

004948

PROPERTY FILE

82M086 - 07

REPORT ON THE
SHUSWAP JOINT VENTURE PROJECT
COTTONBELT CLAIMS
1978

N.T.S. 82-M-7
~~Long~~ Lat. 118° 51' E ~~Lat~~ Long. 51° 22' N

Work Done During
July-August 1978

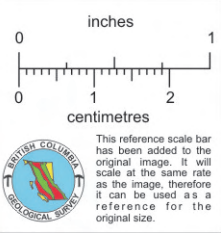
By:

F.-W. WELLMER

METALLGESELLSCHAFT CANADA LIMITED

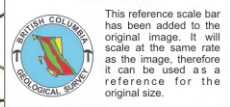
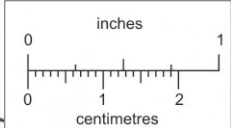
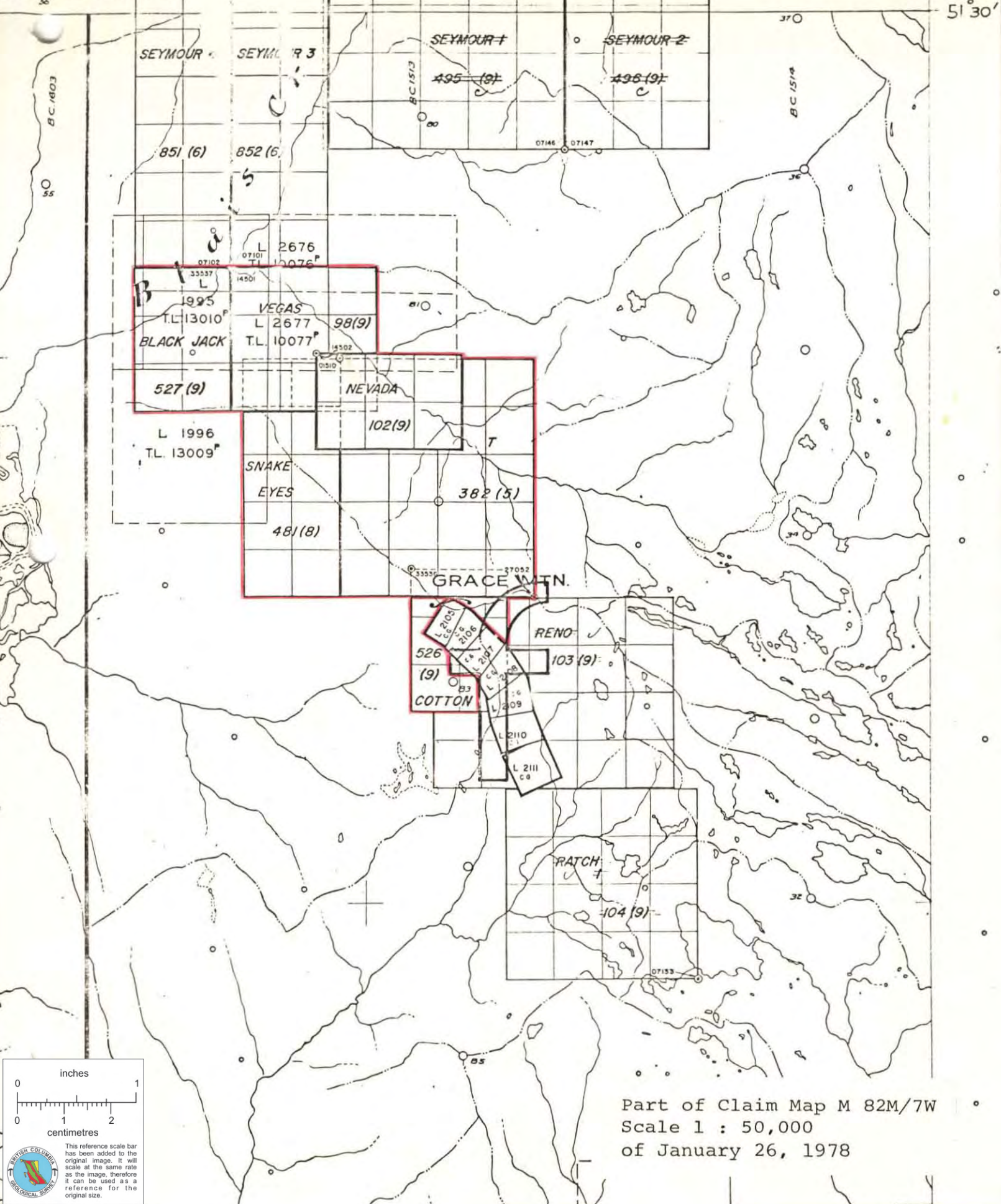
Vancouver, B.C.

November 1978



General Location Map
 Part of NTS Map 82 M
 - Seymour Arm -
 Scale 1 : 250,000

REVELSTOKE



Part of Claim Map M 82M/7W
 Scale 1 : 50,000
 of January 26, 1978

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- GEOLOGICAL MAP WITH LOCATION OF DRILLHOLES
- GEOLOGICAL SECTION ON LINE 13 + 50 N

1. SUMMARY

Work carried out on the GRACE Group during 1978 consisted of diamond drilling of two holes totalling 527 m and a downhole Pulse EM survey. The work was undertaken in July and August, 1978, on behalf of Metallgesellschaft Canada Limited (Vancouver) which, together with its partner Cyprus Anvil Mining Corporation, holds the above-mentioned claims under option.

The drilling contractor was H. Allen Diamond Drilling Limited of Merritt, B.C. The boreholes were of BQ size.

The core is stored on the property of Mr. and Mrs. McLaren, 50621 O'Byrne Road, Sardis, B.C.

The downhole Pulse EM survey was performed by J. Harrington of Crone Geophysics Limited of Mississauga, Ontario.

2. LOCATION AND ACCESS

The Grace Mountain/Cottonbelt area is located approximately 65 kilometres northwest of Revelstoke in the Kamloops Mining Division, N.T.S. 82-M-6.

Access to the property is primarily by helicopter from Revelstoke, although remains of the old haulage trail of the early 1900's could be followed from Seymour Arm.

3. INTRODUCTION

The drilling carried out in the Grace Mountain/Cottonbelt area during July/August 1978 was a follow-up of the 1976 and 1977 geological mapping and IP survey.

The exploration concept was to search in the Cottonbelt area for Ruddock Creek style structural deformation of the Shuswap type stratiform Pb/Zn mineralization with the consequent possibility of improved geometric and qualitative parameters of ore concentrated in a fold closure of a syncline.

Two parallel ore zones are known in the area: the Cotton horizon in the SW and the McLeod horizon in the NE.

Based on microlithostratigraphic studies by P. Levin (1976) and on a larger scale mapping program carried out by J. Kovacik (1977) it was concluded that both horizons are part of one folded horizon. A sequence of three marker horizons could be found proving the mirror images of the rock sequences at the Cotton horizon in the SW and at the McLeod horizon in the NE.

1. The sulfide horizon S_1 ,
2. A white-bluish clear marble horizon M_1 ,
3. A rusty marble horizon M_2 frequently containing allochthonous fragments, garnets and other calc-silicate bands as well as disseminated sulphides; by McMillan & Moore, 1974, this kind of marble encountered at other places was interpreted to be a carbonatite.

In 1977, an IP (pole-dipole survey) was done which detected a pronounced resistivity and chargeability anomaly (4 times background) improving towards depth. The IP results seemed to support the existence of a first steepening and then out-right back curving conductive body downwards which could be best interpreted as a synformal structure connecting the S_1 outcrops of the Cotton and McLeod zones.

4. WORK IN 1978

Two drillholes were drilled on location 1350 + 0° N, 1 + 75 W: DDH No. 1 at 46° to a depth of 317 m, DDH No. 2 at 80° to a depth of 210 m. Drillhole No. 1 was surveyed with a downhole Pulse EM system.

The ore bearing marble and calc-silicate sequence was encountered in both holes, however the ore horizon itself was reduced to a mineralized zone of only 5 centimeters. A steepening of the beds was not found to occur. The majority of structural evidence (dragfolds) indicated that the upper limb is an overturned limb which would corroborate the assumption of a syncline.

The downhole PEM measurements picked up a pyritic zone in the immediate hanging wall of the marble/calc-silicate series but not the ore sequence itself. The PEM measurements indicated that Drillhole No. 1 encountered an edge of a conductive sheet that is dipping 20° - 30° away from the drillhole (see report by J. Duncan Crone in Appendix). The IP effect is obviously caused by disseminated pyrite and, to a lesser degree, by chalcopyrite in the footwall of the marble/calc-silicate series. The intensity of these disseminated sulfides increases to depth as can be seen in Drillhole No. 2. This also corresponds with the results of the IP survey.

From the outcropping footwall series containing disseminated pyrite and chalcopyrite, soil samples were taken on three lines. The geochemical analyses did not yield anomalous results.

5. CONCLUSION

Geologically, most of the dragfolds corroborate the interpretation that the upper limb is overturned and that the fold therefore is a syncline.

Geochemically, the rusty marble considered to be a carbonatite was assayed for Niobium and the Rare Earth elements. The results were anomalous values, though of no economic consequence.

Geophysically, it may be concluded that there is no correlation between the intensity of the electrical effects which increase to depth and the degree of the mineralization in the ore sequence which decreases to depth.

For the time being, there does not seem to be a geophysical tool available at reasonable cost to locate the target of a fold closure.

Therefore, at this point, no further work is recommended within the scope of this joint exploration program.

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APP. I

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

PROJECT : Shuswap Joint Venture HOLE : Cottonbelt 1
 N.T.S. : 82 M 7 GRID Line 1350 N
 CO-ORDS. : 1+75 W
 LOCATION : Mt. Grace ELEVATION: 5,350 feet
 CLAIM : T, No. 382

DRILLED BY: H. Allen Diamond Drilling

CORE SIZE : BQ

START : July 7 , 1978

STOP : July 22, 1978

LENGTH : 317.15 m

LOGGED BY : J.C. Kovacik
 F.-W. Wellmer

DEPTH	DIP	AZ
0	46°	58°
34.0 m	44.5°	-
59.0 m	44°	-
68.5 m	44°	-
99.5 m	46.5°	-
124.0 m	43.5°	-
144.0 m	46°	-
179.0 m	46°	-
200.5 m	50°	-
213.0 m	51.5°	-
235.0 m	51.5°	-
259.0 m	55°	-
279.0 m	54°	-
298.0 m	54.5°	-
317.0 m	55°	73°

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 1 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
0	3.00	overburden	
3.00	6.05	Hornblende- Biotite Gneiss	Medium-grained with occ. garnets 3-5 mm, 20 cm medium-fine-grained quartzite band with biotite starting at 3.60 m.
6.05	6.30	Biotite- quartzite	Medium-grained with biotite flakes 2-3 mm
6.30	8.75	Biotite gneiss	Fine to medium-grained with occ. hornblende and garnets (2-3 mm) $S_1 = 75^\circ - 80^\circ$
8.75	9.35	Biotite quartzite	As above (6.05 - 6.30 m)
9.35	9.90	Biotite gneiss	As above (6.30 - 8.75 m)
9.90	10.05	Biotite quartzite	As above (6.05 - 6.30 m)
10.05	12.10	Biotite gneiss	As above (6.30 - 8.75 m)
12.10	12.30	Amphibolite	Medium-grained with rare garnets
12.30	20.40	Biotite gneiss	Medium-grained with occ. hornblende and occ. quartzite bands (20 - 50 mm thick)
20.40	20.50	Biotite	Pure biotite band, fine-grained
20.50	31.95	Hornblende- biotite gneiss	Medium-grained with varying proportions of melanocratic components and quartzite bands (10 - 20 mm), occ. garnets
31.95	32.25	Biotite quartzite	As above (6.05 - 6.30 m)
32.25	34.80	Biotite gneiss	Medium-grained with quartzite bands (10 - 20 mm thick)
34.80	35.05	Pegmatite	Quartz feldspar pegmatite, coarse grained

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 2 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
35.05	39.10	Biotite gneiss	Medium-grained, quartzitic with pyrite specks at 38.40 m
39.10	40.25	Biotite hornblende gneiss	Medium-grained
40.25	42.60	Biotite gneiss	Fine-grained
42.60	44.20	Biotite hornblende gneiss	Medium-grained
44.20	46.10	Biotite gneiss	Fine-grained
46.10	48.95	Biotite gneiss	Medium-grained 10mm quartz pegmatites with muscovite at 48.60 m
48.95	49.50	Biotite gneiss	Fine-grained
49.50	55.05	Biotite hornblende gneiss	Predominantly fine-grained, top 50 cm medium-grained, core angle at 50.50 m 80°
55.05	55.85	Amphibolite gneiss	With 20% quartz
55.85	57.35	Biotite hornblende gneiss	As above (49.50-55.05)
57.35	58.50	Biotite quartzite	Fine-grained, pale green - light greyish
58.50	61.80	Biotite quartzite	Quartzitic, green quartz band at 61.05 m
61.80	63.20	Quartz feldspar pegmatoides	Coarse grained

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 3 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
63.20	65.25	Biotite gneiss	Quartzitic, medium-grained
65.25	66.75	Biotite- muscovite gneiss	Medium-grained
66.75	67.50	Quartzite	Medium-grained with biotite, greyish
67.50	68.50	Biotite gneiss	Quartzitic medium-grained
68.50	70.45	Biotite gneiss	Medium-grained
70.45	73.20	Biotite gneiss	Fine-grained, quartzitic
73.20	76.35	Biotite gneiss	Medium-grained with occ. bands of quartzitic biotite gneiss
76.35	77.40	Quartz-feld- spar pegma- toide	Coarse grained, with muscovite
77.40	78.25	Biotite gneiss	Fine-grained, quartzitic
78.25	78.90	Biotite gneiss	Quartzite, medium-grained
78.90	86.25	Biotite- muscovite gneiss	Coarse grained
86.25	86.55	Biotite gneiss	Fine grained, quartzitic
86.55	87.40	Biotite- muscovite gneiss	As above (78.90 - 86.25)
87.40	87.90	Biotite gneiss	As above (86.25 - 86.55)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 4 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
87.90	92.00	Biotite-muscovite gneiss	As above (78.90 - 86.25) quartz-feldspar pegmatite at 90.30
92.00	95.40	Biotite gneiss	Quartzite, fine-grained with garnets up to 15 mm, increasingly quartzitic to bottom
95.40	96.45	Biotite quartzite	Fine-grained
96.45	96.90	Biotite gneiss	Medium-grained, quartzitic with garnets
96.90	100.80	Biotite gneiss/ biotite quartzite	Fine-grained, quartzitic biotite gneiss at top grading into biotite quartzite at bottom
100.80	103.15	Biotite-feldspar gneiss	Coarse grained, quartzitic
103.15	103.40	Quartzite	Fine-grained, biotite rich
103.40	105.25	Biotite quartzite	Medium-grained, banded, greenish, carbonate bands at bottom diss. pyrite at 104.25 and 104.75
105.25	111.65	Carbonate gneiss	Banded, irregular alternating patterns (20-10 cm) of biotite feldspar gneiss medium-grained with garnet blasts up to 15 mm, whitish medium-grained and fine-grained quartzite and greenish carbonates
111.65	114.55	Marble	Medium-grained crystalline, glassy-grey fine banding (5-10 mm) with biotite, muscovite, phlogopite
114.55	116.75	Biotite gneiss	Banded, calcareous

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 5 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
116.75	120.90	Marble	Medium-grained, crystalline, greenish-grey with biotite rich bands , occ. garnets in biotite rich bands with quartz, at 117.60 , 119.50 and 120.75 diss. pyrite
120.90	121.20	Calc-silicates	Banded with large garnets and biotite
121.20	121.80	Marble	Medium-grained with phlogopite
121.80	125.45	Marble	Medium-grained white-greyish with biotite aggregates (3-5 mm). Biotite has no orientation ("diorite marble") (acc. to Government geologists carbonatite) at 124.40 m diss. pyrite
125.45	126.40	Calc-silicate	Finely laminated rich in garnets (5-8 mm) sericite, biotite and needle-shaped hornblende
126.40	127.05	Quartzite	Finely banded, grey greenish
127.05	128.00	Calc-silicate	Banded, alternating with fine-grained quartzite
128.00	138.05	Quartzite	Finely laminated, fine-grained, whitish-greyish-greenish, with garnets and occ. bands of calcsilicates
138.05	139.85	Calc-silicates	In part rich in hornblende, almost amphibolitic, occ. small garnets
139.85	144.20	Marble	Coarse crystalline, white, slightly banded, with little phlogopite at the contacts
144.20	145.75	Quartzite	25 cm biotite, quartzite zone at top and bottom and white quartz pegmatoids in centre
145.75	150.00	Marble	Essentially marble, medium-grained, greenish with bands of biotite, quartz and calc-silicates (10-20 mm) quartz pegmatoids zone at 150.00 m

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 6 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
150.00	167.65	Carbonate-biotite gneiss	Medium-grained, from 162.30 to 162.50 m quartzite band, core angle at 150.00 m and 165 m 79°
167.65	168.15	Quartzite/ Marble	Interlayered laminated quartzite with garnets and medium-grained marble
168.15	170.00	Quartzite	Laminated, greenish with occ. garnets up to 15-20 mm
170.00	177.80	Quartzite	Garnetiferous, laminated, greyish garnets (5-8 mm)
177.80	179.40	Feldspar biotite gneiss	Coarse grained, quartzitic
179.40	187.80	Quartzite	Laminated, garnetiferous; garnet free zones from 180.75 to 181.60 and 186.70 to 187.80 marble bands at 179.75 and 181.60 coarse grained quartz pegmatoids at 182.15 and 185.70
187.80	187.85	Sulfide	lost as core, only as much as in broken bit, pyrite, chalcopyrite, sphalerite (4.85% Cu, 0.04% Pb, 3.40% Zn, 0.49 oz/to Ag)
187.85	194.05	Amphibolite	Essentially banded amphibolite, alternating with thin (3-5 cm) laminated quartzite bands and feldspar bands, occ. garnet blasts (10-15 mm). The unit has general appearance of amphibole-biotite-gneiss, diss. very fine-grained sulfide mostly in hairline fractures in hornblende-quartz-bands
194.05	197.00	Quartzite	Fine-grained, laminated with biotite rich zones, occ. garnets (1-2 mm), some epidote at 195.00 and 193.35 1-2 cm quartz pegmatoids core angle at 194.05 70°
197.00	199.10	Biotite gneiss	Quartzitic with feldspar blasts (~ 5%) elongated "flaser texture" Rhythmic zonation (0.5-3 cm) of feldspar rich and biotite rich zones; occ. garnets From 199.00 to 199.10 quartz pegmatoids zone.

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 7 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
199.10	204.75	Quartzite	Fine-grained, laminated, biotite rich with garnets (1-5 mm), grades locally into quartzitic biotite gneiss with feldspar blasts, some amphibolite layers (1-3 cm), core angle at 200.70 m 78°, at 203.80 diss. pyrite
204.75	205.80	Biotite gneiss	With muscovite and feldspar blasts (1 mm), locally abundant mica (soft consistency)
205.80	211.40	Quartzite	As above (199.10 - 204.75) , core angle at 207.80 m 76°
211.40	217.20	Biotite, feldspar-gneiss	Quartzitic, feldspar blasts (1 mm), some leucoxen , few hornblende (1-5 mm) hornblende layers, locally pyrite, pyrrhotite diss. and on fractures , core angle at 215.5 m 82°
217.20	221.50	Quartzite	Laminated, biotite rich, inhomogeneous, more leucocratic, more melanocratic zones changing frequently ; garnet blasts up to 10 mm; irregular zones with feldspar blasts (1-3 mm) elongated, from 218.70 to 218.82 biotite gneiss with garnets.
221.50	222.30	Biotite-muscovite gneiss	With feldspar blasts (1 mm)
222.30	232.50	Quartzite/ biotite-muscovite gneiss	Interlayered zones (5 to 80 cm) of a) quartzite, laminated with garnets b) biotite-muscovite-gneiss with feldspar blasts elongated (1 mm) in quartzite occ. hornblende layers with big garnets (10 mm) from 226.60 to 226.71 quartz pegmatoides
232.50	234.20	Biotite-muscovite gneiss	Predominantly mica (soft consistency), some zones (5-10 cm) feldspar-quartz rich, muscovite 2-10 mm, bluish tint
234.20	235.70	Biotite gneiss	Inhomogeneous unit of 3-10 cm zones of a) biotite-muscovite gneiss with garnets as above (232.50 to 234.20 m) b) biotite gneiss, quartzitic

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 8 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
			c) amphibolite with garnets up to 10 mm d) biotite rich quartzite
235.70	238.60	Amphibolite	With 5-30% leucocratic minerals and 0-15% garnets up to 10 mm, from 236.10 to 236.40 biotite-muscovite gneiss and biotitic quartzite, core angle at 237.25 79°
238.60	239.30	Biotite gneiss	Medium-grained, locally coarse grained, garnet rich (~15%)
239.30	240.60	Biotite gneiss	Coarse grained, with garnets, upper part muscovite rich; from 240.10 to 240.30 biotite-feldspar pegmatite
240.60	241.15	Amphibolite up to 10 mm	Coarse grained with garnets and 5-10% leucocratic minerals; unit has at top and bottom fine-grained biotite gneiss zone with garnets (meta sill?)
241.15	244.60	Biotite gneiss	Coarse grained, locally muscovite rich, feldspar blasts (3 mm) and quartz rich; from 242.80 to 243.05 biotite (chlorite)-quartzite with 3 cm quartz pegmatite in centre
244.60	246.60	Quartzite	Laminated, medium grained, generally biotite rich, locally garnet blasts (3 mm), some hornblende blasts (up to 10 mm) connected with recrystallized quartz zones; core angle at 244.65 79°
246.60	253.65	Biotite-muscovite gneiss	Coarse grained, muscovite irregularly distributed, locally garnet blasts (5 mm), feldspar and quartz blast layers (0.3-1 cm) throughout, some recrystallized quartz layers (1-3 cm); texture generally flaser like
253.65	254.85	Quartzite	Laminated, biotite rich local concentrations of garnet, some zones (1-2 cm) chloritic or amphibolitic or with feldspar blasts, elongated (5 mm); core angle at 253.80 m 78°
254.85	259.00	Biotite-muscovite gneiss	As above (246.60 to 253.65 m)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 9 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
259.00	260.15	Garnet-amphibolite	Massive rock, no foliation, fractures filled with chlorite, upper contact zone biotite rich, lower contact zone coarse grained quartz with biotite
260.15	267.55	Biotite muscovite gneiss	As above (246.60 to 253.65) ; from 263.40 to 264.65, 263.80 to 263.90, and 264.80 to 265.25 biotitic quartzite, laminated
267.55	268.00	Pegmatite	Zoned with quartz, biotite, garnet, hornblende and muscovite
268.00	273.85	Biotite-muscovite gneiss	As above (246.60 to 253.65); from 271.00 to 271.50 abundant coarse quartz "knauern"; from 272.50 to 272.70 quartzite with garnet and biotite; core angle at 271.20 m 80°
273.85	274.20	Quartz pegmatoides	With biotite layers, pyrite on fractures
274.20	282.90	Biotite muscovite gneiss	As above (246.60 to 253.65); from 278.65 to 278.80 discordant zone of chloritic alteration with diss. pyrite, from 278.80 to 279.00 two zones of quartz pegmatoides, at 274.50 dragfolding; core angle at 283.10 78°
282.90	286.75	Biotite	Alternating zones (5-20 cm) of a) biotite-muscovite gneiss as above (246.60 to 253.65) b) biotite gneiss, medium-grained, quartzite with garnets (1-3 mm) from 285.70 to 285.84 quartz pegmatoides traces of pyrite throughout
286.75	287.10	Quartz pegmatoides	With biotite, garnets, some chlorite

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 10 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
287.10	287.60	Biotite gneiss	Inhomogeneous, some coarse, some medium-grained; loc. quartz and feldspar rich, or hornblende rich, garnet blasts
287.60	288.35	Quartzite	Laminated with biotite and garnet, traces of pyrite and chalcopyrite; core angle at 288.00 77°
288.35	288.90	Biotite muscovite gneiss	As above (246.60 to 253.65)
288.90	289.95	Quartzite	Laminated with biotite and garnet blasts traces of pyrite and chalcopyrite
289.95	291.05	Biotite-muscovite gneiss	As above (246.60 to 253.65)
291.05	291.60	Quartzite	Laminated with biotite and some garnet top 2 cm recrystallized; from 291.40 to 291.45 coarse grained hornblende with quartz
291.60	292.10	Biotite-feldspar gneiss	Coarse grained, quartzitic
292.10	298.30	Biotite quartzite	Laminated, medium-grained, locally garnets 5 - 40 cm zone of dark and light grey quartzite; various bands (0.3-5 cm) of quartz pegmatoides, traces of pyrite, pyrrhotite, chalcopyrite, diss. and in fractures throughout; from 297.00 to 297.60 zones with chlorite and hornblende; core angle at 296.80 72°
298.30	300.90	Biotite muscovite gneiss	As above (246.60 to 253.65)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 1

SHEET 11 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
300.90	304.10	Biotite gneiss/ biotite quartzite	Alternating zones (0.5 - 30 cm) of a) biotite-muscovite gneiss as above (246.60 to 253.65) b) biotite quartzite, medium-grained, laminated with garnets locally layers and lenses of mobilized quartz (0.3 - 2 cm); ratio of biotite-muscovite gneiss: biotite quartzite = 3:5; locally traces of pyrite, mainly in quartzite; at 301.60 dragfold; core angle at 303.75 78°
304.10	306.20	Biotite-muscovite gneiss	As above (246.60 to 253.65)
304.20	309.65	Biotite gneiss/biotite quartzite	As above (300.90 to 304.10), ratio 1:1; dragfold at 307.60 and 307.95
309.65	310.50	Biotite gneiss to biotite quartzite	Upper part biotite gneiss, quartzitic, grades into biotite quartzite, medium-grained with garnets and hornblende
310.50	316.60	Biotite-muscovite gneiss	As above (246.60 to 253.65); locally quartzite textures (5-10 cm); zones of recrystallized quartz throughout; intensive dragfolding throughout (1-5 cm); some "gleitbrett" textures
316.60	317.15	Biotite quartzite/biotite gneiss	Biotited quartzite, laminated, medium-grained (2 - 5 cm) interlayered with biotite gneiss coarse grained (2 - 3 cm) and mobilized quartz layers (1 - 3 cm). End of hole 317.15

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

PROJECT : Shuswap Joint Venture HOLE : Cottonbelt 2
 N.T.S. : 82 M 7 GRID Line 1350 N
 CO-ORDS. : 1+75 W
 LOCATION : Mt. Grace ELEVATION: 5,350 feet
 CLAIM : T , No. 382

DRILLED BY: H. Allen Diamond Drilling

CORE SIZE : BQ

START : July 22, 1978

STOP : July 27, 1978

LENGTH : 209.70 m

LOGGED BY : J.C. Kovacik
 F.-W. Wellmer

DEPTH	DIP	AZ
0	80°	58°
25 m	74°	-
52 m	66.5°	-
85 m	62.5°	-
106 m	60.5°	-
118 m	60°	-
137 m	54°	-
164 m	58°	-
188 m	55.5°	-
209 m	58°	49°30'

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 1 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
0	4.05	Hornblende-biotite gneiss	Medium-grained. The bottom 25 cm grade into coarse grained gneiss, melanocratic minerals > 50%. Locally garnet blasts (2 mm average, 5 mm max.), some 2-5 cm amphibolite layers, some 1-2 cm mobilized quartz zones; core angle at 2 m 66°
4.05	4.40	Quartzite	Laminated, light-grey, medium-grained with biotite (~10%)
4.40	4.70	Biotite-hornblende gneiss	Coarse grained melanocratic minerals 40%, some garnets.
4.70	5.00	Amphibolite	Medium-grained to coarse grained, biotite rich
5.00	6.70	Biotite-hornblende gneiss	Coarse grained at top, grades into medium-grained at bottom, ~40% melanocratic minerals with garnets; at 6.30 m 4 cm biotite rich zone, medium-grained, at 6.60 m 4 cm mobilized quartz zone.
6.70	7.30	Quartzite	As above (4.05 - 4.40 m) with amphibolite zone in centre from 6.00 - 6.13 m.
7.30	7.70	Biotite-hornblende gneiss	Medium-grained with garnets, melanocratic minerals (10 to 60%) inhomogeneously distributed.
7.70	7.90	Biotite garnet amphibolite	Medium-grained
7.90	9.80	Biotite gneiss	With garnets and hornblende, melanocratic minerals, inhomogeneously distributed (10 to 70%), generally medium-grained, some coarse grained zones. From 9.0 to 9.40 m coarse grained zone with brown biotite instead of black biotite. From 8.40 to 8.47 m laminated quartzite zone; core angle at 9.30 m 72.5°

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 2 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
9.80	10.50	Quartzite	Laminated, medium-grained, locally re-crystallized . From 10.00 to 10.09 m amphibolitic layer. From 10.20 to 10.26 biotite hornblende gneiss layer
10.50	19.75	Biotite gneiss	Predominantly biotite gneiss medium-grained with ~30% melanocratic minerals, local bands with variations of 10 to 80% melanocratic minerals and garnet blasts (2-4 mm), locally coarse grained, locally laminated quartzite bands (2-5 cm), amphibolite bands (1-10 cm) and mobilized quartz zones (1-3 cm). From 11.1 to 11.25 m laminated quartzite zone with coarse grained mobilized quartz and chlorite at top; at 11.1 m dragfold indicating overturned limb, axes $\approx 160^\circ$ plunge uncertain; core angle at 16 m 68.5° .
19.75	27.85	Hornblende biotite gneiss	Predominantly hornblende biotite gneiss medium-grained locally coarse grained with on the average 30% melanocratic minerals with local variations in bands from 10-80%, locally garnet blasts (2-4 mm), locally laminated quartzite bands (2-5 cm), amphibolite bands (1-5 cm) and mobilized quartzite zones (1-4 cm); in local patches chlorite and epidote; core angle at 23.35 m 75° .
27.85	29.05	Biotite gneiss	Medium-grained as above (10.50 to 19.75 m)
29.05	31.65	Hornblende biotite gneiss	Medium-grained as above (19.75 to 27.85 m); core angle at 30.40 m 73°
31.65	33.20	Quartzite	Laminated, medium-grained with 5-15% biotite, interlayered with 1-10 cm zones of biotite, gneiss, medium-grained and 1-3 cm amphibolite, coarse grained, with garnet blasts (1 mm to max. 10 mm)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 3 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
33.20	34.15	Hornblende- biotite gneiss	Medium-grained as above (19.75 to 27.85 m)
34.15	34.85	Quartzite	Laminated, medium-grained with 5-10% biotite locally garnets 1-2 mm. At 34.20 m 6 cm medium-grained biotite-hornblende-gneiss; at 34.5 m 3 cm mobilized quartz with coarse grained biotite.
34.85	38.00	Biotite gneiss	As above (10.50 to 19.75 m). From 36.20 to 36.30 biotite fels zone, from 36.20 to 36.50 laminated quartzite; core angle at 37.40 75°
38.00	38.20	Quartz peg- matoide	Coarse grained with biotite and hornblende, pyrite diss. and on fractures
38.20	43.35	Hornblende- biotite gneiss	As above (19.75 to 27.85 m)
43.35	47.05	Biotite gneiss	As above (10.50 to 19.75 m), however biotite has distinct brownish tint against the usual black biotite; quartzite bands increase in frequency to depth; core angle at 45 m 76°
47.05	58.05	Hornblende- biotite gneiss	As above (19.75 to 27.85 m). From 52.10 to 52.15 m mobilized quartz zone with chlorite and coarse grained hornblende; core angle at 51.40 m 73°.
58.05	58.20	Quartz-feld- spar pegma- toide	Coarse grained
58.20	59.00	Hornblende- biotite- gneiss	As above (19.75 to 27.85 m) core angle at 59.00 m 81.5°

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 4 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
59.00	61.35	Biotite gneiss	As above (10.50 to 19.75 m). From 59.90 to 60.10 m and from 60.50 to 60.62 m laminated medium-grained quartzite, from 60.90 to 60.95 m medium-grained amphibolite
61.35	62.75	Quartzite	Laminated (1-3 mm), medium grey, light grey with biotite, locally chlorite, hornblende, epidote, some biotite gneiss zones (0.5-3 cm)
62.75	63.95	Quartzite	Diffusely banded (3-5 mm) greenish grey, medium grained with feldspar and some garnet (1 mm), layers and lenses of brown biotite, irregularly distributed (~15% of total)
63.95	65.20	Biotite gneiss	Fine grained to medium grained with 3 (1-3 cm) coarse grained amphibolite bands
65.20	65.85	Pegmatoide/ gneiss	Mixed zone of 2-15 cm layers of quartz feldspar pegmatoide, coarse grained biotite-quartzite, medium grained, and biotite gneiss fine grained to medium grained with hornblende and garnet blasts.
65.85	66.95	Biotite-muscovite gneiss	Medium grained with feldspar blasts (5-10%) elongated, "flaser texture"; core angle at 66.65 m 79°
66.95	67.15	Biotite-muscovite gneiss	Medium-grained as above (65.85 to 66.95 m) but with no feldspar blasts
67.15	67.45	Pegmatoide/ biotite Me gneiss	Interlayered 2-10 cm quartz-feldspar-pegmatoide, coarse grained and 2-10 cm biotite-muscovite gneisses medium-grained.
67.45	68.80	Biotite-muscovite gneiss	Medium-grained without feldspar blasts, few (1-3 cm) zones of quartz feldspar pegmatoides
68.80	71.75	Biotite-muscovite gneiss	Medium-grained with feldspar blasts as above (66.85 to 66.95 m)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 5 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
71.75	72.95	Biotite-muscovite gneiss	Medium-grained without feldspar blasts as above (67.45 to 68.80 m)
72.95	73.60	Biotite gneiss	Medium-grained, inhomogeneous upper 25 cm and lower 5 cm; biotite brownish tint; central 35 cm biotite black with locally muscovite and feldspar blasts
73.60	80.60	Biotite gneiss/ biotite quartzite/ biotite muscovite gneiss	Alternating zones (5-20 cm) of a) quartzitic biotite gneiss medium grained b) biotite-muscovite gneiss with elongated feldspar blasts ("flaser texture"), coarse grained c) biotite-quartzite, medium grained, laminated, garnet blasts throughout. Locally zones (1-5 cm) of quartz pegmatoides and (1-5 cm) of amphibolite, coarse grained. Core angle at 73.65 m 79°.
80.60	82.40	Muscovite-biotite gneiss	Coarse grained, some feldspar blasts (1-2mm) and garnet blasts (1-2mm). From 80.70 to 80.74 m quartz pegmatoides from 81.00 to 81.25 zone of banded biotite quartzite, medium-grained and with quartz feldspar pegmatoides, coarse grained
82.40	83.25	Biotite gneiss	Fine to medium grained, quartzitic, frequent variations in biotite content grades locally into laminated biotite quartzite, locally garnet, hornblende, epidote
83.25	83.85	Biotite-muscovite gneiss	Medium grained with feldspar blasts as above 65.85 to 66.95
83.85	84.85	Biotite gneiss	Fine to medium grained, locally 0.5 - 1cm hornblende rich bands From 84.40 to 84.46 coarse grained amphibolite from 84.70 to 84.75 muscovite blasts up to 5 mm

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 6 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
84.85	88.25	(Muscovite) -biotite- gneiss	Alternating zones (10 - 40 cm) of muscovite-biotite gneiss with feldspar blasts medium to coarse grained and biotite gneiss without feldspar blasts and only occ. muscovite, medium-grained, occ. fine grained, locally garnets (1-2 mm)
88.25	88.65	Amphibolite	Coarse grained with amphibolite blasts (1-2 mm) in clusters (1-3 cm)
88.65	90.20	Muscovite- biotite gneiss	Coarse grained as above (80.60 to 82.40 m) core angles at 89.20 m 75°
90.20	90.80	Biotite gneiss	Medium-grained, some coarse grained quartz-feldspar layers (0.2-0.5 cm) and garnet blasts (1-2 mm) at top 6 cm of coarse grained hornblende and quartz with ~1-2% pyrite and chalcopyrite
90.80	91.45	Muscovite biotite gneiss	Coarse grained as above (80.60 to 82.40 m) locally some epidote
91.45	93.45	Biotite gneiss	Fine to medium grained, locally quartzitic with zones (3-20 cm) of muscovite-biotite gneiss with feldspar blasts, garnets (1-2 mm) throughout
93.45	93.80	Amphibolite/ quartzite	Upper part amphibolite, coarse grained with tourmaline (5mm) and pyrrhotite lower part quartzitic biotite gneiss medium grained with quartz mobilizations
93.80	94.25	Amphibolite	Coarse grained with biotite and tourmaline (1.5 cm), traces of pyrite
94.25	96.80	Muscovite- biotite- gneiss	Coarse grained as above (80.60-82.40 m) core angle at 96.80 79°
96.80	99.35	Biotite gneiss	Medium grained, quartzitic with garnet blasts (1-3 mm), interlayered with amphibolite (1-10 cm), coarse grained, locally

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 7 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
			mobilized quartz bands (0.3-2 cm) increasing towards bottom ; at 97.9 and 98.8 m drag-folds (?) indicating overturned limb .
99.35	101.05	Quartzite	Laminated, medium-grained, generally clean (1-2% biotite and muscovite), from 100.00 to 100.08 m quartzitic biotite gneiss, medium-grained
105.05	101.60	Muscovite-biotite gneiss	Medium-grained with feldspar blasts (1-2 mm) elongated ("flaser texture") and garnet blasts
101.60	102.50	Biotite-quartzite	Laminated, medium-grained, locally biotite rich zones (1-3 mm) with garnets, traces of pyrite and pyrrhotite
102.50	103.25	Marble	Quartzitic, banded, medium-grained with hornblende (15%), biotite and phlogopite (3%), traces of pyrite, po, cp throughout, at 103.10 0.3 mm layers of pyrite and pyrrhotite
103.25	104.00	Quartzite	Laminated, medium-grained with rusty diffuse halos core angle at 103.80 74°
104.00	104.50	Biotite gneiss	Medium-grained, inhomogeneous, partly biotite muscovite gneiss with elongated feldspar blasts, partly quartzitic biotite gneiss with mobilized quartz zones
104.50	105.00	Quartzite	Laminated medium-grained, grades into quartzitic biotite gneiss at top and bottom
105.00	106.95	Muscovite-biotite-gneiss	Coarse-grained as above (80.60 to 82.40 m)
106.95	115.35	Carbonate gneiss	Banded (1-3 cm bands) irregularly distributed zones (2 - 30 cm) of a) greenish carbonate zones, medium-grained b) muscovite-biotite-gneiss (medium to

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 8 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
			coarse grained) c) biotite gneiss medium grained with garnet blasts up to 15 mm d) biotite quartzite medium-grained and quartzite pegmatoides coarse grained local zones (1 to 5 cm) with 1 to 5% pyrite, pyrrhotite Core angle at 111.10 m 78°
115.35	118.25	Marble	Medium-grained, glassy-crystalline, banded (3-10 mm) with biotite, muscovite, phlogo- pite; core angle at 117.20 83°
118.25	122.00	Carbonate gneiss	As above (106.95 to 115.35 m), at 118.70 3 cm fault gouge with pyrite from 119.00 to 119.10 m quartz pegmatoides with 0.5 x 5 cm pyrite lens
122.00	122.60	Marble	As above (115.35 to 118.25 m)
122.60	125.20	Carbonate gneiss	As above (106.95 to 115.35 m)
125.20	126.05	Marble	Medium-grained with biotite and phlogopite, upper and lower part banded, in lower part 23 cm biotite gneiss layers, central part massive
126.05	128.85	Marble	Biotite rich without preferred orientation "diorite marble" from 126.40 with fragments (fine grained biotite-quartz-gneiss), occ. lumps of biotite aggregates up to 15-20 mm; (interpreted by Government geologists as carbonatite), at 126.80 diss. pyrite.
128.85	129.55	Biotite gneiss	Garnet blasts up to 8-10 mm and calc- silicate layers
129.55	130.65	Quartzite	Banded with fine-grained biotite
130.65	132.50	Quartzite	Medium-grained, white-greyish, laminated, core angle 87 - 90°

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 9 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
132.50	133.20	Chlorite- biotite- hornblende- gneiss	About 40-45% chlorite and hornblende, large garnets
133.20	133.35	Amphibolite	With microtectonic deformations
133.25	133.90	Hornblende- biotite gneiss	Medium-grained
133.90	135.30	Hornblende- biotite- quartzite	Banded, 50% quartz zones 50% hornblende-biotite zones
135.30	138.20	Quartzite	Banded, grey-greenish, with biotite and sporadic hornblende
138.20	139.20	Hornblende- chlorite/ biotite gneiss	Interlayered hornblende chlorite gneiss (80%) with biotite gneiss (20%)
139.20	140.00	Marble	Coarse, crystalline, clean, white, occ. banded
140.00	144.70	Marble	Coarse-grained, banded, whitish-grey
144.70	165.40	Carbonate- biotite- gneiss	Medium-grained; from 147.50 to 148.00 fractured and rusty at 156.30 greenish carbonate band from 160.25 to 160.60 greenish carbonate band with garnets
165.40	166.70	(ORE horizon equivalent)	Calcsilicates, medium-grained, with garnet blasts and biotite gneiss zones, inter-layered with 10 cm marble medium grained, some pyrite and galena in upper 6 cm. - ore horizon -
166.70	168.45	Biotite- quartzite	Laminated, medium-grained, grey, from 167 to 168.45 m with occ. garnets (5-10 mm)

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 10 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
168.45	170.15	Calcsili- cate gneiss	With garnets (3-8 mm) from 168.80 to 169.00 quartz pegmatoide with garnet rims (10-15 mm)
170.15	170.50	Biotite quartzite	Medium-grained with garnets
170.50	176.00	Biotite- gneiss	Fine-grained, occ. bands of quartzite, occ. garnets
176.00	177.50	Feldspar- biotite gneiss	Coarse-grained
177.50	178.70	Feldspar- biotite- gneiss	Medium-grained, with garnets and muscovite
178.70	180.10	Feldspar- biotite- gneiss	Medium-grained with muscovite, decreasing content of garnet, and quartzite bands
180.10	180.30	Marble	Chloritic, medium-grained
180.30	181.90	Biotite- chlorite- gneiss	Quartzitic with garnets (3-5 mm), banded with calcsilicate gneiss bands
181.90	187.15	Biotite- quartzite	Banded with occ. garnets, from 186 to 187.15 m rich in calcsilicates at 186.00 quartz pegmatoide zone core angle at 184.00 88°
187.15	187.50	Quartzite	White, medium-grained
187.50	187.90	Biotite- quartzite	Banded with chlorite-hornblende-biotite bands
187.90	188.80	Biotite- muscovite gneiss	Fine-grained, quartzitic
188.80	190.35	Biotite- quartzite	Banded, fine-grained

METALLGESELLSCHAFT CANADA LIMITED

DIAMOND DRILL LOG

HOLE NO. COTTONBELT 2

SHEET 11 of 11

METER

FROM	TO	ROCK TYPE	DESCRIPTION
190.35	191.45	Feldspar-biotite-garnet gneiss	Medium-grained, quartzitic
191.45	192.00	Biotite quartzite	Medium-grained
192.00	192.90	Feldspar-biotite - garnet gneiss	Medium-grained, quartzitic
192.90	196.30	Biotite quartzite	Fine-grained with occ. garnets (2-3 mm)
196.30	201.80	Biotite quartzite	garnet rich from 198.15 to 198.50 feldspar-biotite-gneiss from 199.70 to 199.80 hornblende-biotite, chlorite-garnet band
201.80	203.65	Feldspar-biotite gneiss	Quartzitic with garnets (2-3 mm)
203.65	206.25	Biotite-quartzite	Medium-grained with garnets from 205.35 to 205.55 quartz pegmatoide with large muscovite, epidote, chlorite, garnet and pyrite
206.25	208.00	Feldspar-biotite-garnet gneiss	Quartzitic, medium-grained; from 206.95 to 207.25 biotite-garnet quartzite
208.00	208.70	Biotite-garnet-quartzite	Medium-grained
208.70	209.70	Hornblende garnet-gneiss	With feldspar and garnet blasts
			End of hole 209.70

APP. II

REPORT FOR: Metallgesellschaft Canada Ltd.
COVERING: Borehole And Surface PEM Electromagnetic Survey
OVER THEIR: Cottonbelt Claims, Grace Mountain B.C.
REPORT BY: J. Duncan Crone, Geophysicist
SURVEY BY: James Harrington
DATED: August 17th, 1978

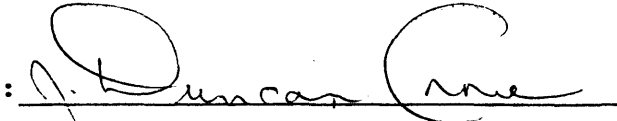
BOREHOLE PEM:

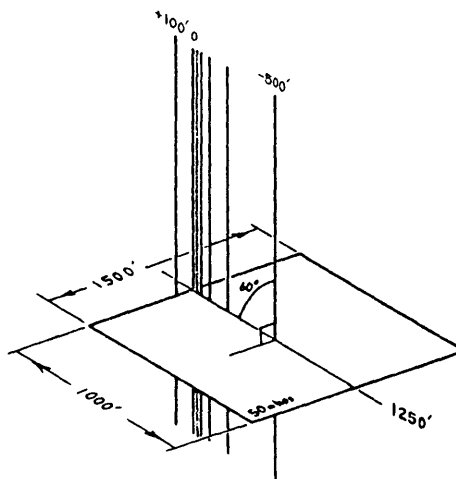
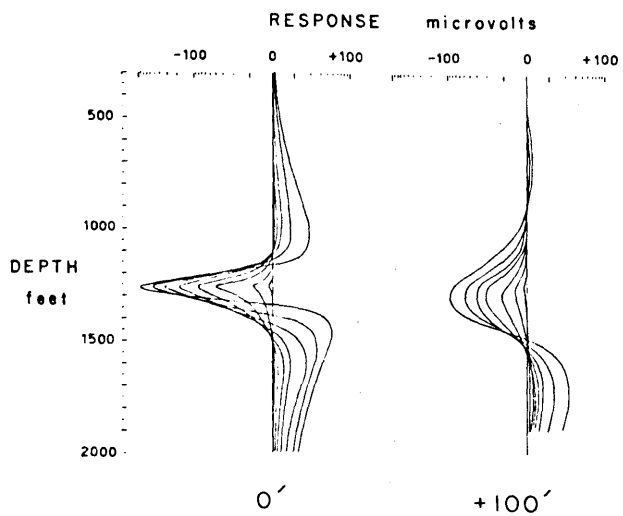
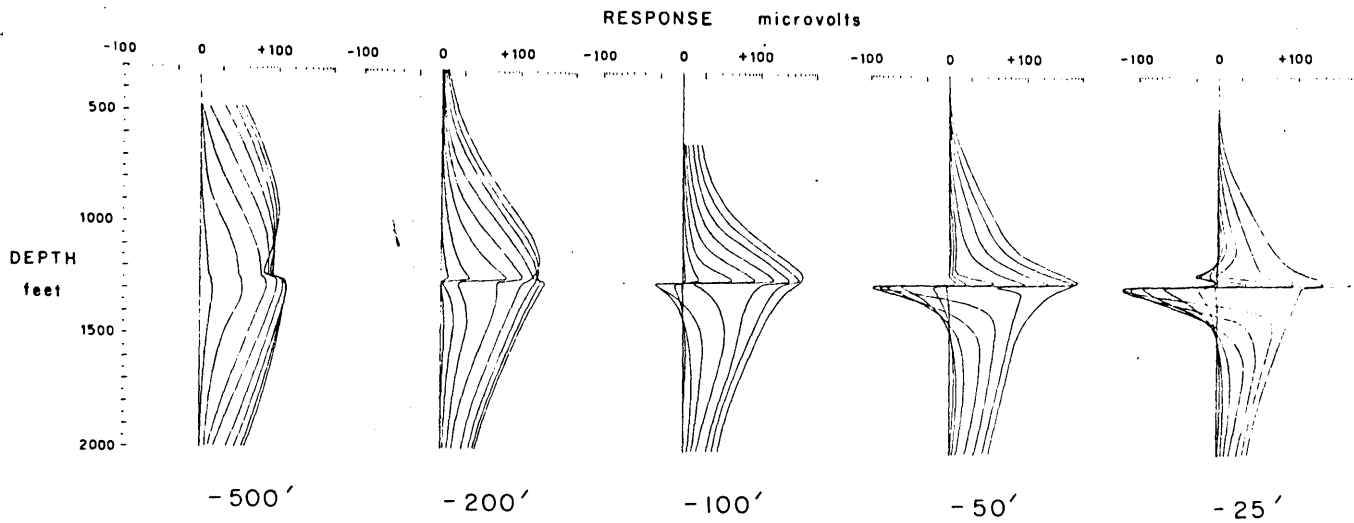
The drill hole on Grace Mountain was surveyed with the PEM using four transmitter loops placed 50 meters from the collar towards the north, south, east and west. The transmit loops were 100 meters square. All four transmit loops obtained a large positive response centered around 100 meters down the hole with the first sample. This changed to a negative response with samples 2, 3 and 4. This type of curve (see model study summary enclosed) is from the borehole intersecting the conductor approximately at right angles near the edge of the conductor. The distance from the edge in this case would be 100 meters since the conductivity thickness of the conductor is poor (4 Mhos). The conductive sheet extends for a considerable distance. It consists of weak pyrite mineralization at 100 meters down the hole. No other conductors of significance were detected in the borehole.

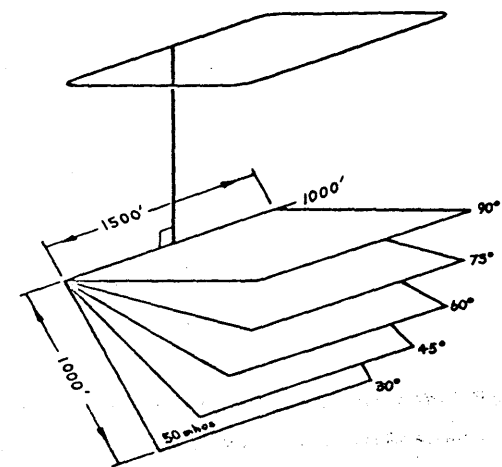
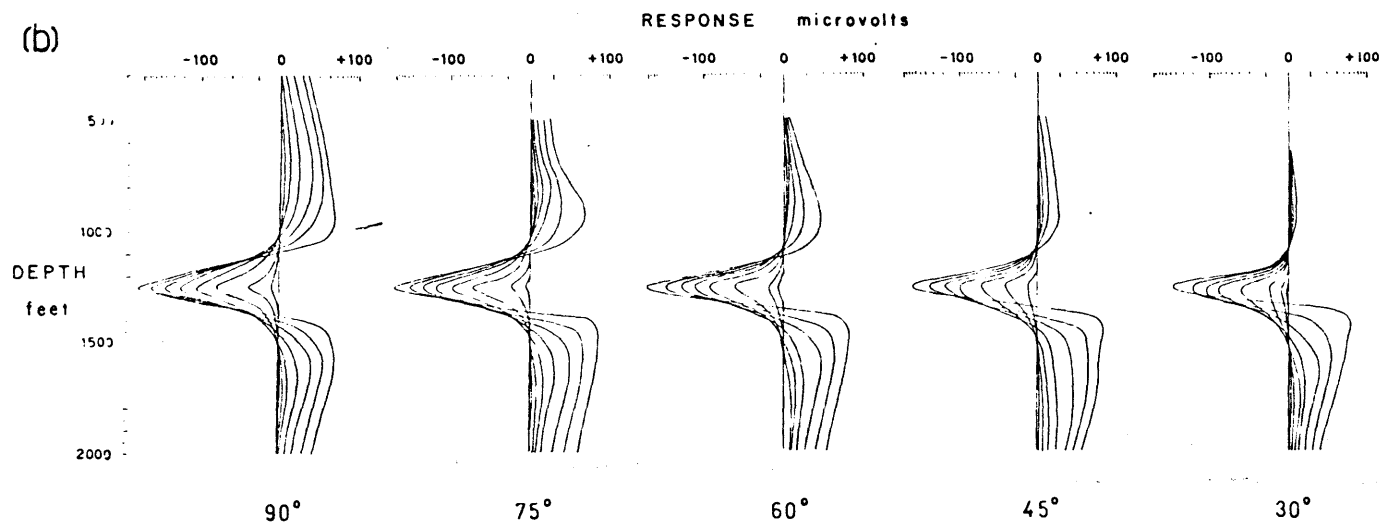
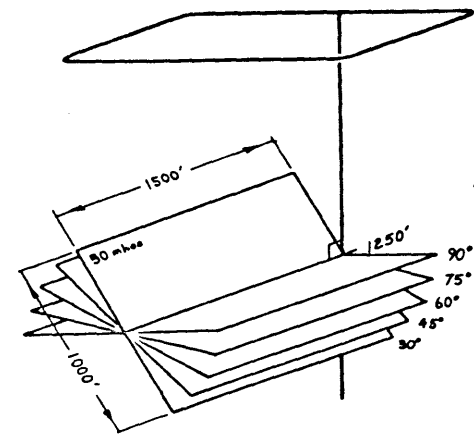
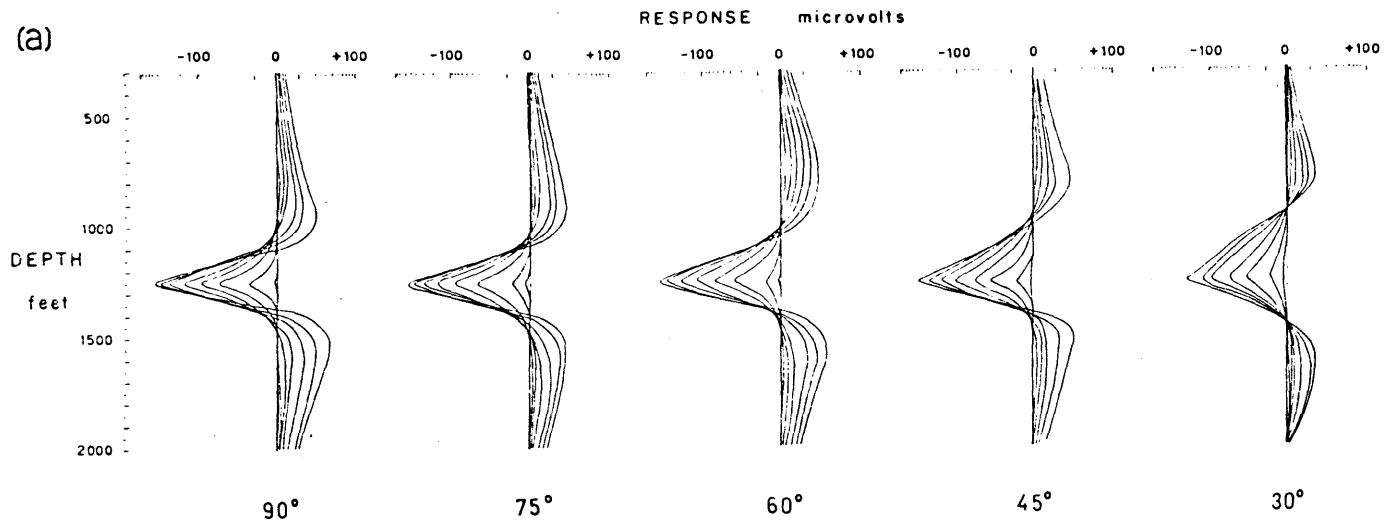
The surface PEM profiles on lines 1350N and 1413N indicate a conductive edge on the first sample only located at 0+60W, L1413N and 0+12W, L13+50N.

Both surface PEM and Borehole PEM would indicate that the conductive sheet intersected at 100 meters down the hole has a dip of 20° to 30° westward.

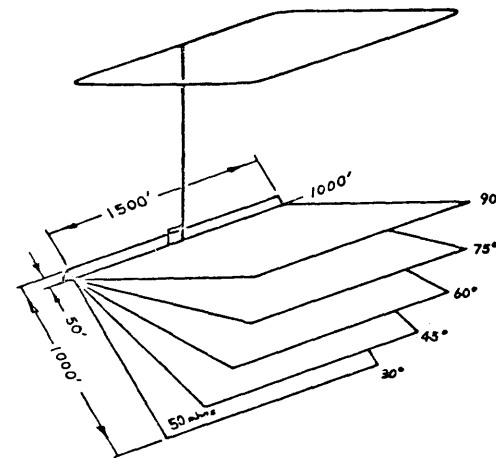
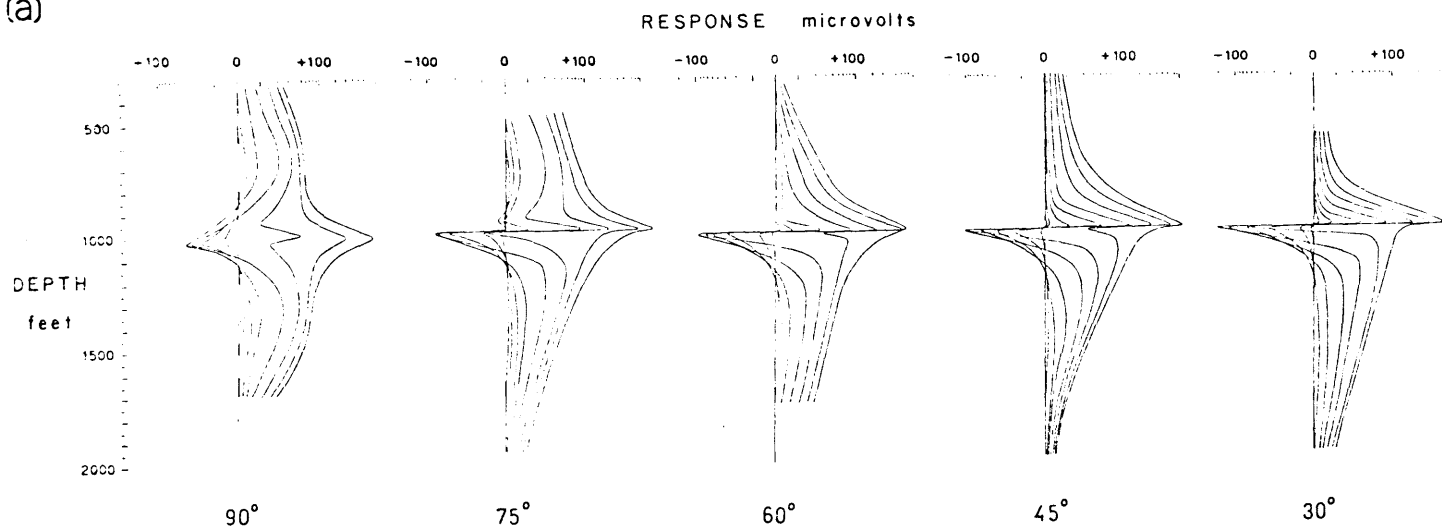
Respectfully submitted,


: J. Duncan Crone
J. Duncan Crone, B.A., P. Eng.,
Geophysicist.

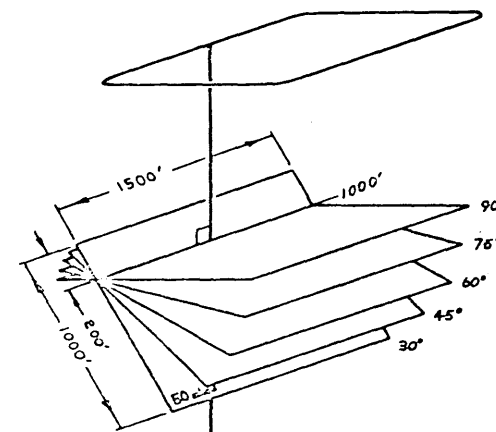
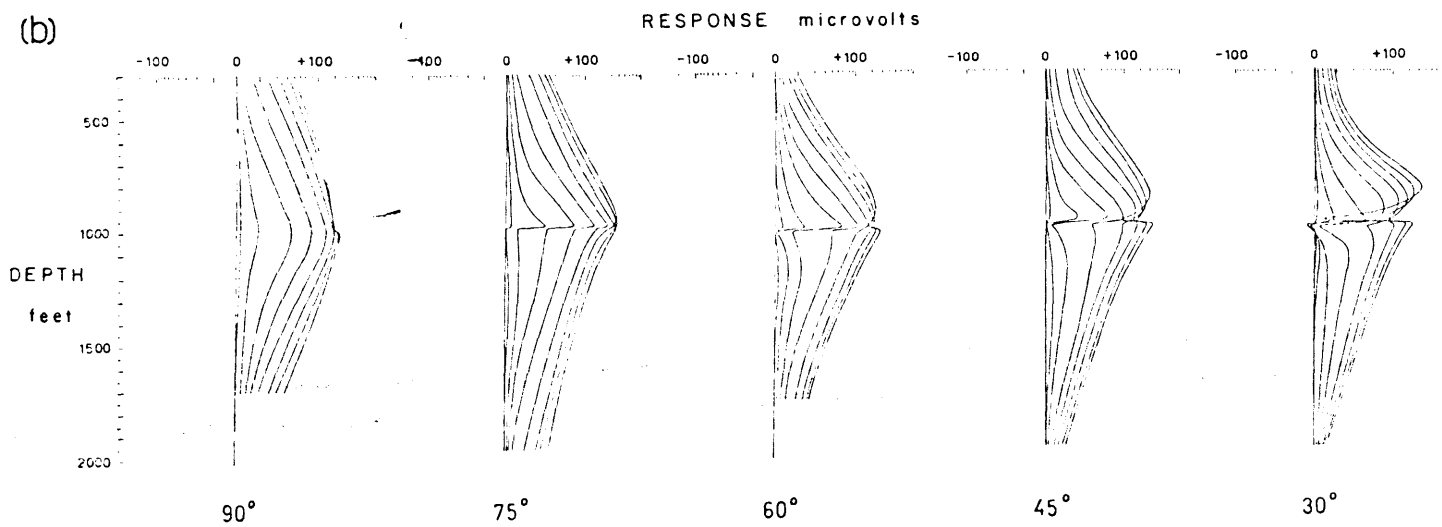


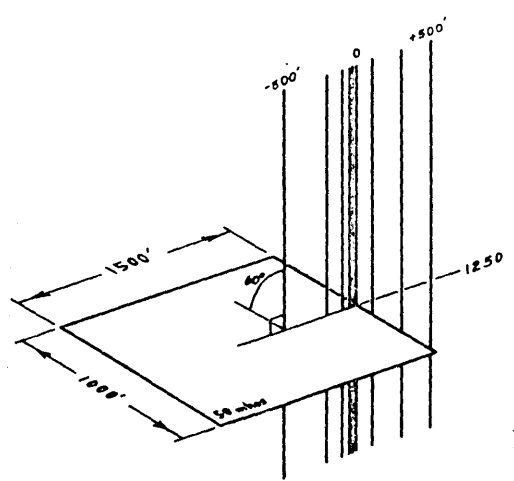
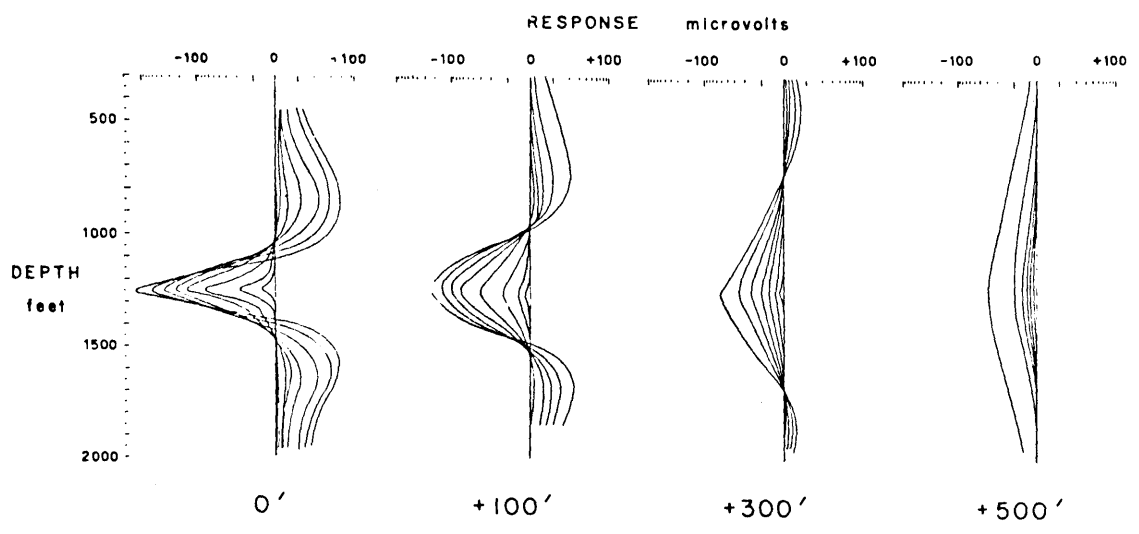
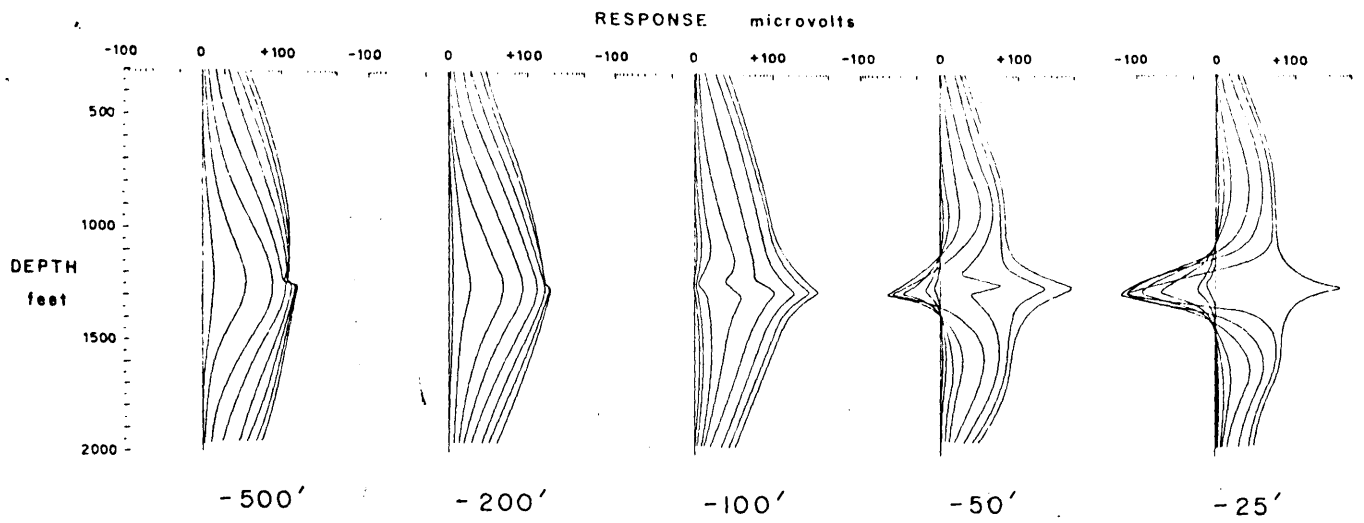


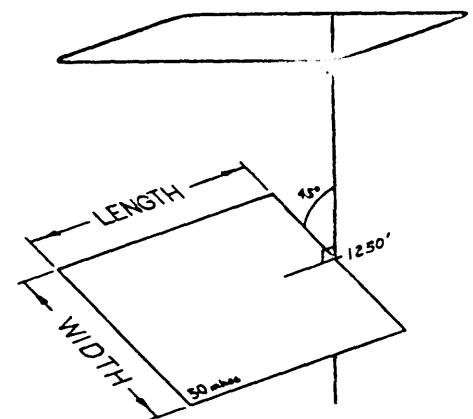
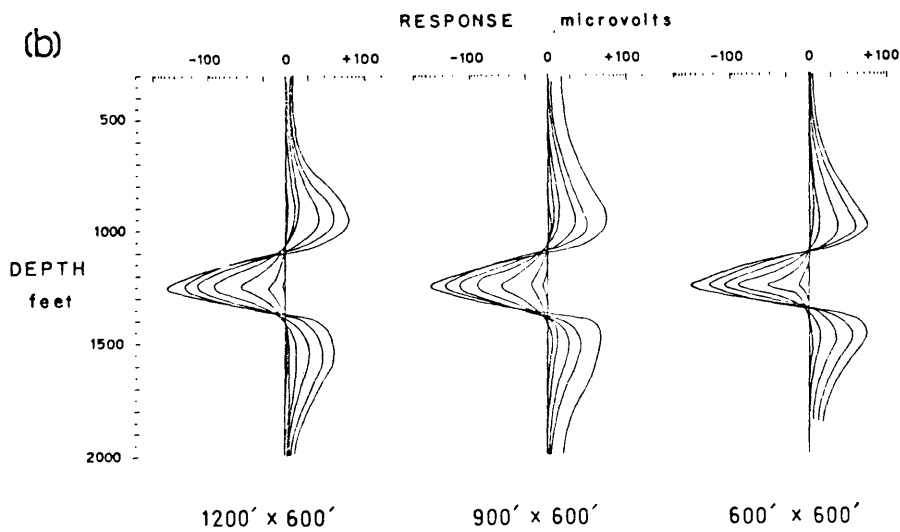
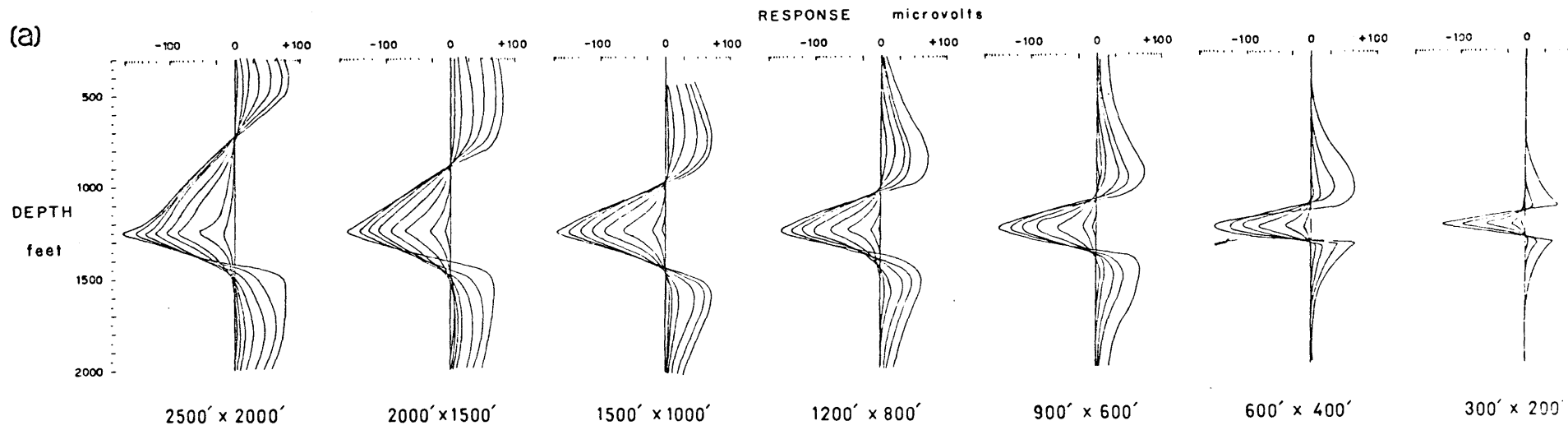
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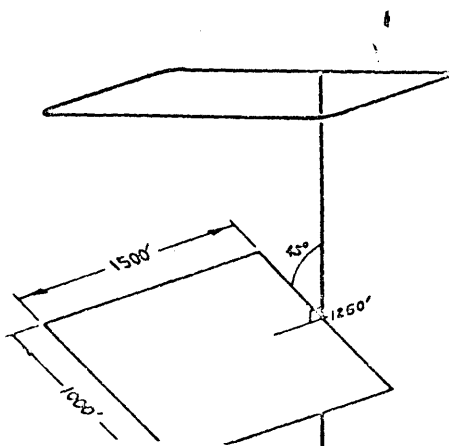
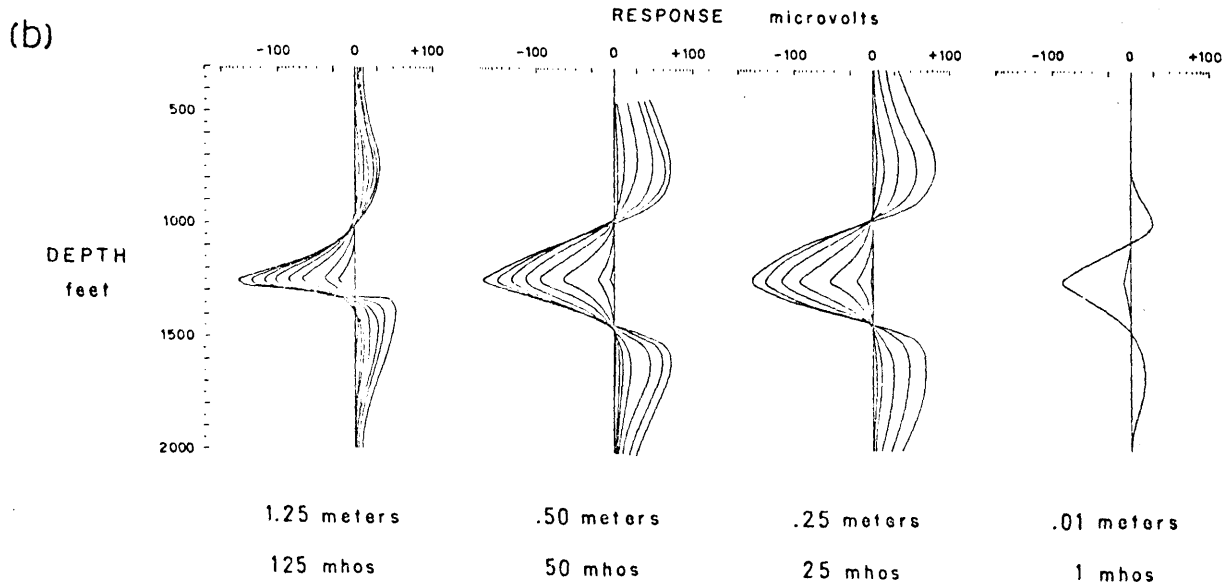
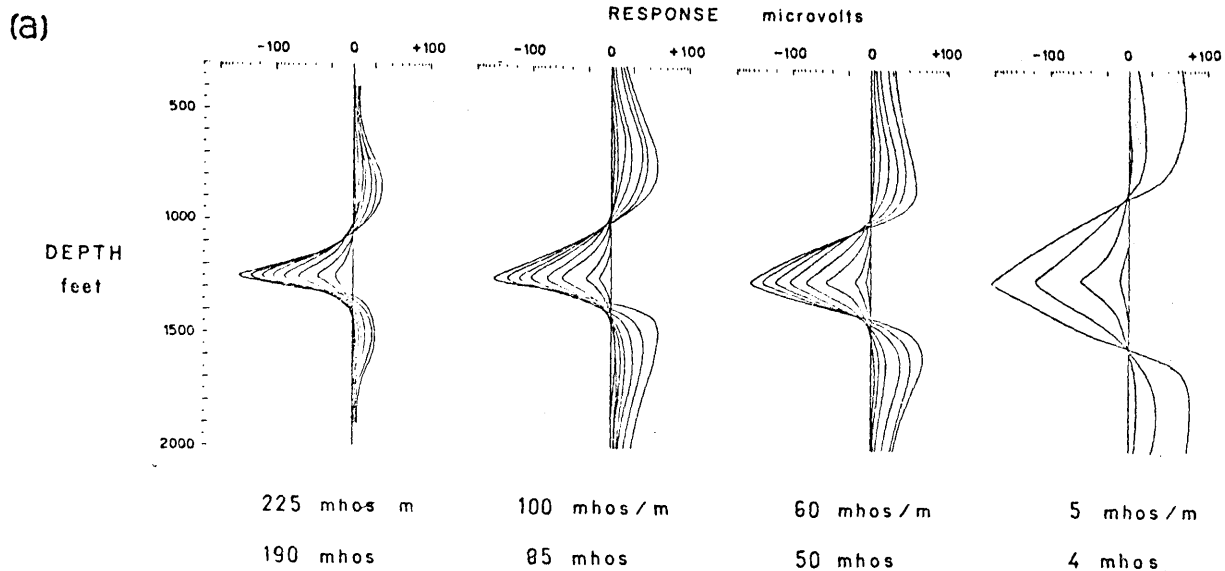


(b)

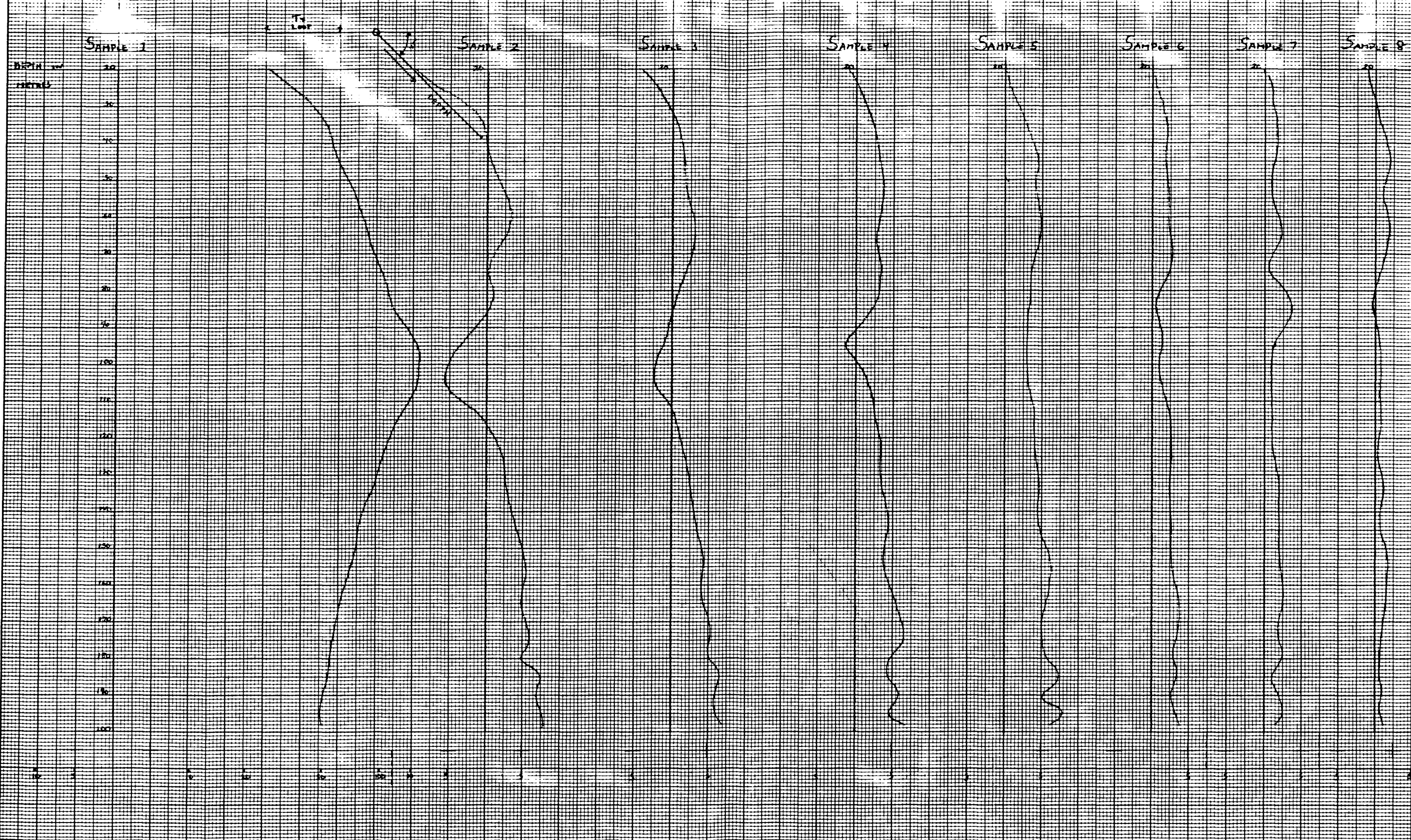




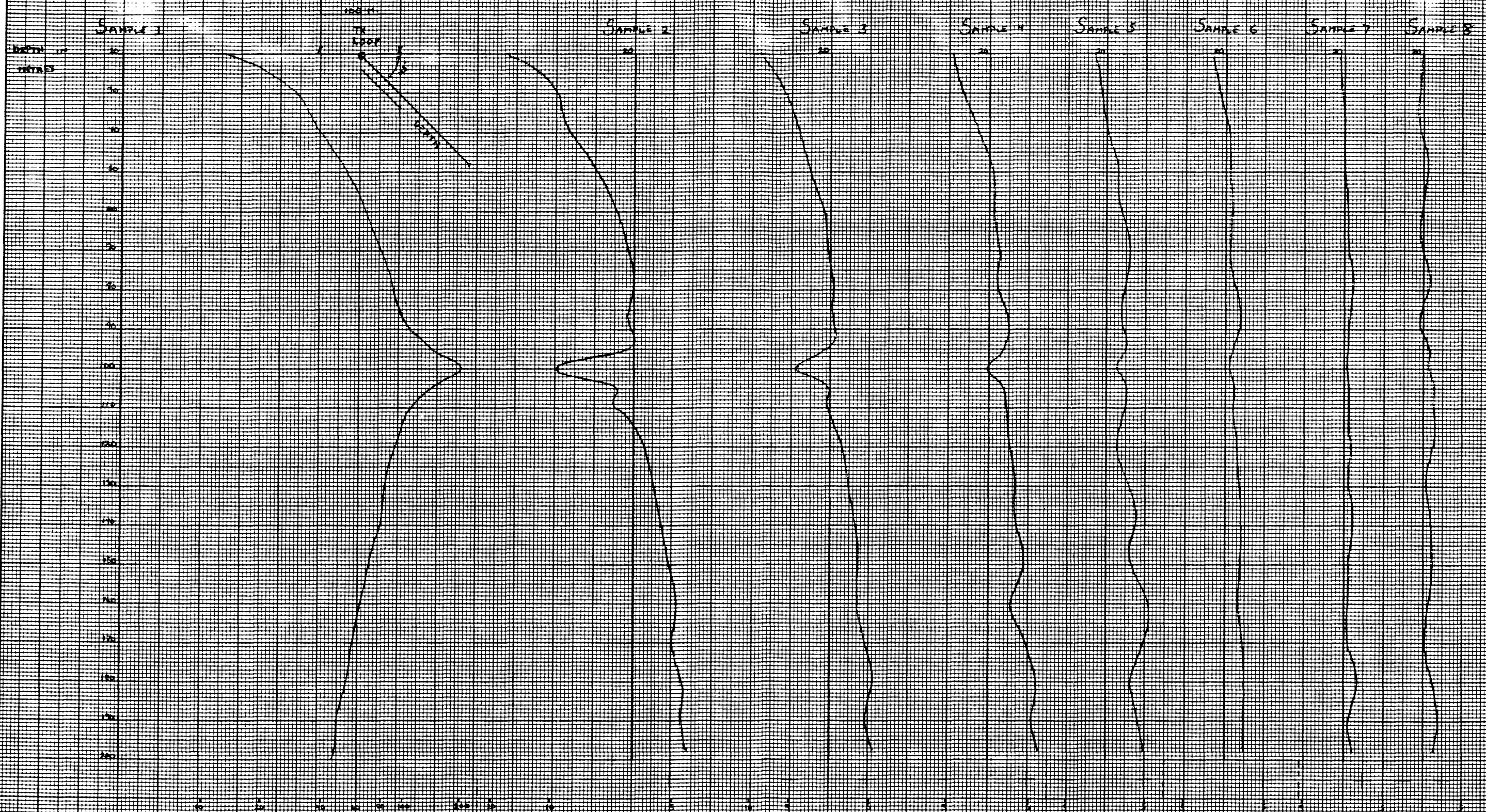




METALSSELLHART CANADA 600
GRACE MOUNTAIN JULY 23/58
T₁ LOOP TO THE WEST (C)
CONSTANT GAIN 400



METALLGESELLSCHAFT CANADA LTD.
GRACE MOUNTAIN JULY 25/78
TS LOOP TO THE SOUTH (B)
CONSTANT GAIN = 300



METALLOERSCHAFT CANADA LTD.
GRACE MOUNTAIN JULY 25/78
IX LOOP TO THE NORTH (D)
CONSTANT GAIN 200

GRD N

5000

100 M

SAMPLE 1

SAMPLE 2

SAMPLE 3

SAMPLE 4

SAMPLE 5

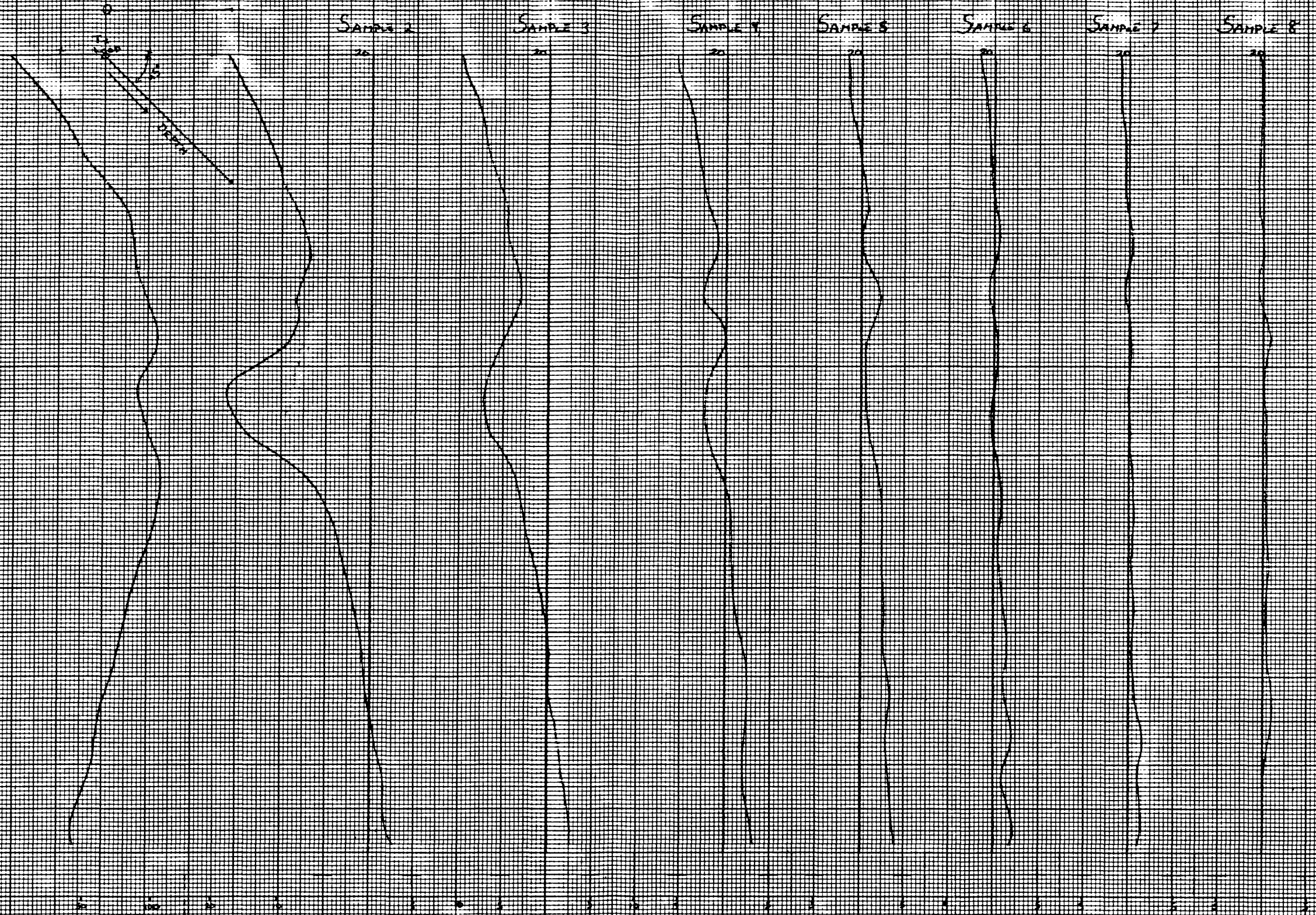
SAMPLE 6

SAMPLE 7

SAMPLE 8

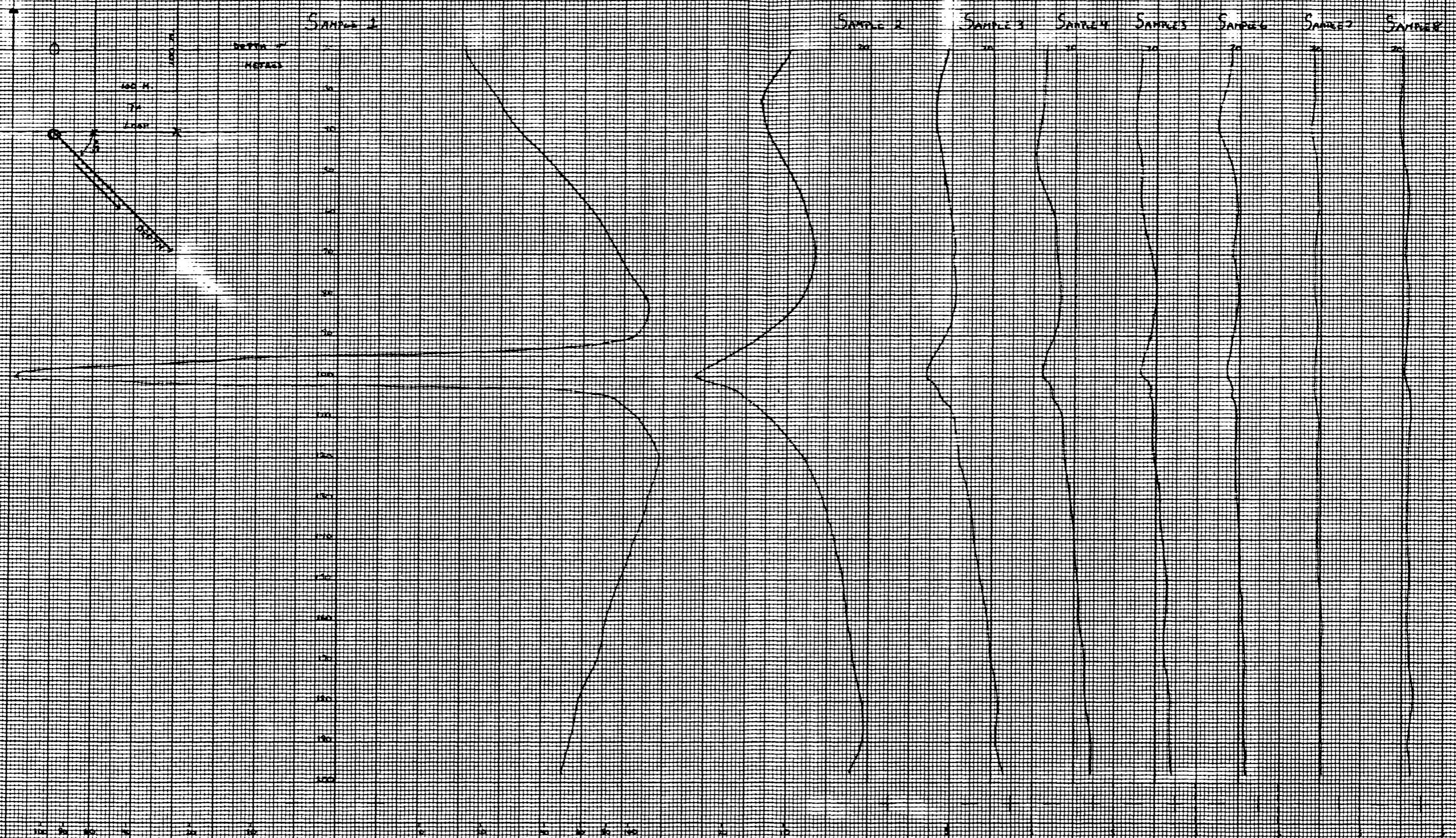
DEPTH (METERS)

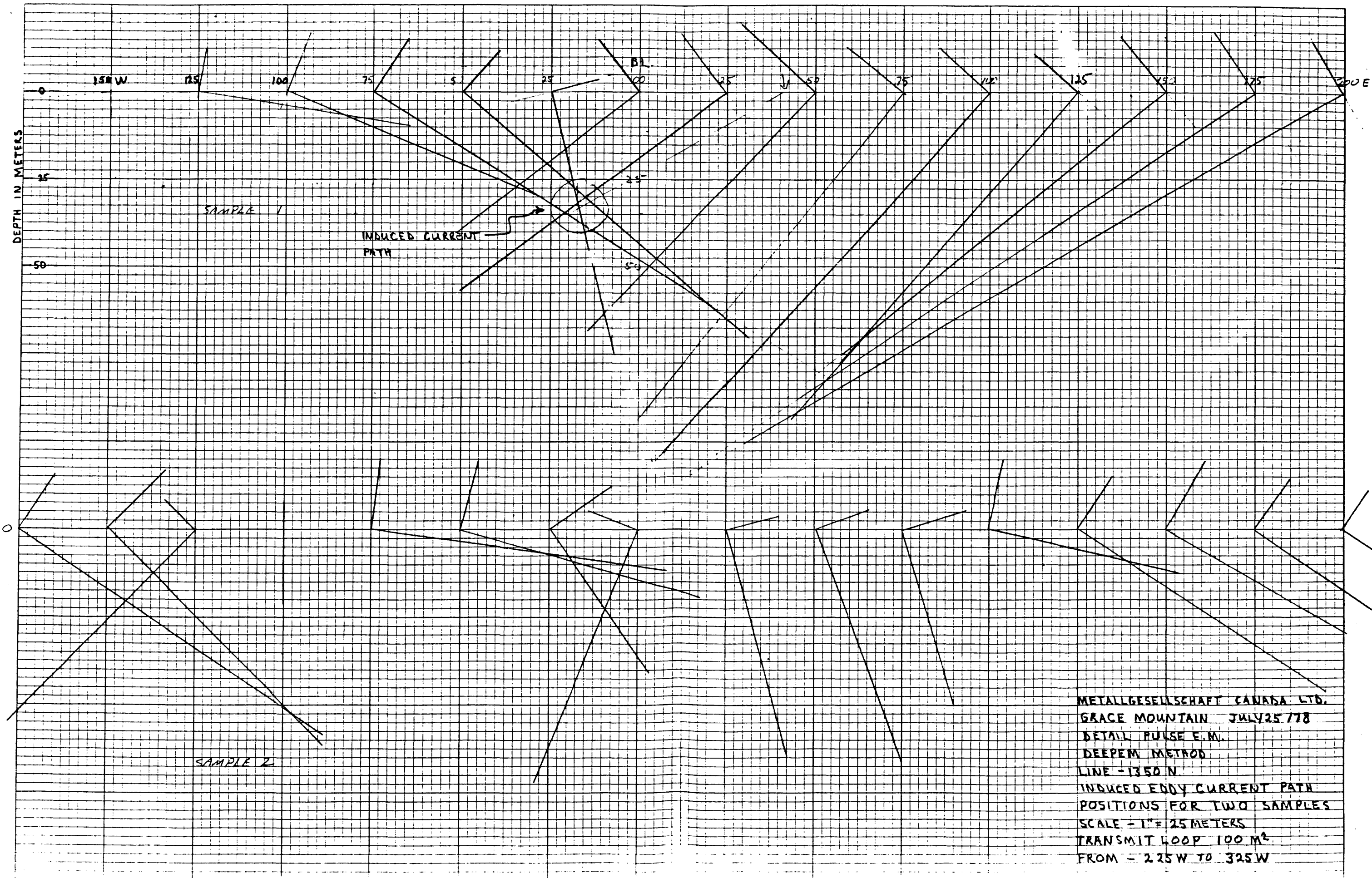
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200



METALLGESELLSCHAFT CANADA LTD.
 GRACE MOUNTAIN, JULY 25/78
 TX LOOP TO THE EAST (A)
 CONSTANT GAIN 100

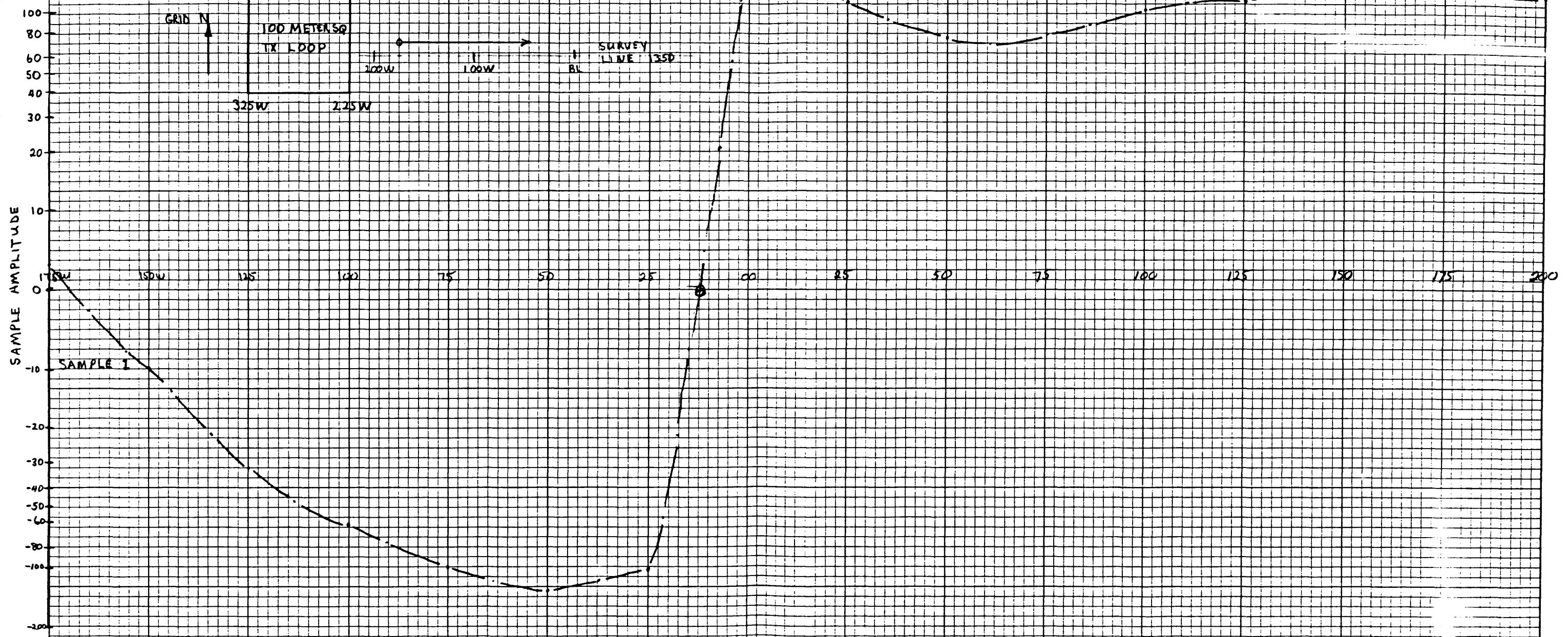
ENL 10





METALLGESELLSCHAFT CANADA LTD.
GRACE MOUNTAIN JULY 25 1978
DETAIL PULSE E.M.
DEEPEM METHOD
LINE - 1350 N
INDUCED EDDY CURRENT PATH
POSITIONS FOR TWO SAMPLES
SCALE - 1" = 25 METERS
TRANSMIT LOOP 100 M²
FROM - 225 W TO 325 W

METALLGESELLSCHAFT CANADA LTD
 GRACE MOUNTAIN JULY 25/78
 DETAIL PULSE E.M. DEEPEM METHOD
 LINE 1350N VERTICAL FIELD COMPONENT
 SURVEY IN METERS



47 0707

K•E 10 X 10 TO THE INCH 10 X 15 INCHES
 KEUFFEL & ESSER CO. MADE IN U.S.A.

SCALE - 1" = 25 METERS

SURVEY LINE 1350 N

175W 150 125 100 75 50 25 U 100 25E 50 75 100 125 150 175 E 200

SAMPLE 2

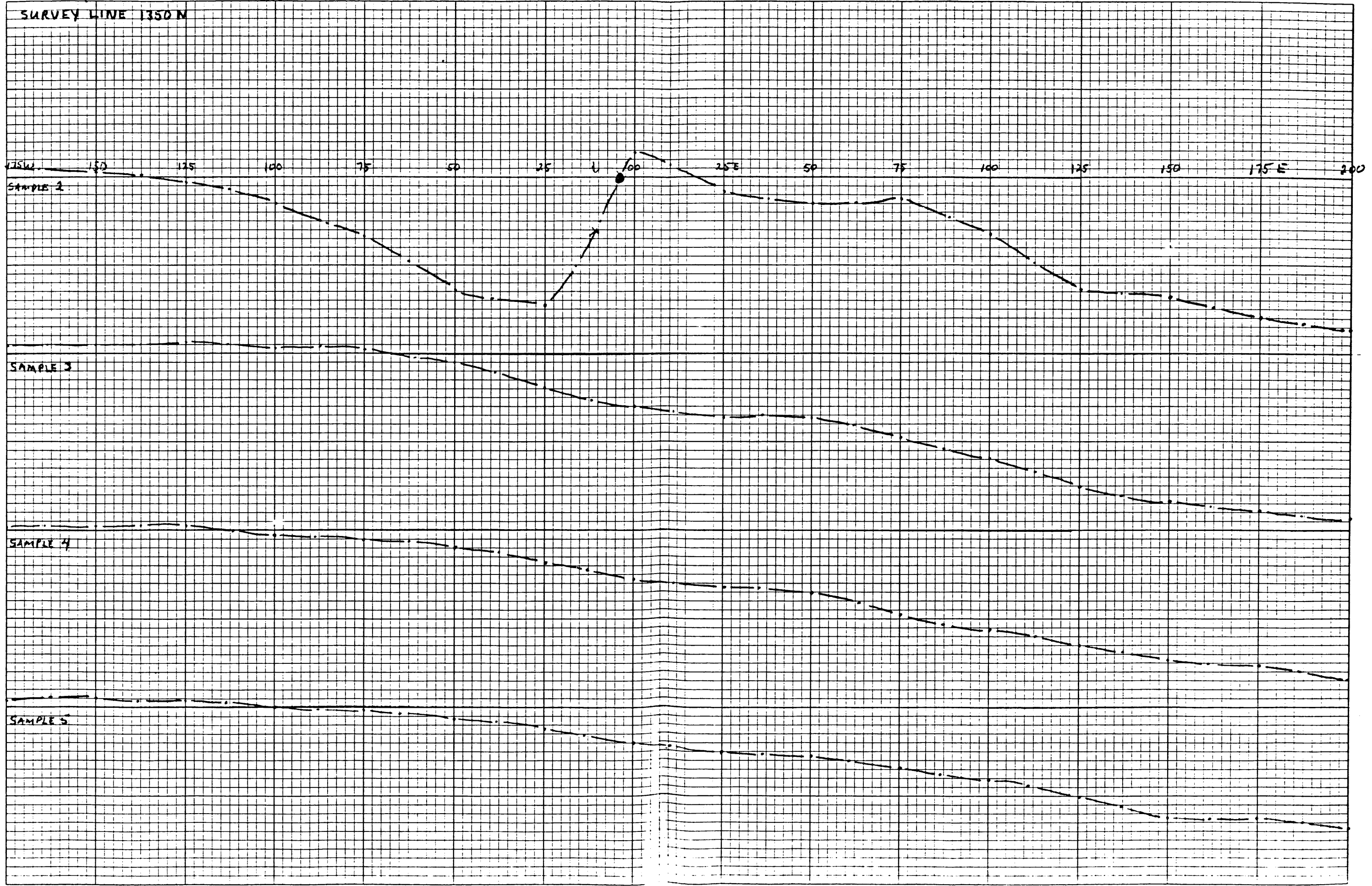
SAMPLE 3

SAMPLE 4

SAMPLE 5

47 0707

K•E 10 X 10 TO THE INCH 6.10 X 15 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.



SURVEY LINE 1350 N

125W 150 125 100 75 50 25 00 25 50 75 100 125 150 175 200

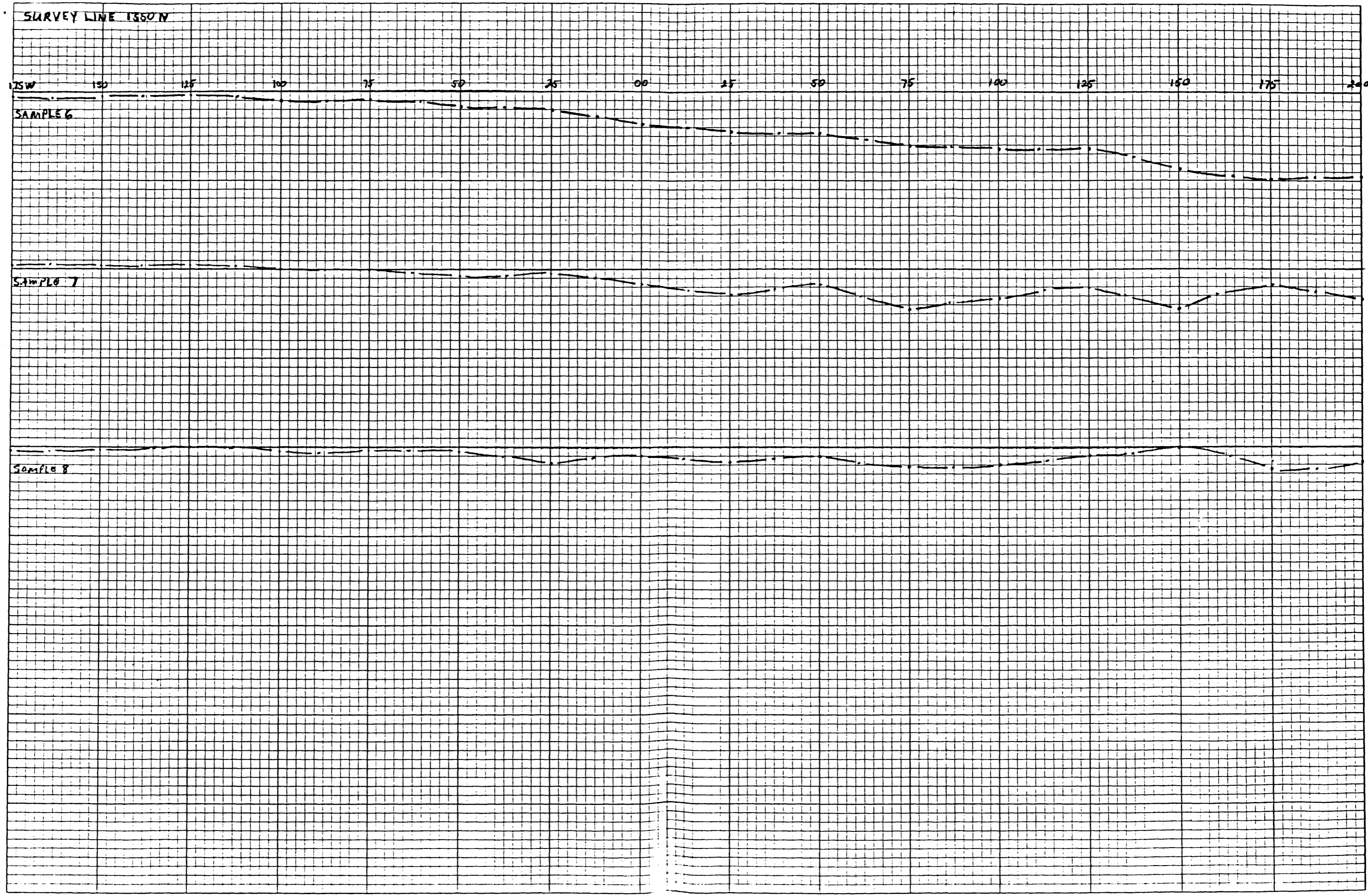
SAMPLE 6

SAMPLE 7

SAMPLE 8

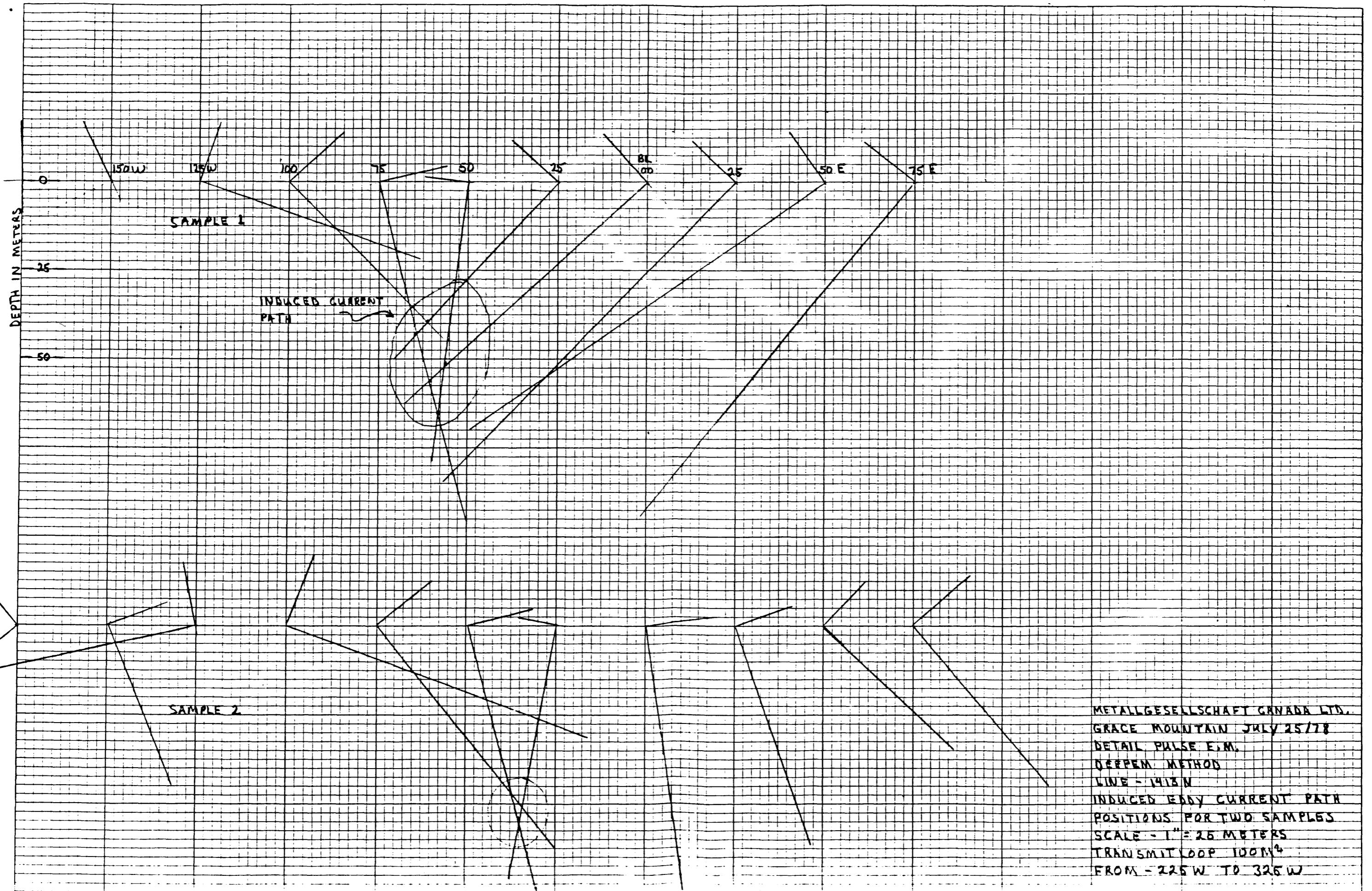
47 0707

K•E 10 X 10 TO THE INCH #10 X 15 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.



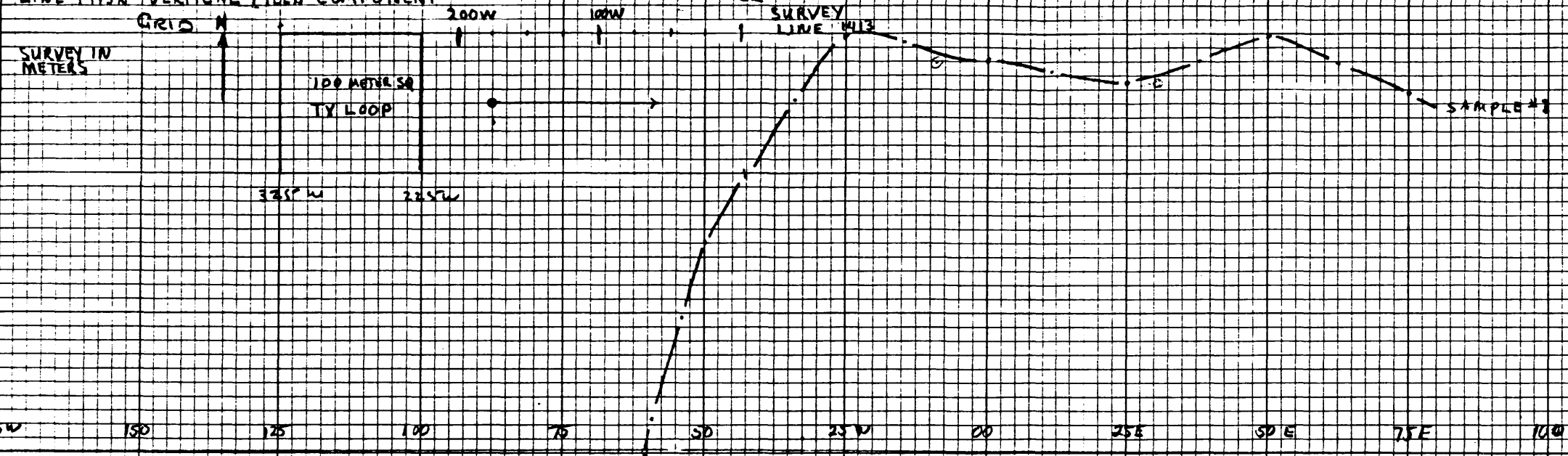
47 0707

K.E. 10 X 10 TO THE INCH • 10 X 15 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



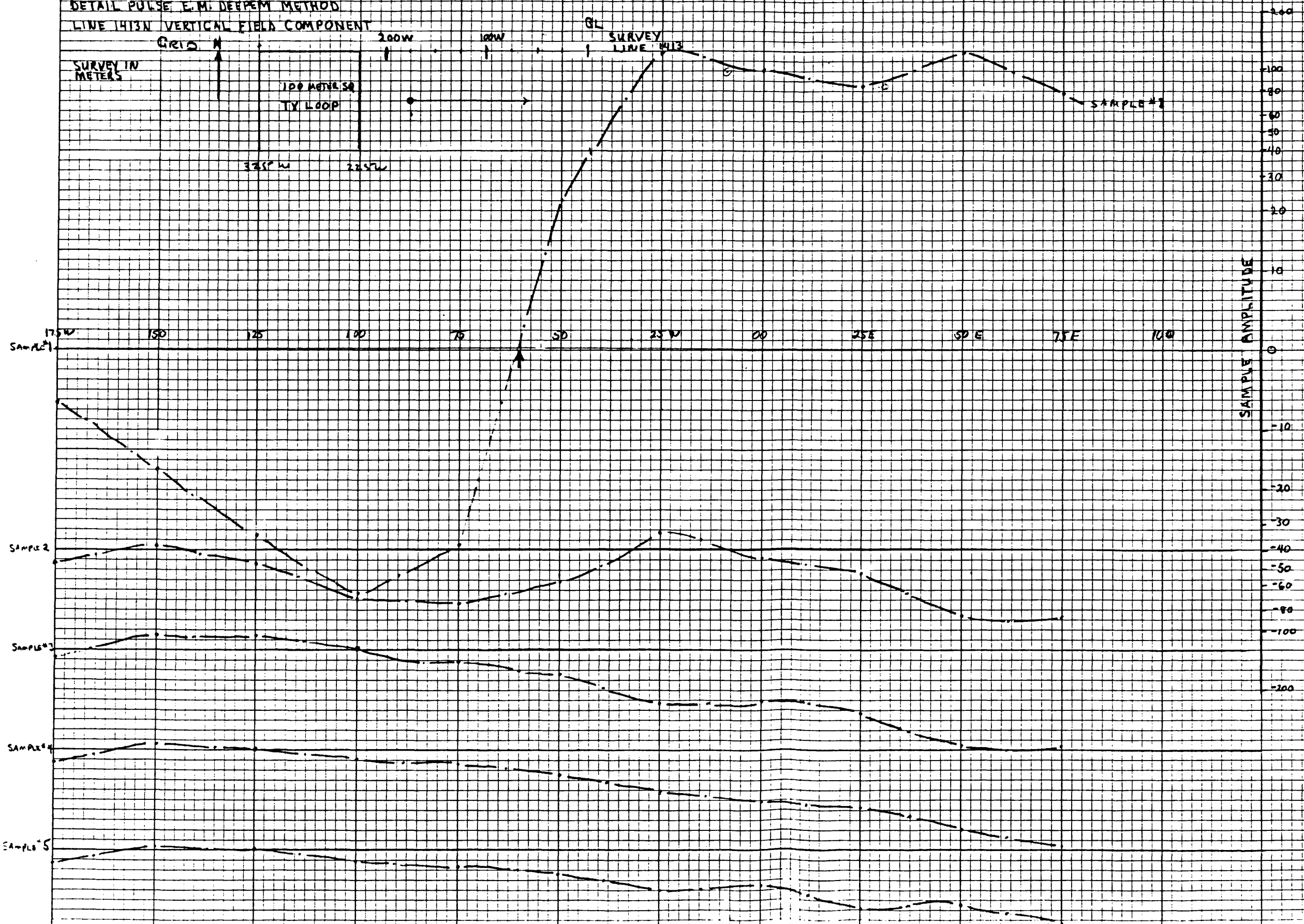
METALLGESELLSCHAFT CANADA LTD.
 GRACE MOUNTAIN JULY 25/78
 DETAIL PULSE E.M.
 DEPEEM METHOD
 LINE - 1413M
 INDUCED EDDY CURRENT PATH
 POSITIONS FOR TWO SAMPLES
 SCALE - 1" = 25 METERS
 TRANSMIT LOOP 100M²
 FROM - 225W TO 325W

METALLGESELLSCHAFT CANADA LTD
 GRACE MOUNTAIN JULY 25/78
 DETAIL PULSE E.M. DEEPEN METHOD
 LINE 1413N VERTICAL FIELD COMPONENT



47 0707

K-E
 10 X 10 TO THE INCH • 10 X 15 INCHES
 NEUFFEL & ESSER CO. MADE IN U.S.A.



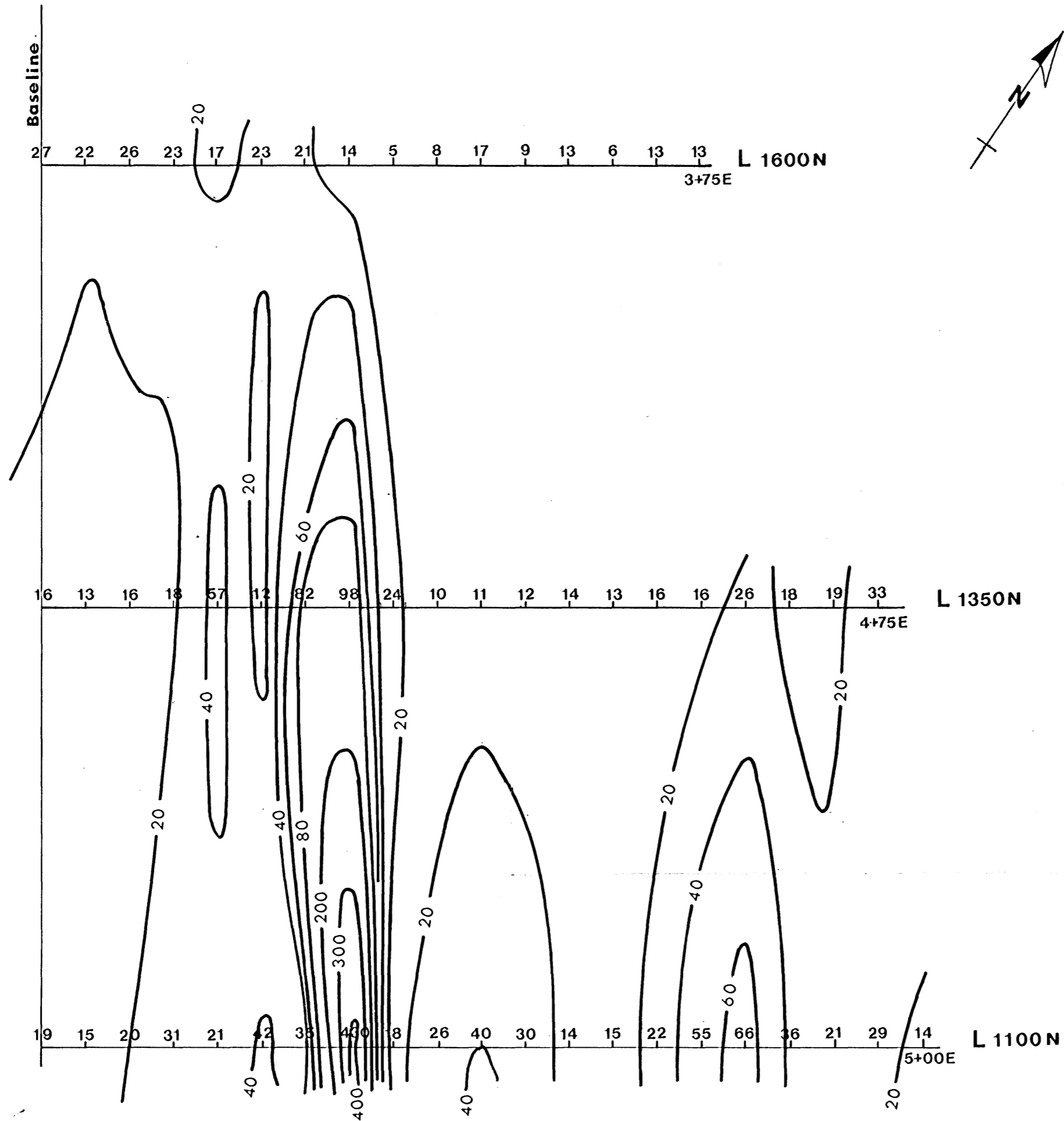
SCALE - 1" = 25 METERS

APP. III

Cottonbelt

Geochemical Survey : Pb ppm

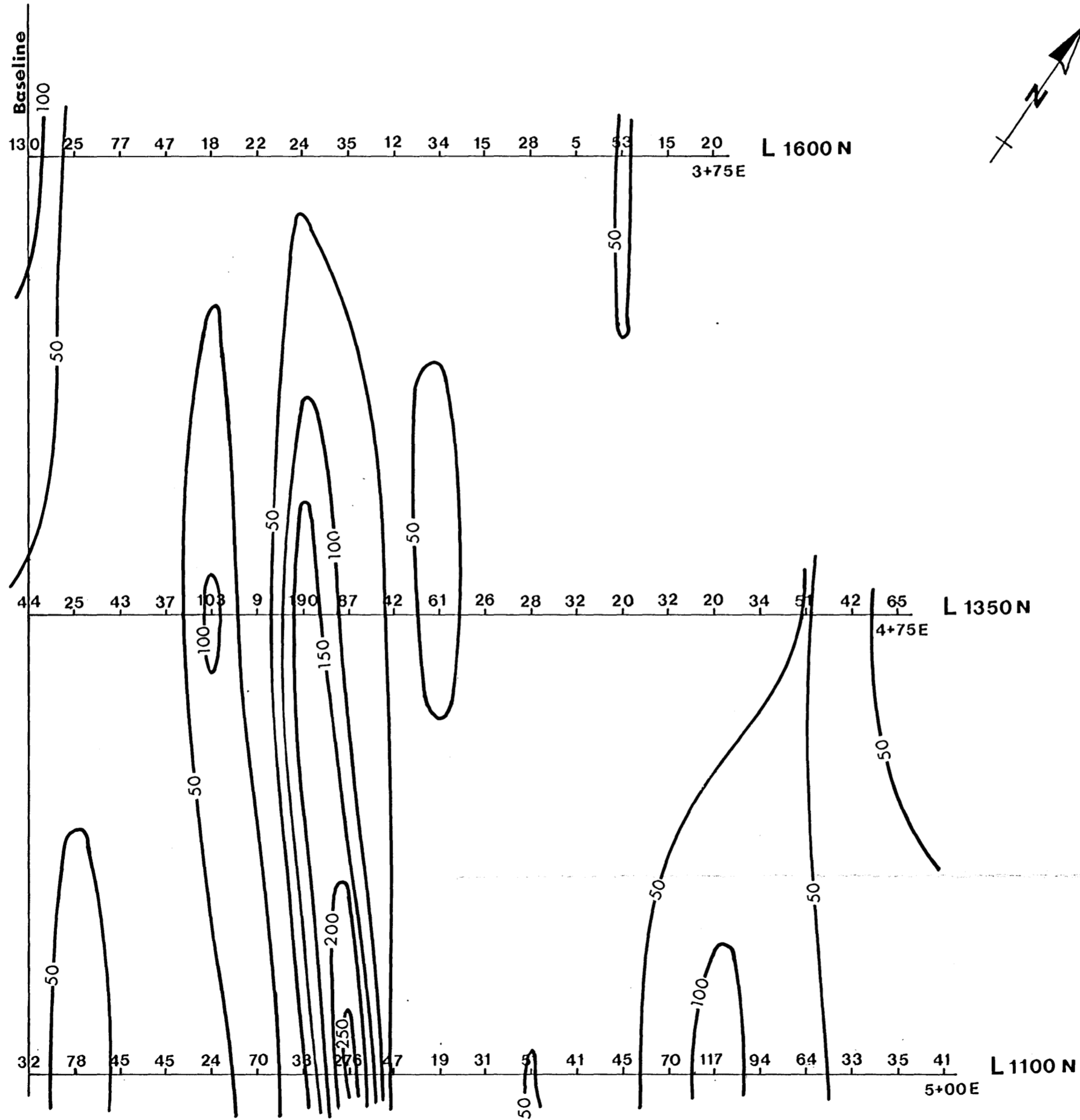
Scale 1:2500



Cottonbelt

Geochemical Survey : Zn ppm

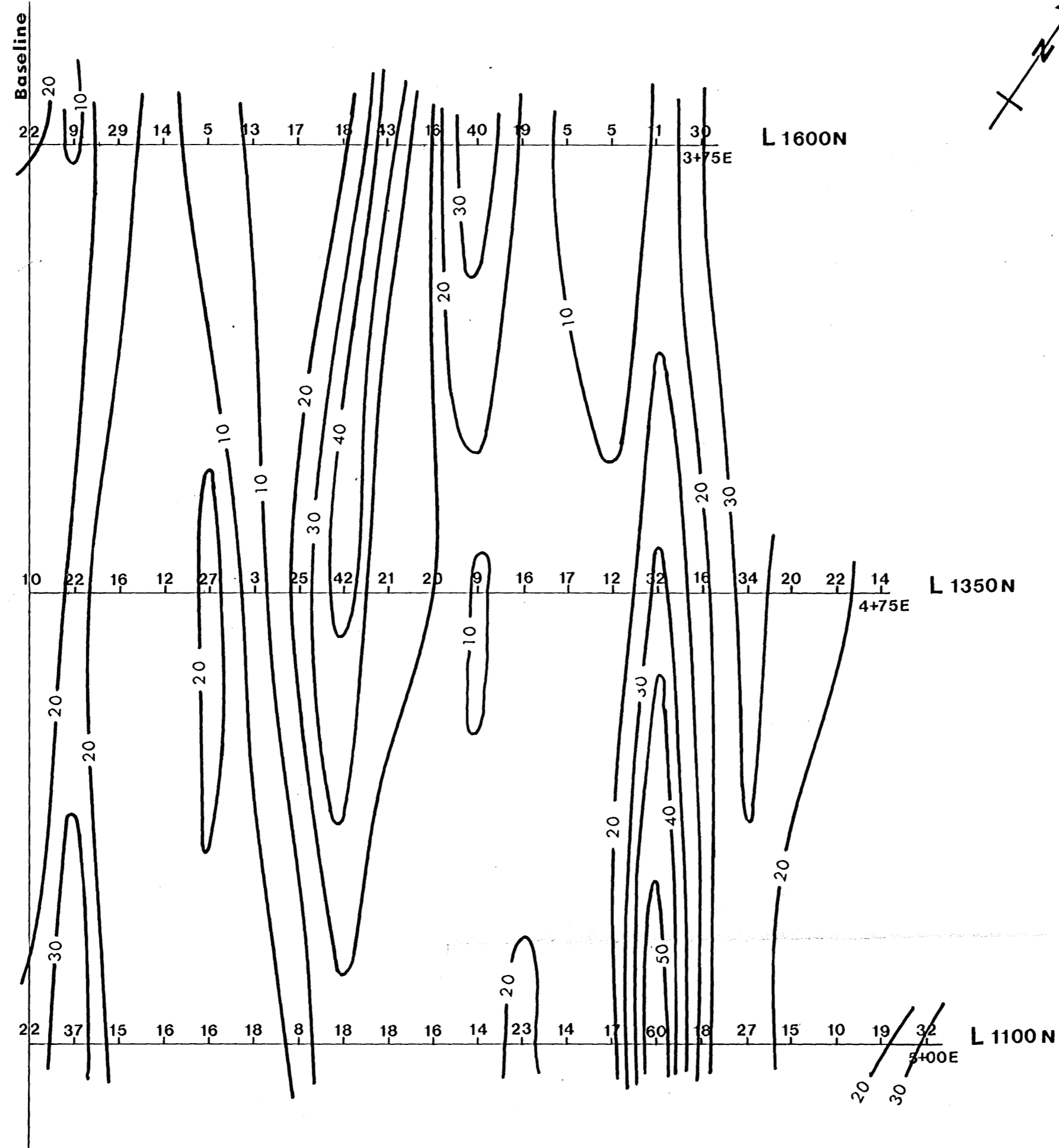
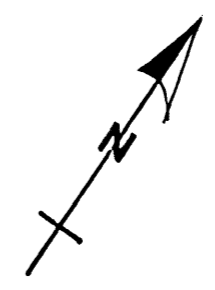
Scale 1:2500



Cottonbelt

Geochemical Survey : Cu ppm

Scale 1:2500



APP. IV



BONDAR-CLEGG & COMPANY LTD.

geochemists • assayers • analytical chemists

1500 PEMBERTON AVENUE, NORTH VANCOUVER, B. C. V7P 2S2
PHONE: 985-0681

REPORT OF: _____ REPORT No. 28 - 903

PROJECT: _____ DATE: August 17, 1978

REPORTED TO: Metallgesellschaft Canada Ltd.

824 - 602 West Hastings Street

Vancouver, B.C. V6B 1P2

Composite

Cerium	1500
Dysprosium	<50
Erbium	<20
Europium	<10
Gadolinium	<100
Holmium	<50
Lanthanum	1000
Lutetium	<20
Neodymium	200
Praseodymium	*
Samarium	<50
Terbium	<20
Thulium	<10
Ytterbium	1
Scandium	<10
Yttrium	30
Potassium	0.7%
Niobium	200

* Unable to determine due to strong spectral interference from very high concentration of calcium in the sample

All results expressed as ppm except where noted.

APP. V

APPENDIX V

STATEMENT OF COSTS

CYPRUS ANVIL MINING CORPORATION

CONTRACT: #28

1. <u>Gridding:</u> Line cutting, picketing, chaining and all associated costs(*) for E.M. Loops - 3 km:	\$ 661.25
2. <u>Prospecting, etc.</u>	-
3. <u>Geophysical Surveying:</u>	
a) <u>Magnetic:</u>	-
b) <u>E.M. - map, report and all associated costs(*)</u> <u>Downhole E.M.:</u>	2,375.32
c) <u>Other Types:</u>	-
4. <u>Geological Surveying:</u>	-
5. <u>Geochemical Surveying:</u>	-
6. <u>Drilling:</u> Mobilization, logging, map, report and all associated costs(*), (including helicopter) (excluding analysis and assaying) 527 m:	63,690.28
7. <u>Stripping:</u>	-
8. <u>Rock Trenching:</u>	-
9. <u>Assaying and Analysis:</u> Assay or geochemical certificates, maps, reports and all associated costs(*):	302.60
10. <u>Outside Consulting:</u>	-
11. <u>Miscellaneous:</u> Road building, reclamation, camp mobilization, etc. (not to exceed 10% of cost of technical work):	2,458.30
TOTAL (Joint Venture)	\$69,487.75 **
TOTAL (Cyprus Anvil)	\$34,743.88
M.E.I.P. Commitment:	<u>\$11,581.29</u>

* Including supervision.

** As invoice, LESS \$3,165.00 Property Acquisition and 10% Administration.

APP. VI

APPENDIX VI

STATEMENT OF QUALIFICATIONS

I, Friedrich-Wilhelm Wellmer, with residence at 1826 West 33rd Avenue, Vancouver, B.C., declare:

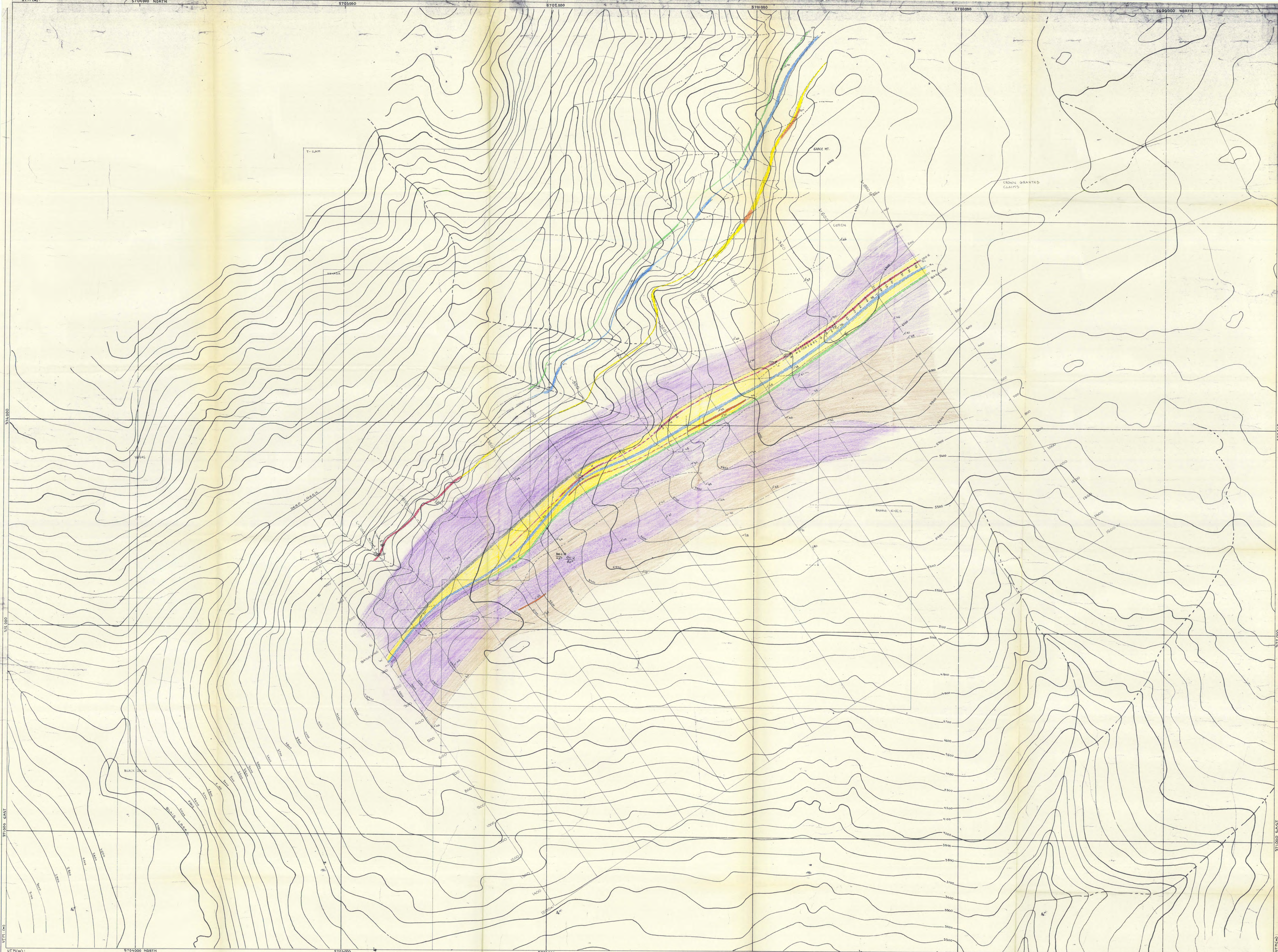
1. that I graduated from the Technische Hochschule Clausthal-Zellerfeld (West Germany) with a diploma in geology in 1966.
2. that I obtained a Ph. D. degree in geology from the Technische Hochschule Clausthal-Zellerfeld in 1970.
3. that since 1966 I have been employed as exploration geologist in Europe, North Africa, South America, USA, Canada.
4. that I am presently employed with Metallgesellschaft Canada Limited of 824-602 West Hastings Street, Vancouver, B.C.
5. that I have no personal interest whatsoever in the claim group under consideration.
6. that I collected the data on which this report is based while working on the property in July 1978.



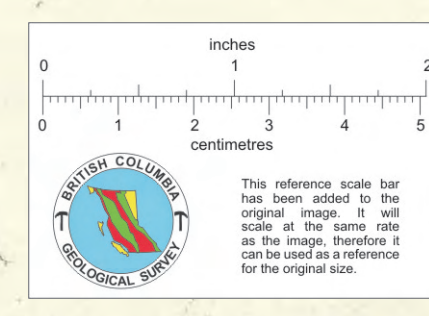
Dr. F.-W. Wellmer

Vancouver, B.C.

ATTACHMENTS



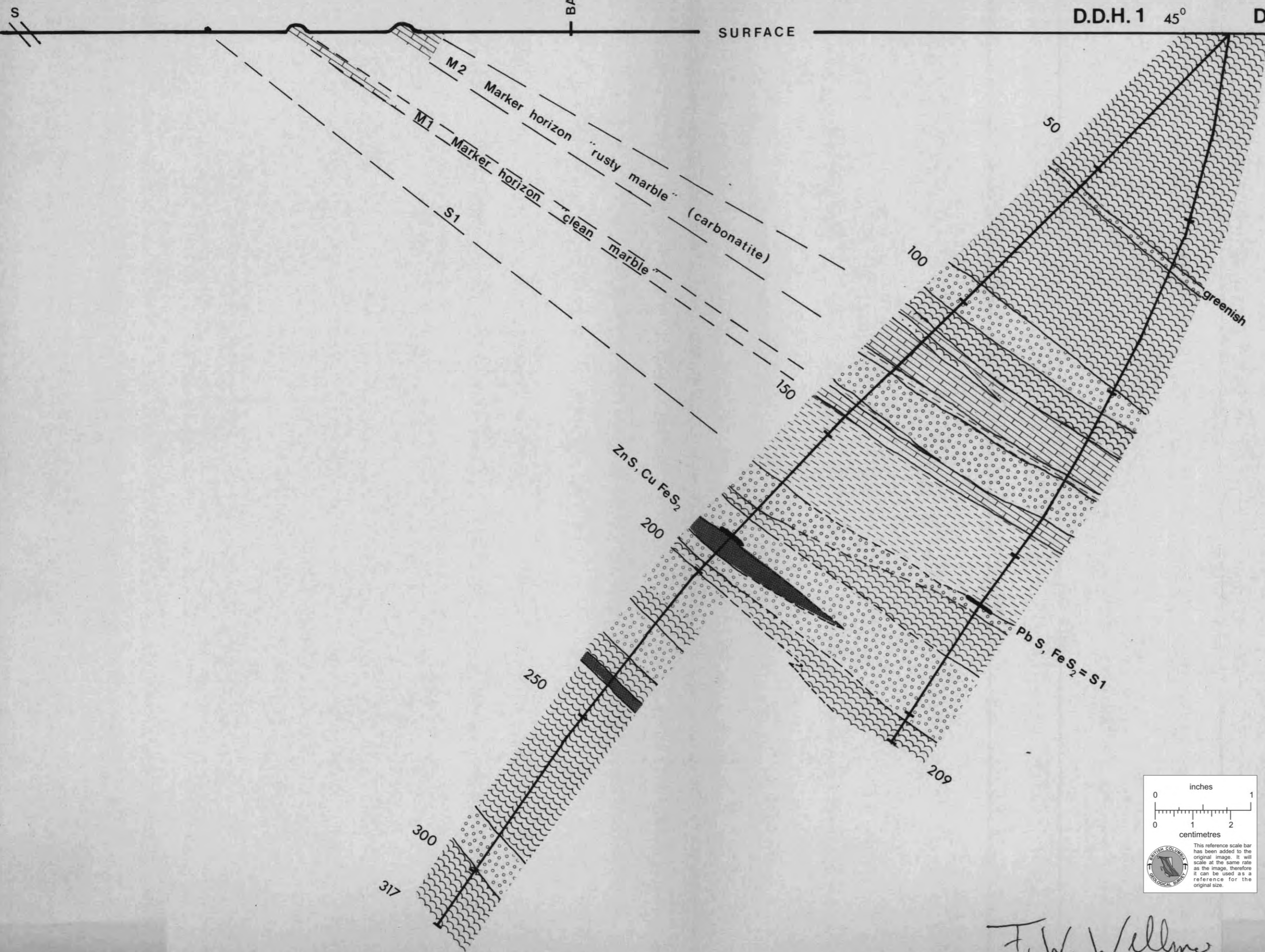
- ORE HOST SEQUENCE:**
- S₁ ORE-BEARING SALTIFEROUS HORNS (FeS, FeS₂, ZnS)
 - S₂ FRAGMENTARILY RE-SOLVED
 - M₁ WHITE MARBLE WITH ANDALUSITE
 - M₂ BERRY MARBLE
 - M₃ GREEN MARBLE, FRAGMENTED OF GNEISS
 - M₄ BOTTLE-CARBONATE GNEISS
- MAIN SEQUENCE:**
- WHITE GNEISS
 - SLATE
 - AMPHIBOLITE
 - GRAB GANBLE


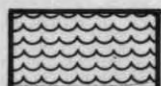
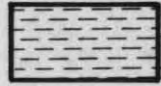
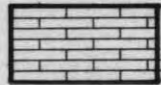



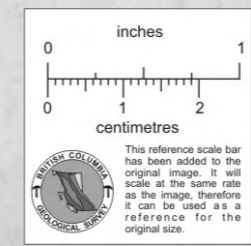
METALLGESELLSCHAFT CANADA LTD
 SHUSWAP JOINT VENTURE
 COTTONBELT CLAIMS
 AUTHOR: J. W. Williams SCALE: 1:5,000 DATE: NOV. 1977
 THIS MAP SHEETS: 1:250,000 82 M 1:50,000 7 W
 COORDINATES:
 DRAFTED BY: J. W. Williams APPROVED:

NE

SW



-  Quartzite, predominantly interlayered with gneisses.
-  Gneisses, predominantly interlayered with quartzite.
-  Ca Silicates, gneisses, Carbonate gneiss.
-  Marble.
-  Amphibolite.



METALLGESELLSCHAFT CANADA LTD.

COTTONBELT PROPERTY

Section : 1,350N

DATE : Nov. '78

SCALE : 1 : 1000

F. W. Wellmer