

SUB-RECORDER RECEIVED AUG 3 1 1-1 M.R. # VANCOUVER, B.C

Geophysical Survey Assessment Report Horn Property

> Fort Steele Mining Division NTS 82F/9 Lat. 49° 36' Long. 116° 04'

Owner: Consolidated Ramrod Gold Corp. Operator: Metall Mining Corporation

> GEOLOGICAL BRANCH ASSESSMENT REPORT

23,002

Vancouver, B.C. August, 1993

Colin Burge Metall Mining Corporation

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INTRODUCTION

The Clair and DH claim groups comprise a portion of the Horn property located about 25 km north of Cranbrook, B.C.

The Horn property is underlain by Proterozoic-age Aldridge formation sediments and sills which host the giant Sullivan Pb-Zn massive sulphide deposit 15 km to the north.

The Sullivan deposit occurs near the contact between the Lower and Middle Aldridge formations and it is this contact that represents the principal target in the belt. The geophysical survey reported herein explores stratigraphy interpreted by regional extrapolation to be in the vicinity of the key contact however direct correlation is not possible due to a high metamorphic grade locally. The survey forms part of a larger program conducted over the 1993 field season.

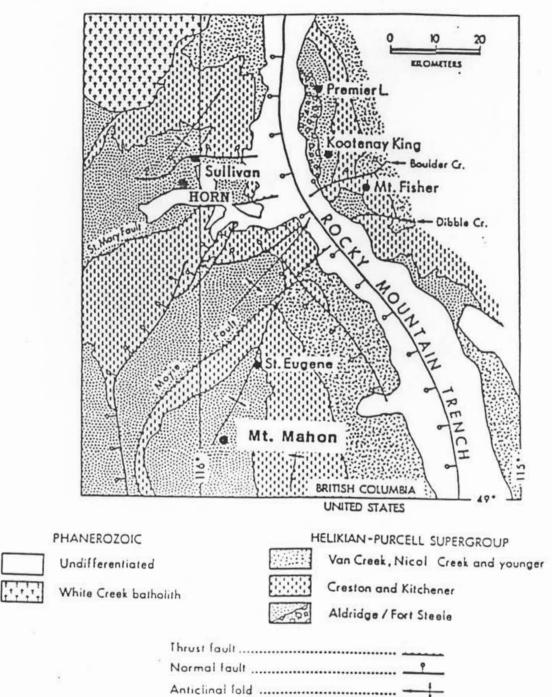
Location and Access

The Horn property covers the north facing slopes on the south side of St. Mary Lake and stretches east to cover an area locally known as "the Pudding Burn" just west of the Pitt Creek drainage. The Clair and DH groups represent the bulk of the Horn property and all of the western part. The claims are about 15 km southwest of Kimberley, B.C. Access to the Horn property is provided by a network of rough, 4WD logging roads which leave the Perry Creek mainline at Sawmill Creek. The Perry Creek road can be reached via the Wycliffe turn-off a few kilometres south of Marysville. The St. Mary's - Meacham and Hellroaring Ck. logging roads access the western part of the property.

<u>Physiography</u>

The Horn property is situated in the Purcell Mountains at elevations ranging from 1000 meters in the St. Mary valley to 2150 meters to the peaks of mountains south of St. Mary Lake.

The forest cover consists of immature stands of fir and spruce as well as alder. The Pudding Burn located on the eastern portion



from Hoy 1989

Washington State Information Circular 86

FIGURE 1

HORN LOCATION MAP

2

of the property, is a large area of blown down fir trees which have been subsequently burned, making access difficult.

The climate is cool and dry without snow in the upper reaches between June and October.

Property and Ownership

The Horn property consists of 204 individual claims for a total of 276 units. Metall Mining Corporation has an option to earn an interest in the claims from the owner Consolidated Ramrod Gold Corporation.

CLAIM NAME	NUMBER	UNITS	RECORD DATE	EXPIRY DATE
HORN 2	212446	1	21-May-91	21-May-95
HORN 4	212448	1	22-May-91	22-May-95
HORN 5	212449	1	22-May-91	22-May-95
HORN 6	212450	1	22-May-91	22-May-95
HORN 7	212451	1	20-May-91	20-May-95
HORN 8	212452	1	20-May-91	20-May-95
HORN 9	212453	1	20-May-91	20-May-95
HORN 10	212454	1	20-May-91	20-May-95
HORN 11	212455	1	20-May-91	20-May-95
HORN 12	212456	1	20-May-91	20-May-95
HORN 13	212457	1	21-May-91	21-May-95
HORN 14	212458	1	21-May-91	21-May-95
HORN 15	212459	1	21-May-91	21-May-95
HORN 16	212460	12	23-May-91	23-May-95
HORN 29	300182	1	06-Jun-91	06-Jun-95
HORN 31	300185	1	06-Jun-91	06-Jun-95
HORN 32	300196	1	06-Jun-91	06-Jun-95

CLAIR GROUP

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HORN 35	300208	1	06-Jun-91	06-Jun-95
HORN 36	300277	1	06-Jun-91	06-Jun-95
HORN 22	300326	20	03-Jun-91	03-Jun-95
HORN 23	300327	18	04-Jun-91	04-Jun-95
HORN 50	302050	1	14-Jul-91	14-Jul-95
HORN 56	302056	1	15-Jul-91	15-Jul-95
HORN 57	302057	1	15-Jul-91	15-Jul-95
HORN 59	302059	1	15-Jul-91	15-Jul-95
HORN 60	302060	1	15-Jul-91	15 - Jul-95
HORN 62	302062	1	15-Jul-91	15-Jul-95
HORN 63	302063	1	15-Jul-91	15-Jul-95
HORN 65	302065	1	15-Jul-91	15-Jul-95
HORN 66	302066	1	15-Jul-91	15 - Jul-95
HORN 68	302068	1	15-Jul-91	15-Jul-95
HORN 69	302069	1	15-Jul-91	15-Jul-95
HORN 71	302071	1	15-Jul-91	15-Jul-95
HORN 72	302072	1	15-Jul-91	15-Jul-95
HORN 74	302074	1	16-Jul-91	16-Jul-95
HORN 75	302075	l	16-Jul-91	16-Jul-95
HORN 77	302077	1	16-Jul-91	15-Jul-96
HORN 81	302081	1	16-Jul-91	15-Jul-96
HORN 90	303019	1	11-Aug-91	10-Aug-96
HORN 92	303021	1	11-Aug-91	10-Aug-96
HORN 93	303022	1	11-Aug-91	10-Aug-96
HORN 95	303024	1	11-Aug-91	10-Aug-96
HORN 114	303932	8	10-Sep-91	10-Sep-95
HORN 108	305616	1	17-0ct-91	17-0ct-95
HORN 110	305618	1	17-0ct-91	17-0ct-95

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DH GROUP

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CLAIM NAME	NUMBER	UNITS	RECORD DATE	EXPIRY DATE
HORN 1	212445	1	21-May-91	21-May-95
HORN 3	212447	1	22-May-91	22-May-95
HORN 17	212461	20	24-May-91	24-May-95
HORN 18	212462	1	22-May-91	22-May-95
HORN 19	212463	1	22-May-91	22-May-95
HORN 20	212464	1	22-May-91	22-May-95
HORN 21	212465	5	22-May-91	22-May-95
HORN 26	300176	1	06-Jun-91	06-Jun-95
HORN 27	300177	1	06-Jun-91	06-Jun-95
HORN 28	300181	1	06-Jun-91	06-Jun-95
HORN 30	300183	1	06-Jun-91	06-Jun-95
HORN 33	300197	1	06-Jun-91	06-Jun-95
HORN 34	300206	1	06-Jun-91	06-Jun-95
HORN 25	300325	20	05-Jun-91	05 - Jun-95
HORN 24	300328	12	05-Jun-91	05-Jun-95
HORN 45	302045	1	14-Jul-91	14-Jul-95
HORN 46	302046	1	14-Jul-91	14-Jul-95
HORN 47	302047	1	14-Jul-91	14-Jul-95
HORN 48	302048	1	19-Jul-91	19-Jul-95
HORN 49	302049	1	14-Jul-91	14-Jul-95
HORN 51	302051	1	14-Jul-91	14-Jul-95
HORN 52	302052	1	14-Jul-91	14-Jul-95
HORN 53	302053	1	14-Jul-91	14-Jul-95
HORN 54	302054	1	14-Jul-91	14-Jul-95
HORN 55	302055	1	14-Jul-91	14-Jul-95
HORN 58	302058	1	15-Jul-91	15-Jul-95

HORN 61	302061	1	15-Jul-91	15-Jul-95
HORN 64	302064	1	15 - Jul-91	15-Jul-95
HORN 67	302067	1	15-Jul-91	15-Jul-95
HORN 70	302070	1	15-Jul-91	15 - Jul-95
HORN 73	302073	1	15 - Jul-91	15-Jul-95
HORN 76	302076	1	16-Jul-91	16-Jul-95
HORN 78	302078	1	16-Jul-91	16-Jul-95
HORN 79	302079	1	16-Jul-91	16-Jul-95
HORN 88	303017	1	10-Aug-91	10-Aug-96
HORN 89	303018	1	10-Aug-91	10-Aug-96
HORN 91	303020	1	10-Aug-91	10-Aug-96
NEE 31	307299	1	01-Feb-92	01-Feb-95

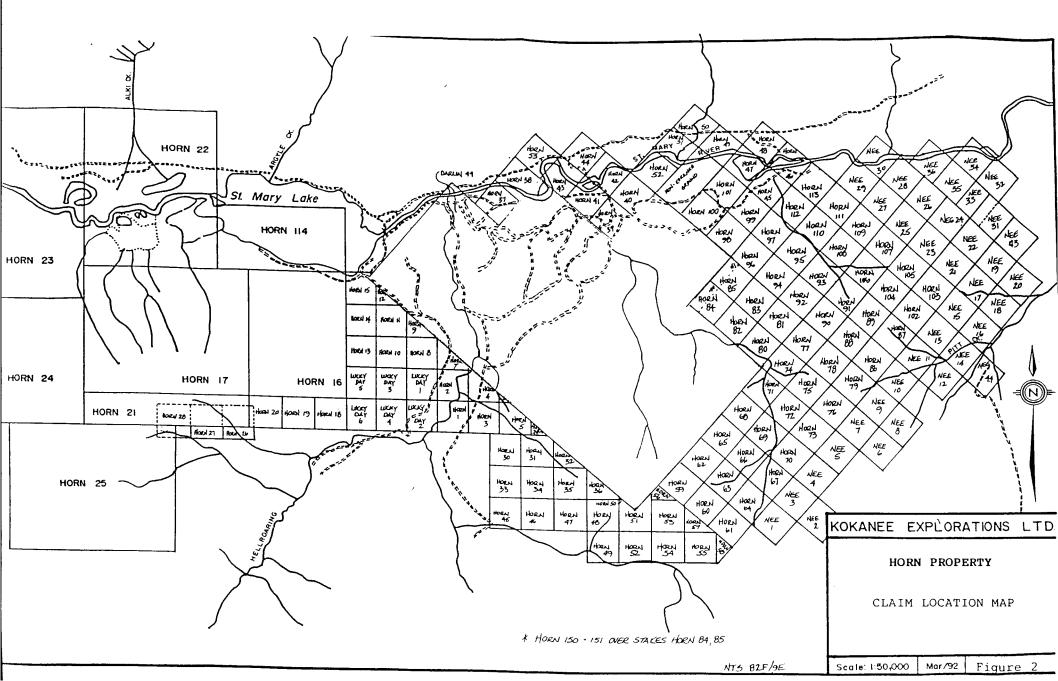
<u>History</u>

Prior to Metall Mining Corporation's 1992 program the eastern portion of the Horn property had not had any previous work filed for assessment purposes. Assessment reports #13,108 and #7401 detail geological and geochemical surveys conducted adjacent to the Horn property.

The western part of the Horn property has seen several episodes of exploration focusing on the Clair Fragmental a sulphide bearing fragmental occurrence on the south side of St. Mary Lake. The Clair Fragmental stratigraphy was explored by Cominco in 1979 and 1981 with two drill holes (A.R. # 10,311 and 7676).

1993 WORK PROGRAM

The geophysical work reported herein involved the surveying of approximately ten line kilometers of the Horn grid established during 1992 with a Crone Pulse EM system. The survey explored a



1.5 km strike length of the Horn stratigraphy. The purpose of the survey was to provide targets laterally east and west on strike with stratigraphy explored in 1992.

GEOLOGY

Regional Geology

The Proterozoic-age Aldridge Formation covers a large part of southeastern B.C. and the southwest corner of Alberta. The Aldridge consists of upper greenschist facies sediments and semiconformable gabbroic sills known as the Moyie Intrusions. The Aldridge package forms three main structural blocks divided by the northeast trending Cranbrook and Moyie Faults. Each block forms a broad, open, northeast plunging anticline and it is near the anticlinal axis of the northern most structural block that the Sullivan deposit occurs. The Sullivan deposit is a 160 million ton > 10% Pb-Zn, 70 gpt Ag conformable, massive sulphide sheet underlain by a tourmaline bearing stockwork system and overlain by a blanket of albitization.

The Horn property is within the same structural block as the Sullivan and covers stratigraphy interpreted to correlate with the Sullivan, located 15 km north, by regional extrapolation.

Property Geology

The Horn property is underlain by Lower and Middle Aldridge formation sediments and Moyie dikes and sills. In the Pudding Burn area the package forms the south facing north limb of a syncline which lies north of, and is truncated by the St. Mary Fault.

The clastic assemblage is made up of thin beds of quartz and biotite rich greywackes and quartzites interpreted to represent a turbidite succession. These units usually contain muscovite in various quantities and are clearly at a higher metamorphic grade than the rest of the Aldridge formation. The intrusive rocks range from diorite to gabbro in composition and are medium to coarse grained. Pegmatite sills up to a few meters thick are also common in the Pudding Burn area.

The target stratigraphy dips below a large gabbro sill which forms a prominent cliff on the north side of Pudding Burn Creek. Please refer to Assessment Report #16971 for a discussion of geology on the western part of the Horn property.

GEOPHYSICS

Six lines at 250 meter spacing (L7250W - L8500W) were surveyed from 1000N to 1000S with a Crone Digital Transient EM System. Four, one kilometer square transmitting loops were required as all data was collected within the loops. The survey was designed to detect conductive material possibly representing a buried massive sulphide deposit both along strike and in the stratigraphic hanging wall and foot wall of the Horn stratigraphy explored in 1992.

A report included in Appendix III prepared by Jim Hawkins of Scott Geophysics details the technical aspects of the survey.

RESULTS

The survey detected a moderate to good conductor spanning lines 7750W, 8000W and 8250W located at 0+50S. This stratigraphy was explored with four drill holes during the 1992 field season.

No anomalous responses of significance occur on lines 7250W, 7500W or 8500W. A number of high amplitude responses were detected on the Z component on line 7250W however the X component is flat.

A power line supplying power to a V.O.R. beacon cuts through the survey area. The survey records spikes in the data where the power line was crossed at the following locations:

> L7250W; 6+50S L7500W; 4+00S L7750W; 0+75N L8000W; 3+50N L8250W; 4+25N

CONCLUSIONS AND RECOMMENDATIONS

The 1993 PEM survey failed to extend known conductive zones onstrike. No conductors of significance were detected in the footwall or hangingwall stratigraphy.

As the stratigraphy hosting the anomalous response was adequately tested during the 1992 field program no further work on the Horn stratigraphy is recommended. Appendix I

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Itemized Cost Statement

HORN PROPERTY

Itemized Cost Statement

Linecutting (June 29, 1993)

D. Calder Exploration	Service,	Kimberley,	B.C.	
9.9 km @ 575/km				6,092.21
				\$6,092.21

Geophysical Survey

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Scott Geophysics, Vancouver, B.C.	17,603.14
B. Stainer (assitant) 10 days @ \$150/day	1,500.00
Vehicle and fuel 10 days @ \$60/day	600.00

\$19,703.14

Report Preparation

C. Burge, P.Geo. 3 days @ \$350/day	1,050.00
Typing, proofing, computer work	500.00
	\$1550.00

TOTAL \$27,345.35

Apportionment:

Clair Group	50%	\$13,672.68
DH Group	50%	\$13,672.67

Appendix II

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Statement of Qualifications

Statement of Qualifications

- I, Colin Michael Burge, P.Geo. hereby certify that:
- I have worked as an exploration geologist since graduation from the University of Waterloo, Waterloo, Ontario with a BSc. in Earth Sciences (1981).
- I am currently employed as a Senior Project Geologist for Minnova Inc., 3rd Floor - 311 Water St., Vancouver, B.C. and have been with this company for six years.
- 3. I am a member in good standing of the Association of Professional Engineers and Geoscientists of B.C.
- 4. I personally carried out or supervised the work reported herein.

Colin M Burg CESSION DEOVINCE BURGE ART ISH SCIEN <u>.</u>...

August 25, 1993 Date

Appendix III

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Pulse EM Report

LOGISTICAL REPORT

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CRONE SURFACE PULSE ELECTROMAGNETIC SURVEY

HORN PROPERTY, KIMBERLEY AREA, BRITISH COLUMBIA

on behalf of

METALL MINING CORPORATION, 3rd floor, 311 Water Street Vancouver, B.C. V6B 1B8

Field work completed: July 8 to 19, 1993

by

Jim Hawkins, Geophysicist SCOTT GEOPHYSICS LTD. 4013 West 14th Avenue Vancouver, B.C. V6R 2X3

August 23, 1993

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4. Surface Summary	2
5. Recommendations	3
Appendix I Horn Property X Component Map	Map pocket 1

Appendix	II	Horn	Property	Ζ	Component	Map	Map	pocket	2

1. INTRODUCTION

Surface In-loop Pulse Electromagnetic surveys were performed on the Horn Property, Kimberley Area, B.C., by Scott Geophysics Ltd. on behalf of Metall Mining Corporation. The field work was done within the period July 8 to 19, 1993.

The survey consisted of a Crone Pulse Electromagnetic In-loop survey on the Horn Property. The dBz/dt and dBx/dt components were measured on select lines at 25m intervals.

This report presents the results of the survey, describes the instrumentation and procedures, and gives the approximate location of selected conductors detected on the survey.

2. PERSONNEL

Jim Hawkins, Geophysicist, was the party chief on the survey and acted as primary operator of the PEM receiver. Scott Benson, Geophysical Technician, acted as his assistant. Brian Stainer of Metall was the additional helper. Colin Burge, Senior Project Geologist, was the Metall representative.

3. INSTRUMENTATION AND PROCEDURES

A Crone 20 channel digital PEM receiver and a Crone 2000 watt PEM transmitter were used on the surface In-loop Pulse Electromagnetic survey.

The In-loop survey measures lines inside the transmitter loop, to better couple with flat lying conducters. Two components, dBz/dt and dBx/dt, were measured on lines 250m apart at 25m station intervals. Time reference between the receiver and transmitter was maintained by radio link.

The receiver and transmitter settings and loop parameters for the surface survey are given in Section 4 of this report.

The survey data was archived, processed, and plotted using a Toshiba T3200SX microcomputer running Crone PEM and proprietary software.

4. SURFACE SUMMARY

Horn Property

NW Transmitter Loop Surveyed July 10-11; L8500W, 25N - 400N L8250W, 25N - 975N L8000W, 25N - 975N Loop size (approx.), 1000m x 1000m. 1.5 ms Rx/Tx Settings: Ramp 16.6 ms Time Base ZTS 1507.5 6 amps (peak to peak) Current Stacking 512 NE Transmitter Loop Surveyed July 12-13; L7750W, 25N - 975N L7500W, 25N - 975N L7250W, 25N - 925N Loop size (approx.), 1000m x 1000m. 1.5 ms Rx/Tx Settings: Ramp Time Base 16.6 ms ZTS 1512.0 Current 6 amps (peak to peak) 512 Stacking SE Transmitter Loop Surveyed July 15-16; L7750W, 25S - 975S L7500W, 25S - 975S L7250W, 25S - 975S Loop size (approx.), 1000m x 1000m. Rx/Tx Settings: Ramp 1.5 ms 16.6 ms Time Base ZTS 1512.0 Current 6 amps (peak to peak) Stacking 512

SW Transmitter Loop

Surveyed July 17-18; L8500W, 525S - 975S L8250W, 25S - 900S L8000W, 25S - 975S

Loop size (approx), 1000m x 1000m.

Rx/Tx Settings:	Ramp	1.5 ms
-	Time Base	16.6 ms
	ZTS	1512.0
	Current	6 amps (peak to peak)
	Stacking	512

Variations in the western loop edges along L8750W (see maps in pocket at end of report) were due to impassible terrain or lack of cut lines due to same.

5. RECOMMENDATIONS

A preliminary examination of the results of the Surface PEM survey on the Horn Property indicates the presence of a moderately strong conductor approximately 100m north of the baseline on lines 7750W, 8000W, and 8250W.

A detailed interpretation of these results, and correlation to geological and geochemical data, is required before any specific recommendations could be made.

Respectfully Submitted,

Vim Hawkins

Jim Hawkins, Geophysicist

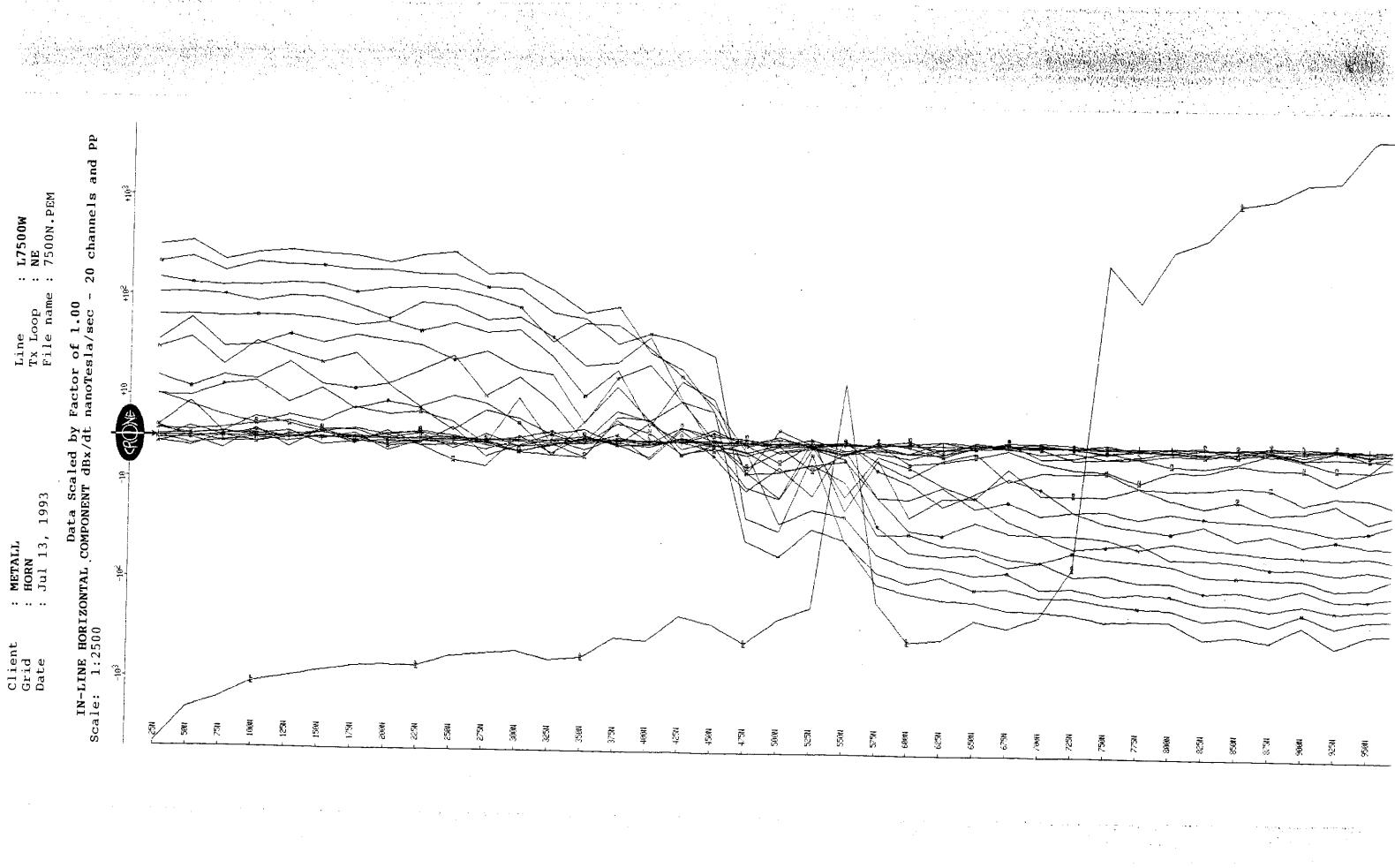
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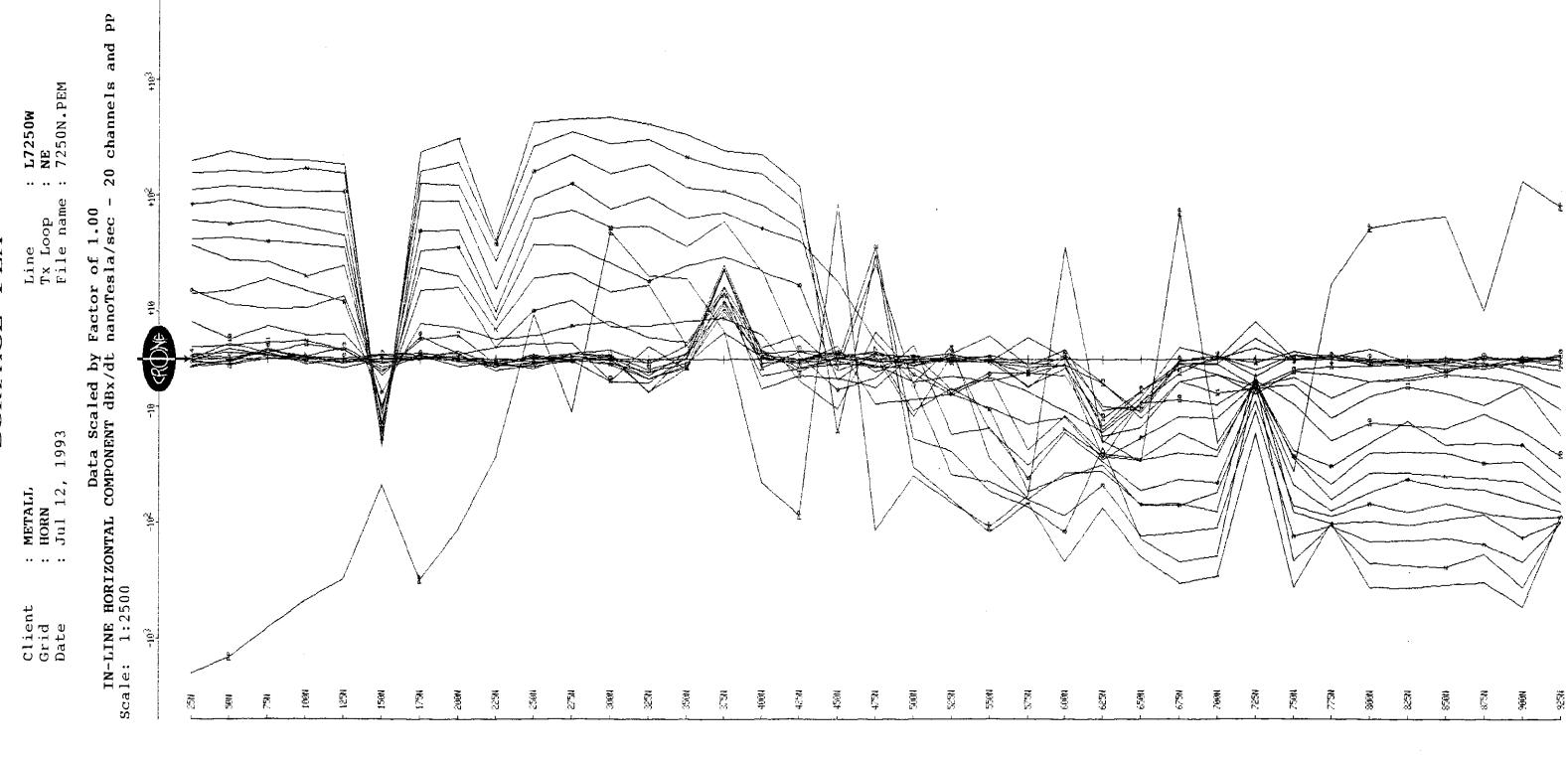
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<u>Pulse EM Profiles</u>

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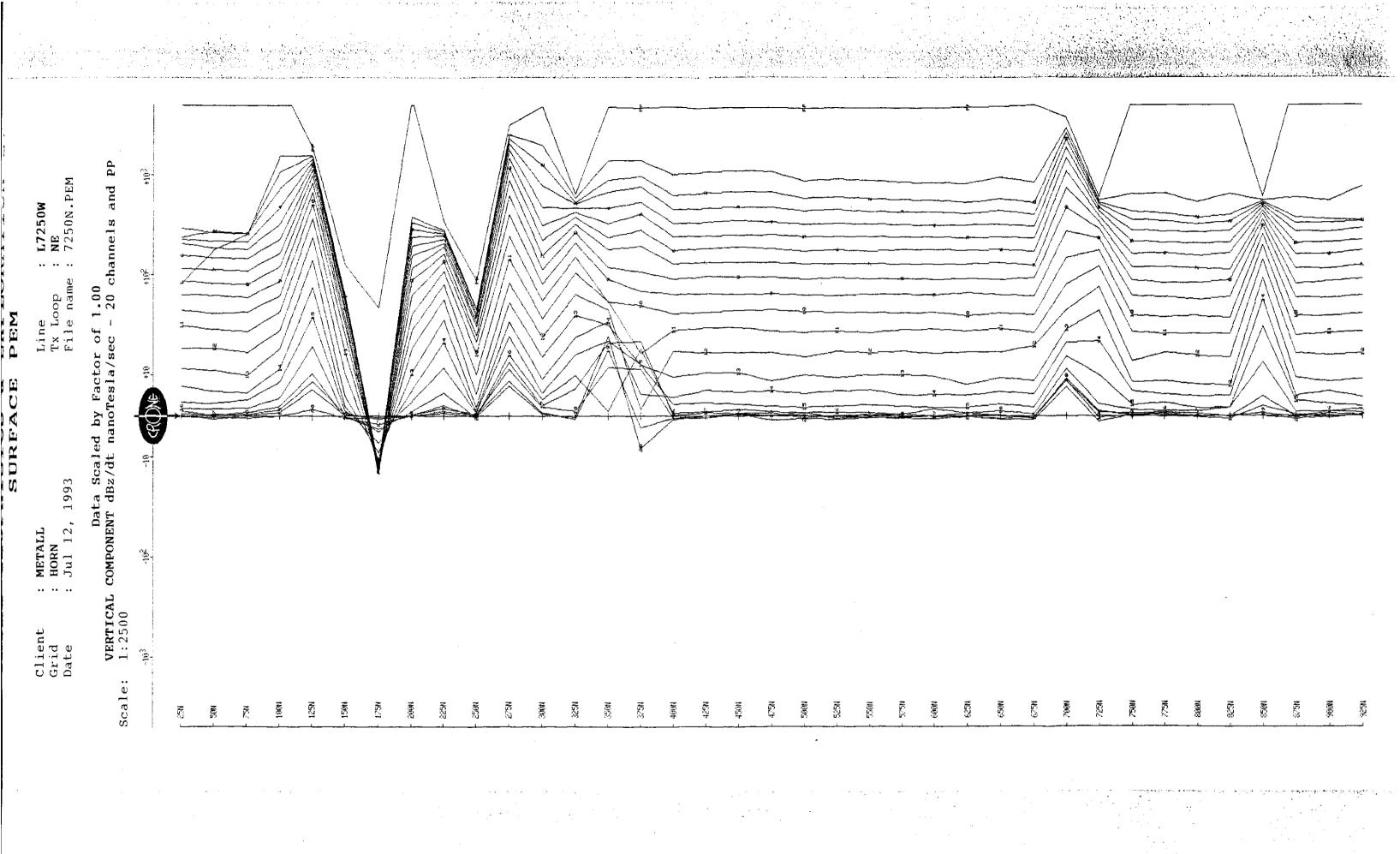


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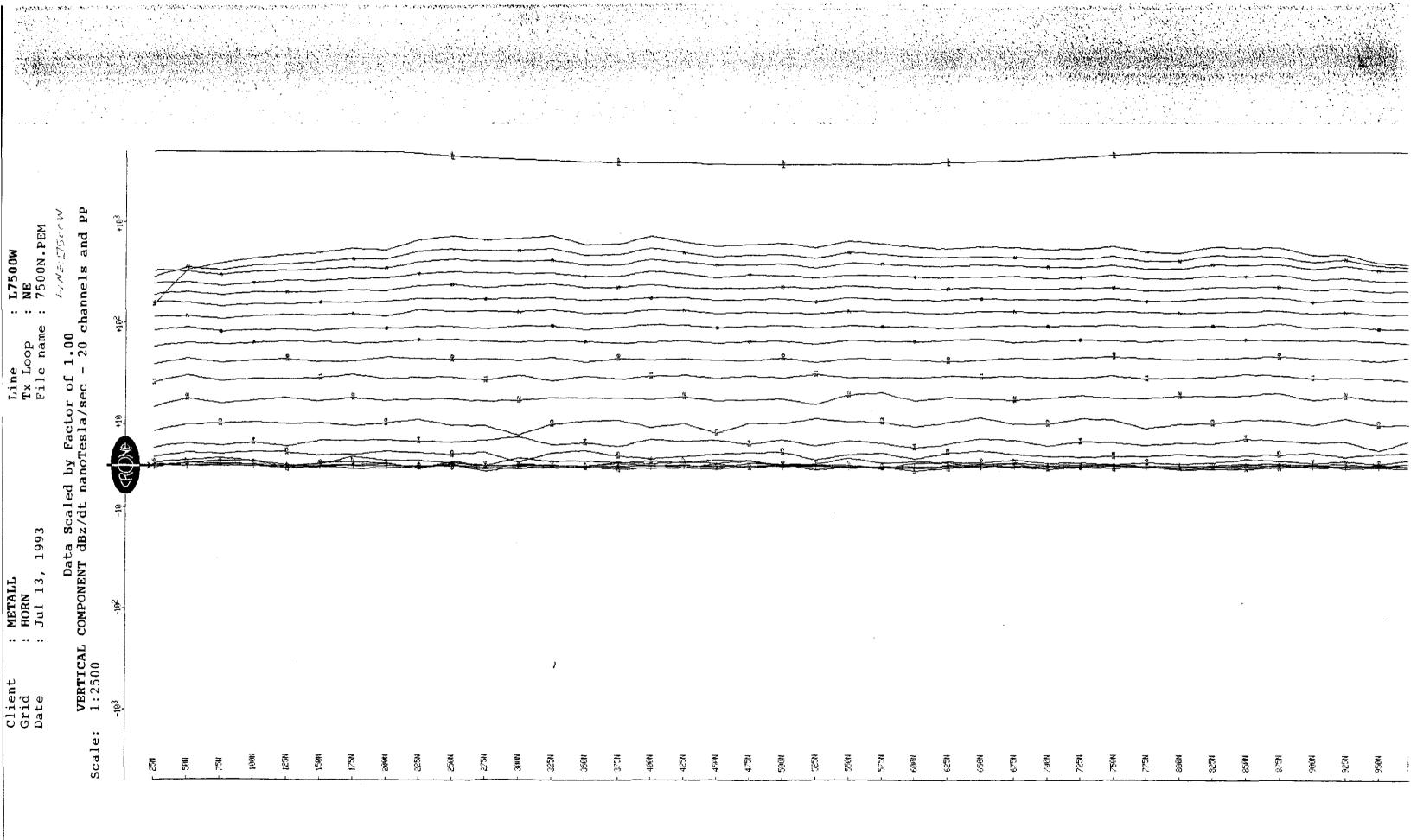
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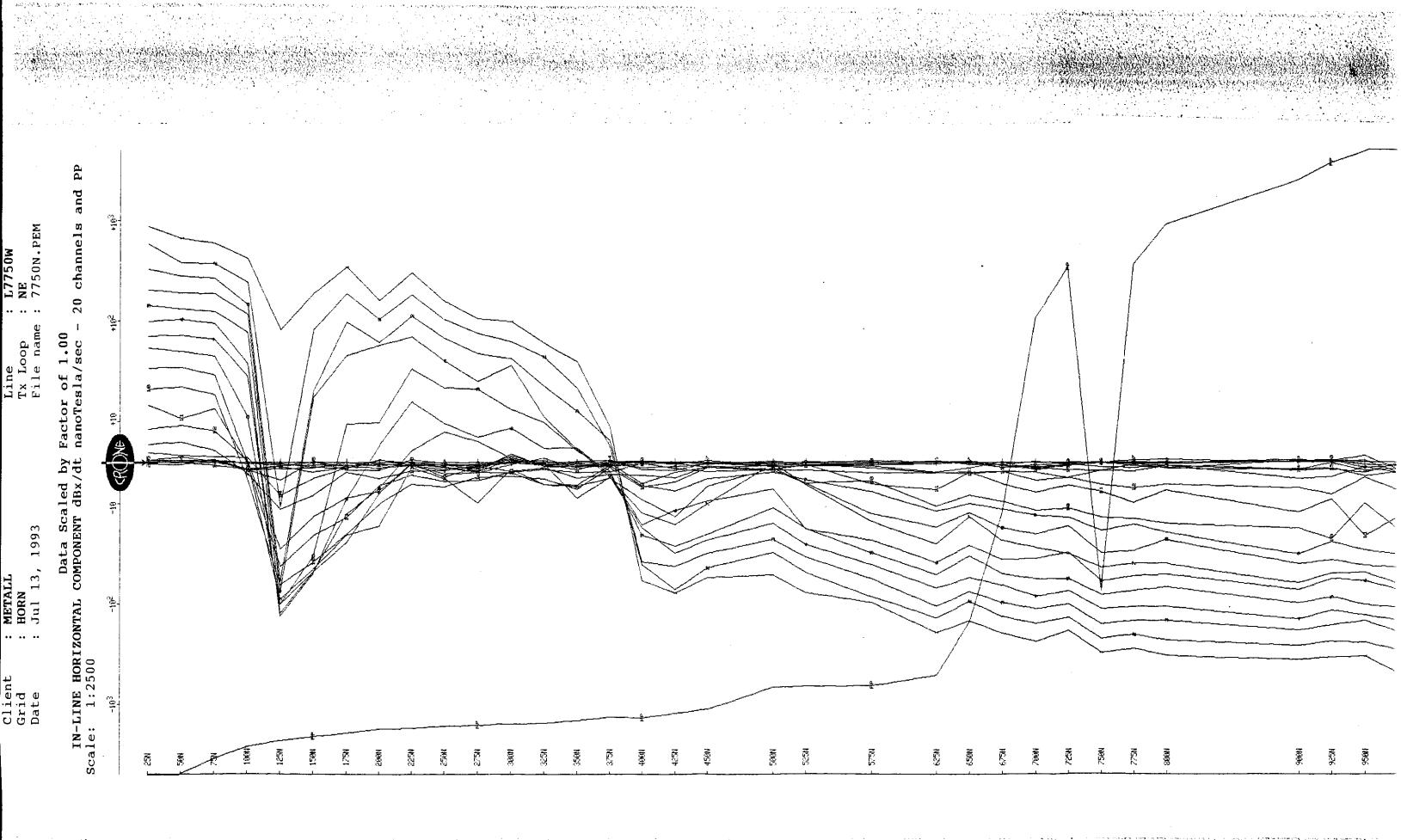
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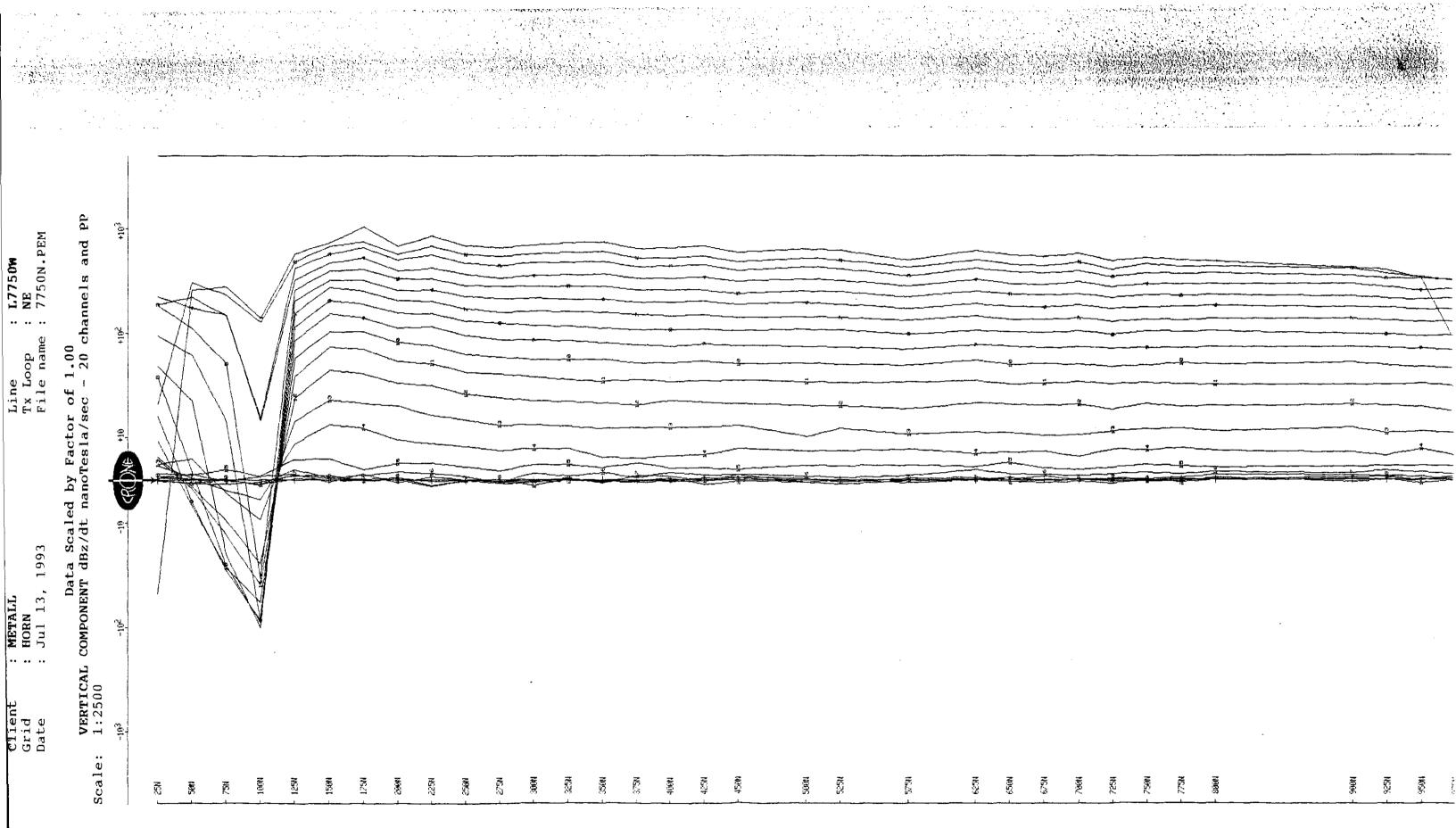


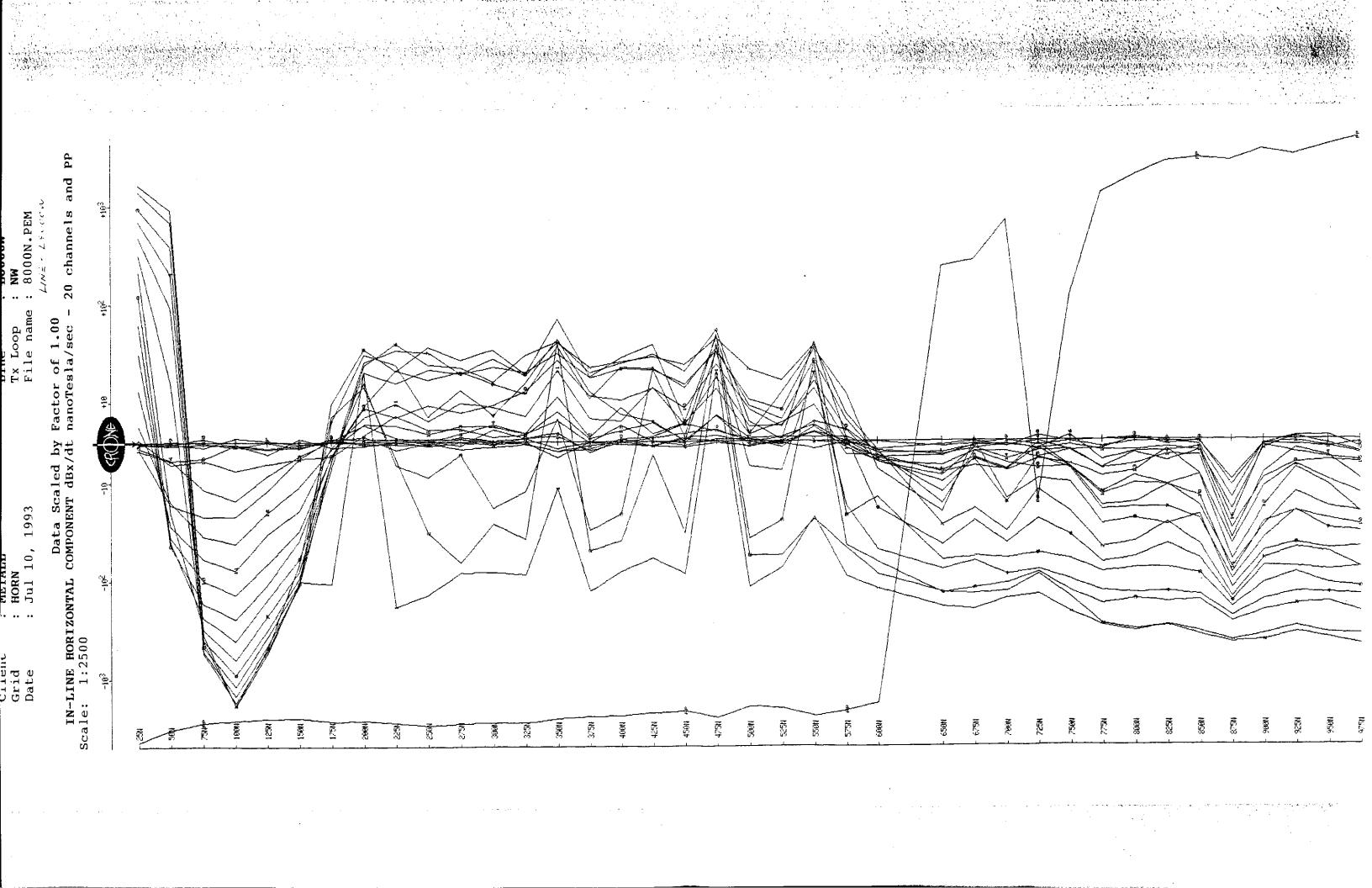
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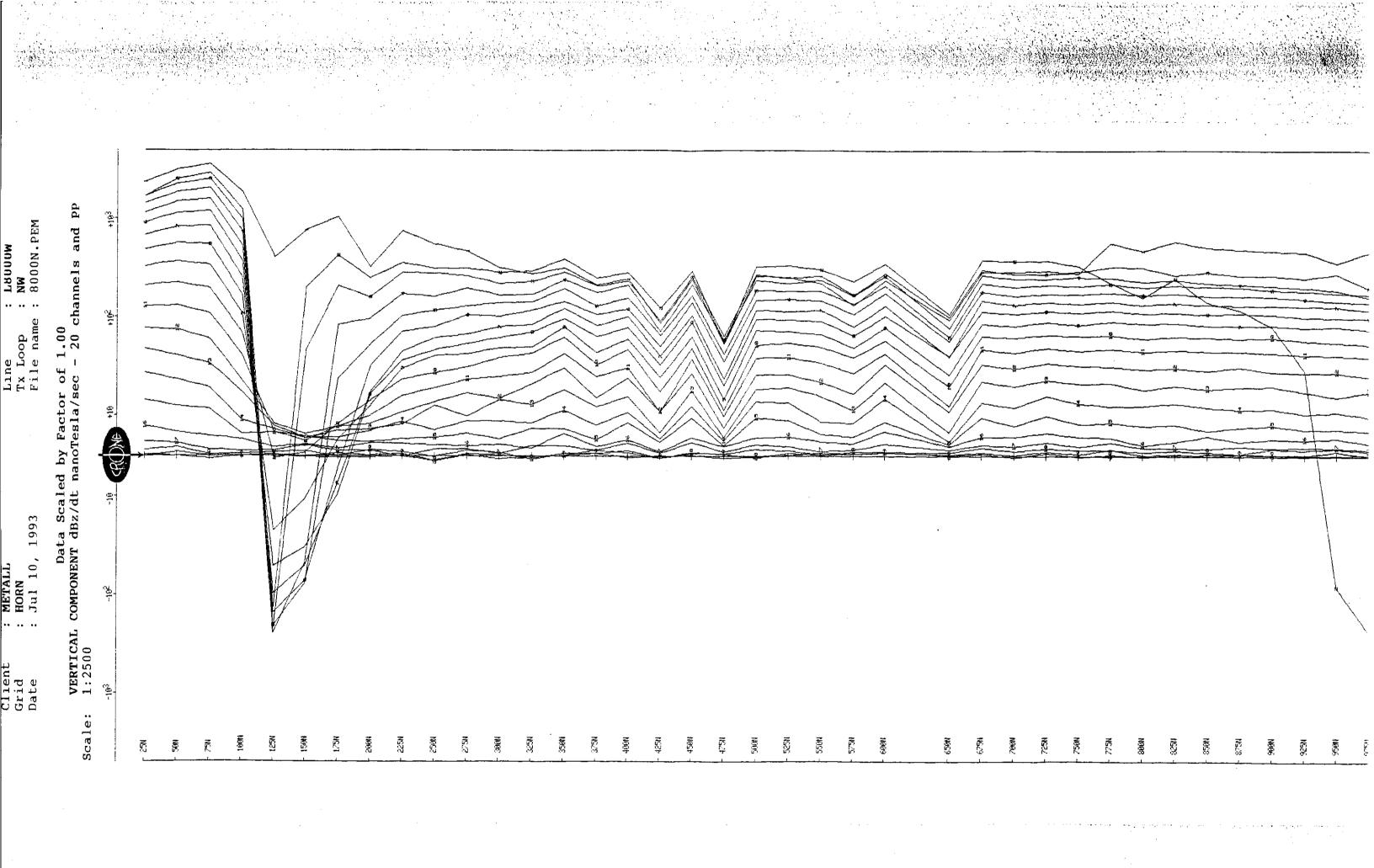


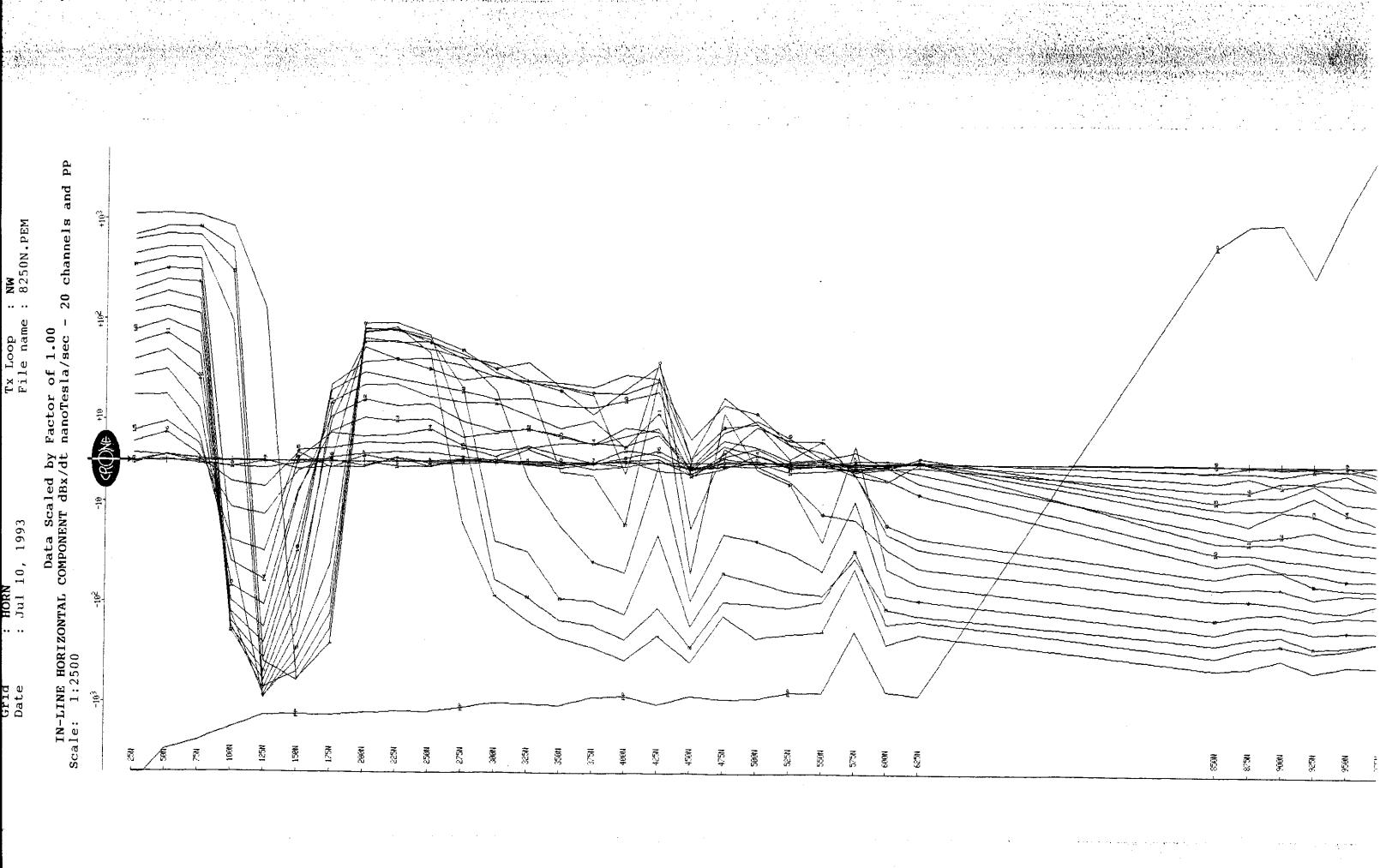
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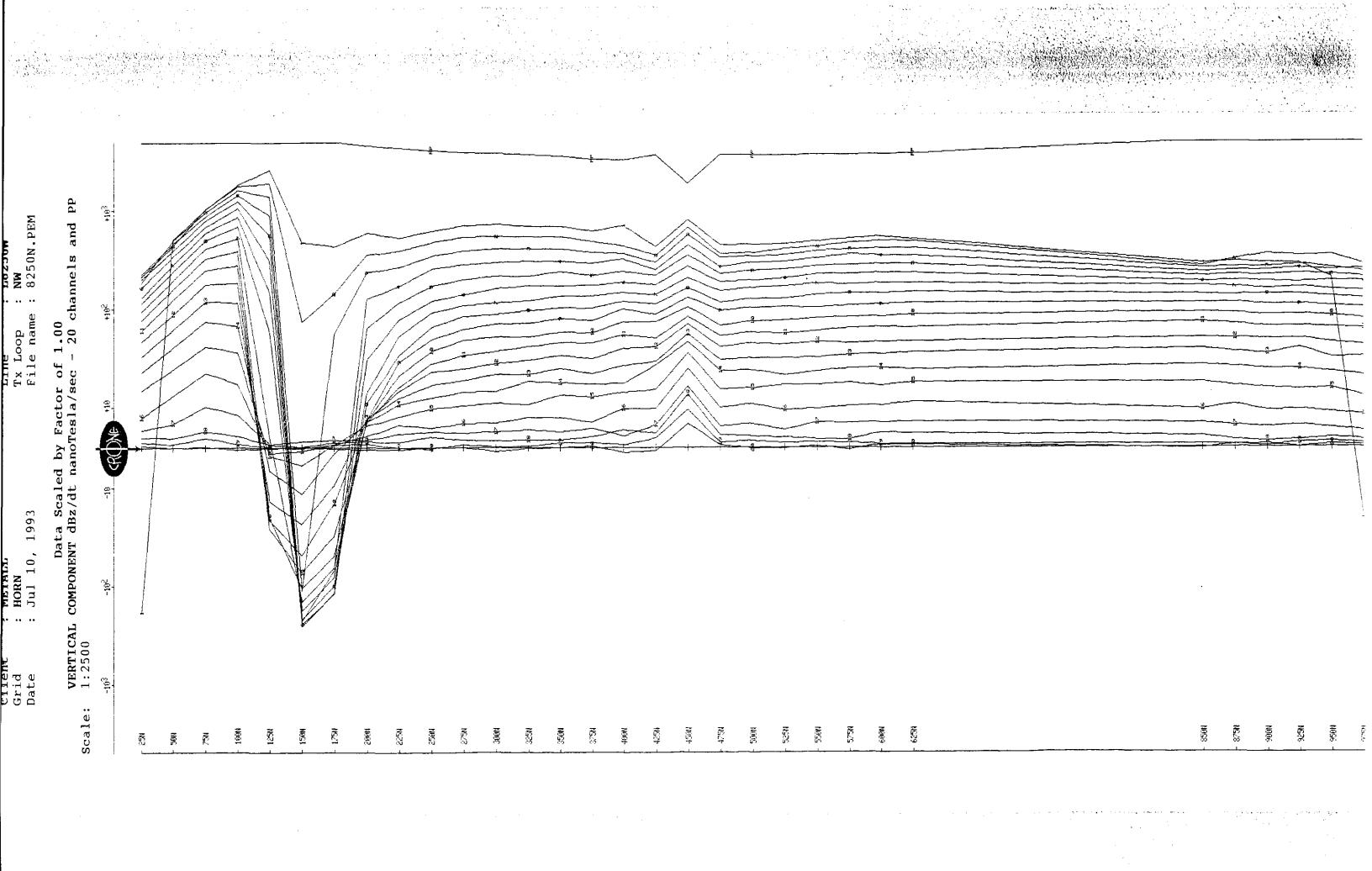


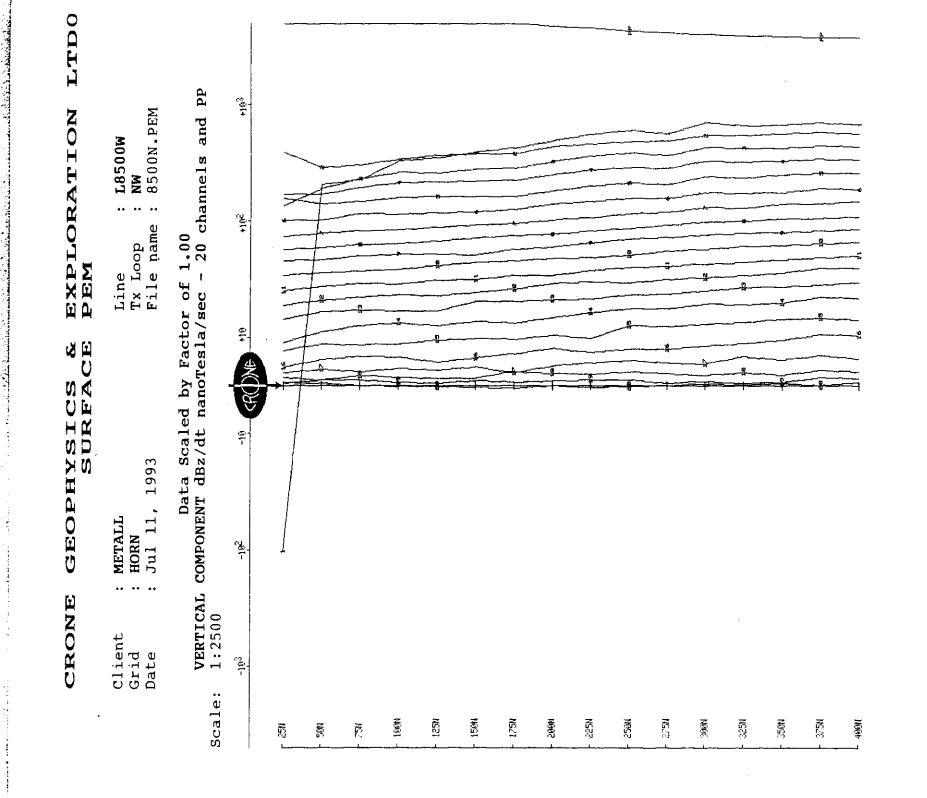


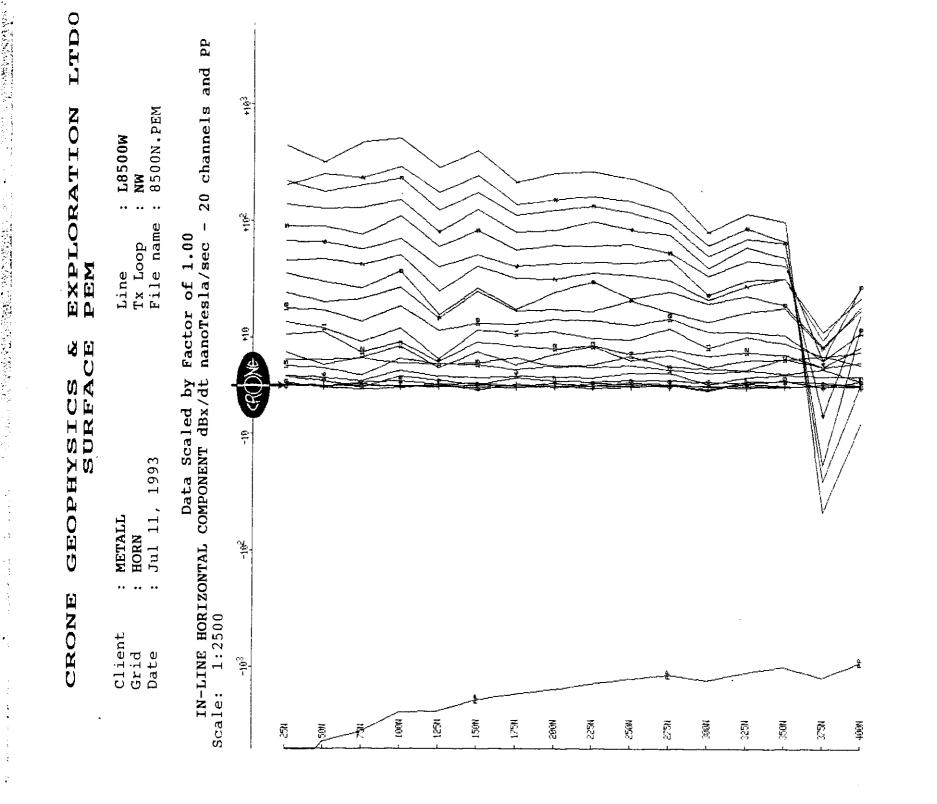


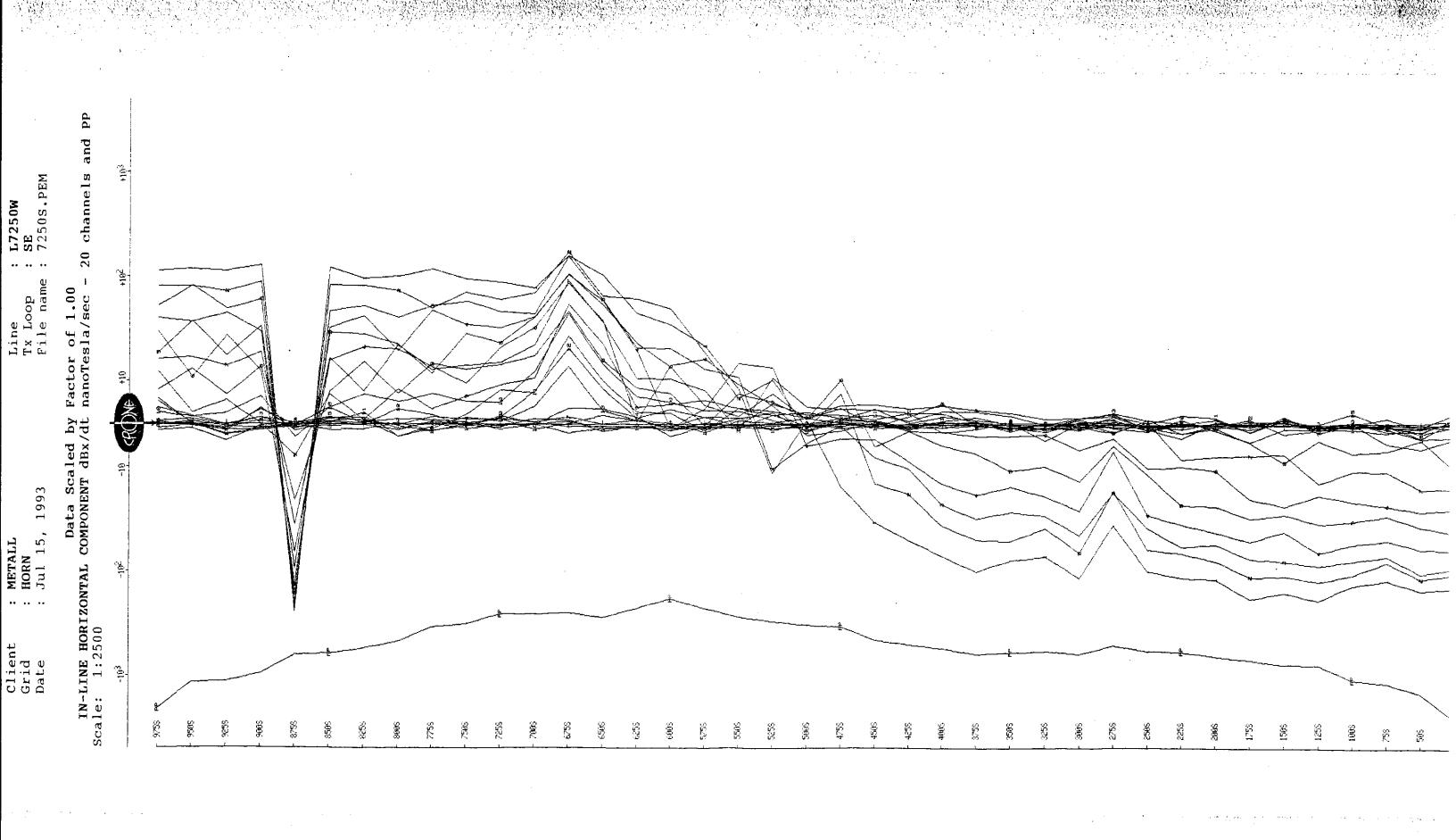






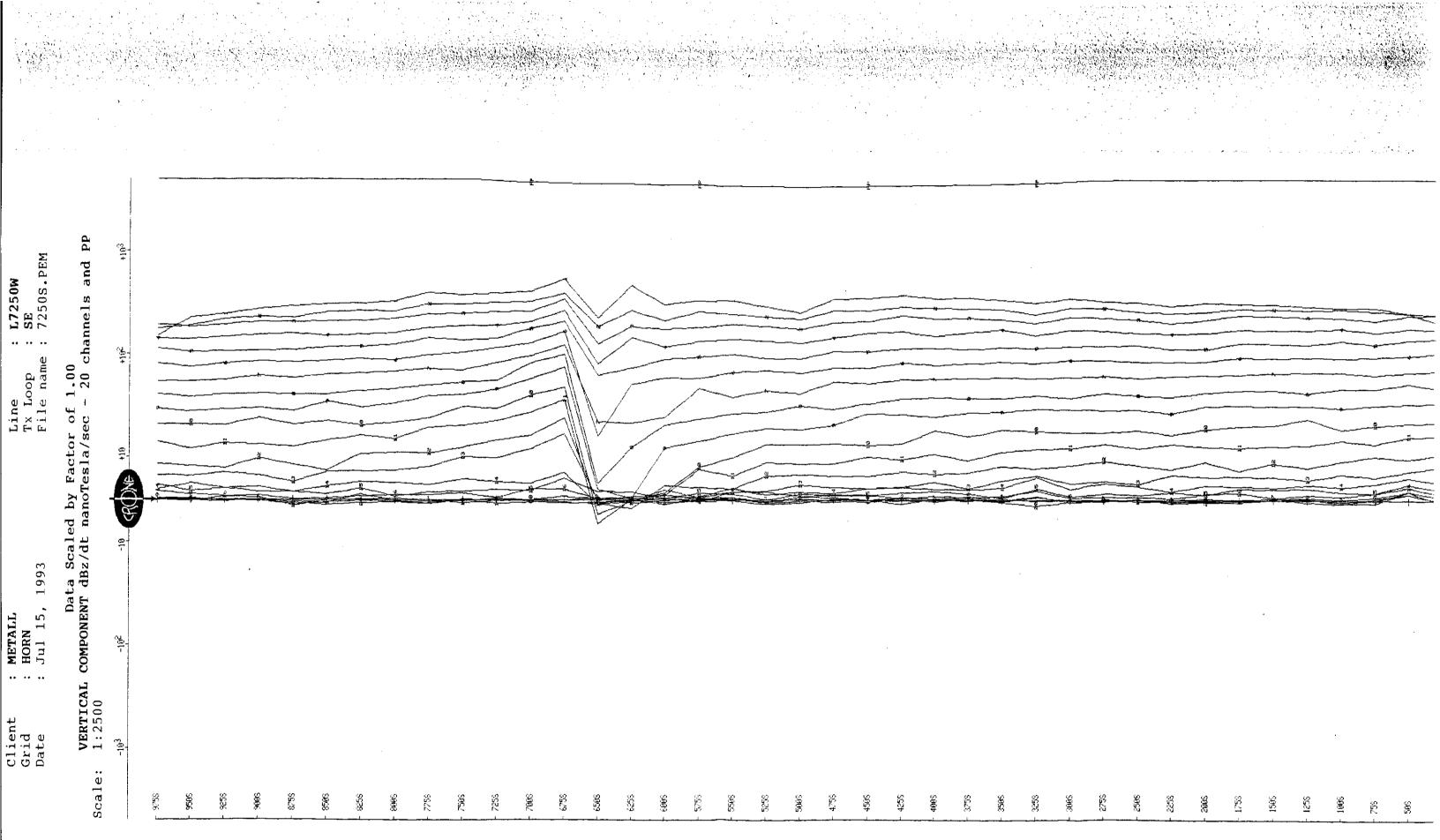


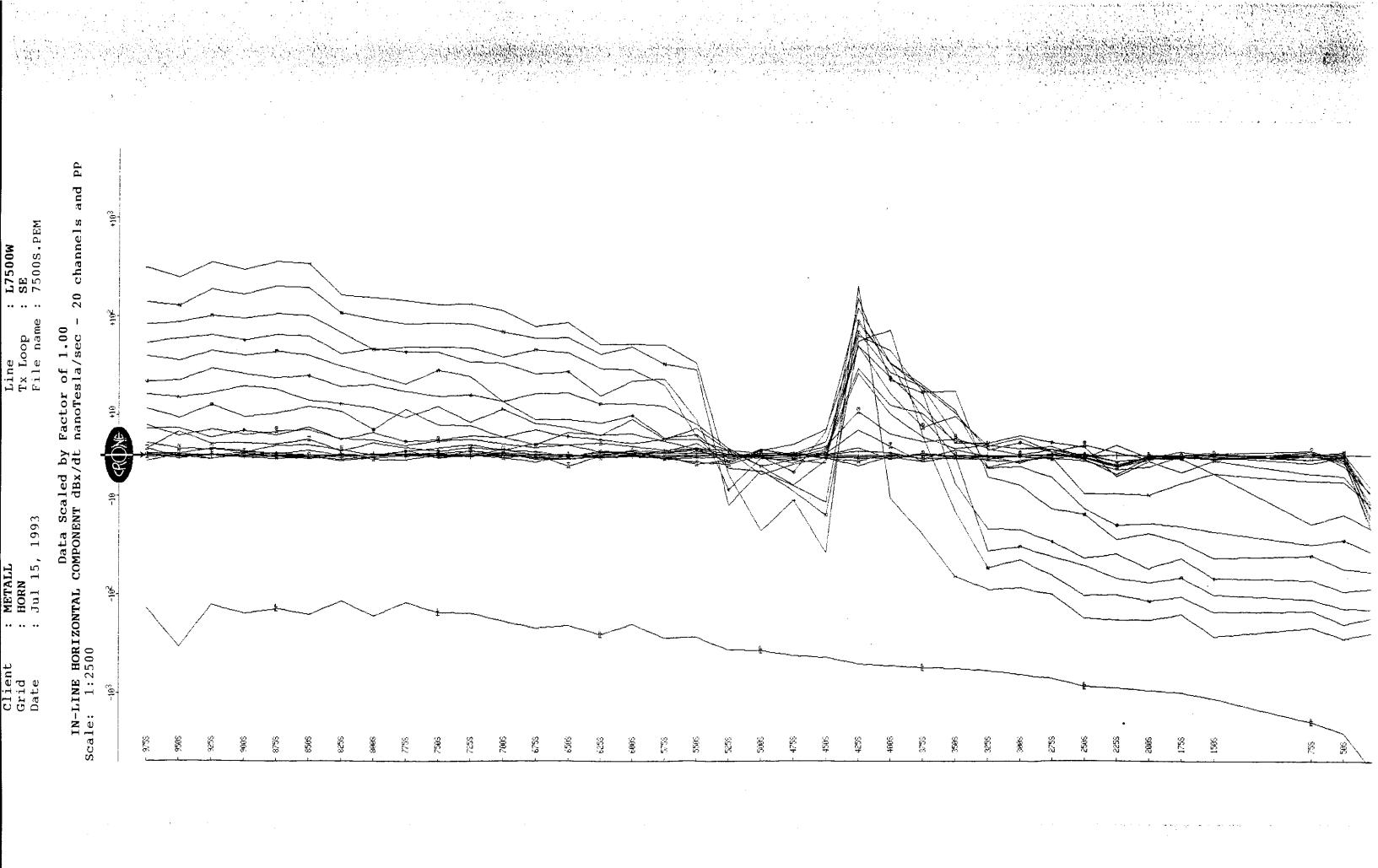


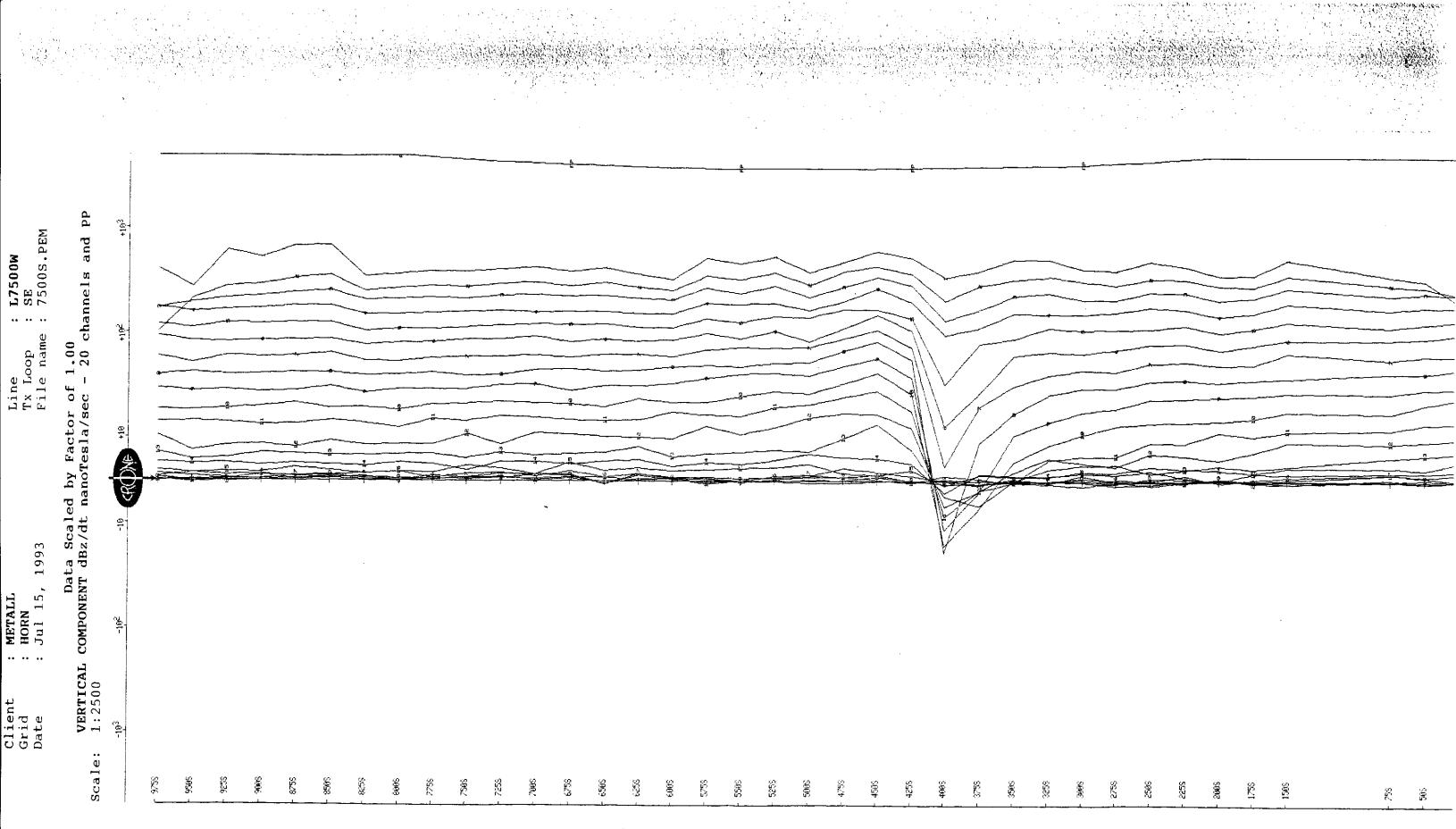


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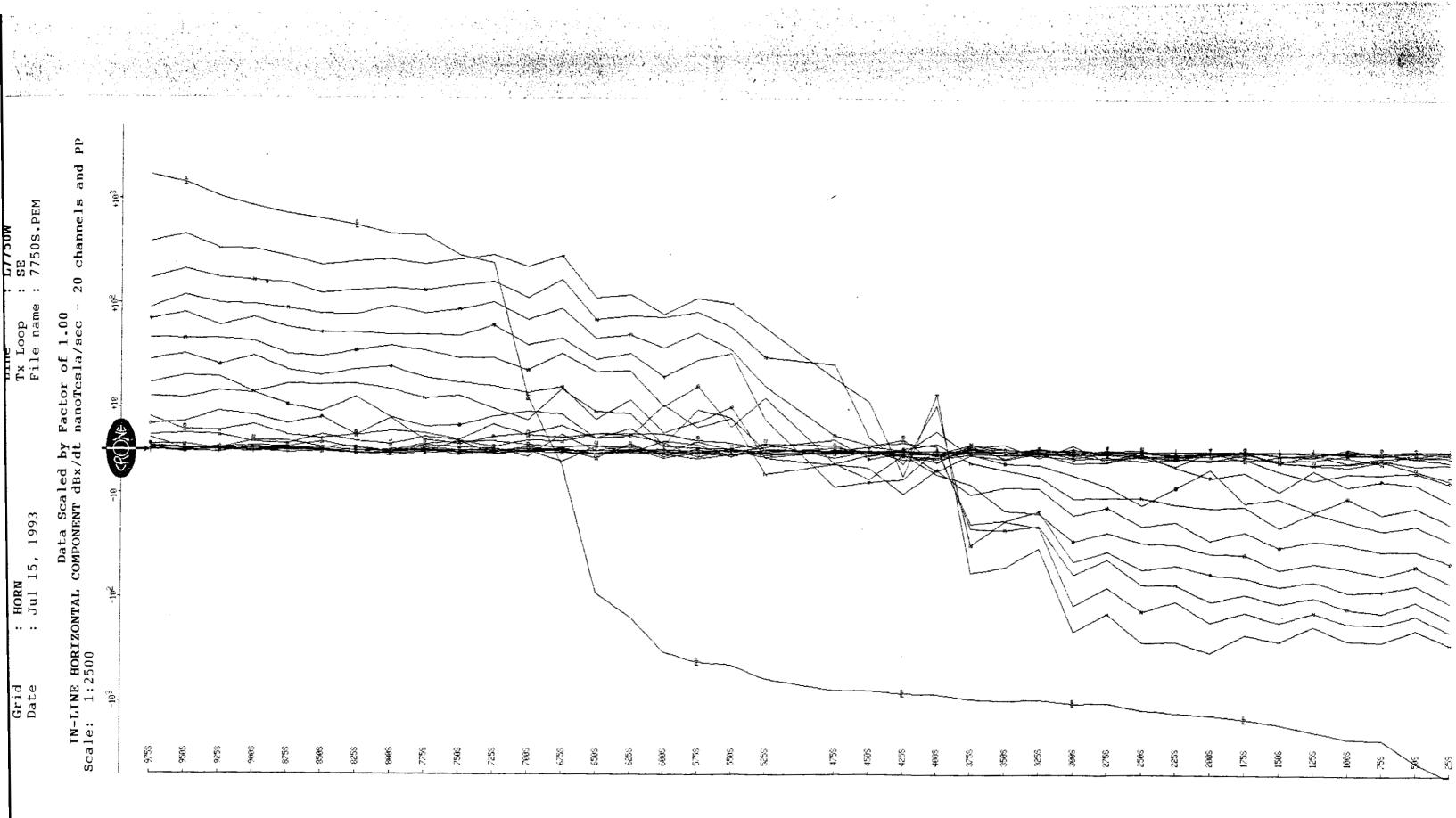
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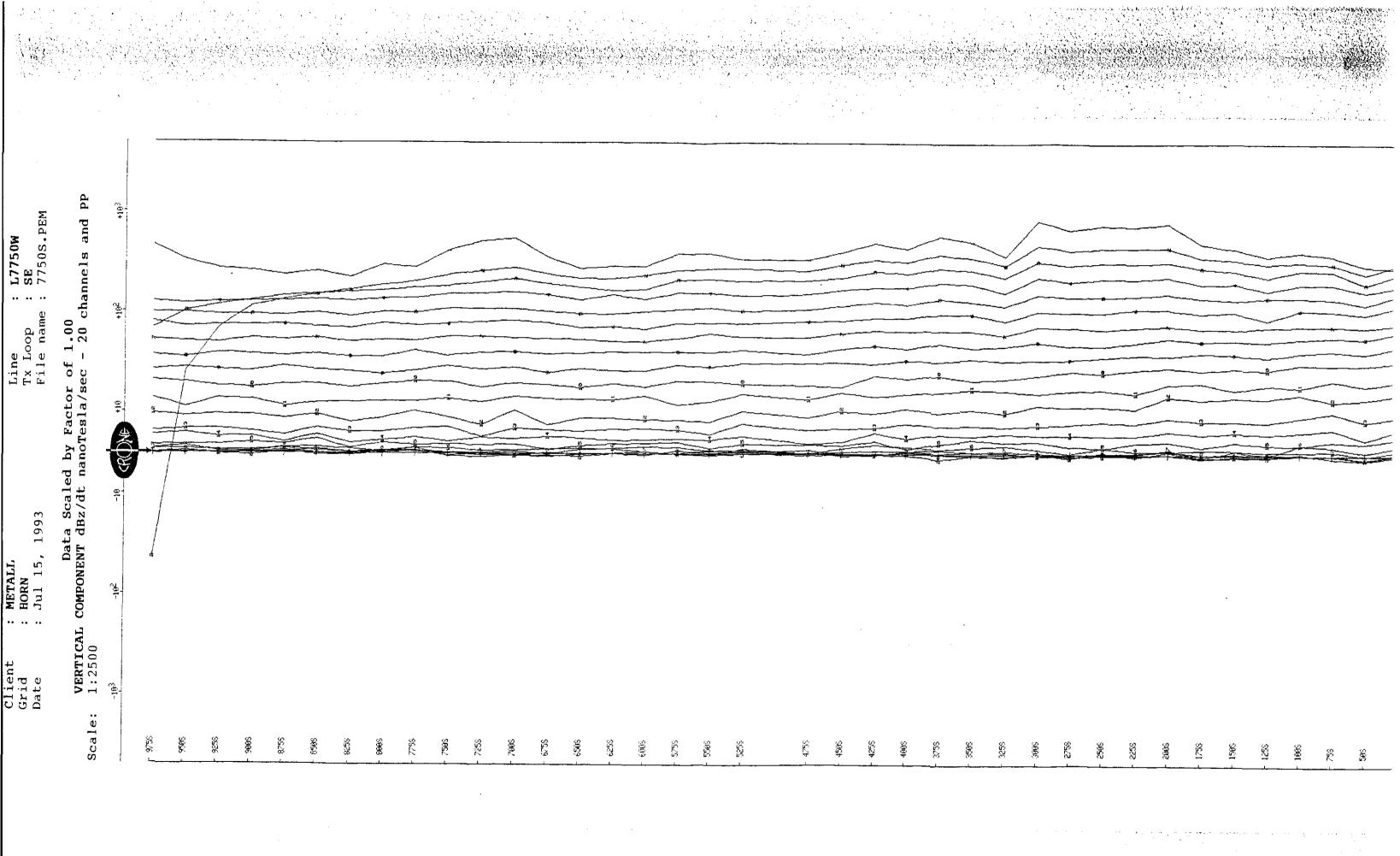


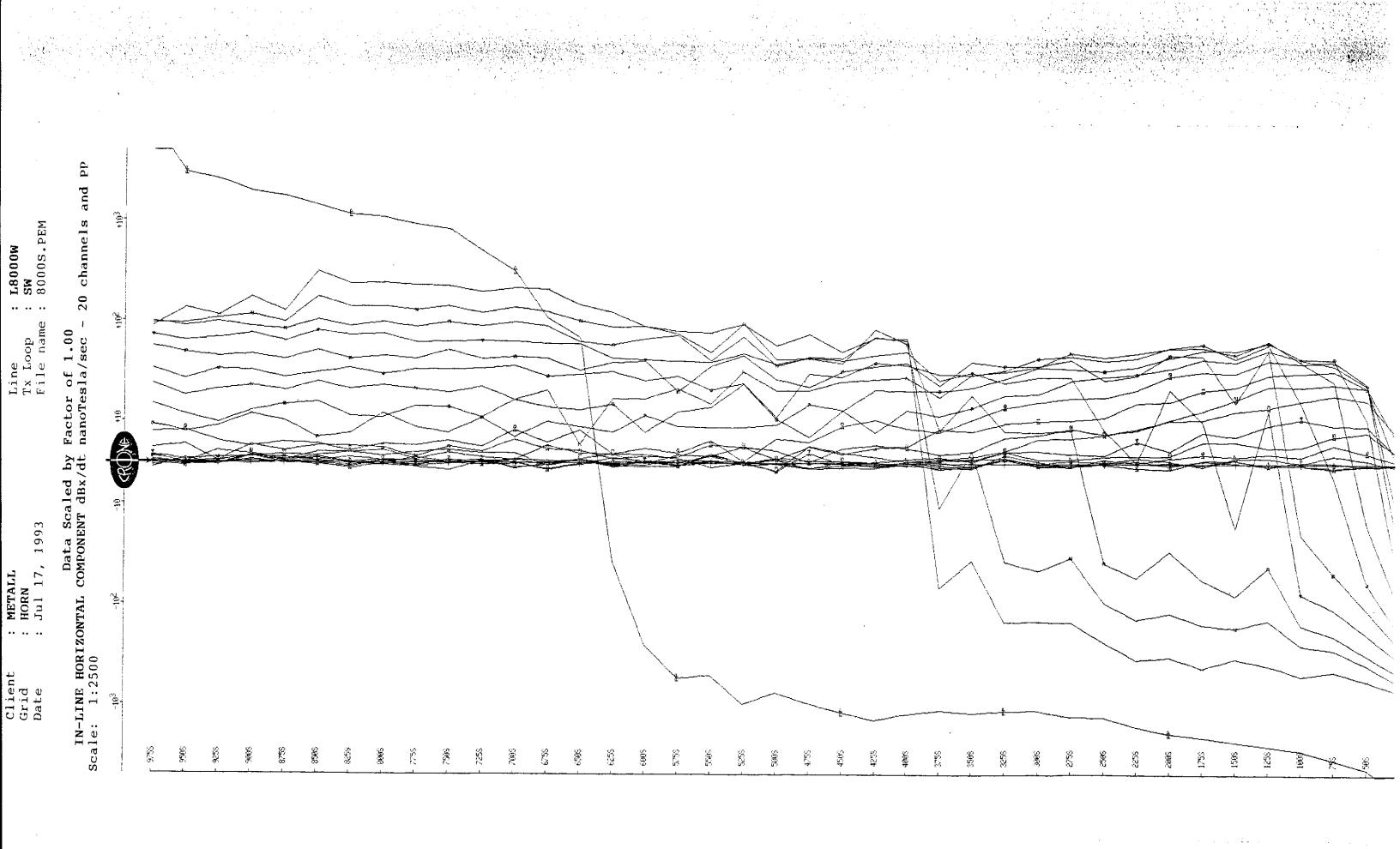
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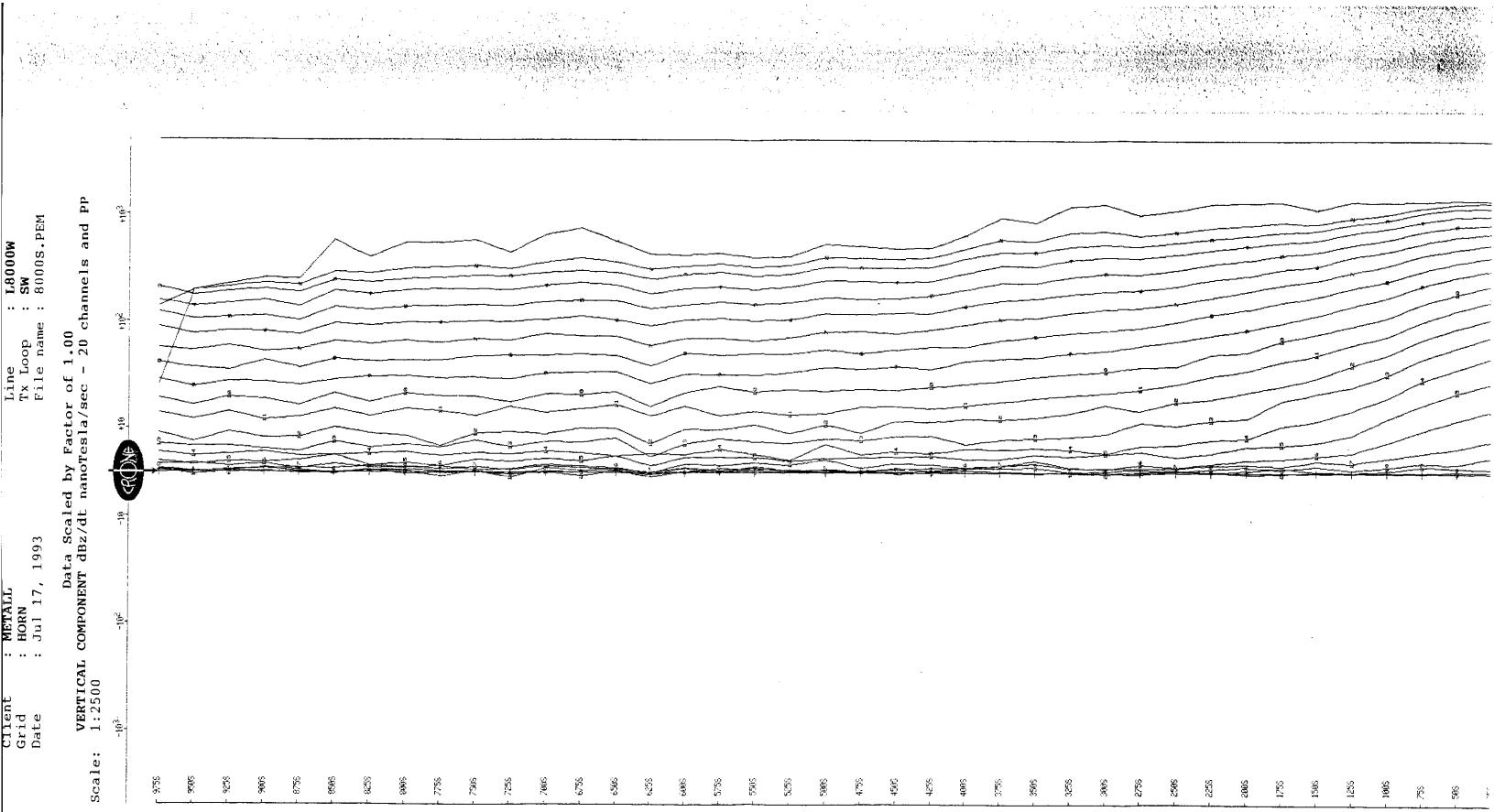


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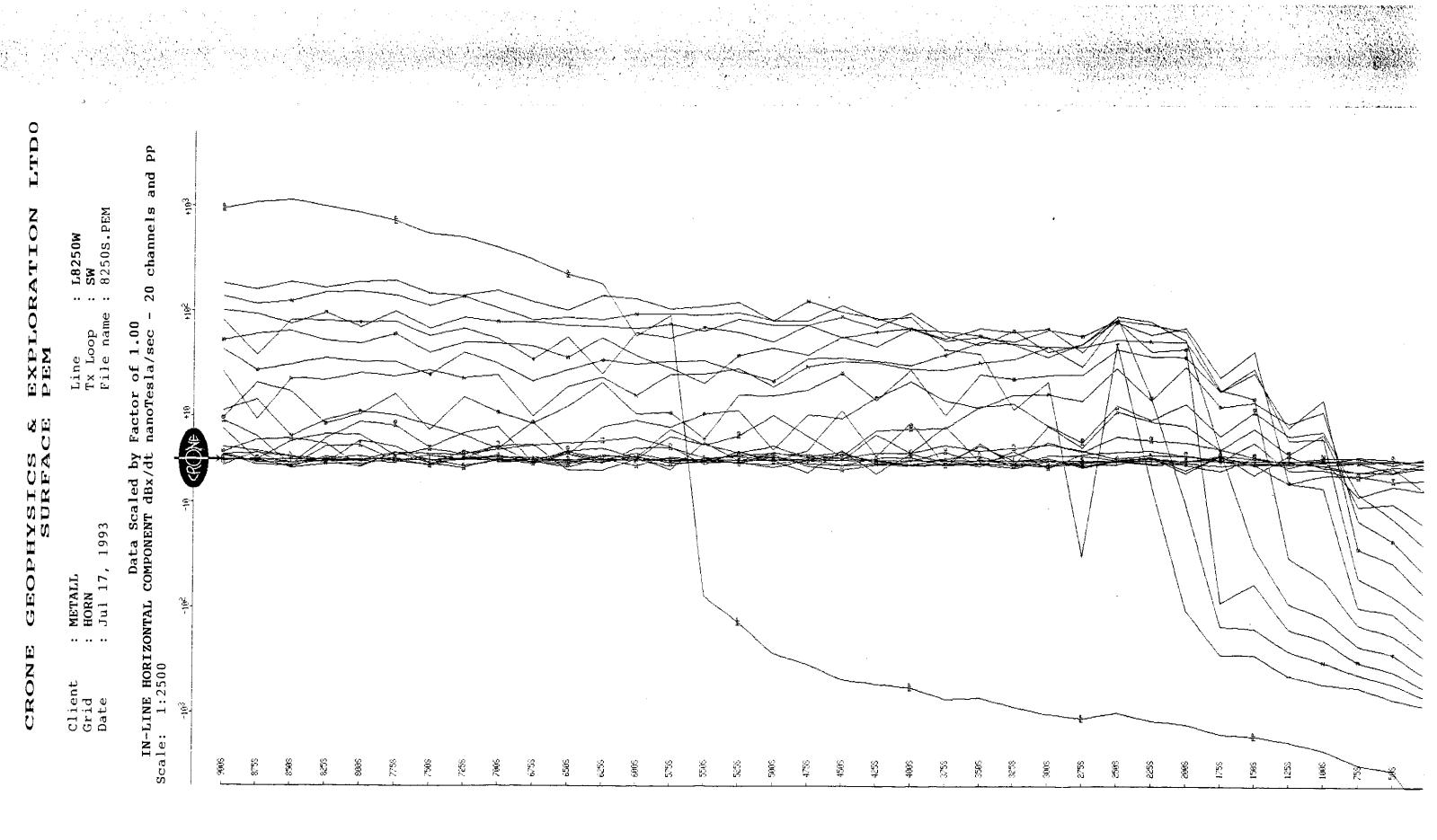
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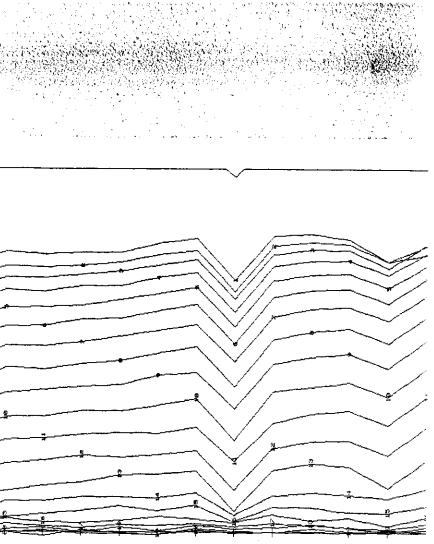


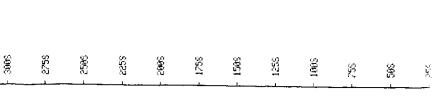
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Line : L8250W Tx Loop : SW File name : 8250S.PEM	ta Scaled by Factor of 1.00 dBz/dt nanoTesla/sec - 20 chan	-19 CRONE +18 +192 +192 +103												
	NE	-102												
: METALL : HORN : Jul 17,	VERTICAL CO 1:2500													

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