

CRA EXPLORATION PTY.LIMITED.

INTERVIEW PINNACLE EL 36/80

GEOLOGICAL REPORT FOR YEAR ENDING

28TH OCTOBER, 1982.

MICROFILMED

Author: T.W.Dickson
Date: 20th October, 1982.
Copies: CRAE Melbourne
CRAE Hobart
CRAE Burnie
Mines Department, Tasmania.
Geopeko, Sydney
Geopeko, Devonport

OPEN FILE

CONTENTS

	<u>Page</u>
1. SUMMARY	1
2. INTRODUCTION	1
3. CONCLUSIONS	1
4. RECOMMENDATIONS	2
5. GEOLOGY	2
6. COMPUTER GEOCHEMICAL STUDY	5
6.1 Computer Coding for Microgas	7
6.1.1. Analytical Variables	8
6.1.2. Geological Variables	8
6.1.3. Methodology	9
7. INTERPRETATION	11
7.1 Lead	12
7.2 Lead with Selections	12
7.3 Zinc	12
7.4 Copper	12
7.5 Nickel	12
7.6 Cobalt	12
7.7 Arsenic	13
7.8 Molybdenum	13
7.9 Tin	13
7.10 Cold Extractable Copper	13
7.11 Copper Nickel Ratio	13
7.12 Free Copper	13
8. LIST OF REFERENCES	14
9. KEYWORDS	14

02

10.	LOCATION	14
11.	LIST OF PLANS	14
12.	LIST OF APPENDICES	15

1. SUMMARY

Access to the Interview-Pinnacles EL 36/80 is extremely difficult and detailed fieldwork which is to include geological mapping, stream sediment sampling and ground investigation of aeromagnetic anomalies has been delayed until the 1982-83 summer season.

This delay has allowed data from the Mines Department West Coast aeromagnetic survey to be included in targeting areas for detailed field checking.

Previous stream sediment data from the area was also reviewed as part of a wider study of North-West Tasmania. A number of possibly anomalous areas located in the south-western section of the Licence and in the Toner River area are to be followed up in detail over the next 12 months period.

2. INTRODUCTION

EL 36/80 was granted on 29th May 1981, and was taken to cover the southern extension of the Balfour - Norfolk - Interview magnetic lineament. The southern extension of this lineament is marked by several old copper workings and the old East Interview copper - lead workings lie just to the west of the E.L.

Work to date has consisted largely of information gathering prior to setting up camp in the area during the coming summer months.

3. CONCLUSIONS

1. Analysis of previous geochemical results indicates some anomalous values in lead and "free" copper at Toner River in the east and Rocky Creek in the south-west.

The presence of low but encouraging tin and molybdenum values could indicate proximity to an acid igneous source in the Toner River area.

2. A number of magnetic anomalies have been detected by the Mines Department West Coast Aeromagnetic Survey, and many of these will require detailed ground follow-up.

3. The area has not been explored in any detail but there is sufficient encouragement to mount a major evaluation programme during the 1982-83 summer months.

4. RECOMMENDATIONS

1. Detailed follow-up stream sediment sampling is required in the Rocky Creek and Toner River areas and the large untested central area needs to be sampled on a reconnaissance basis.

2. Aeromagnetic data is to be computer modelled and the four best anomalies should be evaluated on the ground during the summer season.

5. GEOLOGY

The Interview area is extremely inaccessible and no previous geological mapping has been attempted.

Professor S.W.Carey carried out a detailed photo-interpretation of the entire Rocky Cape block for the CRAE-Geopeko Joint Venture and his interpretation of the Interview-Pinnacles area is shown in plan TASH 931.

Carey describes the rocks in this area (from youngest to oldest) as follows:-

"Phi Group

The Phi Group has very low relief everywhere, a general absence of outcrop traces, and scant vegetation. Sink holes are common, and the formation contains much dolomite and little quartzite. It is not strongly magnetic. There seems to be an unconformity at the base. The Phi Group usually rests on the Epsilon Group, but also on the Alpha Group if my photogeological correlation is correct. I have no record of economic mineralisation associated with this group.

Epsilon Group

The Epsilon Group has the photogeological texture of slates or silty greywackes, finely bedded rhythmically, without much quartzite. On the peneplaned area west of the Norfolk Range the strikes of the rhythmic beds are uniform, but in the mountain country east of the Norfolk Range they are much contorted, with a characteristic photogeological texture. This group has little competence to resist stress difference.

Where the Epsilon Group runs into areas where field data are available, the group correlates with the Balfour Slates (*sensu stricto*) and with the Interview Group.

More of the recorded mineralised veins in the region occur in this group than in any other group, but there are many areas of the Epsilon Group which appear barren. My impression is that the primary control is a specific tectonic lineament, and that within the corridor so constrained, the Epsilon Group forms a convenient host, probably more from physical than chemical reasons.

Alpha Group

The Alpha Group gives prominent relief with poor vegetation and harsh outcrops of quartzite. Bedding units are thicker than in the Epsilon Group.

Where the photogeological Alpha Group runs into areas of recorded field observations it correlates with the Donaldson Group of quartzites, conglomerates, and interbedded slates and dolomite. Some of the conglomerates have very large boulders in a slaty matrix; these may be glacial. No data suggest any correlation of this group with mineralisation.

Kappa Group (? Igneous)

The Kappa Group, which forms the high core of the Norfolk Range, looks to me to be a basic igneous rock e.g. gabbro. I was quite surprised to have to suggest such large masses of igneous rock, because the literature gives no hint of their existence. Perhaps owing to inaccessibility, no competent geologist has ever been on these outcrops.

My reasons for this conclusion are:

- (1) The photographic tone and texture do not look like those of a sediment, or foliated metamorphic rock. Whatever the Kappa Group rocks are, they are massive and physically resistant.
- (2) The relations to the Alpha and Epsilon Groups suggest transgressive contacts in several places.
- (3) The Kappa Group in the areas about Mt. Hadmar, Mt. Judith, and Mt. Sunday seems to be the source of several dykes reported by Ward to be amphibolitized gabbro.
- (4) The Kappa Group yields more fertile soil which supports thicker vegetation than the Alpha, Epsilon and Phi Groups.

Assuming that my photointerpretation is correct, the Kappa Group consists of plutons along the Norfolk Range and Mt. Hadmar, and satellitic sills sheets and dykes over an extensive area. The group most intruded is Epsilon, and also Alpha, and less frequently Phi, and rarely Sigma. Perhaps the rare occurrences in Sigma should be checked. The Kappa igneous activity probably occurred in the Sigma time interval, perhaps co-eval with the Smithton Basalts, and the Bernafai Tuffs and Volcanics.

Nowhere is the Kappa Group associated with high magnetic anomalies, which is surprising if it is really basic igneous rock."

Carey's interpretation has been partly checked by helicopter traversing while checking access routes into the Interview Pinnacles Licence area. The large areas of Kappa Group in the Mt.Hadmar - Mt.Edith area which Carey suggested could possibly be a Gabbroic sill is definitely not igneous. It appears to be an area of relatively flat lying Precambrian rocks which have allowed better soil development and consequently better vegetation cover.

During the helicopter survey a number of additional stream sediment samples were taken. They are listed in Appendix I and are shown on Plan TASH 932.

The Mines Department West Coast Aeromagnetic Survey has outlined a large number of magnetic anomalies. The disturbed zone along the western and northern margins (see Plan TASH 930) appears to be largely formational but there are quite a number of very interesting anomalies in the southern section of the Licence. Each of these anomalies will be computer modelled to set up a priority list for ground investigation.

6. COMPUTER GEOCHEMICAL STUDY

As part of a larger survey of the Rocky Cape region, CRA Exploration Pty.Limited, has carried out a detailed computer study of all previous stream sediment geochemical data. The data was processed on MICROGAS, a micro computer based geochemical analysis system which was developed at Queens University for CRAE.

The package contains 13 user interactive programmes for use on Digital PDP 11/23 or 11/34 computers.

The programs can be divided into two categories; namely data management and statistical.

(a) Data Management

1. CRUNCH Converts data from its original form (ASCII) into a binary form useable by the remaining programs in the package.
2. UNCRUNCH Converts a binary file back into ASCII format.
3. SORT Sorts a binary file with reference to sample number.
4. MERGES Merges two data files that contain the same variables for different samples.
5. MERGEV Merges two data files that contain different variables.
6. LISTER Produces a listing on the printer for a data set or selected portions of it.

(b) Statistical

1. DSTATS Calculations sample univariate statistical parameters and plots a histogram on the terminal screen and the printer.
2. XYPLOT Constructs xy plots or "scatter diagrams" on the screen and printer and calculates a correlation matrix.
3. MAPLOT Constructs a geochemical symbol map on the printer at any scale.

4. PROFILE Plots geochemical values against distance for one or more variables.
5. FACTOR Determines the principal relationships between variables and calculates factor scores, (R-mode analysis).
6. MULREG Determines a functional relationship between dependent and independent variables. (Step-wise multiple regression).
7. DISCRIM Calculates a function that will discriminate between different groups of samples on the basis of a weighted combination of variables, (Discriminant analysis) and calculates discriminant scores.

All programs within MICROGAS except for MERGES, MERGEV, SORT and UNCRUNCH, allow for data management in the form of transformations and/or selections. Up to 25 transformations are allowed in any program except CRUNCH, which allows 200.

The types of transformations used are simple arithmetic statements; more complex calculations can be performed by a series of simple, sequential arithmetic statements.

Up to 15 selection criteria can be made within any one program. These criteria must be met for a sample to be included in the ensuing analysis. For further information on MICROGAS, a summary is given by O.P.Lavin and I.Nichol (1981).

6.1 Computer Coding for Microgas

All stream sediment data was obtained from open file reports held at the Tasmanian Mines Dept. as well as from CRAE internal reports.

Sample locations were plotted on to 1:100 000 topographical sheets and were digitised into AMG co-ordinates in Adelaide. Analytical data was directly coded on to RL01 disc whilst geological variables were manually prepared and later coded on to disc, both on a free format basis. Each company's data was coded as a separate data file to enable later comparison.

6.1.1. Analytical Variables

The following 8 elements are those which have been most commonly analysed: Cu,Pb,Zn,Ni,Co,As,Mo,Sn. Values below detection limit have been inserted as half detection limit. Values of -1 indicate that a sample has not been analysed for a specific element. Minus 1 values are ignored by the statistical calculations.

EAST, NORTH	AMG metric co-ordinates
SMPTYP	Refers to sample type, whether stream sediment or panned concentrate.
STRMORD	Refers to stream order and will give an estimate of catchment size. This variable was obtained by inspection of topographic sheets.
TOPO	Refers to a topographical index rated 1 - 5 based on inspection of topographic sheets.

6.1.2. Geological Variables

Three variables have been used to account for Mines Dept. mapping (FORMGEOL), Prof. Carey's photo-interpretational study (PROFCAR) and site geology (SITEGEOL).

SITEGEOLOG refers to either the dominant outcrop or float recorded at each sample site and obviously varies a great deal since in many instances it was never recorded. Values of -1 indicate that no geological information was recorded.

6.1.3 Methodology

Individual files of each Company data were prepared so that "fudge factors" could be applied if necessary to allow for variations in age of sample, analytical technique, collection methods and differences in detection limits. Actually the data was surprisingly compatible and directly merged (using MERGES) to produce a single file labelled NWTASSS (N.W. Tasmania, Stream Sediment Samples). This file which contained all the most common analytical variables was then transformed logarithmically and processed by DSTATS to determine population cut offs.

Having manually selected the most suitable cut points, file NWTASSS was recycled through the MAPLOT routine to produce geochemical symbol maps for each element at a scale of 1:100 000.

The total number of samples within the Interview Pinnacles EL is sufficient to allow a separate detailed statistical analysis and the data has therefore been treated as part of the whole North-West Province. A Listing of the statistics for each element for the Province is given in Appendix II while the bounds for each MAPLOT symbol is listed on the individual plans.

Plotting errors, because of print size, are in the order of 423m height and 250m width.

Anomalous, possibly anomalous, and high background categories, again for the whole N.W. Province, as follows:-

High Background = HBG
Possibly Anomalous = PA
Anomalous = A

		<u>Log Units</u>	<u>PPM</u>
Lead (0 - 100 ppm only)	HBG	0.8 - 1.25	6.3 - 17.8
	P.A.	1.25 - 1.60	17.8 - 39.8
	A	>1.60	>39.8
Zinc	HBG	1.75 - 2.1	56 - 125
	P.A.	2.1 - 2.7	125 - 501
	A	>2.7	>501
Copper	HBG	1.25 - 1.6	17.8 - 39.8
	P.A.	1.6 - 2.05	39.8 - 125
	A.	>2.05	>112
Nickel	HBG	1.75 - 2.0	65 - 100
	P.A.	2.0 - 2.35	100 - 223
	A	>2.35	>223
Cobalt	HBG	1.25 - 1.6	17.7 - 39.8
	P.A.	1.6 - 2.1	39.8 - 125
	A.	>2.1	>125
Arsenic	HBG	0.8 - 1.2	6.3 - 15.8
	P.A.	1.2 - 2.6	15.8 - 398
	A.	>2.6	>398

		<u>Log Units</u>	<u>PPM</u>
Molybdenum	HBG	0.55 - 0.85	3.5 - 7.1
	P.A.	0.85 - 1.25	7.1 - 17.8
	A.	>1.25	>17.8
Tin	HBG	1.2 - 1.72	15.8 - 52.5
	P.A.	1.72 - 2.30	52.5 - 199.5
	A.	>2.3	>199.5
CxCopper	HBG	0.5 - 0.8	3.2 - 6.3
	P.A.	0.8 - 1.2	6.3 - 15.8
	A.	>1.2	>15.8
Lead (Full Range)	HBG	1.0 - 1.3	10 - 20
	P.A.	1.3 - 1.55	20 - 35.4
	A.	>1.55	>35.4

Ratio

Cu/Ni	HBG	3.0 - 8.5
	P.A.	8.5 - 14.0
	A.	14.0
Free Copper (CxCu + Cu) Cu	HBG	1.4 - 1.7
	P.A.	1.7 - 2.1
	A.	>2.1

7. INTERPRETATION

Access to this area has always proved difficult and previous stream sediment sampling has reflected this. Very few samples are available and they are restricted to the South-West corner, the upper reaches of the Toner River and occasional samples along the northern boundary.

Some above background values are present in each area and the results encourage further sampling during the next summer season.

7.1 Lead Plan TASH 917

The general background is extremely low but the possibly anomalous samples occur on Eighty Creek in the north on Toner River and on Rocky Creek in the south.

7.2 Lead with Selections Plan TASH 918

This plan increases the number of cut points in the 0 - 100 ppm range to provide greater sensitivity in the low ranges of the MAPLOT programme. It of course reflects the three lead anomalies but also indicates that many of the samples surrounding the anomalous values are at the higher end of the background range.

7.3 Zinc Plan TASH 919

Values are all extremely low with only one sample, coincident with the lead anomaly on Rocky Creek, showing any significant zinc content.

7.4 Copper Plan TASH 920

Values are very low and all fall below 18 ppm. Even the values from the Toner River area adjacent to known copper veining fall below what can be classed as high background values for the rest of the Rocky Cape Province.

7.5 Nickel Plan TASH 921

All values are below 16 ppm and are consistent with the lack of basic rocks in the sampled area.

7.6 Cobalt Plan TASH 922

The few available assays are all below background for the rest of the Province.

7.7 Arsenic Plan TASH 923

The few available assays are all below background for the rest of the Province.

7.8 Molybdenum Plan TASH 924

Samples in the south-west are uniformly low but the three samples in the Toner River area show values in the high background to possibly anomalous range.

7.9 Tin Plan TASH 925

Samples in the Toner River area again give values in the high background range which taken together with higher molybdenum values could indicate close proximity to an acid igneous source. Additional sampling is definitely required in this area.

7.10 Cold Extractable Copper Plan TASH 926

As expected by the low total copper values the cold extractable copper values are also relatively low. However, higher values do occur in the Toner River and Rocky Creek areas which strongly suggests a sulphide source for metals in these areas. Soluble copper values are very low in the Eighty Creek area in the north of the EL indicating a non - sulphide source in that area.

7.11 Copper Nickel Ratio Plan TASH 927

No significant values especially as nickel was not assayed in the relatively copper rich Toner River samples.

7.12 Free Copper Plan TASH 928

A ratio of $\frac{Cx_{Cu} + Cu}{Cu}$ which is suggested will enhance sulphide copper and depress copper held in silicate lattices. The higher values on Toner River and Rocky Creek are emphasised but some of the low values along the Interview River have also been enhanced indicating a possible sulphide source for the low copper values in this area.

016

8. LIST OF REFERENCES

Lavin, O.P. and Nichol, I. 1981. Q'Gas: A Mini Computer - Based System to Aid in the Interpretation of Exploration Oriented Geochemical Data. J.Chemical Exploration V.15 No.1-3 pp 521-539

Weir, D.J. 1982. Rocky Cape EL 1/77 Lead-Zinc Computer Study - Stream Sediments. Unpublished Report CRAE No.11586

9. KEYWORDS

Geochem-drainage, stream sediments, computer, statistical methods, regional geology, geophysics - mag.

10. LOCATION

Burnie SK55-3.

11. LIST OF PLANS

Interview - Pinnacle Area Photogeological Interpretation S.W.Carey TASH 931 .

Interview Pinnacles Area -

Stream Geochemistry - Lead TASH 917 .
 Lead with Selections TASH 918 .
 Zinc TASH 919 .
 Copper TASH 920 .
 Nickel TASH 921 .
 Cobalt TASH 922 .
 Arsenic TASH 923 .
 Molybdenum TASH 924 .
 Tin TASH 925 .

Cold Extractable Copper	TASh 926 ·
Cooper - Nickel Ratio	TASh 927 ·
Free Copper	TASh 928 ·

Interview Pinnacles Area RTZ Aeromagnetic Survey	TASh 929 ·
" " " Aeromagnetic Survey Mines Dept. 1982.	TASh 930 ·
" " Preliminary Helicopter borne Stream Sediment Sampling	TASh 932 ·

12. LIST OF APPENDICES

Appendix I	Geochemical Sample Ledger Samples 934338 - 934350 Lagoon River
Appendix II	Statistics for File NWTASSS

APPENDIX I

GEOCHEMICAL SAMPLE LEDGER

SAMPLES 934338 - 50 LAGOON RIVER

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name ROCKY CAPE EL1177 No. Sample numbers Collected by J. WEIR, G. BROADBENT Sheet no. 1
 Area / Prospect LAGOON AEROMAG ANOMALY Date 17/3/82
 Map / Photo reference SANDY CAPE / CONICAL ROCKS 1:100 000 TOPO SHEETS Analysed by ANALABS CODEG DPO no. 30078

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ni	Co	As	Sn	W		
934338	SS.								5	3	8	7	2	2	24	24		Lagoon R. In gravels etc Calc amphibolite?
934339	SS.								3	1	3	5	1	3	12	24		Lagoon R. etc Pyjama Siltstones.
934340	OC	g/s.							8	9	38	51	7	11	24	24		Above locality Pyjama Siltstone.
934341	SS								21	3	23	11	3	3	24	24		Lagoon R. Poor site.
934342	SS.								11	4	14	14	3	2	24	24		Lagoon R. Spill within Lagoon R. flood plain.
934343	f								4	3	3	103	3	3	24	24		Barren quartzite float.
934344	OC.	g/s.							5	5	17	59	8	4	24	24		Met. f. bedded Siltstone - Shale + 350/60E thin qtz Strgs. Cleavage 130°
934345	SS								16	4	15	11	3	3	24	24		Above locality - Poor site.
934346	SS								23	5	21	15	5	4	24	24		RN+ing Lagoon R. qtzite float.
934347	OC	g/s							6	1	9	19	5	8	24	24		Above locality Black finely laminated Shales.
934348	SS.								10	13	29	14	4	8	4	6		Interview R.
934349	OC	g/s.							23	28	35	73	9	22	24	24		Pyjama Siltstone Above locality.
934350	f.								5	7	53	35	15	2	24	24		Green chloritic Rock.

694020

* Sample type ss = stream sediment oc = outcrop f = float s = soil
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2
 *** Outcrop sample type ns = grab sample rc = rock chip (state interval & length) cs = channel sample (mtrm length)

APPENDIX II

STATISTICS FOR FILE NWTASSS

STATISTICS FOR FILE NWTASSS

Selection of histogram intervals was narrowed down to 0.1 and 0.05 log units by a process of trial and error. Any interval less than 0.05 log units tended to create a wide distribution interpreted as analytical reading errors rather than natural distribution.

1. Lead

Lead was considered the most important element within this study for two reasons:

- (a) Lead and zinc are the most suitable indicators in Canada for the discovery of Selwyn Basin type deposits.
- (b) Within the Tasmanian geochemical environment lead was considered to be the most insoluble element and therefore the most likely to give an identifiable dispersion train within a drainage system.

Two sets of histograms were produced, one treating the whole data, the other based on a selected portion of the data between 0-100 ppm to examine its distribution more closely as lead values greater than 100 ppm were considered to be greatly anomalous.

1.1 Total Distribution

Four significant populations are defined by the histogram under 2.1 log units (125.9 ppm) which account for over 2/3 of the samples analysed. A significant tailing off of values is apparent above 2.1 log units (125 ppm). Population cut offs have been defined as follows:

0.9, 1.3, 1.55, 2.1, 3.1, log units

Mean = 0.93

Standard deviation = 0.55

Mean + 1 SD = 1.48

Mean + 2 SD = 2.03

1.2 Lead Distribution with Selections of 0-100 ppm

Values of lead between 0 and 2.0 log units were selected. In this case, 6 cut offs were proposed as follows:

0.5, 0.8, 1.25, 1.6, 1.85, 2.0 log units

Mean = 0.86

Standard deviation = 0.45

Mean + 1 SD = 1.31

Mean + 2 SD = 1.76

This set of statistics was considered to be more accurate and was used for later interpretation in preference to those outlined to section 1.1

2. Zinc

The zinc distribution is quite complex under 2.7 log units (500ppm) and could be interpreted either as one single population or as four overlapping ones. The latter interpretation is preferred. Although several extra populations could be defined below 1.55 log units (35 ppm), these were considered to be insignificant.

Population cut offs were selected as follows:

1.55, 1.75, 2.1, 2.7 log units

Mean = 1.46

Standard Deviation = 0.61

Mean + 1 SD = 2.07

Mean + 2 SD = 2.68

3. Copper

Copper exhibits a relatively simple distribution with six populations evident at the following cut offs:

0.5, 0.95, 1.25, 1.60, 2.05 log units

Mean = 0.95

Standard deviation = 0.45

Mean + 1 SD = 1.40

Mean + 2 SD = 1.85

4. Nickel

Nickel is quite complex with a number of overlapping populations between 1.0 and 2.5 log units (10 - 316 ppm) at a histogram interval of 0.1 log units. Selections were based on an interval of 0.05 log units.

Population selections were made as follows:

1.2, 1.55, 1.75, 2.0, 2.35, 2.8 log units

Although 2 well defined populations exist below 1.0 log units, these were considered too low to be of significance and probably fall into the areas of detection limit.

Mean = 1.13

Standard deviation = 0.61

Mean + 1 SD = 1.74

Mean + 2 SD = 2.35

5. Cobalt

Cobalt exhibits a simple distribution with population cut points selected as follows:

0.9, 1.25, 1.6, 1.8, 2.1, 2.6 log units

Mean = 0.85

Standard deviation = 0.51

Mean + 1 SD = 1.36

Mean + 2 SD = 1.87

6. Arsenic

Arsenic has a poorly defined distribution between 1.3 and 2.6 log units (20-400 ppm) and is very difficult to subdivide. Since over 2/3 of the data fall under 0.8 log units (6.3 ppm) one can only assume that this represents a single population.

Cut offs have been defined as follows:

0.8, 1.20, 2.6, 3.1 log units

Mean = 0.55

Standard deviation = 0.37

Mean + 1 SD = 0.92

Mean + 2 SD = 1.29

7. Molybdenum

Molybdenum shows a wide distribution with the majority of samples below 0.2 log units (1.6 ppm). Population cut offs have been selected as follows:

0.25, 0.55, 0.85, 1.25, 1.55 log units

Mean = 0.21

Standard deviation = 0.21

Mean + 1 SD = 0.42

Mean + 2 SD = 0.63

8. Tin

Tin has a wide distribution with no well defined population breaks between 1.2 - 2.5 log units. This can be interpreted as either a single population or one composed of many smaller populations. The latter interpretation is preferred and cut offs are as follows:

0.7, 1.2, 1.72, 2.3, 2.7 log units

Mean = 0.98

Standard deviation = 0.86

Mean + 1 SD = 1.84

Mean + 2 SD = 2.70

9. CxCu

Cold extraction copper exhibits a wide distribution with poorly defined populations between 0.6 - 2.0 log units. Cut points between populations have been defined as follows:

0.1, 0.5, 0.8, 1.2 log units

Mean = 0.18

Standard deviation = 0.30

Mean + 1 SD = 0.48

Mean + 2 SD = 0.78

10. Copper/Nickel Ratio

This variable was chosen to try to distinguish basic rocks from the remainder and was obtained by simple transformation of the data. A reasonable distribution was obtained and cut offs selected as follows:

3.0, 5.0, 8.5, 14.0, 20.5, 30.0, log units

Mean = 1.41

Standard deviation = 2.56

Mean + 1 SD = 3.86

Mean + 2 SD = 6.31

11. Free Copper, FCU

Free copper was calculated by the formula -

$$FCU = \frac{CxCu + Cu}{Cu}$$

- to enhance any copper anomalies. It reflects the amount of copper absorbed on to clay particles rather than copper held in mineral lattices.

Cut points were chosen at the following intervals:

1.4, 1.7, 2.1 log units

Mean = 1.24

Standard deviation = 0.23

Mean + 1 SD = 1.47

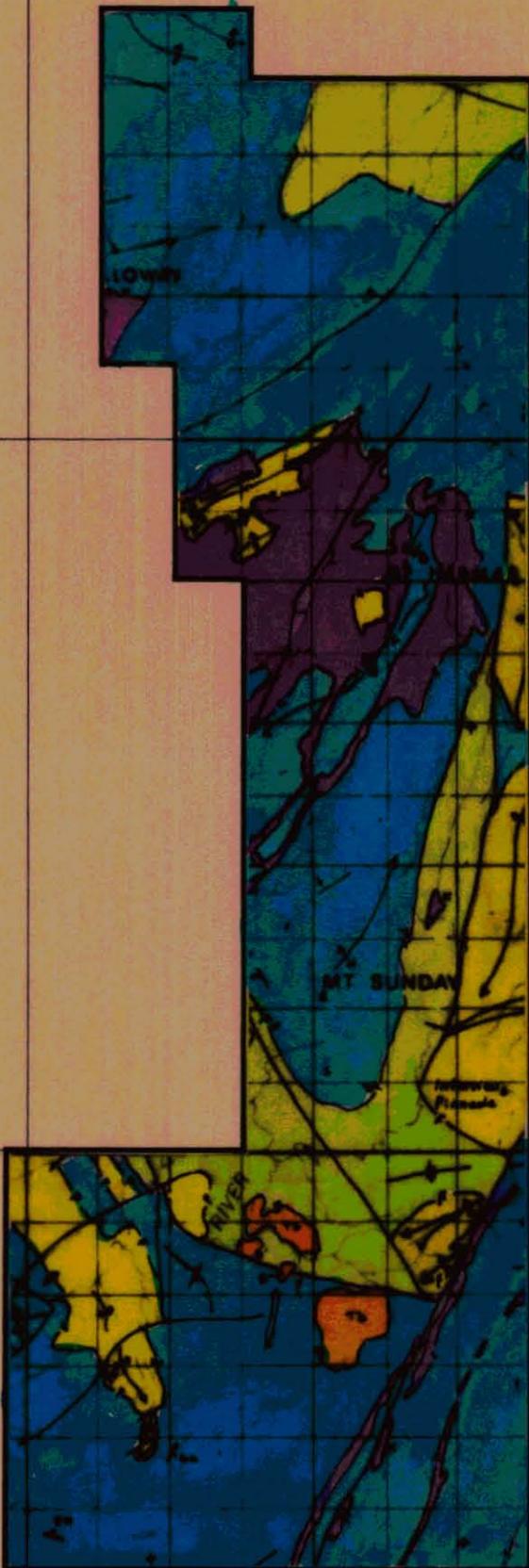
Mean + 2 SD = 1.70

626

330 000 mE

340 000 mE

694027



5 410 000 mN

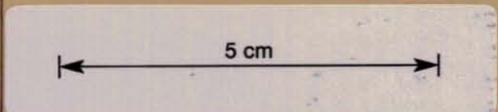
SEDIMENTS

- Precambrian
- Sigma Group..... [white box]
- Phi Group..... [light green box]
- Epsilon Group..... [blue box]
- Alpha Group..... [yellow box]

IGNEOUS ROCKS

- Tertiary
- Basalt..... [orange box]
- Eocambrian ?
- Kappa Group..... [purple box]

5 400 000 mN



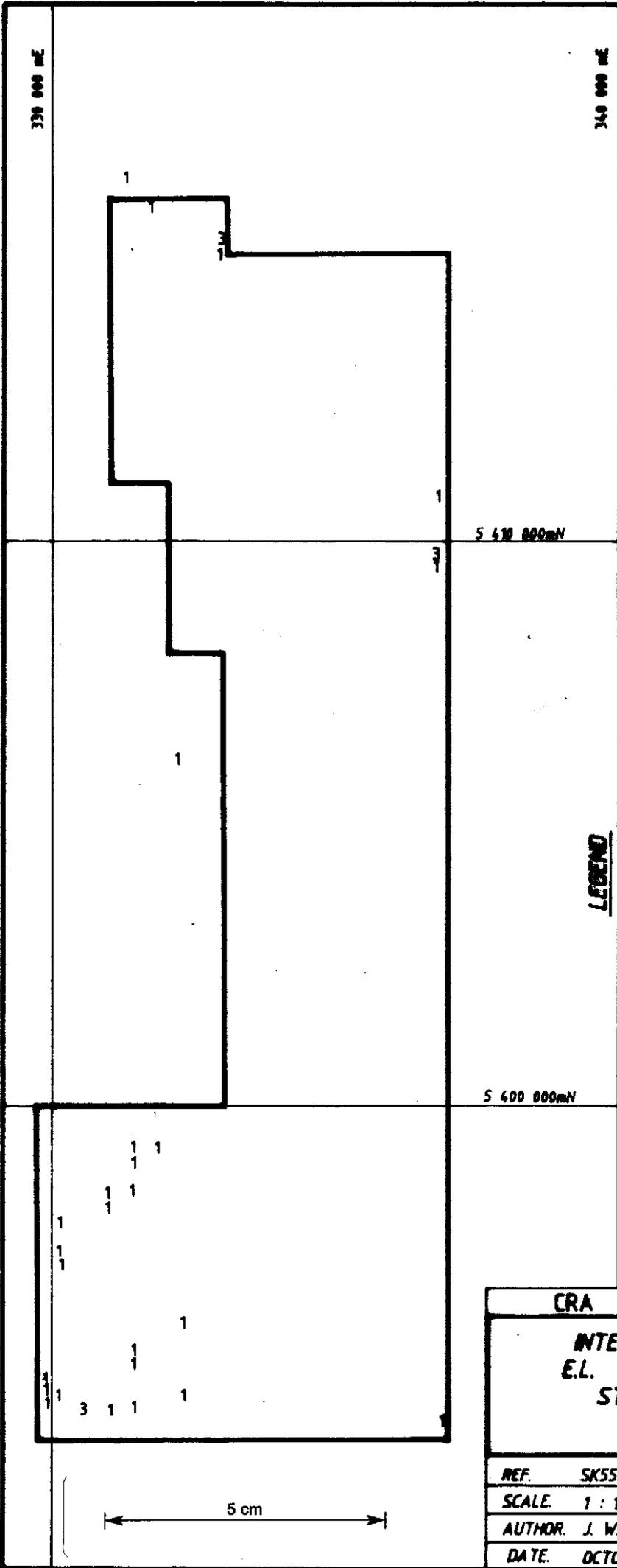
CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA

PHOTOGEOLOGICAL INTERPRETATION
S. W. CAREY.

REF.	SK55 - 5	DRAWN.	R. T.
SCALE.	1 : 100 000	REPORT N°.	11730
AUTHOR.	J. W.	TASH N°.	931
DATE.	OCTOBER 1982		

027



694028

LEGEND

SYMBOL MAP FOR:		LEAD (ppm)		JULY 1982	
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY		
BELOW 0.1	0.1	-	0		
0.1	10	1	2213		
10	20	2	404		
20	36	3	363		
36	126	4	296		
126	1000	5	102		
1000	100 000	6	12		
ABOVE	100 000	7	0		

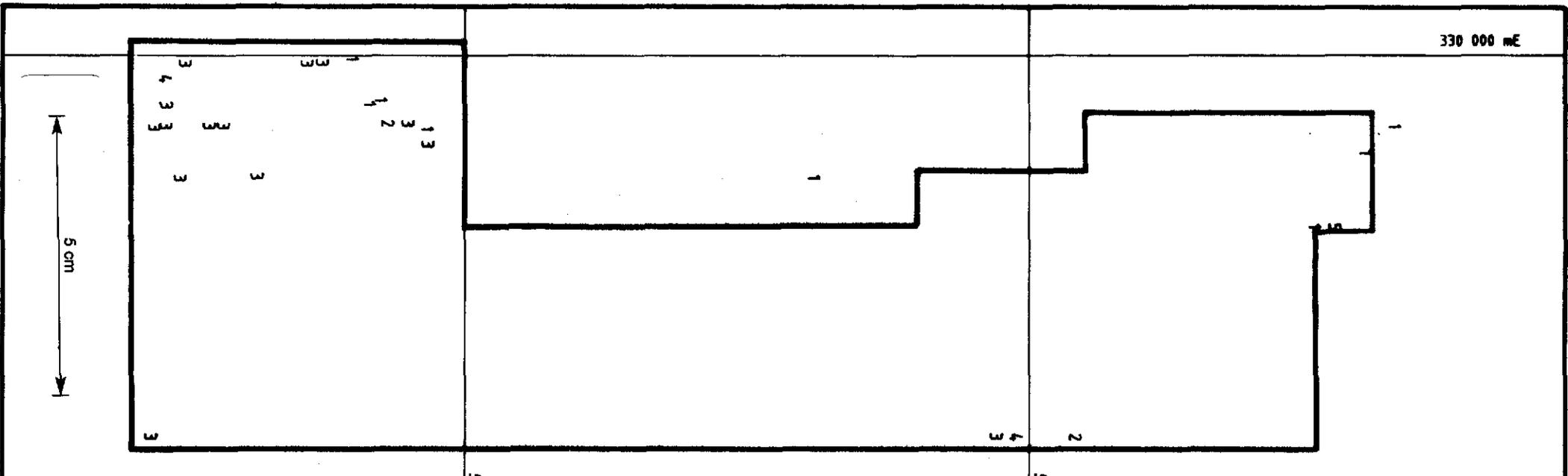
VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:
 WIDTH = .1 INCHES OR 254 mm
 HEIGHT = .167 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED

**INTERVIEW PINNACLE AREA
 E.L. 36/80 WEST TASMANIA
 STREAM GEOCHEMISTRY
 LEAD**

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT NO. 11730
AUTHOR. J. W.	TASH NO. 917
DATE. OCTOBER 1982	



LEGEND

SYMBOL MAP FOR: LEAD with SELECTIONS (ppm) JULY 1982

LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY
BELOW	1	-	22
1	3	1	1269
3	6	2	307
6	18	3	989
18	28	4	370
28	40	5	89
40	71	6	198
71	100	7	73
ABOVE	100	+	133

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:
 WIDTH = 1 INCHES OR 254mm
 HEIGHT = 167 INCHES OR 423mm

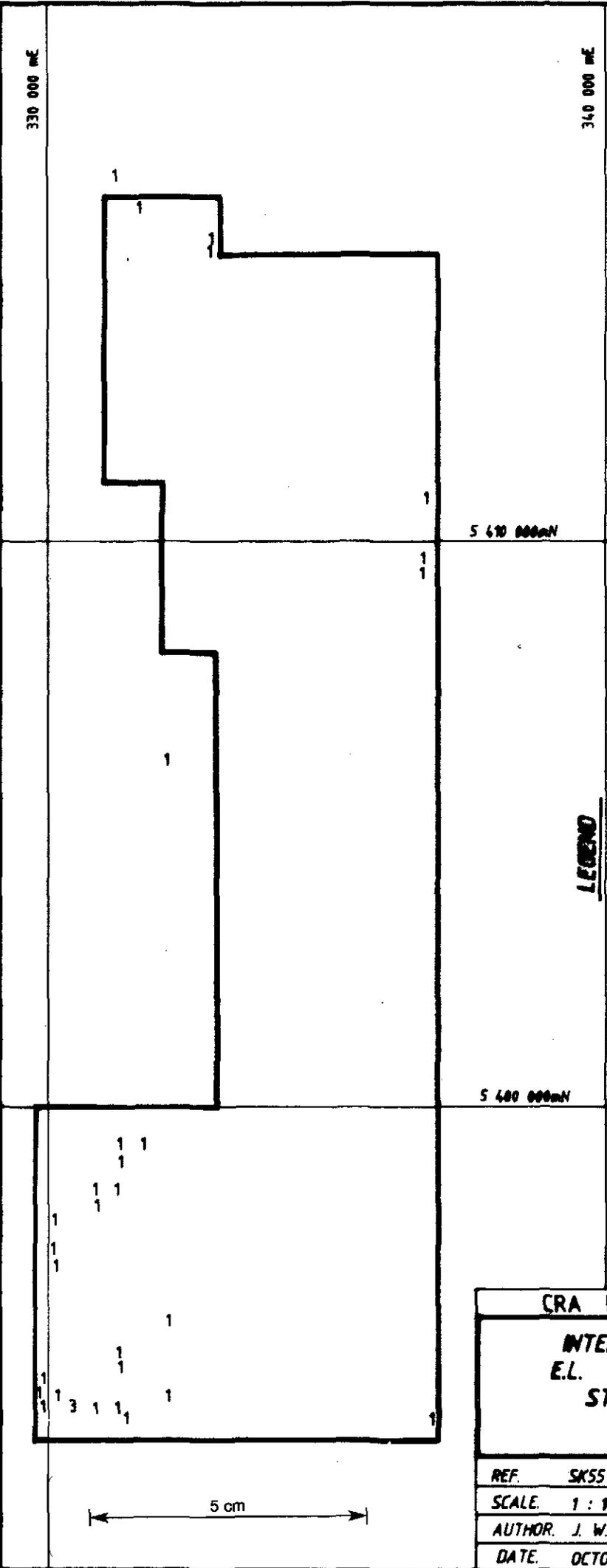
694029

CRA EXPLORATION PTY. LIMITED
 INTERVIEW PINNACLE AREA
 E.L. 36/00 WEST TASMANIA
 STREAM GEOCHEMISTRY
 LEAD with SELECTIONS

REF. SKSS - 5	DRAWN. R. T.
SCALE. 1 : 800 000	REPORT N°. TT230
AUTHOR. J. W.	TASH N°. 978
DATE. OCTOBER 1982	

029

694030



LEGEND

SYMBOL MAP FOR:		ZINC (ppm)	JULY 1982
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY
BELOW			
0.1	36	1	1937
36	56	2	394
56	126	3	641
126	501	4	337
510	100 000	5	76
ABOVE	100 000	*	0

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER :

WIDTH = .1 INCHES OR 264 mm

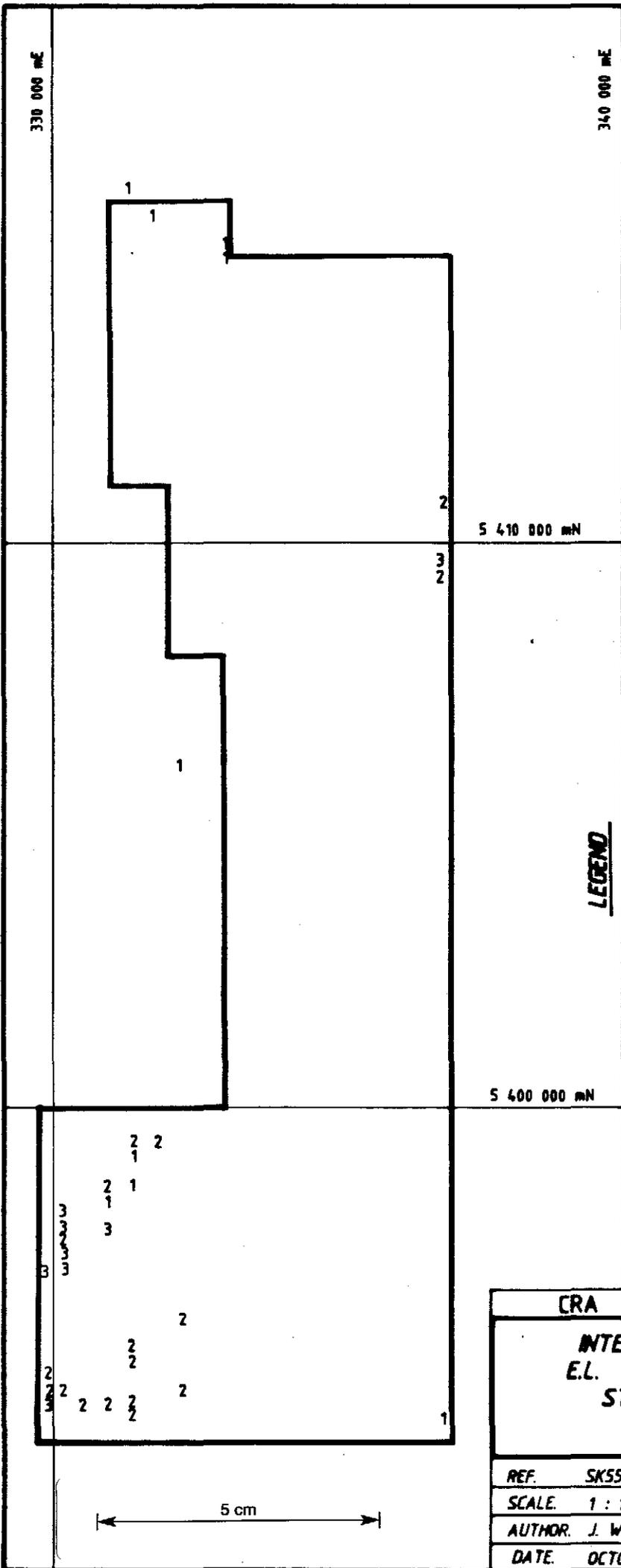
HEIGHT = .07 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/00 WEST TASMANIA
STREAM GEOCHEMISTRY
ZINC

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASH N°. 919
DATE. OCTOBER 1982	

030



694031

LEGEND

SYMBOL	MAP FOR:	COPPER (ppm)	JULY 1982
0	LOWER BOUND BELOW	0.1	FREQUENCY
1	0.1	3	0
2	3	9	754
3	9	18	992
4	18	48	143
5	48	172	535
6	172	10,000	326
7	ABOVE	10,000	91
8			0

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:
 WIDTH = .1 INCHES OR .254 mm
 HEIGHT = .187 INCHES OR 4.73 mm

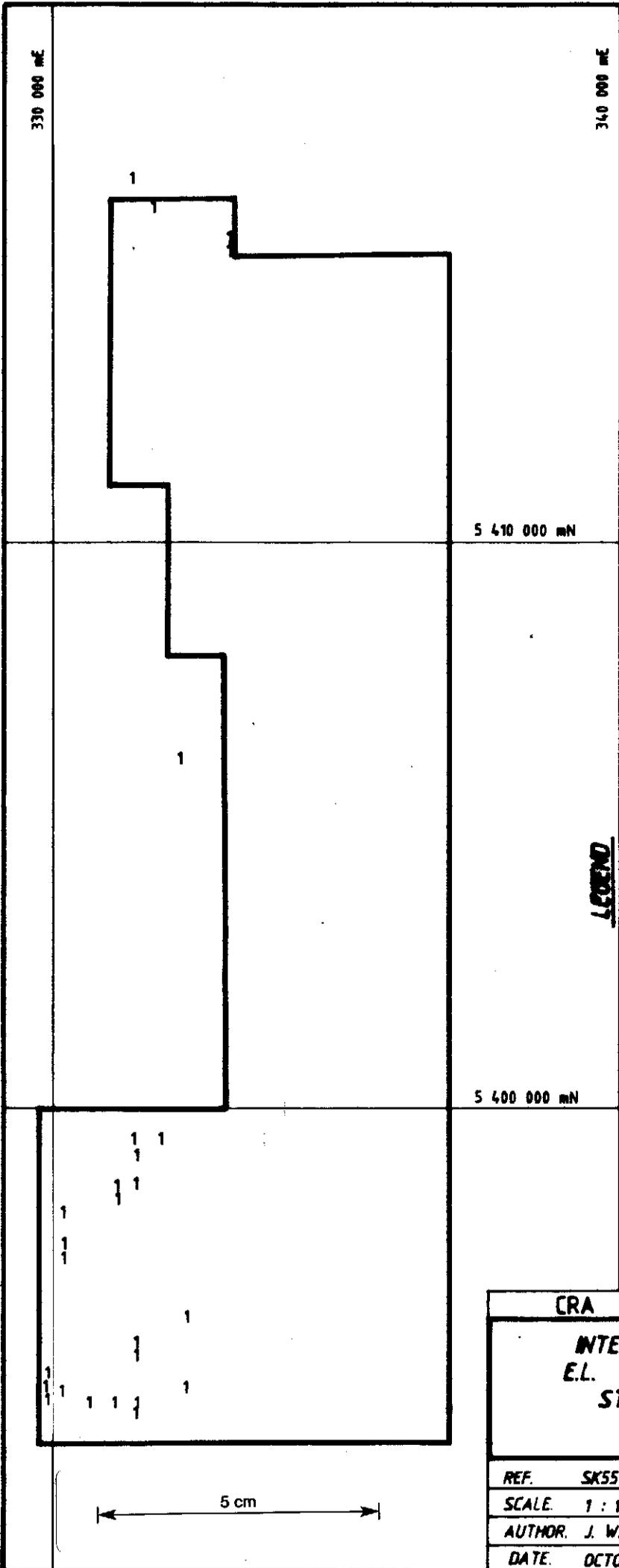
CRA EXPLORATION PTY. LIMITED

**INTERVIEW PINNACLE AREA
 E.L. 36/80 WEST TASMANIA
 STREAM GEOCHEMISTRY
 COPPER**

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASh N°. 920
DATE. OCTOBER 1982	

5 cm

81



694032

LEGEND

SYMBOL MAP FOR:		NICKEL (ppm)		JULY 1982	
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY		
BELOW			5		
1	16	1	1009		
16	36	2	457		
36	56	3	272		
56	100	4	278		
100	224	5	201		
224	631	6	49		
ABOVE	631	.	0		

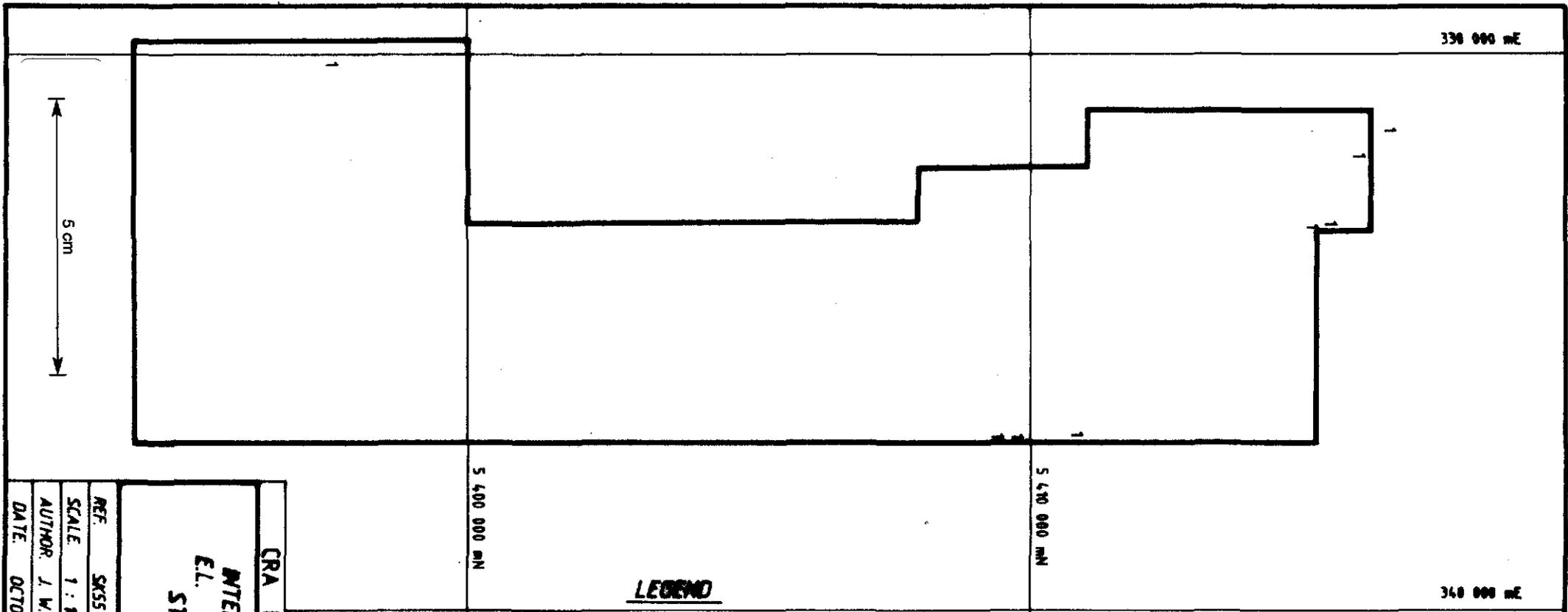
VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:

WIDTH = .1 INCHES OR 264 mm

HEIGHT = .287 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED			
INTERVIEW PINNACLE AREA E.L. 36/80 WEST TASMANIA STREAM GEOCHEMISTRY NICKEL			
REF.	SK55 - 5	DRAWN.	R. T.
SCALE.	1 : 100 000	REPORT N°.	11730
AUTHOR.	J. W.	TASH N°.	921
DATE.	OCTOBER 1982		



LEGEND

SYMBOL MAP FOR:		COBALT (ppm)		JULY 1982	
LOWER BOUND BELOW	UPPER BOUND	SYMBOL	FREQUENCY		
1	8	1	1376		
8	18	2	278		
18	40	3	318		
40	63	4	196		
63	126	5	101		
126	398	6	13		
ABOVE	398	+	0		

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER :

WIDTH = .1 INCHES OR 254 mm

HEIGHT = .167 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA

E.L. 36/00 WEST TASMANIA

STREAM GEOCHEMISTRY

COBALT

REF. SK55 - 5

SCALE 1 : 800 000

AUTHOR J. W.

DATE OCTOBER 1982

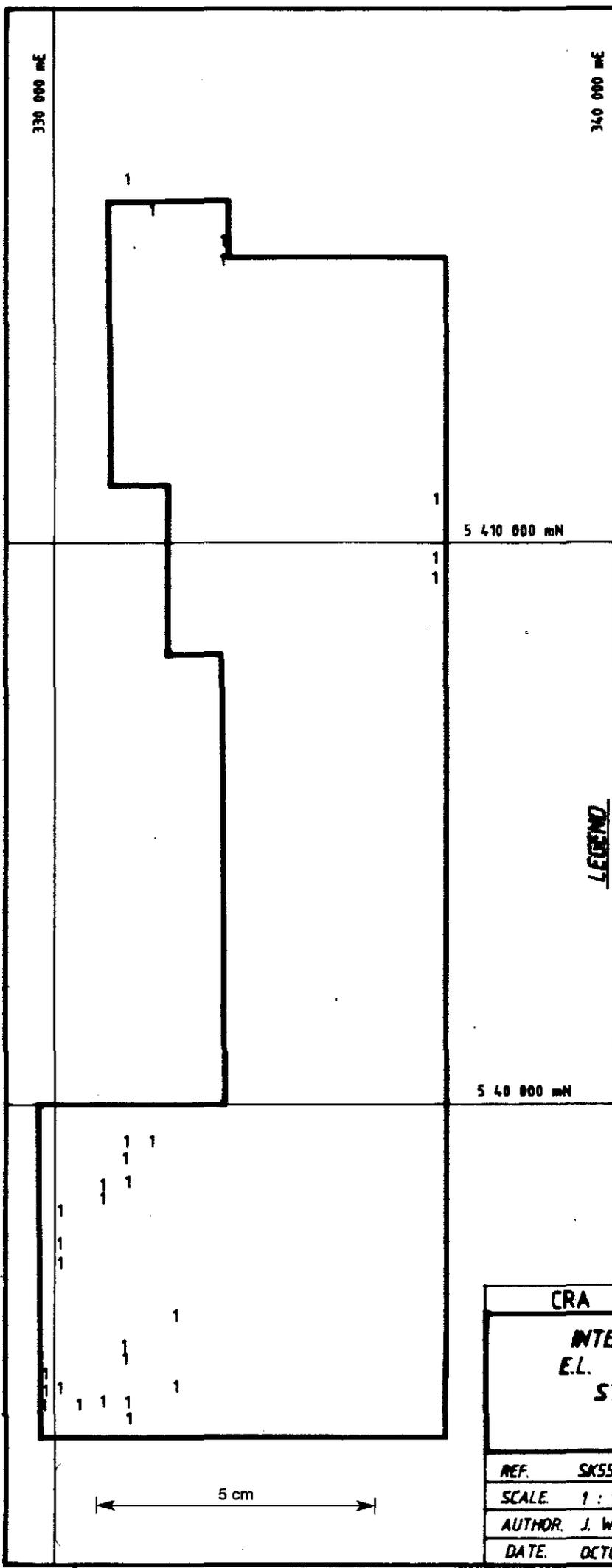
DRAWN R. T.

REPORT NO. 17730

TASH NO. 922

694033

693



694034

LEGEND

SYMBOL MAP FOR:		ARSENIC (ppm)	JULY 1982
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY
BELOW			
1	6	1	2454
6	16	2	124
16	398	3	158
398	1259	4	6
1259	5012	5	1
ABOVE	5012	+	0

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:
 WIDTH = .1 INCHES OR 254 mm
 HEIGHT = .167 INCHES OR 423 mm

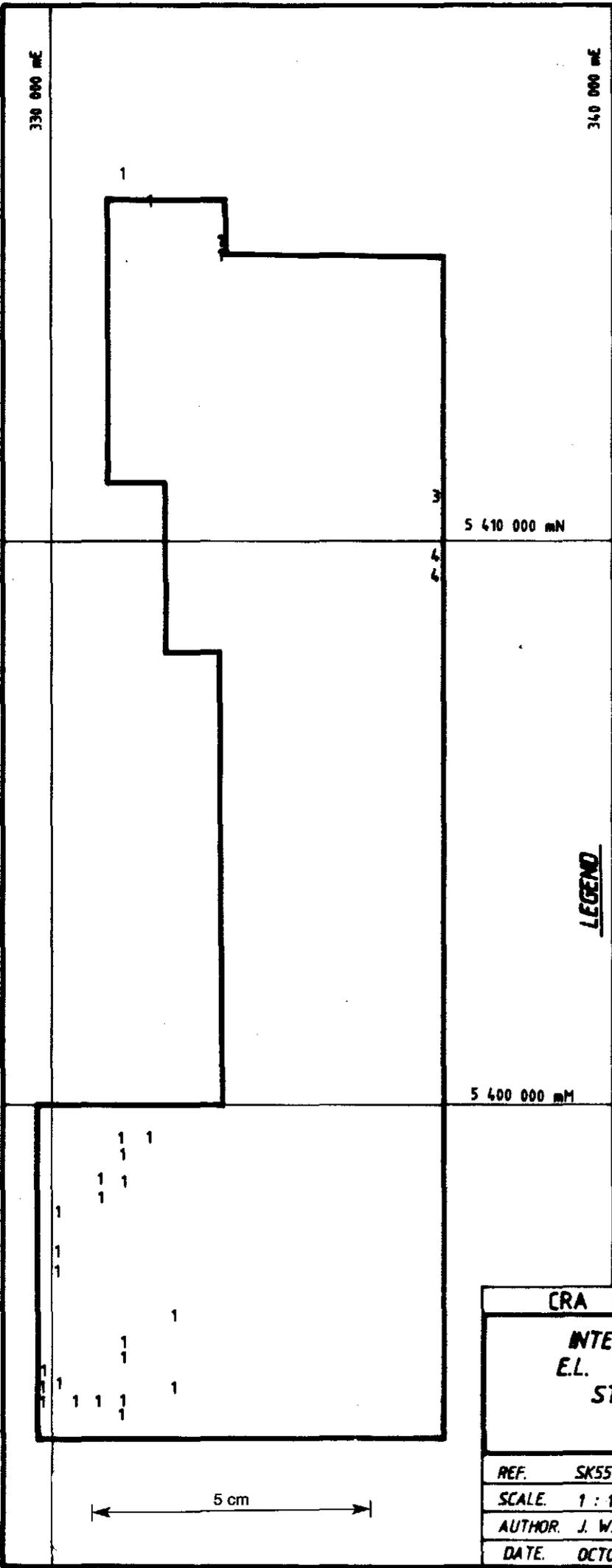
CRA EXPLORATION PTY. LIMITED

**INTERVIEW PINNACLE AREA
 E.L. 36/80 WEST TASMANIA
 STREAM GEOCHEMISTRY
 ARSENIC**

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASH N°. 923
DATE. OCTOBER 1982	

034

694035



LEGEND

SYMBOL	MAP FOR:	MOLYBDENUM (ppm)	SYMBOL	FREQUENCY	JULY 1982
-	LOWER BOUND BELOW	1	-	179	
1	2	2	1	2290	
2	4	4	2	41	
4	7	7	3	44	
7	10	10	4	30	
10	36	36	5	19	
36	126	126	6	20	
ABOVE	126	126	.	0	

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER :

WIDTH = .1 INCHES OR 254 mm

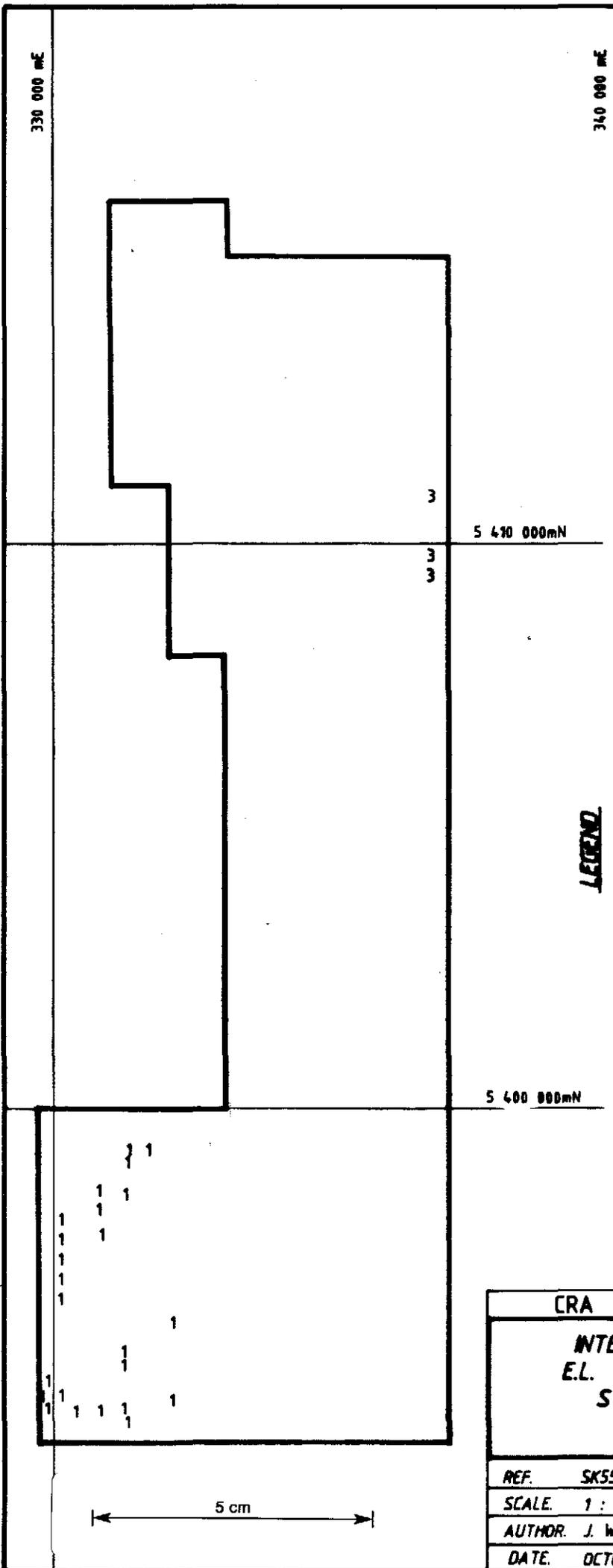
HEIGHT = .17 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
STREAM GEOCHEMISTRY
MOLYBDENUM

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASH N°. 924
DATE. OCTOBER 1982	

445



694036

LEGEND

SYMBOL MAP FOR:		TIN (ppm)	JULY 1982
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY
BELOW	0.1	-	1
0.1	5	1	1379
5	16	2	185
16	53	3	186
53	200	4	215
200	501	5	117
501	31623	6	68
ABOVE	31623	+	0

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER :

WIDTH = .1 INCHES OR 264 mm

HEIGHT = .167 INCHES OR 423 mm

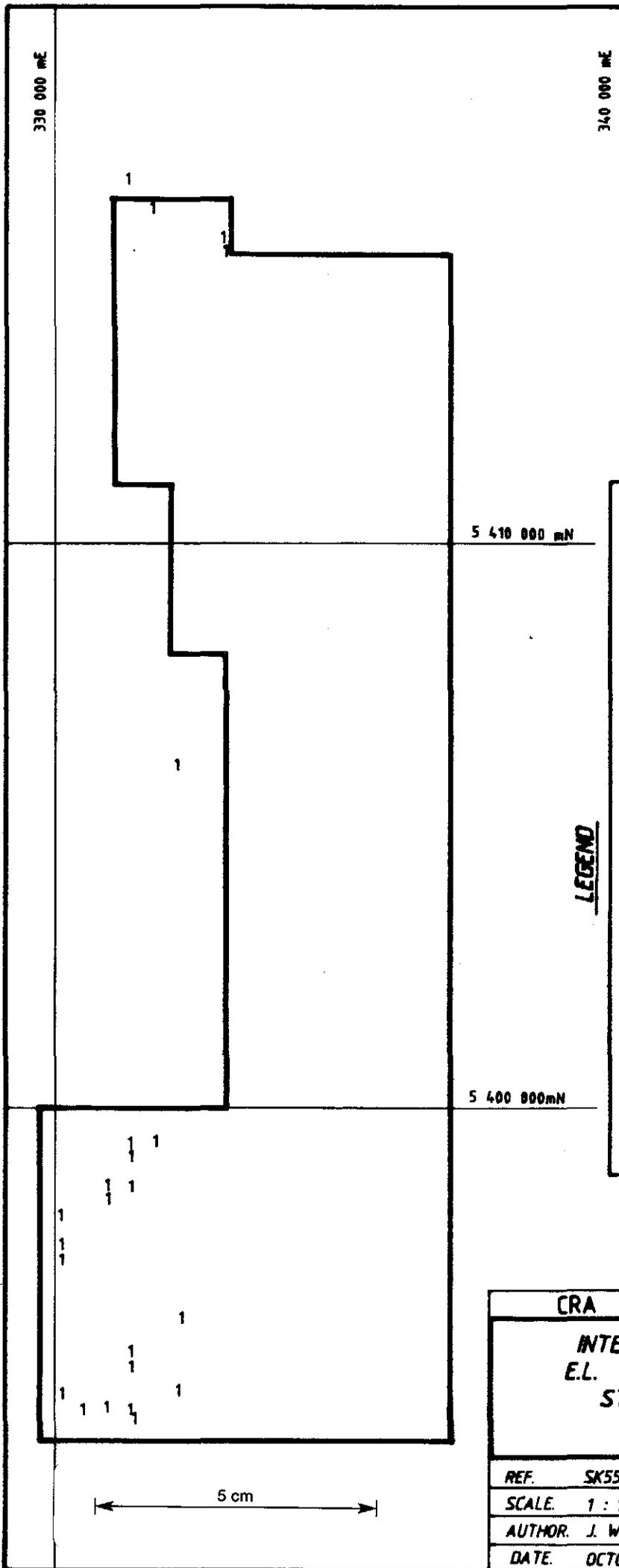
CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
STREAM GEOCHEMISTRY

TIN

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASH N°. 925
DATE. OCTOBER 1982	

037



694038

LEGEND

SYMBOL MAP FOR:		COPPER / NICKEL (µg/g)	SYMBOL	FREQUENCY	JULY 1982
LOWER BOUND	UPPER BOUND				
BELOW	0.0	1	2757	0	
0.0	3.0	2	157		
3.0	5.0	3	82		
5.0	8.5	4	39		
8.5	14.0	5	20		
14.0	20.5	6	13		
20.5	30.0	7	12		
30.0	1000.0	*	0		
ABOVE	1000.0				

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER:

WIDTH = .1 INCHES OR 264 mm

HEIGHT = .07 INCHES OR 423 mm

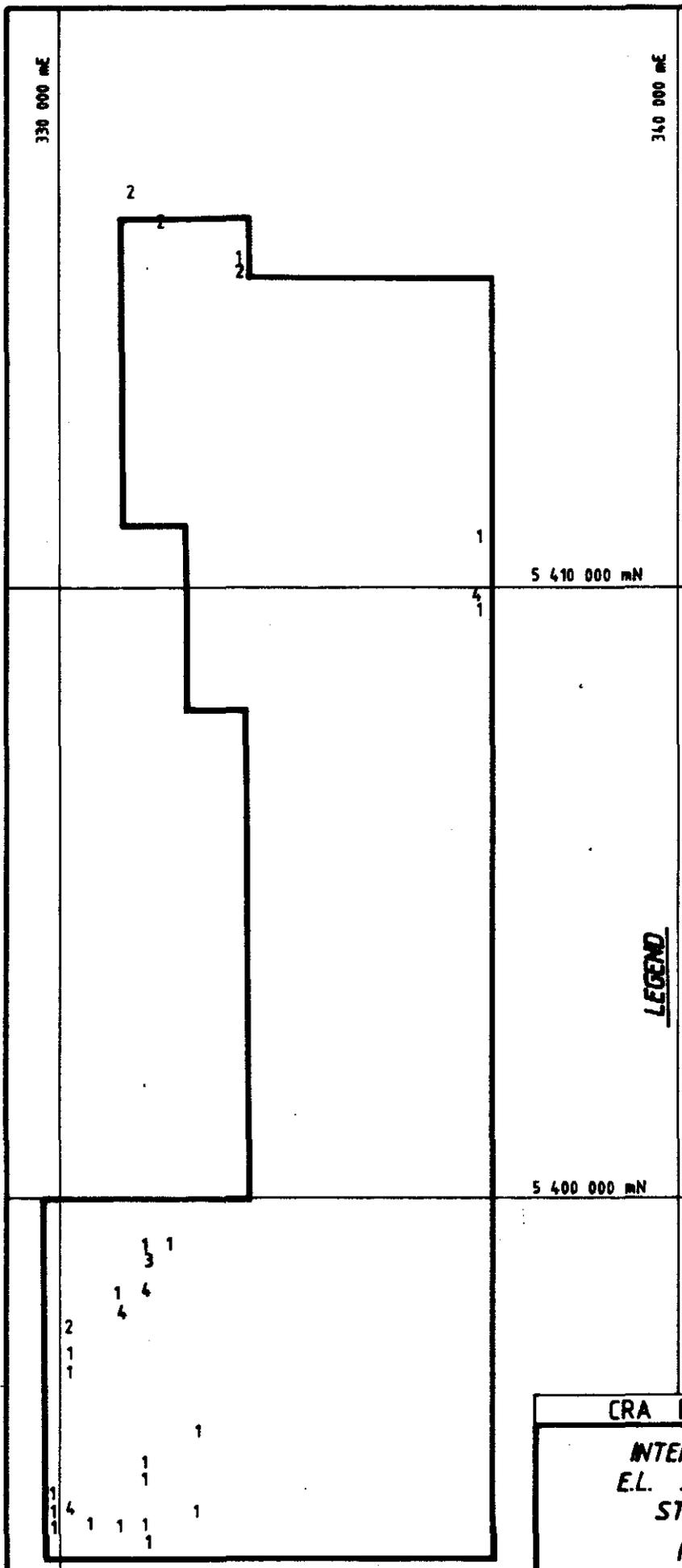
CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
STREAM GEOCHEMISTRY
COPPER / NICKEL

REF. SK55 - 5	DRAWN. R. T.
SCALE. 1 : 100 000	REPORT N°. 11730
AUTHOR. J. W.	TASH N°. 927
DATE. OCTOBER 1982	

038

694039



LEGEND

SYMBOL MAP FOR:		FREE COPPER (ppm)	JULY 1982
LOWER BOUND	UPPER BOUND	SYMBOL	FREQUENCY
BELOW	0.0	-	0
0.0	1.4	1	285
1.4	1.7	2	306
1.7	2.1	3	90
2.1	17.0	4	9
ABOVE	17.0	*	0

VALUES THAT FALL ON A CLASS BOUND ARE ASSIGNED TO THE LOWER CLASS

PLOT ERROR FOR EACH PLOT CHARACTER :

WIDTH = .1 INCHES OR 254 mm

HEIGHT = .187 INCHES OR 423 mm

CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
STREAM GEOCHEMISTRY
FREE COPPER

REF.	SK55 - 5	DRAWN.	R. T.
SCALE.	1 : 100 000	REPORT N°.	11730
AUTHOR.	J. W.	TASH N°.	928
DATE.	OCTOBER 1982		

330 000 mE

340 000 mE

694040



5 410 000 mN



5 400 000 mN

CRA EXPLORATION PTY. LIMITED

**INTERVIEW PINNACLE AREA
 E.L. 36/80 WEST TASMANIA
 R.T.Z. AEROMAGNETIC SURVEY
 1956**

REF. SK55 - 5

SCALE. 1 : 100 000

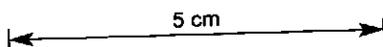
DRAWN. R. T.

AUTHOR. J. W.

REPORT N°. 11730

DATE. OCTOBER 1982

TASH N°. 929



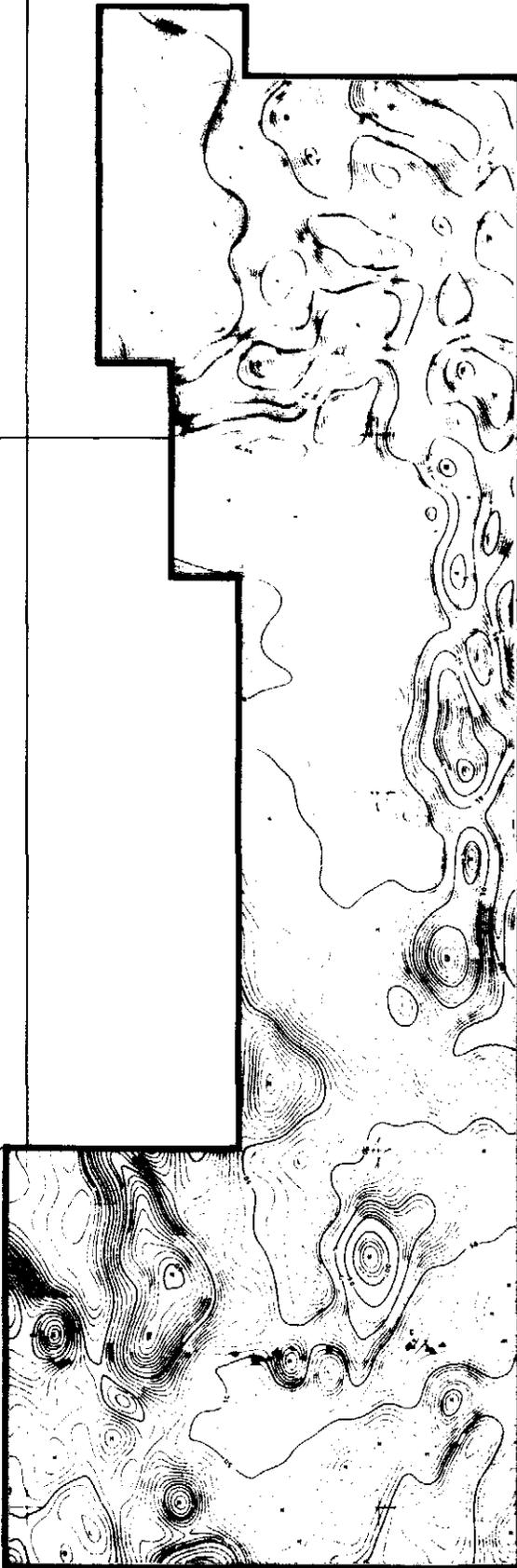
694041

330 000 mE

340 000 mE

5 410 000 mN

5 400 000 mN



CRA EXPLORATION PTY. LIMITED

INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
MINES DEPARTMENT
AEROMAGNETIC SURVEY 1982

REF. SK55 - 5

SCALE. 1 : 100 000

AUTHOR. J. W.

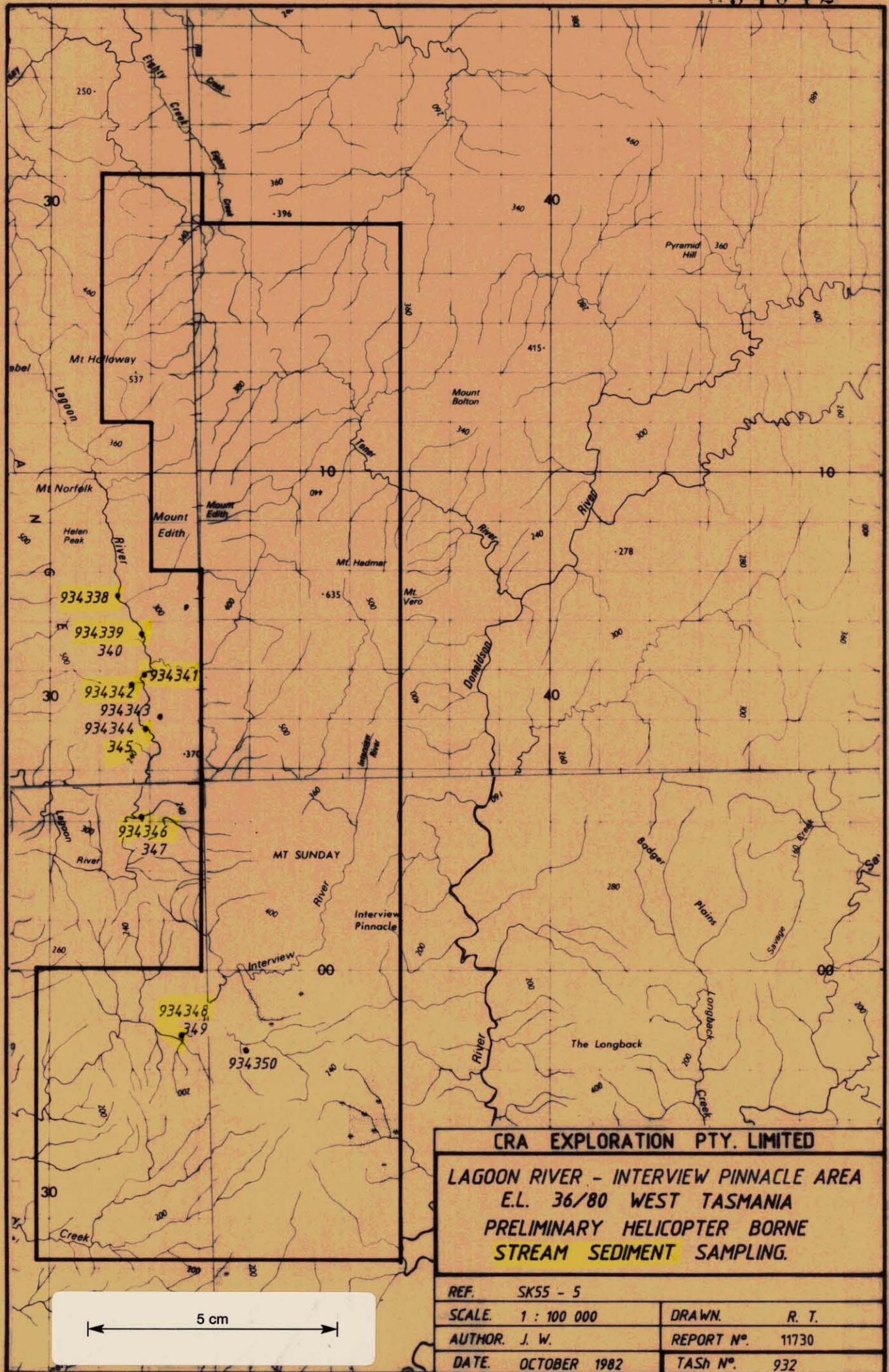
DATE. OCTOBER 1982

DRAWN. R. T.

REPORT N°. 11730

TASH N°. 930

5 cm



CRA EXPLORATION PTY. LIMITED
LAGOON RIVER - INTERVIEW PINNACLE AREA
E.L. 36/80 WEST TASMANIA
PRELIMINARY HELICOPTER BORNE
STREAM SEDIMENT SAMPLING.

REF.	SK55 - 5	DRAWN.	R. T.
SCALE.	1 : 100 000	REPORT N ^o .	11730
AUTHOR.	J. W.	TASH N ^o .	932
DATE.	OCTOBER 1982		

