-	1092	-	1092
K	7	2, 89, 93, 94	Burgett well	-	1341	-	1452	12.60	1341
L	7	90, 178, 179	Burgett well	10.45	1130	10.45	1130	10.45	1108
N	7	3, 63, 88, 137	McCants grnhouse well	12.50	1076	12.50	1076	12.50	1076
O	7	91, 92, 181	Well	12.00	10985	12.00	10985	12.00	10985
-	7	Raser 2008	Burgett discharge	9.95	1110	9.95	1110	9.95	1110
-	7	Raser 2008	Burgett well	13.20	1320	13.20	1320	13.20	1320
-	7	Raser 2008	Burgett well	11.60	1140	11.60	1140	11.60	1140
-	7	LDG 2003	TG 52-7 (~100' W of well J)	11.82	1572	11.82	1572	11.82	1572
Average Concentration				9.27	1700	11.35	1848	11.83	2096
(avg. excluding well "O")									1207
		<u>Lab ID</u>	<u>Sample point</u>						
Well 55-7 samples:		236041-163	Flow line port					9.68	1230
collected 6/26/10		236042-164	Collection tank					9.38	1130
Average Concentration								9.53	1180

Looking down the columns headed "All Wells" we find a [F] value only slightly below that of TDF 55-7 and a [TDS] that is 44% higher. The nearest well to TDF 55-7, of those in Sections 12 and 13, is nearly three-fourths of a mile. Although the group includes wells with strikingly high [TDS] they are well away from the center of the thermal anomaly, indicated by the contour lines.

Considering all the wells in Section 7, their average [F] and [TDS] exceeds those of TDF 55-7 by a substantial margin. However, we suggest that your calculation of the applicable background standard should exclude two Section 7 wells on geologic grounds.

Local residents report that well "G" is only a "few" hundred feet deep. Combined with its location outside the core thermal area the shallow depth makes it unlikely that this well is an indicator of background concentrations in the thermal area. Similarly, well "P" is even farther off the side of the thermal anomaly and is actually on the opposite side of the major fault zone running through the area. The Animas Valley fault is not visible on the surface at this point but several geologists have mapped its probable course to the west of "P" between "P" and the wells around TFD 55-7.

The eleven wells that are clearly within the thermal area are sufficient to define background [F] and [TDS] values. Those averages are shown in bold face type in the table above as 11.83 mg/l for [F] and 2096 mg/l for [TDS]. We do not have access to enough of the researcher's original notes to pass judgment on the relative quality of the various samplers and labs, but we note that correct sampling procedures have been well understood for the entire period of Lightning Dock study covered in this data table.

The one [TDS] that may arouse concern is found in well "O." The high values in this well were measured on two different occasions by the New Mexico State University laboratory, which has extensive experience in this work. We have found nothing in the record to suggest these are not valid measurements. Even if there were a scientific reason to exclude those measurements, the remaining ten wells would still have an average [TDS] of 1207 mg/l, higher than the TFD 55-7 average of 1180 mg/l.

Raser requests OCD-EB approval to proceed with surface discharge during the test period of TFD 55-7 on the basis that the sample analyzed to date meet the "background" standard of Condition 3. Raser further requests that OCD adopt the background values displayed for the core thermal area in the table above as an interim standard for the purposes of continued monitoring according to the approved plan of operations.

Thank you for your consideration.

Very truly yours,
Raser Technologies



Benjamin J. Barker
VP Resource Management

Attachment A

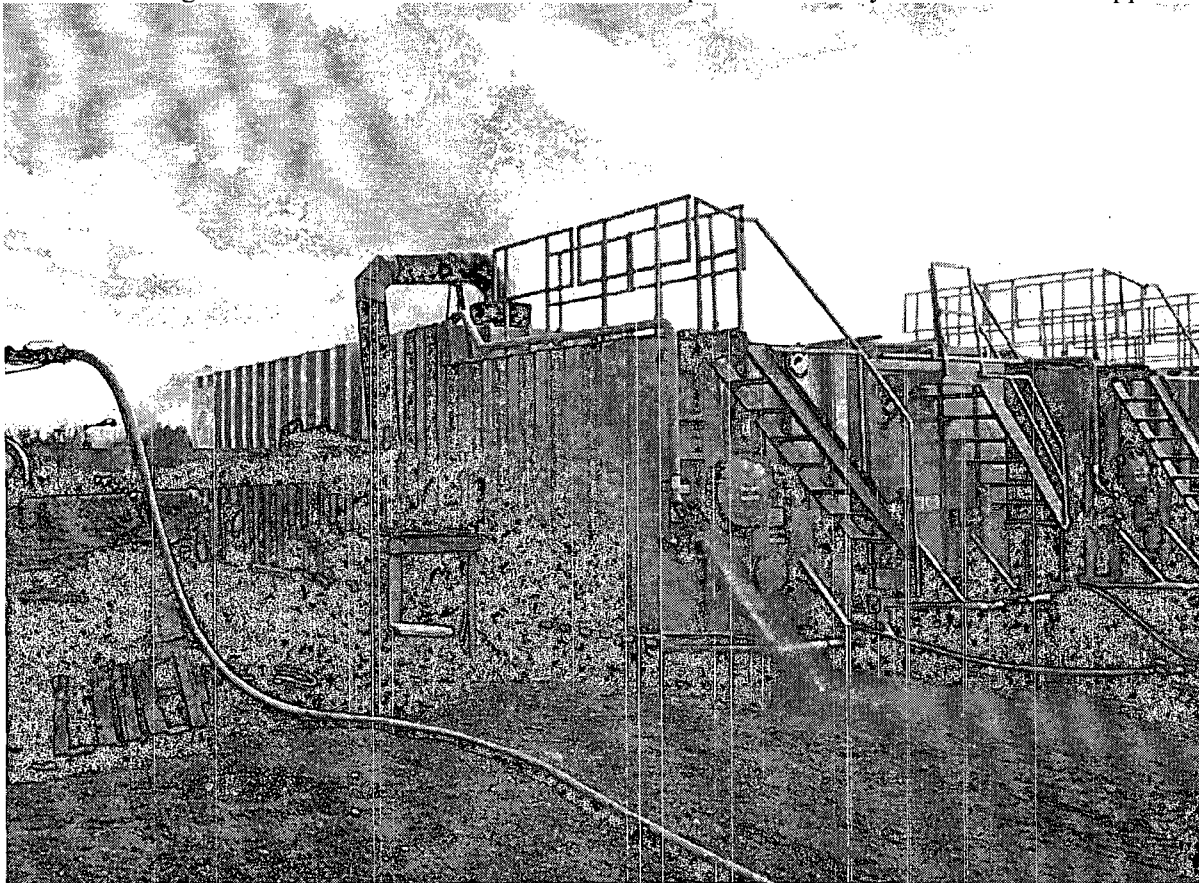
Reports from TraceAnalysis, Inc. of samples collected on June 26, 2010

1. Summary Report 6/29/10
2. Analytical and Quality Control Report 6/29/10

Six samples are included in the reports. The two relevant to this analysis are

- 236041-163, collected from the flow line via a sampling port at the 4 o'clock position while holding back pressure with a throttle valve. The sample tube was submerged in a cold water bath to obtain a whole-fluid sample without flashing.
- 236041-164 collected from the final-stage collection tank after fluid flashed in the tank. This is more representative of the system of production that will be in use during the test.

The air injection line, pressure and temperature gauges, sample port and cooling tank are all visible on the left side of the photo below. Note the capped valve directly beneath the steam vent in the center right. This was used to obtain the tank sample immediately after flow was stopped.



The other samples in the report are:

- #162 – Lightning Dock domestic water (used to mix drilling fluids)
- #165 - Lordsburg municipal water (hotel tap water)
- # 166 and #167 – samples extracted from rig tanks (after significant evaporation) as controls

Summary Report

Jamie Robinson
Raser Technologies
5152 North Edgewood Dr.
Suite 200
Provo, UT 84604

Report Date: June 29, 2010

Work Order: 10062902



Project Location: Lighting Dock, NM
Project Name: Lighting Dock 55-7
Project Number: TFD557B

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
236040	162	water	2010-06-26	09:00	2010-06-28
236041	163	water	2010-06-26	17:40	2010-06-28
236042	164	water	2010-06-26	19:00	2010-06-28
236043	165	water	2010-06-26	22:00	2010-06-28
236044	166	water	2010-06-26	11:00	2010-06-28
236045	167	water	2010-06-26	11:05	2010-06-28

Sample: 236040 - 162

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		130	mg/L as CaCo3	4.00
Total Alkalinity		130	mg/L as CaCo3	4.00
Chloride		33.7	mg/L	2.50
Fluoride		1.05	mg/L	0.500
Sulfate		122	mg/L	2.50
Total Dissolved Solids		410	mg/L	5.00

Sample: 236041 - 163

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		52.0	mg/L as CaCo3	1.00

continued ...

sample 236041 continued ...

Param	Flag	Result	Units	RL
Bicarbonate Alkalinity		136	mg/L as CaCo3	4.00
Total Alkalinity		188	mg/L as CaCo3	4.00
Chloride		84.2	mg/L	2.50
Fluoride		9.68	mg/L	0.500
Sulfate		441	mg/L	2.50
Total Dissolved Solids		1230	mg/L	5.00

Sample: 236042 - 164

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		44.0	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		152	mg/L as CaCo3	4.00
Total Alkalinity		196	mg/L as CaCo3	4.00
Chloride		83.8	mg/L	2.50
Fluoride		9.38	mg/L	0.500
Sulfate		436	mg/L	2.50
Total Dissolved Solids		1130	mg/L	5.00

Sample: 236043 - 165

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		12.0	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		330	mg/L as CaCo3	4.00
Total Alkalinity		342	mg/L as CaCo3	4.00
Chloride		91.2	mg/L	2.50
Fluoride		4.84	mg/L	0.500
Sulfate		327	mg/L	2.50
Total Dissolved Solids		992	mg/L	5.00

Sample: 236044 - 166

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		28.0	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		110	mg/L as CaCo3	4.00
Total Alkalinity		138	mg/L as CaCo3	4.00
Chloride		79.6	mg/L	2.50
Fluoride		11.2	mg/L	0.500
Sulfate		471	mg/L	2.50
Total Dissolved Solids		1350	mg/L	5.00

Sample: 236045 - 167

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		134	mg/L as CaCo3	4.00
Total Alkalinity		134	mg/L as CaCo3	4.00
Chloride		81.7	mg/L	2.50
Fluoride		11.6	mg/L	0.500
Sulfate		483	mg/L	2.50
Total Dissolved Solids		1340	mg/L	5.00



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 5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
 8015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
 E-Mail: info@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX **El Paso:** T104704221-08-TX **Midland:** T104704392-08-TX
 LELAP-02003 LELAP-02002
 Kansas E-10317

Analytical and Quality Control Report

Jamie Robinson
 Raser Technologies
 5152 North Edgewood Dr.
 Suite 200
 Provo, UT, 84604

Report Date: June 29, 2010

Work Order: 10062902



Project Location: Lighting Dock, NM
 Project Name: Lighting Dock 55-7
 Project Number: TFD557B

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
236040	162	water	2010-06-26	09:00	2010-06-28
236041	163	water	2010-06-26	17:40	2010-06-28
236042	164	water	2010-06-26	19:00	2010-06-28
236043	165	water	2010-06-26	22:00	2010-06-28
236044	166	water	2010-06-26	11:00	2010-06-28
236045	167	water	2010-06-26	11:05	2010-06-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 26 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project Lighting Dock 55-7 were received by TraceAnalysis, Inc. on 2010-06-28 and assigned to work order 10062902. Samples for work order 10062902 were received intact at a temperature of 3.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Alkalinity	SM 2320B	61067	2010-06-28 at 11:00	71280	2010-06-28 at 11:00
Chloride (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
Chloride (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
Chloride (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
Fluoride (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
Fluoride (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
Fluoride (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
SO4 (IC)	E 300.0	61068	2010-06-28 at 12:47	71281	2010-06-28 at 12:47
SO4 (IC)	E 300.0	61070	2010-06-28 at 16:46	71284	2010-06-28 at 16:46
SO4 (IC)	E 300.0	61071	2010-06-28 at 20:45	71285	2010-06-28 at 20:45
TDS	SM 2540C	61083	2010-06-28 at 10:30	71296	2010-06-28 at 10:30

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10062902 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 236040 - 162

Laboratory: El Paso
Analysis: Alkalinity
QC Batch: 71280
Prep Batch: 61067

Analytical Method: SM 2320B
Date Analyzed: 2010-06-28
Sample Preparation:

Prep Method: N/A
Analyzed By: JG
Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		130	mg/L as CaCo3	1	4.00
Total Alkalinity		130	mg/L as CaCo3	1	4.00

Sample: 236040 - 162

Laboratory: El Paso
Analysis: Chloride (IC)
QC Batch: 71281
Prep Batch: 61068

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		33.7	mg/L	1	2.50

Sample: 236040 - 162

Laboratory: El Paso
Analysis: Fluoride (IC)
QC Batch: 71281
Prep Batch: 61068

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		1.05	mg/L	1	0.500

Sample: 236040 - 162

Laboratory: El Paso
Analysis: SO4 (IC)
QC Batch: 71281
Prep Batch: 61068

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Report Date: June 29, 2010
TFD557B

Work Order: 10062902
Lighting Dock 55-7

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Lighting Dock, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		122	mg/L	5	2.50

Sample: 236040 - 162

Laboratory: El Paso
Analysis: TDS
QC Batch: 71296
Prep Batch: 61083

Analytical Method: SM 2540C
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: MD
Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		410	mg/L	1	5.00

Sample: 236041 - 163

Laboratory: El Paso
Analysis: Alkalinity
QC Batch: 71280
Prep Batch: 61067

Analytical Method: SM 2320B
Date Analyzed: 2010-06-28
Sample Preparation:

Prep Method: N/A
Analyzed By: JG
Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		52.0	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		136	mg/L as CaCo3	1	4.00
Total Alkalinity		188	mg/L as CaCo3	1	4.00

Sample: 236041 - 163

Laboratory: El Paso
Analysis: Chloride (IC)
QC Batch: 71281
Prep Batch: 61068

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		84.2	mg/L	5	2.50

Sample: 236041 - 163

Laboratory: El Paso
 Analysis: Fluoride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
 Prep Batch: 61068 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		9.68	mg/L	2	0.500

Sample: 236041 - 163

Laboratory: El Paso
 Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
 Prep Batch: 61068 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		441	mg/L	10	2.50

Sample: 236041 - 163

Laboratory: El Paso
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
 Prep Batch: 61083 Sample Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1230	mg/L	1	5.00

Sample: 236042 - 164

Laboratory: El Paso
 Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
 QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG
 Prep Batch: 61067 Sample Preparation: Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		44.0	mg/L as CaCo3	1	1.00

continued ...

sample 236042 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Bicarbonate Alkalinity		152	mg/L as CaCo3	1	4.00
Total Alkalinity		196	mg/L as CaCo3	1	4.00

Sample: 236042 - 164

Laboratory: El Paso
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		83.8	mg/L	5	2.50

Sample: 236042 - 164

Laboratory: El Paso
Analysis: Fluoride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		9.38	mg/L	2	0.500

Sample: 236042 - 164

Laboratory: El Paso
Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		436	mg/L	10	2.50

Report Date: June 29, 2010
TFD557B

Work Order: 10062902
Lighting Dock 55-7

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Lighting Dock, NM

Sample: 236042 - 164

Laboratory: El Paso
Analysis: TDS
QC Batch: 71296
Prep Batch: 61083
Analytical Method: SM 2540C
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28
Prep Method: N/A
Analyzed By: MD
Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1130	mg/L	1	5.00

Sample: 236043 - 165

Laboratory: El Paso
Analysis: Alkalinity
QC Batch: 71280
Prep Batch: 61067
Analytical Method: SM 2320B
Date Analyzed: 2010-06-28
Sample Preparation:
Prep Method: N/A
Analyzed By: JG
Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		12.0	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		330	mg/L as CaCo3	1	4.00
Total Alkalinity		342	mg/L as CaCo3	1	4.00

Sample: 236043 - 165

Laboratory: El Paso
Analysis: Chloride (IC)
QC Batch: 71284
Prep Batch: 61070
Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28
Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		91.2	mg/L	5	2.50

Sample: 236043 - 165

Laboratory: El Paso
Analysis: Fluoride (IC)
QC Batch: 71284
Prep Batch: 61070
Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28
Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		4.84	mg/L	1	0.500

Sample: 236043 - 165

Laboratory: El Paso
 Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
 Prep Batch: 61070 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		327	mg/L	10	2.50

Sample: 236043 - 165

Laboratory: El Paso
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
 Prep Batch: 61083 Sample Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		992	mg/L	1	5.00

Sample: 236044 - 166

Laboratory: El Paso
 Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
 QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG
 Prep Batch: 61067 Sample Preparation: Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		28.0	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		110	mg/L as CaCo3	1	4.00
Total Alkalinity		138	mg/L as CaCo3	1	4.00

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Sample: 236044 - 166

Laboratory: El Paso
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		79.6	mg/L	5	2.50

Sample: 236044 - 166

Laboratory: El Paso
Analysis: Fluoride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		11.2	mg/L	2	0.500

Sample: 236044 - 166

Laboratory: El Paso
Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 Sample Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		471	mg/L	10	2.50

Sample: 236044 - 166

Laboratory: El Paso
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
Prep Batch: 61083 Sample Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1350	mg/L	1	5.00

Sample: 236045 - 167

Laboratory: El Paso
Analysis: Alkalinity
QC Batch: 71280
Prep Batch: 61067

Analytical Method: SM 2320B
Date Analyzed: 2010-06-28
Sample Preparation:

Prep Method: N/A
Analyzed By: JG
Prepared By: JG

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		134	mg/L as CaCo3	1	4.00
Total Alkalinity		134	mg/L as CaCo3	1	4.00

Sample: 236045 - 167

Laboratory: El Paso
Analysis: Chloride (IC)
QC Batch: 71285
Prep Batch: 61071

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		81.7	mg/L	5	2.50

Sample: 236045 - 167

Laboratory: El Paso
Analysis: Fluoride (IC)
QC Batch: 71285
Prep Batch: 61071

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

Parameter	Flag	RL Result	Units	Dilution	RL
Fluoride		11.6	mg/L	2	0.500

Sample: 236045 - 167

Laboratory: El Paso
Analysis: SO4 (IC)
QC Batch: 71285
Prep Batch: 61071

Analytical Method: E 300.0
Date Analyzed: 2010-06-28
Sample Preparation: 2010-06-28

Prep Method: N/A
Analyzed By: JR
Prepared By: JR

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Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		483	mg/L	10	2.50

Sample: 236045 - 167

Laboratory: El Paso
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
Prep Batch: 61083 Sample Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1340	mg/L	1	5.00

Method Blank (1) QC Batch: 71280

QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG
Prep Batch: 61067 QC Preparation: 2010-06-28 Prepared By: JG

Parameter	Flag	MDL Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 71281

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71281

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71281

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71284

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71284

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71284

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL
Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Fluoride		<0.100	mg/L	0.5

Method Blank (1) QC Batch: 71285

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.500	mg/L	2.5

Method Blank (1) QC Batch: 71296

QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
Prep Batch: 61083 QC Preparation: 2010-06-28 Prepared By: MD

Parameter	Flag	MDL Result	Units	RL
Total Dissolved Solids		<5.00	mg/L	5

Duplicates (1) Duplicated Sample: 236045

QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG
Prep Batch: 61067 QC Preparation: 2010-06-28 Prepared By: JG

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	134	134	mg/L as CaCo3	1	0	20
Total Alkalinity	134	134	mg/L as CaCo3	1	0	20

Duplicates (1) Duplicated Sample: 236041

QC Batch: 71296 Date Analyzed: 2010-06-28 Analyzed By: MD
Prep Batch: 61083 QC Preparation: 2010-06-28 Prepared By: MD

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1240	1230	mg/L	1	1	10

Laboratory Control Spike (LCS-1)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	24.6	mg/L	1	25.0	<0.500	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	24.1	mg/L	1	25.0	<0.500	96	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71284
Prep Batch: 61070

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: JR
Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	5.17	mg/L	1	5.00	<0.100	103	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	5.16	mg/L	1	5.00	<0.100	103	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71284
Prep Batch: 61070

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: JR
Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	24.5	mg/L	1	25.0	<0.500	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	24.5	mg/L	1	25.0	<0.500	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285
Prep Batch: 61071

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: JR
Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	25.3	mg/L	1	25.0	<0.500	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	25.3	mg/L	1	25.0	<0.500	101	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285
Prep Batch: 61071

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: JR
Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	5.23	mg/L	1	5.00	<0.100	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	5.23	mg/L	1	5.00	<0.100	105	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71285
Prep Batch: 61071

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: JR
Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	24.8	mg/L	1	25.0	<0.500	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	24.8	mg/L	1	25.0	<0.500	99	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 71296
Prep Batch: 61083

Date Analyzed: 2010-06-28
QC Preparation: 2010-06-28

Analyzed By: MD
Prepared By: MD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids	1070	mg/L	1	1000	<5.00	107	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids	1010	mg/L	1	1000	<5.00	101	90 - 110	6	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	168	mg/L	5.56	139	33.7	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	170	mg/L	5.56	139	33.7	98	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	29.1	mg/L	5.56	27.8	1.05	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	29.4	mg/L	5.56	27.8	1.05	102	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236040

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61068 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	¹ 276	mg/L	5.56	139	122	111	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

¹Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued ...

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	² 278	mg/L	5.56	139	122	112	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	236	mg/L	5.56	139	83.8	109	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	236	mg/L	5.56	139	83.8	109	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	38.4	mg/L	5.56	27.8	9.38	104	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	38.4	mg/L	5.56	27.8	9.38	104	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236042

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61070 QC Preparation: 2010-06-28 Prepared By: JR

²Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	³ 645	mg/L	5.56	139	436	150	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	⁴ 645	mg/L	5.56	139	436	150	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	233	mg/L	5.56	139	79.6	110	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	233	mg/L	5.56	139	79.6	110	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Fluoride	40.4	mg/L	5.56	27.8	11.2	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	40.5	mg/L	5.56	27.8	11.2	105	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

³Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

⁴Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Matrix Spike (MS-1) Spiked Sample: 236044

QC Batch: 71285 Date Analyzed: 2010-06-28 Analyzed By: JR
Prep Batch: 61071 QC Preparation: 2010-06-28 Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	⁵ 688	mg/L	5.56	139	471	156	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate	⁶ 689	mg/L	5.56	139	471	157	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		90 - 110	2010-06-28
Carbonate Alkalinity		mg/L as CaCo3	0.00	236		90 - 110	2010-06-28
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	8.00		90 - 110	2010-06-28
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71280 Date Analyzed: 2010-06-28 Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		90 - 110	2010-06-28
Carbonate Alkalinity		mg/L as CaCo3	0.00	240		90 - 110	2010-06-28
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	8.00		90 - 110	2010-06-28
Total Alkalinity		mg/L as CaCo3	250	248	99	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281 Date Analyzed: 2010-06-28 Analyzed By: JR

⁵Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

⁶Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	23.5	94	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	4.81	96	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71281

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	23.1	92	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.5	98	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.02	100	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71281

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.1	96	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.5	98	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.02	100	90 - 110	2010-06-28

Standard (CCV-1)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.1	96	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	24.9	100	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71284 Date Analyzed: 2010-06-28 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	25.0	25.3	101	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71285

Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	5.00	5.16	103	90 - 110	2010-06-28

Standard (CCV-2)

QC Batch: 71285

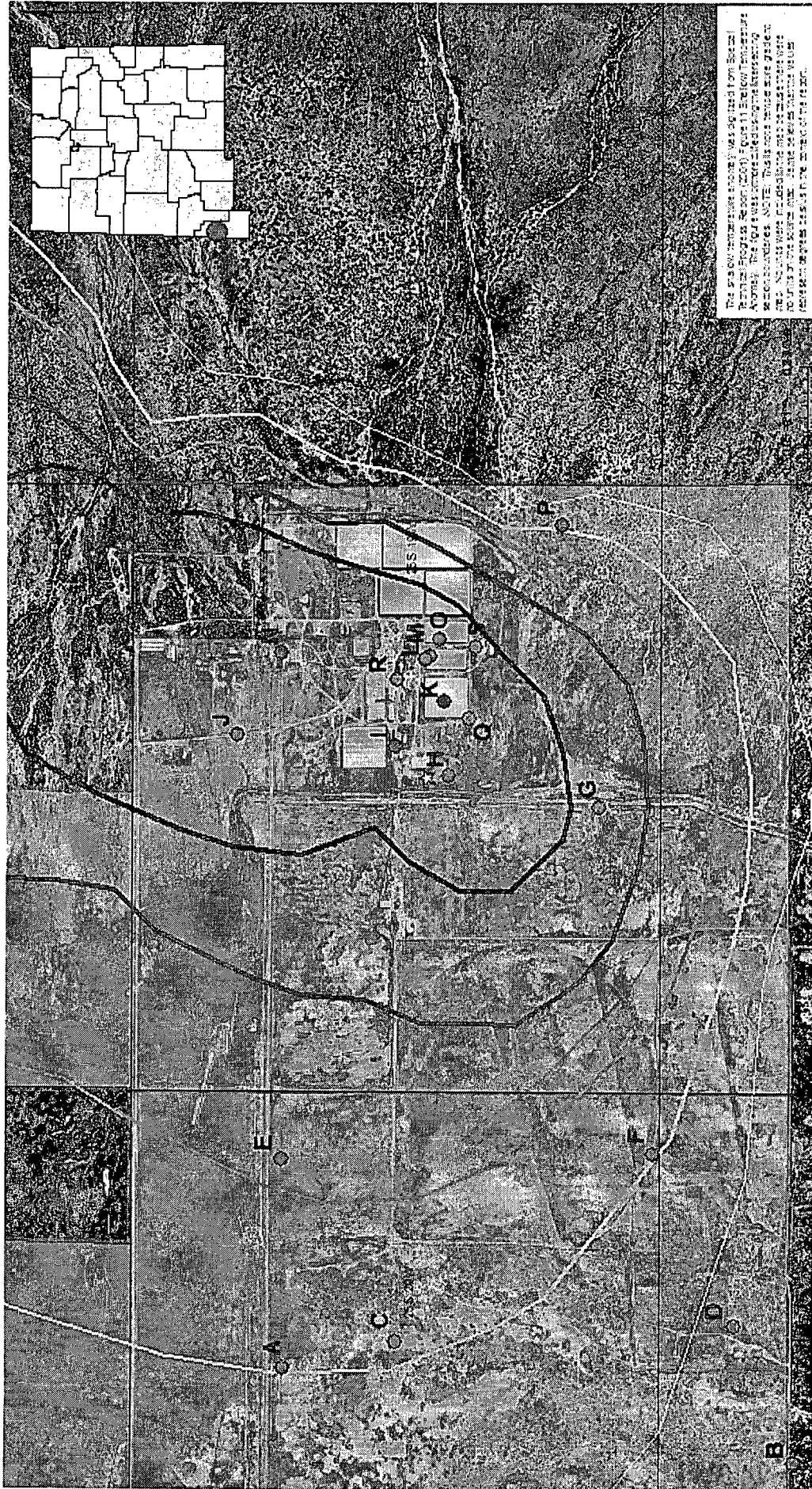
Date Analyzed: 2010-06-28

Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	25.0	24.8	99	90 - 110	2010-06-28

Attachment B

**Maps and Data Table
Showing Lightning Dock [TDS] and [F] Distributions**



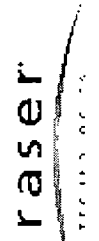
The data presented here was digitized from the original aerial photograph (1960) and is not a true representation of the current terrain. The data was derived from the original photograph and is not a true representation of the current terrain. The data was derived from the original photograph and is not a true representation of the current terrain.

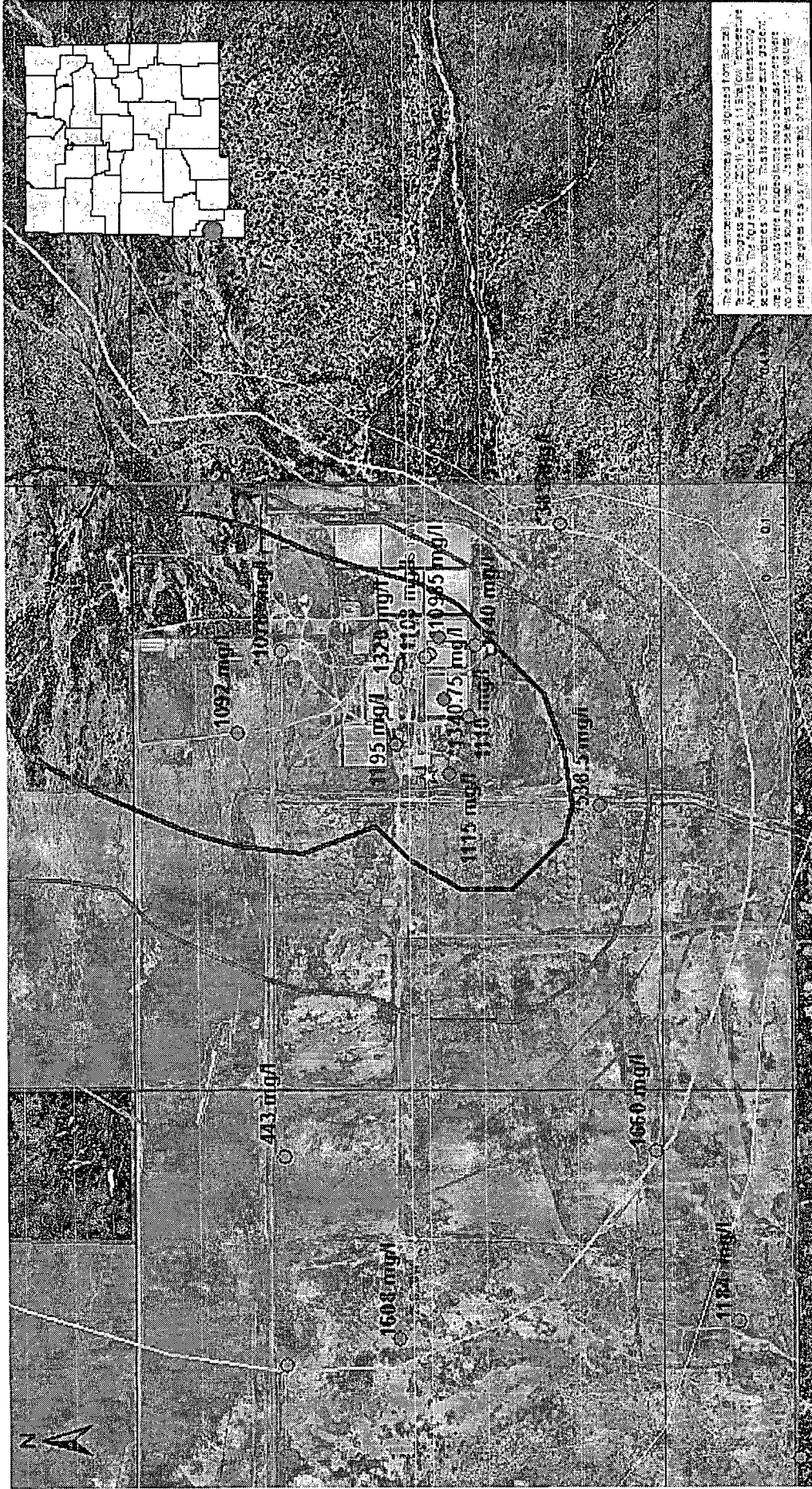
- ☆ 55-7
- Wells
- 80 c
- 90 c
- 100 c
- 120 c
- 150 c

Lightning Dock, NM Reference Map

Map by: James Robinson
Date: 05/20/10

Path: N:\GIS\Working\GIS\Projects\LightningDock\LightningDock.mxd





The data on this map was derived from the
 National Ground Water Information System
 (NGWIS). This system is a national database
 of groundwater quality data. The data is
 derived from a variety of sources and is
 not necessarily current. The data is
 provided for informational purposes only.
 No warranty is made for the accuracy or
 completeness of the data.

Lighting Dock, NIM TDS Concentrations

- ☆ 55-7
- Wells
- 80 c
- 90 c
- 100 c
- 120 c
- 150 c

Map by: J. M. Robinson
 Date: 05/25/06
 File: NIMSEWingMap3BProjectENRISWingMap3BProject.dwg



7000 S. 100 E.



This is a groundwater monitoring well located in the Lightning Dock, NM. The data was collected from the well during the summer months of 2010. The data was collected from the well during the summer months of 2010. The data was collected from the well during the summer months of 2010.

aser

11133 00 10

Lightning Dock, NM Fluoride Concentrations

Note: Values are averages of multiple sites

Lightning Dock, NM
Fluoride Concentrations

NOTE: Values are averages of multiple sites

- ☆ 55-7
- Wells
- 80 C
- 90 C
- 100 C
- 120 C
- 150 C

Lightning Dock, NM
Fluoride Concentrations

Animas Valley Geochemical Data Base Extract: TDS and Fluoride values for Wells in Sections 7, 12 and 13, T25S, R19W

MAP REFERENCE	DATUM REFERENCE	SOURCE REFERENCE	SAMPLE	DATE	WATER SOURCE	W LONGITUDE 27	N LATITUDE 27	TEMP °F	TDS mg/l	F mg/l
A	165	Norman	N-39	-	Well	-108.85263	32.14987	-	-	-
B	167	Norman	N-41	-	Well	-108.85520	32.13586	-	-	-
C	4	Logsdon	P-4	1981	Well	-108.85188	32.14678	-	1608	7.25
D	37	Logsdon	AN-5	1981	Well	-108.85141	32.13749	-	1184	3.48
E	131	OCD	OCD-2	01/28/86	Beall water well	-108.84682	32.14992	63.5	443	2.00
E	138	Cunniff	C-3	11/07/85	Beall water well, OCD-2	-108.84682	32.14992	-	-	-
F	5	Logsdon	P-5	1981	Well	-108.84665	32.13973	-	1660	3.55
*G	183	Summers	Sum-5	04/04/60	Folk well	-108.83698	32.14122	-	620	-
*G	62	AMAX	AMAX-7	01/27/75	Folk well	-108.83698	32.14122	149.0	457	7.80
H	135	OCD	OCD-6	01/28/86	Burgett grnhouse discharge	-108.83612	32.14534	116.6	1115	11.70
I	133	OCD	OCD-4	01/28/86	Burgett geowell	-108.83528	32.14681	118.4	1195	12.50
J	136	Cunniff	C-1	11/07/85	Beall grnhouse well	-108.83501	32.15117	-	1092	-
*K	93	NMSU	NMSU-20	08/07/80	Burgett well	-108.83405	32.14549	159.8	1628	-
*K	2	Logsdon	P-2	1981	Burgett hot well	-108.83405	32.14549	-	1116	12.60
*K	89	NMSU	NMSU-16	03/27/81	Burgett well	-108.83405	32.14549	183.2	1167	-
*K	94	NMSU	NMSU-21	01/06/81	Burgett well	-108.83405	32.14549	149.0	1452	-
*L	90	NMSU	NMSU-17	01/06/81	Burgett well	-108.83288	32.14599	-	1034	-
*L	178	Summers	Sum-1B	04/28/49	Well	-108.83288	32.14599	-	1130	11.00
M	166	Norman	N-40	-	Well	-108.83282	32.14589	-	-	-
*N	63	AMAX	AMAX-8	01/26/75	McCants well	-108.83272	32.14997	185.0	1132	13.00
*N	3	Logsdon	P-3	1981	McCants well	-108.83272	32.14997	-	8	12.00
*N	88	NMSU	NMSU-15	08/06/80	McCants well	-108.83272	32.14997	192.0	982	-
*N	137	Cunniff	C-2	11/07/85	McCants grnhouse well	-108.83272	32.14997	-	1114	-
*O	91	NMSU	NMSU-18	08/07/80	Burgett well	-108.83233	32.14563	192.9	16281	-
*O	92	NMSU	NMSU-19	01/06/81	Burgett well	-108.83233	32.14563	201.2	15604	-
*O	181	Summers	Sum-2B	04/30/66	Well	-108.83233	32.14563	-	1070	12.00
*P	95	NMSU	NMSU-22	08/07/80	Well	-108.82916	32.14227	76.1	352	-
*P	96	NMSU	NMSU-23	01/06/81	Well	-108.82916	32.14227	75.2	418	-
**Q	-	Raser	153440	05/13/08	Burgett discharge	-	-	-	1110	9.95
**R	-	Raser	Geo well 1	6/9/2008	Burgett well	-	-	-	1320	13.2
**S	-	Raser	Geo well D	6/9/2008	Burgett well	-	-	-	1140	11.6
**T	-	Cunniff	AB53998	11/5/2003	TG 52-7	-	-	-	1572	11.82

Attachment C

**Report from
Soil, Water and Air Testing Laboratory
New Mexico State University
12/23/2003
Well TG 52-7**

Date: 12/22/03

ANALYTICAL REPORT

To: Lightning Dock Geothermal, In 523-7908

Attn: Roy A. Cunniff

224 W. Greening Ave.

Las Cruces, NM 88005

Purchase Order #

Below are the results for submitted sample(s).

(MDL=Method detection limit)

Sample I.D. AB53998

Sample Description: Animas NM Well TG 52-7 DST

Sample collection date: 11/05/03 Sample collection time: 15:00

Submittal date: 11/07/03 Submittal time: 15:18

WSS# Request ID No. Collector: ROY CUNNIFF

Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
pH of water	150.1	9.26			11/11/03	LJG
Electrical Conductivity	2510B	2310	micromhos/cm	1	11/11/03	LJG
Total Dissolved Solids	160.2	1572	mg/L	1	11/11/03	BJH
Magnesium (for SAR)-	200.7	0.04	meq/L	0.01	11/21/03	BJH
Calcium (for SAR)-	200.7	0.51	meq/L	0.01	11/21/03	BJH
Sodium (for SAR)-	200.7	19.40	meq/L	0.01	11/21/03	BJH
Potassium by ICP-	200.7	8.4	mg/L	0.1	11/21/03	BJH
Sodium Adsorption Ratio (SAR)	Handbook 60	36.99		0.01	11/21/03	BJH
Carbonate	310.1	1.62	meq/L	0.01	11/12/03	LJG
Bicarbonate	310.1	4.69	meq/L	0.01	11/12/03	LJG
Alkalinity (as CaCO3)	2320B	315.5	mg/L	0.1	11/12/03	LJG
Hardness as CaCO3-	130.2	28	mg/L	1	11/21/03	BJH
Residual Sodium Carbonate (RSC)		5.76	meq/L	0.01	11/21/03	BJH
Chloride by Autoanalyzer	4500-Cl_D	111.0	mg/L	2.5	11/19/03	CAW
Sulfate	4500-SO4_E	545	mg/L	10	11/26/03	JH
Fluoride by electrode	4500-F_C	11.82	mg/L	0.05	11/26/03	DIG
Aluminum by ICP-	200.7	0.78	mg/L	0.05	12/05/03	BJH
Antimony by ICP	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Arsenic by ICP-	EPA 200.7	0.07	mg/L	0.05	12/05/03	BJH
Barium	200.8	53.1	ug/L	0.1	11/26/03	MBL
Beryllium	200.8	Not detected	ug/L	0.2	11/26/03	MBL
Bismuth by ICP-		Not detected	mg/L	1	12/19/03	BJH
Cadmium by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.01	12/05/03	BJH
Calcium by ICP-	200.7	10.9	mg/L	0.1	12/05/03	BJH
Chromium by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.01	12/05/03	BJH
Cobalt by ICP-	200.7	Not detected	mg/L	0.01	12/05/03	BJH
Copper by ICP (EPA 200.7)-	EPA 200.7	Not detected	mg/L	0.04	12/05/03	BJH
Iron by ICP-	200.7	26.80	mg/L	0.05	12/05/03	BJH
Lead by ICP (EPA 200.7)	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Magnesium by ICP-	200.7	0.5	mg/L	0.1	12/05/03	BJH
Manganese by ICP-	200.7	0.474	mg/L	0.005	12/05/03	BJH
Mercury	200.8	3.2	ug/L	0.2	11/26/03	MBL
Molybdenum by ICP-MS	200.8	71.1	ug/L	1	11/26/03	MBL
Nickel by ICP (EPA 200.7)	EPA 200.7	0.01	mg/L	0.01	12/05/03	BJH
Selenium by ICP	EPA 200.7	Not detected	mg/L	0.05	12/05/03	BJH
Silver by ICP-	200.7	Not detected	mg/L	0.02	12/05/03	BJH
Sodium by ICP-	200.7	473.6	mg/L	0.1	12/05/03	BJH
Thallium by ICP	200.7	Not detected	mg/L	0.05	12/05/03	BJH
Uranium by ICP-MS	200.8	1.77	ug/L	0.05	11/26/03	MBL

Sample I.D. AB53998

Sample Description: Animas NM Well TG 52-7 DST

Sample collection date: 11/05/03 Sample collection time: 15:00

Submittal date: 11/07/03 Submittal time: 15:18

WSS# Request ID No. Collector: ROY CUNNIFF

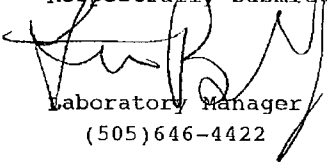
Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
Vanadium by ICP	200.7	Not detected	mg/L	0.05	12/05/03	BJH
Zinc by ICP-	200.7	0.30	mg/L	0.01	12/05/03	BJH
Boron by ICP-	200.7	10.10	mg/L	0.01	12/05/03	BJH
Silica by ICP	EPA 200.7	51.60	mg/L	0.25	12/05/03	BJH

Results relate only to the items tested. This report shall not be reproduced except in full, without the written approval of the laboratory. This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report. Those tests not presently accredited are noted by a hyphen.

Please advise should you have questions concerning these data.

Respectfully submitted,



Laboratory Manager
(505) 646-4422



**Lighting Dock, NIM
Reference Map**

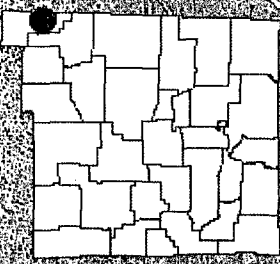
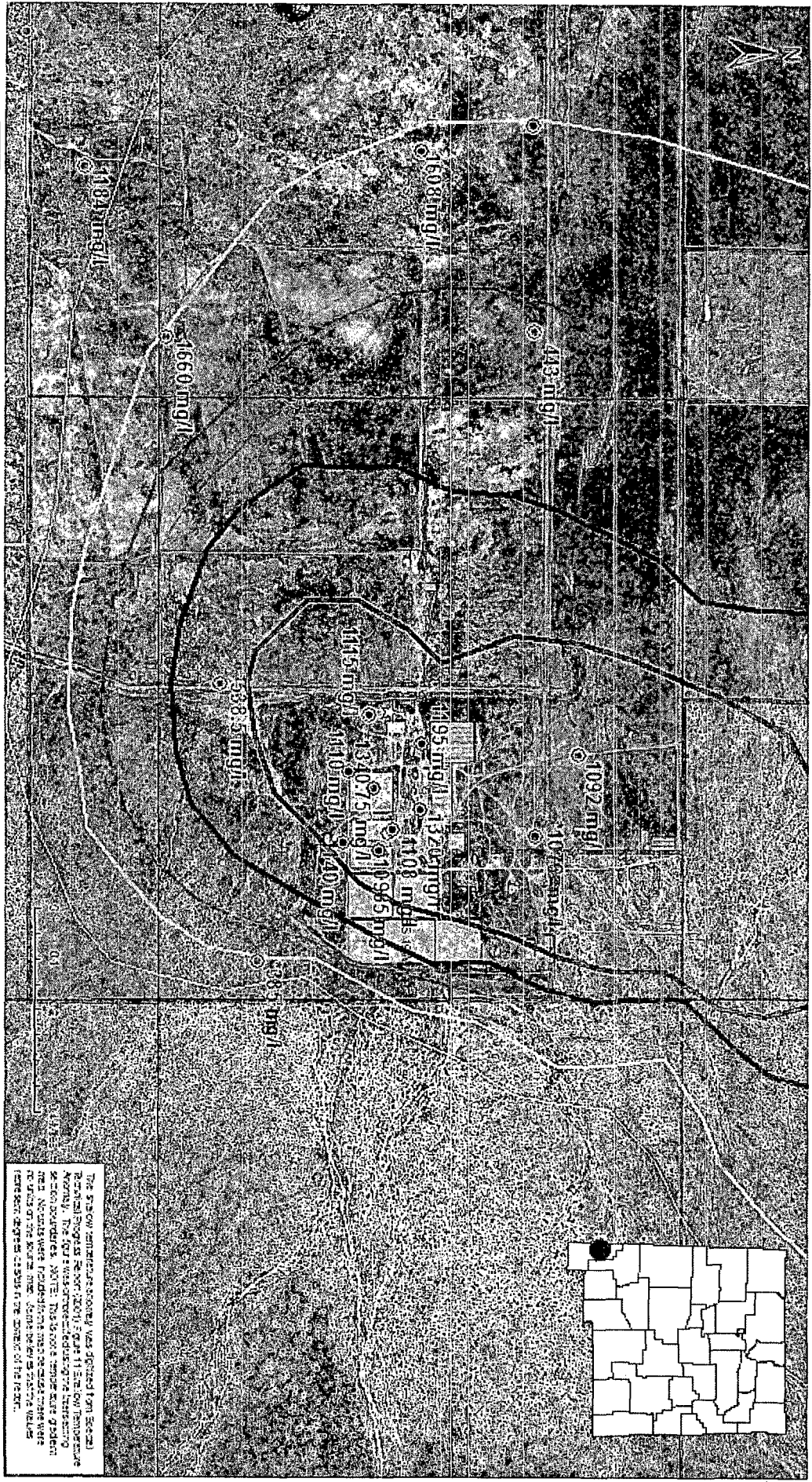
- ☆ 55-7
- Wells
- 100 c
- 120 c
- 150 c
- 80 c
- 90 c

MAP OF LIGHTING DOCK, NIM, AND SURROUNDING AREAS, PREPARED BY THE ARMY CORP OF ENGINEERS, WASHINGTON, D.C., 1965.

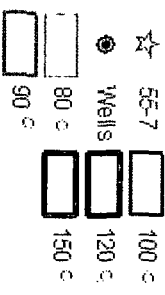
THIS MAP IS A REFERENCE MAP AND IS NOT TO BE USED FOR NAVIGATION. IT IS NOT TO BE USED FOR ANY OTHER PURPOSE. THE USER OF THIS MAP IS ADVISED THAT THE ARMY CORP OF ENGINEERS IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY APPEAR HEREIN. THE USER OF THIS MAP IS ADVISED THAT THE ARMY CORP OF ENGINEERS IS NOT RESPONSIBLE FOR ANY DAMAGES THAT MAY BE SUFFERED BY ANYONE USING THIS MAP.

raiser

717113 01 13

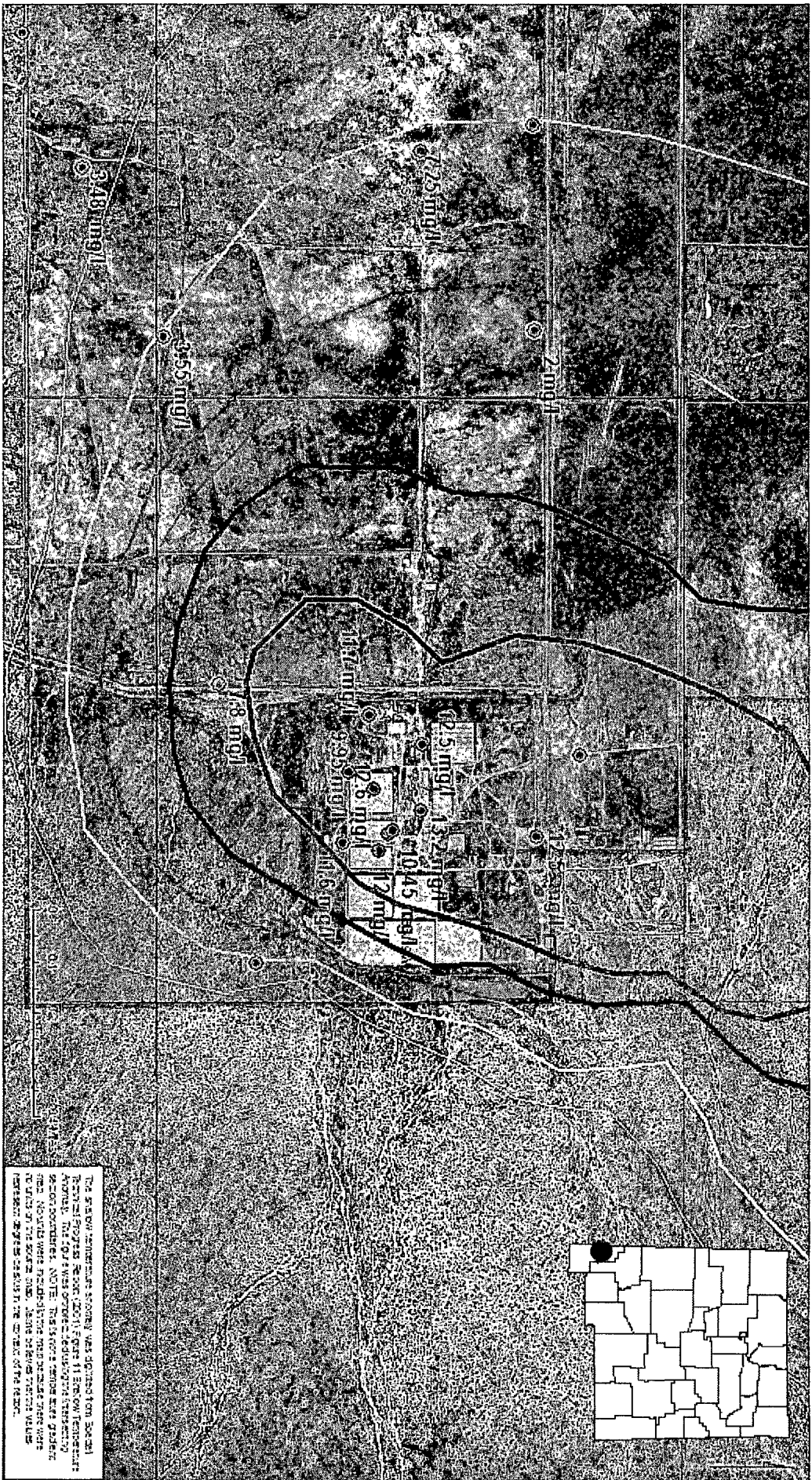


Lighting Dock, NIM TDS Concentrations



The following information was digitized from the original report. The data was processed using the latest software available. This report may contain errors. The user is advised to verify the data before using it for any purpose. The data was collected on 10/10/2007. The data was collected at the Lighting Dock, NIM. The data was collected at the Lighting Dock, NIM. The data was collected at the Lighting Dock, NIM.

DATE: 10/10/2007
 TIME: 10:00 AM
 PROJECT: LIGHTING DOCK, NIM
 DRAWING: TDS CONCENTRATIONS



Lightning Dock, NM Fluoride Concentrations

- ☆ 55-7
- Wells
- 100 c
- 120 c
- 150 c
- 80 c
- 90 c

MAP OF THE REGION
DATE: 05/21/90
NOTE: VALUES ARE SUBJECT TO CHANGE. WORKING AND SPRING WATER SAMPLES FROM LIGHTNING DOCK FOUNTAIN WERE USED FOR
FROM: UNADMITTED COPY. A COPY OF THIS MAP IS AVAILABLE TO THE PUBLIC FOR A FEE OF \$10.00 PER COPY.

The data was compiled from records maintained by the New Mexico Department of Health, Division of Environmental Health Services, and the New Mexico Department of Agriculture, Division of Agricultural Experiment Station. The data was compiled from records maintained by the New Mexico Department of Health, Division of Environmental Health Services, and the New Mexico Department of Agriculture, Division of Agricultural Experiment Station. The data was compiled from records maintained by the New Mexico Department of Health, Division of Environmental Health Services, and the New Mexico Department of Agriculture, Division of Agricultural Experiment Station.

1990
raser

Fluoride Fact Sheet

David C. Kennedy, D.D.S.

FACT #1 Fluoride is more toxic than lead, and just like lead, even in minute doses, accumulates in and is damaging to brain/mind development of children, i.e. produces abnormal behavior in animals and reduces IQ in humans.

FACT #2 Fluoridation is cancer-causing, cancer-promoting, and is linked to increased cancer rates in rats, mice, and humans . Dr. William Marcus, Senior Science Advisor at the Office of Drinking Water, stated unequivocally in his May Day Memo that fluoride is a carcinogen. Full text of the memo available 800-728-3833

FACT #3 Numerous studies, including four published in the Journal of the American Medical Association since 1990, have found that hip fracture rates are substantially higher in people residing in fluoridated communities .

FACT #4 Dental fluorosis, the first visible sign of fluoride poisoning, affects from 8% to 51% of the children drinking fluoridated water and has substantially increased over the last 40 years . Dental fluorosis is more than cosmetic damage with psychological harm. It is also indicative of neurological impairment (See ref. C 3 Dr. Li)

FACT #5 All of the recent large-scale studies on fluoridation and tooth decay show that fluoridation does not reduce tooth decay . Studies from New Zealand, Canada, Europe, and the US have confirmed no difference in decay rates for permanent teeth of residents of fluoridated vs. non-fluoridated communities.

FACT #6 Fluoride drops and tablets are not approved by the U.S. Food and Drug Administration as safe or effective . Ingested fluoride has no detectable effect on decay rates. Fluoride tablets and drops have been shown to be ineffective in reducing tooth decay and to cause skin eruptions, gastric distress, headache, and weakness - which disappear when fluoride use is discontinued - as well as dental fluorosis, a permanent disfigurement.

FACT #7 Fluoride causes iodine deficiency which can result in hypothyroidism and frequently in hyperthyroidism. Fluorides were prescribed to patients suffering from hyperthyroidism as anti-thyroid medication prior to 1950. Fluoride exposure may exacerbate iodine deficiency. During pregnancy, when iodine requirements are at their peak, the fetus is especially vulnerable. Even a slightly underfunctioning thyroid gland can result in loss of IQ in the newborn.

The following warning is required on all fluoridated toothpaste by the FDA since April of 1997 due to the large number of calls to the Poison Control Centers for children who became acutely ill from ingested fluoride. There is approximately 1 milligram of fluoride in a pea sized drop of toothpaste.

"WARNING: Keep out of reach of children under 6 years of age. In case of accidental overdose, seek professional assistance or contact a poison control center immediately."

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, June 25, 2010 9:52 AM
To: 'Jamie Robinson'
Cc: Ben Barker
Subject: RE: Radium Samples

OCD will accept based on the one sample submittal. Generally the QA/QC will document the sample collection, date and time, analysis date and time with Laboratory Method and the information submitted in the letter in a laboratory table.

I have confirmed that this laboratory is indeed legitimate and the information is satisfactory or approved for OCD's needs.

Thank you.

Please be advised that NMOCD approval of this plan does not relieve the operator of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/oqd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Friday, June 25, 2010 9:04 AM
To: Chavez, Carl J, EMNRD
Cc: Ben Barker
Subject: FW: Radium Samples

Carl,
Here is what the lab sent to me for the QA/QC. Will it work? Thanks,
Jamie

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive, Provo UT. 84604
Office: 801.765.1200
Cell: 801.717.5563

From: Robert.Rosson@gtri.gatech.edu [mailto:Robert.Rosson@gtri.gatech.edu]
Sent: Friday, June 25, 2010 8:45 AM
To: Jamie Robinson
Subject: RE: Radium Samples

See if this is what you need

From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Thursday, June 24, 2010 6:19 PM
To: Rosson, Robert
Subject: FW: Radium Samples

Robert,
Looks like I need the QA/QC for our regulators. Can I get that from you? Thanks,
Jamie

-----Original Message-----

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thu 6/24/2010 4:15 PM
To: Jamie Robinson; Ben Barker; mike_smith@blm.gov; Dade, Randy, EMNRD
Subject: RE: Radium Samples

Jamie:

Please have the lab submit the QA/QC Report to support the letter to me
for verification purposes. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Dept.

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Dr., Santa Fe, New Mexico 87505

Office: (505) 476-3490

Fax: (505) 476-3462

E-mail: CarlJ.Chavez@state.nm.us

Website: <http://www.emnrd.state.nm.us/ocd/index.htm>

(Pollution Prevention Guidance is under "Publications")

From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Thursday, June 24, 2010 12:53 PM
To: Ben Barker; mike_smith@blm.gov; Chavez, Carl J, EMNRD
Subject: FW: Radium Samples

Gentlemen,
We received the results back from our Radium test, so I'm forwarding the
results on to you. If you have any questions, please feel free to
contact me.

Jamie

-----Original Message-----

From: Robert.Rosson@gtri.gatech.edu
[mailto:Robert.Rosson@gtri.gatech.edu]
Sent: Thu 6/24/2010 11:56 AM
To: Jamie Robinson
Subject: RE: Radium Samples

Jamie attached is a letter with your results if you need anything else
please feel free to call or contact me.
404 407-6339

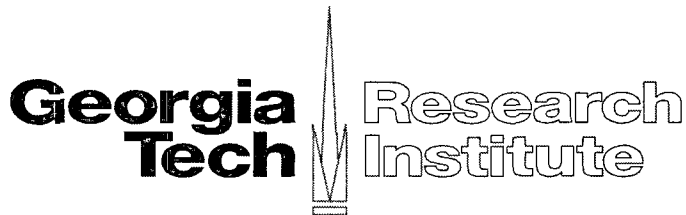
From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Wednesday, June 23, 2010 1:49 PM
To: Rosson, Robert
Subject: Radium Samples

Hi Robert,
Does it look like you will have results to us today on the Radium
analysis? Thanks,

Jamie

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive, Provo UT. 84604
Office: 801.765.1200
Cell: 801.717.5563

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June 23, 2010

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive
Provo, Utah 84604

Dear Ms. Robinson:

The water sample you submitted on June 14, 2010 for measurement of Ra-226 and Ra-228 concentration was found to have the following radionuclide concentrations:

Sample S9574	Ra-226	< 1 picocurie/liter
	Ra-228	< 1 picocurie/liter

Reagent blank

Ra-226 < .4222 pCi/l

Ra-228 < .7513

Ra-226 14.7 ± 1.5 pCi/l (expected 14.6 101%)

Ra-228 13.9 ± 1.9 pCi/l (expected 13.6 102%)

Matrix spike

Ra-226 12.6 ± 1.3 pCi/l (86%)

Ra-228 11.9 ± 1.8 pCi/l (88%)

Matrix spike duplicate

Ra-226 13.9 ± 1.4 pCi/l (95%)

Ra-228 15.6 ± 2.1 pCi/l (115%)

The Radium concentration was measured by Gamma-ray spectroscopy

Please let me know if we can be of further service.

Sincerely yours,

Robert Rosson

Environmental Radiation Center
Electro-Optical Systems Laboratory
Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332 U.S.A.
PHONE 404•407•6776 • FAX 404•407•6828

Electro-Optical Systems Laboratory (EOSL)

EOSL conducts research in broad areas in electro-optical systems, including:

- Remote Sensing
- Modeling and analysis
- Integrated sensing systems
- Optical device technology
- LIDAR system design and measurement
- Microelectronics
- Nanotechnology
- Solid state lighting
- Performance support systems
- Sensor data collection
- Analysis



CONTACT INFORMATION

Gisele Bennett
Laboratory Director
404-407-6100

Technology areas of pre-eminence include:

- LIDAR systems development
- Multispectral imaging
- EO countermeasures technology and analysis
- Wide band-gap semiconductors
- Advanced packaging for transmit/receive modules used in active phased array radars.

The lab performs applied research in the growth and application of carbon nanotubes, multifunctional materials, RFID and optical tagging, chem-bio sensors, and has the leading Medical Device Test Center, which examines the interactions between medical devices and security and logistical systems.

EOSL has the following specially configured research centers:

- Sensors and Sensing Systems Information and Analysis Center (SENSIAC), serving the military sensor community as a repository of information
- LandMARC Research Center, formed to provide solutions for mobile, wireless and performance based tasks
- Environmental Radiation Center performing radiation monitoring
- Environmental Health and Occupational Safety Center for compliance oversight for environmental emergency response, and occupational safety and health issues
- Phosphor Technology Center of Excellence
- The Center for Optimization of Simulated Multiple Objective Systems

Visit EOSL's [lab-maintained web page](#) for more information.

Chavez, Carl J, EMNRD

From: Jamie Robinson [Jamie.Robinson@rasertech.com]
Sent: Thursday, June 24, 2010 4:20 PM
To: Chavez, Carl J, EMNRD
Cc: Ben Barker
Subject: RE: Radium Samples

Carl,
I've submitted that request to the lab, and will get it to you as soon as I can. Thanks,
Jamie

-----Original Message-----

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Thu 6/24/2010 4:15 PM
To: Jamie Robinson; Ben Barker; mike_smith@blm.gov; Dade, Randy, EMNRD
Subject: RE: Radium Samples

Jamie:

Please have the lab submit the QA/QC Report to support the letter to me for verification purposes. Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Dept.

Oil Conservation Division, Environmental Bureau

1220 South St. Francis Dr., Santa Fe, New Mexico 87505

Office: (505) 476-3490

Fax: (505) 476-3462

E-mail: CarlJ.Chavez@state.nm.us

Website: <http://www.emnrd.state.nm.us/ocd/index.htm>

(Pollution Prevention Guidance is under "Publications")

From: Jamie Robinson [<mailto:Jamie.Robinson@rasertech.com>]
Sent: Thursday, June 24, 2010 12:53 PM
To: Ben Barker; mike_smith@blm.gov; Chavez, Carl J, EMNRD
Subject: FW: Radium Samples

Gentlemen,
We received the results back from our Radium test, so I'm forwarding the results on to you. If you have any questions, please feel free to contact me.

Jamie

-----Original Message-----

From: Robert.Rosson@gtri.gatech.edu
[mailto:Robert.Rosson@gtri.gatech.edu]
Sent: Thu 6/24/2010 11:56 AM
To: Jamie Robinson
Subject: RE: Radium Samples

Jamie attached is a letter with your results if you need anything else
please feel free to call or contact me.
404 407-6339

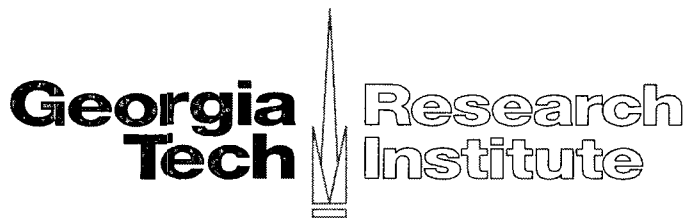
From: Jamie Robinson [mailto:Jamie.Robinson@rasertech.com]
Sent: Wednesday, June 23, 2010 1:49 PM
To: Rosson, Robert
Subject: Radium Samples

Hi Robert,
Does it look like you will have results to us today on the Radium
analysis? Thanks,

Jamie

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive, Provo UT. 84604
Office: 801.765.1200
Cell: 801.717.5563

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June 23, 2010

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive
Provo, Utah 84604

Dear Ms. Robinson:

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Sample S9574	Ra-226	< 1 picocurie/liter
	Ra-228	< 1 picocurie/liter

The Radium concentration was measured by Gamma-ray spectroscopy

Please let me know if we can be of further service.

Sincerely yours,

Robert Rosson

Environmental Radiation Center
Electro-Optical Systems Laboratory
Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332 U.S.A.
PHONE 404•407•6776 • FAX 404•407•6828

Chavez, Carl J, EMNRD

From: Ben Barker [Ben.Barker@rasertech.com]
Sent: Tuesday, June 22, 2010 11:16 PM
To: Chavez, Carl J, EMNRD; Mike_Smith@blm.gov
Subject: conference call

Gentlemen,

Thank you for the invitation to discuss progress on 55-7. I haven't figured out how to originate a conference call from my office phone, but Raser has a toll-free conference system. May I respectfully ask you to use the following numbers? I'll open the conference host line at 0830.

1-888-296-6500 guest code 584297#

Here are a few items to get started.

I expected to send you both maps and tables of the background fluoride and TDS data yesterday but I discovered problems with our GIS-generated maps that are beyond me to cure. They will be fixed tomorrow by brighter folks than I.

In the meantime, we have been changing out equipment at the well site so as to get better water samples and do eventual pump installation more efficiently. The rig limitations Raser encountered while conducting small-scale production for fluid sampling are not readily cured and the drilling contractor has another contract to fulfill soon, so I released the rig. Raser is bringing in one that is better suited to continuing the plan laid out in the approved G-103. We also brought in 2 additional tanks, a move made possible by switching to a rig with a smaller footprint. We now have 2500 bbl of storage in metal tanks at the well. The original rig completed moving off the well site today and its replacement will arrive later this week.

We stored all the cuttings on plastic for drying and later disposal. We have produced no water, hot or cold, directly to the pit. We decanted the cold water from the rig tanks after several days' settling and ran it slowly into the pit so as to avoid creating any pond. I understand the pit is dry. The rig crews shoveled the settled solids into a loader and added them to the cuttings.

We anticipate being able to flow the well longer and collect better water samples by June 28. The new analytical results should be reported by the end of June 30.

The Radium test results are now 2 days past due and we are following up with the lab in Georgia. The backup test report is due about July 1 from Texas.

Thanks,
Ben

VP Resource Management
Raser Technologies
5152 N. Edgewood Drive
Provo, UT 84604
801-765-1200 office
801-850-5904 direct
707-508-9963 mobile

Chavez, Carl J, EMNRD

From: Jamie Robinson [Jamie.Robinson@rasertech.com]
Sent: Monday, June 21, 2010 11:16 AM
To: Ben Barker; auldandy@hotmail.com; Phillips, Haddy L., OSE; Jackson, Charles L., OSE; mike_smith@blm.gov; Chavez, Carl J, EMNRD
Cc: Layne Ashton; Michael.Hayter; rbageo@sbcglobal.net; Nick Goodman; delfortner@charter.net
Subject: 6/21 Drilling and COA's update for Lightning Dock 55-7

Good morning everyone,

Just an update on how operations are going at Lightning Dock, and COA's...

The rig we are currently using at Lightning Dock has been discharged for another job, and we are moving forward to prepare for our pump test.

COA milestones

BLM #10 (*water quality analysis*): Water quality analysis were received and approved by OCD on June 17th, 2010.

BLM #12 (*pit construction*): The pit has been constructed in a manner consistent to the BLM Gold Book standards. Jay Peterson will be constructing the fence.

BLM #13 (*biology survey*): The biology survey has been completed. Layne will be sending Mike Smith a copy of the report.

OCD #3 (*water quality analysis*): Carl Chavez received and approved the analysis results from 55-7 on June 17th, 2010. All standards were met except fluoride, TDS and Radium. Background values for Fluoride and TDS are high, and are comparable to our most recent results. Radium results are pending, and should be received Tuesday or Wednesday of this week. We believe that they will be well within the standard limits.

COA's coming up

BLM #12 (*construction of pit*): The pit has been constructed in a manner consistent to the BLM Gold Book standards. Jay Peterson will be constructing the fence.

BLM #14 (*safety grating or bird balls*): We are currently working with our purchasing agent to identify the most cost efficient safety grating option.

BLM #15 (*2ft freeboard in pit*): The pond will be monitored to assure that 2ft freeboard COA standard will be met and observed during pump test operations.

OSE #4 (*totalizing meter*): Layne is working to identify acceptable totalizing meters.

OSE #6 (*inspection prior to diversion of water*): I will send a separate email to Haddy and Tink on this COA.

Please feel free to contact me with any questions or concerns you might have,

Jamie

Jamie Robinson
Geologist
Raser Technologies, Inc.
5152 N. Edgewood Drive, Provo UT. 84604
Office: 801.765.1200
Cell: 801.717.5563

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, June 17, 2010 2:26 PM
To: 'Ben Barker'
Cc: Nick Goodman; Jamie Robinson; Michael Hayter; Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD
Subject: RE: Lightning Dock Request Permission to Discharge into the TFD 55-7 Unlined Pit

Mr. Barker:

The Oil Conservation Division (OCD) is in receipt of your e-mail and attached letter dated June 17, 2010 with water quality information requesting permission to discharge into the TFD 55-7 Unlined Pit based on the water quality sample collected from the TFD 55-7 borehole. The OCD is aware of the difficulty in obtaining a representative sample from the borehole after discovering the borehole was filled (Mudstone?) between plugs during well workover operations.

After a review of the borehole water quality data results and historical water quality information provided in your submittal, and after conducting a review of the project area, the OCD is aware of the USGS "Basin and Range" maps that indicate granitic and volcanic rocks in basins filled with alluvium may contain moderate to high radioactivity. In a USGS Radioactivity Map of SW New Mexico in the vicinity of the project area in question, the area is designated as "moderate." The data provided indicates that radioactivity is not a problem.

Obtaining a clean representative sample from the borehole was difficult. Based on the analytical laboratory data results, the OCD notes the following:

- 1) The well Fluoride level appears to be significantly above the WQCC Standard of 1.6 mg/L. From the historical data provided, the majority of samples were within the standard with only a couple that exceeded. The OCD is aware that this may be explained by an anomalous upwelling geothermal "hydrogeologic window" in the project area.
- 2) The total dissolved solid (TDS) is marginally elevated above the WQCC Standard of 1000 mg/L and may be elevated due to the method of sample procurement from a geothermal well.
- 3) The radioactivity sample was not provided pending receipt of analytical lab results next week.

The operator would like to proceed in advance of receipt of the radioactivity analytical data results due to rig scheduling and field worker logistics. Also, the operator believes from a telephone conversation that the elevated Fluoride level in the well may be attributable to the aforementioned "hydrogeologic window" in the project area while the TDS is believed to be from turbidity in the borehole.

The operator is requesting to collect a cleaner borehole sample for reanalysis, and to facilitate this, fluids from a couple of holding tanks will be discharged into the pit and a cleaner sample will be obtained from discharge water into the emptied tanks. The OCD has determined that Raser Technologies would be proceeding under its own risk if it proceeds according to its plan.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Ben Barker [<mailto:Ben.Barker@rasertech.com>]
Sent: Thursday, June 17, 2010 3:38 AM
To: Chavez, Carl J, EMNRD

Cc: Nick Goodman; Jamie Robinson; Michael Hayter
Subject: Lightning Dock request for discharge permission

Good Morning Carl,

Attached is the letter request and supporting data for OCD-EB clearance to use the unlined pit at TDF 55-7. Please call my cell phone any time if you have questions or would like an expanded version of any of the tables or data.

We will be picking up tomorrow where we left off last week at the well. We have experienced some delivery problems with the test pump and so we plan to expand the air-lift activities in the drilling plan to clean the hole up and get clearer water samples for the laboratories. We will release Barbour for another job while we take care of plumbing.

Thanks,
Ben

VP Resource Management
Raser Technologies
5152 N. Edgewood Drive
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801-765-1200 office
801-850-5904 direct
707-508-9963 mobile

15042_03

raser[®]

TECHNOLOGIES

June 17, 2010

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Request for Permission to Discharge to TFD 55-7 Pit

Dear Mr. Chavez:

Raser technologies has cleaned out well TFD 55-7 according to the OCD G-103 approved on May 26, 2010. On June 8, 2010 Raser drilling personnel succeeded in collecting samples of produced water from the well with the entire interval from 1050 ft to 1348 ft open. As required by Condition of Approval No. 3, Raser herewith presents the results of laboratory analysis of those samples. We believe the results demonstrate the produced water meets the applicable water quality standards for surface discharge and hereby requests OCD-EB approval to discharge produced fluid to the unlined pit adjacent to the well.

20.6.2.3103 NMAC sets forth standards for forty seven concentration and pH values in ground water. The concentrations measured in the samples from well TFD 55-7 are within the allowable standard in 44 of 46 tests for which results have been received. In the two other tests, for TDS and Fluoride, we present data showing the TDF 55-7 values are within the background limit. The final test, for which results are still pending, is for Radium. Those test results will not be available for another week, but we present available data indicating the likelihood of a positive result is extremely small. Nevertheless, we propose to confine produced water to the well-site pit until the Radium test result is obtained. We will seek your further approval of the surface application plan after the analytical data set is complete.

The standards of 20.6.2.3103 NMAC are listed in Attachment 1, along with the results for the June 8, 2010 samples from TDF 55-7. Additional columns list for comparison (1) the results of analysis by the same laboratory of samples obtained during a 2008 air-assisted flow test of the same well, and (2) selected historical background examples from the Animas data base.

The certified report from TraceAnalysis, Inc. is reproduced as Attachment 2. Direct transmittal from TraceAnalysis to OCD-EB is available upon request.

Raser's project geologist and permit compliance officer, Jamie Robinson, assembled the Animas water chemistry data base referred to above. Attachment 3 presents her comparison of the TDS and Fluoride measurements from TDF 55-7 to the measurements from 188 wells that have been sampled over several decades. Her results show that TDF 55-7 is within the range of wells in the

area that have been discharging to the surface for many years, thus meeting the background standard of COA No. 3.

The data base assembled by Jamie is reproduced in condensed form as Attachment 4. The entire data set is contained in the table but extracting data for your examination may not be convenient. We will supply the data in an Excel spreadsheet upon your request.

The final element test, Radium, is incomplete because of the long exposure time needed to accurately measure very low levels of radiation. Although the test will not be completed for another week we are confident it poses little risk. We can find no record of Radium occurrences in the Animas area. Attachments 5 and 6 contain excerpts from USGS and NMBMMR papers which support this conclusion.

Please do not hesitate to let me know if any additional detail or documentation will facilitate your examination. Thank you for your consideration.

Very truly yours,
Raser Technologies



Benjamin J. Barker
VP Resource Management

Attachments:

Attachment 1: Table of 20.6.2.3103 NMAC Standards and TFD 55-7 Analytical Values.

Attachment 2: Analytical and Quality Control Report, TraceAnalysis, Inc., June 16, 2010.

Attachment 3: Memo From Jamie Robinson to Ben Barker Comparing TDF 55-7 TDS and Fluoride to Historical Data.

Attachment 4: Summary of Historical Water Chemistry Data, Animas Valley, New Mexico.

Attachment 5: USGS paper excerpt describing available data for water radioactivity in the Lightning Dock area.

Scott, R.C. and Barker, F.B., 1962, Data on uranium and radium in ground water in the United States 1954 to 1957. Geological Survey Professional Paper 426, p.79.

Attachment 6: NMBMMR paper excerpt describing available data for water radioactivity in the Lightning Dock area.

Summers W.K., 1976, Catalog of thermal waters in New Mexico. Hydrological Report 4, New Mexico Bureau of Mines and Mineral Resources, pp. 15-18.

Attachment 1

Table of 20.6.2.3103 NMAC Standards and TFD 55-7 Analytical Values

	Analysis	NMAC Standard	TFD 55-7 2010 Results	TFD 55-7 2008 Results	Animas Valley Example
A					
1	Arsenic (As)	0.1 mg/l	0.0210 mg/l	<0.00500 mg/l	
2	Barium (Ba)	1.0 mg/l	0.278 mg/l	0.0510 mg/l	
3	Cadmium (Cd)	0.01 mg/l	<0.00500 mg/l	<0.00100 mg/l	
4	Chromium (Cr)	0.05 mg/l	<0.00100 mg/l	<0.00100 mg/l	
5	Cyanide (CN)	0.2 mg/l	<0.0150 mg/l	<0.0150 mg/l	
6	Fluoride (F)	1.6 mg/l	11.6 mg/l	13.9 mg/l	15 mg/l
7	Lead (Pb)	0.05 mg/l	0.0420 mg/l	<0.00500 mg/l	
8	Total Mercury (Hg)	0.002 mg/l	<0.000200 mg/l	<0.000200 mg/l	
9	Nitrate (NO3 as N)	10.0 mg/l	<0.500 mg/l	<0.100 mg/l	
10	Selenium (Se)	0.05 mg/l	<0.0200 mg/l	<0.0100 mg/l	
11	Silver (Ag)	0.05 mg/l	<0.00500 mg/l	<0.00500 mg/l	
12	Uranium (U)	0.03 mg/l	<0.0300 mg/l		
13	Radioactivity: Radium (Ra 226-228)	30 pCi/l			0.3 pCi/l
14	Benzene	0.01 mg/l	<0.001 mg/l	<0.005 mg/l	
15	Polychlorinated biphenyls (PCB's)	0.001 mg/l	<0.000500 mg/l		
16	Toluene	0.75 mg/l	<0.001 mg/l	<0.005 mg/l	
17	Carbon Tetrachloride	0.01 mg/l	<0.001 mg/l	<0.005 mg/l	
18	1,2-dichloroethane (EDC)	0.01 mg/l	<0.001 mg/l	<0.005 mg/l	
19	1,1-dichloroethylene (1,1-DCE)	0.005 mg/l			
20	1,1,2,2-tetrachloroethylene (PCE)	0.02 mg/l	<0.001 mg/l	<0.005 mg/l	
21	1,1,2-trichloroethylene (TCE)	0.1 mg/l	<0.001 mg/l	<0.005 mg/l	
22	ethylbenze	0.75 mg/l	<0.001 mg/l	<0.005 mg/l	
23	total xylenes	0.62 mg/l	<0.001 mg/l	<0.005 mg/l	
24	methylene chloride	0.1 mg/l	<0.005 mg/l	<0.025 mg/l	
25	chloroform	0.1 mg/l	<0.001 mg/l	<0.005 mg/l	
26	1,1-dichloroethane	0.025 mg/l	<0.001 mg/l	<0.005 mg/l	
27	ethlene dibromide (EDB)	0.0001 mg/l	<0.001 mg/l	<0.005 mg/l	
28	1,1,1-trichloroethane	0.06 mg/l	<0.001 mg/l	<0.005 mg/l	
29	1,1,2-trichloroethane	0.01 mg/l	<0.001 mg/l	<0.005 mg/l	
30	1,1,2,2-tetrachloroethane	0.01 mg/l	<0.001 mg/l	<0.005 mg/l	
31	vinyl chloride	0.001 mg/l	<0.001 mg/l	<0.005 mg/l	
32	PAH's: total naphthalene + monomethylnaphthalenes	0.03 mg/l	<0.005 mg/l	<0.025 mg/l	
33	benzo-a-pyrene	0.0007 mg/l	<0.000183 mg/l		

	Analysis	Standard	2010 Results	2008 Results	Historical Results
B					
1	Chloride (Cl)	250.0 mg/l	80 mg/l	99.8 mg/l	
2	Copper (Cu)	1.0 mg/l	0.0520 mg/l	<0.00500 mg/l	
3	Iron (Fe)	1.0 mg/l	0.0180 mg/l	0.148 mg/l	
4	Manganese (Mn)	0.2 mg/l	0.00800 mg/l	0.00400 mg/l	
5	Phenols	0.005 mg/l	<0.00458 mg/l		
6	Sulfate (SO4)	600.0 mg/l	500 mg/l	566 mg/l	
7	Total Dissolved Solids (TDS)	1000.0 mg/l	1440 mg/l	1450 mg/l	1628 mg/l
8	Zinc (Zn)	10.0 mg/l	0.131 mg/l	0.00900 mg/l	
9	pH	6-9	8.69	9.35	
C					
1	Aluminum (Al)	5.0 mg/l	<0.0500 mg/l	0.243 mg/l	
2	Boron (B)	0.75 mg/l	0.465 mg/l	0.496 mg/l	
3	Cobalt (Co)	0.05 mg/l	<0.00500 mg/l		
4	Molybdenum (Mo)	1.0 mg/l	0.0460 mg/l	0.0340 mg/l	
5	Nickel (Ni)	0.2 mg/l	<0.00500 mg/l	<0.00500 mg/l	

Attachment 2
Analytical and Quality Control Report
TraceAnalysis, Inc.
June 16, 2010



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
 E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX **El Paso:** T104704221-08-TX **Midland:** T104704392-08-TX
 LELAP-02003 LELAP-02002
 Kansas E-10317

Analytical and Quality Control Report

Jamie Robinson
 Raser Technologies
 5152 North Edgewood Dr.
 Suite 200
 Provo, UT, 84604

Report Date: June 16, 2010

Work Order: 10061011



Project Name: Ground Water Monitoring
 Project Number: Ground Water Monitoring

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
234175	LLRP	water	2010-06-08	17:00	2010-06-08

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blair Leftwich

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project Ground Water Monitoring were received by TraceAnalysis, Inc. on 2010-06-08 and assigned to work order 10061011. Samples for work order 10061011 were received intact at a temperature of 3.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Al, Dissolved	S 6010C	60764	2010-06-16 at 11:18	70934	2010-06-16 at 11:19
Cr, Dissolved	S 6010C	60764	2010-06-16 at 11:18	70934	2010-06-16 at 11:19
Fe, Dissolved	S 6010C	60764	2010-06-16 at 11:18	70934	2010-06-16 at 11:19
Mn, Dissolved	S 6010C	60764	2010-06-16 at 11:18	70934	2010-06-16 at 11:19

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10061011 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 234175 - LLRP

Laboratory: Lubbock
Analysis: Al, Dissolved
QC Batch: 70934
Prep Batch: 60764

Analytical Method: S 6010C
Date Analyzed: 2010-06-16
Sample Preparation: 2010-06-16

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Aluminum		<0.0500	mg/L	1	0.0500

Sample: 234175 - LLRP

Laboratory: Lubbock
Analysis: Cr, Dissolved
QC Batch: 70934
Prep Batch: 60764

Analytical Method: S 6010C
Date Analyzed: 2010-06-16
Sample Preparation: 2010-06-16

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Chromium		<0.00100	mg/L	1	0.00100

Sample: 234175 - LLRP

Laboratory: Lubbock
Analysis: Fe, Dissolved
QC Batch: 70934
Prep Batch: 60764

Analytical Method: S 6010C
Date Analyzed: 2010-06-16
Sample Preparation: 2010-06-16

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		0.0180	mg/L	1	0.0100

Sample: 234175 - LLRP

Laboratory: Lubbock
Analysis: Mn, Dissolved
QC Batch: 70934
Prep Batch: 60764

Analytical Method: S 6010C
Date Analyzed: 2010-06-16
Sample Preparation: 2010-06-16

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

continued ...

sample 234175 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Manganese		0.00800	mg/L	1	0.00250

Method Blank (1) QC Batch: 70934

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Parameter	Flag	MDL Result	Units	RL
Dissolved Aluminum		<0.00404	mg/L	0.05

Method Blank (1) QC Batch: 70934

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Parameter	Flag	MDL Result	Units	RL
Dissolved Chromium		<0.000873	mg/L	0.001

Method Blank (1) QC Batch: 70934

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Parameter	Flag	MDL Result	Units	RL
Dissolved Iron		<0.00300	mg/L	0.01

Method Blank (1) QC Batch: 70934

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Parameter	Flag	MDL Result	Units	RL
Dissolved Manganese		<0.00170	mg/L	0.0025

Laboratory Control Spike (LCS-1)

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Aluminum	0.921	mg/L	1	1.00	<0.00404	92	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Aluminum	0.942	mg/L	1	1.00	<0.00404	94	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Chromium	0.0960	mg/L	1	0.100	<0.000873	96	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Chromium	0.0970	mg/L	1	0.100	<0.000873	97	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 70934 Date Analyzed: 2010-06-16 Analyzed By: RR
Prep Batch: 60764 QC Preparation: 2010-06-16 Prepared By: RR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Iron	0.486	mg/L	1	0.500	<0.00300	97	85 - 115

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Chromium		mg/L	1.00	0.978	98	90 - 110	2010-06-16

Standard (CCV-1)

QC Batch: 70934

Date Analyzed: 2010-06-16

Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.971	97	90 - 110	2010-06-16

Standard (CCV-1)

QC Batch: 70934

Date Analyzed: 2010-06-16

Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Manganese		mg/L	1.00	0.980	98	90 - 110	2010-06-16

Attachment 3:

Memo From Jamie Robinson to Ben Barker

Comparing TDF 55-7 TDS and Fluoride to Historical Data

June 16, 2010



June 16, 2010

To: Ben Barker
From: Jamie Robinson
Re: Fluoride and TDS Concentrations in TFD 55-7 Samples

We have collected the published water quality analyses from the Lightning Dock area and found 200 sample records from 188 different wells. I compared this body of data with the recent analytical results from TFD 55-7 and conclude that the water produced in our June 8, 2010 test has fluoride and TDS concentrations that are common in the well waters of the Lightning Dock area.

Fluoride

Of the 188 wells in the data base, 97 were tested for fluoride, yielding 99 sample values. The concentration of fluoride ranged from 0.35 to 15 mg/l with a mean of 3.59 mg/l.

NM standard: 1.6 mg/l
Well TFD 55-7 values: 11.6 mg/l (2010)
13.7 mg/l (2008)

- Fifty-six of the tested wells (58%) showed fluoride concentrations in excess of the standard, with a mean of 5.3 mg/l.
- Nine wells showed fluoride levels greater than 10 mg/l.

Dissolved Solids (TDS)

The data base contains 160 TDS values from 126 wells. The measurements ranged from 8 mg/l to 16,281 mg/l, with a mean of 833 mg/l.

NM standard: 1000 mg/l
Well TFD 55-7 values: 1440 mg/l (2010)
1450 mg/l (2008)

- Thirty-eight of the wells (30%) exceeded the NM standard, with a group mean of 1270 mg/l.
- Twelve wells had TDS values greater than those of TFD 55-7.

Attachment 4:
Summary of Historical Water Chemistry Data
Animas Valley, New Mexico

Case No.	Case Name	Case Type	Case Status	Case Date	Case Time	Case Location	Case Description	Case Details	Case Notes	Case Actions	Case Results	Case Comments
1	10000001	Case 1	Open	2023-01-01	10:00	Room 101	Initial setup and calibration.	10000001	10000001	10000001	10000001	10000001
2	10000002	Case 2	Open	2023-01-02	11:00	Room 102	Second case, similar to Case 1.	10000002	10000002	10000002	10000002	10000002
3	10000003	Case 3	Open	2023-01-03	12:00	Room 103	Third case, minor variations.	10000003	10000003	10000003	10000003	10000003
4	10000004	Case 4	Open	2023-01-04	13:00	Room 104	Fourth case, more complex.	10000004	10000004	10000004	10000004	10000004
5	10000005	Case 5	Open	2023-01-05	14:00	Room 105	Fifth case, significant changes.	10000005	10000005	10000005	10000005	10000005
6	10000006	Case 6	Open	2023-01-06	15:00	Room 106	Sixth case, new parameters.	10000006	10000006	10000006	10000006	10000006
7	10000007	Case 7	Open	2023-01-07	16:00	Room 107	Seventh case, advanced setup.	10000007	10000007	10000007	10000007	10000007
8	10000008	Case 8	Open	2023-01-08	17:00	Room 108	Eighth case, complex analysis.	10000008	10000008	10000008	10000008	10000008
9	10000009	Case 9	Open	2023-01-09	18:00	Room 109	Ninth case, detailed review.	10000009	10000009	10000009	10000009	10000009
10	10000010	Case 10	Open	2023-01-10	19:00	Room 110	Tenth case, final adjustments.	10000010	10000010	10000010	10000010	10000010
11	10000011	Case 11	Open	2023-01-11	20:00	Room 111	Eleventh case, comprehensive test.	10000011	10000011	10000011	10000011	10000011
12	10000012	Case 12	Open	2023-01-12	21:00	Room 112	Twelfth case, data collection.	10000012	10000012	10000012	10000012	10000012
13	10000013	Case 13	Open	2023-01-13	22:00	Room 113	Thirteenth case, analysis phase.	10000013	10000013	10000013	10000013	10000013
14	10000014	Case 14	Open	2023-01-14	23:00	Room 114	Fourteenth case, reporting.	10000014	10000014	10000014	10000014	10000014
15	10000015	Case 15	Open	2023-01-15	00:00	Room 115	Fifteenth case, final report.	10000015	10000015	10000015	10000015	10000015
16	10000016	Case 16	Open	2023-01-16	01:00	Room 116	Sixteenth case, new start.	10000016	10000016	10000016	10000016	10000016
17	10000017	Case 17	Open	2023-01-17	02:00	Room 117	Seventeenth case, progress.	10000017	10000017	10000017	10000017	10000017
18	10000018	Case 18	Open	2023-01-18	03:00	Room 118	Eighteenth case, challenges.	10000018	10000018	10000018	10000018	10000018
19	10000019	Case 19	Open	2023-01-19	04:00	Room 119	Nineteenth case, solutions.	10000019	10000019	10000019	10000019	10000019
20	10000020	Case 20	Open	2023-01-20	05:00	Room 120	Twentieth case, conclusion.	10000020	10000020	10000020	10000020	10000020

Attachment 5:

**USGS paper excerpt describing available data for
water radioactivity in the Lightning Dock area.**

**Scott, R.C. and Barker, F.B., 1962,
Data on uranium and radium in ground water
in the United States 1954 to 1957.**

Geological Survey Professional Paper 426, p.79.

Highlighted text shows uranium and radium values for the Lightning Dock area.

Data on Uranium and Radium in Ground Water in the United States 1954 to 1957

By R. C. SCOTT and F. B. BARKER

GEOLOGICAL SURVEY PROFESSIONAL PAPER 426

*A compilation of data collected as part
of a survey of radioelements in the water
resources of the conterminous United States*



UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1962

No.	Site or Locality	Altitude (ft)	Temp (F)	Moisture (M)	Cap. (Cu)	Zinc (Zn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Organic phosphorus (PO ₄)	Dissolved solids at 180° C	Hardness CaCO ₃	Specific conductance (micro mhos/cm)	pH	Bacterial activity (Qual)	Gas (Qual)	Urea (Qual)	Remarks		
23	6 miles south-Chase of Silver	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
24	11 miles south-west of Dwyer	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
25	Radiant Hot Springs	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann	Done Ann
26	Lordsburg	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo	Hidalgo
27	Dante	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna	Luna
28	Carlsbad	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy	Edwy

CHEMICAL ANALYSES—continued

No.	Site or Locality	Altitude (ft)	Temp (F)	Moisture (M)	Cap. (Cu)	Zinc (Zn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Organic phosphorus (PO ₄)	Dissolved solids at 180° C	Hardness CaCO ₃	Specific conductance (micro mhos/cm)	pH	Bacterial activity (Qual)	Gas (Qual)	Urea (Qual)	Remarks
1	7.4	40.3	10.07	40.00	19	10	9.7	0.70	13	397	0	0	0.4	960	4.0	1.1	0	2,660	118	4,430	8.2	188	9.3	0.6	Sediment in sample, collected June 6, 1952.
2	60	4.0	1.02	1.00	5.4	1.8	1.6	41	43	41	0	0	1.8	2.0	1.8	2	0	103	21	81	7.8	<10	<1	3	Sample turbid, collected June 11, 1952.
3	55	4.1	1.08	1.00	4.4	1.4	1.2	42	44	42	0	0	1.9	2.0	0.6	3	0	100	17	90	7.2	<10	<1	2	Sediment in sample, collected June 11, 1952.
4	19	0.0	0.66	0.45	8.0	1.9	2.0	344	344	344	4	4	303	30	7.7	0	0	892	28	1,260	8.3	35	1.3	0.6	Collected Apr. 1, 1952.
5	18	0.0	0.66	0.45	8.4	2.3	2.0	447	447	447	0	0	330	23	8.0	4.4	0	882	162	1,327	7.9	<14	2	0.9	Composite of two wells, collected May 1, 1952.
6	18	0.0	0.66	0.45	8.4	2.3	2.0	447	447	447	0	0	330	23	8.0	4.4	0	882	162	1,327	7.9	<14	2	0.9	Composite of two wells, collected May 1, 1952.
7	18	0.0	0.66	0.45	8.4	2.3	2.0	447	447	447	0	0	330	23	8.0	4.4	0	882	162	1,327	7.9	<14	2	0.9	Composite of two wells, collected May 1, 1952.
8	18	0.0	0.66	0.45	8.4	2.3	2.0	447	447	447	0	0	330	23	8.0	4.4	0	882	162	1,327	7.9	<14	2	0.9	Composite of two wells, collected May 1, 1952.
9	12	0.0	0.66	0.45	8.4	2.3	2.0	447	447	447	0	0	330	23	8.0	4.4	0	882	162	1,327	7.9	<14	2	0.9	Composite of two wells, collected May 1, 1952.
10	58	1.1	1.00	1.00	21	4.6	6.8	161	161	161	0	0	85	12	1.0	2	0	344	71	475	8.1	<10	<1	5.5	Collected Apr. 1, 1952.
11	21	0.0	1.00	1.00	35	26	4.6	292	292	292	0	0	94	0.8	1.6	4.4	0	306	184	541	7.8	<14	3	1.3	Sediment in sample, collected May 1, 1952.
12	27	0.0	1.00	1.00	109	72	2.8	314	314	314	0	0	170	51	6	3.6	0	622	404	932	7.4	<22	7	3.5	Collected Apr. 1, 1952.
13	27	0.0	1.00	1.00	109	72	2.8	314	314	314	0	0	170	51	6	3.6	0	622	404	932	7.4	<22	7	3.5	Collected Apr. 1, 1952.
14	27	0.0	1.00	1.00	109	72	2.8	314	314	314	0	0	170	51	6	3.6	0	622	404	932	7.4	<22	7	3.5	Collected Apr. 1, 1952.
15	27	0.0	1.00	1.00	109	72	2.8	314	314	314	0	0	170	51	6	3.6	0	622	404	932	7.4	<22	7	3.5	Collected Apr. 1, 1952.
16	27	0.0	1.00	1.00	109	72	2.8	314	314	314	0	0	170	51	6	3.6	0	622	404	932	7.4	<22	7	3.5	Collected Apr. 1, 1952.
17	28	0.0	1.00	1.00	174	45	2.8	210	210	210	0	0	83	1,250	3.3	2.9	0	2,670	537	1,040	7.2	<10	1	1.0	Collected Mar. 31, 1952.
18	28	0.0	1.00	1.00	174	45	2.8	210	210	210	0	0	83	1,250	3.3	2.9	0	2,670	537	1,040	7.2	<10	1	1.0	Collected Mar. 31, 1952.
19	28	0.0	1.00	1.00	174	45	2.8	210	210	210	0	0	83	1,250	3.3	2.9	0	2,670	537	1,040	7.2	<10	1	1.0	Collected Mar. 31, 1952.
20	36	0.0	1.00	1.00	104	33	2.0	297	297	297	0	0	34	6.5	2.2	2.1	0	398	289	612	7.4	<17	1	1.1	Collected Mar. 11, 1952.
21	36	0.0	1.00	1.00	104	33	2.0	297	297	297	0	0	34	6.5	2.2	2.1	0	398	289	612	7.4	<17	1	1.1	Collected Mar. 11, 1952.
22	36	0.0	1.00	1.00	104	33	2.0	297	297	297	0	0	34	6.5	2.2	2.1	0	398	289	612	7.4	<17	1	1.1	Collected Mar. 11, 1952.
23	36	0.0	1.00	1.00	104	33	2.0	297	297	297	0	0	34	6.5	2.2	2.1	0	398	289	612	7.4	<17	1	1.1	Collected Mar. 11, 1952.
24	43	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
25	43	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
26	43	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
27	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
28	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
29	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
30	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
31	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
32	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
33	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
34	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
35	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
36	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
37	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
38	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
39	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.
40	36	0.0	1.00	1.00	136	12	7.3	85	85	85	0	0	22	14	5	7.9	0	384	123	625	7.4	<19	39	1.1	Sediment in sample.

1. In solution when analyzed. 2. Calculated. 3. Includes any material present as sediment.

Attachment 6:

**NMBMMR paper excerpt describing available data
for water radioactivity in the Lightning Dock area.**

**Summers W.K., 1976,
Catalog of thermal waters in New Mexico.
Hydrological Report 4
New Mexico Bureau of Mines and Mineral Resources
pp. 15-18.**

1952
Richard Austin

Catalog of Thermal Waters in New Mexico

by L. S. STUBBS

Highlighted text shows uranium and radium values for the Lightning Dock area.



HYDROLOGIC REPORT 4 New Mexico Bureau of Mines & Mineral Resources 1976
A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Beep-beep signals 15.2 and 21 (from walkie-talkie)
 Radio 4.1 and 21 (from walkie-talkie)
 Uranium 1.5; all mg/l

About 60 gpm are taken from the spring and delivered to Campbell's ranch and trading post. The water provides both heat and water to the ranch, the trading post, and several mobile homes.

TABLE 1. MEASUREMENTS FOR TEMPERATURE, ALTITUDE, AND TOTAL DISSOLVED SOLIDS CONCENTRATION IN PERMITS

Permit No.	Date	Altitude (ft)	Temperature (°F)	Total Dissolved Solids (ppm)
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480
214	12-11-72	10,670	96.0	480

• MEASUREMENTS FOR TEMPERATURE, ALTITUDE, AND TOTAL DISSOLVED SOLIDS CONCENTRATION IN PERMITS

LYONS HUNTING LODGE HOT SPRINGS (13S,13W,10,121)

These springs are in Grant County on the East Fork Gila River and probably correspond to those mentioned by Stearns, Stearns, and Waring (1937, p. 169), and Waring (1965, p. 38) as being in sec. 3, T. 13S., R. 13 W. Thermal water discharges in about three distinct locations and if reports are correct, at a possible fourth location.

1) Upstream approximately 100 yards from the Lyons Hunting Lodge—a pipe set into a fracture in basalt and cemented in, conducts water from the fracture to a small swimming pool. This spring is named in this report the Swimming Pool Spring. Table M1 contains the chemical analysis of a water sample collected at the tap in the 2-inch line, about 4 ft from the natural outlet. The measurements given in table 2 were also made at the tap. The temperature of the water in each cascade was more than 90°F. Trauger (1972) collected a water sample from the Swimming Pool Spring on June 21, 1957; table M1 contains an analysis of this sample.

2) About 100 yards downstream from the Lodge in the bed of the East Fork Gila River—This spring is named in this report East Fork Spring.
 3) Approximately one quarter mile up a narrow canyon from the East Fork Spring, water discharging from fractures in basalt—a collection system conduces the water to a central pipe that delivers it to the Lyons Hunting Lodge. These springs are named in this report the Water-Supply Springs. The water cascades into view at 3 distinct points from vertical

fractures in rhyolite, rhyolite tuff, and rhyolite breccia. Andesite and basalt also occur in the steep-walled canyon. A fourth outlet is not a cascade but a seep from a gravel cover at the base of the fractures. These springs are 20 to 30 ft above a small stream that runs in the canyon above. The collection pipe is about 50 ft above the East Fork Spring at the mouth of the canyon. The uppermost discharge may be as much as 100 ft above the East Fork Gila River.
 Water-Supply Springs were sampled at 3 points, upstream, midway and downstream. Table M1 contains a partial chemical analysis of these samples. The observations reported in table 2 are of a necessity for water at the central collection point or at a cascade point, because the cascade begins at an altitude well above that which could be reached easily; in some instances, as much as 20 ft above the most accessible level.

4) According to D. A. Campbell, another spring lies in a small canyon upstream from the Swimming Pool Spring, about one quarter of a mile north of the East Fork Gila River. No effort was made to locate this spring.

The chemical analyses of waters which range in temperature from 96° to 126°F show only superficial differences and that the water contains about 400-500 ppm total dissolved solids.

NO NAME SPRING, EAST FORK GILA RIVER (13S,13W,10,200)

Because of the inadequacy of the existing maps, the location of this spring can only be approximated to half a mile east of the Lyons Hunting Lodge. The spring discharges about 31 gpm at 106°F from fractures in rhyolite tuff. The outlet for the discharging water occurs over an elevation range above the river. Table 2 contains the measurements made at the spring; the chemical analyses (table M1) show that this water contains less than 400 ppm total dissolved solids.

NO NAME SPRING (13S,13W,20,430)

This spring was noted by Stearns, Stearns, and Waring (1937, p. 169) and Waring (1965, p. 38). It is on the east bank of the main stem of the Gila River in the Gila Wilderness, Grant County. The spring discharges 20 gpm at 112.5°F from beneath a talus cover 20 to 40 ft above the elevation of the river, cascading to the river. The talus covers a rhyolite—diorite rock among several in a complex fault zone.

CLIFF-GILA-RIVERSIDE AREA

In T. 15 and 16 S., R. 17 W., an area roughly bounded by the communities of Cliff, Gila, and Riverside Springs and wells yield water with temperatures ranging from 68° to 92°F. In the immediate area of Riverside temperatures range from 85° to 90°F. Fig. 3, a map showing the location of some springs and wells, gives the temperature of the various sources (Trauger, 1972). The only well sampled during the 1965-1966 irrigation was well 15S,17W,27,11. The temperature was 95°F (March 1, 1966). This well was drilled to 300 ft, but only

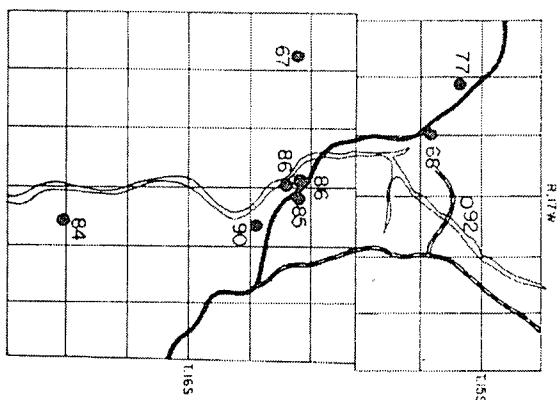


FIGURE 3. MAP OF CLIFF-GILA-RIVERSIDE AREA, GRANT COUNTY, SHOWING THE LOCATIONS OF WELLS AND SPRINGS IN THE SOUTHWESTERN PART OF THE AREA.

200 ft of 8-inch casing were installed. The casing is perforated from 75 to 85 ft and from 170 to 180 ft. The drifter reported that water-yielding rocks is a coarse sand and gravel. Trauger (1972) measured the water level in July, 1962, and found it 17.5 ft below the land surface. The water-bearing formation at this site is reported to be the Gila Conglomerate; however, it may be more recent alluvium or terrace gravels.

Trauger (1972) made the following comments about water from other wells in the area:

Wells	Depth (ft)	Comment
1125	145 (13W,27,21)	well casing of soda and silts from first 100 ft had a high concentration of brine
1129	153 (13W,2,13)	water unusable because of mineral content
1544	145 (17W,10,13)	water unusable because of mineral content

The chemical analyses of water from the area (table M2) show that the water contains less than 500 ppm total dissolved solids and is richer in fluoride and silica than the nonthermal water of Grant County as reported by Trauger.

According to Trauger (1972, p. 21) the Cliff-Gila-Riverside area is in the Mangas Tranche, a northwest-trending structural trough, which is in the transition zone between the Basin and Range Province to the south and the Colorado Plateau Province to the north.

ANIMAS VALLEY

WELL (22S,21W,3,112)

This well was drilled in 1946 for stock use. Records in the files of the State Engineer indicate that on June 14, 1955, the water level was 415.65 ft below land surface and that the temperature of the discharging water was 95°F. This well was reported by Reeder (1957, p. 73), Hood and Kiser (1963, p. 46 and 55) cited in one of those that produce saline water. They gave the temperature as 85°F on July 8, 1955. An attempt was made on June 20, 1966, to measure the temperature and to collect a water sample. The discharge rate was slow, less than 10 gallons per hour, and only a token sample could be collected. The maximum temperature observed was 88.5°F. However, the air temperature at depth was 92° and 80°F, so the water temperature at depth must be somewhat greater.

Hood and Kiser reported the following:

HCO ₃	471 ppm
Cl	102 ppm
Hardness as CaCO ₃	128 ppm
Specific conductance	1,590 micromhos per 25°C
pH	7.8

The sample collected in June 1966 produced the following results:

Na	94 ppm
K	2.1 ppm
Ca	265 ppm
Mg	6.9 ppm

HOT WELLS (25S,19W,7,000)

In 1948, irrigators began developing the Lower Animas Valley as a cotton-producing region. Several wells were drilled in the valley. In 1946, one well struck steam (fig. 4) at 88 ft. One report in the State Engineer's files says the temperature of the discharging water was 240°F. By 1955, two other wells drilled within 100 yards of this well also produced steam at a shallow depth.

In 1955, Kinsinger (1956) made a study of the area around these wells. He drilled a series of holes to a depth of one meter, filled them with sand, showed a thermometer probe through the sand, permitted it to stabilize, and then recorded the temperature at the one-meter depth. His work (fig. 5) shows that the maximum anomaly is located in the center of NW/4SE/4, sec. 7, T. 25 S., R. 19 W.

Reeder (1957, p. 25), as part of a thorough discussion of ground water in the Animas Valley, said:

"Ground water in the Animas Valley... was discovered in well 25, 19, 2, 214, which is 95 feet deep. Water in this well is a few degrees above the boiling point for the altitude and at all times it bubbles and appears to boil. This is especially so when the water in the well is agitated."

Later in the same paragraph he says:

"Water from well 25, 19, 2, 214, which is half a mile to the west of the well 25, 19, 2, 214, has a temperature of 98°F. Water from well 25, 19, 2, 214, depth 74 feet, about 6/8 mile west of well 25, 19, 2, 214 has a temperature of 85°F. Other areas may exist in which hot water occurs relative to the surface."

Strangway and Hofner (1966) made an airborne

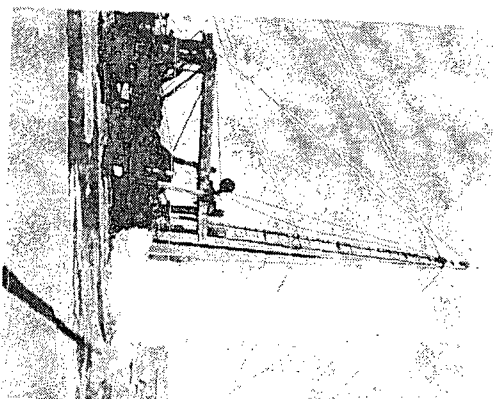


FIGURE 4. DRILLING FIRST HOT WELL (255, 19W-724) IN ANIMAS VALLEY, HIDALGO COUNTY.

infrared survey in the area of the thermal anomaly.

The airborne profile presented on the infrared detector is shown in Figure 1 and included in this report together with Kintzinger's ground temperature data. This temperature difference close to the

evaporator scale so that the peak anomalies were not detected. It should be noted, however, that the flight was conducted 2000 feet above the terrain and yet the apparent temperature difference was quite distinct. Estimating the thermal conductivity of the ground, the heat flow from the ground is approximately 6 x 10¹⁰ cal/cm² per sec.

Kintzinger estimated a power flow of approximately 7500 kw for the area enclosed by the 18°C contour line.

Color photos taken from the air by W. K. Summers during January 1966 and by Shirley A. Colgate during March 1966 reveal that in the area of the thermal anomaly identified by Kintzinger, the vegetation becomes green much earlier than the vegetation surrounding the anomaly.

The thermal anomaly lies west of the southern part of the Pyramid Mountains and along the eastern edge of the Lower Animas Valley. Flegel (1959, p. 21) says:

The Pyramid Mountains are a linear north-south range about 22 miles long. The width, which ranges from 3 to 7 miles, averages about 5 miles. Lower Animas Valley, bounded 15 miles to the west by the Pedernales Mountains, is a typical desert basin in the part and slopes gently upward toward the mountains. An alluvial fan, which has a total area of 15 square miles, is located in the eastern part of the valley. Lake Animas, which is thought to be contemporaneous with glacialation in North America, was mapped and studied by Schuchman (1918, p. 86-88). Study of the different deposits of the lake filled rather quickly and that the rocks ranging in age from Cretaceous to late Tertiary. Basalt flows, which are common in the lower Animas Valley about 15 miles west and south of the anomaly.

Figure 6 is a geologic map of the immediate thermal anomaly after Spiegel (1957) and Flegel (1959). Wells at the anomaly penetrate a red rhyolite welded tuff that

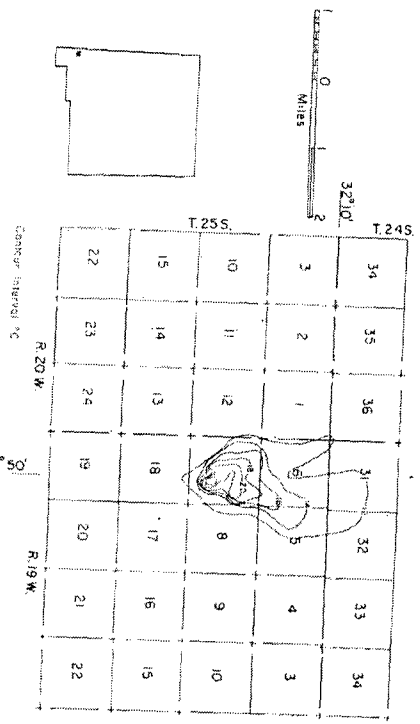


FIGURE 5. TEMPERATURE AT X DEPTH OF INSECTER AROUND HOT WELLS (255, 19W-7200) ANIMAS VALLEY, HIDALGO COUNTY (after Kintzinger, 1959).



FIGURE 6. GEOLOGIC MAP OF THE ANIMAS VALLEY IN THE VICINITY OF THE THERMAL ANOMALY, HIDALGO COUNTY.

fits the description of a rhyolite welded tuff observed by Flegel (p. 14-15) in outcrops both north and south of the anomaly in the Pyramid Mountains. At the anomaly, the rock is highly siltified. One attempt to drill a deep test well produced the following log: 0-85 ft sand, gravel and clay; 85-157 ft red, siltified rhyolite welded tuff. The driller reported using 3 rotary rhyolite welded tuff, 72 ft of siltified tuff. The rhyolite welded tuff is younger than pyroxene andesite (figs. 6 and 7). Detailed gravity data and driller's logs of water wells suggest that a fault with a vertical displacement of several (perhaps several thousand) feet exists between wells 255, 19W-7133 and 255, 19W-7234. Fig. 8 presents an east-west cross section of the anomaly. It is one interpretation of the data; other interpretations are equally possible.

An oil test (Cockell Corp., No. 1 Federal Pyramid) was drilled in the SW 1/4 sec. 31, T. 24 S., R. 19 W. The log of this well shows:

From	To	Description
0	4806	Yellow BE
1390	5795	Volcanics
5795	7130	Pyroxene andesite
7130	7394	Piedmont fan

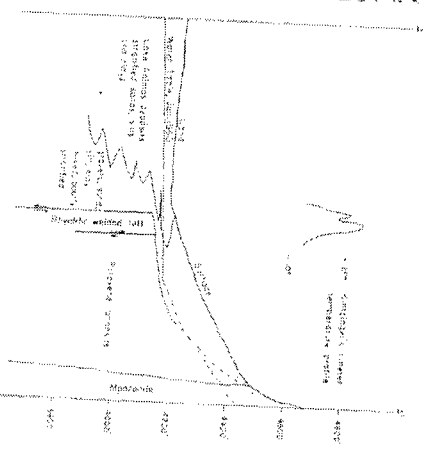


FIGURE 7. CROSS SECTION OF THERMAL ANOMALY, ANIMAS VALLEY.

Chavez, Carl J, EMNRD

From: Jamie Robinson [Jamie.Robinson@rasertech.com]
Sent: Friday, June 04, 2010 3:19 PM
To: Ben Barker; auldandy@hotmail.com; Phillips, Haddy L., OSE; Jackson, Charles L., OSE; mike_smith@blm.gov; Chavez, Carl J, EMNRD
Cc: Michael Hayter; Layne Ashton; rbageo@sbcglobal.net; Nick Goodman; delfortner@charter.net
Subject: 6/4 Drilling and COA updates for Lightning Dock 55-7

Good afternoon to everyone!

And update on drilling operations and COA milestones at Lightning Dock:

Drilling Plan

- Drilled through 1st plug-
- Currently are continued running into the hole, and drilling out cement plugs as outlined in the drilling plan.
- During an attempted airlift this morning, due to a mechanical failure, a small release of fresh water was released within the containment area. The amount of fluid released was less than 5 barrels and appropriate actions were taken to clean up the release. BLM was at the location this morning and did not observe anything to be out of place. We believe that there is no need for concern.

COA Milestones

-We note that the pump test is coming up within the next few weeks, and are working to closely track all COA's associated with that event.

I will be returning to Provo tomorrow, where I will continue to track our COA progress. John Escabel will be the local contact in my absence from the site. I will forward his contact information to everyone on Monday. Please feel free to contact either of us with questions or concerns.

Thanks,

Jamie

Jamie Robinson
Geologist
Raser Technologies
5152 N. Edgewood Drive
Provo, UT 84606
Office: 801.765.1200
Cell: 801.717.5563
jamie.robinson@rasertech.com

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, June 03, 2010 11:05 AM
To: Ben Barker
Cc: 'Layne Ashton'; Dade, Randy, EMNRD; Michael Hayter
Subject: Unlined Pit and Plans to Line it

Ben:

Sorry for not getting back sooner. Send me a basic work plan on what you want to do (nothing fancy).

OCD regulations on temporary pits is available from Part 17.

OCD regulations on permanent pits is available from Part 36.

See OCD regulations at <http://www.emnrd.state.nm.us/ocd/documents/20098-5currentrules-new17and39.pdf>.

OCD recommends at least a 40-mil thermally sealed temperature resistant (EPDM/CSPE-R) liner or other liner as proposed and approved by OCD.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Jamie Robinson [Jamie.Robinson@rasertech.com]
Sent: Tuesday, June 01, 2010 1:53 PM
To: Ben Barker; auldandy@hotmail.com; Phillips, Haddy L., OSE; Jackson, Charles L., OSE; mike_smith@blm.gov; Chavez, Carl J, EMNRD
Cc: Michael Hayter; Layne Ashton; rbageo@sbcglobal.net; Nick Goodman; delfortner@charter.net
Subject: 6/1 Drilling and COA updates for Lightning Dock 55-7
Attachments: image001.jpg; image002.jpg; image003.jpg

Good afternoon to everyone!

My name is Jamie Robinson, and I'm the geologist with Raser Technologies. I've also been tasked with being the compliance officer on the Lightning Dock 55-7 re-entry project. I'll be emailing you a brief update, highlighting where we are at COA's milestones we have reached.

If you have any questions, please don't hesitate to contact me. You can reach me by email jamie.robinson@rasertech.com, or by cell 801.717.5563

Drilling Plan

- Successful BOP test
- Ran into the hole, tagged at 1378 ft
- Circulated the hole
- Currently [are continued running into the hole, and] drilling out cement plug{s} as outlined in the drilling plan.

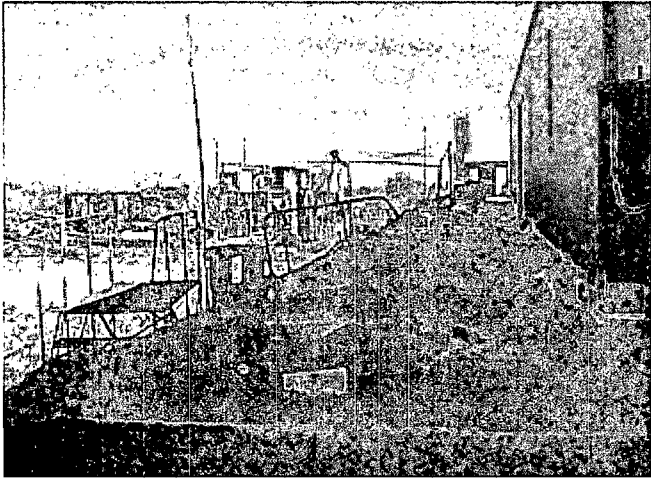
COA Milestones

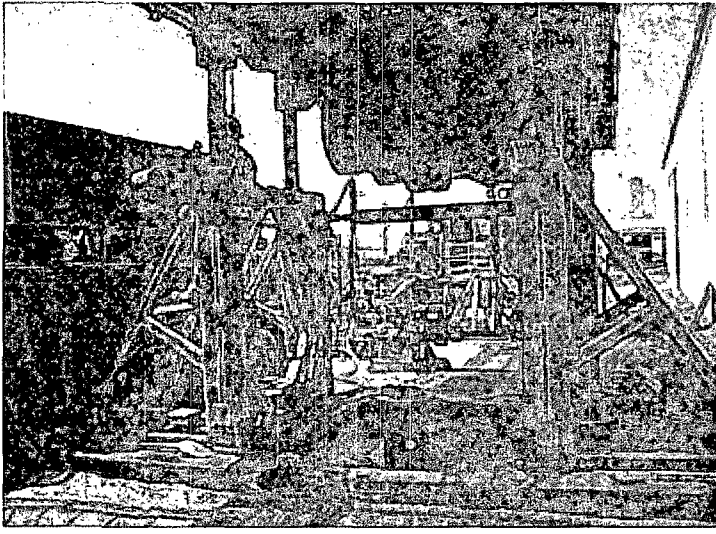
- BLM #1 (well sign) has been met. Required information has been posted at a conspicuous location at the well site 5/27/10.
- BLM #8 (dust control) is being monitored daily. The crew is very conscious of dust control, and has utilized the water truck for onsite dust control as necessary.
- BLM #9 (notification) for notification 5 days prior to beginning of operations has been met. Del Fortner contacted the LCDO on the 5/21/10 and a pre-spud meeting was held the 05/27/10.
- BLM #11 (limited light noise) is being monitored nightly. Light noise has been to those required to safely conduct operations in immediate work area.
- OSE #1 (licensure) has been met. Barbour is licensed in the State of New Mexico in accordance with N.M. State. Ann. 72-12-12 (1998 Repl.).

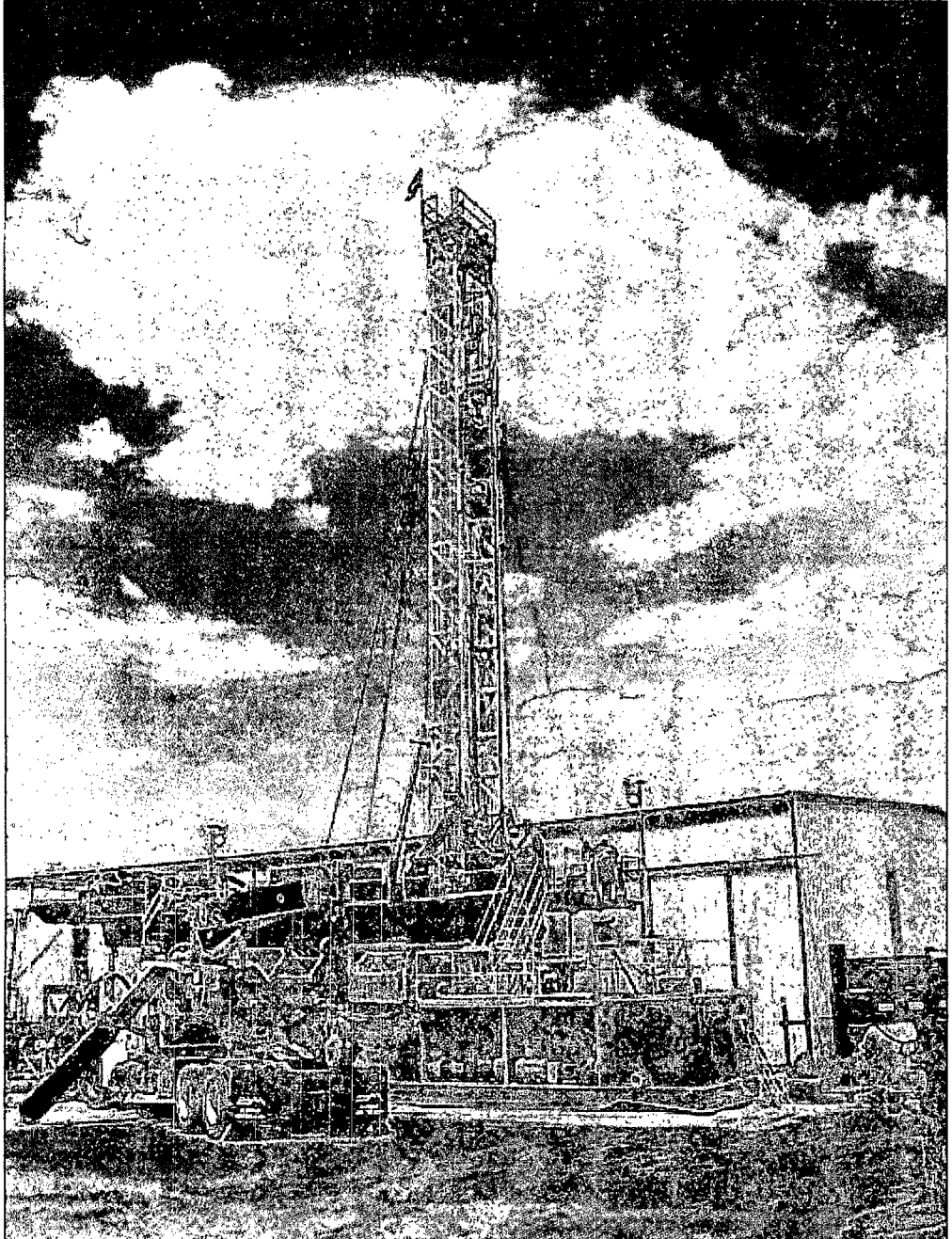
Thanks,

Jamie

Jamie Robinson
Geologist
Raser Technologies







Chavez, Carl J, EMNRD

From: Gray, Darold, EMNRD
Sent: Tuesday, June 01, 2010 8:24 AM
To: Sanchez, Daniel J., EMNRD; Chavez, Carl J, EMNRD
Subject: FW: BOPE test chart
Attachments: scan0001.jpg

Friday, I spoke to Andy Auld. He said they had the go-ahead from BLM to start some work on the well. They were going to put the well head on, and flange up the BOP and get that tested. He has sent me a copy of the chart from the BOP test. The only reason he called me is because he felt that he should let someone know what they were doing, and I was the only one that would answer my phone.

If you need more info, I can contact him, or I can provide you with his phone number. Andy is the onsite representative for Razer.

From: andy auld [mailto:auldandy@hotmail.com]
Sent: Saturday, May 29, 2010 9:13 PM
To: Gray, Darold, EMNRD; mike-smith@blm.gov; Ben Barker; Steve Harman
Subject: RE: BOPE test chart

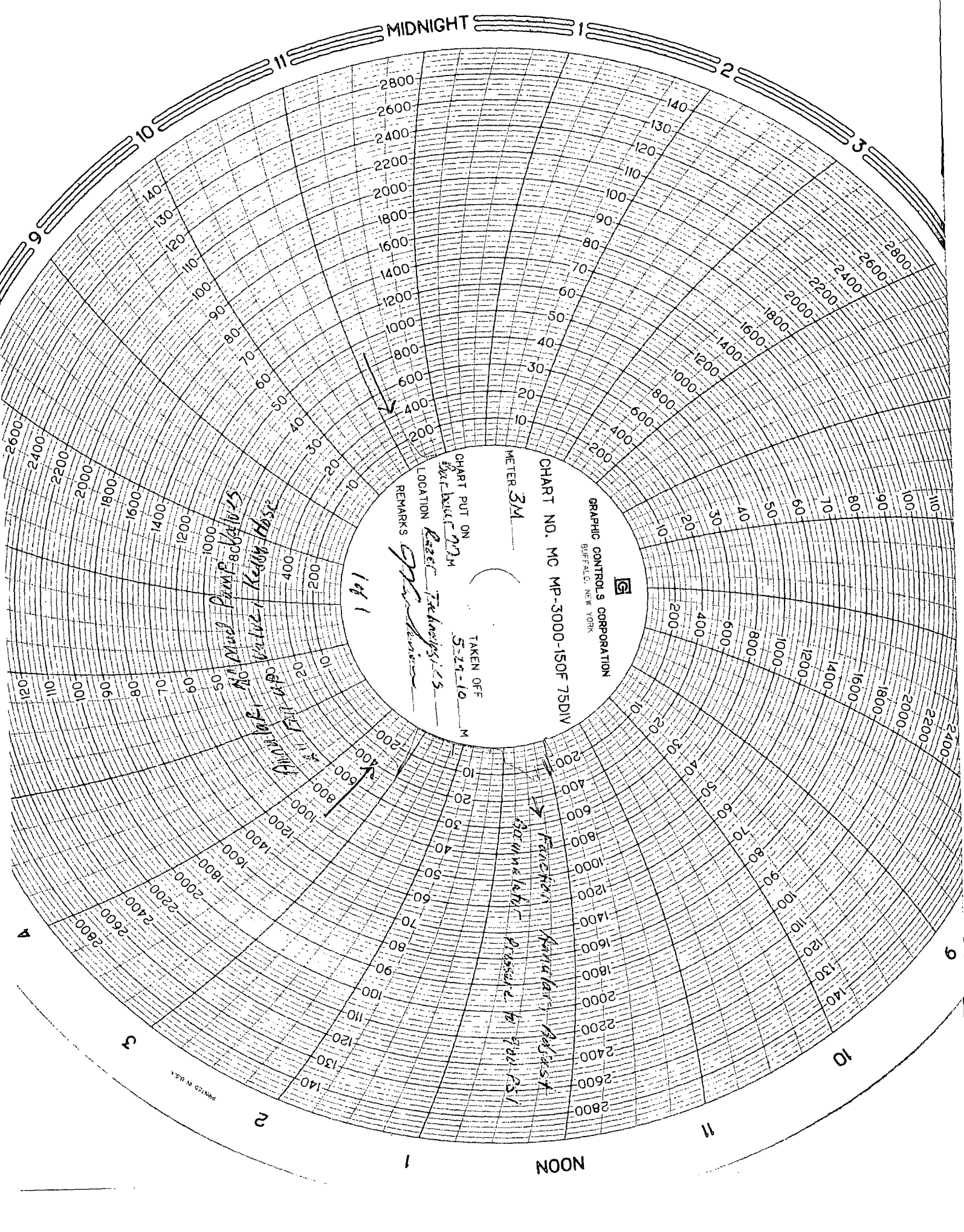
Sorry, this time attached. Thanks Andy

From: auldandy@hotmail.com
To: darold.gray@state.nm.us; mike-smith@blm.gov; ben.barker@rasertech.com;
steve.harman@rasertech.com
Subject: BOPE test chart
Date: Sat, 29 May 2010 20:06:41 -0700

HI everyone, here is scan of test chart for Lighting dock TFD 55-7. Tested annular to 250psi for 30min. tested O.K. Thanks Andy Auld/ Co. site representative.

Hotmail has tools for the New Busy. Search, chat and e-mail from your inbox. [Learn more.](#)

The New Busy is not the old busy. Search, chat and e-mail from your inbox. [Get started.](#)



MIDNIGHT

NOON

GRAPHIC CONTROL S CORPORATION
BUFFALO, NEW YORK

CHART NO. MC MP-3000-150F 75DIV

METER 3M

CHART PUT ON
DATE 11-11-73

TAKEN OFF
5-27-10

LOCATION
Rizer Technology, Inc

REMARKS

1st 1

5000 Hz
1000 Hz
500 Hz
250 Hz
125 Hz
62.5 Hz
31.25 Hz
15.6 Hz
7.8 Hz
3.9 Hz
1.9 Hz
0.9 Hz
0.5 Hz
0.25 Hz
0.125 Hz
0.062 Hz
0.031 Hz
0.015 Hz
0.007 Hz
0.004 Hz
0.002 Hz
0.001 Hz

Frequency
Wavelength
Impedance

PRINTED IN U.S.A.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, May 04, 2010 3:03 PM
To: Reeves, Jacqueta, EMNRD; Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD
Cc: Fesmire, Mark, EMNRD
Subject: FW: Raser Project & API# (GTHT-001) TFD 55-7 G-101, 102 & 103 Forms

FYI.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

-----Original Message-----

From: Mike_Smith@blm.gov [mailto:Mike_Smith@blm.gov]
Sent: Tuesday, May 04, 2010 12:50 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Project & API# (GTHT-001) TFD 55-7 G-101, 102 & 103 Forms

Thanks Carl - this answers my questions regarding water quality.

Regarding wildlife - we will be requiring fencing too. Our Biologist is not going to allow netting, he claims it traps birds and bats. We are thinking of requiring streamers (which our bio says will break up the bird's view so they don't recognize the pit as a body of water) or the commercial "bird balls". I have talked to Layne Ashton about this, and Raser Tech is researching bird balls to see if they are sufficiently dense HDPE to withstand the expected temperatures. I am working with the BLM biologist on final avian protection measures. Once these are done, I will finalize the Federal COA.

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
Mike_Smith@blm.gov

"Chavez, Carl J,
EMNRD"
<CarlJ.Chavez@state.nm.us>
05/04/2010 07:49 AM
To
<Mike_Smith@blm.gov>, "Reeves,
Jacqueta, EMNRD"
<Jacqueta.Reeves@state.nm.us>
cc
"Dade, Randy, EMNRD"
<Randy.Dade@state.nm.us>,
"VonGonten, Glenn, EMNRD"
<Glenn.VonGonten@state.nm.us>
Subject
RE: Raser Project & API# (GTHT-001)

Re:

2) Closed-loop system work over wastes must not be discharged into the unlined pit. [drill cuttings and associated fluids must not be discharged into the unlined pit]

3) All water quality sampling and laboratory methods must be in accordance with the terms and conditions of the discharge permit (GTHT-001) and any discharge from the well to the unlined 170' x 170' x 12' pit must be approved by OCD-EB in advance of any discharge to the pit. OCD will approve the discharge of formation fluids that meets the greater of background and/or 20.6.2.3102 NMAC. Raser must document the back annulus quality of the ground water to OCD's satisfaction. [Yes, if the conditions are not met in this provision, the operator must cease operations and propose another solution to the problem for OCD consideration. OCD requires sampling during the rework to determine the condition of the ground water before pumping can be approved.]

Please find OCD-EB's responses to BLM questions provided above.

As an FYI, OCD discharge permit condition 11(C) (Below-Grade Tanks/Sumps and Pits/Ponds) related to migratory birds states:

"The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted or otherwise rendered non-hazardous to wildlife, including migratory birds. Where netting is not feasible, routine witnessing and/or discovery of dead wildlife and migratory birds shall be reported by the owner/operator to the appropriate wildlife agency with notification also provided to OCD in order to assess and enact measures to prevent the above from reoccurring."

Please contact me if you have questions. Let me know if you need a copy of the discharge permit. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

-----Original Message-----

From: Mike_Smith@blm.gov [mailto:Mike_Smith@blm.gov]
Sent: Monday, May 03, 2010 10:35 AM
To: Reeves, Jacqueta, EMNRD
Cc: Chavez, Carl J, EMNRD
Subject: RE: Raser Project & API# (GTHT-001) TFD 55-7 G-101, 102 & 103 Forms

Jacqui:

I apologize for the delay in returning your message. I have reviewed the OCD's Conditions of Approval for the 55-7 well, and I just have one question regarding OCD COA 3#. This OCD COA states that "OCD will approve the discharge of formation fluids that meets the greater of background and/or 20.6.2.3102 NMAC ". During review of this project, questions came up from the BLM biologist as to what would happen applicable standards were exceeded. What exactly does this approval process mentioned in OCD stipulation #2 mean? Would OCD require shut-down of the pump test until mitigations are formulated?

The other major issue the BLM biologist bought up was migratory bird protection. We are formulating bird protection measures which will be included as a BLM COA.

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
Mike_Smith@blm.gov

"Chavez, Carl J,
EMNRD"
<CarlJ.Chavez@state.nm.us> To
"Reeves, Jacqueta, EMNRD"
<Jacqueta.Reeves@state.nm.us>
04/22/2010 10:32 AM cc
"VonGonten, Glenn, EMNRD"
<Glenn.VonGonten@state.nm.us>,
"Dade, Randy, EMNRD"
<Randy.Dade@state.nm.us>, "Sanchez,
Daniel J., EMNRD"
<daniel.sanchez@state.nm.us>,
<mike_smith@blm.gov>
Subject
RE: Raser Project & API# (GTHT-001)
TFD 55-7 G-101, 102 & 103 Forms

(Embedded image moved to file: pic18813.gif) By receipt of this e-mail and with communication to the BLM on the OCD's approval with conditions for the proposed TFD 55-7 work, please find attached the OCD draft conditions for the BLM to consider for their approval or disapproval of the well workover, etc. Mike Smith is welcome to contact me directly for any input into the conditions by the OCD for our joint communication.

Thanks Jacqui.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Reeves, Jacqueta, EMNRD

Sent: Thursday, April 22, 2010 9:44 AM

To: Chavez, Carl J, EMNRD

Cc: VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD; Sanchez, Daniel J., EMNRD; mike_smith@blm.gov

Subject: RE: Raser Project & API# (GTHT-001) TFD 55-7 G-101, 102 & 103 Forms

Carl,

Since this is a federal well I need to have a BLM approval before I assign an API #. I talked to Mike Smith with the BLM and the GDP submitted is still being reviewed. Hopefully it will be signed off on sometime next week. It is this districts policy to have BLM wells approved by the BLM before an API # is assigned. Mr. Smith will let me know as soon as the GDP for this well is approved and then I will assign the API #.

From: Chavez, Carl J, EMNRD

Sent: Thursday, April 22, 2010 7:01 AM

To: Reeves, Jacqueta, EMNRD

Cc: Ben Barker; Layne Ashton; Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD

Subject: Raser Project & API# (GTHT-001) TFD 55-7 G-101, 102 & 103 Forms

Jacqueta:

Can I expect to receive the new API# by tomorrow? Please share the API# with copied Ben Barker and Layne Ashton so they may move forward with the bond submittal. Once OCD-EB has reviewed the bond and issued an approval letter, OCD Artesia will need to sign the G-Forms for the Administrative Record and this will authorize Raser to begin the project under OCD requirements....

OCD-EB has conditions for approval of the TFD 55-7 work.

Please contact me if you have questions. Thanks.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Dept.

Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505

Office: (505) 476-3490

Fax: (505) 476-3462

E-mail: CarlJ.Chavez@state.nm.us

Website: <http://www.emnrd.state.nm.us/ocd/index.htm>

(Pollution Prevention Guidance is under "Publications")

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[attachment "TFD 55-7 Well Workover 4-22-2010.doc" deleted by Mike Smith/LCFO/NM/BLM/DOI] Confidentiality Notice: This e-mail, including all attachments is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited unless specifically provided under the New Mexico Inspection of Public Records Act. If you are not the intended recipient, please contact the sender and destroy all copies of this message. -- This email has been scanned by the Sybari - Antigen Email System.

FedEx Kinko's

FedEx Kinko's
730 Saint Michaels Dr Ste 3E
Santa Fe, NM 87505-7661
(505) 473-7303

Order Date: 04/13/2010 Branch: 0463
Order Time: 06:36:00 Register: 07
Pickup Date: 04/13/2010
Pickup Time: 12:00
Team Member: Justin F.



04630122B1

Customer: Ben Barker
Account: RASER TECHNOLOGIES

Project Name:
8.5x11 34.45
 1 @ 49.21
FS BW SS Standard 262 @ 0.10
FS C SS 8.5x11/14 39 @ 0.59

Deposit 0.00

Sub-Total 49.21
Discount 14.76

Tax 2.77

Total Amount 37.22



04630122B1

This is not a receipt
All prices shown are estimates

Thank you for visiting

FedEx Kinko's
Make It. Print It. Pack It. Ship It.
www.fedexkinkos.com



Due Date: 4/13/2010 12:00

Taken By: Justin F.
Delivery: N

Order Date: 04/13/2010
Order Time: 06:36

Ship By: 4/13/2010
Producing Store: 0463 / Santa Fe NM St Michaels

Project 1 of 1
Quantity: 1

8.5x11



534262F3F42DC78D0000

Section 1 of 2 (Page Range: Document)



BW Pages



700BBAF2BB381CF00000

Size: 8.5x11
Paper Code: W-White
Sides: 1:1
Orientation: Portrait
Original Count: Actual
Number of Originals: 262

Scaling Option: Not Applicable
Paper Type: Standard
Color Type: Black and White
Service Type: Full Service.
Source:

No Sources Added

QC Complete:

Section 2 of 2 (Page Range: Exception color pages)



Color Pages



BF7775DAD3040A8E0000

Size: 8.5x11
Paper Code: LZ-Laser White
Sides: 1:1
Orientation: Portrait
Original Count: Actual
Number of Originals: 39

Scaling Option: Not Applicable
Paper Type: Standard
Color Type: Color
Service Type: Full Service.
Source:

No Sources Added

QC Complete:

Final QC: --
Customer: **Barker, Ben**
Phone: (707) 838-0238

Status: --
Account:
RASER TECHNOLOGIES
Account #: 04450845490000

CWD : **No**
of Bags: 0
of Boxes: 0
Bin #: --



Review Sample Approval Form

Thank you for your order!

We appreciate your business and your satisfaction is a priority for us! This is your opportunity to evaluate a review sample of your document and review how the finished document will appear before it is produced.

FedEx Office - 730 SAINT MICHAELS DR - Ste 3E - Santa Fe, NM 87505 - (505) 473-7303 - usa0463@fedexkinkos.com

Confidential

General	Date		# of Pages (incl. cover)	
	To		From	
	Phone	()		Lead Project Coordinator
	Fax		RE: OTP Job #	

Revision Info	Proof #	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> Other: _____
	<input type="checkbox"/> Reduced/Enlarged Proof:	The review print image is not actual size based on the size indicated on your job.			
	Your job will be produced at the following actual size:	H x	W		

Please note: _____


Instructions	As you review, please carefully examine your document for:
	<ul style="list-style-type: none"> • Color* • Graphics • Punctuation • Formatting/Visual Clarity • Page Order • * If your document contains color, FedEx Office <i>highly recommends</i> you review a full-color proof in-person. • Page Count • Fonts • Correct Spelling • Margins <p>Once you complete the next section and return this form, your FedEx Office Lead Project Coordinator will evaluate your order's completion time based on your edits, if any.</p>

Review Feedback	Please provide feedback and instructions to proceed:
	<input checked="" type="checkbox"/> GO: I have reviewed the sample output of the job and am satisfied with its quality. I authorize FedEx Office to output the remainder of my order at the agreed-upon specifications. <input type="checkbox"/> OK WITH CHANGES: I authorize FedEx Office to make the noted minor changes to the review print and output the entire job according to the agreed-upon specifications, without any additional review prints for my approval. <input type="checkbox"/> NEW REVIEW PRINT REQUIRED: Please make the noted changes and send another review print. <input type="checkbox"/> REVIEW WAIVED (not recommended): I choose not to review a review print. Please complete the job as indicated on the Job Ticket. <i>email waived</i> <i>4/13</i> Customer Signature _____ Date _____

Internal Use Only	This proof was printed on:	Custom Settings:
	<input type="checkbox"/> Dig. Clr: <input type="checkbox"/> Ovs Clr: <input type="checkbox"/> Dig. B&W: <input type="checkbox"/> Ovs B&W: <input type="checkbox"/> Other:	Production Op: File Name (Source): File Name (PDF):

File Location: DPW Customer Media Document Creation:

707-508-9963 mobile

 TDF 55-7 logs and abandonment files.pdf	<p>Name: TDF 55-7 logs and abandonment files.pdf Type: Portable Document Format (application/pdf) Encoding: base64 Description: TDF 55-7 logs and abandonment files.pdf Download Status: Not downloaded with message</p>
---	---

Subject: Print jobs for delivery, message 1 of 2

Date: Mon, 12 Apr 2010 21:19:50 -0600

From: Ben Barker <Ben.Barker@rasertech.com>

To: usa0463@fedex.com

CC: Layne Ashton <lashton@rasertech.com>

This is the first of two email orders. This is for 4 copies each of 3 files.

Please print 4 copies each of the attached files for local delivery before 10:30 a.m. Tuesday, April 13.

No proof copies are needed.

Please charge this to our corporate account, Raser Technologies, 2803-2084-6.

The recipient is:

Mr. Carl Chavez

New Mexico Energy, Minerals and Natural Resources Department

Oil Conservation Division

Wendell Chino Bldg.

1220 South St. Francis Drive, Third Floor

Santa Fe, NM 87505

Please call any time with questions.

Thanks,

Ben Barker

VP Resource Management


Raser Technologies


5152 N. Edgewood Drive


Provo, UT 84604

707-838-0238 home/office

707-508-9963 mobile

 G-101LDGv4sgn.pdf	Name: G-101LDGv4sgn.pdf Type: Portable Document Format (application/pdf) Encoding: base64 Description: G-101LDGv4sgn.pdf Download Status: Not downloaded with message
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 G-102LDGv3sig.pdf	Name: G-102LDGv3sig.pdf Type: Portable Document Format (application/pdf) Encoding: base64 Description: G-102LDGv3sig.pdf Download Status: Not downloaded with message
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 G-103LDGv4sgn.pdf	Name: G-103LDGv4sgn.pdf Type: Portable Document Format (application/pdf) Encoding: base64 Description: G-103LDGv4sgn.pdf Download Status: Not downloaded with message
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132

8

4

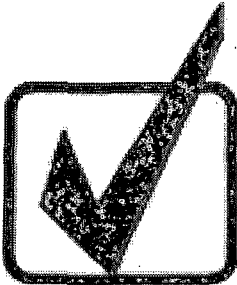
144 B+W

Account: **RASER TECHNOLOGIES**
Customer: **Ben Barker**

Phone: (707) 838-0238

Order Number: 04630122B
Order Date: 04/13/2010
Order Time: 06:36
Taken By: Justin FOrder Due Date: 04/13/2010
Order Due Time: 12:00
Ship By: 04/13/2010
Originating Store: Store 0463

QC Approval Date: 04/13/2010



We have completed your order according to your instructions. In the event your order was not completed in accordance with your expectations, please notify us immediately.

We appreciate your business and look forward to meeting your needs in the future.

Center Manager

Team Member Initials**Date/Timestamp**Customer Consultant: Justin F 04/13/2010 06:36

I took your order and repeated back your instructions.

Production Project 1 : 8.5x11

BW Pages Operator: Justin F 04/13/2010 06:43

I checked all previous work and produced your order according to the instructions.

Color Pages Operator: Justin F 04/13/2010 06:43

I checked all previous work and produced your order according to the instructions.

Final Quality Check: Justin F 04/13/2010 06:43

I checked all previous work and produced your order according to the instructions.

To the best of my knowledge, this order meets your expectations.

EXLOG R.F. SMITH CORP. SMITH GEOTHERMAL DATA LOG

COMPANY Stean Resource Corp.
 WELL Ant-25-55-7
 FIELD 11-1-10-10-10
 COUNTY Hidalgo STATE New Mexico
 LOCATION 11-1-10-10-10-10
 ELEVATION 1211 TO 1211
 CONTRACTOR/RIG Hill Brothers
 SPUD DATE 12/29/81 TO DATE 1/11/82
 TO 700' TRUE VERT. DEPTH
 BOTTOM HOLE LOCATION
 WELL STATUS
 COMPANY REPRESENTATIVE Chris Fay

HOLE SIZE	CASING RECORD
10	30" at 10'
2 1/2" to 1 1/2"	20" at 160'
1 1/2" to 1 1/2"	11-3/4" at 107'
10	at
10	at
10	at

LITHOLOGY SYMBOLS

SECONDARY MINERALS:
 O - QUARTZ
 C - CALCITE
 P - PYRITE
 S - SIDERITE

TESTED ZONES

LOST CIRCULATION ZONES

MISC. REMARKS

LOG INTERVAL

DATE LOGGED 12/29/81 TO 1/11/82
 DEPTH LOGGED 56' TO 700'
 MUD DRILLING 56' TO 700'
 AIR DRILLING
 TEMPERATURE INSTRUMENT TYPE Thermocouples
 PRESSURE INSTRUMENT TYPE
 GAS TRAP - AGITATOR ELEC AIR
 LOG SCALE 1:62 UNIT NO. 131
 LOG PREPARED BY Arnold A. Hernandez

ENTRIES - WATER/STEAM

LOST CIRCULATION ZONES

MISC. REMARKS

TEMPERATURE °C °F IN - OUT
PRESSURE KSC PSI IN - OUT
LOSS/GAIN M BBL S
METHANE ppm
ETHANE ppm

DEPTH	TEMPERATURE	PRESSURE	LOSS/GAIN	METHANE	ETHANE
0					
10					
20					
30					
40					
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
170					
180					
190					
200					
210					
220					
230					
240					
250					
260					
270					
280					
290					
300					
310					
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610					
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630					
640					
650					
660					
670					
680					
690					
700					

DEPTH	TEMPERATURE	PRESSURE	LOSS/GAIN	METHANE	ETHANE
0					
10					
20					
30					
40					
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
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670					
680					
690					
700					

LITHOLOGY DESCRIPTION AND REMARKS

Notes: Secondary minerals expressed in direct percentages, w/w, less than 1% greater than 1%.

Notes: Set 30" surface conductor at 30' spud in on 12/29/81 w/ 17 1/2 bit. 2 1/2" hole opened, begin logging 1/56'.

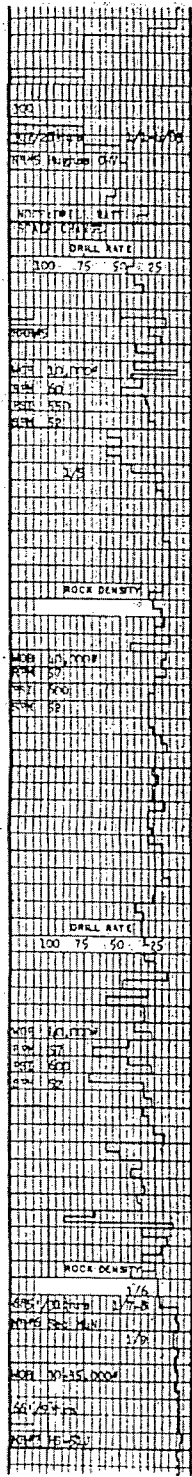
Alluvium pred org, v. silty, pred volcanic clasts (tuff, ash, & andesite) w/ com-v about vht vel silt clay, silty, silty clay, loc silty qtz, com hematite, iron pores silicification.

Lithic ash flow tuff: pred li-rad org, abndt redd clasts, cong-sandy, apparent pore space, (ria-v. hd, poly-v. well consldtd, com silt clay, mrl lining grs, mrl clay.

Tuffired org, red brn, tan, vht, pred trans v/ com earthy app, highly silic w/ 10-20% clay, sphan-sarcosic text w/ com qtz & felds phenos mrl-com rhyolite frags.

Tuffired, red brn, stained app, tan, vht, com elongated gr struo, com-abndt silic & lith frag, decr clay content.

Notes: Drilled 17 1/2" hole 1/78' to 355', POH, r/c on 20' hole.



DEPTH	TEMPERATURE	ETHANE ppm	LOSS	GAIN	PRESSURE IN	CO ₂ ppm	1000	PRESSURE OUT	METHANE ppm	100
0										
100										
200										
300										
400										
500										
600										
700										
800										
900										
1000										
1100										

app, tan, vnt, com, clon
 bed, gr, struc, com, clon
 abent, silic & lith, frag
 deer clay content?

Note: drilled 17"
 hole 1/70' to 185'
 10H, rig up 20' hoist
 operator & drill out
 to 105' used bit
 1/2" 10H & set
 10" casing to 160'
 drill ahead w/ 17"
 bit

buff red, org, pink, tan
 red, w/ m, s, s, s, s, s, s
 red welded w/ com
 flow banding, com, silic
 text w/ fields, qtz
 phenos, com, lith, frag, ss
 var-com, discon, subdpl
 non, var, calc, var, var
 loc, int, l, d, sh, red, vnt
 silic w/ v in success
 text.

buff red, pink, tan, h, cov.
 red, welded text,
 subrd, red, calc, app, w/
 subrd, red, calc, app, w/
 lithic frags (signs, var,
 & signs intrajobnt red
 clay, tr, var, calc, calc,
 var.

buff red, red, to red,
 var, com, vnt, to tan,
 red, welded lithic
 frags, com, int, xln
 text, mod, h, com, frag, d
 appear, oxid appear, fr-
 var, calc, calcite.

Note: 100' bbl mud
 loss - 0.695'

W. 9.1. V. 50 P. 20 P. 1"
 11 pH 10 FIL 13 CL
 700 Side 51

buff brick red, calc, ls,
 etc, sub, ang, red, clasts
 in clay matrix, red weld-
 ed w/ var rhyolite
 xl, buff clasts, colors
 vary, var, calc, frac, fill,
 var, discon, subdpl, non.

Note: losing approx
 5-6 bbl/hr drilling
 fluid 1/695'

buff/red cont'd as
 above, w/ incr igns intr
 clasts.

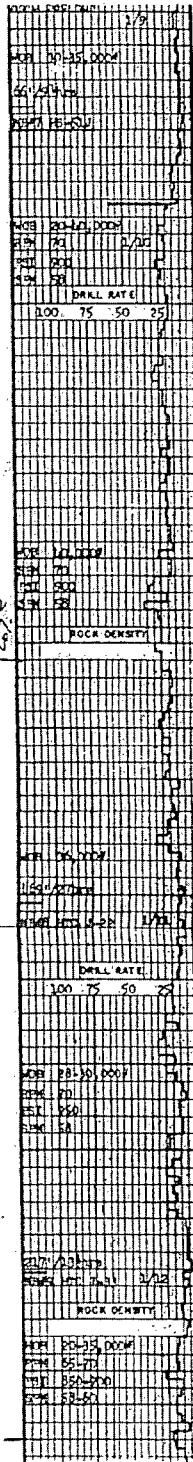
Note: temp drop cue
 add H₂O to build
 volume.

buff/red, brn-red, oxid
 app, comp, sandy, app,
 abent lithic frags (buff
 welded, xln, ash, igns
 intr, & r brcccl, tr-
 var, calc, frac, fill, r
 calc, qtz, tr, var, non.

Note: drilled 17"
 hole to 1070', set
 13 3/8" casing to
 1070'. Begin Drill-
 ing 12" hole.

Note: cement present
 in cuttings 1/1080-
 1150'.

buff/red, red, var, tan



DEPTH (ft)	TEMPERATURE (°F)	LOSS (cc)	GAIN (cc)	CH ₄ (ppm)	CO ₂ (ppm)	METHANE (ppm)
1000	110/120	0	0	0	0	0
1050	125/131	0	0	0	0	0
1100	129/137	0	0	0	0	0
1150	134/142	0	0	0	0	0
1200	139/147	0	0	0	0	0
1250	144/152	0	0	0	0	0
1300	149/157	0	0	0	0	0
1350	154/162	0	0	0	0	0
1400	159/167	0	0	0	0	0
1450	164/172	0	0	0	0	0
1500	169/177	0	0	0	0	0
1550	174/182	0	0	0	0	0
1600	179/187	0	0	0	0	0
1650	184/192	0	0	0	0	0
1700	189/197	0	0	0	0	0

1070: Begin Drilling 12" hole.

Notes present in cuttings 1/1080-1150:

Tuff: pred. red, var. brn, silty, app. pred. congl. sandy app. abndt lith frags w/ var. brecc. app. v. highly siliceous w/ r drusy qtz, com. mag.

Tuff: pred. red brn, oxidized appearance, var. wht, tan, f. gr. xln text, mod siliceous, decr siliceous w/ depth, sft-mod hd, granular app., com. mag, r-tr calcite.

W 9.1 V 10.0 PV 14.9
 T 9.5 F 10.4
 Cl 600-515-45

Tuff: red-brn, gry, wht, tan, granular app., cont. decr siliceous, v. sft-siliceous, com. abndt lith frags, com. mag, r-tr calcite, poss. kaolin.

Tuff: lt. gry, red brn, silty, highly calcic, com. sft blk. murl, com. silty app. (lt. gry, grn), loc. highly alt w/ v abndt clay.

Solution Deposit: pred. calc. carbonate, highly frac. w/ v abndt calc. wht calc. vng, loc. pebbles app., loc. com. blk. sft. murl.

Tuff: highly altered, v. highly calcic, red, grn, abndt clay, sft.

Solution Deposit: 1570: pred. calc. w/ calc. frac. fill, abndt sft blk. murl, highly fractured. Tuff: red-lt. grn-brn, highly altered & oxid. app., sandy-silty app. w/ abndt clay.

Solution Deposit: calc. wht fill, pred. calc. w/ calc. highly frac., loc. abndt sft blk. murl, loc. abndt pyr vng.

Tuff: wht w/ grn mottled app., pred. xln text w/ var. poss. felds phenos, sft-mod, com. abndt calc. aloro vng; abndt mag w/ wht murl screeless.

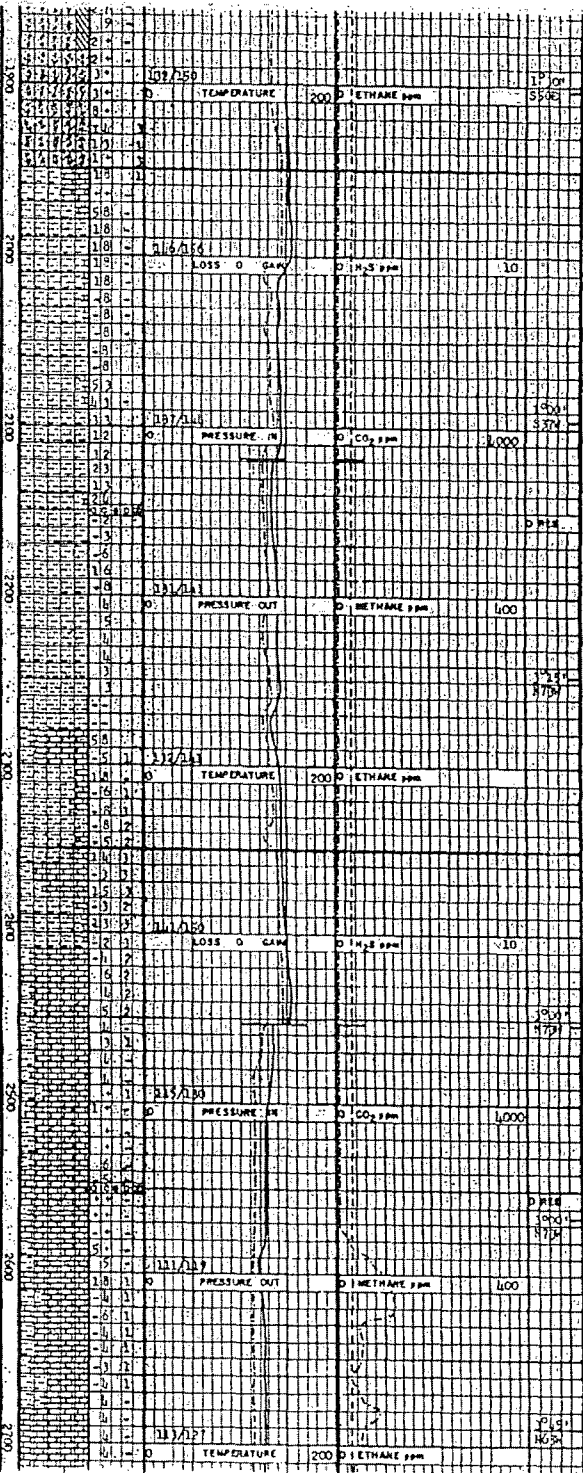
Solution Deposit: pred. calc. w/ abndt calc. qtz, pred. tan, pebbles app. w/ var. calc. frac. fill, intercalated wht-ochr. cryptocr. silica, r-tr poss. forams?

Tuff: variable color, wht, grn, red, brn; pred. xln, var. pumiceous appear., com. sandy appear. v. calcareous, r-tr pyr.

Solution Deposit: pred. calc. w/ abndt calc. qtz, v. in-fn gr. calcite w/ com. calc. calcite sctals, var-com blk. murl (poss. magnetite), r-mur pyr.

Tuff: gry brn, gd welding xln text, abndt sil-

Log header section containing well identification, depth, and various parameters like DRILL RATE and ROCK DENSITY.



Vertical column of lithological descriptions and notes, detailing rock types like Silts, Limestones, and shales, along with specific observations.

Handwritten note: 'col' with an arrow pointing to a specific depth.

Handwritten note: 'col' with an arrow pointing to another specific depth.

Handwritten note: 'colld h2o' with an arrow pointing to a depth interval.

Notes: "Solution Deposit: pred calc w/abnt clc, qtz, v fr in fr calcite, etc." and "sol. calcite, etc.".

Notes: "uff (gry brn, gd) weld- ing xln-text, abnt: sil- mod alt: felds phenoc. coem alt: mica, etc. f.r."

Notes: "Silts: pred gry, tr red, mod hd-hd, v fr-fn gr, abnt clay, loc: mud. sft blk murl, highly calcic; loc highly silic (pos: frac fill), com buff frags: poss slough"

Notes: "Note: Temp variation due to temp pills & add H2O to keep drilling fluid conditioned."

Notes: "W 9.1 V 38 PV 16 VP 5 pH 11.5 FIL 8:4 Cl. 770 Sids 6X"

Notes: "Note: Dumped pits during trip. Temp drop due to adding water & base mud to build volume."

Notes: "Silts: pred gry, enr wht, pred fd gr w/ enr v fr fr, fr: v sft-mud hd, v calcic, pred fil- silic; com: abnt sft blk murl."

Notes: "Silts: pred gry w/ loc: abnt wht due calc cont, v fr-fn gr, enr clay tr: poss kaol, v highly calcic w/ abnt calc rug."

Notes: "Silts: pred blk, enr dk gry, brn, mod hd: sil filic; highly calcic; tr: silic frac fill."

Notes: "Note: lost 85 bbls drilling fluid f/ 2275 spot LCM pill."

Notes: "Limestone f/ 2290-2360: dk brn, pred: micritic: f: dk, hd-v: hd, loc: abnt: micro: siltic, abnt wht-clc, calc rug, sl silic."

Notes: "W 9.1 V 38 PV 12 VP 6 pH 11 FIL 10 Cl. 500 Sids 3X"

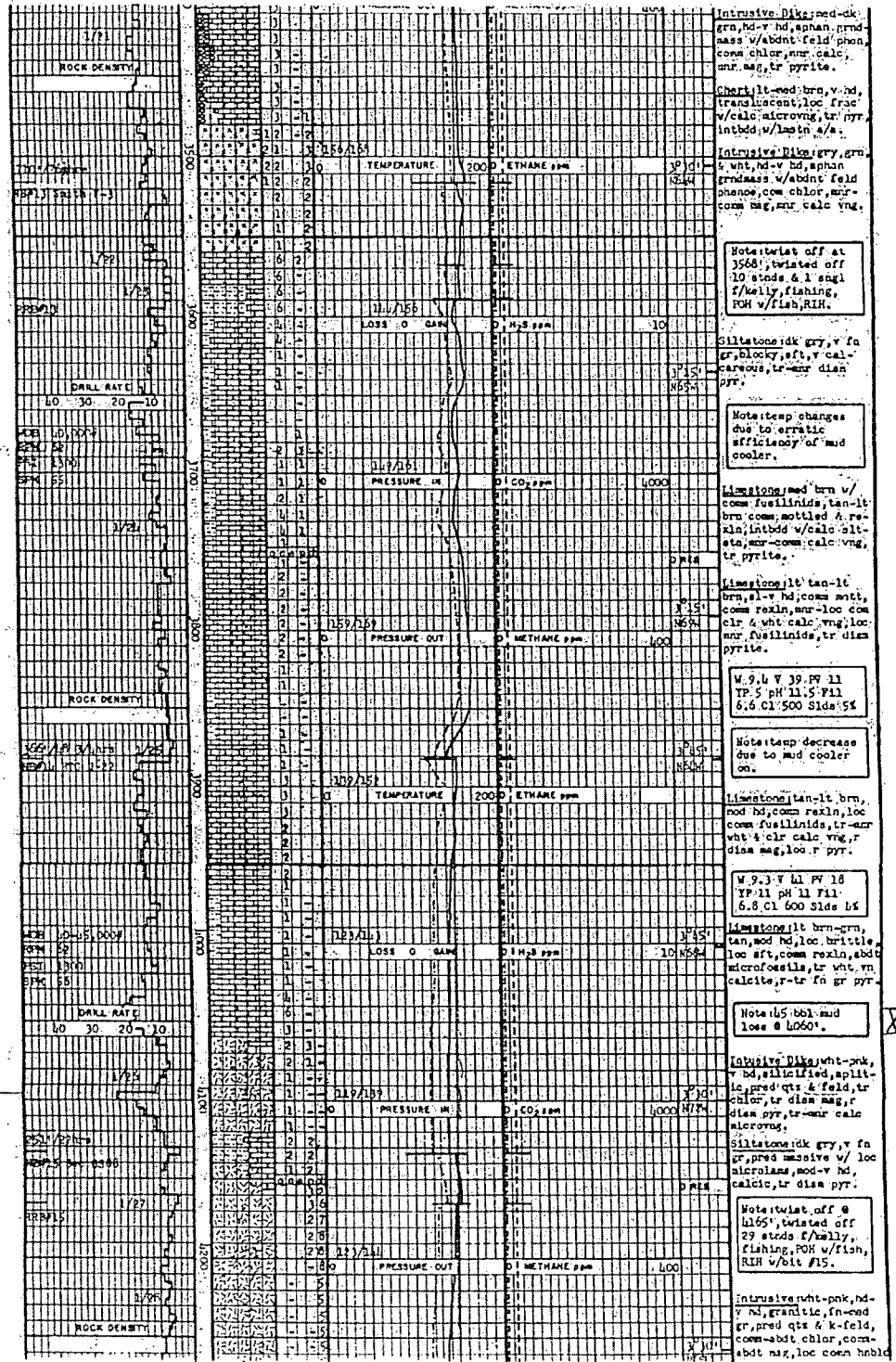
Notes: "Note: RPH, chng bit & BH to decrease angle, rig up mud cooler."

Notes: "Limestone: lt-dk brn, v highly frac, tr: enr bio- clastic, loc: sly-sandy Marl, grains & int: bcs w/ enr highly calcic rft Silts: com."

Notes: "Limestone: pred lt tan, enr dk brn, loc: v abnt: cryptoxic: lt blu sil- ca w/ v abnt bio: clastic, tr: carbonated plant material."

Notes: "Limestone: pred dk brn, hd-v hd due sl silic, pred sly."

Notes: "Limestone: mod-dk gry, hd-v hd, pred: micro- latic, loc: frac in: mod gr, com: abnt wht-clc calc rug, loc: tr: micro- fossil: tr: pyr, assoc w/ Marl: lt brn-lt gry sl-



Intrusive Dike; med-ck, grn, hd-v hd, sphn, prod, mass w/abnt feld, phen, com chlor, mur, calc, mur, mag, tr pyrite.

Chert; lt-med-brn, v-hd, translucent; loc frac w/calc, microwag, tr pyr, intbed w/lastn s/a.

Intrusive Dike; gry, grn, v, wht, hd-v hd, sphn, prod, mass w/abnt feld, phen, com chlor, mur, com mag, mur, calc vng.

Note: twist off at 3560', twisted off 10 studs & 1 slug f/wally, fishing, ROM w/fish, RIH.

Siltstone; dk gry, v fn gr, blocky, sft, v calc, microwag, tr-mur diam pyr.

Note: temp changes due to erratic efficiency of mud cooler.

Limestone; med-brn v/ com fusulinids, tan-lt brn, com, mottled & resin, intbed w/calc silt-stn, mur-com, calc vng, tr pyrite.

Limestone; lt tan-lt brn, sl-v hd, com, mott, com resin, mur-loc com clt & wht calc vng, loc mur fusulinids, tr diam pyrite.

W. 9.4 V 39-PV 11
TP: 5 PH 11.5-F11
6.6 Cl 500 Sids: 51

Note: temp decrease due to mud cooler on.

Limestone; tan-lt brn, mod hd, com resin, loc com fusulinids, tr-mur wht & clt calc vng, r diam mag, loc r pyr.

W. 9.3 V 41-PV 18
TP: 11 PH 11 F11
6.8 Cl 600 Sids: 45

Limestone; lt brn-grn, tan, mod hd, loc, brk, loc sft, com resin, abdt microfossils, tr wht, m calcite, r-tr fn gr pyr.

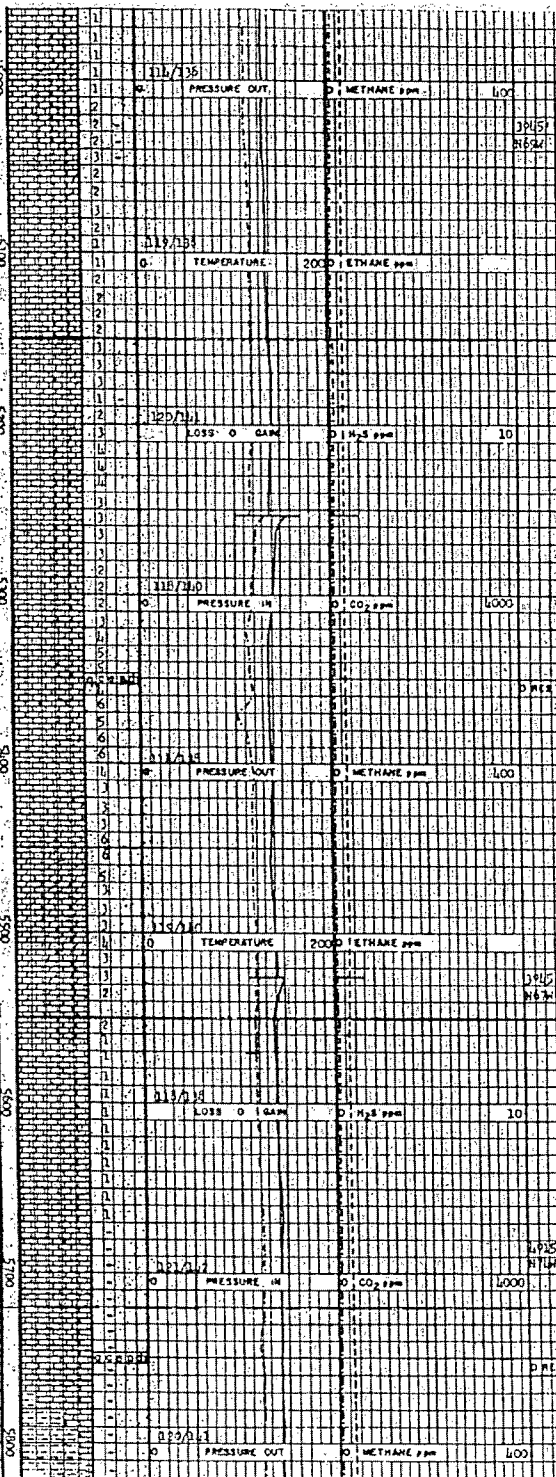
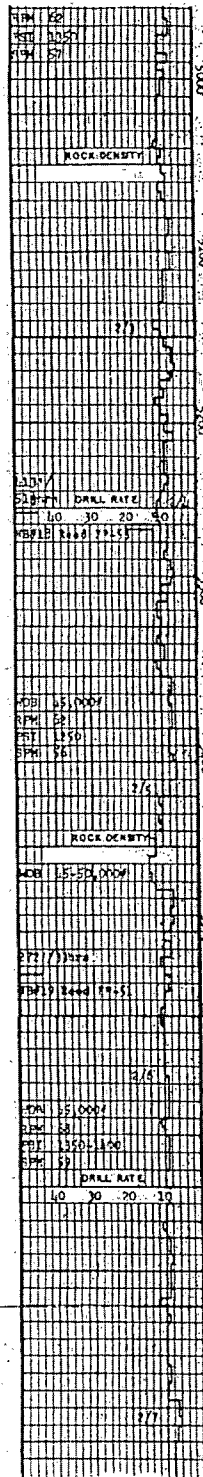
Note: 15' bbl mud loss @ 1060'.

Intrusive Dike; wht-pnk, v hd, silicified, applitic, med-gr & feld, tr chrt, tr diam mag, r diam pyr, tr-mur calc microwag.

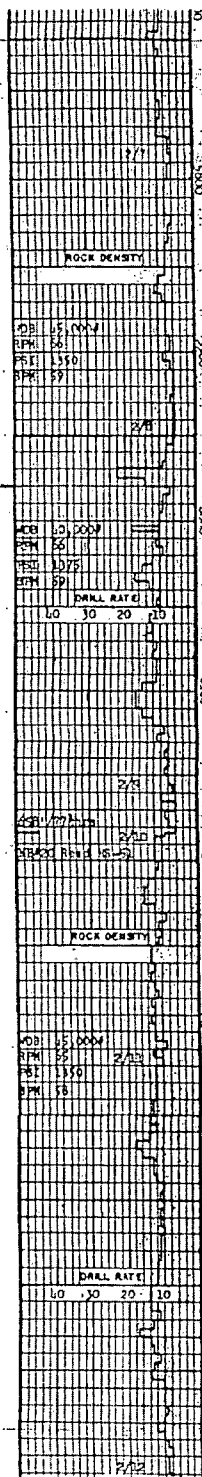
Siltstone; dk gry, v fn gr, prod massive w/ loc microlite, mod-v hd, calcic, tr diam pyr.

Note: twist off @ 4165', twisted off 29 studs f/wally, fishing, ROM w/fish, RIH w/6ts #15.

Intrusive; wht-pnk, hd-v hd, granitic, fn-med gr, prod qtz & K-feld, com-abdt chlor, com-abdt mag, loc coen hblc.



rexin, com intracasts, interbd w/ enfl. lt. gry chert, tr-mn calc vng.
 Limestone wht-lt gry, sl-mod, hd, com brittle rexin, com intracasts interbd w/ tr lt gry chert-mn calc vng, tr-dise pyr.
 Limestone wht-lt gry, sl, hd, com brittle, rexin, com-abdt intracasts, loc v. soft, tr-mn calc vng.
 Limestone lt-dk gry, mottled, mod hd-v hd, com brittle, rexin, tr-mn calc vng, tr interbd chert, r pyr, fossil (prob bivalve).
 Limestone pred wht, enr lt, gry, and hd, loc brittle, microxin, loc silty app, enr-com wht calc vng, tr interbd lt brn chert.
 Limestone brn v/ enr dk brn, pred hd-loc v. hd, microxin, mass app, tr lt brn translucent cryptoxin silica, com calc vng.
 Note: jet shaker pit @ 5359' Temp in drop @ 5370' due to adding new mgd.
 Limestone pred brn-dk gry, enr lt, gry, hd-v hd, pred mass app, com frac'd app, cryptoxin, com-abdt calc frac vng.
 Limestone pred wht w/ enr-com gry brn, hd, granular rexin text, pred sl dolomitic, loc dolo rhombo via, com-abdt calc vng, r pyr.
 Limestone lt-dk gry, v/ com-abdt wht interbd dolomite, sl hd-v, hd, mass app, enr v. calc.
 Marly gry, soft-mod hd, enr hd, highly calcic, sl-highly silty w/ enr gran text, loc enr clay enr calc vng, r green pyr.
 W 9.3 V 40 PV 13 TP 4 PH 10.5 FL 0.6 Cl 500 Slde-LS
 Marly mod-dk gry, soft-mod hd, enr v. hd, interbd v. fn-fn gr calcareous silt & clay w/ loc via microxins, tr v. calc vng.
 Marly mod-dk gry, soft-sl hd, v. fn-fn gr, com-abdt interbd silt & clay, blocky, loc fissile w/ via microxins.
 Siltstone pred mod gry brn, mod hd, pred v well laminated w/ com fissile app, sl-v finely



DEPTH (ft)	TEMPERATURE (°F)	PRESSURE (psi)	LOSS O GAIN (%)	CHETHANE (ppm)	CO ₂ (ppm)
0					
10					
20					
30					
40					
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
170					
180					
190					
200					
210					
220					
230					
240					
250					
260					
270					
280					
290					
300					
310					
320					
330					
340					
350					
360					
370					
380					
390					
400					
410					
420					
430					
440					
450					
460					
470					
480					
490					
500					
510					
520					
530					
540					
550					
560					
570					
580					
590					
600					

silt & clay w/ loc
 via microlans, tr vlt
 calc vng.

Marl med-dk gry, silt-cl
 hd, v in-fn, gr, coen-abdt
 interbd silt & clay,
 blocky, loc flsills w/
 via microlans.

Siltstone: pred mod gry
 brn, mod hd, pred v well
 laminated w/ coen fls-
 sills appr, sl v highly
 calcic, tr calc micro-
 vng w/ r v fn, dissen:
 pyr.

Shale: pred dk gry-blk,
 mod mod gry, v in gr,
 mod-r hd, mod calcareous
 w/ calc cat, abdt dk
 gry-blk organic matter,
 pred blocky w/ coen
 flsills appr, tr calc
 vng, r disn pyr.

Intrudt igneous silt grn
 cast, pred hd mod sft,
 pred porph text, abnt
 in gr, mod calcic, r/
 5000-5900'.

Limestone: med-dk gry, sl
 hd, brittle, sl dolomitic,
 loc granular appr v/
 loc interbd: silica,
 tr v calcite, r-tr f, gr
 disn pyr.

Chert: pred lt gry, mod
 brn-blk, v hd & angular,
 translucent w/ mod v
 translucent, coen-abdt
 carbonate inclusions.

Dolomite: vht-lt brn,
 buff, mod hd-hd, in-mod
 gr xln, w/ coen via
 rhombs, loc coen crs
 granular masses, tr calc
 vng, tr disn, pyr.

Limestone: lt gry-lt
 tan, hd, pred roxin text
 mass appr, loc tr fos-
 sills; mod calc vng; r-tr
 dissn pyr.

Limestone: lt gry, mod
 hd, roxin w/ mod dolo-
 mite, pred cryptoxln w/
 loc granular dolomite,
 massive appr, mod calc
 vng, r disn pyr.

Dolomite: pred-lt gry,
 in gr, roxin gran text,
 mod hd, loc mod frec-
 tured w/ sudent calc
 vng.

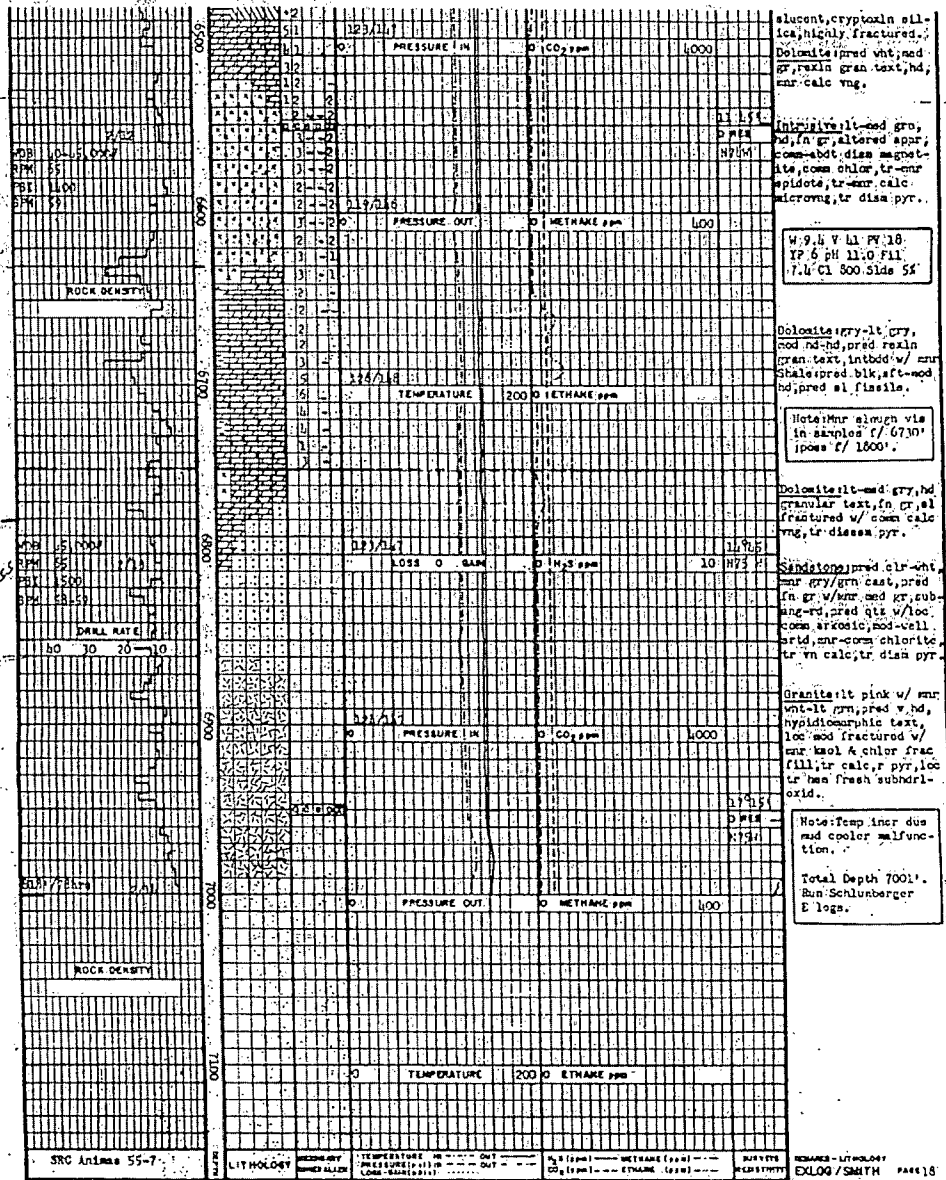
Solution Deposit: lt
 tan-coen vnt, pred tran-
 silcent, cryptoxln sil-
 lica, highly fractured.

Dolomite: pred vht, mod
 gr, roxin gran text, hd,
 mod calc vng.

Intrusive: lt-mod grn,
 hd, in gr, altered appr.

Note: Run two time
 temp survey for ten
 hours each. Project-
 ed maxium hot/col
 hole temp @ 290°F =
 177°F.

W. 9.4 V. 38.77 M
 IP & pH 11.0 Fill
 7.2 Cl 800 Slids 5%



CONSERVATION SURVEY NOTICE

The U.S. Geological Survey requests this form or other Supervisor approved form to be prepared and filled in triplicate with requisite attachments with the Supervisor. The Supervisor must approve this permit prior to any lease operations.

1a. WELL TYPE: PRODUCTION () INJECTION () HEAT EXCHANGE () OBSERVATION () OTHER (X)	4. LEASE SERIAL NO. NM-790
1b. WELL STATUS: New	5. SURFACE MANAGER: BLN () FS () Other (X)
2. NAME OF LESSEE/OPERATOR Steam Reserve Corporation	6. UNIT AGREEMENT NAME N/A
3. ADDRESS OF LESSEE/OPERATOR 1707 Cole Blvd., Golden, CO 80401	7. WELL NO. 55-7
8. LOCATION OF WELL OR FACILITY 2411.9 of the E. line and 2329.1 of the S. line of Sec. 7, T25S, R19W	8. PERMIT NO.
9. TYPE OF WORK:	9. FIELD OR AREA Wildcat
CHANGE PLANS () SITE AND ROAD CONSTRUCTION () CONSTRUCT NEW PRODUCTION FACILITIES () ALTER EXISTING PRODUCTION FACILITIES ()	10. SEC. T. R. S. NWSE Sec. 7, T25S, R19W
CONVERT TO INJECTION () FRACTURE TEST () SHOOT OR ACIDIZE () REPAIR WELL ()	11. COUNTY Hidalgo
PULL OR ALTER CASING () MULTIPLE COMPLETES () ABANDON () OTHER (X)	12. STATE New Mexico

13. DESCRIBE PROPOSED OPERATIONS (Use this space for well activities only. See instructions for current well conditions on reverse)

Plugging of Well No. 55-7

In addition to the plugging procedures approved by the Bureau of Land Management on November 19, 1985, SRC wishes to set two more cement plugs to the surface of Well No. 55-7. A 100 foot plug will be set at the casing shoe from 1000' to 1100' and a 50' surface plug to the top of the hole.

These two plugs will be in addition to the program as set out on the last Sundry Notice approved November 19, 1985.

14. DESCRIBE PROPOSED OPERATIONS (Use this space for all activities other than well work)

17. I hereby certify that the foregoing is true and correct. (See reverse side if needed)

SIGNED Anita Clement TITLE Attorney-in-Fact DATE Dec. 11, 1985

(This space for Federal use)
APPROVED BY (ORIG. SGD.) DAVID R. GLASS TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:
DEC 16 1985

This permit is required by law (30 U.S.C. 1033); regulations: 30 CFR 270.34, 30 CFR 270.35, 30 CFR 270.45, 30 CFR 270.71-1, 30 CFR 270.72; Federal Geothermal Lease Terms and stipulations and other regulatory requirements. The United States Criminal Code (18 U.S.C. 1001) makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States or to any matter within its jurisdiction.

*Dec 12-19-85
Bill TX*

GENERAL SURVEY NOTICE

The U.S. Geological Survey requests this form or other Supervisor approved form to be prepared and filed in triplicate with requisite attachments with the Supervisor. The Supervisor must approve this permit prior to any lease operations.

1a. WELL TYPE: PRODUCTION () INJECTION () HEAT EXCHANGE () OBSERVATION () OTHER (X) Exploration	4. LEASE SERIAL NO. NM-34790
1b. WELL STATUS: New	5. SURFACE AREA: BLA (X) FS () Other ()
2. NAME OF LESSEE/OPERATOR Steam Reserve Corporation	6. UNIT ACREAGE NAME N/A
3. ADDRESS OF LESSEE/OPERATOR 1707 Cole Blvd., Golden, CO 80401	7. WELL NO. 55-7 8. PERMIT NO.
11. LOCATION OF WELL OR FACILITY 2411.9' of the E. line and 2329.1' of the S. line of Sec. 7, T25S, R19W NMPM	9. FIELD OR AREA Wildcat
14. TYPE OF WORK CHANGE PLANS () CONVERT TO INJECTION () PULL OR ALTER CASING () SITE AND ROAD CONSTRUCTION () FRACTURE TEST () MULTIPLE CONDUITS () CONSTRUCT NEW PRODUCTION FACILITIES () SHOOT OR ACTIVATE () ABANDON () ALTER EXISTING PRODUCTION FACILITIES () REPAIR WELL () OTHER ()	10. SEC. T., R., S. & R. NW 1/4 Sec. 7, T25S, R19W NMPM
	11. COUNTY Hidalgo
	12. STATE New Mexico

Plugging & Abandonment

13. DESCRIBE PROPOSED OPERATIONS (Use this space for well activities only. See instructions for correct well conditions on reversal)

See attached for description of plugging and abandonment work completed on Well No. 55-7.

BUM CAS GROUP'S DISTRICT 87-100	
FEB 3 1986	
Dir - 031	
ASST DIR	
S & E	
PUBLIC INFO SP	
CORRESP	
ADMIN - 032	
ADMIN SVCS	
OFFICE SVCS	
OIL - 033	
IND - GEN	
LOCAL USE	
WATER - 037	
SHA - 039	
FILE	
X-ACTING	
CORRESPOND ONLY	

14. DESCRIBE PROPOSED OPERATIONS (Use this space for all activities other than well work)

(See reverse side if needed)

15. I hereby certify that the foregoing is true and correct
SIGNED _____ TITLE **Attorney-in-Fact** DATE **Dec. 30, 1985**

(This space for Federal use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

This permit is required by law (30 U.S.C. 1023); regulations: 30 CFR 170.24, 30 CFR 170.35, 30 CFR 170.43, 30 CFR 170.71-1, 30 CFR 170.72; Federal Geothermal Lease Terms and stipulations and other regulatory requirements. The United States Criminal Code (18 U.S.C. 1001) makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.

ABANDONMENT WORK
ANIMAS 55-7
DECEMBER 20-23, 1985
John E. Deymonaz

- 12/20 Halliburton and American Well Servicing Co. move equipment to Lordsburg, N.M.
- 12/21 American moves workover rig to Animas 55-7 and sets up. Worked tubing for 2 hours, pulling up to 100,000 pounds, could not pull free. Halliburton arrived about noon, hooked up pumps and circulated through tubing for 2 hours while American worked the tubing. Pulled free about 2 PM. Pulled tubing back to 5500 feet and set 70 sack (98 cubic feet) plug from 5500-5400 feet. Pulled 33 joints and circulated. After 30 minutes circulation hole began unassisted two-phase flow which lasted for about 30 minutes. Flow was through 3 inch flow line at bottom of wellhead. Leakage at top of wellhead was prevented by stripper assembly.
- 12/22 Circulate through tubing, well began unassisted two-phase flow for about 30 minutes. Pulled tubing to 2090 feet and set 170 sack plug (238 cubic feet) from 2090-1890 feet. Stood back six stands of tubing (600 feet) and WOC for three hours. RIH, tag cement at 1980 feet. Pull tubing to 1500 feet and set 100 sack plug (140 cubic feet) from 1500-1400 feet. Pull tubing to 1100 feet, set 80 sack plug (112 cubic feet) from 1100-1000 feet stand back six stands and WOC three hours. RIH, tag cement at 1050 feet. Pull tubing to 50 feet and plug from 50 feet to surface using 50 sacks (56 cubic feet). Flush out wellhead with water; shut down.
- 12/23 American and Halliburton rig down equipment and leave location. Dale Burgett crew dig out cellar below wellhead, cut off wellhead and erect monument of 4 inch casing. Cellar will be filled in and monument will be approximately six feet above ground level.

Equipment removed from well and laid down on drill pad includes:

- 213 joints (7189 feet) of J55 2-7/8 inch tubing. Includes 4 joints already on location.
- 4 2-7/8 inch Baker Model L sliding sleeves.
- 1 2-7/8 inch bull nosed check valve.
- 3 3 inch Barton geothermal gate valves.
- 1 13 5/8" x 7 1/16" adapter spool.
- 1 7 1/16" x 2 7/8" 8 round 3M adapter spool.
- 1 13 5/8" x 13 3/8" casing hear w/ 2 3" ext. flanges.
- 2 3 inch companion flanges.
- Misc studs and nuts.

CSU

DUAL INDUCTION - STL

CSU



COMPANY: STEAM RESERVES	OTHER SERVICES:
WELL: PRIMAS 55-7	
FIELD: MILBACAT	
COUNTY: MILBACAT	
STATE: NEW MEXICO	
LOCATION: 2412 FTL	
SECT: 2 2229 FSL	TUP: 255
	RGE: 194
PERMANENT DATUM: DATUM: 4800.0 F	ELEVATIONS:
ELV. ACQUIRED: 17.00M	BM: 4517.6 F
LOG: 17.6 F ABOVE PERM. DATUM	GL: 4800.0 F
PRG: MEASURED FROM: KA	
DATE: 14 FEB 85	PROGRAM:
RUN NO: 1	TAPE NO:
	STATION:
	ORDER NO:
	480898
DEPTH-DRILLER: 7001.0 F	
DEPTH-LOGGER: 7018.0 F	
BTM LOG INTERVAL: 2006.0 F	
TOP LOG INTERVAL: 1055.0 F	
CASING-DRILLER: 1050 F	
CASING-LOGGER: 1050 F	
CASING LOG INTERVAL: 13.0/28	
BIT SIZE: 12 1/4	

TYPE FLUID IN HOLE: FRESH GEL
 DENSITY: 9.4 LB/G
 VISCOSITY: 41.0 S
 PH: 11.0
 FLUID LOSS: 7.4 CC
 SOURCE OF SAMPLE: TANK
 RM: 1.990 OHMM AT 59.0 DEGF
 RMF: 1.530 OHMM AT 59.0 DEGF
 RMC: 2.160 OHMM AT 59.0 DEGF
 SOURCE RMF/RMC: MEAS/MEAS
 RM AT BHT: .474 OHMM AT 270. DEGF
 RMF AT BHT: .364 OHMM AT 270. DEGF
 RMC AT BHT: .514 OHMM AT 270. DEGF

TIME CIRC. STOPPED: 0200
 TIME LOGGER ON BTM: 0900

MAX. REC. TEMP: 270.0 DEGF

LOGGING UNIT NO: 8174
 LOGGING UNIT LOC: FARMINGTON
 RECORDED BY: MAURER
 WITNESSED BY: MR. PILKINGTON

REMARKS:
 CREW, YAZZIE, QUINN
 SONDE ERRORS SET DOWNHOLE

EQUIPMENT NUMBERS-
 DIC 55 DTS 1390 SGC 3407

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 INTERPRETATIONS, 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.

FILE 5 14-FEB-85 09158
 DATA ACQUIRED 00- 00 00100

RAC AT 2MT: .344 OHM AT 270.0 DEG
 RAC AT 2MT: .514 OHM AT 270.0 DEG

TIME CIRC. STOPPED: 0200
 TIME LOGGER ON: 0900

MAX. REC. TEMP: 270.0 DEG

LOGGING UNIT NO: 9174
 LOGGING UNIT LOC: FARMINGTON
 RECORDED BY: MAURER
 WITNESSED BY: AR. PILKINGTON

REMARKS:

CREW: YAZZIE, QUINN
 SONDE ERRORS SET DOWNHOLE

EQUIPMENT NUMBERS-

DIC 55 DIS 1598 SGC 3407

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 INTERPRETATIONS 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.

FILE 5 14-FEB-85 09:58
 DATA ACQUIRED 00-00 00100

AFTER SURVEY TOOL CHECK SUMMARY

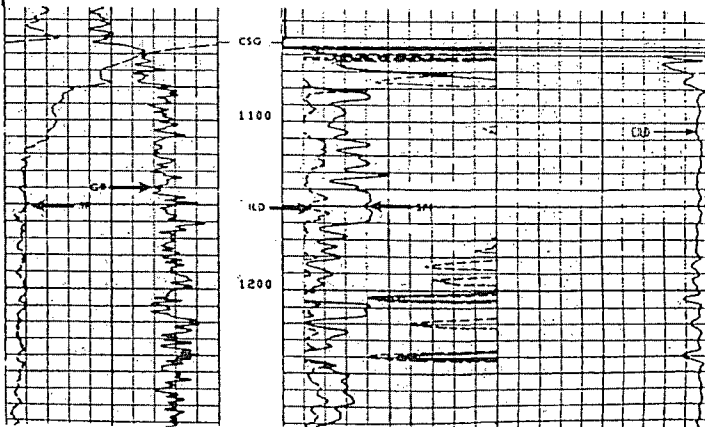
PERFORMED: 85/02/14
 PROGRAM FILE: DILGR (VERSION 26.2 00/00/00)

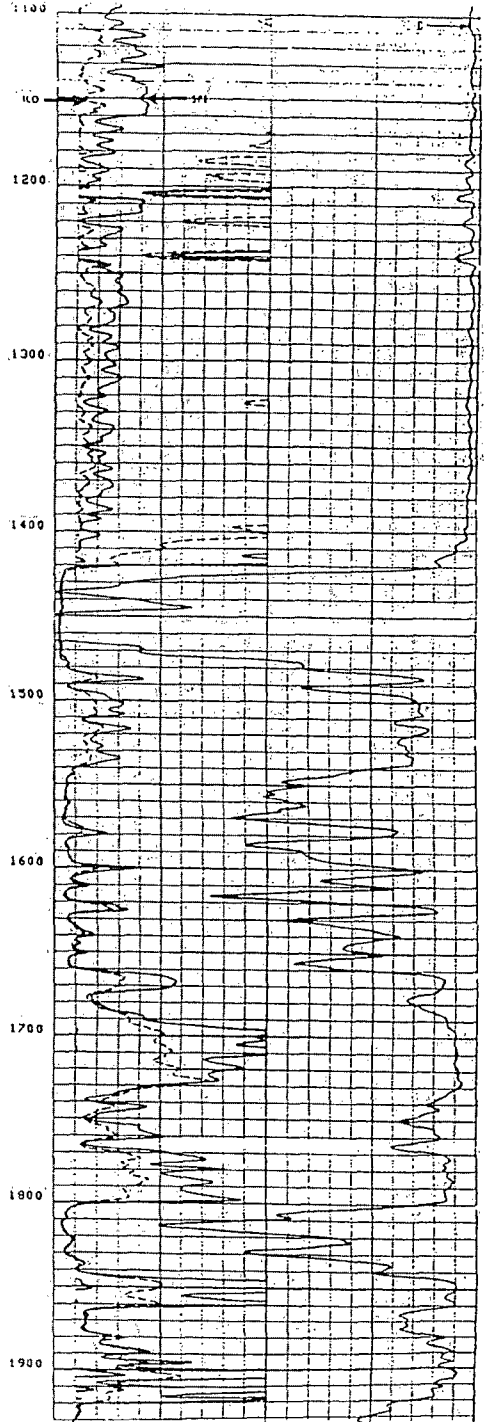
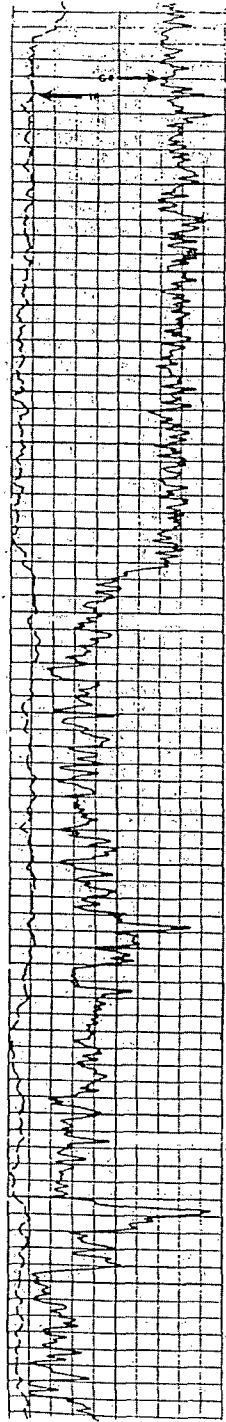
	TOOL CHECK				UNITS
	BEFORE	ZERO	AFTER	PLUS	
ILD	0.0		.1	505.2	MMHO
ILM	0.0		-4	501.1	MMHO
SFL	0.0		-2	500.0	MMHO
ILD SONDE ERROR CORRECTION :				4.0 MMHO	
ILM SONDE ERROR CORRECTION :				3.0 MMHO	

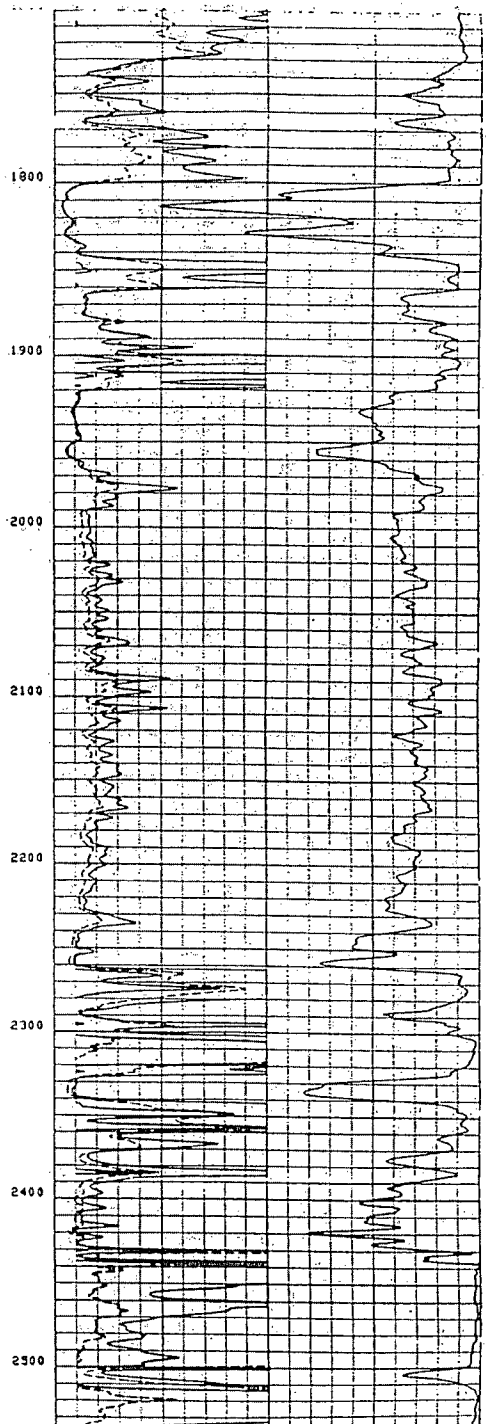
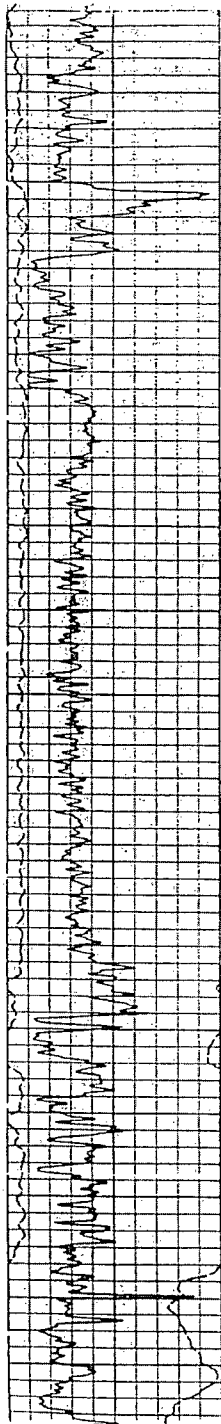
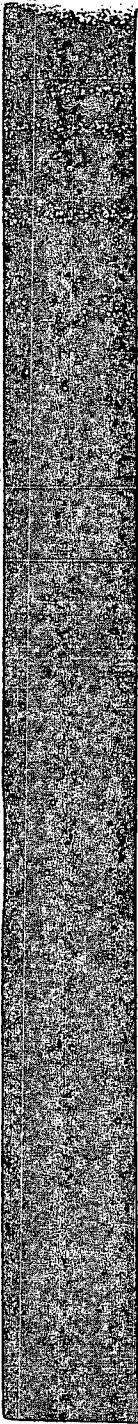
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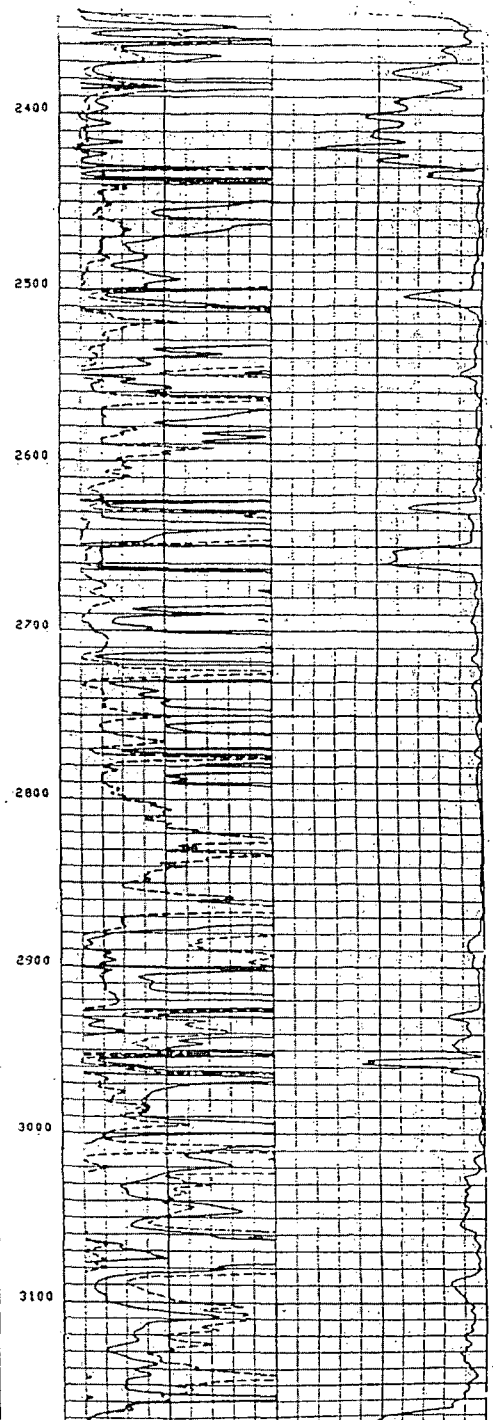
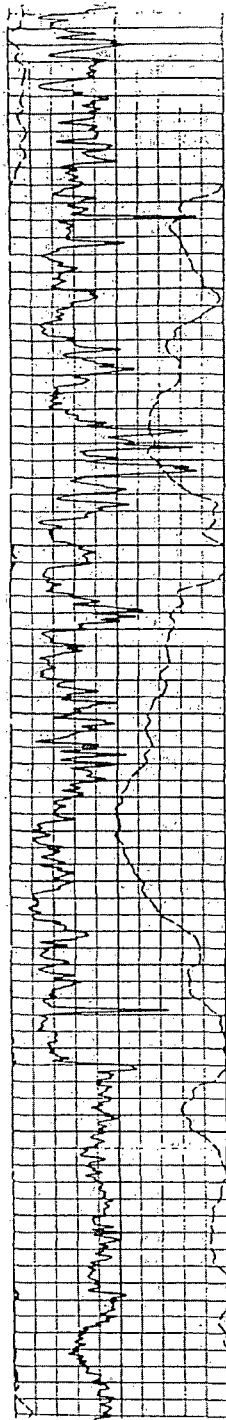
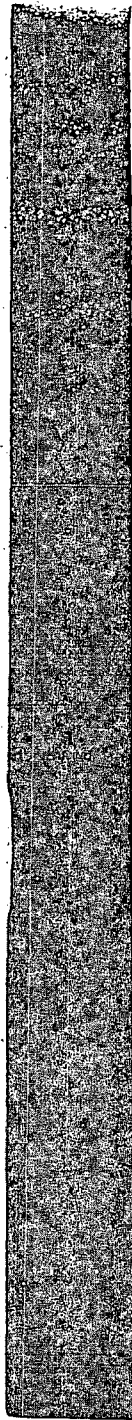
	0.0	ILD (MMHO)	100.00	
GR (GAP)	200.00	SFL (MMHO)	100.00	
SP (MV)	-89.00	CLD (MMHO)	0.0	
	20.00			

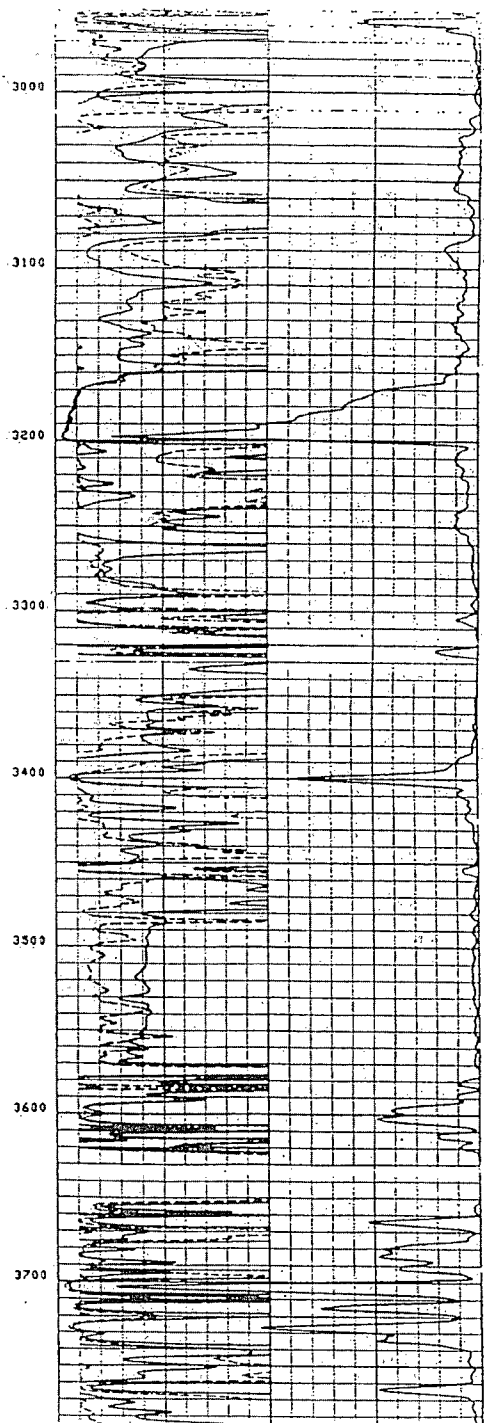
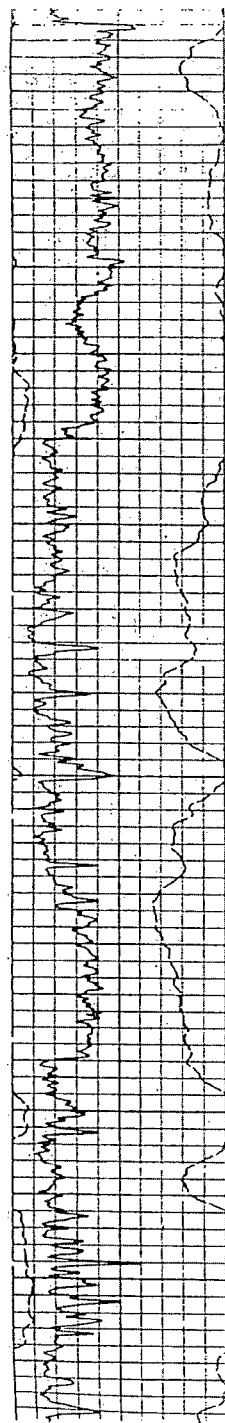
FILE 2 14-FEB-85 09:53

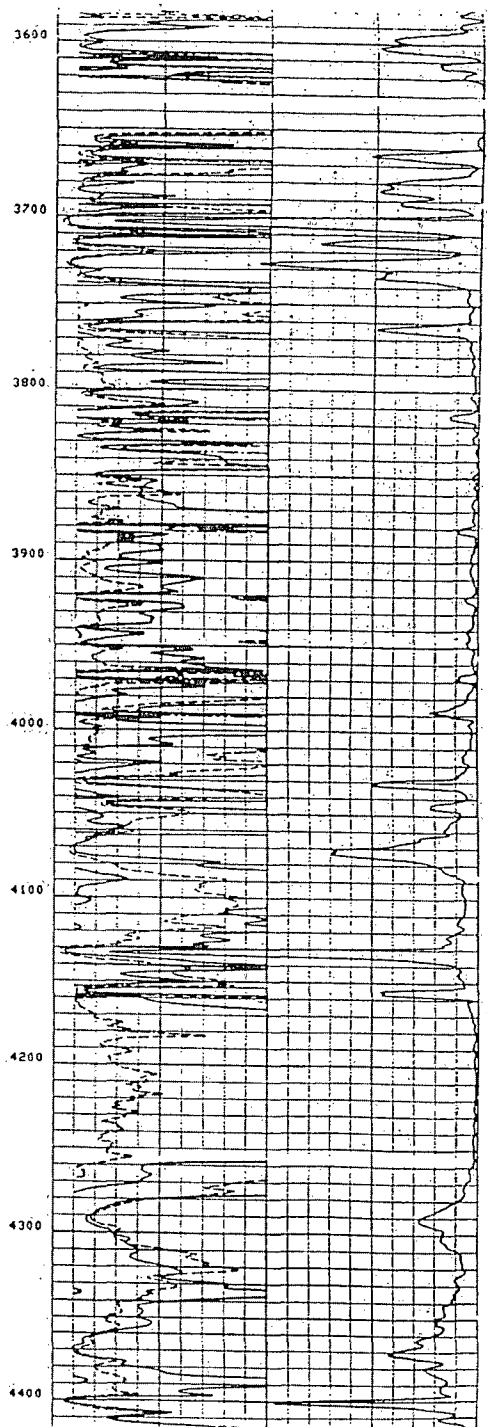
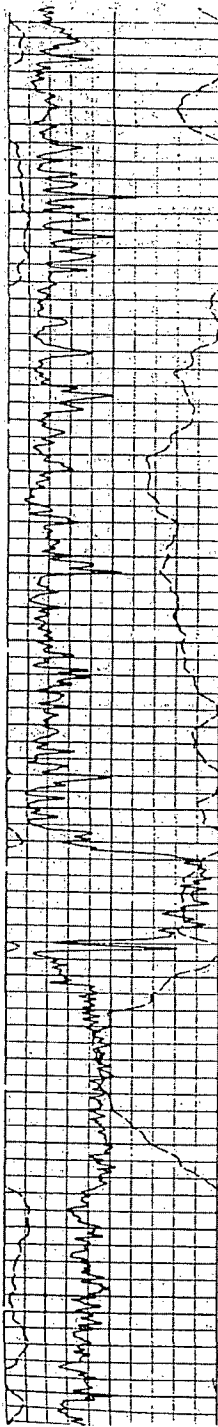




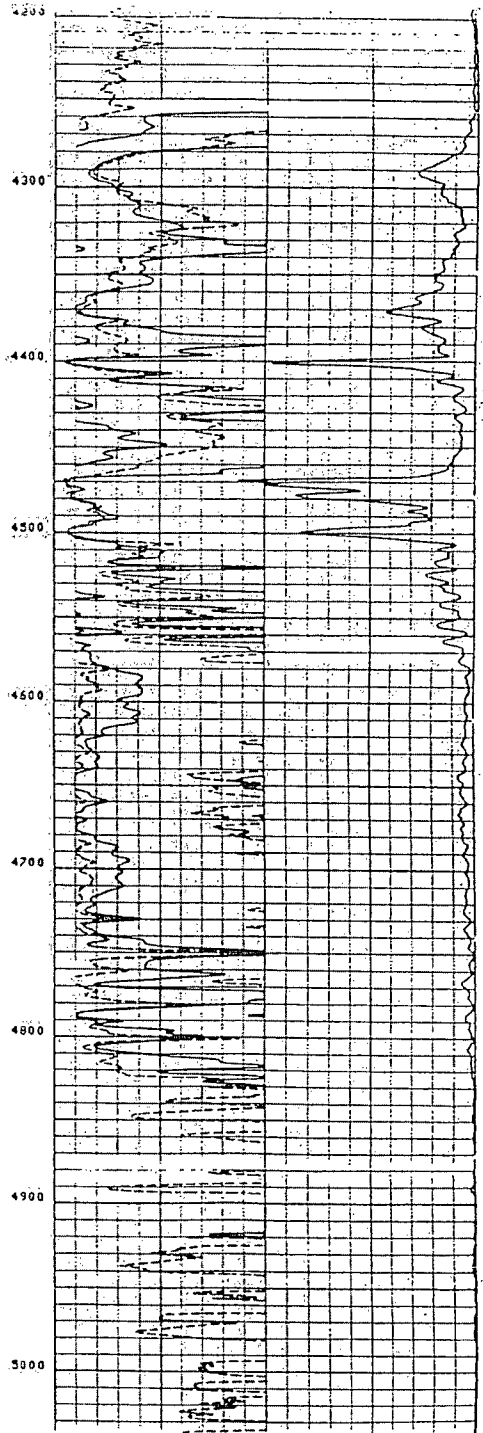
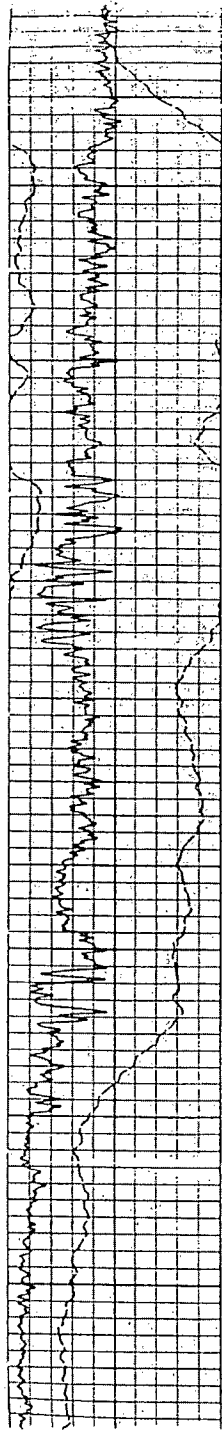


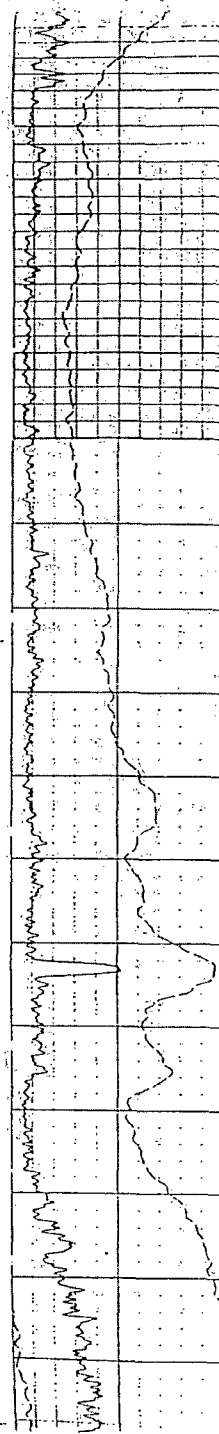






3600
3700
3800
3900
4000
4100
4200
4300
4400





4900

5000

5100

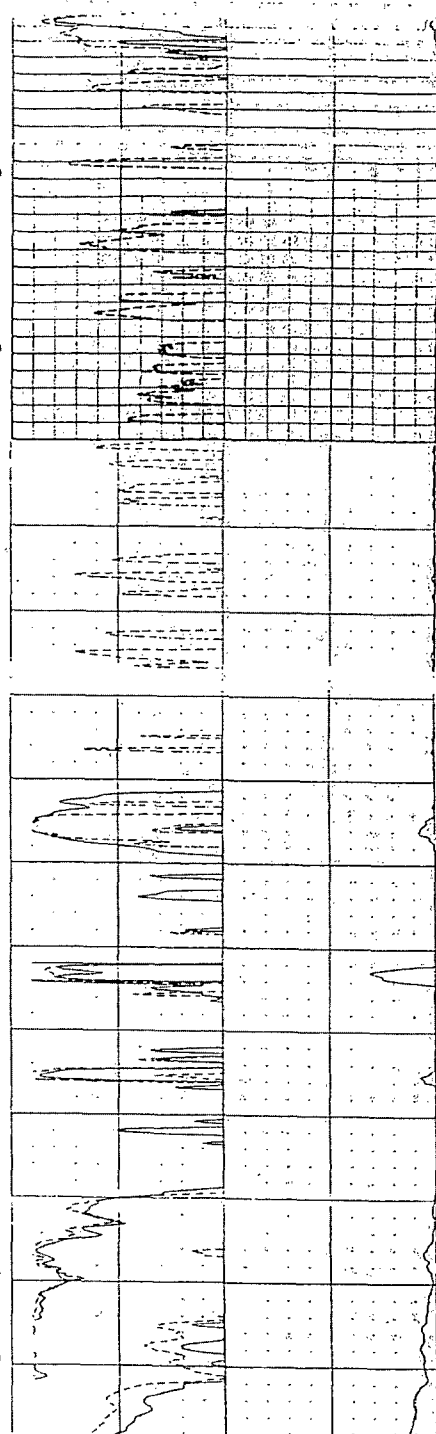
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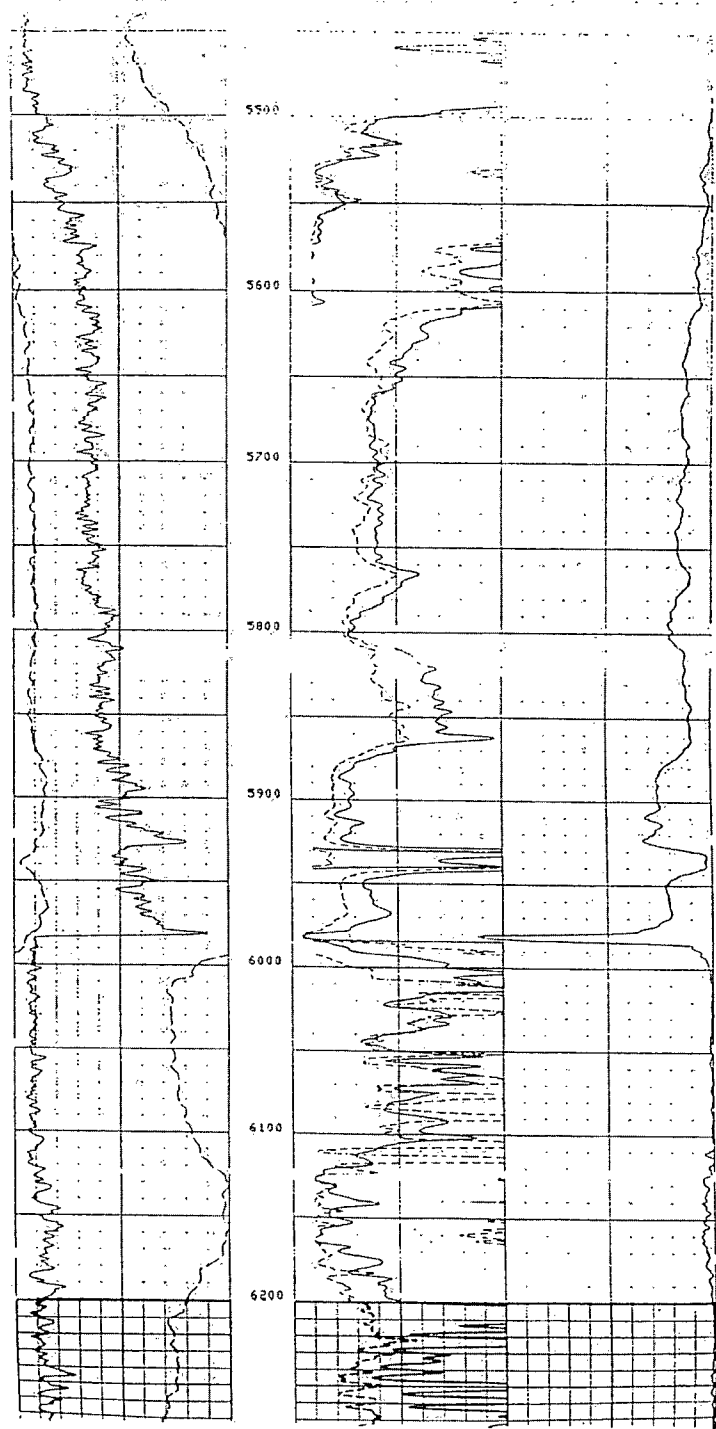
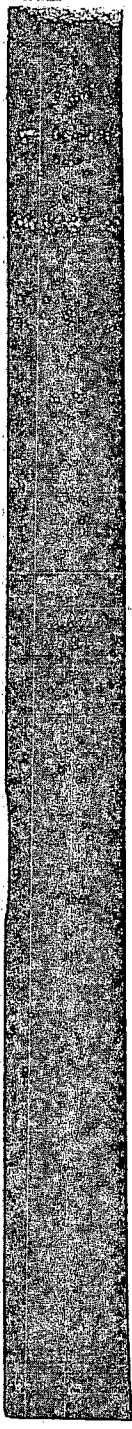
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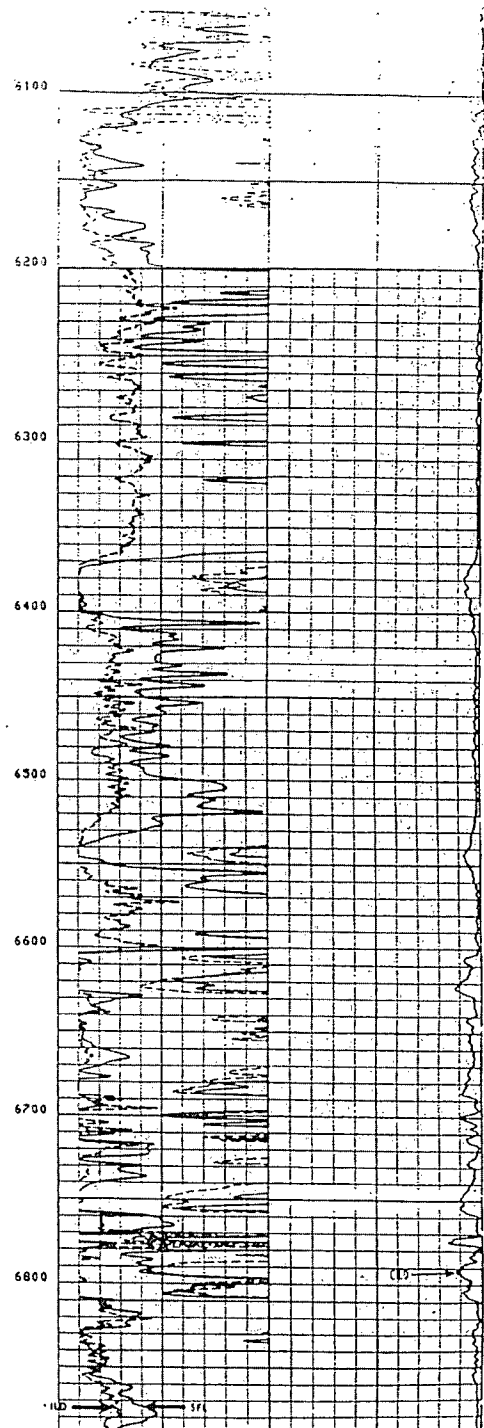
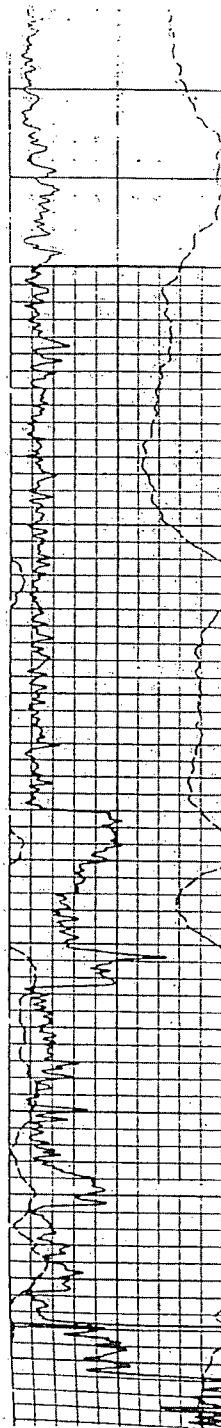
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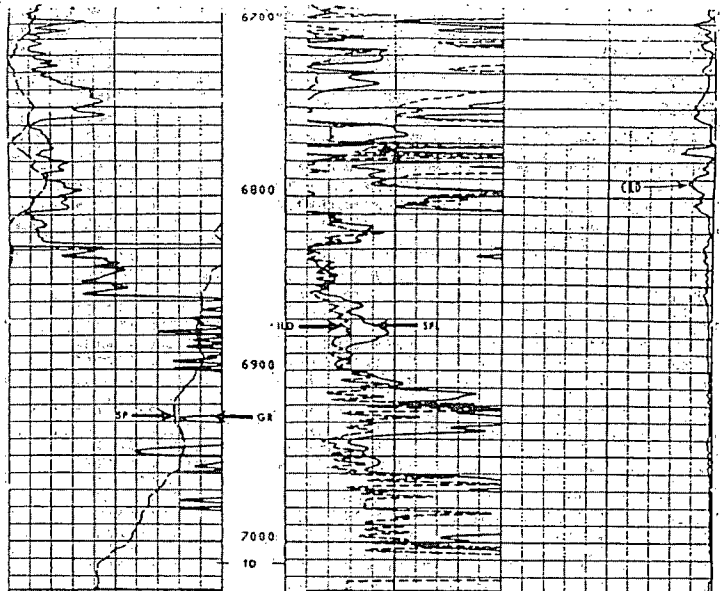
5500

5600









FILE 2 14-FEB-85 09:07

GR (GAPI)	0.0	ILD (DHMM)	100.00
SP (MV)	200.00	SFL (DHMM)	100.00
	-80.00	CLL (MMHD)	400.00
	20.000		0.0

SENSOR MEASURE POINT TO TOOL ZERO

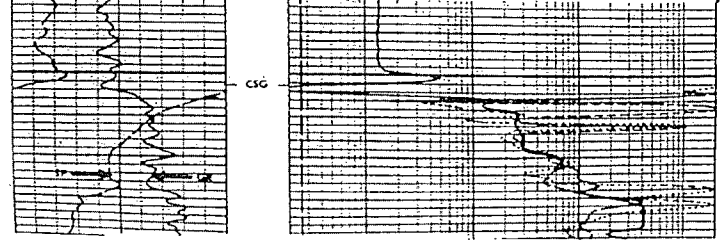
ILD	9.4	FEET	GR	32.9	FEET
ILM	3.7	FEET	SFL	6.4	FEET
SPAR	2.3	FEET	SP	2.3	FEET
TENS	2.3	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
SBR	1.00000	DHMM	DSEC	4.00000	MMHD
FEXP	2.15000		MSEC	-9.00000	MMHD
BMS	OPEN		FNUM	.620000	
IS	12.2300	IN			

GR (GAPI)	0.0	TENS (L)	10000.0
SP (MV)	200.00	ILM (DHMM)	2000.0
	-80.00	ILR (DHMM)	2000.0
	20.000	SFL (DHMM)	2000.0

FILE 2 14-FEB-85 09:13





CSU

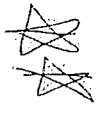
BOREHOLE COMPENSATED SONIC

COMPANY: STEARNS RESERVES
WELL: ANIMAS-55-7

FIELD: HILDCAT
COUNTY: HILDCAT
STATE: NEW MEXICO

LOCATION: 2412 TEL
SECT: 2929 FSL

TWP: 23S
RGE: 19W



PERMANENT DATUM:
ELEV. OF PERM. DATUM: 4200.0 F
LOG MEASURED FROM: KB
DRLG. MEASURED FROM: X8

ELEVATIONS:
KB: 4217.6 F
DPI: 4216.6 F
OLI: 4200.0 F

DATE: 14 FEB 85
RUN NO: 1

DEPTH-DRILLER: 7001.0 F
DEPTH-LOGGER: 7012.0 F
BTL. LOG INTERVAL: 7006.0 F
TOP LOG INTERVAL: 1053.0 F
CASING-DRILLER: 1030 F
CASING-LOGGER: 13-20
BIT SIZE: 12 1/4

OTHER SERVICES:
DIT
LDT
CML
MDT
BHC
HRT

PROGRAM
TAPE NO:
SERVICE
DATE
DRLG NO:
420230

TYPE FLUID IN HOLE: FRESH GEL
 DENSITY: 3.4 LB/G
 VISCOSITY: 41.0 C
 PH: 11.0
 FLUID LOSS: 7.4 CC
 SOURCE OF SAMPLE: TANK
 RM: 1.990 QHMM AT 59.0 DEGF
 RMF: 1.530 QHMM AT 59.0 DEGF
 RMC: 2.160 QHMM AT 59.0 DEGF
 SOURCE RMF/RMC: MEAS/MEAS
 RM AT BHT: 1.482 QHMM AT 265. DEGF
 RMF AT BHT: .371 QHMM AT 265. DEGF
 RMC AT BHT: .524 QHMM AT 265. DEGF

TIME CIRC. STOPPED: 0200
 TIME LOGGER ON BHT: 0900

MAX. REC. TEMP: 265.0 DEGF

LOGGING UNIT NO: 0174
 LOGGING UNIT LOC: FARMINGTON
 RECORDED BY: MAURER
 WITNESSED BY: MR. PILKINGTON

REMARKS:
CREW: YAZZIE, QUINN
CALIPER APPEARS TO BE STICKING

EQUIPMENT NUMBERS:
SGC 3407 SLC 159 SLS 1234

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCE FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, 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 EXPENSE 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.

FILE 11 14-FEB-85 16:55
DATA ACQUIRED 00-00 00100

CALCIN IENS(LB)

LOGGING UNIT LOG: FARRINGTON
RECORDED BY: MAURER
WITNESSED BY: MR. PILKINGTON

REMARKS:

CREW: YAZZIE, QUINN
CALIPER APPEARS TO BE STICKING

EQUIPMENT NUMBERS-

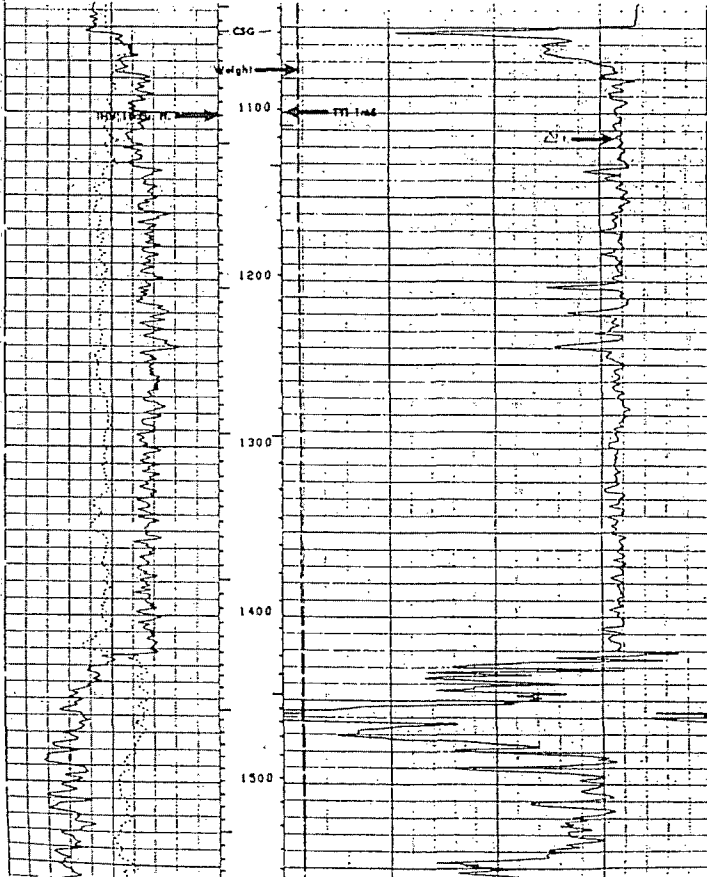
SGC 3407 SLC 139 SLS 1234

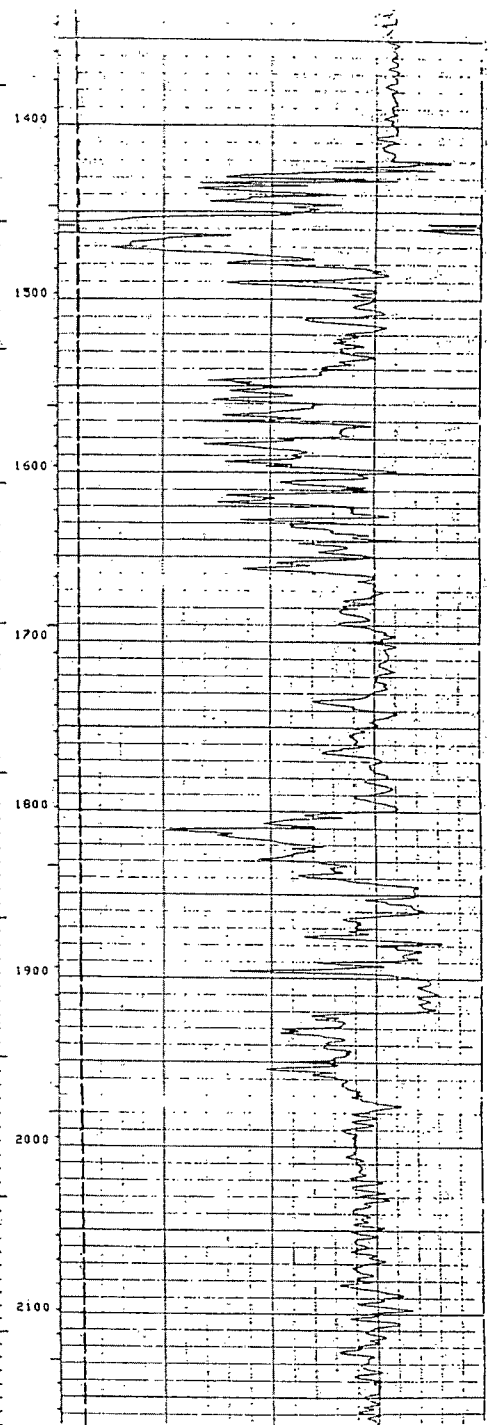
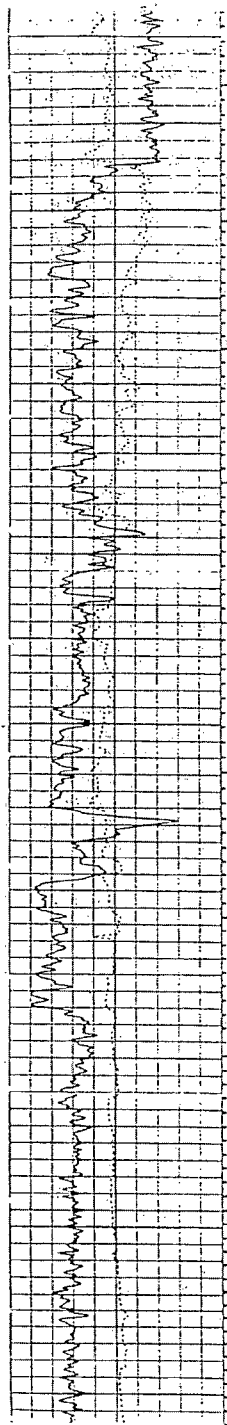
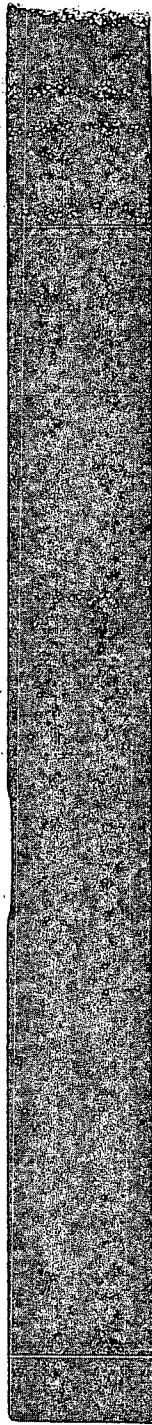
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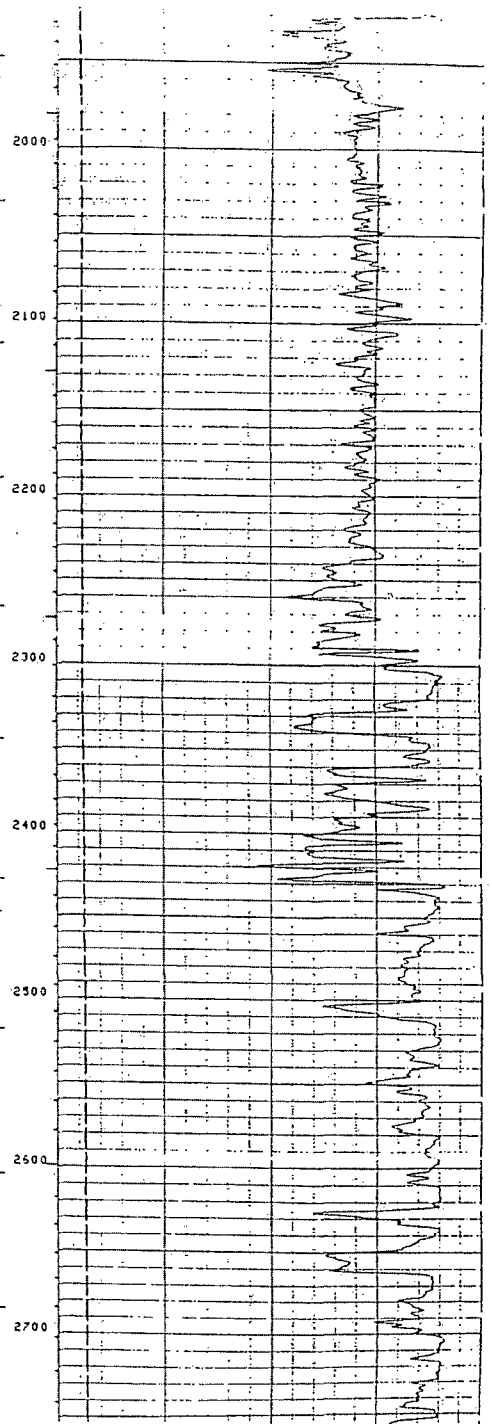
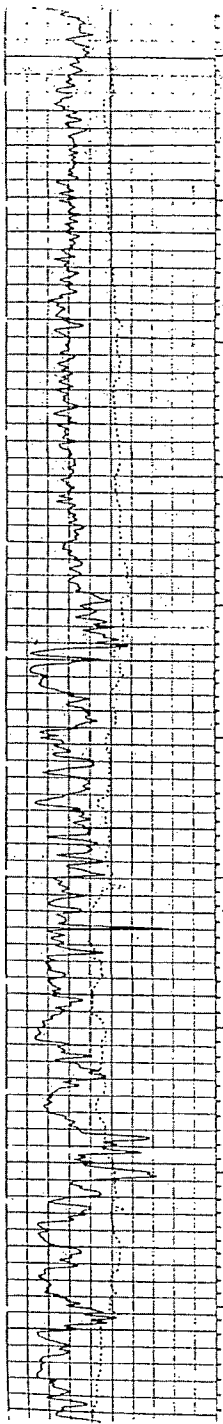
FILE 11 14-FEB-85 16:55
DATA ACQUIRED 00- -00 00:00

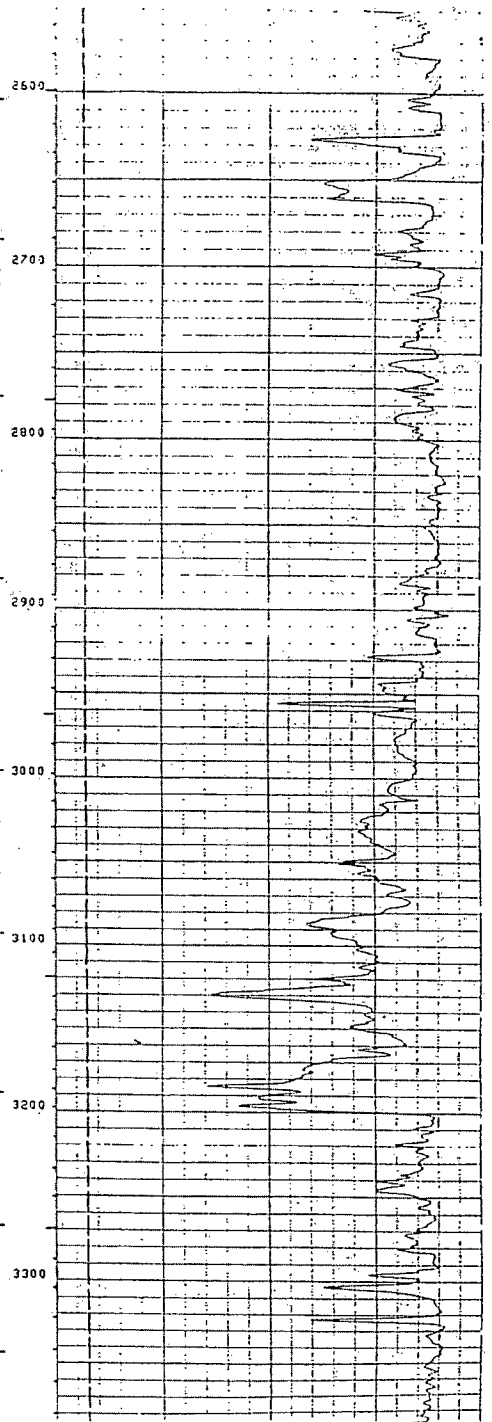
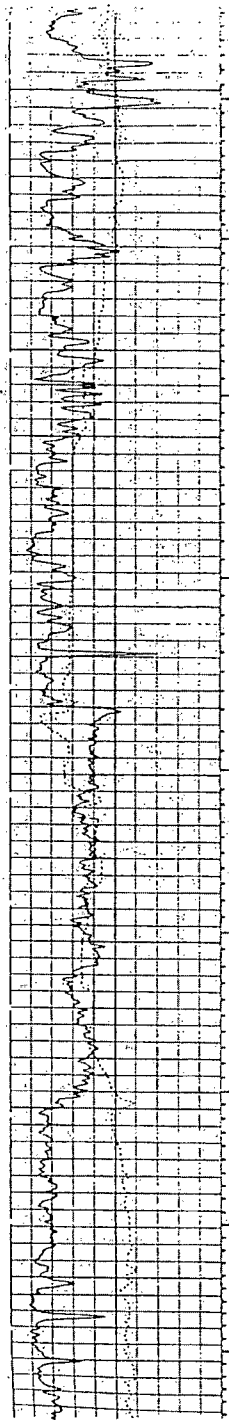
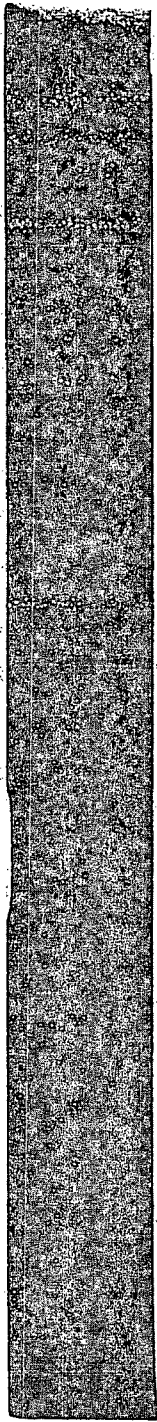
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GR (GAPI)		BT (US/F)	
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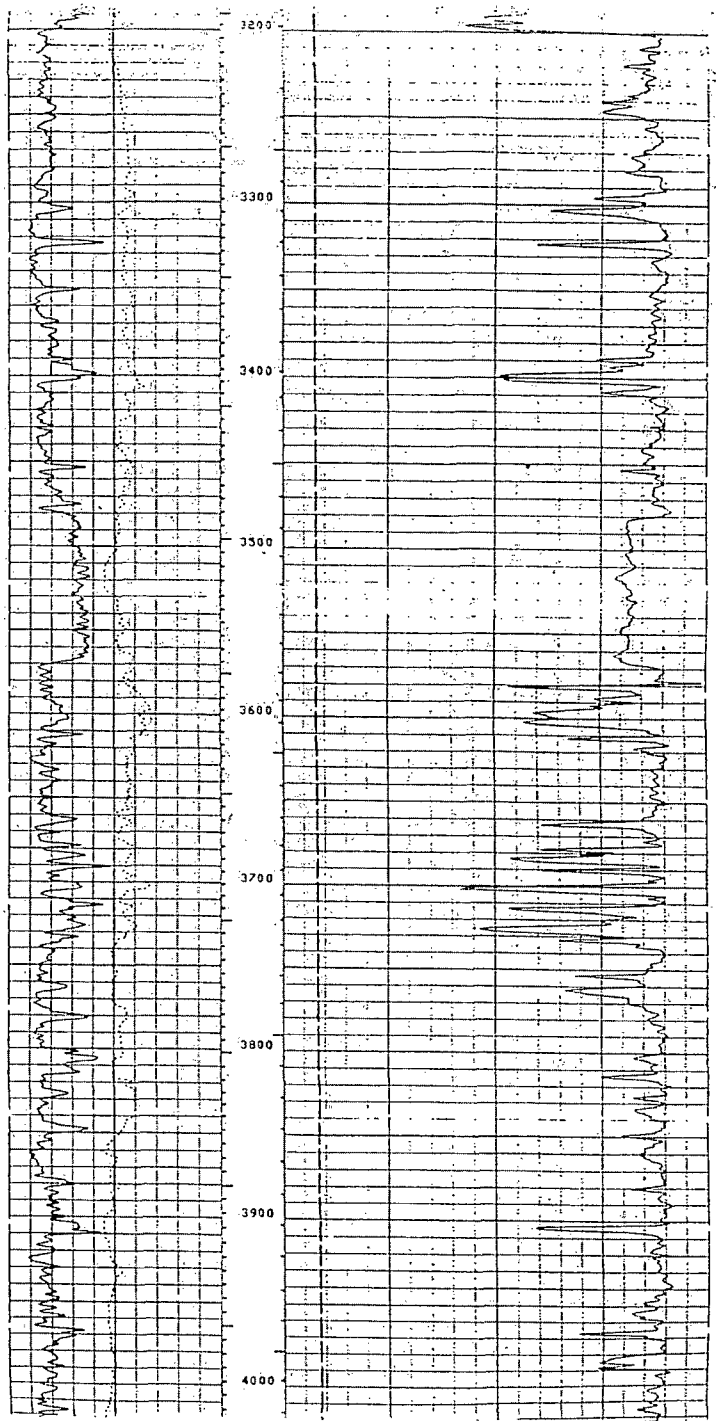
FILE 9 14-FEB-85 16:52

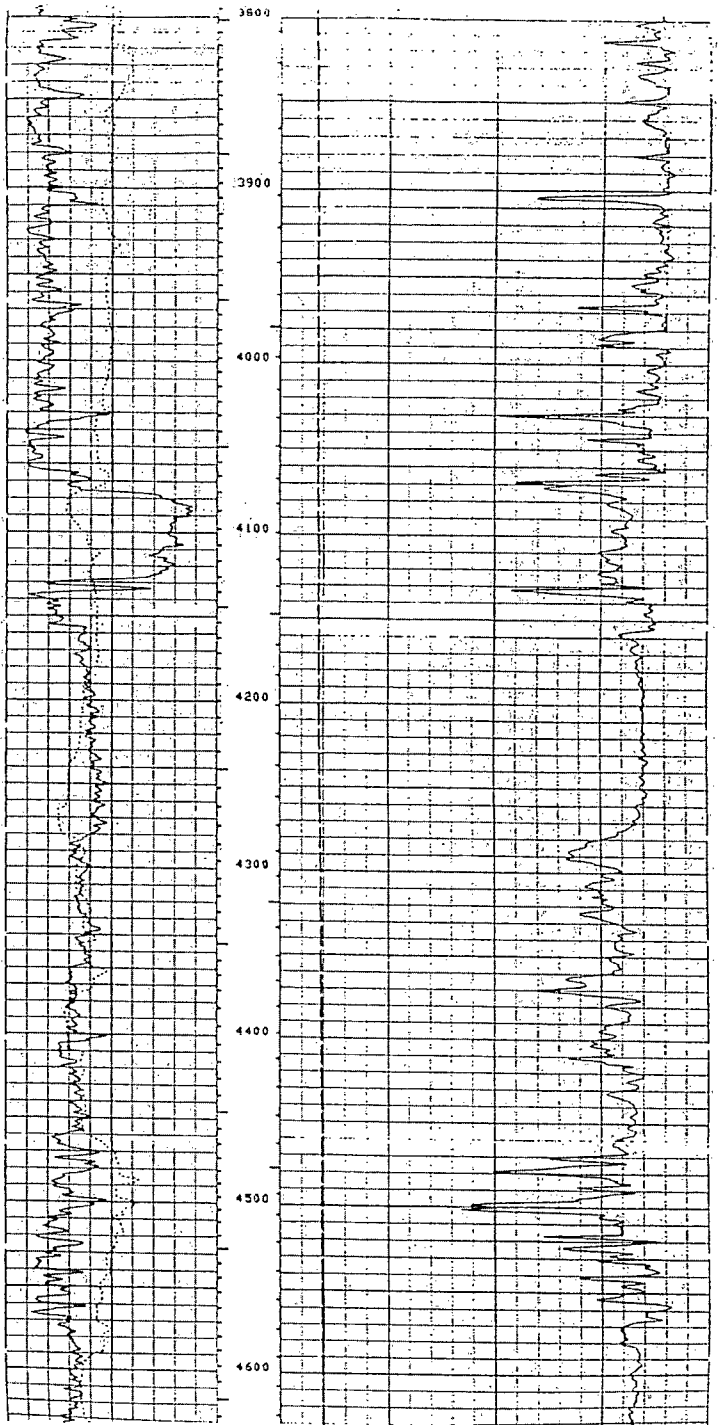
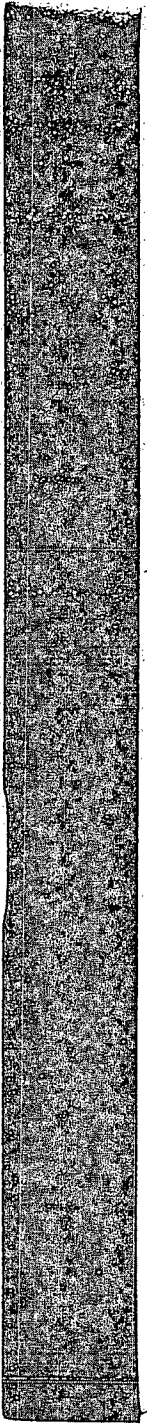


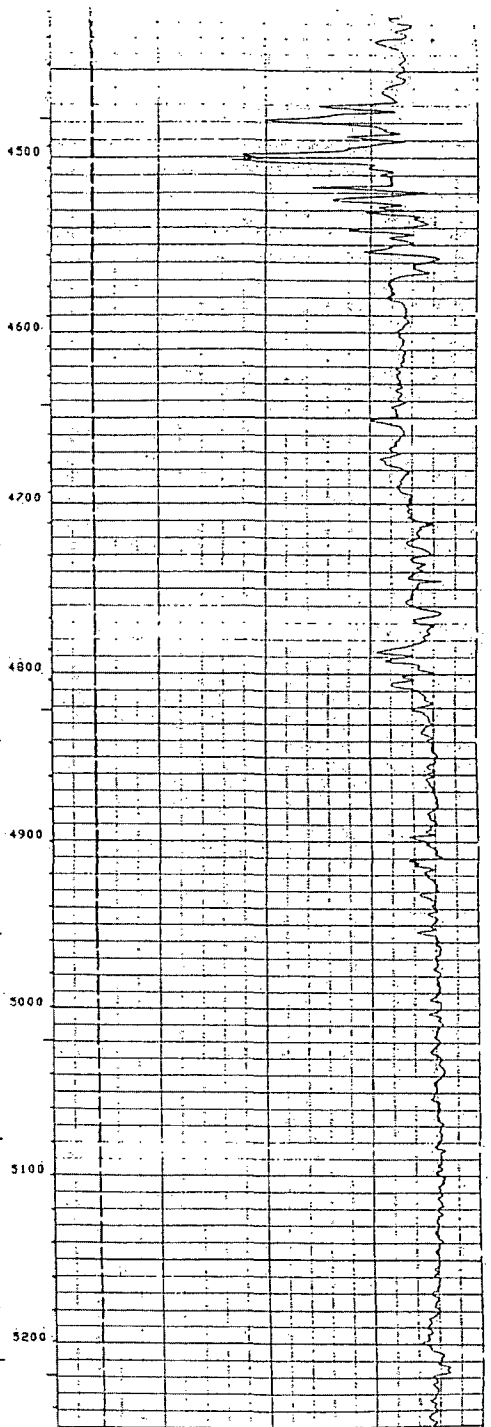
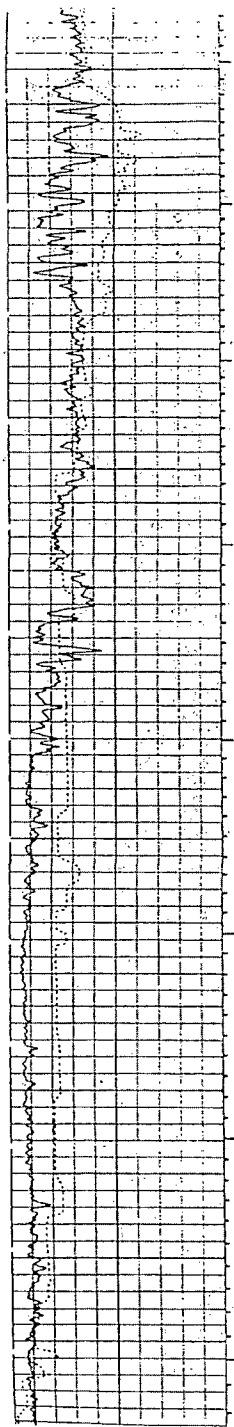
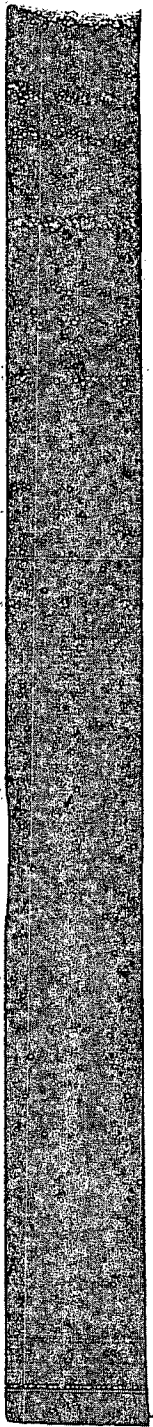


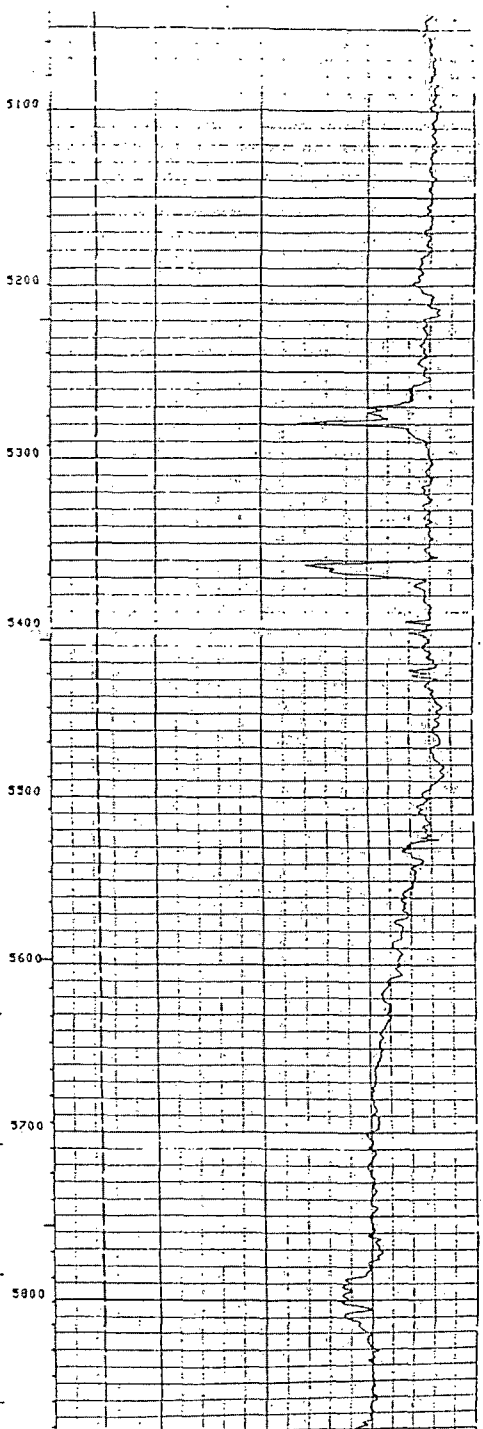
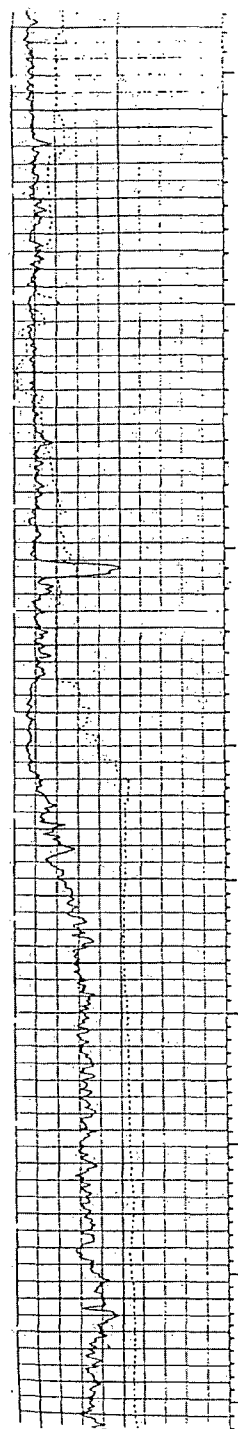
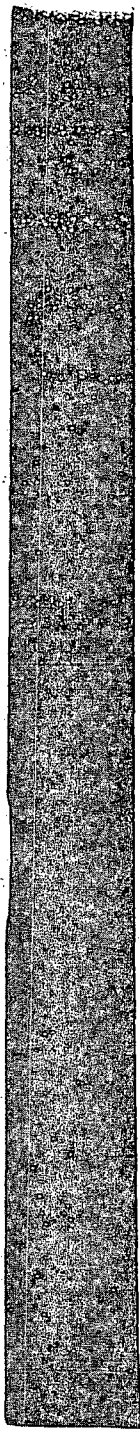


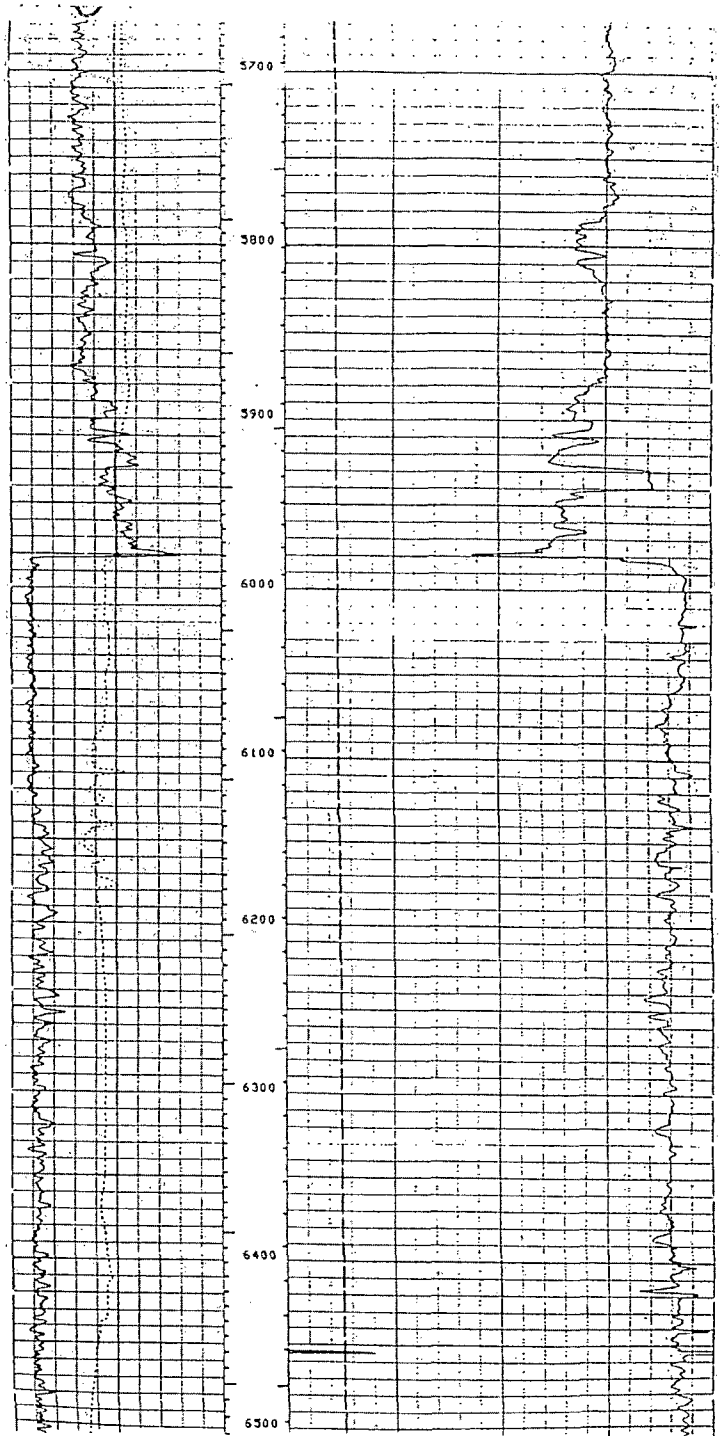
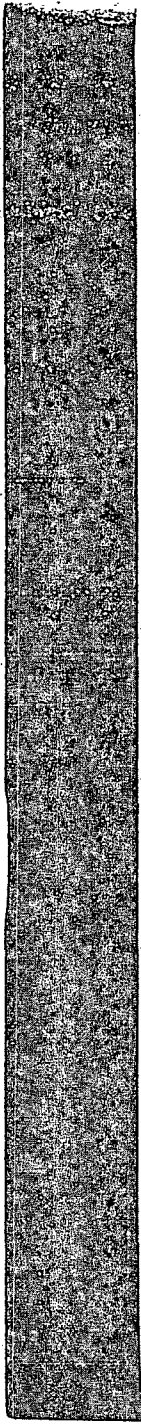


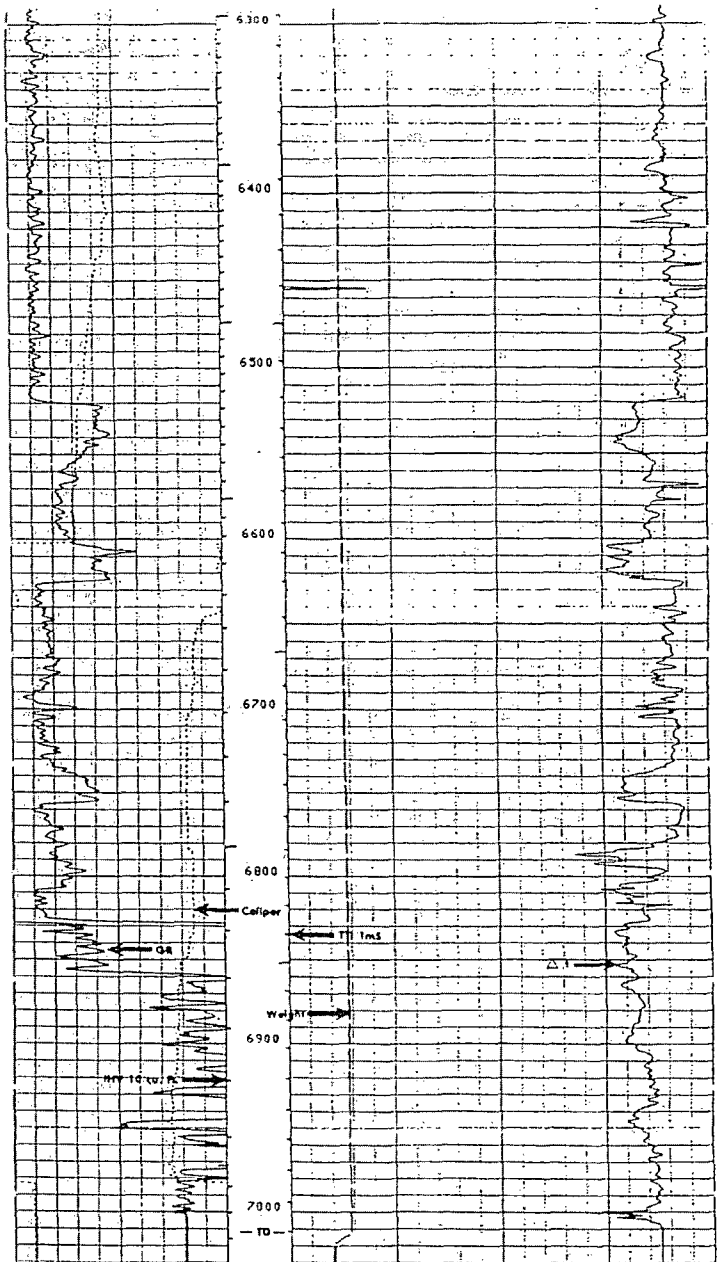












FILE 9 14-FEB-85 15:16

CAL(SIN...)		TMS(LB)	
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GR (GAPI)		DT (US/F)	
0.0	200.00	140.00	40.000

SENSOR MEASURE POINT TO TOOL ZERO

CP: 0 0 0000 0000 0000 0000



Baker Atlas

Well: 35-7
Field: ROSETTE
Company: RASER TECHNOLOGIES
Country: USA

Survey Date: 3-11-2008
Tool Type: Sondex Multifinger Imaging Tool
Tool Size: 8.0" /80-Arms
No. of Fingers: 80
Analyst: Orlando Lars

MIT Report Overview

Pipe:	Nom.OD 13.375 ins	Weight 54.52 ppl	Grade & Thread	Non-ID 12.615 ins	Nom. Upset 14.351 ins	Upper len. 2.4 ins	Lower len. 2.4 ins
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Analysis Overview

These results were generated semi-automatically using Sondex MITPro software Version 3.04. The data was acquired using a Sondex Multifinger Imaging Tool. Sondex accepts no responsibility for the accuracy of the results that are presented.

All items in the string are referred to as 'Joints'. This includes completion items such as cross-overs. Normal joints are identified by integer numbers, sequential in depth. Short joints and completion items are identified by numbers after the decimal point.

All penetrations and projections are measured by local surface shape analysis, where this is effective. The damage classification scheme is described at the end of the Joint Tabulations.

A total of 28 joints were analysed, of which 0 have possible holes.

The most deeply penetrated joints:

- pit depths to 0.097 ins in Joint 22
- pit depths to 0.084 ins in Joint 21
- pit depths to 0.065 ins in Joint 20
- pit depths to 0.06 ins in Joint 19
- pit depths to 0.04 ins in Joint 1
- pit depths to 0.036 ins in Joint 3

The most restricted joints:

- projections to 0.108 ins in Joint 2
- projections to 0.083 ins in Joint 1
- projections to 0.064 ins in Joint 27
- projections to 0.058 ins in Joint 19

Disclaimer

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 interpretations made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions.



MIT Report Overview

Baker Atlas

Well: 55-7
 Field: ROSETTE
 Company: RASER TECHNOLOGIES
 Country: USA

Survey Date: 3-11-2008
 Tool Type: Sonnex Multifinger Imaging Tool
 Tool Size: 8.0" /80-Arms
 No. of Fingers: 80
 Analyst: Orlando Larsu

Pipe:	Nom. OD	Weight	Grade & Thread	Nom. ID	Nom. Upset	Upper len.	Lower len.
	13.375 ins	54.52 ppf		12.615 ins	14.351 ins	2.4 ins	2.4 ins

Remarks:
 This casing appears to be in good condition. A trace of metal loss associated to drill wear was detected from 680 ft to 825 ft (joints 19 through 22). The deepest wall penetration was detected at 814 ft (ft. 22) where metal loss reached 26%. Joint 21 at 759 ft has a wall penetration of 22%. The rest of the drill wear trace graded within the Class 1 range (1 to 20%). Please review the "MIT REPORT JOINT TABULATION SHEET" for more details.
 Hardware: a float collar, was detected at 950 ft. Minor accumulation of deposits were detected in joint 1, 2 and 3.



Baker Atlas

Well: 55-7
 Field: ROSETTE
 Company: RASER TECHNOLOGIES
 Country: USA

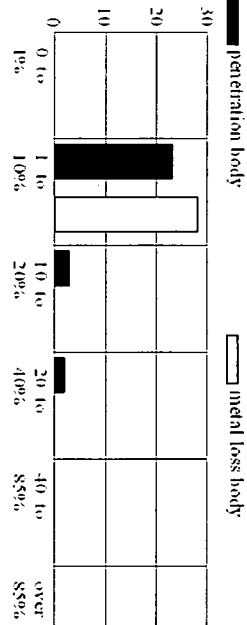
MIT Report Overview Body Region Analysis

Survey Date: 3-11-2008
 Tool Type: Sondes Multifinger Imaging Tool
 Tool Size: 8.0" /80-Arms
 No. of Fingers: 80
 Analysis: Orlando Lasso

Pipe: Norm OD 14.575 ins Weight 54.52 ppf Grade & Thread

Norm ID 12.615 ins Norm Upset 14.351 ins Upper len. 2.4 ins Lower len. 2.4 ins

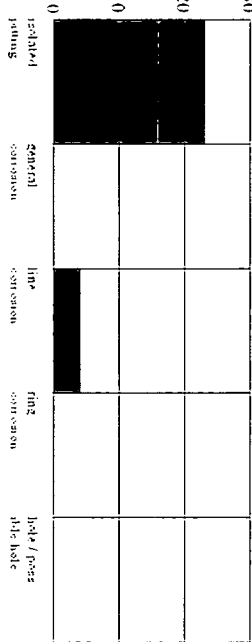
Penetration and Metal Loss (% wall)



Number of joints analysed (total = 28)

pen. loss	0	23	3	2	0	0
	0	28	0	0	0	0

Damage Configuration (body)



Number of joints damaged (total = 27)

23

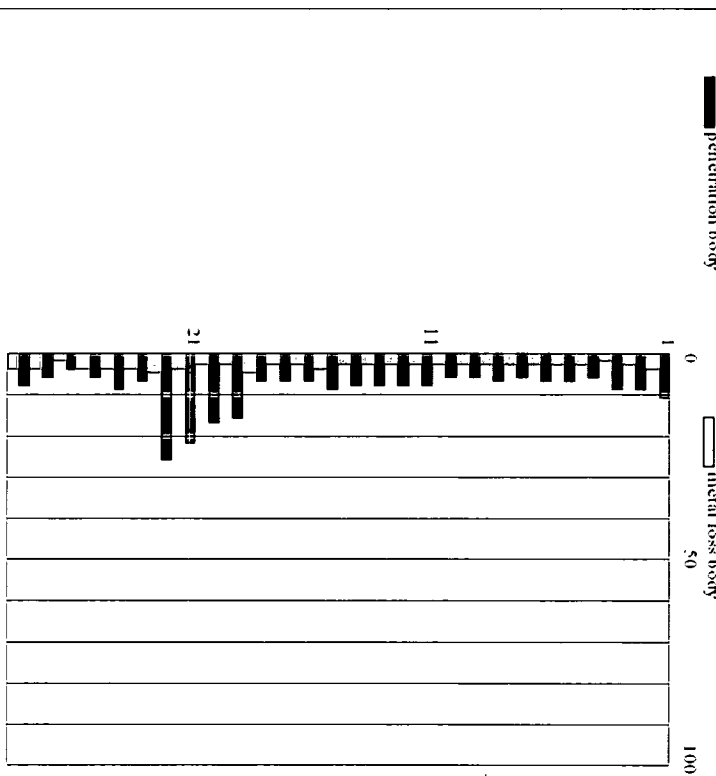
0

4

0

0

Damage Profile (% wall)



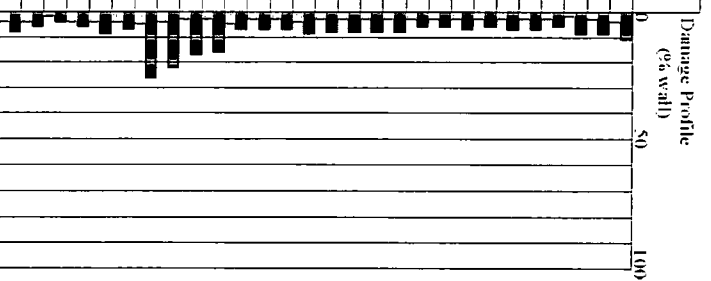
Bottom of Survey = 27

MIT REPORT JOINT TABULATION SHEET

13.375 ins 54.52 ppi
 thickness: Body = 0.380 ins Upset = 0.868 ins
 ID: 12.615 ins

Well: Well # 55-7
 Field: ROSETTE
 Company: RASER TECHNOLOGIES
 Country: USA
 Survey Date: 8-11-2008

I	Penetration		Metal Loss		Projection		Minimum ID	Comments
	Upset inches	Other inches	Body inches	%	Chng inches	Body inches		
0	0	.028	.040	11	.039	.083	12.436	Isolated shallow pitting with deposits.
0	0		.033	9	.032	.108	12.465	Isolated shallow pitting with deposits in body.
0	.028	0	.036	9	.036	.050	12.470	Isolated shallow pitting with light deposits.
0	0	0	.023	6	0	.030	12.504	Isolated shallow pitting with light deposits in body.
0	.026	0	.028	7	0	.041	12.492	Isolated shallow pitting with light deposits.
0	0	0	.026	7	0	.036	12.499	Isolated shallow pitting with light deposits in body.
0	0	0	.024	6	0	.024	12.506	Isolated shallow pitting with light deposits in body.
0	0	0	.028	7	0	.046	12.495	Isolated shallow pitting with light deposits in body.
0	0	0	.022	6	0	.026	12.480	Isolated shallow pitting with light deposits in body.
0	0	0	.031	8	0	.030	12.481	Oval. Isolated shallow pitting with light deposits in body.
0	.026	0	.032	8	0	.041	12.473	Isolated shallow pitting with light deposits.
0	0	0	.030	8	0	.038	12.538	Isolated shallow pitting with light deposits in body.
0	0	0	.030	8	0	.048	12.504	Isolated shallow pitting with light deposits in body.
0	.026	0	.034	9	0	.048	12.520	Isolated shallow pitting with light deposits.
0	0	0	.026	7	0	.044	12.552	Isolated shallow pitting with light deposits in body.
0	0	0	.028	7	0	.046	12.570	Isolated shallow pitting with light deposits in body.
0	0	0	.027	7	0	.040	12.576	Isolated shallow pitting with light deposits in body.
0	.032	0	.060	16	0	.058	12.582	Minor drill wear in joint. Line shallow corrosion with light deposits.
0	.026	0	.065	17	0	.052	12.626	Minor drill wear in joint. Line shallow corrosion with light deposits.
0	.036	0	.084	22	0	.050	12.648	22% anomaly @ 759'. drill wear assoc. Line corrosion with light deposits.
0	0	0	.097	26	0	.046	12.640	26% anomaly @ 814'. drill wear assoc. Line corrosion with light deposits in body.
0	0	0	.025	7	0	.046	12.622	Isolated shallow pitting with light deposits in body.
0	0	.026	.034	9	4	.029	12.576	Isolated shallow pitting with light deposits.
0	0	0	.024	6	4	.052	12.560	Isolated shallow pitting with light deposits.
0	0	0	.015	4	2	0	12.468	FL-OAT COLLAR Oval
0	0	0	.023	6	4	.036	12.504	Isolated shallow pitting with light deposits in body.
0	0	0	.032	8	4	.064	12.447	Isolated shallow pitting with light deposits in body.









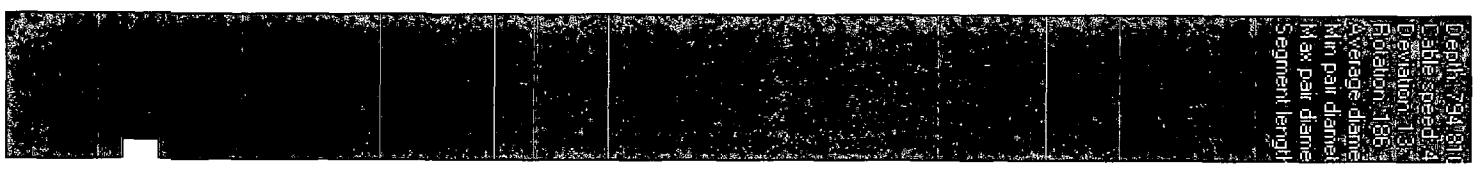
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 Hatched: [blank]
 Revisions: [blank]
 Date: [blank]
 Scale: [blank]

Damage classification scheme

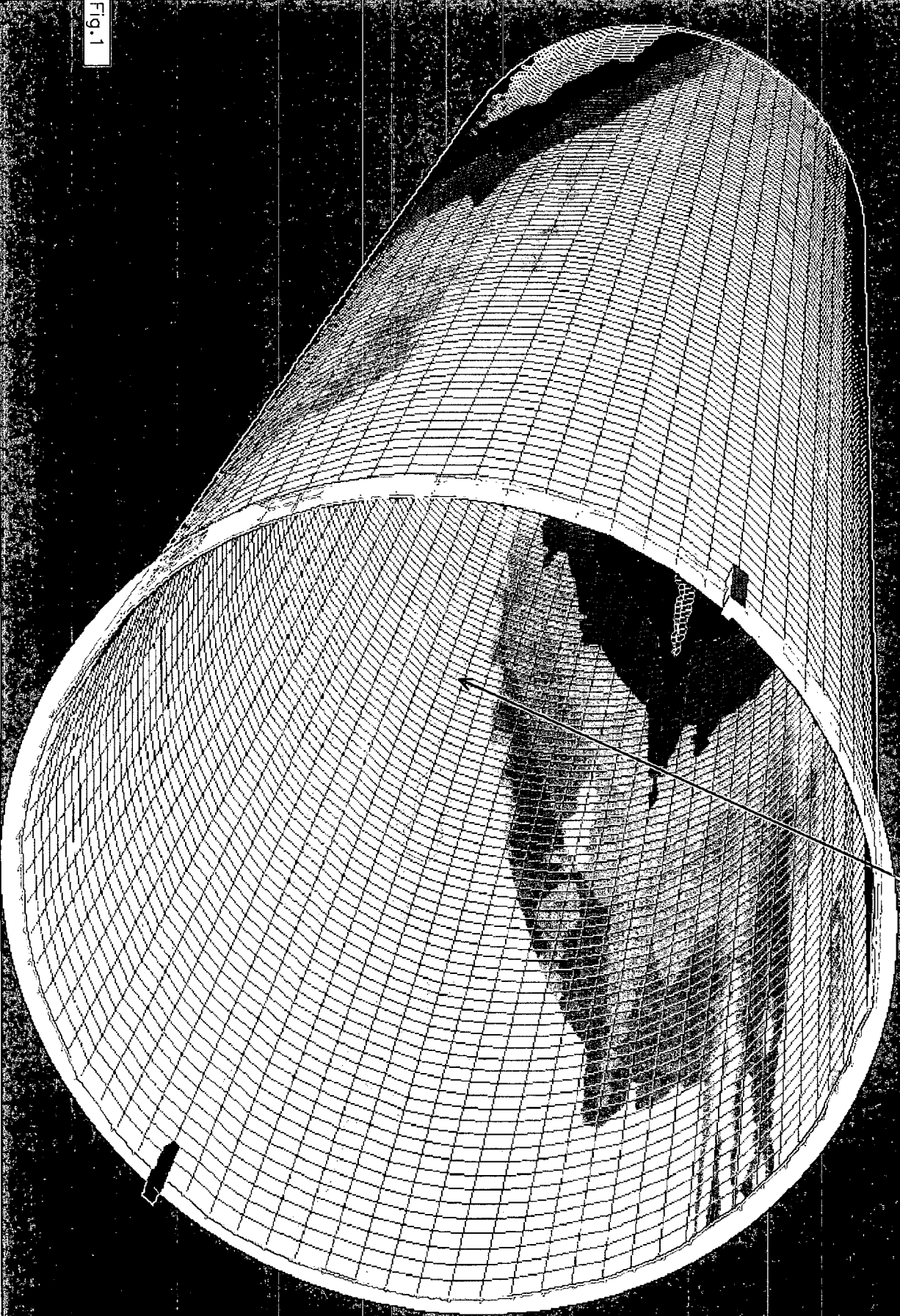
- Crack / projection class - in order of damage severity:
 - Class 1 - penetration exceeds 70% of nominal wall thickness
 - Class 2 - damage area exceeds 50% of circumference, but depth range does not exceed 2 * pipe ID
 - Class 3 - damage depth range exceeds 4 * pipe ID, but extends less than 30% of circumference.
 - Class 4 - damage depth range exceeds 2 * pipe ID and/or extends more than 30% of circumference.
 - Class 5 - damage depth range does not exceed 4 * pipe ID or extend more than 30% of circumference.
- Crack reporting threshold = 20 thou inches deviation in body, 25 thou in coupling.
- Crack line length = 1.667 feet.

Ground shading percentage thresholds

Corrosion level	21 - 40%	41 - 50%	51 - 100%
20% loss			
20% loss			



Ref: 12.767
Ref: 12.666
Ref: 12.959
Ref: 29.990

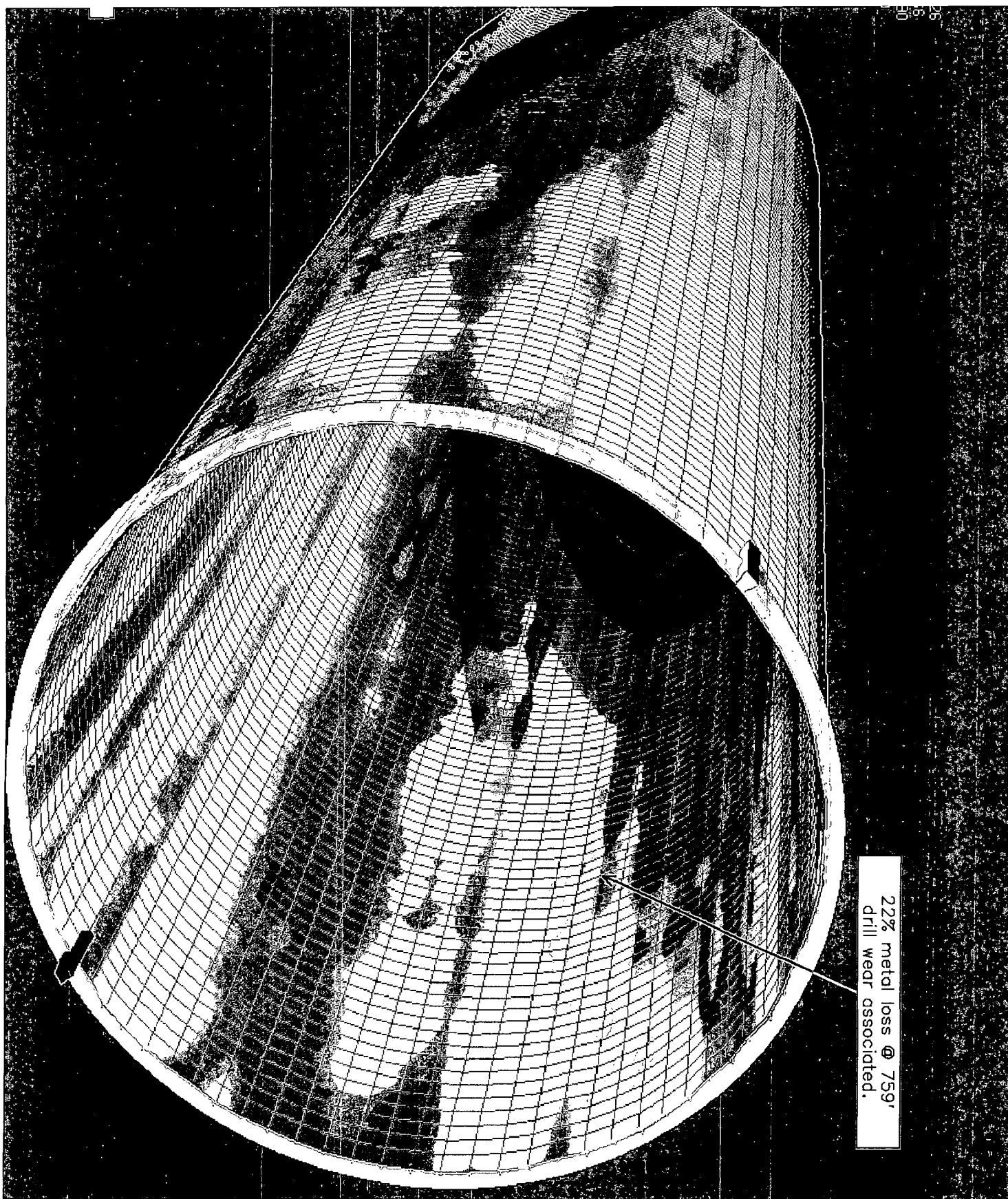


26% metal loss @ 814'
drill wear associated

Fig. 1

Depth: 756.000
Cable speed: 44
Deviation: 19.3
Rotation: 136
Average diameter: 12.7
Min pair diameter: 12.65
Max pair diameter: 12.7
Segment length: 29.990

Fig. 2



22% metal loss @ 759'
drill wear associated.

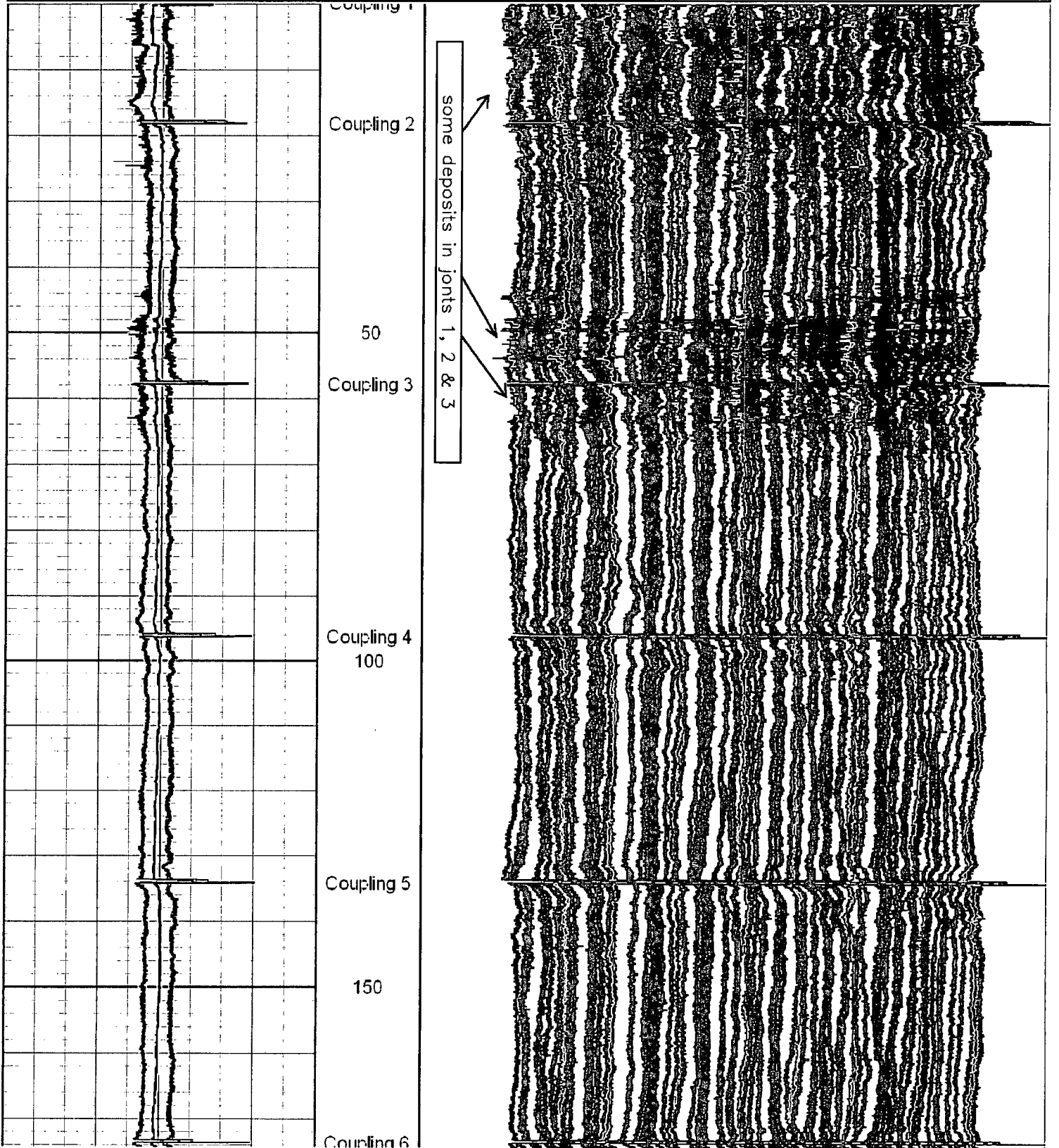


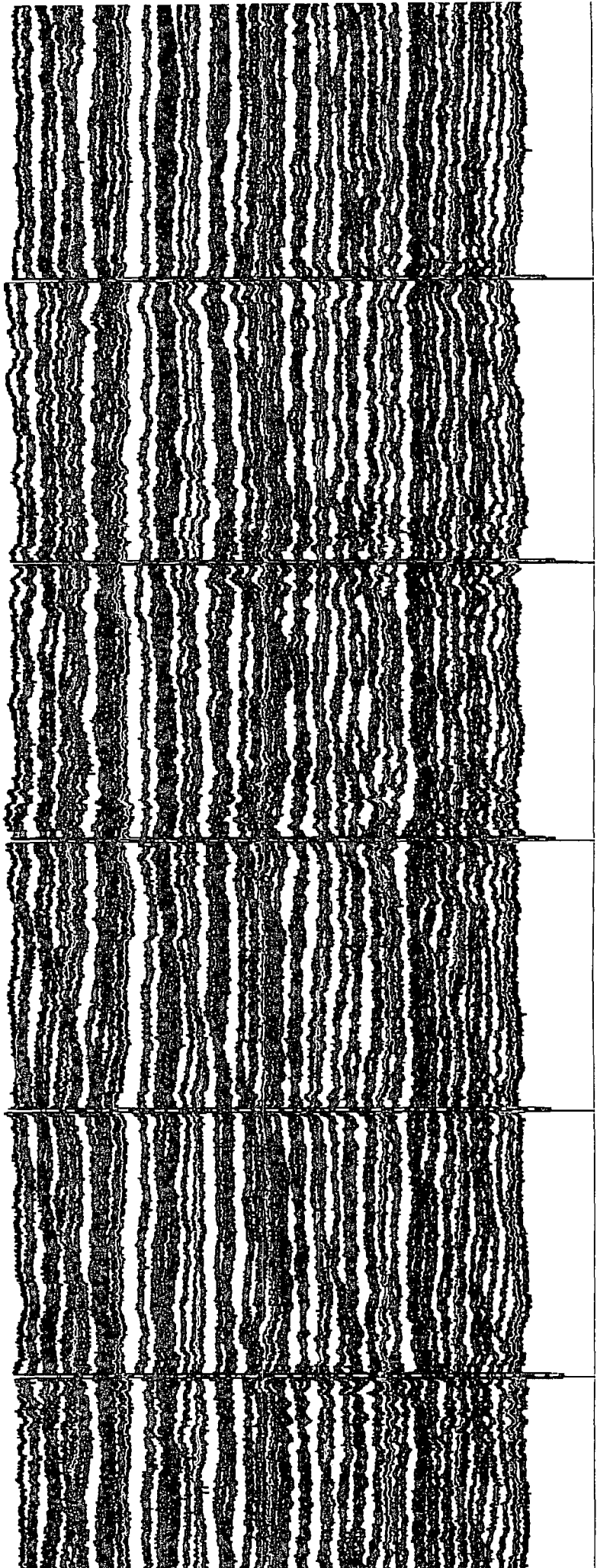
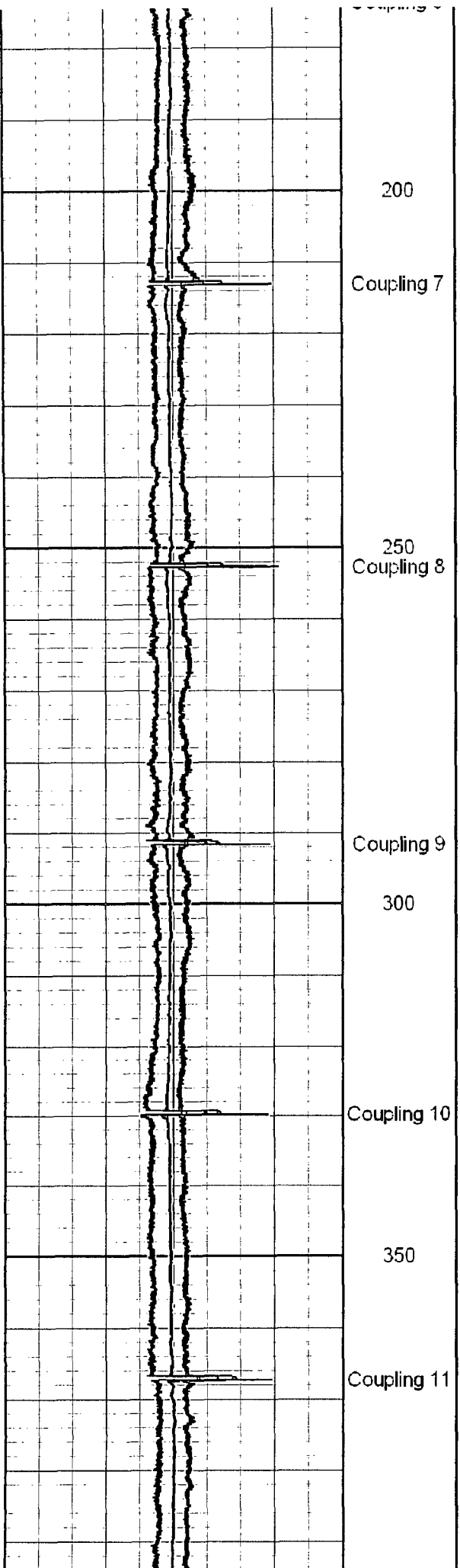
MAIN PASS

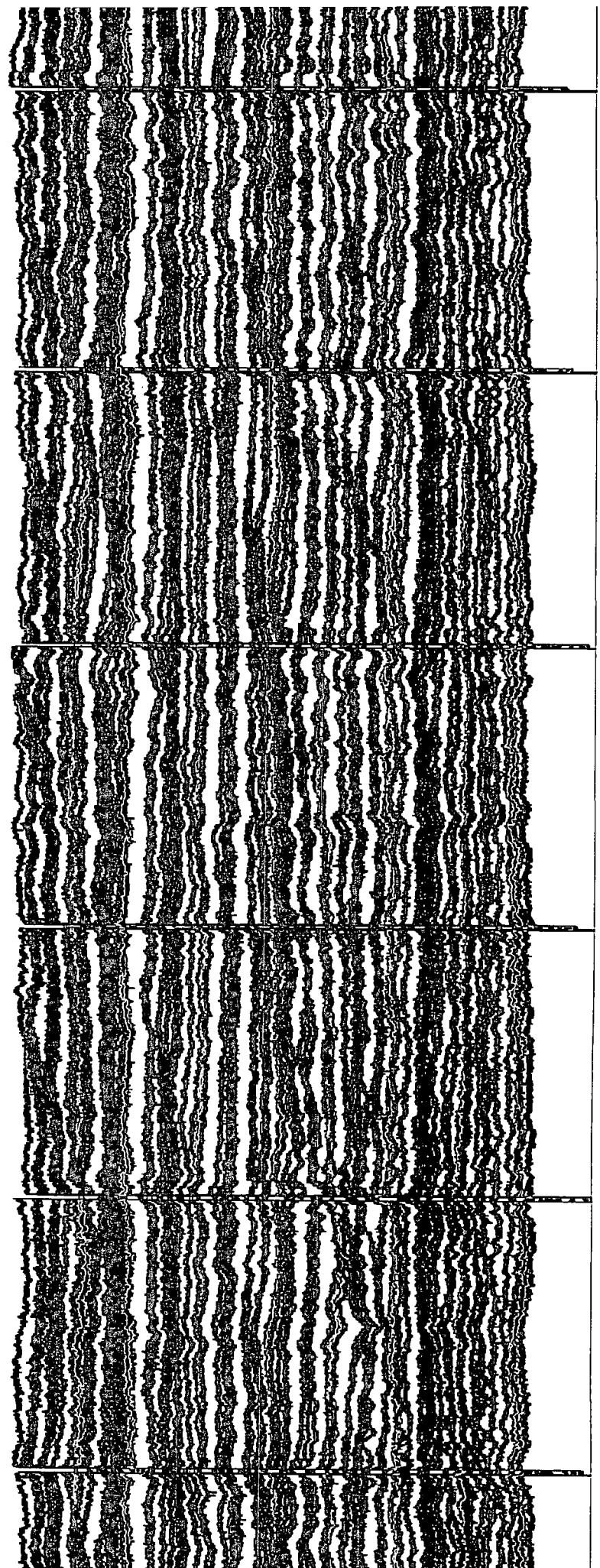
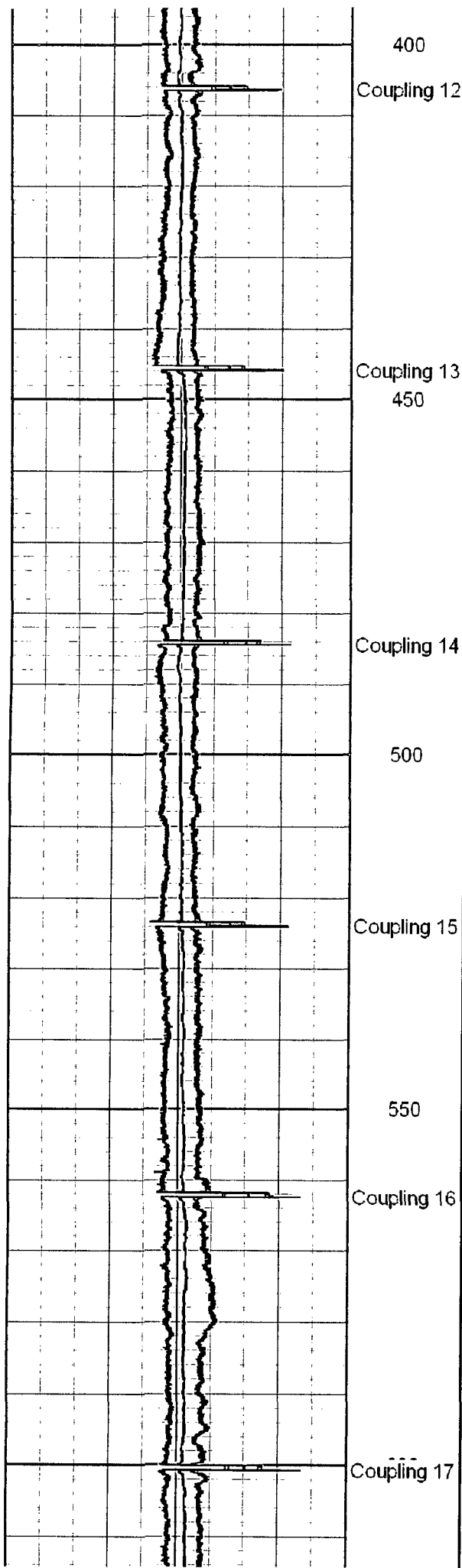
Baker Atlas

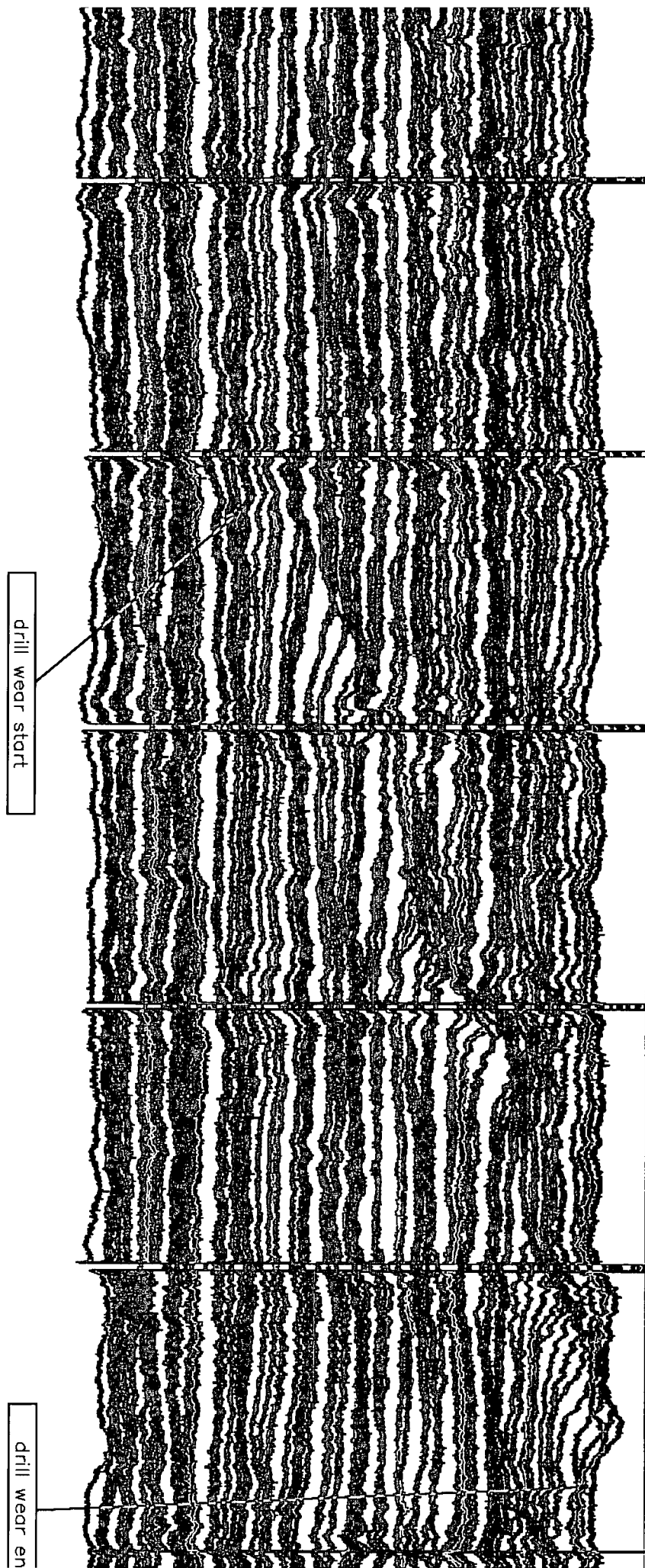
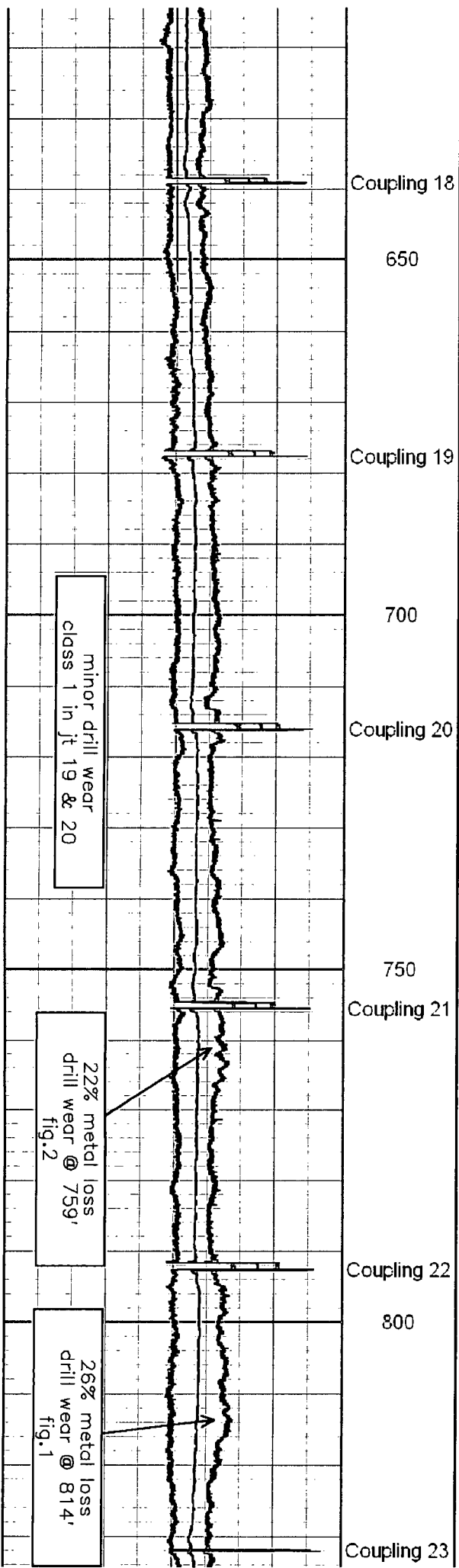
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Dataset Pathname: rosette/55-7/run1/pass4
Presentation Format: ba_80f

MAXIMUM-FINGER 11.615 (in) 13.615	12.015	80 Finger Trace (in)	16.015
MINIMUM-FINGER 11.615 (in) 13.615			
AVERAGE-FINGER 11.615 (in) 13.615			









P

850

Coupling 24

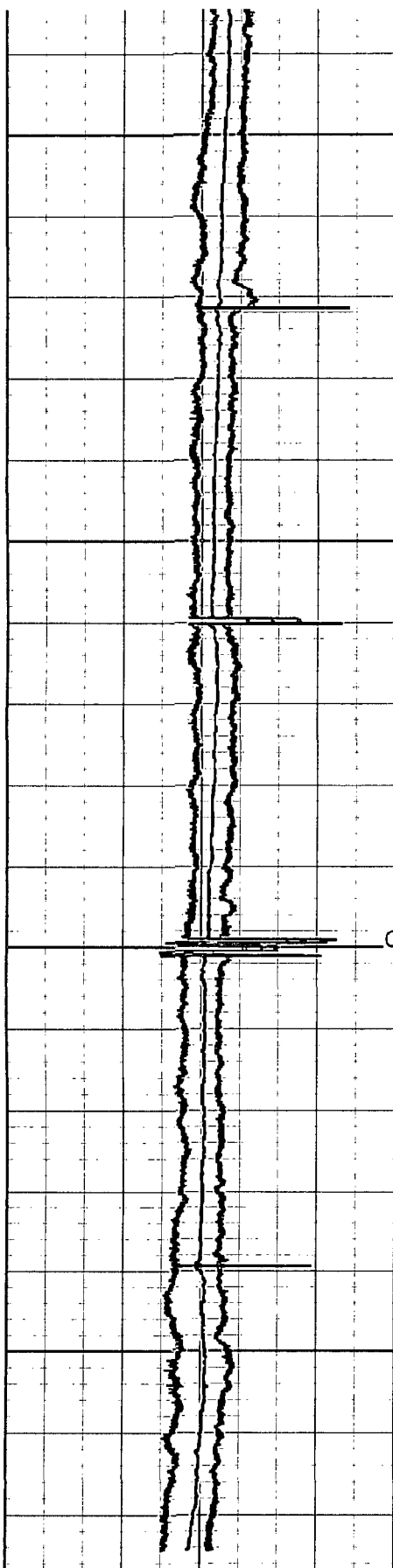
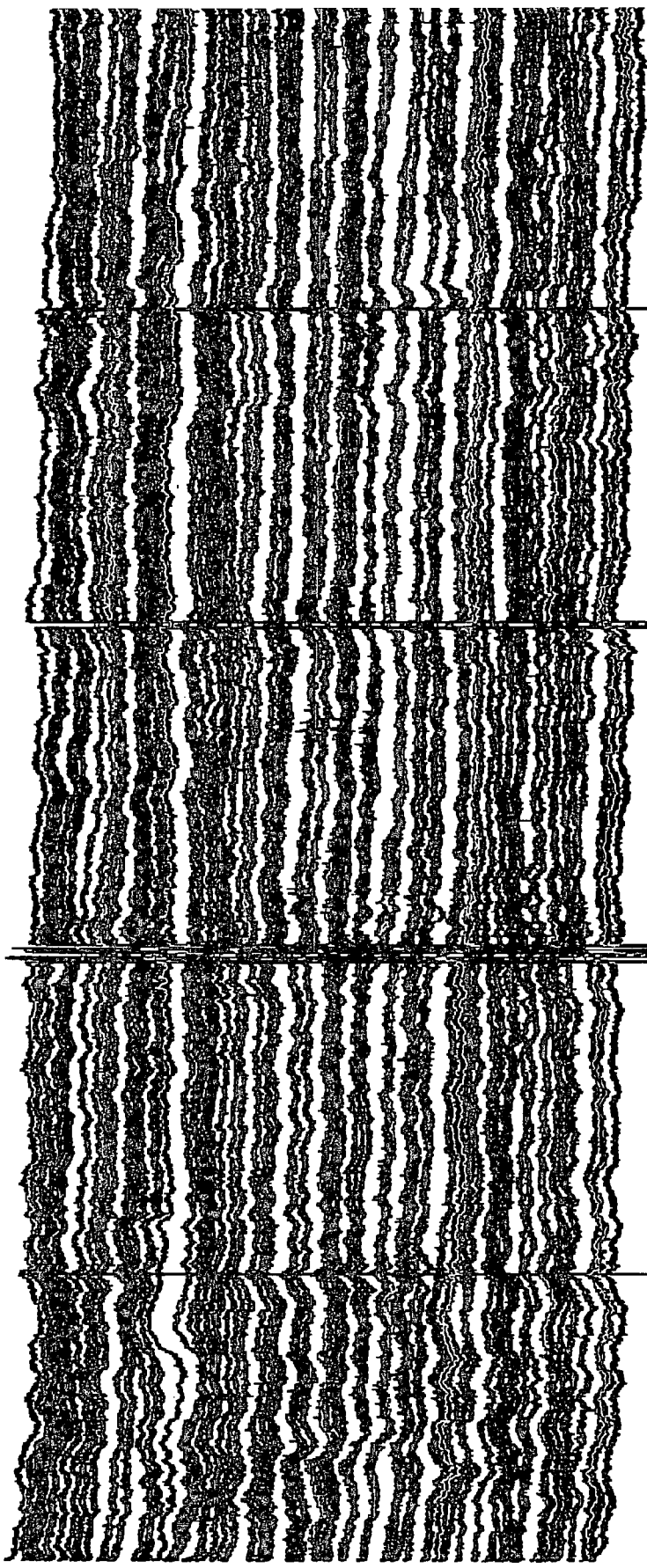
900

Coupling 25

Coupling 25.01
Coupling 26

Coupling 27

1000



12.015 80 Finger Trace (in) 16.015

MAXIMUM-FINGER		
11.615	(in)	13.615

MINIMUM-FINGER		
11.615	(in)	13.615

AVERAGE-FINGER		
11.615	(in)	13.615

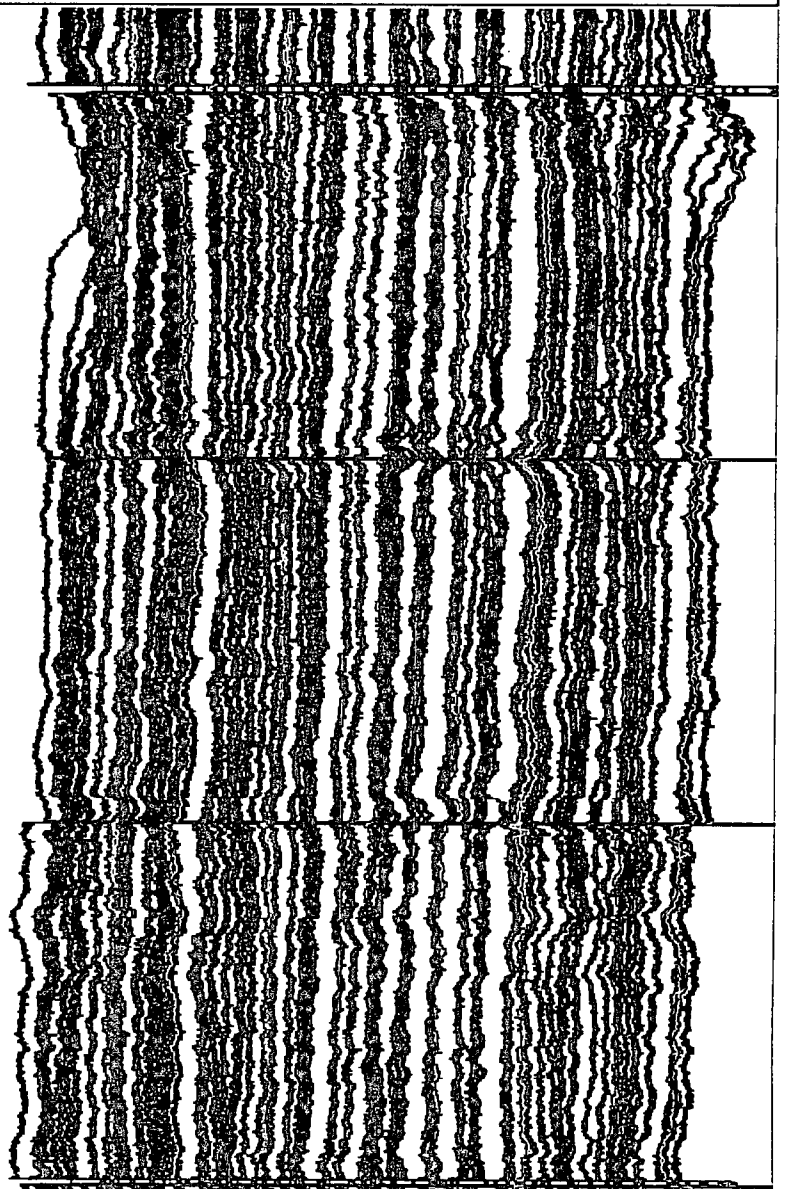
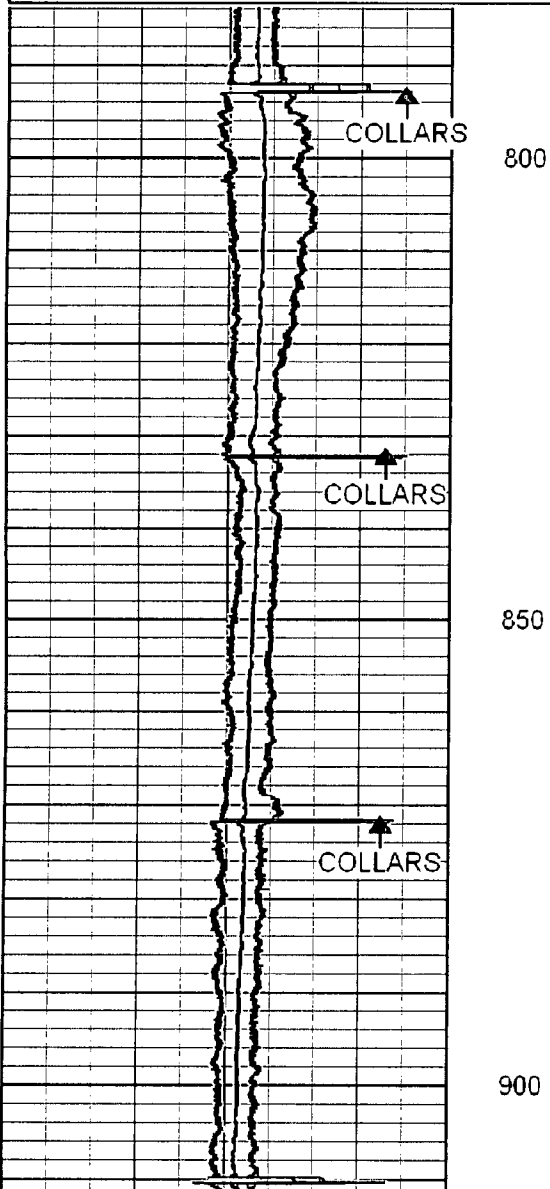


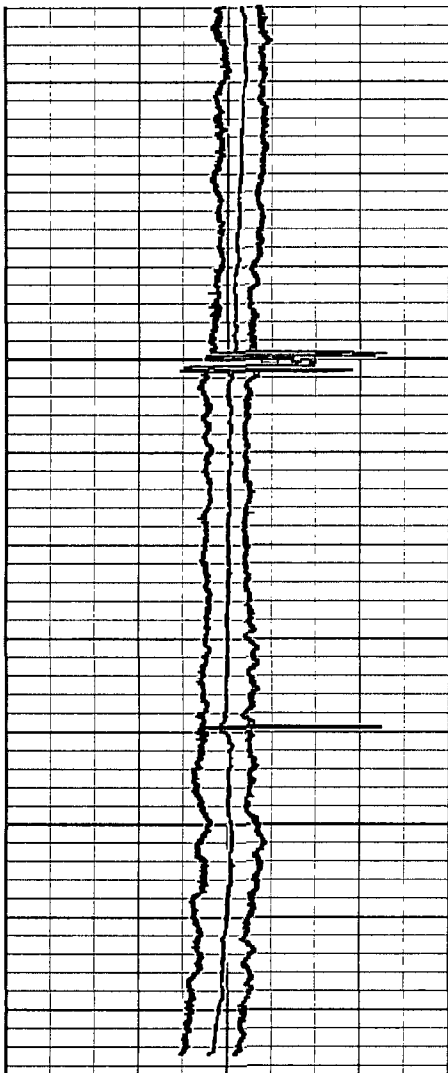
REPEAT PASS

Baker Atlas

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Charted by: Depth in Feet scaled 1:240

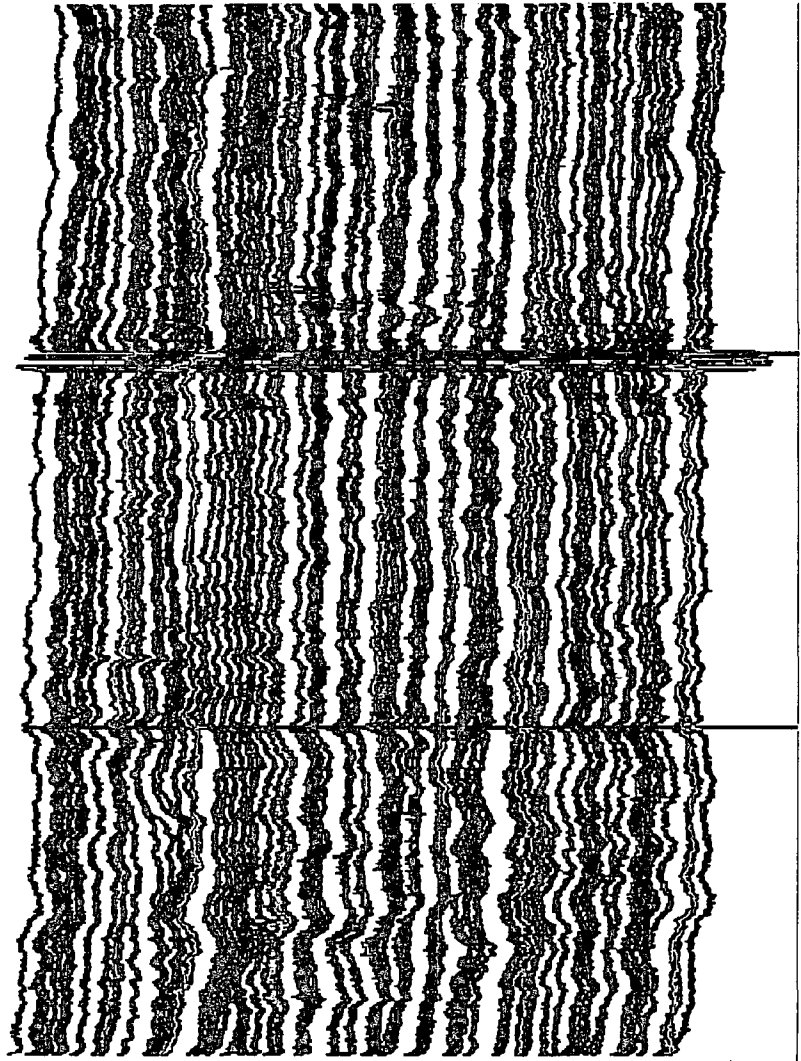
MAXIMUM-FINGER	12.015	80 Finger Trace (in)	16.015
11.615 (in) 13.615			
MINIMUM-FINGER			
11.615 (in) 13.615			
AVERAGE-FINGER			
11.615 (in) 13.615			





950

1000



MAXIMUM-FINGER		
11.615	(in)	13.615
MINIMUM-FINGER		
11.615	(in)	13.615
AVERAGE-FINGER		
11.615	(in)	13.615

12.015 80 Finger Trace (in) 16.015

Multi-finger Imaging Tool Calibration Report

Serial Number: 144524
 Number of Fingers: 80
 Tool Model: 018

Inclinometer Calibration Report

Performed: Tue Aug 01 15:06:51 2006
 Calibration Angle: 55

	Inc X	Inc Y
Vertical:	544	527
Finger 1 up:	532	501
Finger 61 up:	508	537
Finger 41 up:	556	554
Finger 21 up:	581	520
Sensitivity ratio:	1.3806	
X-axis angle:	162.008	

Finger Calibration Report

Performed:

Sun Mar 09 14:34:57 2008

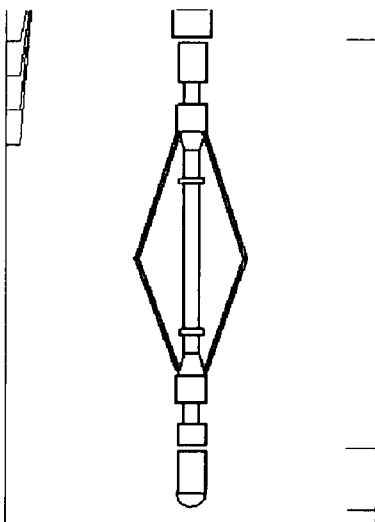
Ring size: (in)	9	Sens	10	Sens	11	Sens	12	Sens	13	Sens	14
Finger 01:	98	93.0	191	104.0	295	119.0	414	108.0	522	121.0	643
Finger 02:	214	89.0	303	95.0	398	102.0	500	93.0	593	101.0	694
Finger 03:	252	104.0	356	106.0	462	110.0	572	97.0	669	103.0	772
Finger 04:	254	111.0	365	118.0	483	123.0	606	111.0	717	110.0	827
Finger 05:	185	101.0	286	108.0	394	114.0	508	106.0	614	116.0	730
Finger 06:	133	95.0	228	103.0	331	111.0	442	105.0	547	117.0	664
Finger 07:	118	96.0	214	111.0	325	115.0	440	115.0	555	127.0	682
Finger 08:	161	95.0	256	105.0	361	109.0	470	104.0	574	114.0	688
Finger 09:	233	107.0	340	113.0	453	116.0	569	108.0	677	115.0	792
Finger 10:	247	110.0	357	114.0	471	115.0	586	106.0	692	111.0	803
Finger 11:	194	96.0	290	102.0	392	104.0	496	103.0	599	116.0	715
Finger 12:	233	107.0	340	110.0	450	113.0	563	112.0	675	118.0	793
Finger 13:	152	99.0	251	107.0	358	109.0	467	109.0	576	122.0	698
Finger 14:	205	101.0	306	103.0	409	104.0	513	106.0	619	116.0	735
Finger 15:	139	97.0	236	102.0	338	104.0	442	110.0	552	117.0	669
Finger 16:	207	102.0	309	105.0	414	105.0	519	110.0	629	115.0	744
Finger 17:	102	88.0	190	93.0	283	95.0	378	104.0	482	113.0	595
Finger 18:	272	112.0	384	116.0	500	109.0	609	120.0	729	110.0	839
Finger 19:	182	98.0	280	101.0	381	97.0	478	106.0	584	100.0	684
Finger 20:	332	117.0	449	117.0	566	109.0	675	114.0	789	96.0	885
Finger 21:	163	100.0	263	99.0	362	96.0	458	108.0	566	107.0	673
Finger 22:	247	104.0	351	104.0	455	100.0	555	114.0	669	113.0	782
Finger 23:	178	101.0	279	105.0	384	101.0	485	116.0	601	117.0	718
Finger 24:	197	101.0	298	102.0	400	99.0	499	113.0	612	114.0	726
Finger 25:	249	111.0	360	113.0	473	108.0	581	115.0	696	117.0	813
Finger 26:	249	110.0	359	111.0	470	105.0	575	116.0	691	114.0	805
Finger 27:	202	105.0	307	107.0	414	103.0	517	122.0	639	119.0	758
Finger 28:	128	100.0	228	102.0	330	102.0	432	121.0	553	122.0	675
Finger 29:	167	103.0	270	107.0	377	101.0	478	120.0	598	115.0	713
Finger 30:	128	103.0	231	107.0	338	104.0	442	127.0	569	125.0	694
Finger 31:	197	111.0	308	112.0	420	107.0	527	125.0	652	116.0	768
Finger 32:	158	102.0	260	104.0	364	99.0	463	118.0	581	112.0	693
Finger 33:	195	102.0	297	103.0	400	98.0	498	113.0	611	106.0	717
Finger 34:	184	100.0	284	102.0	386	98.0	484	117.0	601	112.0	713
Finger 35:	173	107.0	280	111.0	391	110.0	501	131.0	632	121.0	753
Finger 36:	195	101.0	296	101.0	397	95.0	492	111.0	603	107.0	710
Finger 37:	178	100.0	278	104.0	382	101.0	483	119.0	602	112.0	714
Finger 38:	88	91.0	179	99.0	278	100.0	378	119.0	497	115.0	612
Finger 39:	182	109.0	291	110.0	401	110.0	511	127.0	638	116.0	754
Finger 40:	191	105.0	296	113.0	409	116.0	525	128.0	653	112.0	765

Finger 41:	217	105.0	322	108.0	430	108.0	538	120.0	658	109.0	767
Finger 42:	195	106.0	301	110.0	411	111.0	522	123.0	645	112.0	757
Finger 43:	172	103.0	275	107.0	382	109.0	491	121.0	612	116.0	728
Finger 44:	134	97.0	231	104.0	335	107.0	442	123.0	565	112.0	677
Finger 45:	164	97.0	261	101.0	362	102.0	464	118.0	582	110.0	692
Finger 46:X	196	107.0	303	112.0	415	113.0	528	39.0	567	190.0	757
Finger 47:	127	98.0	225	108.0	333	112.0	445	121.0	566	115.0	681
Finger 48:	229	105.0	334	107.0	441	106.0	547	108.0	655	105.0	760
Finger 49:	43	83.0	126	98.0	224	108.0	332	117.0	449	118.0	567
Finger 50:	165	107.0	272	115.0	387	124.0	511	120.0	631	114.0	745
Finger 51:	140	96.0	236	105.0	341	114.0	455	116.0	571	110.0	681
Finger 52:	271	111.0	382	116.0	498	118.0	616	118.0	734	102.0	836
Finger 53:	80	93.0	173	101.0	274	114.0	388	106.0	494	108.0	602
Finger 54:	194	107.0	301	114.0	415	123.0	538	123.0	661	110.0	771
Finger 55:	161	100.0	261	110.0	371	116.0	487	118.0	605	109.0	714
Finger 56:	160	98.0	258	110.0	368	119.0	487	117.0	604	111.0	715
Finger 57:	265	108.0	373	113.0	486	122.0	608	106.0	714	99.0	813
Finger 58:	148	97.0	245	109.0	354	119.0	473	117.0	590	109.0	699

Finger 59:	201	104.0	305	111.0	416	125.0	541	111.0	652	106.0	758
Finger 60:	153	101.0	254	110.0	364	123.0	487	116.0	603	110.0	713
Finger 61:	268	106.0	374	113.0	487	121.0	608	106.0	714	94.0	808
Finger 62:	186	110.0	296	119.0	415	139.0	554	115.0	669	112.0	781
Finger 63:	187	101.0	288	111.0	399	120.0	519	112.0	631	109.0	740
Finger 64:	244	104.0	348	109.0	457	120.0	577	100.0	677	101.0	778
Finger 65:	188	106.0	294	117.0	411	130.0	541	114.0	655	109.0	764
Finger 66:	107	89.0	196	101.0	297	116.0	413	106.0	519	107.0	626
Finger 67:	182	98.0	280	108.0	388	121.0	509	108.0	617	106.0	723
Finger 68:	128	92.0	220	105.0	325	120.0	445	108.0	553	110.0	663
Finger 69:	188	98.0	286	109.0	395	120.0	515	107.0	622	108.0	730
Finger 70:	216	98.0	314	107.0	421	110.0	531	93.0	624	94.0	718
Finger 71:	196	101.0	297	111.0	408	124.0	532	108.0	640	110.0	750
Finger 72:	229	106.0	335	116.0	451	128.0	579	109.0	688	111.0	799
Finger 73:X	804	-1.0	803	-1.0	802	0.0	802	0.0	802	2.0	804
Finger 74:	161	93.0	254	99.0	353	108.0	461	97.0	558	100.0	658
Finger 75:	257	102.0	359	114.0	473	128.0	601	108.0	709	107.0	816
Finger 76:	173	100.0	273	111.0	384	124.0	508	108.0	616	110.0	726
Finger 77:	265	105.0	370	112.0	482	124.0	606	108.0	714	109.0	823
Finger 78:	143	91.0	234	103.0	337	113.0	450	98.0	548	106.0	654
Finger 79:	139	92.0	231	103.0	334	114.0	448	102.0	550	112.0	662
Finger 80:	176	96.0	272	108.0	380	118.0	498	109.0	607	116.0	723

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			CHD-AES (000001) Cable Head	1.04	1.69	2.00
			PRC-001 (000001) Production Roller Centraliser (3 Arm)	1.92	1.69	7.00
			MIT-018 (144524) Multifinger Imaging Tool (80F)	3.33	8.00	92.00
MFING	2.64					
MINCY	2.64					

MINCY 2.64
 MTEMP 2.64
 MCALHI 2.64
 MCALLO 2.64



PRC-017 (000002) Production Roller
 Centraliser (3 Arm)

2.01 1.69 7.00

BUL-001 (000001) Bullnose

0.30 1.69 1.50

Dataset: /field/well/run/_plots/_jobs_/log
 Total Length: 8.60 ft
 Total Weight: 109.50 lb
 O.D.: 8.00 in



Baker Atlas

3 Armealiper Log

File No: _____
 590530
 API No: _____
 N/A

Company: RASER TECHNOLOGIES
 Well: 55-7
 Field: ROSEIE INC LEASE
 County: HIDALGO State: NM

Location: STATE WELL NAME A-36-AB-S-6
 SEC: N/A TWP: N/A RGE: N/A

Other Services:
 SONDEX
 SBT
 TEMP

Permanent Datum: _____ Elevations: _____
 Log Measured From: G.L. N/A Above P. D.
 Drill Measured From: K.B

Date	MARCH 11 2008	
Run	ONE	
Service Order	550530	
Depth Driller	N/A	
Depth Logger	1587 ft	
Bottom Logged Interval	1366 ft	
Top Logged Interval	SURFACE	
Time Started	1430	
Time Finished	1530	
Operator Rig Time	1	
Type of Fluid in Hole	WATER	
Fluid Density	N/A	
Salinity	N/A	
Fluid Level	52 ft	
Logged Cement Top	N/A	
Wellhead Pressure	0 psi	
Maximum Hole Deviation	N/A	
Nominal Logging Speed	30 fpm	
Maximum Recorded Temperature	182.77 degF	
Reference Log	N/A	
Reference Log Date	N/A	
Equipment No.	4249	MIDLAND TX
Recorded By	J. HAUSEY	
Witnessed By	HR. R. CULBERT	

- RUN HERE

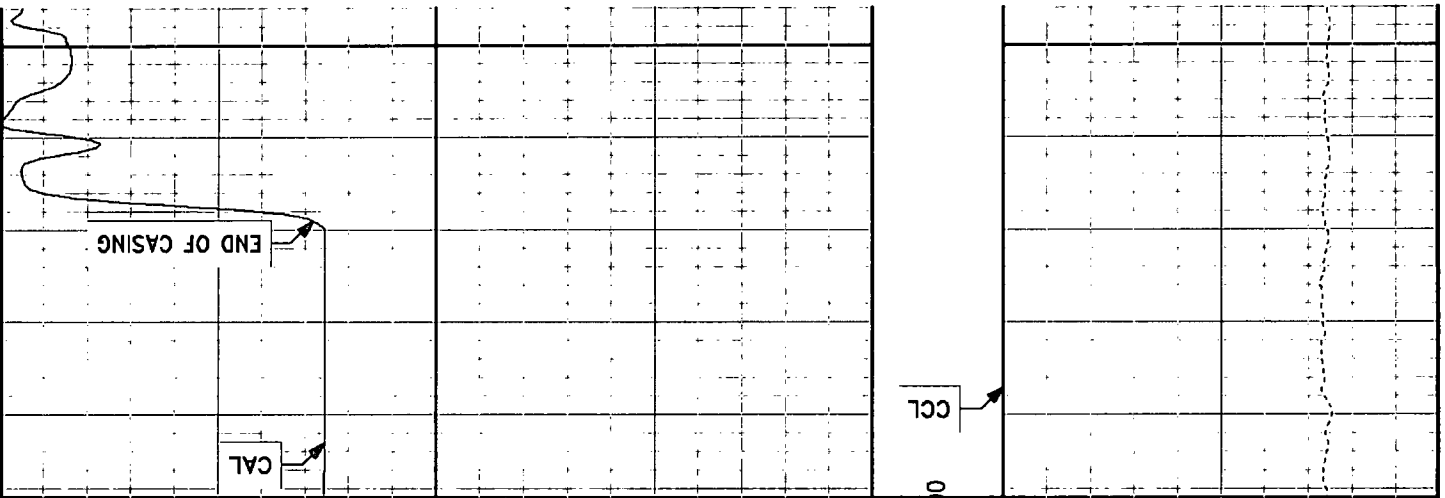
In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Bit Size	From	To

Size	Weight	Grade	From	To
13.375 in	N/A			1031 ft

THANK YOU FOR CHOOSING BAKER ATLAS WIRELINE SERVICES.
 CALIPER RAN IN OPEN HOLE

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	CCL	2324XA		

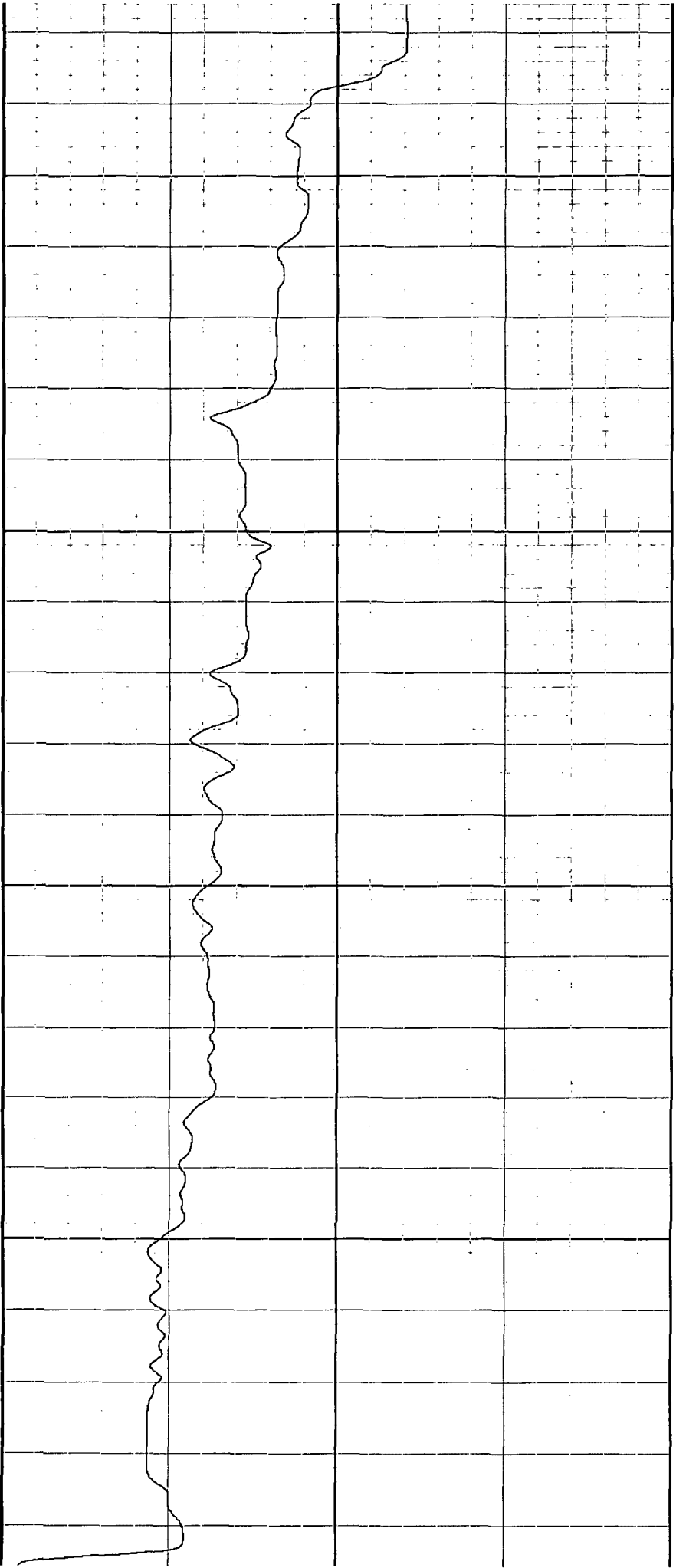


Created by : CNT, v4.07.00
 Plotted by : PlotMgr, v5.4.504
 Company :
 Well :
 File Name : c:\well\data\031108\mps.xtf
 Mode : PlotMgr 5.4.504
 Interval : 1001.00 - 1546.00 feet UP
 Created : 3/11/2008 2:45:52 PM

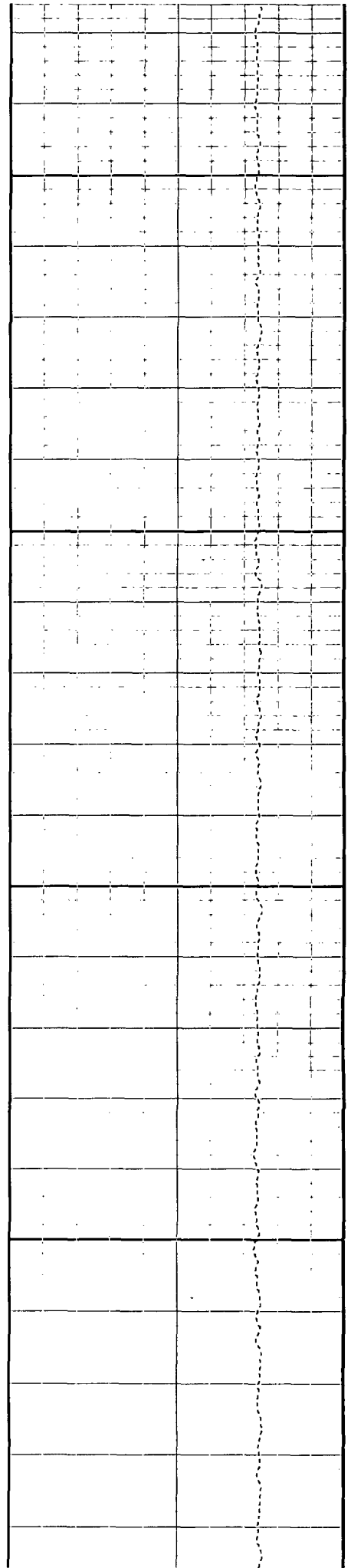
DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES
2324XA	-5.000	CCL
1311XA	0.000	GR
2110XA	0.000	CAL
SYSTEM	0.000	TEN

MAIN PASS



1200



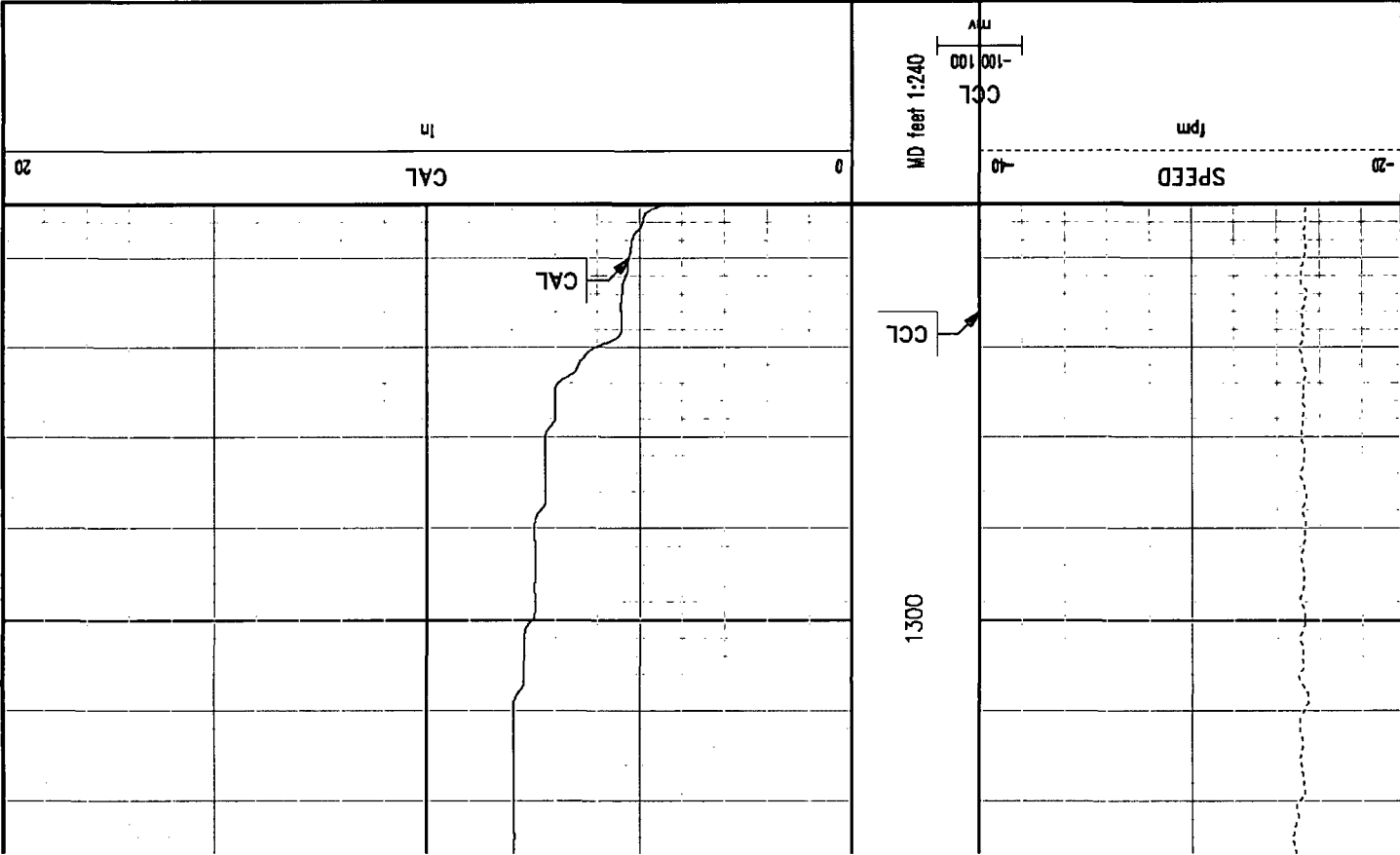
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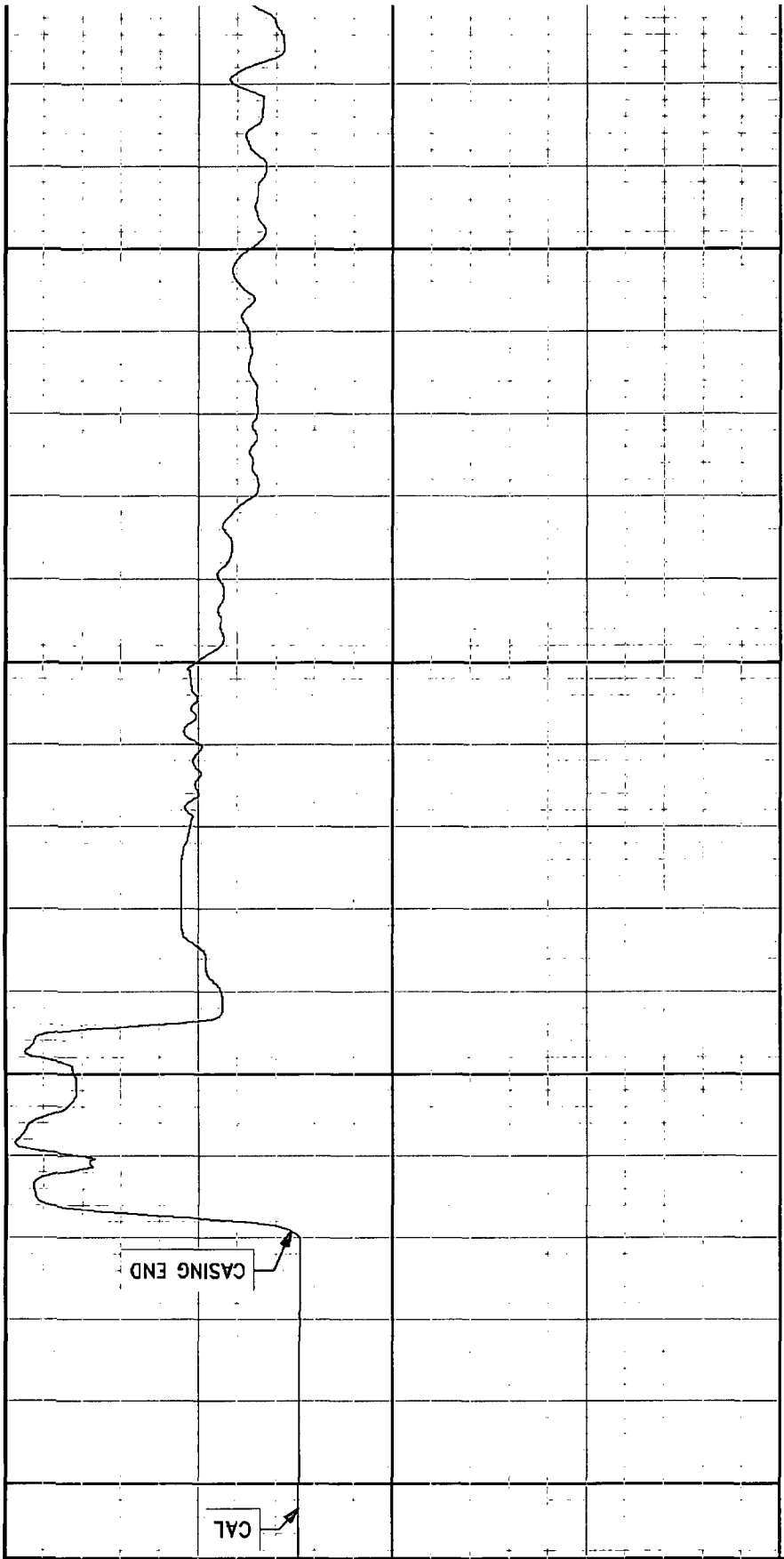
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 Well :
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DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES
2324XA	-5.000	CCL ACCL
1311XA	0.000	GR
2110XA	0.000	CAL TEN
SYSTEM	0.000	TEN

REPEAT

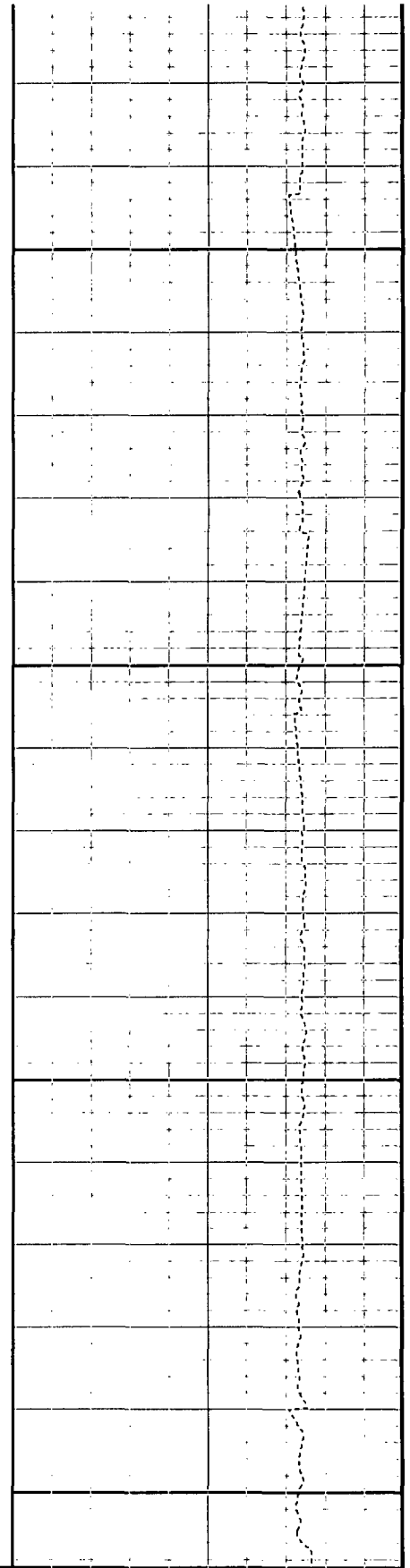




1100

1000

MD feet 1:240
CCL
-100 100
mV



40

20

20

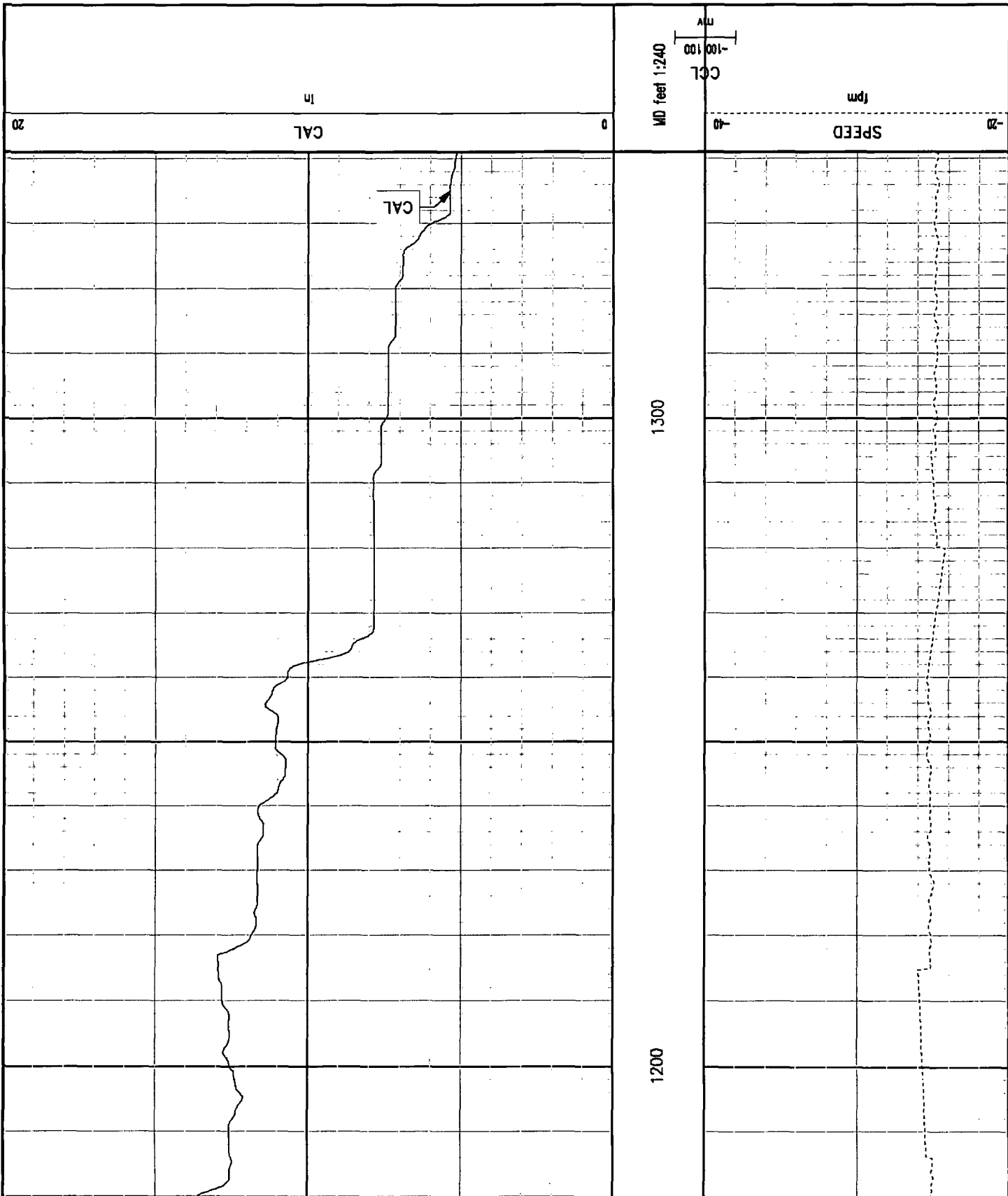
CAL

SPEED

In

rpm

BAKER HUGHES BAKER HUGHES		Baker Atlas	
Company RASER TECHNOLOGIES	Well 55-7	Field ROSETTE INC LEASE	County HIDALGO
File No: 550530	API No: N/A	State NM	Elevation KB N/A
STATE WELL NAME A-36-AB-S-6		Location	



	DF N/A GL N/A	SEC N/A TWP N/A RGE N/A	
--	------------------	-------------------------------	--



Segmented Bond Log
Gamma Ray

Baker Atlas

File No: 550530	Company: RASKER TECHNOLOGIES
API No: N/A	Well: 55-7
	Field: ROSETTE INC LEASE
	County: HIDALGO
	State: NM

Location: STATE WELL NAME A-36-AB-S-6	Other Services: SONDEX TEMP 3 ARM
SEC: N/A TWP: N/A RGE: N/A	Elevations: KB N/A, DF N/A, GL N/A

Permanent Datum	GROUND LEVEL	Elevation	N/A
Log Measured From	G.L.		Above P. D.
Drill Measured From	K.B		

Date	MARCH 11 2008
Run	DNE
Service Order	550530
Depth Driller	N/A
Depth Logger	1024 ft
Bottom Logged Interval	1020 ft
Top Logged Interval	43 ft
Time Started	17:00
Time Finished	19:00
Operator Rig Time	?
Type of Fluid in Hole	WATER
Fluid Density	N/A
Salinity	N/A
Fluid Level	52 ft
Logged Cement Top	N/A
Wellhead Pressure	0 psi
Maximum Hole Deviation	N/A
Nominal Logging Speed	30 fpm
Maximum Recorded Temperature	182.7 degf
Reference Log	N/A
Reference Log Date	N/A
Equipment No.	4249
Location	MIDLAND TX
Recorded By	J. SHRYOCK
Witnessed By	MR. R. CLAUDE

- FOLD HERE

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Bit Size	From	To

Size	Weight	Grade	From	To
13.375 in	N/A		SURFACE	1031 ft

Remarks

CREW: J. HAUSEY, R. WARD,

RIG: POS

CASING WEIGHT AND GRADE UNKNOWN

MAIN PASS 5 INCH

SBT NORMALIZATION RESULTS

CURVE	PARAMETER	VALUE	UNITS	TOP	BOTTOM	COMMENT
ATC1	seg1 cnormf1	-0.346	db/ft	45.750	1019.543	
ATC2	seg2 cnormf2	0.307	db/ft	45.750	1019.543	
ATC3	seg3 cnormf3	0.153	db/ft	45.750	1019.543	
ATC4	seg4 cnormf4	-0.257	db/ft	45.750	1019.543	
ATC5	seg5 cnormf5	0.253	db/ft	45.750	1019.543	
ATC6	seg6 cnormf6	-0.110	db/ft	45.750	1019.543	
ATC1	seg1 dnormf1	-0.346	db/ft	45.750	1019.543	Good Confidence
ATC2	seg2 dnormf2	0.307	db/ft	45.750	1019.543	Good Confidence
ATC3	seg3 dnormf3	0.153	db/ft	45.750	1019.543	Good Confidence
ATC4	seg4 dnormf4	-0.257	db/ft	45.750	1019.543	Good Confidence
ATC5	seg5 dnormf5	0.253	db/ft	45.750	1019.543	Good Confidence
ATC6	seg6 dnormf6	-0.110	db/ft	45.750	1019.543	Good Confidence

SBT PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
amp	fpamp	47.123	mv	34.750	1019.000
amp	fpattn	1.008	dB/ft	34.750	1019.000
atc	dbspread	3.696	dB/ft	34.750	1019.000
atc	spacing	0.812	feet	34.750	1019.000
cemr	casing od	13.375	inches	34.750	1019.000
cemr	casing wt	48.000	lbm/ft	34.750	1019.000
cemr	compress	1500.000	psi	34.750	1019.000
CN	Bit Size	7.875	inches	45.750	1019.543
CN	Casing Thickness	0.340	inches	34.750	1019.000
CN	Casing/Cement Correction	No		45.750	1019.543
CN	CN Chism	No		45.750	1019.543
CN	Matrix	Limestone		45.750	1019.543
CN	Salinity	0.000	ppm	45.750	1019.543

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES					
2346XA	-46.500	CCL					
1309XA	-36.750	GR					
2435XA	-30.250	LSN					
2435XA	-29.750	NEU	SSN				
1424XA	-11.000	ATC1	ATC2	ATC3	ATC4	ATC5	ATC6
		ATAV	ATMN	ATMX	AMAV	DEV	DTMN
		DTMX	RB	XATT	YATT		
1424PA	0.000	CHV	CYQ	SIG			

Created by : SBT, v5.0.003

Plotted by : PlotMgr, v5.4.504

Company : RASKER TECHNOLOGIES

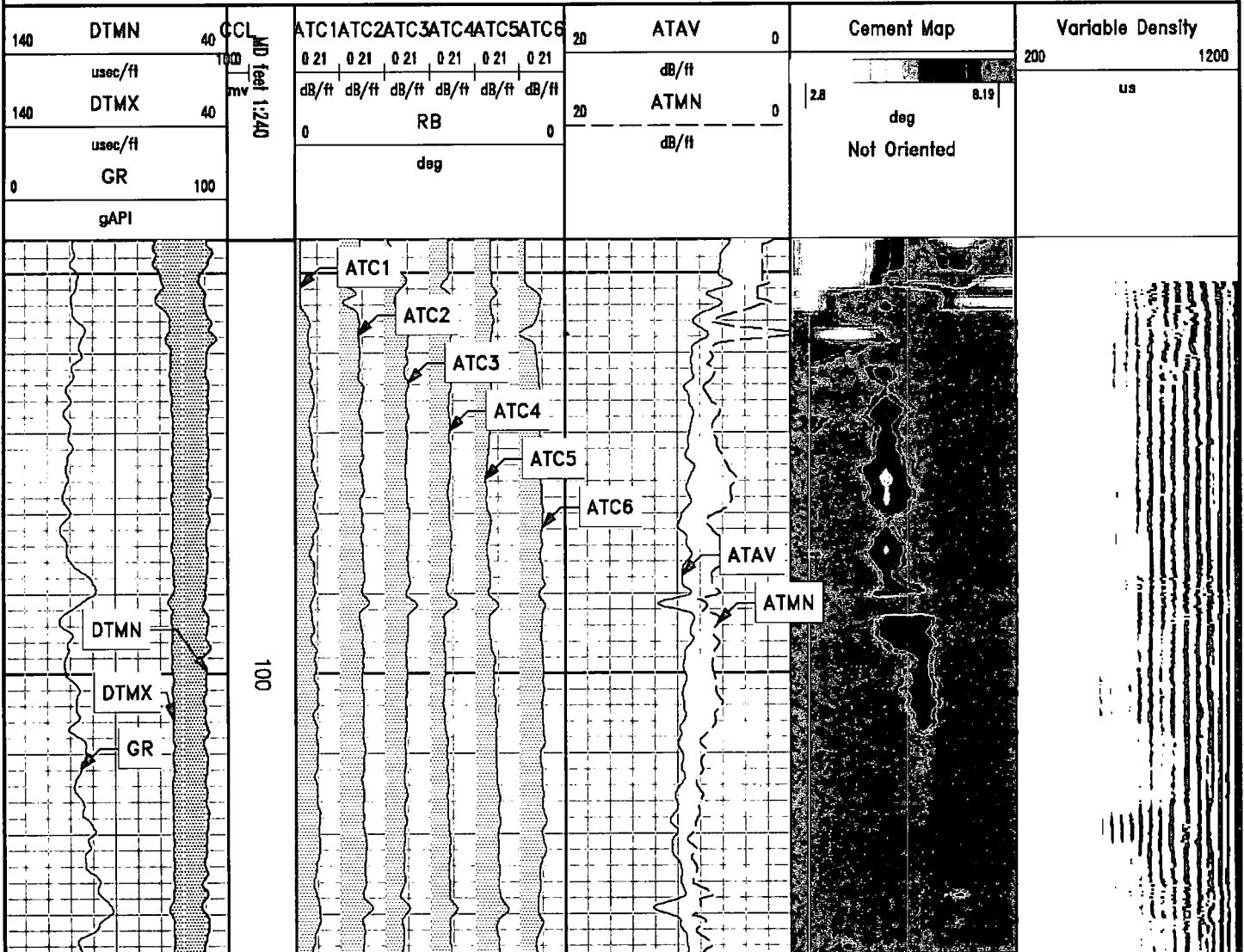
Well : 55-7

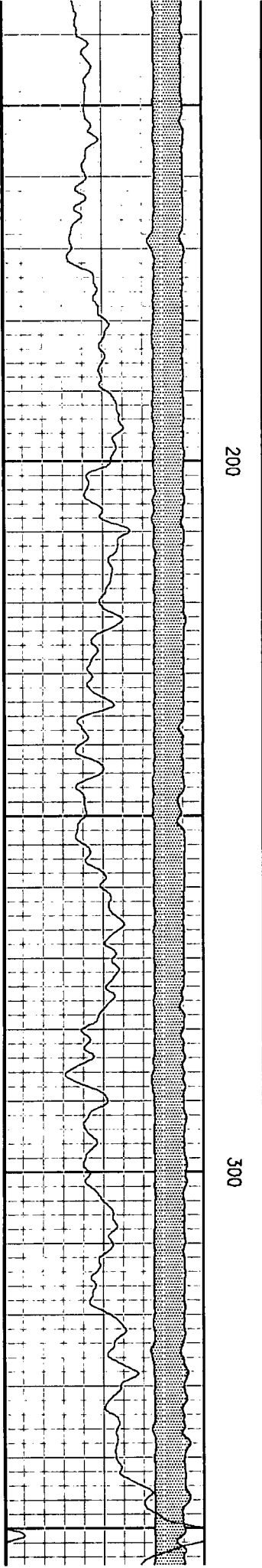
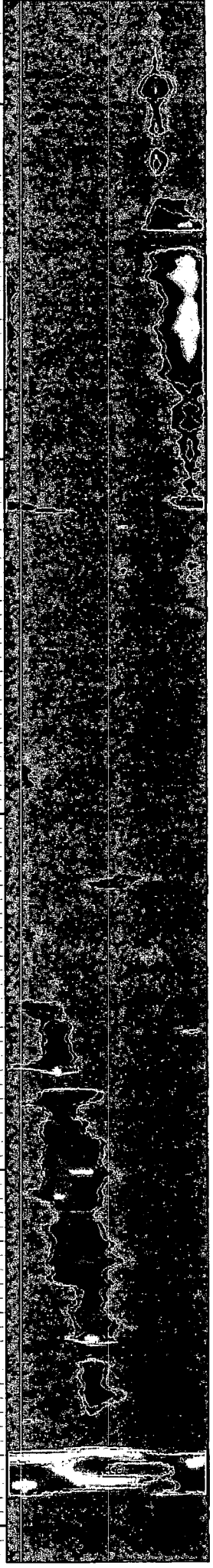
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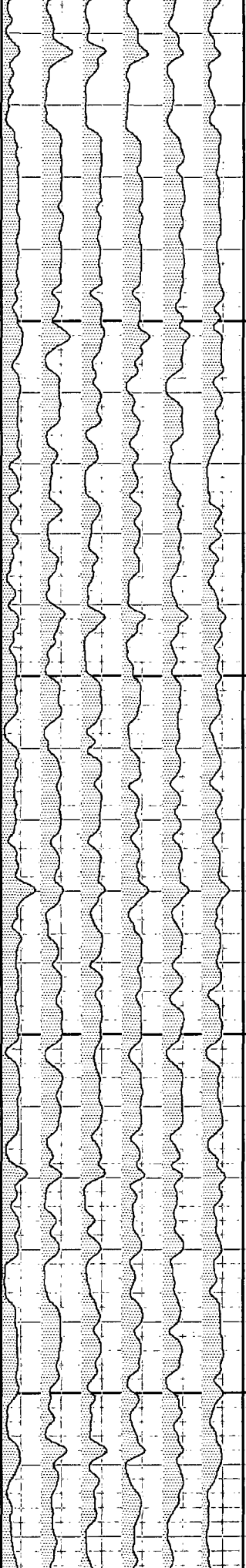
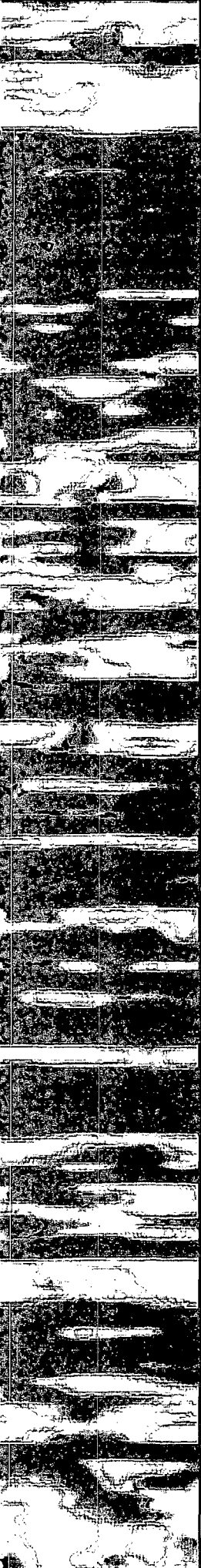
Mode : PlotMgr 5.4.504

Interval : 45.75 - 1020.00 feet UP

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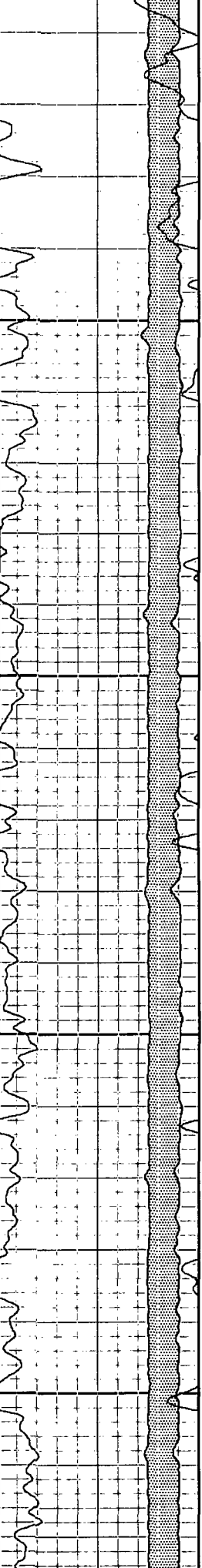


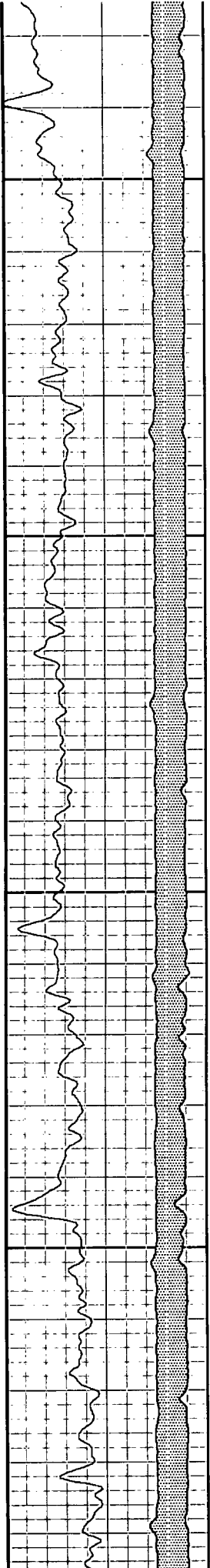




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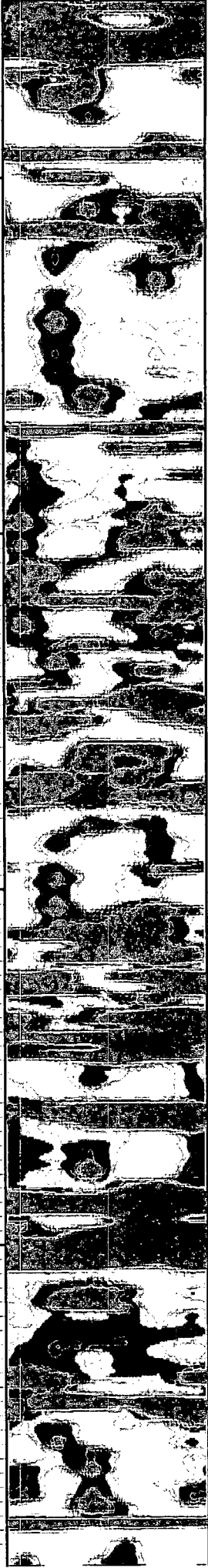
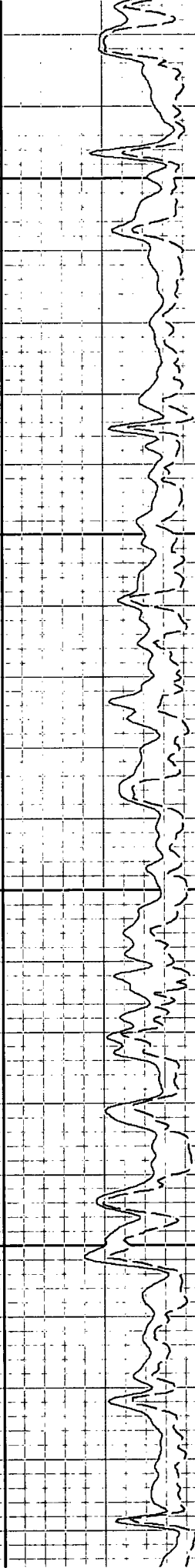
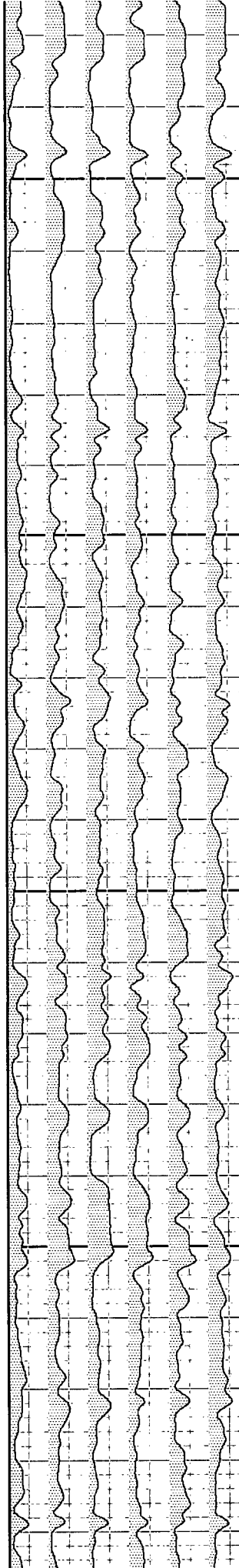
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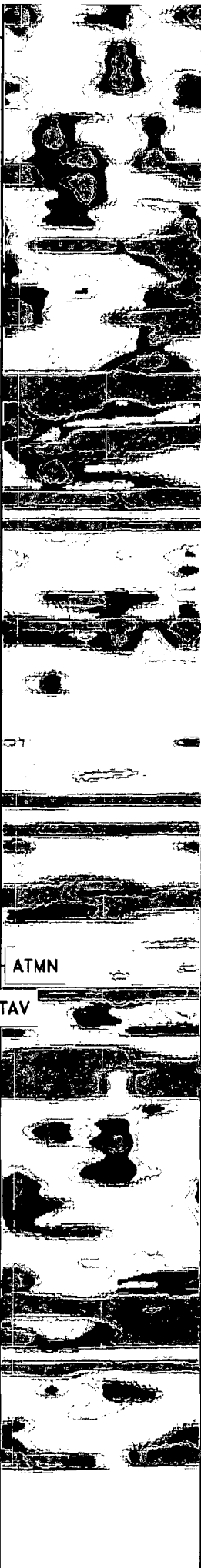
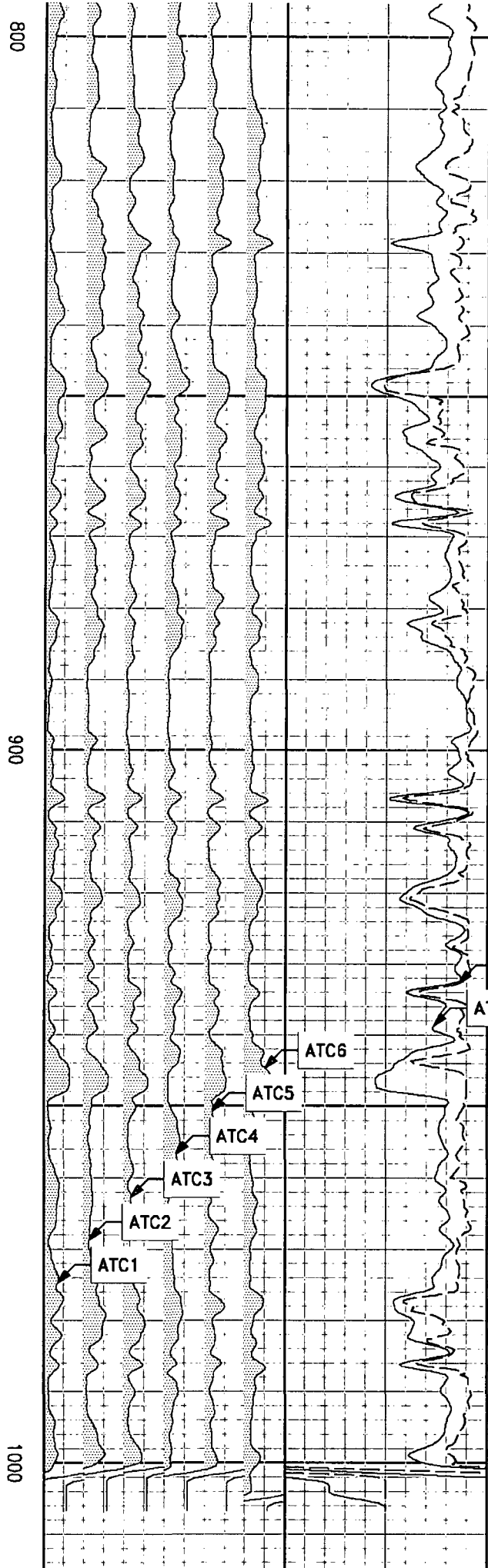
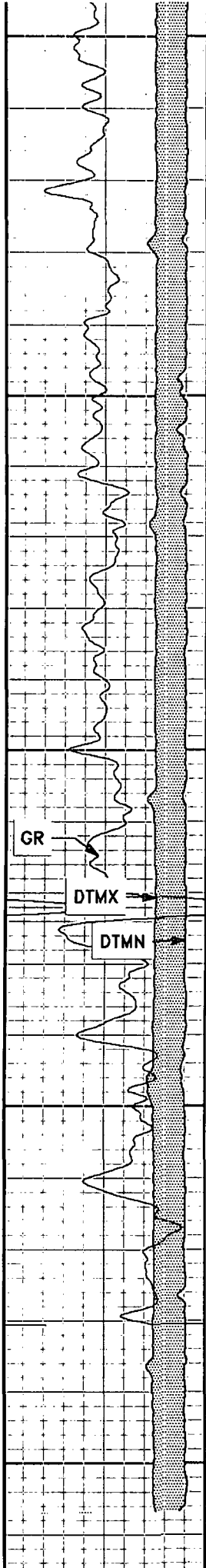




600

700





140	DTMN	40	CCL	ATC1	ATC2	ATC3	ATC4	ATC5	ATC6	20	ATAV	0	Cement Map	Variable Density
	usec/ft		100	0.21	0.21	0.21	0.21	0.21	0.21		dB/ft			200
140	DTMX	40	mv	dB/ft	dB/ft	dB/ft	dB/ft	dB/ft	dB/ft	20	ATMN	0	2.8	8.19
	usec/ft		AND feed 1:2:40	RB		0		0			deg		Not Oriented	
0	GR	100		deg										
	gAPI													

REPEAT

SBT NORMALIZATION RESULTS

CURVE	PARAMETER	VALUE	UNITS	TOP	BOTTOM	COMMENT
ATC1	seg1 cnormf1	-0.346	db/ft	882.047	1019.367	
ATC2	seg2 cnormf2	0.307	db/ft	882.047	1019.367	
ATC3	seg3 cnormf3	0.153	db/ft	882.047	1019.367	
ATC4	seg4 cnormf4	-0.257	db/ft	882.047	1019.367	
ATC5	seg5 cnormf5	0.253	db/ft	882.047	1019.367	
ATC6	seg6 cnormf6	-0.110	db/ft	882.047	1019.367	
ATC1	seg1 dnormf1	-0.486	db/ft	882.047	1019.367	Good Confidence
ATC2	seg2 dnormf2	-5.703	db/ft	882.047	1019.367	Warning Suspect
ATC3	seg3 dnormf3	1.846	db/ft	882.047	1019.367	Good Confidence
ATC4	seg4 dnormf4	0.764	db/ft	882.047	1019.367	Good Confidence
ATC5	seg5 dnormf5	1.590	db/ft	882.047	1019.367	Good Confidence
ATC6	seg6 dnormf6	1.989	db/ft	882.047	1019.367	Good Confidence

SBT PROCESSING

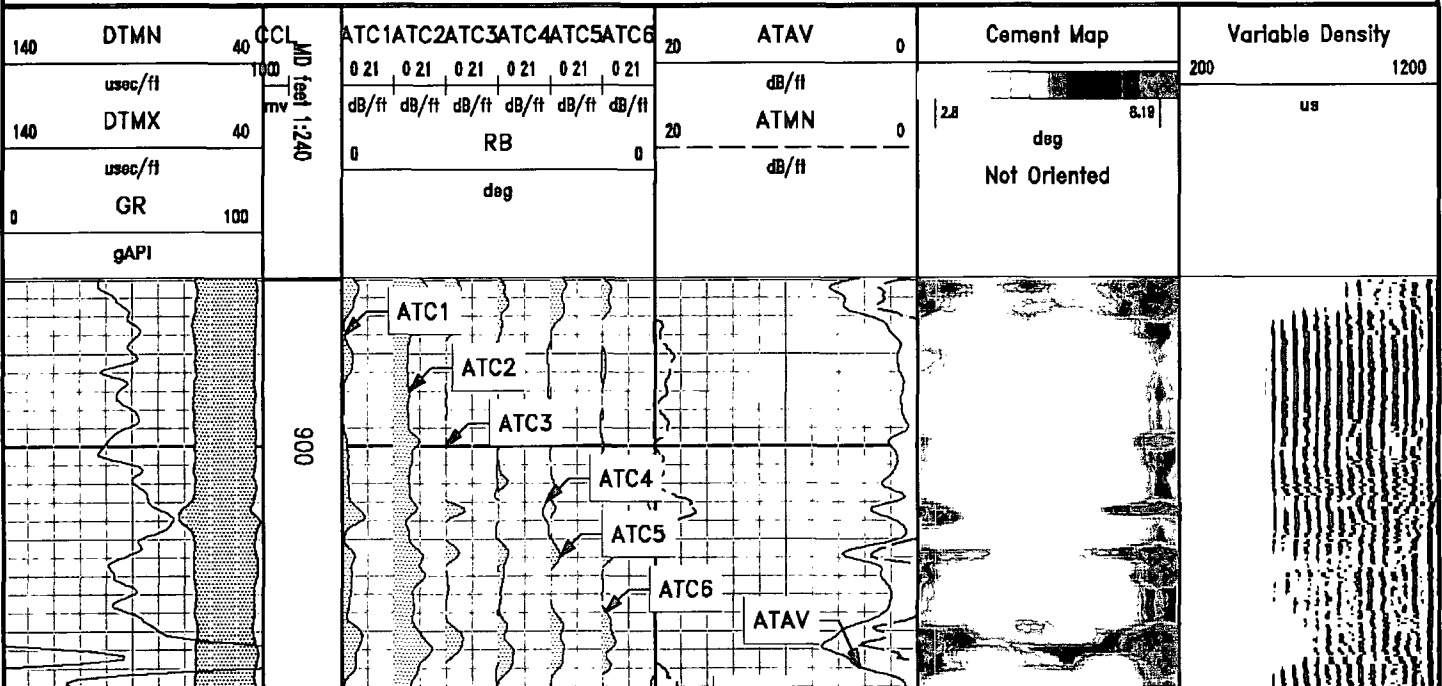
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
amp	fpamp	47.123	mv	871.047	1019.000
amp	fpattn	1.008	dB/ft	871.047	1019.000
atc	dbspread	3.696	dB/ft	871.047	1019.000
atc	spacing	0.812	feet	871.047	1019.000
cemr	casing od	13.375	inches	871.047	1019.000
cemr	casing wt	48.000	lbm/ft	871.047	1019.000

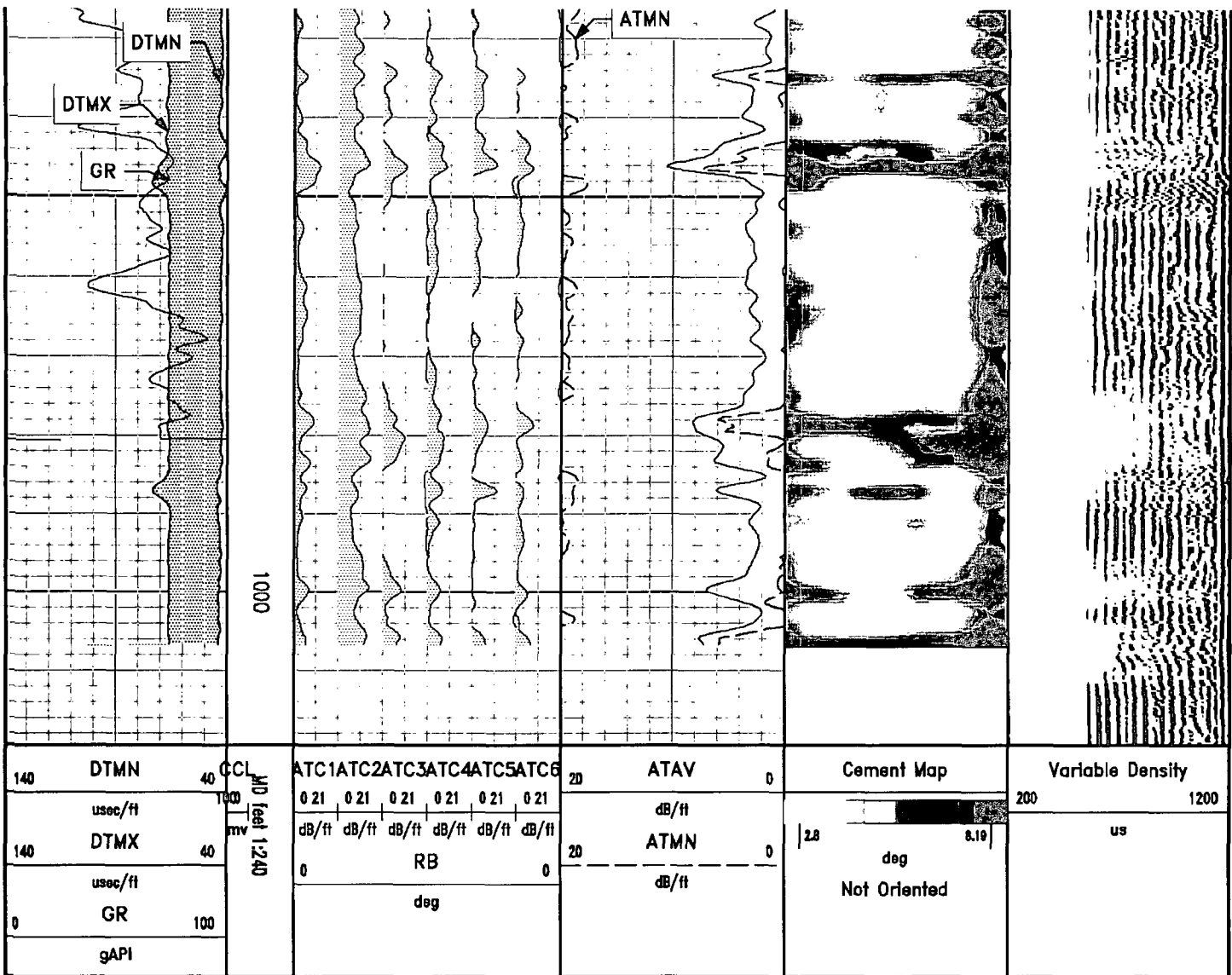
cemr	compress	1500.000	psi	871.047	1019.000
CN	Bit Size	7.875	inches	882.047	1019.367
CN	Casing Thickness	0.340	inches	871.047	1019.000
CN	Casing/Cement Correction	No		882.047	1019.367
CN	CN Chism	No		882.047	1019.367
CN	Matrix	Limestone		882.047	1019.367
CN	Salinity	0.000	ppm	882.047	1019.367

DEPTH OFFSETS (for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES					
2346XA	-46.500	CCL					
1309XA	-36.750	GR					
2435XA	-30.250	LSN					
2435XA	-29.750	NEU	SSN				
1424XA	-11.000	ATC1	ATC2	ATC3	ATC4	ATC5	ATC6
		ATAV	ATMN	ATMX	AMAV	DEV	DTMN
		DTMX	RB	XATT	YATT		
1424PA	0.000	CHV	CYQ	SIG			

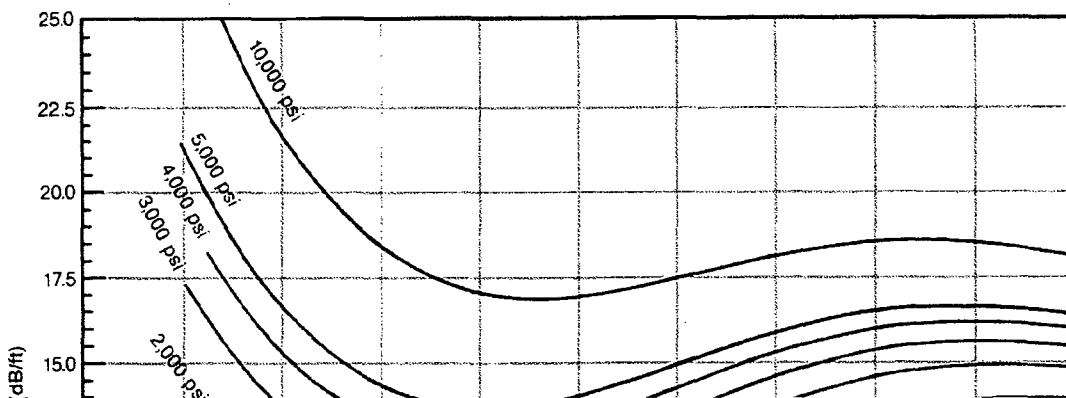
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 Plotted by : PlotMgr, v5.4.504
 Company : RASKER TECHNOLOGIES
 Well : 55-7
 File Name : c:\welldata\0311sb\re.xtf
 Mode : PlotMgr 5.4.504
 Interval : 882.00 - 1019.50 feet UP
 Created : 3/11/2008 6:18:46 PM

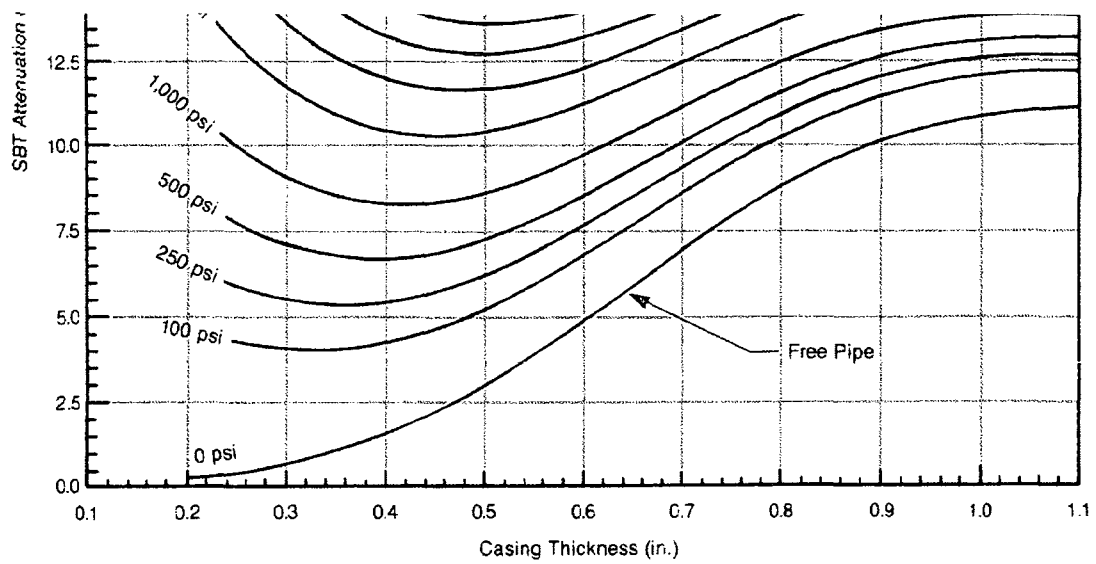




INTERPRETATION CHART


Cement Compressive Strength from Segmented Bond Tool Log



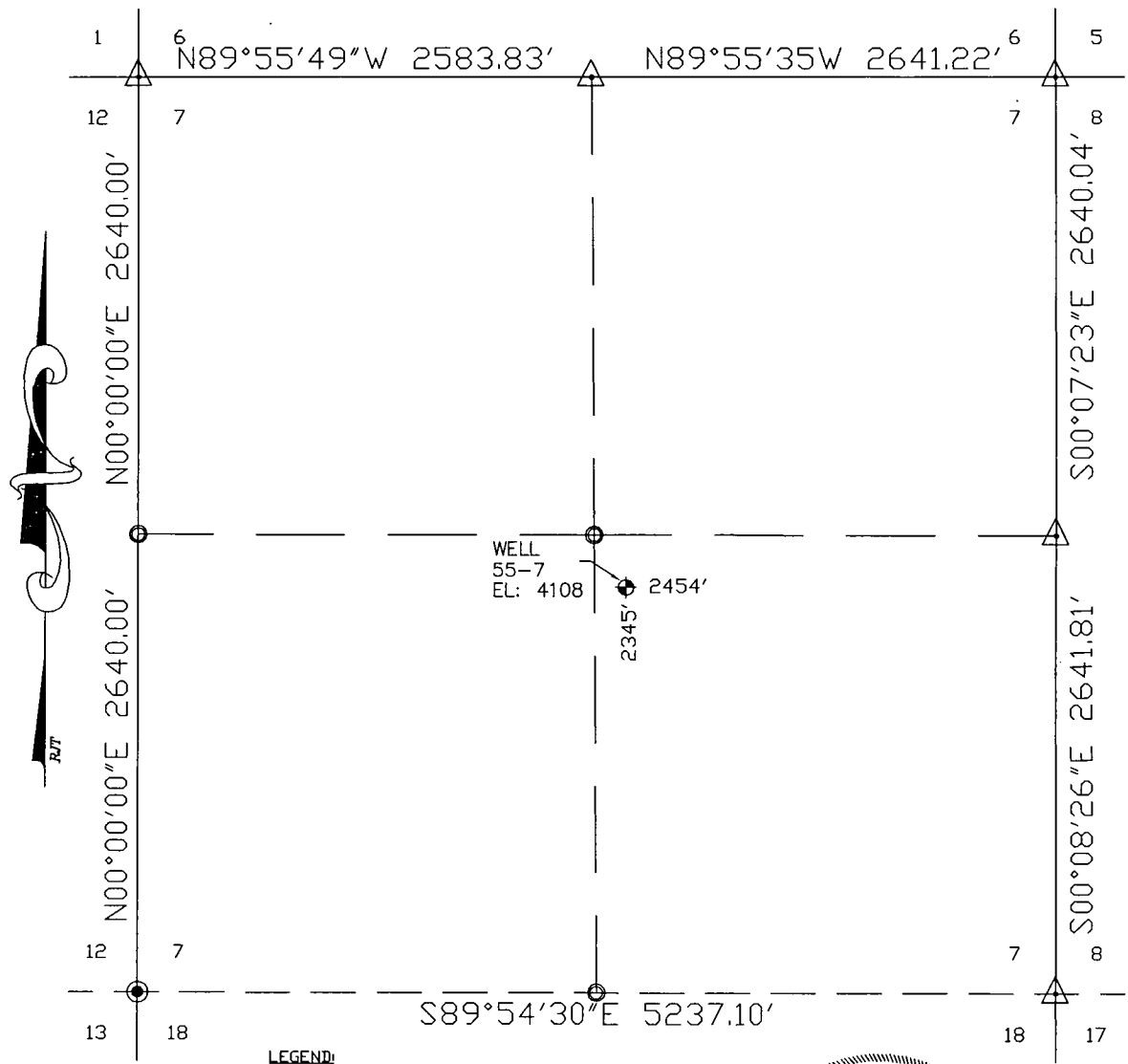


This chart is intended to provide an estimate of the compressive strength of bonded cement using the attenuation readings from the Segmented Bond Tool (SBT™) log.

Enter the chart on the left with the attenuation in dB/ft, while at the same time entering the casing wall thickness (in.) from the bottom of the chart. The point at which the two lines intersect is the estimated compressive strength (psi) of the bonded cement.

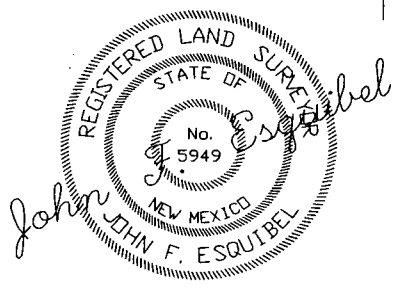
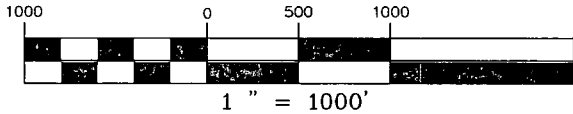
 Baker Atlas	Company <u>RASKER TECHNOLOGIES</u> Well <u>55-7</u> Field <u>ROSETTE INC LEASE</u> County <u>HIDALGO</u> State <u>NM</u>	File No: <u>550530</u> API No: <u>N/A</u>
	Location STATE WELL NAME <u>A-36-AB-S-6</u> SEC <u>N/A</u> TWP <u>N/A</u> RGE <u>N/A</u>	Elevations KB <u>N/A</u> DF <u>N/A</u> GL <u>N/A</u>





LEGEND:

- GLD BRASS CAP
- SET 1/2" REBAR & CAP NMRLS 7240
- NOTHING FOUND
- WELL LOCATION



JN: JFE001

DATE OF SURVEY: APRIL 09, 2010

EXHIBIT B
 LIGHTNING DOCK NO. 1, HI-01 LLC
 WELL LOCATIONS
 HIDALGO COUNTY, NEW MEXICO

Sec. 7, Township 25S, Range 19W

NATIVE RENAISSANCE



JOHN F. ESQUIBEL

DEVELOPMENT CONSULTANT
 LAND SURVEYING
 PLANNING
 CONSTRUCTION MANAGEMENT
 WASTEWATER TREATMENT SYSTEMS
 Arizona - Colorado - New Mexico

Cell 602-758-7530 - Base 928-282-9776
 76 Cindy Lane - Sedona, Arizona 86336

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

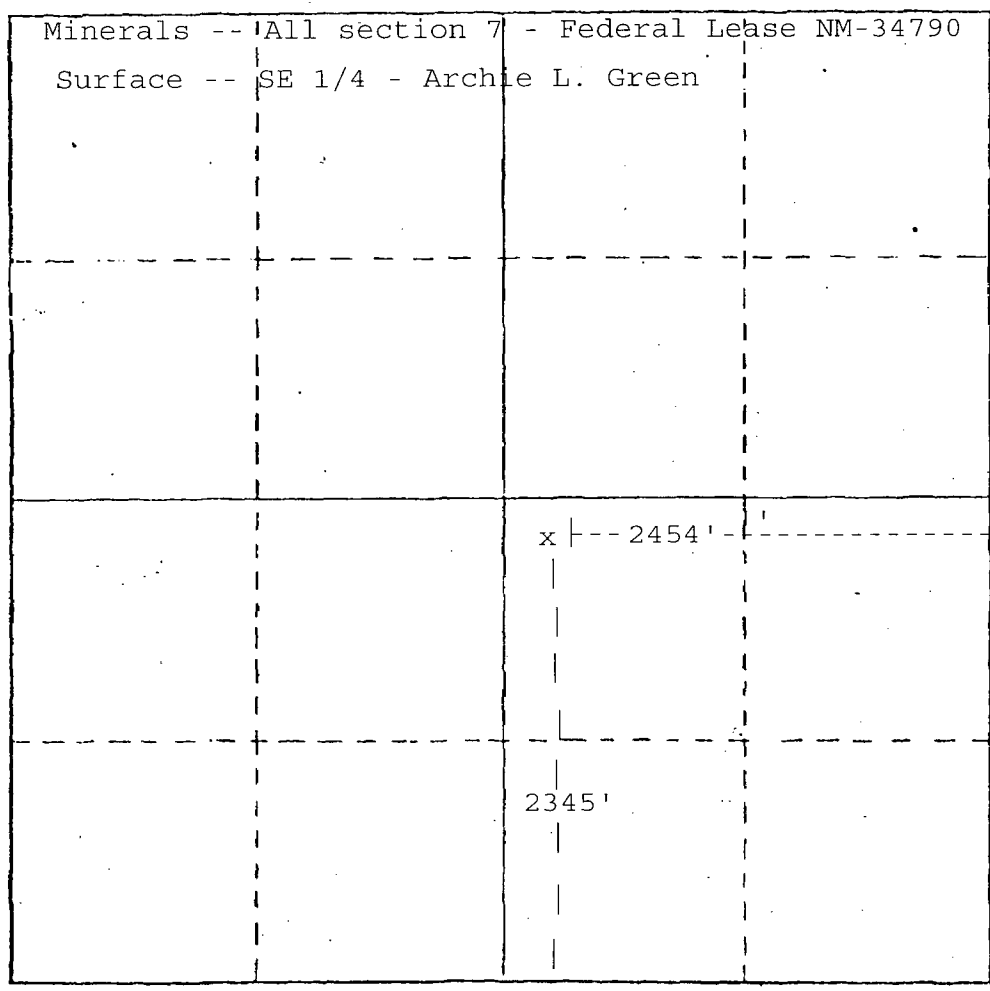
Operator Lightning Dock Geothermal HI-01, LLC		Lease Federal NM-34790			Well No. TFD 55-7
Unit Letter N/A	Section 7	Township 25S	Range 19W	County Hidalgo	
Actual Footage Location of Well: 2454 feet from the East line and 2345 feet from the South line					
Ground Level Elev. 4201'	Producing Formation open hole		Pool wildcat	Dedicated Acreage: N/A Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name
Benjamin J. Barker

Position
V.P. Resource Dev.

Company
Raser Technologies

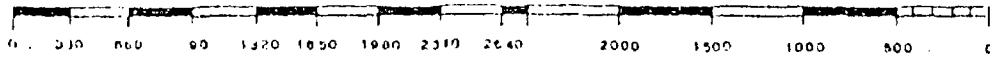
Date
April 12, 2010

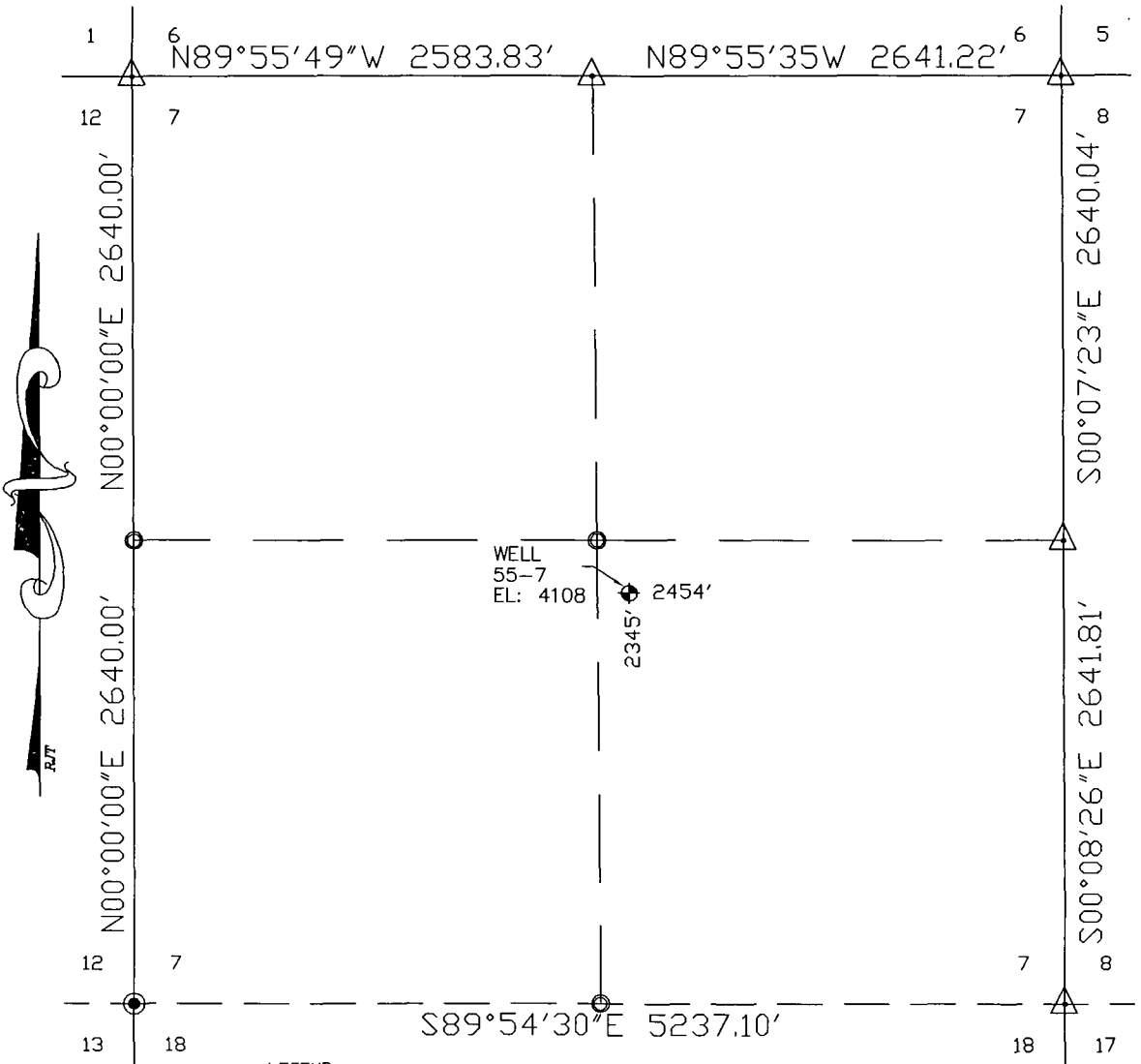
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.
see attached certified survey plat

Date Surveyed
April 9, 2010

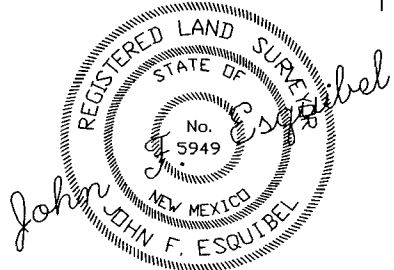
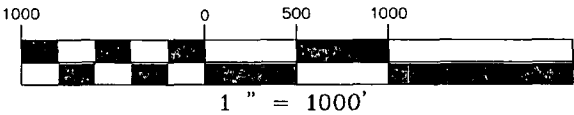
Registered Professional Engineer and/or Land Surveyor
John F. Esquibel

Certificate No.
5949





- LEGEND:**
- △ GLO BRASS CAP
 - SET 1/2" REBAR & CAP NMRLS 7240
 - NOTHING FOUND
 - ⊕ WELL LOCATION



JN: JFE001

DATE OF SURVEY: APRIL 09, 2010

EXHIBIT B
 LIGHTNING DOCK NO. 1, HI-01 LLC
 WELL LOCATIONS
 HIDALGO COUNTY, NEW MEXICO

Sec. 7, Township 25S, Range 19W

NATIVE RENAISSANCE



JOHN F. ESQUIBEL

DEVELOPMENT CONSULTANT
 LAND SURVEYING
 PLANNING
 CONSTRUCTION MANAGEMENT
 WASTEWATER TREATMENT SYSTEMS
 Arizona - Colorado - New Mexico

Cell 602-758-7530 - Base 928-282-9776
 76 Cindy Lane - Sedona, Arizona 86336

GEOHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

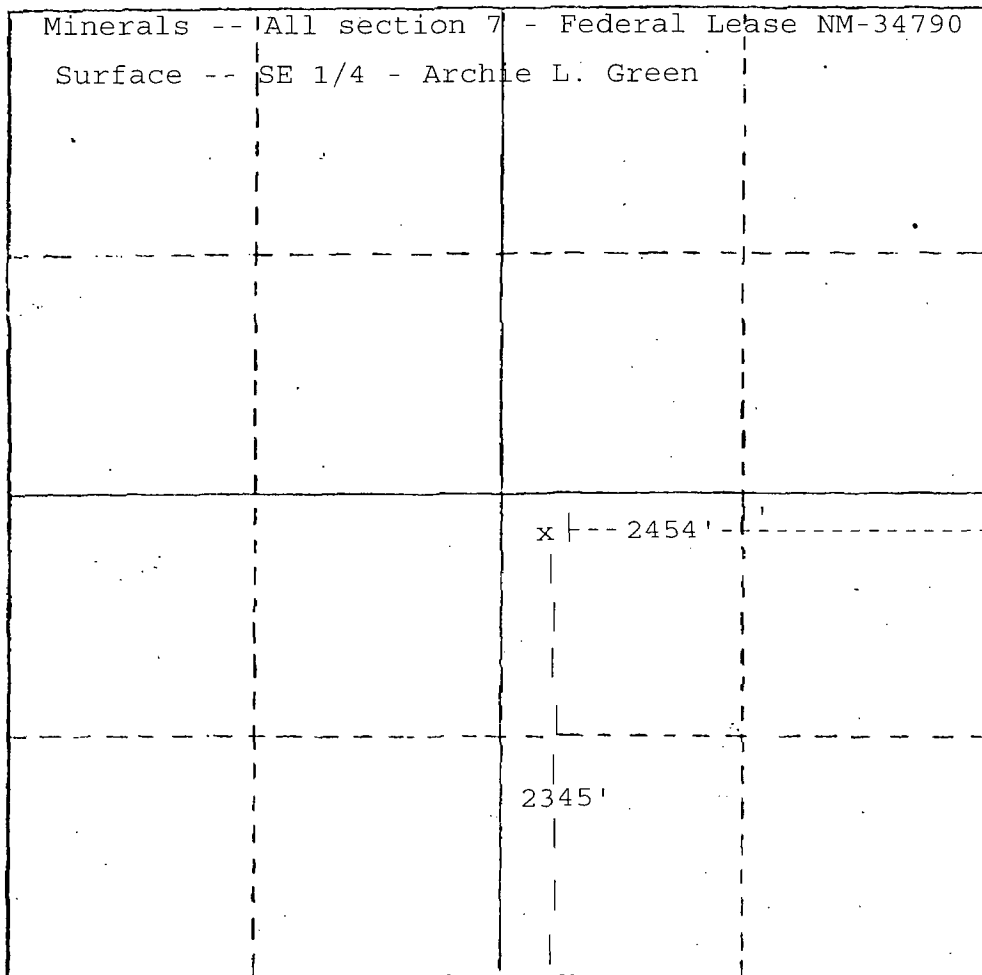
Operator Lightning Dock Geothermal HI-01, LLC		Lease Federal NM-34790		Well No. TFD 55-7	
Unit Letter N/A	Section 7	Township 25S	Range 19W	County Hidalgo	
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CERTIFICATION

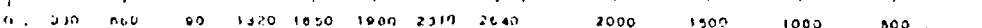
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

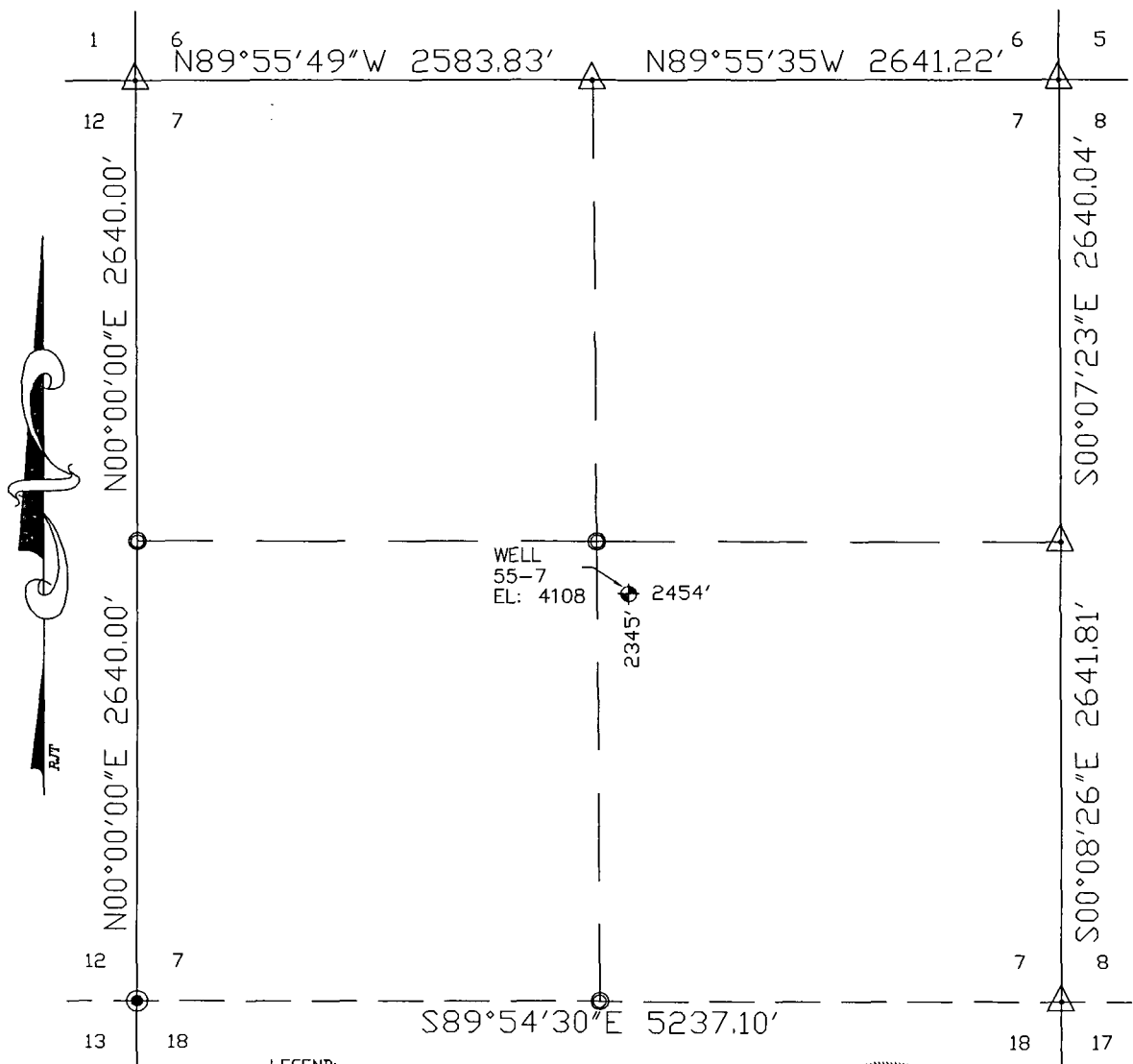
Name
Benjamin J. Barker
Position
V.P. Resource Dev.
Company
Raser Technologies
Date
April 12, 2010

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.
see attached certified survey plat

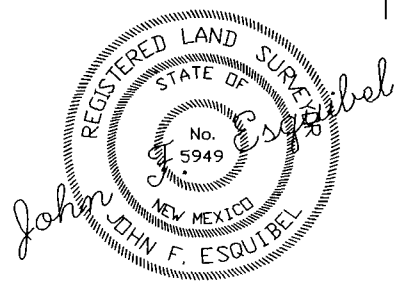
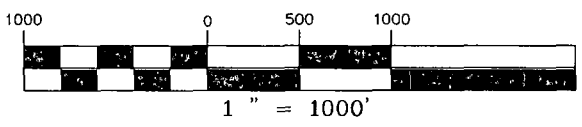
Date Surveyed
April 9, 2010
Registered Professional Engineer and/or Land Surveyor
John F. Esquibel

Certificate No.
5949





- LEGEND:**
- GLO BRASS CAP
 - SET 1/2\"/>



JN: JFE001

DATE OF SURVEY: APRIL 09, 2010

EXHIBIT B
 LIGHTNING DOCK NO. 1, HI-01 LLC
 WELL LOCATIONS
 HIDALGO COUNTY, NEW MEXICO

Sec. 7, Township 25S, Range 19W

NATIVE RENAISSANCE



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 76 Cindy Lane - Sedona, Arizona 86336

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U. S. G. S.		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State NA- Federal
5.a State Lease No.
Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input checked="" type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name N/A
2. Name of Operator Lightning Dock Geothermal HI-01, LLC	8. Farm or Lease Name N/A
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604	9. Well No. TFD 55-7
4. Location of Well Unit Letter _____ Feet From The East Line and 2345 Feet From The South Line, Section 7 Township 25S Range 19W NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) 4201' GR	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK PLUG AND ABANDON
TEMPORARILY ABANDON
PULL OR ALTER CASING CHANGE PLANS
OTHER

SUBSEQUENT REPORT OF:

REMEDIAL WORK ALTERING CASING
COMMENCE DRILLING OPNS. PLUG & ABANDONMENT
CASING TEST AND CEMENT JOB
OTHER

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

- MIRU drill rig.
- Drill out cement plug from 1450' to 1550' approx.
- Drill out cement plug from 1890' to 2090' approx.
- RIH to locate cement plug at 5400' approx.
- Set bridge plug in 3000'-3400' interval.
- Collect water samples for geochemical and environmental analysis.
- Set production pump at 850' approx.
- Release rig.
- Hook up well for pump test to irrigation system.
- Run pump test for up to four weeks.
- Secure well.

Please see attached Proposed Operations and Drilling Plan for details.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE VP Resource Management DATE April 12, 2010

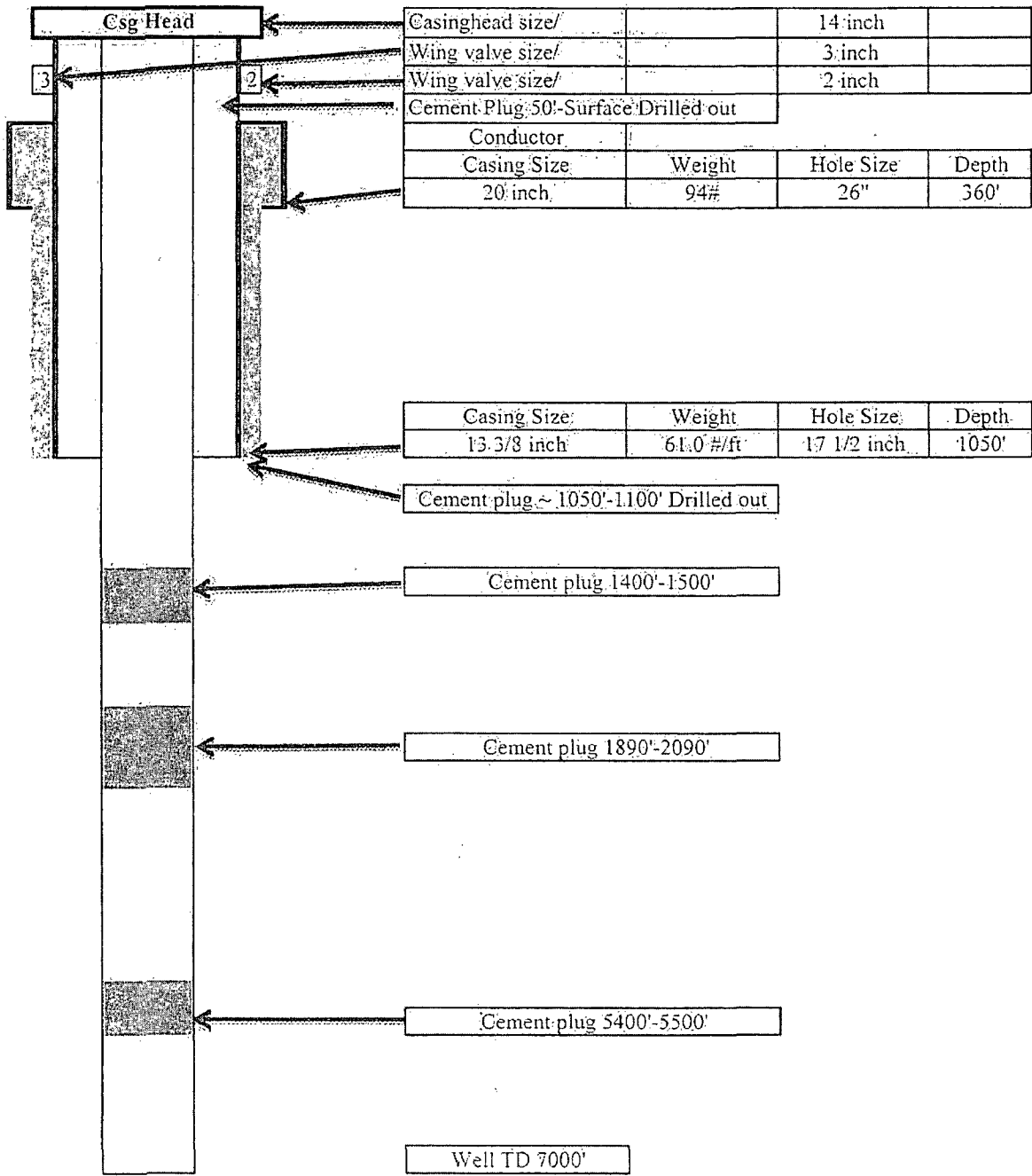
APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

AS IS NOW

Field Name:

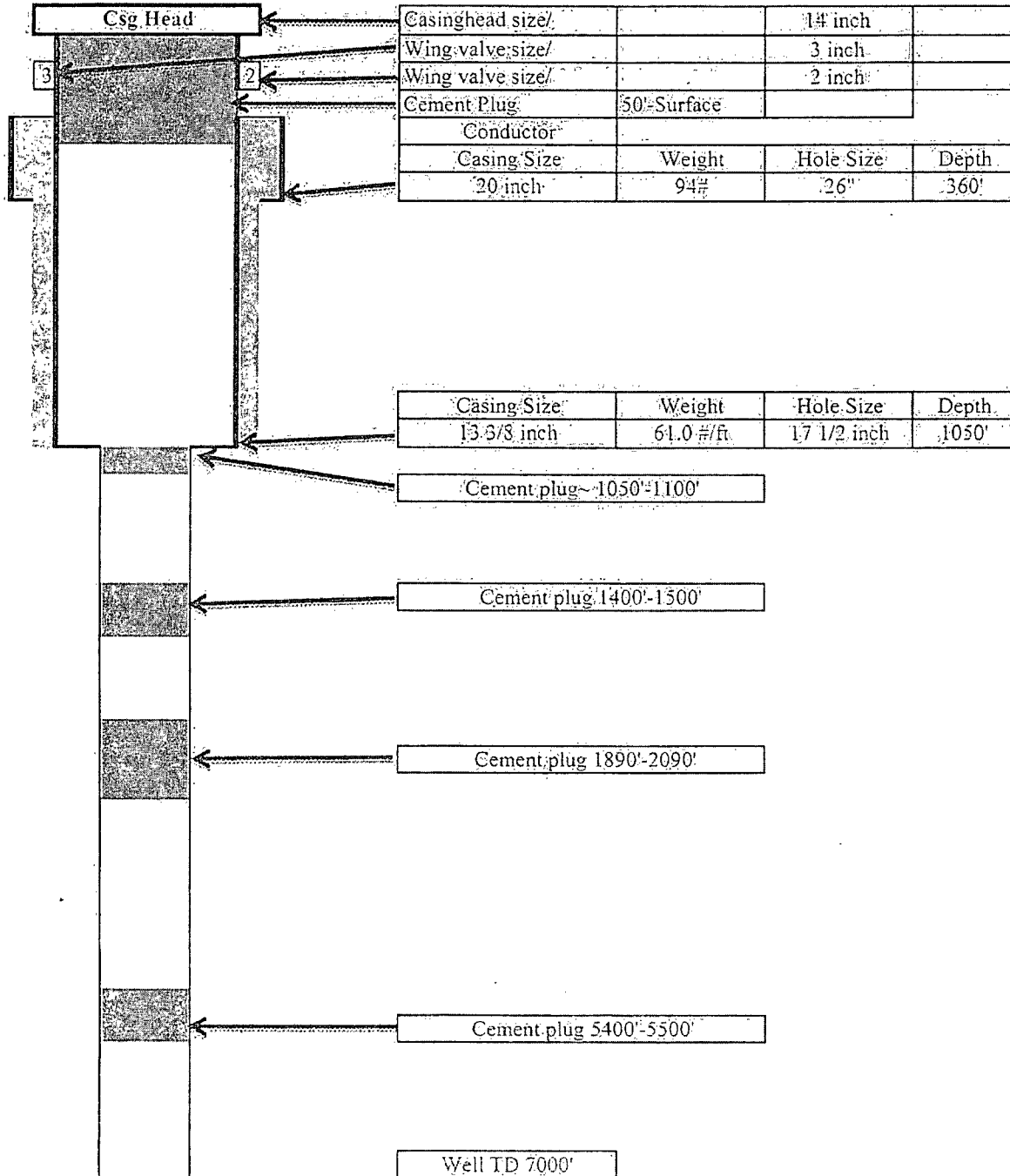
Lightning Dock



P&A 1985

Field Name:

Lightning Dock



Lightning Dock Geothermal HI-01, LLC

Proposed Operations and Drilling Plan, Well TFD 55-7

April 12, 2010

Prepared For:

New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, NM 87505

New Mexico Office of the State Engineer
Water Rights District III Office
301 South Tin Street, Deming, NM 88030

U.S. Department of the Interior, Bureau of Land Management
Las Cruces District Office
1800 Marquess Street, Las Cruces, NM 88005

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V. <u>BLM Drilling Program, 43 CFR 3261.13</u>	9
VI. <u>Attachments</u>	
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B. Lightning Dock Aerial Photo Map	12
C. Survey of Well 55-7 Location	13
D. Down-Hole Test Pump Specifications	14
E. Blowout Prevention Equipment Diagram	15
F. Surface Access Agreement	16

I. Summary of Proposed Operations:

Lightning Dock Geothermal HI-01, LLC, (“LDG”) is a wholly owned subsidiary of Los Lobos Renewable Power, LLC, which is wholly owned by Raser Technologies, Inc. (See Attachment A, Raser Technologies Corporate Structure). LDG proposes to re-enter and test well TFD 55-7 for the purpose of determining its suitability as a geothermal production well. LDG intends to mobilize a drilling rig about April 21, 2010 and will commence operations according to the Plan in Section II, below, as soon as approved by BLM and upon receipt of requisite permits from NMOSE and NMOCD.

The operations for which Lightning Dock Geothermal seeks permission in the present application are comprised of three parts:

- Remove two of the three remaining cement abandonment plugs set in the wellbore by Steam Reserve Corp. in 1985. The deepest plug will remain in place. Rosette, Inc., removed the uppermost two of the five Steam Reserve plugs pursuant to an NMOSE irrigation well permit. LDG intends to test the upper 3,400 ft of the open hole. The water will be sampled and analyzed in accordance with WQCC standards as described below. Compliance with those standards will be verified before any water is discharged in a pump test.
- Install a down-hole production pump and conduct a well and reservoir test. The discharged water will be metered and conveyed to a planted field for irrigation purposes. This will be done using standard farm irrigation equipment such as a wheel line. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Rosette, Inc. has agreed to provide the 2010 water rights to LDG for this test. LDG does not intend to use TFD 55-7 for injection in this operation. The existing unlined reserve pit may be used for cooling and water storage if approved by NMOCD upon receipt of produced water analyses.
- Install proper wellhead equipment and secure the well.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, LDG will proceed to obtain all approvals and permits (BLM, NMOCD, and NMOSE) required for further development.

II. Well Preparation

The first part of the operation requires reopening TFD 55-7 to collect fluid samples, set a bridge plug and install a test pump. The following is the proposed plan for the drilling operation. This detail is incorporated by reference into the BLM Drilling Program, described in Section V of this document.

- 1) Inspect wellhead for dimensional consistency with ANSI series 400 standards.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp circulating pump.
- 3) Install annular or rotating BOP on the wellhead above flow tee with gate valve on side outlet (see Attachment E).
- 4) Mix non-toxic gel-lime mud and fill hole.
- 5) Pick up slick bottom-hole assembly (BHA) #1: 8-1/2" insert bit, BS, 4x6" DC, jars, 1x6" DC, XO.
- 6) Test BOP for leakage by inflating around BHA and pumping in the side outlets to maximum working pressure of the surface piping, not to exceed 900 psig.
- 7) Run in hole and tag bottom, expected at about 1400 ft. Circulate bottoms up.
- 8) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. Airlift will be accomplished by injecting compressed air through the drilling assembly in sufficient quantity to stimulate flow to the surface. Discharging the flow line into a gauging tank will allow measurement of the produced liquid after its separation from the injected air. The volumes produced during the drilling operation will be recorded and will not exceed the storage capacity of the tank and reserve pit on site. No water will be discharged to "Waters of the State".
- 9) Pull out of hole and pick up 9-5/8" bit and stabilizers. Make up stiff BHA #2.
- 10) RIH and time drill cement plug #1. The plugs in well TFD 55-7 are of neat Portland cement. The plugs are reportedly each 50 - 400 ft in length and set in uncased open hole at about 1450 ft and 1850 ft. Time drilling and a "locked" (i.e., stiff and highly stabilized) BHA will be used to drill the plugs while staying in the original hole. Non-toxic, temperature-stable drilling mud will be used, composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit. The drilling fluids will bring the rock cuttings to the surface and then be cleaned and recirculated, preventing loss of drilling fluids into the rock and minimizing discharge into the reserve pit.
- 11) POH and stand back BHA #2.
- 12) Pick up BHA #3: float shoe, XO, 2x6" DC.
- 13) RIH and tag cement plug #2, expected at about 1800 ft.
- 14) Circulate hole clean.
- 15) Displace mud with water. POH to 1500 ft. Close BOP.
- 16) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 17) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 18) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ*

(i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."

- 19) POH, stand back BHA #3.
- 20) Pick up BHA #2. RIH to cement plug #2.
- 21) Circulate mud and drill out plug #2.
- 22) POH, lay down BHA #2.
- 23) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
- 24) POH, lay down BHA #3.
- 25) Run caliper log and select zone for bridge plug installation about 3400 ft.
- 26) Pick up bridge plug and BHA #4: setting tool and DCs as directed.
- 27) RIH and set bridge plug.
- 28) POH to 2800 ft, circulate hole clean.
- 29) POH to 1000 ft.
- 30) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."
- 31) POH laying down drill pipe; lay down BHA #4.
- 32) Make up 9-5/8" pump casing string and set test pump.
- 33) Release rig.

III. Resource Test

34) The results of the analyses from steps 8, 18 and 30 of the preceding section will be compiled in a single report and delivered to NMOCD, NMOSE, and BLM. If the discharge meets WQCC standards, LDG will confer with the agencies to verify the conditions are met for permitted discharge into an unlined reserve pit and delivery to an irrigation system. Should the quality of water not meet the standards of 20.6.2.3103 NMAC for irrigation, LDG will suspend flow test operations, redesign the test and seek approval of subsequent applications to NMOCD, NMOSE, and BLM.

35) Connect flow line to irrigation system.

The flow line will discharge the water into a gauging tank and thence into the irrigation transfer pump or the reserve pit. The pit measures 170 ft x 170 ft x 12 ft deep (see Attachment B). If WQCC standards (20.6.2.3103 NMAC) are met, the reserve pit will be left unlined. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

36) Conduct pump test as directed. LDG will conduct the pump test in consultation with engineers representing the interests of potential investors in the Lightning Dock project. The operation of the test may therefore vary from day to day, but will at all times conform to the requirements of the applicable NMOCD, NMOSE and BLM permits and regulations.

LDG plans to use a 12-inch American-Marsh vertical shaft 10 stage turbine pump for this test. The pump is owned by Raser Technologies and has performance characteristics detailed in Attachment F. The power for the pump will be a 300 hp electric motor with a variable speed controller. The pump will be set at approximately 850 ft depth to allow a maximum drawdown from static water level of about 700 ft. Engineering analysis of Raser's airlift test in 2008 suggests a flow rate of 400 gpm is likely from the well in its present state, i.e., open from 1050 ft to 1450 ft. Since lost circulation occurred at greater depths (e.g., 2275 ft) during the drilling of TDF 55-7, LDG expects the reopened hole may be able to supply fluid up to the pump's maximum capacity, approaching 1500 gpm at this depth.

The pumping rate during the first week of the test will be programmed to gradually bring in flow and to establish the reservoir deliverability as a function of water level drawdown. Thereafter, the rate will be set so as not to exceed the landowner's NMOSE-designated water rights. LDG expects to satisfy itself and its investors' engineers within a test pumping duration of four weeks.

Discharge water samples will be collected weekly and analyzed at an EPA Methods, QA/QC, DQOs-compliant laboratory. LDG will also monitor the discharge daily for standard field parameters including pH, turbidity, color, DO, and specific conductivity. If anomalous readings are detected that indicate a significant change in water source or properties, water samples will be collected immediately and discharge halted. Discharge will not be resumed until and unless laboratory analytical results confirm that the water meets the required criteria.

- 37) Move in and rig up well service rig.
- 38) Remove and lay down pump and casing.
- 39) Install master valve and survey flange.
- 40) Secure well and release rig.
- 41) File operations reports as required with NMOCD, NMOSE and BLM.

IV. BLM Operations Plan, 43 CFR 3261.12

(a) The proposed project is on private land. Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner. No surface disturbance of BLM-managed public lands is proposed.

Well Pad Layout and Design

The well pad layout is approximately 150 ft x 150 ft with an existing reserve pit measuring 170 ft x 170 ft x 12 ft adjacent to the pad.

See Attachment B – Lightning Dock Aerial Map

See Attachment C – Survey of Well Location

(b) Description of Existing and Planned Roads

The well site is accessed via existing state, county and private roads. As such no new roads are necessary for this activity. The primary access roads to the site include: SR-338 (paved); CO98 Geothermal Road (paved), which extends to the surface owner's property. All roads and access at the well site on the surface owner's property are existing compacted dirt and/or graveled.

(c) Description of Ancillary Facilities

Sanitary Facilities – Portable chemical sanitary facilities will be available and used by all personnel during periods of well drilling and/or flow testing.

Mobile drilling office will be set upon on the site during drilling activities.

Existing water holding pond 170 ft x 170 ft x 12 ft.

Trash collection facilities e.g. roll-off container.

(d) Source of Drill Pad and Road Building Materials

Drill pad building material will be derived from any necessary excavation of the existing reserve pit.

The pad will be graded to provide 2% grade to reserve pit.

Existing improved roads will be used.

Any additional material required for pad construction will be secured from a local contractor.

(e) Water Source

Water required for this operation will be secured from an established private owner.

Water derived from the operation will be discharged into a gauging tank and thence to an irrigation transfer pump or the reserve pit. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove

discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

Potable water for human consumption will be provided by bottled water.

(f) Statement Describing Surface Ownership

Surface of the well site is owned by Rosette, Inc. of Animas, NM. Lightning Dock Geothermal holds a Surface Access and Use Agreement, dated 10 January, 2008, with Rosette granting access to the well site.

See Attachment F – Surface Access Agreement.

(g) Description of Procedures to Protect the Environment and Other Relevant Sources

Air Quality: During drilling activities hydrogen sulfide will be monitored by instruments on the drill rig.

Hydrology and Water Quality Monitoring: Water samples will be collected during the cleanout operation and tested to assure compliance with WQCC standards for agricultural use.

Portable chemical toilets supplied by a licensed contractor shall be used for human waste. The waste shall not be buried on site.

Trash and debris will be contained on site, and then hauled to an approved landfill by a licensed contractor. Burial and or burning on site will not be permitted.

Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner.

(h) Plan of Surface Reclamation

Top soil excavated during the construction of the pad, as feasible, will be stockpiled for use during subsequent reclamation of the disturbed area.

(i) Any Other Information That BLM May Require

Will be provided upon request.

V. BLM Drilling Program, 43 CFR 3261.13

(a) Description of Equipment, Materials and Procedures

A large portable rotary drill rig will be used to drill the well.

Equipment Specifications:

The availability of equipment and contractors changes from day to day. LDG will make its selection based on the best units available when the necessary permits are received. The rig will be functionally similar to the following: Drawworks – Taylor RT 5000; Mast – Taylor RT 5000 square set derrick; Substructure – Height 10 ft hydraulic w/ 15 ft K.B. elevation; Two (2) mud pumps; Rotary table; Swivel & Drilling Block; Tripping Block; Generators 235 kW, Air Compressor 500 SCFM.

Procedures will be as described in Section II, Well Preparation.

(b) Proposed / Anticipated Depth of the Well:

The well will be drilled and completed to the designed depth of 3,400 ft.

(c) Directional Drilling:

No directional drilling will be employed.

(d) Casing and Cementing Program:

This is a re-entry into an existing well that currently has cemented casing to approximately 1050 ft and approximately 400 ft of open hole to the first plug at a depth of approximately 1450 ft. The remainder of the well is open hole to the TD of 7000 ft. No additional casing or cement will be utilized in the operation to open this well to 3400 ft.

(e) Circulation Media (mud, air, foam, etc.)

The well will be drilled to a depth of 3,400 ft using non-toxic, temperature-stable drilling mud or aerated fluids. The drilling mud is composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit, bringing the rock cuttings to the surface discharged into the reserve pit, and preventing loss of drilling fluids into the rock.

(f) Description of Logs to be Run:

Caliper Logs

(g) Description and Diagram of Blowout Prevention Equipment:

Blowout prevention equipment (BOPE), which is typically inspected and approved by the BLM and/or the Oil Conservation Division (NMOCD) of the New Mexico Energy, Mining, and Natural Resources

Department (NMEMNRD), as applicable, would be installed, tested and ready for use while drilling to ensure that any geothermal fluid encountered does not flow uncontrolled to the surface.

See Attachment E.

(h) Expected Depth and Thickness of Fresh Water Zones:

N/A – existing casing is set to 1,000 ft hence no fresh, shallow water getting into well.

Static water depth is 71 ft. Total available water column of 1300 ft available

(i) Anticipated Lost Circulation Zones

None anticipated. The only instance of lost circulation recorded by Steam Reserve in the interval 1050 ft – 3400 ft was a minor episode at 2275 ft. That was successfully treated with a small batch of lost circulation material. This is below the deepest plug that LDG intends to drill out. LDG therefore anticipates that lost circulation will not be encountered in carrying out the proposed program.

(j) Anticipated Reservoir Temperatures and Pressures:

Temperature: Peak temperatures have been recorded at 307.4 F at a depth of 1263 ft remaining constant to 1400 ft.

Pressures: High pressure at the depth of 1365 ft is 549.66 psig.

(k) Anticipated Temperature Gradient in the Area:

The regional heat flow is ~80-90mW/m² (Blackwell and Steele, 1992). This heat flow would yield a temperature gradient of about 35°C/km (1.9°F/100 ft) in igneous rocks and 60°C/km (3.3°F/100 ft) in valley fill clays. Most of the non-thermal wells have a gradient near 45°C/km (2.5°F/100 ft). Therefore, 45°C/km (2.5°F/100 ft) will be taken as the background temperature gradient value for the valley fill.

Thermal gradient conditions will range from 78°C/km (4.3°F/100 ft) (*well 672-225*) to 200C/km (11°F/100 ft) (*well 93-8 and AN-104*) and will be similar or higher in 55-7.

(l) Plat Certified by a Licensed Surveyor:

See Attachment C.

(m) Procedures and Duration of Well Testing

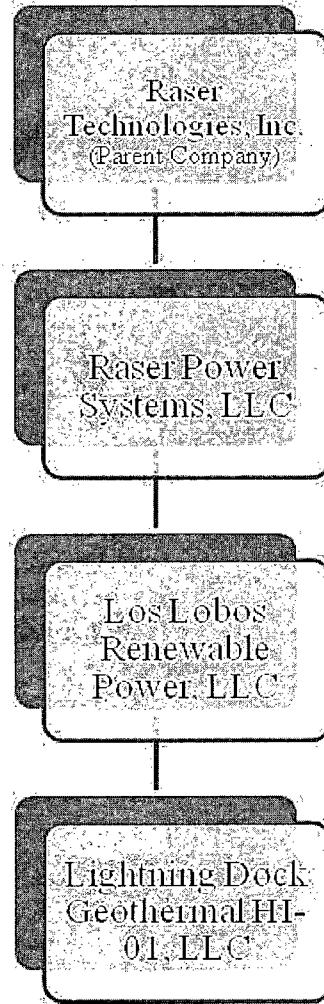
See Section II, Resource Test

(n) Any Other Information That BLM May Require

Will be provided upon request.

Attachment A

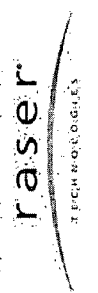
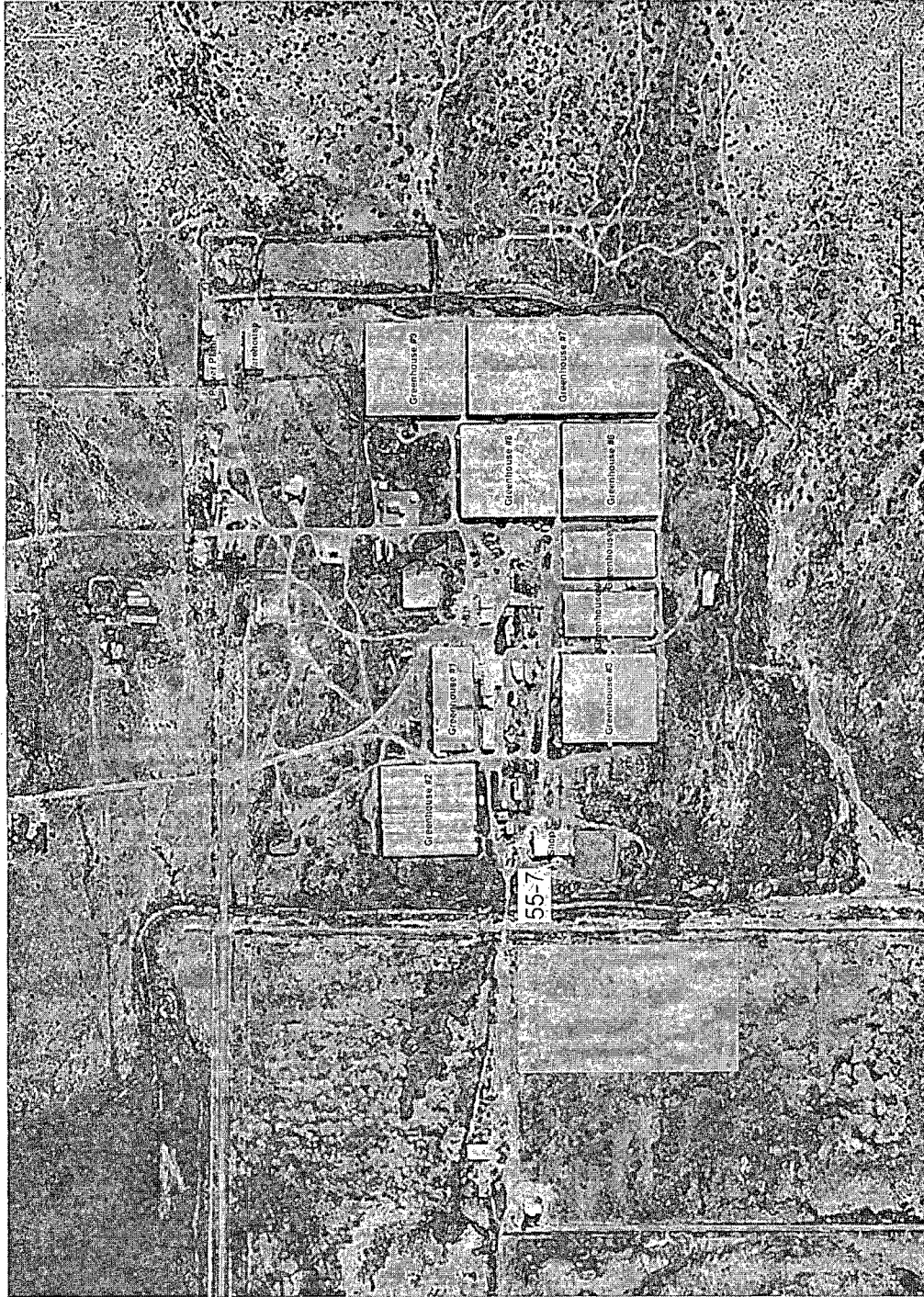
Raser Technologies Corporate Structure



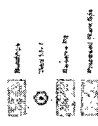
Lightning Dock Geothermal HI-01, LLC is the permit applicant and operator. The illustration above describes the corporate organization of which Lightning Dock Geothermal is a part as follows: Raser Technologies, Inc. is the parent company; Raser's geothermal development company is Raser Power Systems, LLC; the New Mexico entity is Los Lobos Renewable Power, LLC; and Lightning Dock Geothermal HI-01, LLC is the Animas, NM project entity.

Attachment B

Lightning Dock Aerial Photo Map

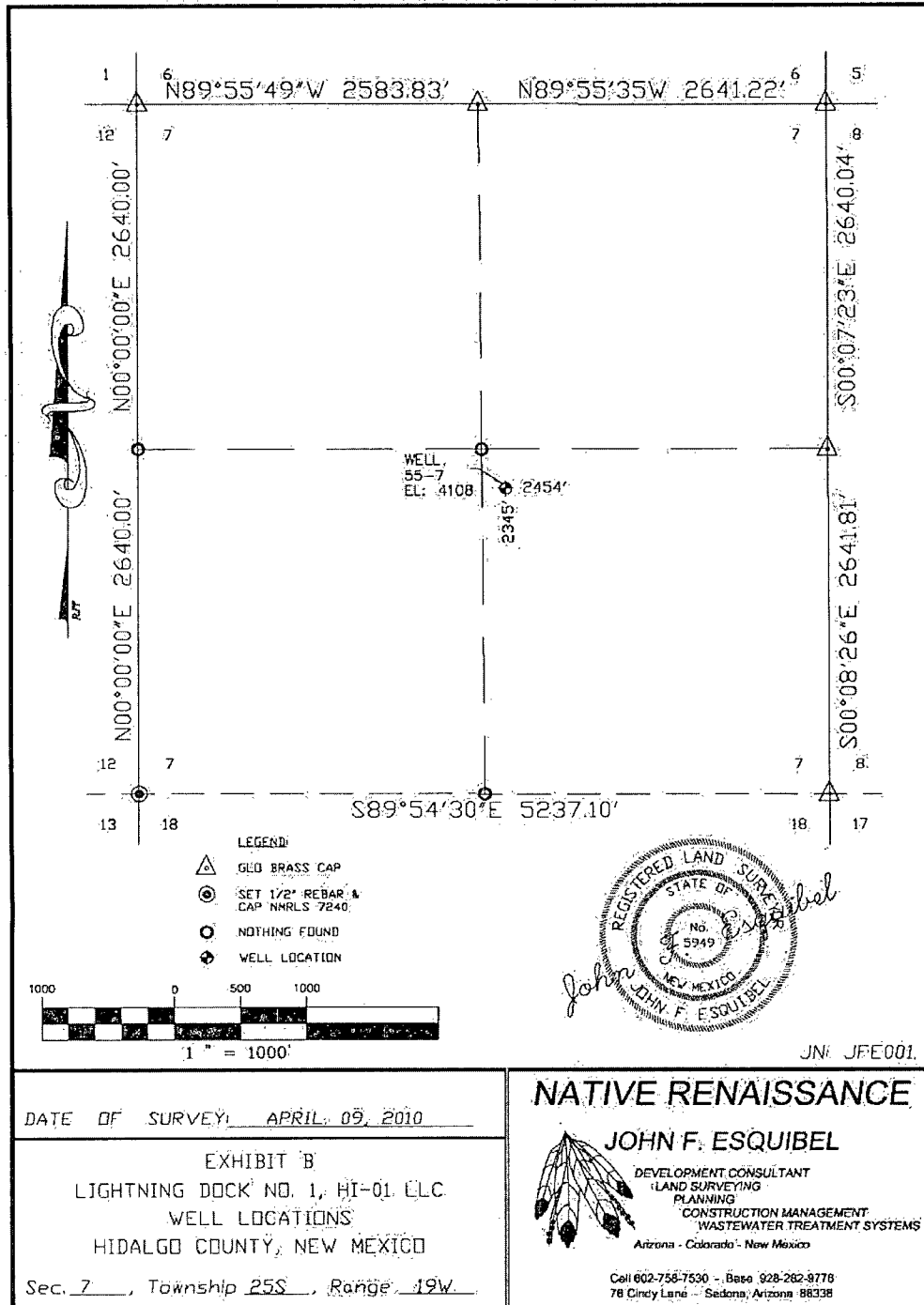


Lightning Dock Geothermal Aerial Map,
Animas Valley, NM



Attachment C

Survey of Well 55-7 Location



Attachment D

Down-Hole Test Pump Specifications

Pump Data Sheet - American-Marsh-Pumps

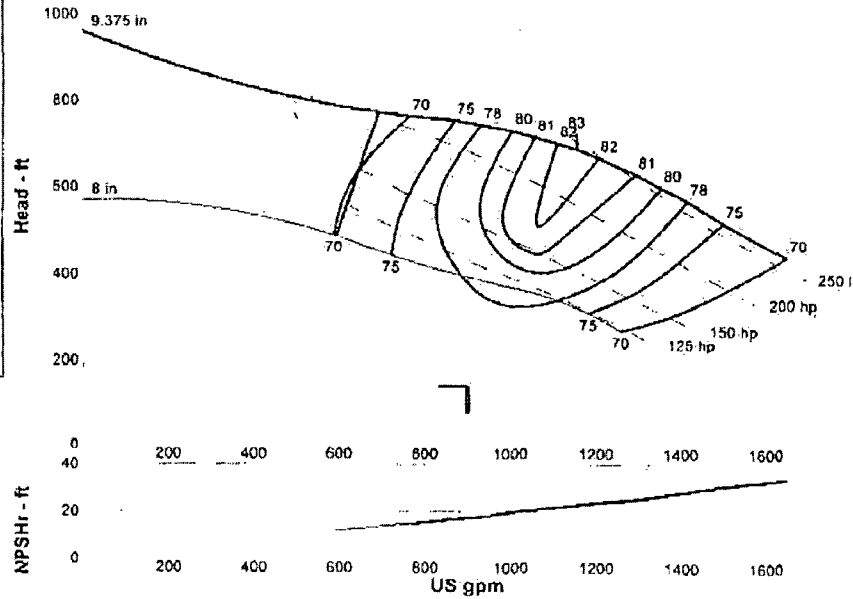
Company:
 Name:
 Date: 7/9/2009



Pump:
 Size: 12MC (10 stage)
 Type: 480_VRT-TURBINE/ENCL
 Synch speed: 1800 rpm
 Curve: 2951
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
Pump Limits:
 Temperature: 250 °F
 Pressure: 584 psi g
 Sphere size: 0.625 in
 Speed: 1760 rpm
 Dia. 9.375 in
 Impeller:
 Ns: 2526
 Nss: 5695
 Suction: 8 in
 Discharge: 6 in
 Bowl size: 11.25 in
 Max lateral: 0.75 in
 Thrust K factor: 10.6 lb/ft
 Power: 450 hp
 Eye area: --- in²

Search Criteria:
 Flow: 900 US gpm
 Head: 140 ft.
Fluid:
 Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHr: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a.
 Atm pressure: 14.7 psi a.
Motor:
 Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 300 hp
 Speed: 1800
 Frame: 448T

Data Point	
Flow:	1152 US gpm
Head:	688 ft
Eff:	82%
Power:	243 hp
NPSHr:	22.9 ft
Design Curve	
Shutoff head:	960 ft
Shutoff dP:	415 psi
Min flow:	693 US gpm
BEP:	83% @ 1155 US gpm
NOL power:	263 hp @ 1500 US gpm
Max Curve	
Max power:	263 hp @ 1500 US gpm

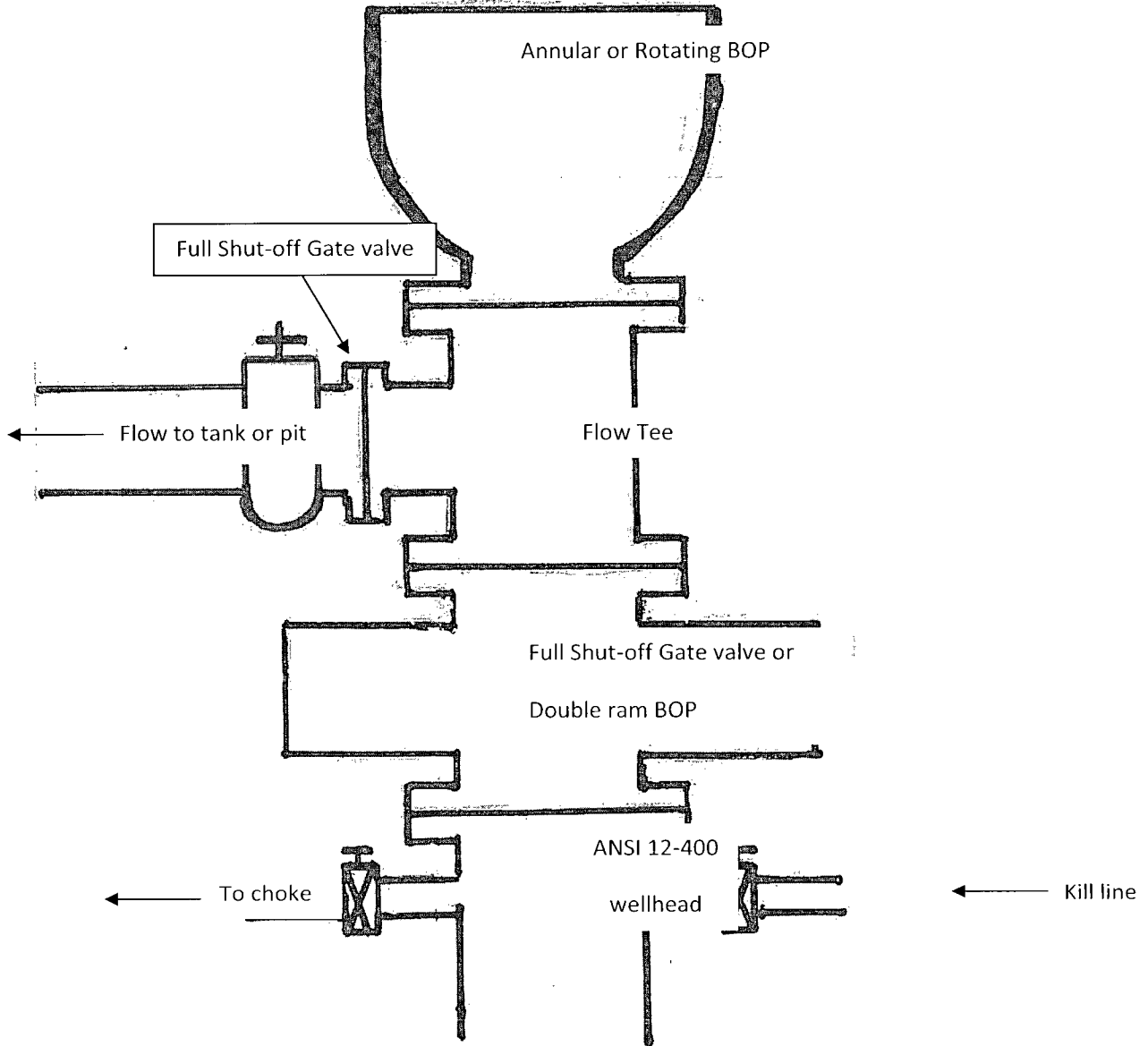


Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1080	1760	709	81	237	21.4
900	1760	749	76	223	17.5
720	1760	778	68	207	14.1
540	1760	---	---	---	---
360	1760	---	---	---	---

Attachment E

Blowout Prevention Equipment Diagram



Attachment F

Surface Use and Access Agreement

Between

Rosette, Inc.

And

Lightning Dock Geothermal HI01, LLC

January 10, 2008

SURFACE ACCESS AND USE AGREEMENT

This **SURFACE ACCESS AND USE AGREEMENT** (“**Agreement**”) is executed effective January 10, 2008, by and between **ROSETTE, INC.**, with an address of 26 Rose Land, Animas, NM 88020 (“**Owner**”), and **LIGHTNING DOCK GEOTHERMAL HI-01, LLC**, with an address of 5152 North Edgewood Drive, Suite 375, Provo, Utah (“**LDG**”).

RECITALS:

A. Owner owns record title to the surface estate of certain real property located in Hidalgo County, State of New Mexico, more particularly described on **Exhibit A** hereto (hereinafter the “**Subject Lands**”). The United States of America, through the Bureau of Land Management (the “**BLM**”), owns the reserved mineral estate, which includes the geothermal estate. Owner owns greenhouse operations which are warmed during the winter months by heat supplied by the utilization of geothermal resources near, on, or around the Subject Lands.

B. LDG is the current owner of a Federal Geothermal Lease NM-34790, issued February 1, 1979 (“**Subject Lease**”), wherein the BLM has granted the holder of the Subject Lease the right to explore for and develop the geothermal resources underlying the lands covered by the Subject Lease, which includes the Subject Lands. Amax Exploration, Inc. (“**Amax**”), a prior owner of the Subject Lease, and a predecessor of Owner entered into a letter agreement dated December 14, 1978 (“**1978 Agreement**”), whereby Amax was granted access to the Subject Lands to develop the Subject Lease. The 1978 Agreement granted Owner’s predecessor the right to drill to a depth of 1000 feet below the surface and extract geothermal resources there from for use in its greenhouse operation. After litigation with the BLM, Owner abandoned use of the geothermal resources from the Subject Lease and Subject Lands, and, pursuant to the settlement agreement with the BLM, Owner has certain plugging and abandoning, and reclamation responsibilities.

C. LDG intends to utilize certain existing geothermal wells on the Subject Lands and to drill additional geothermal wells or reinjection wells (such existing and initially proposed wells, as depicted on **Exhibit B**, and all future wells that may be proposed and drilled by LDG are defined herein collectively as the “**Subject Wells**”) on a portion of the Subject Lands (such initial proposed well-sites, as depicted on **Exhibit B**, and all future well-sites that may be required for future wells, are referred to herein collectively as the “**Well-Sites**”), which Well-Sites will include typical geothermal energy exploration production or reinjection equipment and facilities. In connection with accessing, drilling and operating the Subject Wells and access to power generation facilities, LDG requires a portion of the Subject Lands to construct and maintain access roads crossing the Subject Lands, including, without limitation, existing roads on the Subject Lands (an “**Access Road ROW**” and collectively the “**Access Road ROWs**”). In addition, LDG requires or may require a portion of the Subject Lands to construct and maintain power plants, utilities, transmission lines, water pipelines, water storage and other facilities related to the production, extraction, transportation and reinjection of geothermal resources and the generation and transportation of electricity therefrom (all such improvements constructed or to be constructed by LDG on the Subject Lands are referred to herein collectively as the “**Improvements**”). LDG shall attempt to locate all such Improvements that require linear rights-of-way within the boundaries of the Access Road ROWs when and where economically and operationally feasible, and Owner herein grants Access Road ROWs of sufficient length and width to accommodate any necessary or contemplated Improvements. Furthermore, it may become necessary for LDG to obtain other rights-of-way to accommodate Improvements that cannot be located within an Access Road ROW, including without limitation, the Power Plant ROW, defined below, water storage areas, temporary construction easements, and other non-

linear surface uses (an “**Other ROW**” and collectively the “**Other ROWs**”). The rights-of-way for the necessary Well-Sites (a “**Well Site ROW**” and collectively the “**Well Site ROWs**”), the Access Road ROWs and the Other ROWs, including the Power Plant ROW (defined below), are referred to herein individually as a “**ROW**” and all such rights-of-way granted or to be granted hereunder shall be collectively referred to as the “**ROWs**.”

D. Given the changed circumstances recited above, LDG and Owner desire to cancel and terminate the 1978 Agreement and enter into a new surface use and access agreement that memorializes their discussions and agreements regarding LDG’s access to and use of the surface estate of the Subject Lands, and consideration provided therefore, for the drilling of the Subject Wells, the construction of the ROWs and the development of the Improvements on the Subject Lands. The 1978 Agreement shall terminate upon the execution of this Agreement.

E. LDG and Owner have also agreed that LDG shall have access to and use of certain water rights that are owned by Owner, as more particularly described below.

AGREEMENT:

NOW THEREFORE, in consideration of the mutual promises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto incorporate the recitals above herein and agree as follows:

1. **Term of Agreement.** The rights, including all ROWs, granted by this Agreement shall continue until the rights of LDG, its successors or assigns, to explore for, develop, extract or produce geothermal energy from the Subject Lease, or from lands pooled with the Subject Lease, permanently and irrevocably terminates; provided that the rights granted to LDG herein shall survive the termination of the Subject Lease, so long as the power plant and related facilities on the Subject Lands are capable of producing electricity.

2. **Existing Wells.** Owner hereby grants LDG, its employees and designated agents, and its successors and assigns, the right to access, re-open, re-drill, utilize, deepen, or to plug and abandon, when and if LDG deems it necessary in furtherance of its operations on the Subject Lands, the following wells and any other geothermal wells which exist on the Subject Lands: TFD 55-77, EGS 12-7, GRED 52-7, GRED 36-7, GRED 57-7, and EGS 56-14 (collectively, the “**Existing Wells**”); provided however that the Existing Wells shall not include Well #16 on Exhibit B, which is a water well that is being used by Owner. Owner grants LDG access to and the right to conduct any necessary operations with respect to the Existing Wells, as and where depicted on Exhibit B, except for monitoring purposes, subject to modification by LDG upon a final inspection and survey of the Subject Lands. The Well-Site ROWs for the Existing Wells (and all future wells) shall be initially large enough to accommodate drilling operations, not to exceed 6 acres, but shall contract upon completion of the wells to area sufficient for operation and maintenance of the well, not to exceed 3 acres. One or more of the Existing Wells are close to existing structures or equipment that is stored on the Subject Lands, that may impede access, and LDG agrees to pay for the costs of repairing any damage caused by LDG’s access or to pay the costs of removing or relocating any structures or equipment, in coordination with Owner. Owner hereby also grants LDG Access Road ROWs, with the right to use and expand existing roads, or construct and maintain new roads, as determined by LDG, to and for the development of the Existing Wells (the “**Initial Access Road ROWs**”) as and where depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. Owner and LDG agree that the Initial Access Road ROWs, the centerline of which is approximately depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands, shall initially be sixty (60) feet wide. LDG shall have the right to install additional pipelines, utilities, transmission lines and other Improvements along the Initial Access Road ROWs if it becomes necessary in its operations of the Existing Wells (or

future wells either on or adjacent to the Subject Lands). Owner grants to LDG certain Other ROWs that LDG may require for development of the Existing Wells, for other Improvements or uses that cannot be placed within the boundary of the Initial Access Road ROWs, including, without limitation, water storage areas, permanent or temporary construction areas, and the other rights-of-way needs and uses, as depicted on Exhibit B, or as requested by LDG subsequent to the execution of this Agreement. Once the Well-Sites for the Existing Wells, the Initial Access Road ROWs, and any other initial Other ROWs granted hereunder have been surveyed and precisely identified by legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the initial ROWs described herein.

3. **Power Plant ROW.** As noted above, LDG intends to construct a power plant and related facilities, including geothermal pipeline and utility connections to the plant and transmission facilities out of the plant (the "**Power Plant**"), which power plant site and connections shall require and constitute a "**Power Plant ROW.**" The Owner hereby grants to LDG an exclusive Power Plant ROW to survey, inspect, construct, develop and operate the Power Plant and any related or necessary facilities or Improvements. The Power Plant ROW shall be evidenced by a recorded right-of-way, with a term that extends for as long as the power plant facilities are capable of production of electricity, and for a period of time thereafter for dismantling and remediation, as described below. LDG and Owner shall cooperate to locate the Power Plant ROW in a manner that minimizes the effect on Owner's existing surface uses; provided that, notwithstanding the foregoing, the Power Plant ROW shall be in a location on the Subject Lands that maximizes efficient access to and use of geothermal resources, and to electricity transmission infrastructure and markets. LDG has delivered to Owner a rough map of a possible Power Plant site, along with primary and alternate access roads for the Power Plant site, a copy of which is attached hereto as Exhibit C, and Owner and LDG mutually acknowledge and agree that the approximated rights-of-ways and Power Plant site set out on that rough map would be an example of an acceptable location. LDG agrees to fence and secure the Power Plant ROW. If the Power Plant is no longer capable of production of electricity or if LDG otherwise elects to permanently shut down the Power Plant facilities for any reason, LDG shall provide Owner with written notice of its intent to shut down the facilities. After giving notice of intent to shut down and dismantle the plant, LDG shall have three (3) years to dismantle and remove all infrastructure and improvements pertaining to the Power Plant, including all utilities and transmission facilities, and to remediate the underlying property to its natural condition. Upon the request of LDG, Owner agrees to grant LDG a lease, in a recordable form, with a term that lasts for as long as the Power Plant is in existence and a reasonable time thereafter for dismantling, removal and remediation, of approximately twenty (20) acres (subject to the needs of the Power Plant and the activities of LDG in connection therewith), for the land necessary for the Power Plant and related facilities, at an annual rental rate of \$60 per acre.

4. **Future Subject Wells, ROWs, and Improvements.** LDG intends to develop future Subject Wells on the Subject Lands (in addition to the Existing Wells) ("**Future Wells**"). Additionally, LDG intends to construct and maintain related pipelines, utilities, transmission lines, production facilities, power generation facilities, water storage areas, access roads and other Improvements for such future Subject Wells. Prior to the development of any future Subject Well (not one of the Existing Wells) or Improvements on the Subject Lands in connection therewith, LDG shall provide Owner, in writing, notification of the proposed location of the desired Subject Well(s), Access Road ROW(s), or Other ROW(s) necessary for contemplated Improvements, and a description of the Subject Well(s), Access Road ROW(s) or Other ROW(s) to be constructed (individually and collectively, as the context requires, any "**Future ROWs**"). Within fifteen (15) days of such written notice, LDG and Owner shall discuss the location of the necessary Future ROWs, in an attempt to locate any such Future ROWs in locations that reasonably minimize the impact to the current surface uses of Owner but that do not result in an undue economic or operational burden to LDG. The parties acknowledge and agree that such Well-Site ROWs (for Future Wells) and other Future ROWs shall be located in areas that will maximize recovery and

efficient use of geothermal resources. LDG and Owner agree to meet on the Subject Lands, at the request of either party, in connection with the location of Future ROWs, to discuss such locations. Once Future ROWs have been identified and surveyed for a precise legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the Future ROWs.

5. **1978 Agreement.** Owner and LDG mutually agree to terminate and cancel the 1978 Agreement as of the execution date herewith, and replace the 1978 Agreement with this Agreement. Owner agrees to release LDG of any obligations or claims arising under the 1978 Agreement, and LDG agrees to release Owner of any obligations or claims arising under the 1978 Agreement. Owner and LDG understand that this Agreement is intended to replace and supersede the 1978 Agreement.

6. **Consideration for Agreement.** As consideration for the execution of this Agreement, LDG shall provide the following to Owner:

(a) Upon execution of this Agreement, LDG shall pay to Owner a one-time payment in the amount of Three Hundred Twenty Thousand and No/100 Dollars (\$320,000.00).

(b) LDG shall pay Owner a minimum annual fee of \$1,000.00 as consideration for use of or access to Owner's existing cold water delivery infrastructure. Thereafter, LDG shall pay the \$1,000.00 fee prior to the anniversary date of this Agreement, provided that failure to make such payment shall not constitute an event of breach or default under this Agreement, until Owner has provided LDG with written notice of the failure to make such payment, and LDG fails to make such annual payment within twenty (20) days of such written notice. Moreover, in the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water delivery infrastructure shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

(c) For the use of cold water (see Section 14(b)) provided by Owner to LDG for cooling and other purposes, LDG has agreed to pay an annual payment equal to \$50 per acre foot of water to be used by LDG during the next year, less the \$1000.00 minimum fee set forth above (in other words, the \$1000 fee set forth in Section 6(b) above shall be included as part of, and not in addition to, the annual payment described in this Section 6(c)). LDG shall provide to Owner an estimate of the amount of acre-feet of water that LDG shall use for the following year, and shall pay the annual payment based on such estimated amount, prior to the anniversary date of this Agreement. At the end of such year, if LDG's use of water for the prior year exceeded the estimate, then LDG shall remit the payment for such acre feet used in excess of the estimate for the prior year with the payment for the next year's estimated water uses. The consideration set forth in Section 6(a) above includes the first year's payment for water use under this Agreement. In the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

7. **Cessation of Development or Abandonment of Lease.** LDG intends to explore for geothermal resources on the Subject Lease for the purpose of generating electricity. If LDG fails to take reasonable actions to commence exploration for or development of geothermal resources on the Subject Lease within two (2) years of the date of this Agreement, or if LDG determines at any time, either before or after such two (2) year period, to abandon development of geothermal resources on the Subject Lease (and provides Owner with written notice of such intent to abandon the Subject Lease), then LDG agrees to take such reasonable steps necessary to designate Owner as an operator (with the BLM) for purposes of operating shallower formations under the Subject Lease (down to 1000 feet, consistent with the historical operations of Owner), or, if LDG determines it is in its interest, to assign operating rights in the Subject Lease to

Owner from the surface down to 1000 feet. Notwithstanding the foregoing, if LDG determines that it intends to completely abandon the Subject Lease, and provides written notice of such intent to Owner, then LDG shall assign the entire lease over to Owner, upon assumption by Owner of all rights and responsibilities under the Subject Lease. Moreover, LDG agrees that in connection with such designation of operator, it shall agree to turn over to Owner the following Existing Wells, as shown on Exhibit B, unplugged and accessible: Well #10, Well #11, and Well #25, provided however that Owner shall assume all plugging, abandoning, reclamation and other responsibilities for such wells and shall post any required bonds in connection with the assignment and assumption of such wells. The foregoing agreement of LDG to designate Owner as an operator (or assign operating rights or all of the Subject Lease) is subject to the approval of the BLM. LDG's commitment to commence exploration and development activities on the Subject Lease is also subject to delay or suspension as result of events of Force Majeure. "Force Majeure" shall include, without limitation, the following: strikes; lockouts; riots; action of the elements, including but not limited to fire, explosion, flood, volcanic activity, earthquakes, or tidal waves; accidents; delays in transportation; inability to secure labor or materials in the open market; laws, rules or regulations of any Federal, State, County, Municipal or other governmental agency, authority or representative having jurisdiction, including failure or delay in issuance of necessary permits or approvals; war (whether declared or undeclared including terrorist acts); acts of God; litigation or administrative proceedings affecting title to lands covered hereby or operations thereon; inability to secure or absence of a market for commercial sale of geothermal resources or electricity generated therefrom, produced from the Subject Lease or of derivatives developed by LDG therefrom; or by other matters or conditions beyond the reasonable control of LDG, whether or not similar to the conditions or matters in this definition specifically enumerated.

8. **Cooperation.** Owner agrees to reasonably cooperate with LDG, in good faith, to support and promote the successful development of geothermal resources and the generation of electricity from the Subject Lease.

9. **Pipelines, Utilities.** LDG hereby agrees to locate all pipelines and other linear utilities at all points along an applicable Access Road ROW or Other ROW where reasonable and practical. However, there may be instances where pipelines, transmission facilities and other Improvements cannot be placed along an Access Road ROW, in which case LDG shall be granted separate Other ROWs for such uses. LDG shall not be required to bury pipelines or other utilities.

10. **Access Road ROWs.** LDG agrees that it shall construct and/or improve all currently contemplated new roads and existing roads along the center line(s) approximately depicted on the attached Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. During the construction or improvement of any road, under an Access Road ROW, including the installation of pipelines and other utilities, the right of way shall be sixty (60) feet wide, and LDG shall have a temporary license to use other portions of the Subject Lands during the construction phase of such roads (including the installation of pipelines and other utilities) to park equipment or store gravel or other supplies, provided that LDG shall replant and restore any temporary use areas to their natural condition prior to construction. Upon completion of construction of the road (or expansion or improvement of existing roads) and installation of pipelines and other utilities, the Access Road ROWs shall be forty (40) feet wide. The roads shall be graded and improved with gravel. LDG agrees that it shall maintain the Access Road ROWs to industry standards as a gravel road during the term of this Agreement. LDG shall not be obligated to remove snow that may accumulate on the road, and shall not be responsible for paving the road, providing curb and gutter, or otherwise improving the road to accommodate increased traffic from Owner's lands. The same provisions of this Section 10 shall apply to all future roads and Access Road ROWs to be constructed and maintained by LDG on the Subject Lands, including Access Road ROWs or Other ROWs to the Power Plant ROW.

11. **Owner's Right to Use the ROWs.** LDG shall have the exclusive right to use and maintain the Well Site ROWs and any Other ROWs (including the Power Plant ROW). LDG shall have the non-exclusive right to use and maintain the Access Road ROWs during the term of this Agreement for its purposes. LDG hereby agrees that Owner, and its successors, assigns, employees, agents, invitees and licensees, shall have the right to use the Access Road ROWs for access to the remainder of Owner's property as currently owned and used. Owner, and its successors, assigns, employees, agents, invitees and licensees shall not interfere with LDG's operations on the Subject Lands or the use or maintenance of the Access Road ROWs (or the other ROWs), and Owner shall be responsible for any cost of repairing damage to any road caused by Owner, or its successors, assigns, employees, agents, invitees and licensees. Any proposed use of or modification to an Access Road ROW by Owner, or its successors, assigns, employees, agents, invitees and licensees, which would or may be likely to injure, damage or interfere with the Access Road ROW, shall require the prior written consent of LDG, an express agreement of Owner to assume all costs and damages, and shall require, at LDG's option, the presence of LDG's agent or employee to monitor the activity. Owner, and its successors, assigns, employees, agents, invitees and licensees shall abide by all written safety and other instructions regarding use of the roads that are provided by LDG. When LDG no longer requires an Access Road ROW for its operations, LDG shall provide written notice of its intent to abandon use and Owner shall have the option to assume control and maintenance over the Access Road ROW by notifying LDG within thirty (30) days of receipt of such notice; otherwise, LDG shall remediate and restore the property covered by an Access Road ROW in accordance with applicable law.

12. **Indemnification.**

(a) Owner, its successors and assigns, does hereby agree to relieve, release, indemnify and hold LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, harmless and agree to defend LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, from any claim of damage to any person or property arising out of use of any ROW or other activities on the Subject Lands for damages proximately caused by Owner, its successors, assigns, invitees, and licensees, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, and witness fees, and other monies expended by or incurred by LDG or its agents, in the event it shall become necessary for LDG or its agents to defend themselves from any claims made by anyone as a result of the use of any ROW or other activities on the Subject Lands, by Owner, its successors, assigns, invitees, and licensees, but not otherwise.

(b) LDG, its successors and assigns, hereby agree to relieve, release, indemnify, and hold harmless and agree to defend Owner, its successors, assigns, employees, agents, invitees and licensees from any and all claim of damage to any person or property arising out of use of the Subject Lands for operations by LDG or its agents for damages proximately caused by LDG or its agents, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, witness fees and other monies expended by or incurred by Owner, its successors, assigns, employees, agents, invitees and licensees in the event it shall become necessary for Owner, its successors, assigns, employees, agents, invitees and licensees to defend themselves from any claims made by anyone as a result of LDG's operations, on, across or over the Subject Lands, but not otherwise.

13. **Confidentiality.** Owner hereby agrees, unless compelled by court order or subpoena, that the terms and conditions of this Agreement, including but not limited to the payments referenced in Section 6

above, shall remain confidential and will not be disclosed or released to any other person(s) or third parties. LDG can disclose the existence and terms of this Agreement at its discretion.

14. **Water Rights.** Owner currently owns water rights that pertain to the Subject Lands, which are more particularly described in **Exhibit D** hereto. Owner is currently using a portion of its water rights for the operation of its commercial greenhouse business, for domestic consumption and some limited irrigation needs ("**Current Water Usage**"). Any water rights that Owner currently owns but is not currently using to satisfy the Current Water Usage shall be referred to herein as the "**Excess Water Rights**." LDG requires a minimum of approximately 600 acre-feet of water for the cooling and operational needs of the Power Plant, and Owner agrees that it shall make commercially reasonable efforts to meet those water requirements from the Excess Water Rights, and shall not lease or transfer any of its water rights until LDG's water requirements are being adequately met. Owner agrees to provide LDG access to and use of all Excess Water Rights as follows:

(a) Owner grants LDG the right to use Excess Water Rights for the drilling and testing of geothermal wells on the Subject Lands. LDG shall be responsible for all costs of connecting to Owner's water system.

(b) Owner hereby grants LDG the preferential right to the use of all Excess Water Rights for the development and operation of the Power Plant and the appurtenant geothermal resources. LDG shall install a metering system, at its own cost and expense, if necessary to comply with any requirements of any governmental agency or authority. LDG shall also bear the full cost of connections to Owner's water systems and infrastructure, and, if necessary, any upgrades to Owner's water system necessitated by LDG's use of the Excess Water Rights. LDG shall provide, free of cost, all electricity necessary for pumping any Excess Water Rights for LDG's use. LDG shall pay for any metering, studies or reports that may be required to establish a precise amount of Owner's available water rights, the amount of the Excess Water Rights and/or LDG's water needs for the Power Plant or geothermal resources development. Once the amount of LDG's water rights requirements are established, Owner and LDG agree to enter into a written water use agreement that evidences LDG's rights to the Excess Water Rights, which agreement shall be recorded in the county real property records ("**Water Use Agreement**"). Owner covenants and agrees not to transfer or sell any of the Excess Water Rights, until the Water Use Agreement is executed and recorded.

15. **Drilling of Water Wells on the Subject Lands.** LDG requires a certain amount of water to effectively produce geothermal energy from the Subject Wells. Owner understands that any drilling of water wells on the Subject Lands or land adjacent to the Subject Lands, under certain conditions, could significantly and adversely impact the ability of LDG to explore for and produce geothermal energy. Accordingly, Owner hereby agrees to not drill or construct any water wells on the Subject Lands or on adjacent property to the Subject Lands that Owner owns without first giving LDG written notice of its drilling plans to LDG. Owner agrees to use its best efforts to cooperate with LDG to obtain any additional water rights that LDG may need or apply for to drill the Subject Wells and/or generate electricity from the geothermal resources underlying or pooled with the Subject Lands.

16. **Notices.** Owner may give any notice or deliver any document hereunder to LDG by mailing the same by prepaid registered or certified mail addressed to LDG to the address set forth in the introductory paragraph above, attention General Counsel, or by delivering the same in person to the above-referenced address of LDG. LDG may give any notice or deliver any document hereunder to Owner by mailing the same by prepaid registered or certified mail addressed to Owner at the address set forth in the introductory paragraph above, attention Dale Burgett, or by delivering the same to Owner in person. For purposes of this paragraph, either party may change its address by written notice to the other. In case of any notice or document delivered by registered or certified mail, the same shall be deemed delivered when deposited in any U.S. Post Office, properly addressed as herein provided, with postage fully

prepaid. Notices shall be in writing and shall be given to LDG and Owner at the addresses set forth in the introductory paragraph hereto, or to such address as either party may designate to the other in writing not less than thirty (30) days before that event which triggers notices. Notices shall be effective the third day after the date of mailing, postage prepaid.

17. **Rehabilitation and Restoration.** Upon termination of this Agreement, LDG shall restore the Subject Lands near as possible to their original conditions prior to construction in accordance with acceptable industry practices and all applicable laws and regulations in effect at the time of restoration. To the extent there is any environmental remediation required for property surrounding any ROW, Owner grants LDG a temporary right-of-way to use as much of the Subject Lands as it may require for environmental remediation. LDG shall have the right to use necessary space outside of the right-of-way for repair of any roadway or facilities. If upon termination of this Agreement, or intended abandonment of an Access Road ROW or some other ROW hereunder, LDG agrees and Owner elects to assume ownership and use of any road, well, or other Improvements, then Owner shall expressly assume all liabilities or responsibilities, including without limitation all future reclamation (or plugging and abandoning, for wells) obligations, and shall hold harmless LDG upon assumption of responsibility for such road, well or other Improvements.

18. **No Storage or Repair of Equipment.** LDG shall not allow any construction equipment or materials to be stored on Owner's property outside the confines of the fenced Power Plant ROW beyond ninety (90) days after completion of construction of a ROW or Improvements, unless approved, in advance, by Owner. LDG shall endeavor to maintain clean, neat and orderly roads and facilities at all times. No construction equipment shall be repaired or maintained upon the property of the Owner outside the boundaries of the fenced Power Plant ROW, except in the case of emergencies to prevent damage to the Subject Lands or neighboring properties. No motor fluids will be disposed of on the property of Owner.

19. **Taxes.** Owner shall continue to be responsible for the payment of property taxes, if applicable. LDG agrees to pay all additional taxes that may be assessed against the Subject Lands by reason of improvements placed thereon by LDG. Owner shall provide LDG with written evidence that Owner has paid all property taxes on the Subject Lands at least thirty (30) days prior to when due. If Owner fails to pay property taxes on the Subject Lands, LDG shall have the right, but not the obligation, to pay such tax obligations on Owner's behalf, and such payment, with interest accruing at Eighteen Percent (18%) per annum, shall be due and payable by Owner to LDG within thirty (30) days of payment by LDG.

20. **Recorded Right-of-Way; ROW Map.** Upon the request of LDG or Owner, LDG shall prepare a written right-of-way, in recordable form, which can be recorded in Hidalgo County to provide constructive notice of the exact location of any right-of-way granted pursuant to this Agreement. Moreover, LDG shall maintain a map of the Subject Lands (starting with Exhibit B) which reflects all surface uses and ROWs used or required by LDG, and as new ROWs are obtained by LDG under this Agreement, LDG shall amend and maintain a current map and survey of ROWs, a copy of which shall be provided to Owner.

21. **LDG Financing.** Owner agrees to execute any documents reasonably required by any lender of LDG to permit LDG to obtain financing for LDG's activities on the Subject Lands. Such documents may include, without limitation, a certificate of Owner confirming the validity and enforceability of this Agreement, that there are no defaults under this Agreement, that this Agreement shall survive any foreclosure and may be assigned to subsequent purchasers at foreclosure, consent of Owner to the grant of LDG's rights in this Agreement to a lender for security purposes, and any other covenants and agreements that are typically required by institutional lenders. Moreover, if Owner has existing deeds of trust, mortgages, or other liens on the Subject Lands at the time of this Agreement, Owner agrees to obtain subordinations from its lenders and lienholders with respect to this Agreement, on the form to be provided

by LDG, either prior to execution or within thirty (30) days after execution, as elected by LDG. The subordination agreement may be recorded with the Memorandum described in Exhibit C or recorded separately.

22. **Governing Law.** The laws of the State of New Mexico shall control the rights of the parties under this contract.

23. **Waiver.** By signing this Agreement, neither party waives its statutory and common law rights to occupancy and enjoyment of their respective estates, except as expressly provided in this Agreement.

24. **Assignment of Rights.** All rights and obligations under this Agreement shall run with the Subject Lands and shall inure to the benefit of and be binding upon the heirs, successors, or assigns of each party. LDG may assign its rights in this Agreement without the prior written consent of Owner, including, without limiting the foregoing, assignments for purposes of providing security for any loans. Moreover, LDG shall have the right to assign all or any portion of the ROWs to another entity or person, separate from ownership of the Subject Lease. The parties hereto agree to execute a memorandum of this Agreement, which shall be in form sufficient to record in the Hidalgo County real property records, in the form provided by LDG.

25. **Amendment.** This Agreement constitutes the entire Agreement between the parties pertaining to the subject matter contained in it and supersedes all prior and contemporaneous agreements, representations, and understandings of the parties with respect thereto. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing by all parties.

26. **Counterparts.** This Agreement may be executed in counterparts. Each counterpart shall constitute an original and all counterparts together shall constitute one and the same document. Receipt by party hereto of an executed copy of this Agreement by facsimile shall constitute conclusive evidence of execution and delivery of the Agreement by the signatory thereto.

[Signatures on the following page]

Dated effective as of the date first written above.

OWNER:

ROSETTE, INC.

By: 

Name: Dale Burge

Title: CEO

LDG:

LIGHTNING DOCK GEOTHERMAL HI-01, LLC

By: 

Name: Martin F. Peterson

Title: CFO

EXHIBIT A

Legal Description of the Subject Lands

- A. LDG is the owner of Federal Geothermal Lease NM -34790 (“**Subject Lease**”), granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the lease, described as follows:

1.

T25S, R19W, N.M.P.M.
Sec. 6: Lots 3, 4, 5, 6, 7, SE1/4NW1/4
Sec. 6: E1/2SW1/4
Sec. 7: Lots 1, 2, 3, 4, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4,
NW1/4NE1/4, NE1/4NW1/4
Sec. 18: Lot 1, N1/2NE1/4, NE1/4NW1/4

and

T25S, R20W, N.M.P.M.
Sec. 1: NW1/4SW1/4, S1/2SW1/4, SW1/4SE1/4
Sec. 11: NE1/4, S1/2
Sec. 12: ALL
Sec. 13: N1/2N1/2

Containing 1,500.96 acres, more or less

2. LDG has applied for Federal Geothermal Lease NM 108801, which is pending final approval by the BLM and will be included with the Subject Lease upon approval, granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the Subject Lease, described as follows:

T25S, R20W, N.M.P.M.
Sec. 14: All

Containing 640.00 acres, more or less

- B. Owner is the owner of the land (“**Surface Lands**”) covering, in part, the Subject Lease, which is described as follows:

1. Sections 7 and 18
T25 S, R19 W, N.M.P.M

And

Sections 11, 12, 13, 14, and 23
T25 S, R20 W, N.M.P.M
Containing 2,592.473 acres, more or less

- C. “**Subject Lands**” shall be the surface area wherein LDG’s Subject Lease underlies Owners Surface Lands.

EXHIBIT B

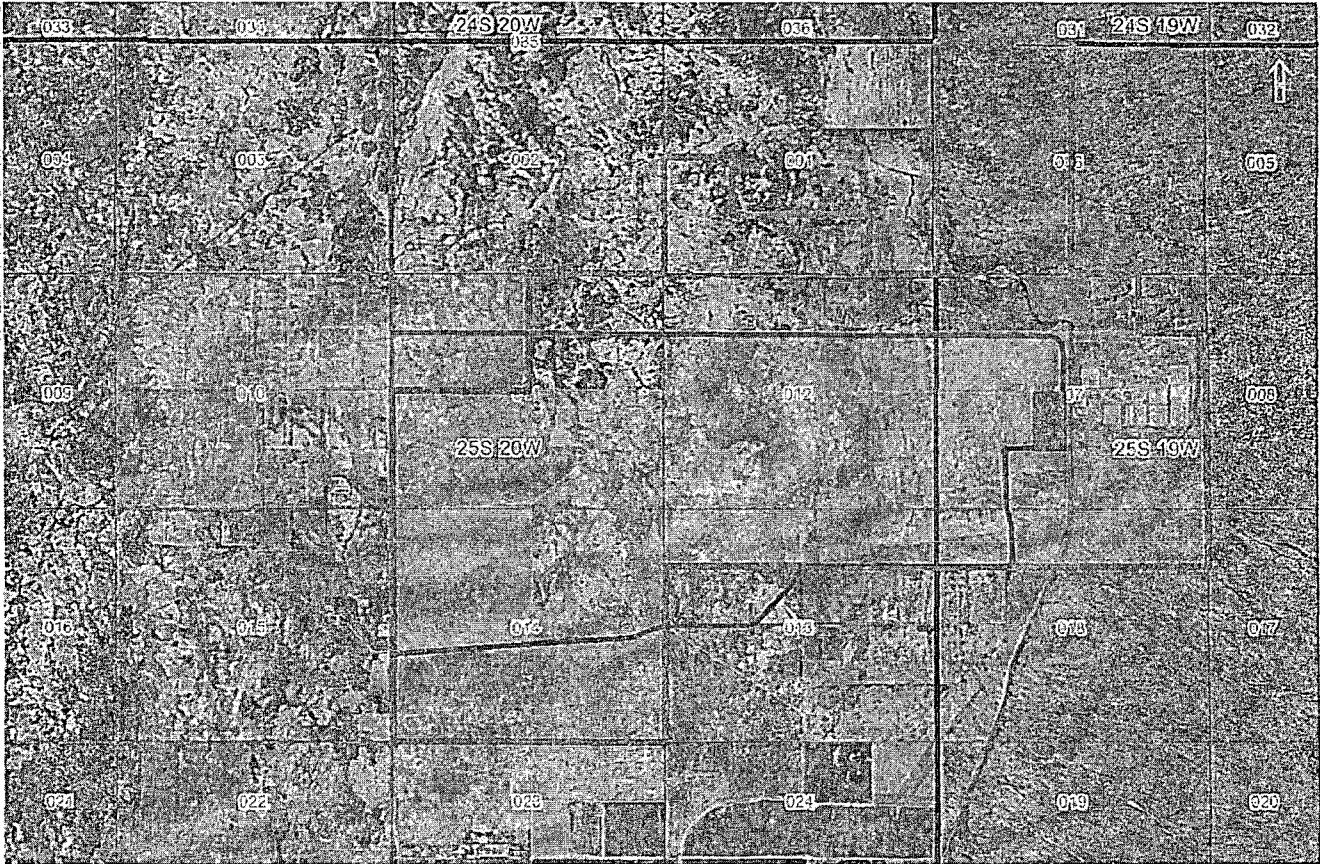
Initial Inventory of Existing Wells and Location of Initial Contemplated ROWs






- Legend**
- Burget Boundary
 - Riser Federal Geothermal Lease
 - Wells**
 - Number, Label**
- | | | | | |
|---|---|--|---|---|
| <ul style="list-style-type: none"> 0. HP Home Heating-Federal 1. Exploratory Well-Federal 2. Exploratory Well-Federal 3. Ameliorative Well-Federal 4. Well No. 1 State-Burgett | <ul style="list-style-type: none"> 5. Well No. 5 State-Burgett 6. Well No. 4 State-Burgett 7. Well No. 3 State-Burgett 8. HP Home Heating-Federal 9. HP Home Heating-Federal 10. Metered Production Well (No. 2 West) - Federal 11. Metered Production Well (No. 3 East) - Federal 12. HP - Greenhouse Heating-Federal 13. HP-Home Heating-Federal 14. Exploratory Well-Federal | <ul style="list-style-type: none"> 15. Abandoned Well-Federal 16. Metered Prod. Well (No. 1 East Well) - Federal 17. Abandoned Well-Federal 18. Metered Production Well (No. 2 West) - Federal 19. Abandoned Well-Federal 20. Deep Exploratory Well (55-7) - Federal 21. HP-Home Heating-Federal 22. Abandoned Well-Federal 23. Working Well-Federal 24. HP-Home Heating-Federal | <ul style="list-style-type: none"> 25. Metered Production Well (No. 3 West) - Federal 26. Abandoned Well-Federal 27. Abandoned Well-Federal 28. HP-Packing Plant-Federal 29. Exploratory Well (55-7) - Federal 30. Irrigation Well - Private 31. Exploratory Well (52-7) - Federal 32. Vacant 33. Well No. 7 State - Burgett 34. State Well - Agriculture | <ul style="list-style-type: none"> 35. State Well - Agriculture 36. State Well - Molasses 37. Abandoned Well - State 38. Exploratory Well (12-7) - Federal 39. Molasses Well - Federal 40. Molasses Well Home Heating - Federal 41. Molasses Well Home Heating - Federal |
|---|---|--|---|---|

EXHIBIT C

Sample Power Plant ROW and Access Roads for a Power Plant



Legend

-  Secondary Access Route
-  Primary Access Route
-  Proposed Plant Location
-  Raser Federal Geothermal Lease
-  Burgett_Boundary

Lightning Dock Geothermal
Power Plant and
Access ROW
Hildago County, Nevada

Lightning Dock Geothermal HI-01, LLC
5152 North Edgewood Drive Suite 375
Provo, UT 84604

EXHIBIT D

Water Rights Description

A. Owner represents and warrants ownership of the following Water Rights identified by New Mexico Office of the State Engineer Numbers:

A-13, with points of diversion located in Section 13, Township 25 South, Range 20 West, N.M.P.M.

A-36-A, with points of diversion located in Sections 6 and 7, Township 25 South, Range 19 West, N.M.P.M., and Sections 4 and 12, Township 25 South, Range 20 West, N.M.P.M.

A-35-D, with points of diversion located in Section 7, Township 25 South, Range 19 West, N.M.P.M., and Section 4, Township 25 South, Range 20 West, N.M.P.M.

A-51, with points of diversion located in Section 10, Township 25 South, Range 20 West, N.M.P.M.

A-64-A, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-384, with points of diversion in Section 12, Township 25 South, Range 20 West, N.M.P.M.

A-385, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-386, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

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N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State NA- Federal
5.a State Lease No.
Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.

1. Type of well Geothermal Producer <input checked="" type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name N/A
2. Name of Operator Lightning Dock Geothermal HI-01, LLC	8. Farm or Lease Name N/A
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604	9. Well No. TFD 55-7
4. Location of Well Unit Letter _____ Feet From The East _____ Line and _____ Feet From The South _____ Line, Section 7 _____ Township 25S _____ Range 19W _____ NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) 4201' GR	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input checked="" type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>OTHER _____ <input type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input checked="" type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> PLUG & ABANDONMENT <input type="checkbox"/></p> <p>CASING TEST AND CEMENT JOB <input type="checkbox"/></p> <p>OTHER _____ <input type="checkbox"/></p>
--	---

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

1. MIRU drill rig.
 2. Drill out cement plug from 1450' to 1550' approx.
 3. Drill out cement plug from 1890' to 2090' approx.
 4. RIH to locate cement plug at 5400' approx.
 5. Set bridge plug in 3000'-3400' interval.
 6. Collect water samples for geochemical and environmental analysis.
 7. Set production pump at 850' approx.
 8. Release rig.
 9. Hook up well for pump test to irrigation system.
 10. Run pump test for up to four weeks.
 11. Secure well.
- Please see attached Proposed Operations and Drilling Plan for details.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE VP Resource Management DATE April 12, 2010

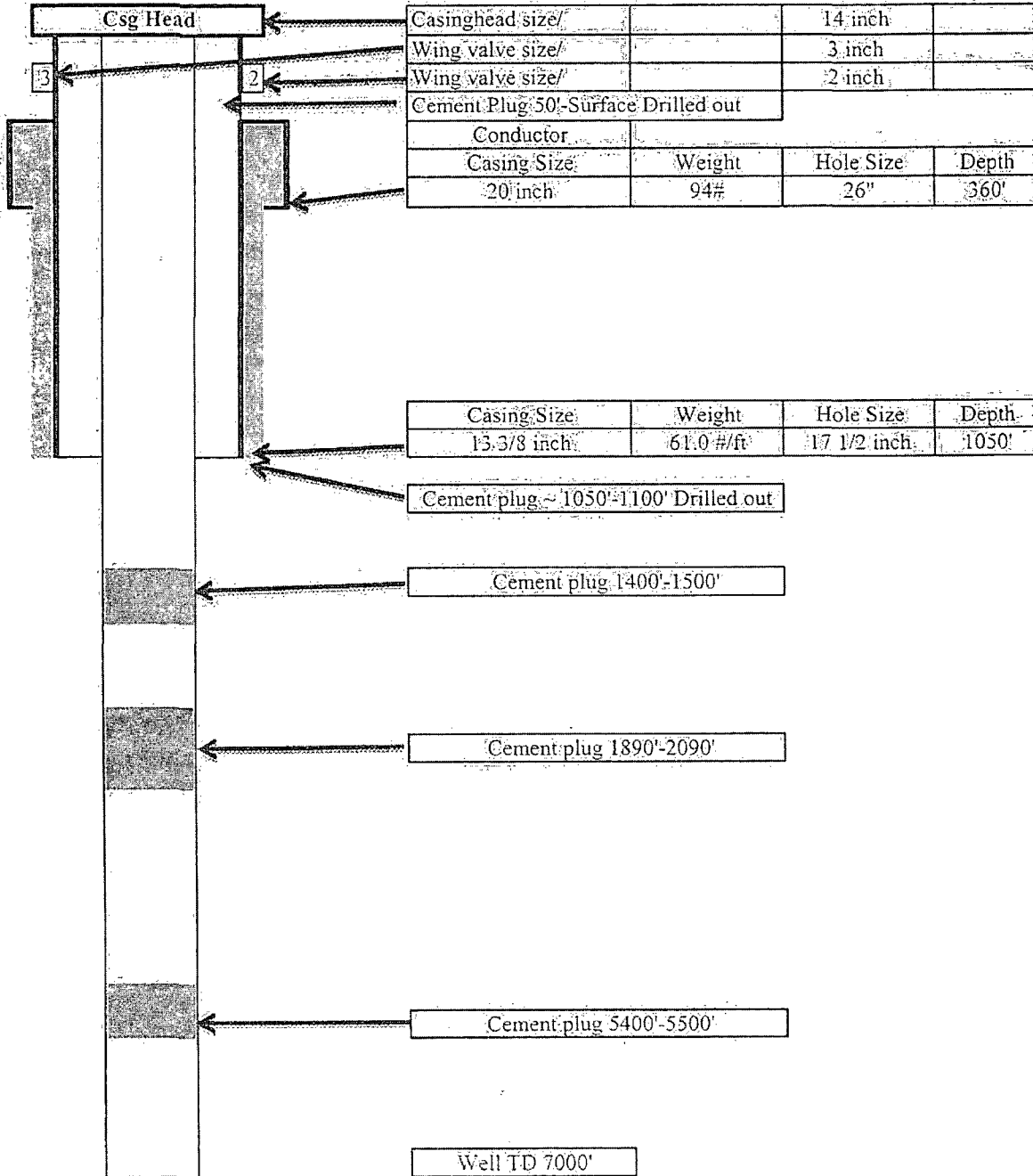
APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

AS IS NOW

Field Name:

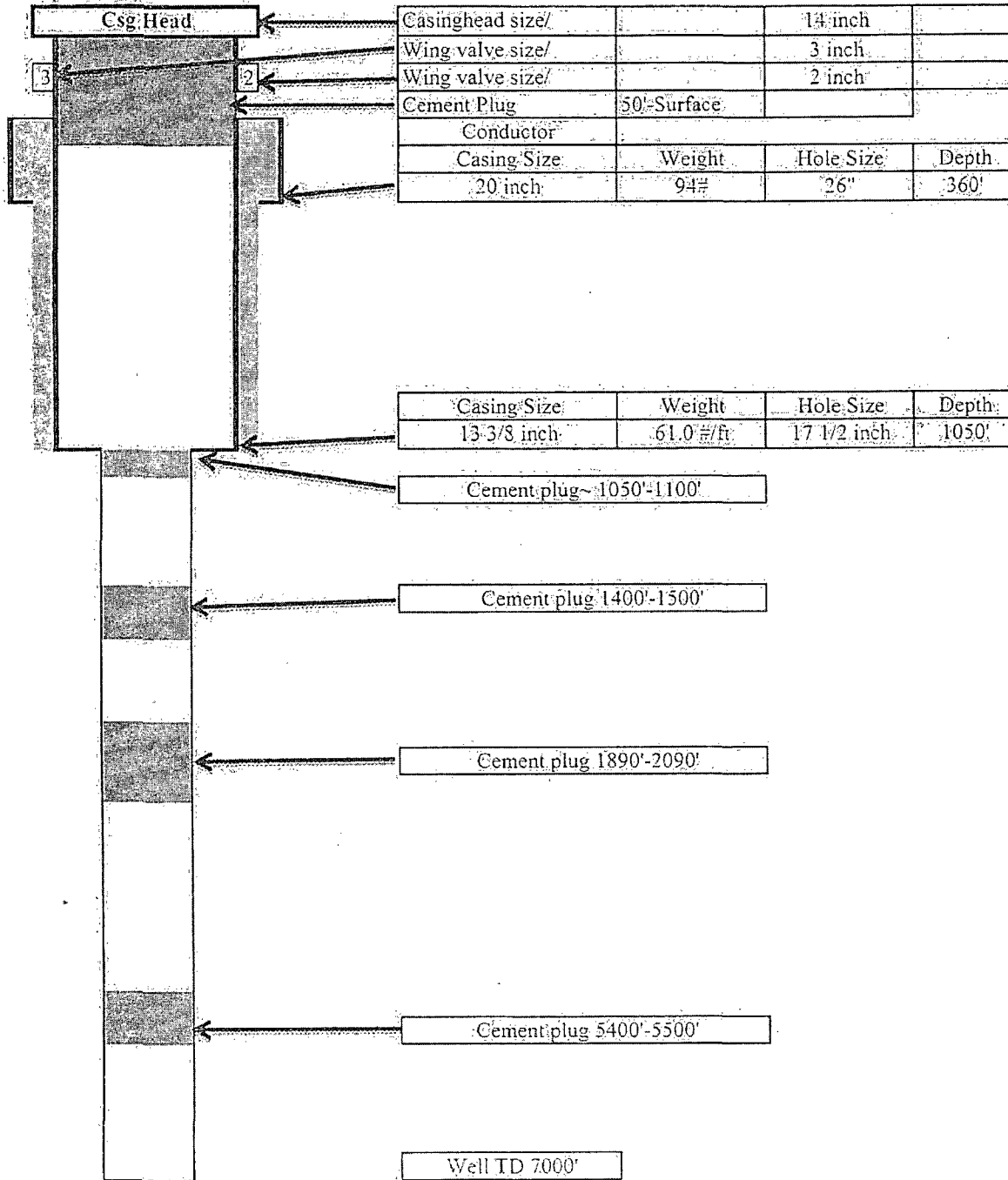
Lightning Dock



P&A 1985

Field Name:

Lightning Dock



Lightning Dock Geothermal HI-01, LLC
Proposed Operations and Drilling Plan, Well TFD 55-7

April 12, 2010

Prepared For:

New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, NM 87505

New Mexico Office of the State Engineer
Water Rights District III Office
301 South Tin Street, Deming, NM 88030

U.S. Department of the Interior, Bureau of Land Management
Las Cruces District Office
1800 Marquess Street, Las Cruces, NM 88005

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I. Summary of Proposed Operations:

Lightning Dock Geothermal HI-01, LLC, (“LDG”) is a wholly owned subsidiary of Los Lobos Renewable Power, LLC, which is wholly owned by Raser Technologies, Inc. (See Attachment A, Raser Technologies Corporate Structure). LDG proposes to re-enter and test well TFD 55-7 for the purpose of determining its suitability as a geothermal production well. LDG intends to mobilize a drilling rig about April 21, 2010 and will commence operations according to the Plan in Section II, below, as soon as approved by BLM and upon receipt of requisite permits from NMOSE and NMOCD.

The operations for which Lightning Dock Geothermal seeks permission in the present application are comprised of three parts:

- Remove two of the three remaining cement abandonment plugs set in the wellbore by Steam Reserve Corp. in 1985. The deepest plug will remain in place. Rosette, Inc., removed the uppermost two of the five Steam Reserve plugs pursuant to an NMOSE irrigation well permit. LDG intends to test the upper 3,400 ft of the open hole. The water will be sampled and analyzed in accordance with WQCC standards as described below. Compliance with those standards will be verified before any water is discharged in a pump test.
- Install a down-hole production pump and conduct a well and reservoir test. The discharged water will be metered and conveyed to a planted field for irrigation purposes. This will be done using standard farm irrigation equipment such as a wheel line. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Rosette, Inc. has agreed to provide the 2010 water rights to LDG for this test. LDG does not intend to use TFD 55-7 for injection in this operation. The existing unlined reserve pit may be used for cooling and water storage if approved by NMOCD upon receipt of produced water analyses.
- Install proper wellhead equipment and secure the well.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, LDG will proceed to obtain all approvals and permits (BLM, NMOCD, and NMOSE) required for further development.

II. Well Preparation

The first part of the operation requires reopening TFD 55-7 to collect fluid samples, set a bridge plug and install a test pump. The following is the proposed plan for the drilling operation. This detail is incorporated by reference into the BLM Drilling Program, described in Section V of this document.

- 1) Inspect wellhead for dimensional consistency with ANSI series 400 standards.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp circulating pump.
- 3) Install annular or rotating BOP on the wellhead above flow tee with gate valve on side outlet (see Attachment E).
- 4) Mix non-toxic gel-lime mud and fill hole.
- 5) Pick up slick bottom-hole assembly (BHA) #1: 8-1/2" insert bit, BS, 4x6" DC, jars, 1x6" DC, XO.
- 6) Test BOP for leakage by inflating around BHA and pumping in the side outlets to maximum working pressure of the surface piping, not to exceed 900 psig.
- 7) Run in hole and tag bottom, expected at about 1400 ft. Circulate bottoms up.
- 8) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. Airlift will be accomplished by injecting compressed air through the drilling assembly in sufficient quantity to stimulate flow to the surface. Discharging the flow line into a gauging tank will allow measurement of the produced liquid after its separation from the injected air. The volumes produced during the drilling operation will be recorded and will not exceed the storage capacity of the tank and reserve pit on site. No water will be discharged to "Waters of the State".
- 9) Pull out of hole and pick up 9-5/8" bit and stabilizers. Make up stiff BHA #2.
- 10) RIH and time drill cement plug #1. The plugs in well TFD 55-7 are of neat Portland cement. The plugs are reportedly each 50 - 400 ft in length and set in uncased open hole at about 1450 ft and 1850 ft. Time drilling and a "locked" (i.e., stiff and highly stabilized) BHA will be used to drill the plugs while staying in the original hole. Non-toxic, temperature-stable drilling mud will be used, composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit. The drilling fluids will bring the rock cuttings to the surface and then be cleaned and recirculated, preventing loss of drilling fluids into the rock and minimizing discharge into the reserve pit.
- 11) POH and stand back BHA #2.
- 12) Pick up BHA #3: float shoe, XO, 2x6" DC.
- 13) RIH and tag cement plug #2, expected at about 1800 ft.
- 14) Circulate hole clean.
- 15) Displace mud with water. POH to 1500 ft. Close BOP.
- 16) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 17) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 18) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ*

(i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."

- 19) POH, stand back BHA #3.
- 20) Pick up BHA #2. RIH to cement plug #2.
- 21) Circulate mud and drill out plug #2.
- 22) POH, lay down BHA #2.
- 23) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
- 24) POH, lay down BHA #3.
- 25) Run caliper log and select zone for bridge plug installation about 3400 ft.
- 26) Pick up bridge plug and BHA #4: setting tool and DCs as directed.
- 27) RIH and set bridge plug.
- 28) POH to 2800 ft, circulate hole clean.
- 29) POH to 1000 ft.
- 30) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."
- 31) POH laying down drill pipe; lay down BHA #4.
- 32) Make up 9-5/8" pump casing string and set test pump.
- 33) Release rig.

III. Resource Test

- 34) The results of the analyses from steps 8, 18 and 30 of the preceding section will be compiled in a single report and delivered to NMOCD, NMOSE, and BLM. If the discharge meets WQCC standards, LDG will confer with the agencies to verify the conditions are met for permitted discharge into an unlined reserve pit and delivery to an irrigation system. Should the quality of water not meet the standards of 20.6.2.3103 NMAC for irrigation, LDG will suspend flow test operations, redesign the test and seek approval of subsequent applications to NMOCD, NMOSE, and BLM.
- 35) Connect flow line to irrigation system.
The flow line will discharge the water into a gauging tank and thence into the irrigation transfer pump or the reserve pit. The pit measures 170 ft x 170 ft x 12 ft deep (see Attachment B). If WQCC standards (20.6.2.3103 NMAC) are met, the reserve pit will be left unlined. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.
- 36) Conduct pump test as directed. LDG will conduct the pump test in consultation with engineers representing the interests of potential investors in the Lightning Dock project. The operation of the test may therefore vary from day to day, but will at all times conform to the requirements of the applicable NMOCD, NMOSE and BLM permits and regulations.

LDG plans to use a 12-inch American-Marsh vertical shaft 10 stage turbine pump for this test. The pump is owned by Raser Technologies and has performance characteristics detailed in Attachment F. The power for the pump will be a 300 hp electric motor with a variable speed controller. The pump will be set at approximately 850 ft depth to allow a maximum drawdown from static water level of about 700 ft. Engineering analysis of Raser's airlift test in 2008 suggests a flow rate of 400 gpm is likely from the well in its present state, i.e., open from 1050 ft to 1450 ft. Since lost circulation occurred at greater depths (e.g., 2275 ft) during the drilling of TDF 55-7, LDG expects the reopened hole may be able to supply fluid up to the pump's maximum capacity, approaching 1500 gpm at this depth.

The pumping rate during the first week of the test will be programmed to gradually bring in flow and to establish the reservoir deliverability as a function of water level drawdown. Thereafter, the rate will be set so as not to exceed the landowner's NMOSE-designated water rights. LDG expects to satisfy itself and its investors' engineers within a test pumping duration of four weeks.

Discharge water samples will be collected weekly and analyzed at an EPA Methods, QA/QC, DQOs-compliant laboratory. LDG will also monitor the discharge daily for standard field parameters including pH, turbidity, color, DO, and specific conductivity. If anomalous readings are detected that indicate a significant change in water source or properties, water samples will be collected immediately and discharge halted. Discharge will not be resumed until and unless laboratory analytical results confirm that the water meets the required criteria.

- 37) Move in and rig up well service rig.
- 38) Remove and lay down pump and casing.
- 39) Install master valve and survey flange.
- 40) Secure well and release rig.
- 41) File operations reports as required with NMOCD, NMOSE and BLM.

IV. BLM Operations Plan, 43 CFR 3261.12

(a) The proposed project is on private land. Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner. No surface disturbance of BLM-managed public lands is proposed.

Well Pad Layout and Design

The well pad layout is approximately 150 ft x 150 ft with an existing reserve pit measuring 170 ft x 170 ft x 12 ft adjacent to the pad.

See Attachment B – Lightning Dock Aerial Map

See Attachment C – Survey of Well Location

(b) Description of Existing and Planned Roads

The well site is accessed via existing state, county and private roads. As such no new roads are necessary for this activity. The primary access roads to the site include: SR-338 (paved); CO98 Geothermal Road (paved), which extends to the surface owner's property. All roads and access at the well site on the surface owner's property are existing compacted dirt and/or graveled.

(c) Description of Ancillary Facilities

Sanitary Facilities – Portable chemical sanitary facilities will be available and used by all personnel during periods of well drilling and/or flow testing.

Mobile drilling office will be set upon on the site during drilling activities.

Existing water holding pond 170 ft x 170 ft x 12 ft.

Trash collection facilities e.g. roll-off container.

(d) Source of Drill Pad and Road Building Materials

Drill pad building material will be derived from any necessary excavation of the existing reserve pit.

The pad will be graded to provide 2% grade to reserve pit.

Existing improved roads will be used.

Any additional material required for pad construction will be secured from a local contractor.

(e) Water Source

Water required for this operation will be secured from an established private owner.

Water derived from the operation will be discharged into a gauging tank and thence to an irrigation transfer pump or the reserve pit. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove

discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

Potable water for human consumption will be provided by bottled water.

(f) Statement Describing Surface Ownership

Surface of the well site is owned by Rosette, Inc. of Animas, NM. Lightning Dock Geothermal holds a Surface Access and Use Agreement, dated 10 January, 2008, with Rosette granting access to the well site.

See Attachment F – Surface Access Agreement.

(g) Description of Procedures to Protect the Environment and Other Relevant Sources

Air Quality: During drilling activities hydrogen sulfide will be monitored by instruments on the drill rig.

Hydrology and Water Quality Monitoring: Water samples will be collected during the cleanout operation and tested to assure compliance with WQCC standards for agricultural use.

Portable chemical toilets supplied by a licensed contractor shall be used for human waste. The waste shall not be buried on site.

Trash and debris will be contained on site, and then hauled to an approved landfill by a licensed contractor. Burial and or burning on site will not be permitted.

Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner.

(h) Plan of Surface Reclamation

Top soil excavated during the construction of the pad, as feasible, will be stockpiled for use during subsequent reclamation of the disturbed area.

(i) Any Other Information That BLM May Require

Will be provided upon request.

V. BLM Drilling Program, 43 CFR 3261.13

(a) Description of Equipment, Materials and Procedures

A large portable rotary drill rig will be used to drill the well.

Equipment Specifications:

The availability of equipment and contractors changes from day to day. LDG will make its selection based on the best units available when the necessary permits are received. The rig will be functionally similar to the following: Drawworks – Taylor RT 5000; Mast – Taylor RT 5000 square set derrick; Substructure – Height 10 ft hydraulic w/ 15 ft K.B. elevation; Two (2) mud pumps; Rotary table; Swivel & Drilling Block; Tripping Block; Generators 235 kW, Air Compressor 500 SCFM.

Procedures will be as described in Section II, Well Preparation.

(b) Proposed / Anticipated Depth of the Well:

The well will be drilled and completed to the designed depth of 3,400 ft.

(c) Directional Drilling:

No directional drilling will be employed.

(d) Casing and Cementing Program:

This is a re-entry into an existing well that currently has cemented casing to approximately 1050 ft and approximately 400 ft of open hole to the first plug at a depth of approximately 1450 ft. The remainder of the well is open hole to the TD of 7000 ft. No additional casing or cement will be utilized in the operation to open this well to 3400 ft.

(e) Circulation Media (mud, air, foam, etc.)

The well will be drilled to a depth of 3,400 ft using non-toxic, temperature-stable drilling mud or aerated fluids. The drilling mud is composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit, bringing the rock cuttings to the surface discharged into the reserve pit, and preventing loss of drilling fluids into the rock.

(f) Description of Logs to be Run:

Caliper Logs

(g) Description and Diagram of Blowout Prevention Equipment:

Blowout prevention equipment (BOPE), which is typically inspected and approved by the BLM and/or the Oil Conservation Division (NMOCD) of the New Mexico Energy, Mining, and Natural Resources

Department (NMEMNRD), as applicable, would be installed, tested and ready for use while drilling to ensure that any geothermal fluid encountered does not flow uncontrolled to the surface.

See Attachment E.

(h) Expected Depth and Thickness of Fresh Water Zones:

N/A – existing casing is set to 1,000 ft hence no fresh, shallow water getting into well.

Static water depth is 71 ft. Total available water column of 1300 ft available

(i) Anticipated Lost Circulation Zones

None anticipated. The only instance of lost circulation recorded by Steam Reserve in the interval 1050 ft – 3400 ft was a minor episode at 2275 ft. That was successfully treated with a small batch of lost circulation material. This is below the deepest plug that LDG intends to drill out. LDG therefore anticipates that lost circulation will not be encountered in carrying out the proposed program.

(j) Anticipated Reservoir Temperatures and Pressures:

Temperature: Peak temperatures have been recorded at 307.4 F at a depth of 1263 ft remaining constant to 1400 ft.

Pressures: High pressure at the depth of 1365 ft is 549.66 psig.

(k) Anticipated Temperature Gradient in the Area:

The regional heat flow is ~80-90mW/m² (Blackwell and Steele, 1992). This heat flow would yield a temperature gradient of about 35°C/km (1.9°F/100 ft) in igneous rocks and 60°C/km (3.3°F/100 ft) in valley fill clays. Most of the non-thermal wells have a gradient near 45°C/km (2.5°F/100 ft). Therefore, 45°C/km (2.5°F/100 ft) will be taken as the background temperature gradient value for the valley fill.

Thermal gradient conditions will range from 78°C/km (4.3°F/100 ft) (*well 672-225*) to 200C/km (11°F/100 ft) (*well 93-8 and AN-104*) and will be similar or higher in 55-7.

(l) Plat Certified by a Licensed Surveyor:

See Attachment C.

(m) Procedures and Duration of Well Testing

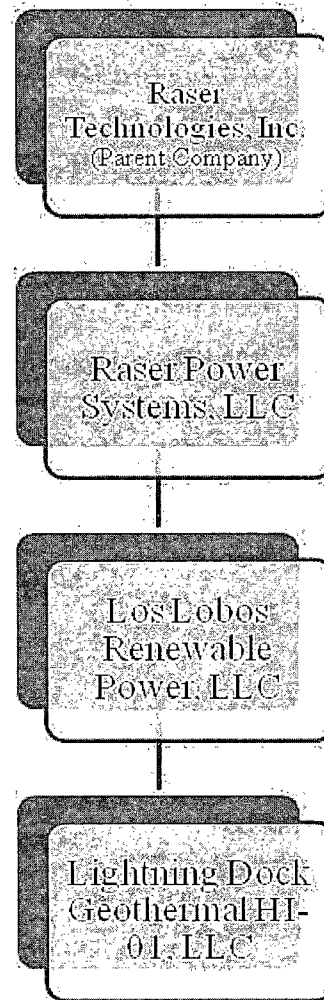
See Section II, Resource Test

(n) Any Other Information That BLM May Require

Will be provided upon request.

Attachment A

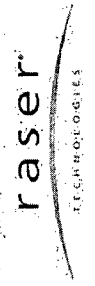
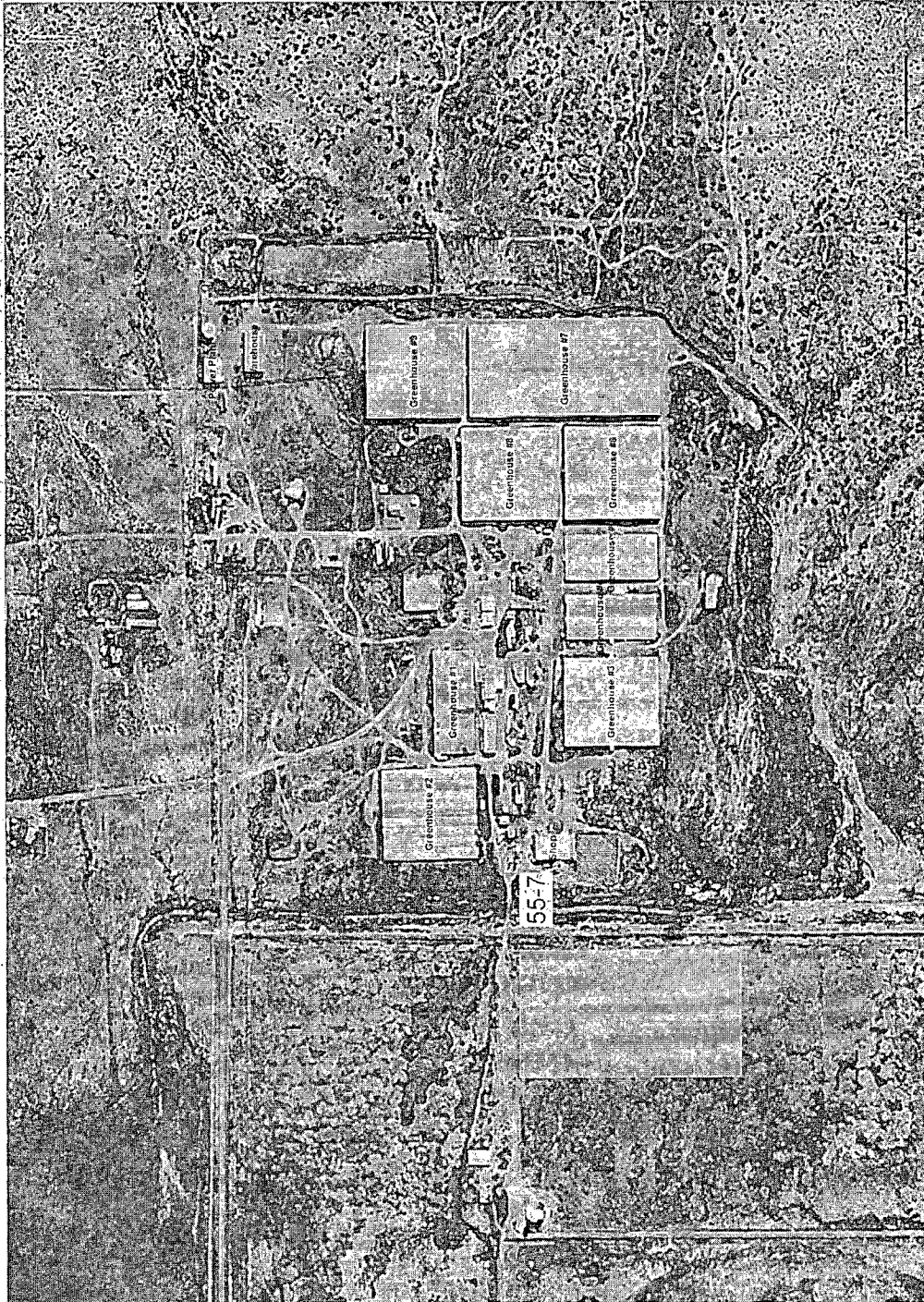
Raser Technologies Corporate Structure



Lightning Dock Geothermal HI-01, LLC is the permit applicant and operator. The illustration above describes the corporate organization of which Lightning Dock Geothermal is a part as follows: Raser Technologies, Inc is the parent company; Raser's geothermal development company is Raser Power Systems, LLC; the New Mexico entity is Los Lobos Renewable Power, LLC; and Lightning Dock Geothermal HI-01, LLC is the Animas, NM project entity.

Attachment B

Lightning Dock Aerial Photo Map

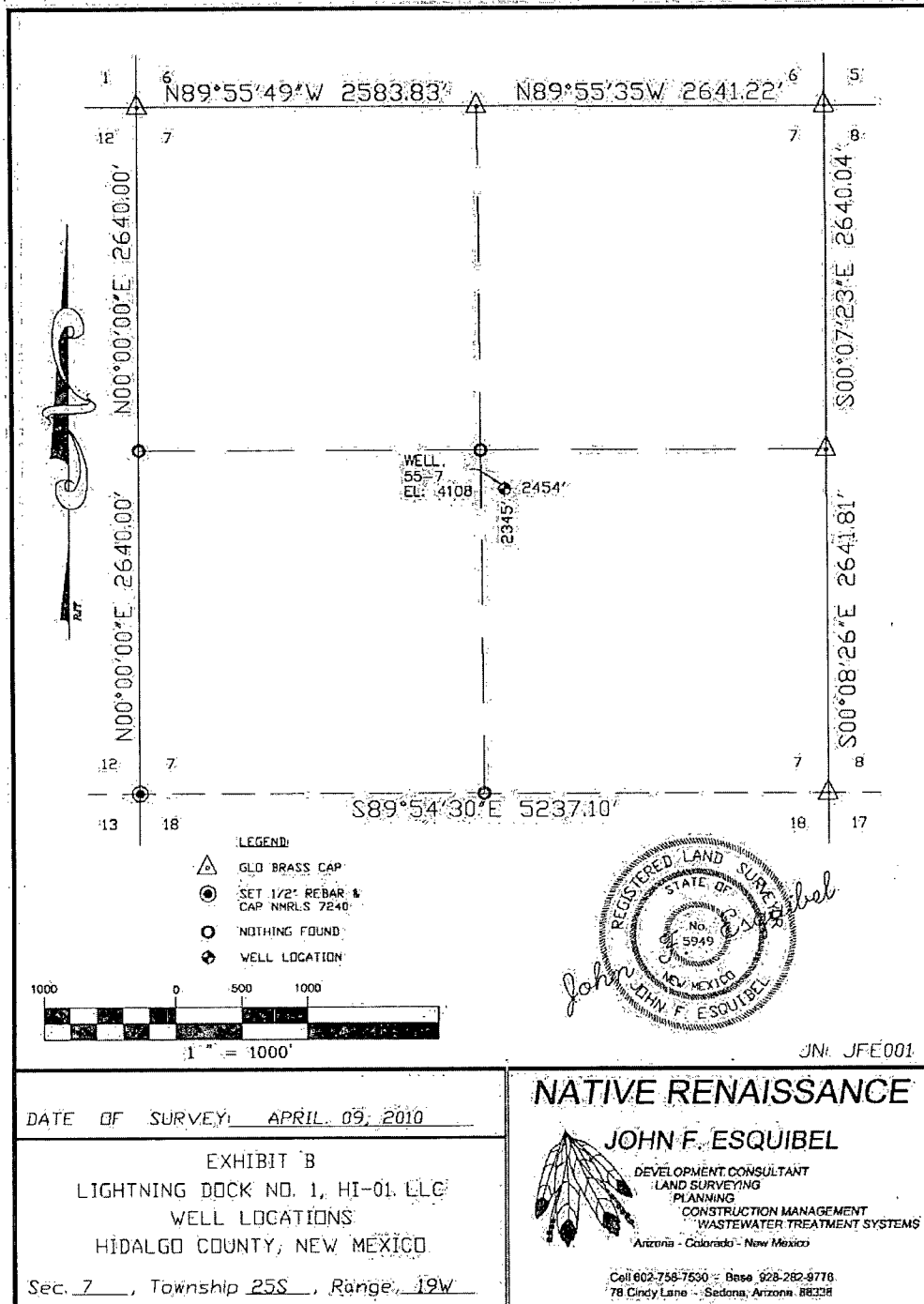


Lightning Dock Geothermal Aerial Map,
Animas Valley, NM



Attachment C

Survey of Well 55-7 Location



Attachment D

Down-Hole Test Pump Specifications

Pump Data Sheet - American-Marsh Pumps

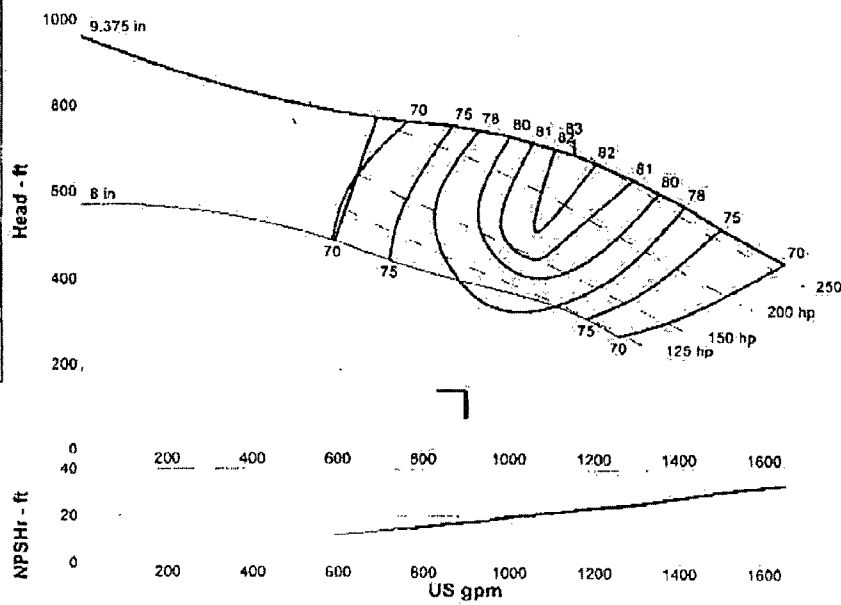
Company:
 Name:
 Date: 7/9/2009



Pump:
 Size: 12MC (10 stage)
 Type: 480 VRT-TURBINE/ENCL
 Synch speed: 1800 rpm
 Curve: 2951
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
Pump Limits:
 Temperature: 250 °F
 Pressure: 584 psi g
 Sphere size: 0.625 in
 Speed: 1760 rpm
 Dia: 9.375 in
 Impeller:
 Ns: 2526
 Nss: 5695
 Suction: 8 in
 Discharge: 6 in
 Bowl size: 11.25 in
 Max lateral: 0.75 in
 Thrust K factor: 10.6 lb/ft
 Power: 450 hp
 Eye area: --- in²

Search Criteria:
 Flow: 900 US gpm
 Head: 140 ft
Fluid:
 Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atm pressure: 14.7 psi a
Motor:
 Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 300 hp
 Speed: 1800
 Frame: 448T

Data Point	
Flow:	1152 US gpm
Head:	888 ft
Eff:	82%
Power:	243 hp
NPSHr:	22.9 ft
Design Curve	
Shutoff head:	960 ft
Shutoff dP:	415 psi
Min flow:	693 US gpm
BEP:	83% @ 1155 US gpm
NOL power:	263 hp @ 1500 US gpm
Max Curve	
Max power:	263 hp @ 1500 US gpm

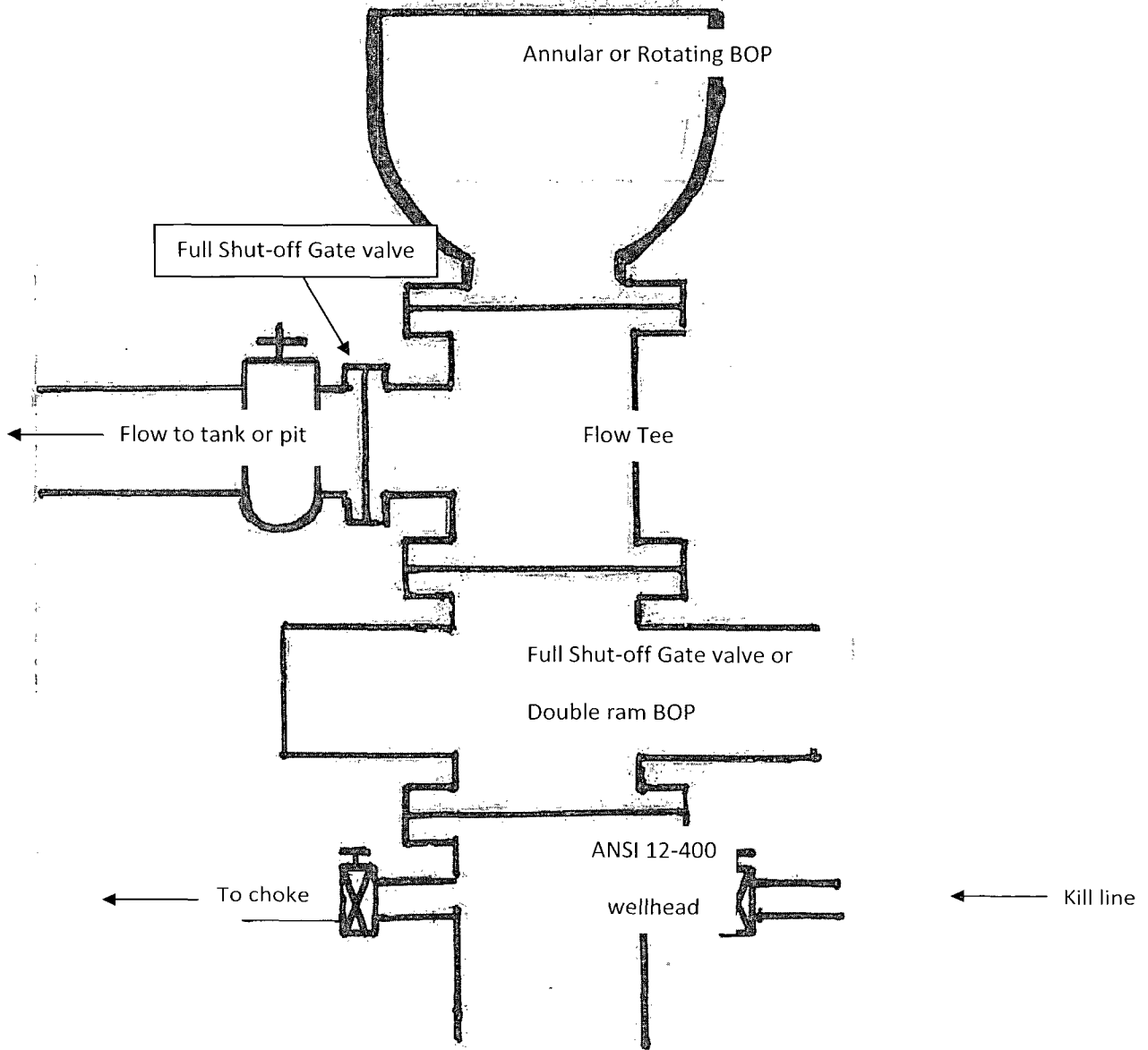


Performance Evaluation

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1080	1760	709	81	237	21.4
900	1760	749	76	223	17.5
720	1760	778	68	207	14.1
540	1760	---	---	---	---
360	1760	---	---	---	---

Attachment E

Blowout Prevention Equipment Diagram



Attachment F

Surface Use and Access Agreement

Between

Rosette, Inc.

And

Lightning Dock Geothermal HI01, LLC

January 10, 2008

SURFACE ACCESS AND USE AGREEMENT

This SURFACE ACCESS AND USE AGREEMENT ("Agreement") is executed effective January 10, 2008, by and between ROSETTE, INC., with an address of 26 Rose Land, Animas, NM 88020 ("Owner"), and LIGHTNING DOCK GEOTHERMAL HI-01, LLC, with an address of 5152 North Edgewood Drive, Suite 375, Provo, Utah ("LDG").

RECITALS:

A. Owner owns record title to the surface estate of certain real property located in Hidalgo County, State of New Mexico, more particularly described on Exhibit A hereto (hereinafter the "Subject Lands"). The United States of America, through the Bureau of Land Management (the "BLM"), owns the reserved mineral estate, which includes the geothermal estate. Owner owns greenhouse operations which are warmed during the winter months by heat supplied by the utilization of geothermal resources near, on, or around the Subject Lands.

B. LDG is the current owner of a Federal Geothermal Lease NM-34790, issued February 1, 1979 ("Subject Lease"), wherein the BLM has granted the holder of the Subject Lease the right to explore for and develop the geothermal resources underlying the lands covered by the Subject Lease, which includes the Subject Lands. Amax Exploration, Inc. ("Amax"), a prior owner of the Subject Lease, and a predecessor of Owner entered into a letter agreement dated December 14, 1978 ("1978 Agreement"), whereby Amax was granted access to the Subject Lands to develop the Subject Lease. The 1978 Agreement granted Owner's predecessor the right to drill to a depth of 1000 feet below the surface and extract geothermal resources therefrom for use in its greenhouse operation. After litigation with the BLM, Owner abandoned use of the geothermal resources from the Subject Lease and Subject Lands, and, pursuant to the settlement agreement with the BLM, Owner has certain plugging and abandoning, and reclamation responsibilities.

C. LDG intends to utilize certain existing geothermal wells on the Subject Lands and to drill additional geothermal wells or reinjection wells (such existing and initially proposed wells, as depicted on Exhibit B, and all future wells that may be proposed and drilled by LDG are defined herein collectively as the "Subject Wells") on a portion of the Subject Lands (such initial proposed well-sites, as depicted on Exhibit B, and all future well-sites that may be required for future wells, are referred to herein collectively as the "Well-Sites"), which Well-Sites will include typical geothermal energy exploration production or reinjection equipment and facilities. In connection with accessing, drilling and operating the Subject Wells and access to power generation facilities, LDG requires a portion of the Subject Lands to construct and maintain access roads crossing the Subject Lands, including, without limitation, existing roads on the Subject Lands (an "Access Road ROW" and collectively the "Access Road ROWs"). In addition, LDG requires or may require a portion of the Subject Lands to construct and maintain power plants, utilities, transmission lines, water pipelines, water storage and other facilities related to the production, extraction, transportation and reinjection of geothermal resources and the generation and transportation of electricity therefrom (all such improvements constructed or to be constructed by LDG on the Subject Lands are referred to herein collectively as the "Improvements"). LDG shall attempt to locate all such Improvements that require linear rights-of-way within the boundaries of the Access Road ROWs when and where economically and operationally feasible, and Owner herein grants Access Road ROWs of sufficient length and width to accommodate any necessary or contemplated Improvements. Furthermore, it may become necessary for LDG to obtain other rights-of-way to accommodate Improvements that cannot be located within an Access Road ROW, including without limitation, the Power Plant ROW, defined below, water storage areas, temporary construction easements, and other non-

linear surface uses (an "Other ROW" and collectively the "Other ROWs"). The rights-of-way for the necessary Well-Sites (a "Well Site ROW" and collectively the "Well Site ROWs"), the Access Road ROWs and the Other ROWs, including the Power Plant ROW (defined below), are referred to herein individually as a "ROW" and all such rights-of-way granted or to be granted hereunder shall be collectively referred to as the "ROWs."

D. Given the changed circumstances recited above, LDG and Owner desire to cancel and terminate the 1978 Agreement and enter into a new surface use and access agreement that memorializes their discussions and agreements regarding LDG's access to and use of the surface estate of the Subject Lands and consideration provided therefore, for the drilling of the Subject Wells, the construction of the ROWs and the development of the Improvements on the Subject Lands. The 1978 Agreement shall terminate upon the execution of this Agreement.

E. LDG and Owner have also agreed that LDG shall have access to and use of certain water rights that are owned by Owner, as more particularly described below.

AGREEMENT:

NOW THEREFORE, in consideration of the mutual promises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto incorporate the recitals above herein and agree as follows:

1. **Term of Agreement.** The rights, including all ROWs, granted by this Agreement shall continue until the rights of LDG, its successors or assigns, to explore for, develop, extract or produce geothermal energy from the Subject Lease, or from lands pooled with the Subject Lease, permanently and irrevocably terminates; provided that the rights granted to LDG herein shall survive the termination of the Subject Lease so long as the power plant and related facilities on the Subject Lands are capable of producing electricity.
2. **Existing Wells.** Owner hereby grants LDG, its employees and designated agents, and its successors and assigns, the right to access, re-open, re-drill, utilize, deepen, or to plug and abandon, when and if LDG deems it necessary in furtherance of its operations on the Subject Lands, the following wells and any other geothermal wells which exist on the Subject Lands: TFD 55-77, EGS 12-7, GRED 52-7, GRED 36-7, GRED 57-7, and EGS 56-14 (collectively, the "Existing Wells"); provided however that the Existing Wells shall not include Well #16 on Exhibit B, which is a water well that is being used by Owner. Owner grants LDG access to and the right to conduct any necessary operations with respect to the Existing Wells, as and where depicted on Exhibit B, except for monitoring purposes, subject to modification by LDG upon a final inspection and survey of the Subject Lands. The Well-Site ROWs for the Existing Wells (and all future wells) shall be initially large enough to accommodate drilling operations, not to exceed 6 acres, but shall contract upon completion of the wells to area sufficient for operation and maintenance of the well, not to exceed 3 acres. One or more of the Existing Wells are close to existing structures or equipment that is stored on the Subject Lands, that may impede access, and LDG agrees to pay for the costs of repairing any damage caused by LDG's access or to pay the costs of removing or relocating any structures or equipment, in coordination with Owner. Owner hereby also grants LDG Access Road ROWs, with the right to use and expand existing roads, or construct and maintain new roads, as determined by LDG, to and for the development of the Existing Wells (the "Initial Access Road ROWs") as and where depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. Owner and LDG agree that the Initial Access Road ROWs, the centerline of which is approximately depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands, shall initially be sixty (60) feet wide. LDG shall have the right to install additional pipelines, utilities, transmission lines and other Improvements along the Initial Access Road ROWs if it becomes necessary in its operations of the Existing Wells (or

future wells either on or adjacent to the Subject Lands). Owner grants to LDG certain Other ROWs that LDG may require for development of the Existing Wells, for other Improvements or uses that cannot be placed within the boundary of the Initial Access Road ROWs, including, without limitation, water storage areas, permanent or temporary construction areas, and the other rights-of-way needs and uses, as depicted on Exhibit B, or as requested by LDG subsequent to the execution of this Agreement. Once the Well-Sites for the Existing Wells, the Initial Access Road ROWs, and any other initial Other ROWs granted hereunder have been surveyed and precisely identified by legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the initial ROWs described herein.

3. **Power Plant ROW.** As noted above, LDG intends to construct a power plant and related facilities, including geothermal pipeline and utility connections to the plant and transmission facilities out of the plant (the "**Power Plant**"), which power plant site and connections shall require and constitute a "**Power Plant ROW.**" The Owner hereby grants to LDG an exclusive Power Plant ROW to survey, inspect, construct, develop and operate the Power Plant and any related or necessary facilities or Improvements. The Power Plant ROW shall be evidenced by a recorded right-of-way, with a term that extends for as long as the power plant facilities are capable of production of electricity, and for a period of time thereafter for dismantling and remediation, as described below. LDG and Owner shall cooperate to locate the Power Plant ROW in a manner that minimizes the effect on Owner's existing surface uses; provided that, notwithstanding the foregoing, the Power Plant ROW shall be in a location on the Subject Lands that maximizes efficient access to and use of geothermal resources, and to electricity transmission infrastructure and markets. LDG has delivered to Owner a rough map of a possible Power Plant site, along with primary and alternate access roads for the Power Plant site, a copy of which is attached hereto as Exhibit C, and Owner and LDG mutually acknowledge and agree that the approximated rights-of-ways and Power Plant site set out on that rough map would be an example of an acceptable location. LDG agrees to fence and secure the Power Plant ROW. If the Power Plant is no longer capable of production of electricity or if LDG otherwise elects to permanently shut down the Power Plant facilities for any reason, LDG shall provide Owner with written notice of its intent to shut down the facilities. After giving notice of intent to shut down and dismantle the plant, LDG shall have three (3) years to dismantle and remove all infrastructure and improvements pertaining to the Power Plant, including all utilities and transmission facilities, and to remediate the underlying property to its natural condition. Upon the request of LDG, Owner agrees to grant LDG a lease, in a recordable form, with a term that lasts for as long as the Power Plant is in existence and a reasonable time thereafter for dismantling, removal and remediation, of approximately twenty (20) acres (subject to the needs of the Power Plant and the activities of LDG in connection therewith), for the land necessary for the Power Plant and related facilities, at an annual rental rate of \$60 per acre.

4. **Future Subject Wells, ROWs, and Improvements.** LDG intends to develop future Subject Wells on the Subject Lands (in addition to the Existing Wells) ("**Future Wells**"). Additionally, LDG intends to construct and maintain related pipelines, utilities, transmission lines, production facilities, power generation facilities, water storage areas, access roads and other Improvements for such future Subject Wells. Prior to the development of any future Subject Well (not one of the Existing Wells) or Improvements on the Subject Lands in connection therewith, LDG shall provide Owner, in writing, notification of the proposed location of the desired Subject Well(s), Access Road ROW(s), or Other ROW(s) necessary for contemplated Improvements, and a description of the Subject Well(s), Access Road ROW(s) or Other ROW(s) to be constructed (individually and collectively, as the context requires, any "**Future ROWs**"). Within fifteen (15) days of such written notice, LDG and Owner shall discuss the location of the necessary Future ROWs, in an attempt to locate any such Future ROWs in locations that reasonably minimize the impact to the current surface uses of Owner but that do not result in an undue economic or operational burden to LDG. The parties acknowledge and agree that such Well-Site ROWs (for Future Wells) and other Future ROWs shall be located in areas that will maximize recovery and

efficient use of geothermal resources. LDG and Owner agree to meet on the Subject Lands, at the request of either party, in connection with the location of Future ROWs, to discuss such locations. Once Future ROWs have been identified and surveyed for a precise legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the Future ROWs.

5. **1978 Agreement.** Owner and LDG mutually agree to terminate and cancel the 1978 Agreement as of the execution date herewith, and replace the 1978 Agreement with this Agreement. Owner agrees to release LDG of any obligations or claims arising under the 1978 Agreement, and LDG agrees to release Owner of any obligations or claims arising under the 1978 Agreement. Owner and LDG understand that this Agreement is intended to replace and supersede the 1978 Agreement.

6. **Consideration for Agreement.** As consideration for the execution of this Agreement, LDG shall provide the following to Owner:

(a) Upon execution of this Agreement, LDG shall pay to Owner a one-time payment in the amount of Three Hundred Twenty Thousand and No/100 Dollars (\$320,000.00).

(b) LDG shall pay Owner a minimum annual fee of \$1,000.00 as consideration for use of or access to Owner's existing cold water delivery infrastructure. Thereafter, LDG shall pay the \$1,000.00 fee prior to the anniversary date of this Agreement, provided that failure to make such payment shall not constitute an event of breach or default under this Agreement, until Owner has provided LDG with written notice of the failure to make such payment, and LDG fails to make such annual payment within twenty (20) days of such written notice. Moreover, in the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water delivery infrastructure shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

(c) For the use of cold water (see Section 14(b)) provided by Owner to LDG for cooling and other purposes, LDG has agreed to pay an annual payment equal to \$50 per acre foot of water to be used by LDG during the next year, less the \$1000.00 minimum fee set forth above (in other words, the \$1000 fee set forth in Section 6(b) above shall be included as part of, and not in addition to, the annual payment described in this Section 6(c)). LDG shall provide to Owner an estimate of the amount of acre-feet of water that LDG shall use for the following year, and shall pay the annual payment based on such estimated amount, prior to the anniversary date of this Agreement. At the end of such year, if LDG's use of water for the prior year exceeded the estimate, then LDG shall remit the payment for such acre feet used in excess of the estimate for the prior year with the payment for the next year's estimated water uses. The consideration set forth in Section 6(a) above includes the first year's payment for water use under this Agreement. In the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

7. **Cessation of Development or Abandonment of Lease.** LDG intends to explore for geothermal resources on the Subject Lease for the purpose of generating electricity. If LDG fails to take reasonable actions to commence exploration for or development of geothermal resources on the Subject Lease within two (2) years of the date of this Agreement, or if LDG determines at any time, either before or after such two (2) year period, to abandon development of geothermal resources on the Subject Lease (and provides Owner with written notice of such intent to abandon the Subject Lease), then LDG agrees to take such reasonable steps necessary to designate Owner as an operator (with the BLM) for purposes of operating shallower formations under the Subject Lease (down to 1000 feet, consistent with the historical operations of Owner), or, if LDG determines it is in its interest, to assign operating rights in the Subject Lease to

Owner from the surface down to 1000 feet. Notwithstanding the foregoing, if LDG determines that it intends to completely abandon the Subject Lease, and provides written notice of such intent to Owner, then LDG shall assign the entire lease over to Owner, upon assumption by Owner of all rights and responsibilities under the Subject Lease. Moreover, LDG agrees that in connection with such designation of operator, it shall agree to turn over to Owner the following Existing Wells, as shown on Exhibit B, unplugged and accessible: Well #10, Well #11, and Well #25, provided however that Owner shall assume all plugging, abandoning, reclamation and other responsibilities for such wells and shall post any required bonds in connection with the assignment and assumption of such wells. The foregoing agreement of LDG to designate Owner as an operator (or assign operating rights or all of the Subject Lease) is subject to the approval of the BLM. LDG's commitment to commence exploration and development activities on the Subject Lease is also subject to delay or suspension as result of events of Force Majeure. "Force Majeure" shall include, without limitation, the following: strikes; lockouts; riots; action of the elements, including but not limited to fire, explosion, flood, volcanic activity, earthquakes, or tidal waves; accidents; delays in transportation; inability to secure labor or materials in the open market; laws, rules or regulations of any Federal, State, County, Municipal or other governmental agency, authority or representative having jurisdiction, including failure or delay in issuance of necessary permits or approvals; war (whether declared or undeclared including terrorist acts); acts of God; litigation or administrative proceedings affecting title to lands covered hereby or operations thereon; inability to secure or absence of a market for commercial sale of geothermal resources or electricity generated therefrom, produced from the Subject Lease or of derivatives developed by LDG therefrom; or by other matters or conditions beyond the reasonable control of LDG, whether or not similar to the conditions or matters in this definition specifically enumerated.

8. **Cooperation.** Owner agrees to reasonably cooperate with LDG, in good faith, to support and promote the successful development of geothermal resources and the generation of electricity from the Subject Lease.

9. **Pipelines; Utilities.** LDG hereby agrees to locate all pipelines and other linear utilities at all points along an applicable Access Road ROW or Other ROW where reasonable and practical. However, there may be instances where pipelines, transmission facilities and other Improvements cannot be placed along an Access Road ROW, in which case LDG shall be granted separate Other ROWs for such uses. LDG shall not be required to bury pipelines or other utilities.

10. **Access Road ROWs.** LDG agrees that it shall construct and/or improve all currently contemplated new roads and existing roads along the center line(s) approximately depicted on the attached Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. During the construction or improvement of any road, under an Access Road ROW, including the installation of pipelines and other utilities, the right of way shall be sixty (60) feet wide, and LDG shall have a temporary license to use other portions of the Subject Lands during the construction phase of such roads (including the installation of pipelines and other utilities) to park equipment or store gravel or other supplies, provided that LDG shall replant and restore any temporary use areas to their natural condition prior to construction. Upon completion of construction of the road (or expansion or improvement of existing roads) and installation of pipelines and other utilities, the Access Road ROWs shall be forty (40) feet wide. The roads shall be graded and improved with gravel. LDG agrees that it shall maintain the Access Road ROWs to industry standards as a gravel road during the term of this Agreement. LDG shall not be obligated to remove snow that may accumulate on the road, and shall not be responsible for paving the road, providing curb and gutter, or otherwise improving the road to accommodate increased traffic from Owner's lands. The same provisions of this Section 10 shall apply to all future roads and Access Road ROWs to be constructed and maintained by LDG on the Subject Lands, including Access Road ROWs or Other ROWs to the Power Plant ROW.

11. **Owner's Right to Use the ROWs.** LDG shall have the exclusive right to use and maintain the Well Site ROWs and any Other ROWs (including the Power Plant ROW). LDG shall have the non-exclusive right to use and maintain the Access Road ROWs during the term of this Agreement for its purposes. LDG hereby agrees that Owner, and its successors, assigns, employees, agents, invitees and licensees, shall have the right to use the Access Road ROWs for access to the remainder of Owner's property as currently owned and used. Owner, and its successors, assigns, employees, agents, invitees and licensees shall not interfere with LDG's operations on the Subject Lands or the use or maintenance of the Access Road ROWs (or the other ROWs), and Owner shall be responsible for any cost of repairing damage to any road caused by Owner, or its successors, assigns, employees, agents, invitees and licensees. Any proposed use of or modification to an Access Road ROW by Owner, or its successors, assigns, employees, agents, invitees and licensees, which would or may be likely to injure, damage or interfere with the Access Road ROW, shall require the prior written consent of LDG, an express agreement of Owner to assume all costs and damages, and shall require, at LDG's option, the presence of LDG's agent or employee to monitor the activity. Owner, and its successors, assigns, employees, agents, invitees and licensees shall abide by all written safety and other instructions regarding use of the roads that are provided by LDG. When LDG no longer requires an Access Road ROW for its operations, LDG shall provide written notice of its intent to abandon use and Owner shall have the option to assume control and maintenance over the Access Road ROW by notifying LDG within thirty (30) days of receipt of such notice; otherwise, LDG shall remediate and restore the property covered by an Access Road ROW in accordance with applicable law.

12. **Indemnification.**

(a) Owner, its successors and assigns, does hereby agree to relieve, release, indemnify and hold LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, harmless and agree to defend LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, from any claim of damage to any person or property arising out of use of any ROW or other activities on the Subject Lands for damages proximately caused by Owner, its successors, assigns, invitees, and licensees, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, and witness fees, and other monies expended by or incurred by LDG or its agents, in the event it shall become necessary for LDG or its agents to defend themselves from any claims made by anyone as a result of the use of any ROW or other activities on the Subject Lands, by Owner, its successors, assigns, invitees, and licensees, but not otherwise.

(b) LDG, its successors and assigns, hereby agree to relieve, release, indemnify, and hold harmless and agree to defend Owner, its successors, assigns, employees, agents, invitees and licensees from any and all claim of damage to any person or property arising out of use of the Subject Lands for operations by LDG or its agents for damages proximately caused by LDG or its agents, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, witness fees and other monies expended by or incurred by Owner, its successors, assigns, employees, agents, invitees and licensees in the event it shall become necessary for Owner, its successors, assigns, employees, agents, invitees and licensees to defend themselves from any claims made by anyone as a result of LDG's operations, on, across or over the Subject Lands, but not otherwise.

13. **Confidentiality.** Owner hereby agrees, unless compelled by court order or subpoena, that the terms and conditions of this Agreement, including but not limited to the payments referenced in Section 6

above, shall remain confidential and will not be disclosed or released to any other person(s) or third parties. LDG can disclose the existence and terms of this Agreement at its discretion.

14. **Water Rights.** Owner currently owns water rights that pertain to the Subject Lands, which are more particularly described in Exhibit D hereto. Owner is currently using a portion of its water rights for the operation of its commercial greenhouse business, for domestic consumption and some limited irrigation needs (“**Current Water Usage**”). Any water rights that Owner currently owns but is not currently using to satisfy the Current Water Usage shall be referred to herein as the “**Excess Water Rights**.” LDG requires a minimum of approximately 600 acre-feet of water for the cooling and operational needs of the Power Plant, and Owner agrees that it shall make commercially reasonable efforts to meet those water requirements from the Excess Water Rights, and shall not lease or transfer any of its water rights until LDG’s water requirements are being adequately met. Owner agrees to provide LDG access to and use of all Excess Water Rights as follows:

(a) Owner grants LDG the right to use Excess Water Rights for the drilling and testing of geothermal wells on the Subject Lands. LDG shall be responsible for all costs of connecting to Owner’s water system.

(b) Owner hereby grants LDG the preferential right to the use of all Excess Water Rights for the development and operation of the Power Plant and the appurtenant geothermal resources. LDG shall install a metering system, at its own cost and expense, if necessary to comply with any requirements of any governmental agency or authority. LDG shall also bear the full cost of connections to Owner’s water systems and infrastructure, and, if necessary, any upgrades to Owner’s water system necessitated by LDG’s use of the Excess Water Rights. LDG shall provide, free of cost, all electricity necessary for pumping any Excess Water Rights for LDG’s use. LDG shall pay for any metering, studies or reports that may be required to establish a precise amount of Owner’s available water rights, the amount of the Excess Water Rights and/or LDG’s water needs for the Power Plant or geothermal resources development. Once the amount of LDG’s water rights requirements are established, Owner and LDG agree to enter into a written water use agreement that evidences LDG’s rights to the Excess Water Rights, which agreement shall be recorded in the county real property records (“**Water Use Agreement**”). Owner covenants and agrees not to transfer or sell any of the Excess Water Rights, until the Water Use Agreement is executed and recorded.

15. **Drilling of Water Wells on the Subject Lands.** LDG requires a certain amount of water to effectively produce geothermal energy from the Subject Wells. Owner understands that any drilling of water wells on the Subject Lands or land adjacent to the Subject Lands, under certain conditions, could significantly and adversely impact the ability of LDG to explore for and produce geothermal energy. Accordingly, Owner hereby agrees to not drill or construct any water wells on the Subject Lands or on adjacent property to the Subject Lands that Owner owns without first giving LDG written notice of its drilling plans to LDG. Owner agrees to use its best efforts to cooperate with LDG to obtain any additional water rights that LDG may need or apply for to drill the Subject Wells and/or generate electricity from the geothermal resources underlying or pooled with the Subject Lands.

16. **Notices.** Owner may give any notice or deliver any document hereunder to LDG by mailing the same by prepaid registered or certified mail addressed to LDG to the address set forth in the introductory paragraph above, attention General Counsel, or by delivering the same in person to the above-referenced address of LDG. LDG may give any notice or deliver any document hereunder to Owner by mailing the same by prepaid registered or certified mail addressed to Owner at the address set forth in the introductory paragraph above, attention Dale Burgett, or by delivering the same to Owner in person. For purposes of this paragraph, either party may change its address by written notice to the other. In case of any notice or document delivered by registered or certified mail, the same shall be deemed delivered when deposited in any U.S. Post Office, properly addressed as herein provided, with postage fully

prepaid. Notices shall be in writing and shall be given to LDG and Owner at the addresses set forth in the introductory paragraph hereto, or to such address as either party may designate to the other in writing not less than thirty (30) days before that event which triggers notices. Notices shall be effective the third day after the date of mailing, postage prepaid.

17. **Rehabilitation and Restoration.** Upon termination of this Agreement, LDG shall restore the Subject Lands near as possible to their original conditions prior to construction in accordance with acceptable industry practices and all applicable laws and regulations in effect at the time of restoration. To the extent there is any environmental remediation required for property surrounding any ROW, Owner grants LDG a temporary right-of-way to use as much of the Subject Lands as it may require for environmental remediation. LDG shall have the right to use necessary space outside of the right-of-way for repair of any roadway or facilities. If upon termination of this Agreement, or intended abandonment of an Access Road ROW or some other ROW hereunder, LDG agrees and Owner elects to assume ownership and use of any road, well, or other Improvements, then Owner shall expressly assume all liabilities or responsibilities, including without limitation all future reclamation (or plugging and abandoning for wells) obligations, and shall hold harmless LDG upon assumption of responsibility for such road, well or other Improvements.

18. **No Storage or Repair of Equipment.** LDG shall not allow any construction equipment or materials to be stored on Owner's property outside the confines of the fenced Power Plant ROW beyond ninety (90) days after completion of construction of a ROW or Improvements, unless approved, in advance, by Owner. LDG shall endeavor to maintain clean, neat and orderly roads and facilities at all times. No construction equipment shall be repaired or maintained upon the property of the Owner outside the boundaries of the fenced Power Plant ROW, except in the case of emergencies to prevent damage to the Subject Lands or neighboring properties. No motor fluids will be disposed of on the property of Owner.

19. **Taxes.** Owner shall continue to be responsible for the payment of property taxes, if applicable. LDG agrees to pay all additional taxes that may be assessed against the Subject Lands by reason of improvements placed thereon by LDG. Owner shall provide LDG with written evidence that Owner has paid all property taxes on the Subject Lands at least thirty (30) days prior to when due. If Owner fails to pay property taxes on the Subject Lands, LDG shall have the right, but not the obligation, to pay such tax obligations on Owner's behalf, and such payment, with interest accruing at Eighteen Percent (18%) per annum, shall be due and payable by Owner to LDG within thirty (30) days of payment by LDG.

20. **Recorded Right-of-Way; ROW Map.** Upon the request of LDG or Owner, LDG shall prepare a written right-of-way, in recordable form, which can be recorded in Hidalgo County to provide constructive notice of the exact location of any right-of-way granted pursuant to this Agreement. Moreover, LDG shall maintain a map of the Subject Lands (starting with Exhibit B) which reflects all surface uses and ROWs used or required by LDG, and as new ROWs are obtained by LDG under this Agreement, LDG shall amend and maintain a current map and survey of ROWs, a copy of which shall be provided to Owner.

21. **LDG Financing.** Owner agrees to execute any documents reasonably required by any lender of LDG to permit LDG to obtain financing for LDG's activities on the Subject Lands. Such documents may include, without limitation, a certificate of Owner confirming the validity and enforceability of this Agreement, that there are no defaults under this Agreement, that this Agreement shall survive any foreclosure and may be assigned to subsequent purchasers at foreclosure, consent of Owner to the grant of LDG's rights in this Agreement to a lender for security purposes, and any other covenants and agreements that are typically required by institutional lenders. Moreover, if Owner has existing deeds of trust, mortgages, or other liens on the Subject Lands at the time of this Agreement, Owner agrees to obtain subordinations from its lenders and lienholders with respect to this Agreement, on the form to be provided

by LDG, either prior to execution or within thirty (30) days after execution, as elected by LDG. The subordination agreement may be recorded with the Memorandum described in Exhibit C or recorded separately.

22. **Governing Law.** The laws of the State of New Mexico shall control the rights of the parties under this contract.

23. **Waiver.** By signing this Agreement, neither party waives its statutory and common law rights to occupancy and enjoyment of their respective estates, except as expressly provided in this Agreement.

24. **Assignment of Rights.** All rights and obligations under this Agreement shall run with the Subject Lands and shall inure to the benefit of, and be binding upon the heirs, successors, or assigns of each party. LDG may assign its rights in this Agreement without the prior written consent of Owner, including, without limiting the foregoing, assignments for purposes of providing security for any loans. Moreover, LDG shall have the right to assign all or any portion of the ROWs to another entity or person, separate from ownership of the Subject Lease. The parties hereto agree to execute a memorandum of this Agreement, which shall be in form sufficient to record in the Hidalgo County real property records, in the form provided by LDG.

25. **Amendment.** This Agreement constitutes the entire Agreement between the parties pertaining to the subject matter contained in it and supersedes all prior and contemporaneous agreements, representations, and understandings of the parties with respect thereto. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing by all parties.

26. **Counterparts.** This Agreement may be executed in counterparts. Each counterpart shall constitute an original and all counterparts together shall constitute one and the same document. Receipt by party hereto of an executed copy of this Agreement by facsimile shall constitute conclusive evidence of execution and delivery of the Agreement by the signatory thereto.

[Signatures on the following page]

Dated effective as of the date first written above:

OWNER:

ROSETTE, INC.

By: 

Name: Dale Burge

Title: CEO

LDG:

LIGHTNING DOCK GEOTHERMAL HI-01, LLC

By: 

Name: Martin F. Petersen

Title: CEO

EXHIBIT A

Legal Description of the Subject Lands

- A. LDG is the owner of Federal Geothermal Lease NM -34790 (“Subject Lease”), granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the lease, described as follows:

1.

T25S, R19W, N.M.P.M.
Sec. 6: Lots 3, 4, 5, 6, 7, SE1/4NW1/4
Sec. 6: E1/2SW1/4
Sec. 7: Lots 1, 2, 3, 4, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4,
NW1/4NE1/4, NE1/4NW1/4
Sec. 18: Lot 1, N1/2NE1/4, NE1/4NW1/4

and

T25S, R20W, N.M.P.M.
Sec. 1: NW1/4SW1/4, S1/2SW1/4, SW1/4SE1/4
Sec. 11: NE1/4, S1/2
Sec. 12: ALL
Sec. 13: N1/2N1/2

Containing 2,500.96 acres, more or less

2. LDG has applied for Federal Geothermal Lease NM 108801, which is pending final approval by the BLM and will be included with the Subject Lease upon approval, granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the Subject Lease, described as follows:

T25S, R20W, N.M.P.M.
Sec. 14: All

Containing 640.00 acres, more or less

- B. Owner is the owner of the land (“Surface Lands”) covering, in part, the Subject Lease, which is described as follows:

1. Sections 7 and 18
T25 S, R19 W, N.M.P.M

And

Sections 11, 12, 13, 14, and 23
T25 S, R20 W, N.M.P.M
Containing 2,592.473 acres, more or less

- C. “Subject Lands” shall be the surface area wherein LDG’s Subject Lease underlies Owners Surface Lands.

EXHIBIT B

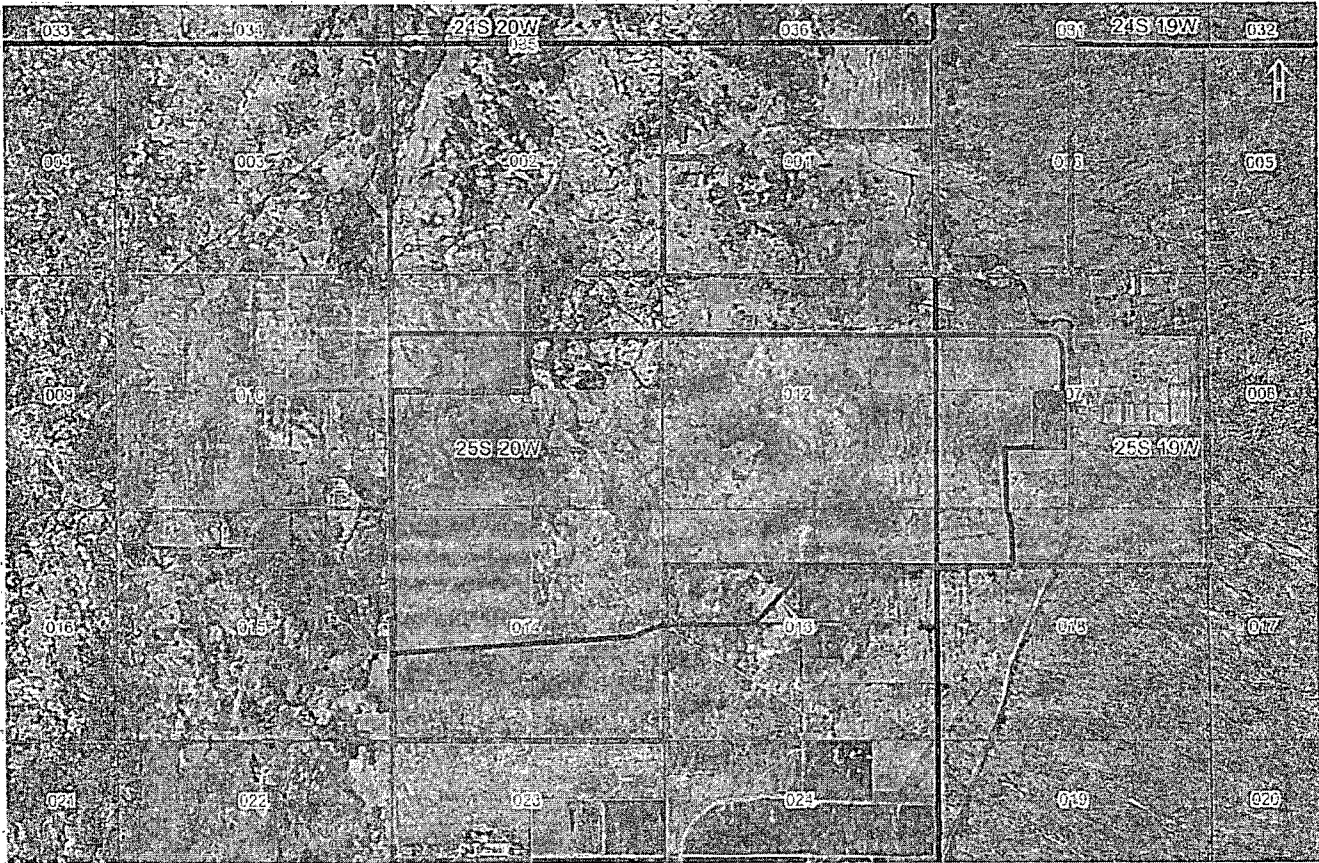
Initial Inventory of Existing Wells and Location of Initial Contemplated ROWs



- Legend**
- Budget_Boundary
 - Riser/Federal Geothermal Lease
- Wells**
- Number, Label**
- | | | | | |
|---|--|--|---|---|
| <ul style="list-style-type: none"> • 0, HP Home Heating-Federal • 1, Exploratory Well-Federal • 2, Exploratory Well-Federal • 3, Amendment Well-Federal • 4, Well No. 1-State-Budget | <ul style="list-style-type: none"> • 5, Well No. 5-State-Budget • 6, Well No. 4-State-Budget • 7, Well No. 3-State-Budget • 8, HP Home Heating-Federal • 9, HP Home Heating-Federal • 10, Metered Production Well (No. 2 Well) - Federal • 11, Metered Production Well (No. 3 East) - Federal • 12, HP-Greenhouse Heating-Federal • 13, HP-Home Heating-Federal • 14, Exploratory Well-Federal | <ul style="list-style-type: none"> • 15, Abandoned Well-Federal • 16, Metered Prod. Well (No. 1 East Well) - Federal • 17, Abandoned Well-Federal • 18, Metered Production Well (No. 2 West) - Federal • 19, Abandoned Well-Federal • 20, Deep Exploratory Well (55-7) - Federal • 21, HP-Home Heating-Federal • 22, Abandoned Well-Federal • 23, Wastage Well-Federal • 24, HP-Home Heating-Federal | <ul style="list-style-type: none"> • 25, Metered Production Well (No. 3 West) - Federal • 26, Abandoned Well-Federal • 27, Abandoned Well-Federal • 28, HP-Facory Plant-Federal • 29, Exploratory Well (35-7) - Federal • 30, Irrigation Well - Private • 31, Exploratory Well (22-7) - Federal • 32, Vacant • 33, Well No. 7 State - Budget • 34, State Well - Amendment | <ul style="list-style-type: none"> • 35, State Well - Amendment • 36, State Well - McQuinn • 37, Abandoned Well - State • 38, Exploratory Well (12-7) - Federal • 39, Midland Well - Federal • 40, Midland Well Home Heating - Federal • 41, Midland Well Home Heating - Federal |
|---|--|--|---|---|

EXHIBIT C

Sample Power Plant ROW and Access Roads for a Power Plant



Legend

-  Secondary Access Route
-  Primary Access Route
-  Proposed Plant Location
-  Raser Federal Geothermal Lease
-  Burgett Boundary

Lightning Dock Geothermal
Power Plant and
Access ROW
Hildago County, Nevada

Lightning Dock Geothermal HI-01, LLC
5152 North Edgewood Drive Suite 375
Provo, UT 84604

EXHIBIT D

Water Rights Description

- A. Owner represents and warrants ownership of the following Water Rights identified by New Mexico Office of the State Engineer Numbers:

A-13, with points of diversion located in Section 13, Township 25 South, Range 20 West, N.M.P.M.

A-36-A, with points of diversion located in Sections 6 and 7, Township 25 South, Range 19 West, N.M.P.M., and Sections 4 and 12, Township 25 South, Range 20 West, N.M.P.M.

A-35-D, with points of diversion located in Section 7, Township 25 South, Range 19 West, N.M.P.M., and Section 4, Township 25 South, Range 20 West, N.M.P.M.

A-51, with points of diversion located in Section 10, Township 25 South, Range 20 West, N.M.P.M.

A-64-A, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-384, with points of diversion in Section 12, Township 25 South, Range 20 West, N.M.P.M.

A-385, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-386, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

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Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State NA- Federal

5.a State Lease No.
Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input checked="" type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name N/A
2. Name of Operator Lightning Dock Geothermal HI-01, LLC	8. Farm or Lease Name N/A
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604	9. Well No. TFD 55-7
4. Location of Well Unit Letter _____ Feet From The East Line and 2345 Feet From The South Line, Section 7 Township 25S Range 19W NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) 4201' GR	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input checked="" type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER <input type="checkbox"/>

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

- MIRU drill rig.
- Drill out cement plug from 1450' to 1550' approx.
- Drill out cement plug from 1890' to 2090' approx.
- RIH to locate cement plug at 5400' approx.
- Set bridge plug in 3000'-3400' interval.
- Collect water samples for geochemical and environmental analysis.
- Set production pump at 850' approx.
- Release rig.
- Hook up well for pump test to irrigation system.
- Run pump test for up to four weeks.
- Secure well.

Please see attached Proposed Operations and Drilling Plan for details.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE VP Resource Management DATE April 12, 2010

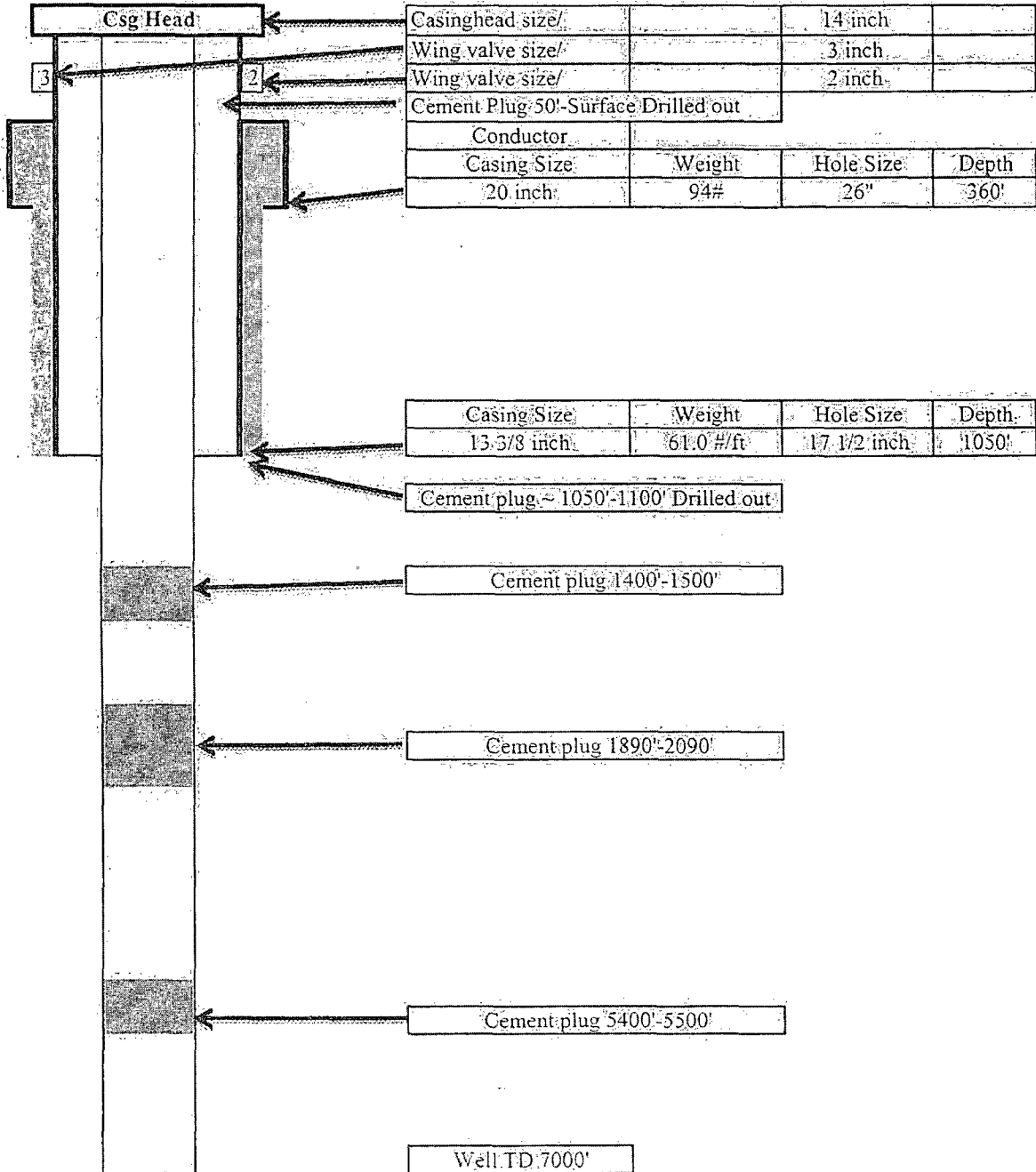
APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

AS IS NOW

Field Name:

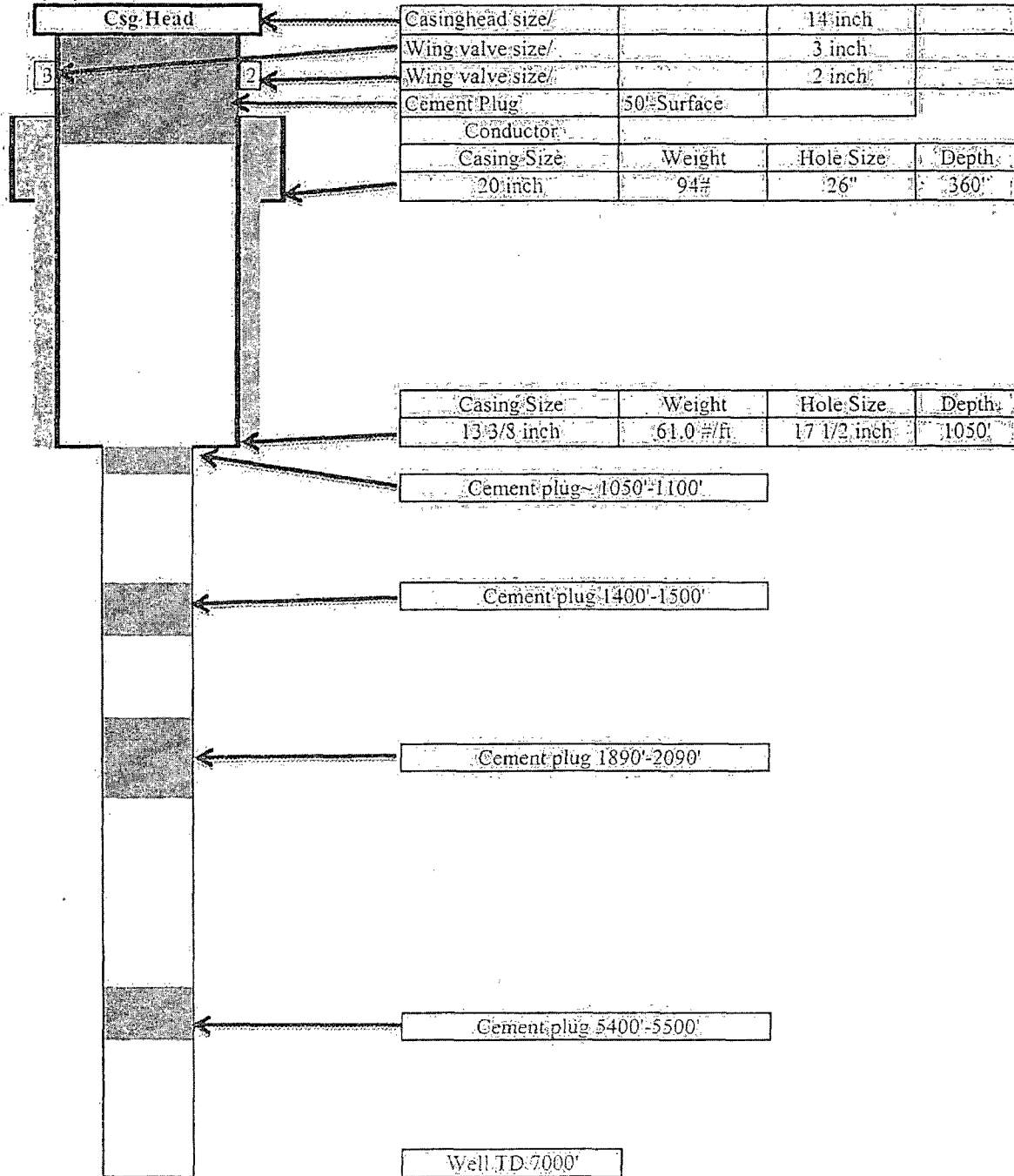
Lightning Dock



P&A 1985

Field Name:

Lightning Dock



Lightning Dock Geothermal HI-01, LLC
Proposed Operations and Drilling Plan, Well TFD 55-7

April 12, 2010

Prepared For:

New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, NM 87505

New Mexico Office of the State Engineer
Water Rights District III Office
301 South Tin Street, Deming, NM 88030

U.S. Department of the Interior, Bureau of Land Management
Las Cruces District Office
1800 Marquess Street, Las Cruces, NM 88005

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I. Summary of Proposed Operations:

Lightning Dock Geothermal HI-01, LLC, (“LDG”) is a wholly owned subsidiary of Los Lobos Renewable Power, LLC, which is wholly owned by Raser Technologies, Inc. (See Attachment A, Raser Technologies Corporate Structure). LDG proposes to re-enter and test well TFD 55-7 for the purpose of determining its suitability as a geothermal production well. LDG intends to mobilize a drilling rig about April 21, 2010 and will commence operations according to the Plan in Section II, below, as soon as approved by BLM and upon receipt of requisite permits from NMOSE and NMOCD.

The operations for which Lightning Dock Geothermal seeks permission in the present application are comprised of three parts:

- Remove two of the three remaining cement abandonment plugs set in the wellbore by Steam Reserve Corp. in 1985. The deepest plug will remain in place. Rosette, Inc., removed the uppermost two of the five Steam Reserve plugs pursuant to an NMOSE irrigation well permit. LDG intends to test the upper 3,400 ft of the open hole. The water will be sampled and analyzed in accordance with WQCC standards as described below. Compliance with those standards will be verified before any water is discharged in a pump test.
- Install a down-hole production pump and conduct a well and reservoir test. The discharged water will be metered and conveyed to a planted field for irrigation purposes. This will be done using standard farm irrigation equipment such as a wheel line. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Rosette, Inc. has agreed to provide the 2010 water rights to LDG for this test. LDG does not intend to use TFD 55-7 for injection in this operation. The existing unlined reserve pit may be used for cooling and water storage if approved by NMOCD upon receipt of produced water analyses.
- Install proper wellhead equipment and secure the well.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, LDG will proceed to obtain all approvals and permits (BLM, NMOCD, and NMOSE) required for further development.

II. Well Preparation

The first part of the operation requires reopening TFD 55-7 to collect fluid samples, set a bridge plug and install a test pump. The following is the proposed plan for the drilling operation. This detail is incorporated by reference into the BLM Drilling Program, described in Section V of this document.

- 1) Inspect wellhead for dimensional consistency with ANSI series 400 standards.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp circulating pump.
- 3) Install annular or rotating BOP on the wellhead above flow tee with gate valve on side outlet (see Attachment E).
- 4) Mix non-toxic gel-lime mud and fill hole.
- 5) Pick up slick bottom-hole assembly (BHA) #1: 8-1/2" insert bit, BS, 4x6" DC, jars, 1x6" DC, XO.
- 6) Test BOP for leakage by inflating around BHA and pumping in the side outlets to maximum working pressure of the surface piping, not to exceed 900 psig.
- 7) Run in hole and tag bottom, expected at about 1400 ft. Circulate bottoms up.
- 8) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. Airlift will be accomplished by injecting compressed air through the drilling assembly in sufficient quantity to stimulate flow to the surface. Discharging the flow line into a gauging tank will allow measurement of the produced liquid after its separation from the injected air. The volumes produced during the drilling operation will be recorded and will not exceed the storage capacity of the tank and reserve pit on site. No water will be discharged to "Waters of the State".
- 9) Pull out of hole and pick up 9-5/8" bit and stabilizers. Make up stiff BHA #2.
- 10) RIH and time drill cement plug #1. The plugs in well TFD 55-7 are of neat Portland cement. The plugs are reportedly each 50 - 400 ft in length and set in uncased open hole at about 1450 ft and 1850 ft. Time drilling and a "locked" (i.e., stiff and highly stabilized) BHA will be used to drill the plugs while staying in the original hole. Non-toxic, temperature-stable drilling mud will be used, composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit. The drilling fluids will bring the rock cuttings to the surface and then be cleaned and recirculated, preventing loss of drilling fluids into the rock and minimizing discharge into the reserve pit.
- 11) POH and stand back BHA #2.
- 12) Pick up BHA #3: float shoe, XO, 2x6" DC.
- 13) RIH and tag cement plug #2, expected at about 1800 ft.
- 14) Circulate hole clean.
- 15) Displace mud with water. POH to 1500 ft. Close BOP.
- 16) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 17) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 18) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ*

(i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."

- 19) POH, stand back BHA #3.
- 20) Pick up BHA #2. RIH to cement plug #2.
- 21) Circulate mud and drill out plug #2.
- 22) POH, lay down BHA #2.
- 23) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
- 24) POH, lay down BHA #3.
- 25) Run caliper log and select zone for bridge plug installation about 3400 ft.
- 26) Pick up bridge plug and BHA #4: setting tool and DCs as directed.
- 27) RIH and set bridge plug.
- 28) POH to 2800 ft, circulate hole clean.
- 29) POH to 1000 ft.
- 30) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."
- 31) POH laying down drill pipe; lay down BHA #4.
- 32) Make up 9-5/8" pump casing string and set test pump.
- 33) Release rig.

III. Resource Test

- 34) The results of the analyses from steps 8, 18 and 30 of the preceding section will be compiled in a single report and delivered to NMOCD, NMOSE, and BLM. If the discharge meets WQCC standards, LDG will confer with the agencies to verify the conditions are met for permitted discharge into an unlined reserve pit and delivery to an irrigation system. Should the quality of water not meet the standards of 20.6.2.3103 NMAC for irrigation, LDG will suspend flow test operations, redesign the test and seek approval of subsequent applications to NMOCD, NMOSE, and BLM.
- 35) Connect flow line to irrigation system.
The flow line will discharge the water into a gauging tank and thence into the irrigation transfer pump or the reserve pit. The pit measures 170 ft x 170 ft x 12 ft deep (see Attachment B). If WQCC standards (20.6.2.3103 NMAC) are met, the reserve pit will be left unlined. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.
- 36) Conduct pump test as directed. LDG will conduct the pump test in consultation with engineers representing the interests of potential investors in the Lightning Dock project. The operation of the test may therefore vary from day to day, but will at all times conform to the requirements of the applicable NMOCD, NMOSE and BLM permits and regulations.

LDG plans to use a 12-inch American-Marsh vertical shaft 10 stage turbine pump for this test. The pump is owned by Raser Technologies and has performance characteristics detailed in Attachment F. The power for the pump will be a 300 hp electric motor with a variable speed controller. The pump will be set at approximately 850 ft depth to allow a maximum drawdown from static water level of about 700 ft. Engineering analysis of Raser's airlift test in 2008 suggests a flow rate of 400 gpm is likely from the well in its present state, i.e., open from 1050 ft to 1450 ft. Since lost circulation occurred at greater depths (e.g., 2275 ft) during the drilling of TDF 55-7, LDG expects the reopened hole may be able to supply fluid up to the pump's maximum capacity, approaching 1500 gpm at this depth.

The pumping rate during the first week of the test will be programmed to gradually bring in flow and to establish the reservoir deliverability as a function of water level drawdown. Thereafter, the rate will be set so as not to exceed the landowner's NMOSE-designated water rights. LDG expects to satisfy itself and its investors' engineers within a test pumping duration of four weeks.

Discharge water samples will be collected weekly and analyzed at an EPA Methods, QA/QC, DQOs-compliant laboratory. LDG will also monitor the discharge daily for standard field parameters including pH, turbidity, color, DO, and specific conductivity. If anomalous readings are detected that indicate a significant change in water source or properties, water samples will be collected immediately and discharge halted. Discharge will not be resumed until and unless laboratory analytical results confirm that the water meets the required criteria.

- 37) Move in and rig up well service rig.
- 38) Remove and lay down pump and casing.
- 39) Install master valve and survey flange.
- 40) Secure well and release rig.
- 41) File operations reports as required with NMOCD, NMOSE and BLM.

IV. BLM Operations Plan, 43 CFR 3261.12

(a) The proposed project is on private land. Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner. No surface disturbance of BLM-managed public lands is proposed.

Well Pad Layout and Design

The well pad layout is approximately 150 ft x 150 ft with an existing reserve pit measuring 170 ft x 170 ft x 12 ft adjacent to the pad.

See Attachment B – Lightning Dock Aerial Map

See Attachment C – Survey of Well Location

(b) Description of Existing and Planned Roads

The well site is accessed via existing state, county and private roads. As such no new roads are necessary for this activity. The primary access roads to the site include: SR-338 (paved); CO98 Geothermal Road (paved), which extends to the surface owner's property. All roads and access at the well site on the surface owner's property are existing compacted dirt and/or graveled.

(c) Description of Ancillary Facilities

Sanitary Facilities – Portable chemical sanitary facilities will be available and used by all personnel during periods of well drilling and/or flow testing.

Mobile drilling office will be set upon on the site during drilling activities.

Existing water holding pond 170 ft x 170 ft x 12 ft.

Trash collection facilities e.g. roll-off container.

(d) Source of Drill Pad and Road Building Materials

Drill pad building material will be derived from any necessary excavation of the existing reserve pit.

The pad will be graded to provide 2% grade to reserve pit.

Existing improved roads will be used.

Any additional material required for pad construction will be secured from a local contractor.

(e) Water Source

Water required for this operation will be secured from an established private owner.

Water derived from the operation will be discharged into a gauging tank and thence to an irrigation transfer pump or the reserve pit. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove

discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

Potable water for human consumption will be provided by bottled water.

(f) Statement Describing Surface Ownership

Surface of the well site is owned by Rosette, Inc. of Animas, NM. Lightning Dock Geothermal holds a Surface Access and Use Agreement, dated 10 January, 2008, with Rosette granting access to the well site.

See Attachment F – Surface Access Agreement.

(g) Description of Procedures to Protect the Environment and Other Relevant Sources

Air Quality: During drilling activities hydrogen sulfide will be monitored by instruments on the drill rig.

Hydrology and Water Quality Monitoring: Water samples will be collected during the cleanout operation and tested to assure compliance with WQCC standards for agricultural use.

Portable chemical toilets supplied by a licensed contractor shall be used for human waste. The waste shall not be buried on site.

Trash and debris will be contained on site, and then hauled to an approved landfill by a licensed contractor. Burial and or burning on site will not be permitted.

Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner.

(h) Plan of Surface Reclamation

Top soil excavated during the construction of the pad, as feasible, will be stockpiled for use during subsequent reclamation of the disturbed area.

(i) Any Other Information That BLM May Require

Will be provided upon request.

V. BLM Drilling Program, 43 CFR 3261.13

(a) Description of Equipment, Materials and Procedures

A large portable rotary drill rig will be used to drill the well.

Equipment Specifications:

The availability of equipment and contractors changes from day to day. LDG will make its selection based on the best units available when the necessary permits are received. The rig will be functionally similar to the following: Drawworks – Taylor RT 5000; Mast – Taylor RT 5000 square set derrick; Substructure – Height 10 ft hydraulic w/ 15 ft K.B. elevation; Two (2) mud pumps; Rotary table; Swivel & Drilling Block; Tripping Block; Generators 235 kW, Air Compressor 500 SCFM.

Procedures will be as described in Section II, Well Preparation.

(b) Proposed / Anticipated Depth of the Well:

The well will be drilled and completed to the designed depth of 3,400 ft.

(c) Directional Drilling:

No directional drilling will be employed.

(d) Casing and Cementing Program:

This is a re-entry into an existing well that currently has cemented casing to approximately 1050 ft and approximately 400 ft of open hole to the first plug at a depth of approximately 1450 ft. The remainder of the well is open hole to the TD of 7000 ft. No additional casing or cement will be utilized in the operation to open this well to 3400 ft.

(e) Circulation Media (mud, air, foam, etc.)

The well will be drilled to a depth of 3,400 ft using non-toxic, temperature-stable drilling mud or aerated fluids. The drilling mud is composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit, bringing the rock cuttings to the surface discharged into the reserve pit, and preventing loss of drilling fluids into the rock.

(f) Description of Logs to be Run:

Caliper Logs

(g) Description and Diagram of Blowout Prevention Equipment:

Blowout prevention equipment (BOPE), which is typically inspected and approved by the BLM and/or the Oil Conservation Division (NMOCD) of the New Mexico Energy, Mining, and Natural Resources

Department (NMEMNRD), as applicable, would be installed, tested and ready for use while drilling to ensure that any geothermal fluid encountered does not flow uncontrolled to the surface.

See Attachment E.

(h) Expected Depth and Thickness of Fresh Water Zones:

N/A – existing casing is set to 1,000 ft hence no fresh, shallow water getting into well.

Static water depth is 71 ft. Total available water column of 1300 ft available

(i) Anticipated Lost Circulation Zones

None anticipated. The only instance of lost circulation recorded by Steam Reserve in the interval 1050 ft – 3400 ft was a minor episode at 2275 ft. That was successfully treated with a small batch of lost circulation material. This is below the deepest plug that LDG intends to drill out. LDG therefore anticipates that lost circulation will not be encountered in carrying out the proposed program.

(j) Anticipated Reservoir Temperatures and Pressures:

Temperature: Peak temperatures have been recorded at 307.4 F at a depth of 1263 ft remaining constant to 1400 ft.

Pressures: High pressure at the depth of 1365 ft is 549.66 psig.

(k) Anticipated Temperature Gradient in the Area:

The regional heat flow is ~80-90mW/m² (Blackwell and Steele, 1992). This heat flow would yield a temperature gradient of about 35°C/km (1.9°F/100 ft) in igneous rocks and 60°C/km (3.3°F/100 ft) in valley fill clays. Most of the non-thermal wells have a gradient near 45°C/km (2.5°F/100 ft). Therefore, 45°C/km (2.5°F/100 ft) will be taken as the background temperature gradient value for the valley fill.

Thermal gradient conditions will range from 78°C/km (4.3°F/100 ft) (*well 672-225*) to 200C/km (11°F/100 ft) (*well 93-8 and AN-104*) and will be similar or higher in 55-7.

(l) Plat Certified by a Licensed Surveyor:

See Attachment C.

(m) Procedures and Duration of Well Testing

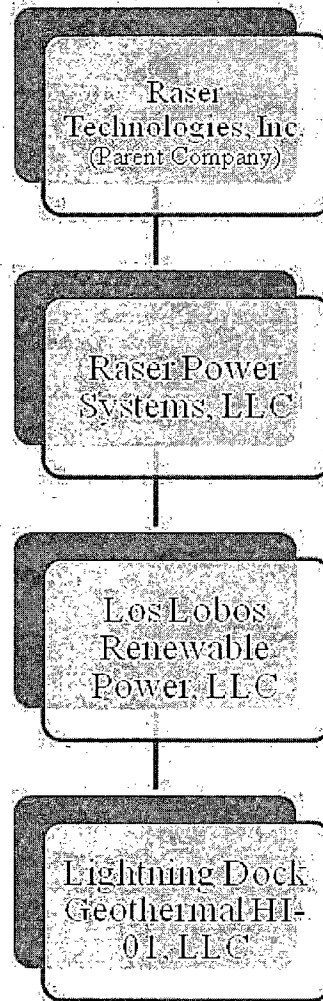
See Section II, Resource Test

(n) Any Other Information That BLM May Require

Will be provided upon request.

Attachment A

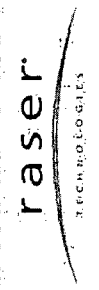
Raser Technologies Corporate Structure



Lightning Dock Geothermal HI-01, LLC is the permit applicant and operator. The illustration above describes the corporate organization of which Lightning Dock Geothermal is a part as follows: Raser Technologies, Inc is the parent company. Raser's geothermal development company is Raser Power Systems, LLC; the New Mexico entity is Los Lobos Renewable Power, LLC; and Lightning Dock Geothermal HI-01, LLC is the Animas, NM project entity.

Attachment B

Lightning Dock Aerial Photo Map

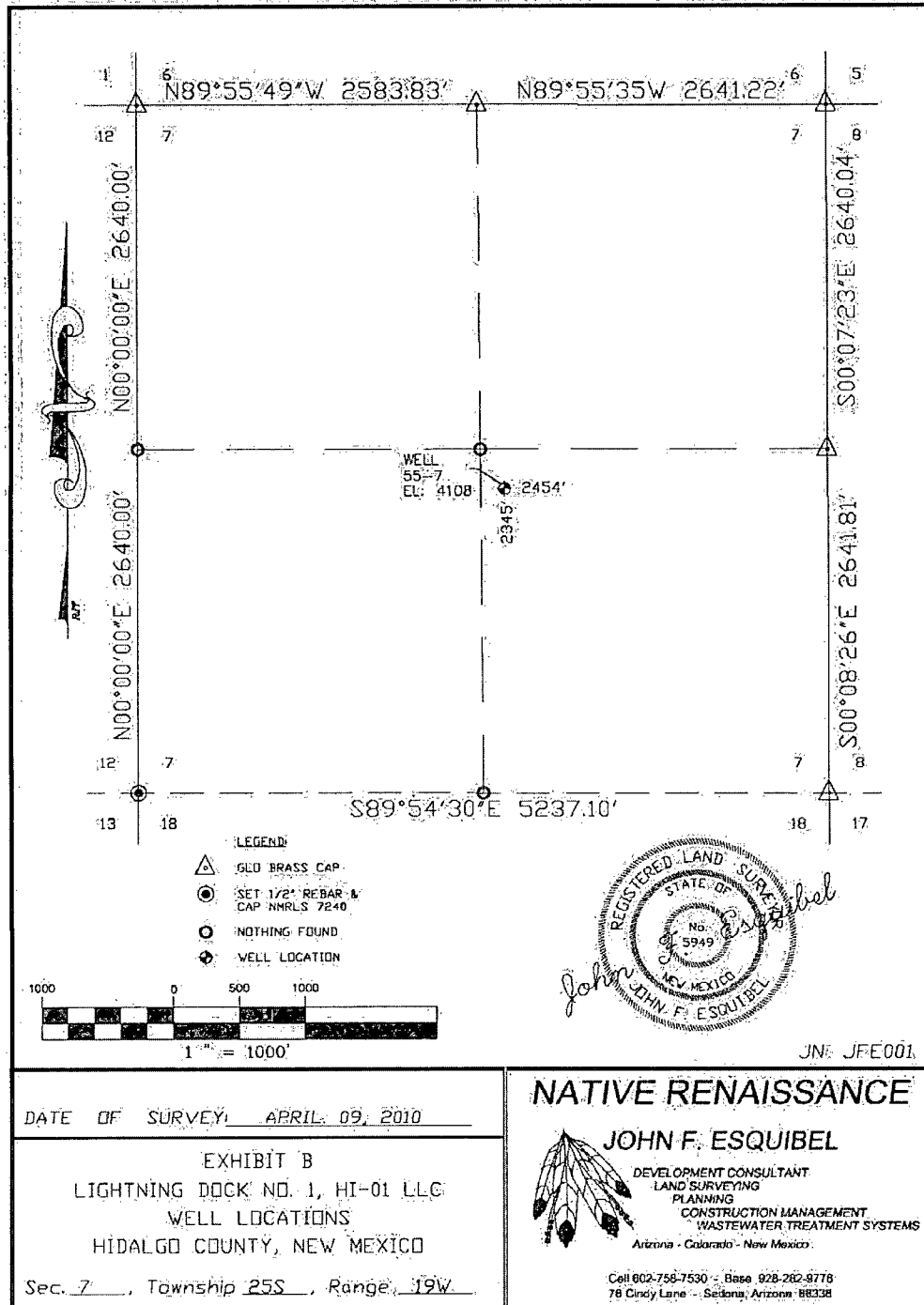


Lightning Dock Geothermal Aerial Map,
Animas Valley, NM



Attachment C

Survey of Well 55-7 Location



DATE OF SURVEY: APRIL 09, 2010

EXHIBIT B
 LIGHTNING DOCK NO. 1, HI-01 LLC
 WELL LOCATIONS
 HIDALGO COUNTY, NEW MEXICO

Sec. 7, Township 25S, Range 19W

NATIVE RENAISSANCE



JOHN F. ESQUIBEL

DEVELOPMENT CONSULTANT
 LAND SURVEYING
 PLANNING
 CONSTRUCTION MANAGEMENT
 WASTEWATER TREATMENT SYSTEMS
 Arizona - Colorado - New Mexico

Cell 602-758-7530 • Base 928-262-9778
 78 Cindy Lane • Sedona, Arizona 86338

Attachment D

Down-Hole Test Pump Specifications

Pump Data Sheet - American-Marsh Pumps

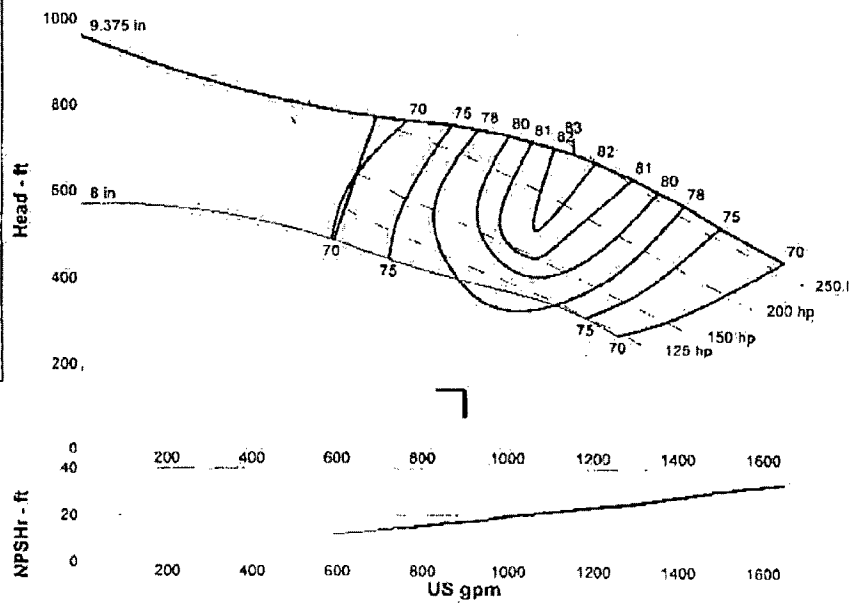
Company:
 Name:
 Date: 7/9/2009



Pump
 Size: 12MC (10 stage)
 Type: 480_VRT-TURBINE/ENCL
 Synch speed: 1800 rpm
 Curve: 2951
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Pump Limits:
 Temperature: 250 °F
 Pressure: 584 psi g
 Sphere size: 0.625 in.
 Speed: 1760 rpm
 Dia: 9.375 in
 Impeller:
 Ns: 2526
 Nss: 5695
 Suction: 8 in
 Discharge: 6 in
 Bowl size: 11.25 in
 Max lateral: 0.75 in
 Thrust K factor: 10.6 lb/ft
 Power: 450 hp
 Eye area: --- in²

Search Criteria
 Flow: 900 US gpm
 Head: 140 ft
 Fluid:
 Water:
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHr: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a.
 Atm pressure: 14.7 psi a.
Motor
 Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 300 hp
 Speed: 1800
 Frame: 449T

Data Point	
Flow:	1152 US gpm
Head:	688 ft
Eff:	82%
Power:	243 hp
NPSHr:	22.9 ft
Design Curve	
Shutoff head:	960 ft
Shutoff dP:	415 psi
Min flow:	693 US gpm
BEP:	83% @ 1155 US gpm
NOL power:	263 hp @ 1500 US gpm
Max Curve	
Max power:	263 hp @ 1500 US gpm

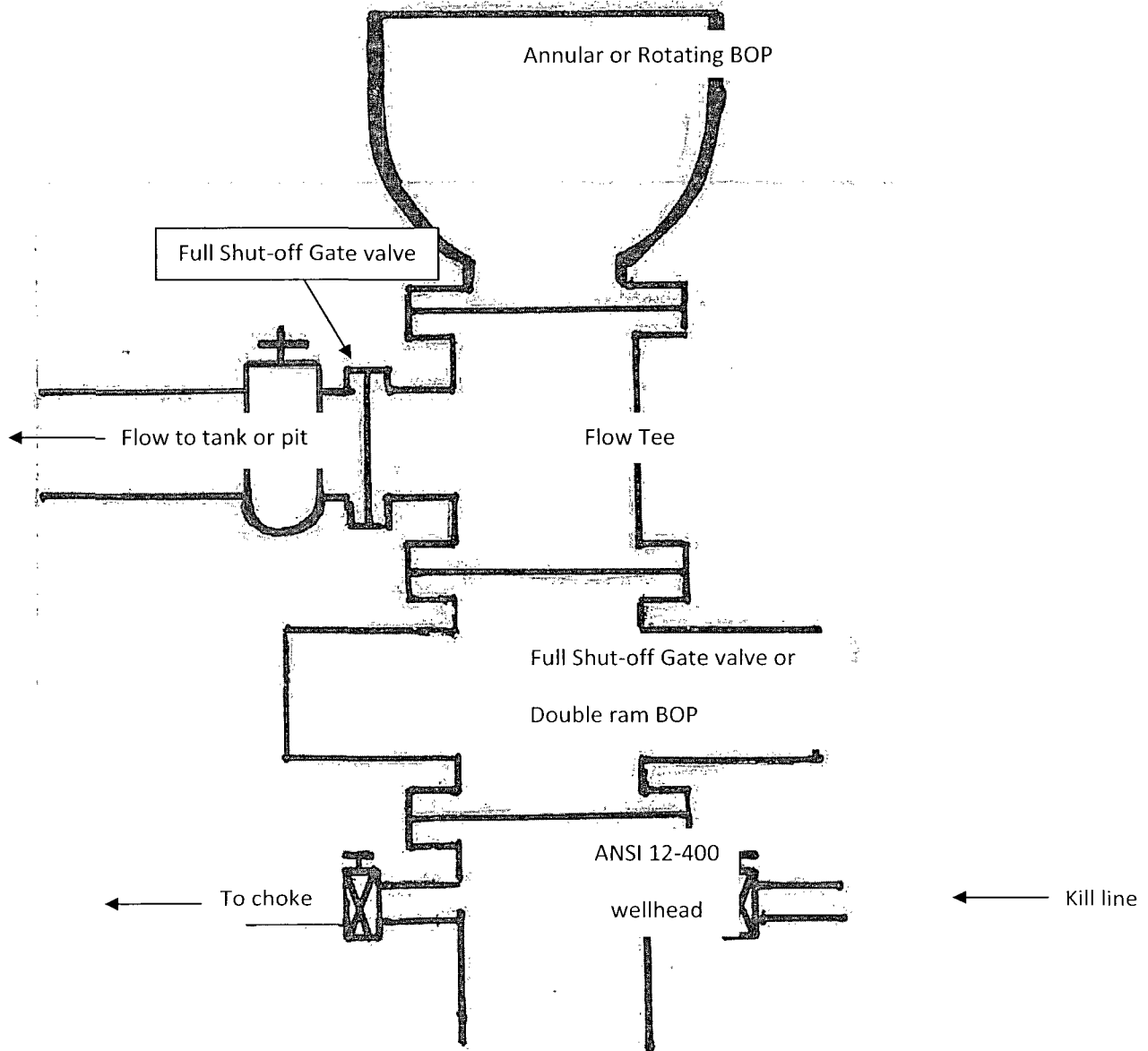


Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1080	1760	709	81	237	21.4
900	1760	749	76	223	17.5
720	1760	778	68	207	14.1
540	1760	---	---	---	---
360	1760	---	---	---	---

Attachment E

Blowout Prevention Equipment Diagram



Attachment F

Surface Use and Access Agreement

Between

Rosette, Inc.

And

Lightning Dock Geothermal HI01, LLC

January 10, 2008

SURFACE ACCESS AND USE AGREEMENT

This SURFACE ACCESS AND USE AGREEMENT ("Agreement") is executed effective January 10, 2008, by and between ROSETTE, INC., with an address of 26 Rose Land, Animas, NM 88020 ("Owner"), and LIGHTNING DOCK GEOTHERMAL HI-01, LLC, with an address of 5152 North Edgewood Drive, Suite 375, Provo, Utah ("LDG").

RECITALS:

A. Owner owns record title to the surface estate of certain real property located in Hidalgo County, State of New Mexico, more particularly described on Exhibit A hereto (hereinafter the "Subject Lands"). The United States of America, through the Bureau of Land Management (the "BLM"), owns the reserved mineral estate, which includes the geothermal estate. Owner owns greenhouse operations which are warmed during the winter months by heat supplied by the utilization of geothermal resources near, on, or around the Subject Lands.

B. LDG is the current owner of a Federal Geothermal Lease NM-34790, issued February 1, 1979 ("Subject Lease"), wherein the BLM has granted the holder of the Subject Lease the right to explore for and develop the geothermal resources underlying the lands covered by the Subject Lease, which includes the Subject Lands. Amax Exploration, Inc. ("Amax"), a prior owner of the Subject Lease, and a predecessor of Owner entered into a letter agreement dated December 14, 1978 ("1978 Agreement"), whereby Amax was granted access to the Subject Lands to develop the Subject Lease. The 1978 Agreement granted Owner's predecessor the right to drill to a depth of 1000 feet below the surface and extract geothermal resources therefrom for use in its greenhouse operation. After litigation with the BLM, Owner abandoned use of the geothermal resources from the Subject Lease and Subject Lands, and, pursuant to the settlement agreement with the BLM, Owner has certain plugging and abandoning, and reclamation responsibilities.

C. LDG intends to utilize certain existing geothermal wells on the Subject Lands and to drill additional geothermal wells or reinjection wells (such existing and initially proposed wells, as depicted on Exhibit B, and all future wells that may be proposed and drilled by LDG are defined herein collectively as the "Subject Wells") on a portion of the Subject Lands (such initial proposed well-sites, as depicted on Exhibit B, and all future well-sites that may be required for future wells, are referred to herein collectively as the "Well-Sites"), which Well-Sites will include typical geothermal energy exploration production or reinjection equipment and facilities. In connection with accessing, drilling and operating the Subject Wells and access to power generation facilities, LDG requires a portion of the Subject Lands to construct and maintain access roads crossing the Subject Lands, including, without limitation, existing roads on the Subject Lands (an "Access Road ROW" and collectively the "Access Road ROWs"). In addition, LDG requires or may require a portion of the Subject Lands to construct and maintain power plants, utilities, transmission lines, water pipelines, water storage and other facilities related to the production, extraction, transportation and reinjection of geothermal resources and the generation and transportation of electricity therefrom (all such improvements constructed or to be constructed by LDG on the Subject Lands are referred to herein collectively as the "Improvements"). LDG shall attempt to locate all such Improvements that require linear rights-of-way within the boundaries of the Access Road ROWs when and where economically and operationally feasible, and Owner herein grants Access Road ROWs of sufficient length and width to accommodate any necessary or contemplated Improvements. Furthermore, it may become necessary for LDG to obtain other rights-of-way to accommodate Improvements that cannot be located within an Access Road ROW, including without limitation, the Power Plant ROW, defined below, water storage areas, temporary construction easements, and other non-

linear surface uses (an "Other ROW" and collectively the "Other ROWs"). The rights-of-way for the necessary Well-Sites (a "Well Site ROW" and collectively the "Well Site ROWs"), the Access Road ROWs and the Other ROWs, including the Power Plant ROW (defined below), are referred to herein individually as a "ROW" and all such rights-of-way granted or to be granted hereunder shall be collectively referred to as the "ROWs."

D. Given the changed circumstances recited above, LDG and Owner desire to cancel and terminate the 1978 Agreement and enter into a new surface use and access agreement that memorializes their discussions and agreements regarding LDG's access to and use of the surface estate of the Subject Lands, and consideration provided therefore, for the drilling of the Subject Wells, the construction of the ROWs and the development of the Improvements on the Subject Lands. The 1978 Agreement shall terminate upon the execution of this Agreement.

E. LDG and Owner have also agreed that LDG shall have access to and use of certain water rights that are owned by Owner, as more particularly described below.

AGREEMENT:

NOW THEREFORE, in consideration of the mutual promises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto incorporate the recitals above herein and agree as follows:

1. **Term of Agreement.** The rights, including all ROWs, granted by this Agreement shall continue until the rights of LDG, its successors or assigns, to explore for, develop, extract or produce geothermal energy from the Subject Lease, or from lands pooled with the Subject Lease, permanently and irrevocably terminates; provided that the rights granted to LDG herein shall survive the termination of the Subject Lease, so long as the power plant and related facilities on the Subject Lands are capable of producing electricity.

2. **Existing Wells.** Owner hereby grants LDG, its employees and designated agents, and its successors and assigns, the right to access, re-open, re-drill, utilize, deepen, or to plug and abandon, when and if LDG deems it necessary in furtherance of its operations on the Subject Lands, the following wells and any other geothermal wells which exist on the Subject Lands: TFD 55-77, EGS 12-7, GRED 52-7, GRED 36-7, GRED 57-7, and EGS 56-14 (collectively, the "Existing Wells"); provided however that the Existing Wells shall not include Well #16 on Exhibit B, which is a water well that is being used by Owner. Owner grants LDG access to and the right to conduct any necessary operations with respect to the Existing Wells, as and where depicted on Exhibit B, except for monitoring purposes, subject to modification by LDG upon a final inspection and survey of the Subject Lands. The Well-Site ROWs for the Existing Wells (and all future wells) shall be initially large enough to accommodate drilling operations, not to exceed 6 acres, but shall contract upon completion of the wells to area sufficient for operation and maintenance of the well, not to exceed 3 acres. One or more of the Existing Wells are close to existing structures or equipment that is stored on the Subject Lands, that may impede access, and LDG agrees to pay for the costs of repairing any damage caused by LDG's access or to pay the costs of removing or relocating any structures or equipment, in coordination with Owner. Owner hereby also grants LDG Access Road ROWs, with the right to use and expand existing roads, or construct and maintain new roads, as determined by LDG, to and for the development of the Existing Wells (the "Initial Access Road ROWs") as and where depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. Owner and LDG agree that the Initial Access Road ROWs, the centerline of which is approximately depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands, shall initially be sixty (60) feet wide. LDG shall have the right to install additional pipelines, utilities, transmission lines and other Improvements along the Initial Access Road ROWs if it becomes necessary in its operations of the Existing Wells (or

future wells either on or adjacent to the Subject Lands). Owner grants to LDG certain Other ROWs that LDG may require for development of the Existing Wells, for other Improvements or uses that cannot be placed within the boundary of the Initial Access Road ROWs, including, without limitation, water storage areas, permanent or temporary construction areas, and the other rights-of-way needs and uses, as depicted on Exhibit B, or as requested by LDG subsequent to the execution of this Agreement. Once the Well-Sites for the Existing Wells, the Initial Access Road ROWs, and any other initial Other ROWs granted hereunder have been surveyed and precisely identified by legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the initial ROWs described herein.

3. **Power Plant ROW.** As noted above, LDG intends to construct a power plant and related facilities, including geothermal pipeline and utility connections to the plant and transmission facilities out of the plant (the “**Power Plant**”), which power plant site and connections shall require and constitute a “**Power Plant ROW**.” The Owner hereby grants to LDG an exclusive Power Plant ROW to survey, inspect, construct, develop and operate the Power Plant and any related or necessary facilities or Improvements. The Power Plant ROW shall be evidenced by a recorded right-of-way, with a term that extends for as long as the power plant facilities are capable of production of electricity, and for a period of time thereafter for dismantling and remediation, as described below. LDG and Owner shall cooperate to locate the Power Plant ROW in a manner that minimizes the effect on Owner’s existing surface uses; provided that, notwithstanding the foregoing, the Power Plant ROW shall be in a location on the Subject Lands that maximizes efficient access to and use of geothermal resources, and to electricity transmission infrastructure and markets. LDG has delivered to Owner a rough map of a possible Power Plant site, along with primary and alternate access roads for the Power Plant site, a copy of which is attached hereto as Exhibit C, and Owner and LDG mutually acknowledge and agree that the approximated rights-of-ways and Power Plant site set out on that rough map would be an example of an acceptable location. LDG agrees to fence and secure the Power Plant ROW. If the Power Plant is no longer capable of production of electricity or if LDG otherwise elects to permanently shut down the Power Plant facilities for any reason, LDG shall provide Owner with written notice of its intent to shut down the facilities. After giving notice of intent to shut down and dismantle the plant, LDG shall have three (3) years to dismantle and remove all infrastructure and improvements pertaining to the Power Plant, including all utilities and transmission facilities, and to remediate the underlying property to its natural condition. Upon the request of LDG, Owner agrees to grant LDG a lease, in a recordable form, with a term that lasts for as long as the Power Plant is in existence and a reasonable time thereafter for dismantling, removal and remediation, of approximately twenty (20) acres (subject to the needs of the Power Plant and the activities of LDG in connection therewith), for the land necessary for the Power Plant and related facilities, at an annual rental rate of \$60 per acre.

4. **Future Subject Wells, ROWs, and Improvements.** LDG intends to develop future Subject Wells on the Subject Lands (in addition to the Existing Wells) (“**Future Wells**”). Additionally, LDG intends to construct and maintain related pipelines, utilities, transmission lines, production facilities, power generation facilities, water storage areas, access roads and other Improvements for such future Subject Wells. Prior to the development of any future Subject Well (not one of the Existing Wells) or Improvements on the Subject Lands in connection therewith, LDG shall provide Owner, in writing, notification of the proposed location of the desired Subject Well(s), Access Road ROW(s), or Other ROW(s) necessary for contemplated Improvements, and a description of the Subject Well(s), Access Road ROW(s) or Other ROW(s) to be constructed (individually and collectively, as the context requires, any “**Future ROWs**”). Within fifteen (15) days of such written notice, LDG and Owner shall discuss the location of the necessary Future ROWs, in an attempt to locate any such Future ROWs in locations that reasonably minimize the impact to the current surface uses of Owner but that do not result in an undue economic or operational burden to LDG. The parties acknowledge and agree that such Well-Site ROWs (for Future Wells) and other Future ROWs shall be located in areas that will maximize recovery and

efficient use of geothermal resources. LDG and Owner agree to meet on the Subject Lands, at the request of either party, in connection with the location of Future ROWs, to discuss such locations. Once Future ROWs have been identified and surveyed for a precise legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the Future ROWs.

5. **1978 Agreement.** Owner and LDG mutually agree to terminate and cancel the 1978 Agreement as of the execution date herewith, and replace the 1978 Agreement with this Agreement. Owner agrees to release LDG of any obligations or claims arising under the 1978 Agreement, and LDG agrees to release Owner of any obligations or claims arising under the 1978 Agreement. Owner and LDG understand that this Agreement is intended to replace and supersede the 1978 Agreement.

6. **Consideration for Agreement.** As consideration for the execution of this Agreement, LDG shall provide the following to Owner:

(a) Upon execution of this Agreement, LDG shall pay to Owner a one-time payment in the amount of Three Hundred Twenty Thousand and No/100 Dollars (\$320,000.00).

(b) LDG shall pay Owner a minimum annual fee of \$1,000.00 as consideration for use of or access to Owner's existing cold water delivery infrastructure. Thereafter, LDG shall pay the \$1,000.00 fee prior to the anniversary date of this Agreement, provided that failure to make such payment shall not constitute an event of breach or default under this Agreement, until Owner has provided LDG with written notice of the failure to make such payment, and LDG fails to make such annual payment within twenty (20) days of such written notice. Moreover, in the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water delivery infrastructure shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

(c) For the use of cold water (see Section 14(b)) provided by Owner to LDG for cooling and other purposes, LDG has agreed to pay an annual payment equal to \$50 per acre foot of water to be used by LDG during the next year, less the \$1000.00 minimum fee set forth above (in other words, the \$1000 fee set forth in Section 6(b) above shall be included as part of, and not in addition to, the annual payment described in this Section 6(c)). LDG shall provide to Owner an estimate of the amount of acre-feet of water that LDG shall use for the following year, and shall pay the annual payment based on such estimated amount, prior to the anniversary date of this Agreement. At the end of such year, if LDG's use of water for the prior year exceeded the estimate, then LDG shall remit the payment for such acre feet used in excess of the estimate for the prior year with the payment for the next year's estimated water uses. The consideration set forth in Section 6(a) above includes the first year's payment for water use under this Agreement. In the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

7. **Cessation of Development or Abandonment of Lease.** LDG intends to explore for geothermal resources on the Subject Lease for the purpose of generating electricity. If LDG fails to take reasonable actions to commence exploration for or development of geothermal resources on the Subject Lease within two (2) years of the date of this Agreement, or if LDG determines at any time, either before or after such two (2) year period, to abandon development of geothermal resources on the Subject Lease (and provides Owner with written notice of such intent to abandon the Subject Lease), then LDG agrees to take such reasonable steps necessary to designate Owner as an operator (with the BLM) for purposes of operating shallower formations under the Subject Lease (down to 1000 feet, consistent with the historical operations of Owner), or, if LDG determines it is in its interest, to assign operating rights in the Subject Lease to

Owner from the surface down to 1000 feet. Notwithstanding the foregoing, if LDG determines that it intends to completely abandon the Subject Lease, and provides written notice of such intent to Owner, then LDG shall assign the entire lease over to Owner, upon assumption by Owner of all rights and responsibilities under the Subject Lease. Moreover, LDG agrees that in connection with such designation of operator, it shall agree to turn over to Owner the following Existing Wells, as shown on Exhibit B, unplugged and accessible: Well #10, Well #11, and Well #25, provided however that Owner shall assume all plugging, abandoning, reclamation and other responsibilities for such wells and shall post any required bonds in connection with the assignment and assumption of such wells. The foregoing agreement of LDG to designate Owner as an operator (or assign operating rights or all of the Subject Lease) is subject to the approval of the BLM. LDG's commitment to commence exploration and development activities on the Subject Lease is also subject to delay or suspension as result of events of Force Majeure. "Force Majeure" shall include, without limitation, the following: strikes; lockouts; riots; action of the elements, including but not limited to fire, explosion, flood, volcanic activity, earthquakes, or tidal waves; accidents; delays in transportation; inability to secure labor or materials in the open market; laws, rules or regulations of any Federal, State, County, Municipal or other governmental agency, authority or representative having jurisdiction, including failure or delay in issuance of necessary permits or approvals; war (whether declared or undeclared including terrorist acts); acts of God; litigation or administrative proceedings affecting title to lands covered hereby or operations thereon; inability to secure or absence of a market for commercial sale of geothermal resources or electricity generated therefrom; produced from the Subject Lease or of derivatives developed by LDG therefrom; or by other matters or conditions beyond the reasonable control of LDG, whether or not similar to the conditions or matters in this definition specifically enumerated.

8. **Cooperation.** Owner agrees to reasonably cooperate with LDG, in good faith, to support and promote the successful development of geothermal resources and the generation of electricity from the Subject Lease.

9. **Pipelines; Utilities.** LDG hereby agrees to locate all pipelines and other linear utilities at all points along an applicable Access Road ROW or Other ROW where reasonable and practical. However, there may be instances where pipelines, transmission facilities and other Improvements cannot be placed along an Access Road ROW, in which case LDG shall be granted separate Other ROWs for such uses. LDG shall not be required to bury pipelines or other utilities.

10. **Access Road ROWs.** LDG agrees that it shall construct and/or improve all currently contemplated new roads and existing roads along the center line(s) approximately depicted on the attached Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. During the construction or improvement of any road, under an Access Road ROW, including the installation of pipelines and other utilities, the right of way shall be sixty (60) feet wide, and LDG shall have a temporary license to use other portions of the Subject Lands during the construction phase of such roads (including the installation of pipelines and other utilities) to park equipment or store gravel or other supplies, provided that LDG shall replant and restore any temporary use areas to their natural condition prior to construction. Upon completion of construction of the road (or expansion or improvement of existing roads) and installation of pipelines and other utilities, the Access Road ROWs shall be forty (40) feet wide. The roads shall be graded and improved with gravel. LDG agrees that it shall maintain the Access Road ROWs to industry standards as a gravel road during the term of this Agreement. LDG shall not be obligated to remove snow that may accumulate on the road, and shall not be responsible for paving the road, providing curb and gutter, or otherwise improving the road to accommodate increased traffic from Owner's lands. The same provisions of this Section 10 shall apply to all future roads and Access Road ROWs to be constructed and maintained by LDG on the Subject Lands, including Access Road ROWs or Other ROWs to the Power Plant ROW.

11. **Owner's Right to Use the ROWs:** LDG shall have the exclusive right to use and maintain the Well Site ROWs and any Other ROWs (including the Power Plant ROW). LDG shall have the non-exclusive right to use and maintain the Access Road ROWs during the term of this Agreement for its purposes. LDG hereby agrees that Owner, and its successors, assigns, employees, agents, invitees and licensees, shall have the right to use the Access Road ROWs for access to the remainder of Owner's property as currently owned and used. Owner, and its successors, assigns, employees, agents, invitees and licensees shall not interfere with LDG's operations on the Subject Lands or the use or maintenance of the Access Road ROWs (or the other ROWs), and Owner shall be responsible for any cost of repairing damage to any road caused by Owner, or its successors, assigns, employees, agents, invitees and licensees. Any proposed use of or modification to an Access Road ROW by Owner, or its successors, assigns, employees, agents, invitees and licensees, which would or may be likely to injure, damage or interfere with the Access Road ROW, shall require the prior written consent of LDG, an express agreement of Owner to assume all costs and damages, and shall require, at LDG's option, the presence of LDG's agent or employee to monitor the activity. Owner, and its successors, assigns, employees, agents, invitees and licensees shall abide by all written safety and other instructions regarding use of the roads that are provided by LDG. When LDG no longer requires an Access Road ROW for its operations, LDG shall provide written notice of its intent to abandon use and Owner shall have the option to assume control and maintenance over the Access Road ROW by notifying LDG within thirty (30) days of receipt of such notice; otherwise, LDG shall remediate and restore the property covered by an Access Road ROW in accordance with applicable law.

12. **Indemnification.**

(a) Owner, its successors and assigns, does hereby agree to relieve, release, indemnify and hold LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, harmless and agree to defend LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, from any claim of damage to any person or property arising out of use of any ROW or other activities on the Subject Lands for damages proximately caused by Owner, its successors, assigns, invitees, and licensees, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, and witness fees, and other monies expended by or incurred by LDG or its agents, in the event it shall become necessary for LDG or its agents to defend themselves from any claims made by anyone as a result of the use of any ROW or other activities on the Subject Lands, by Owner, its successors, assigns, invitees, and licensees, but not otherwise.

(b) LDG, its successors and assigns, hereby agree to relieve, release, indemnify, and hold harmless and agree to defend Owner, its successors, assigns, employees, agents, invitees and licensees from any and all claim of damage to any person or property arising out of use of the Subject Lands for operations by LDG or its agents for damages proximately caused by LDG or its agents, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, witness fees and other monies expended by or incurred by Owner, its successors, assigns, employees, agents, invitees and licensees in the event it shall become necessary for Owner, its successors, assigns, employees, agents, invitees and licensees to defend themselves from any claims made by anyone as a result of LDG's operations, on, across or over the Subject Lands, but not otherwise.

13. **Confidentiality.** Owner hereby agrees, unless compelled by court order or subpoena, that the terms and conditions of this Agreement, including but not limited to the payments referenced in Section 6

above, shall remain confidential and will not be disclosed or released to any other person(s) or third parties. LDG can disclose the existence and terms of this Agreement at its discretion.

14. **Water Rights.** Owner currently owns water rights that pertain to the Subject Lands, which are more particularly described in Exhibit D hereto. Owner is currently using a portion of its water rights for the operation of its commercial greenhouse business, for domestic consumption and some limited irrigation needs ("Current Water Usage"). Any water rights that Owner currently owns but is not currently using to satisfy the Current Water Usage shall be referred to herein as the "Excess Water Rights." LDG requires a minimum of approximately 600 acre-feet of water for the cooling and operational needs of the Power Plant, and Owner agrees that it shall make commercially reasonable efforts to meet those water requirements from the Excess Water Rights, and shall not lease or transfer any of its water rights until LDG's water requirements are being adequately met. Owner agrees to provide LDG access to and use of all Excess Water Rights as follows:

(a) Owner grants LDG the right to use Excess Water Rights for the drilling and testing of geothermal wells on the Subject Lands. LDG shall be responsible for all costs of connecting to Owner's water system.

(b) Owner hereby grants LDG the preferential right to the use of all Excess Water Rights for the development and operation of the Power Plant and the appurtenant geothermal resources. LDG shall install a metering system, at its own cost and expense, if necessary to comply with any requirements of any governmental agency or authority. LDG shall also bear the full cost of connections to Owner's water systems and infrastructure, and, if necessary, any upgrades to Owner's water system necessitated by LDG's use of the Excess Water Rights. LDG shall provide, free of cost, all electricity necessary for pumping any Excess Water Rights for LDG's use. LDG shall pay for any metering, studies or reports that may be required to establish a precise amount of Owner's available water rights, the amount of the Excess Water Rights and/or LDG's water needs for the Power Plant or geothermal resources development. Once the amount of LDG's water rights requirements are established, Owner and LDG agree to enter into a written water use agreement that evidences LDG's rights to the Excess Water Rights, which agreement shall be recorded in the county real property records ("Water Use Agreement"). Owner covenants and agrees not to transfer or sell any of the Excess Water Rights, until the Water Use Agreement is executed and recorded.

15. **Drilling of Water Wells on the Subject Lands.** LDG requires a certain amount of water to effectively produce geothermal energy from the Subject Wells. Owner understands that any drilling of water wells on the Subject Lands or land adjacent to the Subject Lands, under certain conditions, could significantly and adversely impact the ability of LDG to explore for and produce geothermal energy. Accordingly, Owner hereby agrees to not drill or construct any water wells on the Subject Lands or on adjacent property to the Subject Lands that Owner owns without first giving LDG written notice of its drilling plans to LDG. Owner agrees to use its best efforts to cooperate with LDG to obtain any additional water rights that LDG may need or apply for to drill the Subject Wells and/or generate electricity from the geothermal resources underlying or pooled with the Subject Lands.

16. **Notices.** Owner may give any notice or deliver any document hereunder to LDG by mailing the same by prepaid registered or certified mail addressed to LDG to the address set forth in the introductory paragraph above, attention General Counsel, or by delivering the same in person to the above-referenced address of LDG. LDG may give any notice or deliver any document hereunder to Owner by mailing the same by prepaid registered or certified mail addressed to Owner at the address set forth in the introductory paragraph above, attention Dale Burgett, or by delivering the same to Owner in person. For purposes of this paragraph, either party may change its address by written notice to the other. In case of any notice or document delivered by registered or certified mail, the same shall be deemed delivered when deposited in any U.S. Post Office, properly addressed as herein provided, with postage fully

prepaid. Notices shall be in writing and shall be given to LDG and Owner at the addresses set forth in the introductory paragraph hereto, or to such address as either party may designate to the other in writing, not less than thirty (30) days before that event which triggers notices. Notices shall be effective the third day after the date of mailing, postage prepaid.

17. **Rehabilitation and Restoration.** Upon termination of this Agreement, LDG shall restore the Subject Lands near as possible to their original conditions prior to construction in accordance with acceptable industry practices and all applicable laws and regulations in effect at the time of restoration. To the extent there is any environmental remediation required for property surrounding any ROW, Owner grants LDG a temporary right-of-way to use as much of the Subject Lands as it may require for environmental remediation. LDG shall have the right to use necessary space outside of the right-of-way for repair of any roadway or facilities. If upon termination of this Agreement, or intended abandonment of an Access Road ROW or some other ROW hereunder, LDG agrees and Owner elects to assume ownership and use of any road, well, or other Improvements, then Owner shall expressly assume all liabilities or responsibilities, including without limitation all future reclamation (or plugging and abandoning, for wells) obligations, and shall hold harmless LDG upon assumption of responsibility for such road, well or other Improvements.

18. **No Storage or Repair of Equipment.** LDG shall not allow any construction equipment or materials to be stored on Owner's property outside the confines of the fenced Power Plant ROW beyond ninety (90) days after completion of construction of a ROW or Improvements, unless approved, in advance, by Owner. LDG shall endeavor to maintain clean, neat and orderly roads and facilities at all times. No construction equipment shall be repaired or maintained upon the property of the Owner outside the boundaries of the fenced Power Plant ROW, except in the case of emergencies to prevent damage to the Subject Lands or neighboring properties. No motor fluids will be disposed of on the property of Owner.

19. **Taxes.** Owner shall continue to be responsible for the payment of property taxes, if applicable. LDG agrees to pay all additional taxes that may be assessed against the Subject Lands by reason of improvements placed thereon by LDG. Owner shall provide LDG with written evidence that Owner has paid all property taxes on the Subject Lands at least thirty (30) days prior to when due. If Owner fails to pay property taxes on the Subject Lands, LDG shall have the right, but not the obligation, to pay such tax obligations on Owner's behalf, and such payment, with interest accruing at Eighteen Percent (18%) per annum, shall be due and payable by Owner to LDG within thirty (30) days of payment by LDG.

20. **Recorded Right-of-Way; ROW Map.** Upon the request of LDG or Owner, LDG shall prepare a written right-of-way, in recordable form, which can be recorded in Hidalgo County to provide constructive notice of the exact location of any right-of-way granted pursuant to this Agreement. Moreover, LDG shall maintain a map of the Subject Lands (starting with Exhibit B) which reflects all surface uses and ROWs used or required by LDG, and as new ROWs are obtained by LDG under this Agreement, LDG shall amend and maintain a current map and survey of ROWs, a copy of which shall be provided to Owner.

21. **LDG Financing.** Owner agrees to execute any documents reasonably required by any lender of LDG to permit LDG to obtain financing for LDG's activities on the Subject Lands. Such documents may include, without limitation, a certificate of Owner confirming the validity and enforceability of this Agreement, that there are no defaults under this Agreement, that this Agreement shall survive any foreclosure and may be assigned to subsequent purchasers at foreclosure, consent of Owner to the grant of LDG's rights in this Agreement to a lender for security purposes, and any other covenants and agreements that are typically required by institutional lenders. Moreover, if Owner has existing deeds of trust, mortgages, or other liens on the Subject Lands at the time of this Agreement, Owner agrees to obtain subordinations from its lenders and lienholders with respect to this Agreement, on the form to be provided

by LDG, either prior to execution or within thirty (30) days after execution, as elected by LDG. The subordination agreement may be recorded with the Memorandum described in Exhibit C or recorded separately.

22. **Governing Law.** The laws of the State of New Mexico shall control the rights of the parties under this contract.

23. **Waiver.** By signing this Agreement, neither party waives its statutory and common law rights to occupancy and enjoyment of their respective estates, except as expressly provided in this Agreement.

24. **Assignment of Rights.** All rights and obligations under this Agreement shall run with the Subject Lands and shall inure to the benefit of and be binding upon the heirs, successors, or assigns of each party. LDG may assign its rights in this Agreement without the prior written consent of Owner, including, without limiting the foregoing, assignments for purposes of providing security for any loans. Moreover, LDG shall have the right to assign all or any portion of the ROWs to another entity or person, separate from ownership of the Subject Lease. The parties hereto agree to execute a memorandum of this Agreement which shall be in form sufficient to record in the Hidalgo County real property records, in the form provided by LDG.

25. **Amendment.** This Agreement constitutes the entire Agreement between the parties pertaining to the subject matter contained in it and supersedes all prior and contemporaneous agreements, representations, and understandings of the parties with respect thereto. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing by all parties.

26. **Counterparts.** This Agreement may be executed in counterparts. Each counterpart shall constitute an original and all counterparts together shall constitute one and the same document. Receipt by party hereto of an executed copy of this Agreement by facsimile shall constitute conclusive evidence of execution and delivery of the Agreement by the signatory thereto.

[Signatures on the following page]

Dated effective as of the date first written above:

OWNER:

ROSETTE, INC.

By: 

Name: Dale Burpee

Title: CEO

LDG:

LIGHTNING DOCK GEOTHERMAL HI-01, LLC

By: 

Name: Martin F. Petersen

Title: CFO

EXHIBIT A

Legal Description of the Subject Lands

- A. LDG is the owner of Federal Geothermal Lease NM -34790 ("Subject Lease"), granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the lease, described as follows:

1.

T25S, R19W, N.M.P.M.
Sec. 6: Lots 3, 4, 5, 6, 7, SE1/4NW1/4
Sec. 6: E1/2SW1/4
Sec. 7: Lots 1, 2, 3, 4, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4,
NW1/4NE1/4, NE1/4NW1/4
Sec. 18: Lot 1, N1/2NE1/4, NE1/4NW1/4

and

T25S, R20W, N.M.P.M.
Sec. 1: NW1/4SW1/4, S1/2SW1/4, SW1/4SE1/4
Sec. 11: NE1/4, S1/2
Sec. 12: ALL
Sec. 13: N1/2N1/2

Containing 2,500.96 acres, more or less

2. LDG has applied for Federal Geothermal Lease NM 108801, which is pending final approval by the BLM and will be included with the Subject Lease upon approval, granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the Subject Lease, described as follows:

T25S, R20W, N.M.P.M.
Sec. 14: All

Containing 640.00 acres, more or less

- B. Owner is the owner of the land ("Surface Lands") covering, in part, the Subject Lease, which is described as follows:

1. Sections 7 and 18
T25 S, R19 W, N.M.P.M

And

Sections 11, 12, 13, 14, and 23
T25 S, R20 W, N.M.P.M
Containing 2,592.473 acres, more or less

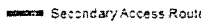
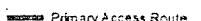
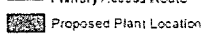
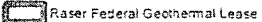

- C. "Subject Lands" shall be the surface area wherein LDG's Subject Lease underlies Owners Surface Lands.

EXHIBIT C

Sample Power Plant ROW and Access Roads for a Power Plant



Legend

-  Secondary Access Route
-  Primary Access Route
-  Proposed Plant Location
-  Raser Federal Geothermal Lease
-  Burgett Boundary

Lightning Dock Geothermal
Power Plant and
Access ROW
Hildago County, Nevada

Lightning Dock Geothermal HI-01, LLC
5152 North Edgewood Drive Suite 375
Provo, UT 84604

EXHIBIT D

Water Rights Description

A. Owner represents and warrants ownership of the following Water Rights identified by New Mexico Office of the State Engineer Numbers:

A-13, with points of diversion located in Section 13, Township 25 South, Range 20 West, N.M.P.M.

A-36-A, with points of diversion located in Sections 6 and 7, Township 25 South, Range 19 West, N.M.P.M., and Sections 4 and 12, Township 25 South, Range 20 West, N.M.P.M.

A-35-D, with points of diversion located in Section 7, Township 25 South, Range 19 West, N.M.P.M., and Section 4, Township 25 South, Range 20 West, N.M.P.M.

A-51, with points of diversion located in Section 10, Township 25 South, Range 20 West, N.M.P.M.

A-64-A, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-384, with points of diversion in Section 12, Township 25 South, Range 20 West, N.M.P.M.

A-385, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-386, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

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File		
N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State NA- Federal
5.a State Lease No.
Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input checked="" type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name N/A
2. Name of Operator Lightning Dock Geothermal HI-01, LLC	8. Farm or Lease Name N/A
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604	9. Well No. TFD 55-7
4. Location of Well Unit Letter _____ Feet From The East _____ Line and 2345 Feet From The South _____ Line, Section 7 _____ Township 25S _____ Range 19W _____ NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) 4201' GR	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input checked="" type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER _____ <input type="checkbox"/>

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

1. MIRU drill rig.
2. Drill out cement plug from 1450' to 1550' approx.
3. Drill out cement plug from 1890' to 2090' approx.
4. RIH to locate cement plug at 5400' approx.
5. Set bridge plug in 3000'-3400' interval.
6. Collect water samples for geochemical and environmental analysis.
7. Set production pump at 850' approx.
8. Release rig.
9. Hook up well for pump test to irrigation system.
10. Run pump test for up to four weeks.
11. Secure well.

Please see attached Proposed Operations and Drilling Plan for details.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE VP Resource Management DATE April 12, 2010

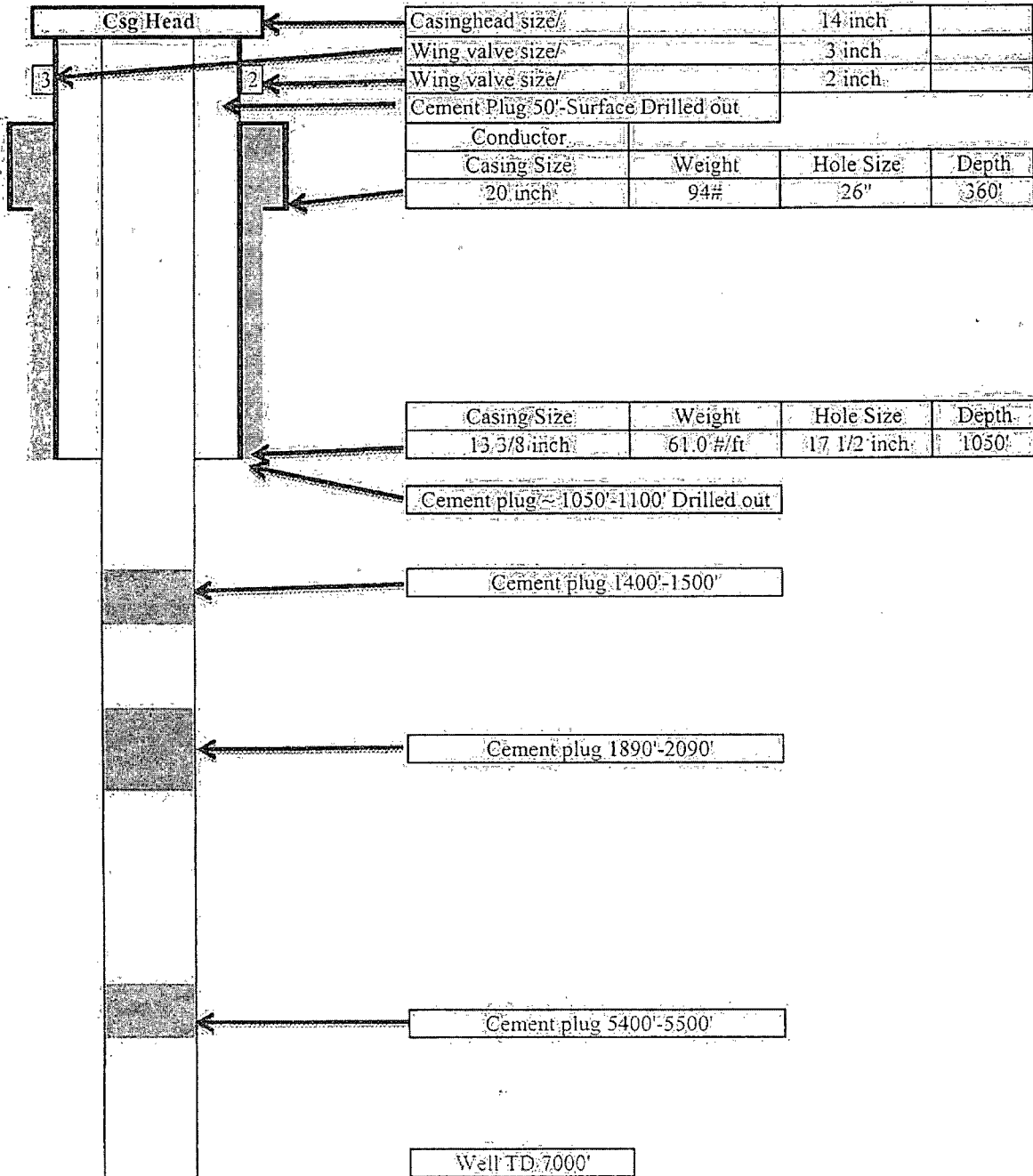
APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

AS IS NOW

Field Name:

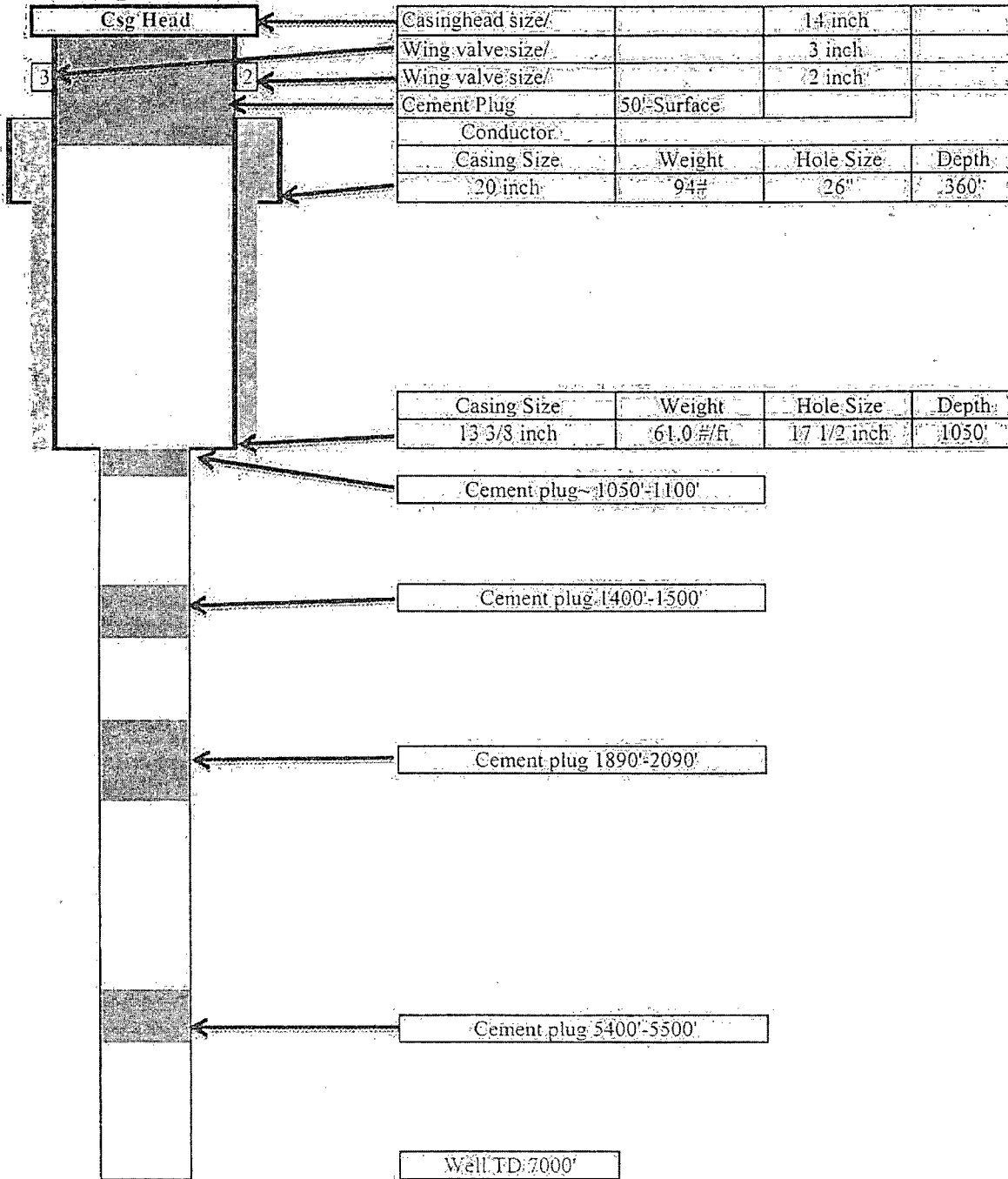
Lightning Dock



P&A 1985

Field Name:

Lightning Dock



Lightning Dock Geothermal HI-01, LLC
Proposed Operations and Drilling Plan, Well TFD 55-7

April 12, 2010

Prepared For:

New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, NM 87505

New Mexico Office of the State Engineer
Water Rights District III Office
301 South Tin Street, Deming, NM 88030

U.S. Department of the Interior, Bureau of Land Management
Las Cruces District Office
1800 Marquess Street, Las Cruces, NM 88005

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III. <u>Resource Test</u>	5
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D. Down-Hole Test Pump Specifications	14
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F. Surface Access Agreement	16

I. Summary of Proposed Operations:

Lightning Dock Geothermal HI-01, LLC, (“LDG”) is a wholly owned subsidiary of Los Lobos Renewable Power, LLC, which is wholly owned by Raser Technologies, Inc. (See Attachment A, Raser Technologies Corporate Structure). LDG proposes to re-enter and test well TFD 55-7 for the purpose of determining its suitability as a geothermal production well. LDG intends to mobilize a drilling rig about April 21, 2010 and will commence operations according to the Plan in Section II, below, as soon as approved by BLM and upon receipt of requisite permits from NMOSE and NMOCD.

The operations for which Lightning Dock Geothermal seeks permission in the present application are comprised of three parts:

- Remove two of the three remaining cement abandonment plugs set in the wellbore by Steam Reserve Corp. in 1985. The deepest plug will remain in place. Rosette, Inc., removed the uppermost two of the five Steam Reserve plugs pursuant to an NMOSE irrigation well permit. LDG intends to test the upper 3,400 ft of the open hole. The water will be sampled and analyzed in accordance with WQCC standards as described below. Compliance with those standards will be verified before any water is discharged in a pump test.
- Install a down-hole production pump and conduct a well and reservoir test. The discharged water will be metered and conveyed to a planted field for irrigation purposes. This will be done using standard farm irrigation equipment such as a wheel line. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Rosette, Inc. has agreed to provide the 2010 water rights to LDG for this test. LDG does not intend to use TFD 55-7 for injection in this operation. The existing unlined reserve pit may be used for cooling and water storage if approved by NMOCD upon receipt of produced water analyses.
- Install proper wellhead equipment and secure the well.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, LDG will proceed to obtain all approvals and permits (BLM, NMOCD, and NMOSE) required for further development.

II. Well Preparation

The first part of the operation requires reopening TFD 55-7 to collect fluid samples, set a bridge plug and install a test pump. The following is the proposed plan for the drilling operation. This detail is incorporated by reference into the BLM Drilling Program, described in Section V of this document.

- 1) Inspect wellhead for dimensional consistency with ANSI series 400 standards.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp circulating pump.
- 3) Install annular or rotating BOP on the wellhead above flow tee with gate valve on side outlet (see Attachment E).
- 4) Mix non-toxic gel-lime mud and fill hole.
- 5) Pick up slick bottom-hole assembly (BHA) #1: 8-1/2" insert bit, BS, 4x6" DC, jars, 1x6" DC, XO.
- 6) Test BOP for leakage by inflating around BHA and pumping in the side outlets to maximum working pressure of the surface piping, not to exceed 900 psig.
- 7) Run in hole and tag bottom, expected at about 1400 ft. Circulate bottoms up.
- 8) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. Airlift will be accomplished by injecting compressed air through the drilling assembly in sufficient quantity to stimulate flow to the surface. Discharging the flow line into a gauging tank will allow measurement of the produced liquid after its separation from the injected air. The volumes produced during the drilling operation will be recorded and will not exceed the storage capacity of the tank and reserve pit on site. No water will be discharged to "Waters of the State".
- 9) Pull out of hole and pick up 9-5/8" bit and stabilizers. Make up stiff BHA #2.
- 10) RIH and time drill cement plug #1. The plugs in well TFD 55-7 are of neat Portland cement. The plugs are reportedly each 50 - 400 ft in length and set in uncased open hole at about 1450 ft and 1850 ft. Time drilling and a "locked" (i.e., stiff and highly stabilized) BHA will be used to drill the plugs while staying in the original hole. Non-toxic, temperature-stable drilling mud will be used, composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit. The drilling fluids will bring the rock cuttings to the surface and then be cleaned and recirculated, preventing loss of drilling fluids into the rock and minimizing discharge into the reserve pit.
- 11) POH and stand back BHA #2.
- 12) Pick up BHA #3: float shoe, XO, 2x6" DC.
- 13) RIH and tag cement plug #2, expected at about 1800 ft.
- 14) Circulate hole clean.
- 15) Displace mud with water. POH to 1500 ft. Close BOP.
- 16) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 17) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 18) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ*

(i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."

- 19) POH, stand back BHA #3.
- 20) Pick up BHA #2. RIH to cement plug #2.
- 21) Circulate mud and drill out plug #2.
- 22) POH, lay down BHA #2.
- 23) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
- 24) POH, lay down BHA #3.
- 25) Run caliper log and select zone for bridge plug installation about 3400 ft.
- 26) Pick up bridge plug and BHA #4: setting tool and DCs as directed.
- 27) RIH and set bridge plug.
- 28) POH to 2800 ft, circulate hole clean.
- 29) POH to 1000 ft.
- 30) Airlift fluid in the wellbore if necessary to clean out well. Collect and analyze geochemical water samples and record volume of produced water. Water samples will be collected *in situ* (i.e., down hole) if possible but may be taken by sampling separator from the flow line. The airlift, water sampling, and analysis will be performed as described in step 8 of this Section and in Section I, above. The volume of produced water will be recorded. No water will be discharged to "Waters of the State."
- 31) POH laying down drill pipe; lay down BHA #4.
- 32) Make up 9-5/8" pump casing string and set test pump.
- 33) Release rig.

III. Resource Test

34) The results of the analyses from steps 8, 18 and 30 of the preceding section will be compiled in a single report and delivered to NMOCD, NMOSE, and BLM. If the discharge meets WQCC standards, LDG will confer with the agencies to verify the conditions are met for permitted discharge into an unlined reserve pit and delivery to an irrigation system. Should the quality of water not meet the standards of 20.6.2.3103 NMAC for irrigation, LDG will suspend flow test operations, redesign the test and seek approval of subsequent applications to NMOCD, NMOSE, and BLM.

35) Connect flow line to irrigation system.

The flow line will discharge the water into a gauging tank and thence into the irrigation transfer pump or the reserve pit. The pit measures 170 ft x 170 ft x 12 ft deep (see Attachment B). If WQCC standards (20.6.2.3103 NMAC) are met, the reserve pit will be left unlined. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

36) Conduct pump test as directed. LDG will conduct the pump test in consultation with engineers representing the interests of potential investors in the Lightning Dock project. The operation of the test may therefore vary from day to day, but will at all times conform to the requirements of the applicable NMOCD, NMOSE and BLM permits and regulations.

LDG plans to use a 12-inch American-Marsh vertical shaft 10 stage turbine pump for this test. The pump is owned by Raser Technologies and has performance characteristics detailed in Attachment F. The power for the pump will be a 300 hp electric motor with a variable speed controller. The pump will be set at approximately 850 ft depth to allow a maximum drawdown from static water level of about 700 ft. Engineering analysis of Raser's airlift test in 2008 suggests a flow rate of 400 gpm is likely from the well in its present state, i.e., open from 1050 ft to 1450 ft. Since lost circulation occurred at greater depths (e.g., 2275 ft) during the drilling of TDF 55-7, LDG expects the reopened hole may be able to supply fluid up to the pump's maximum capacity, approaching 1500 gpm at this depth.

The pumping rate during the first week of the test will be programmed to gradually bring in flow and to establish the reservoir deliverability as a function of water level drawdown. Thereafter, the rate will be set so as not to exceed the landowner's NMOSE-designated water rights. LDG expects to satisfy itself and its investors' engineers within a test pumping duration of four weeks.

Discharge water samples will be collected weekly and analyzed at an EPA Methods, QA/QC, DQOs-compliant laboratory. LDG will also monitor the discharge daily for standard field parameters including pH, turbidity, color, DO, and specific conductivity. If anomalous readings are detected that indicate a significant change in water source or properties, water samples will be collected immediately and discharge halted. Discharge will not be resumed until and unless laboratory analytical results confirm that the water meets the required criteria.

- 37) Move in and rig up well service rig.
- 38) Remove and lay down pump and casing.
- 39) Install master valve and survey flange.
- 40) Secure well and release rig.
- 41) File operations reports as required with NMOCD, NMOSE and BLM.

IV. BLM Operations Plan, 43 CFR 3261.12

(a) The proposed project is on private land. Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner. No surface disturbance of BLM-managed public lands is proposed.

Well Pad Layout and Design

The well pad layout is approximately 150 ft x 150 ft with an existing reserve pit measuring 170 ft x 170 ft x 12 ft adjacent to the pad.

See Attachment B – Lightning Dock Aerial Map

See Attachment C – Survey of Well Location

(b) Description of Existing and Planned Roads

The well site is accessed via existing state, county and private roads. As such no new roads are necessary for this activity. The primary access roads to the site include: SR-338 (paved); CO98 Geothermal Road (paved), which extends to the surface owner's property. All roads and access at the well site on the surface owner's property are existing compacted dirt and/or graveled.

(c) Description of Ancillary Facilities

Sanitary Facilities – Portable chemical sanitary facilities will be available and used by all personnel during periods of well drilling and/or flow testing.

Mobile drilling office will be set upon on the site during drilling activities.

Existing water holding pond 170 ft x 170 ft x 12 ft.

Trash collection facilities e.g. roll-off container.

(d) Source of Drill Pad and Road Building Materials

Drill pad building material will be derived from any necessary excavation of the existing reserve pit.

The pad will be graded to provide 2% grade to reserve pit.

Existing improved roads will be used.

Any additional material required for pad construction will be secured from a local contractor.

(e) Water Source

Water required for this operation will be secured from an established private owner.

Water derived from the operation will be discharged into a gauging tank and thence to an irrigation transfer pump or the reserve pit. The irrigation transfer pump (e.g., 25 hp centrifugal) will remove

discharged water from the tank or pit and send it via a 10 inch Victaulic line to the irrigation system for application to a crop under an existing NMOSE permit. The designated crop area is the area directly south of the plant site on Attachment B. Flow will be metered using a totalizing ultrasonic or orifice meter to ensure volume does not exceed the NMOSE-permitted total.

The water in well TFD 55-7 will be sampled and analyzed for dissolved fraction of all 26.2.3103 NMAC constituents, VOCs (8260B), SVOCs (8270C), PAHs (8310), TPH (418.1), metals – dissolved (6010B/6020) including Bromide, Lithium, Rubidium, and Tungsten (by approved EPA methods), Mercury (7470A/7471A), general chemistry (methods specified in 40 CFR 136.3), Uranium (6010B/6020), radioactivity (E903/E904), and Radon (EPA method approved by NMOCD). An EPA Methods, QA/QC, and DQOs-compliant laboratory will analyze samples.

Potable water for human consumption will be provided by bottled water.

(f) Statement Describing Surface Ownership

Surface of the well site is owned by Rosette, Inc. of Animas, NM. Lightning Dock Geothermal holds a Surface Access and Use Agreement, dated 10 January, 2008, with Rosette granting access to the well site.

See Attachment F -- Surface Access Agreement.

(g) Description of Procedures to Protect the Environment and Other Relevant Sources

Air Quality: During drilling activities hydrogen sulfide will be monitored by instruments on the drill rig.

Hydrology and Water Quality Monitoring: Water samples will be collected during the cleanout operation and tested to assure compliance with WQCC standards for agricultural use.

Portable chemical toilets supplied by a licensed contractor shall be used for human waste. The waste shall not be buried on site.

Trash and debris will be contained on site, and then hauled to an approved landfill by a licensed contractor. Burial and or burning on site will not be permitted.

Clearing and grubbing will be confined to the project area as approved by BLM in consultation with the landowner.

(h) Plan of Surface Reclamation

Top soil excavated during the construction of the pad, as feasible, will be stockpiled for use during subsequent reclamation of the disturbed area.

(i) Any Other Information That BLM May Require

Will be provided upon request.

V. BLM Drilling Program, 43 CFR 3261.13

(a) Description of Equipment, Materials and Procedures

A large portable rotary drill rig will be used to drill the well.

Equipment Specifications:

The availability of equipment and contractors changes from day to day. LDG will make its selection based on the best units available when the necessary permits are received. The rig will be functionally similar to the following: Drawworks – Taylor RT 5000; Mast – Taylor RT 5000 square set derrick; Substructure – Height 10 ft hydraulic w/ 15 ft K.B. elevation; Two (2) mud pumps; Rotary table; Swivel & Drilling Block; Tripping Block; Generators 235 kW, Air Compressor 500 SCFM.

Procedures will be as described in Section II, Well Preparation.

(b) Proposed / Anticipated Depth of the Well:

The well will be drilled and completed to the designed depth of 3,400 ft.

(c) Directional Drilling:

No directional drilling will be employed.

(d) Casing and Cementing Program:

This is a re-entry into an existing well that currently has cemented casing to approximately 1050 ft and approximately 400 ft of open hole to the first plug at a depth of approximately 1450 ft. The remainder of the well is open hole to the TD of 7000 ft. No additional casing or cement will be utilized in the operation to open this well to 3400 ft.

(e) Circulation Media (mud, air, foam, etc.)

The well will be drilled to a depth of 3,400 ft using non-toxic, temperature-stable drilling mud or aerated fluids. The drilling mud is composed of a bentonite clay-water or polymer-water mix to lubricate and cool the drill bit, bringing the rock cuttings to the surface discharged into the reserve pit, and preventing loss of drilling fluids into the rock.

(f) Description of Logs to be Run:

Caliper Logs

(g) Description and Diagram of Blowout Prevention Equipment:

Blowout prevention equipment (BOPE), which is typically inspected and approved by the BLM and/or the Oil Conservation Division (NMOCD) of the New Mexico Energy, Mining, and Natural Resources

Department (NMEMNRD), as applicable, would be installed, tested and ready for use while drilling to ensure that any geothermal fluid encountered does not flow uncontrolled to the surface.

See Attachment E.

(h) Expected Depth and Thickness of Fresh Water Zones:

N/A – existing casing is set to 1,000 ft hence no fresh, shallow water getting into well.

Static water depth is 71 ft. Total available water column of 1300 ft available

(i) Anticipated Lost Circulation Zones

None anticipated. The only instance of lost circulation recorded by Steam Reserve in the interval 1050 ft – 3400 ft was a minor episode at 2275 ft. That was successfully treated with a small batch of lost circulation material. This is below the deepest plug that LDG intends to drill out. LDG therefore anticipates that lost circulation will not be encountered in carrying out the proposed program.

(j) Anticipated Reservoir Temperatures and Pressures:

Temperature: Peak temperatures have been recorded at 307.4 F at a depth of 1263 ft remaining constant to 1400 ft.

Pressures: High pressure at the depth of 1365 ft is 549.66 psig.

(k) Anticipated Temperature Gradient in the Area:

The regional heat flow is ~80-90mW/m² (Blackwell and Steele, 1992). This heat flow would yield a temperature gradient of about 35°C/km (1.9°F/100 ft) in igneous rocks and 60°C/km (3.3°F/100 ft) in valley fill clays. Most of the non-thermal wells have a gradient near 45°C/km (2.5°F/100 ft). Therefore, 45°C/km (2.5°F/100 ft) will be taken as the background temperature gradient value for the valley fill.

Thermal gradient conditions will range from 78°C/km (4.3°F/100 ft) (*well 672-225*) to 200C/km (11°F/100 ft) (*well 93-8 and AN-104*) and will be similar or higher in 55-7.

(l) Plat Certified by a Licensed Surveyor:

See Attachment C.

(m) Procedures and Duration of Well Testing

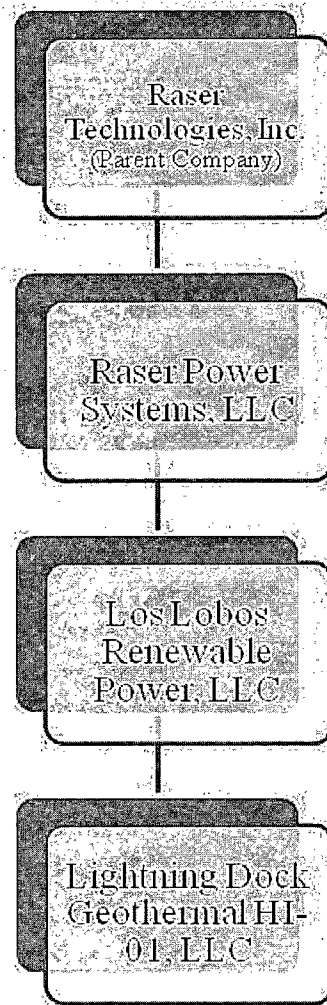
See Section II, Resource Test

(n) Any Other Information That BLM May Require

Will be provided upon request.

Attachment A

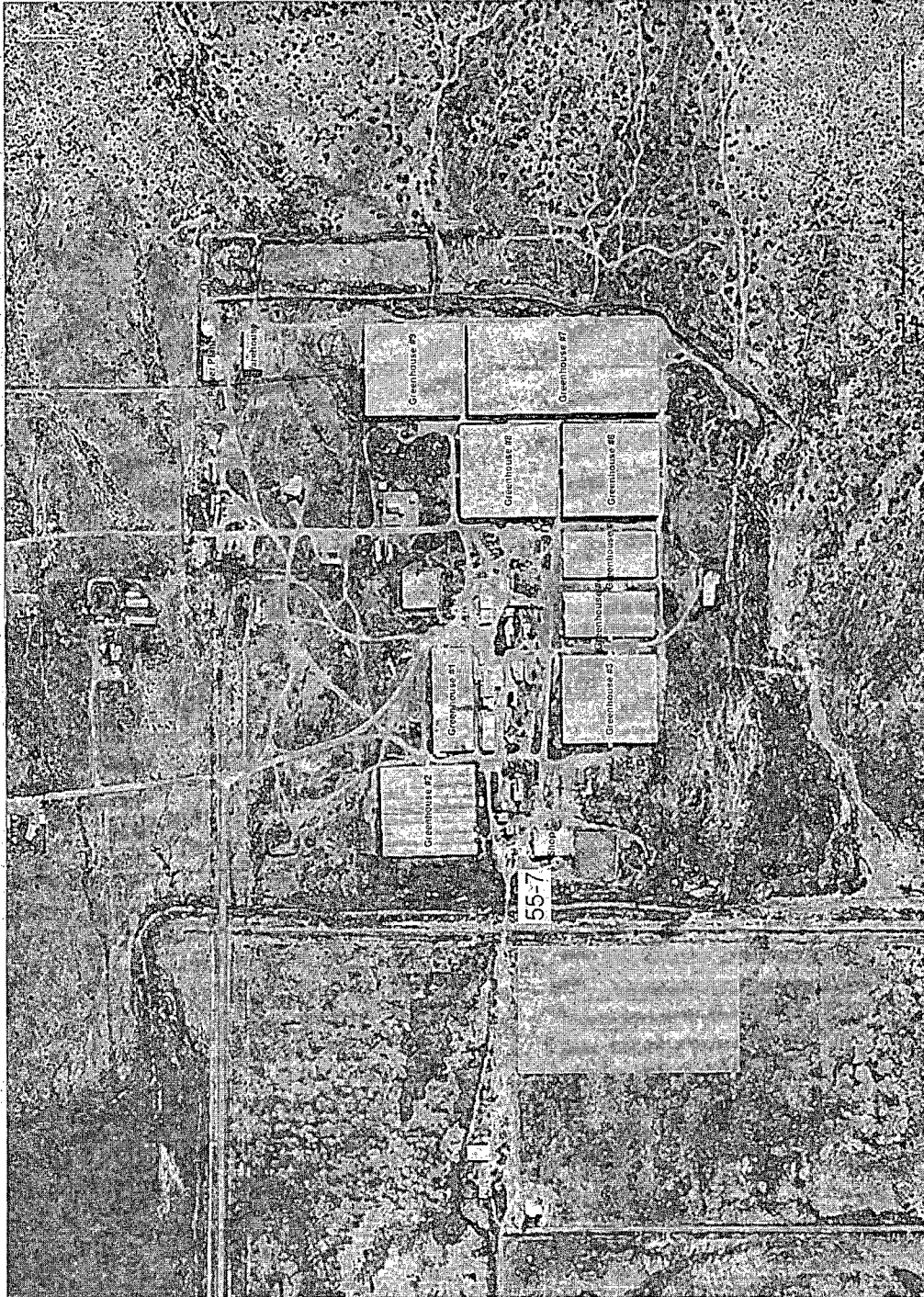
Raser Technologies Corporate Structure



Lightning Dock Geothermal HI-01, LLC is the permit applicant and operator. The illustration above describes the corporate organization of which Lightning Dock Geothermal is a part as follows: Raser Technologies, Inc is the parent company, Raser's geothermal development company is Raser Power Systems, LLC, the New Mexico entity is Los Lobos Renewable Power, LLC, and Lightning Dock Geothermal HI-01, LLC is the Animas, NM project entity.

Attachment B

Lightning Dock Aerial Photo Map

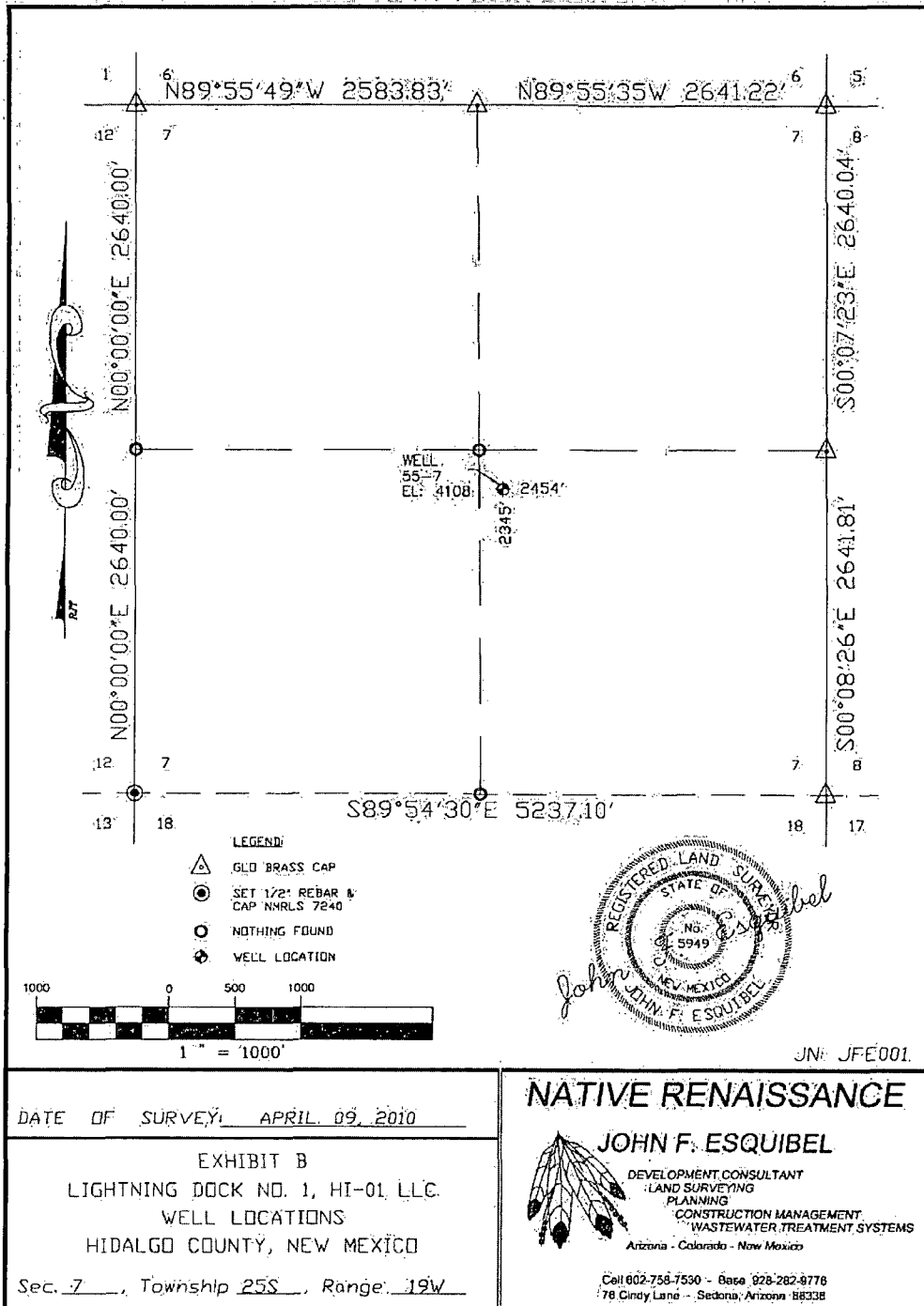


Lightning Dock Geothermal Aerial Map,
Animas Valley, NM



Attachment C

Survey of Well 55-7 Location



Attachment D

Down-Hole Test Pump Specifications

Pump Data Sheet - American-Marsh Pumps

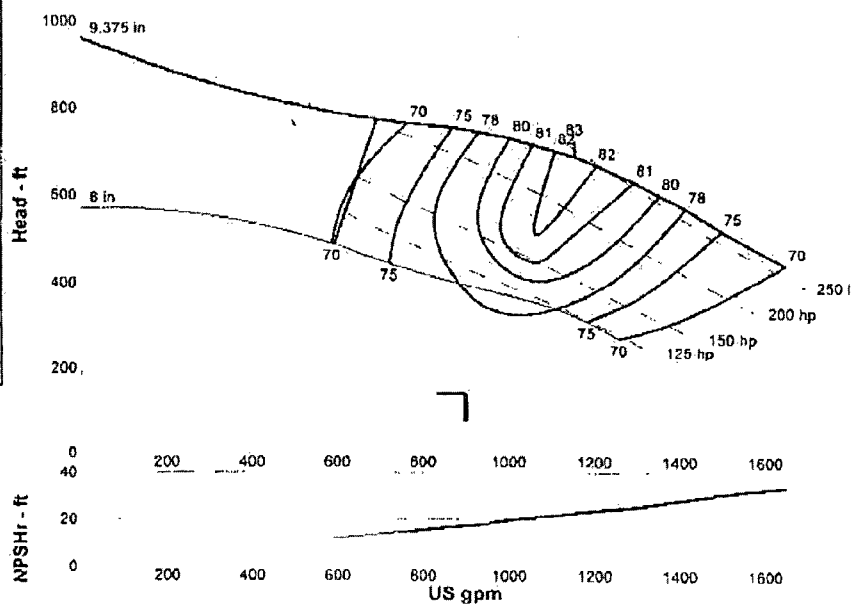
Company:
 Name:
 Date: 7/9/2009



Pump
 Size: 12MC (10 stage)
 Type: 480 VRT-TURBINE/ENCL
 Synch speed: 1800 rpm
 Curve: 2951
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
Pump Limits
 Temperature: 250 °F
 Pressure: 584 psi g
 Sphere size: 0.625 in
 Speed: 1760 rpm
 Dia: 0.375 in
 Impeller:
 Ns: 2526
 Nss: 5695
 Suction: 8 in
 Discharge: 6 in
 Bowl size: 11.25 in
 Max lateral: 0.75 in
 Thrust K factor: 10.6 lb/ft
 Power: 450 hp
 Eye area: --- in²

Search Criteria
 Flow: 900 US gpm
 Head: 140 ft
Fluid
 Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a.
 Atm pressure: 14.7 psi a.
Motor
 Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 300 hp
 Speed: 1800
 Frame: 448T

Data Point	
Flow:	1152 US gpm
Head:	688 ft
Eff:	82%
Power:	243 hp
NPSHr:	22.9 ft
Design Curve	
Shutoff head:	960 ft
Shutoff dP:	415 psi
Min flow:	693 US gpm
BEP:	83% @ 1155 US gpm
NOL power:	263 hp @ 1500 US gpm
Max Curve	
Max power:	263 hp @ 1500 US gpm

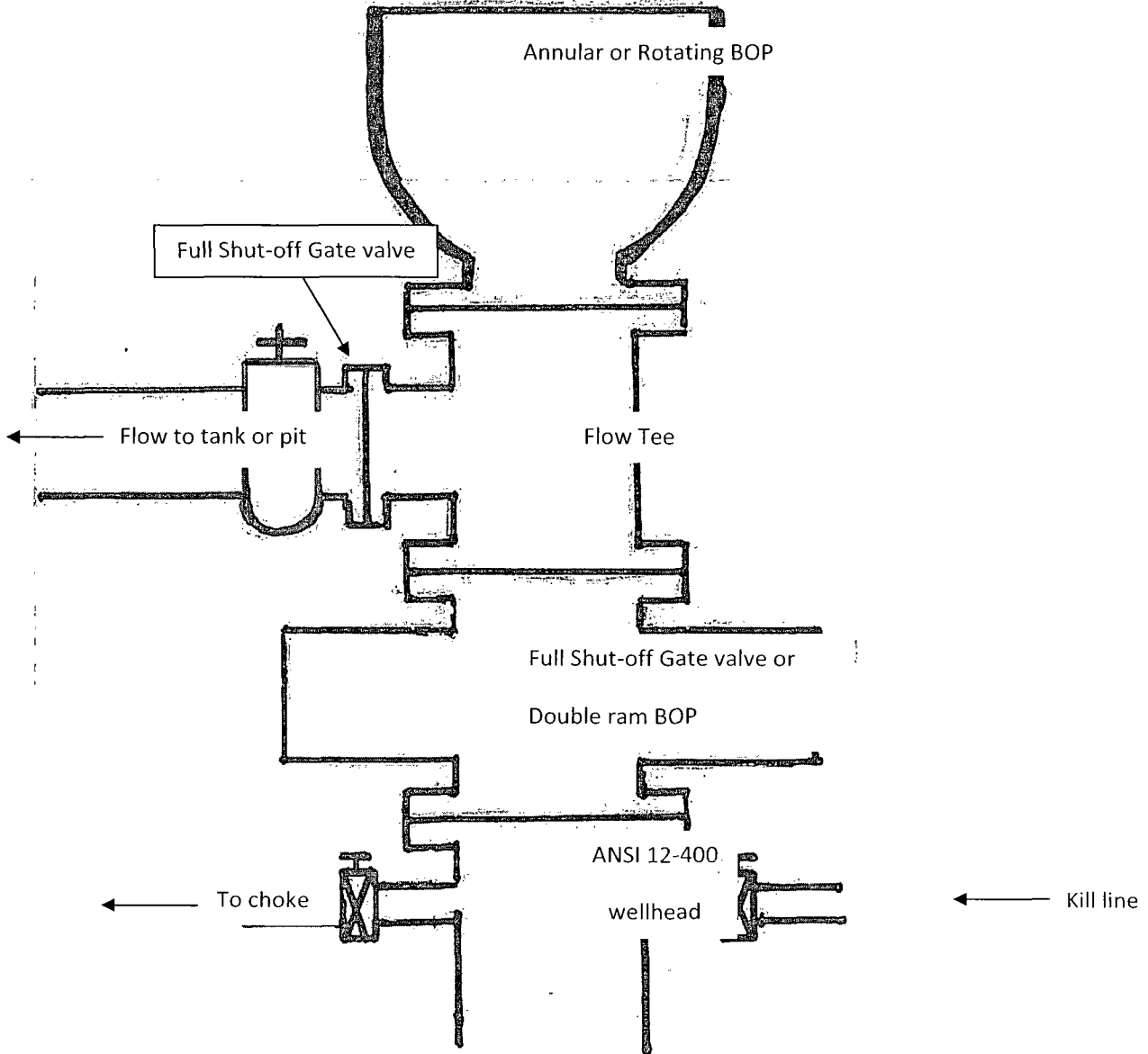


Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1080	1760	709	81	237	21.4
900	1760	749	76	223	17.5
720	1760	778	68	207	14.1
540	1760	---	---	---	---
360	1760	---	---	---	---

Attachment E

Blowout Prevention Equipment Diagram



Attachment F

Surface Use and Access Agreement

Between

Rosette, Inc.

And

Lightning Dock Geothermal HI01, LLC

January 10, 2008

SURFACE ACCESS AND USE AGREEMENT

This SURFACE ACCESS AND USE AGREEMENT ("Agreement") is executed effective January 10, 2008, by and between ROSETTE, INC., with an address of 26 Rose Land, Animas, NM 88020 ("Owner"), and LIGHTNING DOCK GEOTHERMAL HI-01, LLC, with an address of 5152 North Edgewood Drive, Suite 375, Provo, Utah ("LDG").

RECITALS:

A. Owner owns record title to the surface estate of certain real property located in Hidalgo County, State of New Mexico, more particularly described on Exhibit A hereto (hereinafter the "Subject Lands"). The United States of America, through the Bureau of Land Management (the "BLM"), owns the reserved mineral estate, which includes the geothermal estate. Owner owns greenhouse operations which are warmed during the winter months by heat supplied by the utilization of geothermal resources near, on, or around the Subject Lands.

B. LDG is the current owner of a Federal Geothermal Lease NM-34790, issued February 1, 1979 ("Subject Lease"), wherein the BLM has granted the holder of the Subject Lease the right to explore for and develop the geothermal resources underlying the lands covered by the Subject Lease, which includes the Subject Lands. Amax Exploration, Inc. ("Amax"), a prior owner of the Subject Lease, and a predecessor of Owner entered into a letter agreement dated December 14, 1978 ("1978 Agreement"), whereby Amax was granted access to the Subject Lands to develop the Subject Lease. The 1978 Agreement granted Owner's predecessor the right to drill to a depth of 1000 feet below the surface and extract geothermal resources there from for use in its greenhouse operation. After litigation with the BLM, Owner abandoned use of the geothermal resources from the Subject Lease and Subject Lands, and, pursuant to the settlement agreement with the BLM, Owner has certain plugging and abandoning, and reclamation responsibilities.

C. LDG intends to utilize certain existing geothermal wells on the Subject Lands and to drill additional geothermal wells or reinjection wells (such existing and initially proposed wells, as depicted on Exhibit B, and all future wells that may be proposed and drilled by LDG are defined herein collectively as the "Subject Wells") on a portion of the Subject Lands (such initial proposed well-sites, as depicted on Exhibit B, and all future well-sites that may be required for future wells, are referred to herein collectively as the "Well-Sites"), which Well-Sites will include typical geothermal energy exploration production or reinjection equipment and facilities. In connection with accessing, drilling and operating the Subject Wells and access to power generation facilities, LDG requires a portion of the Subject Lands to construct and maintain access roads crossing the Subject Lands, including, without limitation, existing roads on the Subject Lands (an "Access Road ROW" and collectively the "Access Road ROWs"). In addition, LDG requires or may require a portion of the Subject Lands to construct and maintain power plants, utilities, transmission lines, water pipelines, water storage and other facilities related to the production, extraction, transportation and reinjection of geothermal resources and the generation and transportation of electricity therefrom (all such improvements constructed or to be constructed by LDG on the Subject Lands are referred to herein collectively as the "Improvements"). LDG shall attempt to locate all such Improvements that require linear rights-of-way within the boundaries of the Access Road ROWs when and where economically and operationally feasible, and Owner herein grants Access Road ROWs of sufficient length and width to accommodate any necessary or contemplated Improvements. Furthermore, it may become necessary for LDG to obtain other rights-of-way to accommodate Improvements that cannot be located within an Access Road ROW, including without limitation, the Power Plant ROW, defined below, water storage areas, temporary construction easements, and other non-

linear surface uses (an "Other ROW" and collectively the "Other ROWs"). The rights-of-way for the necessary Well-Sites (a "Well Site ROW" and collectively the "Well Site ROWs"), the Access Road ROWs and the Other ROWs, including the Power Plant ROW (defined below), are referred to herein individually as a "ROW" and all such rights-of-way granted or to be granted hereunder shall be collectively referred to as the "ROWs."

D. Given the changed circumstances recited above, LDG and Owner desire to cancel and terminate the 1978 Agreement and enter into a new surface use and access agreement that memorializes their discussions and agreements regarding LDG's access to and use of the surface estate of the Subject Lands, and consideration provided therefore, for the drilling of the Subject Wells, the construction of the ROWs and the development of the Improvements on the Subject Lands. The 1978 Agreement shall terminate upon the execution of this Agreement.

E. LDG and Owner have also agreed that LDG shall have access to and use of certain water rights that are owned by Owner, as more particularly described below.

AGREEMENT:

NOW THEREFORE, in consideration of the mutual promises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto incorporate the recitals above herein and agree as follows:

1. **Term of Agreement.** The rights, including all ROWs, granted by this Agreement shall continue until the rights of LDG, its successors or assigns, to explore for, develop, extract or produce geothermal energy from the Subject Lease, or from lands pooled with the Subject Lease, permanently and irrevocably terminates; provided that the rights granted to LDG herein shall survive the termination of the Subject Lease, so long as the power plant and related facilities on the Subject Lands are capable of producing electricity.

2. **Existing Wells.** Owner hereby grants LDG, its employees and designated agents, and its successors and assigns, the right to access, re-open, re-drill, utilize, deepen, or to plug and abandon, when and if LDG deems it necessary in furtherance of its operations on the Subject Lands, the following wells, and any other geothermal wells which exist on the Subject Lands: TFD 55-77, EGS 12-7, GRED 52-7, GRED 36-7, GRED 57-7, and EGS 56-14 (collectively, the "Existing Wells"); provided however that the Existing Wells shall not include Well #16 on Exhibit B, which is a water well that is being used by Owner. Owner grants LDG access to and the right to conduct any necessary operations with respect to the Existing Wells, as and where depicted on Exhibit B, except for monitoring purposes, subject to modification by LDG upon a final inspection and survey of the Subject Lands. The Well-Site ROWs for the Existing Wells (and all future wells) shall be initially large enough to accommodate drilling operations, not to exceed 6 acres, but shall contract upon completion of the wells to area sufficient for operation and maintenance of the well, not to exceed 3 acres. One or more of the Existing Wells are close to existing structures or equipment that is stored on the Subject Lands, that may impede access, and LDG agrees to pay for the costs of repairing any damage caused by LDG's access or to pay the costs of removing or relocating any structures or equipment, in coordination with Owner. Owner hereby also grants LDG Access Road ROWs, with the right to use and expand existing roads, or construct and maintain new roads, as determined by LDG, to and for the development of the Existing Wells (the "Initial Access Road ROWs") as and where depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. Owner and LDG agree that the Initial Access Road ROWs, the centerline of which is approximately depicted on Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands, shall initially be sixty (60) feet wide. LDG shall have the right to install additional pipelines, utilities, transmission lines and other Improvements along the Initial Access Road ROWs if it becomes necessary in its operations of the Existing Wells (or

future wells either on or adjacent to the Subject Lands). Owner grants to LDG certain Other ROWs that LDG may require for development of the Existing Wells, for other Improvements or uses that cannot be placed within the boundary of the Initial Access Road ROWs, including, without limitation, water storage areas, permanent or temporary construction areas, and the other rights-of-way needs and uses, as depicted on Exhibit B, or as requested by LDG subsequent to the execution of this Agreement. Once the Well-Sites for the Existing Wells, the Initial Access Road ROWs, and any other initial Other ROWs granted hereunder have been surveyed and precisely identified by legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the initial ROWs described herein.

3. **Power Plant ROW.** As noted above, LDG intends to construct a power plant and related facilities, including geothermal pipeline and utility connections to the plant and transmission facilities out of the plant (the "**Power Plant**"), which power plant site and connections shall require and constitute a "**Power Plant ROW**." The Owner hereby grants to LDG an exclusive Power Plant ROW to survey, inspect, construct, develop and operate the Power Plant and any related or necessary facilities or Improvements. The Power Plant ROW shall be evidenced by a recorded right-of-way, with a term that extends for as long as the power plant facilities are capable of production of electricity, and for a period of time thereafter for dismantling and remediation, as described below. LDG and Owner shall cooperate to locate the Power Plant ROW in a manner that minimizes the effect on Owner's existing surface uses; provided that, notwithstanding the foregoing, the Power Plant ROW shall be in a location on the Subject Lands that maximizes efficient access to and use of geothermal resources, and to electricity transmission infrastructure and markets. LDG has delivered to Owner a rough map of a possible Power Plant site, along with primary and alternate access roads for the Power Plant site, a copy of which is attached hereto as Exhibit C, and Owner and LDG mutually acknowledge and agree that the approximated rights-of-ways and Power Plant site set out on that rough map would be an example of an acceptable location. LDG agrees to fence and secure the Power Plant ROW. If the Power Plant is no longer capable of production of electricity or if LDG otherwise elects to permanently shut down the Power Plant facilities for any reason, LDG shall provide Owner with written notice of its intent to shut down the facilities. After giving notice of intent to shut down and dismantle the plant, LDG shall have three (3) years to dismantle and remove all infrastructure and improvements pertaining to the Power Plant, including all utilities and transmission facilities, and to remediate the underlying property to its natural condition. Upon the request of LDG, Owner agrees to grant LDG a lease, in a recordable form, with a term that lasts for as long as the Power Plant is in existence and a reasonable time thereafter for dismantling, removal and remediation, of approximately twenty (20) acres (subject to the needs of the Power Plant and the activities of LDG in connection therewith), for the land necessary for the Power Plant and related facilities, at an annual rental rate of \$60 per acre.

4. **Future Subject Wells, ROWs, and Improvements.** LDG intends to develop future Subject Wells on the Subject Lands (in addition to the Existing Wells) ("**Future Wells**"). Additionally, LDG intends to construct and maintain related pipelines, utilities, transmission lines, production facilities, power generation facilities, water storage areas, access roads and other Improvements for such future Subject Wells. Prior to the development of any future Subject Well (not one of the Existing Wells) or Improvements on the Subject Lands in connection therewith, LDG shall provide Owner, in writing, notification of the proposed location of the desired Subject Well(s), Access Road ROW(s), or Other ROW(s) necessary for contemplated Improvements, and a description of the Subject Well(s), Access Road ROW(s) or Other ROW(s) to be constructed (individually and collectively, as the context requires, any "**Future ROWs**"). Within fifteen (15) days of such written notice, LDG and Owner shall discuss the location of the necessary Future ROWs, in an attempt to locate any such Future ROWs in locations that reasonably minimize the impact to the current surface uses of Owner but that do not result in an undue economic or operational burden to LDG. The parties acknowledge and agree that such Well-Site ROWs (for Future Wells) and other Future ROWs shall be located in areas that will maximize recovery and

efficient use of geothermal resources. LDG and Owner agree to meet on the Subject Lands, at the request of either party, in connection with the location of Future ROWs, to discuss such locations. Once Future ROWs have been identified and surveyed for a precise legal description, Owner and LDG shall execute written rights-of-way, in form sufficient for recording in Hidalgo County, that conclusively identify the Future ROWs.

5. **1978 Agreement.** Owner and LDG mutually agree to terminate and cancel the 1978 Agreement as of the execution date herewith, and replace the 1978 Agreement with this Agreement. Owner agrees to release LDG of any obligations or claims arising under the 1978 Agreement, and LDG agrees to release Owner of any obligations or claims arising under the 1978 Agreement. Owner and LDG understand that this Agreement is intended to replace and supersede the 1978 Agreement.

6. **Consideration for Agreement.** As consideration for the execution of this Agreement, LDG shall provide the following to Owner:

(a) Upon execution of this Agreement, LDG shall pay to Owner a one-time payment in the amount of Three Hundred Twenty Thousand and No/100 Dollars (\$320,000.00).

(b) LDG shall pay Owner a minimum annual fee of \$1,000.00 as consideration for use of or access to Owner's existing cold water delivery infrastructure. Thereafter, LDG shall pay the \$1,000.00 fee prior to the anniversary date of this Agreement, provided that failure to make such payment shall not constitute an event of breach or default under this Agreement, until Owner has provided LDG with written notice of the failure to make such payment, and LDG fails to make such annual payment within twenty (20) days of such written notice. Moreover, in the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water delivery infrastructure shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

(c) For the use of cold water (see Section 14(b)) provided by Owner to LDG for cooling and other purposes, LDG has agreed to pay an annual payment equal to \$50 per acre foot of water to be used by LDG during the next year, less the \$1000.00 minimum fee set forth above (in other words, the \$1000 fee set forth in Section 6(b) above shall be included as part of, and not in addition to, the annual payment described in this Section 6(c)). LDG shall provide to Owner an estimate of the amount of acre feet of water that LDG shall use for the following year, and shall pay the annual payment based on such estimated amount, prior to the anniversary date of this Agreement. At the end of such year, if LDG's use of water for the prior year exceeded the estimate, then LDG shall remit the payment for such acre feet used in excess of the estimate for the prior year with the payment for the next year's estimated water uses. The consideration set forth in Section 6(a) above includes the first year's payment for water use under this Agreement. In the event LDG fails to make such payment after such 20-days written notice, LDG's right to access Owner's cold water shall terminate, but the remainder of this Agreement shall remain in full force and effect (including all ROWs granted or to be granted hereby).

7. **Cessation of Development or Abandonment of Lease.** LDG intends to explore for geothermal resources on the Subject Lease for the purpose of generating electricity. If LDG fails to take reasonable actions to commence exploration for or development of geothermal resources on the Subject Lease within two (2) years of the date of this Agreement, or if LDG determines at any time, either before or after such two (2) year period, to abandon development of geothermal resources on the Subject Lease (and provides Owner with written notice of such intent to abandon the Subject Lease), then LDG agrees to take such reasonable steps necessary to designate Owner as an operator (with the BLM) for purposes of operating shallower formations under the Subject Lease (down to 1000 feet, consistent with the historical operations of Owner), or, if LDG determines it is in its interest, to assign operating rights in the Subject Lease to

Owner from the surface down to 1000 feet. Notwithstanding the foregoing, if LDG determines that it intends to completely abandon the Subject Lease, and provides written notice of such intent to Owner, then LDG shall assign the entire lease over to Owner, upon assumption by Owner of all rights and responsibilities under the Subject Lease. Moreover, LDG agrees that in connection with such designation of operator, it shall agree to turn over to Owner the following Existing Wells, as shown on Exhibit B, unplugged and accessible: Well #10, Well #11, and Well #25, provided however that Owner shall assume all plugging, abandoning, reclamation and other responsibilities for such wells and shall post any required bonds in connection with the assignment and assumption of such wells. The foregoing agreement of LDG to designate Owner as an operator (or assign operating rights or all of the Subject Lease) is subject to the approval of the BLM. LDG's commitment to commence exploration and development activities on the Subject Lease is also subject to delay or suspension as result of events of Force Majeure. "Force Majeure" shall include, without limitation, the following: strikes; lockouts; riots; action of the elements, including but not limited to fire, explosion, flood, volcanic activity, earthquakes, or tidal waves; accidents; delays in transportation; inability to secure labor or materials in the open market; laws, rules or regulations of any Federal, State, County, Municipal or other governmental agency, authority or representative having jurisdiction, including failure or delay in issuance of necessary permits or approvals; war (whether declared or undeclared including terrorist acts); acts of God; litigation or administrative proceedings affecting title to lands covered hereby or operations thereon; inability to secure or absence of a market for commercial sale of geothermal resources or electricity generated therefrom; produced from the Subject Lease or of derivatives developed by LDG therefrom; or by other matters or conditions beyond the reasonable control of LDG, whether or not similar to the conditions or matters in this definition specifically enumerated.

8. **Cooperation.** Owner agrees to reasonably cooperate with LDG, in good faith, to support and promote the successful development of geothermal resources and the generation of electricity from the Subject Lease.

9. **Pipelines, Utilities.** LDG hereby agrees to locate all pipelines and other linear utilities at all points along an applicable Access Road ROW or Other ROW where reasonable and practical. However, there may be instances where pipelines, transmission facilities and other Improvements cannot be placed along an Access Road ROW, in which case LDG shall be granted separate Other ROWs for such uses. LDG shall not be required to bury pipelines or other utilities.

10. **Access Road ROWs.** LDG agrees that it shall construct and/or improve all currently contemplated new roads and existing roads along the center line(s) approximately depicted on the attached Exhibit B, subject to modification by LDG upon a final inspection and survey of the Subject Lands. During the construction or improvement of any road, under an Access Road ROW, including the installation of pipelines and other utilities, the right of way shall be sixty (60) feet wide, and LDG shall have a temporary license to use other portions of the Subject Lands during the construction phase of such roads (including the installation of pipelines and other utilities) to park equipment or store gravel or other supplies, provided that LDG shall replant and restore any temporary use areas to their natural condition prior to construction. Upon completion of construction of the road (or expansion or improvement of existing roads) and installation of pipelines and other utilities, the Access Road ROWs shall be forty (40) feet wide. The roads shall be graded and improved with gravel. LDG agrees that it shall maintain the Access Road ROWs to industry standards as a gravel road during the term of this Agreement. LDG shall not be obligated to remove snow that may accumulate on the road, and shall not be responsible for paving the road, providing curb and gutter, or otherwise improving the road to accommodate increased traffic from Owner's lands. The same provisions of this Section 10 shall apply to all future roads and Access Road ROWs to be constructed and maintained by LDG on the Subject Lands, including Access Road ROWs or Other ROWs to the Power Plant ROW.

11. **Owner's Right to Use the ROWs.** LDG shall have the exclusive right to use and maintain the Well Site ROWs and any Other ROWs (including the Power Plant ROW). LDG shall have the non-exclusive right to use and maintain the Access Road ROWs during the term of this Agreement for its purposes. LDG hereby agrees that Owner, and its successors, assigns, employees, agents, invitees and licensees, shall have the right to use the Access Road ROWs for access to the remainder of Owner's property as currently owned and used. Owner, and its successors, assigns, employees, agents, invitees and licensees shall not interfere with LDG's operations on the Subject Lands or the use or maintenance of the Access Road ROWs (or the other ROWs), and Owner shall be responsible for any cost of repairing damage to any road caused by Owner, or its successors, assigns, employees, agents, invitees and licensees. Any proposed use of or modification to an Access Road ROW by Owner, or its successors, assigns, employees, agents, invitees and licensees, which would or may be likely to injure, damage or interfere with the Access Road ROW, shall require the prior written consent of LDG, an express agreement of Owner to assume all costs and damages, and shall require, at LDG's option, the presence of LDG's agent or employee to monitor the activity. Owner, and its successors, assigns, employees, agents, invitees and licensees shall abide by all written safety and other instructions regarding use of the roads that are provided by LDG. When LDG no longer requires an Access Road ROW for its operations, LDG shall provide written notice of its intent to abandon use and Owner shall have the option to assume control and maintenance over the Access Road ROW by notifying LDG within thirty (30) days of receipt of such notice; otherwise, LDG shall remediate and restore the property covered by an Access Road ROW in accordance with applicable law.

12. **Indemnification.**

(a) Owner, its successors and assigns, does hereby agree to relieve, release, indemnify and hold LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, harmless and agree to defend LDG, its managers, members, successors, assigns, employees, agents, invitees and licensees, from any claim of damage to any person or property arising out of use of any ROW or other activities on the Subject Lands for damages proximately caused by Owner, its successors, assigns, invitees, and licensees, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, and witness fees, and other monies expended by or incurred by LDG or its agents, in the event it shall become necessary for LDG or its agents to defend themselves from any claims made by anyone as a result of the use of any ROW or other activities on the Subject Lands, by Owner, its successors, assigns, invitees, and licensees, but not otherwise.

(b) LDG, its successors and assigns, hereby agree to relieve, release, indemnify, and hold harmless and agree to defend Owner, its successors, assigns, employees, agents, invitees and licensees from any and all claim of damage to any person or property arising out of use of the Subject Lands for operations by LDG or its agents for damages proximately caused by LDG or its agents, which damages include specifically but without limitation, all damages sounding in tort (whether by way of nuisance, trespass, ultrahazardous activity or otherwise) and/or involving environmental contamination and its incident response, compensation or liability, and also including all expenses, reasonable attorneys' fees, court costs, witness fees and other monies expended by or incurred by Owner, its successors, assigns, employees, agents, invitees and licensees in the event it shall become necessary for Owner, its successors, assigns, employees, agents, invitees and licensees to defend themselves from any claims made by anyone as a result of LDG's operations, on, across or over the Subject Lands, but not otherwise.

13. **Confidentiality.** Owner hereby agrees, unless compelled by court order or subpoena, that the terms and conditions of this Agreement, including but not limited to the payments referenced in Section 6

above, shall remain confidential and will not be disclosed or released to any other person(s) or third parties. LDG can disclose the existence and terms of this Agreement at its discretion.

14. **Water Rights.** Owner currently owns water rights that pertain to the Subject Lands, which are more particularly described in Exhibit D hereto. Owner is currently using a portion of its water rights for the operation of its commercial greenhouse business, for domestic consumption and some limited irrigation needs ("Current Water Usage"). Any water rights that Owner currently owns but is not currently using to satisfy the Current Water Usage shall be referred to herein as the "Excess Water Rights." LDG requires a minimum of approximately 600 acre-feet of water for the cooling and operational needs of the Power Plant, and Owner agrees that it shall make commercially reasonable efforts to meet those water requirements from the Excess Water Rights, and shall not lease or transfer any of its water rights until LDG's water requirements are being adequately met. Owner agrees to provide LDG access to and use of all Excess Water Rights as follows:

(a) Owner grants LDG the right to use Excess Water Rights for the drilling and testing of geothermal wells on the Subject Lands. LDG shall be responsible for all costs of connecting to Owner's water system.

(b) Owner hereby grants LDG the preferential right to the use of all Excess Water Rights for the development and operation of the Power Plant and the appurtenant geothermal resources. LDG shall install a metering system, at its own cost and expense, if necessary to comply with any requirements of any governmental agency or authority. LDG shall also bear the full cost of connections to Owner's water systems and infrastructure, and, if necessary, any upgrades to Owner's water system necessitated by LDG's use of the Excess Water Rights. LDG shall provide, free of cost, all electricity necessary for pumping any Excess Water Rights for LDG's use. LDG shall pay for any metering, studies or reports that may be required to establish a precise amount of Owner's available water rights, the amount of the Excess Water Rights and/or LDG's water needs for the Power Plant or geothermal resources development. Once the amount of LDG's water rights requirements are established, Owner and LDG agree to enter into a written water use agreement that evidences LDG's rights to the Excess Water Rights, which agreement shall be recorded in the county real property records ("Water Use Agreement"). Owner covenants and agrees not to transfer or sell any of the Excess Water Rights, until the Water Use Agreement is executed and recorded.

15. **Drilling of Water Wells on the Subject Lands.** LDG requires a certain amount of water to effectively produce geothermal energy from the Subject Wells. Owner understands that any drilling of water wells on the Subject Lands or land adjacent to the Subject Lands, under certain conditions, could significantly and adversely impact the ability of LDG to explore for and produce geothermal energy. Accordingly, Owner hereby agrees to not drill or construct any water wells on the Subject Lands or on adjacent property to the Subject Lands that Owner owns without first giving LDG written notice of its drilling plans to LDG. Owner agrees to use its best efforts to cooperate with LDG to obtain any additional water rights that LDG may need or apply for to drill the Subject Wells and/or generate electricity from the geothermal resources underlying or pooled with the Subject Lands.

16. **Notices.** Owner may give any notice or deliver any document hereunder to LDG by mailing the same by prepaid registered or certified mail addressed to LDG to the address set forth in the introductory paragraph above, attention General Counsel, or by delivering the same in person to the above-referenced address of LDG. LDG may give any notice or deliver any document hereunder to Owner by mailing the same by prepaid registered or certified mail addressed to Owner at the address set forth in the introductory paragraph above, attention Dale Burgett, or by delivering the same to Owner in person. For purposes of this paragraph, either party may change its address by written notice to the other. In case of any notice or document delivered by registered or certified mail, the same shall be deemed delivered when deposited in any U.S. Post Office, properly addressed as herein provided, with postage fully

prepaid. Notices shall be in writing and shall be given to LDG and Owner at the addresses set forth in the introductory paragraph hereto, or to such address as either party may designate to the other in writing, not less than thirty (30) days before that event which triggers notices. Notices shall be effective the third day after the date of mailing, postage prepaid.

17. **Rehabilitation and Restoration:** Upon termination of this Agreement, LDG shall restore the Subject Lands near as possible to their original conditions prior to construction in accordance with acceptable industry practices and all applicable laws and regulations in effect at the time of restoration. To the extent there is any environmental remediation required for property surrounding any ROW, Owner grants LDG a temporary right-of-way to use as much of the Subject Lands as it may require for environmental remediation. LDG shall have the right to use necessary space outside of the right-of-way for repair of any roadway or facilities. If upon termination of this Agreement, or intended abandonment of an Access Road ROW or some other ROW hereunder, LDG agrees and Owner elects to assume ownership and use of any road, well, or other Improvements, then Owner shall expressly assume all liabilities or responsibilities, including without limitation all future reclamation (or plugging and abandoning, for wells) obligations, and shall hold harmless LDG upon assumption of responsibility for such road, well or other Improvements.

18. **No Storage or Repair of Equipment.** LDG shall not allow any construction equipment or materials to be stored on Owner's property outside the confines of the fenced Power Plant ROW beyond ninety (90) days after completion of construction of a ROW or Improvements, unless approved, in advance, by Owner. LDG shall endeavor to maintain clean, neat and orderly roads and facilities at all times. No construction equipment shall be repaired or maintained upon the property of the Owner outside the boundaries of the fenced Power Plant ROW, except in the case of emergencies to prevent damage to the Subject Lands or neighboring properties. No motor fluids will be disposed of on the property of Owner.

19. **Taxes.** Owner shall continue to be responsible for the payment of property taxes, if applicable. LDG agrees to pay all additional taxes that may be assessed against the Subject Lands by reason of improvements placed thereon by LDG. Owner shall provide LDG with written evidence that Owner has paid all property taxes on the Subject Lands at least thirty (30) days prior to when due. If Owner fails to pay property taxes on the Subject Lands, LDG shall have the right, but not the obligation, to pay such tax obligations on Owner's behalf, and such payment, with interest accruing at Eighteen Percent (18%) per annum, shall be due and payable by Owner to LDG within thirty (30) days of payment by LDG.

20. **Recorded Right-of-Way; ROW Map.** Upon the request of LDG or Owner, LDG shall prepare a written right-of-way, in recordable form, which can be recorded in Hidalgo County to provide constructive notice of the exact location of any right-of-way granted pursuant to this Agreement. Moreover, LDG shall maintain a map of the Subject Lands (starting with Exhibit B) which reflects all surface uses and ROWs used or required by LDG, and as new ROWs are obtained by LDG under this Agreement, LDG shall amend and maintain a current map and survey of ROWs, a copy of which shall be provided to Owner.

21. **LDG Financing.** Owner agrees to execute any documents reasonably required by any lender of LDG to permit LDG to obtain financing for LDG's activities on the Subject Lands. Such documents may include, without limitation, a certificate of Owner confirming the validity and enforceability of this Agreement, that there are no defaults under this Agreement, that this Agreement shall survive any foreclosure and may be assigned to subsequent purchasers at foreclosure, consent of Owner to the grant of LDG's rights in this Agreement to a lender for security purposes, and any other covenants and agreements that are typically required by institutional lenders. Moreover, if Owner has existing deeds of trust, mortgages, or other liens on the Subject Lands at the time of this Agreement, Owner agrees to obtain subordinations from its lenders and lienholders with respect to this Agreement, on the form to be provided

by LDG; either prior to execution or within thirty (30) days after execution, as elected by LDG. The subordination agreement may be recorded with the Memorandum described in Exhibit C or recorded separately.

22. **Governing Law.** The laws of the State of New Mexico shall control the rights of the parties under this contract.

23. **Waiver.** By signing this Agreement, neither party waives its statutory and common law rights to occupancy and enjoyment of their respective estates, except as expressly provided in this Agreement.

24. **Assignment of Rights.** All rights and obligations under this Agreement shall run with the Subject Lands and shall inure to the benefit of and be binding upon the heirs, successors, or assigns of each party. LDG may assign its rights in this Agreement without the prior written consent of Owner, including, without limiting the foregoing, assignments for purposes of providing security for any loans. Moreover, LDG shall have the right to assign all or any portion of the ROWs to another entity or person, separate from ownership of the Subject Lease. The parties hereto agree to execute a memorandum of this Agreement, which shall be in form sufficient to record in the Hidalgo County real property records, in the form provided by LDG.

25. **Amendment.** This Agreement constitutes the entire Agreement between the parties pertaining to the subject matter contained in it and supersedes all prior and contemporaneous agreements, representations, and understandings of the parties with respect thereto. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing by all parties.


26. **Counterparts.** This Agreement may be executed in counterparts. Each counterpart shall constitute an original and all counterparts together shall constitute one and the same document. Receipt by party hereto of an executed copy of this Agreement by facsimile shall constitute conclusive evidence of execution and delivery of the Agreement by the signatory thereto.

[Signatures on the following page]

Dated effective as of the date first written above.

OWNER:

ROSETTE, INC.

By: 
Name: Dale Burge
Title: CEO

LDG:

LIGHTNING DOCK GEOTHERMAL HI-01, LLC

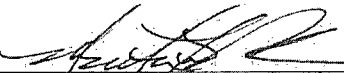
By: 
Name: Martin F. Peterson
Title: CEO

EXHIBIT A

Legal Description of the Subject Lands.

A. LDG is the owner of Federal Geothermal Lease NM -34790 (“Subject Lease”), granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the lease, described as follows:

1.

T25S, R19W, N.M.P.M.
Sec. 6: Lots 3, 4, 5, 6, 7, SE1/4NW1/4
Sec. 6: E1/2SW1/4
Sec. 7: Lots 1, 2, 3, 4, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4,
NW1/4NE1/4, NE1/4NW1/4
Sec. 18: Lot 1, N1/2NE1/4, NE1/4NW1/4

and

T25S, R20W, N.M.P.M.
Sec. 1: NW1/4SW1/4, S1/2SW1/4, SW1/4SE1/4
Sec. 11: NE1/4, S1/2
Sec. 12: ALL
Sec. 13: N1/2N1/2

Containing 2,500.96 acres, more or less

2. LDG has applied for Federal Geothermal Lease NM 108801, which is pending final approval by the BLM and will be included with the Subject Lease upon approval, granting LDG the right to explore for and develop geothermal resources underlying the lands covered by the Subject Lease, described as follows:

T25S, R20W, N.M.P.M.
Sec. 14: All

Containing 640.00 acres, more or less

B. Owner is the owner of the land (“Surface Lands”) covering, in part, the Subject Lease, which is described as follows:

1. Sections 7 and 18
T25 S, R19 W, N.M.P.M

And

Sections 11, 12, 13, 14, and 23
T25 S, R20 W, N.M.P.M
Containing 2,592.473 acres, more or less

C. “Subject Lands” shall be the surface area wherein LDG’s Subject Lease underlies Owners Surface Lands.

EXHIBIT B

Initial Inventory of Existing Wells and Location of Initial Contemplated ROWs



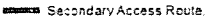
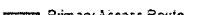



- Legend**
- Budget_Boundary
 - Riser Federal Geothermal Lease
- Wells**
- | Number, Label | | | | |
|-----------------------------|--|---|--|---|
| 0, HP Home Heating-Federal | 5, Well No. 5-State-Budget | 15, Abandoned Well-Federal | 25, Metered Production Well (No. 3 West) - Federal | 35, State Well - Amendment |
| 1, Exploratory Well-Federal | 6, Well No. 4-State-Budget | 16, Metered Prod. Well (No. 1 Clac. Well) - Federal | 26, Abandoned Well-Federal | 36, State Well - MoCanta |
| 2, Exploratory Well-Federal | 7, Well No. 3-State-Budget | 17, Abandoned Well-Federal | 27, Abandoned Well-Federal | 37, Abandoned Well - State |
| 3, Amendment Well-Federal | 8, HP Home Heating-Federal | 18, Metered Production Well (No. 2 West) - Federal | 28, HP-Facing Pond-Federal | 38, Exploratory Well (12-7) - Federal |
| 4, Well No. 1-State-Budget | 9, HP Home Heating-Federal | 19, Abandoned Well-Federal | 29, Exploratory Well (28-7) - Federal | 39, MoCanta Well - Federal |
| | 10, Metered Production Well (No. 4 Well) - Federal | 20, Deep Exploratory Well (ES-7) - Federal | 30, Irrigation Well - Private | 40, MoCanta Well Home Heating - Federal |
| | 11, Metered Production Well (No. 3 East) - Federal | 21, HP Home Heating-Federal | 31, Exploratory Well (22-7) - Federal | 41, MoCanta Well Home Heating - Federal |
| | 12, HP-Greenhouse Heating-Federal | 22, Abandoned Well-Federal | 32, Vacant | |
| | 13, HP Home Heating-Federal | 23, Wastery Well-Federal | 33, Well No. 7 State - Budget | |
| | 14, Exploratory Well-Federal | 24, HP Home Heating-Federal | 34, State Well - Amendment | |

EXHIBIT C

Sample Power Plant ROW and Access Roads for a Power Plant



Legend

-  Secondary Access Route
-  Primary Access Route
-  Proposed Plant Location
-  Raser Federal Geothermal Lease
-  Burrell_Boundary

Lightning Dock Geothermal
Power Plant and
Access ROW
Hildago County, Nevada

Lightning Dock Geothermal HI-01, LLC
5152 North Edgewood Drive Suite 375
Provo, UT 84604

EXHIBIT D

Water Rights Description

A. Owner represents and warrants ownership of the following Water Rights identified by New Mexico Office of the State Engineer Numbers:

A-13, with points of diversion located in Section 13, Township 25 South, Range 20 West, N.M.P.M.

A-36-A, with points of diversion located in Sections 6 and 7, Township 25 South, Range 19 West, N.M.P.M., and Sections 4 and 12, Township 25 South, Range 20 West, N.M.P.M.

A-35-D, with points of diversion located in Section 7, Township 25 South, Range 19 West, N.M.P.M., and Section 4, Township 25 South, Range 20 West, N.M.P.M.

A-51, with points of diversion located in Section 10, Township 25 South, Range 20 West, N.M.P.M.

A-64-A, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-384, with points of diversion in Section 12, Township 25 South, Range 20 West, N.M.P.M.

A-385, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

A-386, with points of diversion in Section 7, Township 25 South, Range 19 West, N.M.P.M.

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

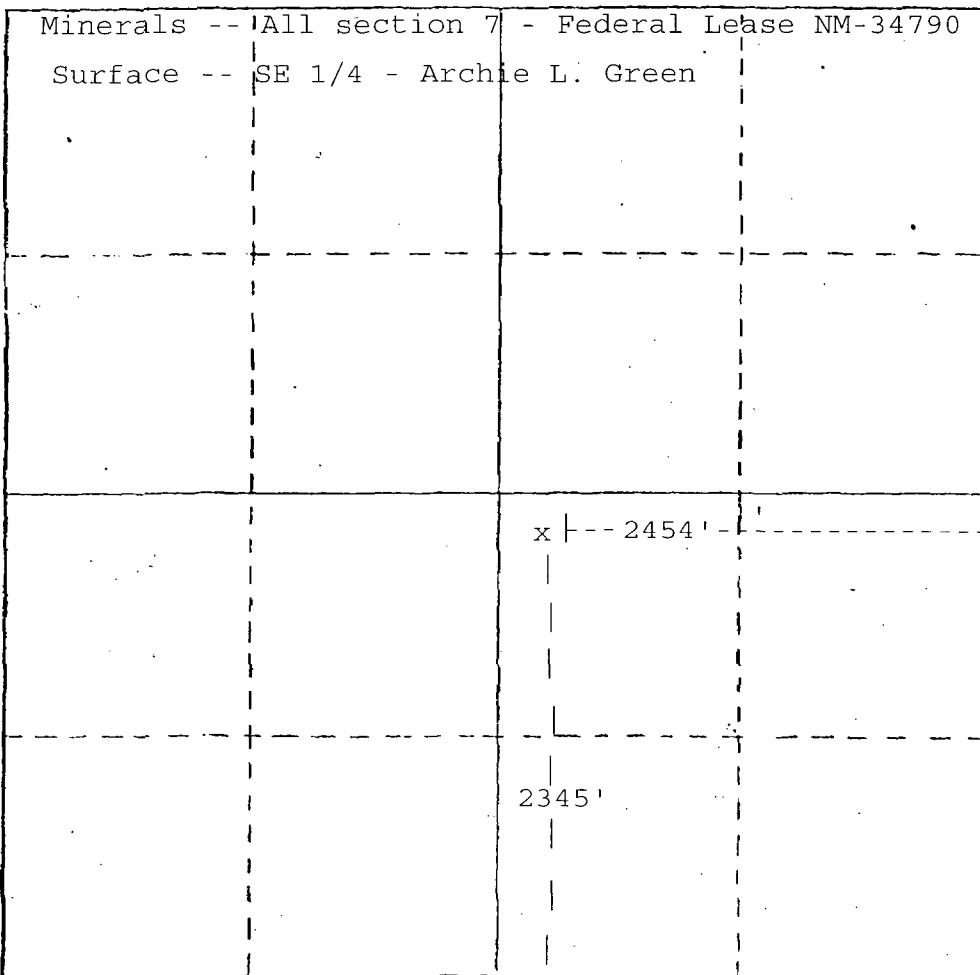
Operator Lightning Dock Geothermal HI-01, LLC		Lease Federal NM-34790			Well No. TFD 55-7
Unit Letter N/A	Section 7	Township 25S	Range 19W	County Hidalgo	
Actual Footage Location of Well: 2454 feet from the East line and 2345 feet from the South line					
Ground Level Elev. 4201'	Producing Formation open hole		Pool wildcat	Dedicated Acreage: N/A Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

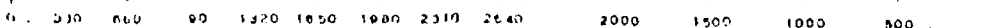
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

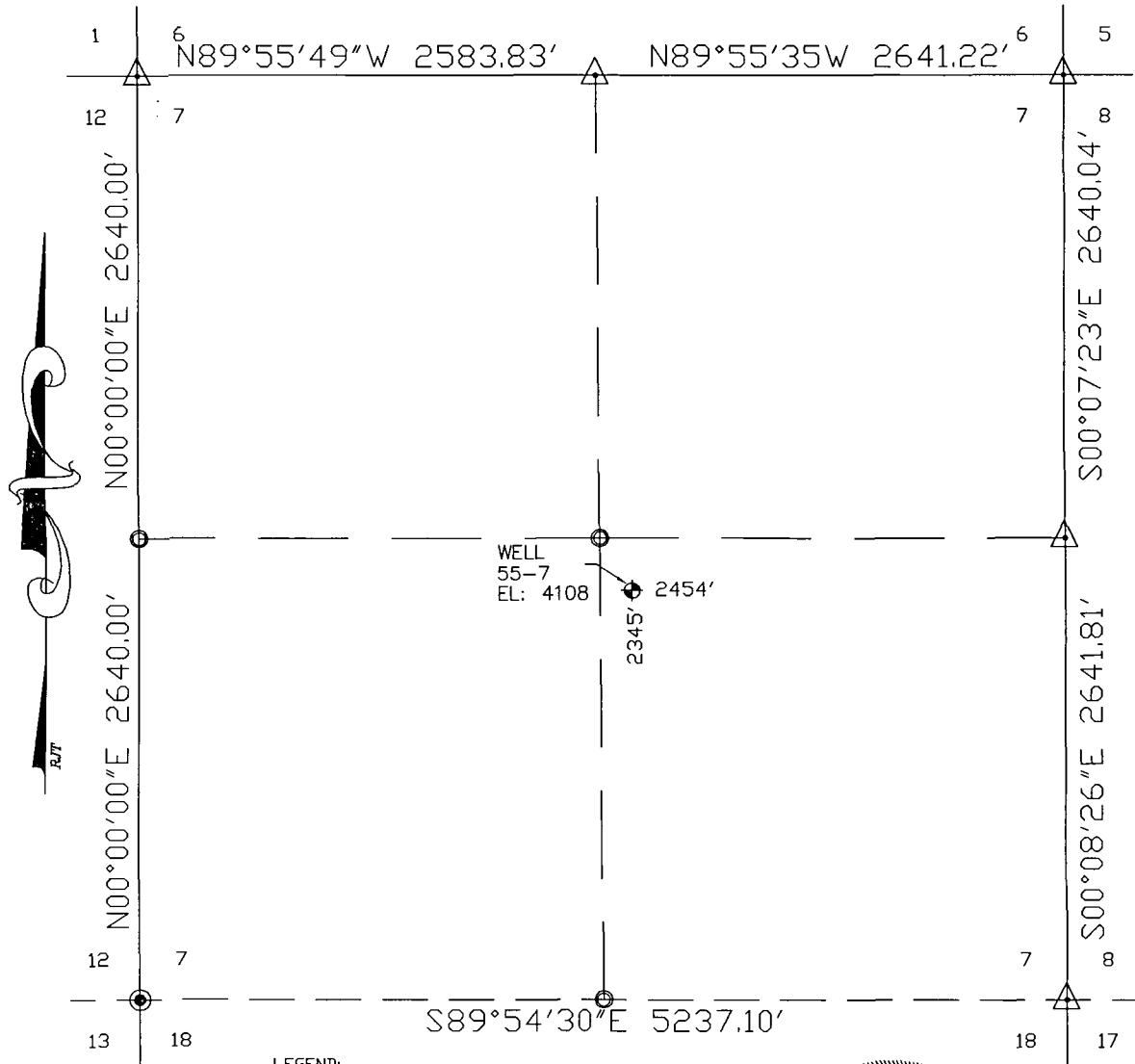
Name
Benjamin J. Barker
Position
V.P. Resource Dev.
Company
Raser Technologies
Date
April 12, 2010

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.
see attached certified survey plat

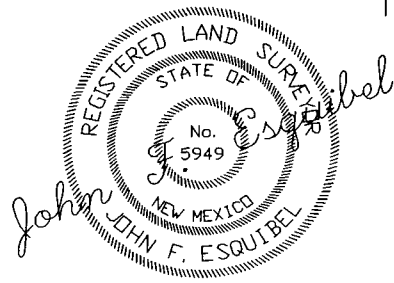
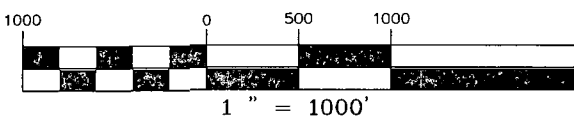
Date Surveyed
April 9, 2010
Registered Professional Engineer and for Land Surveyor
John F. Esquibel

Certificate No.
5949





- LEGEND:**
- GLO BRASS CAP
 - SET 1/2' REBAR & CAP NMRLS 7240
 - NOTHING FOUND
 - WELL LOCATION



JN: JFE001

DATE OF SURVEY: APRIL 09, 2010

EXHIBIT B
 LIGHTNING DOCK NO. 1, HI-01 LLC
 WELL LOCATIONS
 HIDALGO COUNTY, NEW MEXICO

Sec. 7, Township 25S, Range 19W

NATIVE RENAISSANCE



JOHN F. ESQUIBEL

DEVELOPMENT CONSULTANT
 LAND SURVEYING
 PLANNING
 CONSTRUCTION MANAGEMENT
 WASTEWATER TREATMENT SYSTEMS
 Arizona - Colorado - New Mexico

Cell 602-758-7530 - Base 928-282-9776
 76 Cindy Lane - Sedona, Arizona 86336

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

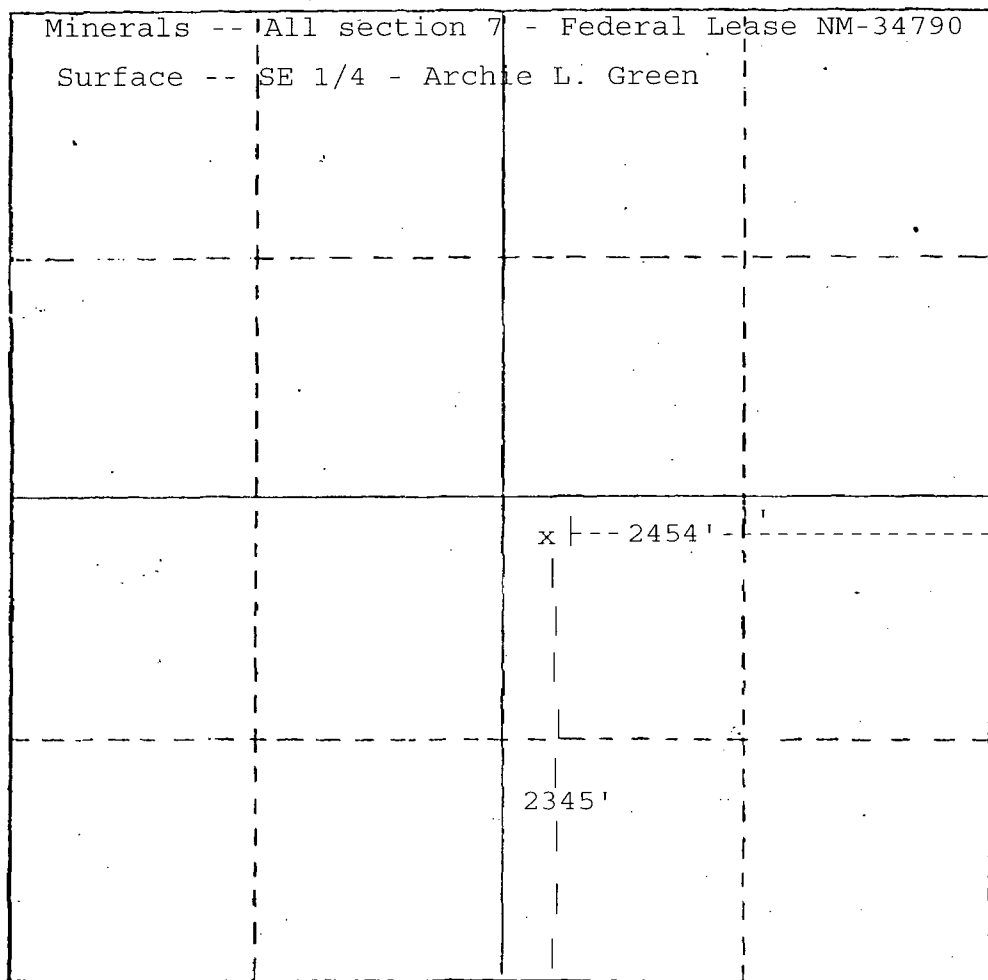
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Unit Letter N/A	Section 7	Township 25S	Range 19W	County Hidalgo	
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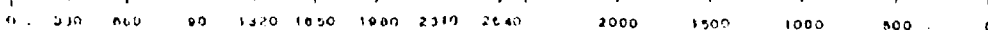
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name
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Position
V.P. Resource Dev.
Company
Raser Technologies
Date
April 12, 2010

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.
see attached certified survey plat

Date Surveyed
April 9, 2010
Registered Professional Engineer and/or Land Surveyor
John F. Esquibel

Certificate No.
5949



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File		
N.M.B.M.		
U.S.C.S.		
Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN,
OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease
STATE NA - Federal FEDERAL
5.a State Lease No.
Federal NM-34790

1a. Type of Work Drill <input checked="" type="checkbox"/> Deepen <input type="checkbox"/> Plug Back <input type="checkbox"/>		7. Unit Agreement Name N/A
b. Type of Well Geothermal Producer <input checked="" type="checkbox"/> Temp Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>		8. Farm or Lease Name N/A
2. Name of Operator Lightning Dock Geothermal HI-01, LLC		9. Well No. TFD 55-7
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604		10. Field and Pool, or Wildcat Wildcat
4. Location of Well UNIT LETTER _____ LOCATED 2411.9 FEET FROM THE East LINE AND 2329.1 FEET FROM THE South LINE OF SEC. 7 TWP. 25 S RGE. 19 W NMPM		12. County Hidalgo
19. Proposed Depth 3400'		19A. Formation Open Hole
20. Rotary or C.T. Rotary		
21. Elevations (Show whether DF, RT, etc.) 4201' GR	21A. Kind & Status Plug. Bond. Irrev. Ltr Credit	21B. Drilling Contractor Everett D. Burgett
22. Approx. Date Work will start mob. 5/1/10		

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP

- MIRU drill rig.
- Drill out cement plug from 1450' to 1550' approx.
- Drill out cement plug from 1890' to 2090' approx.
- RIH to locate cement plug at 5400' approx.
- Set bridge plug in 3000'-3400' interval.
- Collect water samples for geochemical and environmental analysis.
- Set production pump at 850' approx.
- Release rig.
- Hook up well for pump test to irrigation system.
- Run pump test for up to four weeks.
- Secure well.

Please see attached Proposed Operations and Drilling Plan for details.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed _____ Title VP Resource Management Date April 12, 2010

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

APPLICATION FOR PERMIT TO DRILL, DEEPEN,
OR PLUG BACK--GEOTHERMAL RESOURCES WELL

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N.M.B.M.		
U.S.C.S.		
Operator		
Land Office		

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STATE NA - Federal FEE

5.a State Lease No.
Federal NM-34790

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b. Type of Well Geothermal Producer Temp Observation
Low-Temp Thermal Injection/Disposal

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8. Farm or Lease Name
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2. Name of Operator Lightning Dock Geothermal HI-01, LLC

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12. County
Hidalgo

19. Proposed Depth
3400'

19A. Formation
Open Hole

20. Rotary or C.T.
Rotary

21. Elevations (Show whether DF, RT, etc.)
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Irrev. Ltr Credit

21B. Drilling Contractor
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Hidalgo

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Signed _____ Title VP Resource Management Date April 12, 2010

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Schlumberger

FRACTURE IDENTIFICATION LOG

CSU

COMPANY: STEAM RESERVES

WELL: ANIMAS 55-7

FIELD: WILDCAT
COUNTY: HILDAGO
STATE: NEW MEXICO

LOCATION: 2412 FEL
2329 FSL

SEC: 7 TWP: 25S RGE: 19M

PERMANENT DATUM:
ELEV. OF PERM. DATUM: 4200.0 F
LOG MEASURED FROM: KB
17.6 F ABOVE PERM. DATUM
DRLG. MEASURED FROM: KB
ELEVATIONS:-
KB: 4217.6 F
DF: 4216.6 F
GL: 4200.0 F

DATE: 14 FEB 85
RUN NO: 1

DEPTH-DRILLER: 7001.0 F
DEPTH-LOGGER: 7012.0 F
BTM. LOG INTERVAL: 7006.0 F
TOP LOG INTERVAL: 1053.0 F
CASING-DRILLER: 1050 F
CASING-LOGGER: 1053 F
CASING: 13 3/8
BIT SIZE: 12 1/4

OTHER SERVICES-

PROGRAM
TAPE NO:
26.2
SERVICE
ORDER NO:
420298

TYPE FLUID IN HOLE: FRESH GEL
DENSITY: 9.4 LB/G
VISCOSITY: 41.0 S
PH: 11.0
FLUID LOSS: 7.4 C3
SOURCE OF SAMPLE: TANK
RM: 1.990 OHMM AT 59.0 DEGF
RMF: 1.530 OHMM AT 59.0 DEGF
RMC: 2.160 OHMM AT 59.0 DEGF
SOURCE RMF/RMC: MEAS/MEAS
RM AT BHT: .474 OHMM AT 270. DEGF
RMF AT BHT: .364 OHMM AT 270. DEGF
RMC AT BHT: .514 OHMM AT 270. DEGF

TIME CIRC. STOPPED: 0200
TIME LOGGER ON BTM.: 0900

MAX. REC. TEMP: 270.0 DEGF

LOGGING UNIT NO: 8174
LOGGING UNIT LOC: FARMINGTON
RECORDED BY: MAURER
WITNESSED BY: MR. PILKINGTON

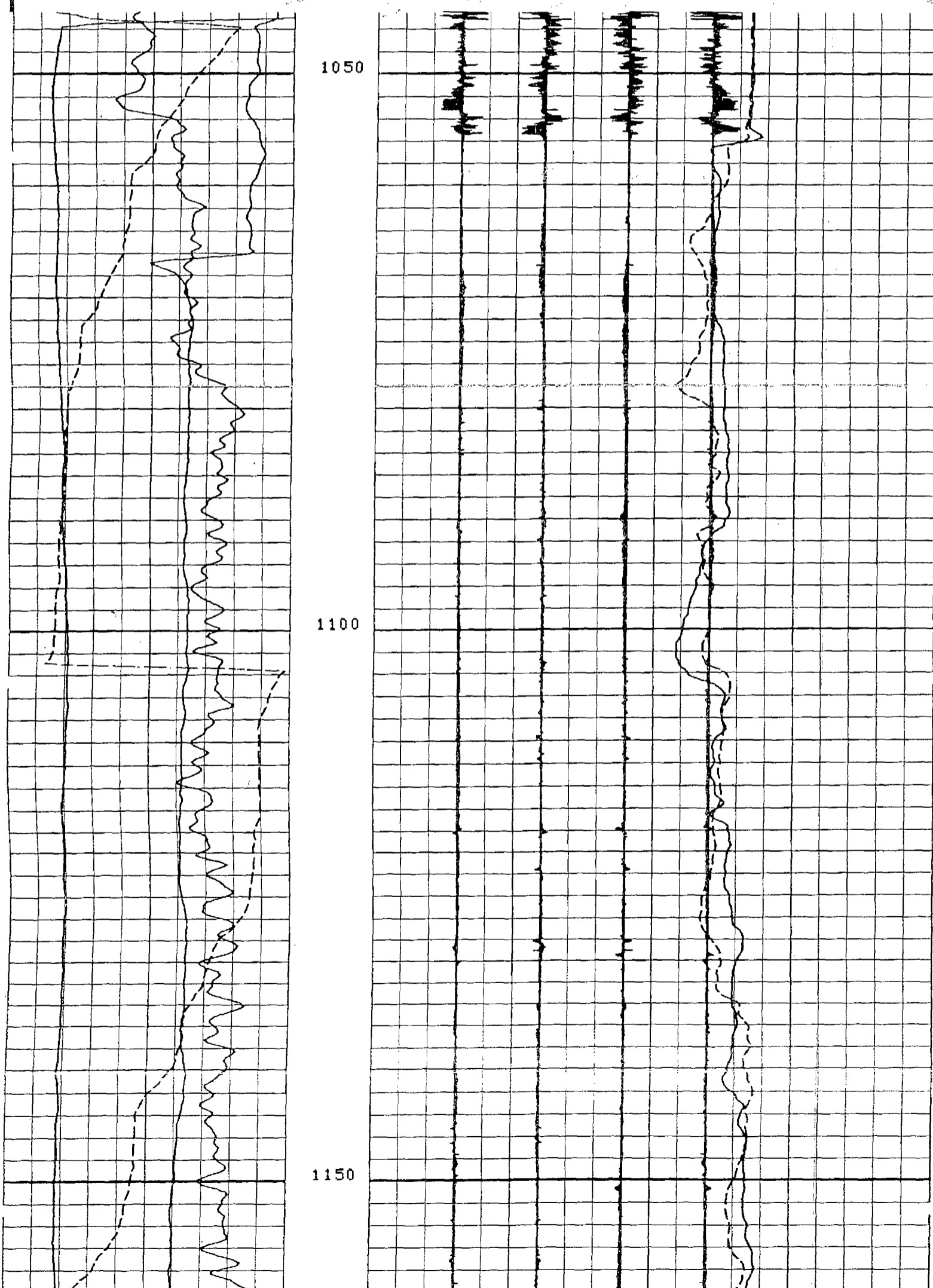
REMARKS:
CREW, YAZZIE, QUINN

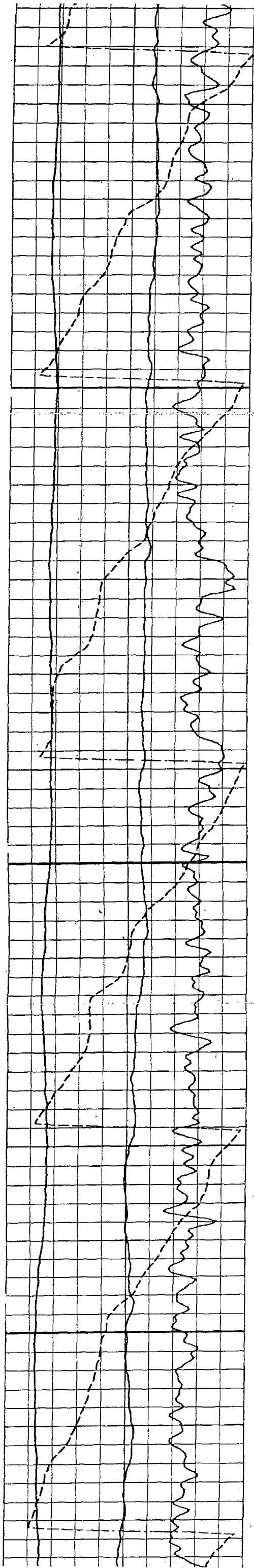
EQUIPMENT NUMBERS-

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 INTERPRETATIONS, 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.

		ZERO	
		-6.000	4.0000
		ZERO	
		-3.000	7.0000
		D23	
		-30.00	20.000
		D12	
		-15.00	35.000
		C2 (IN)	
		26.000	6.0000
		C1 (IN)	
		26.000	6.0000
		ZERO	
		-12.00	8.0000
		ZERO	
		-9.000	11.000
		D41	
		-60.00	40.000
		D34	
		-45.00	55.000
GR (GAPI)			
0.0	200.00		
RB (DEG)			
-40.00	360.00		
AZIM(DEG)			
-40.00	360.00		
DEVI(DEG)			
-1.000	9.0000		

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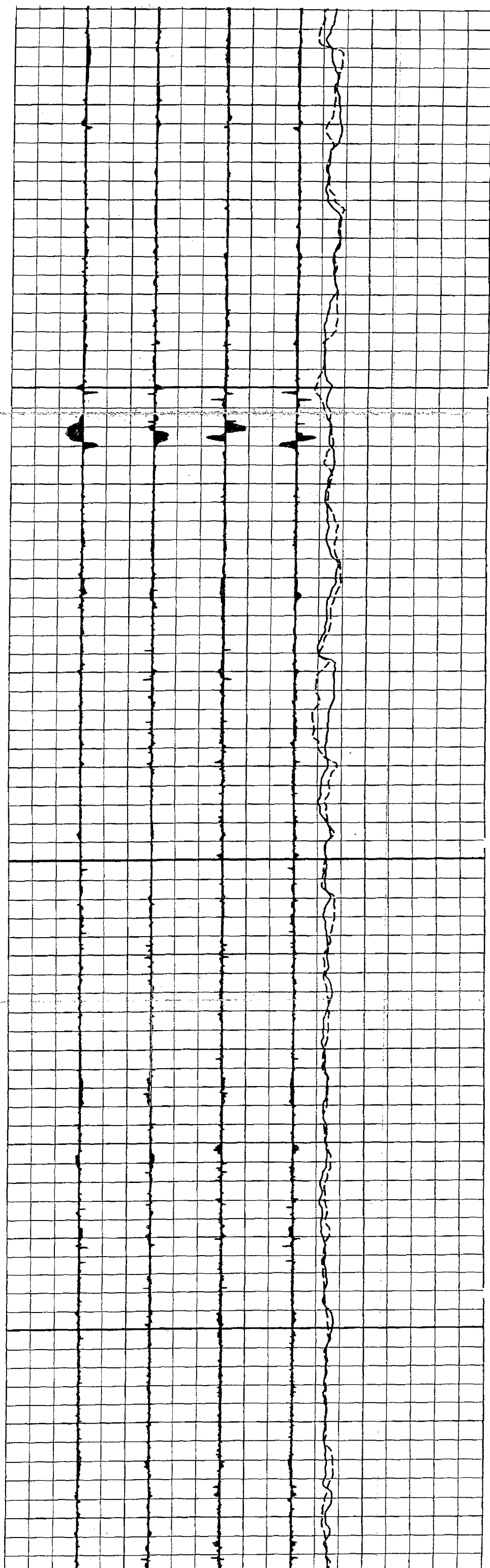


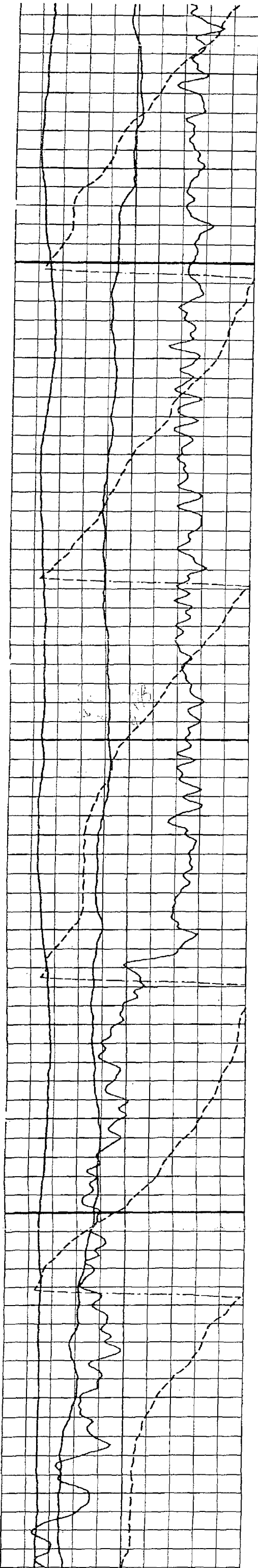


1200

1250

1300

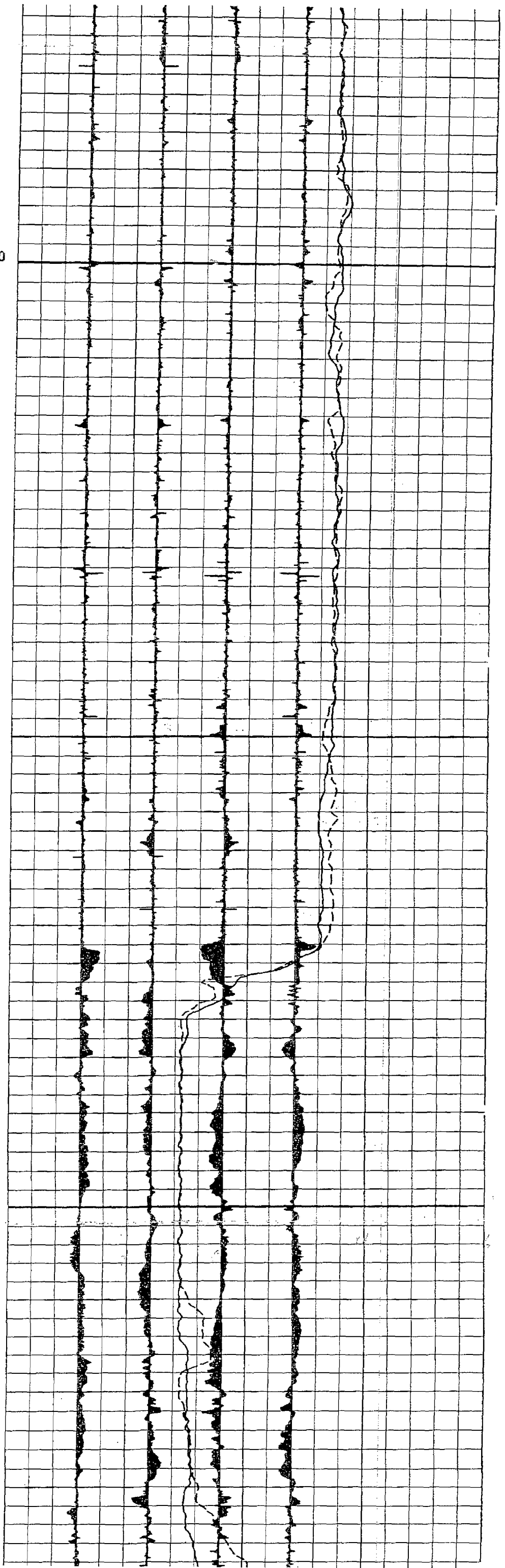


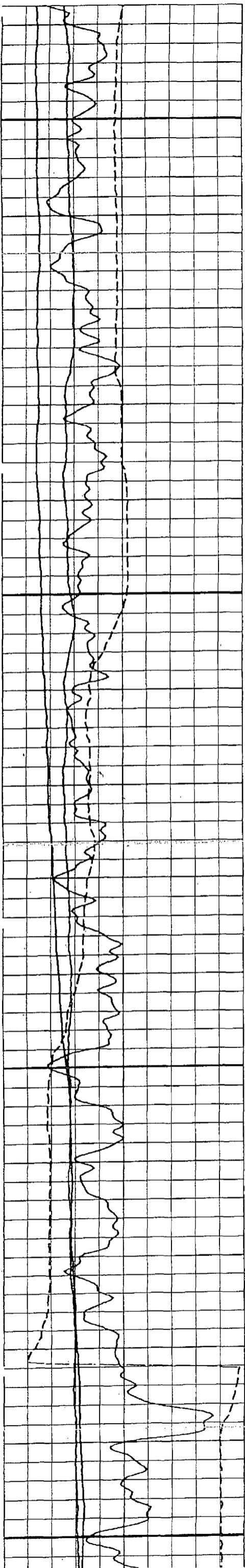


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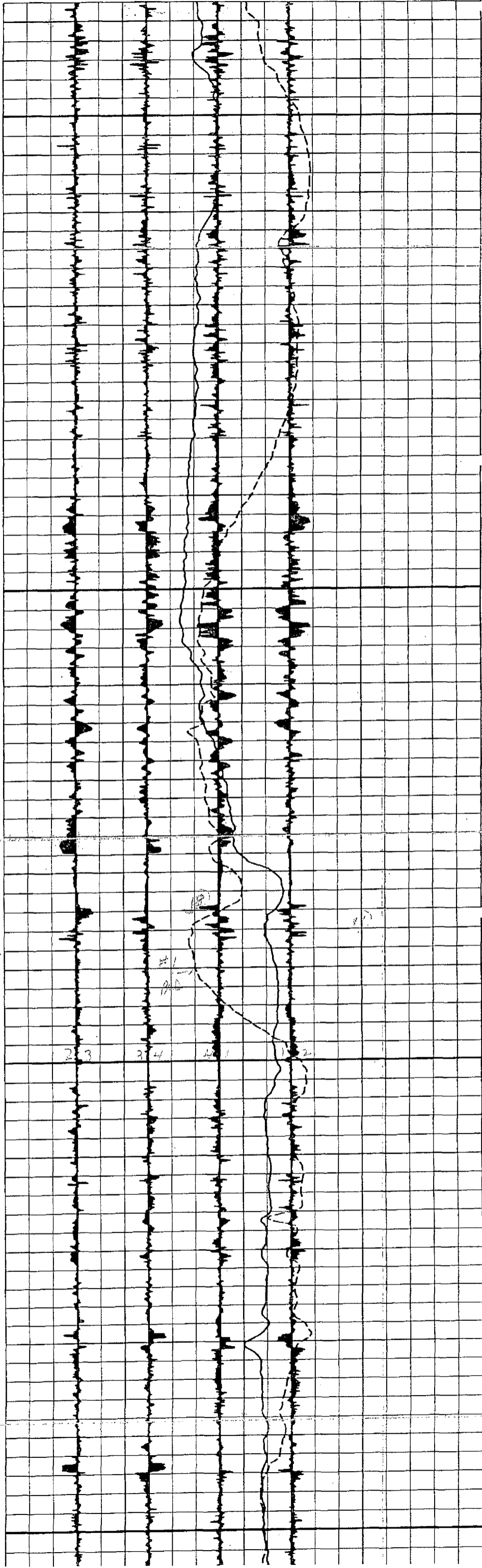


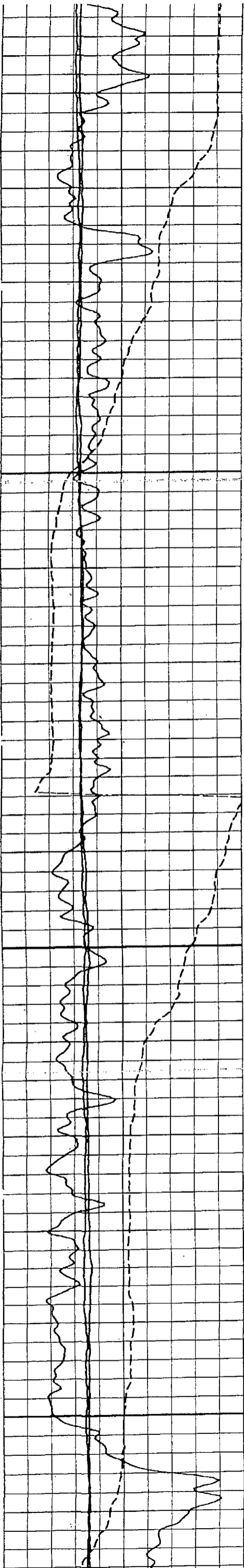
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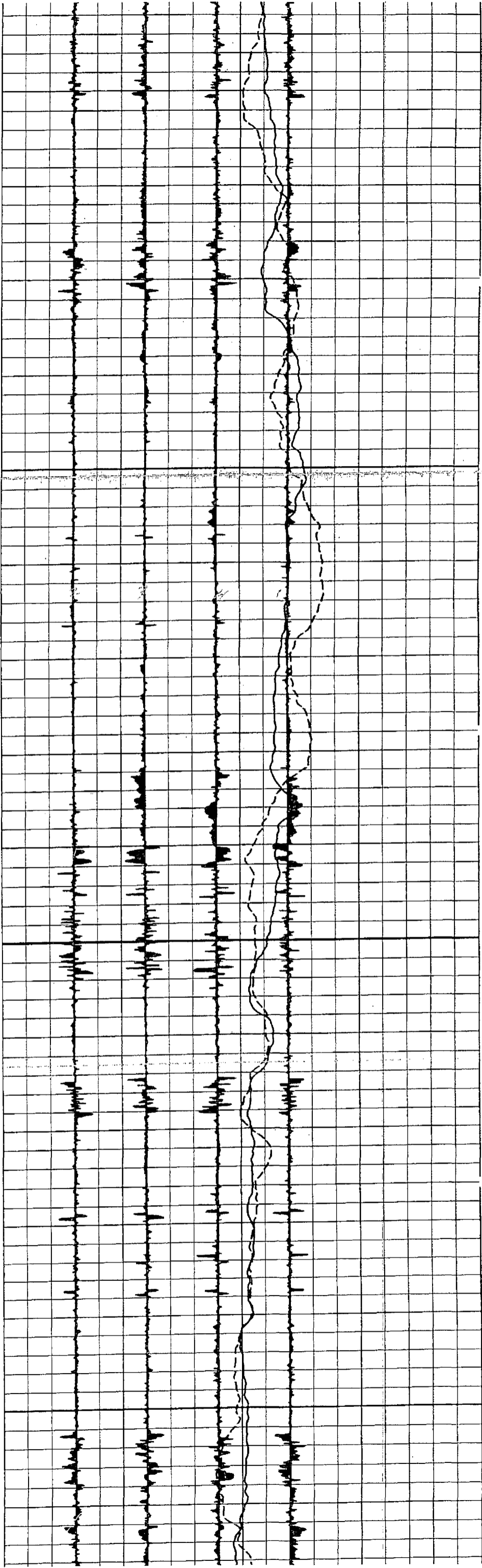


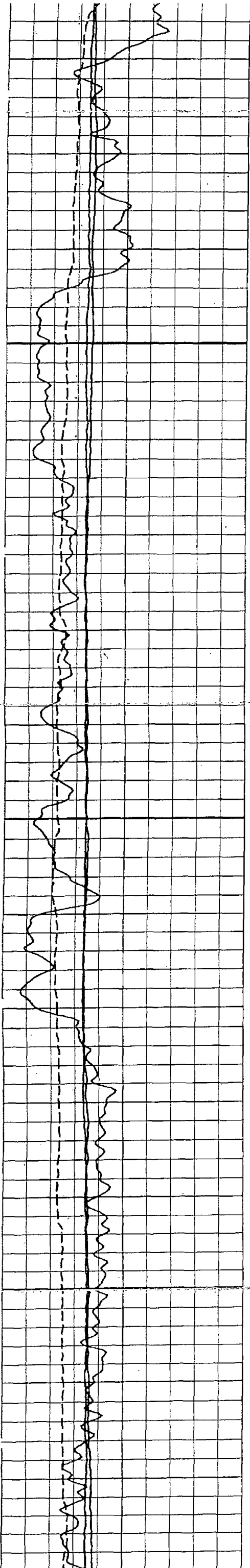


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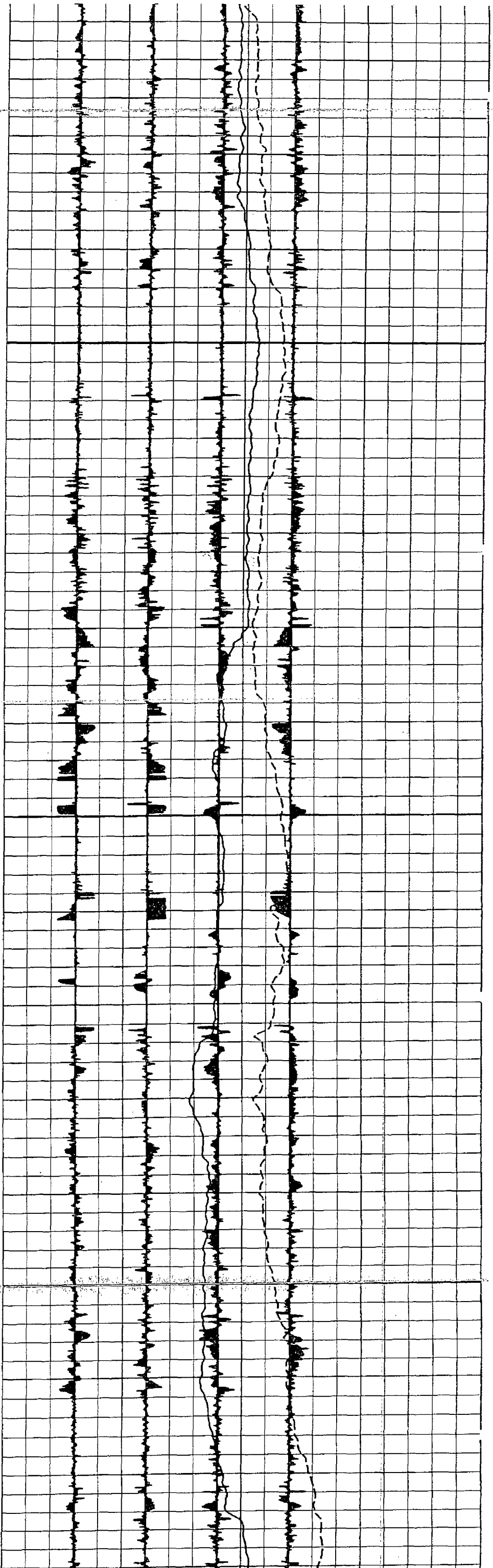


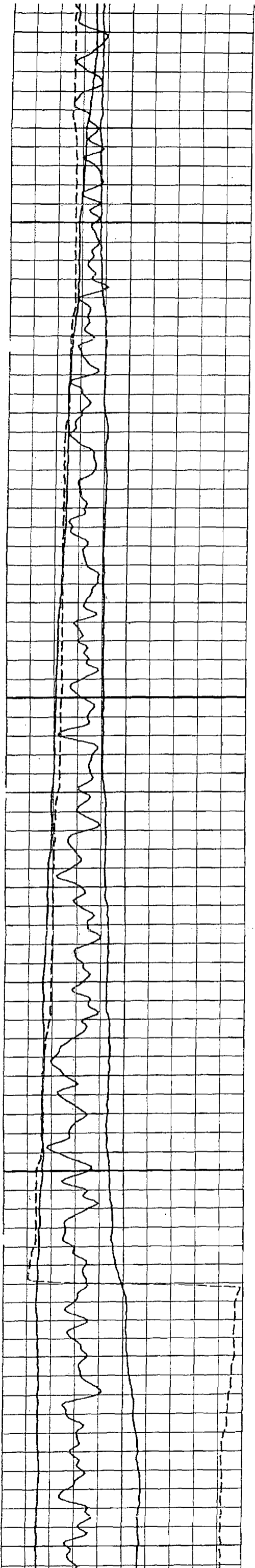


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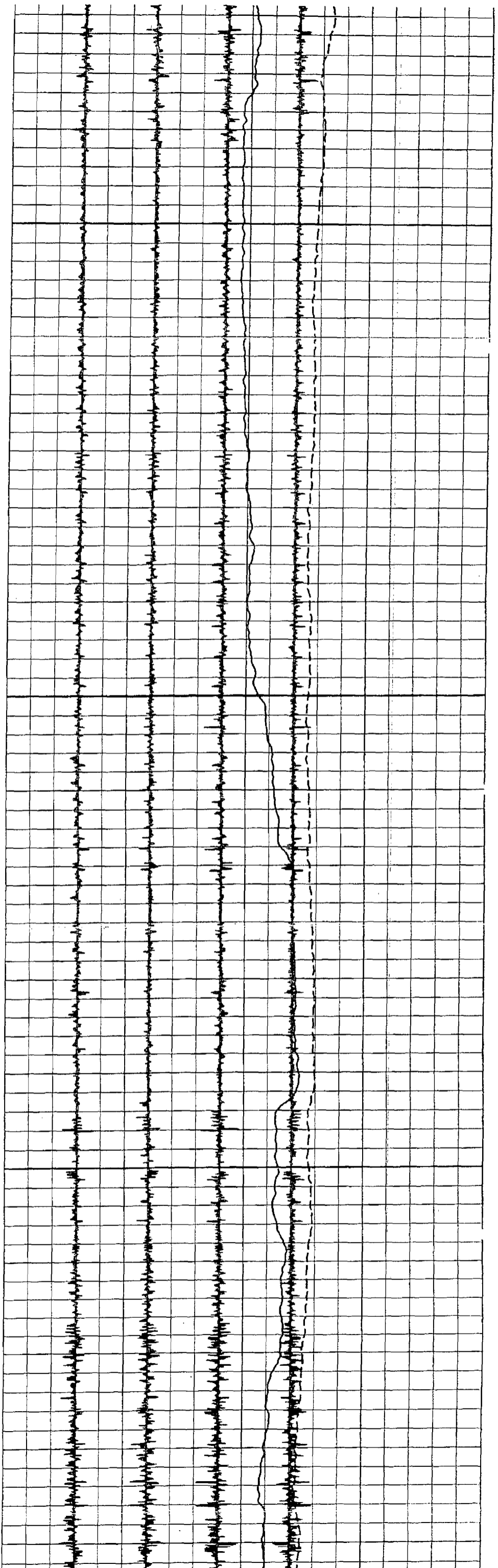


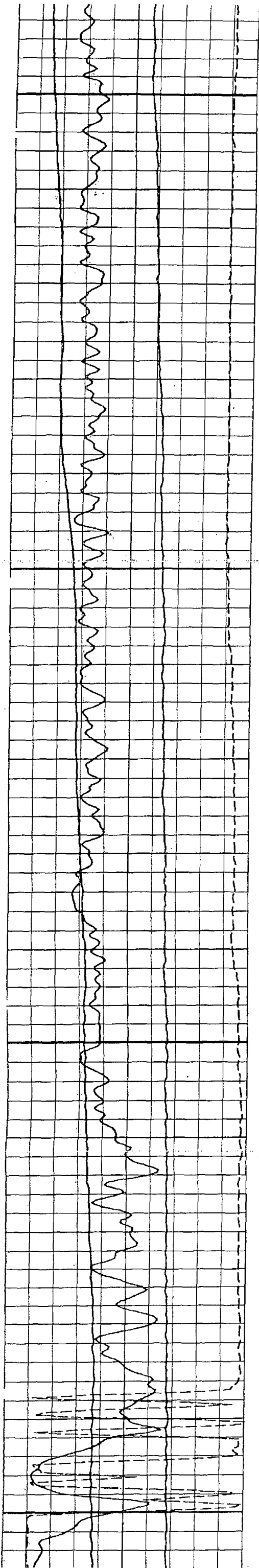


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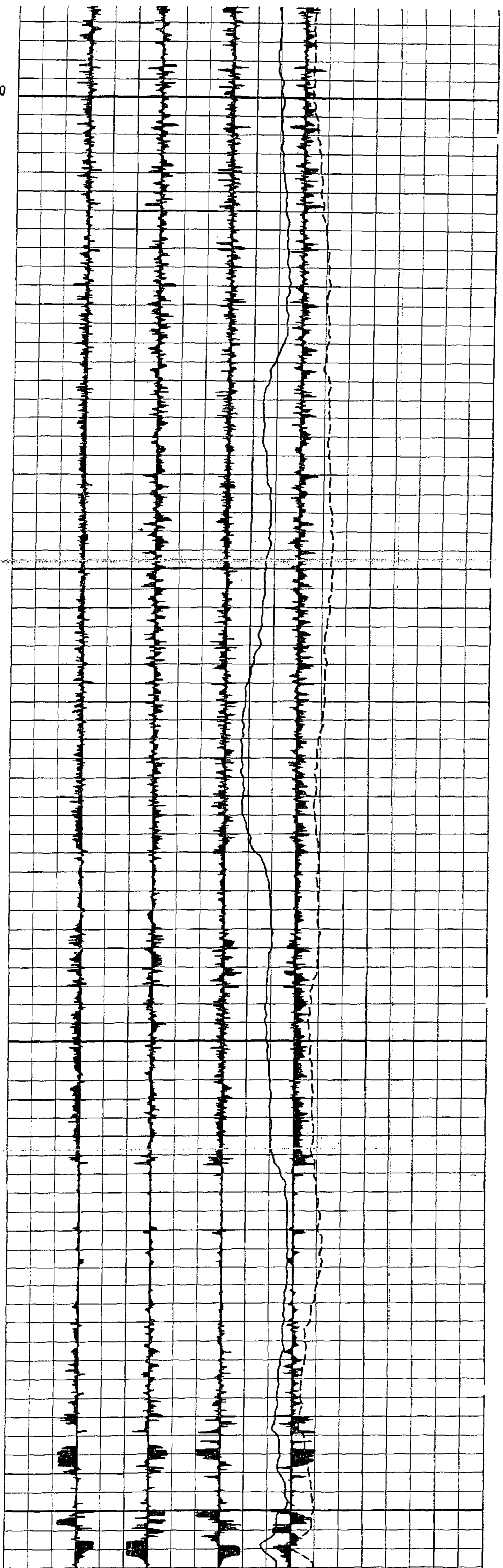


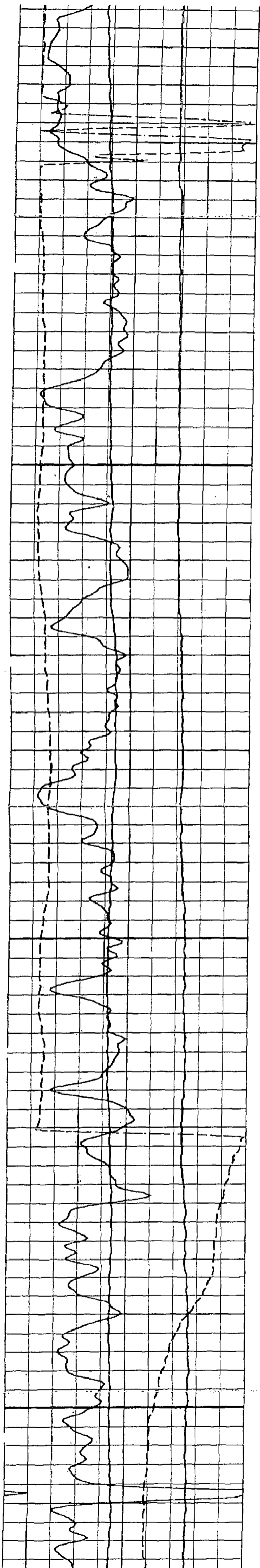
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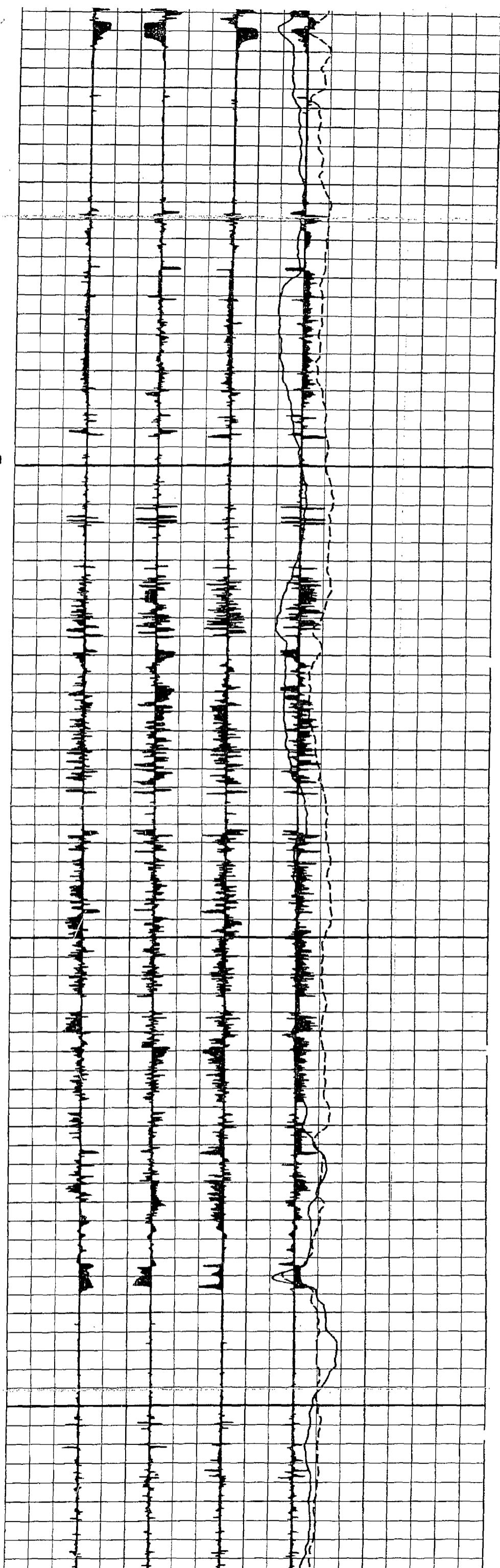


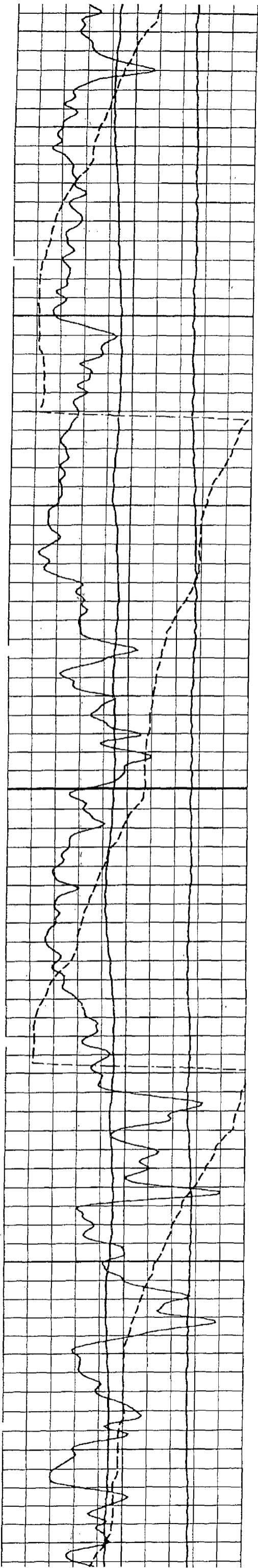


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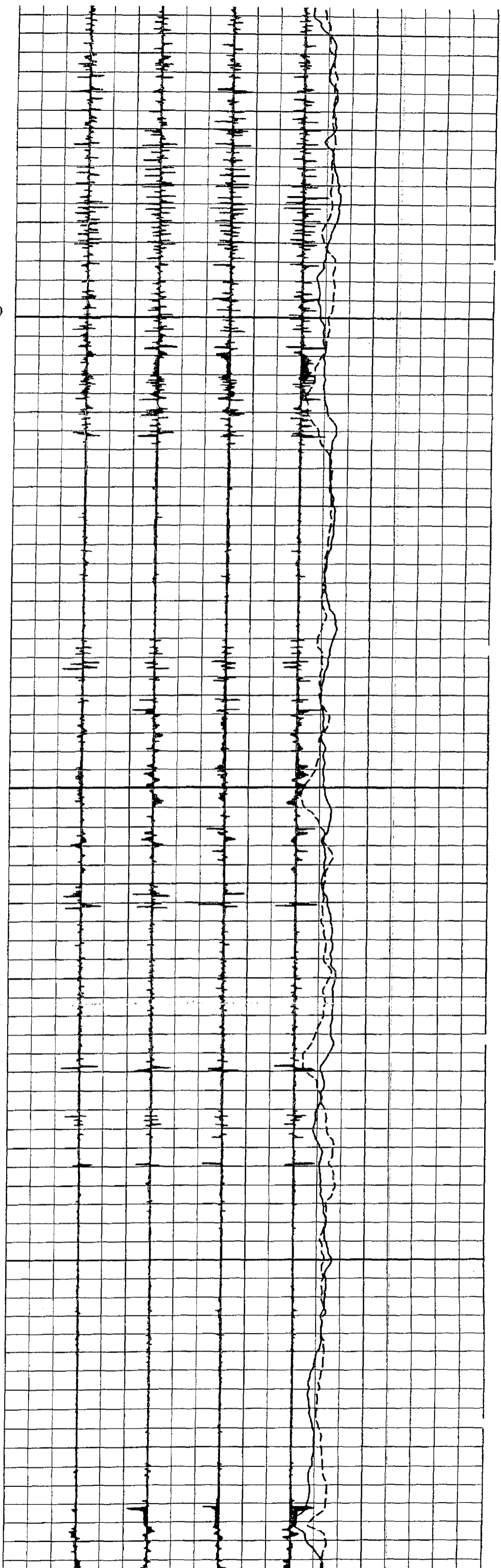


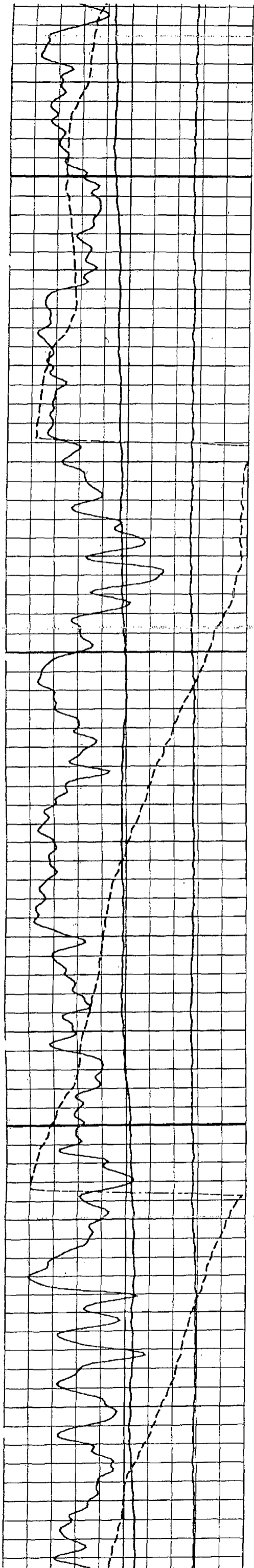


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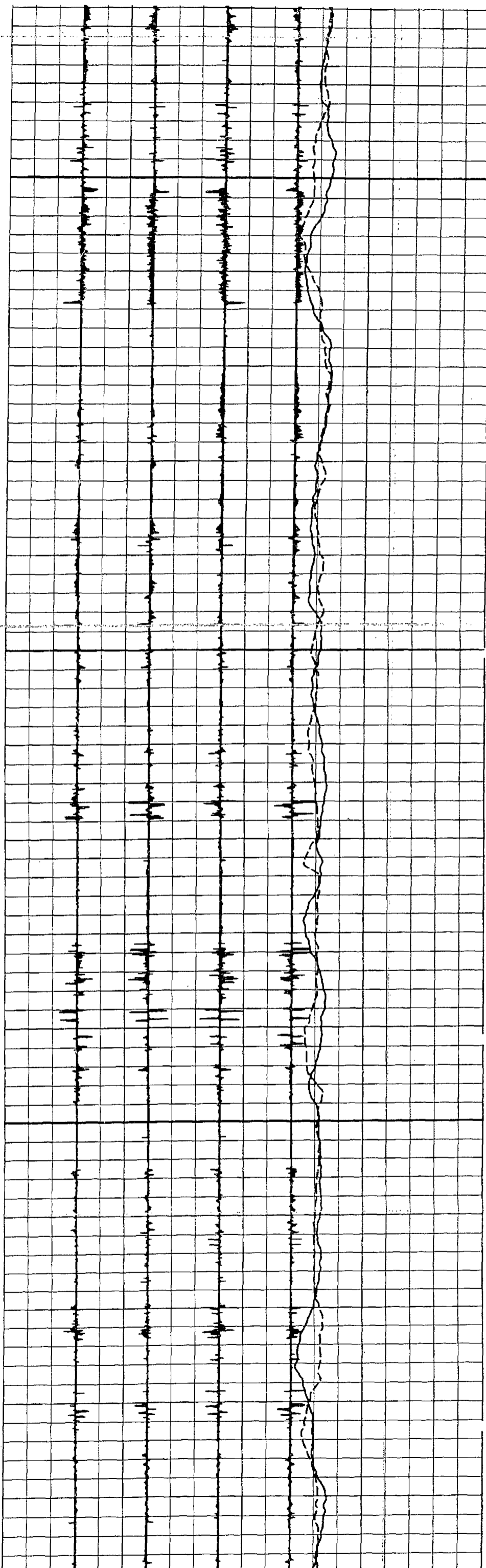


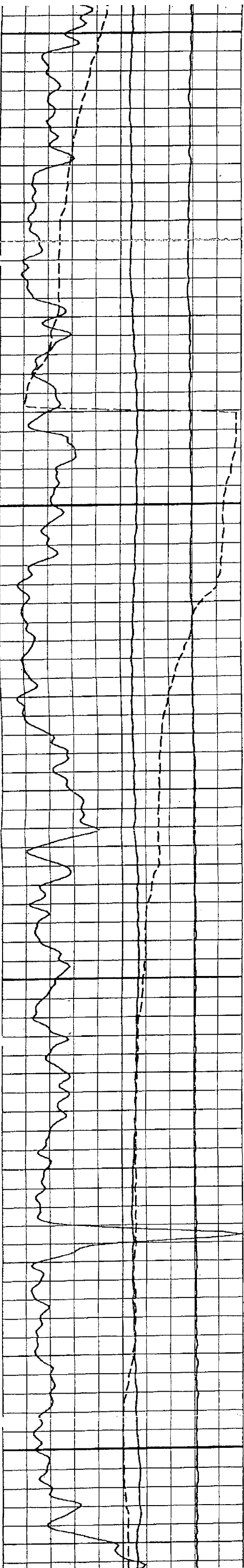


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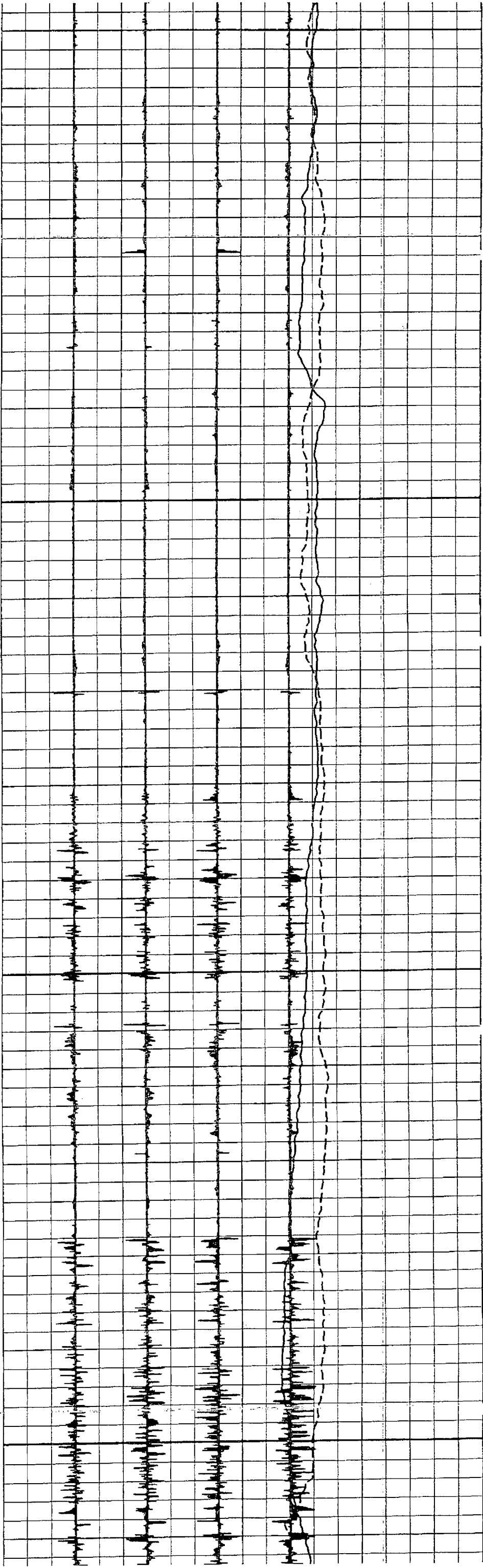


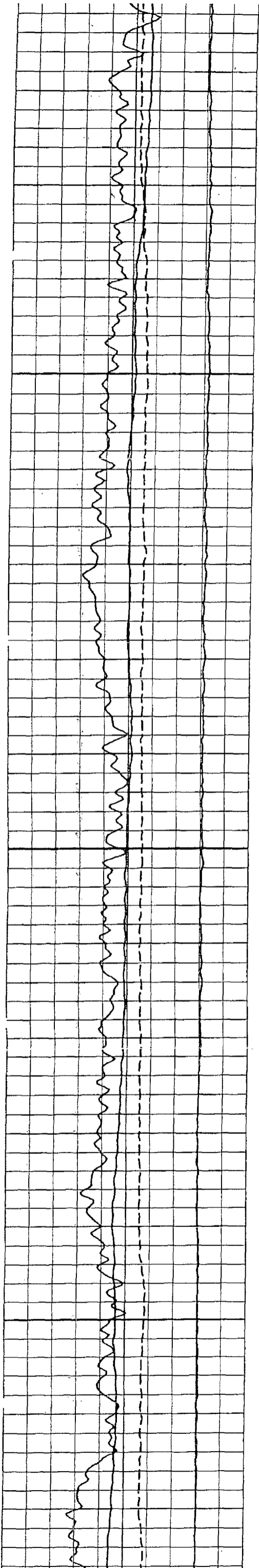
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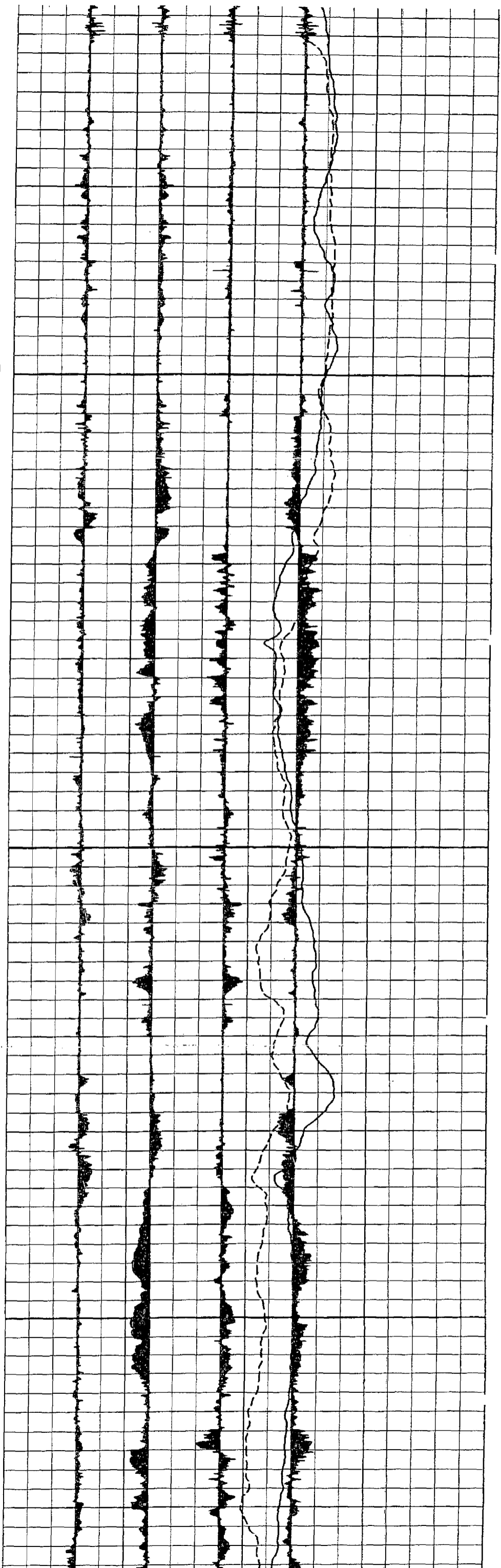


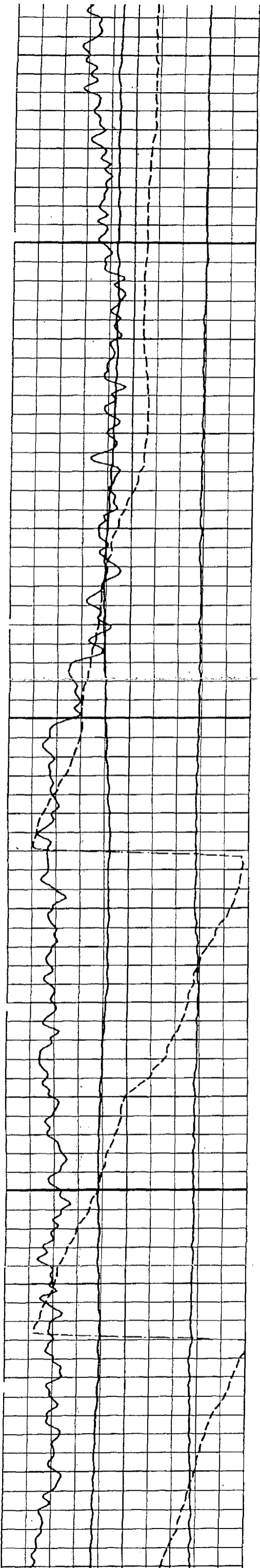


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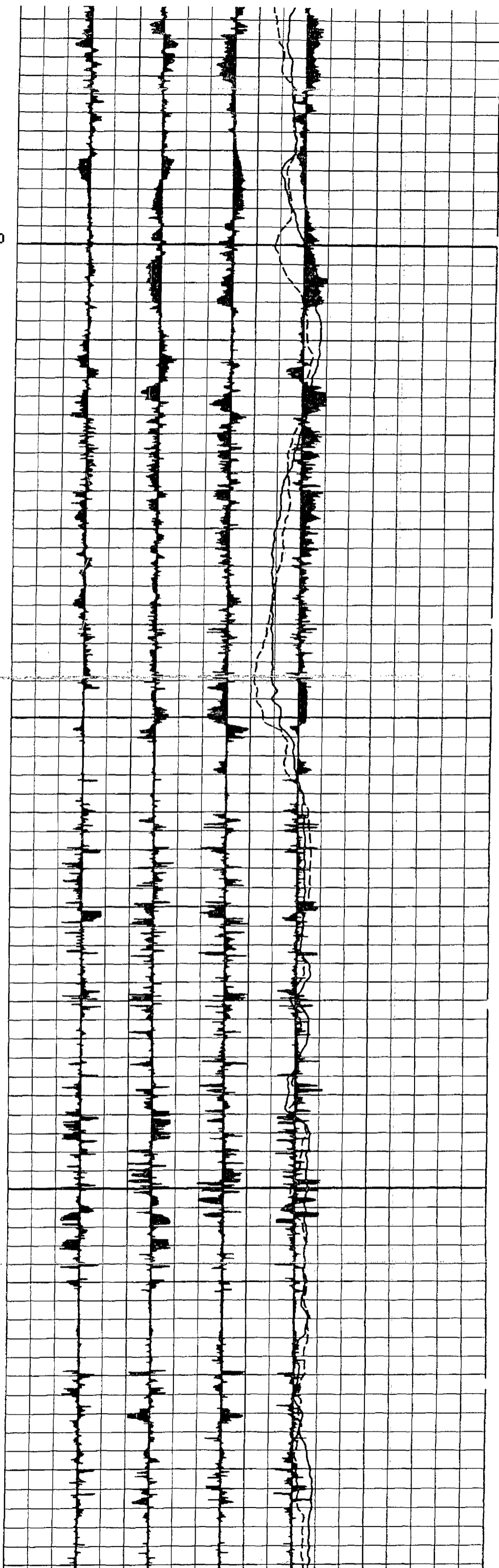


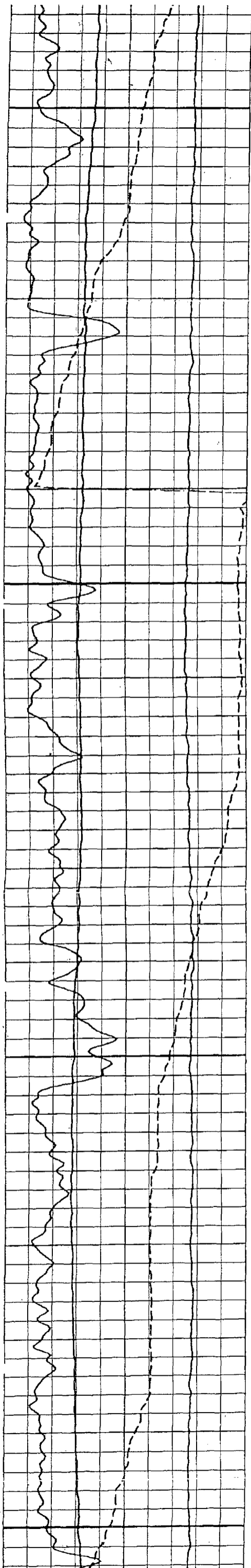


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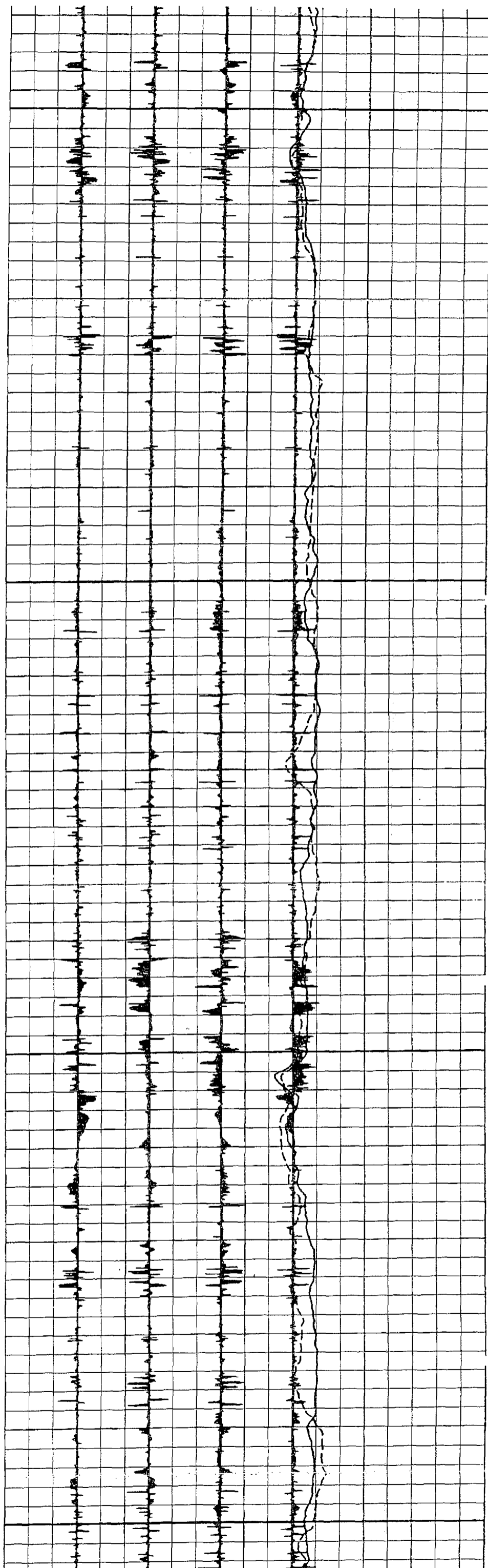


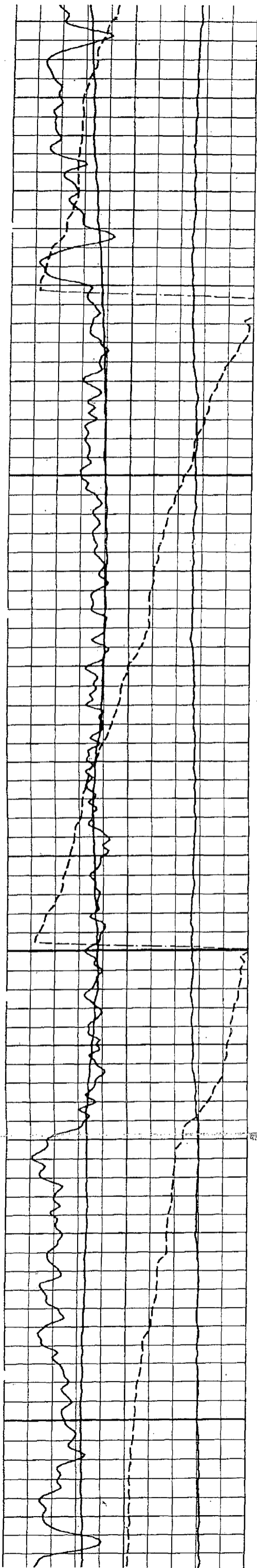
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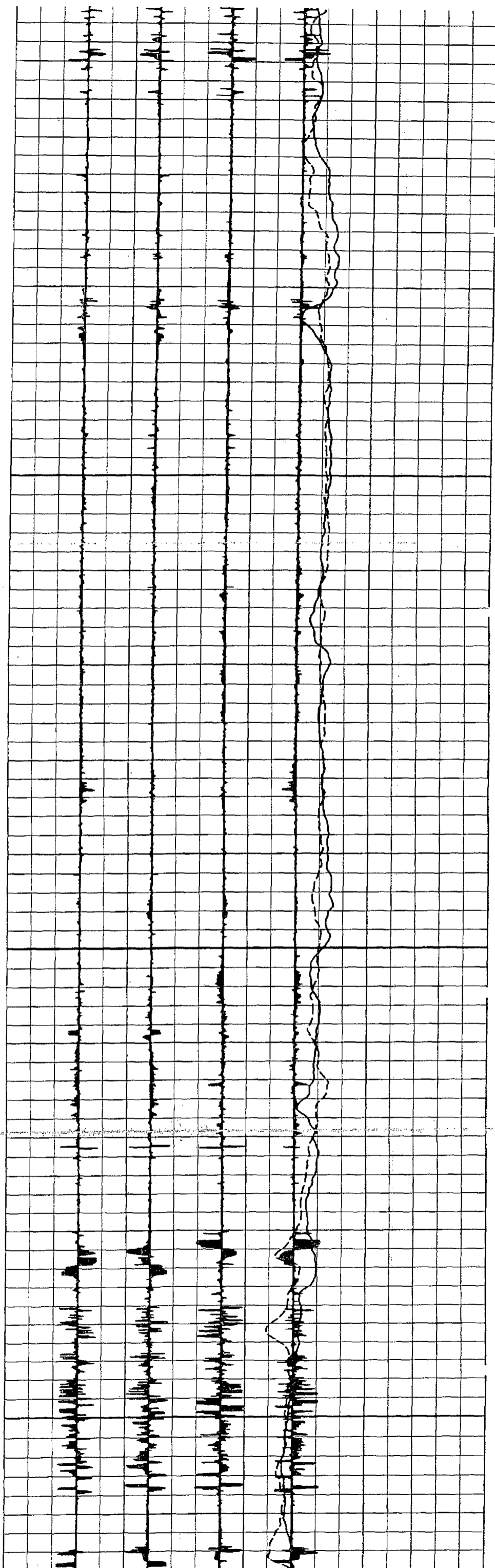


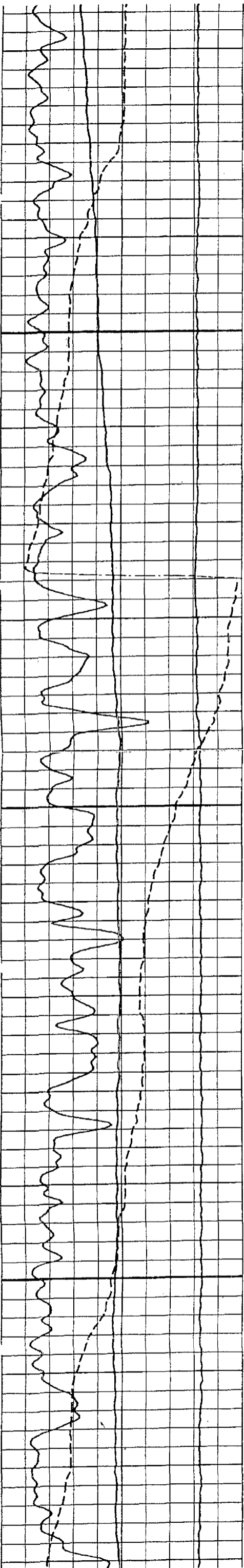


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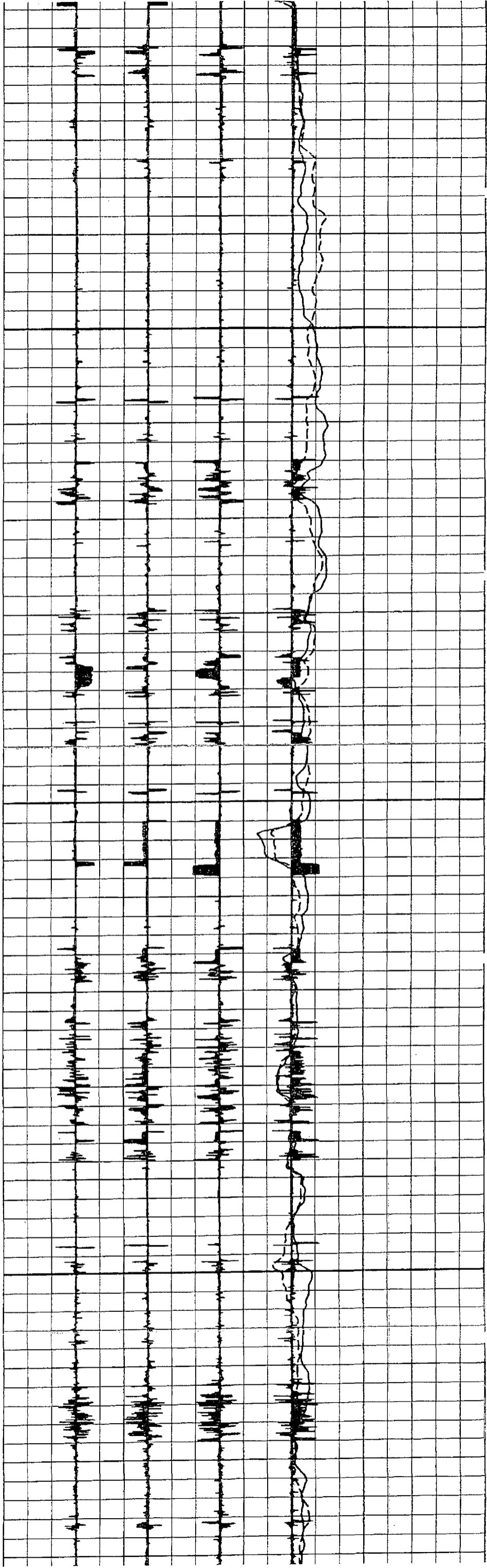


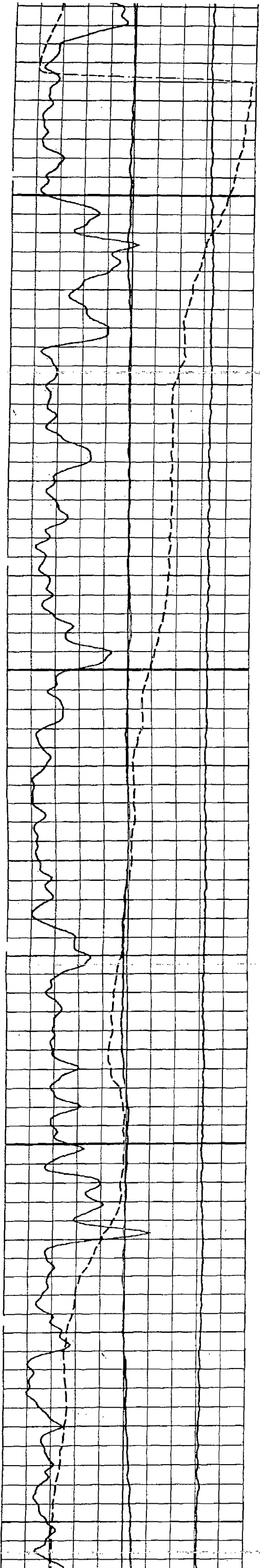


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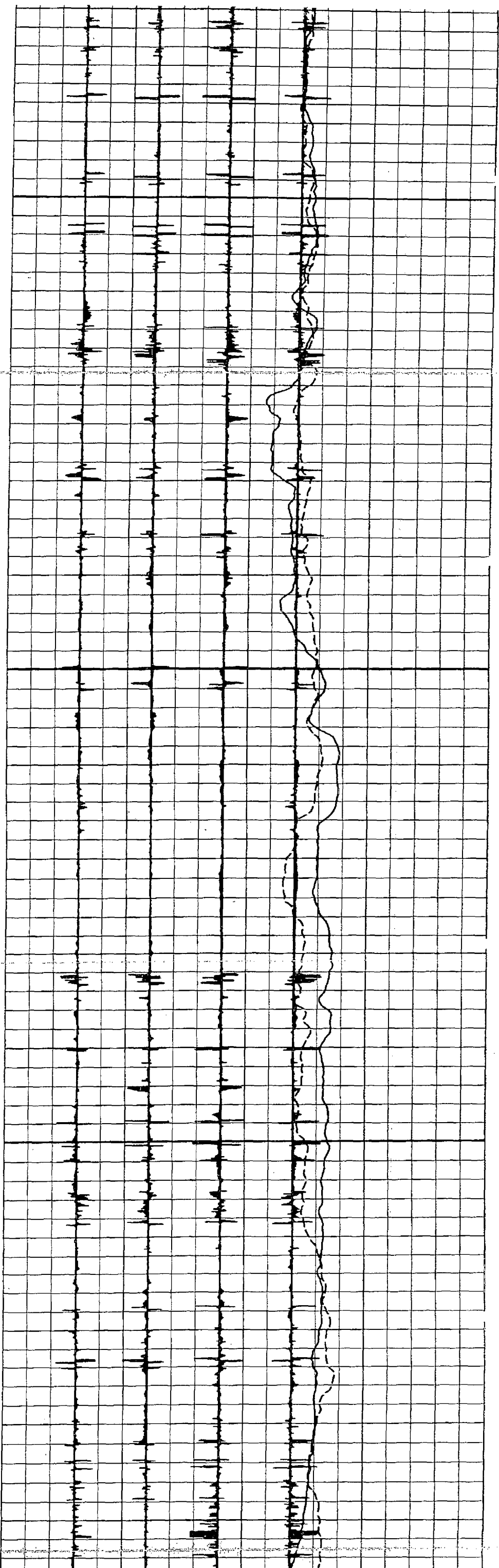


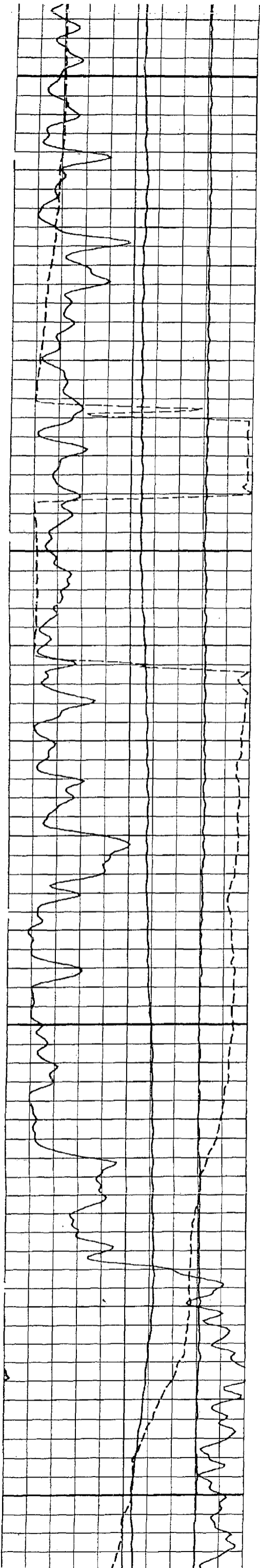


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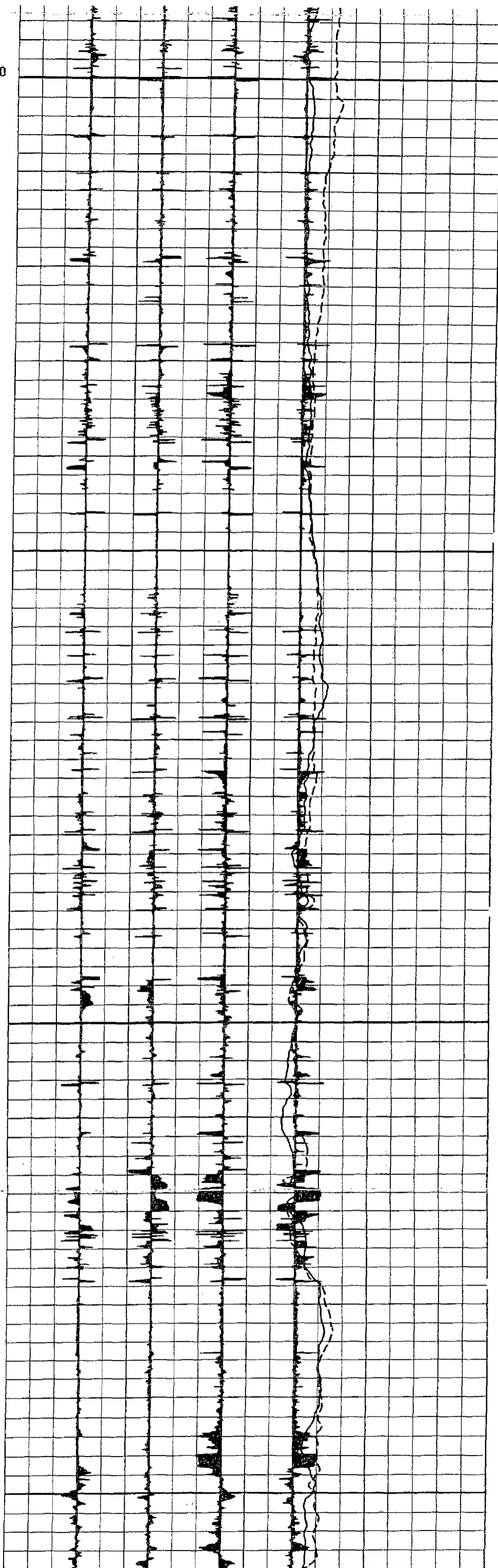


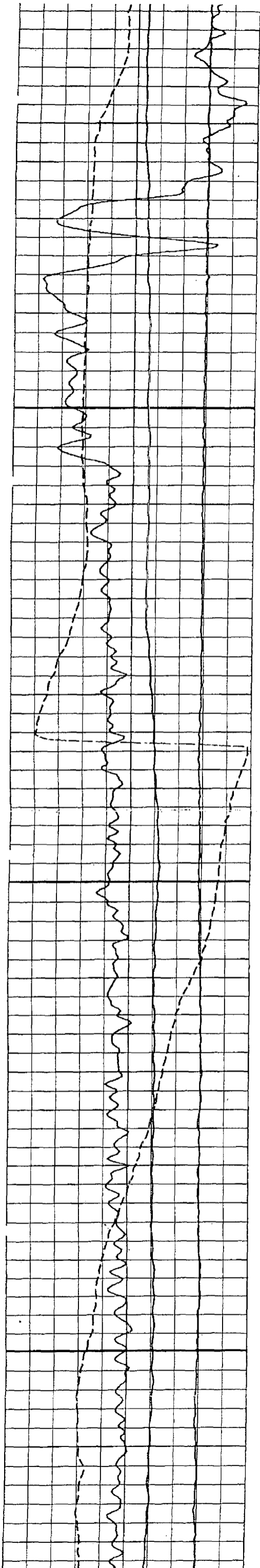
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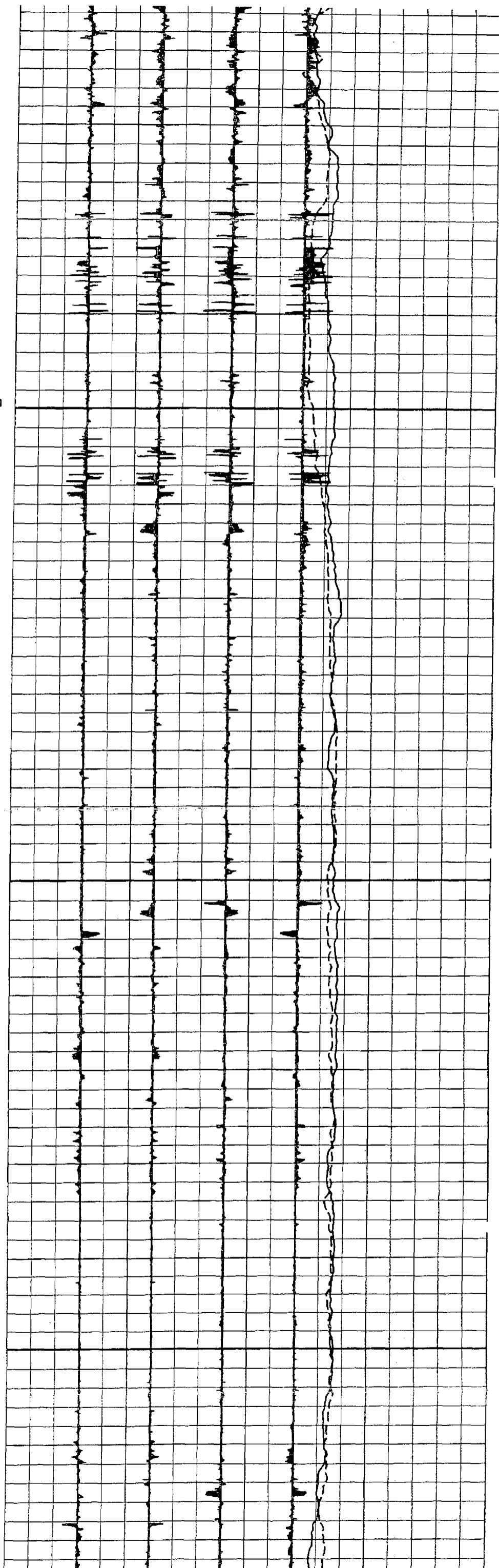


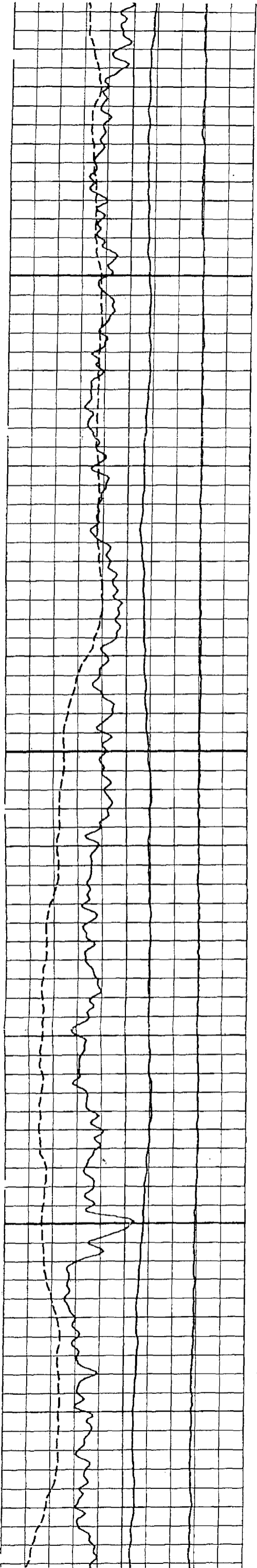


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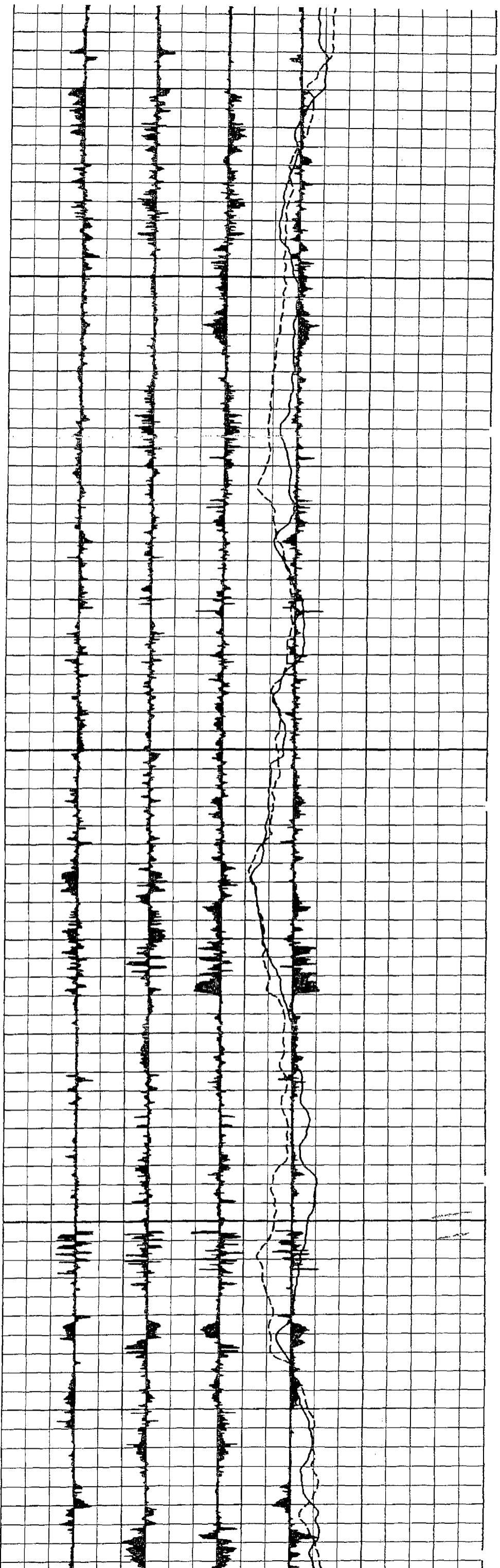


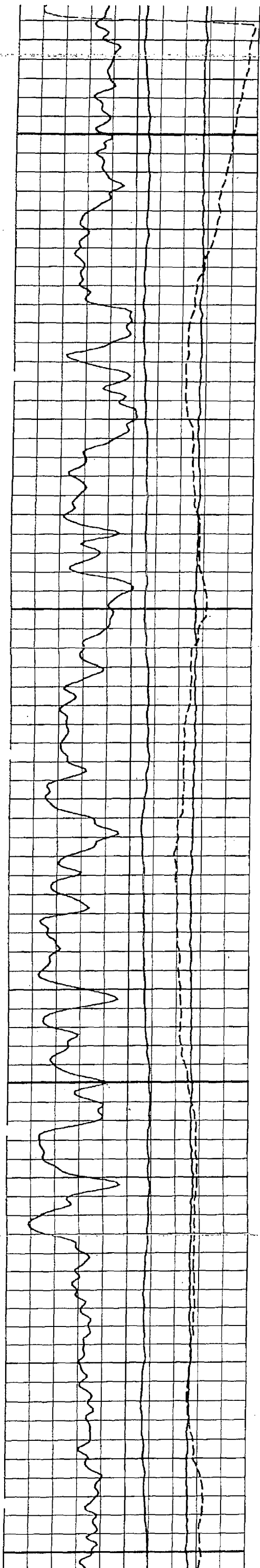


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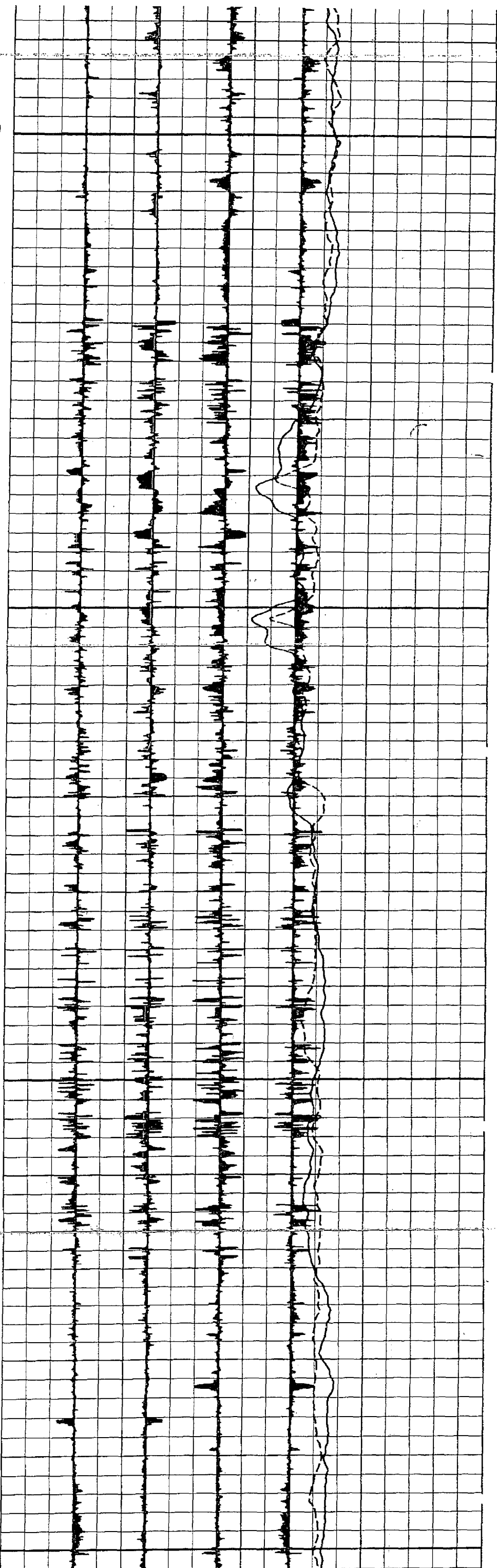


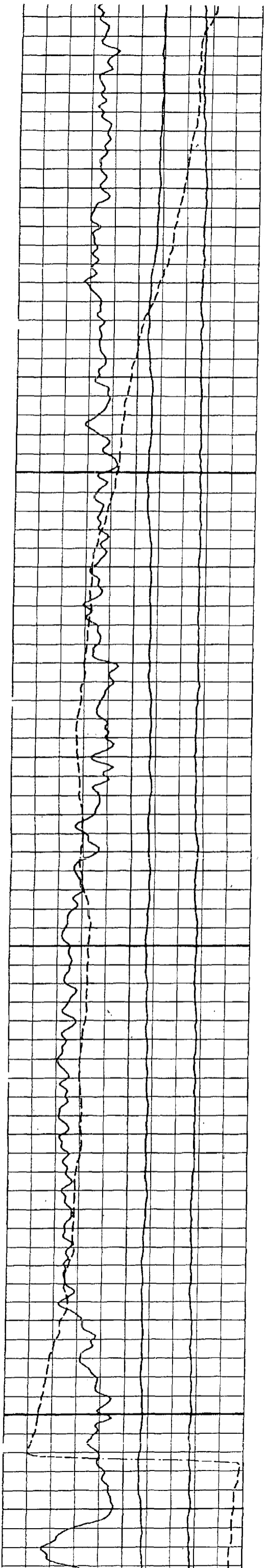
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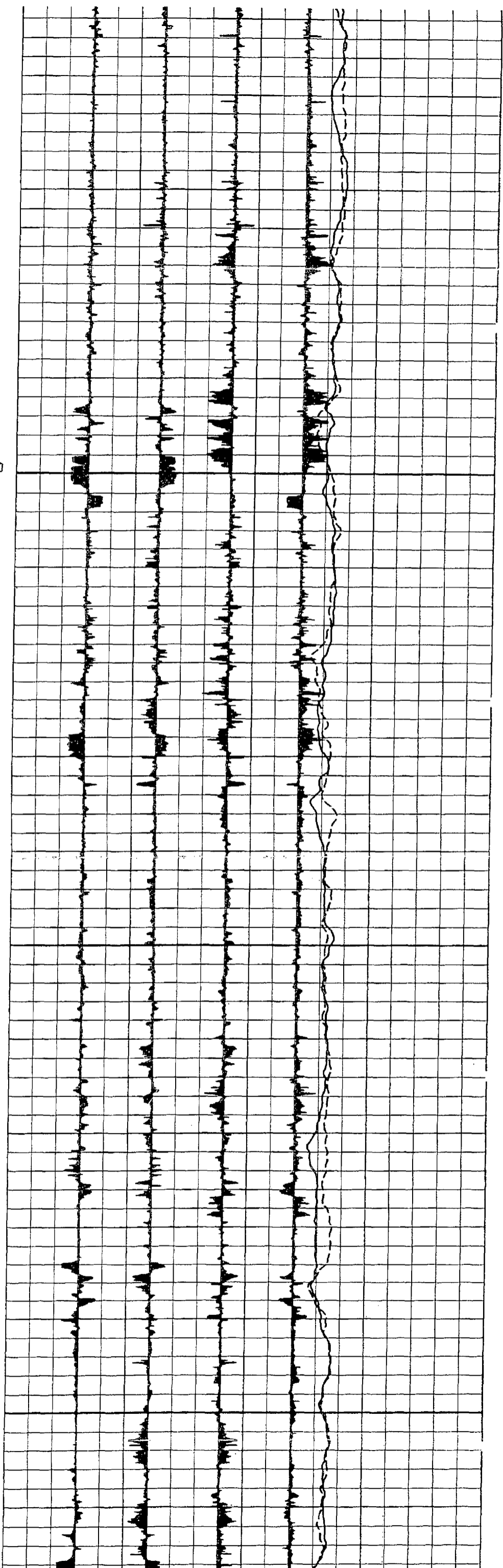


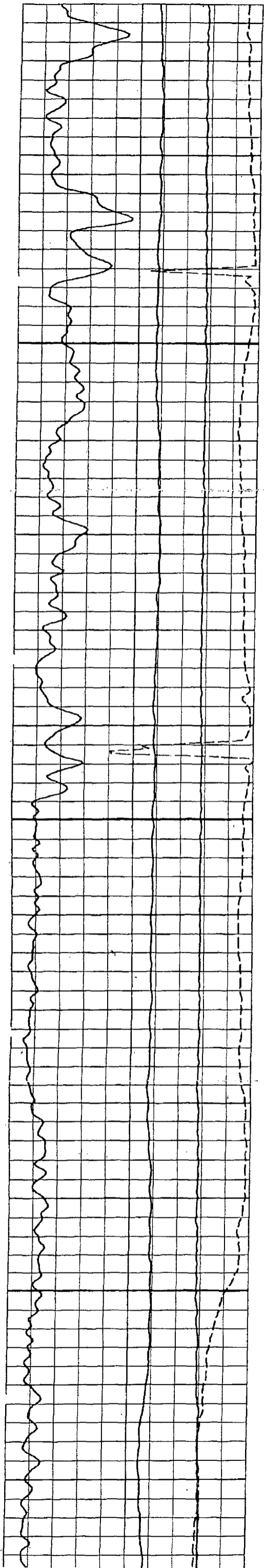


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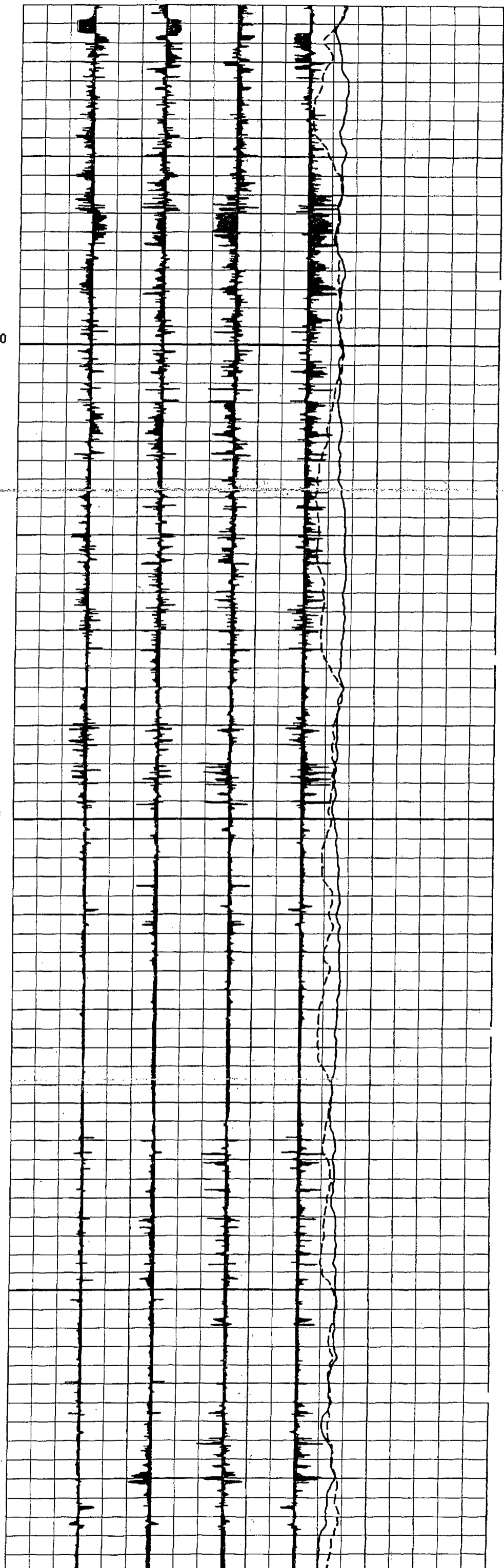


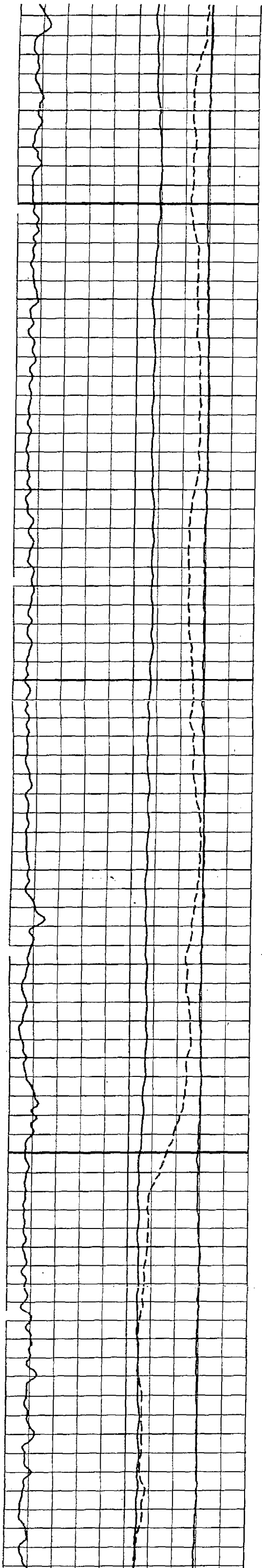


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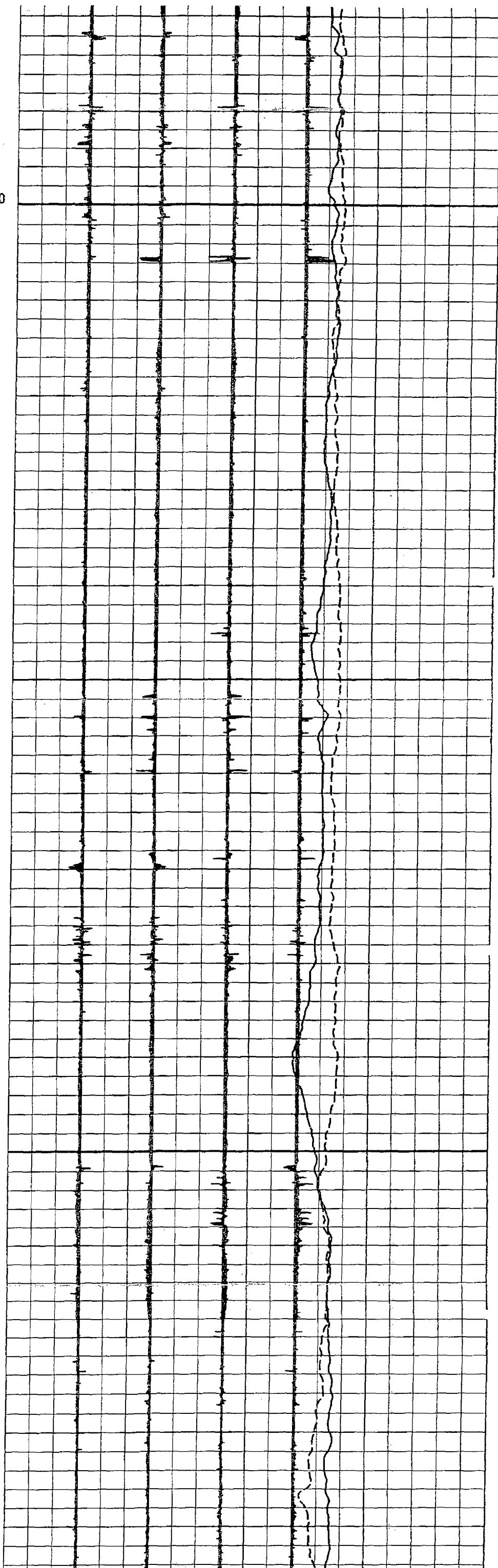


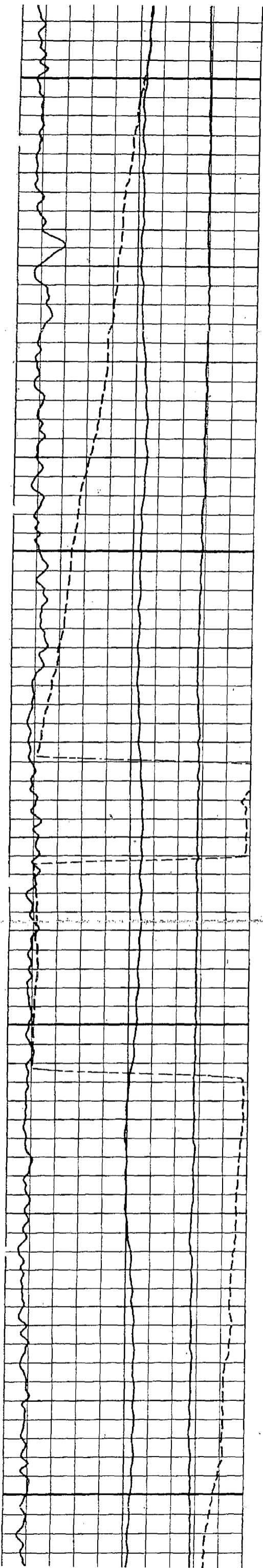


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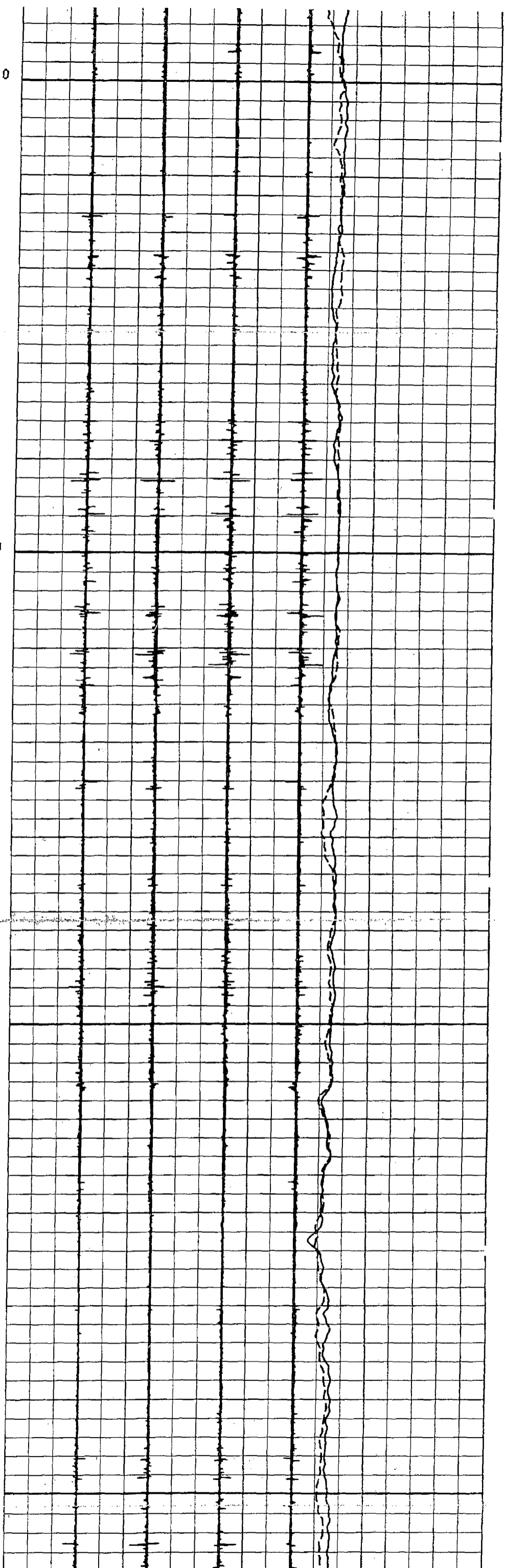


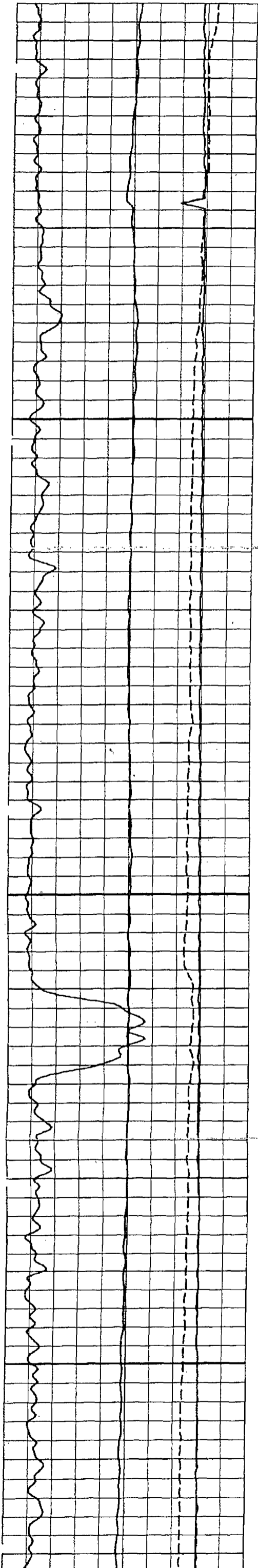
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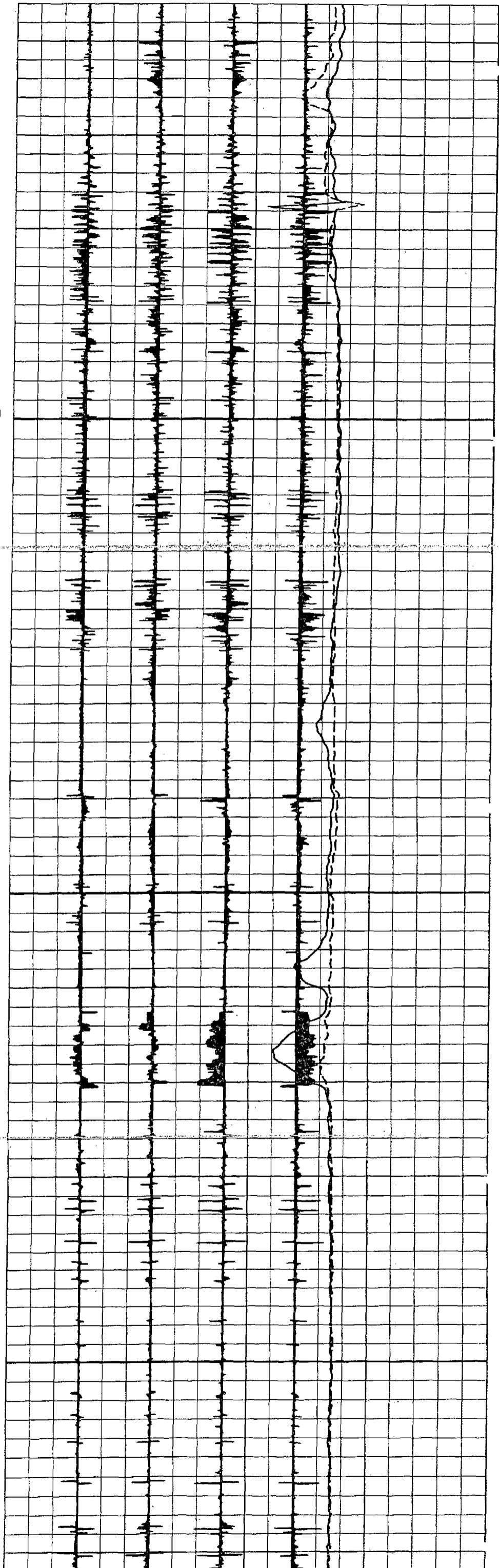


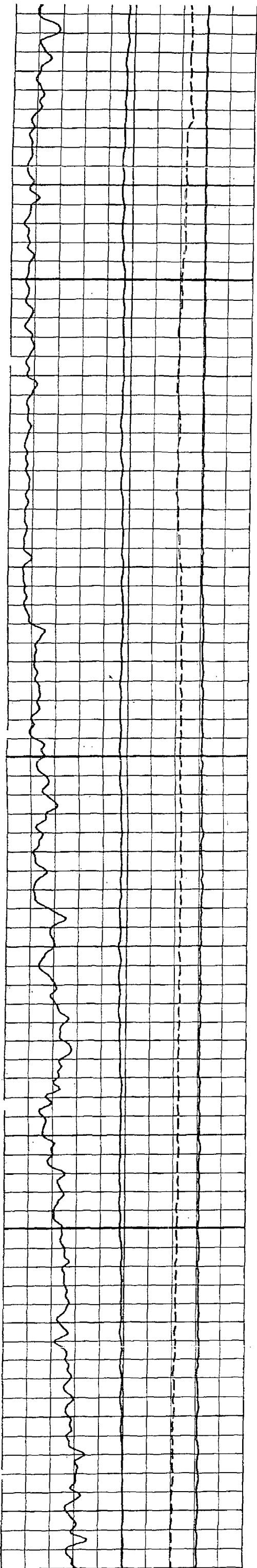


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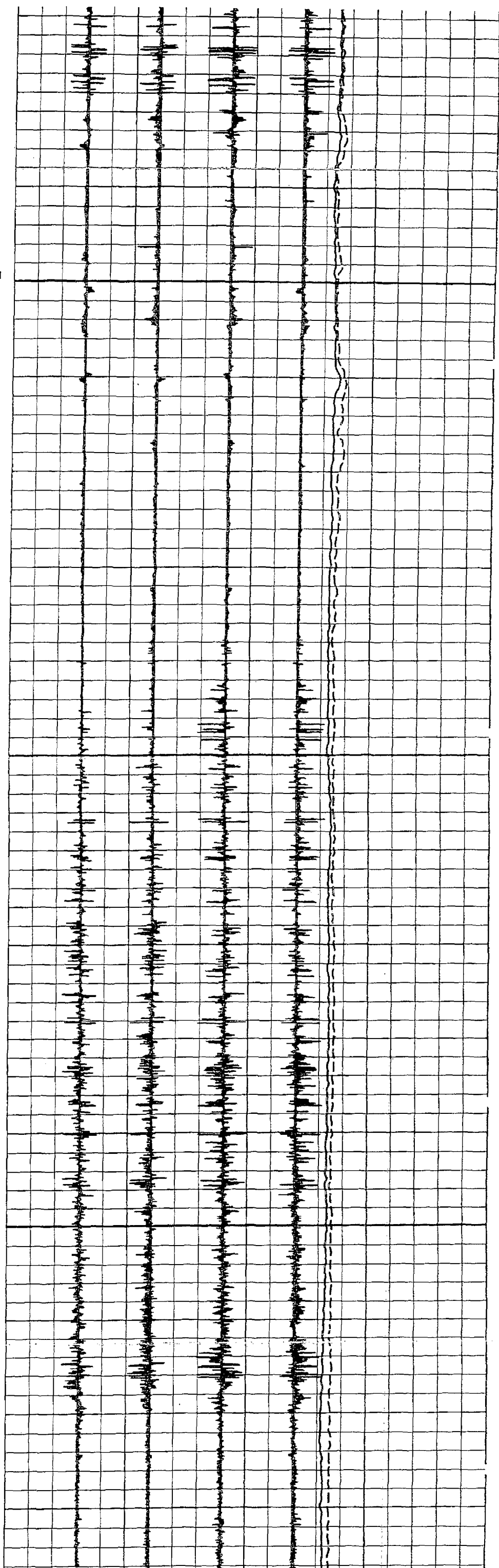


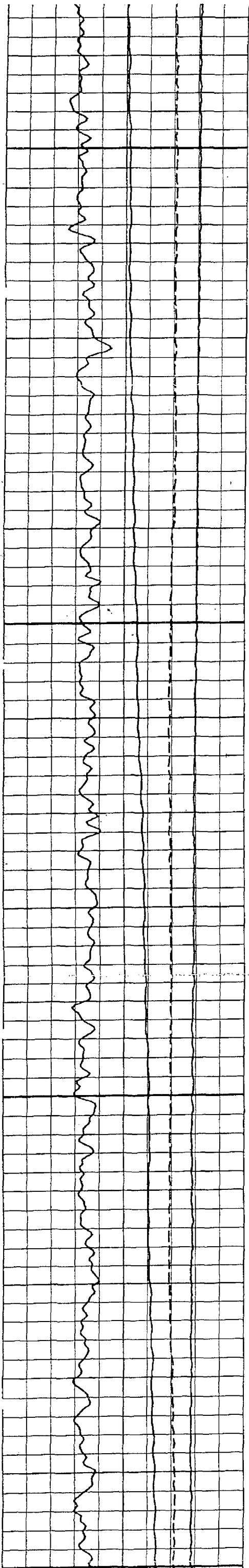


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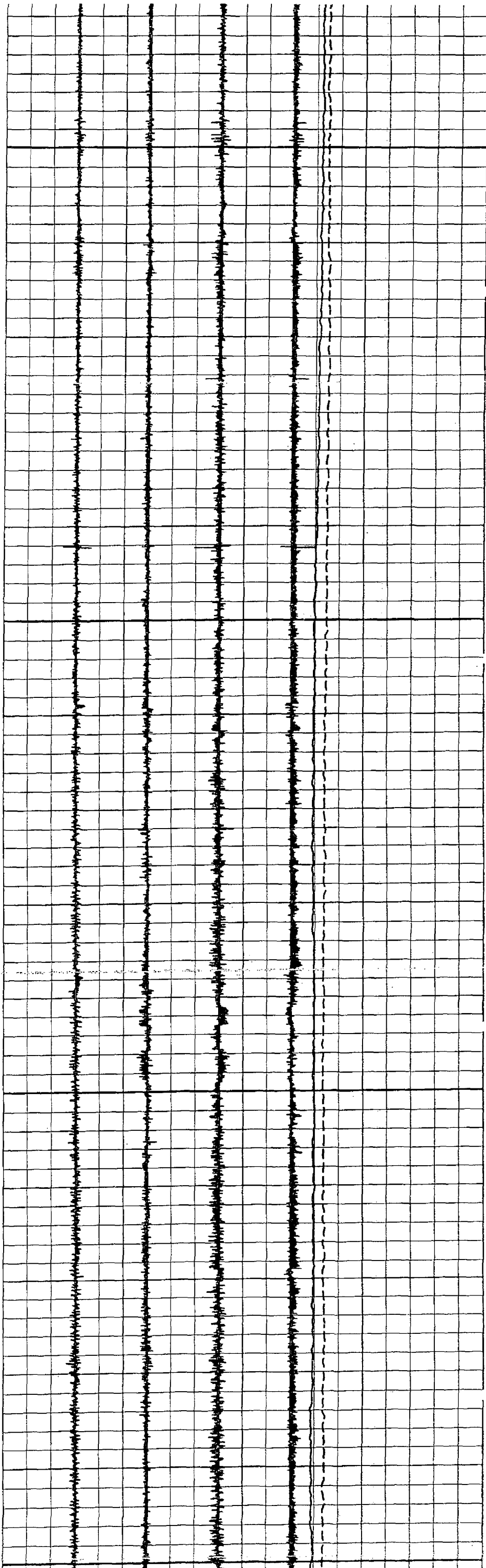


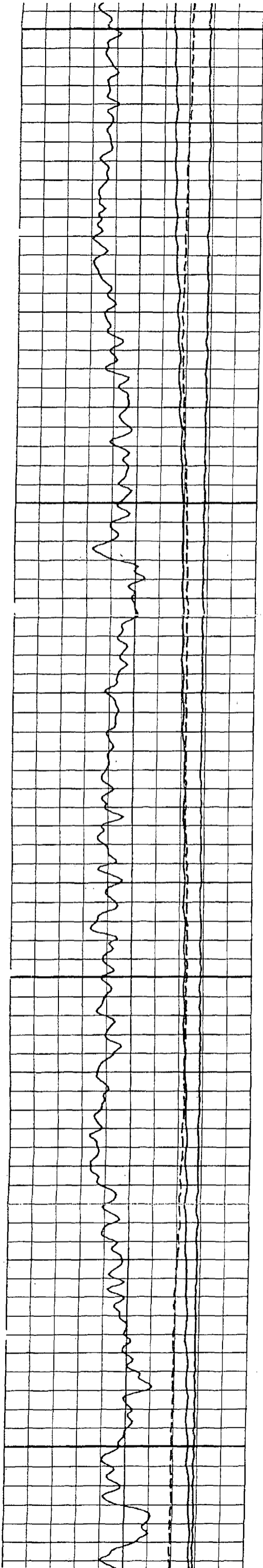
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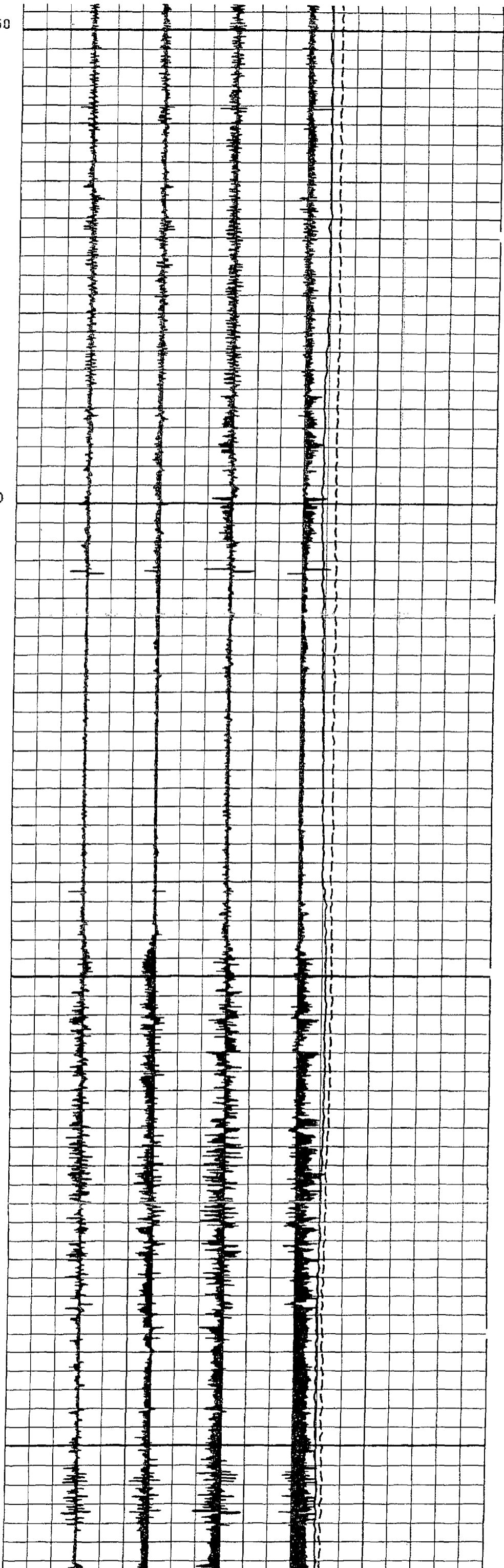


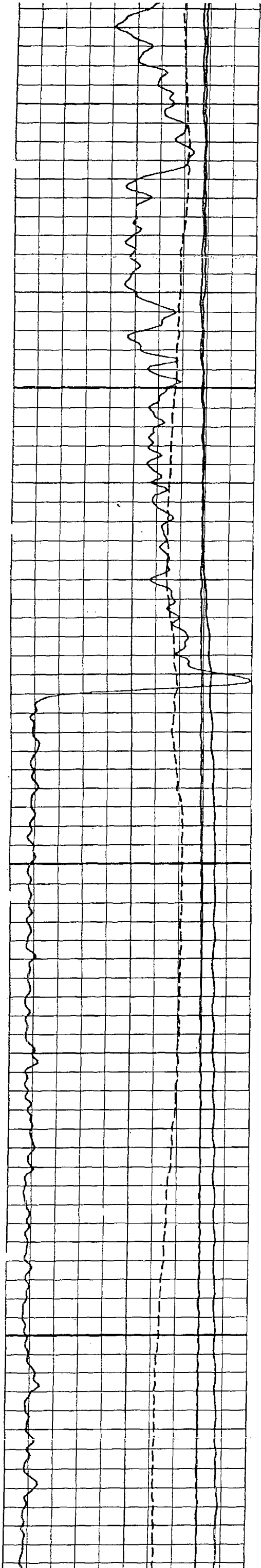
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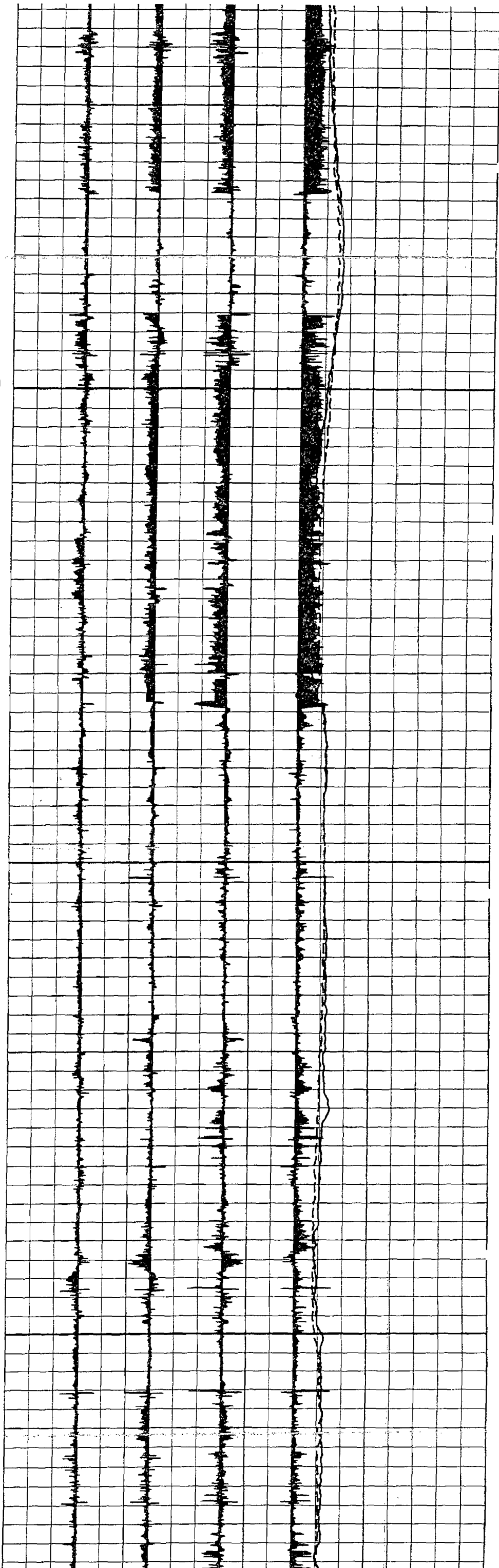


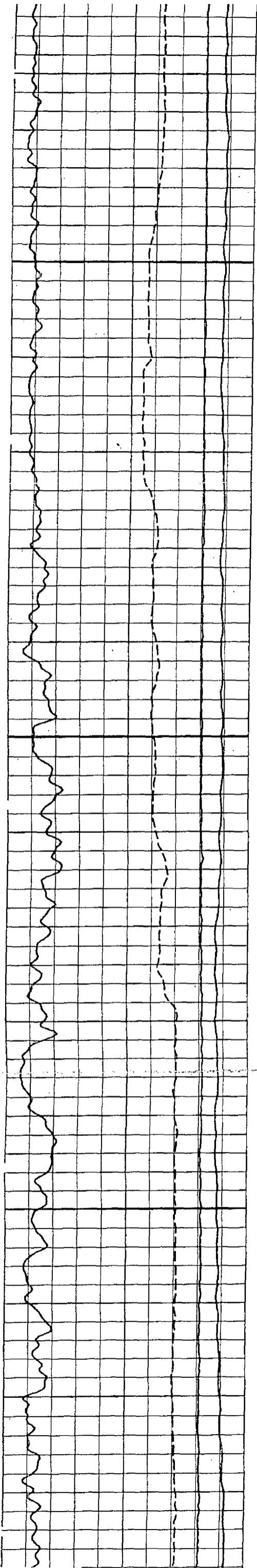


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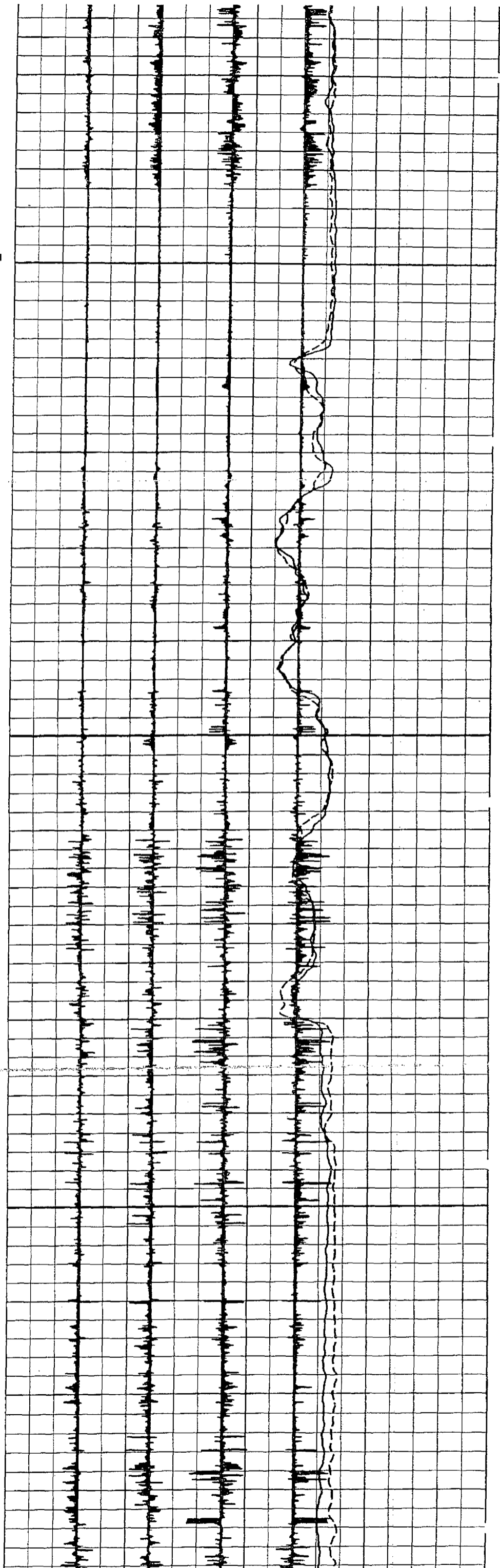


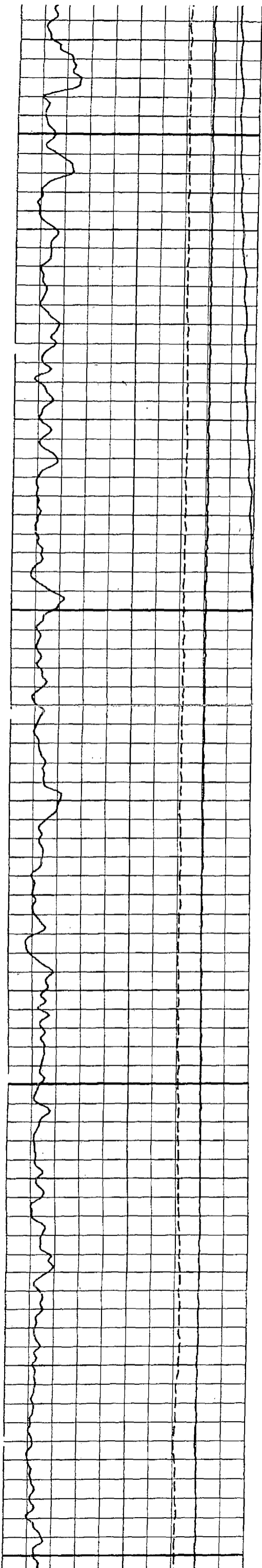


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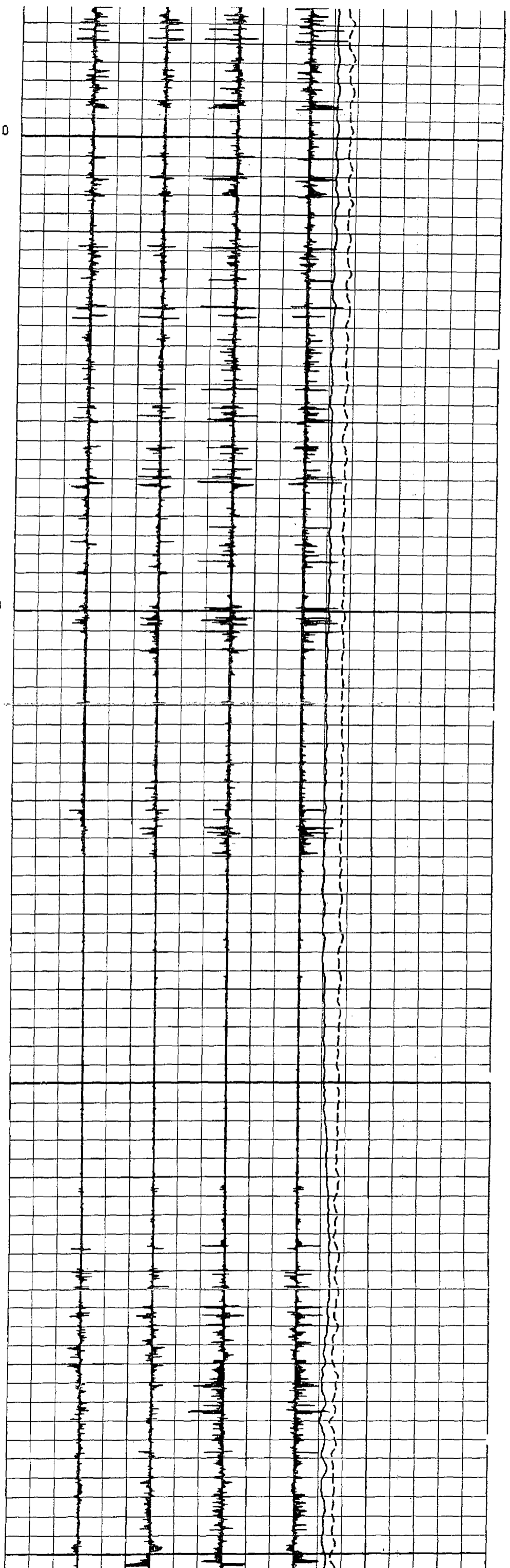


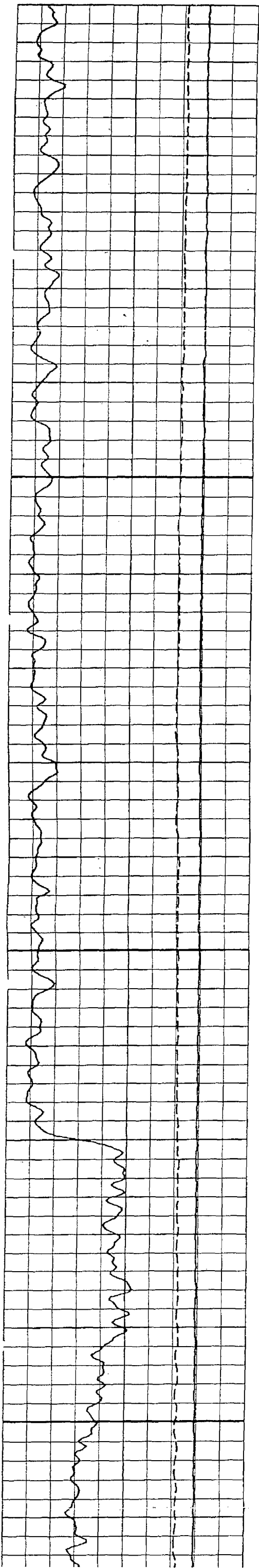
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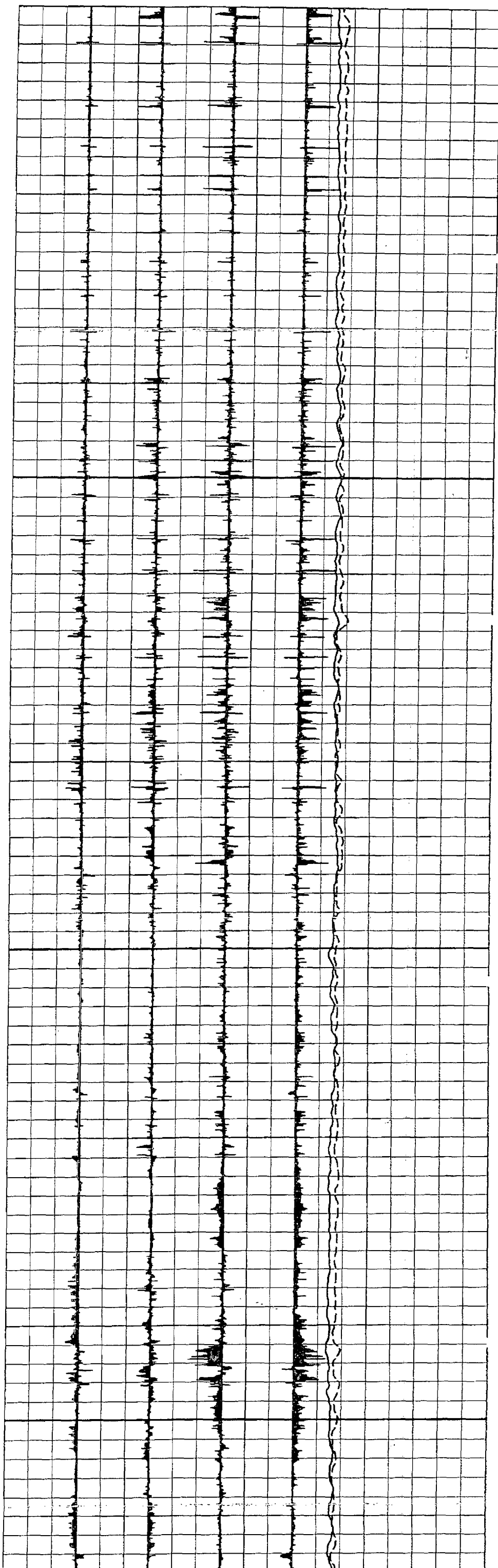


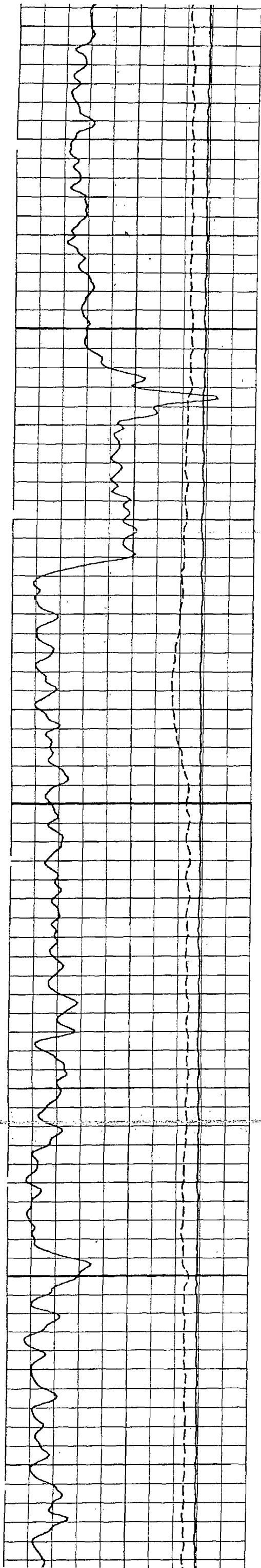


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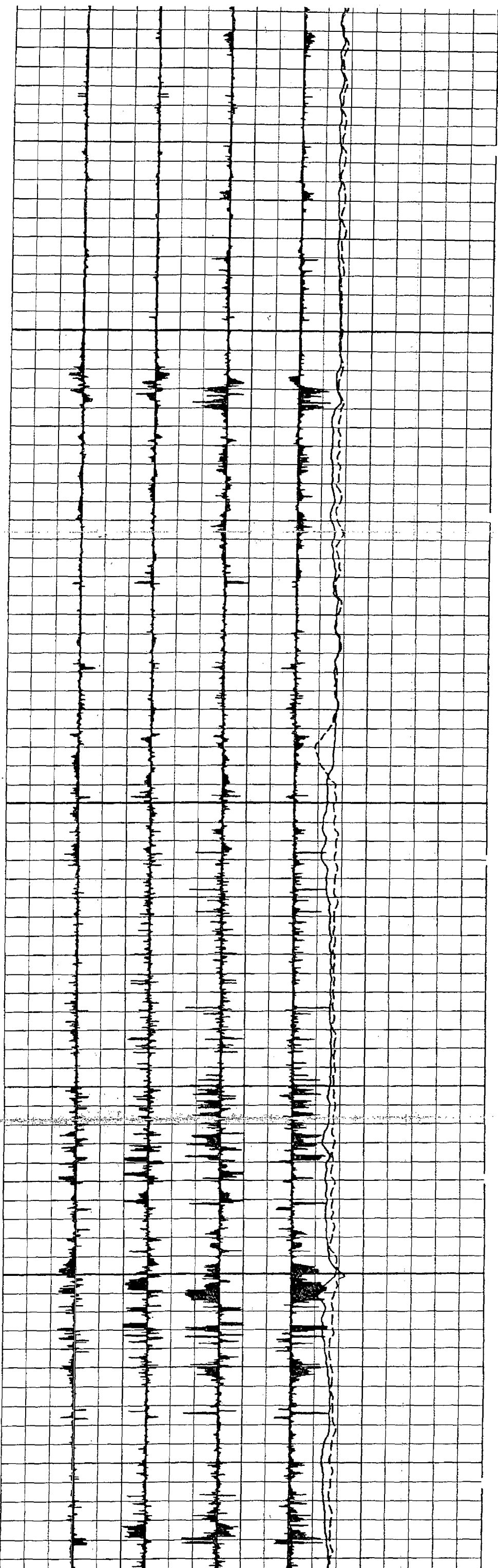


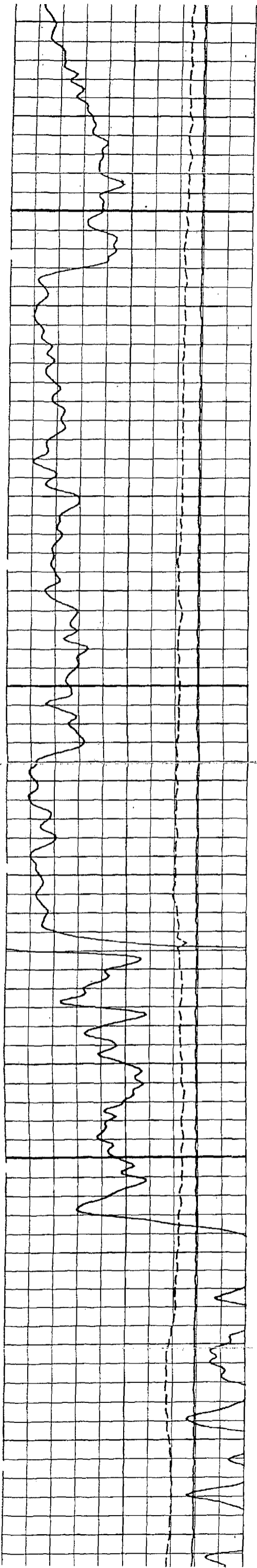


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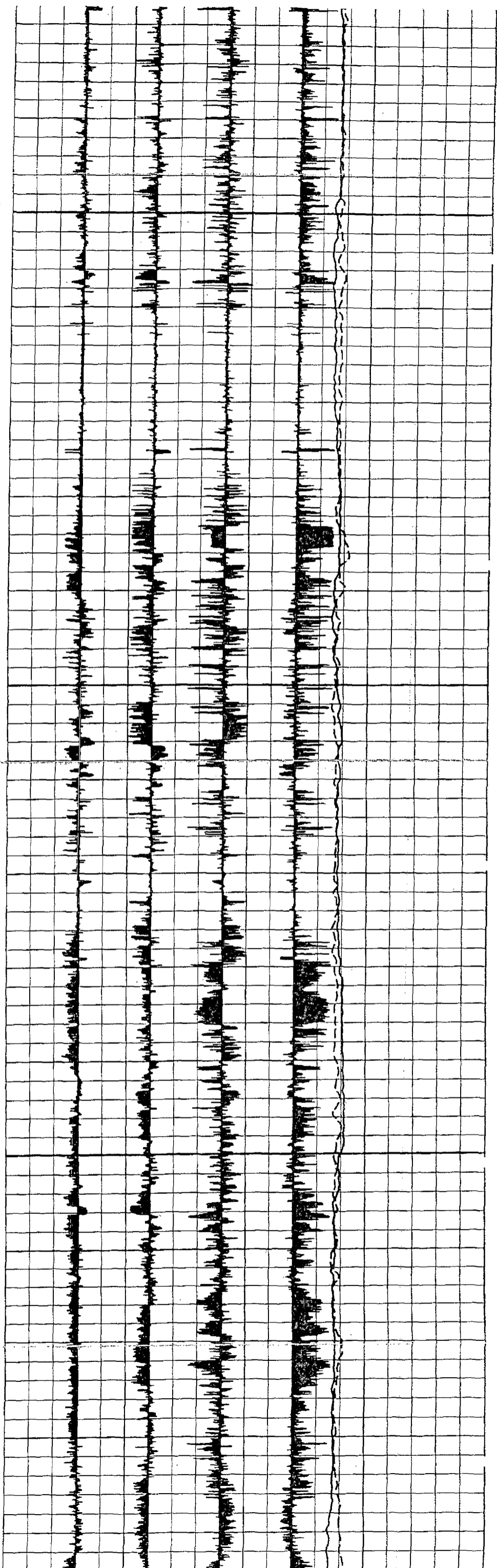


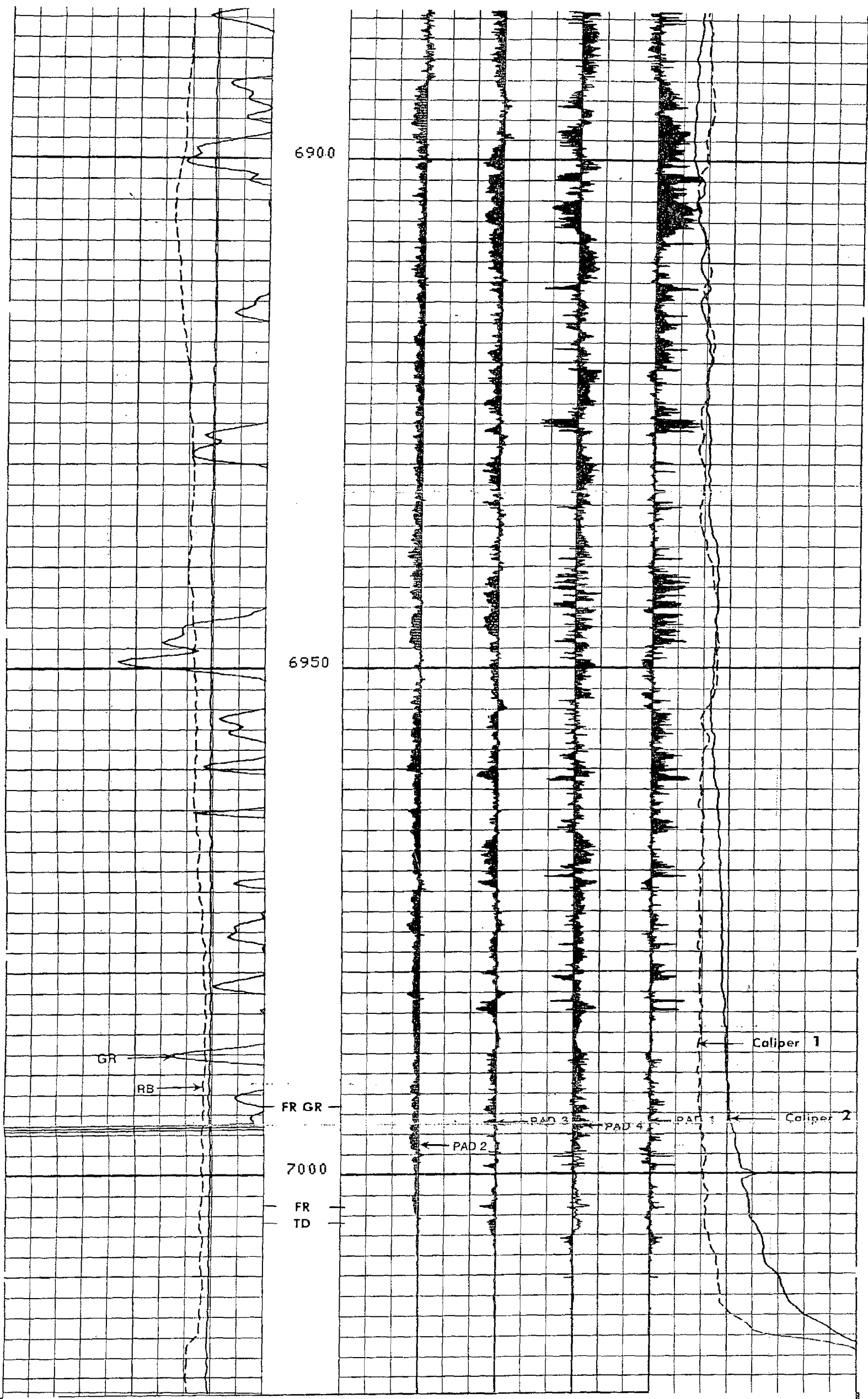


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FILE 1 14-FEB-85 21:29
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ZERO		
-3.000	7.0000	
D23		
-30.00	20.000	
D12		
-15.00	35.000	
	C2 (IN)	
26.000		6.0000
	C1 (IN)	

		26.000		6.0000
			C1 (IN)	
		26.000		6.0000
			ZERO	
GR (GAPI)	0.0	200.00		
		-12.00		8.0000
			ZERO	
RB (DEG)	-40.00	360.00		
		-9.000		11.000
AZIM (DEG)	-40.00	360.00		
		-60.00	D41	40.000
DEVI (DEG)	-1.000	9.0000		
		-45.00	D34	55.000

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
MCT	72	DEG	MDEC	0	DEG
BHS	OPEN		STYP	HDSD	
DD	0.0	F	BS	12.2500	IN
PP	NORM				

TAPE NOT MADE

COMPANY	STEAM RESERVES	SCHL. FR	7006
WELL	ANIMAS 55-7	SCHL. TD	7012
FIELD	WILDCAT	DRLR. TD	7001
COUNTY	HILDALGO	STATE	NEW MEXICO
		Elev:	KB 4217.6
			DF 4216.6
			GL 4200.0

Schlumberger

LITHO DENSITY-COMPENSATED NEUTRON

CSU

COMPANY: STEAM RESERVES

WELL: ANIMAS 55-7

FIELD: WILDGAT
COUNTY: HILDAGO
STATE: NEW MEXICO

LOCATION: 2412 FEL
2329 FSL

SEC: 7 TWP: 25S RGE: 19W

PERMANENT DATUM:
ELEV. OF PERM. DATUM: 4200.0 F
LOG MEASURED FROM: KB
17.6 F ABOVE PERM. DATUM
DRLG. MEASURED FROM: KB

ELEVATIONS:-
KB: 4217.6 F
DF: 4216.6 F
GL: 4200.0 F

DATE: 14 FEB 85
RUN NO: 1

DEPTH-DRILLER: 7001.0 F
DEPTH-LOGGER: 7012.0 F
BTM. LOG INTERVAL: 7009.0 F
TOP LOG INTERVAL: 1053.0 F
CASING-DRILLER: 1050 F
CASING-LOGGER: 1053 F
CASING: 13 3/8
BIT SIZE: 12 1/4

OTHER SERVICES-

DIL
LDT
CNL
BHC
HDT
HRT

PROGRAM
TAPE NO: 26.2
SERVICE
ORDER NO: 420298

TYPE FLUID IN HOLE: FRESH GEL
DENSITY: 9.4 LB/G
VISCOSITY: 41.0 S
PH: 11.0
FLUID LOSS: 7.4 CC
SOURCE OF SAMPLE: TANK
RM: 1.990 OHMM AT 59.0 DEGF
RMF: 1.530 OHMM AT 59.0 DEGF
RMC: 2.160 OHMM AT 59.0 DEGF
SOURCE RMF/RMC: MEAS/MEAS
RM AT BHT: .482 OHMM AT 265. DEGF
RMF AT BHT: .371 OHMM AT 265. DEGF
RMC AT BHT: .524 OHMM AT 265. DEGF

TIME CIRC. STOPPED: 0200
TIME LOGGER ON BTM.: 1100

MAX. REC. TEMP: 265.0 DEGF

LOGGING UNIT NO: 8174
LOGGING UNIT LOC: FARMINGTON
RECORDED BY: MAURER
WITNESSED BY: MR. PILKINGTON

REMARKS:
CREW, YAZZIE, QUINN

EQUIPMENT NUMBERS-
DRS 3723 NSC 1795 CNC 359 SGC 298
CCCB 2800

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 INTERPRETATIONS, 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.

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 INTERPRETATIONS, 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.

FILE 0 14-FEB-85 14:45
 DATA ACQUIRED 00- -00 00:00

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 85/02/14
 PROGRAM FILE: LDNGR (VERSION 26.2 00/00/00)

CNTH TOOL CHECK

JIG
 BEFORE AFTER
 NRAT 2.126 2.117

POROSITY CHANGE (LIME): -.000

LDTL TOOL CHECK

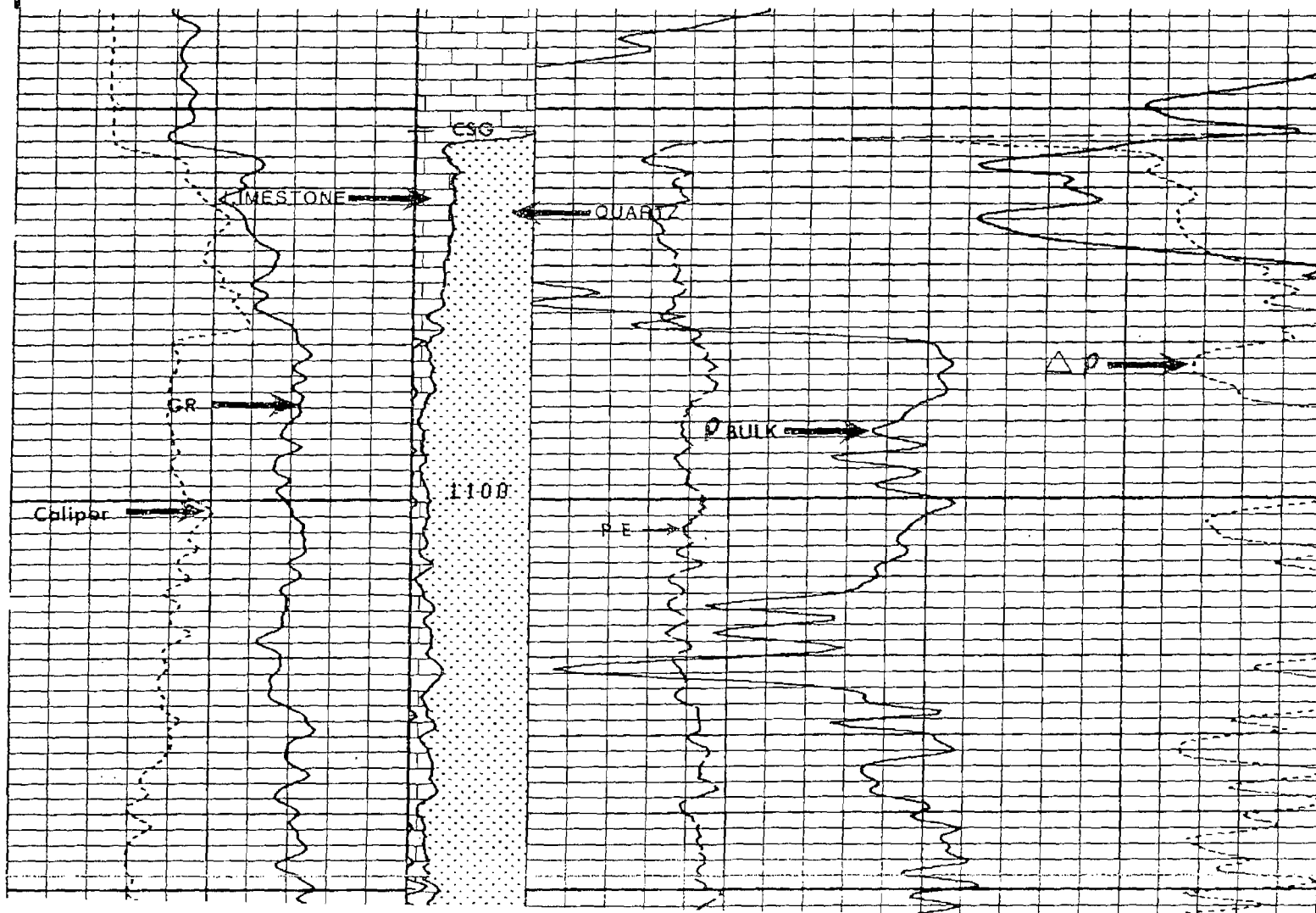
DRS SONDE NUMBER : 3723
 NUCLEAR SERVICE CARTRIDGE NUMBER : 1795
 POWERED DETECTOR HOUSING NUMBER : 2769
 POWERED GAMMA-GAMMA DETECTOR NUMBER : 2796
 LDT LOGGING SOURCE NUMBER : 7091
 LDT CALIBRATION MODE : WATE
 MUD DENSITY : 8.00000

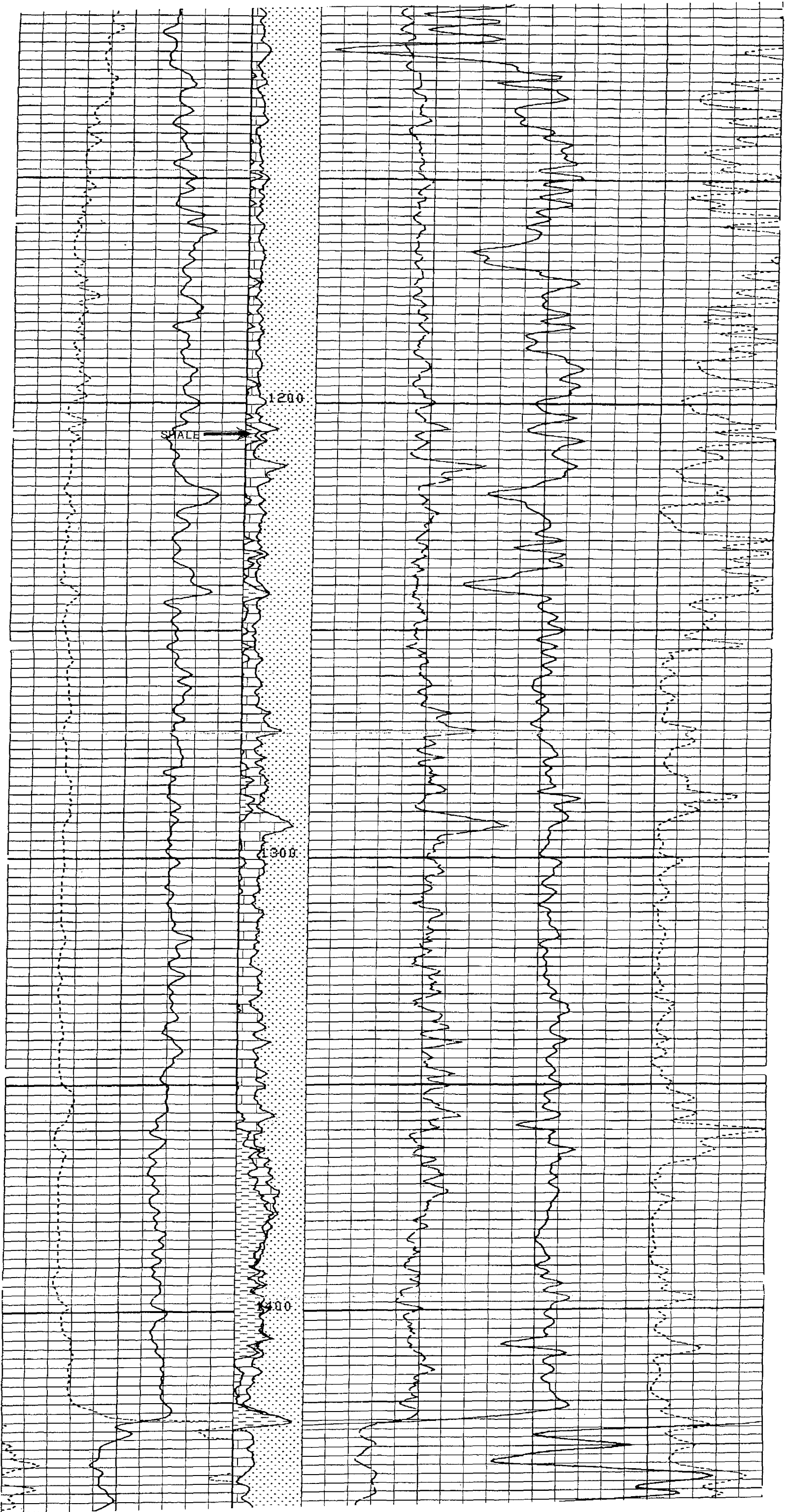
BACKGROUND MEASURED
 BEFORE AFTER UNITS
 LL 19.95 20.00 CPS
 LU 77.18 77.18 CPS
 LS 58.56 58.62 CPS
 LITH 5.816 5.78 CPS
 SS1 13.82 14.07 CPS
 SS2 9.507 9.43 CPS

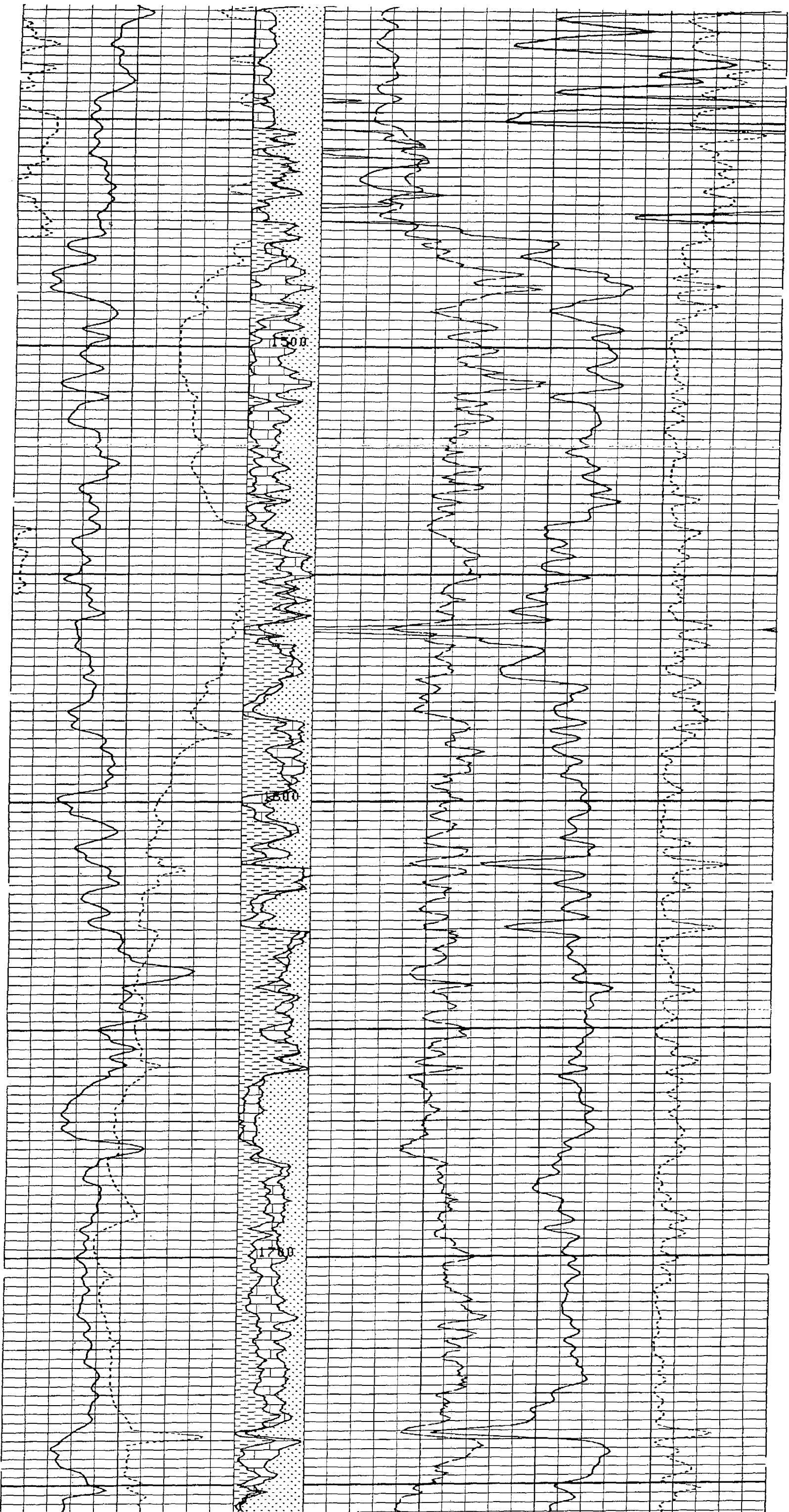
FILE 0 14-FEB-85 14:43

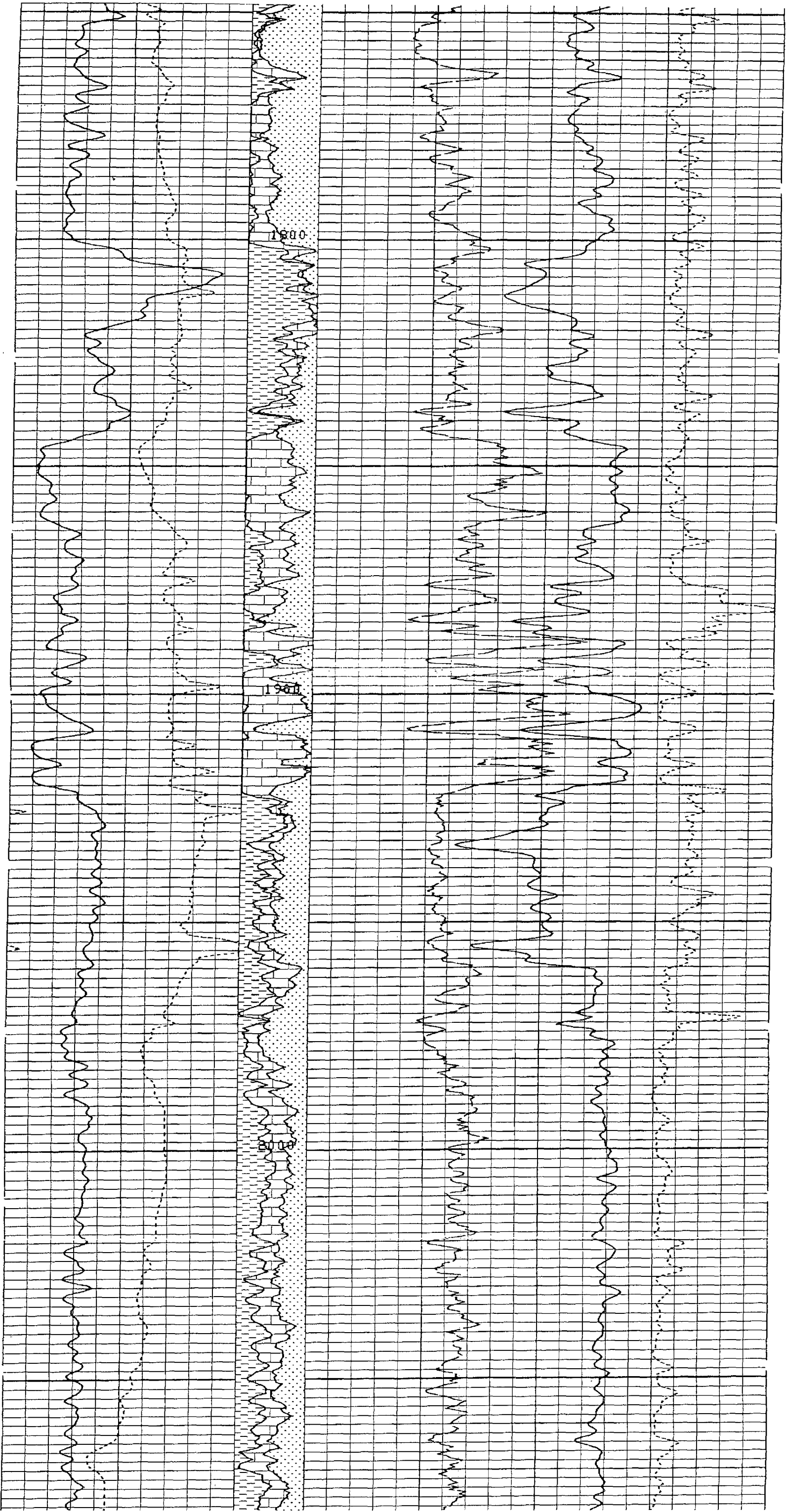
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0.0	200.00	-.2500	.25000
CALI(IN)		RHOB(G/C3)	
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		PEF	
		0.0	10.000

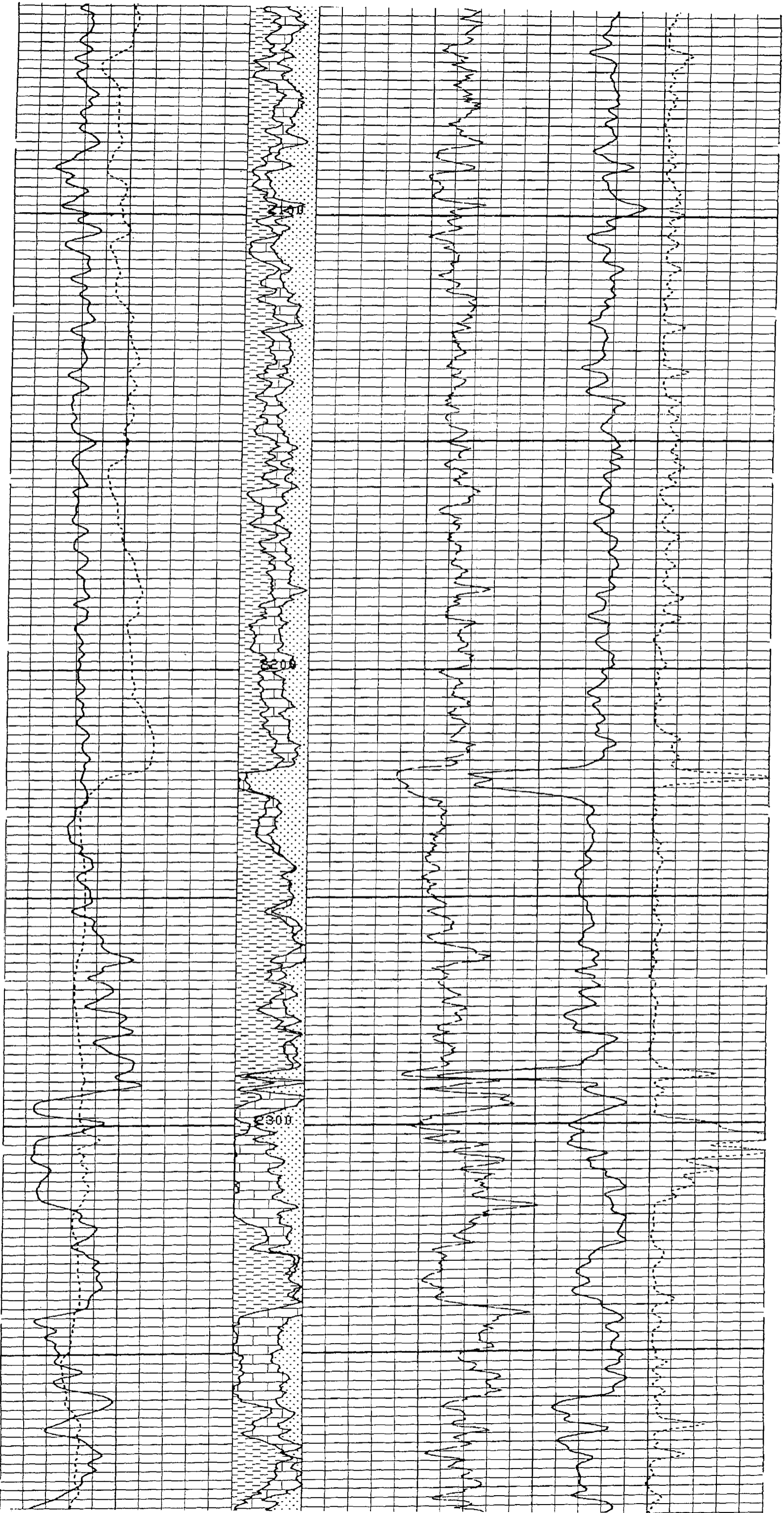
FILE 6 14-FEB-85 14:40
 DATA ACQUIRED 14-FEB-85 13:57

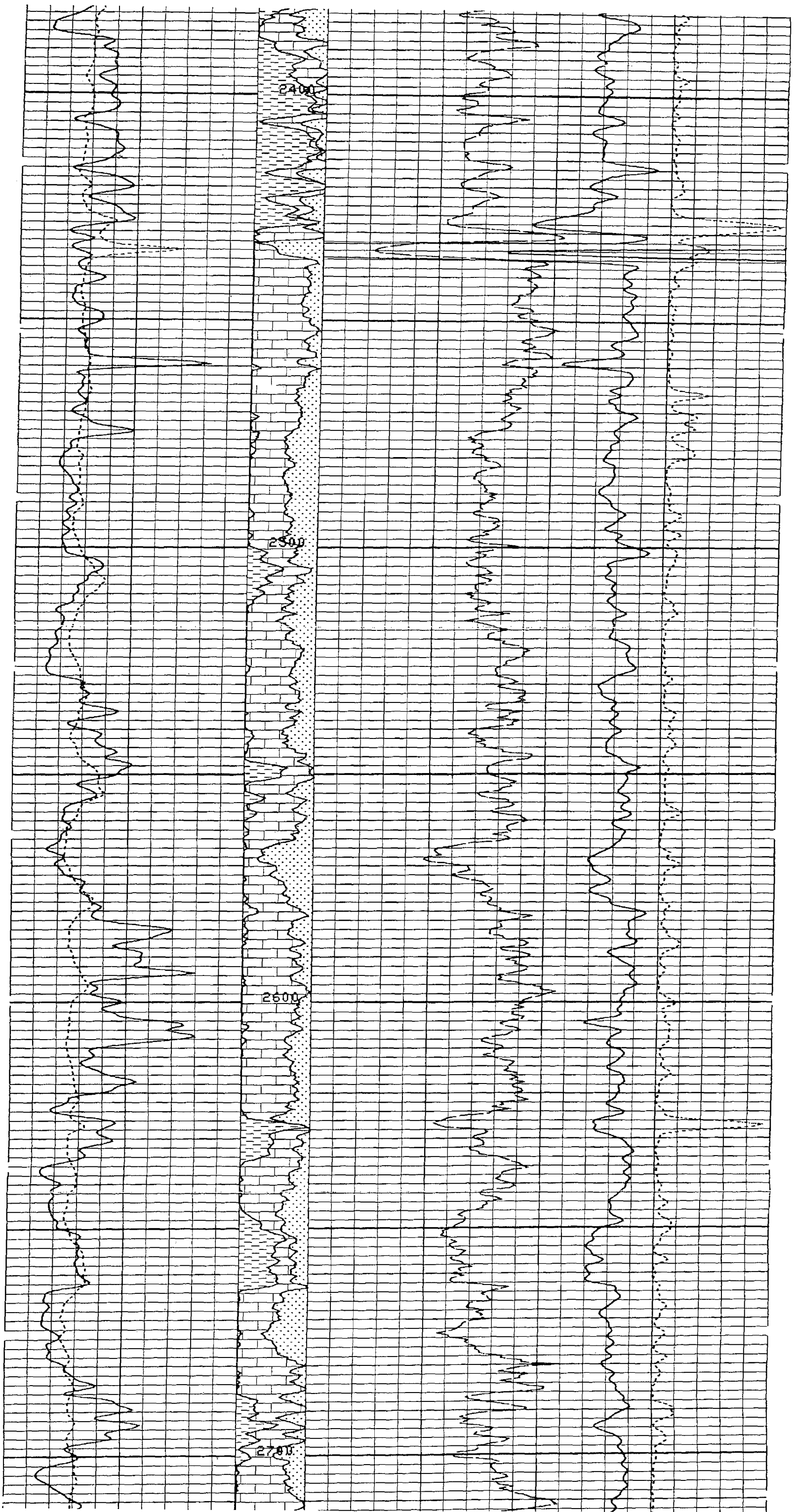


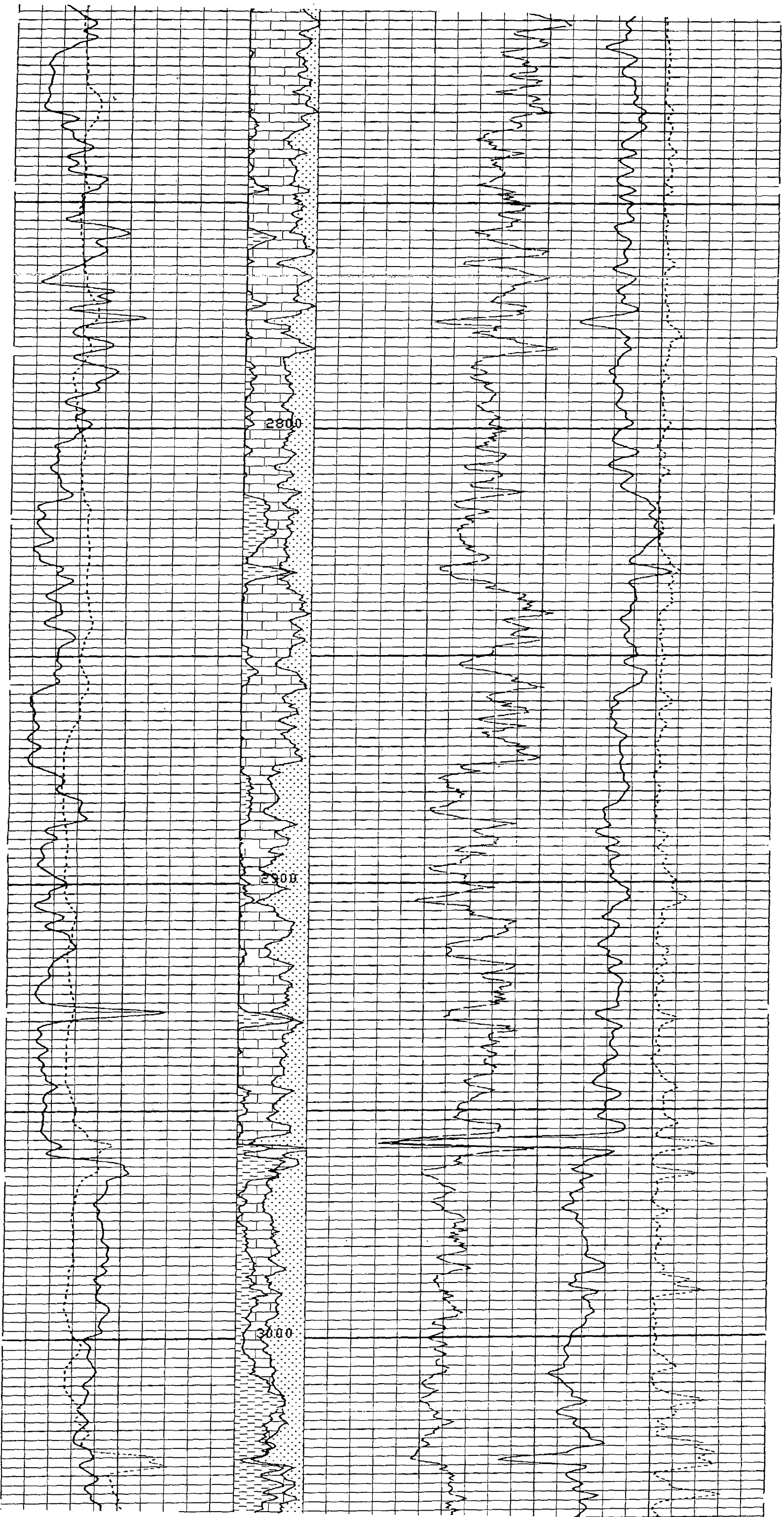


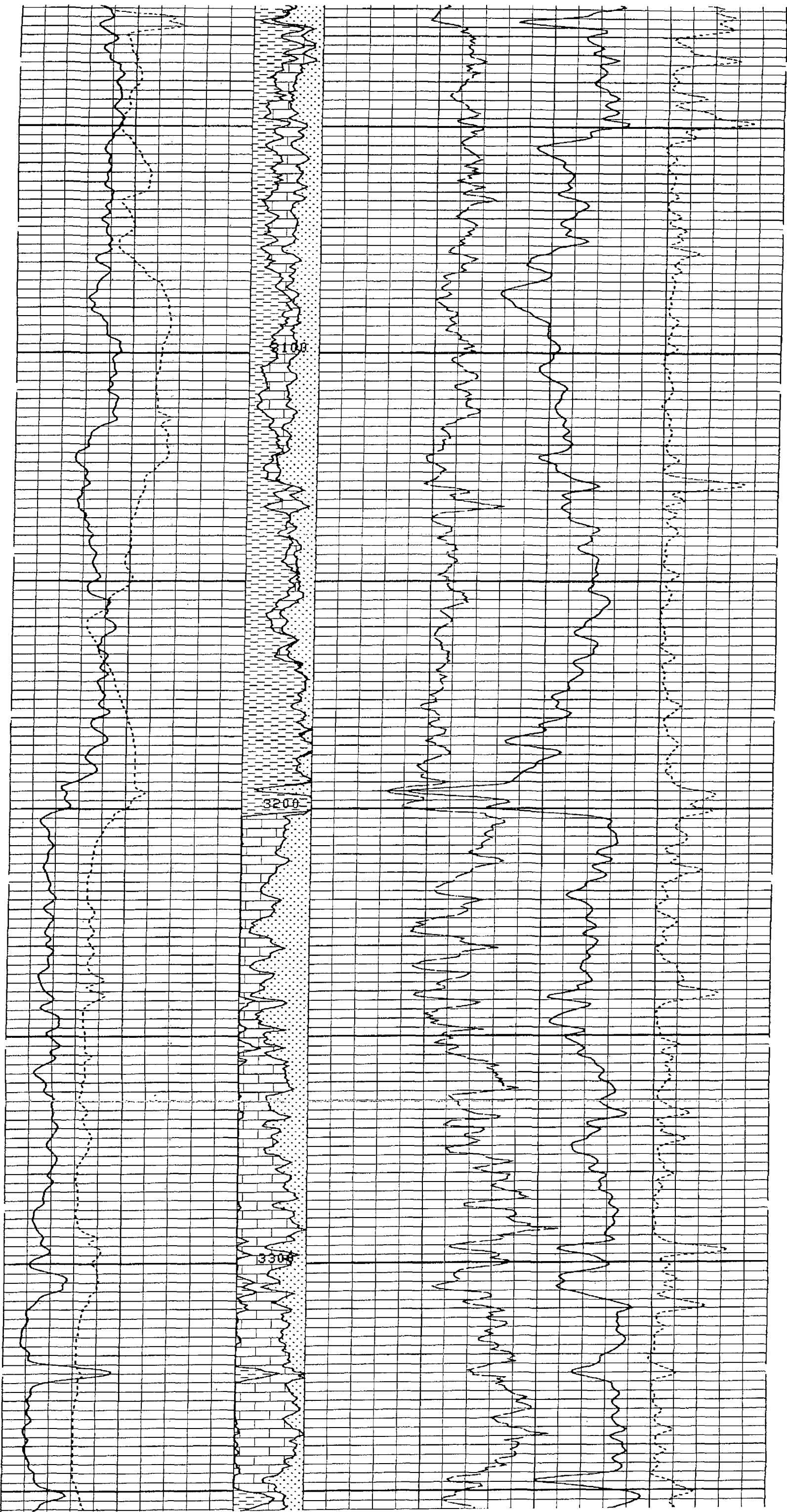


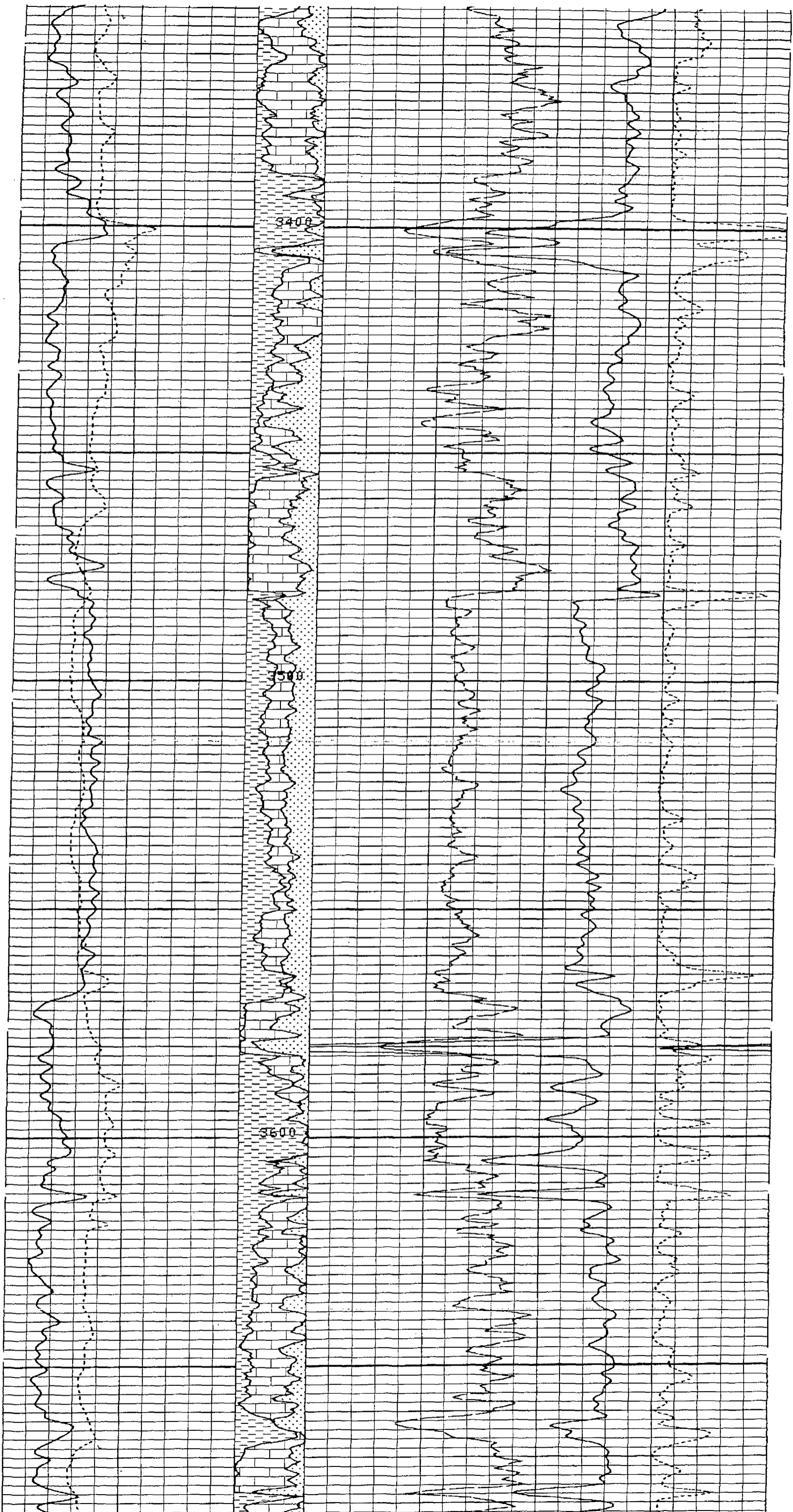


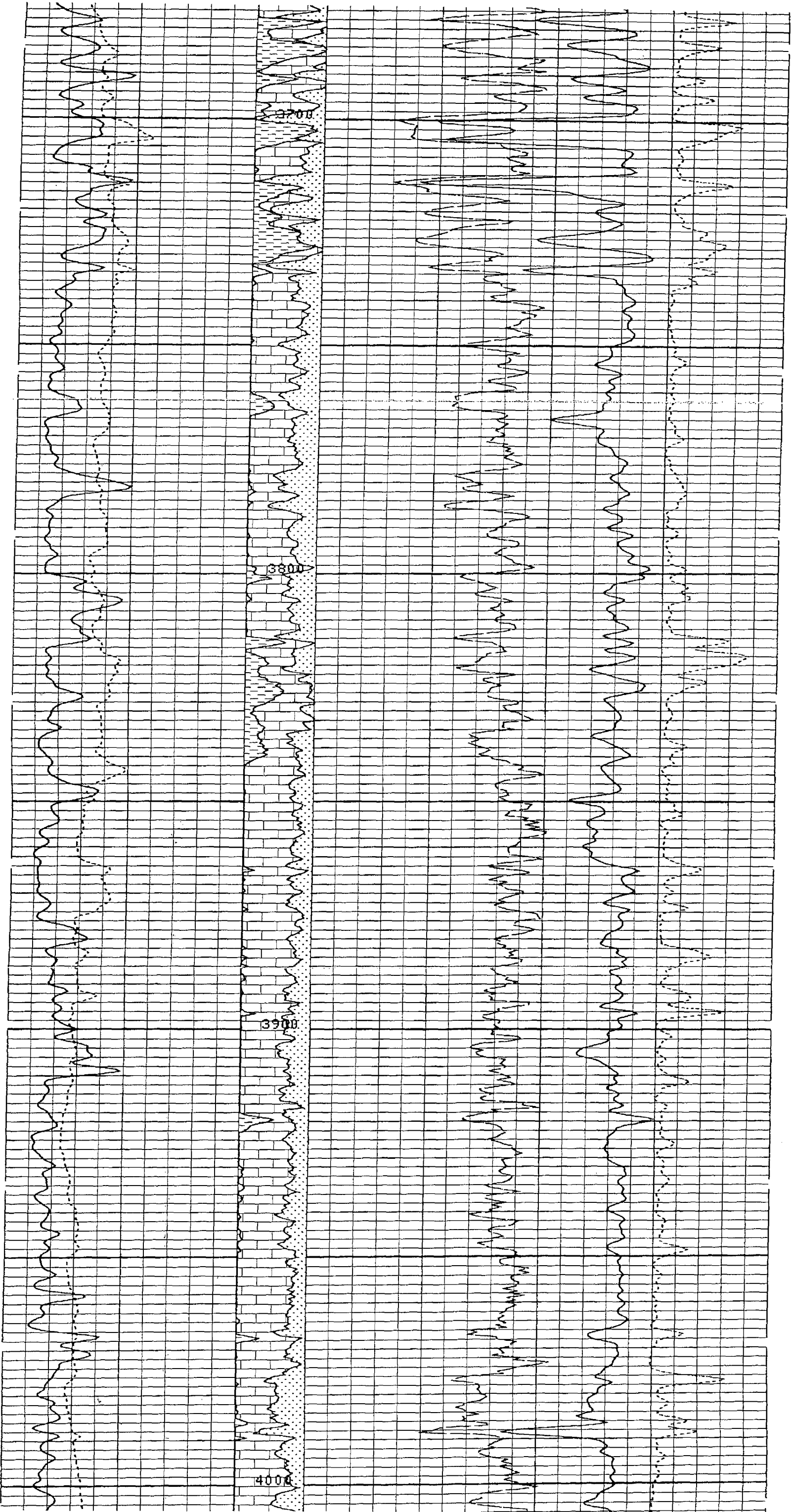


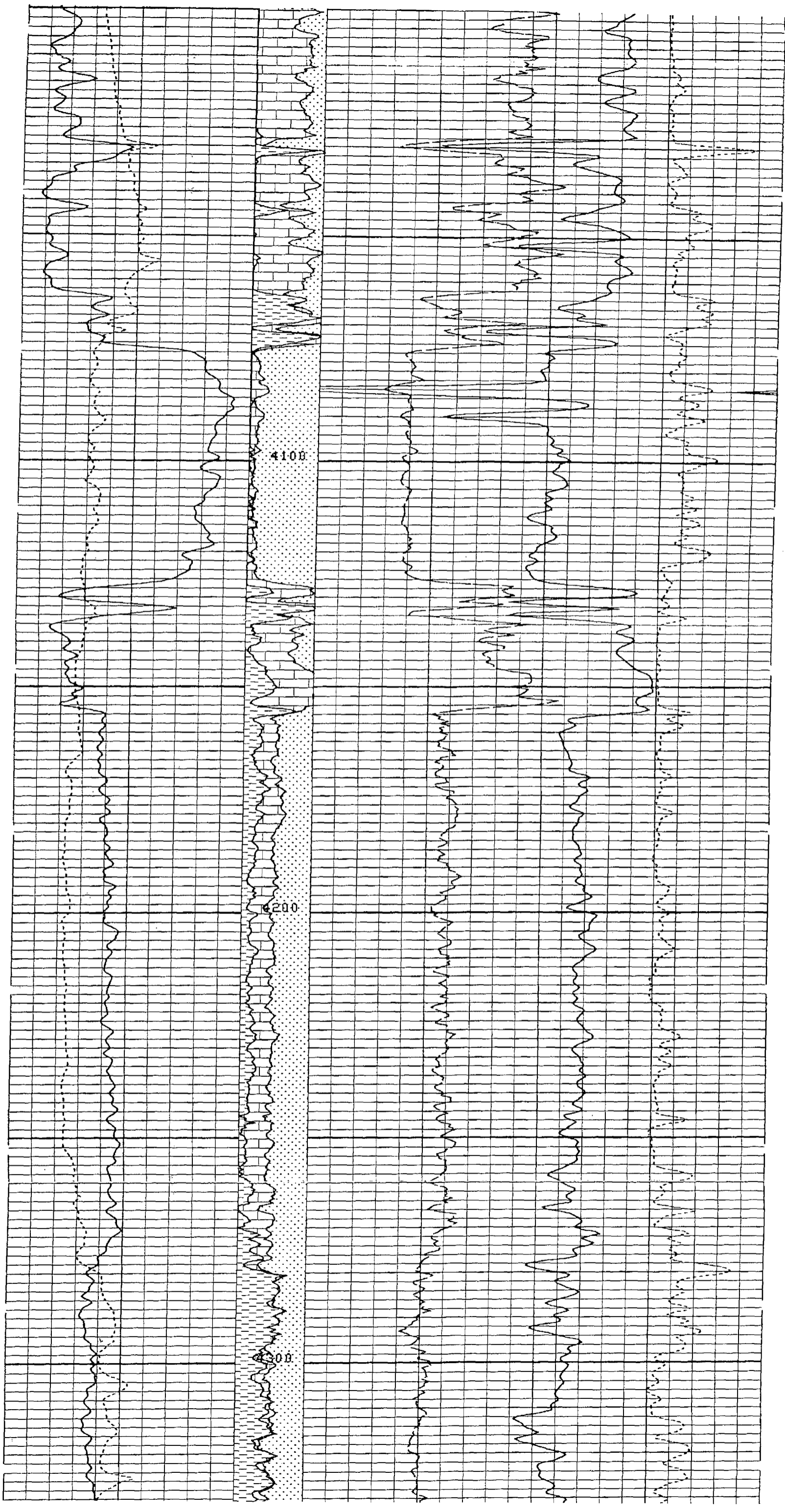


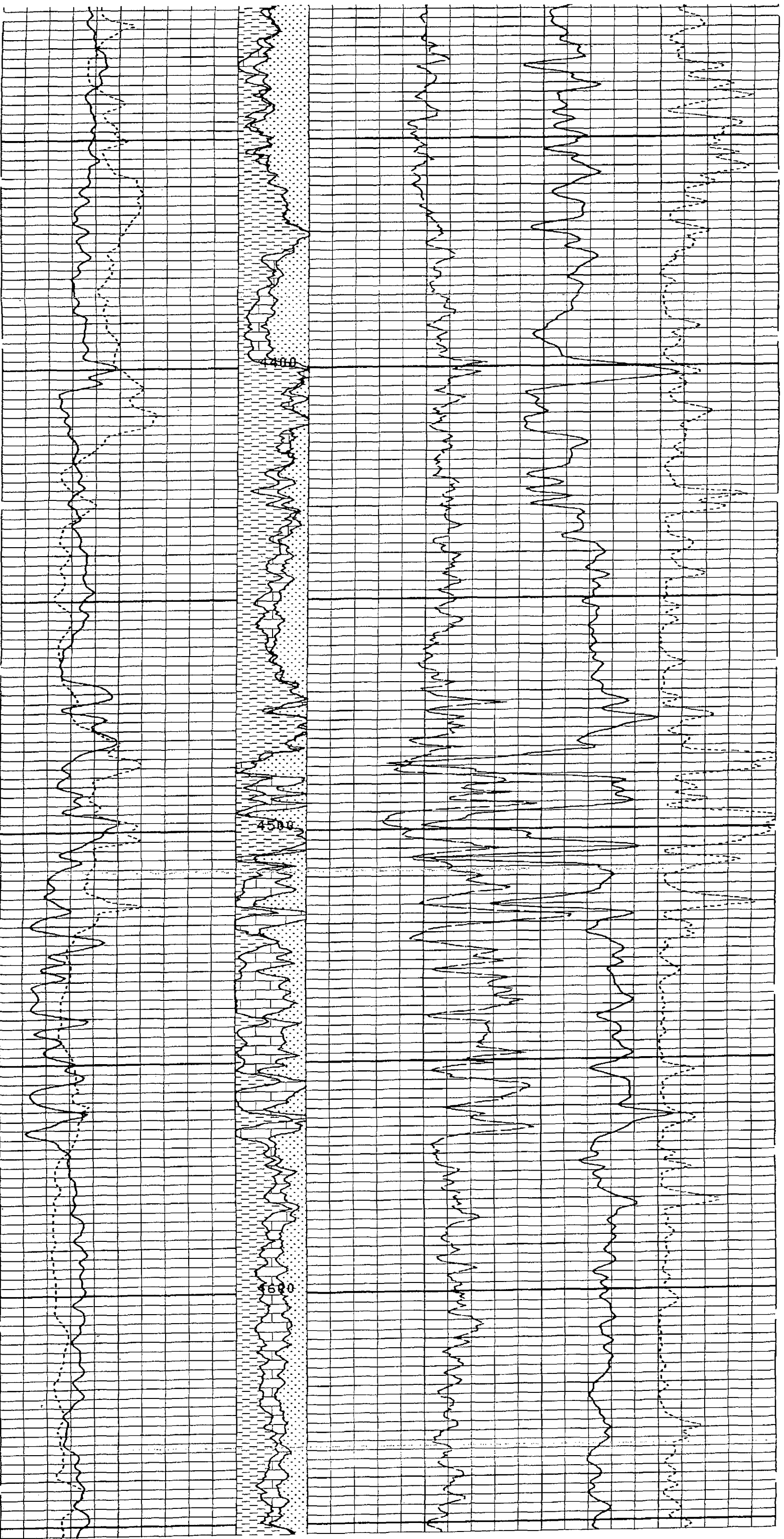


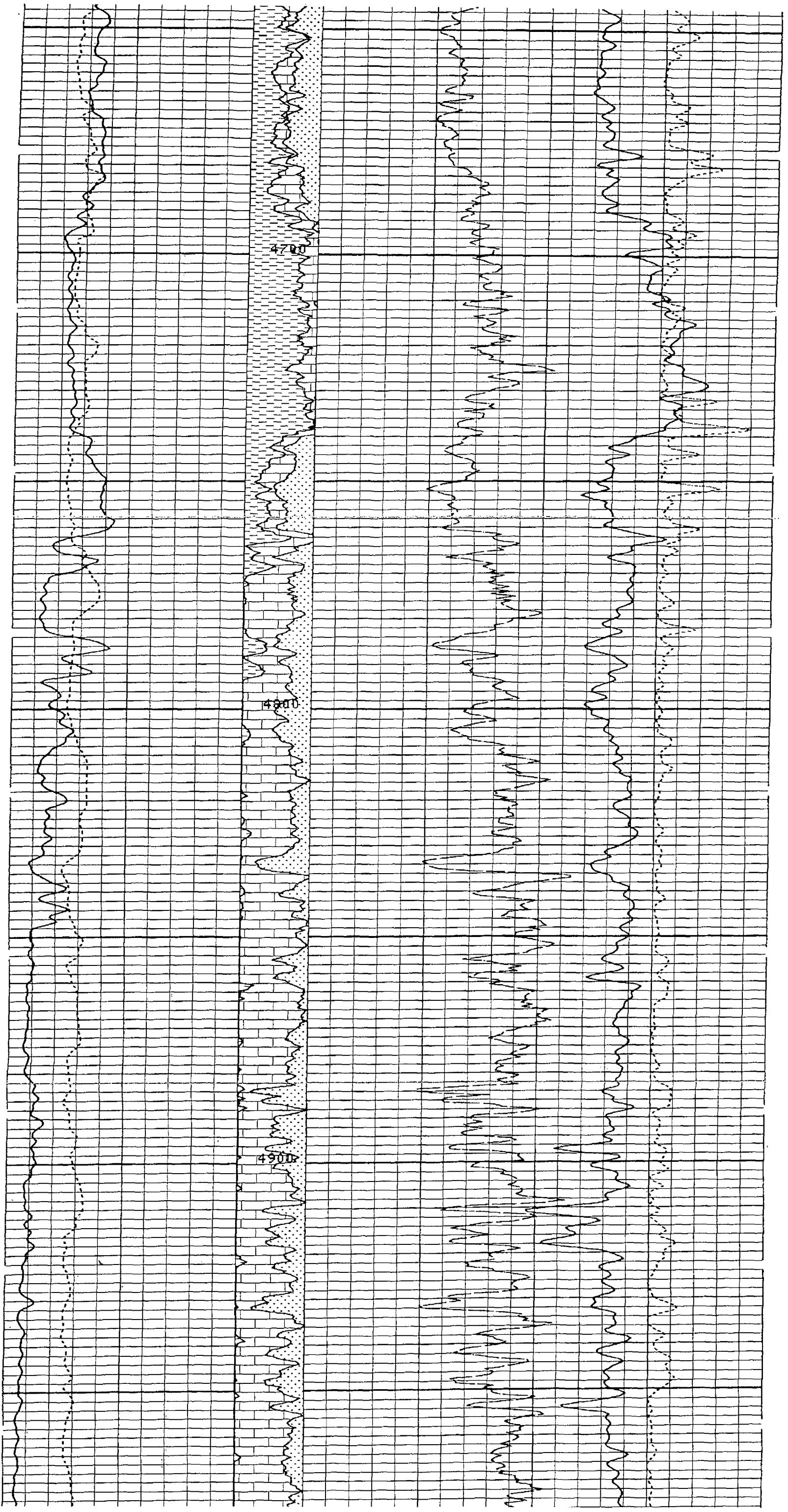


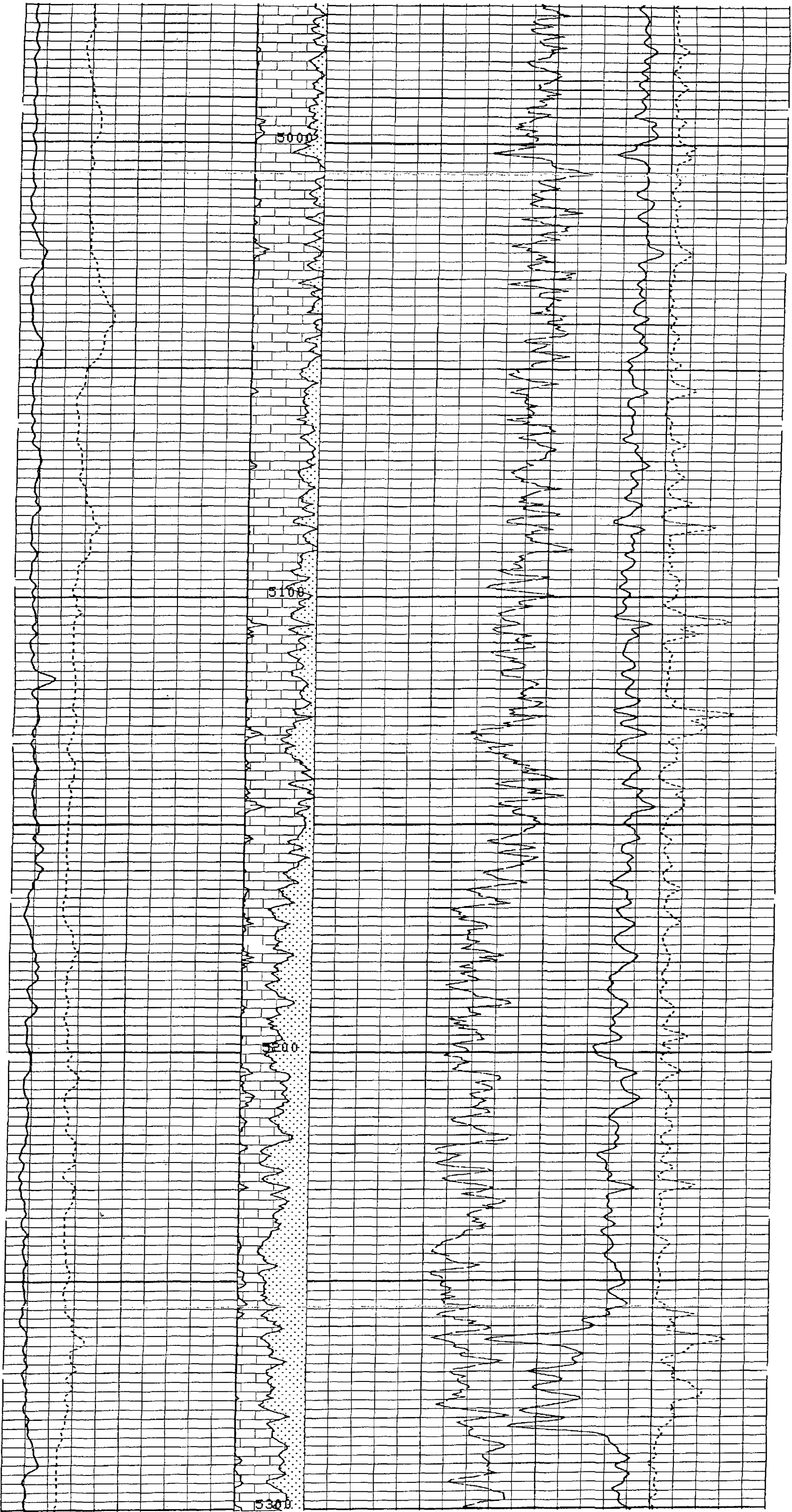


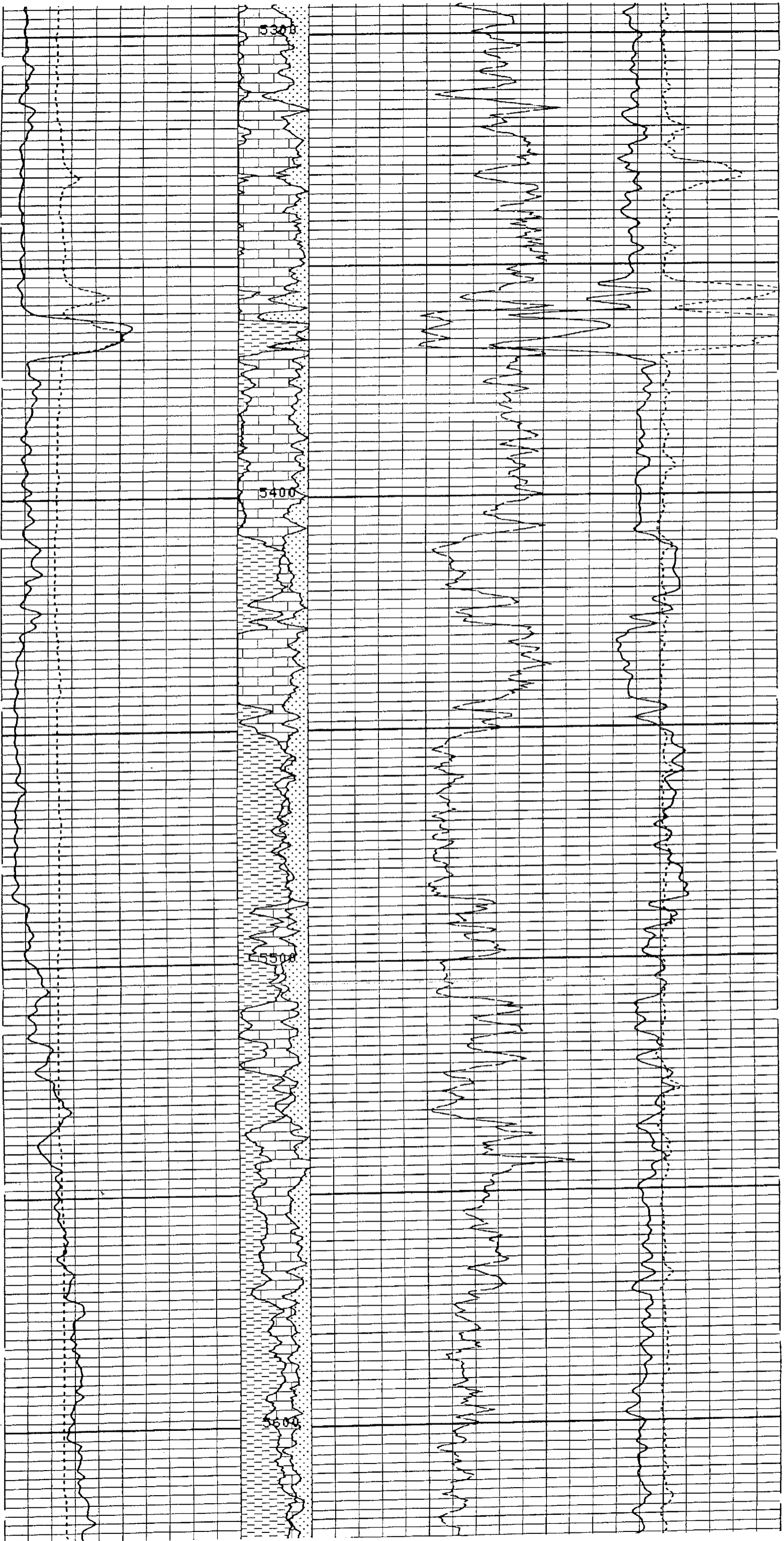


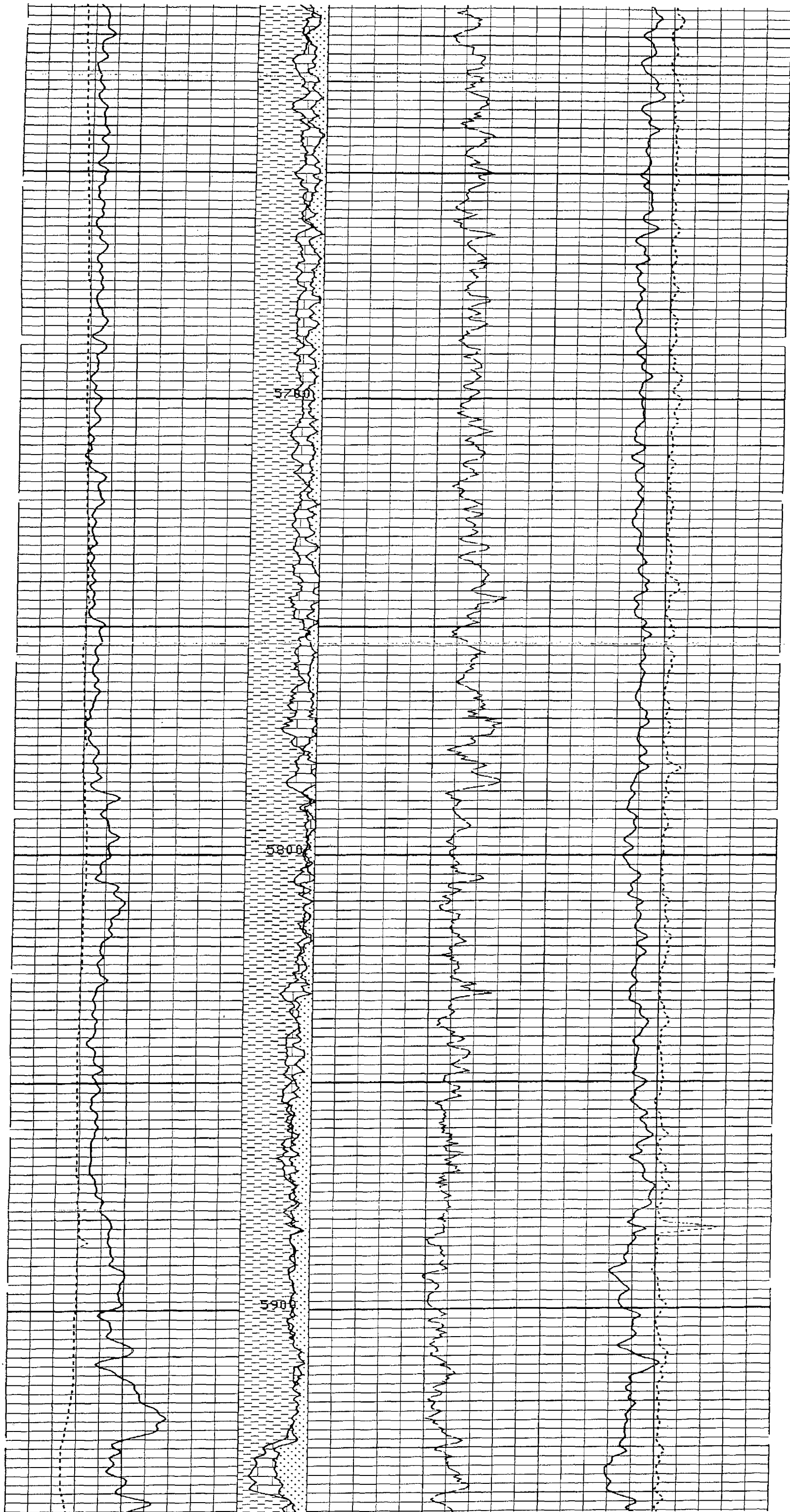


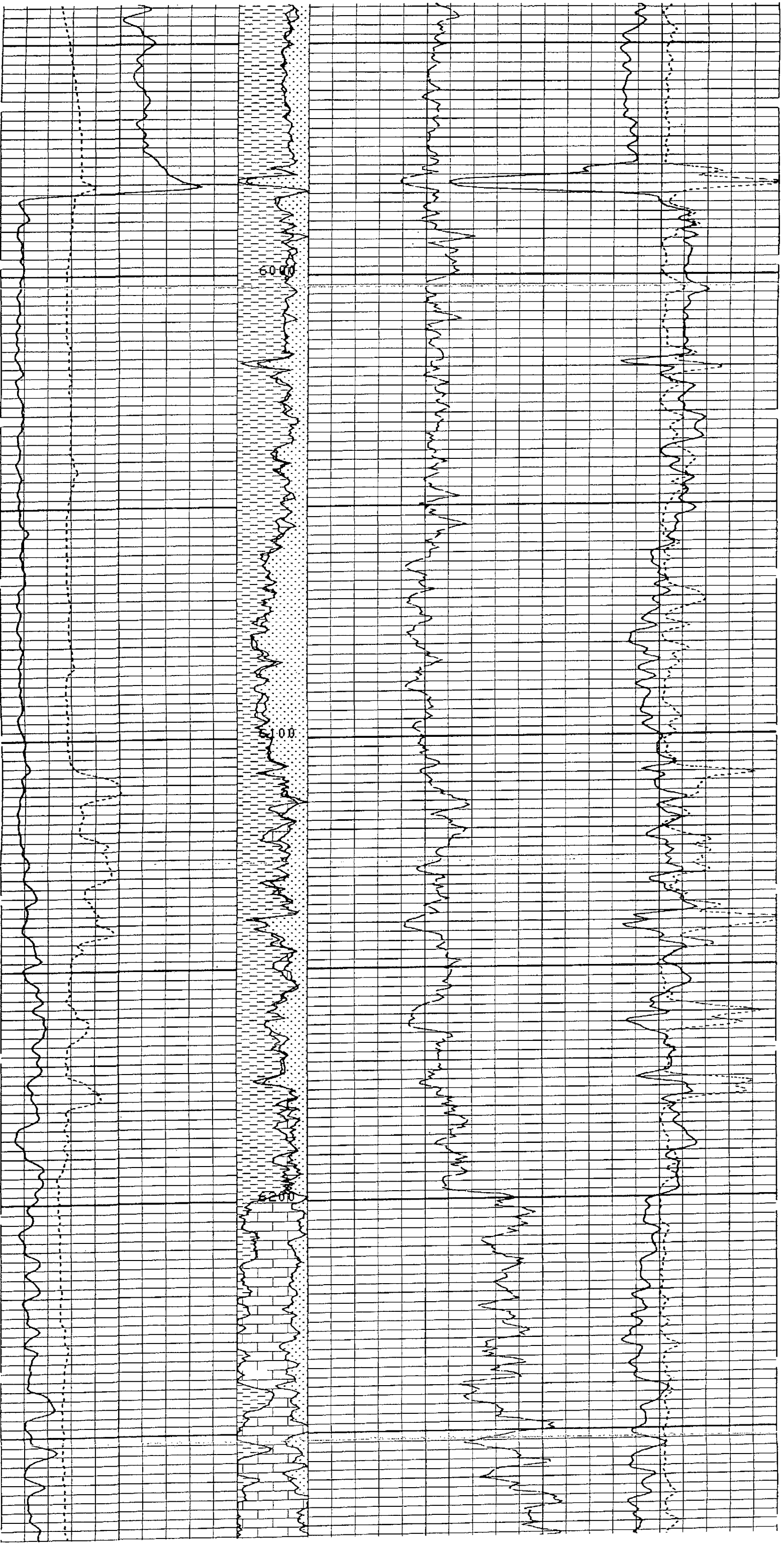


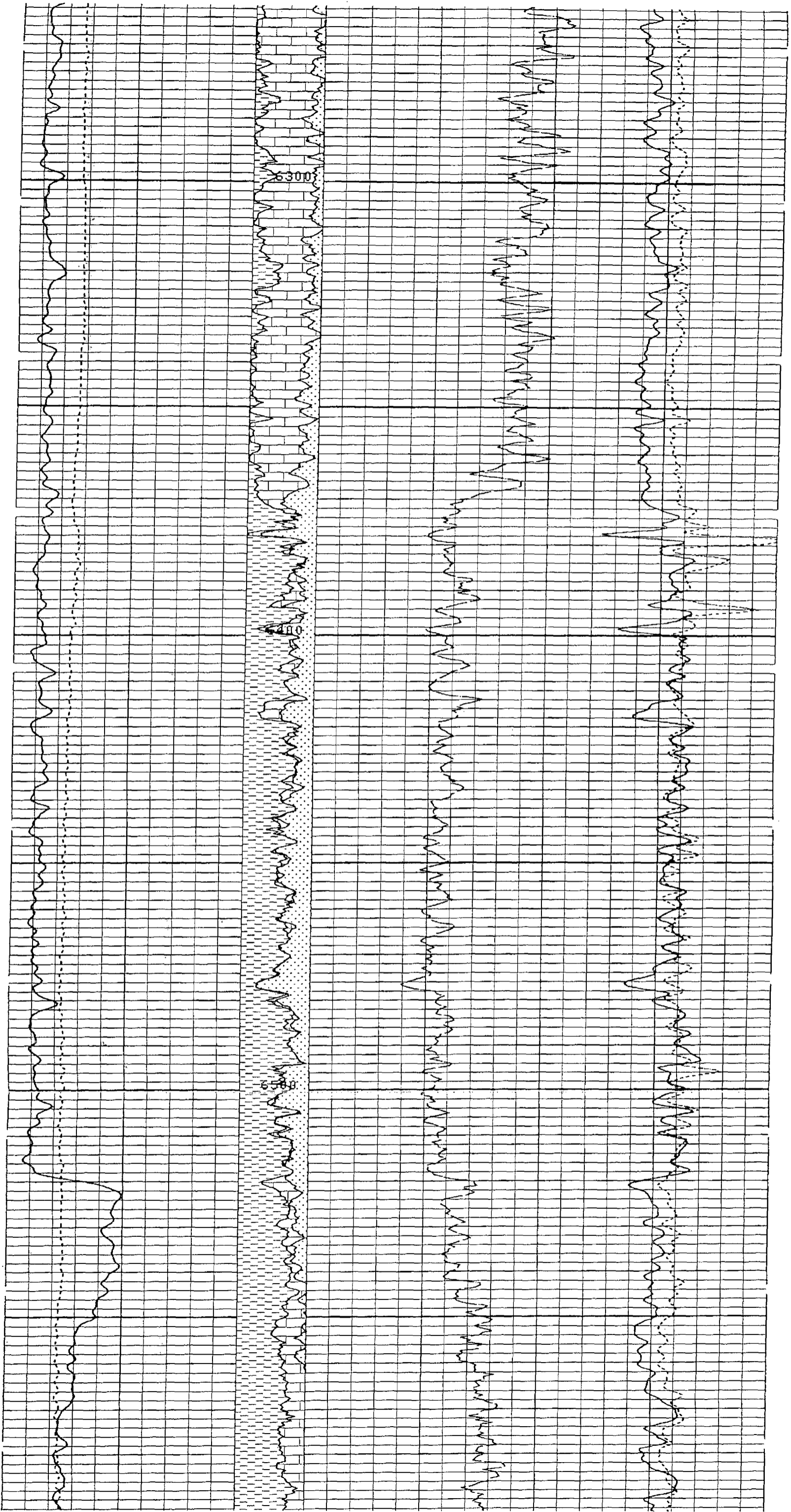


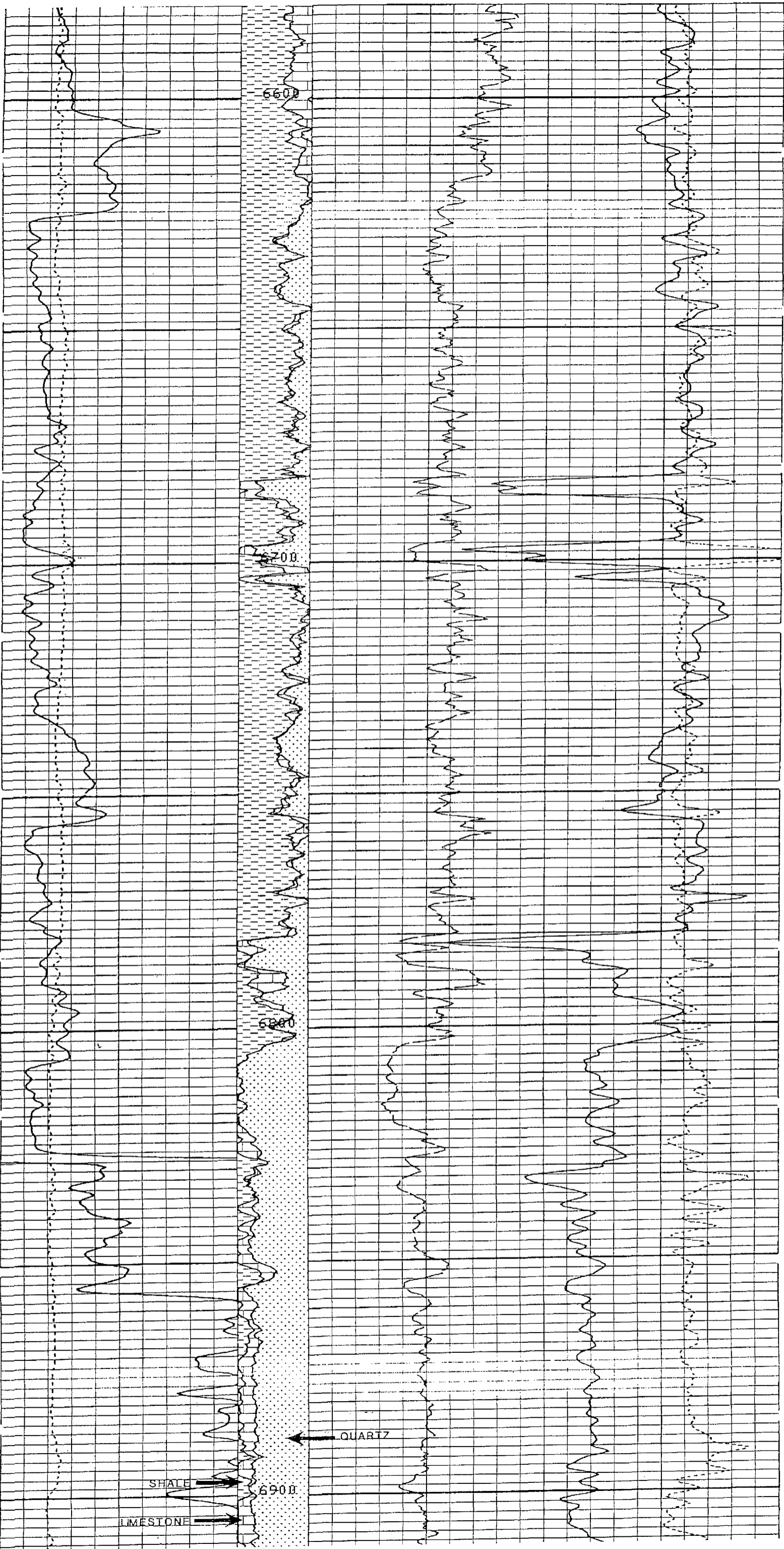


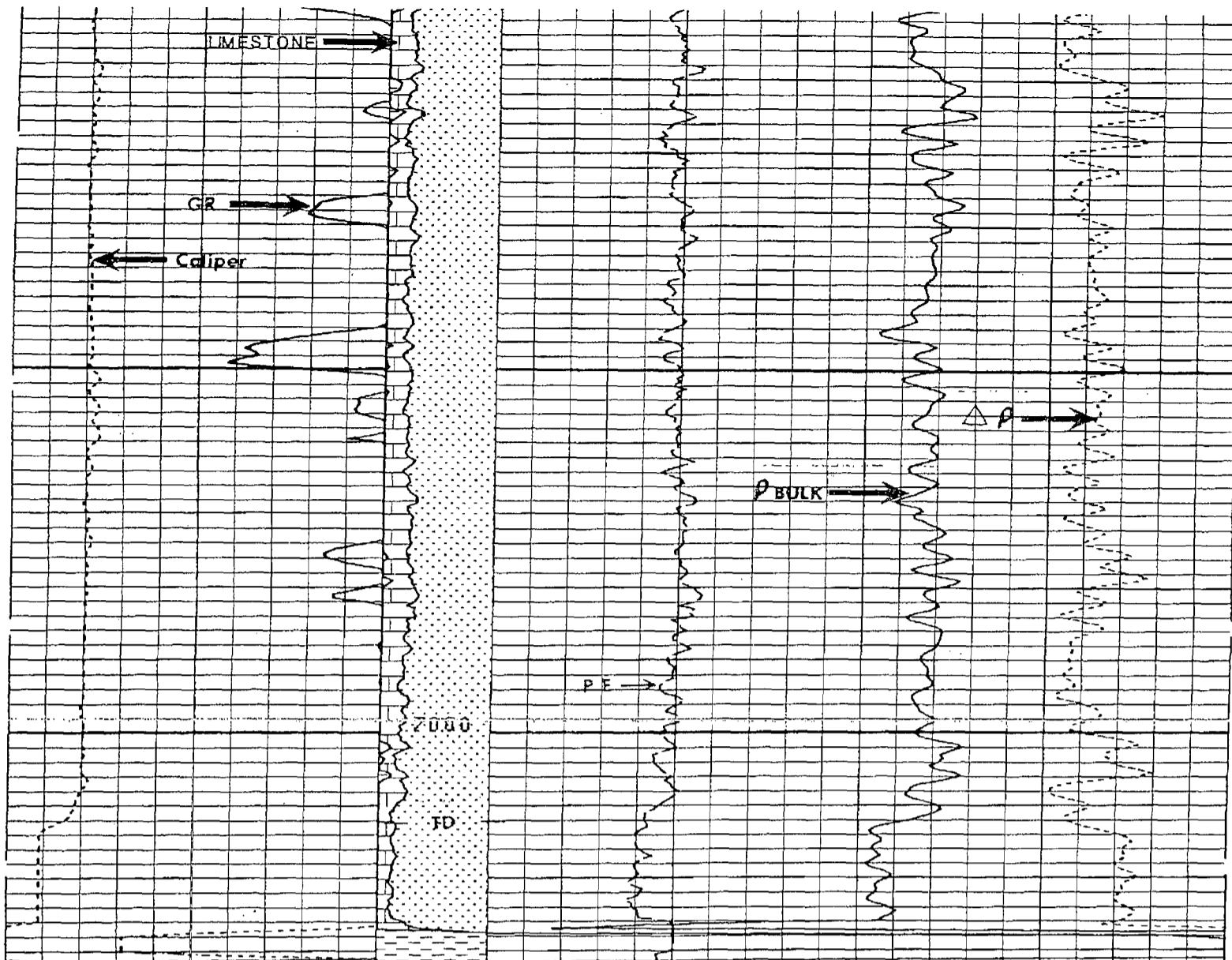












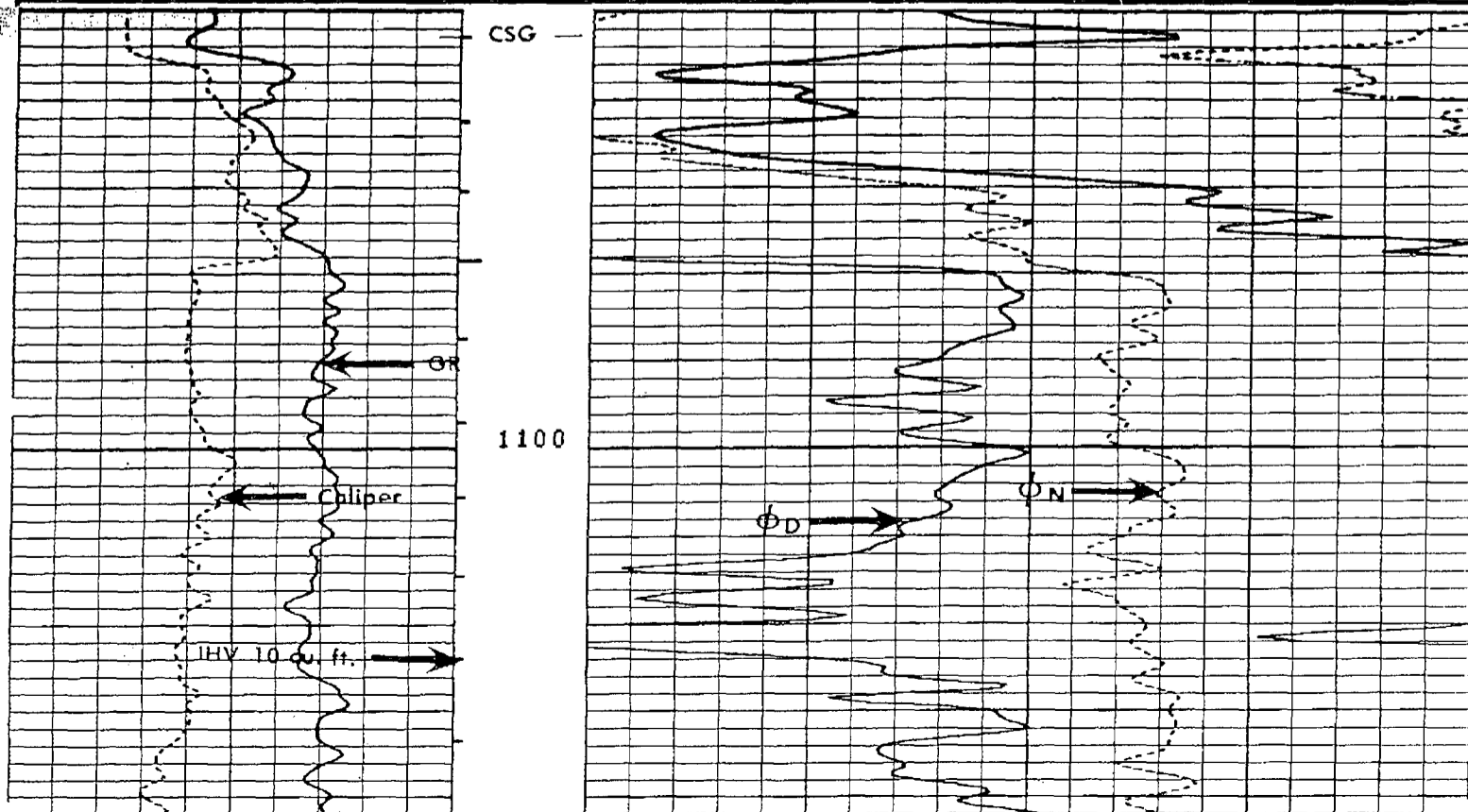
FILE 6 14-FEB-85 14:26
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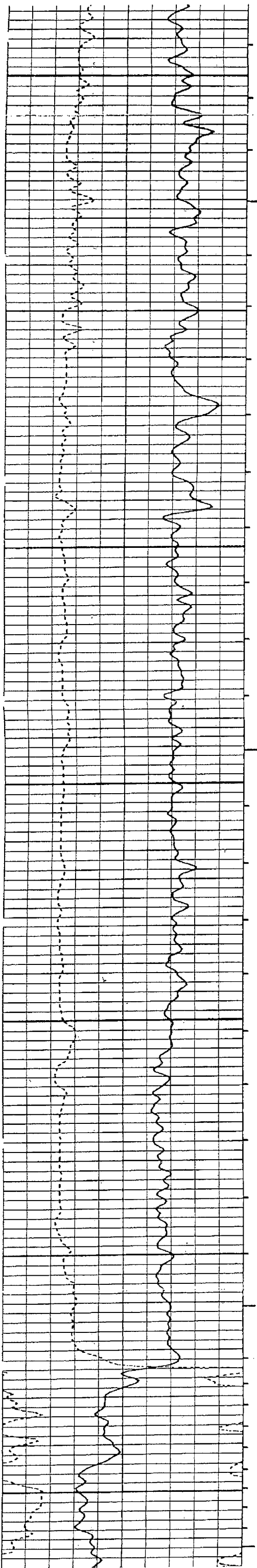
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CALI (IN)		RHOB (G/C3)	
10.000	20.000	2.0000	3.0000
		PEF	
		0.0	10.000

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
UM3	8.99700	G/C3	BHT	140.000	DEGF
UM1	13.7700	G/C3	UM2	4.77900	G/C3
RHM2	2.64400	G/C3	RHM3	2.87700	G/C3
TMMF	NONE		RHM1	2.71000	G/C3
UF	.398000		PDUT	LIME	
HC	CALI		DMRT	10000.0	F
FD	1.00000	G/C3	MATR	LIME	
WMUD	9.40000	LB/G	MDEN	2.71000	G/C3
BS	12.2500	IN	BHS	OPEN	
PP	NORM		DD	0.0	F

CALI (IN)		NPHI	
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GR (GAPI)		DPHI	
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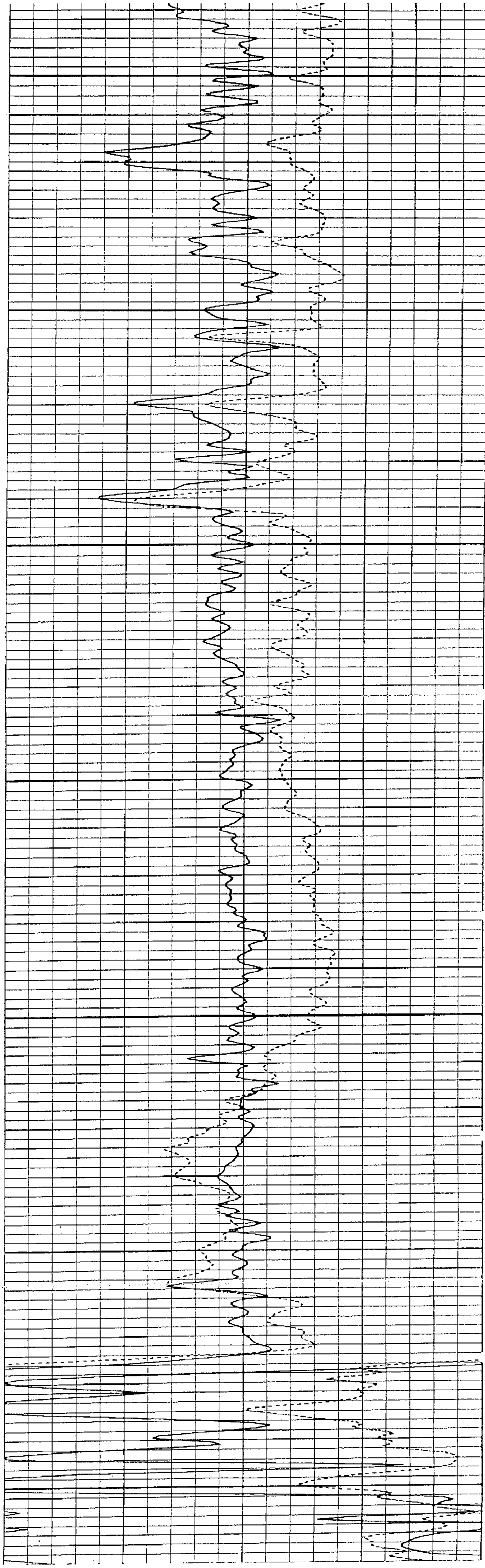


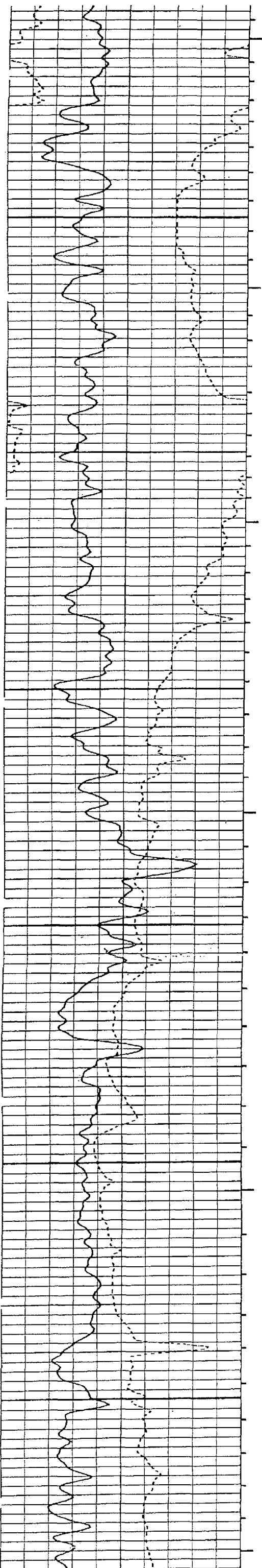


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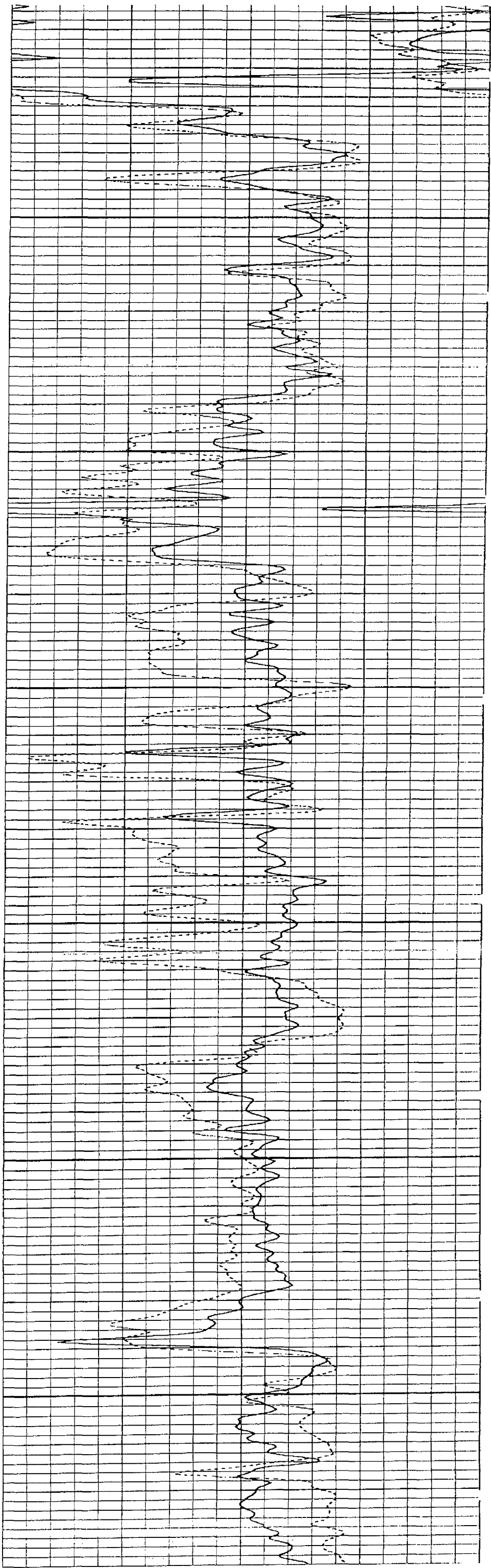
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1400



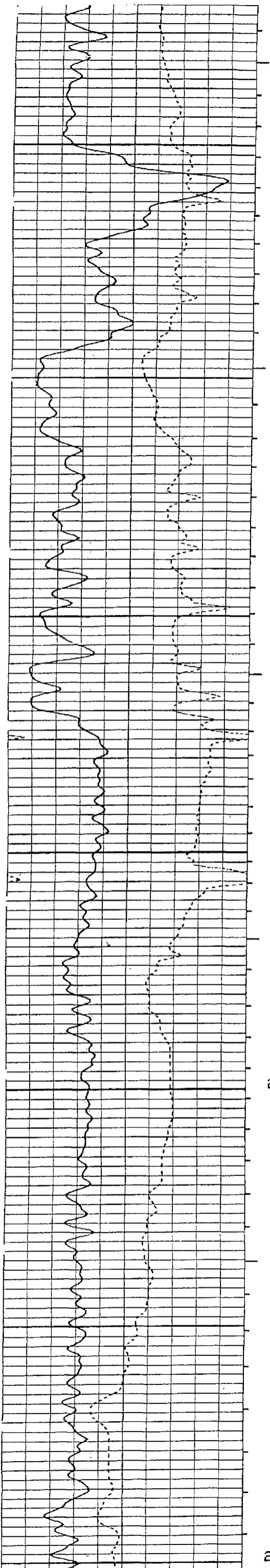


1500



1600

1700

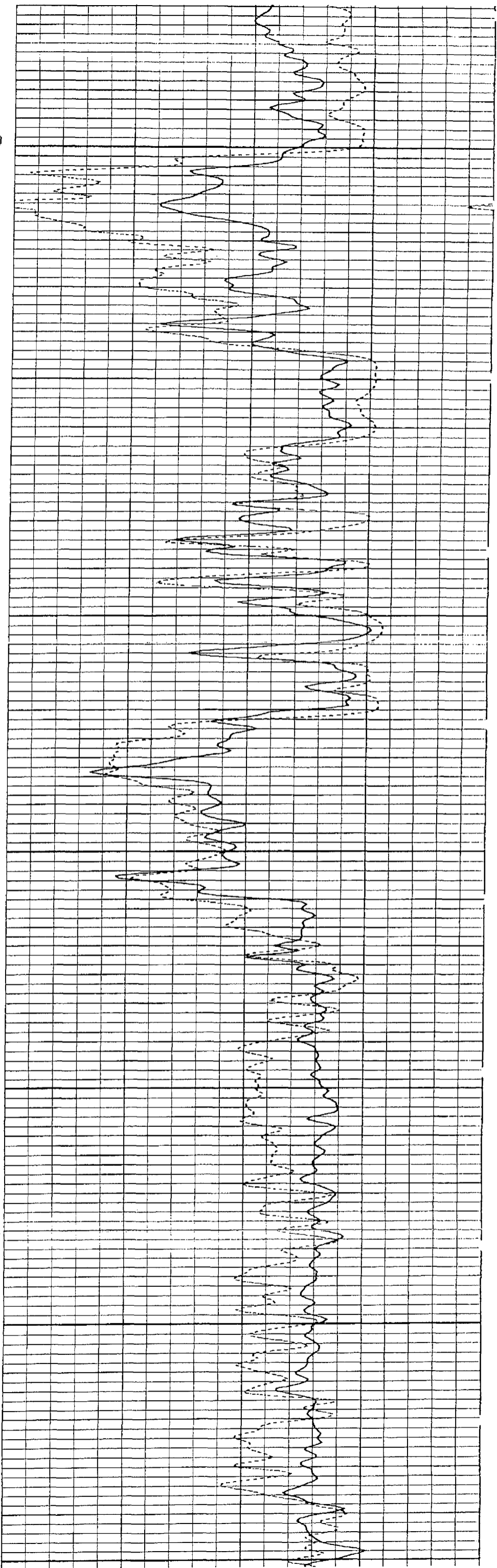


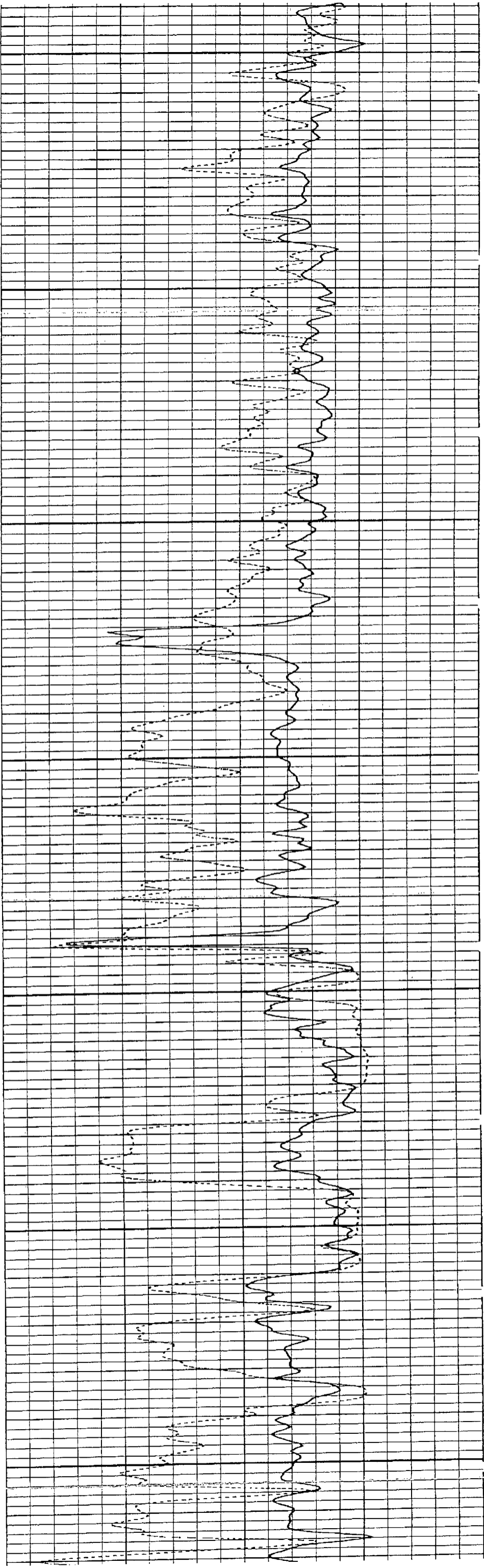
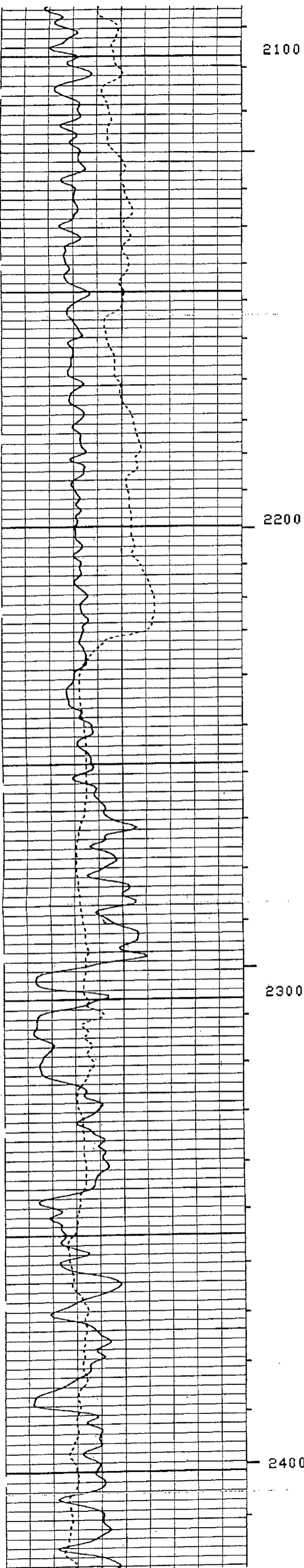
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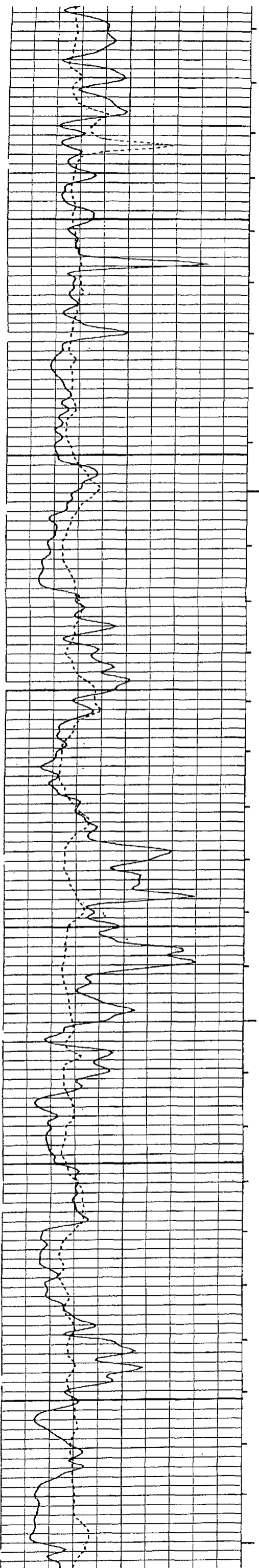
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2000

2100



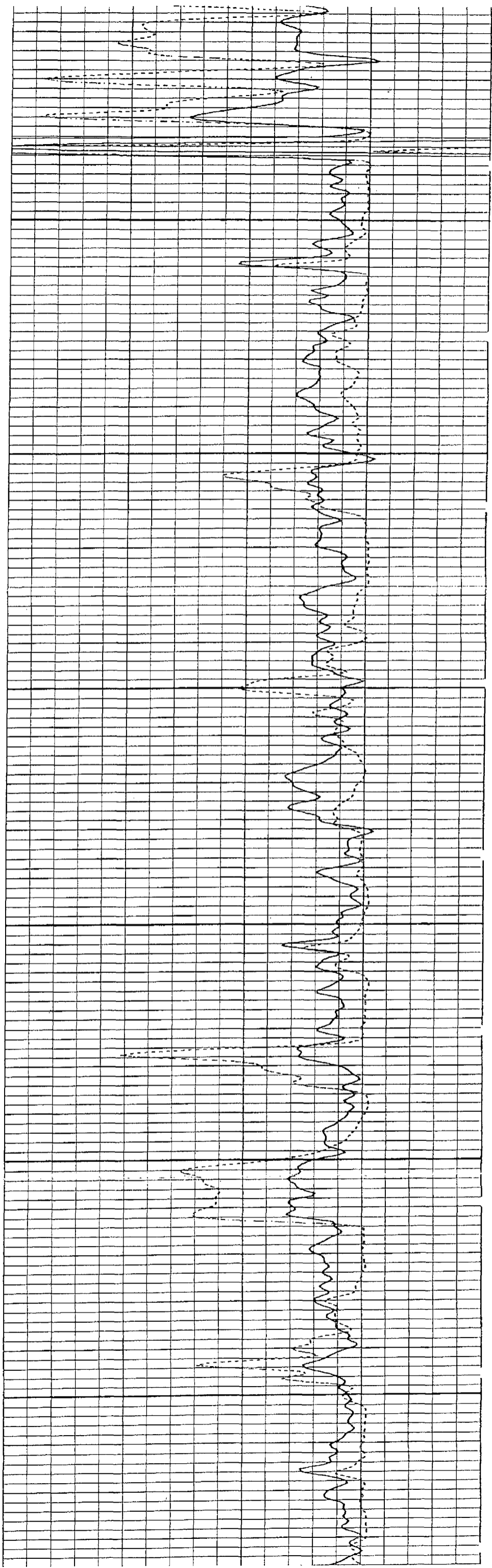


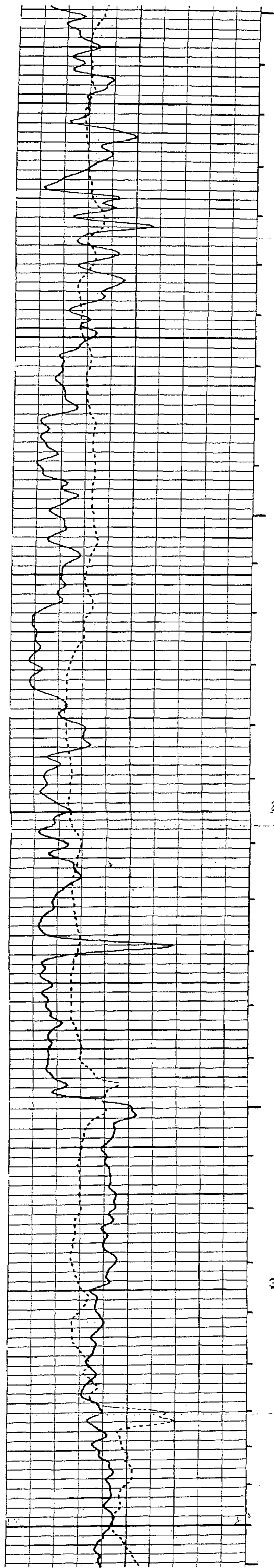


2500

2600

2700

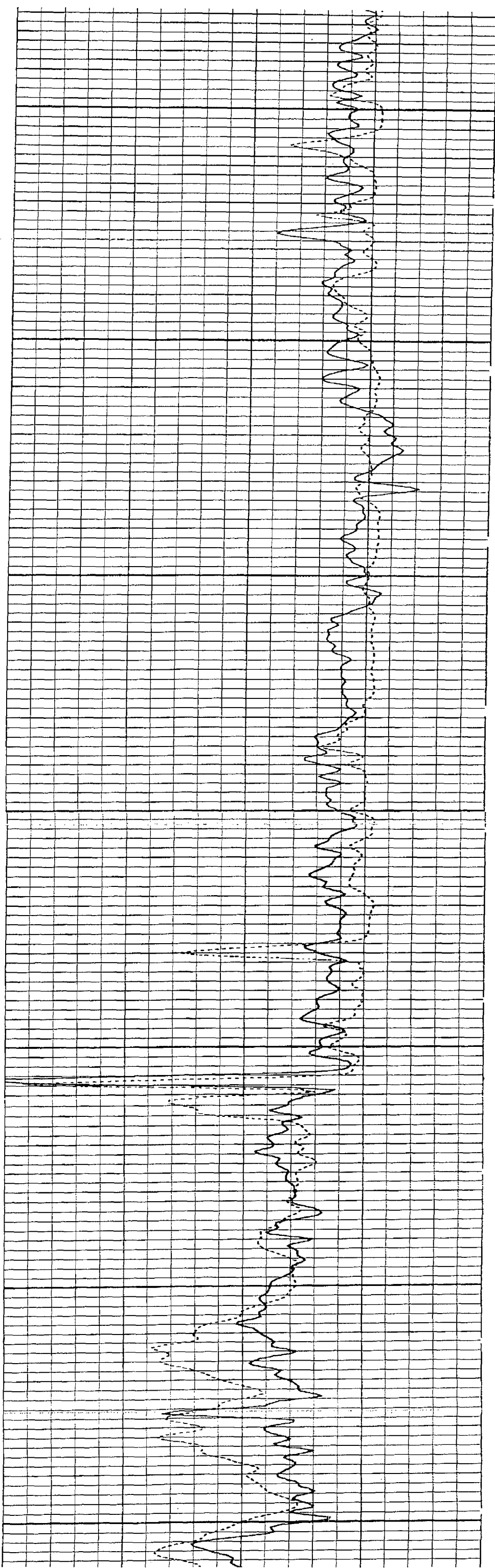


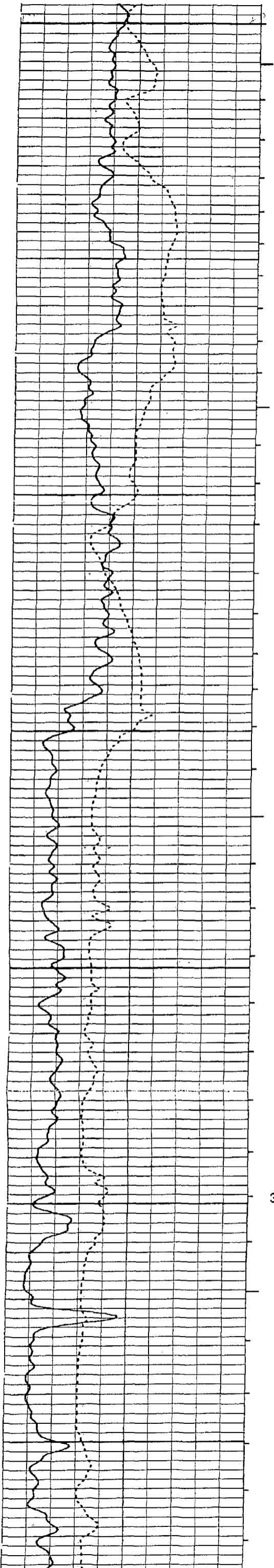


2800

2900

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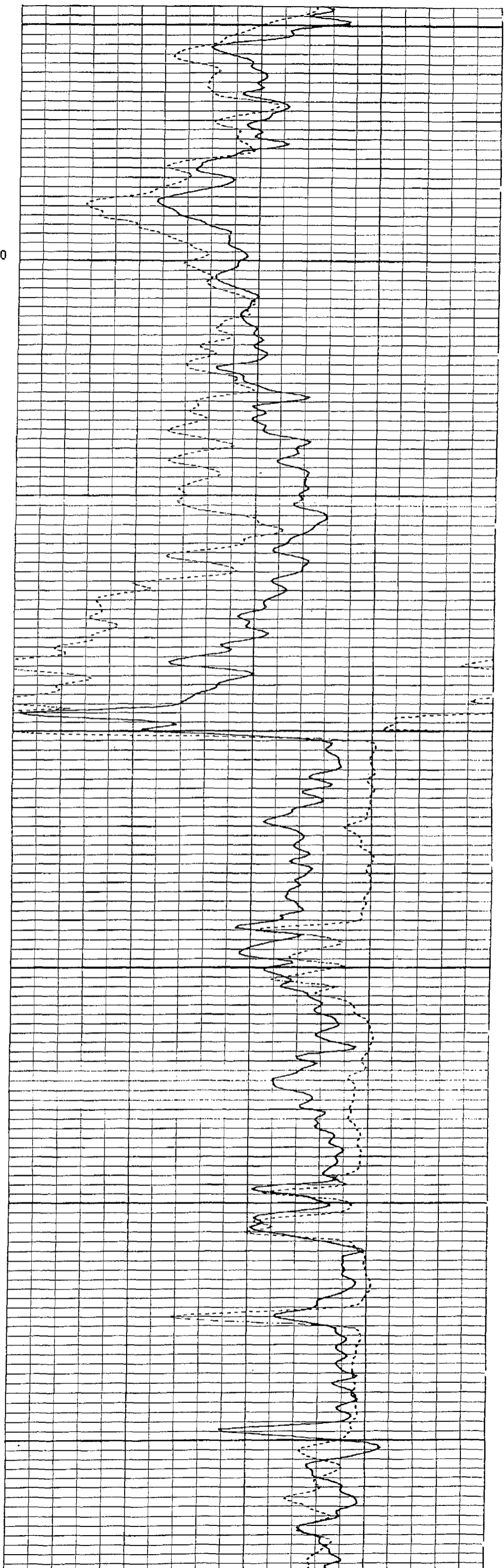


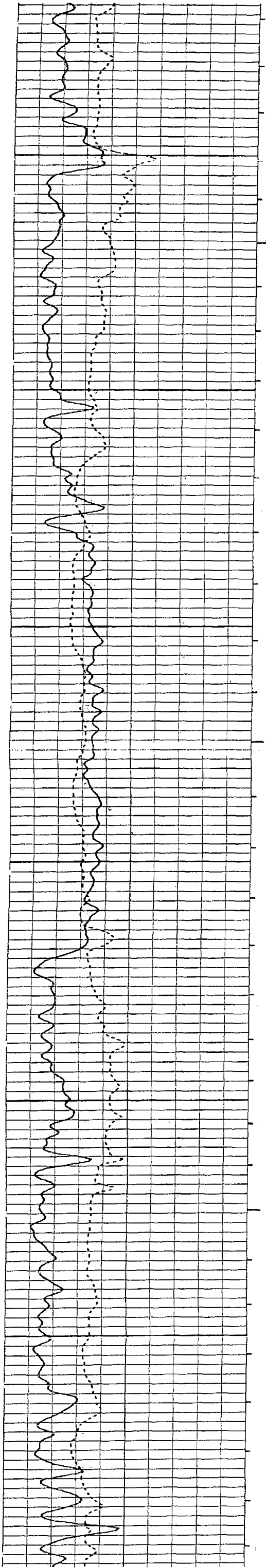


3100

3200

3300



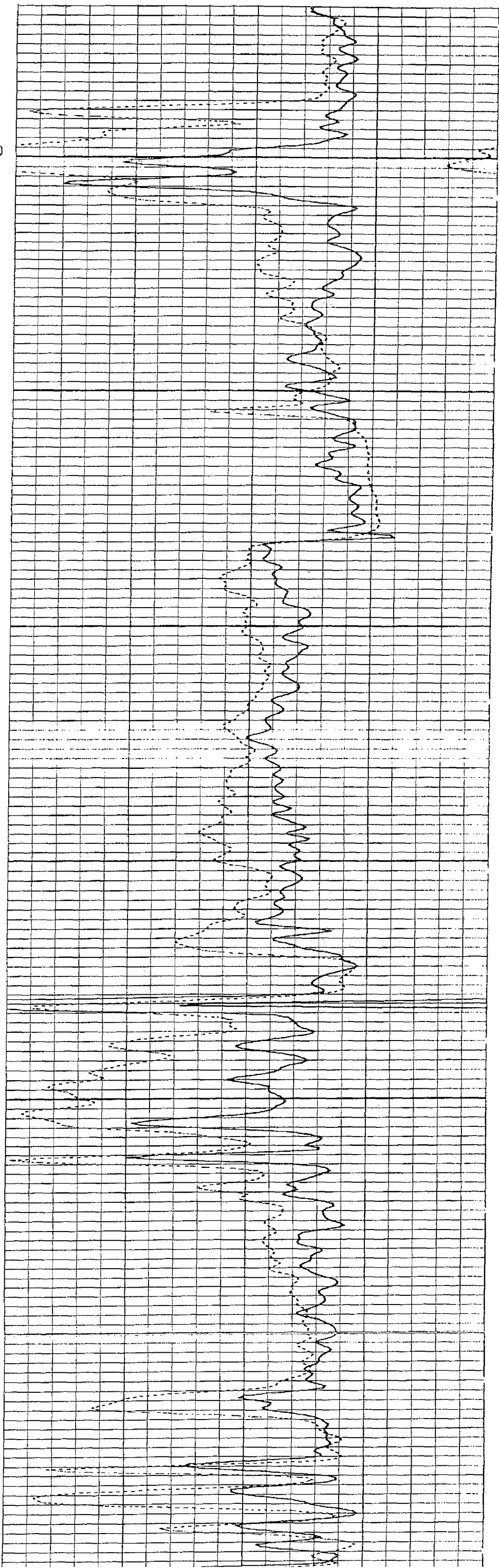


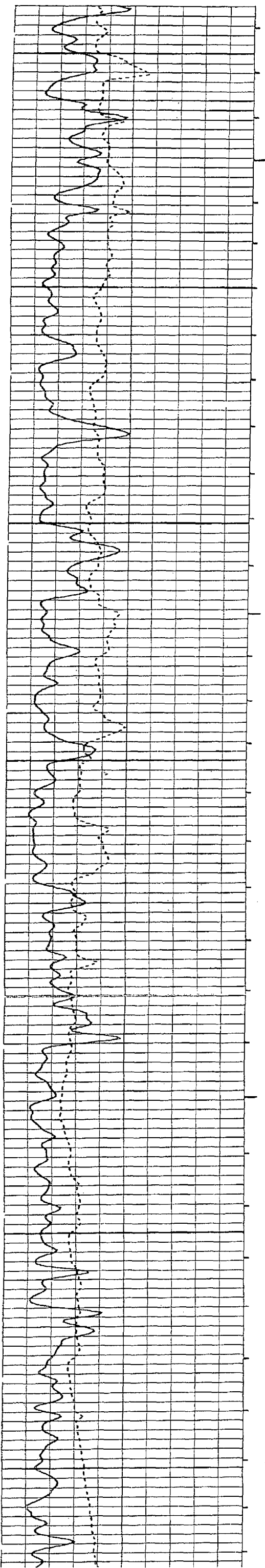
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3500

3600

3700



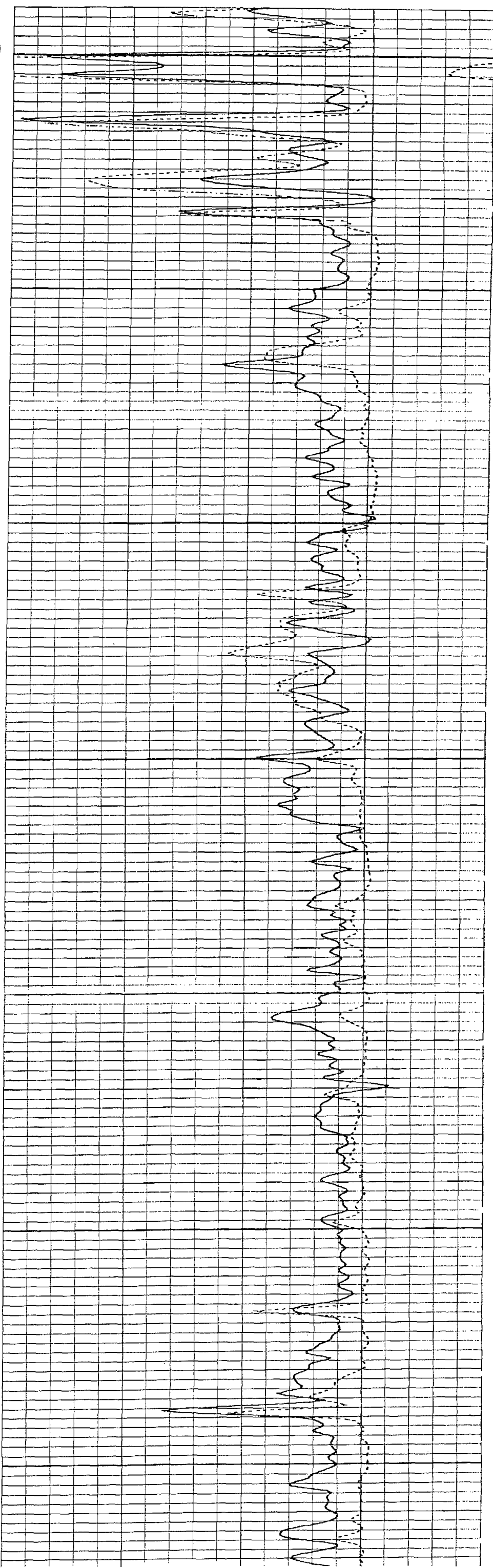


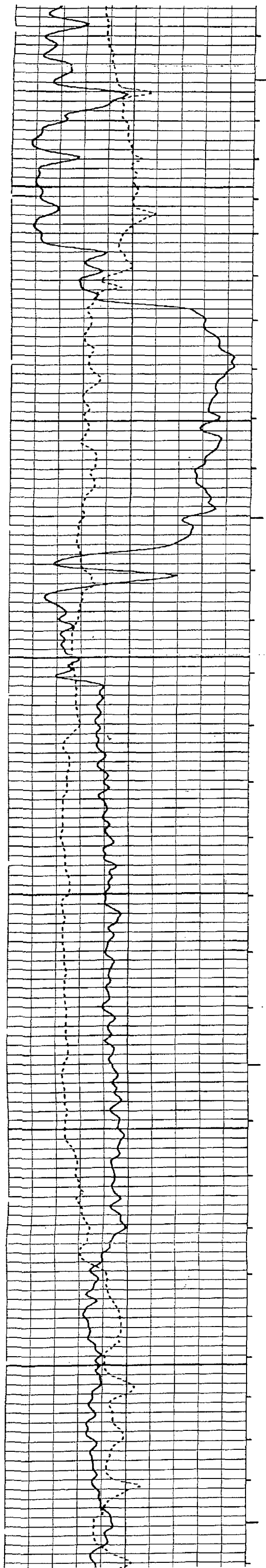
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3900

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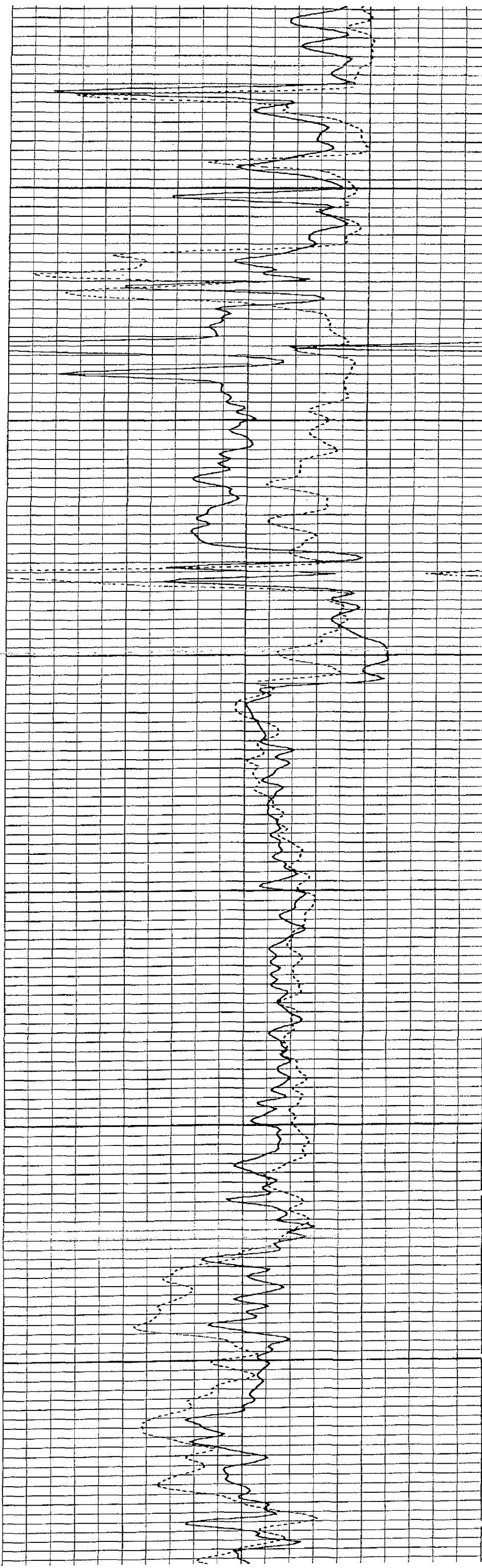


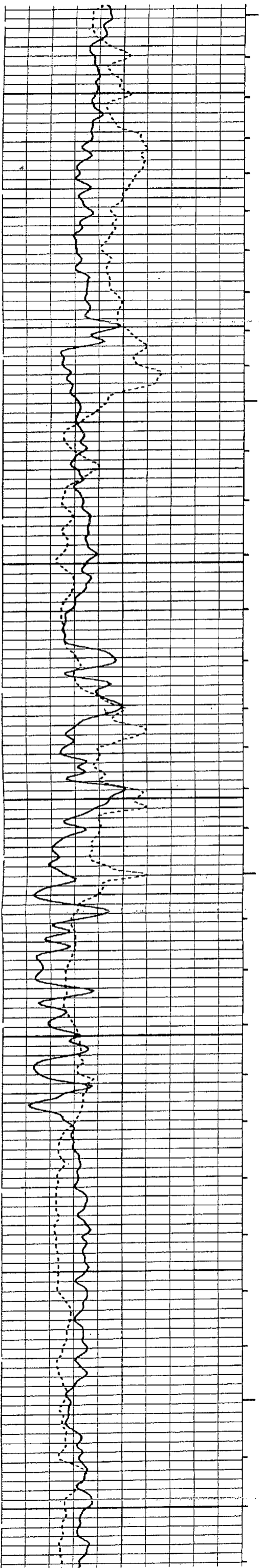


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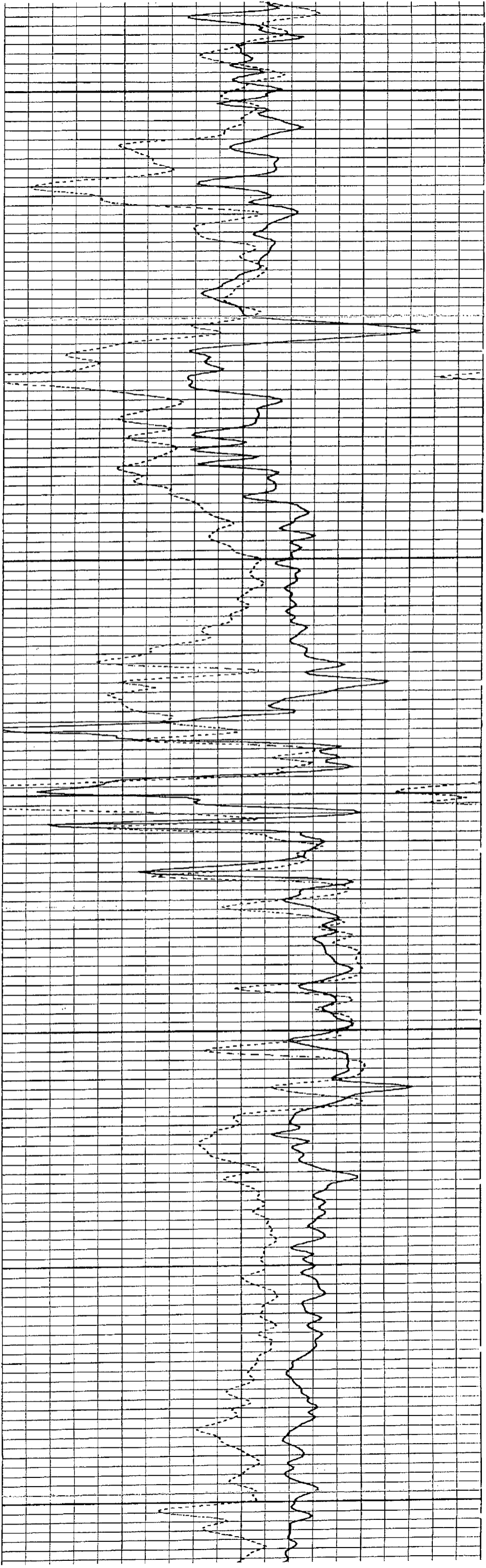
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4300



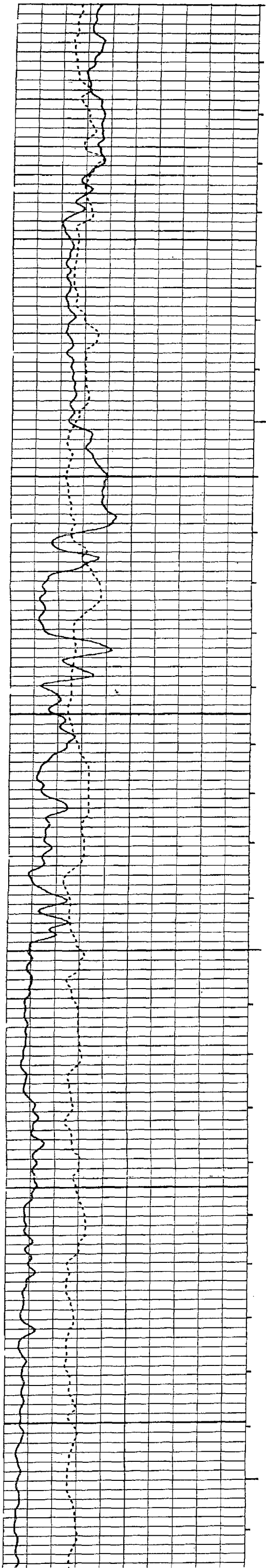


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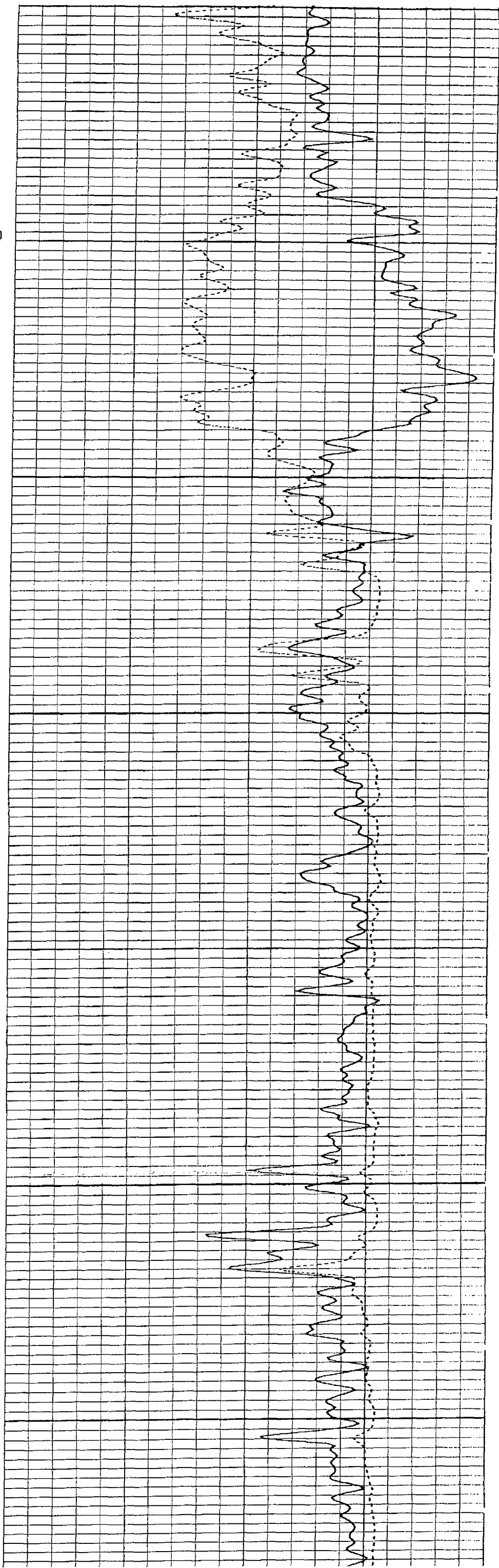
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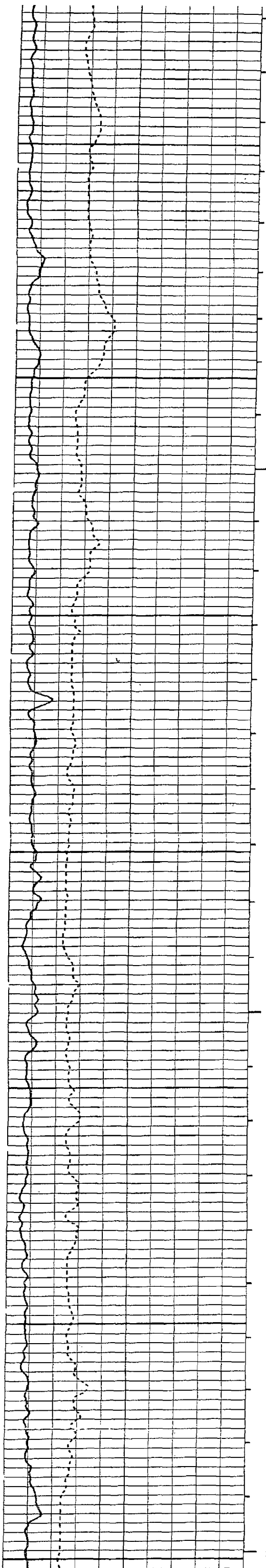


4700

4800

4900



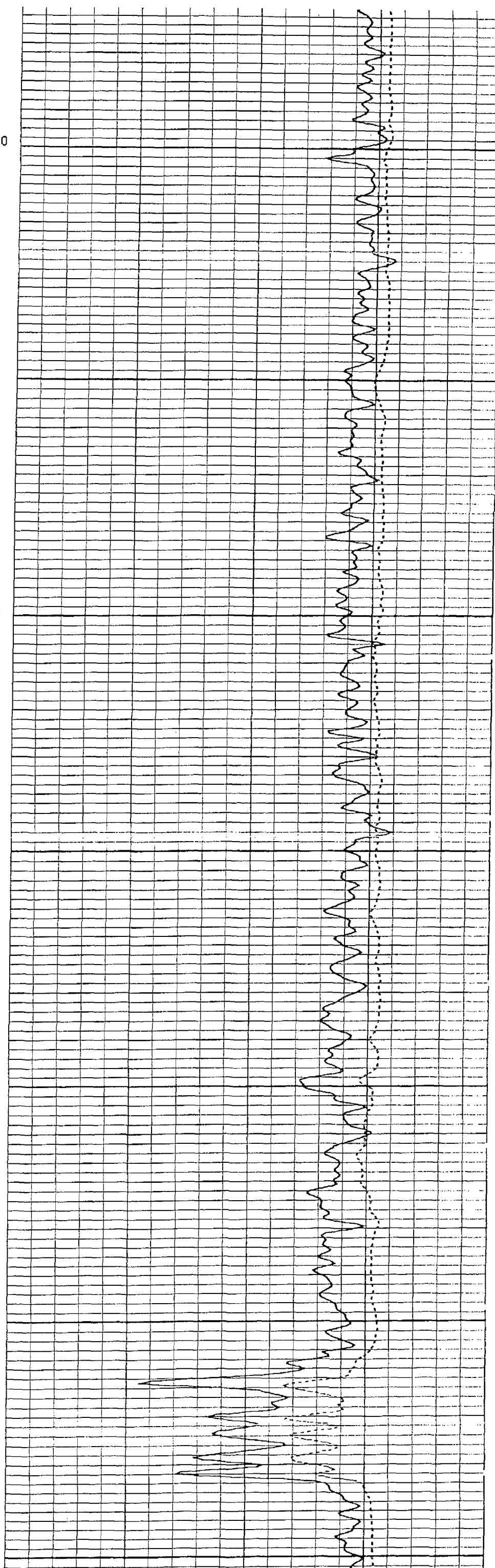


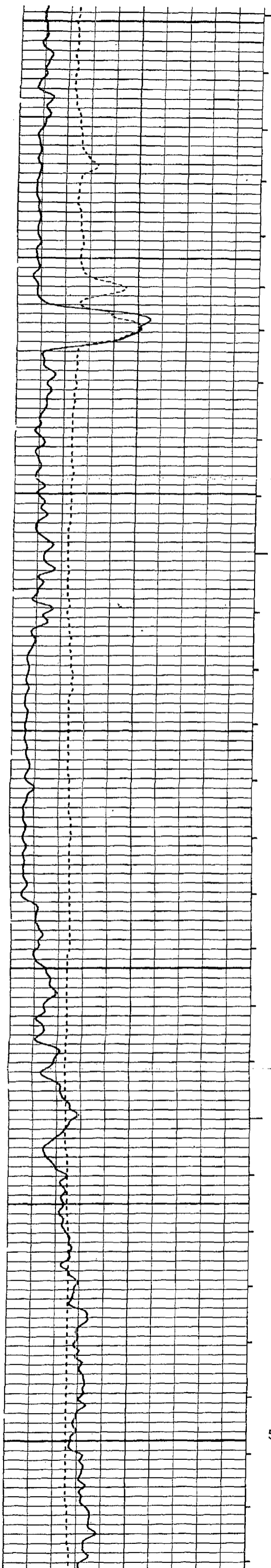
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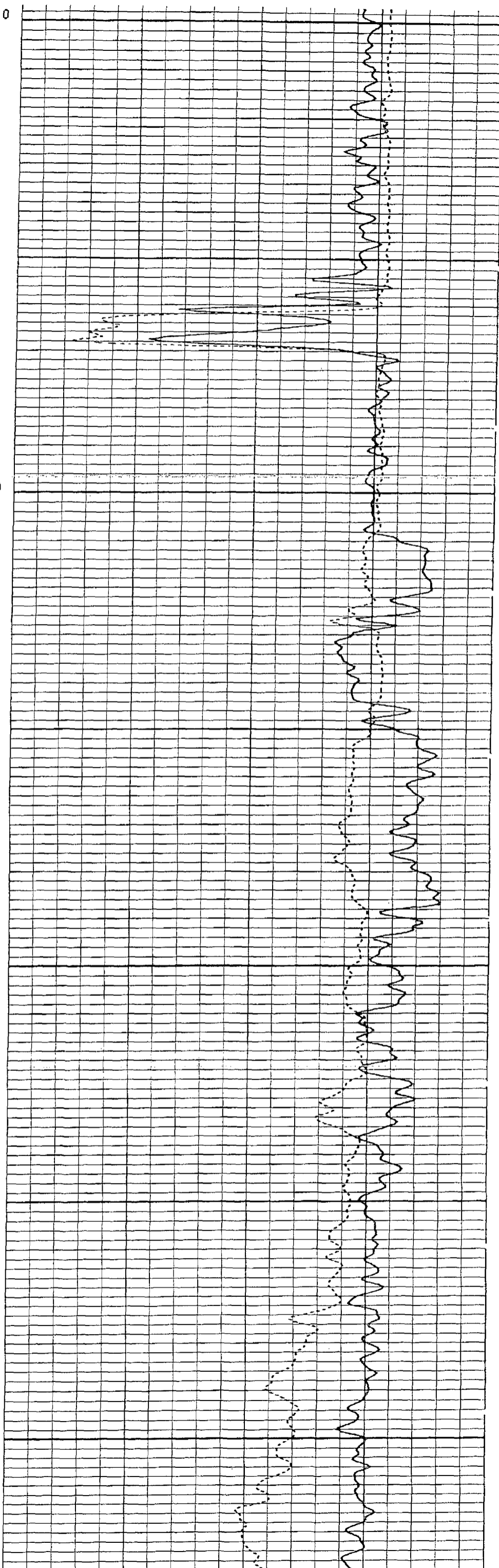
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5300





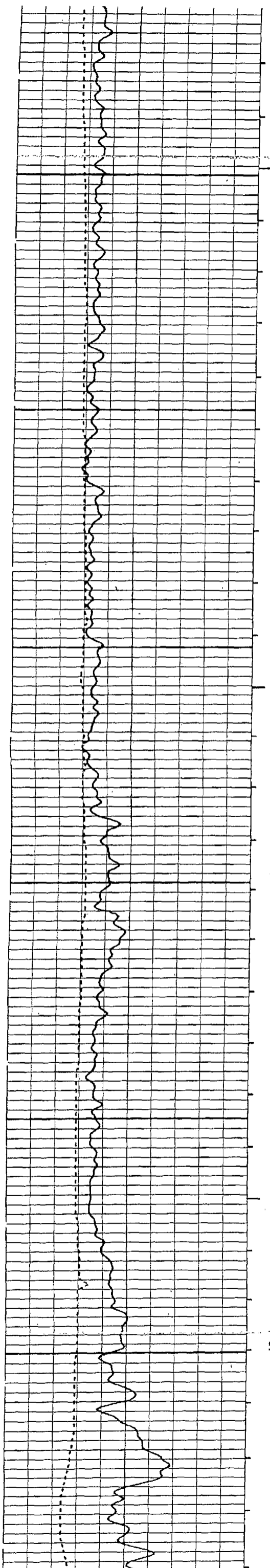
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5400

5500

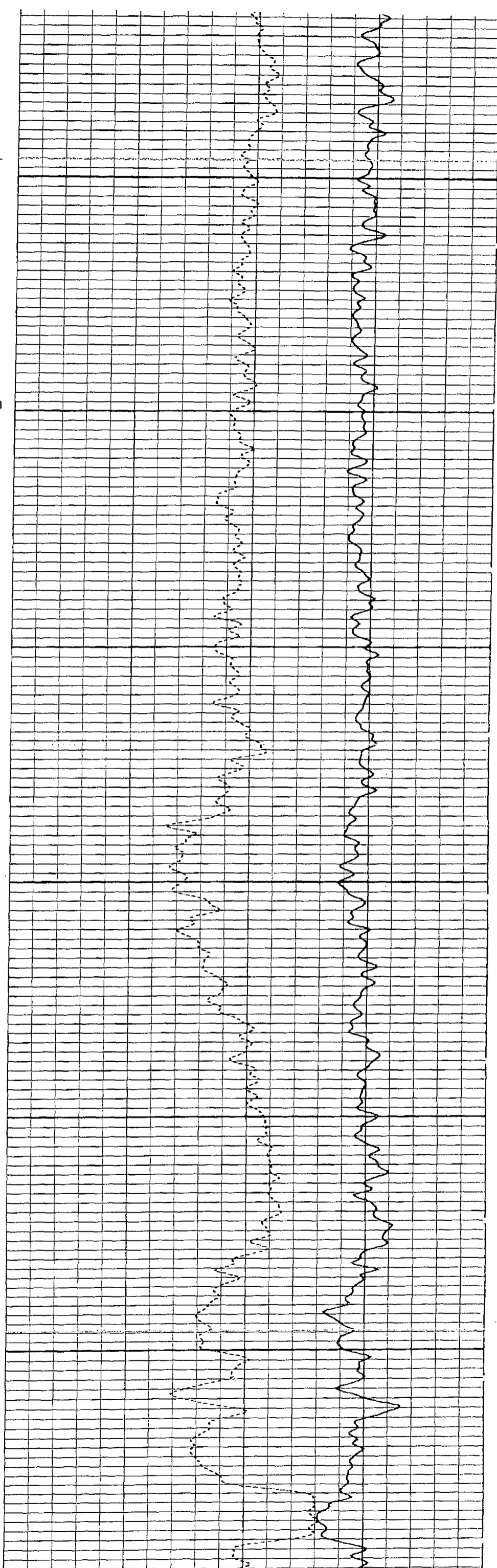
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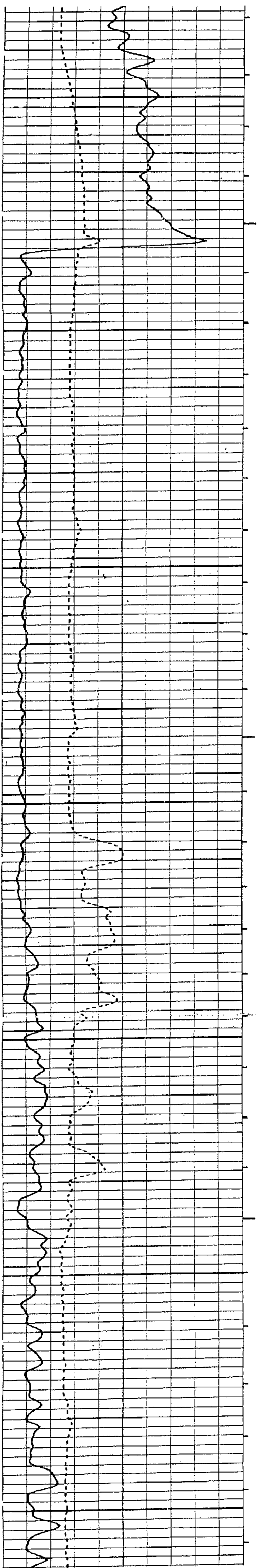


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5800

5900

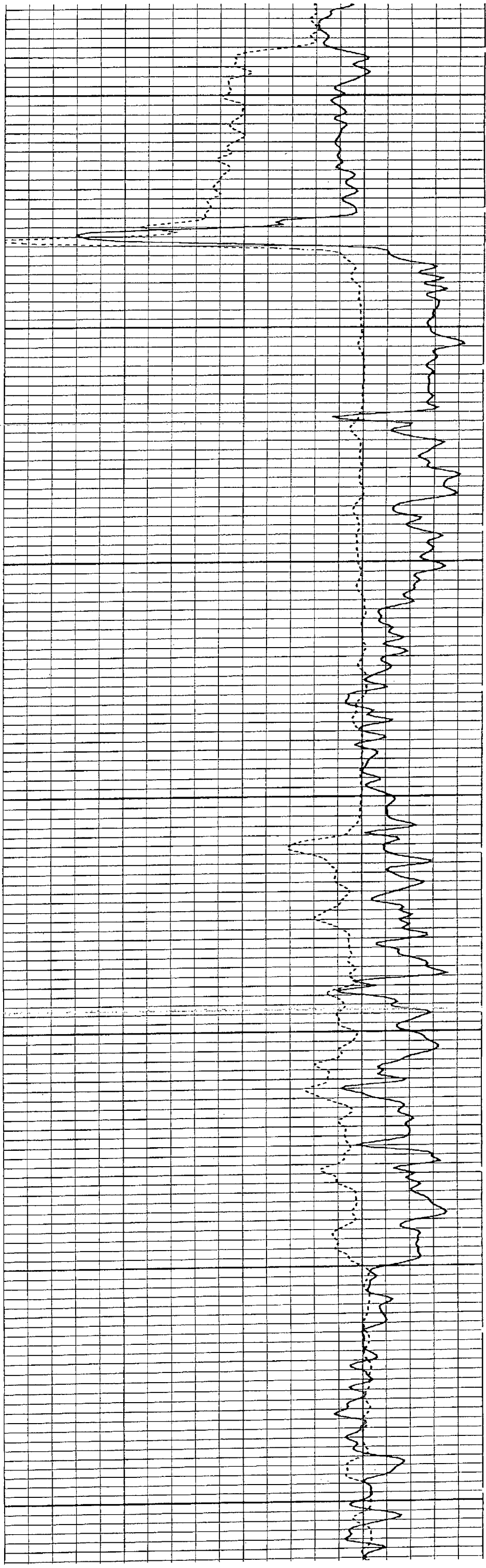


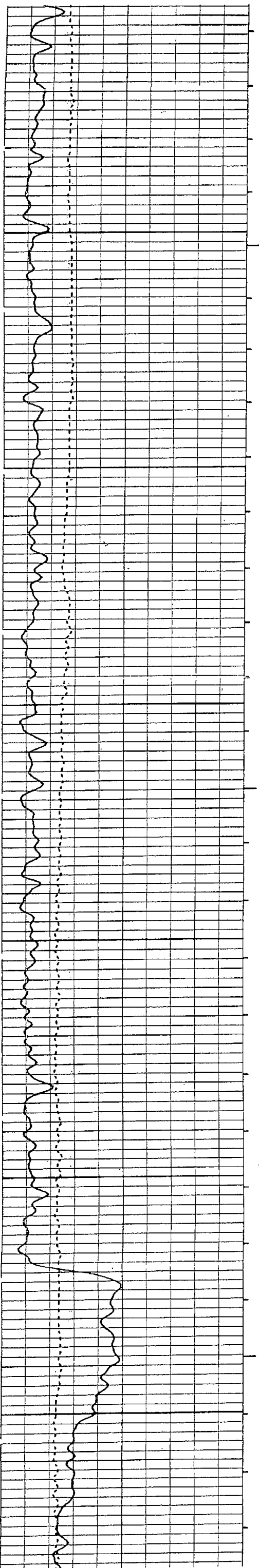


6000

6100

6200

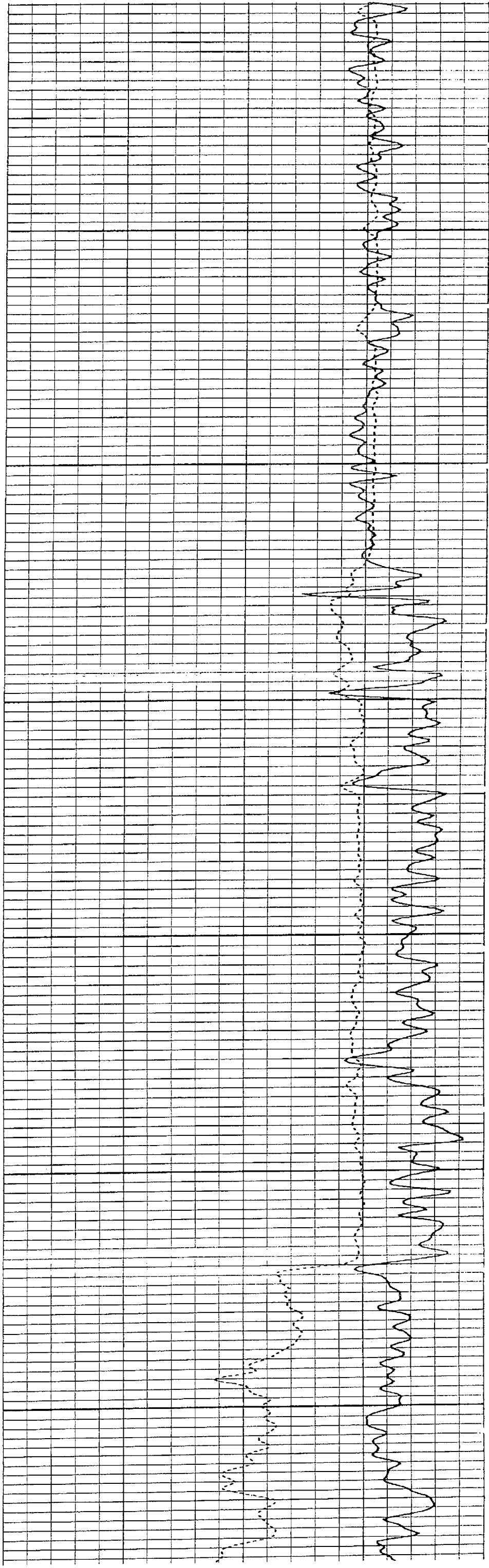


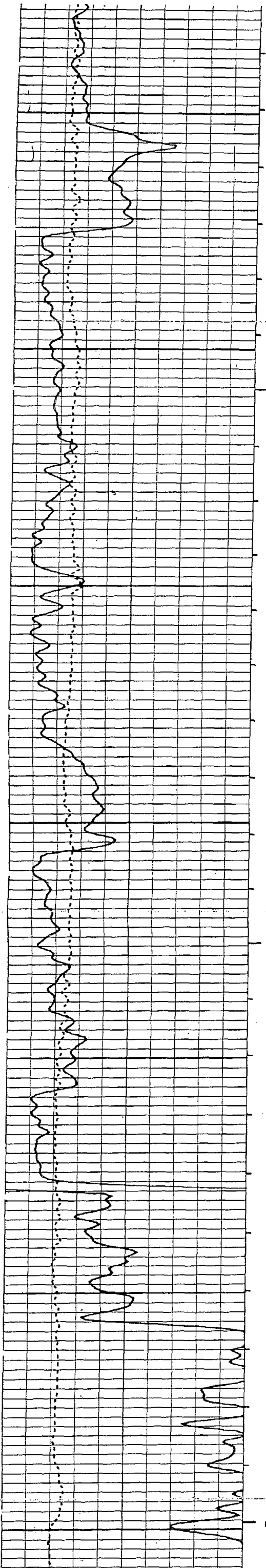


6300

6400

6500



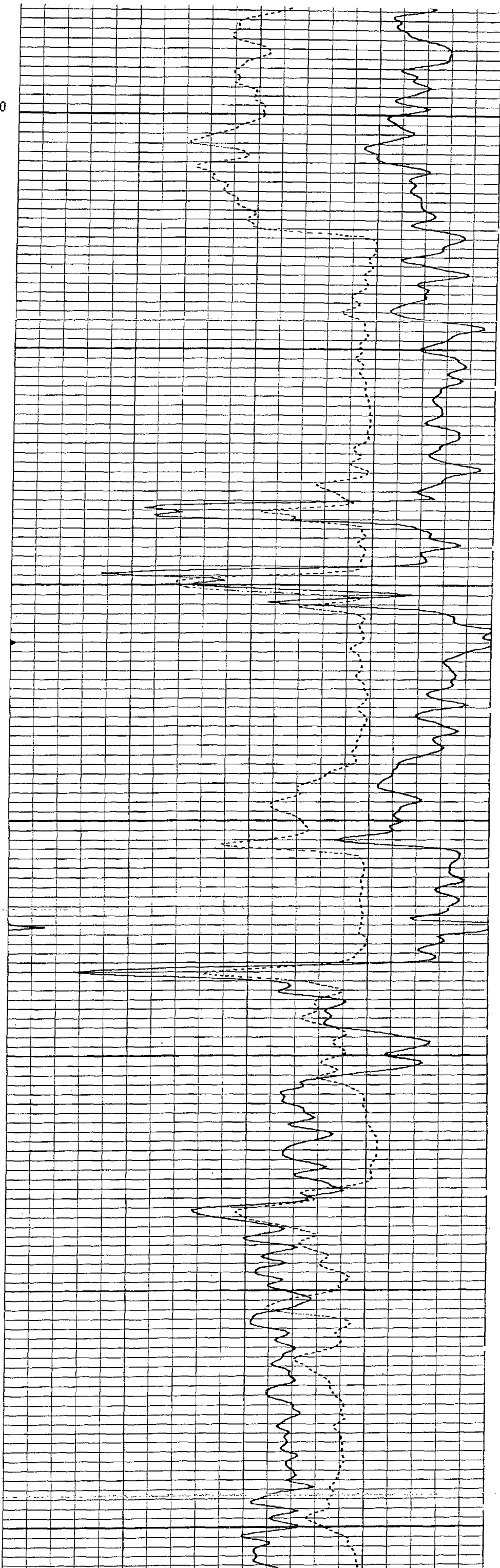


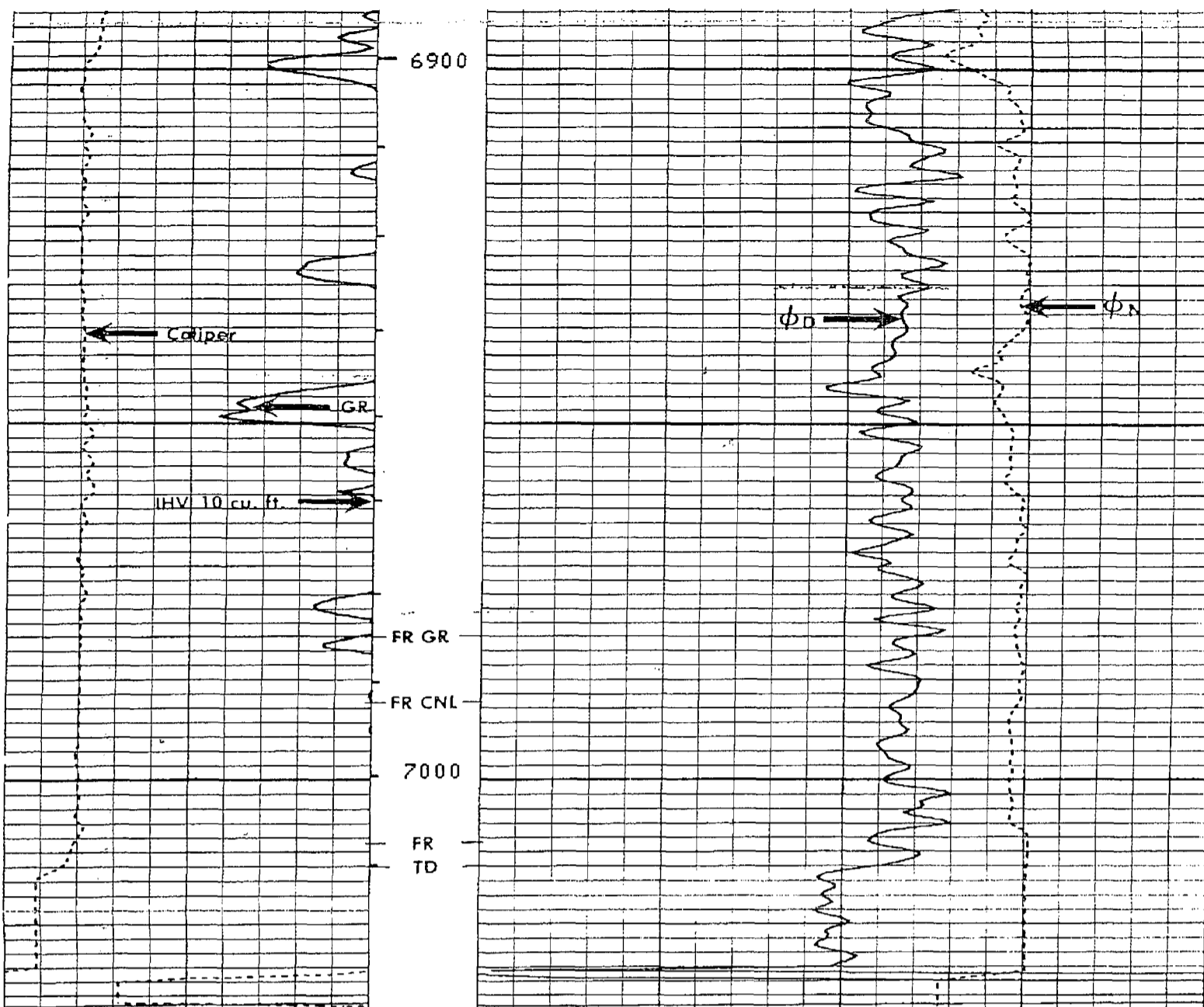
6600

6700

6800

6900





FILE 6 14-FEB-85 11:11

CALIKIN)		NPHI	
10.000	20.000	.30000	-.1000
GR (GAPI)		DPHI	
0.0	200.00	.30000	-.1000

SENSOR MEASURE POINT TO TOOL ZERO

STSG	27.6	FEET	GR	32.2	FEET
NCNL	23.2	FEET	SCNL	23.2	FEET
SS2	2.0	FEET	FCNL	23.2	FEET
LITH	2.5	FEET	SS1	2.0	FEET
LU	2.5	FEET	LS	2.5	FEET
CALI	2.6	FEET	LL	2.5	FEET
NRAT	23.2	FEET	TENS	-.9	FEET

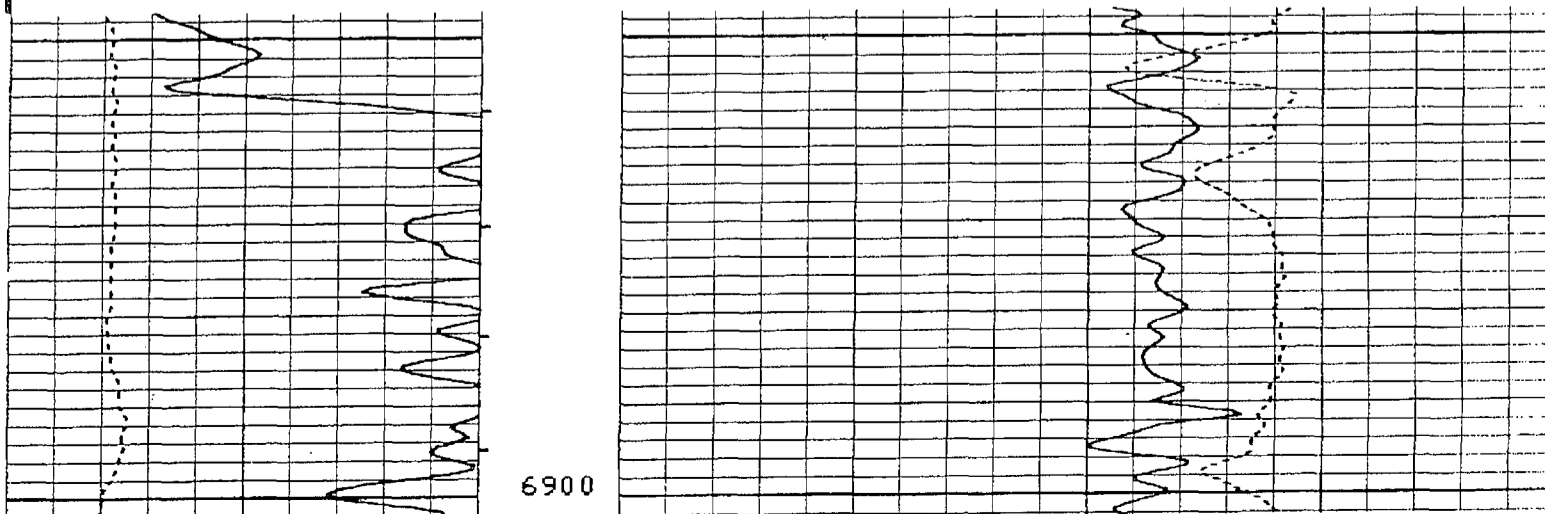
PARAMETERS

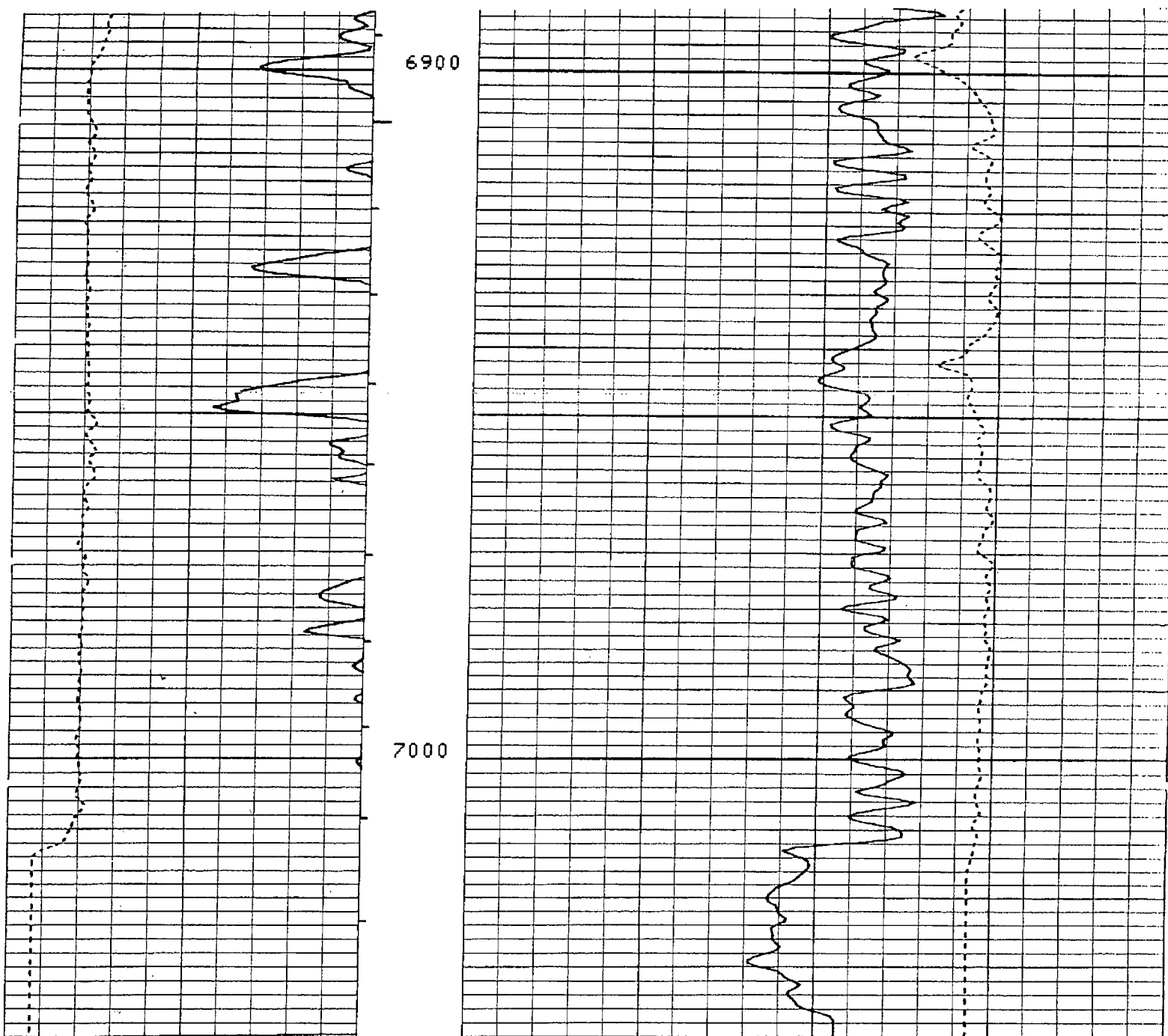
NAME	VALUE	UNIT	NAME	VALUE	UNIT
SHT	80.0000	DEGF	TD	10000.0	F
HC	CALI		PSNR	2.20000	
FD	1.00000	G/C3	MATR	LIME	
WMUD	8.00000	LB/G	MDEN	2.71000	G/C3
DHC	NONE		LPCS	TWIN	
BS	7.87500	IN	BHS	OPEN	

CALIKIN)		NPHI	
10.000	20.000	.30000	-.1000
GR (GAPI)		DPHI	
0.0	200.00	.30000	-.1000

REPEAT SECTION

FILE 5 14-FEB-85 11:09





FILE 5 14-FEB-85 11:03 REPEAT SECTION

CALI(IN)		NPHI	
10.000	20.000	.30000	-.1000
GR (GAPI)		DPHI	
0.0	200.00	.30000	-.1000

SENSOR MEASURE POINT TO TOOL ZERO

STSG 27.6 FEET	GR 32.2 FEET
NCNL 23.2 FEET	SCNL 23.2 FEET
SS2 2.0 FEET	FCNL 23.2 FEET
LITH 2.5 FEET	SS1 2.0 FEET
LU 2.5 FEET	LS 2.5 FEET
CALI 2.6 FEET	LL 2.5 FEET
NRAT 23.2 FEET	TENS -.9 FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
SHT	80.0000	DEGF	TD	10000.0	F
HC	CALI		PSNR	2.20000	
FD	1.00000	G/C3	MATR	LIME	
WMUD	8.00000	LB/G	MDEN	2.71000	G/C3
DHC	NONE		LPCS	TWIN	
BS	7.87500	IN	BHS	OPEN	

BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 85/02/14
 PROGRAM FILE: LDNGR (VERSION 26.2 00/00/00)

SGTL DETECTOR CALIBRATION SUMMARY

	MEASURED		CALIBRATED	UNITS
GR	BKGD 59	JIG 221	165	GAPI

CNTH DETECTOR CALIBRATION SUMMARY

	TANK		JIG	
NRAT	INPUT 2.20000	CALIBRATED 2.158	MEASURED 2.167	CALIBRATED 2.126

CNTH DETECTOR CALIBRATION SUMMARY

	TANK		JIG	
NRAT	INPUT	CALIBRATED	MEASURED	CALIBRATED
	2.20000	2.158	2.167	2.126

LDTG DETECTOR CALIBRATION SUMMARY

DRS SONDE NUMBER : 3723
 NUCLEAR SERVICE CARTRIDGE NUMBER : 1795
 POWERED DETECTOR HOUSING NUMBER : 2769
 POWERED GAMMA-GAMMA DETECTOR NUMBER : 2796
 LDT LOGGING SOURCE NUMBER : 7091
 LDT CALIBRATION MODE : WATE
 MUD DENSITY : 8.00000

	M E A S U R E D			
	BKGD	AL+FE	AL	UNITS
LL	19.9	89.0	97.5	CPS
LU	77.1	135.7	147.8	CPS
LS	58.5	157.0	171.3	CPS
LITH	5.8	33.5	49.7	CPS
SS1	13.8	170.8	186.1	CPS
SS2	9.5	247.0	266.0	CPS

LDTG CALIPER CALIBRATION SUMMARY

	MEASURED		CALIBRATED		
CALI	SMALL	LARGE	SMALL	LARGE	UNITS
	7.6	12.2	8.0	12.0	IN
	FILE 0		14-FEB-85 10:31		

SHOP SUMMARY

PERFORMED: 85/01/19
 PROGRAM FILE: CCOHOP (VERSION 26.2 83/11/17)

LDTG DETECTOR CALIBRATION SUMMARY

DRS SONDE NUMBER : 3723
 NUCLEAR SERVICE CARTRIDGE NUMBER : 1795
 POWERED DETECTOR HOUSING NUMBER : 2769
 POWERED GAMMA-GAMMA DETECTOR NUMBER : 2796
 LDT LOGGING SOURCE NUMBER : 7091
 LDT CALIBRATION MODE : WATE
 MUD DENSITY : 8.00000

	M A S T E R C A L I B R A T E D			
	BKGD	AL+FE	AL	UNITS
LL	20.2	89.0	97.4	CPS
LU	77.5	135.7	147.8	CPS
LS	58.9	157.0	171.3	CPS
LITH	5.7	33.5	49.8	CPS
SS1	13.8	170.8	186.1	CPS
SS2	9.4	247.0	266.0	CPS

SHOP SUMMARY

PERFORMED: 85/01/15
 PROGRAM FILE: CCOHOP (VERSION 26.2 83/11/17)

CNTH DETECTOR CALIBRATION SUMMARY

	TANK		JIG	
NRAT	MEASURED	CALIBRATED	MEASURED	CALIBRATED
	2.200	2.158	2.179	2.137

(CNC:359 , CNB:3345)

COMPANY	STEAM RESERVES	SCHL. FR	
WELL	ANIMAS 55-7	SCHL. TD	7012
FIELD	WILDCAT	DRLR. TD	7001
COUNTY	HILDAIGO	STATE	NEW MEXICO
		Elev:	KB 4217.6
			DF 4216.6
			GL 4200.0

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, March 19, 2010 4:27 PM
To: Chavez, Carl J, EMNRD
Cc: Lucero, Stephen A., EMNRD; VonGonten, Glenn, EMNRD
Subject: Meeting Notes (3/19/2010) to "General Correspondence 2008 - Present" File (GTHT-1)

Ben Barker and Mike Hayter met with Carl Chavez, Glenn von Gonten and Mark Fesmire in Santa Fe on Friday 3/19/2010 at 1:00 p.m. to discuss the OSE Hearing date and any issues. Raser Technologies hand delivered G-101, 102 and 103 Forms for re-entry into PA'd Well 55-7. OCD will review and let Raser know about any deficiencies.

Carl Chavez discussed the regulations, forms, etc. associated with Forms G-101 through G-107; however, OCD is only now responsible for reviewing Forms G-101 – 103.

Glenn von Gonten discussed the drilling aspects.

Raser indicated that OSE is good with their Well 55-7 workover once OCD approves, and Raser provides a single well bond referencing a new OCD API# for the well, Raser is free to conduct its work on this well to determine if shareholders are interested in investment with Raser on the geothermal project.

The issues with OSE can play out in the interim with the first hearing scheduled for 10/26/2010 somewhere down south that could last for 3 -4 days. If OCD approves the G forms, Raser will cleanout the well in April of 2010. The 4 wk. well test with calculated results will be complete by 5/15/2010 and Raser will determine if the project is viable based on the well test. If Raser thinks it is a "go", it will give investors time to decide whether to invest \$15M in the project by 6/15/2010 will know if "yes" or "no". If yes, Raser could have well drilled and in place by 12/30/2010. The plant could be fully operational and transmitting by Q4 of 2011 and selling power by 1/2012. OSE issues would have to be resolved for the above to happen too.

Informed Raser that OCD may be responsible for low and high temperature geothermal regulations and it was currently coordinating with the other agencies about this matter.

OCD requested technical and policy recommendations for streamlining the process by 3/30/2010 in consideration of the Governor's recent Executive Order requiring EMNRD to complete a report w/ DB for deep source geothermal power resource areas, technical and policy recommendations for streamlining the permit process for commercial power companies to help make NM a leader in geothermal renewable power.

End.....

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

Rasert Meeting.

Friday 3/19/2010

<u>Name</u>	<u>Company</u>	<u>ph</u>	<u>E-mail</u>
Carl Chavez	NM OFD	505-476-3490	Carl.j.Chavez@state.nm.us
M Hayter	Raser	801-765-1200	michael.hayter@rasertech
Ben Barker	Raser	801-765-1200	ben.barker@rasertech.com
Glen vonGarten	OCS	476-3488	

Raser Meeting.

Friday 3/19/2010

<u>Name</u>	<u>Company</u>	<u>ph</u>	<u>E-mail</u>
Carl Chavez	NM OFD	505-476-3490	Carl.j.Chavez@state.nm.us
M Hayter	Raser	801-765-1200	michael.hayter@rasertech.com
Ben Barker	Raser	801-765-1200	ben.barker@rasertech.com
GLEN WONG	OCS	476-3488	

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form G-101
Adopted 10-1-74
Revised 10-1-78

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Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN,
OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease
STATE NA - Federal Federal
5.a State Lease No.
Federal NM-34790

1a. Type of Work Drill Deepen Plug Back
b. Type of Well Geothermal Producer Temp Observation
Low-Temp Thermal Injection/Disposal

7. Unit Agreement Name
NA
8. Farm or Lease Name
Lightning Dock Geo.

2. Name of Operator
Los Lobos Renewable Power, LLC
3. Address of Operator
5152 Edgewood Drive, Provo, Utah 84604

9. Well No.
TFD 55-7
10. Field and Pool, or Wildcat
Wildcat

4. Location of Well
UNIT LETTER _____ LOCATED 2411.9 FEET FROM THE East LINE
AND 2329.1 FEET FROM THE South LINE OF SEC. 7 TWP. 25 S RGE. 19 W NMPM

12. County
Hidalgo

21. Elevations (Show whether DF, RT, etc.) 4201 GR	21A. Kind & Status Plug. Bond. Irrev. Ltr Credit	21B. Drilling Contractor Everett D. Burgett	19. Proposed Depth 3000'	19A. Formation Open Hole	20. Rotary or C.T. Rotary	22. Approx. Date Work will start Mobilize 04 01 2010
---	---	--	-----------------------------	-----------------------------	------------------------------	---

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP

Please see attached

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed Benjamin J. Barber Title VP Resource Management Date March 18, 2010

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Proposed Operations Plan for the Cleanout of TFD 55-7

I. Description of Proposed Operations:

Los Lobos Renewable Power, LLC (“Los Lobos”) proposes to reenter well TFD 55-7 for the purpose of determining its suitability as a geothermal production well. Los Lobos intends to begin mobilizing a drilling rig about April 1, 2010 and will commence operations according to the Plan in Section II., below, as soon as permitted.

The operations for which Los Lobos seeks permission comprise three parts:

- Remove two of the three remaining cement abandonment plugs set in the wellbore by Steam Reserve Corp. in 1985. The deepest plug will remain in place. The two uppermost of five plugs were removed by Rosette, Inc. pursuant to an OSE irrigation well permit. Los Lobos intends to test approximately the upper third of the open hole.
- Install a production pump and conduct a well and reservoir test, delivering water directly to Rosette’s existing green house system, which has been in use in for more than 10 years. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Los Lobos does not intend to use TFD 55-7 for injection in this operation.
- Install proper wellhead equipment and secure the well.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, Los Lobos will proceed with continued development according to the requirements of all permits, including the OCD discharge permit.

II. Cleanout and Testing Plan for Well TFD 55-7

- 1) Excavate casing to expose original weld area and inspect for exterior corrosion. Reinstall wellhead and casing if necessary.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp pump.
- 3) Install annular BOP on the wellhead above flow tee with gate valve on side outlet.
- 4) Mix gel-lime mud and fill hole.
- 5) Pick up slick BHA #1: 8-1/2” insert bit, BS, 4x6” DC, jars, 1x6” DC, XO.
- 6) Test BOP for leakage by inflating around BHA and pumping in the side outlets to maximum working pressure of the surface piping, not to exceed 900 psig.
- 7) Run in hole and tag bottom, expected at about 1400’. Circulate bottoms up.
- 8) Pull out of hole and pick up 9-5/8” bit and stabilizers. Make up stiff BHA #2.
- 9) RIH and time drill cement plug #1.
- 10) POH and stand back BHA #2.
- 11) Pick up BHA #3: float shoe, XO, 2x6” DC.
- 12) RIH and tag cement plug #2, expected at about 1800 ft.

- 13) Circulate hole clean.
- 14) Displace mud with water. POH to 1500 ft. Close BOP.
- 15) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 16) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 17) Air lift well and record volume of produced water.
- 18) POH, stand back BHA #3.
- 19) Pick up BHA #2. RIH to cement plug #2.
- 20) Circulate mud and drill out plug #2.
- 21) POH, lay down BHA #2.
- 22) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
- 23) POH, lay down BHA #3.
- 24) Run caliper log and select zone for bridge plug installation about 3000 ft.
- 25) Pick up bridge plug and BHA #4: setting tool, DCs as directed.
- 26) RIH and set bridge plug.
- 27) POH to 2800 ft, circulate hole clean.
- 28) POH to 1000 ft, air lift well as directed.
- 29) POH laying down drill pipe, lay down BHA #4.
- 30) Make up pump string and set test pump as directed.
- 31) Connect flow line to Rosette, Inc. greenhouse facility.
- 32) Release rig.
- 33) Conduct pump test as directed.
- 34) Move in and rig up well service rig.
- 35) Remove and lay down pump and casing.
- 36) Install master valve and survey flange.
- 37) Secure well and release rig.

GEOHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

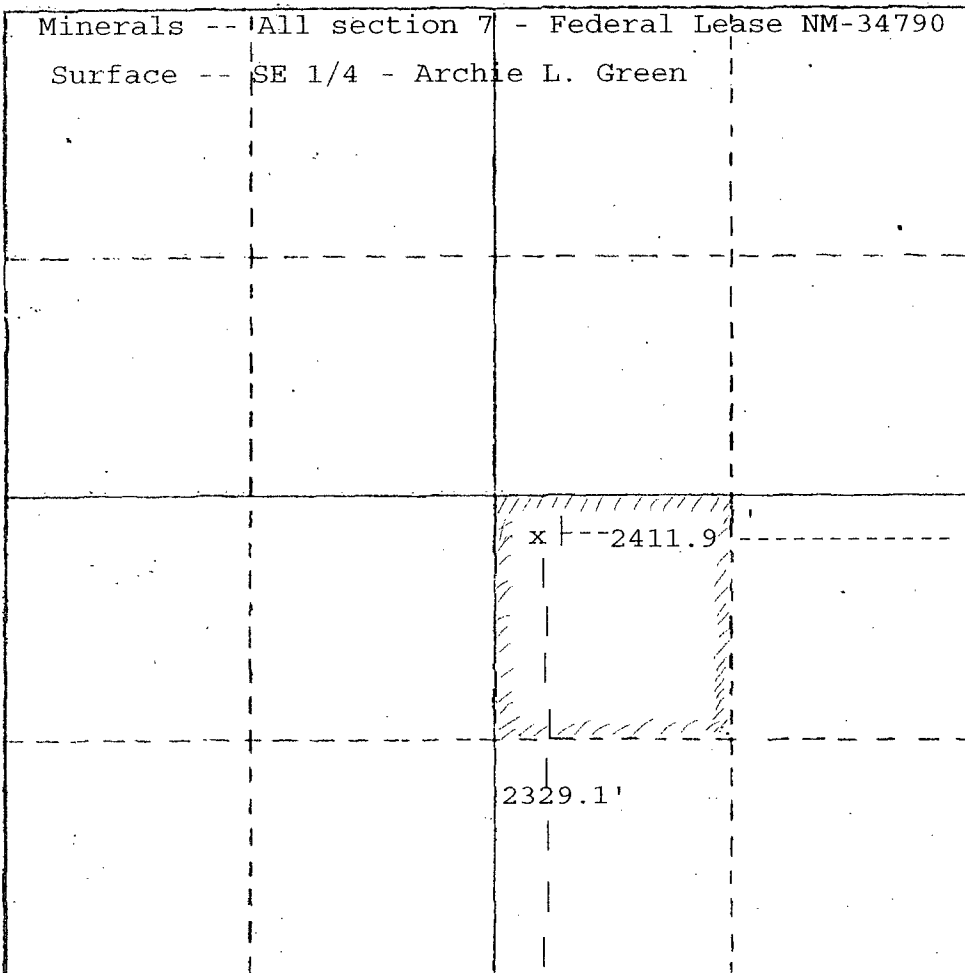
Operator Los Lobos Renewable Power, LLC		Lease Federal Lease MM-34790			Well No. TFD 55-7
Unit Letter 2411.9	Section 7	Township 25S	Range 19W	County Hidalgo	
Actual Footage Location of Well: 2411.9 feet from the East line and 2329.1 feet from the south line					
Ground Level Elev. 4201'	Producing Formation Open Hole		Pool Wildcat	Dedicated Acreage: 40 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Benjamin J. Barker

Name
Benjamin J. Barker

Position
V.P. Resource Dev.

Company
Raser Technologies

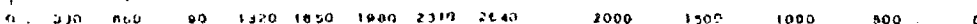
Date
March 18, 2010

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

Form G-103
Adopted 10-1-74
Revised 10-1-78

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U. S. G. S.		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State NA - Federal
5.a State Lease No.
Federal NM 34790

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit ..." (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input checked="" type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name NA
2. Name of Operator Los Lobos Renewable Power, LLC	8. Farm or Lease Name Lightning Dock Geo.
3. Address of Operator 5152 Edgewood Drive, Provo, Utah 84604	9. Well No. TFD 55-7
4. Location of Well Unit Letter 2411.9 Feet From The East Line and 2329.1 Feet From The South Line, Section 7 Township 25S Range 19W NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) 4201' GR	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input checked="" type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER <input type="checkbox"/>

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

See Attached

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Benjamin J. Barber TITLE VP Resource Management DATE March 18, 2010

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Proposed Operations Plan for the Cleanout of TFD 55-7

I. Description of Proposed Operations:

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- Install a production pump and conduct a well and reservoir test, delivering water directly to Rosette’s existing green house system, which has been in use in for more than 10 years. The test will exercise water rights owned by Rosette, Inc. and already assigned to this well. Los Lobos does not intend to use TFD 55-7 for injection in this operation.
- Install proper wellhead equipment and secure the well.

If TFD 55-7 demonstrates adequate potential as a geothermal production well, Los Lobos will proceed with continued development according to the requirements of all permits, including the OCD discharge permit.

II. Cleanout and Testing Plan for Well TFD 55-7

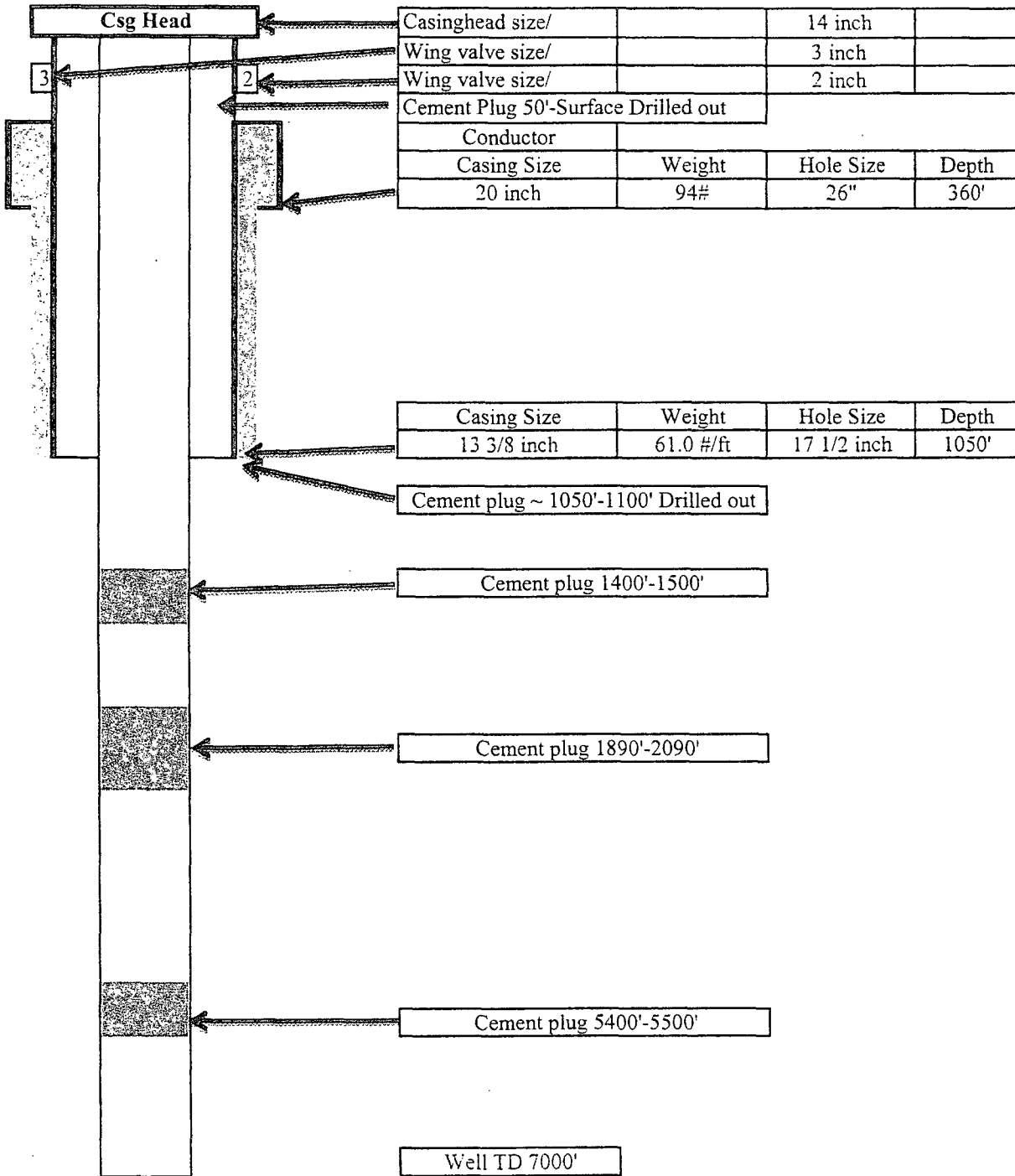
- 1) Excavate casing to expose original weld area and inspect for exterior corrosion. Reinstall wellhead and casing if necessary.
- 2) Move in and rig up a rotary drilling rig with a rated capacity of at least 5000 ft and a mud system with a minimum volume of 500 barrels and a 500 hp pump.
- 3) Install annular BOP on the wellhead above flow tee with gate valve on side outlet.
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- 12) RIH and tag cement plug #2, expected at about 1800 ft.

- 13) Circulate hole clean.
- 14) Displace mud with water. POH to 1500 ft. Close BOP.
- 15) Pump water at 10-25 bbl/min and record stable casing head pressure.
- 16) Rig for air injection through drill pipe. Set up fluid sample collection point on flow line.
- 17) Air lift well and record volume of produced water.
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- 19) Pick up BHA #2. RIH to cement plug #2.
- 20) Circulate mud and drill out plug #2.
- 21) POH, lay down BHA #2.
- 22) Pick up BHA #3, RIH and tag cement plug # 3, expected at about 5400 ft. Circulate hole clean.
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- 33) Conduct pump test as directed.
- 34) Move in and rig up well service rig.
- 35) Remove and lay down pump and casing.
- 36) Install master valve and survey flange.
- 37) Secure well and release rig.

AS IS NOW

Field Name:

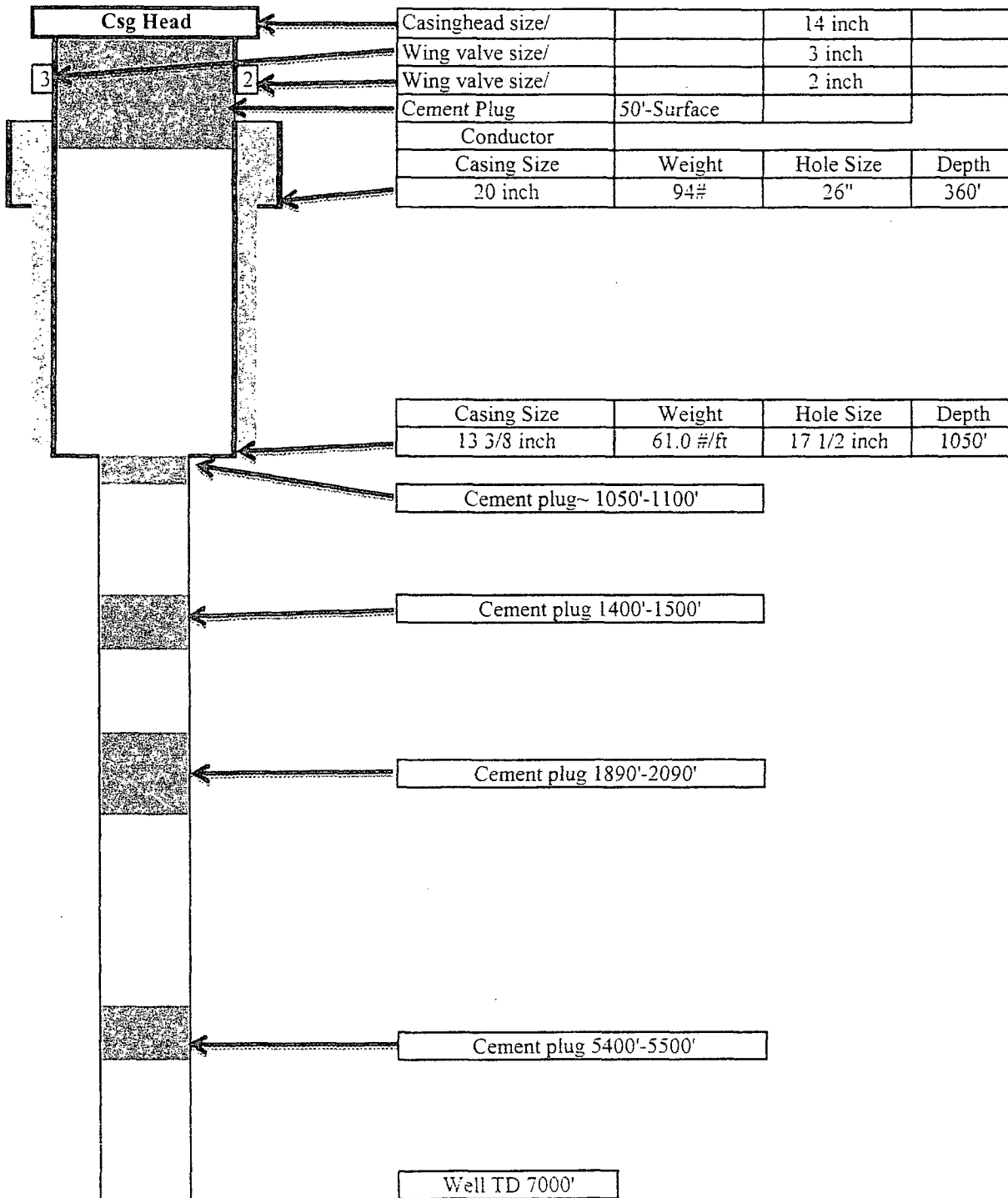
Lightning Dock



P&A 1985

Field Name:

Lightning Dock



ABANDONMENT WORK
ANIMAS 55-7
DECEMBER 20-23, 1985
John E. Deymonaz

- 12/20 Halliburton and American Well Servicing Co. move equipment to Lordsburg, N.M.
- 12/21 American moves workover rig to Animas 55-7 and sets up. Worked tubing for 2 hours, pulling up to 100,000 pounds, could not pull free. Halliburton arrived about noon, hooked up pumps and circulated through tubing for 2 hours while American worked the tubing. Pulled free about 2 PM. Pulled tubing back to 5500 feet and set 70 sack (98 cubic feet) plug from 5500-5400 feet. Pulled 33 joints and circulated. After 30 minutes circulation hole began unassisted two-phase flow which lasted for about 30 minutes. Flow was through 3 inch flow line at bottom of wellhead. Leakage at top of wellhead was prevented by stripper assembly.
- 12/22 Circulate through tubing, well began unassisted two-phase flow for about 30 minutes. Pulled tubing to 2090 feet and set 170 sack plug (238 cubic feet) from 2090-1890 feet. Stood back six stands of tubing (600 feet) and WOC for three hours. RIH, tag cement at 1980 feet. Pull tubing to 1500 feet and set 100 sack plug (140 cubic feet) from 1500-1400 feet. Pull tubing to 1100 feet, set 80 sack plug (112 cubic feet) from 1100-1000 feet stand back six stands and WOC three hours. RIH, tag cement at 1050 feet. Pull tubing to 50 feet and plug from 50 feet to surface using 50 sacks (56 cubic feet). Flush out wellhead with water, shut down.
- 12/23 American and Halliburton rig down equipment and leave location. Dale Burgett crew dig out cellar below wellhead, cut off wellhead and erect monument of 4 inch casing. Cellar will be filled in and monument will be approximately six feet above ground level.

Equipment removed from well and laid down on drill pad includes:

- 213 joints (7189 feet) of J55 2-7/8 inch tubing. Includes 4 joints already on location.
- 4 2-7/8 inch Baker Model L sliding sleeves.
- 1 2-7/8 inch bull nosed check valve.
- 3 3 inch Barton geothermal gate valves.
- 1 13 5/8" x 7 1/16" adapter spool.
- 1 7 1/16" x 2 7/8" 2 round 3M adapter spool.
- 1 13 5/8" x 13 3/8" casing head w/ 2 3" ext. flanges.
- 2 3 inch companion flanges.
- Misc studs and nuts.



Baker Atlas

MULTI-FINGER IMAGING CALIPER

Company RASER TECHNOLOGIES

Well 55-7

Field ROSETTE

County HIDALGO State NEW MEXICO

Location: API #: Other Prices G-RING SBT 3-ARM CAL Elevation K.B. N/A D.F. N/A G.L. N/A

SEC TWP RGE Permanent Datum G.L. Elevation N/A Log Measured From G.L. Drilling Measured From GROUND LEVEL

Table with columns: Number, Driller, Logger, Logged Interval, Log Interval, Hole Size, Fluid, Viscosity, Recorded Temp., Cement Top, Well Ready, Logger on Bottom, Cement Number, Location, Drilled By, Logged By. Includes data for 11-MARCH-2008 and MR. GIGUIERE.

Table with columns: Borehole Record (Number, Bit, From, To, Weight, Size, Tubing Record From, To), Log Record (Size, Wgt/Ft, Top, Bottom), String, Action String.

<<< Fold Here >>>

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 set out in our current Price Schedule.

Comments

LOG TO WIRELINE MEASUREMENTS. HAVE NO RECORD OF CASING WT. ONLY GOING BY CALIPER READING.



Baker Atlas

Well: 55-7
Field: ROSETTE
Company: BAKER TECHNOLOGIES
Country: USA

MIT Report Overview

Survey Date: 3-11-2008
Tool Type: Sondex Multifinger Imaging Tool
Tool Size: 8.0" /80-Arms
No. of Fingers: 80
Analyst: Orlando Lazo

Well	Weight	Grade & Thread	Nom. ID	Nom. Upsid	Upper len.	Lower len.
13.375 ins	54.52 pbf		12.015 ins	14.351 ins	2.4 ins	2.4 ins

Analysis Overview

se results were generated semi-automatically, using Sondex MITPro software Version 3.04. data was acquired using a Sondex Multifinger Imaging Tool. Sondex accepts no responsibility for the accuracy of the results that are presented.

items in the string are referred to as 'Joints'. This includes completion items such as s-overs. Normal joints are identified by integer numbers, sequential in depth. If joints and completion items are identified by numbers after the decimal point.

penetrations and projections are measured by local surface shape analysis, where this is effective. The damage classification scheme is described at the end of the Joint Tabulations.

Total of 28 joints were analysed, of which 0 have possible holes.

most deeply penetrated joints:

- pit depths to 0.997 ins in Joint 22
- pit depths to 0.084 ins in Joint 21
- pit depths to 0.065 ins in Joint 20
- pit depths to 0.06 ins in Joint 19
- pit depths to 0.04 ins in Joint 1
- pit depths to 0.036 ins in Joint 3

most restricted joints:

- projections to 0.108 ins in Joint 2
- projections to 0.085 ins in Joint 1
- projections to 0.064 ins in Joint 27
- projections to 0.058 ins in Joint 19

Disclaimer

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 interpretations made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions.



Baker Atlas

MIT Report Overview

Well: 55-7
 Field: ROSETTE
 Company: BAKER TECHNOLOGIES
 Country: USA

Survey Date: 3-11-2008
 Tool Type: SonDEX Multifinger Imaging Tool
 Tool Size: 8.0" /80-Arms
 No. of Fingers: 80
 Analyst: Orlando Laso

Nom. OD	13.375 ins	Weight	54.52 lbf	Grade & Thread		Nom. ID	12.643 ins	Nom. Upset	11.551 ins	Upper len.	2.4 ins	Lower len.	2.4 ins
---------	------------	--------	-----------	----------------	--	---------	------------	------------	------------	------------	---------	------------	---------

Analysis appears to be in good condition. A trace of metal loss associated to drill wear was detected from 81 to 825 ft (points 19 through 22). The deepest wall penetration was detected at 814 ft (pt. 22) where metal loss reached 26%. Point 21 at 750 ft has a wall penetration of 22%. The rest of the drill wear trace graded within the Class 1 range (1 to 20%). Please review the "MIT REPORT JOINT TABULATION SHEET" for more details. A bore collar was detected at 950 ft. Minor accumulation of deposits were detected in joint 1, 2 and 3.



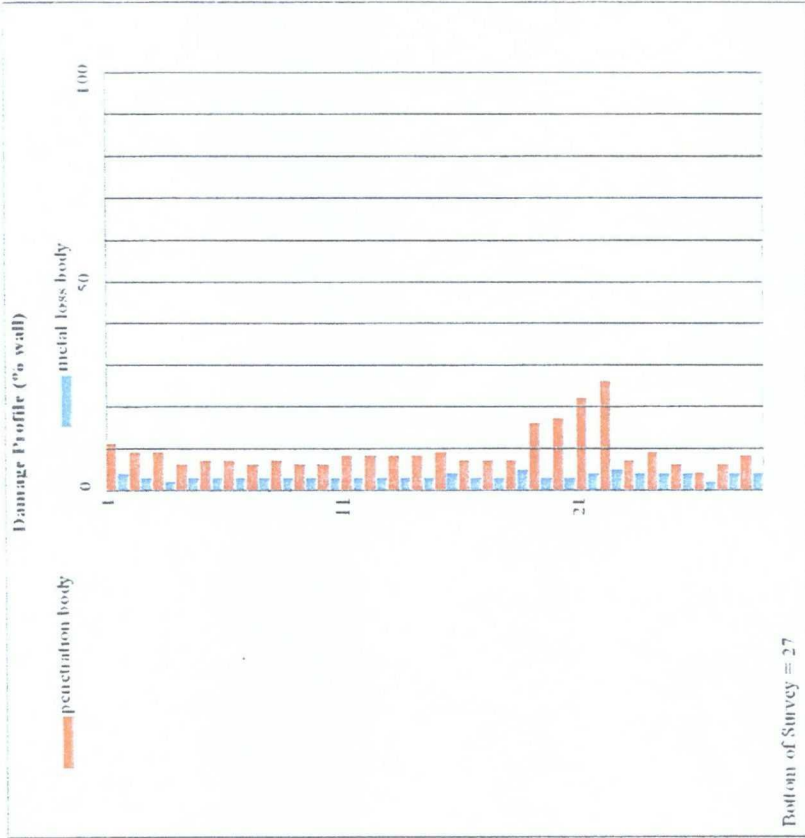
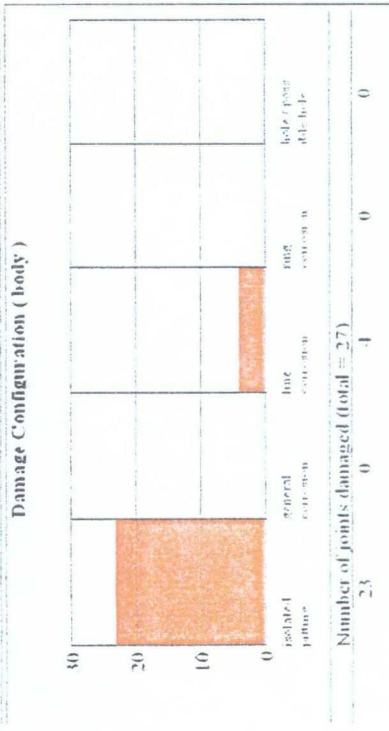
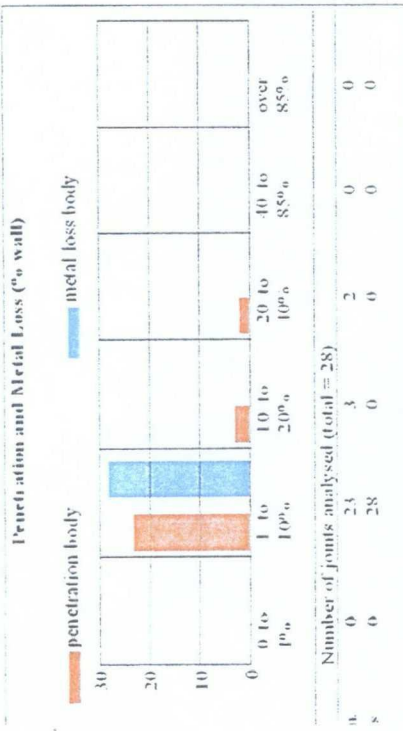
Miller Atlas

Well # 55-7
 Field: ROSSETTE
 Company: KASER TECHNOLOGIES
 Country: USA

MIT Report Overview Body Region Analysis

Survey Date: 3-11-2008
 Tool Type: Sondex Multifinger Imaging Tool
 Tool Size: 8.0" / 80-Arms
 No. of Fingers: 80
 Analyst: Orlando Laso

Nom. OD	13.375 ins	Weight	51.52 ppf	Grade & Thread	
Nom. ID	12.615 ins	Nom. Upset	14.351 ins	Upper ten.	2.4 ins
				Lower ten.	2.4 ins





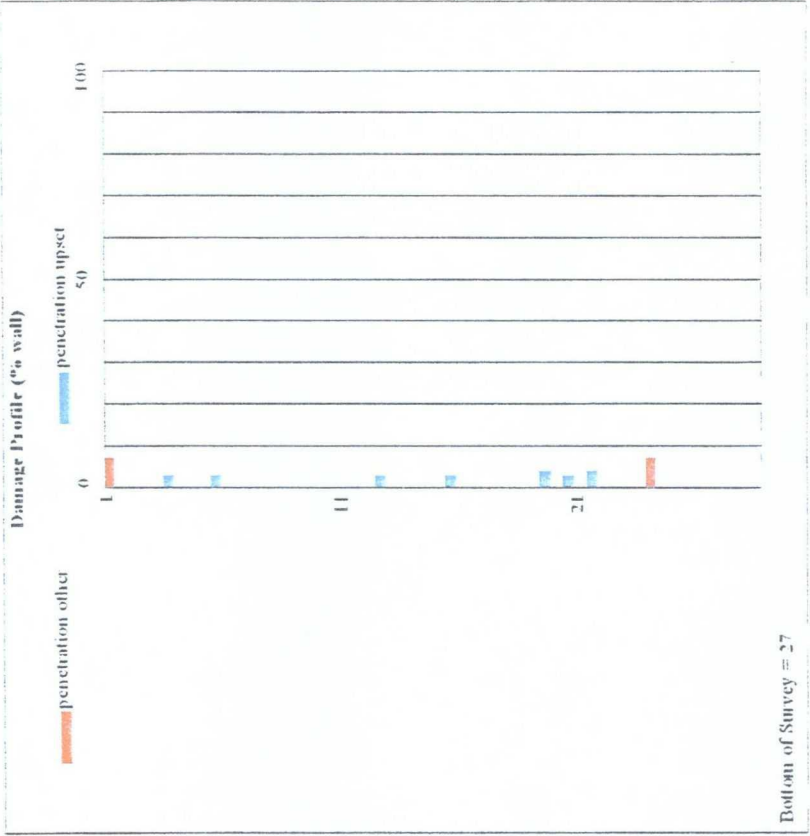
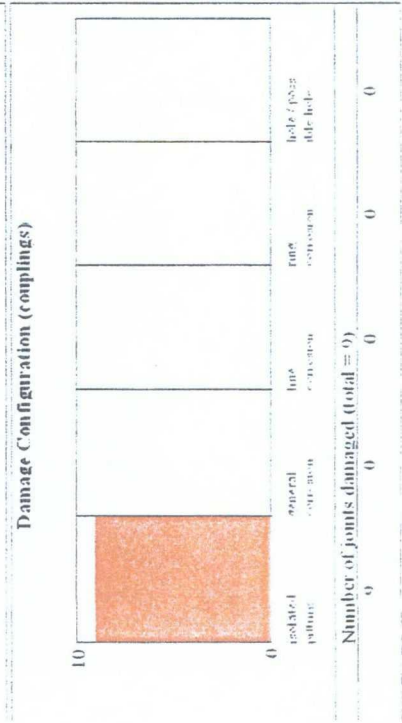
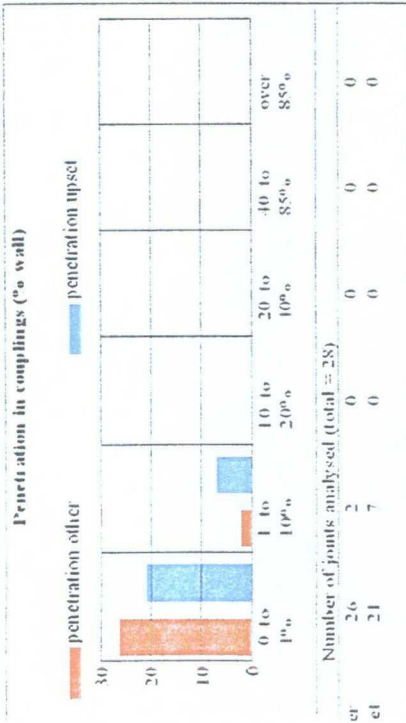
Atlas

Well # 55-7
 Field ROSSETTE
 Company KASER TECHNOLOGIES
 Country USA

MIT Report Overview Coupling Region Analysis

Survey Date: 3-11-2008
 Tool Type: Sondex Multifinger Imaging Tool
 Tool Size: 8.0" /80-Arms
 No. of Fingers: 80
 Analyst: Orlando Laso

Well ID	13.375 ins	Weight	51.52 ppf	Grade & Thread	
Nom. ID	12.615 ins	Upper len	2.4 ins	Lower len	2.4 ins
Nom. Upset	11.351 ins				





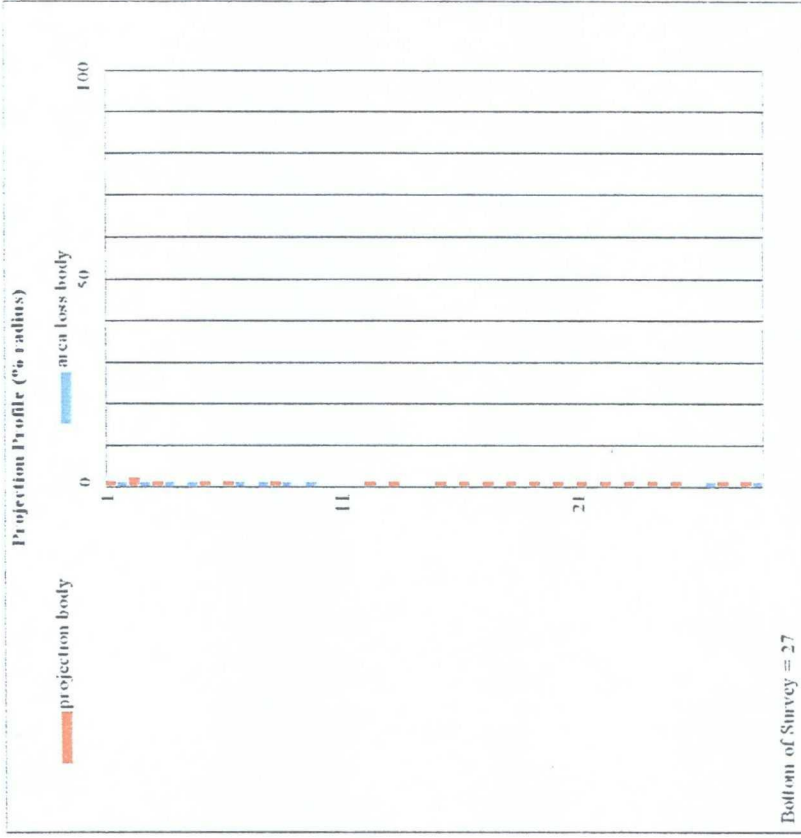
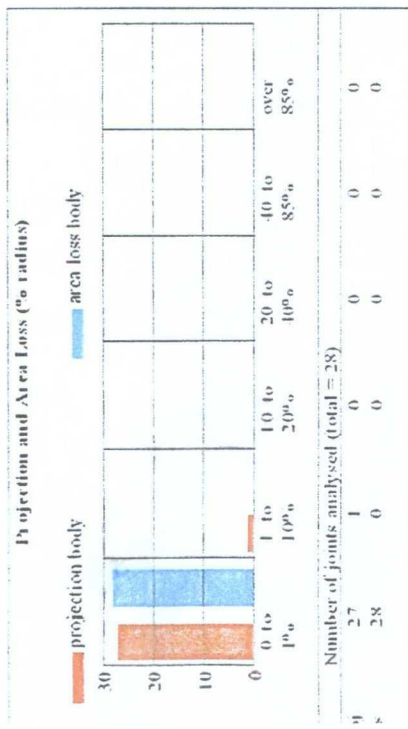
Miller Atlas

Well # 55-7
 Field: ROSETTE
 Company: RASER TECHNOLOGIES
 Country: USA

MIT Report Overview Body Region Analysis

Survey Date: 3-11-2008
 Tool Type: Sondex Multifinger Imaging Tool
 Tool Size: 8.0" 80-Arms
 No. of Fingers: 80
 Analyst: Orlando Lasso

Well	Nom OID	Weight	Grade & Thread	Upper len.	Lower len.
13.375 ins	5.152 ipf			2.1 ins	2.1 ins
	Nom ID	Nom. Upset			
	12.615 ins	11.351 ins			



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 16
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 18
 19
 20
 21
 22
 23
 24
 25
 26
 27

Depth: 794.810
 Cable speed: 4
 Deviation: 13
 Rotation: 186
 Average diam:
 Min pair diam:
 Max pair diam:
 Segment length:

Classification scheme
 / projection class, in order of damage severity
 1. Reflection exceeds 70% of nominal wall thickness
 2. Damage area exceeds 50% of circumference, but depth range does not exceed 2 * pipe ID
 3. Damage depth range exceeds 1 * pipe ID, but extends less than 30% of circumference
 4. Damage depth range exceeds 2 * pipe ID and/or extends more than 30% of circumference
 5. Damage depth range does not exceed 1 * pipe ID or extend more than 30% of circumference
 6. Working threshold = 20 thou inches deviation in body, 25 thou in coupling
 length = 1.667 feet

Shading percentage thresholds



Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, March 17, 2010 7:38 AM
To: 'Layne Ashton'
Subject: RE: API number for existing Discharge permit

Layne:

API#s assigned to the project are well specific. The only well not having an assigned API# is Well 55-7, the well you have expressed interest in reworking and conducting tests on.

OCD needs your G forms to review for the well workover, and if approvable, Raser will be requested to submit a Geothermal Single Well Bond for it. Once we approve the bond, OCD will sign the G-forms and Raser may conduct its project work.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Layne Ashton [mailto:lashton@rasertech.com]
Sent: Tuesday, March 16, 2010 2:59 PM
To: Chavez, Carl J, EMNRD
Subject: API number for existing Discharge permit

Carl,

I've just met with Mr. Patrick Barnes of Wells Fargo, who is helping me with the paperwork on the bonds associated with the existing discharge permit, dated July 1, 2009. I see on the *Form GTB-2 \$10,000 Multi-Well Geothermal Plugging Bond* that an API Number needs to be noted on the Form. However, I do not see an API Number on the aforementioned discharge permit, but GTHT-001 is noted in the "RE:" beneath the address. Is this the API No.? I would sincerely appreciate your help in clarifying this for me at your earliest possible convenience.

Thank you and best regards,

W. Layne Ashton
Raser Technologies, Inc.
5152 Edgewood Drive, Suite 375
Provo, Utah 84604
Tel. (801) 765-1200
Fax (801) 374-3314
Cell (801) 473-6090
layne.ashton@rasertech.com

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, March 16, 2010 11:27 AM
To: 'Layne Ashton'
Subject: RE: Licensed Driller

Layne:

Thnx. for clarification as I anticipate Raser will document in the G-103 exactly what it is planning to do.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
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(Pollution Prevention Guidance is under "Publications")

From: Layne Ashton [mailto:lashton@rasertech.com]
Sent: Tuesday, March 16, 2010 10:57 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Licensed Driller

Carl,

By way of clarification Raser is **not** going to reinject water into 55-7. Rather, we are going to test pump 55-7 for a limited time and within Dale's water rights associated with the well. The water will be delivered directly to Dale Burgett's green house system.

W. Layne Ashton
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layne.ashton@rasertech.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, March 16, 2010 7:29 AM
To: Layne Ashton
Cc: Ben Barker; Michael Hayter; Brooks, David K., EMNRD; Dade, Randy, EMNRD; Reeves, Jacqueta, EMNRD
Subject: RE: Licensed Driller

Ashton:

OK, OCD will review the Raser's submittal. Regarding the bond for well 55-7, the bond must be received and approved prior to any work on the well. Once OCD has review your G-Forms, and if OCD approves, OCD will issue an API# for the well, and Raser must submit a well bond for OCD review and approval before any work can commence on the well.

Regarding Burgett's well and OCD confirming acceptability, I don't think this was discussed under the current context of your message. It is important to note that Raser's proposed work on well 55-7 has not been reviewed in its entirety by the OCD and until we approve, the implication is premature at best. This well was not discussed at the hearing for the project; however, OCD understands that Raser needs flexibility to conduct it exploration activities at the project location. Regarding re-injection of cold fluids into Well 55-7 after the test, OCD is still considering this as to introduce cold fluids

into the reservoir, this could result in a raise the temperature of the ground water to any downgradient geothermal users with geothermal rights. Again, the intention to inject well test water through Well 55-7 has not yet been approved, but OCD has told Raser that the Discharge Permit requires that injection wells inject at a depth of at least 100 feet below the deepest fresh water well in the project area.

Thank you.

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From: Layne Ashton [mailto:lashton@rasertech.com]
Sent: Monday, March 15, 2010 3:38 PM
To: Chavez, Carl J, EMNRD
Cc: Ben Barker; Michael Hayter
Subject: RE: Licensed Driller

Carl,

Thank you for your message. We are finalizing the bond and the G-100/102/103 forms now, identifying Everett D. Burgett Drilling as the driller. We will be submitting those forms this week. On the bonding, we will add TFD 55-7 under an additional bond once we have the correct API number.

We inquired about the acceptability of Mr. Burgett because we are aware of his previous interaction with the State and BLM. We wanted to offer you an opportunity to express any reservations informally, as a courtesy. Thank you for confirming his acceptability.

Please allow me to clarify the testing and injection issues regarding TFD 55-7. Rosette, Inc. has operated this well under an OSE-issued irrigation well permit for the last decade. They have established water rights and a beneficial use for its output. Our initial operation will merely open more, but not all, of the obstructed wellbore to flow, and Rosette will continue to use the fluid in its operations. Our testing will consist of careful observation of the surrounding wells while TFD 55-7 is flowed into the Rosette, Inc. system as it has before.

We do not intend to use TFD 55-7 for injection in this operation, nor to make any other changes to the Rosette system. If the well demonstrates adequate potential, it will be deemed a "geothermal production well." At that point, Raser will proceed with development according to the requirements you have outlined and as specified in the OCD discharge permit.

Regards,

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From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Friday, March 12, 2010 3:09 PM
To: Layne Ashton
Cc: Ben Barker; Michael Hayter; Reeves, Jacqueta, EMNRD; VonGonten, Glenn, EMNRD
Subject: RE: Licensed Driller

Ashton:

OCD is awaiting your bond(s) for Well 55-7 along with G-101, 102 and 103 (attached schematic of existing well construction w/ proposed workover itemization for approval of the OCD).

Seems like Raser wants to just work on this well initially. You will note in the discharge permit that injection wells must be constructed at least 100 feet deeper than the deepest fresh water well in the project location; therefore, using Well 55-7 to inject the well test water may not be approvable, unless perhaps it is reconstructed to comply with the terms and conditions of the OCD Discharge Permit? Raser should determine whether there are any downgradient geothermal permit users with standing that could be adversely impacted by any cold water injection. The OCD will have to approve your planned work to see if it meets the terms and conditions of the discharge permit. Bonding must be approved before any G forms can be approved by the OCD allowing Raser to perform the work. Lastly, the construction of the temporary pits, permanent pits and/or evaporation ponds must have liners (capable of handling heat- EDPM, CSPE-R? of sufficient thickness to be approved for use at the project location. To read up on pit design and construction, please go to: <http://www.emnrd.state.nm.us/ocd/documents/20098-5currentrules-new17and39.pdf> (see Parts 17 and 36) for guidance. Please also be aware of Part 11 if hydrogen sulfide gas will exceed 100 ppm in a public area. There are also Geothermal Forms (<http://www.emnrd.state.nm.us/ocd/Forms.htm>) for well testing, etc. referenced in the regulations and they are available on the OCD Website at <http://www.emnrd.state.nm.us/ocd/documents/OilConservationDivisionGeothermalApplicationProcess8-18-2009.pdf>. Raser must use Geothermal Forms to document everything and ultimately certain forms must be attached to individual forms requesting permission to produce and/or inject for each well Raser is planning to place into operation.

I look forward to receipt of you forms and bonding for what you are planning to do.

Please review the OCD discharge permit and contact me to discuss the discharge permit and any questions you may have on the project by Friday COB 3/19/2010. Thank you.

Carl J. Chavez, CHMM
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From: Layne Ashton [<mailto:lashton@rasertech.com>]
Sent: Friday, March 12, 2010 2:26 PM
To: Chavez, Carl J, EMNRD
Cc: Ben Barker; Michael Hayter
Subject: Licensed Driller

Carl,

I thought I'd let you know that Raser intends to use Everett D. Burgett Drilling, NM license no. 248 for going into 55-7. Burgett will bring in an appropriate rig, as well as a seasoned crew with extensive geothermal well drilling experience in

both NV and UT. Do you have any thoughts or comments? Raser is now in a position to submit the permit now that it has a licensed NM driller & supervisor selected.

Again, please let me know if you have any comments or questions. The best way to reach me is on my cell phone, which is (801) 473-6090. Thank you.

Best wishes,

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, March 16, 2010 7:44 AM
To: Phillips, Haddy L., OSE
Cc: Brooks, David K., EMNRD; 'Mike_Smith@blm.gov'
Subject: Lightning Dock Geothermal- Animas, NM

Haddy:

Good morning. OCD will be receiving a well work over request to re-enter the PA'd Burgett Well 55-7 in the geothermal project area. While there is no intent (as stated below by Raser in yellow highlight) to use this well as an injection well, for the purpose of Raser's well test, they are planning to run a well test where they will remove ground water and after the test, they will re-inject the ground water back into the reservoir.

As part of OCD's review of Raser's well work over request, and well test for the geothermal project, OCD would like to know if this presents any concerns by the OSE? Thank you.

Carl J. Chavez, CHMM
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Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

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Sent: Tuesday, March 16, 2010 7:29 AM
To: 'Layne Ashton'
Cc: Ben Barker; Michael Hayter; Brooks, David K., EMNRD; Dade, Randy, EMNRD; Reeves, Jacqueta, EMNRD
Subject: RE: Licensed Driller

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Thank you.

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Sent: Monday, March 15, 2010 3:38 PM
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Cc: Ben Barker; Michael Hayter
Subject: RE: Licensed Driller

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Sent: Friday, March 12, 2010 3:09 PM
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Sent: Friday, March 12, 2010 2:26 PM
To: Chavez, Carl J, EMNRD
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Subject: Licensed Driller

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Again, please let me know if you have any comments or questions. The best way to reach me is on my cell phone, which is (801) 473-6090. Thank you.

Best wishes,

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 25, 2010 8:18 AM
To: 'Mike_Smith@blm.gov'
Subject: RE: Otero County Oil Well PAs BLM Forms

Mike:

Could you please give me a call to communicate about this recent Well 55-7 well work when you get a chance. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
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E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

-----Original Message-----

From: Mike_Smith@blm.gov [mailto:Mike_Smith@blm.gov]
Sent: Thursday, February 25, 2010 7:47 AM
To: Chavez, Carl J, EMNRD
Subject: Re: Otero County Oil Well PAs BLM Forms

Hi Carl:

Thanks for forwarding the FANs to OCD Artesia. I'll send copies of future FANs to the OCD district offices when they come in to BLM.

You probably spoke with the reps from Raser Technology last week. They informed me they want to re-open well 55-7, perform a flow-test, and possibly bring it into production. They have been informed that they will have to submit a Geothermal Permit to Drill to meet Federal requirements (c.f. 43 CFR 3260.10).

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
Mike_Smith@blm.gov

"Chavez, Carl J,
EMNRD"
<CarlJ.Chavez@state.nm.us> To
<Mike_Smith@nm.blm.gov>

cc

02/24/2010 04:16
PM

Subject
Otero County Oil Well PAs BLM Forms

(Embedded image moved to file: pic10200.gif) Hey Mike.

FYI, you may forward BLM forms like those O&G PA forms to the OCD District Office Supervisor based on the county the well work was performed in. I have forwarded the forms to the OCD Artesia District Office.

For example, go to <http://www.emnrd.state.nm.us/ocd/AboutUs.htm> and click on the map to obtain a mail address to the corresponding OCD District Office that the BLM forms may be sent to.

Please contact me if I may be of further assistance. Thank you.

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, February 25, 2010 8:15 AM
To: 'Mike_Smith@blm.gov'
Subject: RE: Otero County Oil Well PAs BLM Forms

Thanks for the communication Mike.

OCD will be receiving G-101, 102 and 103 Forms to re-enter the well. Raser will need to provide a diagram of the existing well construction conditions outlining their plans for the well for OCD approval.

Please note that all information going forward with this project may be found under the API# and/or the facility permit "GTHT-1" at OCD Online (<http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0813635742>). The G-103 will be placed under the "Workover Requests" Thumbnail.

The OCD is involved with a Geothermal Working Group to identify deep source geothermal resources, make technical and policy recommendations for streamlining the commercial power generation process. You may monitor the issues and even become involved by going to OCD Online "UIC-999." Stephen Lucero of the EMNRD- ECMD is heading up the group and in charge of stimulus funding that New Mexico Tech will be funded to develop a geothermal resource database. In addition, the OCD has been re-evaluating its geothermal regulations and now believes that it may also be responsible for low-temperature geothermal resources where the intent is to extract the heat. I will forward the recent correspondence and meeting related to this new development. It comes at a time when the state is working to be the leader in inter-intrastate renewable energy programs, including geothermal power production.

Thanks for the communication.

Carl J. Chavez, CHMM
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Regards,

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<CarlJ.Chavez@state.nm.us> To
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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, February 10, 2010 9:14 AM
To: 'Mike_Smith@blm.gov'
Cc: 'Michael Hayter'; Reeves, Jacqueta, EMNRD
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

Yeah, if the well was officially PA'd, then OCD would require a G-101, G-102 and G-103 for the well work over. Send the forms directly to me. OCD would need to issue an API# for it and make sure bonding is in place for any wells used in the geothermal project. Raser also knows there are Federal requirements as well. Thnx.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

-----Original Message-----

From: Mike_Smith@blm.gov [mailto:Mike_Smith@blm.gov]
Sent: Wednesday, February 10, 2010 7:46 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl:

Thanks for keeping me in the loop on these issues. Layne Ashton has asked me to call him, so it's probably about Well 55-7.

If this well has been plugged and abandoned, then Raser will most likely need to submit a geothermal drilling permit

Regards,

Michael Smith
Geologist - BLM
Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005
575-525-4421
Mike_Smith@nm.blm.gov

"Chavez, Carl J,
EMNRD"
<CarlJ.Chavez@state.nm.us>
02/09/2010 11:45 AM
"Michael Hayter"
<Michael.Hayter@rasertech.com>
cc
"Layne Ashton"

<lashton@rasertech.com>, "Ben
Barker" <Ben.Barker@rasertech.com>,
<Mike_Smith@blm.gov>, "Brooks,
David K., EMNRD"
<david.brooks@state.nm.us>, "Dade,
Randy, EMNRD"
<Randy.Dade@state.nm.us>, "Reeves,
Jacqueta, EMNRD"
<Jacqueta.Reeves@state.nm.us>,
"Sanchez, Daniel J., EMNRD"
<daniel.sanchez@state.nm.us>

Subject

RE: Raser Technologies Bonding
(GTHT-001) & Well 55-7 Info.

Mike:

David Brooks has replied with the following in relation to the new project production/development well in the above subject proposed to be re-worked by Raser.

Carl

I am not entirely clear on the facts. As I read the applicable bonding requirements, if they plan to drill four "deep" (=>2,000 feet) wells under their multi-well bonds, no additional wells can be covered under that bond, and an single-well bond in the applicable amount would be required for each additional well.

I do not know if the issue is involved here, but the references to BLM in the emails cause me to address it. I find nothing in the Geothermal Resources Act or the Geothermal rules that limits bonding requirements to non-federal lands. Thus, it would seem that a geothermal operator, unlike an oil and gas operator, would have to furnish a bond to OCD in the applicable amount for a geothermal well on federal land, the same as if it were on State or private land.

David

Consequently, further evaluation of OCD Geothermal Regulations (see yellow highlighted) indicates the following:

19.14.20.8 PLUGGING BOND:

A. Any person who has drilled or is drilling or proposes to drill any geothermal resources well shall post with the division, and obtain approval thereof, a bond, in a form approved by the division, conditioned to plug such well, if non-productive or when abandoned, in such a way as to confine all fluids in their native strata.

Each such bond shall be executed by a responsible surety company authorized to transact business in the state of New Mexico and shall describe, or by subsequent rider describe, the name and exact location of the well, or wells, covered by the bond. Bonds may be either one-well bonds or multi-well bonds, in the amounts stated below in accordance with type of bond and depth of well(s):

(1) One-well bonds:

Projected depth of proposed well or Actual depth of existing well bond	Amount of
Less than 500 feet deep ("shallow")	\$2,000
500 feet to 2,000 feet deep ("intermediate")	\$3,000
More than 2,000 feet deep ("deep")	\$5,000.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, February 09, 2010 9:29 AM
To: 'Ben Barker'
Cc: Mike_Smith@blm.gov
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Ben:

Interesting..... If you look through the Well 55-7 file link below I believe there is a PA form with associated info. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
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1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Ben Barker [<mailto:Ben.Barker@rasertech.com>]
Sent: Tuesday, February 09, 2010 8:57 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike,

The wellhead is still in place so I don't think it qualifies as a P&A. Was it reported to BLM as such?

Ben

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, February 09, 2010 8:52 AM
To: Michael Hayter
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

No problem. I'm coordinating with Mike Smith (Bureau of Land Management) on the above subject well. It appears to be an ancillary well to the OCD discharge permit and the OCD must coordinate with BLM on Federal wells. Wells that are plugged and abandoned revert back to the landowner, and in this case it is the BLM I believe? Thanks.

Carl J. Chavez, CHMM
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Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [<mailto:Michael.Hayter@rasertech.com>]
Sent: Tuesday, February 09, 2010 8:44 AM
To: Chavez, Carl J, EMNRD

Cc: Layne Ashton; Ben Barker

Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl,

Thank you. Unfortunately, I must postpone today's meeting. Our equity partner, Evergreen who is funding drilling, called a last minute meeting to discuss the Lightning Dock project. I'll be in touch later today or tomorrow to reschedule. I'm sorry for the change, I hope it doesn't cause any problems.

Best,
Mike

Director - Geothermal Business Development
Raser Technologies, Inc.
5152 North Edgewood Drive
Provo, Utah 84003
Office: +1.801.765.1200 x216
Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, February 09, 2010 7:50 AM
To: Michael Hayter
Subject: FW: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

FYI. Please find below OCD's most recent bond contact from Well Fargo.

Also, regarding Well 55-7, I located Well 55-7 information and have provided the file location related to the well. I notice from my preliminary review of the file that it is a Federal well with some history, i.e., directionally drilled and/or whip stocked and it went through a couple of well owners. The well was PA'd as you had indicated.

AMAX (GTLT-005) First Row Last Column File
<http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0912464638>

I look forward to meeting with you today. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Thursday, February 05, 2009 8:55 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Technologies

Mr.. Chavez,

Thanks for your response to my inquiry. I have talked to Mr.. Brooks and he has cleared up the questions I had regarding the bond forms. One other question has developed as a result of my discussions with the risk. That is, is it possible to

bond the \$50,000 sum required for geothermal injection wells? The form we have is entitled "Cash Plugging Bond" but it appears to be an assignment of cash collateral. The account would rather handle this with a bond from a surety if that is acceptable to you. Please let me know if that is something you would accept. Thanks for your continued assistance on this matter.

Patrick Barnes CIC
Sr. Account Executive
Wells Fargo Insurance Services
1095 E. 2100 S. Ste 200
SLC, Utah 84106
Tel: (801) 246-4376
Fax: (801) 485-5217

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, January 30, 2009 10:52 AM
To: Barnes, Patrick
Cc: Watson, Jason F.; Brooks, David K., EMNRD; Gum, Tim, EMNRD
Subject: RE: Raser Technologies

Mr. Patrick:

A couple of issues from your note that I request that you follow-up on:

- 1) Please contact Mr. David Brooks at (505) 476-3450 about the outdated and penal sum of the bonds being incorrect. Attorney Brooks developed the bond documentation for Los Lobos or Raser Technologies. Please be advised that the bond documents must reference "Los Lobos Renewable Power, LLC. as the application was received under Los Lobos. The amounts of bonds are split between regulations, i.e., WQCC (\$50K multi-injection wells) vs. OCD geothermal (Amts. split for multi vs. single) production well bonding requirements.
- 2) I have forwarded the draft discharge permit (see attachment) to Mr. Tim Gum of the OCD Artesia Office to cross-check issued API#s from him to identify any incorrect API#s in the draft discharge permit page 1 and in Section 21 (see OCD draft discharge permit with references to API#s and the most recent discharge permit that I sent to Mr. Gum to double check). I will work with Mr. Gum to make sure you have the correct API#s for the bond.

You may also contact Mr. Gum of the OCD District 2 Office in Artesia at (575) 748-1283 (X 102). Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3491
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Friday, January 30, 2009 9:10 AM
To: Chavez, Carl J, EMNRD
Cc: Watson, Jason F.
Subject: Raser Technologies

Mr. Chavez, we are in the final stages of securing the bonds needed for this company to proceed with the geothermal projects planned in the state of New Mexico. The surety informs us that the bond forms we have referenced are outdated and the penal sum of the bonds is also incorrect. Could you please provide us with the proper bond forms and also the

penal sum of the bonds that are required. Could you also please confirm the API numbers for each of these bonds, as the surety also indicated that one of those was not correct.

Thanks you for your assistance. Please give me a call if you would like to discuss the matter further. We look forward to getting this matter resolved in the near future.

Patrick Barnes CIC
Sr. Account Executive
Wells Fargo Insurance Services
1095 E. 2100 S. Ste 200
SLC, Utah 84106
Tel: (801) 246-4376
Fax: (801) 485-5217

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, February 09, 2010 9:25 AM
To: 'Michael Hayter'
Cc: Layne Ashton; Ben Barker; Mike_Smith@blm.gov; Brooks, David K., EMNRD
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Good communication on this matter. I will confer with our Attorney Mr. Brooks and get back with you based on the situation (re-entry into a PA'd well).

The issue as I see it is whether OCD may require 2 multi-well bonds for the production/development wells under the OCD Geothermal Regulations that should cover Raser with any additional PA'd wells that it would like to re-enter. Stay tuned....

Regarding BLM, I see you have copied Mike Smith who can provide any Federal information based on your intent. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/oed/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [mailto:Michael.Hayter@rasertech.com]
Sent: Tuesday, February 09, 2010 9:17 AM
To: Chavez, Carl J, EMNRD
Cc: Layne Ashton; Ben Barker; Mike_Smith@blm.gov
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

We understand regarding the well diagram. We will provide that and the plan for re-entry and testing. Regarding bonding, my understanding is that we are covered under the existing bond we have with BLM. As for the OCD bond which we will submit in the near future, please let us know how to proceed. We are submitting for 5 exploratory wells (a single well bond and a deep multi-well bond for 4 wells, in addition to the injection well bond), so can we include 55-7 in these bonds or add it as a 6th well under a single well bond?

Thanks,

Mike

Director - Geothermal Business Development
Raser Technologies, Inc.
5152 North Edgewood Drive
Provo, Utah 84003
Office: +1.801.765.1200 x216
Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, February 09, 2010 9:11 AM

To: Michael Hayter
Cc: Layne Ashton; Ben Barker; Mike_Smith@blm.gov
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

In speaking with Mr. Layne, I indicated that the well is an ancillary well to the OCD Discharge Permit (GTHT-001). Therefore, a G-103 would be the path and OCD and BLM would need to see a well diagram of the present well construction. The well apparently has a significant work record so any well work proposed would require a well construction diagram of the existing condition of the well. Also, the question of well bonding came up that BLM and OCD would need to consider as part of the re-entry into a PA'd well. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [<mailto:Michael.Hayter@rasertech.com>]
Sent: Tuesday, February 09, 2010 9:03 AM
To: Chavez, Carl J, EMNRD
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl,

The landowner is Dale Burgett, it is a split-estate. We have a surface agreement that gives us full permission and rights to re-enter the well and use it for production should it be found capable. We are planning to submit a sundry notice to BLM also.

Mike

Director - Geothermal Business Development
Raser Technologies, Inc.
5152 North Edgewood Drive
Provo, Utah 84003
Office: +1.801.765.1200 x216
Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, February 09, 2010 8:52 AM
To: Michael Hayter
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

No problem. I'm coordinating with Mike Smith (Bureau of Land Management) on the above subject well. It appears to be an ancillary well to the OCD discharge permit and the OCD must coordinate with BLM on Federal wells. Wells that are plugged and abandoned revert back to the landowner, and in this case it is the BLM I believe? Thanks.

Carl J. Chavez, CHMM
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E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [mailto:Michael.Hayter@rasertech.com]
Sent: Tuesday, February 09, 2010 8:44 AM
To: Chavez, Carl J, EMNRD
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl,

Thank you. Unfortunately, I must postpone today's meeting. Our equity partner, Evergreen who is funding drilling, called a last minute meeting to discuss the Lightning Dock project. I'll be in touch later today or tomorrow to reschedule. I'm sorry for the change, I hope it doesn't cause any problems.

Best,
Mike

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Office: +1.801.765.1200 x216
Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, February 09, 2010 7:50 AM
To: Michael Hayter
Subject: FW: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

FYI. Please find below OCD's most recent bond contact from Well Fargo.

Also, regarding Well 55-7, I located Well 55-7 information and have provided the file location related to the well. I notice from my preliminary review of the file that it is a Federal well with some history, i.e., directionally drilled and/or whip stocked and it went through a couple of well owners. The well was PA'd as you had indicated.

AMAX (GTLT-005) First Row Last Column File
<http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0912464638>

I look forward to meeting with you today. Thank you.

Carl J. Chavez, CHMM
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E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Thursday, February 05, 2009 8:55 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Technologies

Mr.. Chavez,

Thanks for your response to my inquiry. I have talked to Mr.. Brooks and he has cleared up the questions I had regarding the bond forms. One other question has developed as a result of my discussions with the risk. That is, is it possible to bond the \$50,000 sum required for geothermal injection wells? The form we have is entitled "Cash Plugging Bond" but it appears to be an assignment of cash collateral. The account would rather handle this with a bond from a surety if that is acceptable to you. Please let me know if that is something you would accept. Thanks for your continued assistance on this matter.

Patrick Barnes CIC
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Wells Fargo Insurance Services
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SLC, Utah 84106
Tel: (801) 246-4376
Fax: (801) 485-5217

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, January 30, 2009 10:52 AM
To: Barnes, Patrick
Cc: Watson, Jason F.; Brooks, David K., EMNRD; Gum, Tim, EMNRD
Subject: RE: Raser Technologies

Mr. Patrick:

A couple of issues from your note that I request that you follow-up on:

- 1) Please contact Mr. David Brooks at (505) 476-3450 about the outdated and penal sum of the bonds being incorrect. Attorney Brooks developed the bond documentation for Los Lobos or Raser Technologies. Please be advised that the bond documents must reference "Los Lobos Renewable Power, LLC. as the application was received under Los Lobos. The amounts of bonds are split between regulations, i.e., WQCC (\$50K multi-injection wells) vs. OCD geothermal (Amts. split for multi vs. single) production well bonding requirements.
- 2) I have forwarded the draft discharge permit (see attachment) to Mr. Tim Gum of the OCD Artesia Office to cross-check issued API#s from him to identify any incorrect API#s in the draft discharge permit page 1 and in Section 21 (see OCD draft discharge permit with references to API#s and the most recent discharge permit that I sent to Mr. Gum to double check). I will work with Mr. Gum to make sure you have the correct API#s for the bond.

You may also contact Mr. Gum of the OCD District 2 Office in Artesia at (575) 748-1283 (X 102). Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
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Office: (505) 476-3491
Fax: (505) 476-3462

E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Friday, January 30, 2009 9:10 AM
To: Chavez, Carl J, EMNRD
Cc: Watson, Jason F.
Subject: Raser Technologies

Mr. Chavez, we are in the final stages of securing the bonds needed for this company to proceed with the geothermal projects planned in the state of New Mexico. The surety informs us that the bond forms we have referenced are outdated and the penal sum of the bonds is also incorrect. Could you please provide us with the proper bond forms and also the penal sum of the bonds that are required. Could you also please confirm the API numbers for each of these bonds, as the surety also indicated that one of those was not correct.

Thanks you for your assistance. Please give me a call if you would like to discuss the matter further. We look forward to getting this matter resolved in the near future.

Patrick Barnes CIC
Sr. Account Executive
Wells Fargo Insurance Services
1095 E. 2100 S. Ste 200
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Tel: (801) 246-4376
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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, February 09, 2010 9:11 AM
To: 'Michael Hayter'
Cc: Layne Ashton; Ben Barker; 'Mike_Smith@blm.gov'
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

In speaking with Mr. Layne, I indicated that the well is an ancillary well to the OCD Discharge Permit (GTHT-001). Therefore, a G-103 would be the path and OCD and BLM would need to see a well diagram of the present well construction. The well apparently has a significant work record so any well work proposed would require a well construction diagram of the existing condition of the well. Also, the question of well bonding came up that BLM and OCD would need to consider as part of the re-entry into a PA'd well. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/oed/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [mailto:Michael.Hayter@rasertech.com]
Sent: Tuesday, February 09, 2010 9:03 AM
To: Chavez, Carl J, EMNRD
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl,

The landowner is Dale Burgett, it is a split-estate. We have a surface agreement that gives us full permission and rights to re-enter the well and use it for production should it be found capable. We are planning to submit a sundry notice to BLM also.

Mike

Director - Geothermal Business Development
Raser Technologies, Inc.
5152 North Edgewood Drive
Provo, Utah 84003
Office: +1.801.765.1200 x216
Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, February 09, 2010 8:52 AM
To: Michael Hayter
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Mike:

No problem. I'm coordinating with Mike Smith (Bureau of Land Management) on the above subject well. It appears to be an ancillary well to the OCD discharge permit and the OCD must coordinate with BLM on Federal wells. Wells that are plugged and abandoned revert back to the landowner, and in this case it is the BLM I believe? Thanks.

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E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/oed/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Michael Hayter [<mailto:Michael.Hayter@rasertech.com>]
Sent: Tuesday, February 09, 2010 8:44 AM
To: Chavez, Carl J, EMNRD
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

Carl,

Thank you. Unfortunately, I must postpone today's meeting. Our equity partner, Evergreen who is funding drilling, called a last minute meeting to discuss the Lightning Dock project. I'll be in touch later today or tomorrow to reschedule. I'm sorry for the change, I hope it doesn't cause any problems.

Best,
Mike

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Provo, Utah 84003
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Mobile: +1.801.589.1872
www.rasertech.com

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Tuesday, February 09, 2010 7:50 AM
To: Michael Hayter
Subject: FW: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

FYI. Please find below OCD's most recent bond contact from Well Fargo.

Also, regarding Well 55-7, I located Well 55-7 information and have provided the file location related to the well. I notice from my preliminary review of the file that it is a Federal well with some history, i.e., directionally drilled and/or whip stocked and it went through a couple of well owners. The well was PA'd as you had indicated.

AMAX (GTLT-005) First Row Last Column File
<http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0912464638>

I look forward to meeting with you today. Thank you.

Carl J. Chavez, CHMM

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E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Thursday, February 05, 2009 8:55 AM
To: Chavez, Carl J, EMNRD
Subject: RE: Raser Technologies

Mr.. Chavez,

Thanks for your response to my inquiry. I have talked to Mr.. Brooks and he has cleared up the questions I had regarding the bond forms. One other question has developed as a result of my discussions with the risk. That is, is it possible to bond the \$50,000 sum required for geothermal injection wells? The form we have is entitled "Cash Plugging Bond" but it appears to be an assignment of cash collateral. The account would rather handle this with a bond from a surety if that is acceptable to you. Please let me know if that is something you would accept. Thanks for your continued assistance on this matter.

Patrick Barnes CIC
Sr. Account Executive
Wells Fargo Insurance Services
1095 E. 2100 S. Ste 200
SLC, Utah 84106
Tel: (801) 246-4376
Fax: (801) 485-5217

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Friday, January 30, 2009 10:52 AM
To: Barnes, Patrick
Cc: Watson, Jason F.; Brooks, David K., EMNRD; Gum, Tim, EMNRD
Subject: RE: Raser Technologies

Mr. Patrick:

A couple of issues from your note that I request that you follow-up on:

- 1) Please contact Mr. David Brooks at (505) 476-3450 about the outdated and penal sum of the bonds being incorrect. Attorney Brooks developed the bond documentation for Los Lobos or Raser Technologies. Please be advised that the bond documents must reference "Los Lobos Renewable Power, LLC. as the application was received under Los Lobos. The amounts of bonds are split between regulations, i.e., WQCC (\$50K multi-injection wells) vs. OCD geothermal (Amts. split for multi vs. single) production well bonding requirements.
- 2) I have forwarded the draft discharge permit (see attachment) to Mr. Tim Gum of the OCD Artesia Office to cross-check issued API#s from him to identify any incorrect API#s in the draft discharge permit page 1 and in Section 21 (see OCD draft discharge permit with references to API#s and the most recent discharge permit that I sent to Mr. Gum to double check). I will work with Mr. Gum to make sure you have the correct API#s for the bond.

You may also contact Mr. Gum of the OCD District 2 Office in Artesia at (575) 748-1283 (X 102). Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM

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Oil Conservation Division, Environmental Bureau
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Office: (505) 476-3491
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Barnes, Patrick [mailto:Patrick_Barnes@wellsfargois.com]
Sent: Friday, January 30, 2009 9:10 AM
To: Chavez, Carl J, EMNRD
Cc: Watson, Jason F.
Subject: Raser Technologies

Mr. Chavez, we are in the final stages of securing the bonds needed for this company to proceed with the geothermal projects planned in the state of New Mexico. The surety informs us that the bond forms we have referenced are outdated and the penal sum of the bonds is also incorrect. Could you please provide us with the proper bond forms and also the penal sum of the bonds that are required. Could you also please confirm the API numbers for each of these bonds, as the surety also indicated that one of those was not correct.

Thanks you for your assistance. Please give me a call if you would like to discuss the matter further. We look forward to getting this matter resolved in the near future.

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Chavez, Carl J, EMNRD

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Sent: Tuesday, February 09, 2010 8:52 AM
To: 'Michael Hayter'
Cc: Layne Ashton; Ben Barker
Subject: RE: Raser Technologies Bonding (GTHT-001) & Well 55-7 Info.

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Sort Order: Ascending Descending

Order Number County Order Date

GTLT-5-0 Sierra

Entity:

API Number(s):

Operator: AMAX Exploration Inc.

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GTLT - 5 (14-36)-27S-20W Amax Exploration, Inc. (Hidalgo County) 22-J(PA); 11-I(PA) & GTR-237-17-A(PA)	GTLT - 5 (19-29)-27S-19W Amax Exploration, Inc. (Hidalgo County) 13-H(PA); 12-E(PA); 14-A(PA); GTR-232-18-L(PA) & GTR-232-19-I(PA)	GTLT - 5 (1-24)-25S-20W Amax Exploration, Inc. (Hidalgo County) T-126-C(PA); T-127-A(PA); T-134-N(PA); T-133-F(PA) & T-136-B(PA)	GTLT - 5 (5-18)-25S-19W Amax Exploration, Inc. (Hidalgo County) GTR-6 3-G (PA); Animas 55- J; T-128-F(PA); T-130-K(PA); 206-B (PA); GTR-6 4-D(PA); GTR-6 5-K(PA); GTR-6 6- N(PA); 231-G(PA); No.1: T-135-L(PA) & T-131-B(PA)
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(1745 Kb ~10 min.) (2283 Kb ~13 min.) (1121 Kb ~6 min.) (23109 Kb ~128 min.)

GTLT - 5 31&32-24S-19W Amax Exploration, Inc. (Hidalgo County) Cockrell Well 1-H; GTR-6 1-J (PA) & GTR-6 2-P (PA)	GTLT - 5 Amax Exploration, Inc. (Sierra County) GTR-290; 1124-1 & 1124-4		GTLT - 5 13-25S-20W Hidalgo County 672-216
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(1874 Kb ~10 min.) (1033 Kb ~6 min.) (4252 Kb ~24 min.) (318 Kb ~2 min.)

GTLT - 5 5-16S-7W Sierra County 1124-2 & 1124-3	GTLT - 5 (5-18)-25S-19W Hidalgo County 672-203; 672-204; T-129; 672-210; 672-209; 672-207; 672-205; 672-222; 672-235; 672-232; 672-234; 672-233; T-132; 672-218; 672-229; 672- 230 & 672-217	GTLT - 5 31-24S-19W Hidalgo County T-125
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(699 Kb ~4 min.) (2626 Kb ~15 min.) (269 Kb ~1 min.)

View All Go Back

GTLT - 5

**(6-18)-25S-19W
Amax Exploration, Inc.
(Hidalgo County)**

**GTR-6 3-G (PA); Animas 55-
J; T-128-F(PA); T-130-K(PA);
206-B (PA); GTR-6 4-D(PA);
GTR-6 5-K(PA); GTR-6 6-
N(PA); 231-G(PA); No.1;
T-135-L(PA) & T-131-B(PA)**

Chavez, Carl J, EMNRD

Subject: Raser Technologies Meeting (Lightning Dock Geothermal)
Location: TBD

Start: Tue 2/9/2010 1:00 PM
End: Tue 2/9/2010 3:00 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Chavez, Carl J, EMNRD
Required Attendees: Michael Hayter; Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD

FYI. Time is approximate.....

Mike Hayter of Raser Technologies may stop by with a few employees to discuss the above subject project, introduce employees, and deliver a G-103 Sundry Notice for well work on Burgett Well 55-7.

Mike Hayter
Ben Ashton (1 yr. w/ Raser)
Wayne Ashton (daily PM in Lordsburg, NM)

Well 55-7 Work Over w/ G-103 Form
Plugged in 1984

Additional Capital received for more work in Lordsburg
Sending well bonds for project soon
OSE hearing in about 4 to 6 weeks

Signed APDs will occur after OCD Bond approval letter(s) goes out.

Correlative Rights: Only for permitted high temperature geothermal users (>250 F) under OCD NMSA and NMAC.

Lightning Dock Area of Review Animas Valley, NM

Lightning Dock is a 1,000-acre area located in the Animas Valley, NM. The area is currently managed as a BLM National Monument. The area is located in the Animas Valley, NM, and is bounded by the Animas River to the north and the Animas Valley to the south. The area is currently managed as a BLM National Monument. The area is located in the Animas Valley, NM, and is bounded by the Animas River to the north and the Animas Valley to the south. The area is currently managed as a BLM National Monument.

- Number Description**
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- Proposed Units**
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 - 40. Riparian Forest
 - 41. Riparian Forest

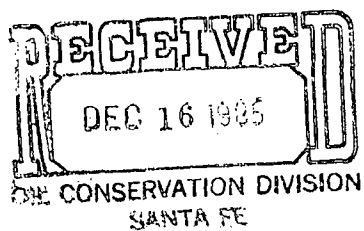


Public Meeting Map

12/01/2008



December 12, 1985



Mr. Roy E. Johnson
Senior Petroleum Geologist
State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Re: Steam Reserve Corporation's Geothermal Well No. 55
Animas Project, Hidalgo County

Dear Mr. Johnson:

Pursuant to our phone conversation please find enclosed a Geothermal Sundry Notice which supplements the plugging work approved for Steam Reserve Corporation's deep geothermal well at Animas. The previous Sundry Notice provided that the well would be left open at the top and turned over to Mr. Burgett. SRC now plans to set two additional cement plugs, one at the casing shoe and one at the surface as described on the attached Sundry Notice.

Work is planned to commence for plugging of the well on or about December 17, 1985. We look forward to receiving your approved Sundry Notice.

Very truly yours,
STEAM RESERVE CORPORATION

Anita Clement
Anita Clement
Permit Administrator

LC Zones
2275
4060
Gas Kicks 2600 -
2800
6050 - 6130

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

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N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

5. Indicate Type of Lease
State Fed. & Fee

5.a State Lease No.
N/A

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit --" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer Temp. Observation Other: Geothermal Exploration
Low-Temp Thermal Injection/Disposal

7. Unit Agreement Name
N/A

2. Name of Operator
Steam Reserve Corporation

8. Farm or Lease Name
NM-34790 - Minerals
Dale Burgett - Surface

3. Address of Operator
1707 Cole Blvd., Golden, CO 80401

9. Well No.
55

4. Location of Well
Unit Letter _____ Feet From The East Line and 2329.1 Feet From
The South Line, Section 7 Township 25 South Range 19 West NMPM.

10. Field and Pool, or Wildcat
Wildcat

15. Elevation (Show whether DF, RT, GR, etc.)
GR - 4201'

12. County
Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

- PERFORM REMEDIAL WORK PLUG AND ABANDON
TEMPORARILY ABANDON
PULL OR ALTER CASING CHANGE PLANS
OTHER

SUBSEQUENT REPORT OF:

- REMEDIAL WORK ALTERING CASING
COMMENCE DRILLING OPNS. PLUG & ABANDONMENT
CASING TEST AND CEMENT JOB
OTHER _____

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

Plugging of Well No. 55

On November 1, 1985, Steam Reserve Corporation submitted a Sundry Notice which described the proposed plugging method for Well No. 55 at Animas.

This Sundry Notice serves to supplement that program by adding two additional cement plugs as follows:

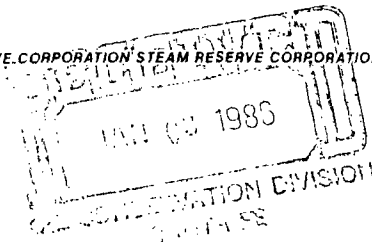
1. Cement Plug set at the casing shoe from 1000' to 1100', and
2. A 50' surface plug at the top of the hole.

Work on the well is expected to start on December 17, 1985.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Anita Clement TITLE Attorney-in-Fact DATE 12-12-85

APPROVED BY _____ TITLE _____ DATE _____



December 30, 1985

Mr. Roy E. Johnson
Senior Petroleum Geologist
State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Re: Steam Reserve Corporation's Geothermal Well
No. 55 - Animas Project, Hidalgo County

Dear Mr. Johnson:

Steam Reserve Corporation completed abandonment work at its geothermal exploration well No. 55 at the above-referenced project. Attached is a Sundry Notice with a detailed description of the work performed. Also included for your records are job logs and summary from Halliburton Services, and description of work from American Well Servicing Company.

Upon approval of the Sundry Notice please return one copy to me for completion of our files.

Very truly yours,

STEAM RESERVE CORPORATION

A handwritten signature in cursive script that reads 'Anita Clement'.

Anita Clement
Permit Administrator

/ac

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		✓
N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

**SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS**

5. Indicate Type of Lease
State Fed. & Fee
5.a State Lease No.
N/A

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer Temp. Observation Other: Geothermal Exploration
Low-Temp Thermal Injection/Disposal

7. Unit Agreement Name
N/A

2. Name of Operator
Steam Reserve Corporation

8. Farm or Lease Name
NM-34780 - Minerals
Dale Burgett - Surface

3. Address of Operator
1707 Cole Blvd., Golden, CO 80401

9. Well No.
55

4. Location of Well
Unit Letter _____ Feet From The East Line and 2329.1 Feet From
The South Line, Section 7 Township 25 South Range 19 West NMPM.

10. Field and Pool, or Wildcat
Wildcat

15. Elevation (Show whether DF, RT, GR, etc.)
GR - 4201'

12. County
Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>OTHER <input type="checkbox"/></p>		<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> PLUG & ABANDONMENT <input checked="" type="checkbox"/></p> <p>CASING TEST AND CEMENT JOB <input type="checkbox"/></p> <p>OTHER <input type="checkbox"/></p>	
---	--	---	--

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

See attached for description of plugging and abandonment work completed on Well No. 55, Animas Project, Hidalgo County.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Acita Clement TITLE Attorney-in-Fact DATE Dec. 310, 1985

APPROVED BY Roy E. Johnson TITLE Senior Petroleum Geologist DATE 1-6-86

ABANDONMENT WORK
ANIMAS 55-7
DECEMBER 20-23, 1985
John E. Deymonaz

- 12/20 Halliburton and American Well Servicing Co. move equipment to Lordsburg, N.M.
- 12/21 American moves workover rig to Animas 55-7 and sets up. Worked tubing for 2 hours, pulling up to 100,000 pounds, could not pull free. Halliburton arrived about noon, hooked up pumps and circulated through tubing for 2 hours while American worked the tubing. Pulled free about 2 PM. Pulled tubing back to 5500 feet and set 70 sack (98 cubic feet) plug from 5500-5400 feet. Pulled 33 joints and circulated. After 30 minutes circulation hole began unassisted two-phase flow which lasted for about 30 minutes. Flow was through 3 inch flow line at bottom of wellhead. Leakage at top of wellhead was prevented by stripper assembly.
- 12/22 Circulate through tubing, well began unassisted two-phase flow for about 30 minutes. Pulled tubing to 2090 feet and set 170 sack plug (238 cubic feet) from 2090-1890 feet. Stood back six stands of tubing (600 feet) and WOC for three hours. RIH, tag cement at 1980 feet. Pull tubing to 1500 feet and set 100 sack plug (140 cubic feet) from 1500-1400 feet. Pull tubing to 1100 feet, set 80 sack plug (112 cubic feet) from 1100-1000 feet stand back six stands and WOC three hours. RIH, tag cement at 1050 feet. Pull tubing to 50 feet and plug from 50 feet to surface using 50 sacks (56 cubic feet). Flush out wellhead with water, shut down.
- 12/23 American and Halliburton rig down equipment and leave location. Dale Burgett crew dig out cellar below wellhead, cut off wellhead and erect monument of 4 inch casing. Cellar will be filled in and monument will be approximately six feet above ground level.

Equipment removed from well and laid down on drill pad includes:
213 joints (7189 feet) of J55 2-7/8 inch tubing. Includes 4 joints already on location.

- 4 2-7/8 inch Baker Model L sliding sleeves.
 - 1 2-7/8 inch bull nosed check valve.
 - 3 3 inch Barton geothermal gate valves.
 - 1 13 5/8" x 7 1/16" adapter spool.
 - 1 7 1/16" x 2 7/8" 8 round 3M adapter spool.
 - 1 13 5/8" x 13 3/8" casing hear w/ 2 3" ext. flanges.
 - 2 3 inch companion flanges.
- Misc studs and nuts.

HALLIBURTON SERVICES
JOB LOG

WELL NO. 5 LEASE HANNAH ST TICKET NO. 228499-7

CUSTOMER Jean Reeves (AMHX)

PAGE NO. 1

JOB TYPE Plug to Abandon

DATE 12-21-85

FORM 1013 R-1

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GROSS)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1100							on location & set up
1	1230	1.5	0	1		2000		Circulated hole to pump Tbg loose
	1255		32.0			1100		Shutdown
	1348	1.0	32.0	1		2000		Circulated while working tbg
	1350		40.0	1		1300		Pipefree - circulated
	1418		110.0					Shut down & Pull Tbg
	1545							Circulate hole
	1700		450	1				
	1704		20	1			*	H ₂ O Blend - 1st Plug @ 5400-5500'
	1714		17.5	1				Cont - 70% H ₂ O / 30% cement, 75% cement, 2 1/2" HK-12
	1721		1.0	1				H ₂ O spacer
	1721		30.1	1				Displ
	1730		30.1	1				on spot
	1800		10.0	1				pump down tbg
	805			1				Shutdown
								Return 12-22-85 @ 0800
12-22-85	0730							on location
2	0825	2.0	20.0	1		500		pump down tbg
	0835							Shut down &
							*	2nd Plug @ 12300-20700' (1200')
2	0930	3.0	20.0	1		350		H ₂ O Blend
	0945	3.0	42.2	1		500		Cont - 100% H ₂ O / 35% cement, 75% cement, 2 1/2" HK-12
	0956	3.0	1.0	1		100		H ₂ O spacer
	0959	4.5	9.3	1		200		Displace
	1001					0	*	plug on spot - 100ft = 11000' TMS 1985 1980
								3rd Plug @ 14000-15000' (1000')
2	1301	2.0	20.0	1		200		H ₂ O Blend
	1321	3.5	35.0	1		250		Cont - 100% H ₂ O / 35% cement, 75% cement, 2 1/2" HK-12
	1330	3.5	1.0	1		0		H ₂ O spacer
	1330	3.5	6.6	1		0		Displace
	1332	3				0		plug on spot
	1344	3.0	10.0	1		50		Circulated hole
	1353	5.0	15.0	1		250		Circulation broke
	1355		20.0					shut down
								Continued on page 2

CUSTOMER

HALLIBURTON SERVICES
JOB LOG

WELL NO. # 5 LEASE AMINIX 57 TICKET NO. 228499-7
 CUSTOMER Steam Reserves (AMINIX) PAGE NO. 2
 JOB TYPE Plug to Abandon DATE 12-22-85

FORM 1013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GPM)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
							*	4th Plug set @ 1000'-1100' (5' ID x out)
2	1404	2.5	20.0	1		250		H ₂ O ahead
	1416	2.5	20.0	1		50		Cont. Back H w/ 25% SPH, 75% CER-2, 3/16" H ₂ O-12
	1424	2.5	.9	1				H ₂ O spacer
	1424	2.5	4.6	1				Displace
	1426							Plug on spot
								wait 3 hrs + Tag
								Tagged Plug @ 1050'
2	1722	2.5		1				Loaded hole
	1728	2.5	17.0	1				Circulation broke
	1750		20.0	1				Shut down
	1742	1.5	4.0	1				Cont. Back H w/ 25% SPH, 75% CER-2, 3/16" H ₂ O-12
	1745							Shut down
							*	Surf Plug set @ 50' to Surface
								Job Complete

CUSTOMER



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

STEAM RESERVES CORPORATION
COMPANY

ANIMAS 55 WELL NO. 7
WELL NAME

HIDALGO COUNTY, NEW MEXICO BD2-165
LOCATION

JOB NUMBER

WT0185-S0160

TYPE OF SURVEY

MAGNETIC MULTI SHOT SURVEY

DATE

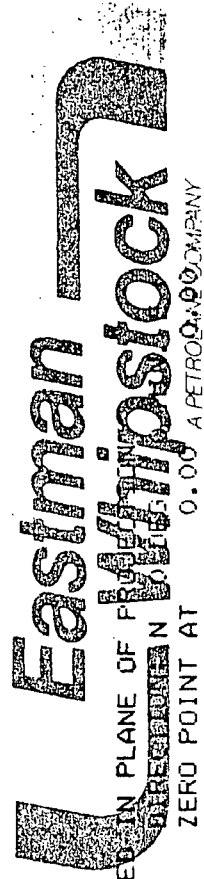
6-JAN-85

SURVEY BY
TROY ONEY

OFFICE
WEST TEXAS

STEAM RESERVES CORPORATION
ANIMAS 55 WELL NO. 7
HIDALGO COUNTY, NEW MEXICO BD2-165
JAN. 7, 1935

EASTMAN WHIPSTOCK, INC.
MAGNETIC MULTI SHOT SURVEY WT0185-S0160
SURVEYOR: TROY ONEY (360--1031)



VERTICAL SECTION CALCULATED IN PLANE OF PROGRESSION
ZERO POINT AT 0.00 A PETROBRAS COMPANY

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

STEAM RESERVES CORPORATION
ANIMAS 55 WELL NO. 7

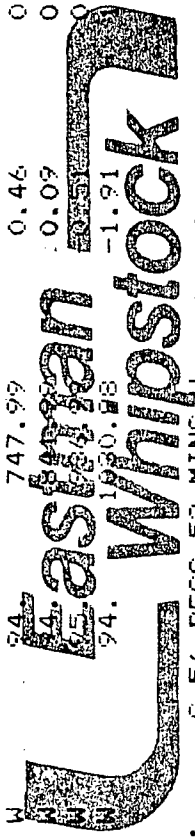
COMPUTATION PAGE NO. 1

TIME DATE

HIDALGO COUNTY, NEW MEXICO BDZ-165

07:57:40 07-JAN-84

MEASURED DEPTH FEET	DRIFT ANGLE D M		DIRECTION	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES		DOGLEG SEVERITY DG/100FT		
	D	M					FEET	FEET			
360.	0	0	0	0.	360.00	0.00	0.00	0.00	0.00		
CASING ASSUMED VERTICAL TO 360 FT.											
373.	0	15	N 58 W	13.	373.00	0.01	0.01	N	0.02	W	1.92
465.	0	45	S 63 W	92.	465.00	0.19	0.19	N	0.79	W	0.63
559.	0	15	N 58 W	94.	558.99	0.36	0.36	N	1.58	W	0.61
654.	0	15	N 65 W	95.	653.99	0.56	0.56	N	1.94	W	0.03
748.	0	15	S 34 W	94.	747.99	0.46	0.46	N	2.31	W	0.35
842.	0	15	S 20 W	95.	841.99	0.09	0.09	N	2.49	W	0.06
937.	0	30	S 7 W	94.	936.98	-1.91	0.51	S	2.64	W	0.28
1031.	1	15	S 17 W	94.	1030.98	-1.91	0.91	S	2.93	W	0.81



FINAL CLOSURE - DIRECTION: S 56 DEGS 53 MINS W
DISTANCE: 3.50 FEET

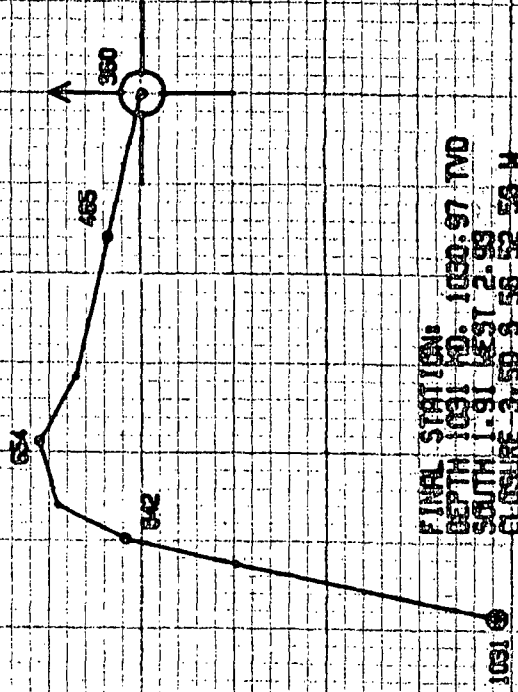
STEM RESERVES CORPORATION
ANIMAS 55 WELL NO. 7
HIDALGO COUNTY, NEW MEXICO

802-165

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 1 FEET
DEPTH INDICATOR: MD





P.O. Box 6341/Midland, Texas 79711-0341/(915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, TROY ONEY, in the employ of Eastman Whipstock, Inc., did on the days of JAN. 6th, 1985 thru JAN. 6th, 1985 conduct or supervise the taking of a MAGNETIC MULTI SHOT survey by the method of magnetic orientation from a depth of 360 feet to 1031 feet, with recordings of inclination and direction being obtained at approximate intervals of 94 feet.

This survey was conducted at the request of STEAM RESERVES CORP. for their ANIMAS 55 WELL NO. 7, HIDALGO County, State of NEW MEXICO, in the _____ field.

This data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

Troy Oney
Directional Supervisor/Surveyor

The data for this survey has been examined by me and confirms to principles and procedures set forth by Eastman Whipstock, Inc.
[Signature]

Before me, the undersigned authority, on this day personally appeared TROY ONEY, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this information is a true statement of facts therein recited.

Subscribed and sworn to before me on this 24th day of JAN., 1985.

Roy L Steinke
Notary Public in and for the
County of Midland, Texas



ROY L. STEINKE
Notary Public, State of Texas
My Commission Expires July 8, 1985

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

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SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State Fed. & Fee

5.a State Lease No.
N/A

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Injection/Disposal <input type="checkbox"/> Other: <u>Geothermal Exploration</u>	7. Unit Agreement Name
2. Name of Operator <u>Steam Reserve Corporation</u>	8. Farm or Lease Name <u>NM-34790 - Minerals</u> 9. Well No. <u>Archie Green - Surface</u> <u>55</u>
3. Address of Operator <u>1707 Cole Blvd., Golden, CO 80401</u>	10. Field and Pool, or Wildcat <u>Wildcat</u>
4. Location of Well Unit Letter <u>2411.9</u> Feet From The <u>East</u> Line and <u>2329.1</u> Feet From The <u>South</u> Line, Section <u>7</u> Township <u>25 South</u> Range <u>19 West</u> NMPM.	12. County <u>Hidalgo</u>
15. Elevation (Show whether DF, RT, GR, etc.) <u>GR 4201'</u>	

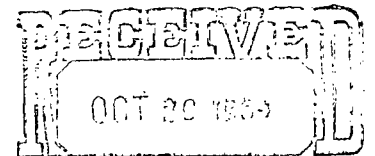
16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER <u>Change of Operator</u> <input checked="" type="checkbox"/>		OTHER _____ <input type="checkbox"/>	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

Steam Reserve Corporation is the new Operator for Well No. 55. Steam Reserve Corporation is a subsidiary of AMAX Exploration, Inc., the former operator of this well.

Note: Steam Reserve Corporation holds record title to all former AMAX Exploration, Inc. geothermal leases in New Mexico.



OIL CONSERVATION COMMISSION
SANTA FE

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Jay J. Bennett TITLE ATTORNEY-IN-FACT DATE 10-23-84

APPROVED BY Roy Epburn TITLE DISTRICT SUPERVISOR DATE 10-29-84

CONDITIONS OF APPROVAL IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

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GEOTHERMAL RESOURCES WELLS

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Land Office		

5. Indicate Type of Lease
State Fed. & Fee

5.a State Lease No.
N/A

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1. Type of well Geothermal Producer <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Injection/Disposal <input type="checkbox"/> Other: Geothermal Exploration	7. Unit Agreement Name N/A
2. Name of Operator Steam Reserve Corporation	8. Farm or Lease Name NM-34790 - Minerals Dale Burgett - Surface
3. Address of Operator 1707 Cole Blvd., Golden, CO 80401	9. Well No. 55
4. Location of Well Unit Letter 2411.9 Feet From The East Line and 2329.1 Feet From The South Line, Section 7 Township 25 South Range 19 West NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) GR - 4201'	12. County Hidalgo

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PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER <input type="checkbox"/>

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

Revised Plugging Plan for Well No. 55

Bring in workover rig unto location, pull 2 7/8" tubing. Run in hole and set bridge plug at 5500 feet. Place cement plug from 5500 to 5400 feet. Pull up and set bridge plug at 2090 feet, place cement plug from 2090 to 1890 feet (plug goes from 100' into the Paleozoics to 100' into the Tertiary Volcanics). Test location and strength of plug by tagging plug with drill string or tubing, pull up and set bridge plug at 1500'. Place cement plug from 1500 to 1400'. Test location and strength of plug by tagging plug with drill string or tubing. Pull out of hole. The well will be turned over to Dale Burgett contingent upon BLM approval and Mr. Burgett meeting the necessary BLM requirements.

The modified plan has been proposed after reviewing your letter dated October 21, 1985. SRC believes that the proposed plan will adequately protect the formation from possible contamination. Any potential hydrocarbon resources in the vicinity of Well No. 55 were driven off at the time of granitic intrusions into the Paleozoics section in Late Cretaceous or Early Tertiary times.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Acosta Clement TITLE Attorney-in-Fact DATE Nov. 1, 1985

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

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S. G. S.		
Operator		
Land Office		

5. Indicate Type of Lease
State Fed. & Fee

5.a State Lease No.
N/A

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1. Type of well Geothermal Producer Temp. Observation Other: Geothermal Exploration
Low-Temp Thermal Injection/Disposal

7. Unit Agreement Name
N/A

2. Name of Operator Steam Reserve Corporation

8. Farm or Lease Name
NM-34790 - Minerals Dale Burgett - Surface

3. Address of Operator 1707 Cole Blvd., Golden, CO 80401

9. Well No.
55

4. Location of Well
Unit Letter 2411.9 Feet From The East 2329.1 Feet From
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Wildcat

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Hidalgo

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SUBSEQUENT REPORT OF:

REMEDIAL WORK ALTERING CASING
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18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Alita Clement TITLE Attorney-in-Fact DATE Nov. 1, 1985

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

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Land Office	

5. Indicate Type of Lease
State Fed. & Fee

5.a State Lease No.
N/A

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Other: Geothermal Exploration Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input type="checkbox"/>	7. Unit Agreement Name N/A
2. Name of Operator STEAM RESERVE CORPORATION	8. Farm or Lease Name NM-34790 - Minerals Dale Burgett - Surface
3. Address of Operator 1707 Cole Blvd., Golden, Colorado 80401-3293	9. Well No. 55
4. Location of Well Unit Letter 2411.9 Feet From The East Line and 2329.1 Feet From The South Line, Section 7 Township 25 South Range 19 West NMPM.	10. Field and Pool, or Wildcat Wildcat
15. Elevation (Show whether DF, RT, GR, etc.) GR - 4201'	12. County Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input checked="" type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER <input type="checkbox"/>

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any)

Plugging and Abandonment Well 55-7

Bring workover rig unto location, pull 2 7/8" tubing. Run in hole and set bridge plug at 2090 feet. Place cement plug from 2090 to 1890 feet. Test location and strength of plug by tagging plug with drill string or tubing with a minimum of 15,000 lbs. Pull up and set bridge plug at 1412 feet. Place cement plug from 1412 to 900 feet. Test location and strength of plug by tagging plug with drill string or tubing with a minimum of 15,000 lbs. Pull out of hole and set bridge plug or packer in 13 3/8" casing at a depth of 50 feet. Cement to surface with local ready-mix truck.

Weld plate onto top of well head, back fill cellar and reclaim sump with spoil from construction. Restore surface to the approximate original contour.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Beata Clement TITLE Attorney-in-Fact DATE 10-11-85

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

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S. G. S.		
Operator		
Land Office		

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State Fed. & Fee
5.a State Lease No.
N/A

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

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16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

<p>NOTICE OF INTENTION TO:</p> <p>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/></p> <p>TEMPORARILY ABANDON <input type="checkbox"/></p> <p>PULL OR ALTER CASING <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/></p> <p>OTHER <input type="checkbox"/></p>	<p>SUBSEQUENT REPORT OF:</p> <p>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/></p> <p>COMMENCE DRILLING OPNS. <input type="checkbox"/> PLUG & ABANDONMENT <input checked="" type="checkbox"/></p> <p>CASING TEST AND CEMENT JOB <input type="checkbox"/></p> <p>OTHER <input type="checkbox"/></p>
---	---

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any

Plugging and Abandonment Well 55-7

Bring workover rig unto location, pull 2 7/8" tubing. Run in hole and set bridge plug at 2090 feet. Place cement plug from 2090 to 1890 feet. Test location and strength of plug by tagging plug with drill string or tubing with a minimum of 15,000 lbs. Pull up and set bridge plug at 1412 feet. Place cement plug from 1412 to 900 feet. Test location and strength of plug by tagging plug with drill string or tubing with a minimum of 15,000 lbs. Pull out of hole and set bridge plug or packer in 13 3/8" casing at a depth of 50 feet. Cement to surface with local ready-mix truck.

Weld plate onto top of well head, back fill cellar and reclaim sump with spoil from construction. Restore surface to the approximate original contour.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Alita Clement TITLE Attorney-in-Fact DATE 10-11-85

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

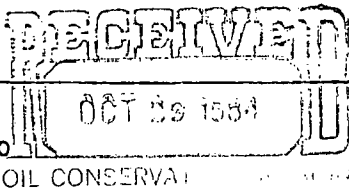
DRILLING PROGRAM

Sheet No. 1 of 2

STEAM RESERVE CORPORATION

Prepared By
Otis L. Day

Date:
Sept. 11, 1984

Lease and Well Number Animas - 55-7				AFE No.
Field, County and State Lighting Dock KGRA - Hidalgo, New Mexico				Division Geothermal
Location NW-SE SEC. 7, T25S R19W				
Datum and Elevation	K.B. 14' Ft.	Prop. Total Depth 6000' Ft.	Est. Drig Time 45 Days	Est. Total Time 60 Days

SEQUENCE OF OPERATIONS:

1. On the existing location have a company specializing in conductor and rat hole drilling, drill a 36" hole to a depth of 25' to 30'. Install a joint of 30" lapweld, plainended casing. Level the casing and cement using local ready-mix. Construct a 10'x 10'x 6' cellar around the existing conductor pipe with a cement floor and buried 8" fiberglass drain to the sump. It is recommended that the rat and mouse holes be dug at the same time as the conductor pipe hole.
2. Move in the rotary tools and rig up over the conductor pipe. Weld on a 30" riser of the same casing as the conductor pipe and install the flow line and fill up line.
3. Mix Spud Mud as recommended by the mud company . (See mud program.)
4. Spud-in with a 17-1/2" bit on a 26" hole opener and center punch hole inside the conductor pipe. Drill 26" hole to 60'. Pick up 17-1/2" BHA and drill to 300' as indicated by lithology. Survey at 150' and 300'. Open hole to 26" to 300'.
5. Run and cement 20", 94lb., H-40 Buttress casing. Tack weld or Bakerlok all couplings. Cement using a stab-in float shoe. Cement to surface. (See cement program). W.O.C. 6 hours.
6. Cut off 20" casing and weld on 20" flange. Install Blow Out Preventer on 20" flange as in attached Drawing 001. Test preventer with 200 psi. Connect picture nipple and flow line.
7. Drill a 17-1/2" hole to 1000' using mud as the circulating medium. Run a wire

Lease and Well Number	AFE No.
Animas - 55-7	

SEQUENCE OF OPERATIONS:

7. (cont.) line deviation survey every 150' or as necessary. Run a locked-in BHA to prevent excessive hole deviation and to stabilize the bit and drill collars in the large diameter hole. Circulate and condition mud and hole and run an Eastman Multi-shot directional survey on the trip out of the hole to run the 13-3/8" casing.
8. Run and cement the 13-3/8", 54.50lb., K-55, Buttress Casing. Tack weld or Baker-lok the bottom 4 joints. Cement to surface and W.O.C. 12 hours.
9. Install 13-3/8" wellhead and nipple up blow out preventers as in attached Drawing 002. Test casing and preventers to 500 psi.
10. Drill out 13-3/8" casing with a 12-1/4" bit to 6000' or the first entry or loss circulation zone that is determined to be of sufficient temperature to run 9-5/8" casing. A sand plug would be set across this zone and a cement plug set on top of the sand plug. Circulation would be established and the hole conditioned to run the 9-5/8" casing. A minimum of 200' of lap will be used into the 13-3/8" surface casing. Totally cement the annulus of the 9-5/8" liner as per the cement program. W.O.C. 12 hours.
11. Make changes to the BOPE stack to drill with air if necessary. Retest the stack if changes are made. If no changes are made to the stack then clean out to the top of the liner and test the liner lap. Squeeze if necessary until lap will hold a pressure test. Drill out the 9-5/8" liner using a 8-1/2" bit to the top of the float collar and test the casing with 500 psi. Drill out the cement and float collars and displace mud with fresh water or brine.
12. Drill the 8-1/2" hole with fresh water or brine as hole conditions dictate. Clean out cement and sand plugs and continue drilling if necessary. Test or temperature survey as required by the Geologic and Engineering staff at significant entries or loss circulation zones. It may be deemed advantageous to install a rotating head and air drilling equipment during the drilling of this section of hole. If commercial temperatures and fluid volumes are attained the hole will be completed as outlined in the casing and cementing programs.

Mud, Logging, Wellhead and BHA Programs

Interval	Type	Weight	PV-YP	Fluid Loss	Solids	PH
0' - 300'	Gel and Water -lime	8.4	10-15 20-30	10-12cc	5	10
300' - 1000'	Gel and Water-low solids	8.5-8.8	15-20 10-15	10cc	4-5	8.5-9.5
1000' - 6000' -TD	polymer-low solids	8.5-8.8	6-10 4-8	10cc	4-5	10-11

Remarks A Gel and Water, low solids system with fluid loss kept at 10cc or less --
 As temperatures become elevated the treatment with polymer thinners will become necessary
 to control fluid loss and rheological properties. PH should be maintained above 10

WELLHEAD PROGRAM

API Nominal Size	Working Pressure PSI	Type	Remarks
20"	600 API (2000 psi)	Weld on Flange 21½" Bore	Rental
13-3/8" x 12"	400 ANSI(960 psi)	13-3/8" SOW x 12" 400 ANSI	WKM or CWH
10-3/4" x 10"	400 ANSI(960 psi)	10-3/4" SOW x 10" 400 ANSI	WKM or CWH
10" x 10"	400 ANSI(960 psi)	10" 400 ANSI x 10" 400 ANSI	WKM or CWH
WKM Power Seal Gate Valve or CWH Rotary Disc Valve			

LOGGING PROGRAM

Interval	Log Type and Scale	Remarks
0' - 300'	No Wireline logs	
300' - 1000'	Electric and temperature	
1000' - 6000'	" " "	
and others as required by the Geologic and Engineering staffs.		

BHA PROGRAM

Hole sizes-Depths	
As determined by the Drilling Consultant or Drilling Manager	
<u>DIRECTIONAL</u>	Drill hole as straight as possible

CASING PROGRAM

Size 20"

Depth 300'

Well Animas 55-7

Interval	Weight lb-ft	Grade	Jt. Type	Calculated Safety Factors			
				Top Burst	Bot. Burst	Collapse	Tension
0' - 300'	94	H - 40	Buttress	4.22	4.09	3.47	49.72(jt.)

DESIGN CONDITIONS

Surface Burst Pressure	- 500	PSI	Outside mud Wt. (collapse)	- 9.6	PPG
Inside Mud Wt. (Burst)	- 9.6	PPG	Inside Mud Wt. (collapse)	- -0-	PPG
Outside Mud Wt. (Burst)	- 8.6	PPG	Form. Press. Grad. at Shoe (coll.)-		PPG
Frac. Grad. at Shoe (Burst)-		PPG	Biaxial Load, (coll.)	<input checked="" type="checkbox"/> Burst <input checked="" type="checkbox"/>	Bouy No ^{Yes} - <input checked="" type="checkbox"/> _{No} - <input checked="" type="checkbox"/>

SLURRY DESCRIPTION AND PROPERTIES

900 cu. ft. (783 sacks) of Class "G" cement blended with 3 per cent CaCl₂.

	Desired Top surface	Excess 100 per cent
Slurry Vol.- Cu.Ft. - (Slurry No.)	900	
Slurry Yield - Cubic Ft. - Sack	1.15	
Slurry Density - PPG	118	
Thickening Time - Depth - Hrs.-Min.	4 hours	
Compressive Strength - PSI - Hours	1870psi at 100°F in 8 hours - 3885 psi at 100°F in 24 hrs.	

RUNNING AND CEMENTING INSTRUCTIONS

Shoe, Collar's and Joint Strengthening

1. Threadlock bottom 4 joints
2. Tackweld bottom 4 joints and Float Equip.
3. Use HOWCO FS with drill pipe stab-in Assy.

Centralizers and Scratchers - Number, Type and Spacing

1. Two centralizers around bottom two collars
2. No scratchers to be run.

Preflush, Displacement Rate, Plugs, Reciprocation, Etc.

1. Cement through drill pipe from bottom
2. Run Min. of 100 cu. ft. of water ahead as preflush

Pressure Testing and Landing

1. Maximum differential pressure will be approximately 150 psi
2. Test casing and surface equipment to 200 psi.

BOP PROGRAM

API Stack	Working Pressure	Min. Bore inches	Type	Test Pressures - PSI		
				Ram Type	Annular	Rot. Head
see drawing	3000 psi	21"	Hydril	200 psi		

CASING PROGRAM	Size	Depth	Well				
	13-3/8"	1000'	Animas 55-7				
Interval	Weight lb-ft	Grade	Jt. Type	Calculated Safety Factors			
				Top Burst	Bot. Burst	Collapse	Tension
0' - 1000'	61#	K-55	Buttress	6.18	4.90	1.23	5.56

DESIGN CONDITIONS

Surface Burst Pressure	- 500	PSI	Outside mud Wt. (collapse)	-8.8	PPG
Inside Mud Wt. (Burst)	- 8.8	PPG	Inside Mud Wt. (collapse)	- -0-	PPG
Outside Mud Wt. (Burst)	- 8.6	PPG	Form. Press. Grad. at Shoe (coll.)-		PPG
Frac. Grad. at Shoe (Burst)-		PPG	Biaxial Load, (coll.)	<input checked="" type="checkbox"/> Burst <input type="checkbox"/>	Bouy ^{Yes} - _{No} - x

SLURRY DESCRIPTION AND PROPERTIES

Class "G" cement blended with 1:1 perlite + 40% silica flour + 3% gel + 0.5% CFR-2			
Slurry retarded as needed for temperature			
		Desired Top Surface	Excess 100%
Slurry Vol.- Cu.Ft. - (Slurry No.)			
Slurry Yield - Cubic Ft. - Sack	2.12		
Slurry Density - PPG	100 @ surf. & 116 @ Btm.		
Thickening Time - Depth - Hrs.-Min.	2 -3 hours		
Compressive Strength - PSI - Hours	± 1100 /24 hrs.		

RUNNING AND CEMENTING INSTRUCTIONS

Shoe, Collar's and Joint Strengthening
1. Use HOWCO stab-in Float Collar. Threadlock bottom 4 jts. & Tack weld bottom of collars
2. Position Float Collar 2 jts. above Guide Shoe
Centralizers and Scratchers - Number, Type and Spacing
1. Use 1 centralizer in the middle of the bottom jt. & over the collar of every third jt. to the shoe of the 20" casing. (300'±)
Preflush, Displacement Rate, Plugs, Reciprocation, Etc.
1. As needed.
Pressure Testing and Landing
1. Maximum differential pressure expected is approximately 750 psi
2. Displace with Mud.
3. Test casing and surface equipment to 500 psi with State Representative notified.

BOP PROGRAM

API Stack	Working Pressure	Min. Bore inches	Type	Test Pressures - PSI		
				Ram Type	Annular	Rot. Head
see Draw 002	000 psi	12 1/2"	Annular & CSO	500 psi	500 psi	500psi

CASING PROGRAM	Size	9-5/8"	Depth	6000'	Well	Animas 55-7	
Interval	Weight lb-ft	Grade	Jt. Type	Top Burst	Calculated Safety Factors Bot. Burst	Collapse	Tension
800' - 6000'	43.50#	N-80	Buttress	1.75	1.57	1.25	2.31

DESIGN CONDITIONS

Surface Burst Pressure	- 1727	PSI	Outside mud Wt. (collapse)	- 8.8	PPG
Inside Mud Wt. (Burst)	- 8.8	PPG	Inside Mud Wt. (collapse)	- -0-	PPG
Outside Mud Wt. (Burst)	- 8.6	PPG	Form. Press. Grad. at Shoe (coll.)	- 12.0	PPG
Frac. Grad. at Shoe (Burst)	-	PPG	Biaxial Load, (coll.)	<input type="checkbox"/> Burst <input type="checkbox"/>	Bouy ^{Yes} - ^{No} - X

SLURRY DESCRIPTION AND PROPERTIES

Class "G" cement + 50# Spherelite / sk. + 40% SSA-1 + 5% lime + 4% Gel + 1% CFR-2 + .5% Halad. 22# Tailed - in with Class "G" + 40% SSA-1 + 0.5% CFR-2, - Both slurrys retarded as needed for temperature.

	-1-	-2-	Desired Top 800'	Excess ± 50%
Slurry Vol. - Cu.Ft. - (Slurry No.)				
Slurry Yield - Cubic Ft. - Sack	3.45	1.62		
Slurry Density - PPG	12.0	15.6		
Thickening Time - Depth - Hrs.-Min.	3½ - 4½ hrs.	2-3 hrs.		
Compressive Strength - PSI - Hours	750-24 hrs.	2300-8 hrs.		

RUNNING AND CEMENTING INSTRUCTIONS

- Shoe, Collar's and Joint Strengthening
1. Run Float Shoe and Float Collar on top of second jt.
 2. Run Midway circulating type hanger
- Centralizers and Scratchers - Number, Type and Spacing
1. Run 2 centralizers in lap area and 2 on each of the bottom jts.
- Preflush, Displacement Rate, Plugs, Reciprocation, Etc.
1. Circulate at least 2 complete rounds before cementing.
- Pressure Testing and Landing
1. WOC 12 hours. Clean out to the top of the 9-5/8" liner. Test lap to 500 psi
Squeeze lap if necessary. Clean out and retest until a test is obtained.

(No change in BOPE until Tie-Back) BOP PROGRAM

API Stack	Working Pressure	Min. Bore inches	Type	Test Pressures - PSI		
				Ram Type	Annular	Rot. Head
see Draw. 002	960 psi	12¼"	Annular and CSO	500 PSI	500 PSI	500 PSI



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Las Cruces Field Office
1800 Marquess
Las Cruces, NM 88005
www.nm.blm.gov

IN REPLY REFER TO:
NMNM 34790
3260 (03000)

Mr. Roy Cuniff
President
Lightning Dock Geothermal, Inc.
224 West Greening
Las Cruces, NM 88005

JUL 21 2000

Dear Mr. Cuniff:

We received your appeal of the amended Sundry Notice you submitted on May 25, 2000. We have also received the appeal withdrawal letter. We reviewed your reasons and hereby extend the time to February 1, 2001. We will also notify and modify Mr. Burgett's Sundry Notice so the dates do not conflict with your proposed testing. Please advise us as soon as you have acquired the necessary equipment for the testing operation and have completed a surface owner agreement. As before, we need at least a 3-day advance notice so that a qualified engineering technician can be present to witness commencement of the operations and, specifically, removal of the BLM seal that will be placed on the well casing. Once your operations are nearing completion, please advise this office so we can have Mr. Burgett proceed with the plugging operations. Be advised that the plugging operations have been directed by the Courts and will have to be completed in a timely manner to avoid any potential contamination that could result because of Well 55-7 being left open. Please furnish this office with any results that may affect the plugging of Well 55-7. Modifications of Mr. Burgett's Sundry Notice could occur as a result of your investigations. As previously agreed, variations to the agreed upon dates will be reviewed as necessary.

If at anytime the testing program is not in compliance with the prior approved Sundry Notice, this letter, or with the PET directions, he/she will order a shutdown to your operations and you will be directed to take whatever corrective action is needed. Any questions should be directed to Joe Torrez at (505) 525-4374.

Sincerely,

FOR Amy L. Lueders
Field Manager

cc:
Mr. Dale Burgett
Mr. John Zavitz
Mr. Grant Vaughn

received
7/21/2000: Rec

3260-3
erly 9-1958)
1988)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
GEOTHERMAL SUNDRY NOTICE

OPERATOR'S COPY

FORM APPROVED
OMB NO. 1004-0132
Expires: September 30, 1990

The Bureau of Land Management (BLM) requests this form or other BLM-approved forms to be prepared and filed in triplicate with requisite attachments with the authorized officer. The authorized officer must approve this permit prior to any lease operations.

6. Lease Serial No.
NM-34790

7. Surface Manager: BLM FS
 Other

Well Type: Production Injection Heat Exchange Observations Other

8. Unit Agreement Name
N/A

TEST FOR DISCOVERY WELL 55-7

9. Well No. 55-7 10. Permit No.

Well Status:

IN TREASURY CONDITION

Name of Lessee/Operator

11. Field or Area
ANIMAS

LIGHTNING DOCK GEOTHERMAL, INC

12. Sec., T., R., B. & M. NW 1/4 SE 1/4

Address of Lessee/Operator

Sec. 7, T25S, R19W

224 W. GREENING AVE, LAS CRUCES, NM 88005

Location of Well or Facility 2411.9' OF THE E. LINE AND 2329' OF THE S. LINE

13. County
HIDALGO

OF SEC. 7, T25S, R19W

14. State
NEW MEXICO

Type of Work

- Change Plans
- Site and Road Construction
- Construct New Production Facilities
- Alter Existing Production Facilities
- Convert to Injection
- Fracture Test
- Shoot or Acidize
- Repair Well
- Pull or Alter Casing
- Multiple Complete
- Abandon
- Other

5. Describe Proposed Operations (Use this space for well activities only. See instructions for current well conditions on reverse)

The current configuration of the well, as reported to us by the Federal Government, is that the well is open from surface to approximately 1,500 feet of depth, more or less, with the cement plugs originally set from 1500 to 1400 feet, from 1100 to 1050 feet, and from 50 feet to surface reportedly having been drilled out by Dale Burgett. In addition, Mr. Burgett reportedly has introduced a large quantity of strong acid into the well, and has performed drill stem and pumping tests on the well. These actions call into question the possible integrity of the surface casing set to 1050 feet of depth using 13 3/8-inch steel pipe which was then cemented to the surrounding formations, and also of the integrity of the well bore below the bottom of the surface casing. We have been advised that the BLM has set into motion a requirement that Mr. Burgett re-establish the cement plugs at their original horizons.

The lessee who concurrently is also the Designated Operator on this well by ownership thru legal succession thru AMAX, SRC, and GPI, plans to reenter Well 55-7 to conduct a series of scientific tests and measurements on this well prior to permitting the BLM to require Mr. Burgett to re-establish the cement plugs at their original horizons. The proposed work includes a series of temperature measurements of the well, a suite of geophysical logs to be run into the surface casing, and open well bore below 1050 feet, and a series of controlled flow tests to acquire water samples for analyses and to determine reservoir characteristics. It is anticipated that the controlled flow tests might be conducted by use of a series of tests conducted over time, with pressure monitoring equipment used to evaluate hydraulic properties within the well bore zone of influence. Produced geothermal water would be directed into the existing reserve pit located adjacent to the well. Moreover, depending on the amount of water produced, this geothermal water would be allowed to cool and then used to circulate and condition the well before temperature and other geophysical logs are acquired.

Since the work outlined herein will be conducted in a sequential step-wise manner, with intervening periods of data review and analyses, the entire program could take considerable time to complete. We will submit a Plan Of Operations prior to the start of the scientific testing program.

16. Describe Proposed Operations (Use this space for all activities other than well work)

17. I hereby certify that the foregoing is true and correct

Signed RAC

Title PRESIDENT LIGHTNING DOCK GEOTHERMAL, INC. Date 21 APRIL 2002

(This space for Federal use)

Approved by [Signature]

Conditions of Approval, if any

Title FIELD OFFICE MGR Date 5/22/00

Title 18 U.S.C. Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on reverse)

FILE

Form 3260-3
(formerly 9-1958)
(June 1988)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504
Attention: Roy Johnson

GEOHERMAL SUNDRY NOTICE

The Bureau of Land Management (BLM) requests this form or other BLM approved forms to be prepared and filed in triplicate with requisite attachments with the authorized officer. The authorized officer must approve this permit prior to any lease operations.

1a. Well Type: Production Injection Heat Exchange Observation Other

TEST FOR DISCOVERY WELL 55-7

1b. Well Status:

IN TRANSIT CONDITION

2. Name of Lessee/Operator

LIGHTNING ROCK GEOTHERMAL, INC

3. Address of Lessee/Operator

224 W. GREENING AVE, LAS CRUCES, NM 88005

4. Location of Well or Facility 2411.9' OF THE E. LINE AND 2329' OF THE S. LINE

OF SEC. 7, T 25 S, R 19 W

6. Lease Serial No.

NM-34790

7. Surface Manager: BLM FS
 Other

8. Unit Agreement Name

N/A

9. Well No.
55-7

10. Permit No.

11. Field or Area

ANIMAS

12. Sec., T., R., B. & M. NW 1/4 SE 1/4

SEC. 7, T 25 S, R 19 W

13. County

HIDALGO

14. State

NEW MEXICO

5. Type of Work

- Change Plans
- Site and Road Construction
- Construct New Production Facilities
- Alter Existing Production Facilities
- Convert to Injection
- Fracture Test
- Shoot or Acidize
- Repair Well
- Pull or Alter Casing
- Multiple Complete
- Abandon
- Other

15. Describe Proposed Operations (Use this space for well activities only. See instructions for current well conditions on reverse)

The current configuration of the well, as reported to us by the Federal Government, is that the well is open from surface to approximately 1,500 feet of depth, more or less, with the cement plugs originally set from 1500 to 1400 feet, from 1100 to 1050 feet, and from 50 feet to surface reportedly having been drilled out by Dale Burgett. In addition, Mr. Burgett reportedly has introduced a large quantity of strong acid into the well, and has performed drill stem and pumping tests on the well. These actions call into question the possible integrity of the surface casing set to 1050 feet of depth using 13 3/8-inch steel pipe which was then cemented to the surrounding formations, and also of the integrity of the well bore below the bottom of the surface casing. We have been advised that the BLM has set into motion a requirement that Mr. Burgett re-establish the cement plugs at their original horizons.

The lessee who concurrently is also the Designated Operator on this well by ownership thru legal succession thru AMAX, SRC, and GPI, plans to reenter Well 55-7 to conduct a series of scientific tests and measurements on this well prior to permitting the BLM to require Mr. Burgett to re-establish the cement plugs at their original horizons. The proposed work includes a series of temperature measurements of the well, a suite of geophysical logs to be run into the surface casing and open well bore below 1050 feet, and a series of controlled flow tests to acquire water samples for analyses and to determine reservoir characteristics. It is anticipated that the controlled flow tests might be conducted by use of a series of tests conducted over time, with pressure monitoring equipment used to evaluate hydraulic properties within the well bore zone of influence. Produced geothermal water would be directed into the existing reserve pit located adjacent to the well. Moreover, depending on the amount of water produced, this geothermal water would be allowed to cool and then used to circulate and condition the well before temperature and other geophysical logs are acquired.

Since the work outlined herein will be conducted in a sequential step-wise manner, with intervening periods of data review and analyses, the entire program could take considerable time to complete. We will submit a Plan Of Operations prior to the start of the scientific testing programs.

16. Describe Proposed Operations (Use this space for all activities other than well work)

17. I hereby certify that the foregoing is true and correct

Signed

RJC

Title

PRESIDENT, LIGHTNING ROCK GEOTHERMAL, INC.

Date

24 APRIL 2000

(This space for Federal use)

Approved by

[Signature]

Title

CEO, Field office mgr.

Date

5/22/00

Title 18 U.S.C. Section 1001 (a) provides that any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations is to any matter within its jurisdiction.

(Instructions on reverse)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504
Attention: Roy Johnson

GEOHERMAL SUNDRY NOTICE

The Bureau of Land Management (BLM) requests this form or other BLM approved forms to be prepared and filed in triplicate with requisite attachments with the authorized officer. The authorized officer must approve this permit prior to any lease operations.

1a. Well Type: Production Injection Heat Exchange Observation Other

1b. Well Status: IN TRESPASS CONDITION

2. Name of Lessee/Operator
LIGHTNING ROCK GEOTHERMAL, INC

3. Address of Lessee/Operator
224 W. GREENWICH AVE, LAS CRUCES, NM 88005

4. Location of Well or Facility 2411.9' OF THE E. LINE AND 2329' OF THE S. LINE OF SEC. 7, T 25 S, R 19 W

5. Type of Work
- Change Plans
 - Site and Road Construction
 - Construct New Production Facilities
 - Alter Existing Production Facilities
 - Convert to Injection
 - Fracture Test
 - Shoot or Acidize
 - Repair Well
 - Pull or Alter Casing
 - Multiple Complete
 - Abandon
 - Other

15. Describe Proposed Operations (Use this space for well activities only. See instructions for current well conditions on reverse)

The current configuration of the well, as reported to us by the Federal Government, is that the well is open from surface to approximately 1,500 feet of depth, more or less, with the cement plugs originally set from 1500 to 1400 feet, from 1100 to 1050 feet, and from 50 feet to surface reportedly having been drilled out by Dale Burgett. In addition, Mr. Burgett reportedly has introduced a large quantity of strong acid into the well, and has performed drill stem and pumping tests on the well. These actions call into question the possible integrity of the surface casing set to 1050 feet of depth using 13 3/8-inch steel pipe which was then cemented to the surrounding formations, and also of the integrity of the well bore below the bottom of the surface casing. We have been advised that the BLM has set into motion a requirement that Mr. Burgett re-establish the cement plugs at their original horizons.

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Since the work outlined herein will be conducted in a sequential step-wise manner, with intervening periods of data review and analyses, the entire program could take considerable time to complete. We will submit a Plan Of Operations prior to the start of the scientific testing programs.

16. Describe Proposed Operations (Use this space for all activities other than well work)

17. I hereby certify that the foregoing is true and correct

Signed RJC Title PRESIDENT, LIGHTNING ROCK GEOTHERMAL, INC. Date 21 APRIL 2000

(This space for Federal use)

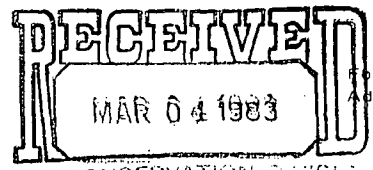
Approved by [Signature] Title CEO, Field Office Mgr. Date 5/22/00

SEE ATTACHED FOR

Title 18 U.S.C. Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations or any materially false information in any matter within the jurisdiction.

(Instructions on reverse)

6. Lease Serial No. <u>NM-34790</u>	
7. Surface Manager: <input checked="" type="checkbox"/> BLM <input type="checkbox"/> FS <input checked="" type="checkbox"/> Other	
8. Unit Agreement Name <u>N/A</u>	
9. Well No. <u>55-7</u>	10. Permit No.
11. Field or Area <u>ANIMAS</u>	
12. Sec., T., R., B. & M. <u>NW 1/4 SE 1/4</u>	
13. County <u>SEC. 7, T 25 S, R 19 W</u>	
14. State <u>HIDALGO</u>	
15. State <u>NEW MEXICO</u>	



Form G-101
Adopted 10/1/74

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

APPLICATION FOR PERMIT TO DRILL, DEEPEN,
OR PLUG BACK--GEOTHERMAL RESOURCES WELL

OIL CONSERVATION DIVISION

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File	/	✓
N.M.B.M.	/	
U.S.G.S.	/	
Operator	/	
Land Office		

SANTA FE

5. Indicate Type of Lease
STATE Fed. & FEE

5.a State Lease No.

7. Unit Agreement Name
Animas

8. Farm or Lease Name
NM-34790 - Minerals
Archie Green - Surface

9. Well No.
55

10. Field and Pool, or Wildcat
Wildcat

12. County
Hidalgo

19. Proposed Depth
7000'

19A. Formation

20. Rotary or C.T.
Mud

21. Elevations (Show whether DF, RT, etc.)
GR 4201

21A. Kind & Status Plug. Bond
BOND 224-45-94

21B. Drilling Contractor
Unknown

22. Approx. Date Work will start
May 1, 1983

1a. Type of Work Drill Deepen Plug Back

b. Type of Well Geothermal Producer Temp Observation
Low-Temp Thermal Exploration Injection/Disposal

2. Name of Operator
AMAX Exploration, Inc.

3. Address of Operator
1707 Cole Boulevard, Golden, CO 80401

4. Location of Well UNIT LETTER _____ LOCATED 2411.9 FEET FROM THE East LINE
AND 2329.1 FEET FROM THE South LINE OF SEC. 7 TWP. 25S RGE. 19W NMPM

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
<u>20"</u>	<u>13-3/8"</u>		<u>50'</u>		
<u>12-1/4"</u>	<u>9-5/8"</u>		<u>700'</u>		

See attached "Proposed Plan of Exploration"

APPROVAL VALID FOR 90 DAYS
PERMIT EXPIRES 7-4-83
UNLESS DRILLING UNDERWAY

OIL CONSERVATION COMMISSION TO BE NOTIFIED
WITHIN 24 HOURS OF BEGINNING OPERATIONS

PERMIT EXTENDED TO 11-1-83

Carl Ulvog

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed [Signature] Title Manager, Geit Station Date 2/28/83

APPROVED BY Carl Ulvog TITLE DISTRICT SUPERVISOR DATE 4/5/83

CONDITIONS OF APPROVAL, IF ANY:

NM OIL CONS. COMMISSION

Drawn By Santa Fe
~~Antelope, NV 89216~~

Form: USGS 9-1957

UNITED STATES DEPARTMENT OF THE INTERIOR
 GEOLOGICAL SURVEY, CONSERVATION DIVISION

Form Approved
 Budget Bureau No.

GEOHERMAL DRILLING PERMIT

The U.S. Geological Survey requires this form or other Supervisor approved form to be prepared and filed in triplicate with requisite attachments with the Supervisor. The Supervisor must approve this permit prior to any lease operation.

1a. TYPE OF WORK: DRILL NEW WELL () REDRILL () DEEPEN () PLUG BACK () DIRECTIONALLY DRILL () OTHER ()

1b. WELL TYPE: PRODUCTION () INJECTION () HEAT EXCHANGE () OBSERVATION () WATER SUPPLY () OTHER ()

1c. WELL STATUS: New

2. NAME OF LESSEE/OPERATOR

AMAX Exploration, Inc.

3. ADDRESS OF LESSEE/OPERATOR

1707 Cole Blvd., Golden CO 80401

15. LOCATION OF WELL At surface
~~At proposed prod. zone~~
SWSWNE Sec. 7, T25S R19W NMPM

At proposed prod. zone
same

16. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE

2400 West of Line

17. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR ON THIS LEASE

150 ft. from ΔT Well 672-227

18. DRILLING MEDIA AND CHARACTERISTICS: AIR ()
 WATER () MUD () FOAM () Other ()

19. PROPOSED DEPTH
 MEASURED: 5-7000'
 TRUE VERTICAL: 5-7000'

20. ELEVATIONS: ESTIMATED () FINAL () 4201
 REFERENCE DATUM: GR () MAT () DF () XB () RT ()
 CASINGHEAD FLANGE () OTHER ()

21. EXISTING AND/OR PROPOSED CASING AND CEMENTING PROGRAM (List existing program first, followed by proposed program, and separate by a sufficient space to clearly distinguish the two programs)

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	COUPLING (Collars & Threads)	GRADE	SETTING DEPTH		QUANTITY OF CEMENT
					Top	Bottom	
20"	13-3/8"				0	50	Cement to Surface
12 1/4"	9-5/8"				0	700	Cement to Surface

22. PROPOSED WORK SUMMARY

1. Drill 20" hole to 50 feet
2. Set 13-3/8" conductor casing - cement
3. Drill 12-1/4" hole to 700 feet
4. Run 9-5/8" casing - cement to surface
5. Install and test BOPE
6. Drill 8-3/4" to 6 1/2" hole to TD

(Use additional space on reverse side of form)

23. [Signature] Mgr. Land Dept. 12/2/82
 SIGNED TITLE DATE

(This space for Federal use)

APPROVED BY 'Orig. Sgd.' Earl R. Cunningham TITLE District Manager DATE DEC 16 1982

CONDITIONS OF APPROVAL, IF ANY:

This permit is required by law (30 U.S.C. 1023); regulations, 30 CFR 270.71; Federal Geothermal Lease Terms and Stipulations and other regulatory requirements. The United States Criminal Code (18 U.S.C. 1001) makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.

(See instructions on reverse side)

SEE ATTACHED FOR
 CONDITIONS OF APPROVAL

NMOCD

RECEIVED

DEC 19 1983

Form: USGS 9-1958

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY, CONSERVATION DIVISION

Form Approved
Budget Bureau No. _____

GEOHERMAL SUNDRY NOTICE

The U.S. Geological Survey requests this form or other Supervisor approved form to be completed and returned in triplicate with requisite attachments with the Supervisor. The Supervisor must approve this permit prior to any lease operations.

CONSERVATION DIVISION
SANTA FE

LEASE SERIAL NO.
NM-34790

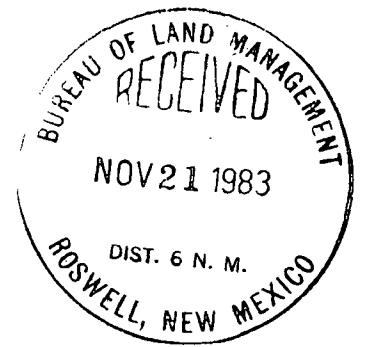
SURFACE MANAGER: BLM () FS ()
Other (X)

<p>1a. WELL TYPE: PRODUCTION () INJECTION () HEAT EXCHANGE () OBSERVATION () OTHER (X) Exploration</p> <p>1b. WELL STATUS: New</p> <p>2. NAME OF LESSEE/OPERATOR AMAX Exploration, Inc.</p> <p>3. ADDRESS OF LESSEE/OPERATOR 1707 Cole Blvd., Golden, Colorado 80401</p> <p>13. LOCATION OF WELL OR FACILITY NW$\frac{1}{4}$NW$\frac{1}{4}$SE$\frac{1}{4}$, Section 7, T25S, R19W</p> <p>14. TYPE OF WORK</p> <table style="width: 100%; border: none;"> <tr> <td style="border: none;">CHANGE PLANS ()</td> <td style="border: none;">CONVERT TO INJECTION ()</td> <td style="border: none;">FULL OR ALTER CASING ()</td> </tr> <tr> <td style="border: none;">SITE AND ROAD CONSTRUCTION (X)</td> <td style="border: none;">FRACTURE TEST ()</td> <td style="border: none;">MULTIPLE COMPLETE ()</td> </tr> <tr> <td style="border: none;">CONSTRUCT NEW PRODUCTION FACILITIES ()</td> <td style="border: none;">SHOOT OR ACIDIZE ()</td> <td style="border: none;">ABANDON ()</td> </tr> <tr> <td style="border: none;">ALTER EXISTING PRODUCTION FACILITIES ()</td> <td style="border: none;">REPAIR WELL ()</td> <td style="border: none;">OTHER ()</td> </tr> </table>	CHANGE PLANS ()	CONVERT TO INJECTION ()	FULL OR ALTER CASING ()	SITE AND ROAD CONSTRUCTION (X)	FRACTURE TEST ()	MULTIPLE COMPLETE ()	CONSTRUCT NEW PRODUCTION FACILITIES ()	SHOOT OR ACIDIZE ()	ABANDON ()	ALTER EXISTING PRODUCTION FACILITIES ()	REPAIR WELL ()	OTHER ()	<p>6. UNIT AGREEMENT NAME N/A</p> <p>7. WELL NO. 8. PERMIT NO. 55-7</p> <p>9. FIELD OR AREA Wildcat</p> <p>10. SEC. T., R., B. & M. NW$\frac{1}{4}$NW$\frac{1}{4}$SE$\frac{1}{4}$ Sec. 7, T25S, R19W</p> <p>11. COUNTY Hidalgo</p> <p>12. STATE New Mexico</p>
CHANGE PLANS ()	CONVERT TO INJECTION ()	FULL OR ALTER CASING ()											
SITE AND ROAD CONSTRUCTION (X)	FRACTURE TEST ()	MULTIPLE COMPLETE ()											
CONSTRUCT NEW PRODUCTION FACILITIES ()	SHOOT OR ACIDIZE ()	ABANDON ()											
ALTER EXISTING PRODUCTION FACILITIES ()	REPAIR WELL ()	OTHER ()											

15. DESCRIBE PROPOSED OPERATIONS (Use this space for well activities only. See instructions for current well conditions on reverse)

- (1) Construction of a drill pad for well No. 55-7.
The pad dimensions will be 300' X 300' and will include a sump 150' X 100' X 10'.
- (2) Access (see map).

Stipulation:
Approved subject to road being Arch-cleared.



16. DESCRIBE PROPOSED OPERATIONS (Use this space for all activities other than well work)

17. I hereby certify that the foregoing is true and correct (Use reverse side if needed)

SIGNED: Earl R. Cunningham TITLE: District Manager DATE: 12/18/83

(This space for Federal use)
APPROVED BY: Orig. Sgd. Earl R. Cunningham TITLE: District Manager DATE: DEC 16 1983

CONDITIONS OF APPROVAL, IF ANY:

This permit is required by law (30 U.S.C. 1023); regulations: 30 CFR 270.34, 30 CFR 270.35, 30 CFR 270.45, 30 CFR 270.71-1, 30 CFR 270.72; Federal Geothermal Lease Terms and Stipulations and other regulatory requirements. The United States Criminal Code (18 U.S.C. 1001) makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.