INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD.

REPORT ON FIELD INVESTIGATIONS OF THE SOUTH WEST SECTION OF E.L. 4/61

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REPORT ON FIELD INVESTIGATIONS OF THE SOUTH-WEST SECTION OF EL 4/61.

Maps

Graphs

REPORT ON FIELD INVESTIGATIONS OF THE SOUTH-WEST SECTION OF EL 4/61

1. INTRODUCTION

During the period 1st February to 23rd March, 1978, field investigations were undertaken in the south-west section of EL 4/61, from Stringer Creek in the south, to Nancy Creek in the north, and from the Pieman River, eastwards for some 4 kilometres. The area covered by the investigations is in the vicinity of 24 square kilometres.

These investigations involved a geochemical stream sediment survey, and an examination of a small aeromagnetic anomaly in the vicinity of Stringers Creek.

11. LOCATION AND ACCESS (Maps 1 and 1a)

EL 4/61 is situated on the north-west coast of Tasmania.

Schedule: Commencing at a point on the Waratah-Corinna Road whose co-ordinates are 354925 metres E. 5406720 metres N., thence northerly to 354175 metres E. 5416775 metres N., westerly to 343205 metres E. 5416650 metres N., southerly to 343660 metres E. 5377340 metres N., easterly to 352800 metres E. 5377445 metres N. northerly to 352495 metres E. 5403955 N (a point on the Waratah-Corinna Road) and thence north-easterly by that road to the point of commencement.

Access to and within the south-western portion of EL 4/61 is extremely limited. To the south, a H.E.C. track branches off the Zeehan Granville road some 27 kilometres from Zeehan, and terminates at the Pieman River, immediately upstream of Stringer Creek. The Waratah-Corinna Road cuts through the centre of E.L.4/61 terminating at the Pieman River approx. 20 kilometres from its mouth. The only access between Corinna and Stringers Creek is the Pieman River which follows the western boundary of the E.L. south of Nancy Creek.

During the course of this field investigation, foot traverses were made up to 4 kilometres east of the Pieman River.

111. PHYSIOGRAPHY AND TOPOGRAPHY (Map 1a)

The area investigated forms part of a peneplain, up to 200 metres above sea-level, lying to the west of the Meredith Range and Mt. Livingstone. The undenuded parts of this peneplain are covered with Tertiary sediments. Some of these sediments contain gold, but few rich concentrates are known.
The peneplain is very minutely dissected by many westward flowing tributaries of the Pieman and their affluents e.g. Meredith and Paradise Rivers. The resultant landscape is extremely rugged and foreboding.

1V. RAINFALL AND VEGETATION

The annual rainfall is in excess of 200 millimetres and is relatively evenly distributed throughout the year. February and March are usually the driest months with rivers and creeks generally at their lowest levels. Thus, the stream sediment sampling programme was carried out at this time.
Vegetation is, in the main, very thick, temperate, rain forest. Consequently progress in the field is slow.

V. GEOLOGY (Map 2)

The area with which this report deals is occupied by a belt of metamorphic rocks consisting of pelitic schist, greenschist and amphibolite, and known as the "Whyte Schist". This belt of metamorphic rocks, of Precambrian Age, extends from Granville Harbour in the south-west, to north of Savage River and contains the Savage River Magnetite deposits, associated volcanics and intrusives. (See Savage River Report 1975). Further to the north these rocks are known as the Keith Metamorphics and extend to Wynyard on the North West Coast. This ribbon-like belt of sheared metomorphic rocks, stretching for some 115 kilometres north-north east across the north-west corner of Tasmania, has been termed the "Arthur Lineament" (Formation of Arthur Lineament is outlined in the Savage River Report 1975).

VI. GEOCHEMICAL SURVEY (Maps 3, 4 & 5)

(i) A stream sediment survey was carried out over an area of some 24 square kilometres. The onset of heavy rains in late March with the resultant rapid rise in water levels of all creeks, precipitated the termination of the sampling programme for the season.

(ii) Collection and Preparation of Stream Sediments.

Samples of wet stream sediments were collected from recent and active alluvium. Samples were collected at approximately 400 metre intervals along major and minor tributaries of the Pieman River. Location of samples was plotted on 1 to 40,000 scale aerial photographs in the field, and the samples dried at base camp as follows:

+ 40 mesh	-	panned for Au and Sn before rejection
- 40 + 80 mesh	-	retained in sample bags
- 80 mesh	-	despatched to Tetchem Laboratories, Cairns for analyses.

Lack of -80 mesh material in the stream sediments was the major problem in the sampling programme, there being insufficient material present to allow for Au (Gold) determinations.

(iii) Geochemical Analyses.

Stream sediments of -80 mesh were analyses for A.A.A. for Copper, Lead, Zinc and Silver at the Tetchem Laboratories in Cairns. There was not sufficient sample for Au (Gold) determinations on the sediments collected from the Nancy Creek- Paradise River area - an area of old alluvial workings.

Generally, the accuracy of analyses would be ± 15%. Lower limits of detection of various elements are as follows.

Copper	2 parts per million
Lead	3 parts per millio n
Zinc	3 parts per million
Ag	0.5 parts per million

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(iv) Statistical Evaluation of Analyses (Graphs 1, 2 & 3)

Sample locations were plotted on a base map of 1" to ½ mile, compiled by the former Chief Mining Engineer at Savage River, J.P. Sheehan (The insignificant Ag (silver) values did not warrant a statistical evaluation). The concentration of metallic ions of copper, lead and zinc are shown beneath each sample number on the appropriate plans.

Analytical results were studied statistically using the Cumulative Frequency method involving medians and quartiles. (See Appendix "A"). Details of calculations are attached to Graph 1 (Cu) Graph 2 (Pb) and Graph 3 (Zn).

A summary of the median value, standard deviation and lowest anomalous value for the various elements are given below.

No. of Samples.	Elements.	Median	Standard Deviation	Lowest Anomalous Value.
62	Copper	5.6 ppm*	5.85 ppm*	29.0 ppm*
37	Lead	6.0ppm*	3.3 ppm *	19.2 ppm*
37	Zinc	14.8 ppm*	14.4 ppm*	72.4 ppm*

* ppm = parts per million.

(v) Conclusions on Stream Sediment Survey

Analyses were obtained on 62 samples collected from major and minor tributaries of the Pieman River.* The minimum and maximum values of copper, lead and zinc are as follows.

Element	Minimum (ppm)	Maximum (ppm)
Copper	2	42
Lead	3	22
Zinc	6	105

* This gives a density of approximately 2.5 samples per sq. kilometre.

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Samples which are computed to be anomalous are listed below.

Element	Anomalous Value
Copper	Sample No. 52 (42 ppm)
Lead	Sample No. 52 (22 ppm)
Zinc	Sample No. 52 (105 ppm) and No. 59(86 ppm)

These anomalous values are of low rank and do not offer any indication of a major ore bearing horizon. These results are not unexpected as, apart from the occurrence of minor quantities of chalcopyrite in pyrite zones of the large Magnetite deposits, no base metal mineralization of note is known to occur within the Precambrian Whyte schist.

V11. GEOPHYSICAL - MAGNETIC - SURVEY (Maps 6, 7 & 8)

(i) In 1956, the B.M.R. undertook an aeromagnetic survey over the southern half of EL 4/61 from north of Savage River, south to the southern boundary of EL 4/61. (See Map G 288-19, B.M.R. Report No. 1962/116 - Map 6 this Report). Three significant magnetic anomalies were outlined, corresponding to the three magnetic deposits of Savage River, Long Plains and Rocky River. A smaller anomaly was outlined to the south-south west of Rocky River, approximately two kilometres north-north east of the junction of Stringer Creek with the Pieman River. It was decided to investigate this anomaly to try to determine its cause.

(ii) Method of Investigation.

The position of the aeromagnetic anomaly was plotted, as accurately as possible, on the Pieman 1:100,000 topographic sheet. Co-ordinates were calculated for the approximate centre of the anomaly. A track was then cut and surveyed by theodolite for some two kilometres, from the Pieman River to the position calculated as being the centre of the anomaly. Magnetometer readings were then taken at intervals of approximately 25 metres, along the length of the surveyed track using a McPhar Fluxgate portable magnetometer.

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Readings were then plotted on a graph to outline any anomalous values present (Map 8).

(iii) Results of Survey (Map 8)

A base reading was taken at the Pieman River - Stringers Creek junction - outside the expected anomalous zone - a value of 250 gammas being obtained. Seventy-five readings were taken along the magnetic traverse, and of these 74 were positive values and one a negative value. This negative reading of minus 3900 gammas occurs at station PG 10 and is probably due to a dyke.

A small anomalous zone was outlined between survey stations PG 28 and PG 30 and has a maximum value of 4800 gammas. Although no outcrops are present this anomaly is probably caused by some minor quantity of magnetic material. When compared to the ground magnetic values of the Rocky River magnetite deposit, which are in excess of 15,000 γ , this anomaly is of little significance.

The surveyed traverse line terminated at a small creek. Thirty metres downstream from this point, an eleven metre zone of sheared amphibolite (chloritic schist) outcrops. This outcrop was found to be slightly magnetic, a fresh sample contained 11.4% iron, an oxidised sample (iron stained) contained 14.3% iron (see Appendix B). However, magnetometer readings over this zone did not exceed 1100 gammas.

(iv) Conclusions on Magnetic Survey

The anomalous zone between survey stations PG 28 and PG 30 and the small peaks at stations PG 34, PG 40 and PG 41 are probably due to some small magnetic occurrences. The zone between PG 28 and PG 30 probably does correspond to some part of the B.M.R. Aeromagnetic anomaly but whether it represents the centre line of the aeromagnetic anomaly is not known for sure. The only accurate means of checking this out is to cut and survey a series of cross-traverses at intervals of say 100 metres along the existing surveyed traverse.

This would involve considerable time and expense and would involve a controlled theodolite survey.

I believe that,

1. as the aeromagnetic anomaly is of small magnitude when compared to the Rocky River anomaly (which represents a probable tonnage of 4 million tonnes at only 16% Fe) and

2. the ground magnetic survey did not outline any significant anomalous zones (maximum reading of 4800 γ's compared to in excess of 80,000 γ's for the Rocky River anomaly) further examination is unwarranted.

V11. GENERAL CONCLUSIONS

(i) It is most unlikely that any significant base metal mineralization occurs within the southern portion of EL 4/61, south of the Corinna - Waratah Road.

(ii) It is also most unlikely that any significant iron (magnetite) occurrence exists in the Stringer Creek area.

1X. RECOMMENDATIONS FOR FURTHER EXPLORATION OF EL 4/61

(i) It was unfortunate that insufficient fine material (-80 mesh) was present in stream sediment samples to allow any gold (Au) determinations on samples from the Paradise River, Lucy Creek and Nancy Creek area. This is an area of old alluvial gold workings. The largest gold nugget found in Tasmania was found in the Rocky River. It is reported that over 1000 ounces of coarse gold was obtained from the Paradise River. Although the operations of the companies working the alluvial grounds were unsuccessful, I feel that some sort of systematic sampling programme should be carried out over this area.

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(ii) an iron deposit - Heamatite and Magnetite - occurs on the Meredith River, some 6.5 kilometres upstream from its junction with the Pieman River. This deposit is mentioned in an unpublished Mines Department report of 1924 by an A.M. Reid and titled "Preliminary Report on the Occurrence of Iron Ore at Meredith, Paradise, Rocky and Whyte Rivers". Reid outlines the deposit as follows - "a body of iron ore 300 ft. in width exposed to a depth of 100 ft",with the following quantities of ore present.

Actual Reserve	- 428,570 tons
Potential Reserve	- 1,285,710 tons.
Possible Reserve	- Very Considerable.

This deposit should be investigated.

As mentioned previously in this report, ground work within EL 4/61 is controlled by the weather, particularly the amount of rainfall. Thus, it will be at least January-February 1979 before investigation of the areas mentioned above can commence.

M. Edyvean
16/5/78.

APPENDIX A

1. Geochemical Analyses.

2. Article, "The Use of the Median and Quartiles in Estimating Normal and Anomalous Values of a Geochemical Field"
By. B. Ya. Yufa and Yu. M. Gurvich.

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TETCHEM LABORATORIES PTY. LTD.
1 Ogden Street,
Cairns
Phone 3518

258012

CERTIFICATE OF ANALYSIS

No. 153/78
SHEET No. 1
INV. No.

Samples Submitted by INDUSTRAIAL MINING INVESTIGATIONS PTY. LIMITED.
Samples Received by 16-3-78 Request No.

All results in p.p.m. unless otherwise indicated.

SAMPLE MARKINGS		Cu	Pb	Ag	Zn				
ELH/61.IMI1		4		<0.5					
2		4	7	<0.5	14				
3		13	4	<0.5	15				
4		5	5	<0.5	16				
5		3		<0.5					
6		3		<0.5					
7		5		<0.5					
8		5		<0.5					
9		5		<0.5					
10		4	4	<0.5	14				
11		7	7	<0.5	13				
12		3	3	<0.5	10				
13		3		<0.5					
14		2		<0.5					
15		6		<0.5					
16		2		<0.5					
17		3		<0.5					
18		4		<0.5					
19		6	6	<0.5	9				
20		3	5	<0.5	7				
21		4	4	<0.5	14				
22		15		<0.5					
23		8		<0.5					
24		11		<0.5					
25		18		<0.5					
26		15		<0.5					
27		11	5	<0.5	31				
28		9	3	<0.5	22				
29		3		<0.5					
30		3		<0.5					
31		3		<0.5					
32		6		<0.5					
33		10		<0.5					
34		23	8	<0.5	39				
35		10		<0.5					
36		11	4	<0.5	21				
37		10		<0.5					
38		9		<0.5					
39		7	3	<0.5	11				
40		11	5	<0.5	15				
41		9	3	<0.5	14				
42		7	3	<0.5	14				
ELH/61.IMI43		11	4	<0.5	17				

FOR METHOD DETAILS, SEE PRICE LIST

CHIEF CHEMIST P. Tetlow BSc   DATE 21-3-1978

REMARKS:
METHOD A: No Prep.

INSUFFICENT SAMPLE FOR Au & Sn.
(FURTHER 15 Grams REQUIRED.)

ABBREVIATIONS:

- bld—below limit of detection.
- dwt—pennyweights troy per short ton of 2000 pounds.
- lb—pounds per short ton.
- oz—ounces troy per short ton of 2000 pounds.
- ppb—parts per billion = grams per 10^9 grams.
- ppm—parts per million = grams per 10^6 grams.

TETCHEM LABORATORIES PTY. LTD.

1 Ogden Street,
Cairns

Phone 3518

258013

CERTIFICATE OF ANALYSIS

No. -224/78

SHEET No. 1

INV. No.

Samples Submitted by INDUSTRIAL MINING INVESTAGATION PTY.LTD.

Samples Received by 6-4-78 Request No.

All results in p.p.m. unless otherwise indicated.

SAMPLE MARKINGS	Cu	Pb	Zn	Ag
EL.4/61IMI 45	INNSUFFICENT SAMPLE			
46	2	7	11	<1
47	10	12	41	<1
48	5	10	26	<1
48A	2	6	6	<1
49	10	10	32	<1
50	6	9	24	<1
51	6	8	26	<1
52	42	22	105	<1
53	24	14	52	<1
54	5	7	15	<1
55	5	7	15	<1
56	6	10	12	<1
57	6	8	18	<1
58	11	10	32	<1
59	22	11	86	<1
60	INNSUFFICENT SAMPLE			
61	4	7	13	<1
62	4	6	13	<1
63	INNSUFFICENT SAMPLE			
64	6	8	17	<1
EL.4/61IMI 65	4	7	14	<1

FOR METHOD DETAILS, SEE PRICE LIST

CHIEF CHEMIST [signature]

DATE 30-4-78

REMARKS:
METHOD A: No Prep.

ABBREVIATIONS:

bld—below limit of detection.

dwt—pennyweights troy per short ton of 2000 pounds.

lb—pounds per short ton.

oz—ounces troy per short ton of 2000 pounds.

ppb—parts per billion = grams per 10^9 grams.

ppm—parts per million = grams per 10^6 grams.

EL4/61 Statistical Evaluation of Cu Analyses.

[redacted]lue	2	3	4	5	6	7	8	9	10	11	13	15	18	22	23	24	42
Freq	4	9	8	7	8	3	1	3	5	6	1	2	1	1	1	1	1
[redacted].Freq.	4	13	21	28	36	39	40	43	48	54	55	57	58	59	60	61	62
%	65	21	33·9	45·2	58·1	62·9	64·5	69·4	77·4	87·1	88·7	91·9	93·5	95·2	96·8	98·4	100·0

From Graph 1. $Q_1 = 3.4$ $Me = 5.6$ $Q_3 = 9.5$

Std. Deviation (upper) $= \frac{3}{2}(Q_3 - Me) = 1.5(3.9) = 5.85.$

Std. Deviation (lower) $= \frac{3}{2}(Me - Q_1) = 1.5(2.2) = 3.3.$

Normal Dist. (upper) = Median (Me) + Std. Deviation = 5·6 + 5·85 = 11·45.

Normal Dist. (lower) = Median (Me) − Std. Deviation = 5·6 − 3·3 = 2·3.

Anomalous Values = Median + $6(Q_3 - Me)$ = 5·6 + 6(3·9) = 29.

also = Median + 4(Std. Dev.) = 5·6 + 4(5·85) = 29.

Anomalous Sample In Survey = **No 52 with 42 ppm.**

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E.L. 4/61 Statistical Evaluation of Pb Analyses.

Value	3	4	5	6	7	8	9	10	11	12	14	22
Freq.	5	5	4	3	7	4	1	4	1	1	1	1
Cum. Freq.	5	10	14	17	24	28	29	33	34	35	36	37
%	13.5	27.0	37.8	45.9	64.9	75.7	78.4	89.2	91.9	94.6	97.3	100

From Graph 2. $Q_1 = 4$ $Me = 6$ $Q_3 = 8.2$.

Std. Deviation (upper) $= \frac{3}{2}(Q_3 - Me) = 1.5(2.2) = 3.3$

Std. Deviation (lower) $= \frac{3}{2}(Me - Q_1) = 1.5(2.0) = 3.0$

Normal Dist. (upper) = Median (Me) + Std. Deviation = 6 + 3.3 = 9.3

Normal Dist. (lower) = Median (Me) − Std. Deviation = 6 − 3.0 = 3.0

Anomalous Values = Median + $6(Q_3 - Me)$ = 6.0 + 6(2.2) = 19.2

also = Median + 4 (Std. Dev.) = 6.0 + 4(3.3) = 19.2

Anomalous Value In Survey = **N° 52 with 22 p.p.m.**

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E.L. 4/61 Statistical Evaluation of Zn Analyses.

Value	6	7	9	10	11	12	13	14	15	16	17	18	21	22	24	26	31	32
Freq.	1	1	1	1	2	1	3	6	4	1	2	1	1	1	1	2	1	2
Cum. Freq.	1	2	3	4	6	7	10	16	20	21	23	24	25	26	27	29	30	32
%	2.7	5.4	8.1	10.8	16.2	18.9	27.0	43.2	54.1	56.8	62.2	64.9	67.5	70.3	73.0	78.4	83.8	86.5

Value	39	41	52	86	105
Freq.	1	1	1	1	1
Cum. Freq.	33	34	35	36	37
%	89.2	91.9	84.6	97.3	100.0

From Graph 3.

Q_1 = 12.8

Me = 14.8

Q_3 = 24.4

Std. Deviation (upper) = $\frac{3}{2}(Q_3 - Me) = 1.5(9.6) = 14.4$

Std. Deviation (lower) = $\frac{3}{2}(Me - Q_1) = 1.5(2.0) = 3.0$

Normal Dist. (upper) = Median (Me) + Std. Deviation = $14.8 + 14.4 = 29.2$

Normal Dist. (lower) = Median (Me) − Std. Deviation = $14.8 - 3.0 = 11.8$

Anomalous Values = Median + $6(Q_3 - Me) = 14.8 + 6(9.6) = 72.4$

also = Median + 4 (Std. Dev.) = $14.8 + 4(14.4) = 72.4$.

Anomalous Samples in Survey = **No 52 (105 ppm) and No 59 (86 ppm.)**

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APPENDIX A

2. "THE USE OF THE MEDIAN AND QUARTILES IN ESTIMATING NORMAL AND ANOMALOUS VALUES OF A GEO-CHEMICAL FIELD."

B.YA. YUFA & YU.M. GURVICH

FIELD PARTY NO 1,
ALL-UNION INSTITUTE OF APPLIED GEOPHYSICS,
LENINGRAD.

TRANS FROM. GEOKHIMIYA, NO. 8, PP 817-824, 1964.

(THE COPY OF THIS ARTICLE IS OF INSUFFICIENT QUALITY TO WARRANT REPRODUCTION ON MICROFILM).

THE USE OF THE MEDIAN AND QUARTILES IN ESTIMATING NORMAL AND ANOMALOUS VALUES OF A GEOCHEMICAL FIELD*

B. Ya. Yufa and Yu. M. Gurvich
Field Party No. 1,
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(ABSTRACT)

The use of the median and quartiles is proposed in the rapid determination of anomalous values in any given geochemical or geophysical field. Examples are given of vanadium contents of granites, nickel contents of kimberlites, and copper and rubidium contents of basalt. --D. R. Wones

In geochemical investigations and geological prospecting knowledge of the normal concentrations of the elements in rocks is important. When such information is available, it is possible to compare similar rocks of different regions, to determine the character of the distribution of the elements in different rocks and, in many cases, during prospecting, to establish the most promising zones in a section.

It is also important to know the lower limit of anomalous concentrations. Knowing these limits for different rocks and different regions it is possible to outline promising areas which require further study. This kind of information is important both in prospecting for economic mineral deposits and in general geochemical investigations.

The concentrations of the elements determined in a given area (in rocks, waters or gases) are random values depending not only on the general regularities in the distribution characteristics of a given object but also on purely local conditions. It is necessary, therefore, to treat the data by the methods of mathematical statistics, in terms of probability.

Let us denote by q the probability (P) of the deviation of a certain value $\bar{x}$ from the general mean M by t standard deviations (σ):

$$P(\bar{x} - M > t\sigma) = q. \qquad (1)$$

If q (significance level) is taken so small that the deviation of A from M by $t\sigma$ can be considered practically improbable, then the lower limit of the anomaly can be calculated by the formula:

$$A = M + t\sigma. \qquad (2)$$

The normal field (NF) of concentrations or of some other geochemical parameter is defined as the interval of values deviating from the mean by no more than 1σ, i. e.:

$$NF = M \pm \sigma. \qquad (3)$$

Thus, to distinguish between normal and anomalous fields it is necessary to know not only the average value of a given parameter but also the standard deviation from the mean. The question now arises, [illegible] of average [illegible] represents [illegible] of a given p[illegible]

*[illegible] from: Geokhimiya, No. 8, pp. 817 - [illegible]

[illegible] arithmetic [illegible], the mode (Mo) and the median [illegible]. The use of these different averages for different types of distribution makes comparison of data difficult [1].

Let us compare the different types of averages and select the one which is the best indicator of the average level of distribution of a parameter within a geochemical field.

The arithmetic mean is convenient because of its simplicity but it has several shortcomings:

1. dependence of sharply deviating individual values of the parameter;

2. inapplicability in the cases where some values of the parameter are beyond the sensitivity limits of the methods used in the investigation, or when the data are semiquantitative;

3. difficulty of calculation with large amounts of data.

The mode is a more objective estimate of the average level for a given field and it is practically free of the first two shortcomings listed above. Determination of the mode requires knowledge of the distribution function of the parameter, for the mode is represented on the abscissa and corresponds to the maximum probability.

Very often the theoretical distribution in a geochemical field is not known or, if known, may differ from the actual distribution because the nature of the distribution depends on the accuracy in determining a given parameter [2]. If the actual distribution is normal, it will be so shown by quantitative data, but semiquantitative data will give it as a Poisson distribution, and qualitative data, as a binomial distribution. Moreover, the actual distribution may be distorted by either nonrandom sampling or by the special selection of sampling points.

The mode is determined as the abscissa of maximum frequency and this substitution of frequency for probability introduces an indeterminate error into the value of the mode for a limited number of observations. The magnitude of this error can be determined with an approximation which depends [illegible] determined from [illegible] there may be several modal class intervals (Fig. 1a) or one "broad" plateau covering several class intervals (Fig. 1b). In such cases the mode is either not an average representative of the distribution (Fig. [illegible] or it may be zero (Fig. 1d).

The median is the middle value in an array of values arranged in order of magnitude. It can be determined from a cumulative frequency curve shown in Fig. 2. The median on this curve corresponds to 50 [illegible] the cumulative frequency.

If the number of observations is sufficiently large the median does not depend [illegible] the anomalous values of the parameter. [illegible] may be used even if the sampling contains some (< 25%) anomalous values and also when dealing with semiquantitative data. Moreover, the median displays an asymptotically normal random value. If the distribution is leptokurtic or platokurtic, the median is a more reliable average than the arithmetic mean [3]. The properties of [illegible] median are especially important in work with data on geochemical fields in which distributions are most frequently skewed to [illegible] right.

If the distribution is symmetrical the median coincides with the mode and the arithmetic mean. In moderately asymmetrical unimodal distributions, the median lies between the mode and the arithmetic mean and nearer to the latter. This intermediate position of the median is another of its desirable properties.

Finally, a very significant advantage of the median in geochemical work is its invariant position whether the calculations are made from the measured values or from their functions [4]. For example, if logarithms of the parameters of a geochemical field are used instead of the parameters themselves, the antilogarithm of the median of the logarithms coincides with the median calculated for the values of the parameter. It follows that the average represented by median is independent of the type of distribution of the parameter. The arithmetic means may vary considerably with the type of distribution and this is their most serious disadvantage.

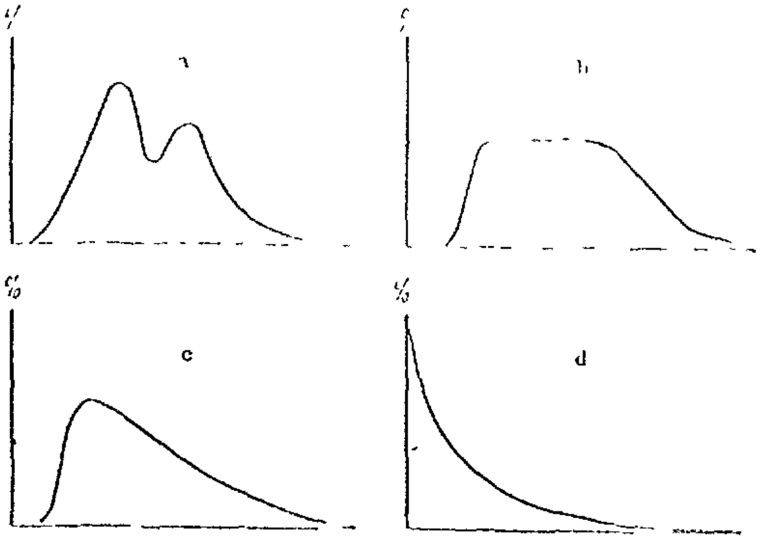
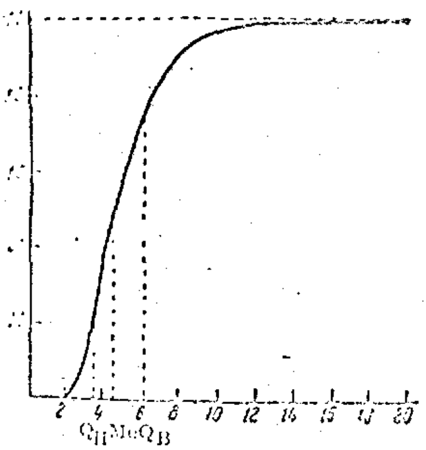


Fig. 1 Types of element distributions in rocks



2. Cumulative curve of the distribution of vanadium in granites (data from [1]).

...timating the median and quartiles it ...cient to use the method illustrated ... 1 and 2 and based on the data from ... 6]. The frequency of occurrence ... of intervals of values of a given ...ter is recorded in the table by means ...s (dashes) up to the symbol for 5 ... When necessary the sum of occurrences ...ulative frequency can be calculated ... column. The median corresponds ...cumulative frequency. All anomalous ... $>15 \cdot 10^{-3}\%$ in Table 1; $>200 \cdot 10^{-3}\%$ in Table 2) can be placed in one interval.

Thus, the median, the most representative average for our purpose, can be calculated very easily even when the quantity of raw data is large.

When the median is used, the width of the distribution is estimated by quartiles. The first quartile (Q_1) corresponds to 25% cumulative frequency and the third (Q_3) to 75%. In a symmetrical or nearly symmetrical distribution, σ is determined uniquely by the quartiles [3]:

$$\sigma = \frac{3}{4}(Q_3 - Q_1). \qquad (4)$$

In an assymetrical distribution the boundaries of the normal field will be different on the two sides of Me. In this case [7] σ may be calculated from the deviations:

$$\Delta_U = Q_3 - Me, \qquad (5)$$

$$\Delta_L = Me - Q_1. \qquad (6)$$

The values of σ will be respectively:

$$\sigma_U = \frac{3}{2}\Delta \qquad (7)$$

$$\sigma_L = \frac{3}{2}\Delta . \qquad (8)$$

[illegible]	3	4	5	6	7	8	9	10	11	12	13	14	15	[illegible]
Frequency	6	16	14	10	7	4	3	1	—	—	—	—	—	2
Cumulative frequency	6	22	36	46	53	57	60	61	61	61	61	61	61	63

Table 2

	Nickel content in kimberlites, 10^{-3}% (spectrographic data)					
	5	10	20	50	100	>200
Frequency	6	33	165	182	65	8
Cumulative frequency	6	39	204	386	451	459

Note: The value of the median obtained from the data of Table 2 is very different from the arithmetic mean given in [6]: 0.023% and 0.015% respectively. The high value of the arithmetic mean is confirmed by the value of the mean antilogarithm – 0.035%.

Such a determination of the standard deviation automatically excludes the dependence of variance on the distribution law.

Our investigation made on the basis of 132, 320 measurements with different typ[illegible] of distribution, including highly asymmet[illegible] cal ones, shows that when σ is calculat[illegible] formulas (7) and (8), the frequency of the d[illegible] tion from the median has a normal distri[illegible]

[illegible], therefore, that [illegible] the limits of the normal [illegible] by [illegible], the median be used instead of [illegible] the mean, and the calculation of [illegible] and lower limits be made using [illegible]:

$$NF_U = Me + 1.5\,(Q_3 - Me), \qquad (9)$$

$$NF_L = Me - 1.5\,(Me - Q_1). \qquad (10)$$

[illegible] the right side of the distribution [illegible] needed in estimating the lower limit, [illegible], the calculation of A (2) should be [illegible] the formula:

$$A = Me + 1.5t\,(Q_3 - Me). \qquad (11)$$

[illegible] value of t depends, in general, on [illegible] of the problem, the distribution [illegible] required parameter, the significance [illegible] and the number of observations. As [illegible] of t increases, the significance [illegible] decreases and also the probability of [illegible] the first order (normal values of [illegible] parameter are considered anomalous), [illegible] the probability of error of the second [illegible] anomalous values are considered [illegible] increases. In determining the low- [illegible] of an anomaly it is especially im- [illegible] not to make an error of the second [illegible], i. e., not to miss any anomalous [illegible]. For this reason, the significance [illegible] should not be too small, but, on [illegible] hand, an increase in the value of [illegible] result in unjustified separation of [illegible] of the field which are actually normal. [illegible] case of prospecting, for example, it [illegible] rational to set q = 0. 2, as suggested [illegible]. Usually, depending on the concrete [illegible], the value of q should be between [illegible] 0. 01, i. e., 10 to 1%.

[illegible] a given significance level the value [illegible] depends on the character of distribution [illegible] parameter. If it is not known the [illegible] limit of t can be determined from [illegible]'s inequality:

$$P(|\bar{x} - M| > t\sigma) \leq \frac{1}{t^2}. \qquad (12)$$

[illegible] follows from equations (1) and (12)

$$t = \frac{1}{\sqrt{q}}. \qquad (13)$$

[illegible] distribution is symmetrical the right [illegible] in (12) may be decreased by 2/3 [illegible] [illegible]

$$t_0 = \sqrt{\frac{2}{q}}. \qquad (14)$$

[illegible] in estimating A [illegible] are only in- [illegible] in the deviation from the mean in [illegible] direction of the higher values of the parameter, t should be calculated by a one-sided test. This lowers the significance level by a factor of 2, i. e.:

$$t_0 = \frac{1}{\sqrt{3q}}. \qquad (15)$$

Only the right-hand side of the distribution curve is considered in estimating A and, therefore, according to formulas (2), (5), (7) and (15), the lower limit of anomaly is:

$$A = Me + \frac{1}{2}\sqrt{\frac{3}{q}}\,(Q_3 - Me). \qquad (16)$$

It is easy to calculate that for a significance level of 2% (q = 0. 02) the value of t_0 for any distribution will be less than 4. In that case

$$A = Me + 6\,(Q_3 - Me). \qquad (17)$$

A comparison of the different methods of statistical treatment was made using data from [15] on the distribution of vanadium in granites of one of the massifs of Northern Kazakhstan (Table 1).

It was found that the data of Table 1 approximate a lognormal distribution if two anomalous samples are excluded (0. 02%). If these samples are included even the logarithms of the vanadium contents do not obey the law of normal distribution (skewness - 0. 68, kurtosis - 13. 9).

The averages* and the standard deviations from the averages were calculated by different methods. It follows from the table that:

1. Anomalous samples have practically no effect on the distribution parameters calculated from the median and the quartiles.

---

*The averages given in Table 3 differ from those given in [5] because the authors made arithmetical errors in their calculations: in computation of logarithms and in division by n - 1 in averaging.

[illegible]
mean.

2. The value of the median is [illegible] the theoretical value of the mode and the mean of the lognormal distribution.

The data of Table 3 fully confirm the orrectness of using the median and quartiles in estimating an average and its variance. According to formula (9), the upper nit of the normal field is a content of 9 · 10⁻³% and the lower limit (formula [illegible]), is 3.1 · 10⁻³%. For the significance level q = 0.02 the lower limit of the anomaly, lculated by formula (17), is 13.7 · 10⁻³%.

The method proposed here was tested by calculating the clarkes of copper (basalts d rubidium (granites) in the earth's crust om the data given in [8] (Table 4).

It follows from Table 4 that the median most coincides with the clarkes. It is eresting to note that when two groups th different averages (rubidium) were combined the median was found to be more stable than the arithmetic mean.

When the data are arranged as in Table 3 the magnitudes of the normal and anomalous fields can be determined efficiently and with nfidence. The greatest advantage of the ethod is the independence of the results from the character of distribution of the parameter. This is particularly important extensive geochemical investigations en the theoretical distribution law is not known and it is practically impossible to use complex statistical methods to disver it.

The method proposed here can be used for estimating normal and anomalous geoysical fields.

Table 3

		Average · 10^{-3}%				Standard deviation · 10^{-3}%			Other parameters			
		arithmetic mean	mean of lognormal distribution	Me	Mo	from arithmetic mean	from lognormal mean	from Me, formula (8)	Q_1	Q_3	X	ε
All samples	absolute	5.9	5.3	4.7	4.0	3.06	+2.55 −1.71 2.13	1.9 (1.7)	3.6	6.2	0.05	[illegible]
	relative	1.18	1.103	0.92	0.78	1.92	1.33	1.12 (1.00)				
Without anomalous samples	absolute	5.41	5.1	4.6 (4.8)	4.0 (4.8)	1.70	+1.[illegible] −1.36 1.6[illegible]	1.9 (1.7)	3.6 (3.9)	6.2	0.25	−0.[illegible]
	relative	1.06	1.0	0.90	0.78 (0.94)	1.06	1.0	1.12 ([illegible])				
[illegible]		1.11	[illegible]	[illegible]	1.0 ([illegible])	[illegible]	[illegible]	[illegible]				

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Data of 19[illegible]	259	$0.9 \cdot 10^{-2}$	$1.5 \cdot 10^{-2}$	107	$4.5 \cdot 10^{-2}$	$4.0 \cdot 10^{-2}$
Data of 1962	24	$1.0 \cdot 10^{-2}$	$1.1 \cdot 10^{-2}$	490	$2.0 \cdot 10^{-2}$	$2.0 \cdot 10^{-2}$
Combined data	283	$1.0 \cdot 10^{-2}$	$1.4 \cdot 10^{-2}$	597	$2.0 \cdot 10^{-2}$	$2.4 \cdot 10^{-2}$

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Received for publication
December 26, 1963

UDC 513.113.3:550.4

013

APPENDIX B

1. Assay Results of Samples of Schist.

2. Magnetic Values - Ground Magnetometer Survey.

014

258026

HEAD OFFICE COPY

c.c. to Mr. M. Edyvean,
20 Kerran Crescent
LAUNCESTON 7250

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

3rd March 1978.

CERTIFICATE OF ANALYSIS

To Industrial & Mining Investigations Pty Ltd,

Suite 3709 Australia Square, Sydney N.S.W. 2000

The sample of Specimens *received from* you *on the* 1st March '78 *and stated to be from* Stringer Creek ~~*has*~~ *have been examined, with the following results:—*

1978	Registered Number	Description	%Fe (HCl Sol)
3/3/78	780422	Stringer Creek No. 1.	14.3
	780423	Stringer Creek No. 2.	11.4

Analyses by.....R.G......

Fee. $10.00

Chief Chemist and Metallurgist

54330

Details of Ground Magnetic Survey - Sturgeon Creek Area - EK4/61.

Instrument : Fluxgate 600.

Base Reading 250 γ

Station	Reading γ	Station	Reading γ
PG0	800	PG15	1200
PG1	1100	PG16	1450
+25 metres	1150	PG17	1500
PG2	900	+25 metres	1350
+30 metres	750	PG18	1300
PG3	750	+25 metres	1300
PG4	900	PG19	1400
+25 metres	900	+20 metres	1950
+50 metres	800	PG20	1300
PG5	1100	+25 metres	1200
PG6	1220	+50 metres	700
+30 metres	1250	PG21	500
+60 metres	1100	+25 metres	550
PG7	1100	PG22	500
+30 metres	1250		
PG8	1500	+25 metres	840
+30 metres	1550	PG23	1300
PG9	1600	+30 metres	400
+30 metres	1750	PG24	1050
PG10	−3400	PG25	1100
+30 metres	1600	+25 metres	1150
PG11	1750	PG26	1200
+30 metres	1650	+25 metres	1250
PG12	1450	PG27	1550
+30 metres	1300	+20 metres	1450
PG13	1250	PG28	1750
+30 metres	1200	+25 metres	2300
PG14	1150	PG29	3700
+25 metres	1150	+25 metres	4800

Station	Reading γ
+50 metres	1700
PG30	2000
+25 metres	850
PG31	700
PG32	600
PG33	600
PG34	2100
PG35	950
PG36	850
PG37	700
PG38	750
PG39	500
+25 metres	700
PG40	2250
PG41	2350
PG42	1450
SCHIST { +30 metres	1100
SCHIST { +40 metres	1100

25028

Map 1
TASMANIA
1:500000
KEY MAP ONLY
SHOWING EXPLORATION
AND SPECIAL PROSPECTORS
LICENCES ONLY AS AT
25 · 11 · 77
BOUNDARIES SHOWN AS DESCRIBED. SEE SEPARATE SHEET FOR OIL.
Issued by the Department of Mines, Hobart.
I. G. SYMONS
Director of Mines
LOCATION INSET
BASS STRAIT
SOUTHERN OCEAN
TASMAN SEA
KING ISLAND
MACQUARIE ISLAND
E.L.21/73 58 S.KM. KIBUKA MINES P/L 1 · 12 · 77
E.L.9/69 69 S.KM. KIBUKA MINES P/L 21 · 11 · 77
E.L.24/76 19 S.KM. KIBUKA MINES P/L 3 · 2 · 78
E.L.15/66 123 S.KM. WARMAN INT. LTD. 24 · 4 · 78
E.L.12/75 58 S.KM. KIBUKA MINES P/L 4 · 1 · 78
E.L. PENDING 1334 S.KM. INDUSTRIAL SANDS P/L
S.P.L.771 7 S.KM. B. SABIN 4 · 1 · 78
E.L.6/77 452 S.KM. E.Z. CO. OF A'ASIA LTD. 1 · 12 · 77
E.L.17/75 46 S.KM. C.C.J. BLACKLOW 17 · 11 · 77
E.L.18/76 19 S.KM. B.H.P. CO. LTD. 4 · 2 · 78
E.L.13/77 16 S.KM. D.W. OSBORNE PENDING
E.L.1/77 2550 S.KM. C.R.A. EXPLOR. P/L PENDING
E.L.1/63 47 S.KM. CLEVELAND TIN N.L. 11 · 2 · 78
E.L.19/73 21 S.KM. RENISON LTD. 27 · 1 · 78
E.L.53/70 62 S.KM. VALLEY EXPL. HOLDINGS P/L 10 · 12 · 77
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E.L.14/76 18 S.KM. LOUISA MG. CORP. N.L. 28 · 11 · 77
S.P.L. PENDING T. SLOGGETT
TASMANIA 1:500000 FOURTH EDITION

TASMANIA 1:100 000
TOPOGRAPHIC SURVEY

PIEMAN

REFER TO THIS MAP AS: SHEET 7914 EDITION 3 1977

AERO-MAGNETIC ANOMALY (Approximate Location Only)

GROUND MAGNETOMETER TRAVERSE

5,10 etc. SURVEY STATIONS

SCALE 1 : 100 000

Kilometres 2 1 0 2 4 6 8 10 12 Kilometres

S/1721/77

PRODUCED by the Survey Branch, Lands Department, Hobart, 1977.
NOMENCLATURE: Topographic names on this map have been approved by the Nomenclature Board of Tasmania.
MAP ACCURACY: the average accuracy of this map is ± 25 metres in the horizontal position of well defined detail and ± 5 metres in elevation.
MAP RELIABILITY: Topographic information shown on this map is correct to 1977.
ROAD CLASSIFICATION: Roads are classified according to their intended function as part of the national road system.
The representation of a road or track on this map is no evidence of the existence of a right of way.

BLACK NUMBERED GRID LINES ARE 1000 METRE INTERVALS OF THE AUSTRALIAN MAP GRID, ZONE 55
GRID VALUES ARE SHOWN IN FULL ONLY AT THE SOUTH WEST CORNER OF THE MAP
HORIZONTAL DATUM: AUSTRALIAN GEODETIC DATUM 1966
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM
TRANSVERSE MERCATOR PROJECTION
CONTOUR INTERVAL 40 METRES
ELEVATIONS IN METRES

5 cm

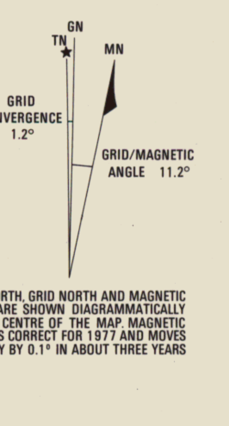
a TASMAP publication

UNIVERSAL GRID REFERENCE

BEFORE GIVING A GRID REFERENCE, CIVILIAN USERS SHOULD STATE THE NUMBER AND NAME OF THIS MAP:
7914: PIEMAN

GRID ZONE DESIGNATION: 55G	TO GIVE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 100 METRES	
100 000 METRE SQUARE IDENTIFICATION (5400: CQ / CP)	SAMPLE POINT: 846 △ MOUNT AGNEW	
	1 Read letters identifying 100 000 metre square in which the point lies:	CP
	2 Locate first VERTICAL grid line to LEFT of point and read LARGE figures labelling the line in either the top or bottom margin, or on the line itself:	52
	3 Estimate tenths from grid line to point:	8
IGNORE the SMALLER figures of any grid number; these are for finding the full co-ordinates. Use ONLY the LARGER figures of the grid number; example: 335000	4 Locate first HORIZONTAL grid line BELOW point and read LARGE figures labelling the line in either the left or right margin, or on the line itself:	60
	5 Estimate tenths from grid line to point:	3
	SAMPLE REFERENCE:	CP528603
	If reporting beyond 18° in any direction, prefix Grid Zone Designation, as: 55GCP528603	

- Built-up area; National route marker
- Principal road and highway; Cutting
- Secondary road; Embankment
- Minor road; Road bridge
- Vehicular track
- Road distance in kilometres
- Railway, multiple track; Station; Railway bridge
- Railway, single track; Railway tunnel
- Light railway or tramway
- Power transmission line
- Fence; Levee or bank
- Mine; Windmill; Yard; Quarry
- Building/s; Church; Ruin; Drive-in theatre
- Trig station; Bench mark; Spot elevation (BM 306 •220)
- Cliff; Contour with value; Depression contour
- Forest, dense
- Forest, medium
- Pine plantation
- Orchard
- Windbreak
- Lake, perennial; Stream, perennial
- Lake, intermittent; Stream, intermittent
- Lake, mainly dry; Stream, mainly dry
- Swamp, perennial; intermittent
- Land subject to inundation
- Bore or well; Spring; Tank or small dam
- Breakwater; Pier; Wharf
- Wreck, exposed; Lighthouse
- Rock, bare or awash; Foreshore flat; Sand
- Reef; Rock ledge



TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1977 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS

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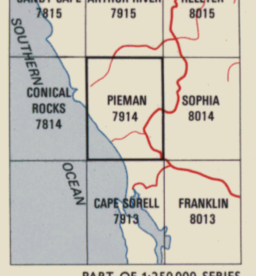

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PIEMAN
TASMANIA
EDITION 3 1977

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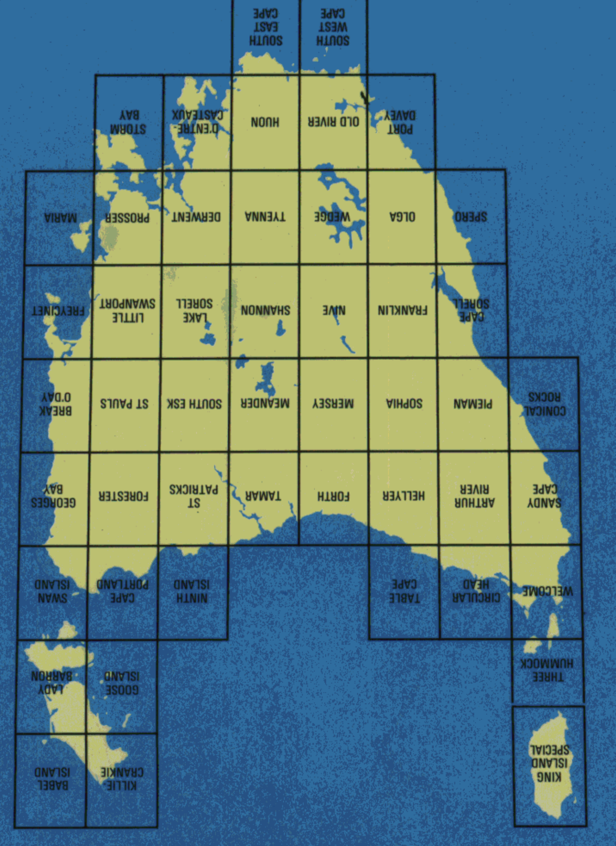


1 : 100 000 MAP SHEET INDEX

TASMAP

PIEMAN Map. 1a
Area Covered Includes:
Zeehan Corinna
Trial Harbour

LOCATION AND ACCESS – EL 4/61 – South of Savage River

O/F Report 78 - 1268

TASMANIA 1:100 000 TOPOGRAPHIC MAP

PUBLISHED BY
LANDS DEPARTMENT HOBART

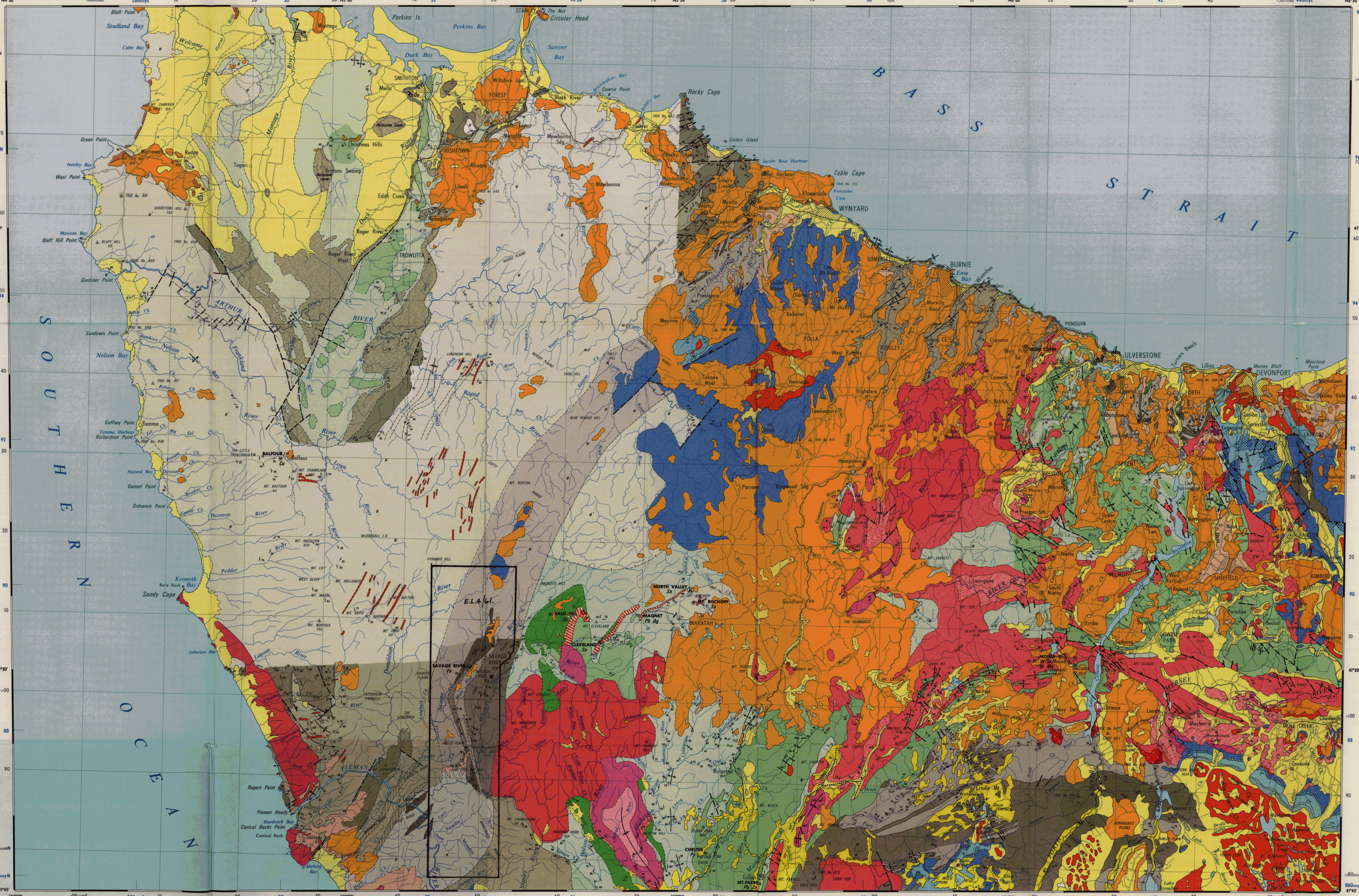
258029

AUSTRALIA 1:250,000 FIRST EDITION 1973

BURNIE

GEOLOGICAL SURVEY OF TASMANIA — DEPARTMENT OF MINES — HOBART

TASMANIAN GEOLOGICAL ATLAS SERIES SHEET SK55-3



COMPREHENSIVE REFERENCE FOR TASMANIA

HOLOCENE	Alluvium, sand, gravel and talus.	
PLEISTOCENE	Till, fluvioglacial, periglacial and associated deposits.	
	Errosional surface.	
TERTIARY	Non–marine sequences (light); marine limestone (dark); basalt and related igneous rock types (orange).	
	Low angle unconformity.	
TRIASSIC	Fluvio–lacustrine sequences of sandstone, siltstone, mudstone (light) with carbonaceous sequences indicated (dark). Fresh water sequence with some coal measures.	UPPER PARMEENER SUPER-GROUP
PERMIAN UPPER CARBONIFEROUS	Upper glacio–marine sequence of pebbly mudstone, pebbly sandstone and limestone. Fresh water sequence with some coal measures. Lower glacio–marine sequence of pebbly mudstone, pebbly sandstone, minor limestone, Tasmanite oil shale and basal tillite.	LOWER PARMEENER SUPER-GROUP

WESTERN TASMANIA

UPPER — MIDDLE DEVONIAN	Terrestial cavern fillings.	EUGENANA BEDS.
	Unconformity attributed to Tabberabberan Orogeny.	
LOWER DEVONIAN — SILURIAN	Some quartzwacke sequences (dark) and siltstone–shale sequences (light) indicated; Devonian limestone–siltstone (horizontally lined over–print).	ELDON GROUP AND CORRELATES; SPERO BAY GROUP.
ORDOVICIAN	Limestone sequence. Siliceous terrestrial conglomerate, marine quartzwacke and siltstone.	JUNEE GROUP AND CORRELATES.
	Unconformity in northern Tasmania and parts of western Tasmania attributed to Cambrian movements; apparent conformity in Adamsfield region and parts of western Tasmania.	
CAMBRIAN	Middle–Upper Cambrian fossiliferous usually greywacke turbidite sequences (horizontally lined overprint); acid with intermediate volcanic and associated rocks dominant (dark), and horizon with fossiliferous Upper Cambrian shallow water deposits (vertically lined overprint); basic–intermediate volcanic and associated rocks dominant (diagonally lined overprint); probably Cambrian unfossiliferous usually greywacke turbidite sequences (light); probably Cambrian unfossiliferous orthoquartzite sequence (dotted).	INCLUDING DUNDAS GROUP (fossiliferous); MT READ VOLCANICS AND OTHER FORMATIONS.
	Usually unconformity attributed to Penguin Orogeny but apparent conformity at Smithton and Pieman River.	
PRECAMBRIAN	Comparatively unmetamorphosed sequences. Mudstone–sandstone sequences (u′) – dominantly mudstone (light), dominantly orthoquartzite (dark), quartzwacke turbidite successions (small dot over–print), conglomerate (large dot over–print); dolomite (horizontally lined over–print); basalt lava (vertically lined over–print).	
	Metamorphic rocks. Pelitic sequences (dark); metaquartzite sequences (light) with some platy quartzite units indicated (vertically lined over–print); amphibolite (diagonally lined over–print). Garnet bearing rocks are indicated (g).	

EASTERN TASMANIA

	Unconformity.	
LOWER DEVONIAN — TREMADOCIAN — CAMBRIAN (?)	Micaceous quartzwacke turbidite sequences dominant (light); mudstone sequences dominant (dark).	MATHINNA BEDS

IGNEOUS ROCKS

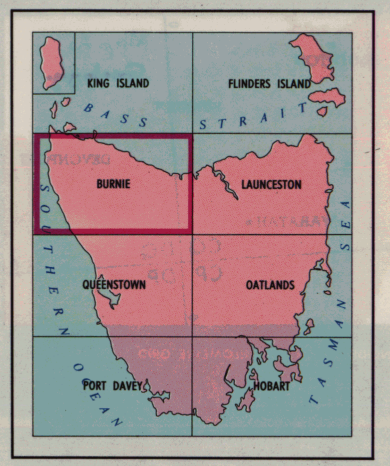
TERTIARY	Basalt and related rock types.
CRETACEOUS	Syenite. Appinite.
JURASSIC	Dolerite and related rock types.
LOWER CARBONIFEROUS — UPPER DEVONIAN	Dominantly adamellite–granite. Dominantly granodiorite. Dominantly diorite.
CAMBRIAN	Granitic rocks. Coarser grained basic rocks. Serpentinite, peridotite and associated rocks. Acid with intermediate volcanic and associated rocks. Basic–intermediate volcanic and associated rocks.
PRECAMBRIAN	Granite. Dolerite.

Undifferentiated rocks are indicated by the lightest colour and the letter "u" or "u′"
Blank boxes indicate absence of rock unit from this map sheet.

- Geological boundary established by 1:15,840 scale mapping.
- Geological boundary defined by air photo interpretation, reconnaissance mapping and > 1:15,840 scale mapping.
- Fault with relative downthrown side indicated.
- Thrust fault with upper plate indicated.
- Wrench fault with relative displacement given. Important faults are indicated by dots where concealed.
- Hinge line with plunge of major fold: anticline, syncline.
- Generalized strike and dip of beds, vertical horizontal, overturned
- Generalized strike and dip of beds with facing unknown.
- Generalized strike and dip determined from air photos.
- Strike and dip of igneous banding, vertical banding.
- Generalized strike and dip of cleavage, vertical cleavage.
- Generalized strike and dip of dominant second cleavage, vertical second cleavage.
- Generalized strike and dip of metamorphic foliation, vertical foliation.
- Minor fold hinge line with plunge.
- Lineation with plunge (mineral alignment; intersection of surfaces).

- Road
- Vehicular track
- Built–up area
- Town
- Railway Station or Siding
- Power Transmission Line
- Trigonometric Station
- Astronomical Station
- Airfield
- Lighthouse

MINERAL DEPOSITS; Significant production centres.
Mine; Ag–silver, Bi–bismuth, Cu–copper, Mo–molybdenium, Os–osmiridium, Pb–lead, Py–pyrite, Sn–tin, W–tungsten, Zn–zinc.
Quarry; Do–dolomite, Ls–limestone, Cy–clay.
Alluvial working; Gr–Aggregate, Sn–tin.
Encircled symbol indicates operating at present.



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Geological compilation by:– E. WILLIAMS, B. Sc. (Hons.), Ph. D., F.G.S.
N.J.TURNER, B.Sc. (Hons.)

Base map redrawn from "Burnie" sheet of Tasmania 1:250 000 series (1963) produced by Lands and Survey Department Hobart.
Geological map production by Drawing Office, Department of Mines, Hobart.
Cartography by P.B.Nankivell, A.M.A.I.C.
E.Williams, B.Sc. (Hons.), Ph.D., F.G.S., Supervising Geologist in charge of Regional Mapping.
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Compiled under the direction of J.G.Symons, B.E., Director of Mines.
Issued under the authority of the Honourable Eric.E.Reece, Minister for Mines.
Published 1973.

SCALE 1:250,000

5 0 5 10 15 20 25 30 35 KILOMETRES

5 0 5 10 15 MILES

GREY NUMBERED LINES INDICATE THE 20,000 METRE TRANSVERSE MERCATOR GRID, ZONE 7 (AUSTRALIA SERIES)
BLUE NUMBERED TICKS INDICATE THE 20,000 YARD TRANSVERSE MERCATOR GRID, ZONE 7 (AUSTRALIA SERIES)

5 cm

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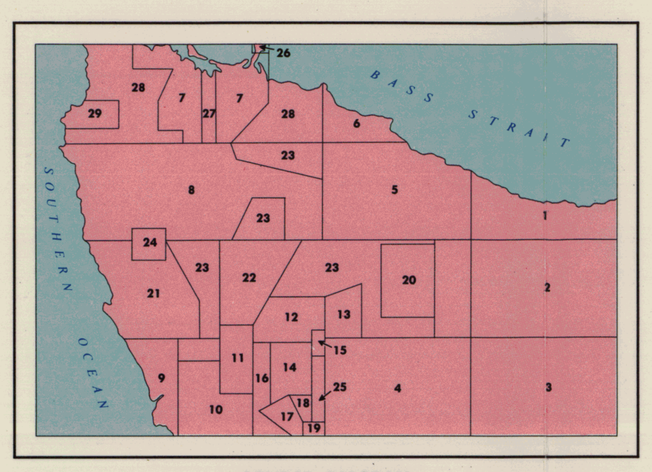

SOURCE DIAGRAM

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Map.2

BURNIE
SHEET SK55-3

GEOCHEMICAL STREAM SEDIMENT SURVEY - E.L.4/61. -

SAMPLE LOCATION AND ANALYSES

COPPER.

258031

78-1268

Map 3

8TH. MAY 1978

001

GEOCHEMICAL STREAM SEDIMENT SURVEY - EL 4/61

SAMPLE LOCATION AND ANALYSES

LEAD.

258032

8TH MAY 1978

002 MAP 4

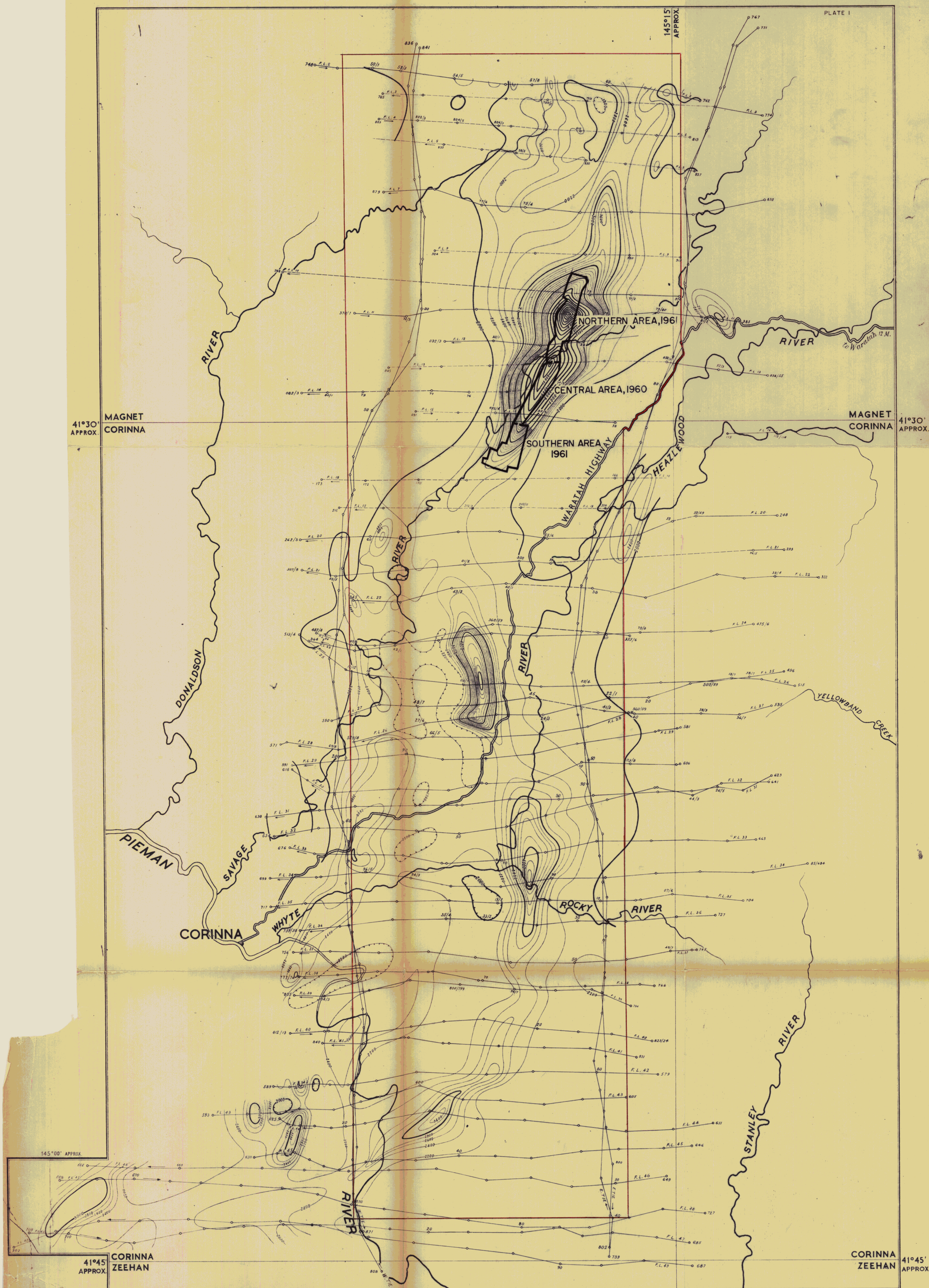
GEOCHEMICAL STREAM SEDIMENT SURVEY - E.L. 4/61.

SAMPLE LOCATION AND ANALYSES

ZINC

8TH MAY 1978

PLATE I



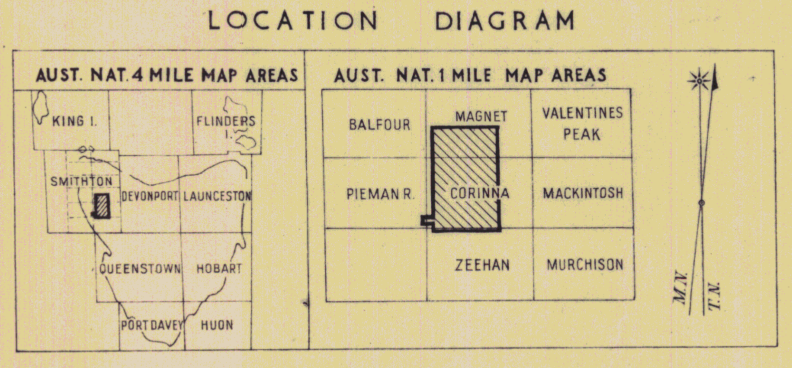
258034

APPROXIMATE SCALE IN MILES

1 0 1 2 3 4 5

CONTOUR INTERVAL 200 GAMMAS

LOCATION DIAGRAM



LEGEND

- MAGNETIC CONTOURS (1000, 200)
- MAGNETIC LOW
- FLIGHT LINE
- FLIGHT LINE (INTERPOLATED)
- ROAD
- TRACK
- RIVER

SAVAGE RIVER, IRON DEPOSITS

AEROMAGNETIC MAP OF TOTAL INTENSITY

SHOWING AREA OF GROUND MAGNETIC SURVEYS
1960 AND 1961

EXPLANATION

This map was compiled from the results of an airborne magnetometer survey of selected areas in the Rocky River-Rio Tinto district, Tasmania, conducted by the Bureau of Mineral Resources in May, 1956. The object of the survey was to delineate magnetic anomalies showing the extent and distribution of probable iron ore deposits.

The data remain uncorrected for regional gradient in total field intensity of 5·6 γ per mile in a direction of S 19° W

The total intensity was continuously recorded by an airborne magnetometer. The survey was made at an altitude of 500 feet above ground level along lines spaced one half-mile apart.

Photo mosaic assemblies were used as a visual aid to navigation. The actual flight path of the aircraft was plotted from 35 mm. continuous strip photography of the ground taken during flight.

GEOPHYSICAL SECTION, BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS

To Accompany Record No. 1962/116

78-1268

G 288-19

004
Map 6

LOCATION OF AEROMAGNETIC SURVEY (B.M.R. 1956) AND GROUND MAGNETOMETER SURVEY (I.M.I. 1978)

PART MAP EL4/61.
SCALE - 1" to ½ mile.
(1cm = 316·8 metres)

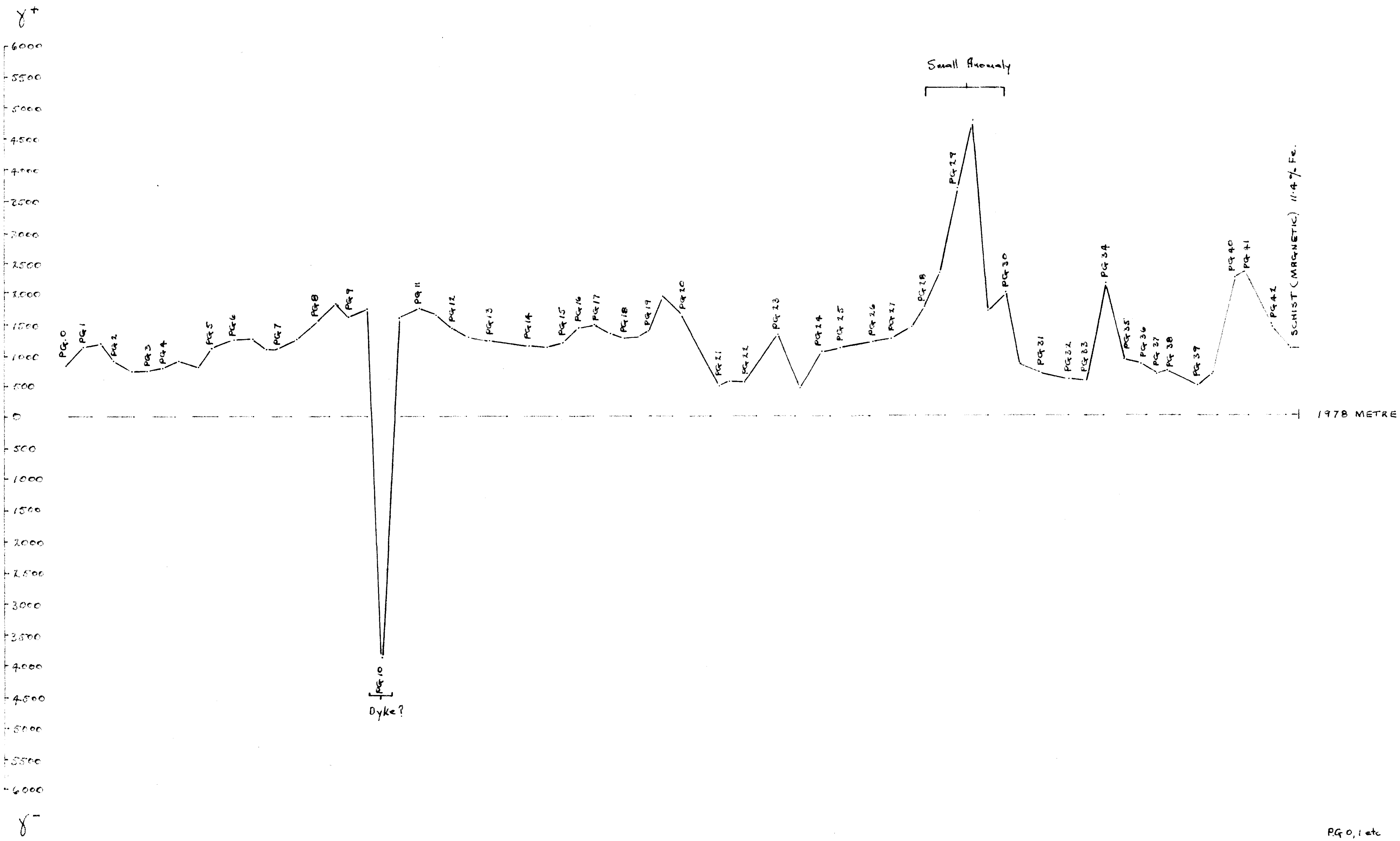
5 cm

10TH. MAY 1978

Geophysical - Magnetometer Survey

Stringer Creek Area

E.L. 4/61.



258036

P.G 0, 1 etc. Theodolite Survey Stations

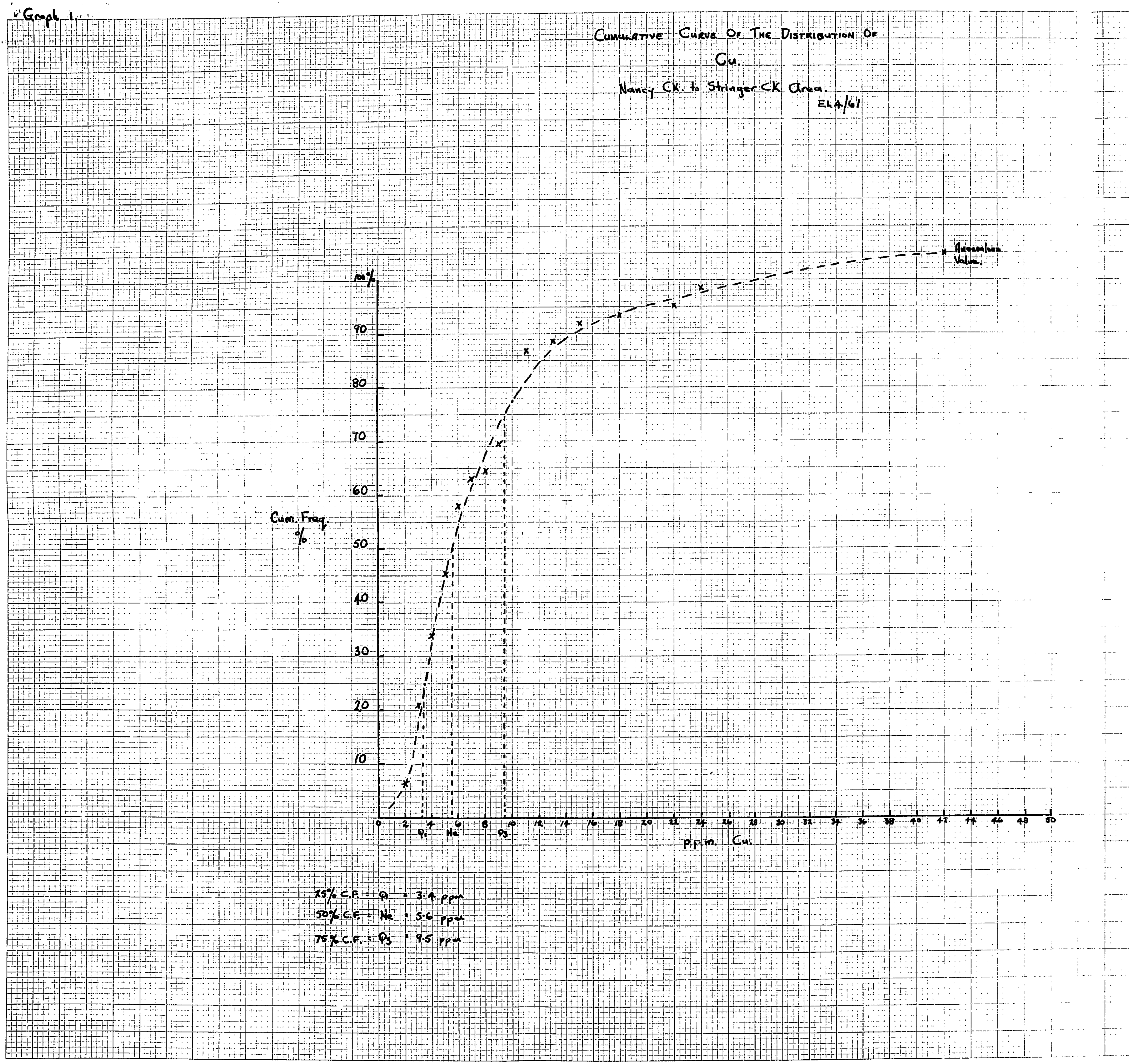
Scale: 1 to 5000 (1 cm to 50 metres)

16th May 1978

5 cm

Map 8

006


Graph 1
Cumulative Curve Of The Distribution Of
Cu.
Nancy Ck. to Stringer Ck Area.
EL 4/61
Cum. Freq. %
100%
90
80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
Q1
Me
Q3
p.p.m. Cu.
Anomalous Value.
25% C.F. = Q1 = 3.4 ppm
50% C.F. = Me = 5.6 ppm
75% C.F. = Q3 = 9.5 ppm

Graph 2.

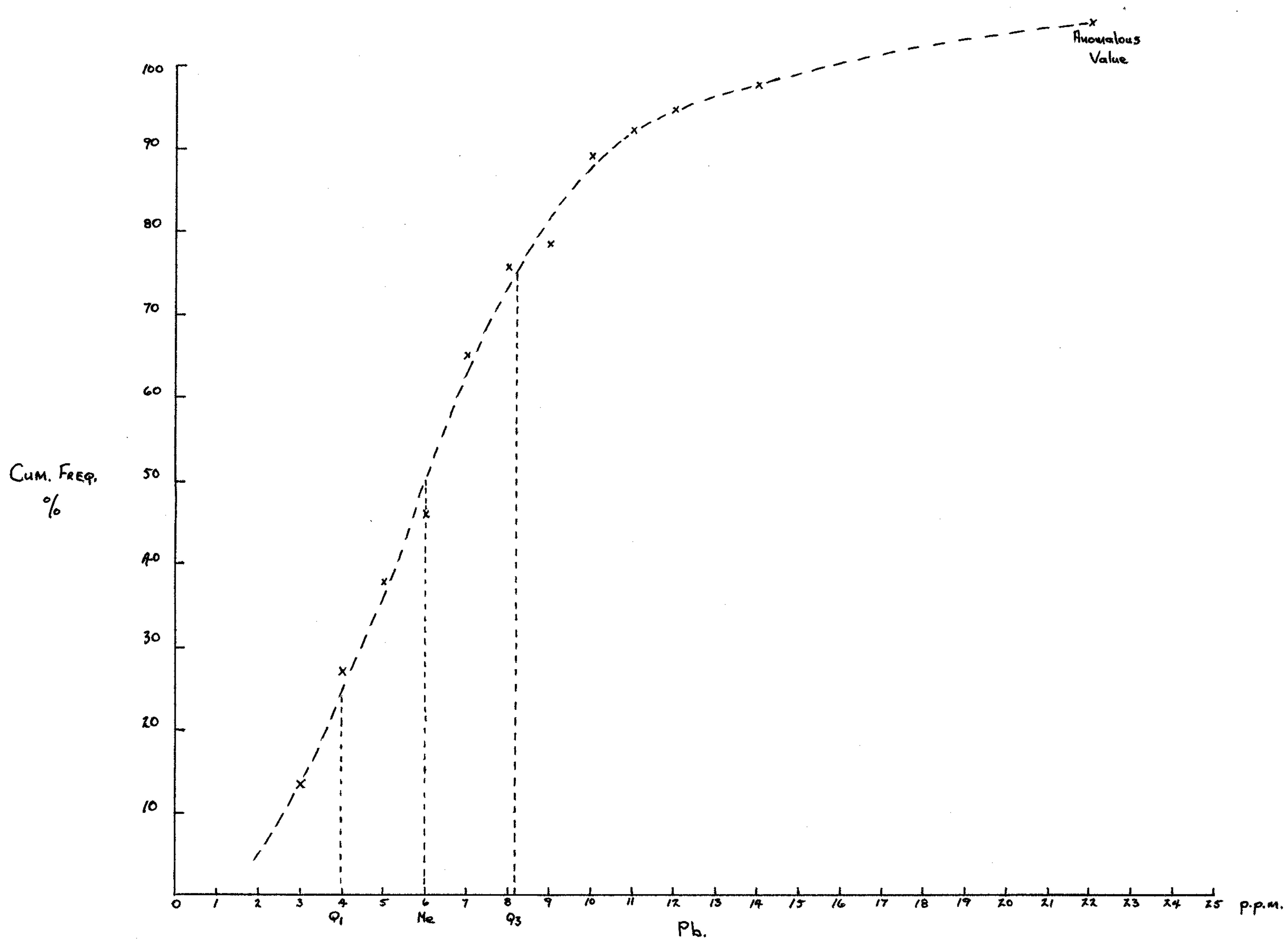
258038

Cumulative Curve Of The Distribution Of

Pb.

Nancy CK. to Stringer CK. Area

E.L.4/61

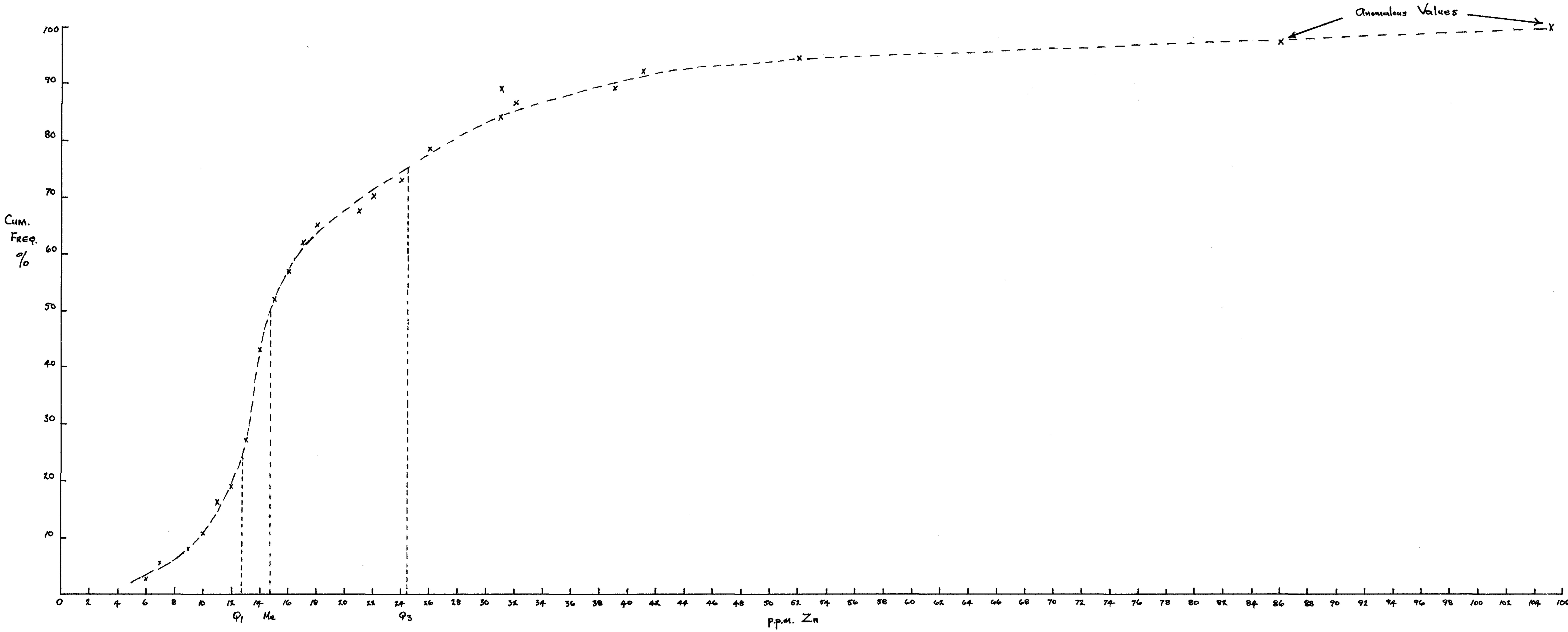


25% C.F. = Q_1 = 4 p.p.m.
50% C.F. = Me = 6 p.p.m.
75% C.F. = Q_3 = 8·2 p.p.m.

5 cm

Graph 3.

CUMULATIVE CURVE OF THE DISTRIBUTION OF
Zn.
Nancy CK. to Stringer CK. Area
E.L.A./61.



25% C.F. = Q_1 = 12.8
50% C.F. = Me = 14.8
75% C.F. = Q_3 = 24.4