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EL 28/78

ROSSARDEN MINES LTD.

FINAL REPORT

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INTRODUCTION

Exploration Licence 28/78 was originally granted to Aberfoyle Exploration Pty. Ltd on the 6th April, 1979, and following the sale of the Aberfoyle and Storeys Creek Mines to Rossarden Mines Ltd. on the 19th May, 1981, the latter company assumed responsibility for exploration within EL 28/78.

Associated with the departure of Rossarden Mines Ltd. from the Rossarden area in late 1982, the licence expired on the 6th October, 1982, and this relinquishment (final) report details all exploration work undertaken by Rossarden Mines Ltd. for the period 19th May, 1981 to 6th October, 1982.

The exploration philosophy adopted by Rossarden Mines Ltd. was designed to:

(i) Test for the presence of previously undiscovered tin-tungsten mineralizatio and/or :

(ii) Conduct further exploration in areas of known mineralization, in one or all of the three categories described below.

Primary mineralization in the area is related to the Ben Lomond Granite, and occurs in one of three categories ;

1. Large scale quartz veins systems with considerable strike length, and carrying tin, tungsten and sulphides in Mathinna Beds host rocks;
2. Small scale quartz veins associated with jointing in the granite, and having a margin of altered mineralized granite; these carry tin, tungsten with local concetrations of sulphides and uranium;
3. Pipes of altered granite, carrying tin, zinc, and lead with silver.

Because the first group has sustained significant long term mining, it was considered the prime target ; the other categories are typified by patchy mineralization, and were considered to be secondary targets in view of their potential for open cut extraction.

Consequently the exploration program was intended to investigate the occurence of Aberfoyle/Storeys Creek type vein systems in Mathinna Beds adjacent to the granite, and to rationalise the numerous small occurences of vein types hosted by the granite in terms of granite and regional structure.

Although certain components of the original program (such as air photo interpretation, and gravity surveys), were not done, various other comprehensive exploration activitie were performed as detailed in this report.

The results of the exploration work, whilst encouraging in certain respects, did not appear to reveal any new occurences of quartz vein systems of the Aberfoyle type. The Demmocks and Mammoth Prospects belong to category 2, while the Rifle Range Prospect appears to belong to the first category. However, the results of the main regional component of the exploration (ie. stream sediment sampling), require follow up investigation, and the presence of one, or all of three categories of primary tin tungsten mineralization, within the general area of EL 28/78, cannot be precluded.

SUMMARY

Exploration activity within EL 28/78 for the period May 19th, 1981 to October 6th, 1982 consisted of reconnaissance mapping, geochemistry orientation surveys, a stream sediment sampling program, prospect evaluation, and decrepitation studies of mineralized and barren quartz veins.

An orientation geochemical study of stream sediments in Gipps Creek showed the secondary dispersion of tin, tungsten, arsenic, copper and zinc downstream of the abandoned Long Tunnel Mine to be complicated by the "contaminant" effects of other prospects in the area.

Reconciliation of the contamination due to these other prospects appeared to reveal a gradual decrease in concentration of tin and tungsten in the -40# size fraction downstream, whereas no obvious dispersion trends were apparent for arsenic, copper and zinc. Statistical treatment of the analytical data showed very high positive correlations between tin and tungsten, and between copper and zinc, while both tin and tungsten showed negative correlations with arsenic.

The orientation geochemical study of soils in the Johnson/Kookaburra Veins area was not as useful as the stream sediment survey, mainly because of the number of samples taken, and the length of traverses.

A major stream sediment sampling program was then conducted over EL 28/78, and the sample analyses statistically processed to enable estimation of anomaly threshold values ; a total of nineteen unusual/anomalous/very anomalous areas were defined by this work, of which four areas (on Sawpit, Aberfoyle, Storeys and Castle Carey Creeks appear to represent newly discovered tin-tungsten mineralization.

Several prospects were investigated by means of mapping, grab sampling, soil sampling costeaning, channel sampling, and core drilling. The prospects examined were Demmocks, Mammoth, Rifle Range, and the Lutwyche Vein System.

Demmocks Tin Prospect consists of disseminated cassiterite in joint controlled zones of greisenized granite, while the Mammoth Tin Tungsten Propsect consists of sporadic

cassiterite and wolframite in quartz veins hosted by granite.

The Rifle Range Prospect was originally identified by Aberfoyle Tin Ltd., and although the recently completed program of exploration consisted of drilling two diamond holes, knowledge of the potential of this line of quartz veins has not been significantly improved.

Investigation of the Lutwyche Vein Swarm in the near surface levels showed it to be an intensely veined zone of quartz stringers arranged en echelon, and carrying variable amounts of cassiterite, wolframite and sulphides.

Decrepitation studies on quartz veins from the Aberfoyle area were done by the C.S.I.R.O. and Burlinson Geochemical Services ; the results obtained generally show a distinct difference in decrepitation behaviour between mineralized and country quartz veins, although further work is still required to resolve certain problems.

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GEOCHEMISTRY

ORIENTATION STUDIES

A. STREAM SEDIMENT SAMPLING

A stream sediment orientation study was carried out in the area of Gipps Creek, 8km south west of Rossarden. This creek was chosen for study because of its proximity to several mineralized zones within the granite country rock of the area. It was believed that any elements leached from the ore zones would be present in the creek and so consequently ten samples were collected every 100m downstream from the junction of the Gipps road with the creek.

Sample sites marked GC-1 to GC-10 are shown on Figure 1.

These were then split into four size fractions +40#, -40# to -80# to +120# and -120# and analyzed for tin, tungsten, zinc, copper and arsenic. By plotting the results of each size fraction against distance downstream, the dispersion of each element was traced, as shown on Figures 2, 3, 4, 5, and 6. In addition, the downstream dispersions of tin, tungsten and arsenic in order of decreasing size are shown on Figures 7, 8, 9 and 10. Sample analyses are contained in Appendix I.

Tin displays an erratic concentration pattern in all three -40# fractions, although these fractions (+80#, +120# and -120#) show mutually sympathetic concetrations of cassiterite. Maximum concentrations occur in the +80# and +120# fractions.

Tungsten also shows an erratic dispersion pattern in the -40# size fractions, although all four fractions have mutually sympathetic concentrations of wolf-framite. Similarly to tin, maximum concentrations occur in the +80# and +120# fractions.

Arsenic displays a less erratic dispersion downstream than tin and tungsten, and the +40#, +80# and +120# fractions have generally sympathetic concentrations. Maximum concentrations of arsenic occur in the -120# fraction. The +40# fraction appears to decrease in concentration downstream, while the +80# and +120# fractions (and probably the -120# fraction) appear to increase downstream.

Copper is similar to arsenic in that the +40#, +80# and +120# size fractions show mutually sympathetic concentrations and maximum concentration of copper occurs in the -120# fraction. All four size fractions appear to show a dispersion trend of increased concentrations downstream, but mainly in the -120# size fraction.

Zinc is similar to both copper and arsenic in dispersion patterns although all four size fractions show mutually sympathetic concentrations.

Similarly to copper, maximum concentration of zinc occurs in the -120# fraction, and all four size fractions appear to show a dispersion trend of increased concentration downstream, but also mainly in the -120# fraction.

The sampling programme was aimed at assessing the secondary dispersion of tin, tungsten, arsenic, copper and zinc downstream of the old Long Tunnel Mine.

However, several other prospects and abandoned mines occur downstream of the Long Tunnel Mine on the banks of Gipps Creek, namely the old Ben Lomond Tungsten Mine (sample points GC 7-8) and Hayes Prospect (GC 7-8).

These prospects (plus a previously unknown area of mineralization between GC 4 & 5) have also contributed to the element concentrations in Gipps Creek as follows:

Tin	:	two peaks, one from GC 4-5 and one at GC 8, involving all size fractions
Tungsten	:	two peaks, one at GC 5, and one at GC 8 involving all size fractions
Arsenic	:	three peaks, one from GC 4-5 (except the -120# fraction)
Copper	:	two peaks, one from GC 3-5 (-120# fraction), and a broad peak from GC 7-9 (all size fractions)
Zinc	:	two peaks, a small one at GC 4 (all fractions except -120#), and a second, broad peak from GC 7-9 for all size fractions.

Removal of the "contamination" effect of these prospects etc. downstream of the old Long Tunnel Mine reveals the following dispersion effects:

Tin	:	Concentrations of tin in the +80#, the +120# and probably the -120# size fractions show a gradual decrease downstream.

Tungsten : concentrations in the +180#, the +120# and probably the -120# fractions show a gradual decrease downstream.

Arsenic : Concentration of arsenic in all but the -120# size fraction appear constant downstream and any underlying trend is not readily apparent over the interval of sampling.

Copper : screening out of the "contamination" effects from the prospects etc. downstream of the Old Long Tunnel Mine, does not result in any clear dispersion trend over the sampled interval of 1km.

Zinc : Similar comments apply to the concentrations of zinc as for the copper levels.

Statistical processing of the analytical data (Table 1) shows the maximum mean concentrations of tin and tungsten to occur in +80# size fraction, while the copper, zinc and arsenic maxima occur in the -120# fraction.

Element - element correlations were calculated, as shown in Table 2.

A near perfect positive correlation exists between tin and tungsten in the -40# size fractions (ie. the +80#, +120# and -120# fractions as shown in Figures 8,9 and 10). A similar strong correlation exists between copper and zinc in all fractions but the -120#, which is anomalous.

Tin and tungsten show moderate positive correlations with -120# copper, but not the coarser size fractions. Tin and tungsten also show gradually increasing negative correlations with arsenic for progressively smaller sizes.

Tin, tungsten and arsenic all show moderate (positive and negative) corrlations with -120# zinc values. Because tin and tungsten were the only elements to display consistent strong correlations for all size fractions (especially the -40# fractions), it was decided to conduct the stream sediment sampling program over EL 28/78 using these elements as "path finders".

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TABLE 1.

	Sn				W				As				Cu				Zn			
	+40#	+80#	+120#	-120#	+40#	+80#	+120#	-120#	+40#	+80#	+120#	-120#	+40#	+80#	+120#	-120#	+40#	+80#	+120#	-120#
$\bar{X}$	89.8	1258	855	341	31.5	366	214.5	181.5	3.9	8.7	3.9	24	8.6	20	43.8	222.4	37.9	68.7	119.5	266
S	48.8	994.6	663.7	167.4	30.2	258.6	163.9	76.7	2.1	11.1	3.0	5.6	3.4	10.2	46.5	450.7	9.0	24.5	89.4	85.9

$\bar{x}$: Mean

S : Standard Deviation

Data in parts per million

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TABLE 2.

CORRELATION COEFFICIENTS, ELEMENT - ELEMENT PER SIZE FRACTION

	W				As				Cu				Zn			
	+40#	+80#	+120#	- 120#	+40#	+80#	+120#	- 120#	+40#	+80#	+120#	- 120#	+40#	+80#	+120#	- 120#
Sn	0.90	0.99	0.99	0.96	0.53	-0.34	-0.58	-0.67	-0.12	-	-0.01	0.64	-0.09	0.23	0.12	-0.49
W					0.54	-0.37	-0.58	-0.72	-0.04	-0.08	-	0.70	-0.25	0.17	0.13	-0.55
As									0.01	0.26	-0.08	-0.37	0.06	-0.04	-0.15	0.77
Cu													0.70	0.91	0.98	-0.23

B. SOIL SAMPLING

Soil samples were collected from a gridded area in the region of Johnsons and Kookaburra Veins (Figure 11), north of the Aberfoyle Mine

The samples were collected from the C horizon over a 20m grid and split into four size fractions (+40#, +80#, +120#, and -120#) before analysis for tin, tungsten, arsenic, copper and zinc (Appendix II).

Tin is most concentrated in the +40# fraction, whereas tungsten and arsenic values peak in the -80# fraction. Thus, superficially, +40# tin and -80# tungsten particles appear to correlate with the adjacent ore bodies.

Downslope secondary dispersion patterns of tin, tungsten and arsenic are shown in Figures 12, 13 and 14, and also in Figures 15, 16 and 17 as a function of decreasing size fraction.

The main deficiency of the soil sampling survey centres on the number of samples taken (4), and the distance traversed (60m). These factors, in conjunction with the possibility that the 40 N 20E-40E samples were collected over a subcropping northern extension of one of the Johnson Veins complicate the interpretation of the results.

It appears that the 40 N 40 E sample contained abundant, relatively coarse grained, cassiterite, and that the 40 N 20 E sample contained relatively abundant wolfranite (and ? arsenopysite), all shed from a shallow mineralised quartz vein. Accordingly, the extent of sampling either side of this inferred mineralised zone may have been insufficient to adequately define a complete secondary dispersion halo.

Alternatively, analyses of tin and tungsten in the -120# fraction may be interpreted as exhibiting a consistent clastic syngenetic secondary dipersion pattern. Arsenic values in the same size fraction may represent hydromorphic epigenetic secondary dispersion.

Providing the latter interpretation is valid, it should be possible to use tin and tungsten in the -120# size fraction as path finder elements in subsequent soil sampling programmes.

STREAM SEDIMENT SAMPLING PROGRAM.

INTRODUCTION

A full stream sediment sampling program was conducted in EL28/78 during April 1982. The study was undertaken as part of the general exploration of the Exploration Licence in an attempt to identify any broad tin and tungsten anomalies which would warrant further investigation.

The Exploration Licence is dissected by a series of south to south easterly flowing creeks, which drain from the Lomond mountains. These creeks flow through three distinct geological units, namely those of Devonian age granite to the west, Ordovician - Devonian age Mathinna Beds in the east, both capped by Permian age sediments mainly in the downfaulted areas.

Reconnaisance mapping of EL28/78 was done as a precursor to the sampling of the streams, and the results are presented at a scale of 1:20 000 in Figure 25 It was discovered from the stream sediment orientation study, that when a creek flowed through or past a mineralised area, traces of tin and tungsten could be found for some distance downstream Consequently it was decided that a stream sediment sampling program should be conducted in the area using tin and tungsten as the pathfinder elements.

METHOD OF SAMPLING

The sampling program generated approximately 100 samples from all the major creeks in the Exploration Licence, namely Buffalo, Hercules, Egan, Sundial, Castle Carey, Storeys, Aberfoyle and Sawpit.

Sample spacing in a given creek ranged from 100m to 1km, and averaged approximately 500m over all the creeks. Samples were taken from all the main creeks (with the exceptions noted below), and at the junction of flowing tributaries, as shown on Figures 19, 20, 21, 22, 23 & 24.

The samples were sieved in the field with the -10# size fraction taken in preference to the -40# fraction to enable the collection of a larger sample. The samples were then analysed for tin and tungsten.

Two main problems were encountered which restricted the objective of complete coverage of the EL, namely :

(1) In the areas of more gentle relief, the creeks found to meader over a broad flood plain, creating extensive marshlands, and consequently organic rich muds which proved impossible to sample. This type of area was most commonly found in the granite terrain of the Gipps Creek area, especially in the upper reaches of Sundial, Egans and Buffalo creeks, and because of this only the lower parts of these creeks could be sampled.

(2) Contamination of Storeys and Aberfoyle creeks due to the mining operations on the banks of these creeks. Consequently, no samples were collected from these creeks downstream of the tailings dumps of the two mine areas.

RESULTS

The samples were taken as follows: (see also Figures 19-24)

Sandpit	creeks	-	samples	SS	1-24
Aberfoyle	"	-	"	SS	25-37
Storeys	"	-	"	SS	38-58
Castle Carey	"	-	"	SS	59-69
Sundial	"	-	"	SS	70-75
Buffalo	"	-	"	SS	76, 80-89
Egans	"	-	"	SS	77-79, 91
Hercules	"	-	"	SS	90

Sample analyses are tabulated in Appendix III. The results were statistically processed in two groups according to the dominant provenance of the tributaries, or to the underlying bedrock of the main streams.

The division was made into either granite or the metasediments of the Mathinna Beds on the basis of the reconnaissance mapping (Figure 25)

The results from these groups were then totalled and mean and standard deviation values were calculated as follows:

TABLE 3.

COUNTRY ROCK	GRANITE ($N = 44$)		MATHINNA BEDS (N=45)	
Elements	Sn	W	Sn	W
$\bar{x}$	41.9	13.5	48.1	15.9
S	74.4	33.3	53.8	16.9

N = Population sample size ; $\bar{x}$ = mean ; S = standard deviation; analyses in ppm

Because approximately two thirds of any sample lie within one standard deviation of the mean, the following criteria were adopted to further classify the results shown in Table 3;

Mean	+	0.5	standard deviation	= Unusual
Mean	+	1	" "	= Anomalous
Mean	+	2	" "	= Very Anomalous

Application of these parameters to the sample analyses is shown below in Table 4.

Table 4.

GRANITE		MATHINNA BEDS		STATUS	Colour on Figure 26
Sn	W	Sn	W		
0-65	0-30	0-70	0-25	Normal (N)	Black
65-115	30-45	70-100	25-35	Unusual (U)	Blue
115-215	45-75	100-150	35-50	Anomalous (A)	Green
>215	>75	>150	>50	Very Anomalous (VA)	Red

(Analyses in ppm)

Examination of the sample analyses (Appendix III) revealed eight unusual, three anomalous, and eight very anomalous areas requiring follow up exploration. Details are given in Figure 26, and summarised below in Table 5.

TABLE 5.

SAMPLE NO.	CREEK	STATUS	ROCK TYPE	EXPLANATION
SS 8	Sawdpit	A	Mathinna	Unknown
24	"	U	"	"
25	Aberfoyle	A	"	? Part of Aberfoyle Vein System
26	"	VA	"	
27	"	VA	"	
28	"	U	"	
29	"	U	Granite	
33	"	U	"	
37	"	A	Mathinna	? Part of Storeys Vein System
38	Storeys	U	"	Mammoth
39	"	VA	"	Mammoth
42	"	U	Granite	Flaherty
45	"	VA	Mathinna	Brock
46	"	VA	"	Bedelph No. 2
47	"	VA	Granite	Unknown
62	Castle Carey	U	"	"
66	" "	VA	"	"
89	Buffalo	U	"	"
90	Hercules	VA	"	Rex Hill

Four apparently prospective areas have been identified, namely near Sawpit creek (SS 8), near Aberfoyle creek (SS 26-27), near lower Storeys creek (SS 47) and near Castle Carey creek (SS 66). The anomalous area defined by samples SS 26-27 may represent an extension of the Aberfoyle Vein System.

Other anomalies shown in Table 5 appear to be associated with known tin/tungsten mineralization in either prospects or old mining areas.

The system of classifying the results (Table 4) requires closer scrutiny, since the dispersion of tin and tungsten downstream of the Mammoth workings in Nisbet Creek is noteworthy; Over a distance of approximately 500m, the tin and tungsten values were reduced by one half from SS 39 to SS 38, with an associated drop in status from very anomalous to unusual.

This observation is in general agreement with the reconstructed downstream dispersion of tin and tungsten in Gipps creek (see orientation studies), where the -40# to -120# size fractions show a decrease of one half to two thirds over a distance of 1km.

The implication of these results is that any stream sediment samples classified as "unusual", and which were collected from tributaries 500m in length should be further examined by additional sampling.

DEMMOCKS TIN PROSPECT

INTRODUCTION

Demmocks Tin Prospect is located 2km south of Rossarden (561 950E, 5384 300N) within Mineral Lease 4725/M covering an area of 80 acres. The prospect was previously worked on a smaller scale in the early 1900's when it was abandoned because of problems with grade and gound conditions.

GEOLOGY

The prospect occurs within the main mass of the Ben Lomond granite which is of Devonian age.

The mineralization has formed at the boundary between a feldspar rich coarse grained equigrannular granite, and a quartz porphyry containing abundant mica. The contact between these rock types is usually sharp with a strike direction to the north west although in some cases a gradational boundary is exhibited.

Permo-carboniferous age grits and conglomerates overlie the Devonian granite to the northeast of the prospect; these conglomerates and grits contain abundant quartz and granite pebbles, and in places many contain debrital tin.

The spatial distribution of the mineralization is controlled by the joint pattern which pervades the equigranular granite. These joints exhibit two main trends, northwest and east-southwest; the former group trend almost parallel to the granite - prophyry contact while the second group trend normal to this contact. Both groups of joints dip steeply, ranging from 80° NE to vertical.

The granite is cut by several thick quartz veins trending northwest with a near vertical dip. These veins are barren, and although trending parallel to the mineralized zones, contain only euhedral quartz crystals up to 5cm in size.

The mineralization forms as dyke like bodies of dark coloured greisen along northwest trending joints. The greisen often found in association with the barren quartz veins, appears as a jointed quartz-mica mass, studded with sulphide minerals, which are mainly pyrite, arsenopysite, chalcopyrite; fine grained cassiterite is disseminated in the greisen.

The thickness and persistence of these greisen bodies appears to be controlled by the intersecting second set of joints. Consequently the mineralized zone appears as a stockwork of thick high grade areas where two joint sets meet. This zone is approximately 30m wide, and may continue beneath the Permo-Carboniferous sediment to the northeast,

COMPLETED WORK

The area was mapped at 1:200 scale (Figure 27) and a 20x20m grid laid out for soil sampling. Numerous grab samples were collected, mainly from the waste dumps of the old shafts and pits, and analysed for tin, tungsten and copper.

Soil samples were collected from the C horizon at all grid intersections, and analysed for tin tungsten and copper.

Three costeans were excavated, their walls mapped and channel sampled, the samples also being analysed for tin, tungsten and copper.

RESULTS

Grab Samples

A total of 23 grab samples were collected as follows ; DP 1A, 1B, 3-6, D53, D55-68 and D91-92.

Localities are indicated on Figure 27, and analyses are contained in Appendix 1V. Maximum values obtained were 2.03% Sn, 230 ppm W, and 2.2% Cu. Sample D66 contained 8500ppm Sn, 130ppm W, 9600 ppm Cu, 24 ppm Ag and $<$0 1 ppm Au.

Soil Samples

A total of 49 soil samples (D1-49) were collected from the 20x20m grid. Grid co-ordinates and results are contained in Appendix 1V, and the locations portrayed in Figure 27. The results show a wide range in tin values (up to 2150ppm). Tungsten values, in common with the grab sample results, are low and generally not indicative of the mineralization, with very little dispersion about the mean value. The areas of known mineralization are approximately defined by the 100 ppm Sn and 20 ppm Cu soil anomaly contours, and these anomalies appear to trend north, northeast and possibly east-west.

Channel Samples

A total of 32 channel samples (each 3m in length) were taken as follows:

D50-52 : along the northwall of the collapsed shaft in the north of the area;

D54 : across the quartz porphyry near its contact with the granite;

D69-90 : along costeans No. 1 and 2

D93-97 : along costean No. 3.

Localities are shown in Figure 27, and the results contained in Appendix 1V.

The channel sample results show a reasonable correspondence with the soil sample results, and integration of these two groups of data, - suggest north-west trending zones of mineralization in the area exposed by costeans 1 and 2.

However, there is no clear picture of mineralization trends over the entire area; the mineralization appears to extend to the north, and there may be a second parallel zone in the south of the area.

MAMMOTH TIN-TUNGSTEN PROSPECT

INTRODUCTION

The Mammoth Tin-Tungsten Prospect is located approximately 0.8km from the Storeys Creek Mine, on the southern bank of Nisbet Creek, (560 250E, 5389 650N).

The prospect has been worked intermittently on a small scale since the 1920's.

GEOLOGY

The major mineralization occurs in a series of parallel quartz veins (Striking approximately NW) which outcrop in the granite, near the northern contact with Mathinna Beds, to form a zone at least 200m wide. A primary, subordinate set of veins strike approximately ENE perpendicularly to this secondary set. These veins are generally narrower, infrequent and have a limited strike length.

Locally the granite is altered to a fine grained quartz-muscovite-tourmaline leucogranite, frequently containing rounded phenocrysts of quartz. Greisen envelopes, of varying width, have formed about the margins of the veins.

At the northern contact, exposed in Nisbet Creek, the granite dips steeply to the northeast beneath the Mathinna Beds. Above the southern bank of Nisbet Creek the granite has been peneplaned to form a plateau; here the granite encloses isolated xenoliths and roof pendants of the country rock. To the west and northeast the granite is overlain by flat-lying basal Permian sediments.

Veins of the main (ie. secondary), system fill tension fractures which strike between 305° and 330° with dips to the southwest of between 20° and 40°. These veins continue along to the northwest where they pass under the Permian cover.

In the granite the veins vary up to 300mm in thickness, with a mean thickness of about 100mm and are bordered by greisen. The greisen envelope is up to 1 metre wide and consists of coarse intergrowths of muscovite and tourmaline; occasionally disseminated cassiterite is found adjacent to the vein. In places the greisen is restricted to the upper margin of the vein. Zones of less intense alteration extend several metres from the veins.

The veins consist of milky quartz gangue containing muscovite and tourmaline with minor pyrite, wolframite and cassiterite. Where the veins enter the Mathinna

Beds, the vein width often increases dramatically, some veins being more than 1 metre wide, although there is not a proportional increase in grade.

The minor, primary veins strike 250° and are vertical or dip steeply to the north. Only one of these veins has been worked over an interval of about 25 metres where the vein appears to have increased in width.

The presence of faults, which strike parallel to the secondary vein system and dip to the southwest at about 50°, limits the continuity of the primary veins along strike and has produced significant displacement of the secondary veins.

PREVIOUS WORK

The initial work consisted of a series of costeans in which the No. 1 and No. 2 veins are exposed (see Figure 28). The continuation of the No. 1 vein has been exposed further north on the plateau above Nisbet Creek, indicating a total strike length in excess of 400 metres. Between No. 1 and No. 2 veins several other parallel veins with similar dips are exposed in small pits.

Underground workings consist of an adit driven in from the side of the road in the dip direction of No. 1 vein. This was intended to intersect the vein at depth, however the adit was abandoned after driving 18 metres. A second adit, 20 metres upslope and slightly north of the first, has intersected No. 1 vein 13 metres below its surface outcrop. A small section of the vein has been stoped although there does not appear to be any increase in grade at this depth.

COMPLETED WORK

The area was mapped at 1:1000 scale (Figure 28), Following which grab samples were collected from the veins exposed in the old workings, and from the waste dumps. Four costeans were excavated, and their walls mapped and channel sampled; quartz veins exposed in these costeans were grab sampled, and selected C horizon soil samples were collected above the alteration zones bordering these quartz veins All samples taken were analysed for tin and tungsten.

RESULTS

Grab Samples

A total of 32 grab samples were collected as follows:

Veins exposed in old workings

No. 1 Vein : samples MV 1-12

Unnamed vein (s) : samples MV 13-15

No. 2 Vein : samples MV 16-20

Waste dump samples : MD 1-4

Veins exposed in recent costeans : samples MC 1 QV 1B and 2B, MC 2 QV 1B, 2B, 3B and 4B, MC 3 QV 1B and 2B.

Localities are shown in Figure 28, and the results are contained in Appendix V. Analyses of No. 1 Vein revealed maximum values of 1.75% Sn and 3000ppm W, while No. 2 vein is of lower grade, peaking at 1450ppm Sn , and 70ppm W. Sample MV 14 analysed 6.05% Sn and 50ppm W, but was not encountered in costean MC1. Waste dump sample results are generally not indicative of the mineralization present in the quartz veins. Analyses of the veins exposed in costeans MC1-3, reveal very low tin and tungsten values; however none of the costean tested the strike extensions of the No. 1 vein, although the No. 2 vein was shown to be discontinuous to the south.

Soil Samples

A total of 6 C horizon soil samples were collected from costeans MC1, 2 and 3, (samples MC1 - S1A, 1B etc). The results indicate a good correaltion with the underlying 5m channel sample results from the granite, but a variable (higher or lower) relation to the 1m channel sample results.

Consequently the results imply that soil sampling could be used to determine the general (background) grade of the granite, but that individual veins would require excavation and channel sampling.

The choice of such pits/costeanswould depend on taking soil samples in a systematic manner over a large area. Analyses are contained in Appendix V.

Channel Samples

A total of 37 5m and 13 1m channel samples were collected as shown in Figure 28, and tabulated in Appendix V. The 5m channel samples are numbered MC1 1-14, MC2 1-7, MC3 1-7, and MC4 1-9, and the 1m samples are titled MC1 QV1 A, C QV2 A,C, MC2 QV1 A, C QV 2 A, C, QV 3 A, C and MC 3 QV 1 A, C, QV 2 C.

These results reveal essentially low tin grades, the maximum occurring in MC 1 (310 ppm Sn). Outside the strike extensions of the No. 1 vein which were not investigated by the program of costeaning, the mineralization of the other veins is predominantly low grade with an erratic distribution of higher grades. In addition, the granite and greisen zones only contain low background tin and tungsten values.

RIFLE RANGE PROSPECT

INTRODUCTION AND GEOLOGY

The Rifle Range Mine is defined by a belt of quartz float and shattered blue-grey, veined quartzite varying in width from 20-30m; the belt is traceable for a discontinuous strike length of approximately 1km on a bearing of 305°-320° (parallel to the Lutwyche Vein System)[refer Figure 29.]

The central portion of the Rifle Range Line to the west of the Aberfoyle Rivulet is well defined, but the line becomes less distinct at its eastern and western extremities.

Exposures in the Aberfoyle Rivulet suggest that the Rifle Range Line may consist of several sub-parallel, closely spaced zones of fracturing and irregular quartz veining. These zones cut across an upthrown block of Mathinna sediments bounded to the north and south by northwest trending faults and to the east by the Aberfoyle No. 3 Fault.

The main rock types of this area resemble those at the Aberfoyle Mine and in the Lutwyche area. These consist of dark quartzites and psammopelites with minor slaty bands with a strike between 310°-320° and dips to the south west ranging from 30°-80°. Sporadic spotting may be seen in some of the slaty bands.

A poorly developed cleavage strikes approximately 330° and dips at 60° to the southwest.

Jointing is well developed. One set of joints has a strike varying between 340° and 010° and dips steeply to the west. A second set of joints strikes 40°-50° and dips steeply to the south-east. A sporadically developed third set of joints, which may be lined with quartz, strike 70-80° with steep and vertical dips.

The quartz veining and float which defines the Rifle Range Line is predominantly of a white, milky and massive variety. The veins them selves may be drusy in parts, with cavities containing small quartz crystals and, rarely, crystals of haematite. Limonite and haematite-stained quartz is not common.

Neither sulphide nor tin/wolfram mineralization was observed, but a short narrow, poorly developed zone of limonitic quartz, psammopelite and gossan-like material was noted. This zone overlies a low, narrow spur on the eastern bank of a bend in the Aberfoyle Rivulet,

Several narrow, well defined cross-veins striking about 070° and dipping 80° to the north were noted to be parallel to a jointing direction.

PREVIOUS WORK

Aberfoyle Tin Ltd. mapped the prospect at 1:1200 scale, and condicted a soil sampling program on a 15m x 15m grid. Soil samples were screened to -80#, and analysed for copper, zinc and arsenic.

The main soil anomaly of interest was one extneding for 700m from 3500E 9500N to 2400E 10900N.

The general conclusion made was that the Rifle Range Line represented a vein system comparable with Lutwyche, but slightly deeper, so that no metal bearing veins were exposed on the surface.

WORK COMPLETED

Two diamond drill holes were collared east of the Rifle Range Line of outcrop, as shown on Figures 29 and 30.

Drill Hole RR-1 (1094E, 3055N : Fig - 30) was collared at approximately 575m ASL, and inclined at 90° to the horizontal. (ie: vertically (!)) Total depth was 61.0m, and the hole was not surveyed. It intersected a Mathinna Bed Sequence represented mainly by meta greywacke with minor interbedded meta grey wacke and slaty mudstone and several chloritized " mafic tuffs/sills/dykes, which appear to be sub parallel to the bedding. Details are shown in cross section A-B (Fig 31) and the log of the hole is in Appendix V1.

Quartz veins were intersected as follows:

9.5 - 9.95	:	milky quartz, with goethite coating fractures, minor carbonate and white mica.
11.57-11.65	:	milky quartz, with kaolin (ex ? topaz), minor carbonate and white mica.
27.43-27.54	:	milky with minor white mica.
46.00-46.90	:	milky quartz, minor white mica, carbonate and trace pyrite.

47.68 - 48.03m : milky quartz, minor white mica, carbonate and trace topaz and kaolin.

53.40 - 53.75m :milky and glassy/vuggy quartz, diffuse margins, and minor carbonate.

55.75 - 55.82m : milky quartz, minor carbonate and white mica. No cassiterite/wolframite/sulphide (except pyrite) mineralization was observed, and most of the veins are interpreted as country quartz (barren). The only likely mineralized veins are those from 11.59 - 11.65, and 47.68 - 48.03m. The quartz vein from 46.0 - 46.9 m was subjected to decrepitation analysis, and although meeting some of the criteria for mineralized veins, is most probably country quartz, (see Section ..).

Drill Hole RR-2 (1145E, 3074N: Fig 30) was collared at approximately 575m ASL, and inclined at 60° on an azimuth of 030° Mine Grid (= 040° State Grid). Total depth was 150.0m, and the hole was not surveyed.

The Mathinna Bed sequence encountered, consists equally of quartzite (meta greywacke), and interbedded quartzite and argillaceous quartzite, with minor slaty mudstone. A quartz-feldspar porphry dyke was met at the top of the hole, beneath which several chloritised matic tuffs/sills/dykes were encountered, which are similar to those in RR-1. Details are shown in cross section A-B (Figure 31), and the log of the hole is in Appendix V11.

Quartzveins were intersected as follows:

42.1 - 45.1m : zone of milky and vuggy quartz, veins ranging from 20-100mm in width and containing kaolin (ex ? topaz), carbonate and fluorite.

59.16-59.29m : milky and vuggy quartz, minor kaolin (ex ?topaz) and carbonate trace of ? cassiterite.

61.0 -61.05m : zone of irregular, thin (10mm) milky quartz veins, generally rimmed with chlorite/mica and containing minor carbonate.

89.2 -89.35m : 90.57 - 91.01m : 91.63 - 91.95m : 92.60 - 92.65m ; milky quartz with inclusions of chlorite/mica and containing minor carbonate.

115.05-115.45m : zone of irregular, thin milky quartz, with abundant carbonate, and minor pyrite.

Similarly to drillhole RR-1, virtually no cassiterite/wolframite/sulphide mineralization was observed, although three of the "veins" (42.1-45.1, 59.16-59.29m, and 61.0-61.05m) are interpreted as being in the mineralized quartz vein category. The remaining six quartz veins appear to be (barren) country quartz.

Decrepitation analysis of the vein at 91.63m indicates it to be country quartz. Full details on samples collected from the Rifle Range area for decriptation work are provided in Section .

DISCUSSION

Drill hole RR-1 was put down with the objective of assessing the validity of an easterly dipping Rifle Range Line of quartz veins, while RR-2 was drilled with the objective of testing the existence of an inferred fault (trending WNW), as shown on Figure 29.

Any interpretation of the structure of the Rifle Range Line must incorporate the following aspects:

(i) the NW strike and SW dip of the quartz-veins seen in outcrop.

(ii) the location of soil geochemical anomalies, which occur consistently to the west of the veins outcrop;

(iii) the lack of correlation of the quartz across section A-B of the likely main quartz veins in RR-1 and RR-2, with the Rifle Range outcrop;

(iv) the orientations of the quartz-feldspar porphyry dyke, and the inferred fault zone, on section A-B.

(v) the correlation of the quartz veins in RR-2 with the outcrop to the SE (of the collar of the hole) - indicating a westerly dip for these veins.

These latter two points imply that either cleavage (or the west dipping joints set) in the host Mathinna Beds have played an important role in the orientation of acidic intrusive bodies.

The Rifle Range Prospect, based on the tennous evidence of a single decrepigram, appears to contain quartz veins of the mineralized category.

In summary, the drilling program has virtually disproved an easterly dip for the Rifle Range veins, and the prospect has yet to be adequately tested.

BATTERY - LUTWYCHE VEINS

INTRODUCTION

The Battery Vein consists of a set of near vertical quartz veins (generally (< 100mm thick), containing abundant cassiterite, it strikes at approximately 045° and is transverse to the Lutwyche vein System, (Refer Figure 29).

Drill hole RR-3 was collared at 940E, 2515N (Fig 30)at an elevation of approximately 615m ASL: it was inclined at 80° on an azimuth of 135° Mine Grid (= 145° State Grid) with the objective of intersecting the Battery Vein at shallow depth.

PREVIOUS WORK

Although Battery Vein was mined underground from the 13 Level of the Aberfoyle Mine, the amount of data on this vein in the upper levels is sparse, and amounts to a single drill hole inclined at 60° on azimuth 320° (Mine Grid). This drill hole intersected several cassiterite bearing quartz veins, all of which were $\ll$25mm in width. However, core recovery over the target interval was only 60% and in addition, the hole may have met the Battery Vein below its main up-plunge position.

RESULTS

Drill hole RR-3 failed to reach its target, but instead it steepened and deflected to the east (Figure 29). As a result, numerous quartz veins representing the Lutwyche Vein Swarm were encountered, and the hole inadvertently provided additional information on the Lutwyche veins at shallow depth, as shown on cross section C-D (Figure 29 and 32).

The log of RR-3 is indicated as Appendix VIII. It intersected a Mathinna Bed sequence composed mainly of argillaceous quartzite included in which was a thin kaolinized and chloritized ? mafic tuff/sill/dyke, which was correlated with a similar lithology in the old Aberfoyle drill hole S 29.

The Lutwyche Vein System/Swarm occurs as an intensely veined zone of quartz stringers typically < 100mm and averaging 5-10mm in width. These stringer veins are frequently arranged en echelon, and show a tendancy to form in clusters.

Typical clusters of echelon quartz veins are as follows in RR-3: 13.3 - 20-1m 31.8 - 36.7m, 49.12 - 53.05m, 65.2 - 74.5m, and 98.02 - 101.8m. Mineralization in these veins appears to be mainly pyrite and sphalerite with cassiterite and wolframite generally amounting to <1% (vol).

Several, relatively thick quartz veins (eg.54.25 - 54.54m, 75.3 - 75.8m, 76.0 - 76.3, and 95.85 - 96.3m), may be either mineralized or country quartz.

In conclusion, drill hole RR-3 has indicated the nature of the Lutwyche Vein System / Swarm within the top 100m of the surface, and appears to complement the data already obtained by Aberfoyle Tin Ltd. via drill holes S 29, 31, 34, 35 and 36.

The true width of the Lutwyche Vein System on section C-D (ie. north of Battery Vein), is approximately 75m, which contrasts with the thickness south of the Battery Vein. Fault movement along (or parallel to) Battery Vein is also implied by the apparent offset of Kookaburra Fault (Fig. 29).

DECREPITATION STUDIES

INTRODUCTION

Preliminary investigations done jointly by Dr. R. Wilkins of the CSIRO and Burlinson Geochemical Services, revealed a significant difference between mineralized quartz and barren country quartz samples collected from the Aberfoyle Mine and surrounding area.

The contrast between the two types of quartz was due to variations in both decrepitation temperatures, and in decrepitation activities of the (fluid) inclusions.

Consequently, a suite of unmarked quartz samples was despatched to Burlinson Geochemical Services in Darwin for further decrepitation work.

WORK COMPLETED

A total of twelve mineralized quartz veins, four country quartz veins (ie. metamorphically segregated silica), and three quartz veins from the Rifle Range area, were despatched for analysis. Grain sixe fractions investigated were 600-1100um, 420-600um and 200-420um: it was found that greater detail was obtained in the decrepigrams with the decreasing grain size, although the 0-60um fraction results were very similar to the -420um fraction results. Problems were encountered with multi mineralize samples, particularly those containing sulphides, and as a result, only hand picked, clean quartz was processed.

RESULTS

Decrepigrams of the samples are in Appendix 1X, and the results shown also in Table 6. The results occur in several groups as follows:

(i) Bimodal, high activity, with the 500°C peak slightly dominant over the 390°C peak, (Samples 1, 3A,3B):

(ii) Bimodal, moderate activity, with the 360/370°C peak approximately equal in height to the 500°C peak and with a trace of a peak near 250°C, (Samples 6,7,10 11).

(iii) Trimodal, moderate activity, with the 500°C peak generally subordinate to the 360°C/370°C peak, (Samples 2,4,5,8, and 9)

Samples 8 and 9 are clearly transitional to group (ii), since they have a subordinate 250°C peak.

CATEGORY	SAMPLE NO.	SIZE FRACTION ( )	APP. MEAN TEMP. PEAK 1	PEAK 2	PEAK 3	APP. MODAL ACT. PEAK 1	PEAK 2	PEAK 3	MODAL ACT. RATIOS 2/1	3/2
MINERALIZED QUARTZ	1	—600+420	-	395	505	-	860	1650	-	1.9
	2	"	235	355	515	210	320	200	1.5	0.6
	3A	"	-	390	515	-	650	1650	-	2.5
	3B	"	-	385	505	-	850	1265	-	1.5
	4	"	255	375	515	350	360	290	1.0	0.8
	5	"	250	360	490	305	400	140	1.3	0.3
	6	"	-	360	505	-	295	450	-	1.5
	7	"	-	360	500	-	330	470	-	1.4
	8	"	240	360	525	50	180	360	3.6	2.0
	9	"	255	365	505	80	570	750	7.1	1.3
	10	"	-	385	505	-	490	675	-	1.4
	11	"	-	380	480	-	860	860	-	1.0
		AVERAGES =	247	372	505	199	514	730	2.9	1.3
COUNTRY QUARTZ	16	-600+420	265	395	505	125	330	1900	2.6	5.8
	17	"	260	420	505	160	750	3580	4.7	4.8
	18	"	265	425	515	135	385	2725	2.8	7.1
	19	"	275	395	525	145	560	2710	3.9	4.8
		AVERAGES =	266	409	512	141	506	2729	3.5	5.6
RIFLE RANGE AREA	RRS	-600+420	-	385	525	-	230	860	-	3.7
	RR-1	"	-	390	495	-	350	1400	-	4.0
	RR-2	"	-	425	515	-	590	2915	-	4.9

TABLE 6.

The data has been presented in Table 6 on the assumption that the bimodal decrepigrams with the high decrepitation activity (Group (i)), represent variants of groups (ii) and (iii), possibly in response to processes of deformation (? natural decrepitation).

As indicated previously, groups (ii) and (iii) are probably separated by a transitional boundary and consequently there may be a continuous trend from group (iii) to group (ii) to group (i), accompanying increasing deformation (heating/fracturing).

The approximate mean temperatures of decrepitation (ie. the temperature causing the greatest number of inclusions to burst), for peaks 1,2 and 3 are 247°C, 372°C and 505°C. Associated decrepitation activity (ie the total number of inclusions which decrepitate over a 10°C temperature interval), shows a greater variation for the various groups.

The 372°C peak is believed to represent CO_2 rich inclusions, while the 505°C peak is presumably due to fluid rich inclusions.

COUNTRY VEINS

The results are depicted in decrepitations in Appendix X, and also in Table 6. Decrepitation temperatures are uniform, but the activities are variable. The approximate mean temperatures of decrepitation for peaks 1,2 and 3 are 266°C, 409°C and 512°C, thereby allowing a distinction from peaks 1+2 of the mineralized veins. In addition, decrepitation activities of peak 3 for country quartz are considerably higher than the corresponding peak for the ore veins. This feature is also confirmed by the modal activity ratios shown in Table 6.

RIFLE RANGE VEINS

Sample results are shown in Appendix XI and in Table 6. Sample RRS was collected from an outcropping vein, while RR-1 and RR-2 were collected from drill holes RR-1 (47m) and RR-2 (91m).

Using the guidelines developed in the preceding sections for classification of quartz veins, it is apparent that any attempt at classifying the Rifle Range samples may be conjectural.

Sample RRS is probably the most likely example of mineralized quartz, although its modal decrepitation activity ratio is very high. It is most similar to sample 3A.

Sample RR-1, whilst having an apparently normal decrepitation temperature, has a high modal activity ratio (peaks 2 and 3) and is probably country quartz.

Sample RR-2 shows a similar peak 2 temperature to country quartz, but a similar peak 3 temperature to mineralized quartz. However, its modal activity ratio for peaks 2 and 3, is probably more typical of country quartz.

Complicating the interpretation of all three samples is the lack of a 250/270°C peak (peak 1), and their thermal histories may be a characteristic of the Rifle Range area.

Further details on the Rifle Range area are given in section .

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APPENDIX I
STREAM SEDIMENT SAMPLING (ORIENTATION STUDY) - ANALYSES

Analysis code B1/1 Report AC 3359/82 Page 1

NATA Certificate Results in ppm

Data base no	Sample			Sn	W	As
7151	G.C.	1	+40#	75	50	2
7152	G.C.	2	+40#	70	20	5
3	G.C.	3	+40#	80	25	<2
4	G.C.	4	+40#	95	15	6
5	G.C.	5	+40#	220	110	8
6	G.C.	6	+40#	38	10	2
7	G.C.	7	+40#	60	15	5
8	G.C.	8	+40#	95	35	4
9	G.C.	9	+40#	85	10	3
7160	G.C.	10	+40#	80	25	2
	G.C.	11	+40#	(55)	(15)	(3) – ?

Data base no	Sample				Sn	W	As
7151	G.C.	1	-40	+80#	1100	320	35
2	G.C.	2	-40	+80#	370	120	11
3	G.C.	3	-40	+80#	880	290	<2
4	G.C.	4	-40	+80#	1150	440	<2
5	G.C.	5	-40	+80#	2000	560	<2
6	G.C.	6	-40	+80#	640	200	4
7	G.C.	7	-40	+80#	560	130	7
8	G.C.	8	-40	+80#	3500	900	<2
9	G.C.	9	-40	+80#	330	110	19
7160	G.C.	10	-40	+80#	2050	600	<2
	G.C.	11	-40	+80#	(850)	(250)	(4) – ?

Data base no	Sample				Sn	W	As
7151	G.C.	1	-80	+120#	780	200	<2
2	G.C.	2	-80	+120#	620	170	2
3	G.C.	3	-80	+120#	520	140	<2
4	G.C.	4	-80	+120#	350	95	5
5	G.C.	5	-80	+120#	1700	370	<2
6	G.C.	6	-80	+120#	410	75	4
7	G.C.	7	-80	+120#	220	65	7
8	G.C.	8	-80	+120#	1950	480	<2
7159	G.C.	9	-80	+120#	300	30	11
	Detn limit				(4)	(10)	(2)

037

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NATA Certificate Results in ppm

	Sample	Sn	W	As
7160	G.C. 10 -80 +120#	1700	470	<2
	G.C. 11 -80 +120#	(350)	(95)	(<2)

	Sample	Sn	W	As
7151	G.C. 1 -120#	250	120	32
2	G.C. 2 -120#	120	75	25
3	G.C. 3 -120#	270	190	24
4	G.C. 4 -120#	530	250	18
5	G.C. 5 -120#	540	330	18
6	G.C. 6 -120#	350	180	15
7	G.C. 7 -120#	350	200	22
8	G.C. 8 -120#	520	230	24
9	G.C. 9 -120#	150	100	30
7160	G.C. 10 -120#	250	140	30
	G.C. 11 -120#	(230)	(150)	(10)
	Detn limit	(4)	(10)	(2)

038

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Analysis code C1 Report AC 3359/82 Page 3

NATA Certificate Results in ppm

data base number	Sample		Cu	Zn
7151	GC-Ø1	+4Ø#	8	3Ø
7152	GC-Ø2	+4Ø#	4	26
3	GC-Ø3	+4Ø#	4	28
4	GC-Ø4	+4Ø#	8	46
5	GC-Ø5	+4Ø#	8	32
6	GC-Ø6	+4Ø#	1Ø	38
7	GC-Ø7	+4Ø#	14	42
8	GC-Ø8	+4Ø#	12	55
9	GC-Ø9	+4Ø#	6	4Ø
7160	GC-1Ø	+4Ø#	12	42
	GC-11	+4Ø#	4	25 — ?
7161	GC-Ø1	+8Ø#	18	48
2	GC-Ø2	+8Ø#	16	5Ø
3	GC-Ø3	+8Ø#	8	34
4	GC-Ø4	+8Ø#	1Ø	5Ø
5	GC-Ø5	+8Ø#	1Ø	5Ø
6	GC-Ø6	+8Ø#	16	7Ø
7	GC-Ø7	+8Ø#	28	8Ø
8	GC-Ø8	+8Ø#	26	9Ø
9	GC-Ø9	+8Ø#	4Ø	11Ø
7170	GC-1Ø	+8Ø#	28	95
	GC-11	+8Ø#	12	45 — ?
7171	GC-Ø1	+12Ø#	17Ø	35Ø
2	GC-Ø2	+12Ø#	19	55
3	GC-Ø3	+12Ø#	14	55
4	GC-Ø4	+12Ø#	14	75
5	GC-Ø5	+12Ø#	14	8Ø
6	GC-Ø6	+12Ø#	34	9Ø
7	GC-Ø7	+12Ø#	48	1ØØ
8	GC-Ø8	+12Ø#	48	15Ø
7199	GC-Ø9	+12Ø#	42	11Ø
	Detn limit		(2)	(2)

039

652040

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Analysis code C1 Report AC 2359/82 Page 4

NATA Certificate Results in ppm

	Sample	Cu	Zn
7160	GC-10 +120#	36	100
	GC-11 +120#	12	50
	[illegible]		
7181	GC-01 -120#	30	280
2	GC-02 -120#	4	250
3	GC-03 -120#	100	200
4	GC-04 -120#	80	190
5	GC-05 -120#	1500	200
6	GC-06 -120#	55	200
7	GC-07 -120#	110	220
8	GC-08 -120#	95	290
9	GC-09 -120#	140	420
7190	GC-10 -120#	110	410
	GC-11 -120#	65	210
	Detn limit	(2)	(2)

040

SOIL SAMPLING (ORIENTATION STUDY) APPENDIX II - ANALYSES

652041

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Analysis code B1/1 Report AC 3625/82 Page 1

NATA Certificate Results in ppm

Sample	Sn	W	As
40N 0E +40#	540	20	36
40N20E +40#	34	60	50
40N40E +40#	2250	40	<2
40N60E +40#	290	40	70
40N 0E +80#	190	25	38
40N20E +80#	60	90	75
40N40E +80#	370	30	9
40N60E +80#	260	30	15
40N 0E +120#	150	40	36
40N20E +120#	80	110	90
40N40E +120#	200	40	13
40N60E +120#	180	40	19
40N 0E -120#	160	130	36
40N20E -120#	90	110	95
40N40E -120#	140	55	15
40N60E -120#	120	65	24
Detn limit	(4)	(10)	(2)

041

652042

amdel

Analysis code C1 Report AC 3625/82 Page 2

NATA Certificate Results in ppm

Sample	Cu	Zn
40N00E A	20	30
40N00E B	22	30
40N00E C	38	50
40N00E D	50	45
40N20E A	6	22
40N20E B	9	22
40N20E C	10	28
40N20E D	20	32
40N40E A	10	22
40N40E B	12	22
40N40E C	14	24
40N40E D	13	28
40N50E A	9	22
40N50E B	8	24
40N50E C	16	32
40N50E D	34	35
Detn limit	(2)	(2)

042.

STREAM SEDIMENT SAMPLE ANALYSES APPENDIX III

amdel

652043

Analysis code B1/1 Report AC 4884/82

NATA Certificate Results in ppm

STREAM SEDIMENT DATA BASE NUMBER	Sample	Sn	W
7601	5501	12	<10
2	5502	12	<10
3	5503	8	<10
4	5504	12	<10
5	5505	28	<10
6	5506	18	<10
7	5507	<4	<10
8	5508	14	45
9	5509	12	10
7610	5510	10	20
11	5511	10	10
12	5512	8	<10
13	5513	24	10
SS14 LOST → 7615	5515	30	<10
16	5516	55	<10
17	5517	50	<10
18	5518	14	10
19	5519	20	<10
20	5520	16	<10
21	5521	65	<10
22	5522	20	<10
23	5523	60	<10
7624	5524	75	<10
	Detn limit	(4)	(10)

043

amdel

APPENDIX III

Analysis code B1/1 Report AC 5057/82

NATA Certificate Results in ppm

	Sample	Sn	W
7625	SS 25	130	45
26	SS 26	160	60
27	SS 27	220	75
28	SS 28	60	35
29	SS 29	90	40
7630	SS 30	30	10
1	SS 31	26	15
2	SS 32	40	20
3	✓SS 33	40	30
4	SS 34	8	<10
5	SS 35	20	10
6	SS 36	<4	<10
7	SS 37	34	40
8	SS 38	85	20
9	SS 39	180	40
7640	SS 40	16	<10
1	SS 41	24	10
2	SS 42	100	15
3	SS 43	28	10
4	SS 44	48	<10
5	SS 45	3300	15
6	SS 46	200	15
7	SS 47	420	10
8	SS 48	32	15
9	SS 49	44	20
7650	SS 50	24	10
1	SS 51	14	<10
2	SS 52	20	<10
3	SS 53	40	<10
4	SS 54	42	10
5	SS 55	46	10
6	SS 56	10	<10
7	SS 57	20	10
8	✓SS 58	16	10
9	SS 59	50	10
7660	SS 60	24	<10
1	SS 61	55	10
2	SS 62	65	10
3	SS 63	12	<10
4	SS 64	10	10
5	SS 65	24	10
6	SS 66	40	230
7	SS 67	60	15
8	SS 68	12	<10
7669	✓SS 69	24	<10
	Detn limit	(4)	(10)

044

652045

amdel

APPENDIX III

Analysis code B1/1 Report AC 5306/82 Page 3

NATA Certificate Results in ppm

	Sample	Sn	W	
7670	SS70	26	10	
1	SS71	8	10	
2	SS72	14	10	
3	SS73	6	<10	
4	SS74	14	<10	
5	SS75	4	<10	
6	SS76	14	<10	
7	SS77	20	<10	
8	SS78	6	<10	
9	SS79	16	<10	
7680	SS80	16	<10	
1	SS81	16	<10	
2	SS82	55	20	
3	SS83	20	<10	
4	SS84	20	<10	
5	SS85	18	<10	
6	SS86	16	15	
7	SS87	20	<10	
8	SS88	55	10	
9	SS89	70	10	
7690	SS90	320	20	
~~7691~~	SS91	16	<10	— not on map
	Detn limit	(4)	(10)	

APPENDIX IV A

DEMMOCKS TIN PROSPECT

GRAB SAMPLES

SAMPLE	Sn	W	Cu
DP 1a	330	15	1800
DP 1b	470	20	2.20%
DP 3	1.70%	230	1.70%
DP 5	55	<10	55
DP 6	150	20	26

CHANNEL SAMPLES

D 93	960	-	-
D94	110	-	-
D95	210	-	-
D96	160	-	-
DQV	300	-	-
D97A	200	-	-
D97B	170	-	-

Results in ppm, unless shown otherwise.

APPENDIX IV B

DEMMOCKS TIN PROSPECT

amdel

Analysis code B1/1 Report AC 4669/82 Page 1

NATA Certificate Results in ppm

Soil Samples

Co-ordinates	Sample	Sn	W
000N 000E	D01	150	15
" 020E	D02	40	15
" 040E	D03	55	25
" 060E	D04	120	20
" 080E	D05	60	20
" 100E	D06	660	25
" 120E	D07	1800	30
020N 000E	D08	80	15
" 020E	D09	60	25
" 040E	D10	85	20
" 060E	D11	330	20
" 080E	D12	900	25
" 100E	D13	300	25
" 120E	D14	390	20
040N 000E	D15	75	20
" 020E	D16	180	20
" 040E	D17	200	20
" 060E	D18	160	20
" 080E	D19	80	20
" 100E	D20	310	30
" 120E	D21	85	20
060N 000E	D22	120	15
" 020E	D23	100	25
" 040E	D24	85	15
" 060E	D25	360	25
" 080E	D26	190	25
" 100E	D27	200	20
" 120E	D28	90	25
080N 000E	D29	160	20
" 020E	D30	190	25
" 040E	D31	370	20
" 060E	D32	200	25
" 080E	D33	65	15
" 100E	D34	150	15
" 120E	D35	180	20
100N 000E	D36	170	15
" 020E	D37	340	10
" 040E	D38	440	15
" 060E	D39	60	15
" 080E	D40	65	15
	Detn limit	(4)	(10)

047

652048

amdel

Analysis code B1/1 Report AC 4669/82 Page 2

NATA Certificate Results in ppm

Co-ordinates		Sample	Sn	W
100N 100E		D41	280	20
100 120E		D42	80	20
120 000E		D43	55	10
" 020E		D44	120	15
" 040E		D45	270	20
" 060E		D46	2150	20
" 080E		D47	160	20
" 100E		D48	70	10
" 120E		D49	65	15
	Channel Samples	D50	860	30
	Channel Samples	D51	600	30
	Channel Samples	D52	4150	30
	Dump Sample	D53	1050	25
	Channel Sample	D54	4500	20
	Dump (Grab) Samples	D55	2550	20
	Dump (Grab) Samples	D56	880	15
	Dump (Grab) Samples	D57	1050	15
	Dump (Grab) Samples	D58	1450	15
	Dump (Grab) Samples	D59	200	25
	Dump (Grab) Samples	D60	1150	20
	Dump (Grab) Samples	D61	*1.94%	60
	Dump (Grab) Samples	D62	*2.03%	75
	Dump (Grab) Samples	D63	2350	20
	Dump (Grab) Samples	D64	1750	210
	Dump (Grab) Samples	D65	600	20
	Dump (Grab) Samples	D66	8500	130
	Dump (Grab) Samples	D67	5800	45
	Grab Sample	D68	2750	20
	Costean (Channel) Samples	D69	110	20
	Costean (Channel) Samples	D70	90	15
	Costean (Channel) Samples	D71	85	20
	Costean (Channel) Samples	D72	85	20
	Costean (Channel) Samples	D73	140	25
	Costean (Channel) Samples	D74	170	15
	Costean (Channel) Samples	D75	140	20
	Costean (Channel) Samples	D76	180	15
	Costean (Channel) Samples	D77	180	15
	Costean (Channel) Samples	D78	190	20
	Costean (Channel) Samples	D79	190	20
	Costean (Channel) Samples	D80	170	25
		Detn limit	(4)	(10)

*Result has been redetermined by code B2

amdel

Analysis code B1/1 Report AC 4669/82

NATA Certificate Results in ppm

	Sample	Sn	W
Costean (Channel) Samples	D81	160	25
	D82	240	30
	D83	660	20
	D84	100	15
	D85	70	15
	D86	80	20
	D87	70	35
	D88	1200	25
	D89	100	20
	D90	150	15
Permian Grab Samples	D91	14	30
	D92	20	15
	Detn limit	(4)	(10)

049

652050

amdel

Analysis code C1 Report AC 4659/82 Page 1

NATA Certificate Results in ppm

Sample	Cu
D Ø1	6
D Ø2	14
D Ø3	16
D Ø4	8
D Ø5	32
D Ø6	8
D Ø7	14
D Ø8	2Ø
D Ø9	1Ø
D 1Ø	1Ø
D 11	1Ø
D 12	16
D 13	12
D 14	12
D 15	22
D 16	28
D 17	11Ø
D 18	16
D 19	16
D 2Ø	2Ø
D 21	3Ø
D 22	8
D 23	2Ø
D 24	22
D 25	65
D 26	18
D 27	12
D 28	12
D 29	8Ø
D 3Ø	1Ø
D 31	1Ø
D 32	14
D 33	14
D 34	2
D 35	6
D 36	14
D 37	12
D 38	1Ø
D 39	1Ø
D 4Ø	16

Detn limit - (2)

amdel

Analysis code C1   Report AC 4669/82

NATA Certificate   Results in ppm

Sample	Cu
D 41	10
D 42	16
D 43	2
D 44	22
D 45	95
D 46	55
D 47	20
D 48	<2
D 49	14
D 50	150
D 51	230
D 52	220
D 53	3800
D 54	36
D 55	180
D 56	130
D 57	55
D 58	85
D 59	60
D 60	620
D 61	120
D 62	8200
D 63	85
D 64	260
D 65	4500
D 66	9600
D 67	80
D 68	46
D 69	26
D 70	20
D 71	24
D 72	32
D 73	26
D 74	14
D 75	12
D 76	20
D 77	20
D 78	24
D 79	50
D 80	16

Detn limit. (2)

amdel

Analysis code C1 Report AC 4669/82

NATA Certificate Results in ppm

Sample	Cu
D 81	16
D 82	12
D 83	50
D 84	24
D 85	22
D 86	26
D 87	75
D 88	90
D 89	130
D 90	170
D 91	6
D 92	6
Detn limit	(2)

APPENDIX V

amdel

MAMMOTH TIN-TUNGSTEN PROSPECT

Analysis code B1/1   Report AC 4795/82   Page 1

NATA Certificate   Results in ppm

Sample	Sn	W
MV-01	34	10
MV-02	160	640
MV-03	32	15
MV-04	5400	25
MV-05	6300	20
MV-06	55	3000
MV-07	70	55
MV-08	9100	30
MV-09	1.75%	20
MV-10	5800	1450
MV-11	1450	30
MV-12	420	25
MV-13	85	<10
MV-14	6.05%	50
MV-15	160	<10
MV-16	1450	15
MV-17	140	15
MV-18	390	20
MV-19	270	20
MV-20	900	70
MD-01	1250	45
MD-02	780	40
MD-03	1100	130
MD-04	2750	2150
MC1-S1A	130	35
MC1-S1B	100	30
MC1-01	70	10
MC1-02	65	15
MC1-03	65	10
MC1-04	65	<10
MC1-05	130	15
MC1-06	230	20
MC1-07	200	15
MC1-08	65	10
MC1-09	310	15
MC1-10	70	15
MC1-11	95	10
MC1-12	65	10
MC1-13	70	25
MC1-14	55	15
Detn limit	(4)	(10)

Results above 1% are being redetermined by Code B2

053

652054

amdel

Analysis code B1/1 Report AC 4795/82 Page 2

NATA Certificate Results in ppm

Sample	Sn	W
MC1-QV1A	65	10
MC1-QV1B	40	<10
MC1-QV1C	70	10
MC1-QV2A	50	<10
MC1-QV2B	100	15
MC1-QV2C	240	20
MC2-S2A	90	20
MC2-S2B	50	25
MC2-01	65	10
MC2-02	75	10
MC2-03	65	<10
MC2-04	70	15
MC2-05	75	15
MC2-06	120	15
MC2-07	70	10
MC2-QV1A	65	15
MC2-QV1B	60	<10
MC2-QV1C	70	15
MC2-QV2A	18	40
MC2-QV2B	6	15
MC2-QV2C	32	90
MC2-QV3A	24	30
MC2-QV3B	12	<10
MC2-QV3C	60	20
MC2-QV4B	14	10
MC3-S3A	100	15
MC3-S3B	110	45
MC3-01	100	15
MC3-02	70	15
MC3-03	75	15
MC3-04	95	15
MC3-05	95	15
MC3-06	100	30
MC3-07	55	15
MC3-QV2B	180	55
MC3-QV2C	170	15
MC4-01	70	15
MC4-02	75	20
MC4-03	60	15
MC4-04	55	15
Detn limit	(4)	(10)

652055

amdel

Analysis code B1/1   Report AC 4795/82

NATA Certificate   Results in ppm

Sample	Sn	W
MC4-05	65	10
MC4-06	50	10
MC4-07	48	20
MC4-08	38	10
MC4-09	60	15
MC3-QV1A	70	15
MC3-QV1B	170	15
MC3-QV1C	130	10
Detn limit	(4)	(10)

NB MC3-QV1C = MC3-QV2A.

055

652056

APPENDIX VI

DIAMOND DRILL CORE LOG

Hole No.	:	RR-1
Area	:	Rifle Range
Location	:	North of pump house on Aberfoyle Creek
Drilled by	:	East Coast Drilling
Logged by	:	Summons Geoservices P/L.
Date Commenced	:	19.10.81
Date Completed	:	20.10.81
Core Recovery	:	100%
Total Depth (m)	:	61.0
Precollar (m)	:	2.0
Collar RL (m AsL)	:	575
Co-ordinates	:	1094E, 3055N
Azimuth	:	N/A.
Inclination	:	-90°
Core Size	:	NQ : 2.0 - 15.6m ; BQ : 15.6 - 61.0m.
Core Stored	:	Dept. of Mines

RR-1

DEPTH (m)		DESCRIPTION
0.2.0	:	Soil
2.0-2.8	:	Slaty mudstone, slightly graphitic
2.8-4.4	:	Meta-greywacke with mudstone clasts
4.4-7.2	:	Slaty mudstone ; △ cleavage (S_1) ≒ 10°
7.2-9.5	:	Meta-greywacke, minor stringers of country quartz
9.5-9.95	:	Quartz vein, goethite ex ? sulphide, minor carbonate and sericitized mudstone fragments.
9.95-11.57	:	Meta-greywacke, minor country quartz veins
11.57-11.65	:	Quartz vein, kaolinized ? topaz, minor sericite and carbonate
11.65-23.4	:	Meta-greywacke, strongly veined with country quartz from 11.65-12.60 in ; △ S_1 ≒ 50°
23.4-28.05	:	Meta-greywacke, a strongly veined with country quartz and carbonate ; quartz veins (? country) from 27.15 - 27.22, and also 27.43 - 27.51m with mica.
28.05-42.2	:	Meta-greywacke, minor country quartz veins and carbonate ;△ S_1 ≒ 60°
42.2-43.2	:	Altered, chloritized ? mafic dyke ; △ contact = 40-65°
43.2-46.0	:	Meta-greywacke with interbeds of slaty mudstone ;△ S_1 = 45°
46.0-46.9	:	Quartz vein, minor mica, carbonate, trace pyrite, contact △ 50°
46.9-47.68	:	Meta-greywacke
47.68-48.03	:	Quartz vein, minor mica, carbonate, trace kaolin and topaz
48.03-48.45	:	Meta-greywacke

48.45-48.55	:	Crushed zone (breccia), in quartz and meta-greywacke
48.55-48.80	:	Meta-greywacke, strongly veined with counrty quartz
48.8-48.85	:	Altered, chloritized ? mafic dyke
48.85-53.40	:	Meta-greywacke, interbeds of slaty mudstone, minor country quartz, carbonate veins ;$\triangle S_1 \simeq 65°$
53.40-53.75	:	Quartz vein, vuggy and diffuse margins, minor carbonate $\triangle$ contact $\simeq 0°$
53.75-55,52	:	Meta-greywacke
55.52-55.55	:	? Crushed/sheared zone in puggy mudstone, $\triangle$ contact $\simeq$ 65°
55.55-55.75	:	Meta-greywacke
55.75-55.82	:	Quartz vein, minor mica and carbonate
55.82-56.02	:	Meta-greywacke
56.02-56.08	:	? Crushed/sheared zone in puggy mudstone, $\triangle$ contacts = 65°
56.08-58.75	:	Meta-greywacke with interbeds of argillite and slaty mudstone
58.75-58/87	:	Altered, chloritized, ? mafic dyke
58/87-61.00	:	Meta-greywacke, minor country quartz veins.

E.O.H. - 61.00

APPENDIX VII

DIAMOND DRILL CORE LOG

Hole No.	:	RR-2
Area	:	Rifle Range
Location	:	North of Pump house on Aberfoyle Creek
Drilled by	:	East Coast Drilling
Logged by	:	Summons Geoservices P/L.
Date Commenced	:	20.10.81
Date Completed	:	23.10.81
Core Recovery	:	100%
Total Depth (m)	:	150.0
Precollar (m)	:	3.0
Collar RL (m AsL)	:	575
Co-ordinates	:	1145E, 3074N
Azimuth	:	040° (State Grid)
Inclination	:	-60°
Core Size	:	NQ : 3.0 - 3.6m ; BQ : 36.2 - 150.0m.
Core Stored	:	Dept of Mines.

RR-2

Depth (m)		Description and Comments
0 - 3.0	:	Soil
3.0 - 5.1	:	Quartz-feldspar porphyry dyke, coarse grained and partly oxidized; Δ contact = 35°
5.1 - 6.05	:	Chilled margin of porphyry and/or contact metamorphosed meta-greywacke, partly oxidised
6.05-14.1	:	Meta-greywacke with slaty mudstone clasts, minor country quartz veins ; quartz cemented breccia from 6.09-7.05m.
14.1 -14.18	:	Altered, chloritized ? mafic dyke
14.18-17.30	:	Meta-greywacke with interbeds of slaty mudstone
17.30-17.50	:	Altered, chloritized ? mafic dyke
17.50-20.30	:	Meta-greywacke, minor country quartz veins
20.30-23.70	:	Slaty mudstone, graphitic in part ; $\Delta S_1 \fallingdotseq$ 30/35°
23.70-23.90	:	Altered, chloritized ? mafic dyke
23.90-24.90	:	Slaty mudstone, with minor spotted (? hornfelsic) quartzite
24.90-42.2	:	Meta-greywacke with minor slaty mudstone interbeds and minor country quartz veins 33.0-33.50m.
42.2 -45.1	:	Zone of quartz veins in meta grey-wacke ; quartz veins as follows (depth to top margin) :

42.2m	:	irregular, 20-30mm wide, vuggy quartz, kaolinized topaz.
42.6m	:	irregular, 20-30mm wide, vuggy quartz, kaolinized topaz
43.0m	:	100mm wide, vuggy quartz, kaolinized topaz =57°
43.9m	:	35mm " " " " " =50°
44.7m	:	80mm " " " " " +fluorit
45.0m	:	" " " " "

45.1 -51.70	:	Meta-greywacke, minor country quartz veins, and two 20mm wide quartz veins at 48.65m and 49.65m.
51.70-57.40	:	Slaty mudstone, minor meta-greywacke ; ΔS_1=30°
57.40-59.16	:	Meta-greywacke
59.16-59.29	:	Quartz vein, vuggy, kaolinized topaz, minor carbonate ; Δ contact $\fallingdotseq$ 55°

59.29-61.0	:	Meta-greywacke, minor country quartz veins
61.0 -61.05	:	Quartz veins, vuggy. kaolinized topaz ; Δ contact = 60°
61.05-73.80	:	Meta-greywacke, minor interbeds of slaty mudstone
73.80-74.95	:	Zone of irregular quartz veining in meta-greywacke ; veins have chlorite/sericite selvedges and contain carbonate
74.95-89.2	:	Meta-greywacke ; ($\Delta S_o/S_1 \simeq 60°$)
89.2 -89.35	:	Quartz vein, with carbonate and chlorite/sericite "inclusions" (ex ? mudstone)
89.35-89.7	:	Meta-greywacke
89.7 -89.75	:	Crushed zone (breccia) in slaty mudstone
89.75-90.57	:	Meta-greywacke
90.57-91.01	:	Quartz vein with carbonate and chlorite/sericite "inclusions" ; Δ contact $\simeq$ 70°
91.01-91.63	:	Meta-greywacke
91.63-91.95	:	Quartz vein, chlorite/sericite "inclusions" and patches of carbonate
91.95-92.60	:	Meta-greywacke, some country quartz veins carrying carbonate
92.60-92.65	:	Quartz vein, (as for 91.63-91.95)
92.65-96.6	:	Meta-greywacke
96.6 -115.05	:	Meta-greywacke with subordinate interbeds of slaty mudstone, ($\Delta S_o/S_1 \simeq 55°$) ; minor country quartz
115.05-115.45	:	Zone of irregular quartz veins, containing abundant carbonat and minor pyrite
115.45-124.70	:	Meta-greywacke and interbedded mudstone
124.70-127.55	:	Meta-greywacke, with abundant country quartz veins
127.55-150.00	:	Meta-greywacke, minor interbeds of slaty mudstone and minor country quartz veins.

E.O.H. - 150.00

APPENDIX VIII

DIAMOND DRILL CORE LOG

Hole no.	:	RR-3
Area	:	Lutwyche
Location	:	South west of pump house on Aberfoyle Creek
Drilled by	:	R. S. Rickards
Logged by	:	Summons Geoservices P/L
Date Commenced	:	Approx November, 1981
Date Completed	:	
Core Recovery	:	100%
Total Depth (m)	:	103.6
Precollar (m)	:	3.0
Collar RL (m AsL)	:	615
Co-ordinates	:	940E, 2515N
Azimuth	:	145° (State Grid)
Inclination	:	-80°
Core Size	:	NQ : 3.0 - 100.0m. ; BQ : 100.0 - 103.6m.
Core Stored	:	Dept of Mines.

062

652063

RR-3

DEPTH (m)		DESCRIPTION
0 - 3.0	:	Soil
3.0-6.1	:	Meta-greywacke with minor interbedded slaty mudstone
6.1-6.9	:	Crushed zone (breccia) in meta-greywacke
6.9-7.5	:	Strongly weathered, chloritized/kaolinized (and ? brecciated), mafic dyke.
7.5-11.4	:	Meta-greywacke, very minor country quartz
11.4-13.3	:	Slaty mudstone, minor country quartz
13.3-16.6	:	Meta-greywacke, with quartz veins carrying oxidized sulphides at 14.0m (100m), 14.45m (5mm), and with minor kaolin at 15.4m (25mm).
16.6-17.0	:	Zone of several quartz veins, all with muscovite selvedges, and containing partly oxidized pyrite/sphalerite (5 vol %), and trace of cassiterite/wolframite ; average vein width is 10-15mm.
17.0-27.85	:	Meta-greywacke, with interbeds of mudstone ; quartz veins with muscovite selvedges, and $\ll$1 vol % pyrite/sphalerite, and trace wolframite occur at 17.28m (5mm), 17.4 (10mm), 19.55m (80mm) 19.9m (5mm) and 20.1m (2mm) ; $\Delta S_o \simeq 45°$.
27.85-28.25	:	Quartz vein, average 30mm wide, minor muscovite and fluorite ; partly oxidized sulphides ($\simeq$ 10 vol % pyrite, $\simeq$ 10 vol % sphalerite) ; $\ll$1 vol % cassiterite/wolframite ; Δ contact $\simeq$ 15°.
28.25-29.7	:	Meta-greywacke, minor country quartz
29.7-30.2	:	? Altered greywacke with original fragments of mudstone ; rock is very porous ....? due to front of alteration ?.
30.2-48.05	:	Meta-greywacke with mudstone interbeds ; quartz veins with muscov selvedges, and $\simeq$ 5 vol % pyrite, $\ll$2 vol % sphlalerite, trace cass iterite + wolframite at 31.8m (10mm), 32.5m (5mm) 34.4m (5mm) and 42.0m (3mm) : Δ vein margins = $\Delta S_o/S_1$ (= 25-35°).

48.05-48.7 :	Meta-greywacke with a zone of en echelon quartz veins 5-10mm wide, and carrying 5vol % pyrite 5 vol % sphalerite $\ll$ 1 vol cassiterite/wolframite
48.7-49.10 :	Meta-greywacke
49.10-50.16 :	Meta-greywacke, with quartz veins $\simeq$ 10mm wide at 49.12 and 49.6m, and carrying 2 vol % pyrite 3 vol % sphalerite, and trace cassiterite/wolframite.
50.16-50.23 :	Quartz vein, vuggy, with yellow coloured ? carbonate, 5 vol % pyrite, 2 vol % sphalerite, and $\ll$ 5 vol % cassiterite.
50.23-54.25 :	Meta-greywacke with echelon quartz veins carrying $\simeq$ 2 vol % pyrite, $\ll$ 1 vol % sphalerite, trace wolframite at 50.9m (10mm) 51.5m (2mm) ; $\triangle$ vein = $\triangle$ S_o/S_1 30°.
54.25-54.54 :	Quartz vein, with $\simeq$ 10 vol % pyrite
53.53-57.7 :	Meta-greywacke, minor mudstone interbeds strongly veined with country quartz
57.7-75.3 :	Meta-greywacke, minor mudstone interbeds with quartz veins (single and grouped) as follows: 59.9 - 60.1m (en echelon 20mm), 61.4m (30mm), 65.2m (10mm), 68.8 - 69.2m (en echelon, 2-3mm), 70.0 - 70.3m (en echelon 10mm), 70.8-71.45m (en echelon 5mm), 73.1m (5mm), 74.5m (5mm) : range of mineralization is $\ll$ 1 - 15 vol % pyrite, $\ll$ 1 - 10 vol % sphalerite, and 1 - 2 vol % cassiterite + wolframite $\triangle$ veins = $\triangle$ S_o/S_1 = 40°.
75.3-75.8 :	Quartz vein, minor muscovite, pink carbonate, 5 vol % pyrite, diffuse lower margin.
75.8-76.0 :	Meta-greywacke
76.0-76.3 :	As for 75.3-75.8m ; $\triangle$ top margin = 80°
76.3-94.1 :	Meta-greywacke, minor interbedded slaty mudstone ; quartz vei[n] at 78.0m (40mm), and 79.6m (20mm), both with 5 vol % pyrite trace cassiterite + wolframite. Barren quartz 82.5 - 83.0 wit[h] 5 vol % pyrite and 2 vol % carbonate ; $\triangle$ S_o/S_1 $\simeq$ 20°.

94.1-95.85	:	Meta-greywacke with interbeds of slaty mudstone, quartz veins arranged en echelon throughout average 5mm wide, carrying 2 vol % pyrite, 2 vol % sphlareite, trace cassiterite + wolframite Δ veins = Δ S_o/S_1 = 35/40°.
95.85-96.3	:	Quartz vein, diffuse margins echelon veins appear to transect it.
96.3-98.02	:	Meta-greywacke, with a single irregular quartz vein at 97.3m (50mm), containing mica and trace sulphides.
98.02-100.0	:	Meta-greywacke with mudstone interbeds, and zone of en echelon quartz veins averaging 5mm wide, and carrying $\leqslant$ 5 vol % pyrite, 2 vol % sphalerite, and trace -1 vol % casserterite and wolframite ; Δ veins = 40°
100.0-100.6	:	Meta-greywacke
100.6-101.8	:	Meta-greywacke, with mudstone interbeds and zone of en echelon quartz veins averaging 2-5mm wide, carrying 5 vol % pyrite, $\leqslant$ 5 vol % sphalerite, 1-2 vol % cassiterite, and $\leqslant$ 1 vol % wolframite ; Δ $S_o/S_1 \approx \Delta$ vein $\approx$ 40°
101.8-103.6	:	Meta-greywacke, with mudstone interbeds.

E.O.H. - 103.6m.

APPENDIX IX

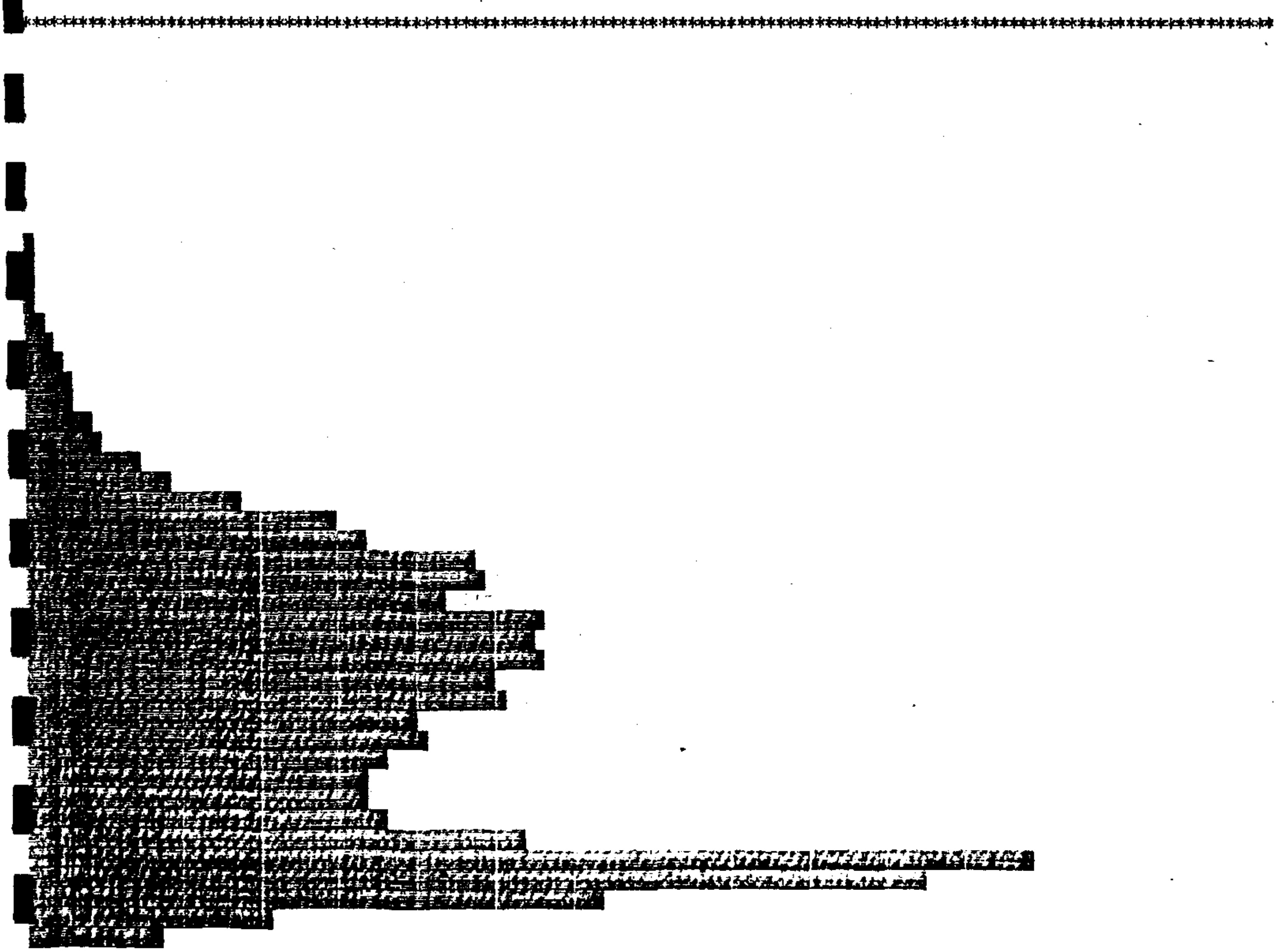
066

RUN D34 ROSSARDEN 1 1gm -600+420u
14/12/81 12.25am T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0001	0000	0001
0150	0002	0000	0008	0007	0017
0200	0016	0027	0028	0041	0054
0250	0074	0095	0095	0121	0137
0300	0199	0245	0353	0522	0575
0350	0740	0760	0695	0863	0837
0400	0860	0780	0784	0651	0659
0450	0592	0561	0567	0601	0822
0500	1653	1473	0952	0410	0230
0550					

16 COUNTS PER SYMBOL



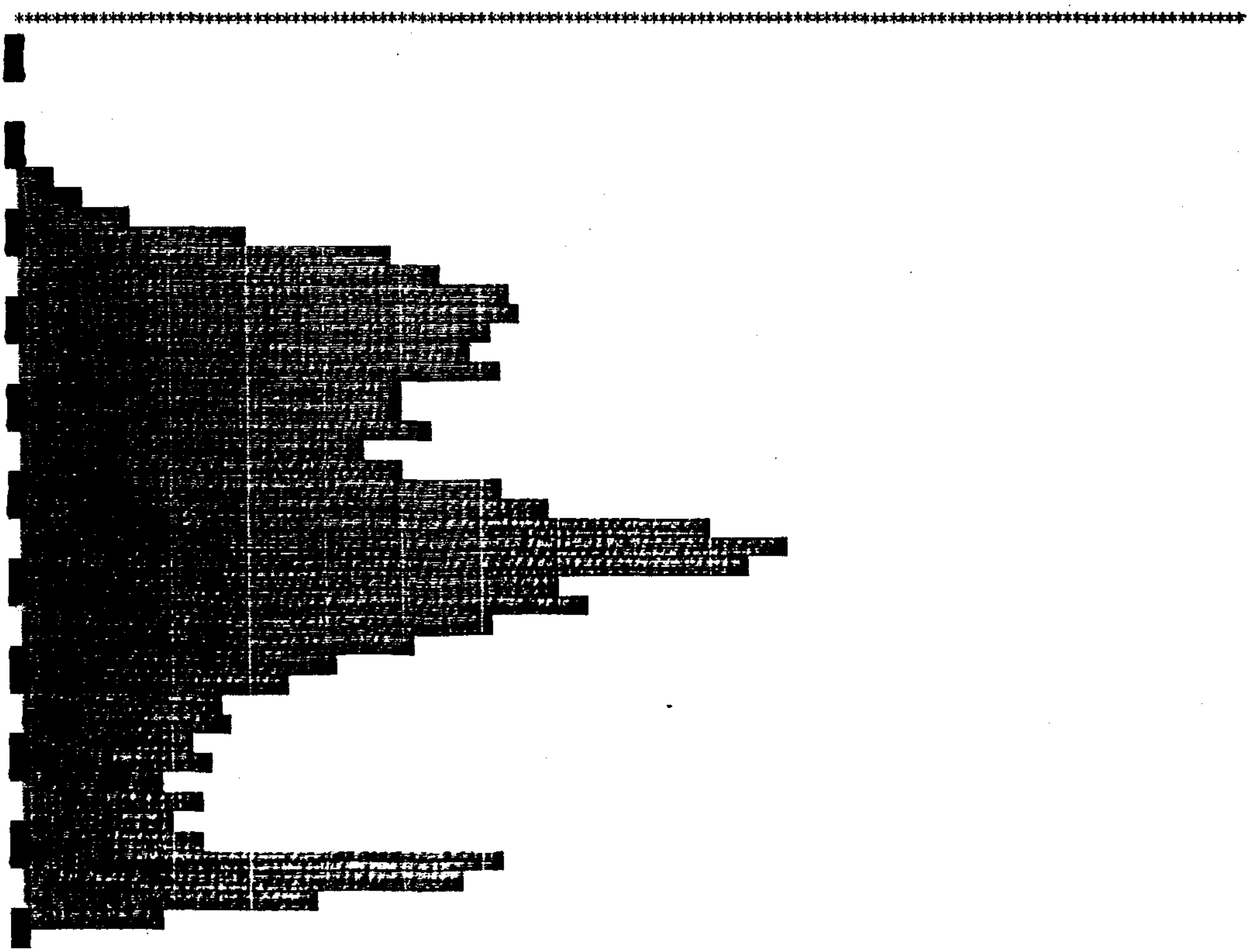
067

RUN D38   ROSSARDEN 2   Hand Picked clean quartz.   1gm   -600+420u
14/11/81   3.45am   T=330   G=1000

HEAT RATE (5,10,20)   20
START TEMPERATURE   100
END TEMPERATURE   550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0002	0001
0150	0003	0016	0031	0050	0096
0200	0158	0178	0206	0209	0198
0250	0191	0200	0161	0161	0172
0300	0144	0163	0200	0223	0288
0350	0322	0304	0224	0237	0198
0400	0165	0134	0112	0085	0091
0450	0075	0082	0062	0077	0065
0500	0079	0203	0187	0127	0063
0550					

4 COUNTS PER SYMBOL



Dark coloured Sample 3 - Much cassiterite

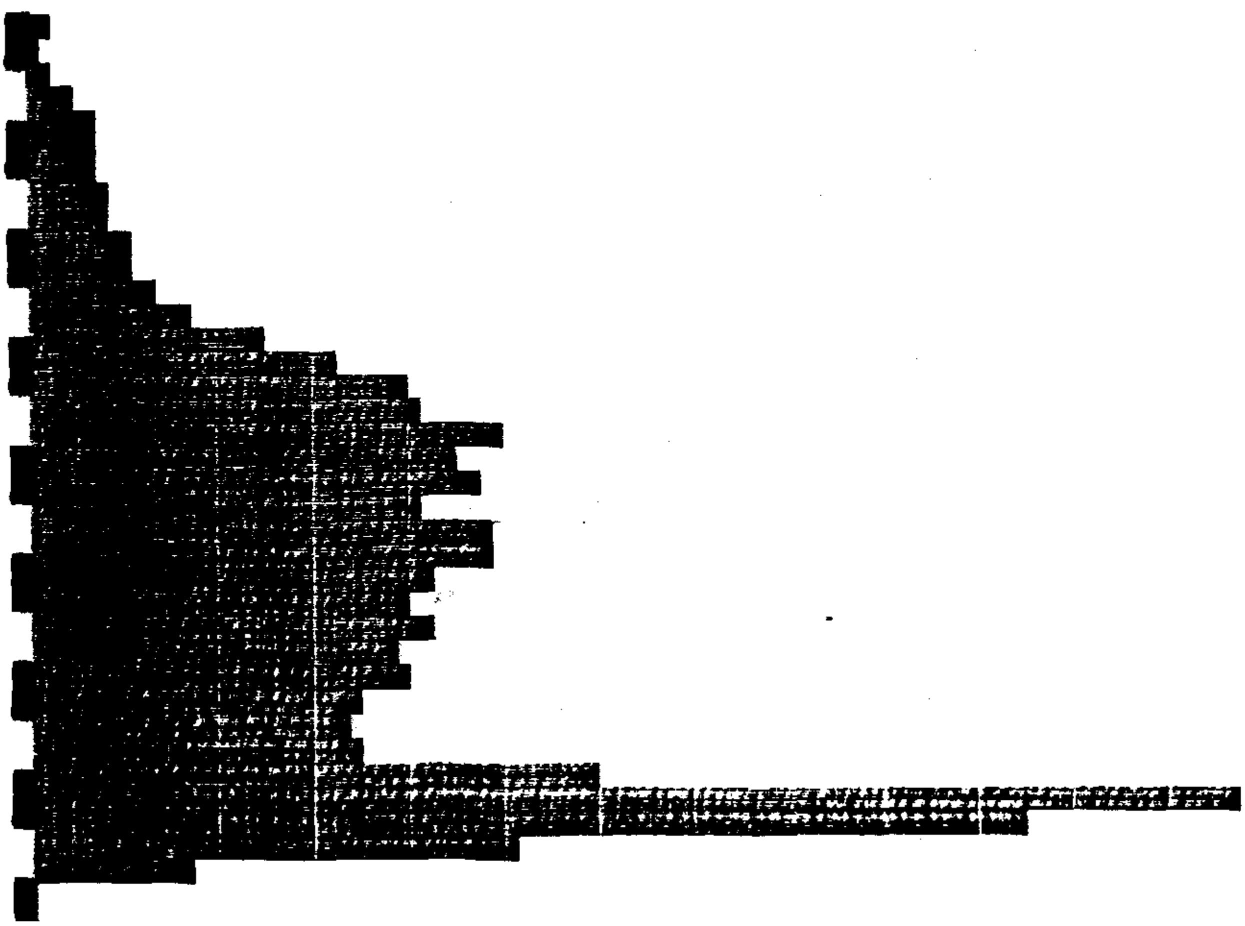
* Sample number duplicated. There is no sample 13

RUN D20   ROSSARDEN 3   1gm -600+420u   T=330 G=1000
10/11/81   3.05am

HEAT RATE (5,10,20) 20
START TEMPERATURE   100
END TEMPERATURE   550

DEG C	10	20	30	40	50
0100	0000	0000	0004	0000	0000
0150	0003	0005	0007	0012	0036
0200	0026	0044	0069	0096	0100
0250	0109	0119	0123	0145	0152
0300	0185	0237	0320	0425	0526
0350	0541	0648	0589	0611	0539
0400	0633	0628	0553	0521	0546
0450	0500	0521	0454	0444	0455
0500	0782	1647	1352	0658	0236
0550					

16 COUNTS PER SYMBOL



069

Whiter sample No 3 - Minor $WO_3^=$ only 652070

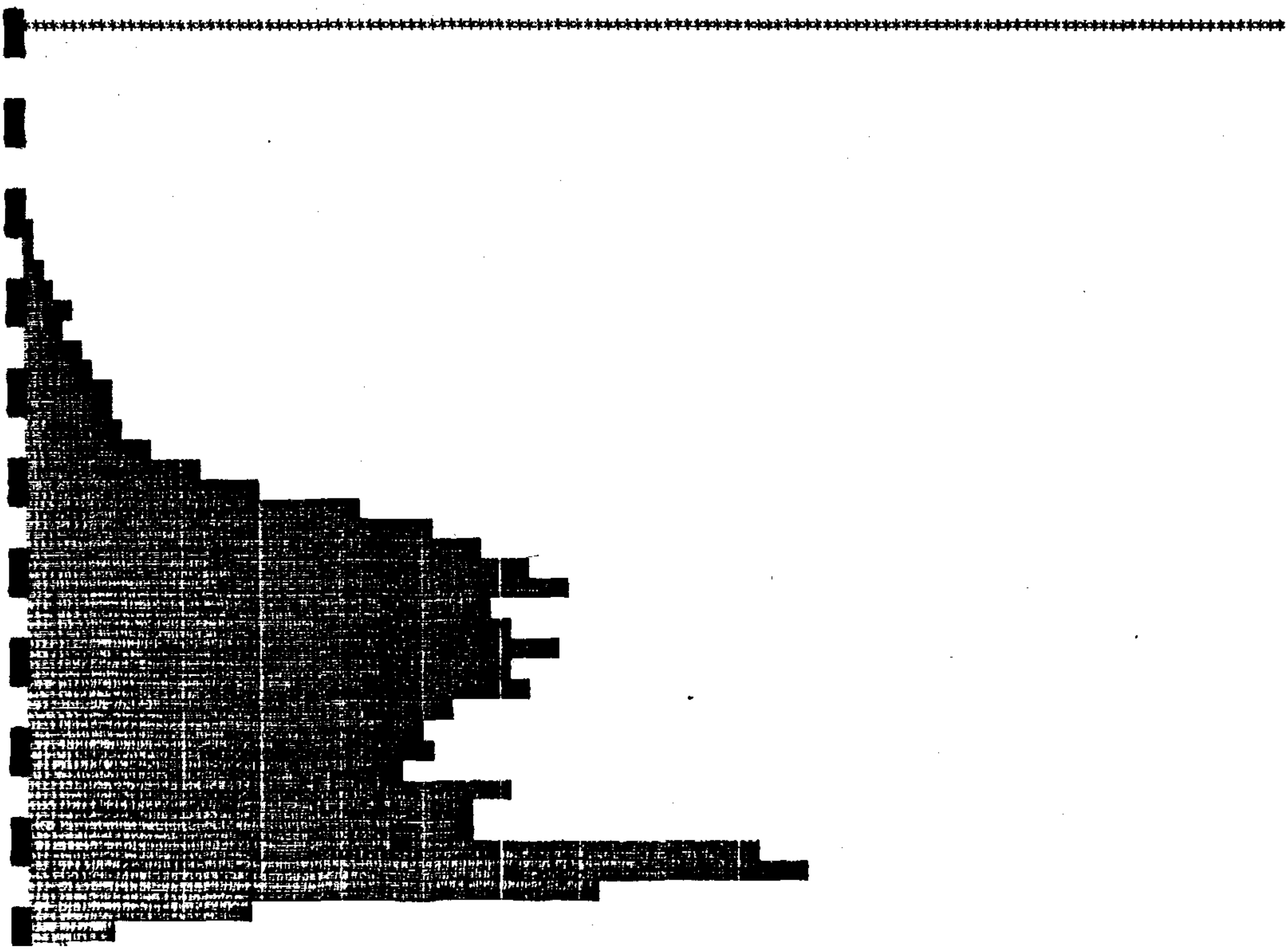
* Sample Number Duplicated
– There is no sample 13

RUN D27 ROSSARDEN 3 1gm -600+420u
12/11/81 10.35pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0003	0002	0004	0005	0005
0150	0005	0003	0012	0016	0023
0200	0042	0057	0080	0070	0106
0250	0126	0145	0149	0172	0218
0300	0298	0391	0552	0656	0751
0350	0822	0885	0757	0796	0872
0400	0799	0816	0697	0650	0659
0450	0614	0790	0735	0730	1189
0500	1265	0935	0382	0158	0073
0550					

16 COUNTS PER SYMBOL



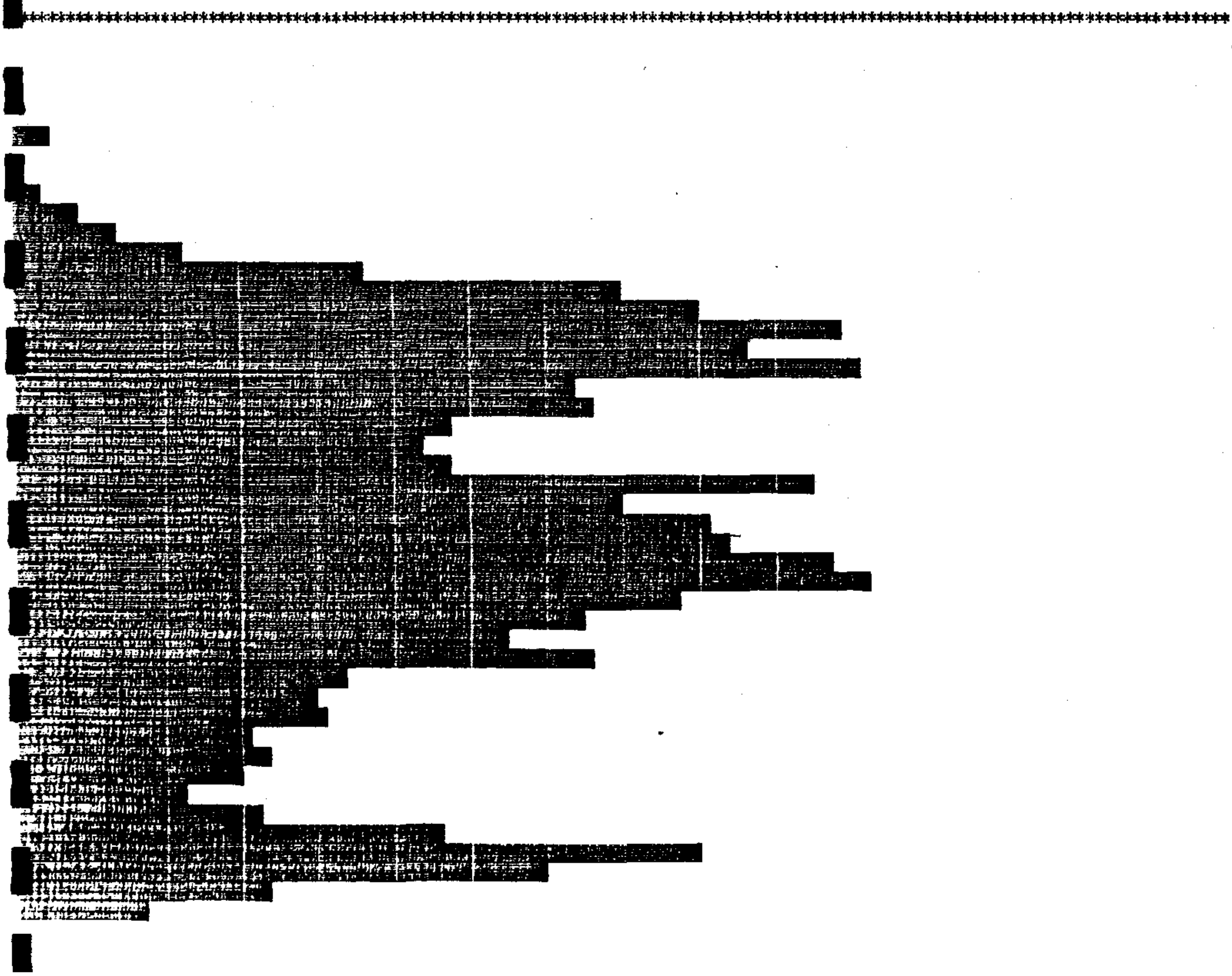
070

RUN D40 ROSSARDEN 4 Hand Picked clean quartz
14/11/81 5.25am T=330 G=1000 1gm -600+420u

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0000	0016
0150	0001	0005	0012	0031	0044
0200	0073	0150	0256	0289	0351
0250	0310	0358	0237	0245	0186
0300	0174	0184	0336	0256	0295
0350	0302	0344	0362	0280	0242
0400	0209	0247	0140	0131	0133
0450	0102	0110	0099	0073	0104
0500	0181	0288	0224	0108	0058
0550					

4 COUNTS PER SYMBOL

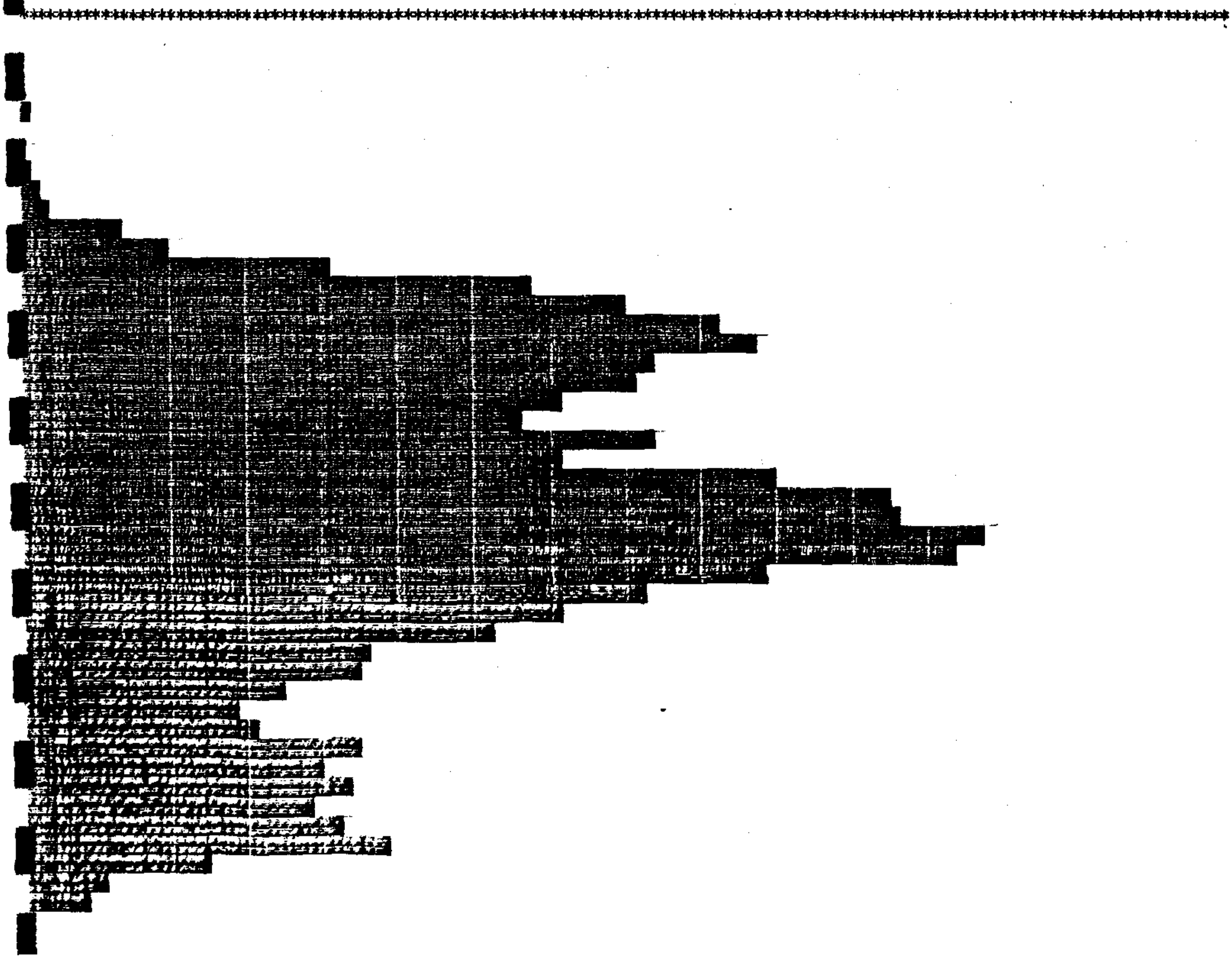


RUN D32 ROSSARDEN 5 1gm -600+420u
13/11/81 10.45pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0005	0000
0150	0002	0007	0008	0014	0044
0200	0065	0133	0218	0259	0297
0250	0315	0271	0262	0229	0215
0300	0268	0230	0320	0370	0372
0350	0411	0396	0317	0264	0230
0400	0203	0150	0146	0115	0095
0450	0102	0144	0131	0141	0124
0500	0139	0159	0081	0036	0029
0550					

4 COUNTS PER SYMBOL



072

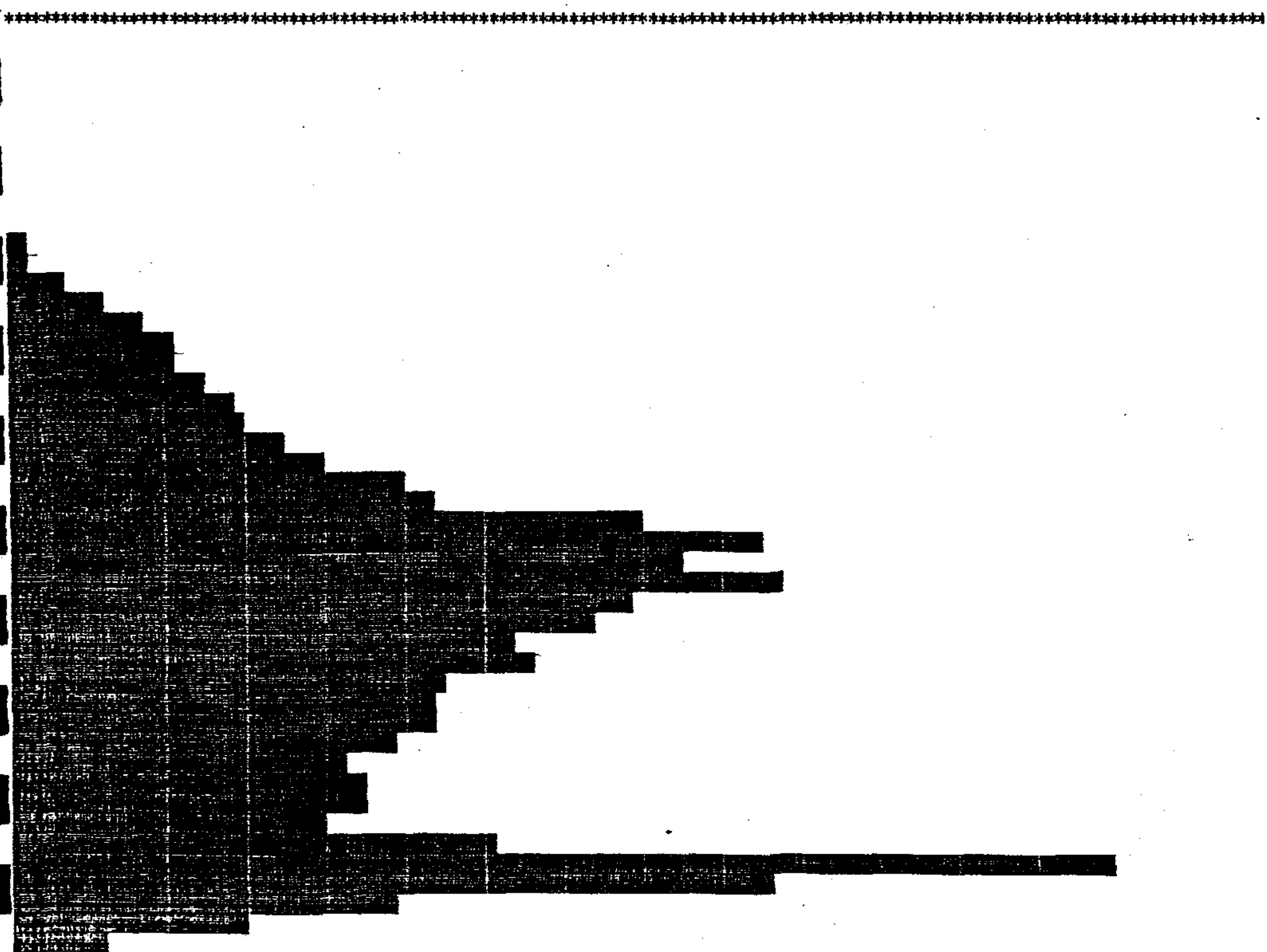
652073

RUN D14 ROSSARDEN 6 Hand Picked clean quartz 19m -600+420u
9/11/81 10.05pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50	
0100	0000	0000	0000	0000	0000	
0150	0000	0000	0001	0000	0008	
0200	0011	0027	0043	0058	0069	
0250	0070	0080	0092	0097	0114	
0300	0131	0163	0175	0256	0304	350
0350	0274	0315	0253	0237	0206	
0400	0213	0177	0175	0175	0159	
0450	0138	0147	0147	0129	0199	505
0500	0451	0308	0159	0096	0042	
0550						

4 COUNTS PER SYMBOL



.073

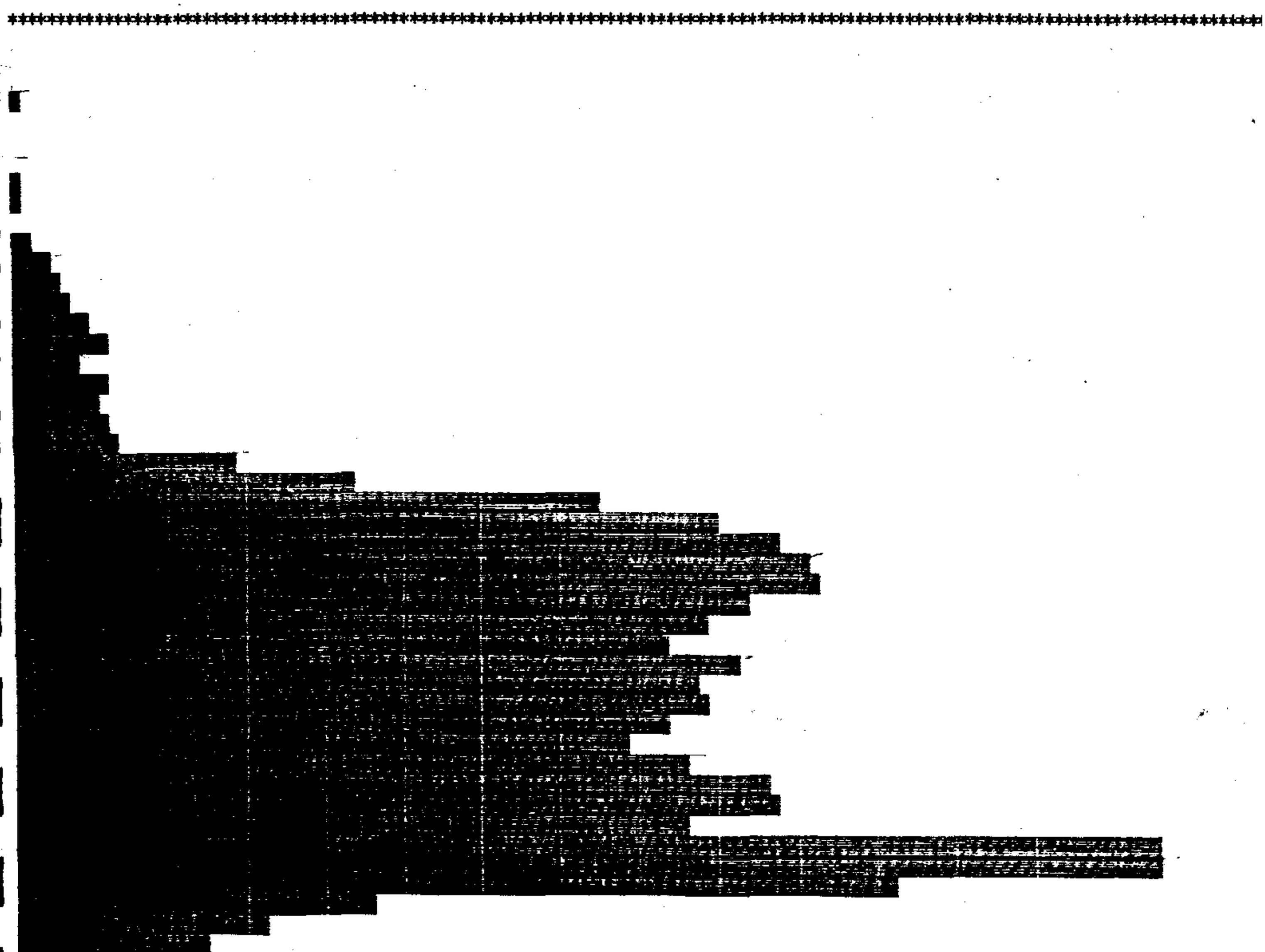
652074

RUN D7 ROSSARDEN 7 Size Test 1gm -420+200u T=330 G=1000
9/11/81 3.10am

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0004	0000	0000
0150	0001	0005	0004	0002	0008
0200	0017	0022	0027	0034	0041
0250	0030	0042	0038	0043	0046
0300	0094	0141	0240	0288	0315
0350	0326	0329	0301	0287	0269
0400	0297	0282	0286	0271	0253
0450	0276	0311	0315	0277	0469
0500	0470	0361	0151	0104	0081
0550					

4 COUNTS PER SYMBOL



074

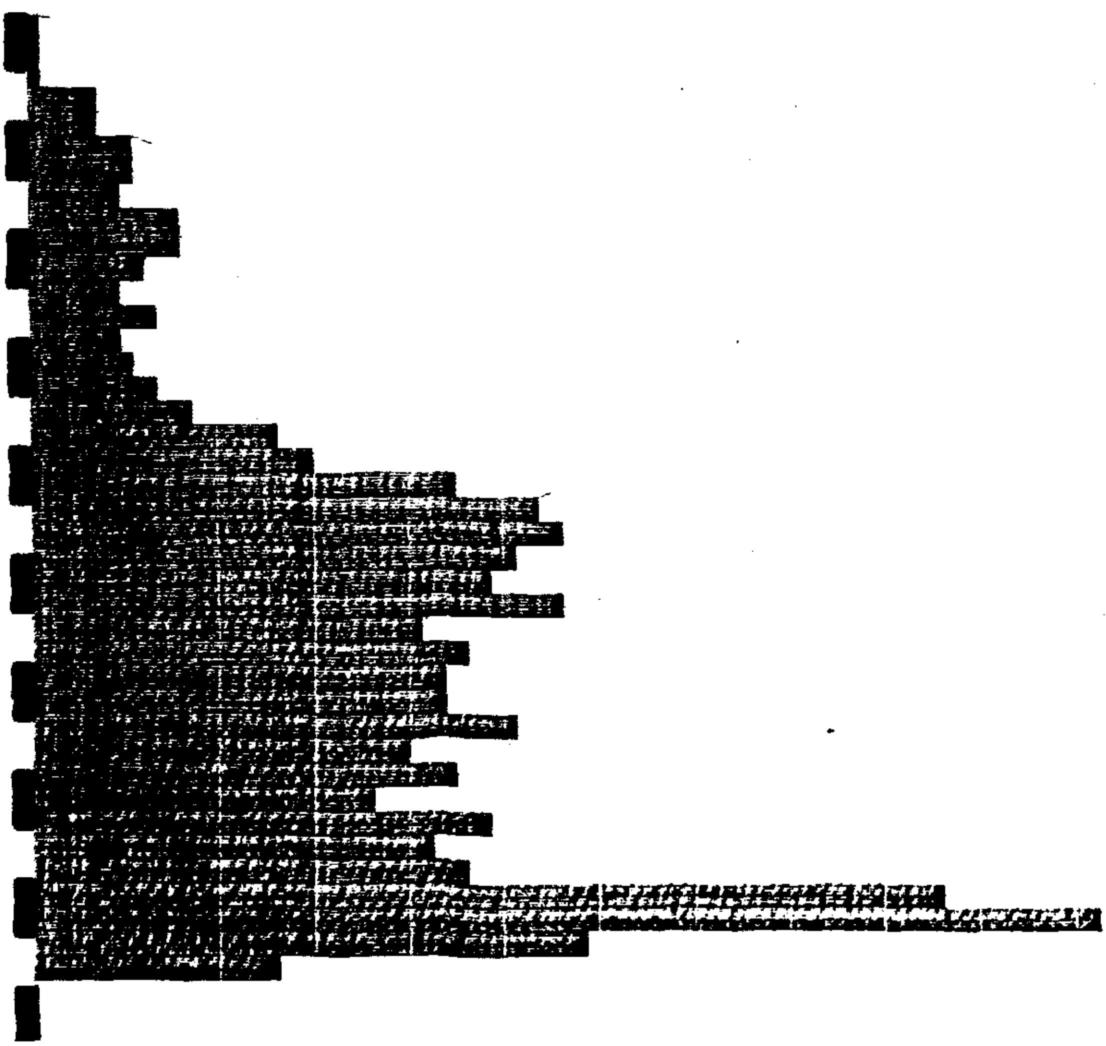
652075

RUN D35 ROSSARDEN 8 1gm -600+420u
14/11/81 1.15am T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0001	0000	0001
0150	0004	0006	0007	0027	0025
0200	0037	0036	0034	0052	0053
0250	0042	0033	0045	0034	0038
0300	0047	0056	0084	0099	0146
0350	0173	0183	0167	0159	0181
0400	0135	0151	0142	0142	0167
0450	0131	0147	0119	0157	0139
0500	0151	0310	0361	0189	0086
0550					

4 COUNTS PER SYMBOL



075

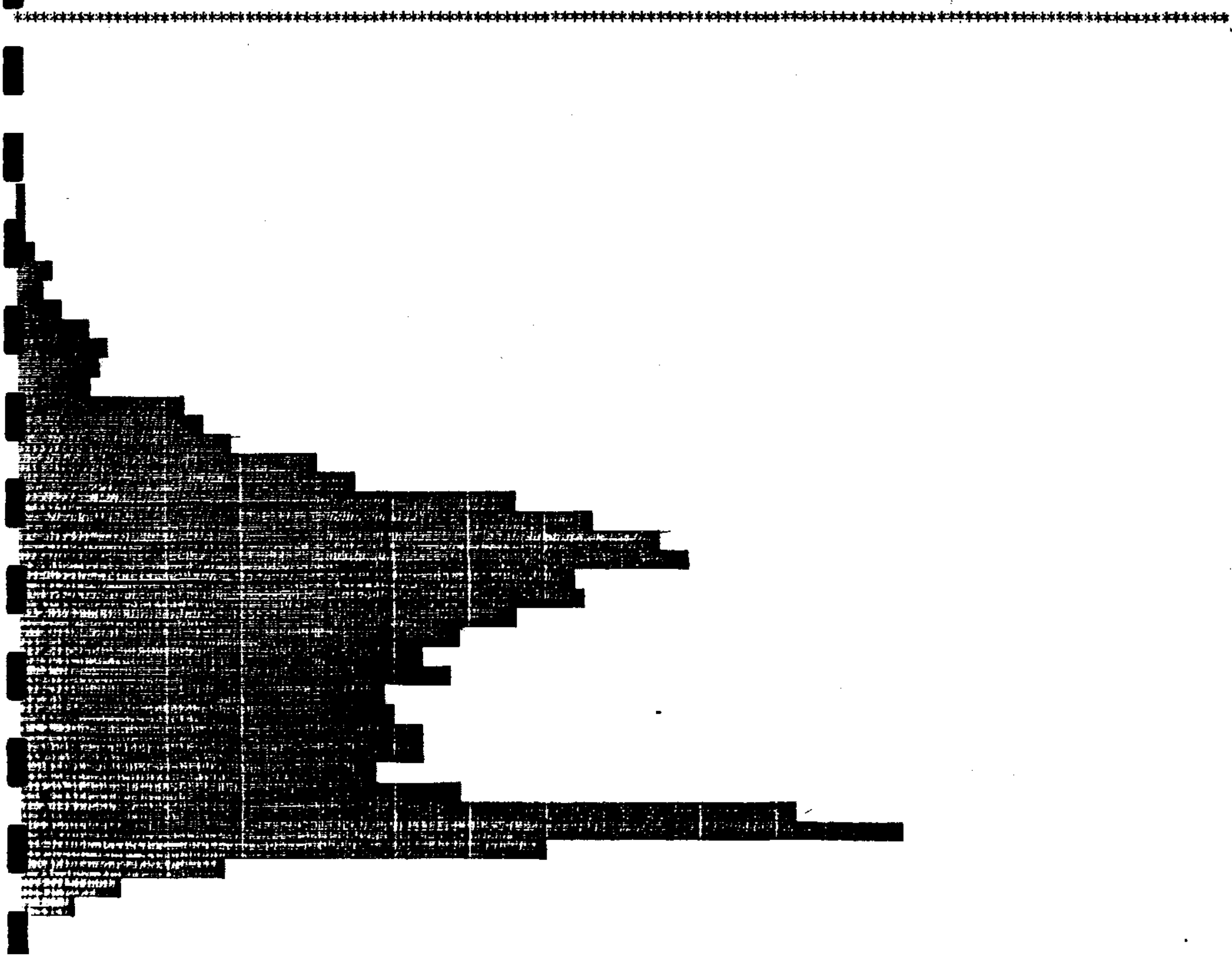
652076

RUN D26   ROSSARDEN 9   1gm   -600+420u
12/11/81   9.45pm   T=330   G=1000

HEAT RATE (5,10,20)   20
START TEMPERATURE   100
END TEMPERATURE   550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0001	0002
0150	0002	0006	0012	0011	0015
0200	0023	0032	0026	0043	0068
0250	0080	0075	0068	0149	0162
0300	0191	0257	0288	0426	0491
0350	0544	0569	0474	0484	0429
0400	0383	0345	0369	0313	0327
0450	0351	0344	0305	0378	0658
0500	0747	0453	0179	0094	0054
0550					

8 COUNTS PER SYMBOL



076

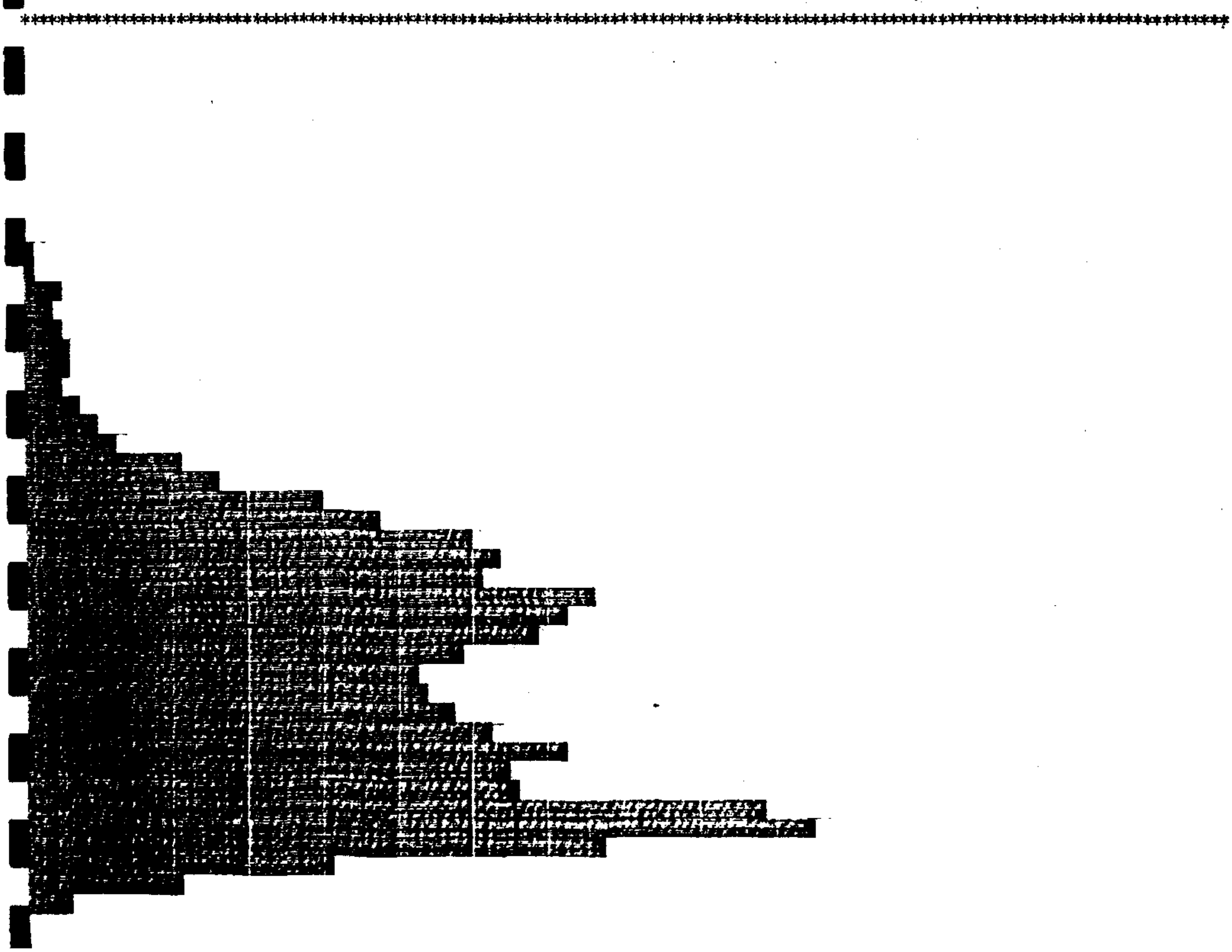
652077

RUN D37   ROSSSARDEN   10   1gm   -600+420u
14/11/81   2.55am   T=330 G=1000

HEAT RATE (5,10,20)   20
START TEMPERATURE   100
END TEMPERATURE   550

DEG C	10	20	30	40	50
0100	0000	0002	0000	0000	0000
0150	0001	0005	0005	0006	0003
0200	0012	0011	0032	0028	0034
0250	0043	0043	0033	0051	0071
0300	0083	0142	0172	0256	0311
0350	0385	0410	0398	0490	0465
0400	0443	0377	0341	0347	0368
0450	0406	0467	0416	0424	0637
0500	0675	0503	0270	0142	0040
0550					

8 COUNTS PER SYMBOL

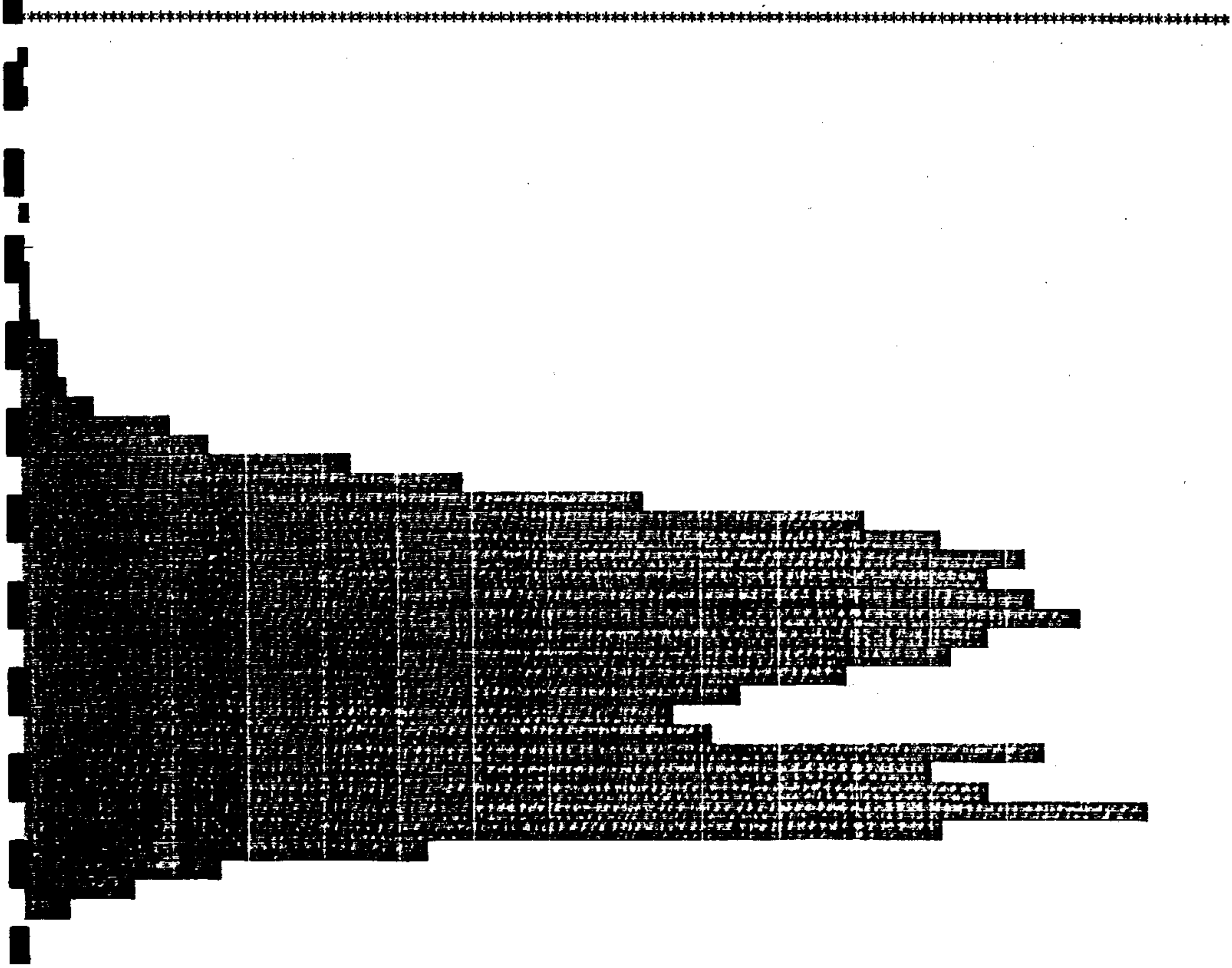


RUN D36 ROSSARDEN 11 1gm -600+420u
14/11/81 2.05am T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0010	0003	0011	0005	0001
0150	0004	0005	0007	0013	0003
0200	0006	0010	0010	0014	0019
0250	0036	0035	0045	0066	0128
0300	0164	0282	0380	0535	0712
0350	0779	0852	0818	0861	0903
0400	0818	0786	0697	0613	0557
0450	0587	0866	0771	0816	0954
0500	0783	0351	0174	0098	0043
0550					

8 COUNTS PER SYMBOL



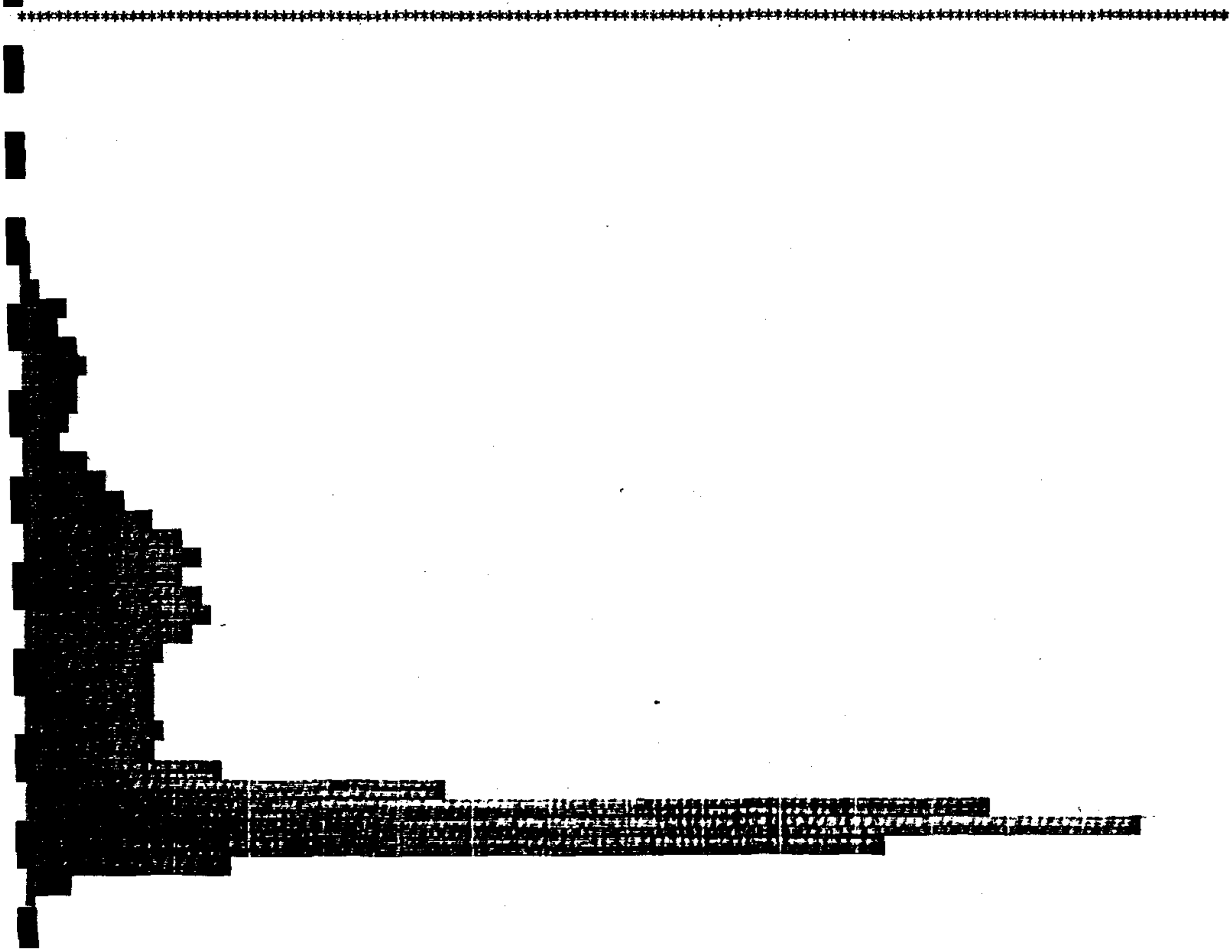
APPENDIX X

RUN D21 ROSSARDEN 16 1sm -600+420u T=330 G=1000
10/11/81 3.55am

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0000	0000
0150	0001	0001	0004	0009	0004
0200	0021	0025	0047	0085	0078
0250	0109	0125	0096	0099	0082
0300	0079	0124	0158	0176	0228
0350	0280	0304	0280	0317	0329
0400	0288	0244	0237	0231	0226
0450	0242	0235	0339	0732	1641
0500	1903	1465	0367	0090	0026
0550					

16 COUNTS PER SYMBOL

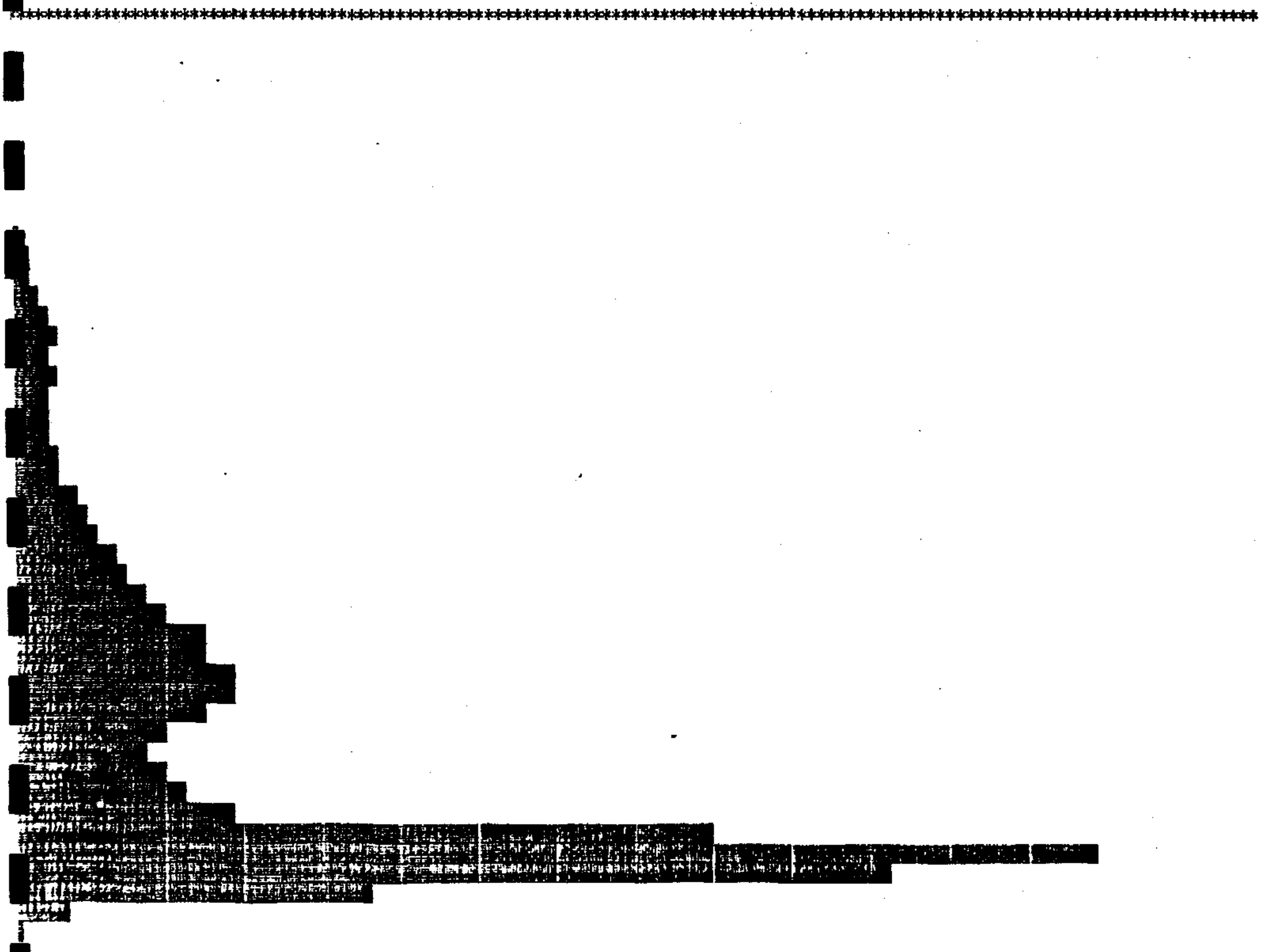


UN D44 ROSSARDEN 17 Hand picked quartz 1gm =600+420u
20/11/81 8.35pm T=330 G=1000

EAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0009	0000	0000	0002	0013
0150	0018	0021	0027	0027	0051
0200	0068	0093	0107	0139	0166
0250	0155	0160	0157	0130	0129
0300	0163	0182	0229	0281	0319
0350	0359	0410	0473	0540	0641
0400	0653	0750	0746	0654	0519
0450	0458	0522	0586	0745	2315
0500	3582	2900	1206	0209	0032
0550					

32 COUNTS PER SYMBOL

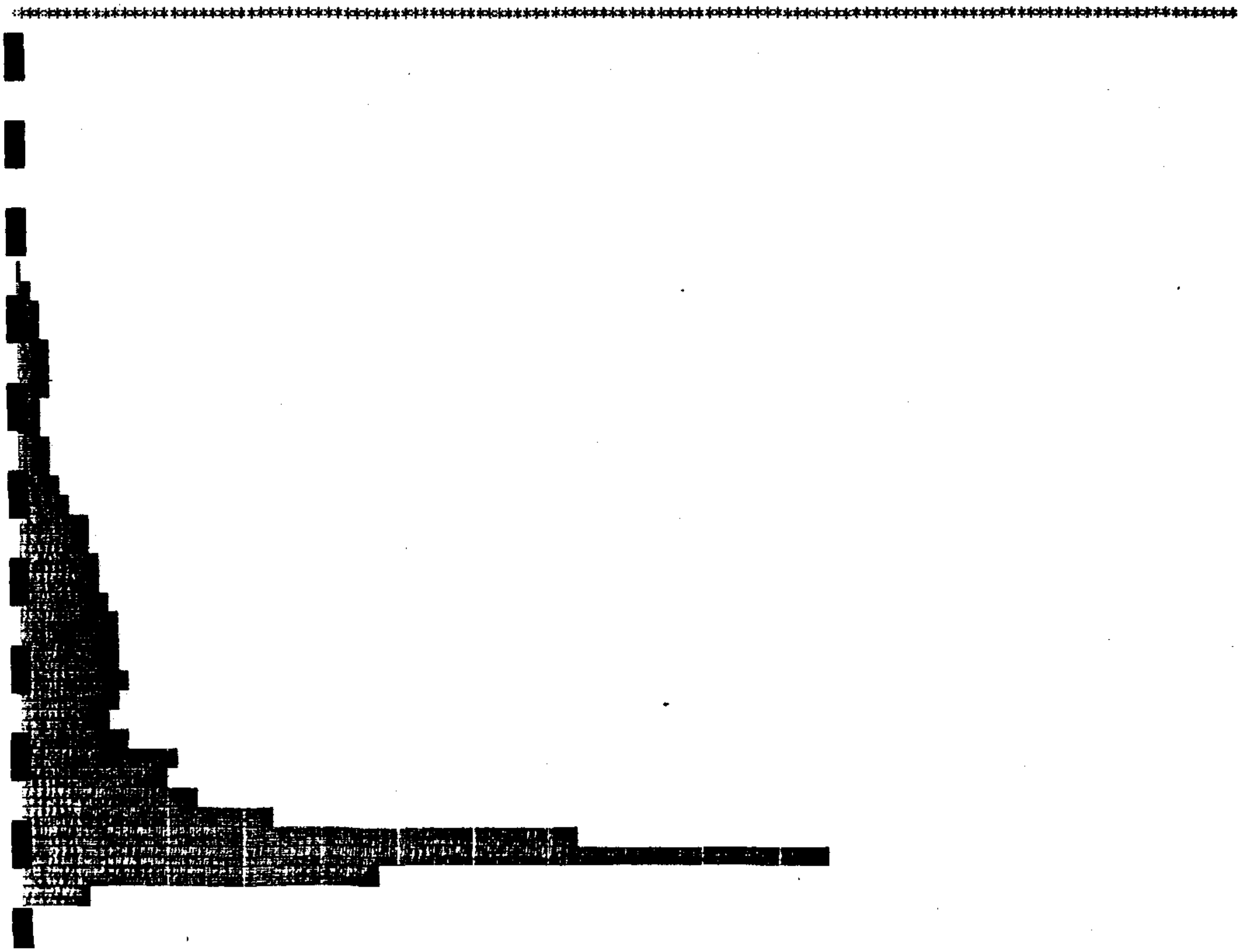


RUN D31 ROSSARDEN 18 Hand picked clean quartz 1gm -600+420u
13/11/81 9.55pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0000	0001
0150	0001	0004	0002	0005	0019
0200	0031	0051	0071	0117	0118
0250	0138	0133	0133	0123	0125
0300	0132	0137	0172	0202	0263
0350	0279	0300	0319	0321	0374
0400	0378	0366	0385	0367	0345
0450	0408	0546	0529	0639	0872
0500	1899	2724	1217	0282	0038
0550					

32 COUNTS PER SYMBOL

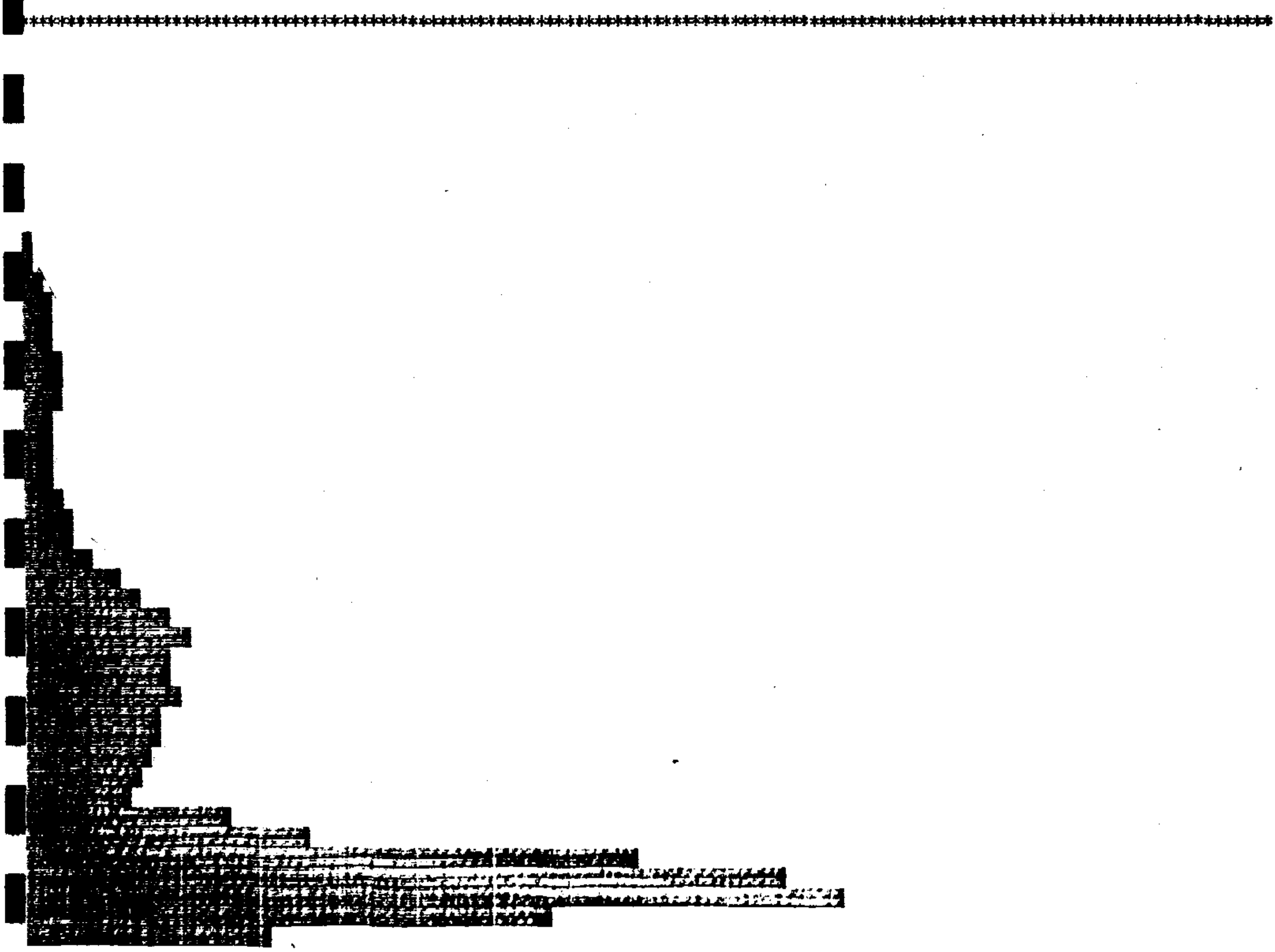


RUN D45 ROSSARDEN 19 Hand picked quartz 1gm -600+420u
20/11/81 9.25pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0001	0003	0006
0150	0006	0019	0014	0025	0032
0200	0059	0076	0099	0126	0116
0250	0137	0133	0145	0120	0103
0300	0117	0117	0151	0177	0186
0350	0250	0344	0403	0501	0557
0400	0489	0494	0515	0474	0450
0450	0427	0405	0357	0678	0929
0500	2021	2498	2710	1756	0807
0550					

32 COUNTS PER SYMBOL



APPENDIX XI

084

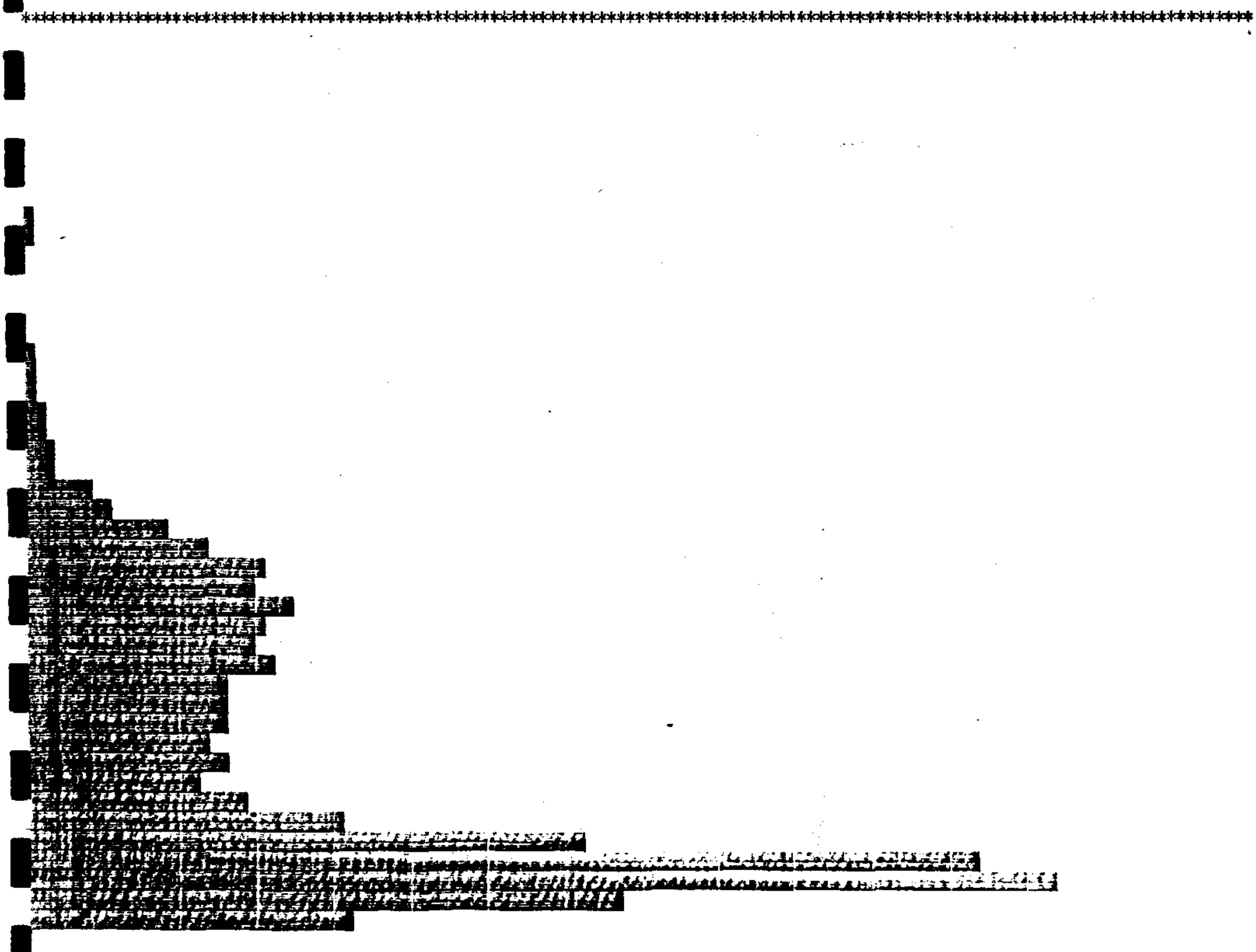
652085

RUN D33 ROSSARDEN RRS 1gm -600+420u
13/11/81 11.35pm T=330 G=1000

HEAT RATE (5,10,20) 20
START TEMPERATURE 100
END TEMPERATURE 550

DEG C	10	20	30	40	50
0100	0000	0000	0000	0000	0000
0150	0000	0001	0000	0013	0009
0200	0001	0000	0000	0007	0006
0250	0010	0012	0014	0020	0021
0300	0030	0028	0061	0078	0122
0350	0158	0202	0196	0229	0202
0400	0193	0209	0173	0175	0173
0450	0154	0170	0145	0184	0266
0500	0467	0792	0860	0502	0279
0550					

8 COUNTS PER SYMBOL



085

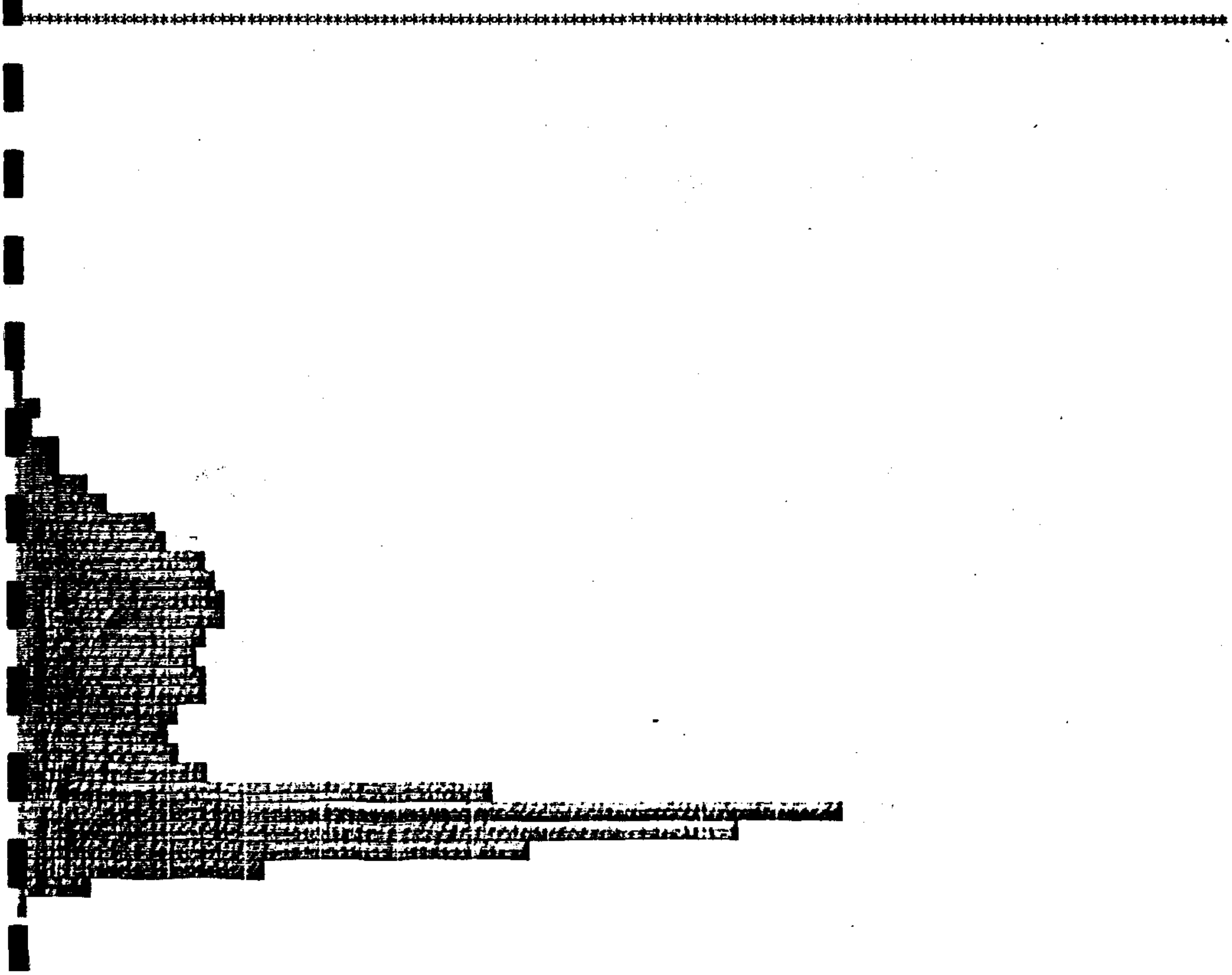
652086

UN D46   ROSSARDEN   RR1 47m   1gm   -600+420u
20/11/81   10.15pm   T=330 G=1000

EAT RATE (5,10,20)   20
TART TEMPERATURE   100
END TEMPERATURE   550

DEG C	10	20	30	40	50
100	0002	0002	0001	0002	0000
0150	0003	0000	0002	0003	0007
0200	0004	0002	0006	0002	0012
250	0012	0022	0021	0055	0041
300	0090	0086	0138	0175	0250
0350	0257	0320	0336	0353	0354
400	0326	0308	0335	0322	0284
450	0260	0287	0322	0800	1399
0500	1220	0875	0427	0136	0022
0550					

16 COUNTS PER SYMBOL



080

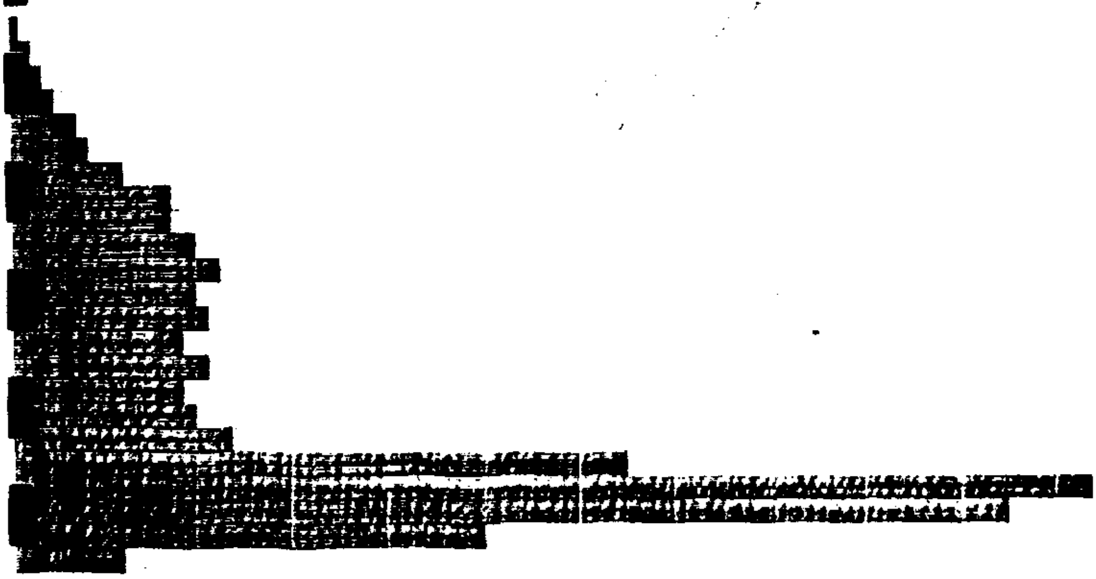
652087

UN D47 ROSSARDEN RR2 91m 19m -600+420u Hand picked qtz
0/11/81 11.05pm T=330 G=1000

EAT RATE (5,10,20) 20
TART TEMPERATURE 100
END TEMPERATURE 550

EG C	10	20	30	40	50
100	0000	0000	0000	0000	0000
150	0000	0001	0000	0000	0000
0200	0001	0004	0001	0001	0002
250	0003	0001	0004	0002	0006
300	0019	0009	0036	0068	0107
0350	0148	0213	0248	0346	0452
0400	0463	0526	0588	0540	0547
450	0488	0570	0505	0536	0639
0500	1666	2917	2692	1294	0330
0550					

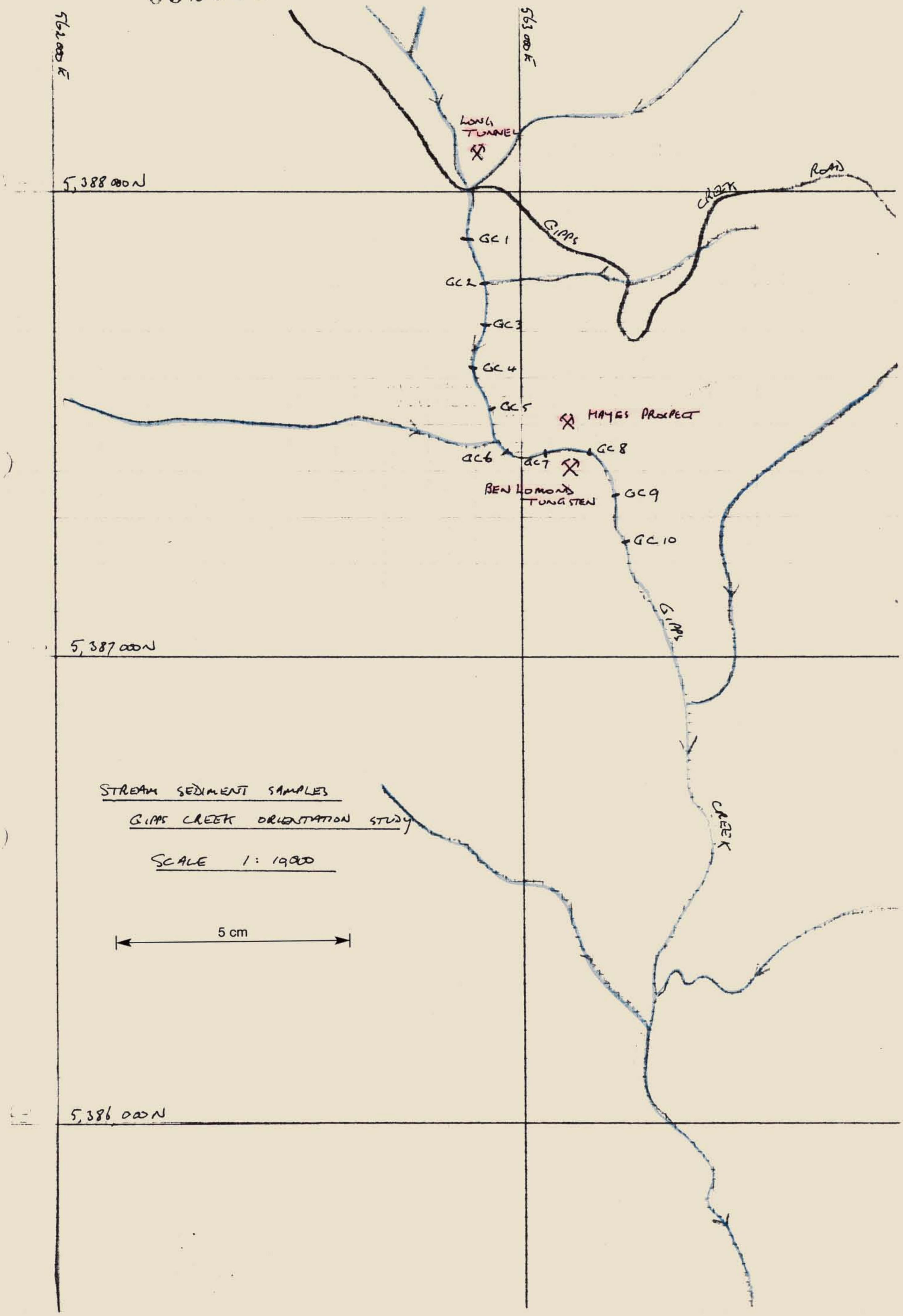
32 COUNTS PER SYMBOL



087

652088

FIGURE 1.

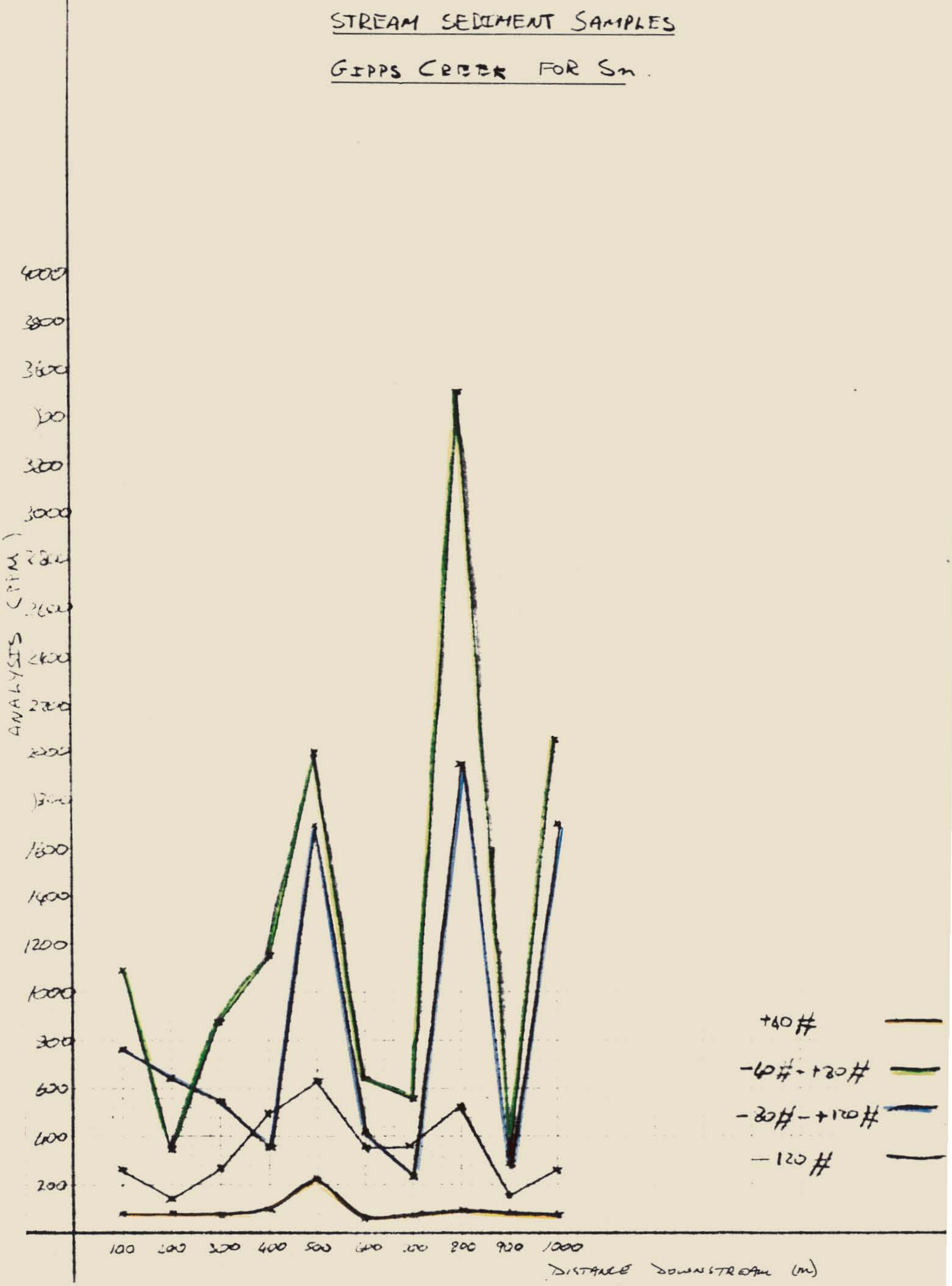


STREAM SEDIMENT SAMPLES
GIPPS CREEK ORIENTATION STUDY
SCALE 1: 10000

083

652089

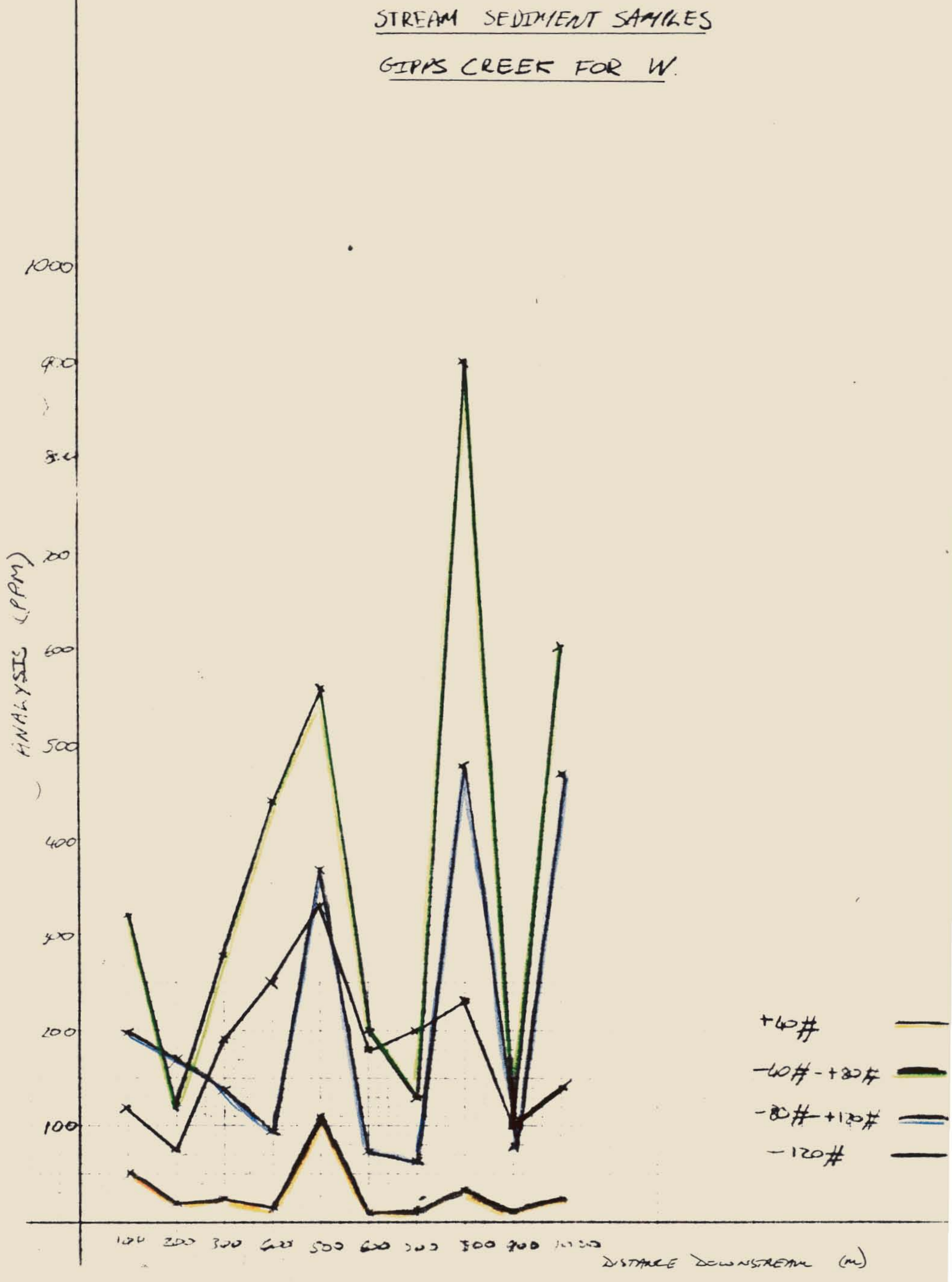
FIGURE 2.



083

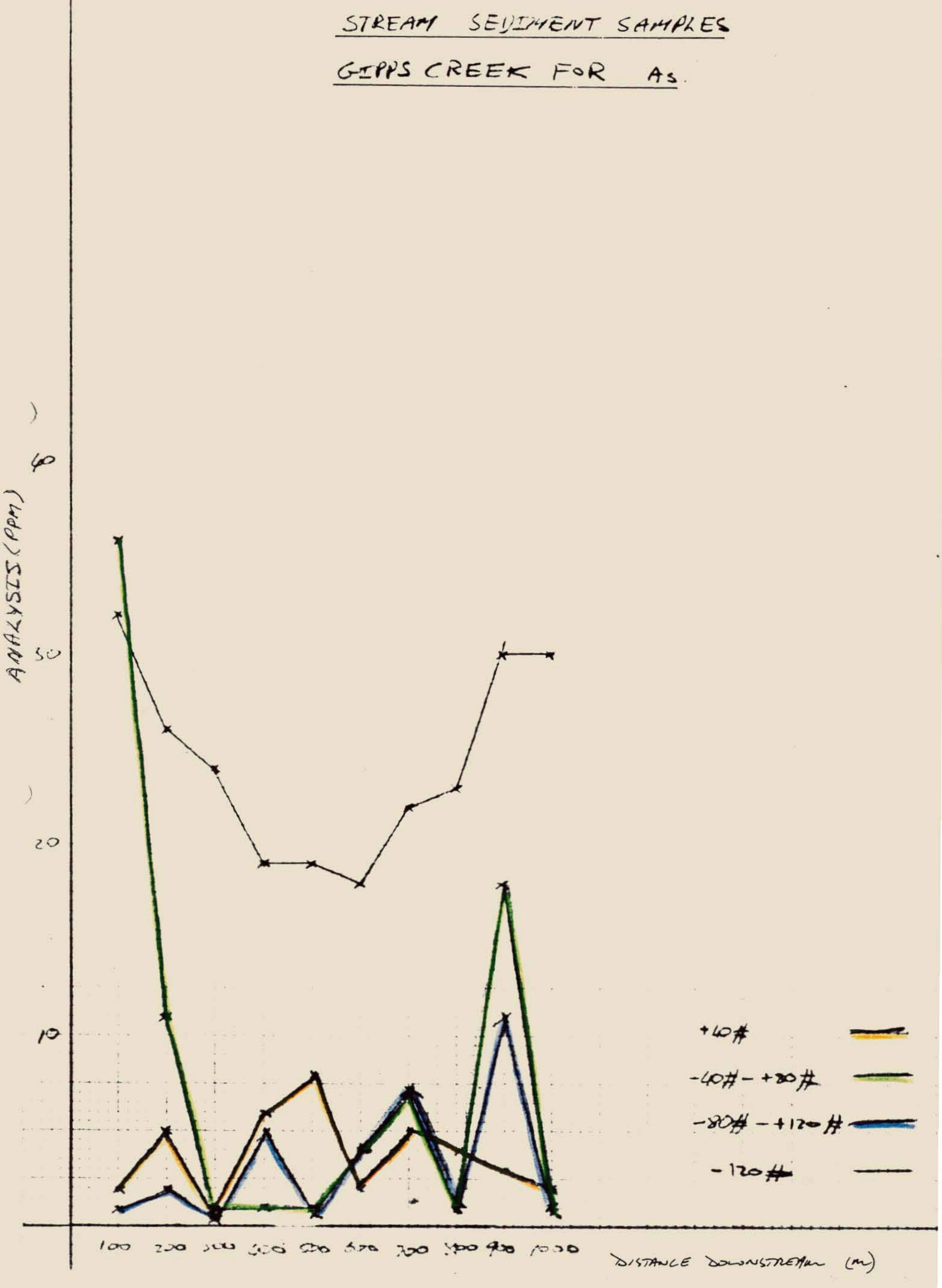
652090

FIGURE 3.



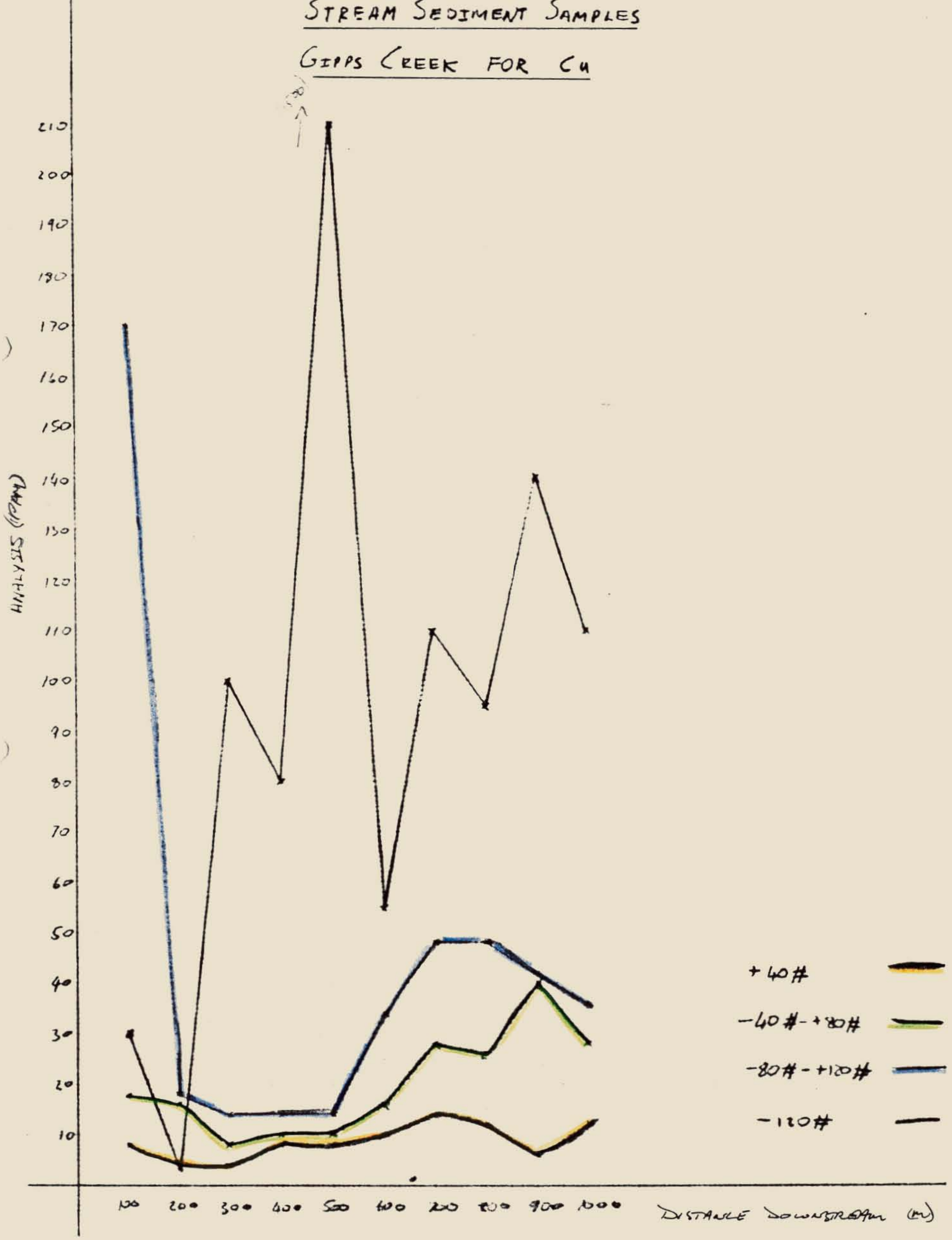
652091

FIGURE 4



091 652092

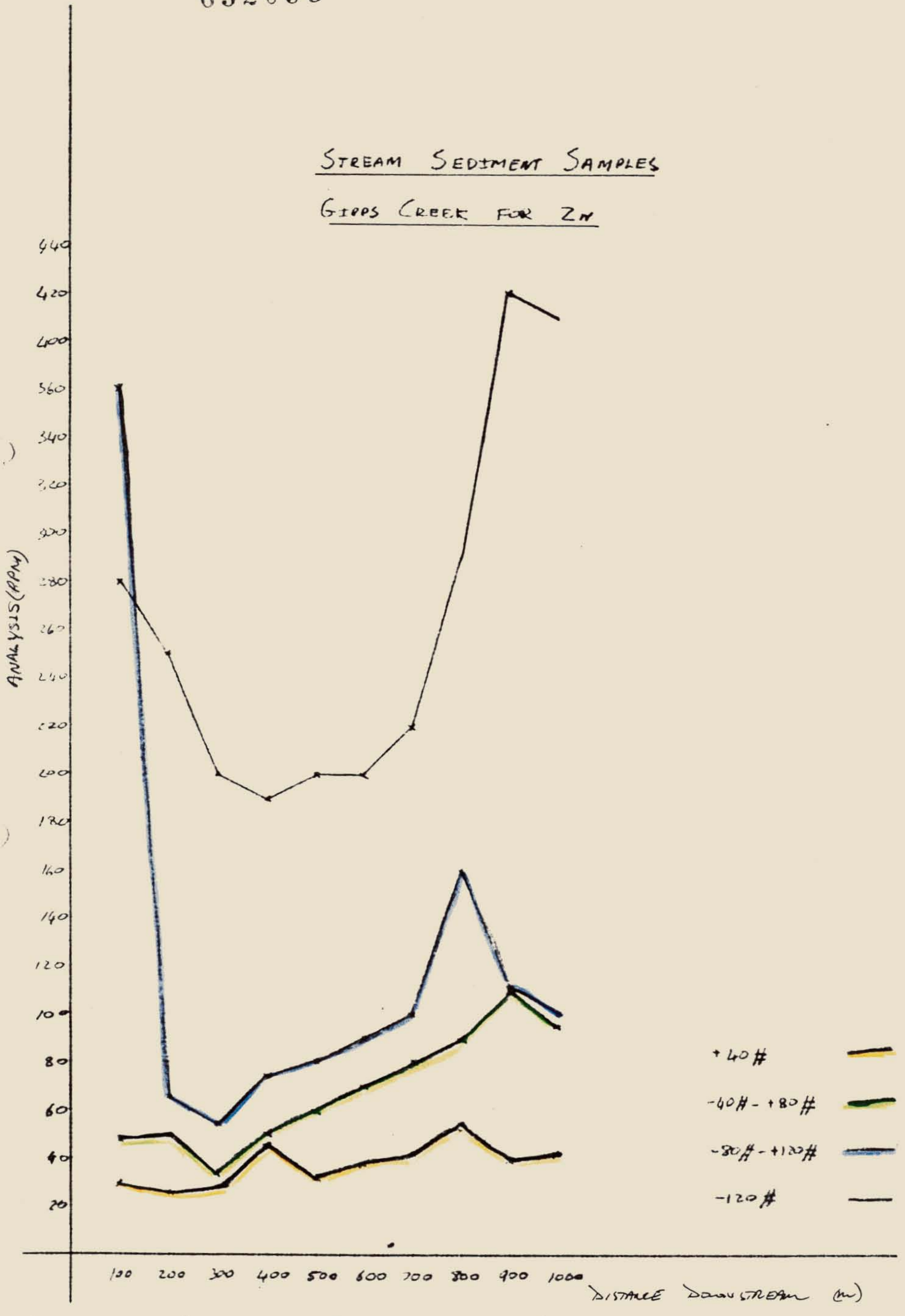
FIGURE 5.



092

FIGURE 6

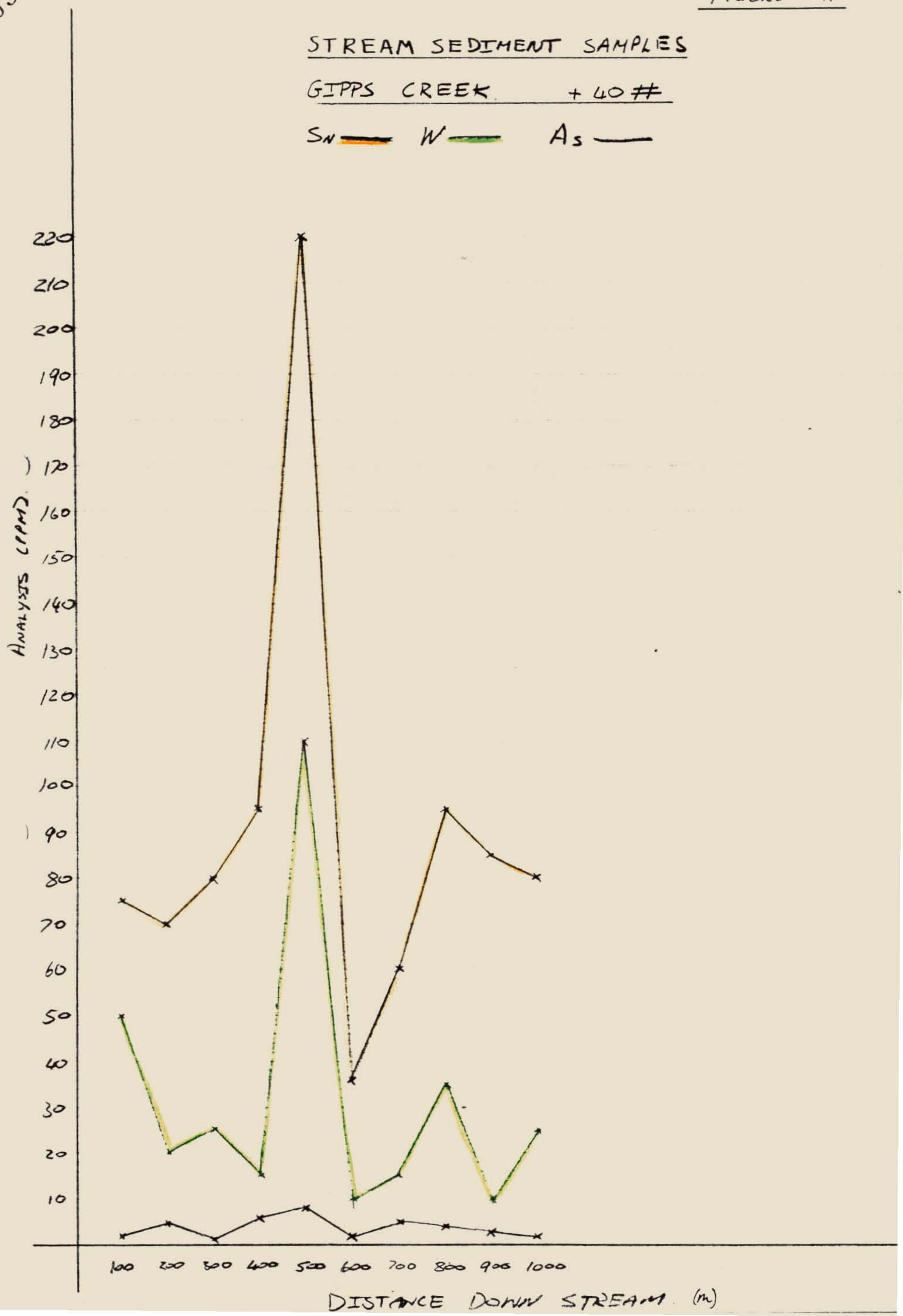
652093



093

652094

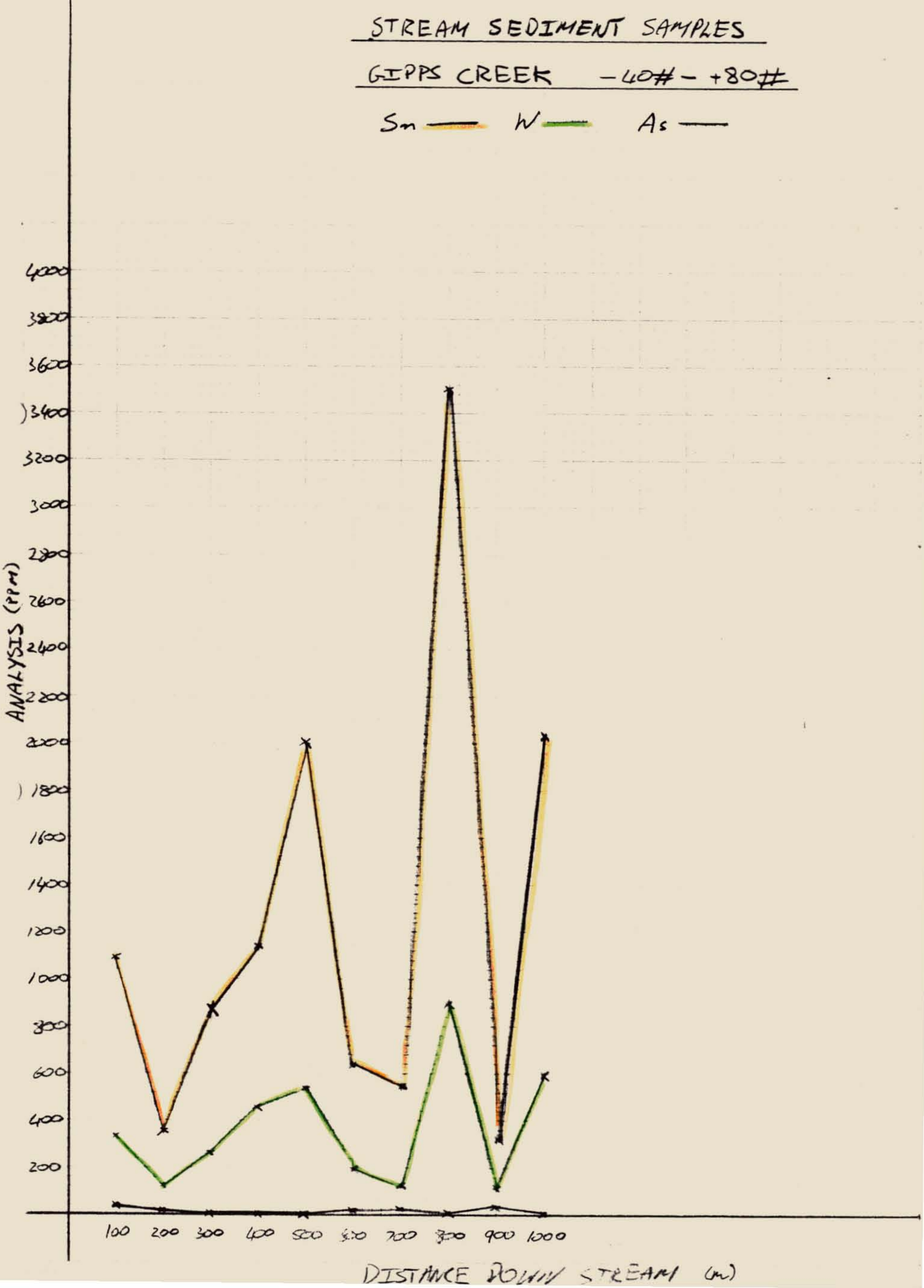
FIGURE 7.



094

652095

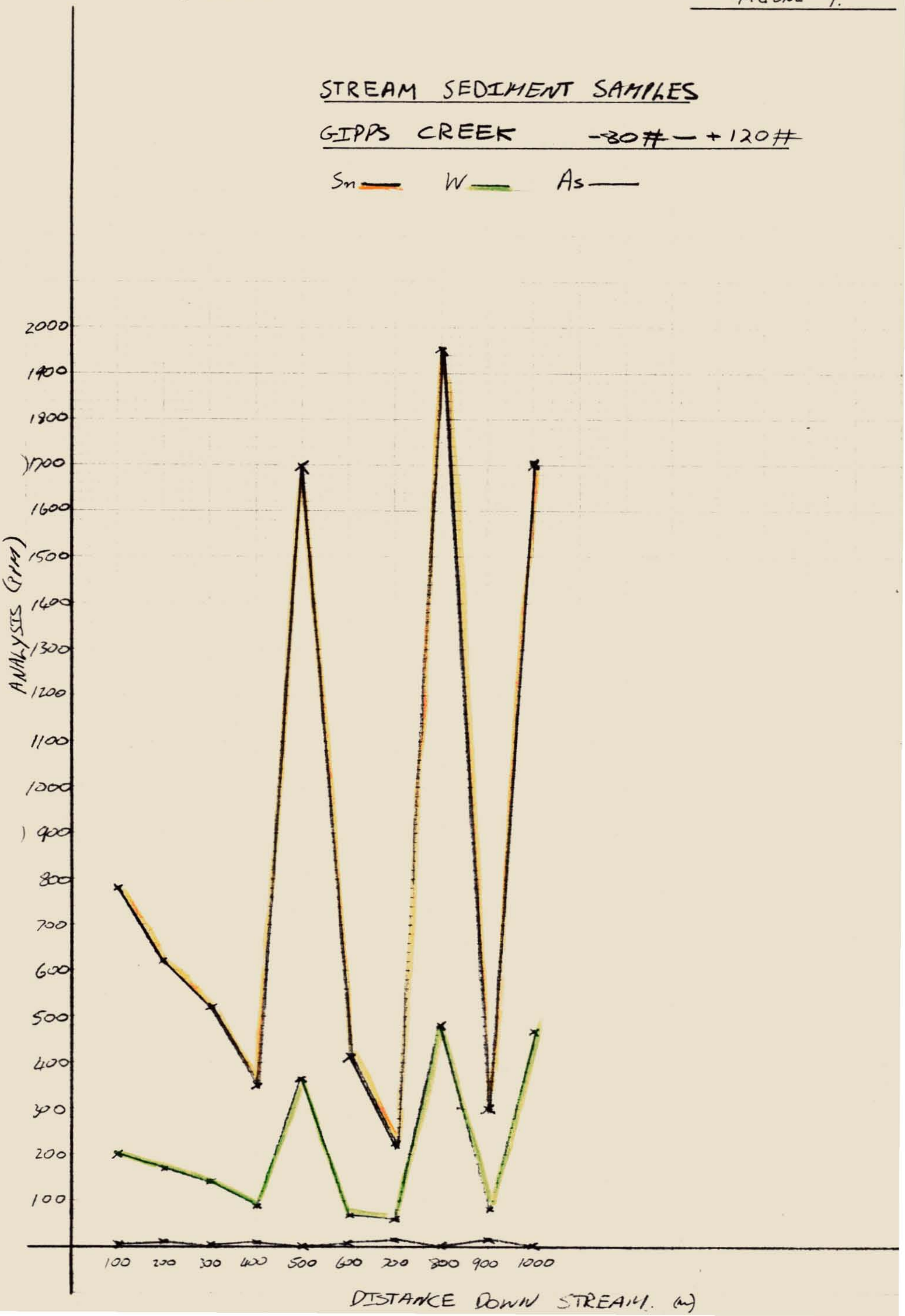
FIGURE 8



095

652096

FIGURE 9.



098

652097

FIGURE 10

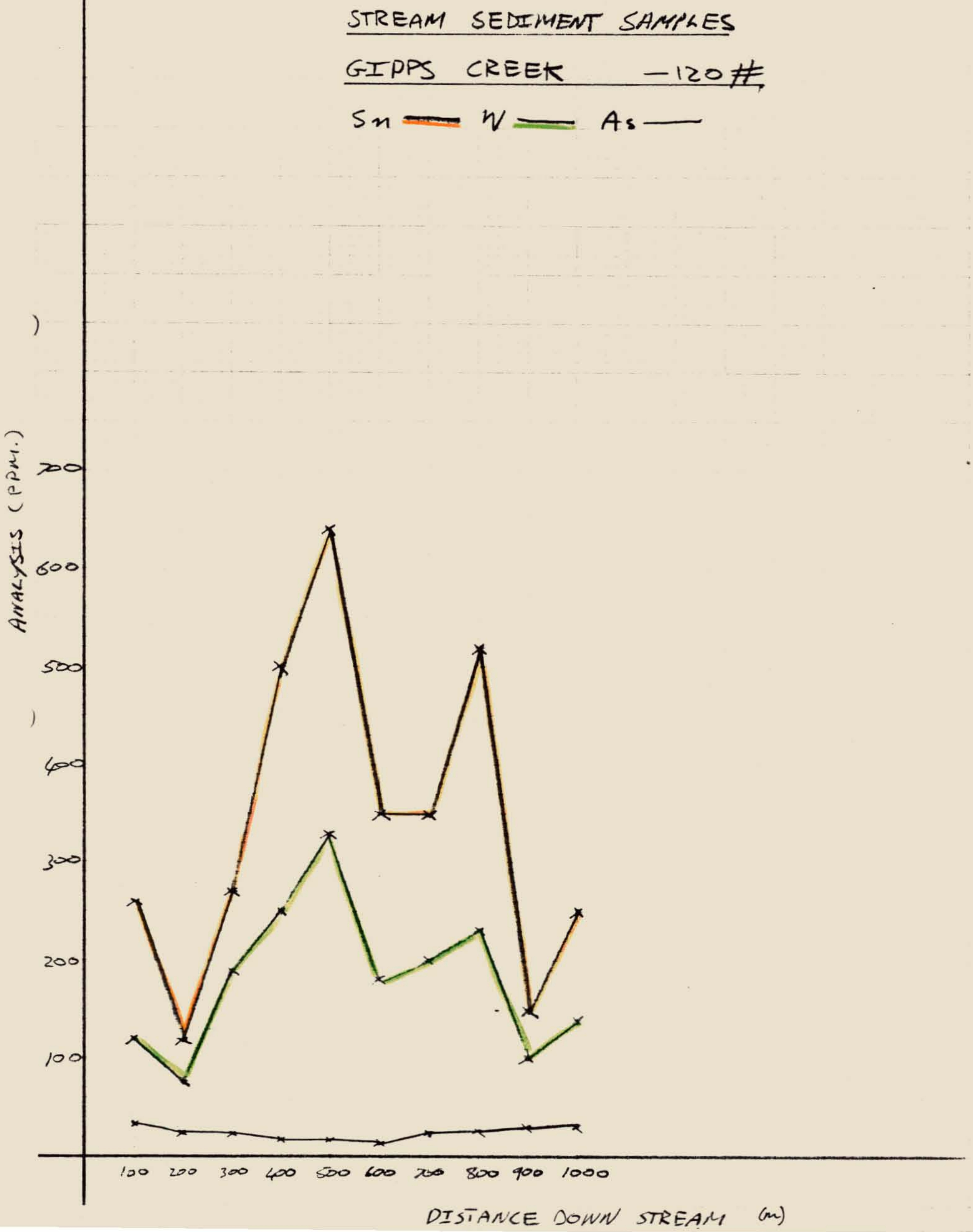
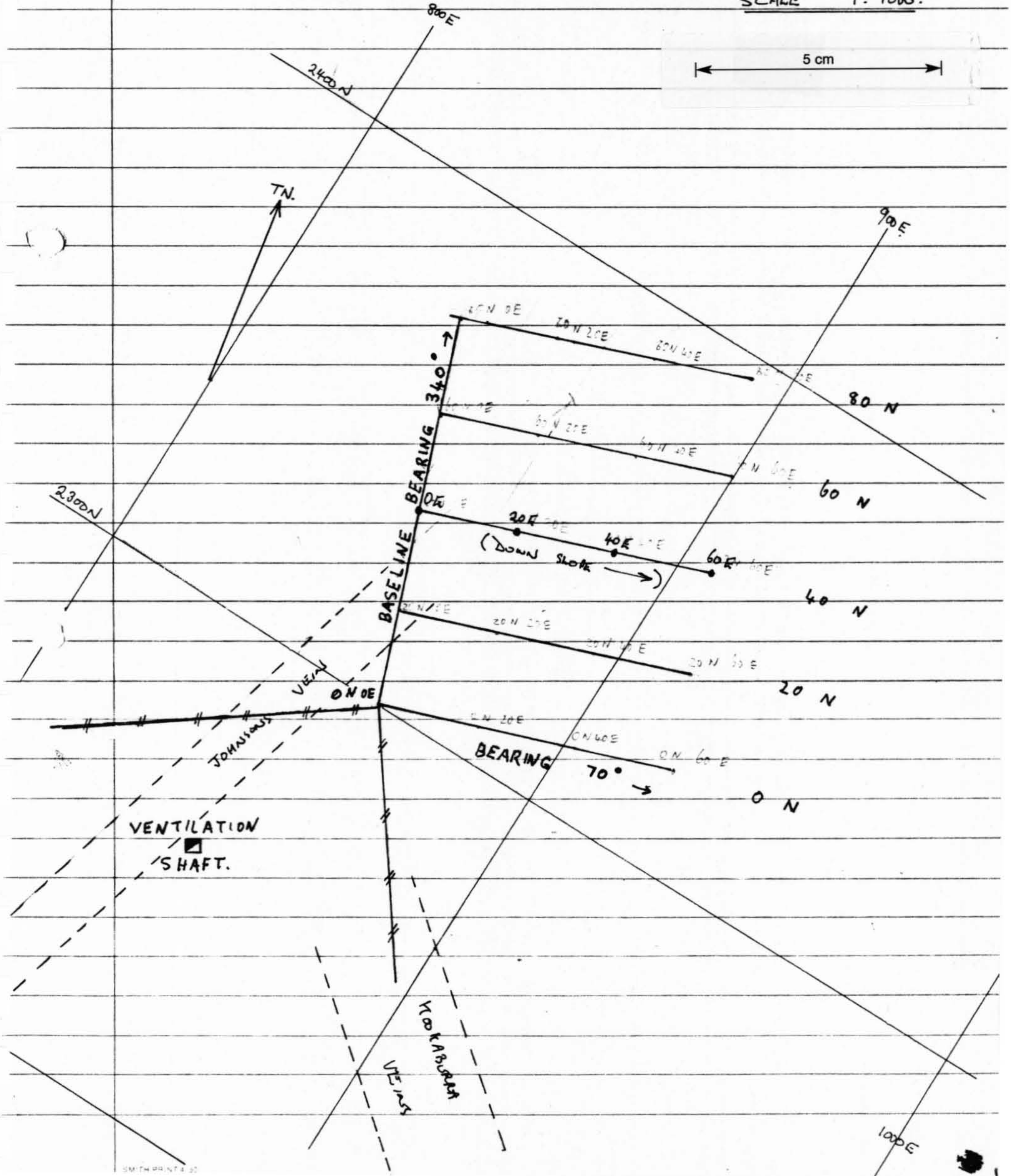


FIGURE 11.

SOIL SAMPLES – ORIENTATION SURVEY

KOOKABURRA AND JOHNSONS VEINS AREA.

SCALE 1: 1000.



652099

FIGURE 12

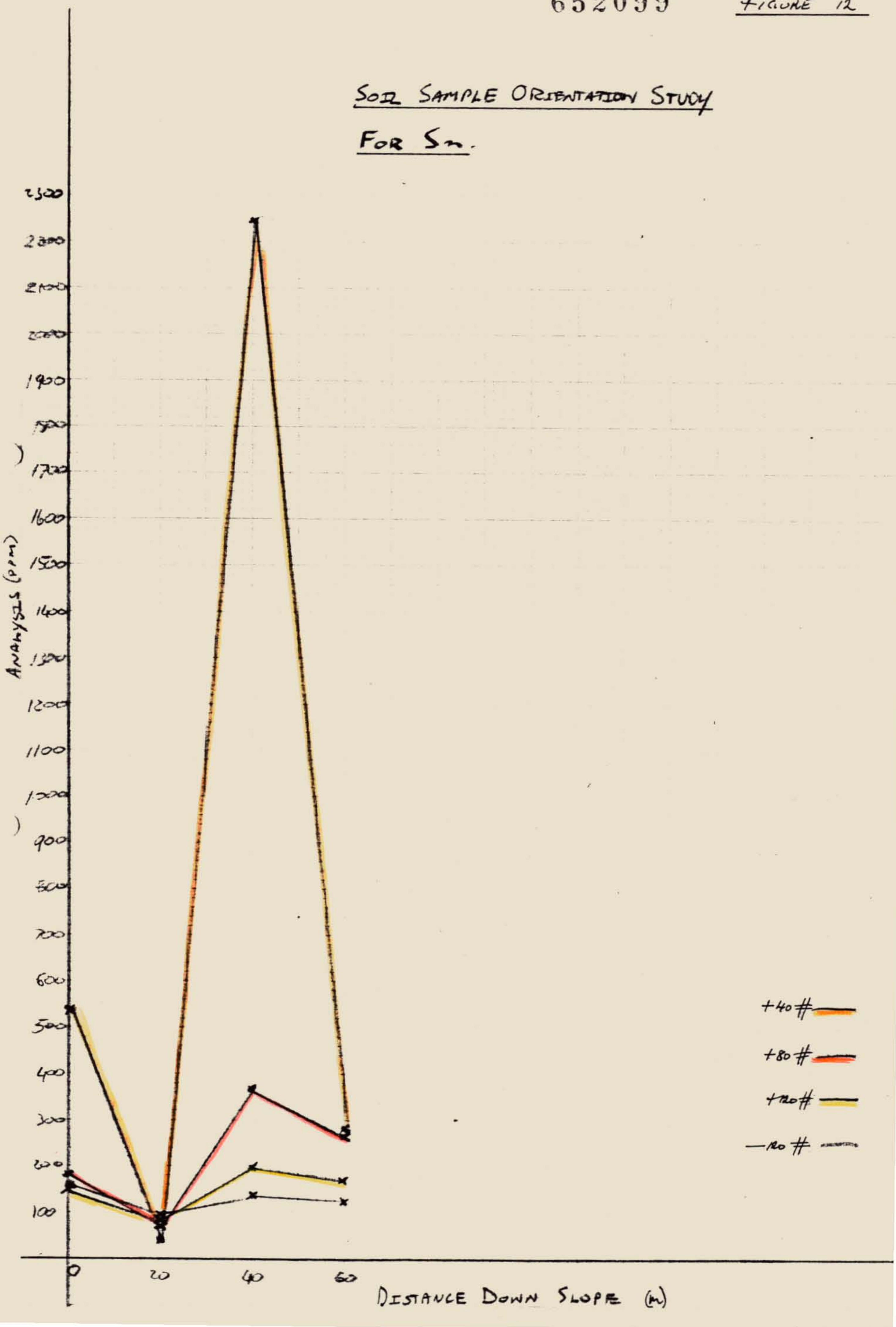
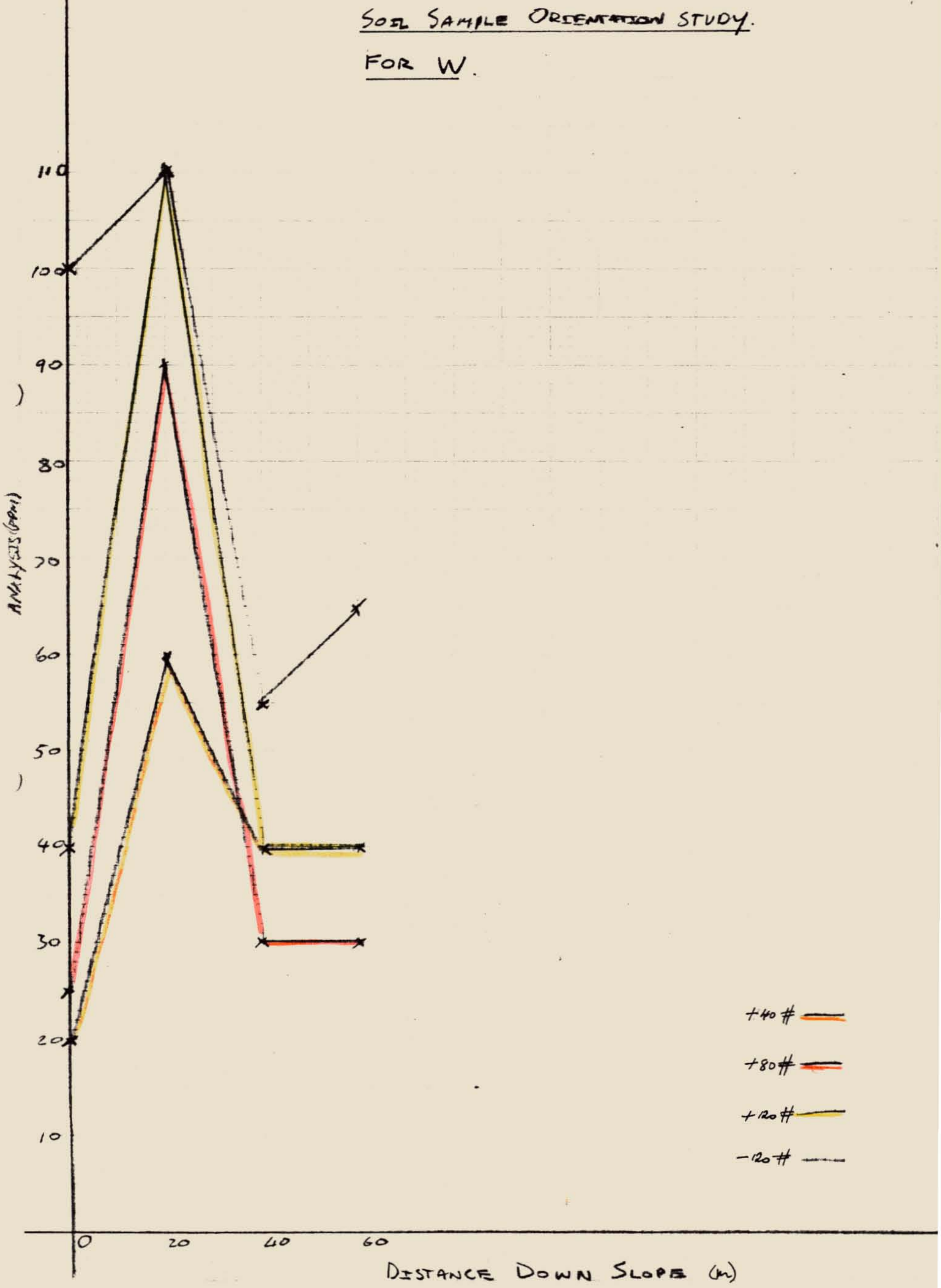
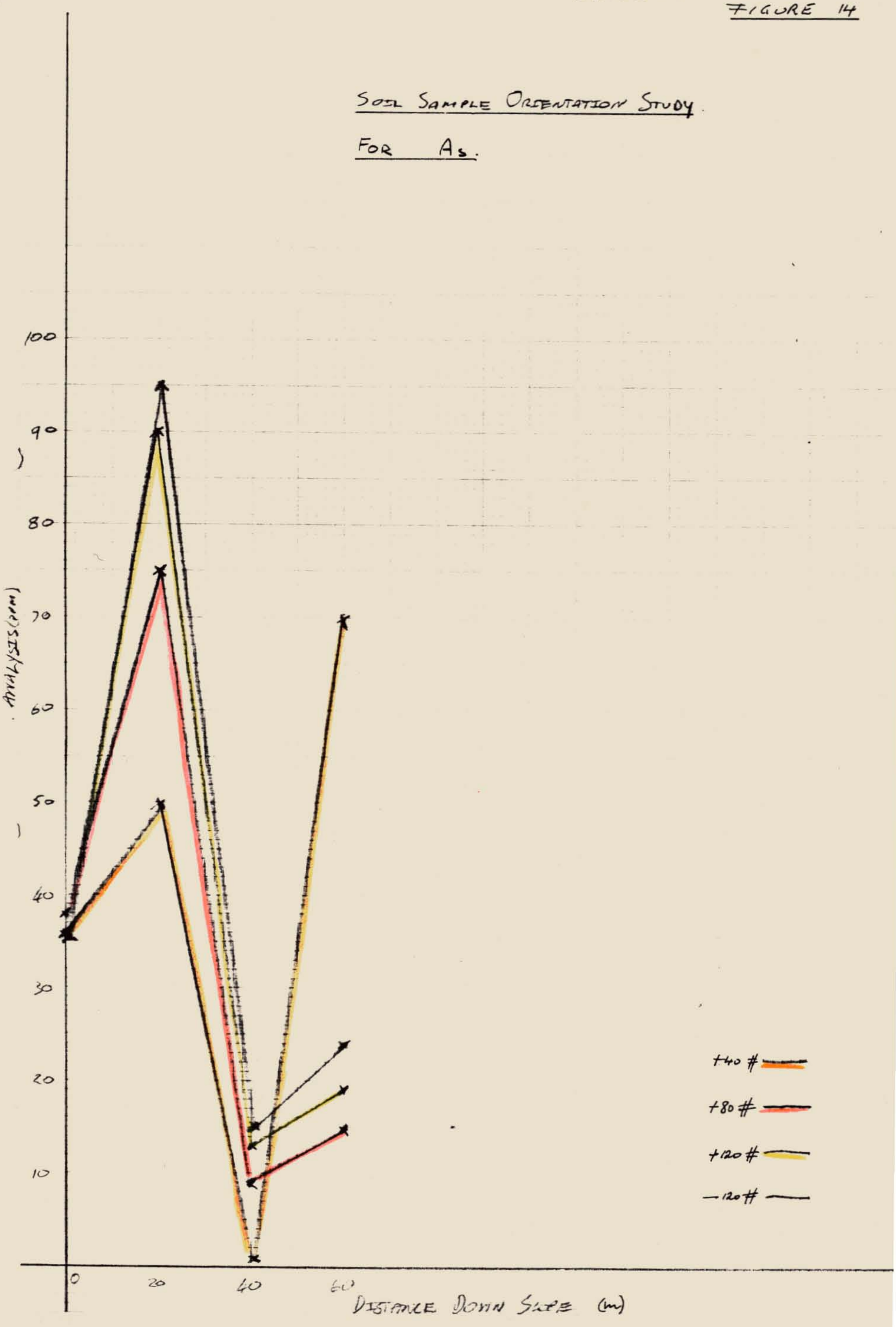


FIGURE 13


SOIL SAMPLE ORIENTATION STUDY.
FOR W.
ANALYSIS (ppm)
110
100
90
80
70
60
50
40
30
20
10
0
20
40
60
DISTANCE DOWN SLOPE (m)
+40#
+80#
+120#
-120#

652101

FIGURE 14



652102

FIGURE 15

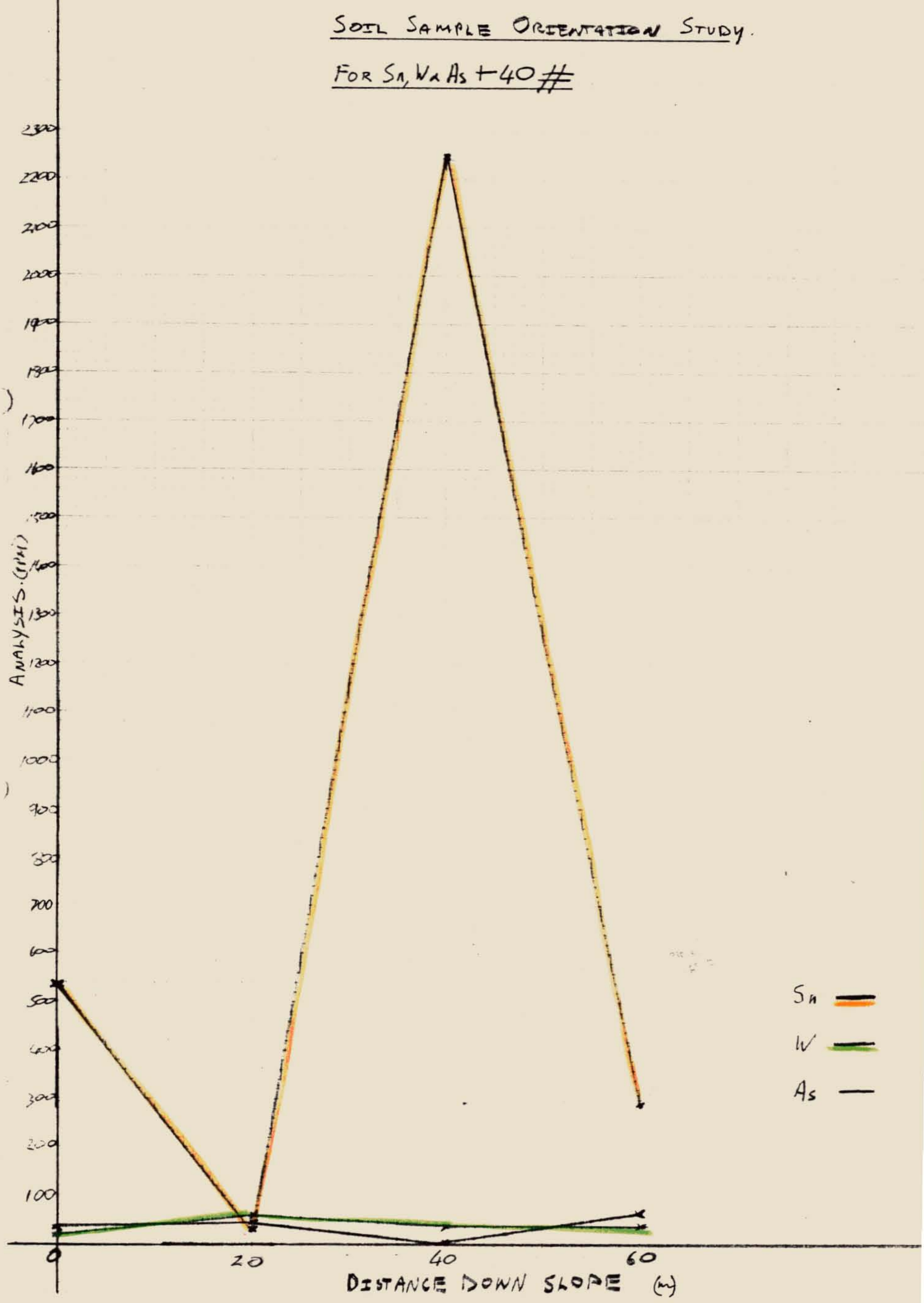
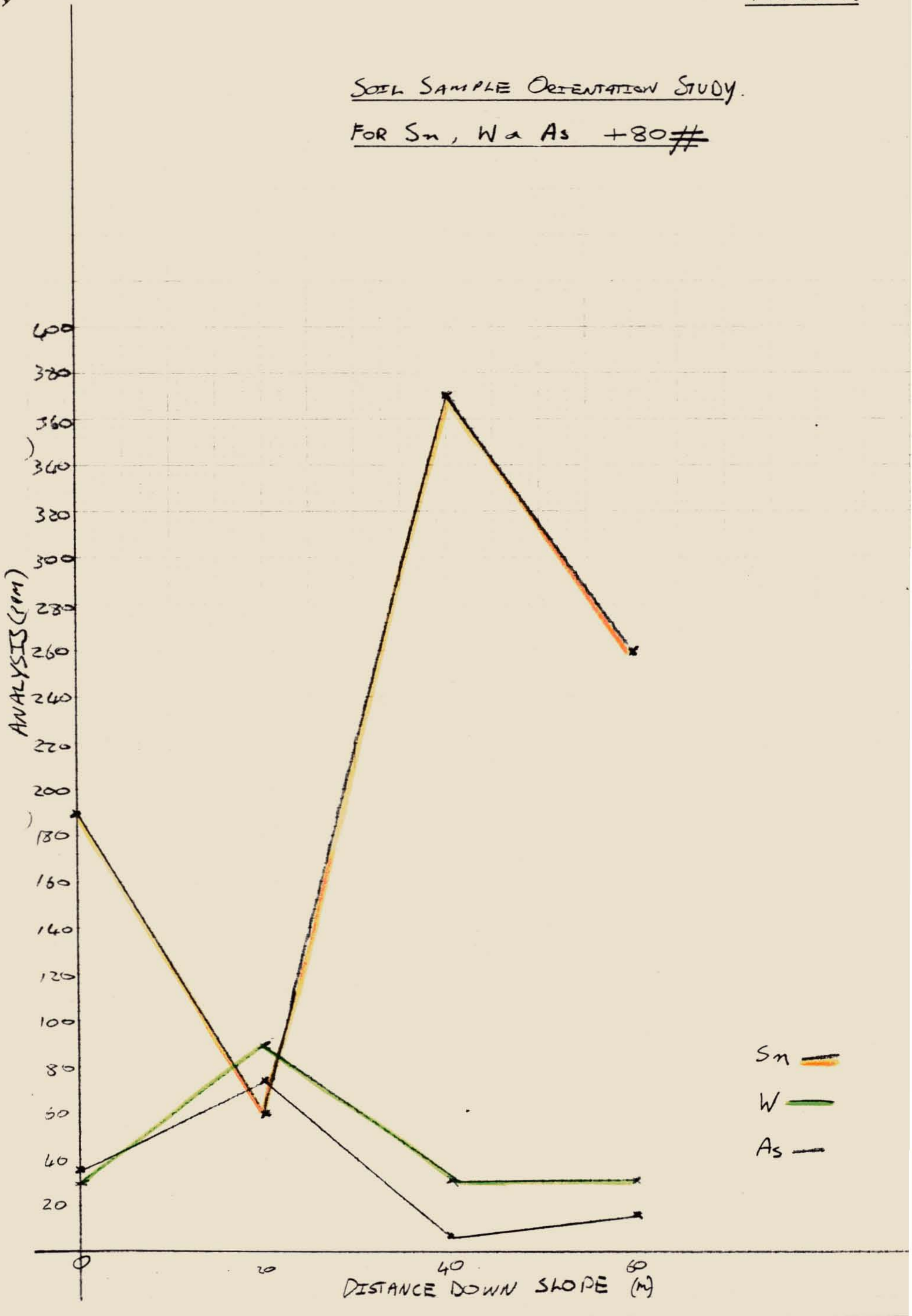


FIGURE 16

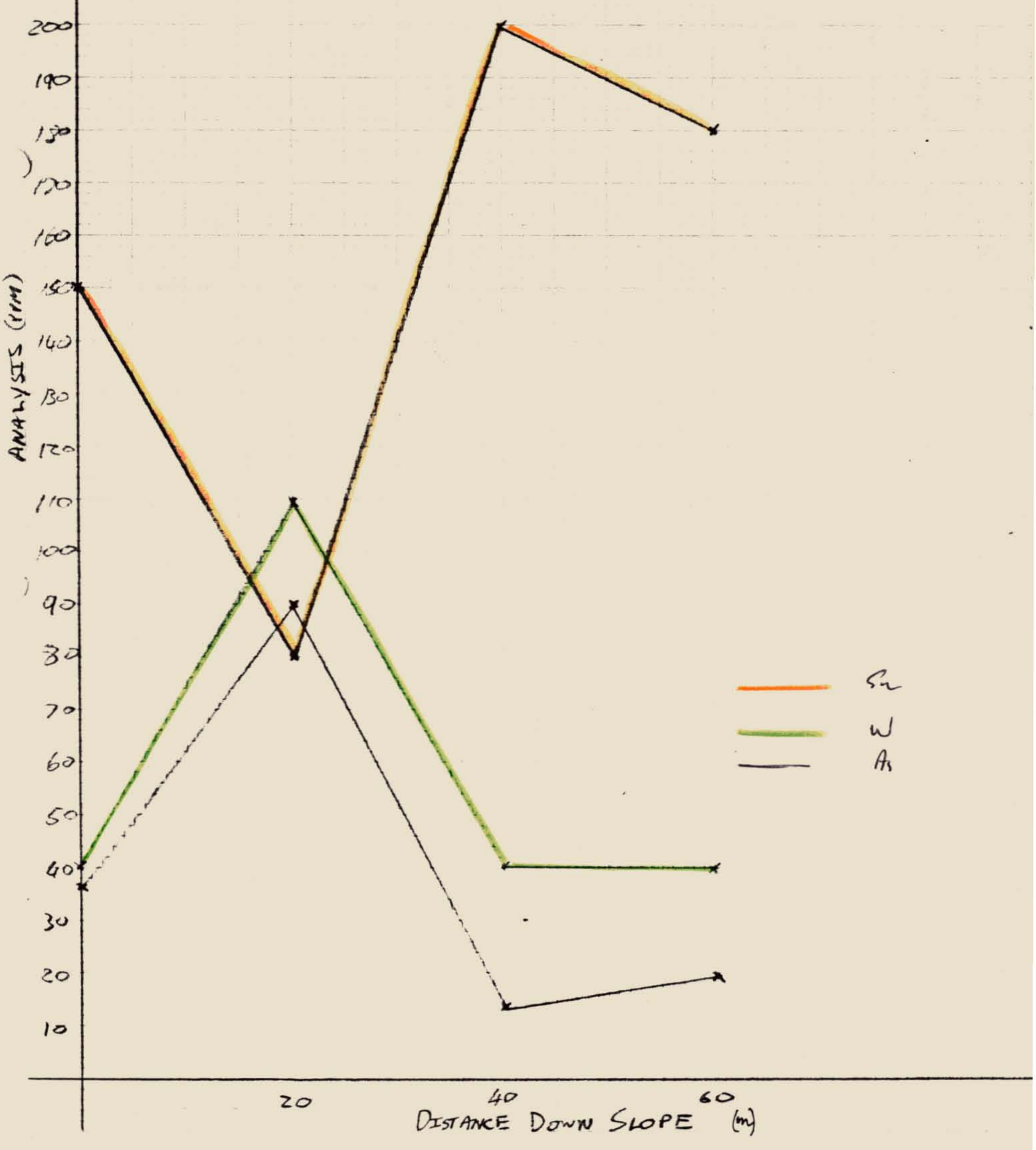

SOIL SAMPLE ORIENTATION STUDY.
FOR Sn, W & As +80#
ANALYSIS (PPM)
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
20
40
60
DISTANCE DOWN SLOPE (M)
Sn
W
As

652104

FIGURE 17

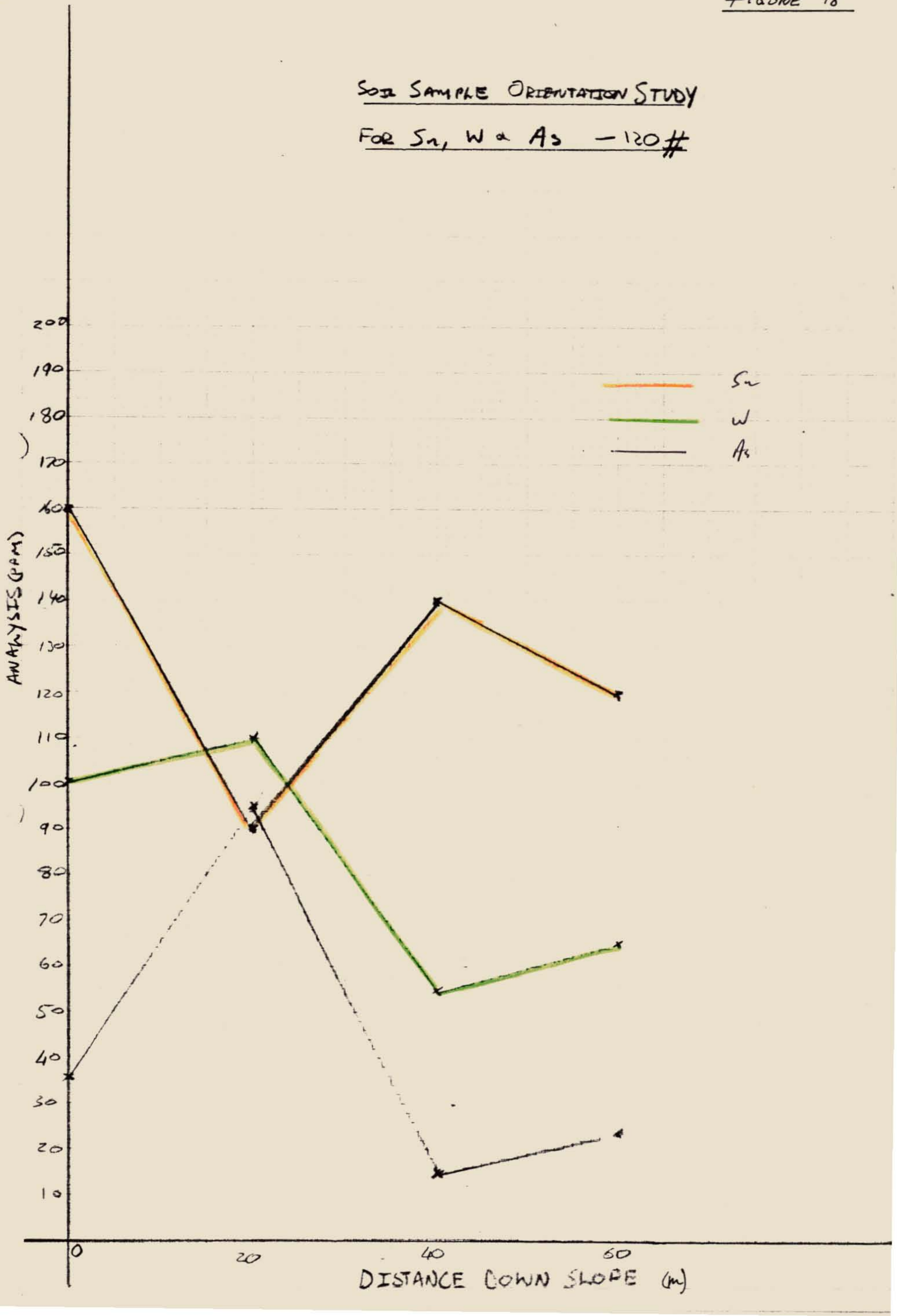
SOIL SAMPLE ORIENTATION SURVEY

FOR Sn, W & As +120#



652105

FIGURE 18



652106

SAWPIT CREEK — FIGURE 19.

STREAM SEDIMENT SAMPLES

SCALE 1: 20 000

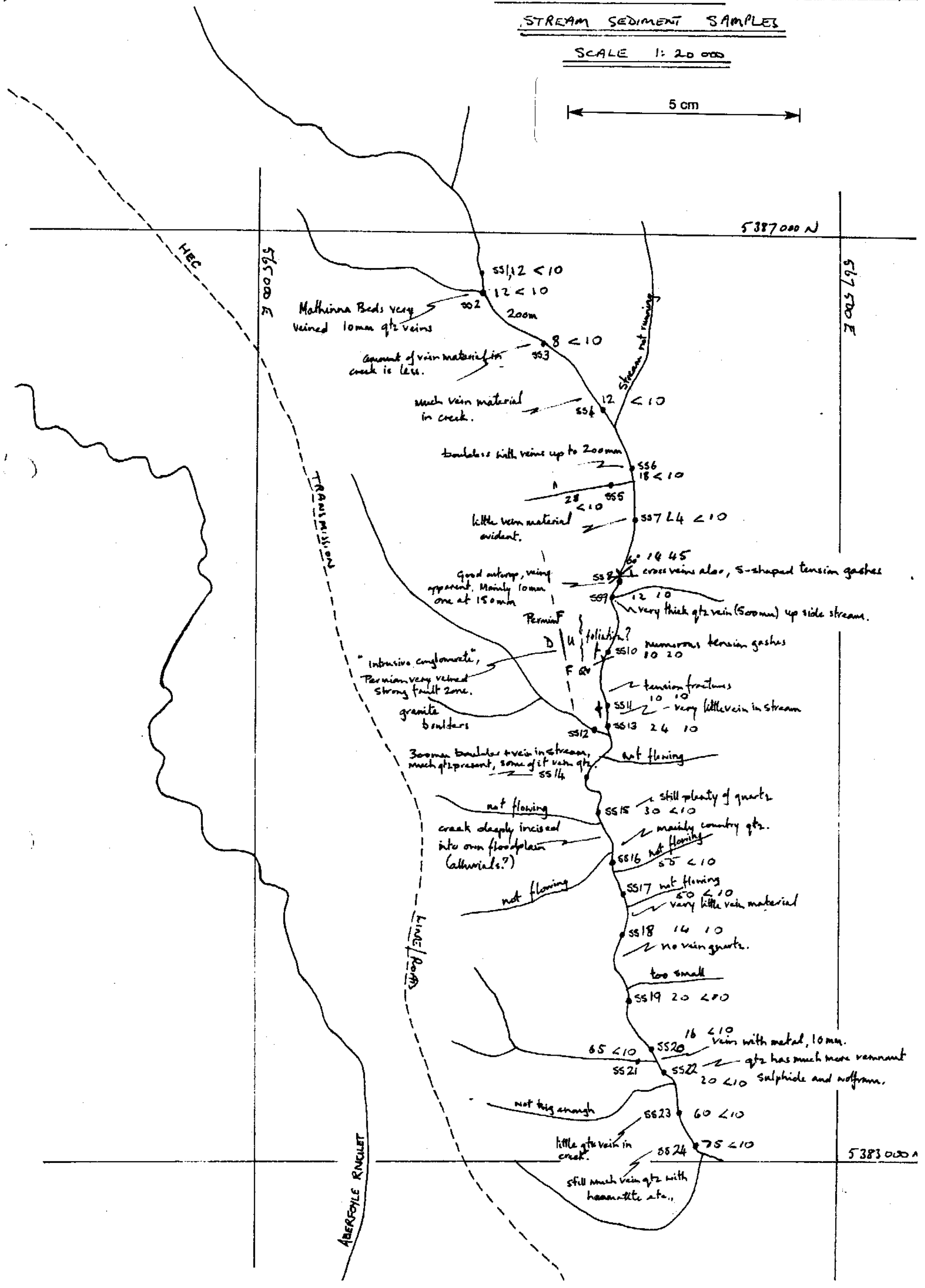
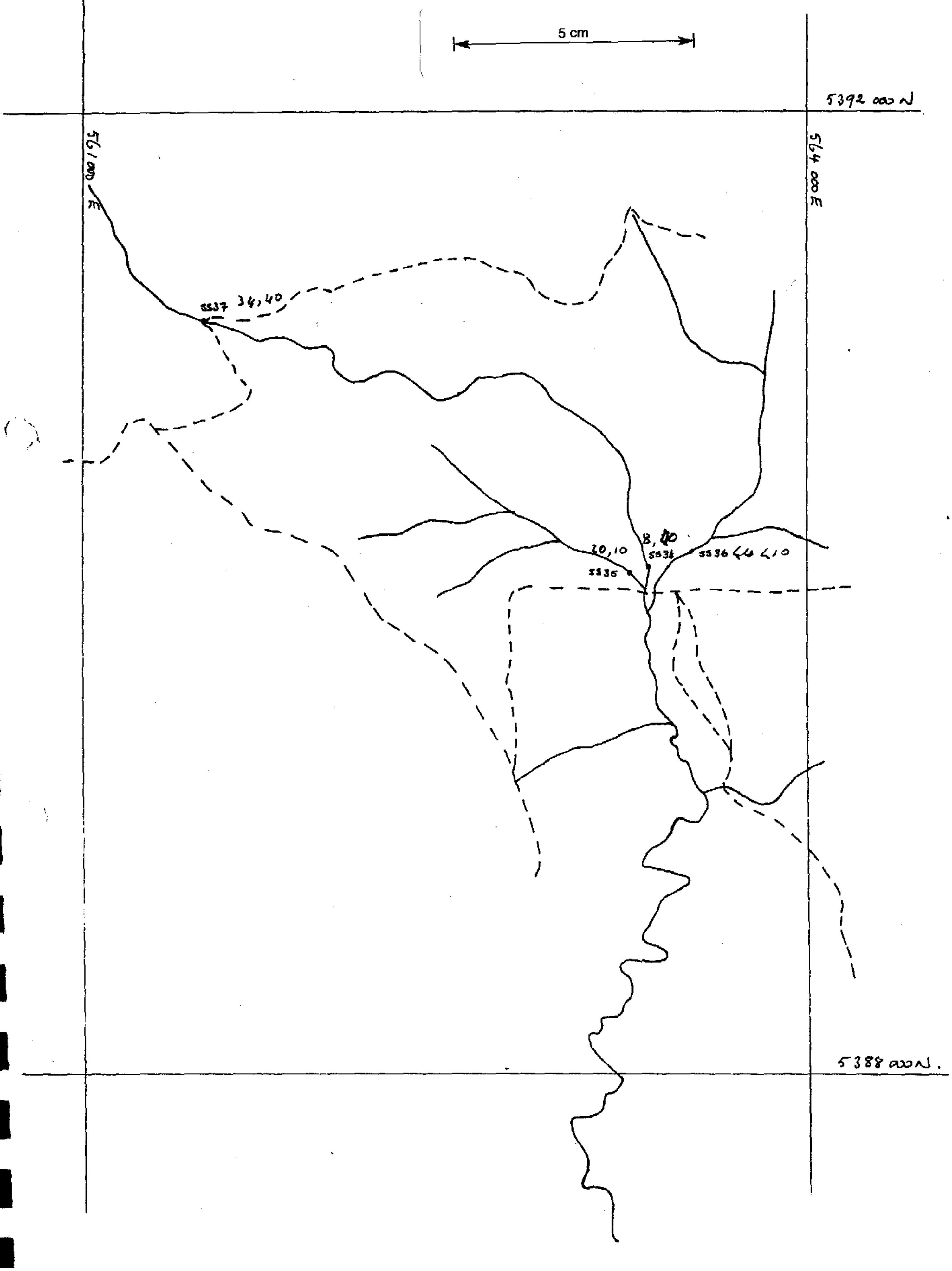


FIGURE 20 A.

ABERFOYLE CREEK

STREAM SEDIMENT SAMPLES

SCALE 1: 20 000



652108

ABERFOYLE CREEK

STREAM SEDIMENT SAMPLES

SCALE 1:20 000

FIGURE 20B

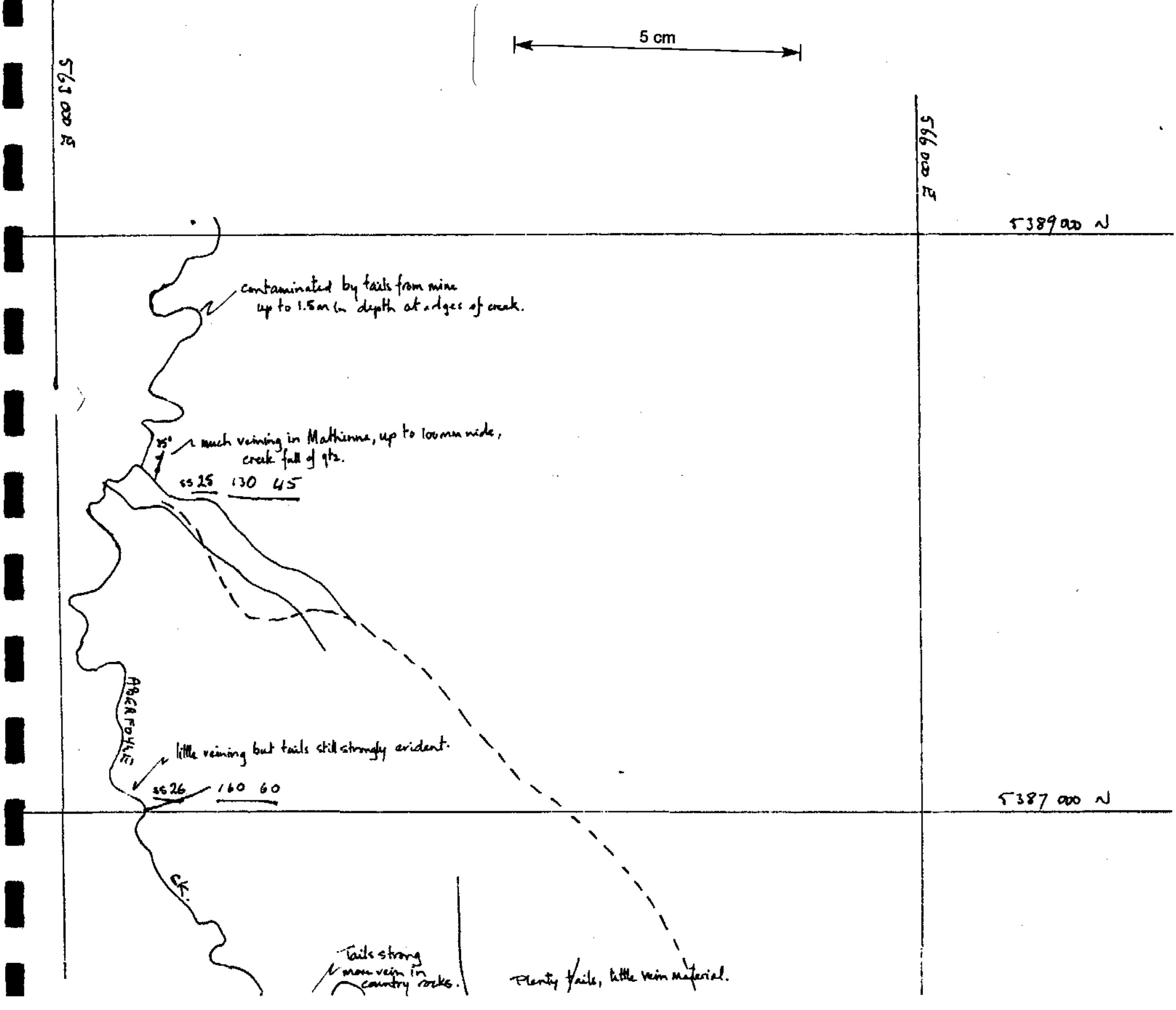
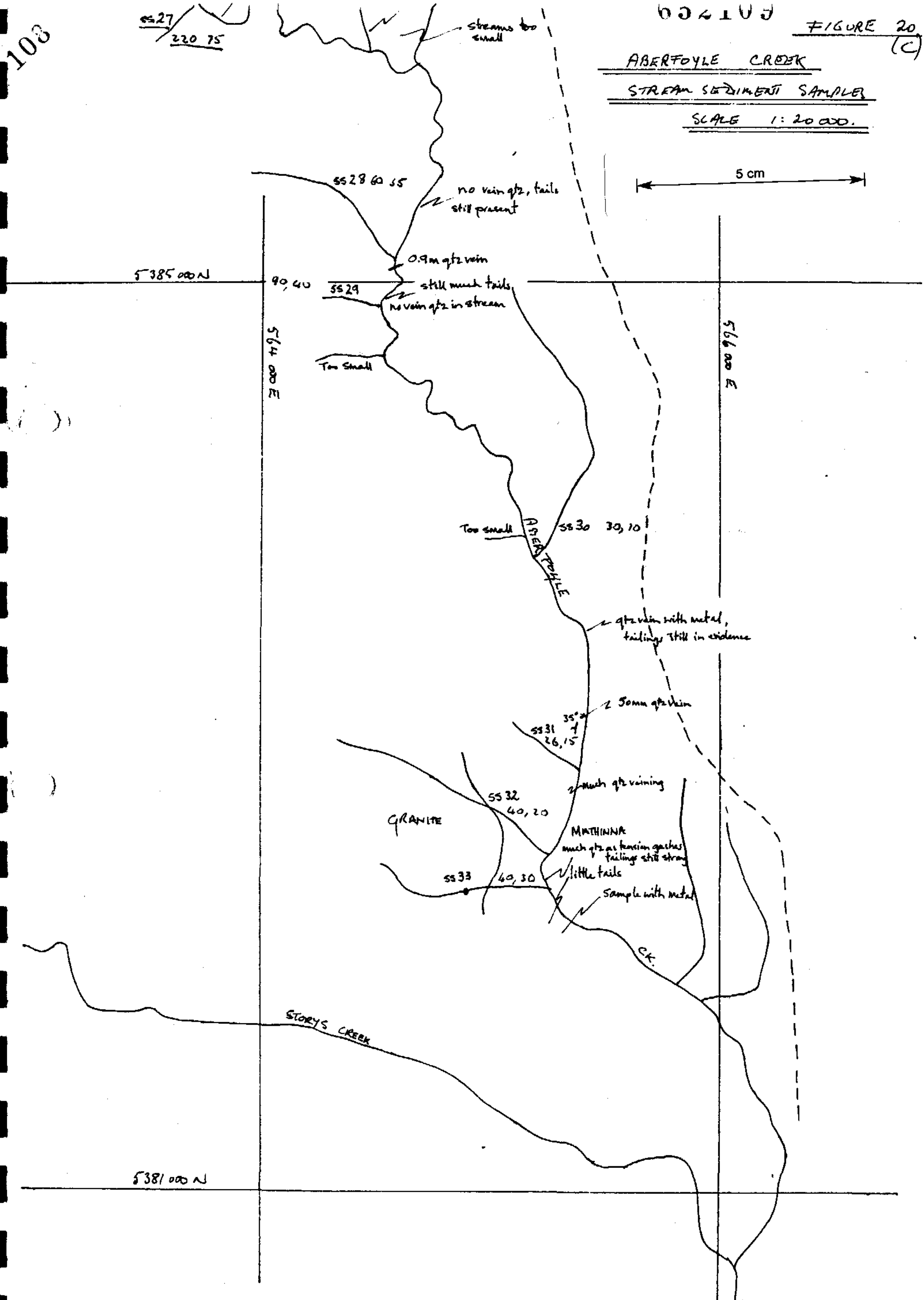


FIGURE 20 (C)

ABERFOYLE CREEK

STREAM SEDIMENT SAMPLES

SCALE 1:20 000.



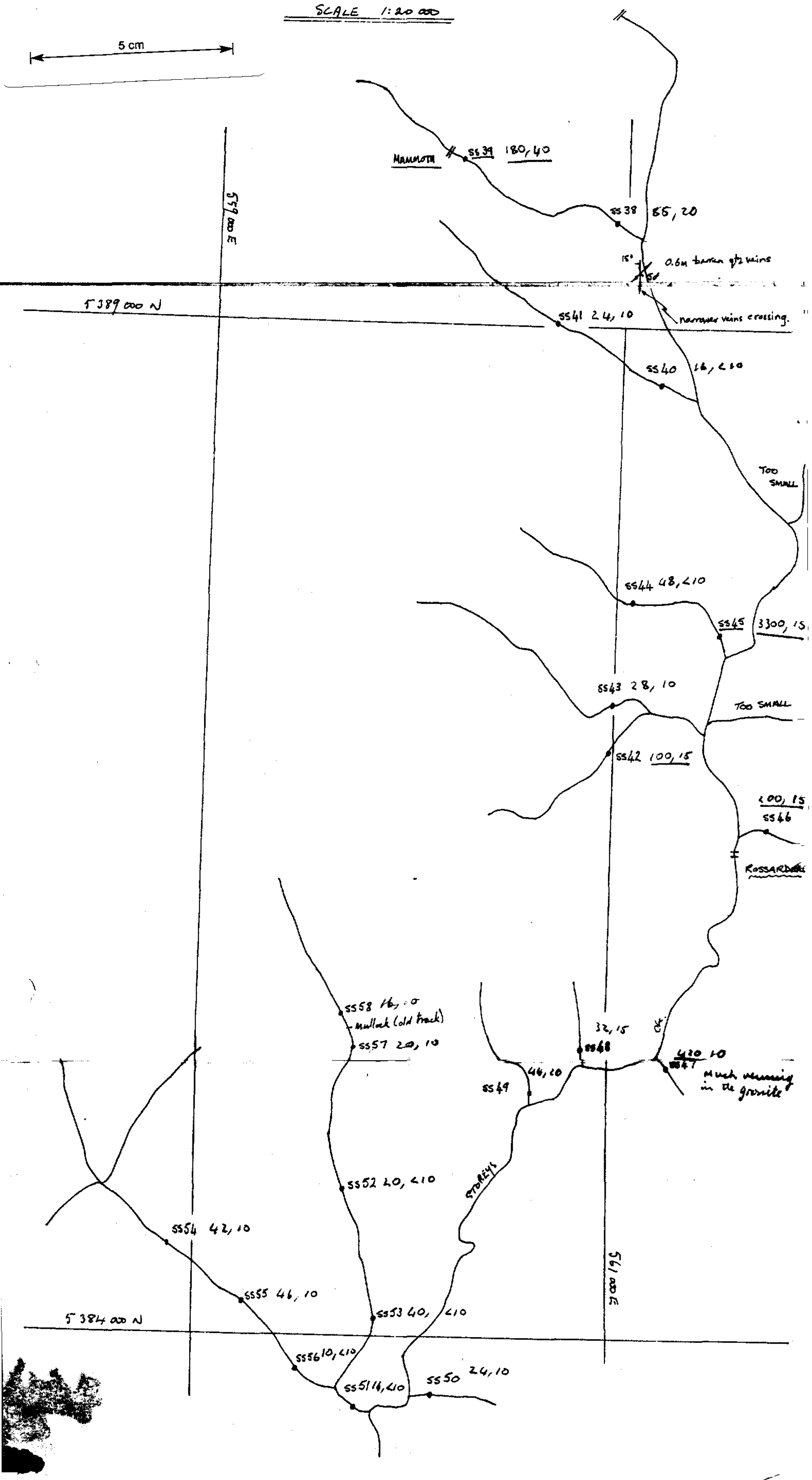
652110

STOREYS CREEK

STREAM SEDIMENT SAMPLES

SCALE 1:20 000

FIGURE 21



110

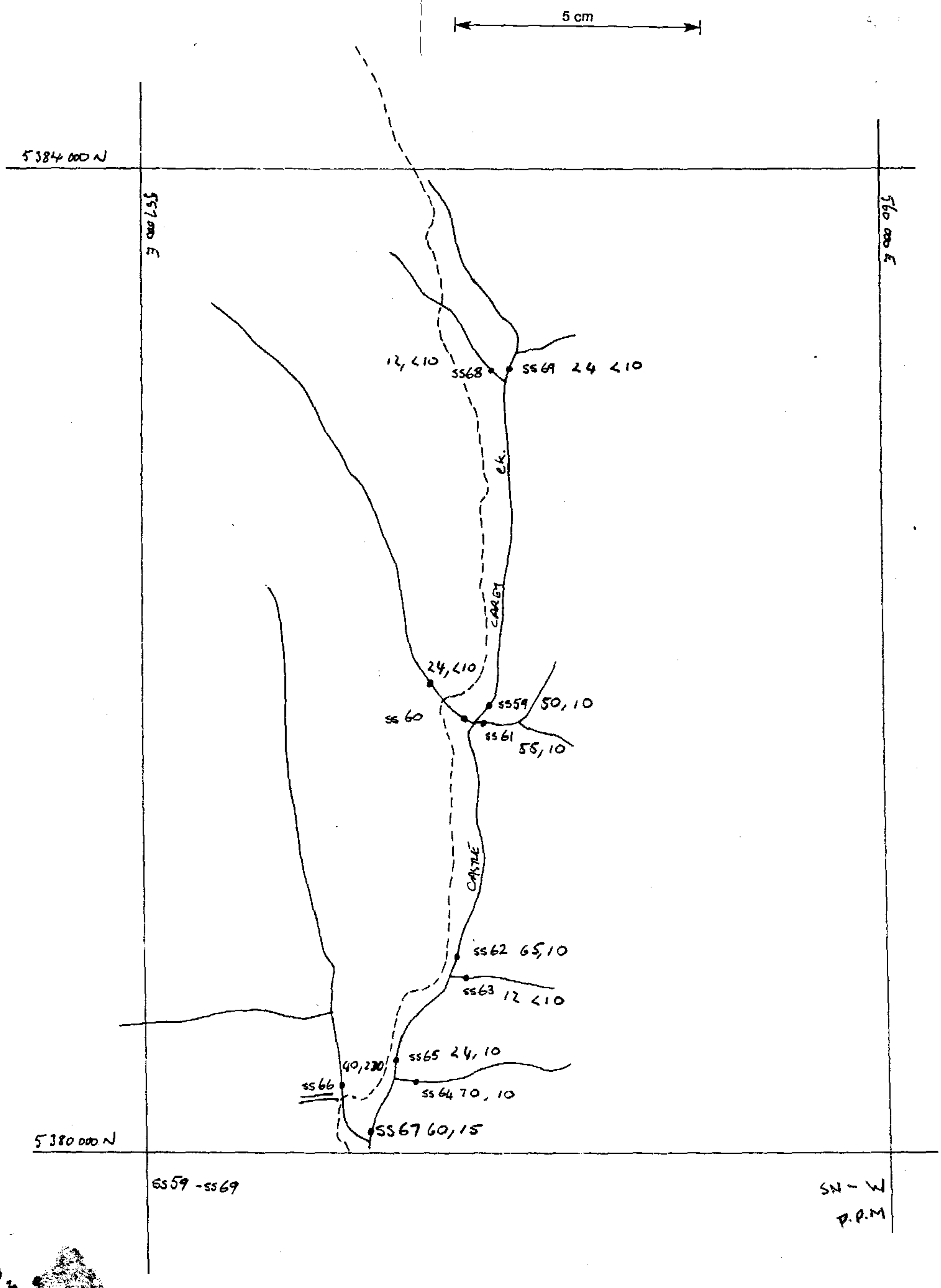
652111

CASTLE CAREY CREEK

FIGURE 22

STREAM SEDIMENT SAMPLES

SCALE 1:20 000



111

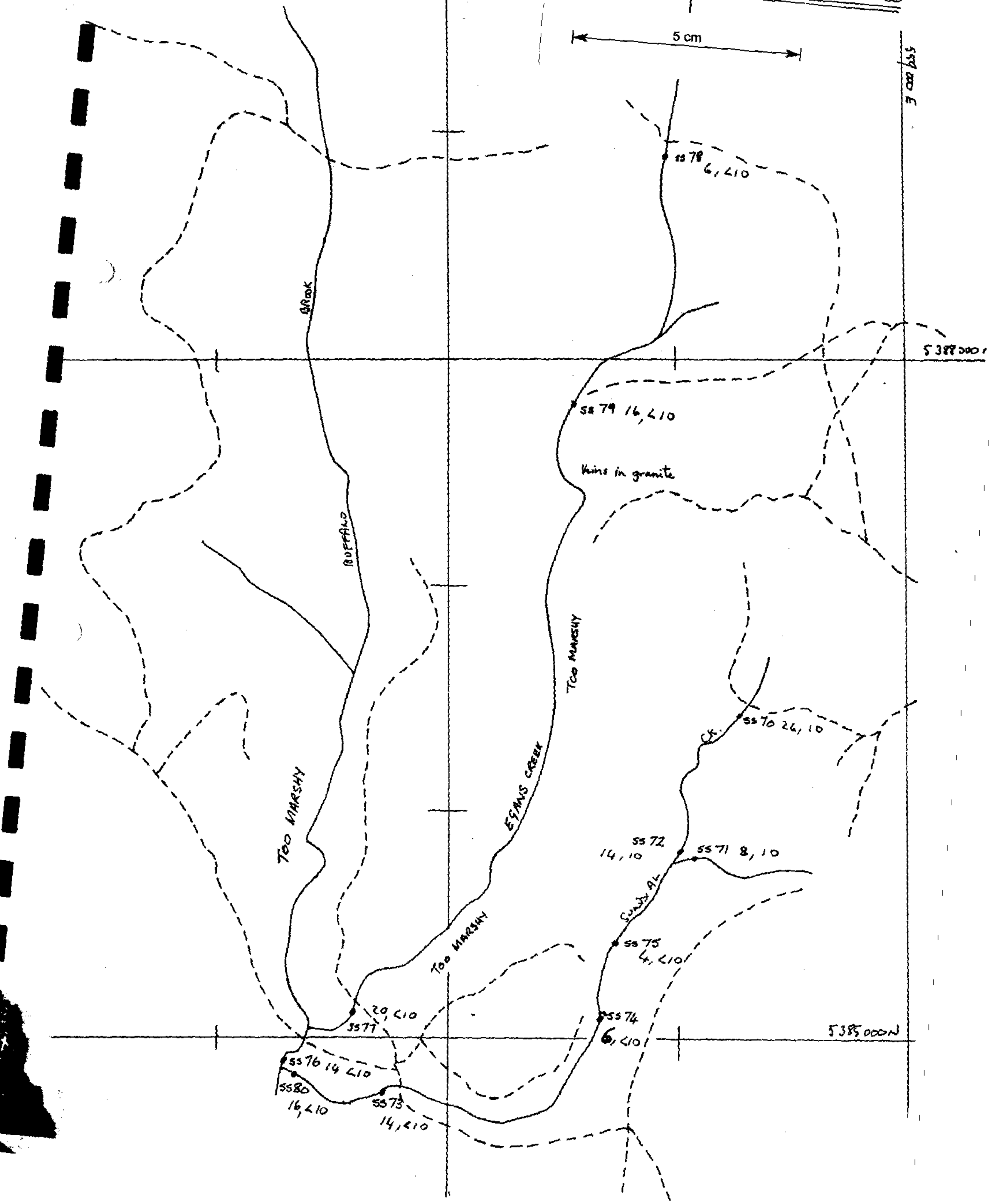
632112

BUFFALO, EGANS, SUNDIAL CREEKS

STREAM SEDIMENT SAMPLES

FIGURE 23

SCALE 1:20 000

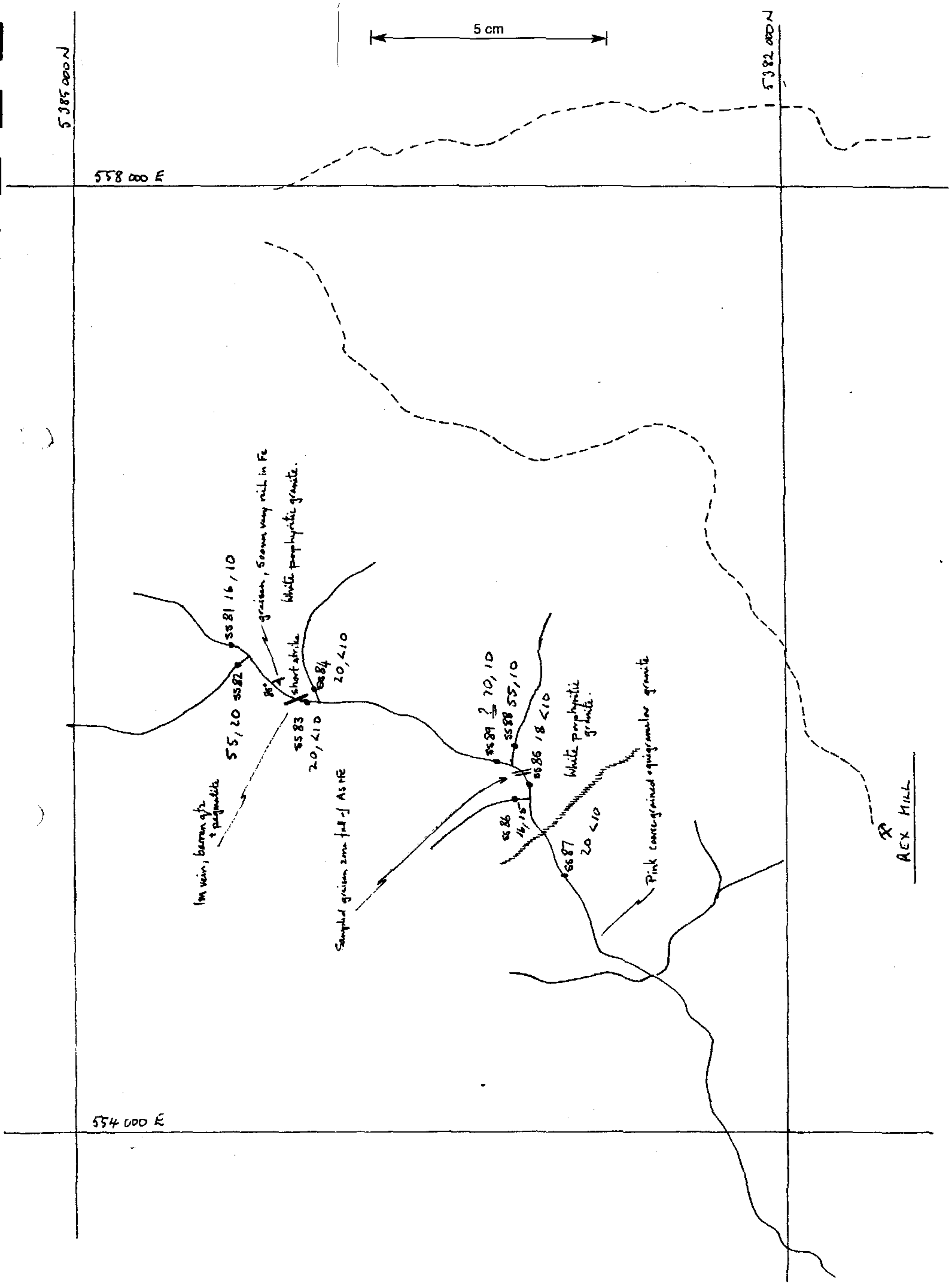


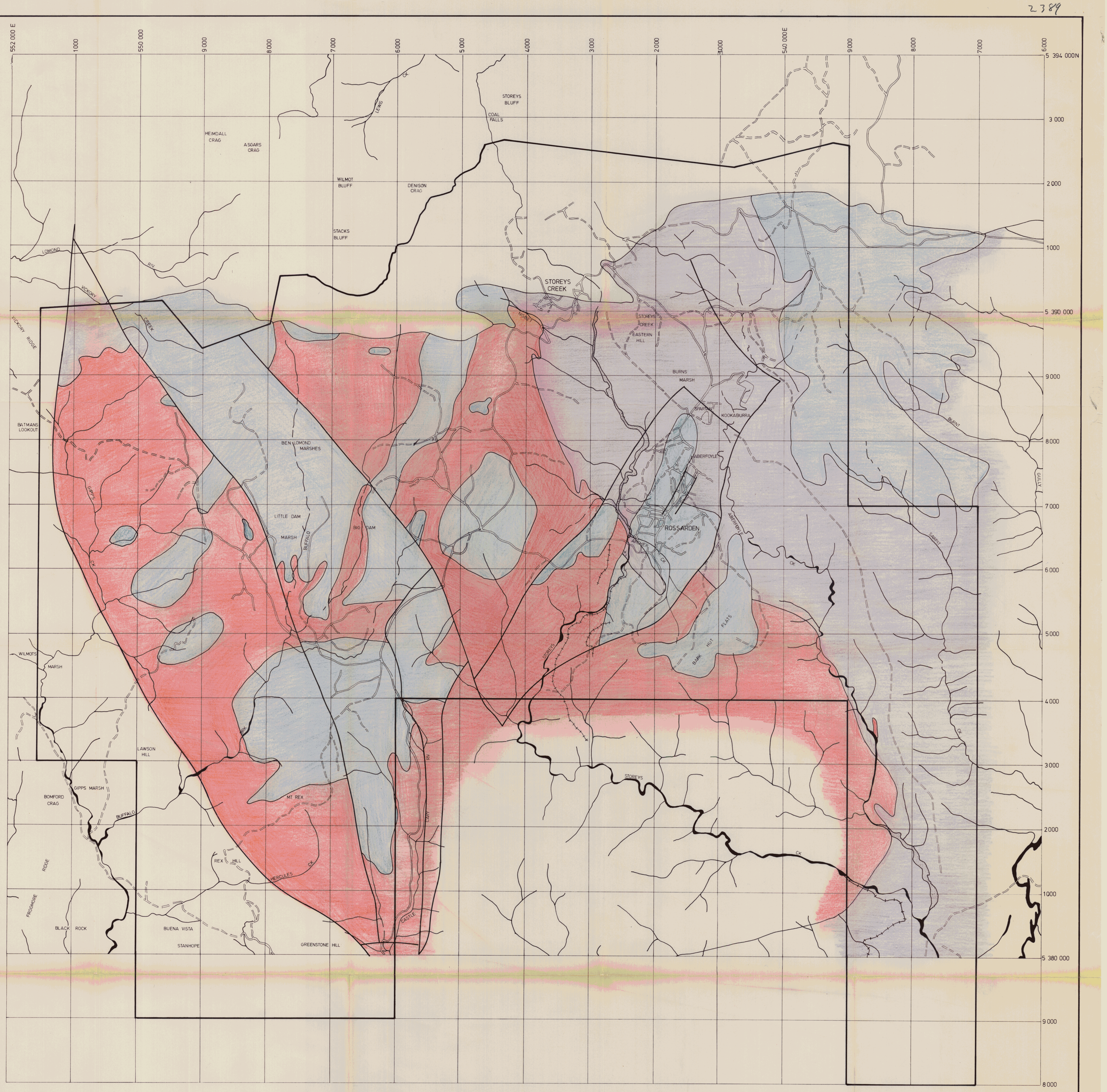
652113

BUFFALO BROOK – STREAM SEDIMENT SAMPLES

FIGURE 24

SCALE 1: 20 000.





PERMIAN SEDIMENTS

BEN LOMOND GRANITE

MATHINNA BEDS

ROSSARDEN MINES LTD.

EL 28/78

REGIONAL GEOLOGY

SCALE - 1: 20 000
GEOLOGY - J. SMART, G. PARTINGTON
DRAWN - M. DOWLING

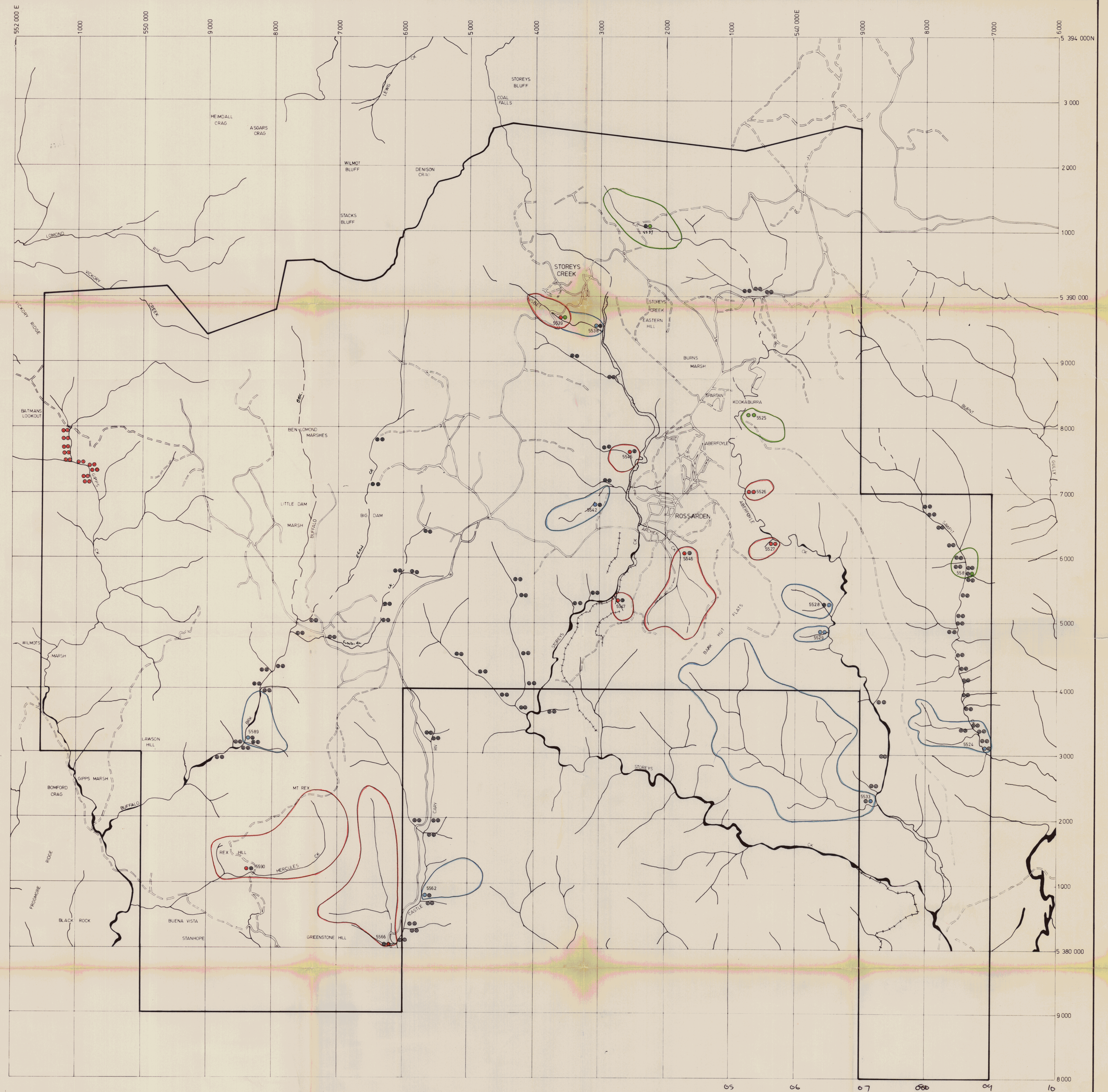
5 cm

652114

FIG. 25

2389

2390



Sn W

- NORMAL
- UNUSUAL
- ANOMALOUS
- VERY ANOMALOUS

ROSSARDEN MINES LTD.
EL 28/78
STREAM SEDIMENT SAMPLES
LOCALITIES AND RESULTS

SCALE - 1 20 000
GEOLOGY/ SAMPLING: G. PARTINGTON
DRAWN: M. DOWLING

5 cm

652115

83-1894

FIG. 26

2390

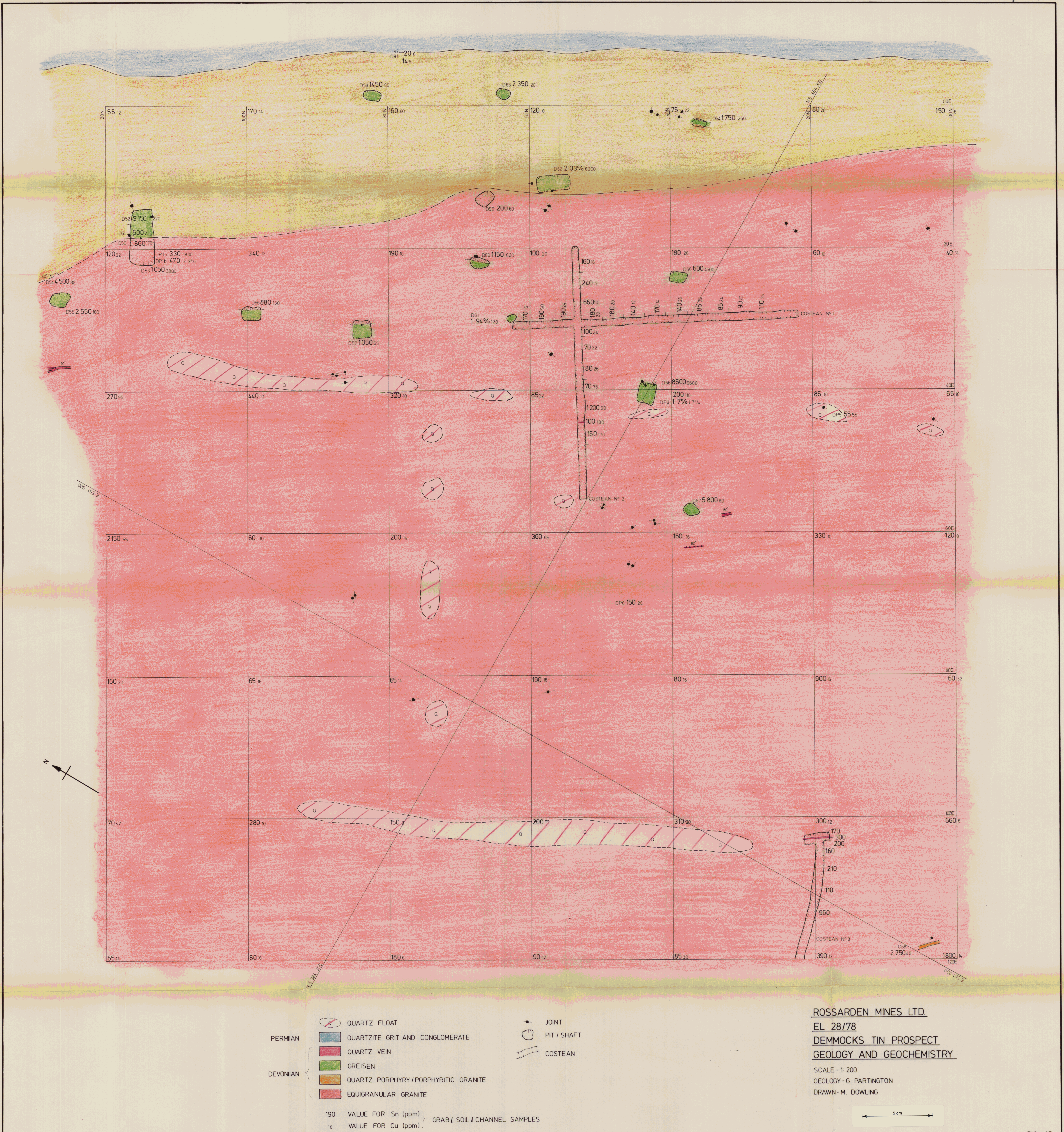
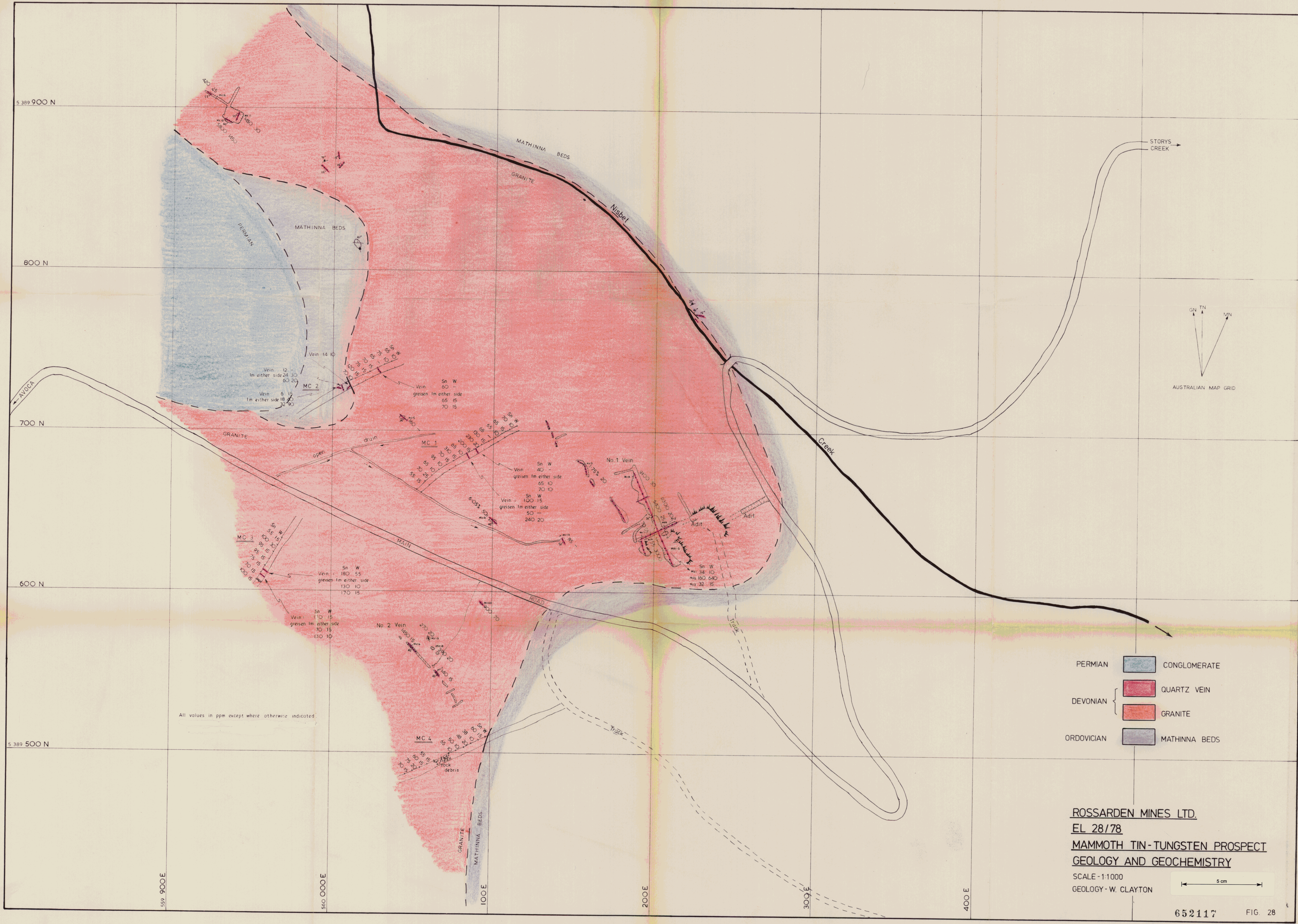


FIG 27

83-1894 652116


ROSSARDEN MINES LTD.
EL 28/78
MAMMOTH TIN-TUNGSTEN PROSPECT
GEOLOGY AND GEOCHEMISTRY
SCALE - 1:1000
GEOLOGY - W. CLAYTON
5 cm
652117
FIG. 28
PERMIAN
CONGLOMERATE
DEVONIAN
QUARTZ VEIN
GRANITE
ORDOVICIAN
MATHINNA BEDS
AUSTRALIAN MAP GRID
GN
TN
MN
STORYS CREEK
AVOCA
MAIN ROAD
Nisbet
Creek
MATHINNA BEDS
GRANITE
PERMIAN
MC 1
MC 2
MC 3
MC 4
No.1 Vein
No 2 Vein
Adit
Track
open drain
rock debris
All values in ppm except where otherwise indicated
5 389 900 N
800 N
700 N
600 N
5 389 500 N
559 900 E
560 000 E
100 E
200 E
300 E
400 E

83-1894

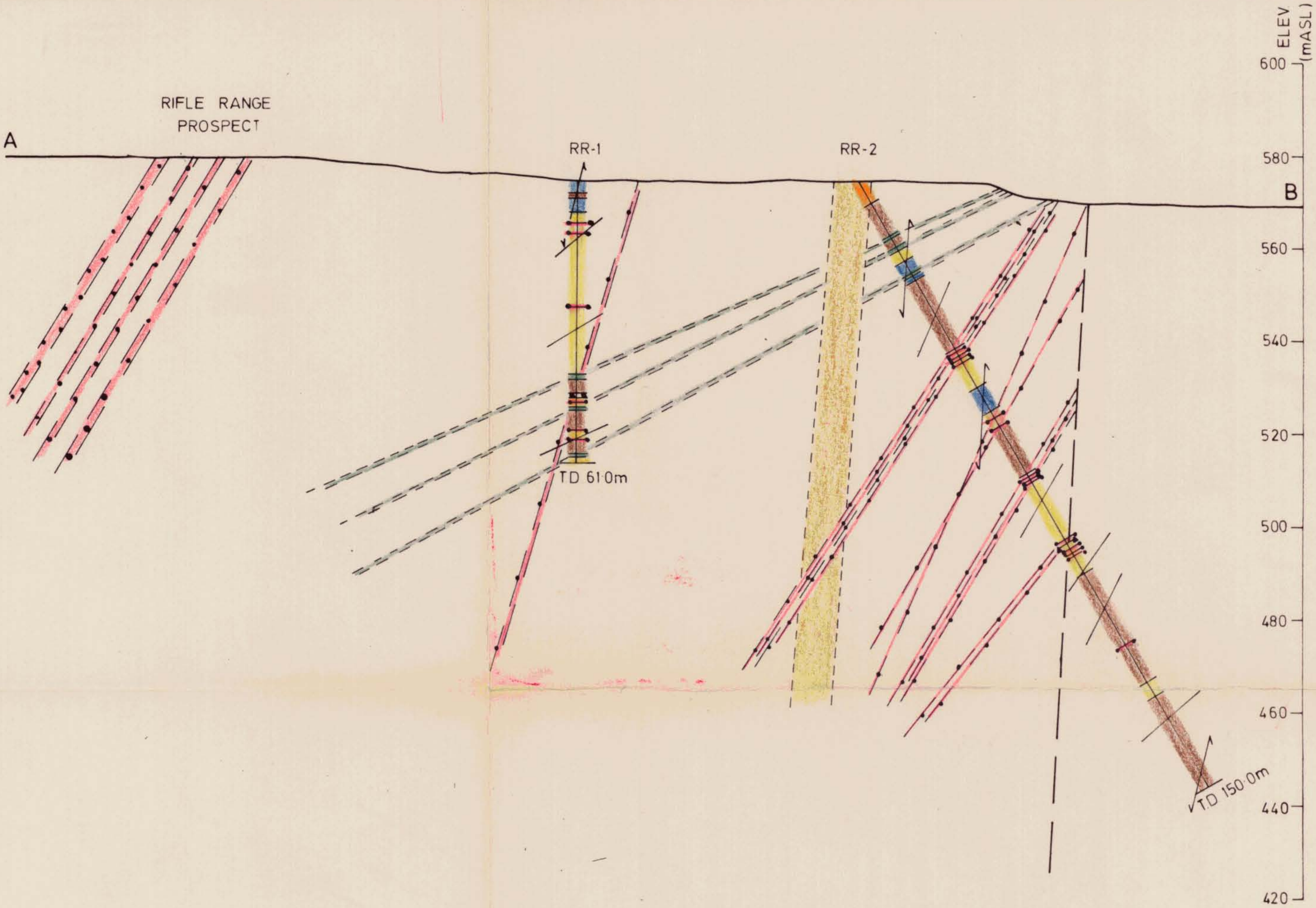
2392

ROSSARDEN MINES LTD.
RIFLE RANGE - LUTWYCHE AREA
GEOLOGICAL FACT MAP
FIG. 29
Scale 1:1200
652118
5 cm
OUTCROP BOUNDARY (POSITION APPROXIMATE)
POSITION APPROXIMATE
POSITION INFERRED
SURFACE PROJECTION OF VEIN SYSTEM MARGIN
POSITION APPROXIMATE
POSITION INFERRED
FAULT
SECTION LINE
ABERFOYLE TIN LTD. DRILL HOLE
ROSSARDEN MINES LTD. DRILL HOLE
Approved
Date
Sign
Revisions
No.
Remarks
Date
Name
Drawn
Traced
Engineer
2500E
3000E
3500E
4000E
4500E
8000N
8500N
9000N
9500N
10000N
FAULT
KOOKABURRA
VEINS
JOHNSONS (PAY/PROSPECT) VEINS
VERTICAL PROJECTION OF S.W. PLUNGING BATTERY VEIN
UP DIP PROJECTION OF TOP LUTWYCHE VEIN SWARM
STRIKE PROJECTION OF BASE LUTWYCHE VEIN SWARM
EXTENT OF PROJECTED LUTWYCHE VEINS
(LOWER SECTION)
LUTWYCHE VEIN SWARM
ABERFOYLE No 3 FAULT
RIFLE RANGE LINE
RIFLE RANGE SOUTH EAST EXTENSION
No outcrop in this area scattered Mathinna sediments on the slope
abundant quartz float
sparse quartz float
psammopelite
swamp
Permian float
prospectors pit
quartzites with quartz veining
slates & psammopelites
occurrence of quartz feldspar porphyry floaters
lightly scattered quartz float
no outcrop - river flats
quartzites with irregular quartz veining
zone of quartz veining
line of quartz float
RR-1
RR-2
RR-3

83-1894

2393

83-1894 5 cm 2394



DEVONIAN
- QUARTZ VEINS
- QUARTZ-FELDSPAR PORPHYRY

MATHINNA BEDS (ORD - e. DEV)
- ?MAFIC TUFF/ SILL / DYKE
- SLATY MUDSTONE (META-ARGILLITE)
- QUARTZITE (META-GREYWACKE)
- ARGILLACEOUS QUARTZITE & INTERBEDDED META-GREYWACKE/META-ARGILLITE

- BEDDING
- CLEAVAGE
- FAULT

652120

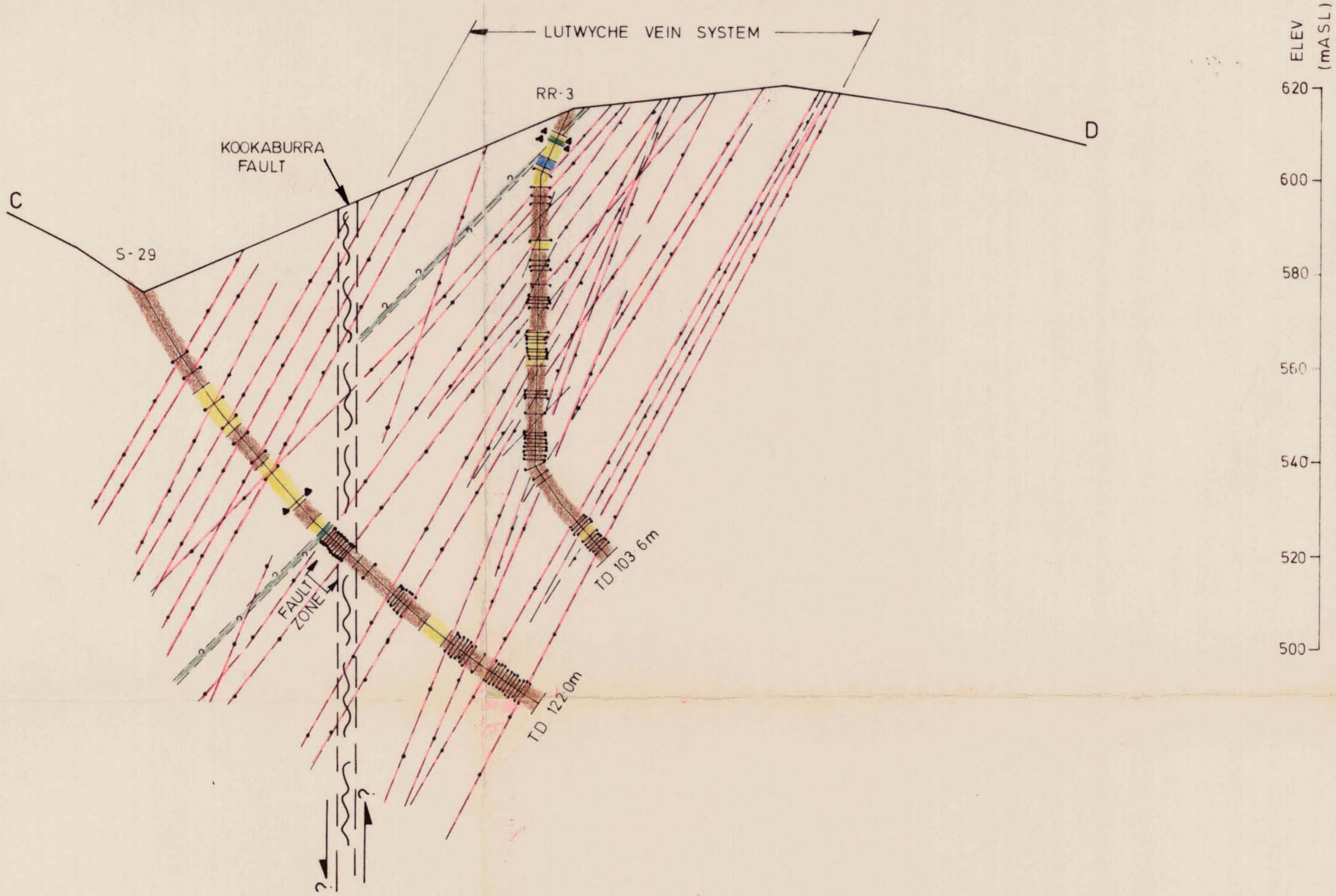
ROSSARDEN MINES LTD.
EL 28/78
RIFLE RANGE PROSPECT

SCALE - 1:1000
GEOLOGY - T.G. SUMMONS
DRAWN M.DOWLING

5 cm

FIG 31

83-1894



DEVONIAN — QUARTZ VEIN

MATHINNA BEDS (ORD - e DEV)
- ?MAFIC TUFF / SILL / DYKE
- SLATY MUDSTONE (META-ARGILLITE)
- QUARTZITE (META-GREYWACKE)
- ARGILLACEOUS QUARTZITE & INTERBEDDED META-GREYWACKE WITH META-ARGILLITE

BEDDING

FAULT ZONE

652121

ROSSARDEN MINES LTD.
EL 28/78
LUTWYCHE VEIN SYSTEM

SCALE - 1:1000
GEOLOGY - T.G SUMMONS
DRAWN - M DOWLING

5 cm

FIG 32