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COMSTAFF PROPRIETARY LIMITED

E.L. 19/68 - ST. VALENTINE'S PEAK AREA

REPORT ON A FOLLOW-UP PROGRAMME TO INVESTIGATE STREAM SEDIMENT ANOMALIES 1969 - 1970

AMG REFERENCE POINT ADDED

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REPORT ON A FOLLOW-UP PROGRAMME TO INVESTIGATE STREAM SEDIMENT ANOMALIES 1969-70

1. INTRODUCTION

The area covered by this report is typical of north-western Tasmania, with one notable exception. There is a network of good gravel roads as a result of the timber activities of Associated Forest Holdings Pty. Ltd., and access within the area is therefore much better than is usual.

In 1968 hand specimens of massive galena were brought to the Waratah Office by a local prospector. He stated that these came from the St. Valentine's Peak area (Plan 2A-23), but declined to be more specific. Accordingly EL 19/68 was applied for, and a regional geochemical stream sediment programme was run to cover this area during the 1968-69 summer field season. Pike (1964) had mapped the area as part of a B.Sc. (Honours) thesis, and direct geological investigation was restricted to a few traverses to check that Pike's map provided a suitable basis for the investigation.

The results obtained from the stream sediment programme indicated several areas which warranted follow-up work, and to achieve this a programme of detailed geological mapping and soil sampling along cut lines was initiated toward the end of the 1969-70 summer season. Initially the objective was to test the western granite/sediment contact as anomalies here were comparable with or better than those on the eastern contact, and access was much better. The programme was not completed until well into the 1970 winter season, and this report has been further delayed by the late return of analytical data.

2. THE 1969-70 WORK PROGRAMME

The work carried out involved the cutting and soil sampling of two grids (Plan 2A-22), and of geological mapping both along the cut lines and on road traverses.

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Whenever possible 1968-69 stream sample sites were located and the drainages tied in to the grids, thus ensuring that the anomalous areas were sampled, and producing a more accurate map of the drainage.

It was found that previous work in the area had produced information regarding both the geology and drainage that was in basic agreement with the results of this programme, although some deviation in detail was recorded.

2.1. Valentine's Peak North (Plan 2A-22, 2A-23)

The cutting of a base-line was avoided by pegging and surveying the main Associated Pulp and Paper Mills (A.P.P.M.) Road, and using this for that purpose. The grid consisted of 10 lines at 1,000 ft. intervals. Eight lines were 2,500 ft. long and two were 3,500 ft. long. One line 1,000 ft. long, and occupying an intermediate position (line 65S) was also cut. All lines were orientated east-west (magnetic). The drainage in this area was anomalous for Cu, Zn, and Sn, with some minor areas that were also possibly anomalous for Pb. In view of the poor mobility of Sn, Ao soil horizon samples were collected at 50 ft. intervals along each line, and these were analysed, for the most part, for Cu, Zn, and Sn. Samples collected from lines 60S, 65S and 70S, west of the A.P.P.M. road, were also analysed for Pb, as the drainage here was anomalous for this metal.

Subsequently auger samples from the lower B/upper C horizon were collected from selected lines for experimental orientation work.

Each cut line was geologically mapped in as much detail as the sometimes rather limited outcrop allowed, and the A.P.P.M. road, Ringwood Road and Companion Road were traversed within the grid area.

Statistical Summary:	Lines cut	28,000 ft.
	Samples collected	
	Ao	560
	B/C	165
	Geological traverses	
	cut line	28,000 ft.
	Roads	18,350 ft.

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2.2. St. Valentine's Peak South (Plans 2A-22, 2A-24)

This area was anomalous for Pb and Sn in the north, and for Pb in the south, with minor scattered anomalies for both Cu and Zn throughout. As in the northern grid the A.P.P.M. Road was pegged, surveyed and used as a base-line. The grid consisted of 7 cut lines varying in length from 2,500 ft to 5,500 ft, each being orientated at 120 (magnetic) and at 1,000 ft. intervals. Ao soil horizon samples were collected at 100 ft intervals along each line, and were analysed for Ag, Cu, Pb, Zn and Sn.

Detailed geological mapping was carried out along each line, and all roads within the grid area, except the 29 mile Road, were also traversed.

Statistical summary:	lines cut	31,500 ft.
	Ao samples collected	320
	Geological traverses	
	- cut lines	31,500 ft.
	- roads	16,000 ft.

3. GEOLOGY (Plans 2A-24, 2A-25)

The St. Valentine's Peak area as a whole is an inlier of Cambrian rocks, bounded to the north and south by Tertiary basalt, and to the east and west by the basal Ordovician Owen Conglomerate, of which were formed both St. Valentine's Peak and Companion Hill. Structurally the area is an anticline striking about NNE-SSW and Pike's work beyond the area of the northern grid suggests that the outcrop of the Cambrian closes northward and thus that the anticline plunges to the north.

In the northern part of the area the axial region of the fold is occupied by the (?) Devonian Hampshire Granite, which is presumably also present at depth to the south. The emplacement of this granitic body has resulted in the metamorphism of the surrounding sediments, which are now often represented by hornfels. The intrusion of the granite was also accompanied by an influx of boron, fluorine and other mobile elements, with the result that tourmalinisation is fairly common.

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Where metamorphism is of a sufficiently low grade for the original rock type still to be recognizable, the Cambrian sediments consist for the most part of calcareous and argillaceous siltstones, with tuffs and tuffaceous sediments becoming more important toward the south. Minor black chert beds are also seen.

Igneous activity of lesser magnitude than the granite emplacement is represented by a (?) dyke-like quartz-porphyry striking almost coincident with the axial trend of the anticline, whilst Pike has also recorded the presence of Cambrian lavas, which were not observed by this author.

3.1. The Geology of the Northern Grid Area (Plan 2A-25)

The St. Valentine's Peak North area lies on the northern part of the western limb of the anticline, and extends across the western granite/sediment contact. The northern-most line (00) is still within the granite, but the southern-most line (90S) is some 800 ft. south of the edge of the granite outcrop.

Outcrop was rather limited, but sufficient to produce a reasonably accurate map, and in most cases it was possible to fix the positions of junctions and contacts within a few feet or tens of feet. This was particularly so with the granite, which develops a distinctive grey sandy soil type that was a marked aid to mapping.

The Cambrian sediments here form a strip running roughly north-south and varying in width from 700 ft. to 1,500 ft. They extend from Line 00 in the north to about halfway between Lines 40S and 50S in the south - a "strike" length of 4,500 ft. Dips vary from 30^{o} - 48^{o} and are to the west.

The dominant rock type is laminated siltstone, which varies in colour from off-white through grey to a rich orange-brown, the latter in part perhaps being a result of weathering and oxidation. In addition to the lamination, these rocks are also banded, with lamination and colour banding often being coincident. The siltstones are more or less impure, and generally

consist of well-sorted angular to sub-angular fine quartz grains in a dirty matrix of calcite and (?) clay minerals. In places the calcareous content becomes sufficiently high for the rock to effervesce when tested with dilute hydrochloric acid.

Minor black chert is also present as (possibly) is quartzite. However, the latter was only identified in float material at the extreme eastern end of line 90S, and its presence within the succession is thus only tentatively suggested.

On line 50S, close to the granite contact an outcrop of a pinkish creamy rock was identified in the field as an extremely weathered andesite or andesitic tuff, since it closely resembles rocks of this type seen within the Mt. Reid Volcanics in the Pinnacles Area, and this has been shown as "Tuffs and Pyroclastics" on Plan 2A-25. However, samples of substantially similar appearance collected from the A.P.P.M. Road 200 ft. north of line 40S, and from near the middle of Line 30S were identified by the Australian Mineral Development Laboratories as "highly altered siliceous and felspathic clay" and "highly altered siliceous clay" respectively. The former consists of very fine (0.05 mm) grains of quartz and felspar (up to 20%), set in an extremely fine grained matrix of clay minerals (80%). An x-ray diffractometer scan revealed the presence of kaolin and mica/illite, both highly disordered and degraded, and of gibbsite, within the matrix. The refractive index of the felspar was less than that of quartz, suggesting a K-or Na-rich variety. The second specimen, from line 30S, was very similar, though felspar and gibbsite were not reported.

It seems possible that these rocks represent the extreme alteration products of an original rock type with a composition equivalent to an acid to intermediate igneous rock. They may thus relate to the "andesitic tuff" mentioned above, and do in fact occur roughly along strike from it.

With the intrusion of a granitic mass into the sedimentary pile, a metamorphic aureole developed, so that a band of metasediments is now interposed between the (relatively) unaltered siltstones and the granite. This "halo" of metasediments varies in width from 0ft on 10S to about 1,000 ft in the northern part of the grid, whilst in the south metasediments entirely fill the gap between the granite in the east and Tertiary basalt in the west, and presumably underlie at least the marginal

part of the latter. The apparent absence of significantly metamorphosed rocks on line 10S is not without significance (section 4.1 Geochemistry-Valentine's Peak North).

For the most part the metasediments are hornfelsic in texture, and the mineral assemblages present - diopside-quartz-alkali felspar and diopside/hedenbergite-quartz-plagioclase - indicate medium to high grade metamorphism of the pyroxene-hornfels facies. The production of metamorphic rocks of this facies is favoured by shallow depths and high temperatures, with the latter ranging from 600° - 900° C, depending on pressure.

Metamorphism of this grade is considered to be too high for there to be a cassiterite deposit, at the granite contact for which the environment is otherwise highly favourable. It is thought that any such deposit, if originally present, would have migrated outward along the temperature gradient, and may have disseminated during the process.

The hornfelses themselves are referred to by Pike both as calc-silicate hornfels and laminated cherty hornfels, both of which are good descriptive terms of these rocks, although they do not indicate either the original rock type or the grade of metamorphism. In aspect these rocks present a grey,green, buff or black cherty appearance, and are often banded (laminated), with the less resistant bands being etched out by weathering.

The general appearance and the mineral assemblages present suggest that the hornfelses are the direct metamorphic equivalent of the siltstones outcropping to the west, and it is felt that the banding within the hornfels, which results both from an increase in grain size and an increase in the proportion of diopside to quartz, may merely reflect the banding and lamination in the siltstones. Pike, however, suggests that the banding in the hornfels has been produced by metamorphism. Just east of the junction of Ringwood Road and the main A.P.P.M. Road Pike records the occurrence of a laminated cherty hornfels in which "the metamorphic segregations are filled with fibrous radiating crystals of wollastonite", showing that here was a rock type with an original relatively high calcareous content.

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Throughout the grid area the hornfels contain occasional sporadic blebs of disseminated sulphides, as is indicated on Plan 2A-25. In the main the sulphide is pyrite, but occasional occurrences of (?) chalcopyrite and (?) pyrrhotite were noted. Much of the sulphide may result from the mobilisation and concentration of material originally present within the argillaceous impurities of the siltstone, but it is not impossible that some may have been introduced.

To the west of A.P.P.M. Road, on Companion Road and line 70S is a small outcrop of Owen Conglomerate, about 500 ft. in width, exposed through a window in Tertiary basalt.

At the eastern end of each line, except 90S, the Hampshire Granite is exposed. Width of outcrop varies from about 200 ft. on line 80S to 1,600 ft. on line 50S. Grain size in the granite varies from fine to coarse, and the colour varies from cream, to pink to grey. The rock is extremely leucocratic for the main part, comprising 35%-40% quartz, 40% potash felspar and 20% plagioclase felspar, with ferromagnesian minerals (mainly biotite) making up only 1-5% of the rock. However biotite increases to about 15% in some localities. A fairly strong porphyritic texture is generally present, with phenocrysts up to 1 cm, across of both quartz and felspar with scattered flakes of biotite. Magnetite, pyrite, apatite, sphene and tourmaline are common accessories.

Tourmalinisation, whilst not prevalent, is fairly common throughout, and tends to occur in bands and pods which are more resistant to erosion and thus weather out in relief. A typical tourmalinised pod consists of 40% quartz, 35% tourmaline, 15-20% potash felspar and 5-10% plagioclase. As might be expected as the logical accompaniment of tourmalinisation, fluorite was noted at several localities.

On line 80S, in the area of the granite outcrop, several large (4 inch) quartz crystals were observed among the float, suggesting the presence of veining or possibly even a pegmatite.

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At the side of the A.P.P.M. Road, about 350 feet north of the Companion River and line 30S, is a small exposure of quartz-porphyry. This rock is pale pink in colour, fairly well weathered and shows phenocrysts (5 mm) of quartz and felspar in a fine grained matrix (of quartz and felspar ?). This was the only occurrence of this rock type observed in the Valentine's Peak North Area.

Tertiary basalt overlies the Cambrian sediments and metasediments, and also the Owen Conglomerate. It is seen at the western end of line 10S, and at the western ends of line 50S to 70S, whilst it occupies almost the whole length of line 80S and 90S. It is also seen in sporadic outcrop along the A.P.P.M. road from about 400 ft. north of line 50S to 1,800 feet south of line 90S.

Quarternary, deposits in this northern grid area appear restricted to soils and creek alluvium.

3.2. <u>The Geology of the Southern Grid Area</u> (Plan 2A-24)

The Valentine's Peak South grid straddles the axial zone of the southern end of the anticline, which appears to swing southeastwards in the extreme south of the area. The geological picture of the southern area is less complete than that of Valentine's Peak North for two reasons. Firstly, there is less outcrop here, and secondly much of the area is blanketed by a post-Palaeozoic (?Quarternary) till or tillitic deposit, which tends toobscure the relationship of the various rock types. Lithological boundaries indicated on the map are thus far more tentative than those shown for the northern area. Cambrian sediments and metasediments occupy a central "corridor", bounded on the west by Tertiary basalt and on the east by Owen Conglomerate.

The Cambrian here shows a greater lithological variation than in the north, comprising siltstone, tuffaceous siltstone, tuff, hornfels, quartzite and meta-quartzite. The siltstones are essentially similar to those of the north, though possibly less calcareous. They are grey, buff and brown in colour, and contain trilobite moulds in some localities (Pike). Their outcrop is limited to two thin strips near the A.P.P.M. Road, and a small patch on line 160S. The outcrop along the road between lines 180S and 200S is of interest as the dips recorded in the northern and southern portions are opposed; it is thought that the axis of the anticline passes through here.

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The siltstones are sporadically pyritised and/or tourmalinised.

Tuffaceous sediments assume a more important role than in the northern area, particularly in the southern part of the grid. It is in the southern exposure, near line 220S, that a group of dips to the north-east were recorded, suggesting that the axis of the fold swings south-eastwards here.

Toward the eastern end of lines 180S and 190S, and on the southern part of the logging road which crosses the former, there is an eastward dipping metamorphosed impure calcareous quartzite, now represented by a rock containing 55% quartz, 35% epidote and 10% chlorite and alteration products. It has a lenticular texture possibly of tectonic origin. It is possible that this outcrop is continuous (beneath the tillitic cover) with that of the meta-quartzite seen on Line 170S, though the latter has a different mineralogy - quartz 60%, sericite/muscovite 20-25% and limonite/goethite 10-15% - and a hornfelsic texture.

The hornfels seen in the Valentine's Peak South area is very similar to that of the northern grid, though more heavily pyritised and tourmalinised, especially where adjacent to quartz-porphyry.

Along the eastern limb of the anticline, the outcrop of the Cambrian is bounded by the basal Ordovician Owen conglomerate. This consists of sub-angular-rounded fragments of quartzite, chert, jasper and quartz, bounded by a recrystallised siliceous cement to produce a hard, resistant, massive pinkish-grey to dark grey rock.

Close to the A.P.P.M. Road and well exposed in two metal quarries is a discontinuous outcrop of quartz and quartz-felspar-porphyry dyke (?), which is strongly pyritised and tourmalinised on line 190S, where it has apparently caused these same phenomena in adjacent metasediments. Pike suggests that this may be a Cambrian intrusive, contemporaneous and/or associated with the tuffs and lavas of the area. Comstaff geologists favour regarding the porphyry as an apophysis of the granite, and thus (?) Devonian in age: the evidence for this being as follows :-

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a) the relatively close coincidence of the porphyry outcrop and the axial trace of the anticline, suggesting the porphyry occupies a tensional fracture near the crest. The anticline resulted from the Tabberabberan Orogeny (late Devonian).

b) hornfelsing of the Cambrian sediments appears related to the porphyry in the Valentine's Peak South area.

c) both granite and porphyry are tourmalinised and produce tourmalinisation of the country rock, suggesting that their respective primary magmas were of similar composition.

Metasediments on either side of the porphyry in the quarry on line 190S are observed to dip away from the porphyry. It is thought that this represents a local "doming" of the beds by intrusion, and not the axial region of the anticline.

To the west and south-east of the grid, Cambrian outcrop is truncated by an overlying sheet of basalt, whilst much of the area between the basalt and the Owen Conglomerate is obscured by a covering of tillitic material. This consists of a layer of loosely cemented boulders and gravels in which a weak siliceous matrix binds together fragments of Owen Conglomerate, chert, (?) lava, quartz and quartzite. This has been shown as "tillite" on the map although, resemblance apart, there is no direct evidence of glacial origin. The material may represent a local accumulation of scree washed down from St. Valentine's Peak.

4. GEOCHEMISTRY

The results of soil sampling in both north and south were disappointing. Stream sediment anomalies detected last season had been of a fairly high order particularly in the case of tin, and yet the grids showed only a small number of scattered mainly low level anomalies.

4.1. Geochemistry - Valentine's Peak North

In the first instance Ao soil horizon samples were collected at 50ft. intervals along each line.

The results of these lacked significant anomalies, and it was felt that, especially with the Sn results, this might be the result of a population problem. Cassiterite is very stable, and thus geochemical sampling for Sn depends on physically picking up grains of cassiterite within the samples. It was therefore decided to carry out an orientation study to check the validity of Ao horizon sampling, and to this end lower B/C horizon auger samples were collected from selected lines. (Plan 2A-26).

Histograms were prepared from the results received, and thresholds were determined from these . They were :-

Ao soil samples

Cu Pb	normal decay curves, no anomalies
Zn	130 ppm
Sn	60 ppm

B/C horizon samples

Cu	130 ppm
Pb	60 ppm
Zn	180 ppm
Sn	70 ppm

The positions of those samples with anomalous values (i.e. greater than threshold) are shown on Plan 2A-26.

Comparison charts showing the relationship between Ao and B/C horizon samples were also prepared, and these are presented in plans 2A-28 - 2A-32 inclusive.

It can be seen from Plan 2A-26 that the anomalies detected are not extensive, and that they are scattered and do not appear to form any bands or zones. It therefore seems unlikely that they are of economic significance, espcially as

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reference to Plan 2A-25 shows the bulk of them to be situated on the basalt outcrop. The only anomaly that merits further investigation is about 950 ft. east of the A.P.P.M. road on Line 10S, where high Sn, Cu and Zn values coincide at the sediment/granite contact, in an area where high grade hornfels was not recorded. The anomalous values were recorded in both Ao and B/C samples (Sn) or in the B/C horizon alone (Cu, Zn) as may be seen in Plan 2A-28, and should therefore be reliable.

A study of the comparison charts (Plans 2A-28, -2A-32 inclusive) shows a fair degree of correspondence between Ao and B/C horizon samples. Usually the B/C samples produce a higher (absolute) peak, although this is not always the case (Plan 2A-32-Cu) The important feature of these charts is that in most cases inflexions in one curve are reflected by similar inflexions in the other although their magnitude may differ and they may be offset due, for example to soil creep.

This relatively close correlation of the curves suggests that Ao sampling has, in this area, a sufficiently high validity to be of practical use.

4.2. Geochemistry - St. Valentine's Peak South

Ao soil horizon samples were collected at 100 ft. intervals along each line. Histograms were drawn up from the analytical results, and soil thresholds determined. These were:-

Ag	normal decay curve, no anomalies
*Cu	(40 ppm overall) 80 ppm excluding results on basalt
Pb	250 ppm
Sn	normal decay curve, no anomalies
*Zn	(110 ppm overall) normal decay curve, no anomalies excluding results on basalt.

*"Overall" and "excluding basalt" thresholds were calculated for these elements as past experience had shown that

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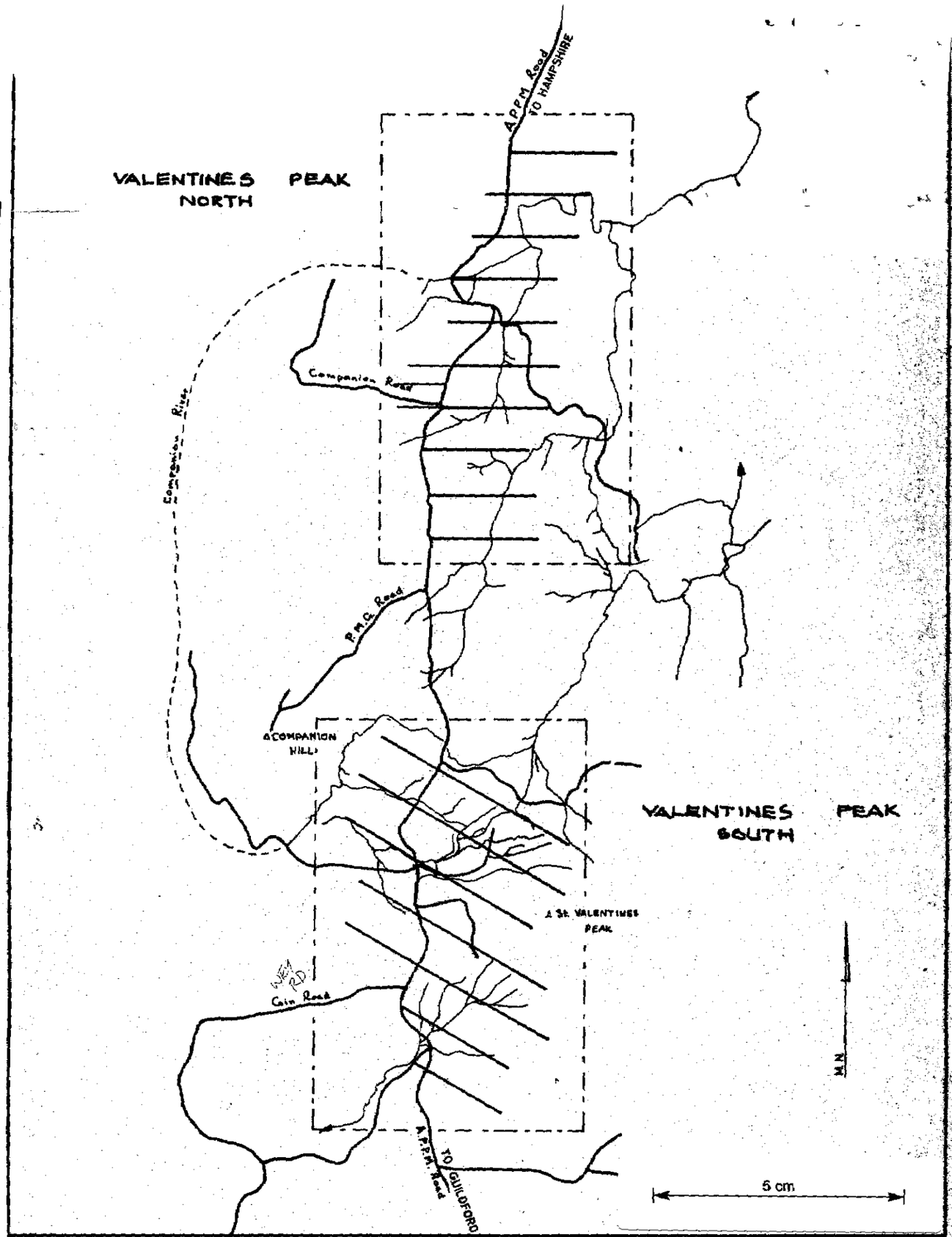
their background values are usually abnormally high over basalt.

The few scattered values above the threshold that were observed are shown on Plan 2A-27. None appear to be of economic interest.

5. P L A N S

TAS-2A-22	Soil Sample Grids, St. Valentine's Peak
TAS-2A-23	Locality Plan, St. Valentine's Peak
TAS-2A-24	Geology, St. Valentine's Peak South
TAS-2A-25	Geology, St. Valentine's Peak North
TAS-2A-26	Geochemistry, St. Valentine's Peak North
TAS-2A-27	Geochemistry, St. Valentine's Peak South
TAS-2A-28	Profile Line 10S - Sn, Zn
TAS-2A-29	Profile Line 60S - Pb, Cu, Zn, Sn
TAS-2A-30	Profile Line 65S - Sn, Cu, Pb, Zn
TAS-2A-31	Profile Line 70S - Sn, Cu, Pb, Zn
TAS-2A-32	Profile Line 80S - Sn, Cu, Zn.



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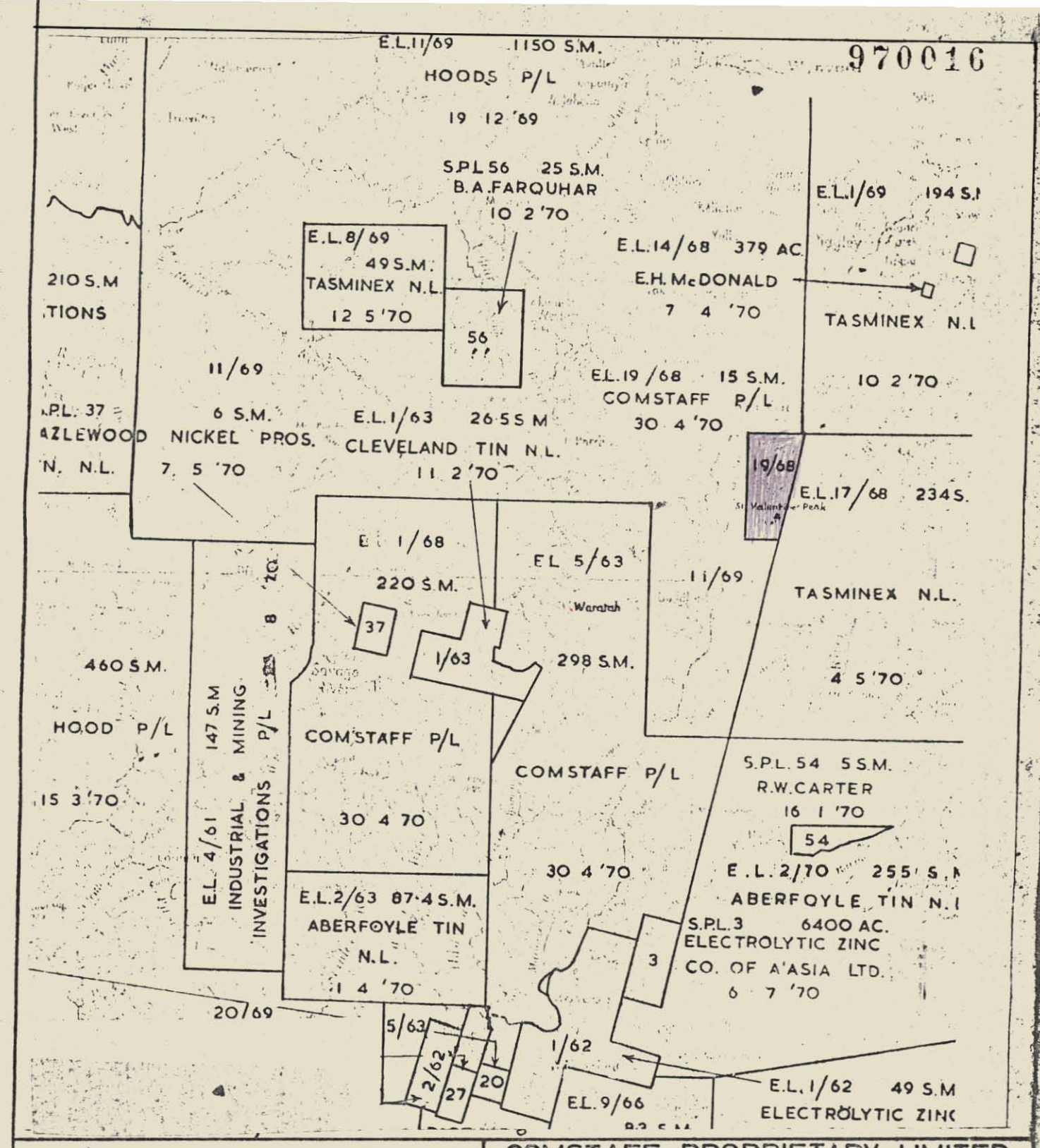
ST. VALENTINES PEAK

SOIL SAMPLE GRIDS - LOCALITY PLAN

DRAWN	COMPILED	SCALE 1:36,000	TAS-2A-22

970016



LEGEND

5 cm

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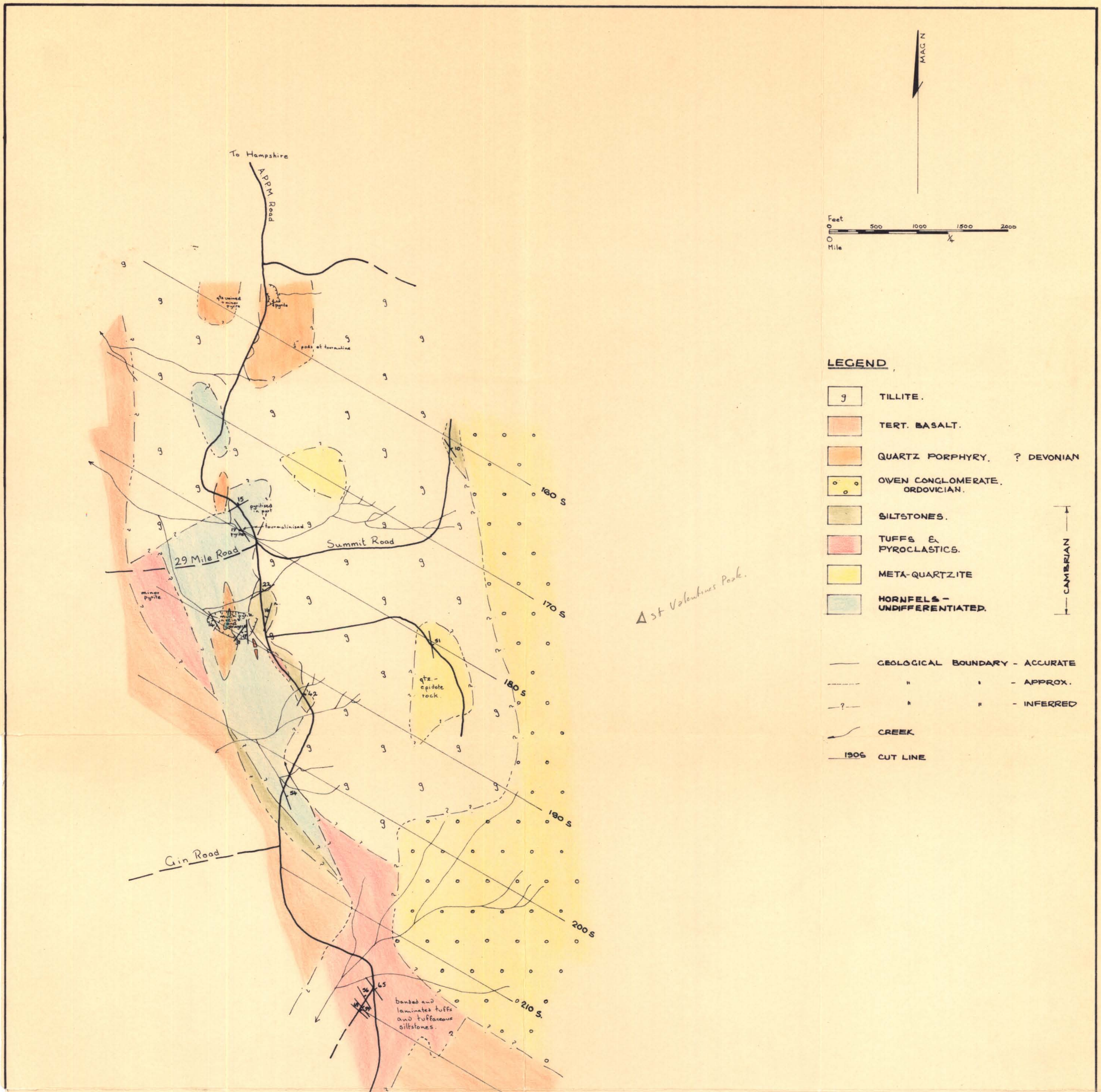
ST. VALENTINES PEAK

LOCALITY PLAN

DRAWN	COMPILED	SCALE 1:250000 NO	TAS-2A-23



970017

5 cm

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1969-70

VALENTINES PEAK SOUTH GEOLOGY

2147

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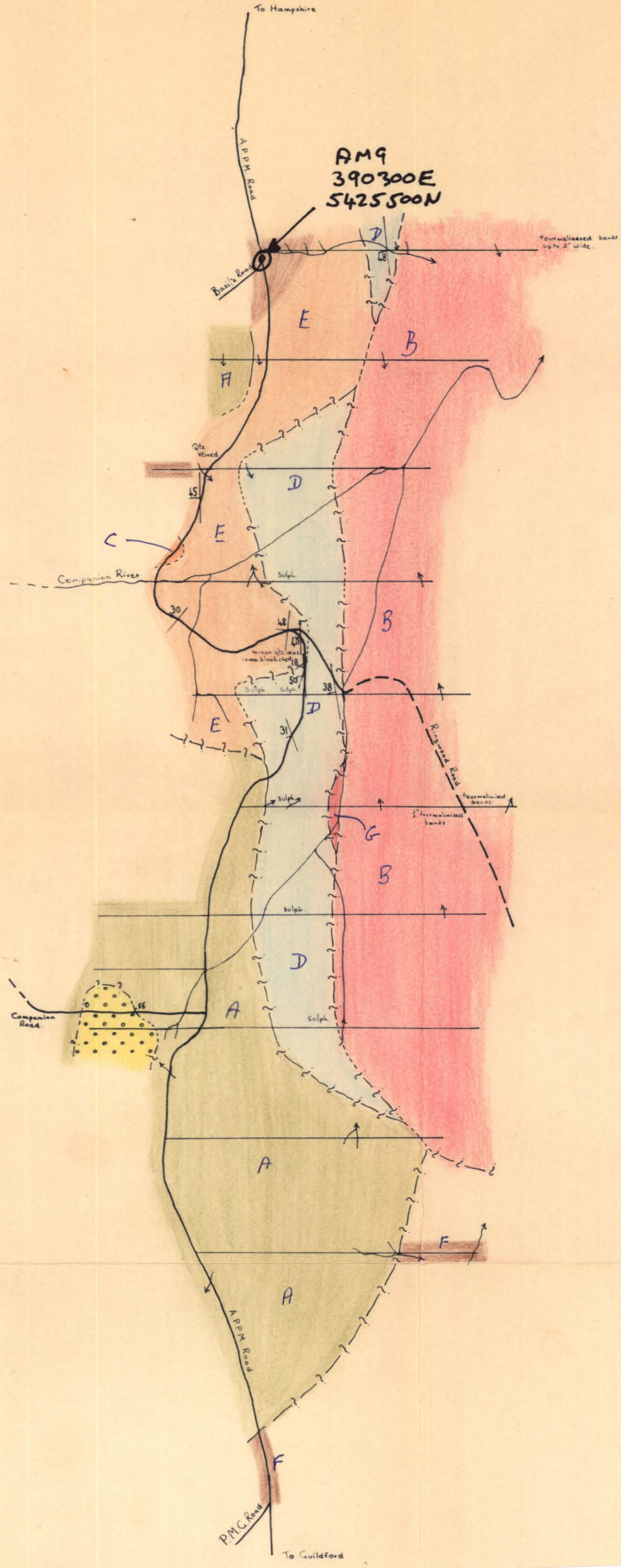
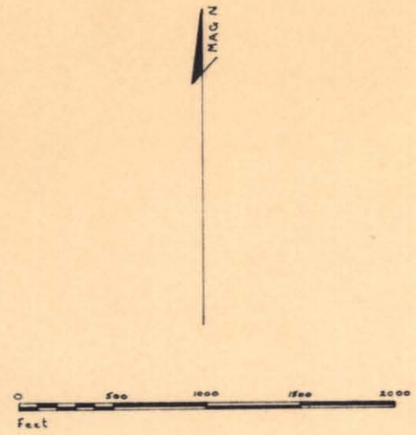
TAS-2A-24





LEGEND

A	Tertiary basalt	
B	Granite	
C	Quartz-porphyry	
D	Laminated cherty hornfels	
E	Siltstones	Cambrian
F	Metasediments and Sediments (undifferentiated)	Cambrian
G	Tuffs and pyroclastics	Cambrian
	Owen Conglomerate	Ordovician
sulph.	Minor sulphides present	
	Cut Line	
	Major Drainage	
	Gully	

5 cm

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1969-70

VALENTINES PEAK NORTH
GEOLOGY

2148

TAS-2A-25

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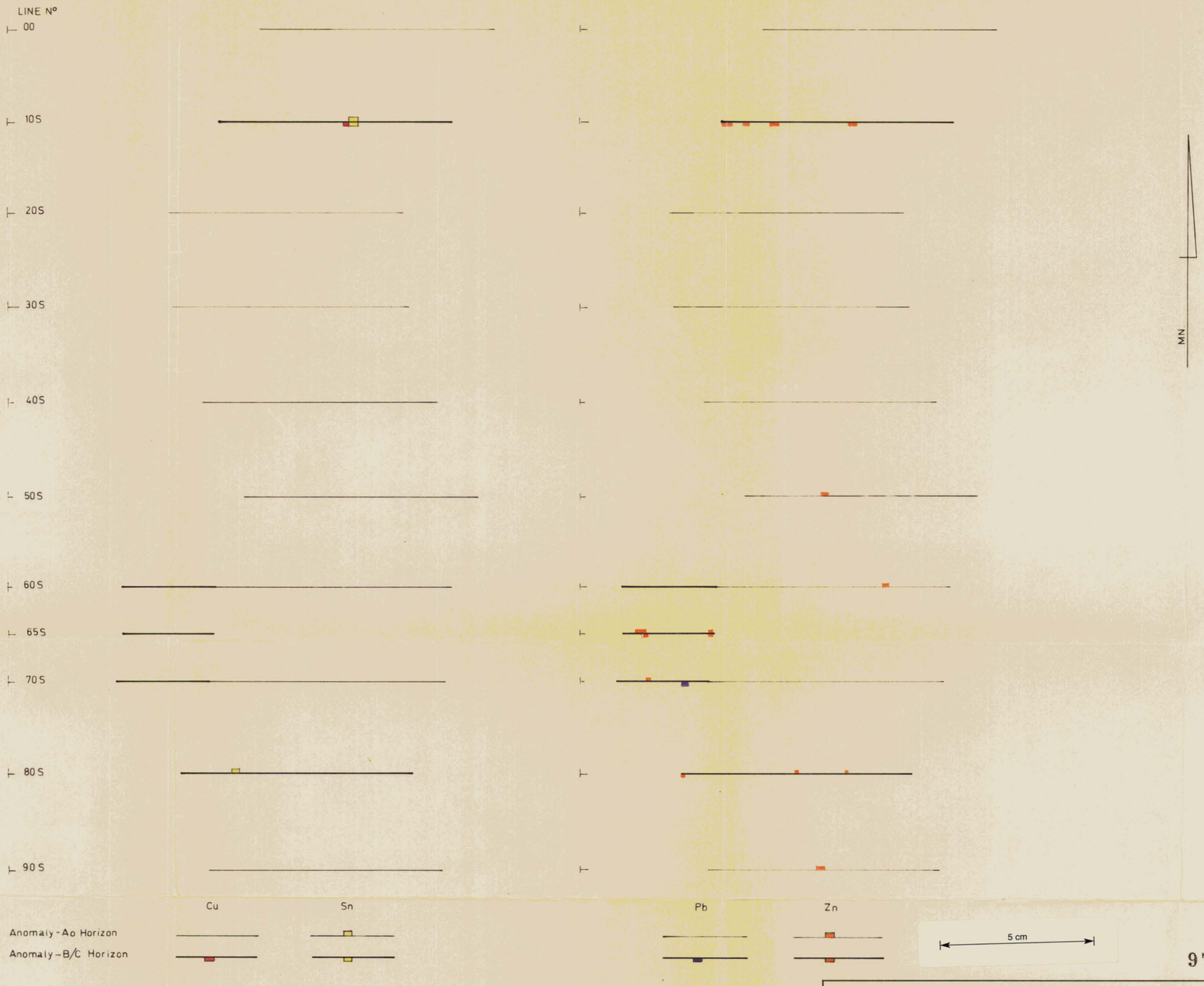

LEGEND

Cut line with Ao horizon Soil Samples at 50 ft. intervals and B/C horizon

Auger Samples at 50 ft. intervals.

970019

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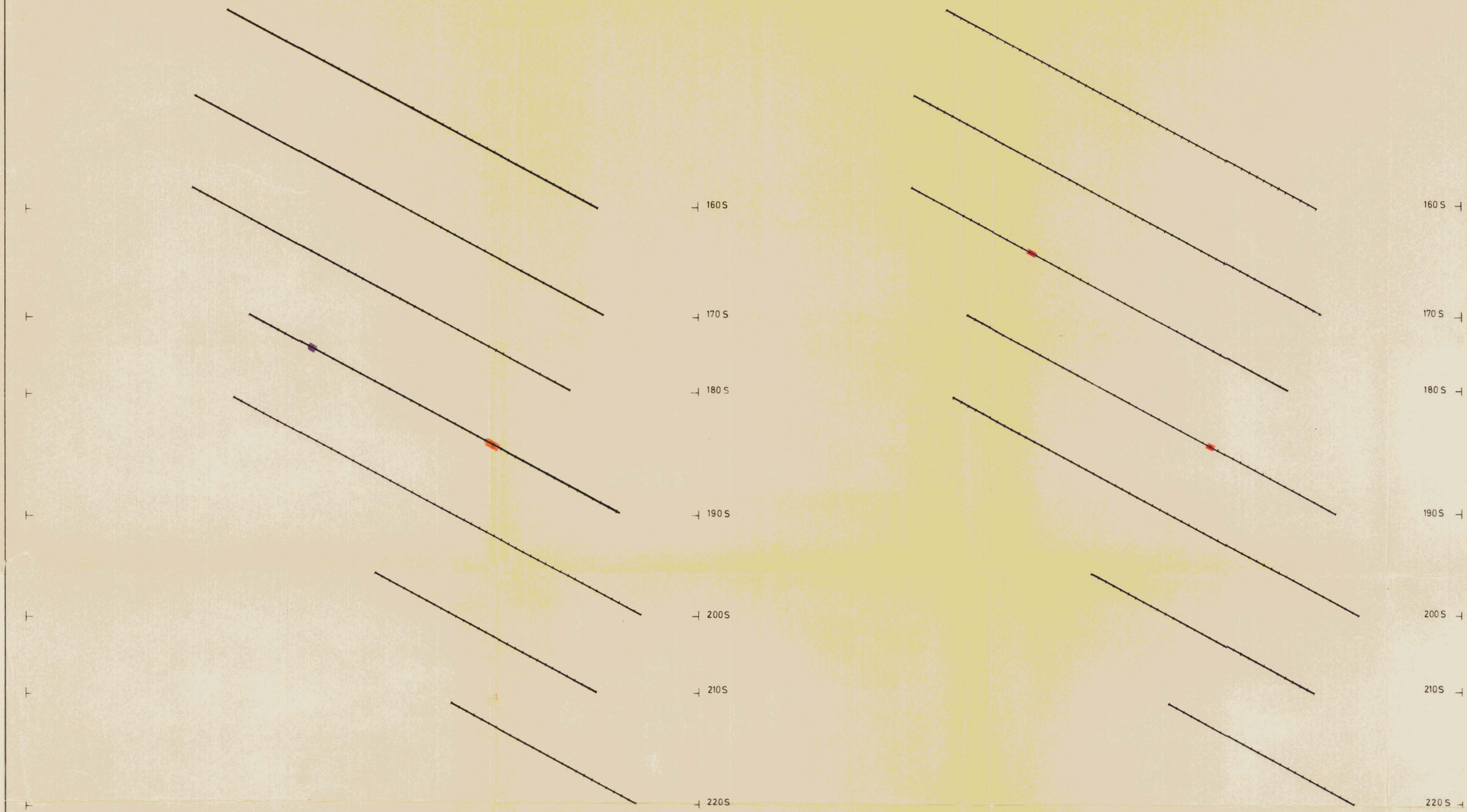
VALENTINES PEAK NORTH
GEOCHEMISTRY

2149

DRAWN	AUG 70
CHECKED	
COMPILED	
SCALE	1:9000
	TAS-2A-26



5 cm

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LEGEND

Cut line with soil sample positions

Anomalous zone Pb.

Anomalous zone Zn.

Anomalous zone Cu.

N

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VALENTINES PEAK SOUTH

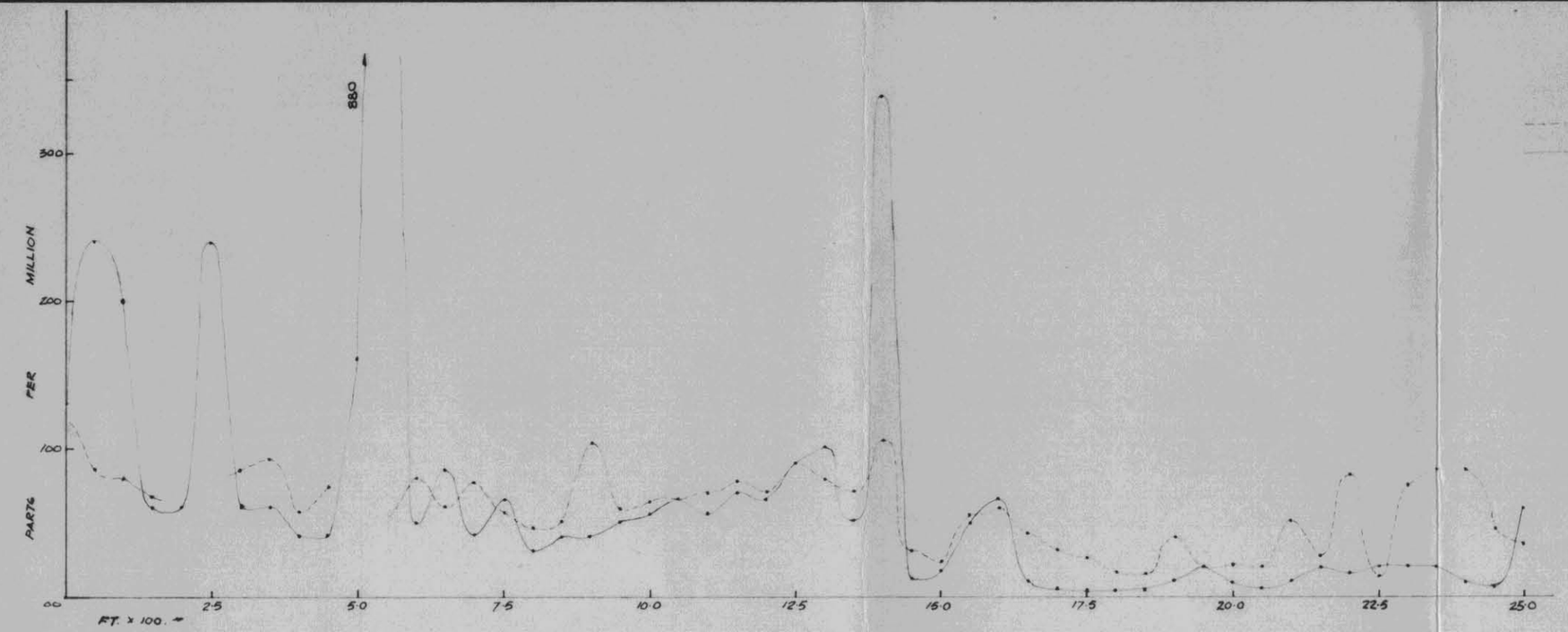
GEOCHEMISTRY

2150

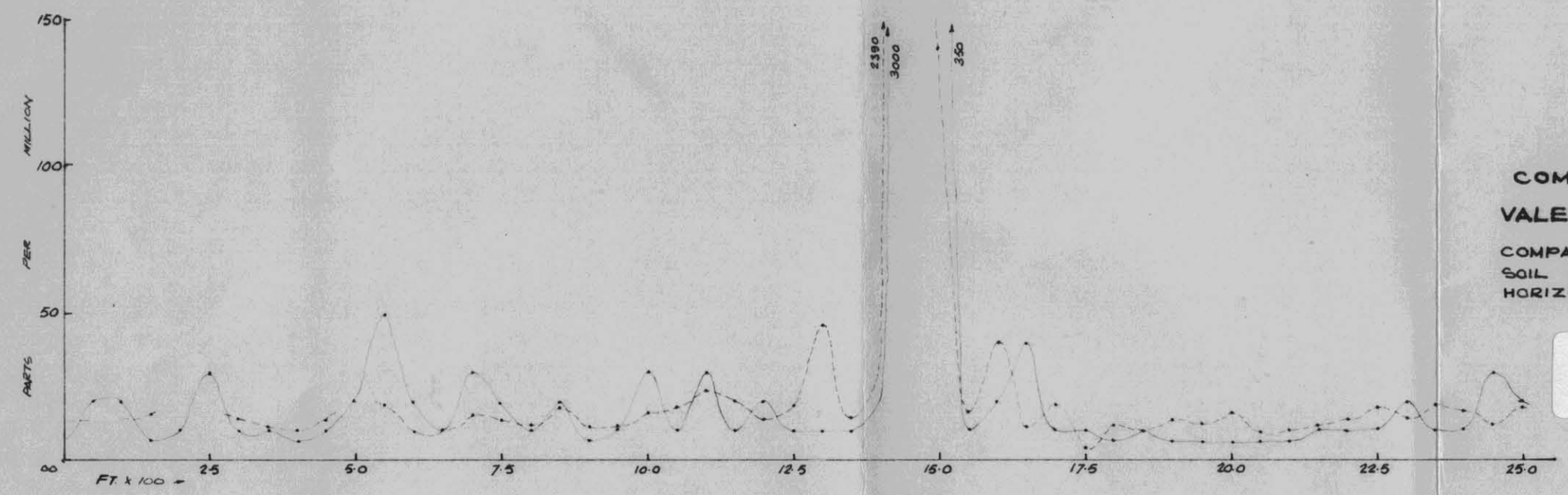
DRAWN	AUG. 70
CHECKED	
COMPILED	
SCALE	1 : 9000
	TAS - 2A - 27

016

Zn.



Sn.



LINE 10 SOUTH.

970021

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1969-70
VALENTINES PEAK NORTH.

COMPARISON CHART A_0 HORIZON SOIL SAMPLES WITH B/C HORIZON AUCER SAMPLES.

5 cm

TAS-2A-28

970022

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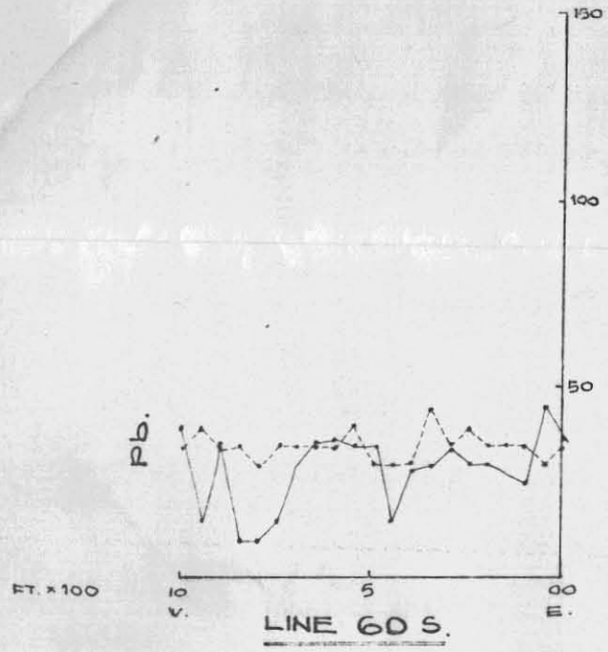
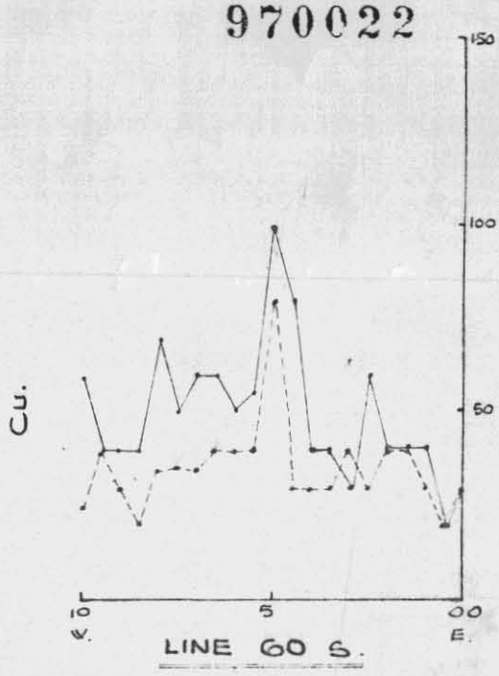
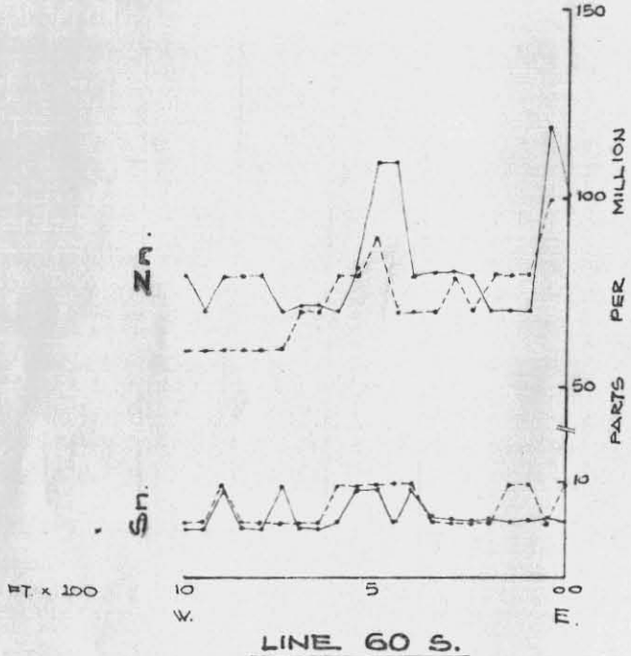


LINE 60 S.



LINE 60 S.



LINE 60 S.

---- A_o HORIZON.
—— B/C HORIZON.

LEGEND

COMSTAFF PROPRIETARY LIMITED

VALENTINES PEAK NORTH

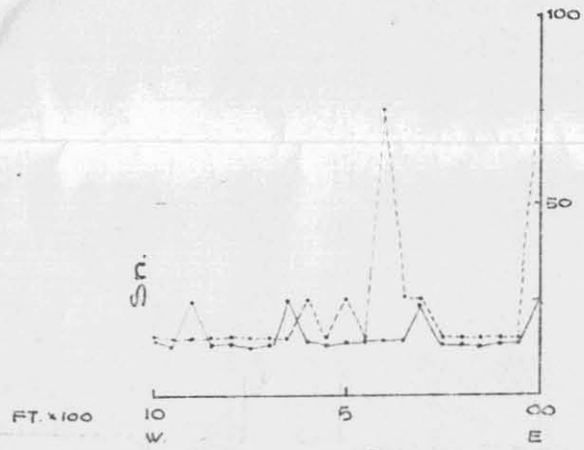
PROFILES LINE 60 SOUTH

Ao SOIL SAMPLES – B/C AUGER SAMPLES

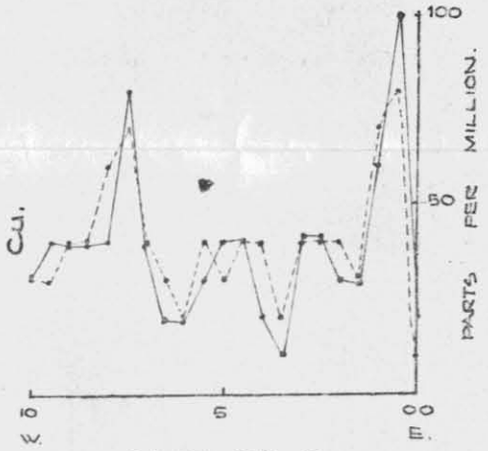
DRAWN	COMPILED	SCALE	TAS-2A-29

970023

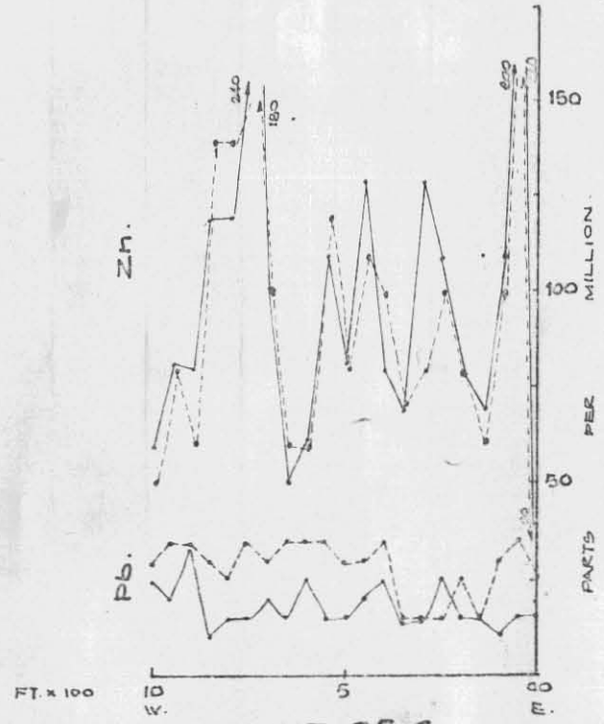
018



LINE 65 S



LINE 65 S



LINE 65 S

---- A_o HORIZON.
—— B/C HORIZON.

LEGEND

COMSTAFF PROPRIETARY LIMITED

VALENTINES PEAK NORTH

PROFILES LINE 65 SOUTH

Ao SOIL SAMPLES – B/C AUGER SAMPLES

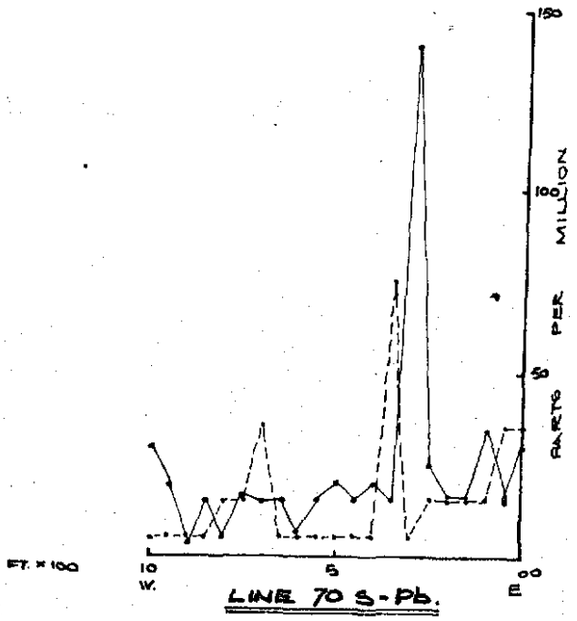
DRAWN	COMPILED	SCALE	TAS-2A-30

970024

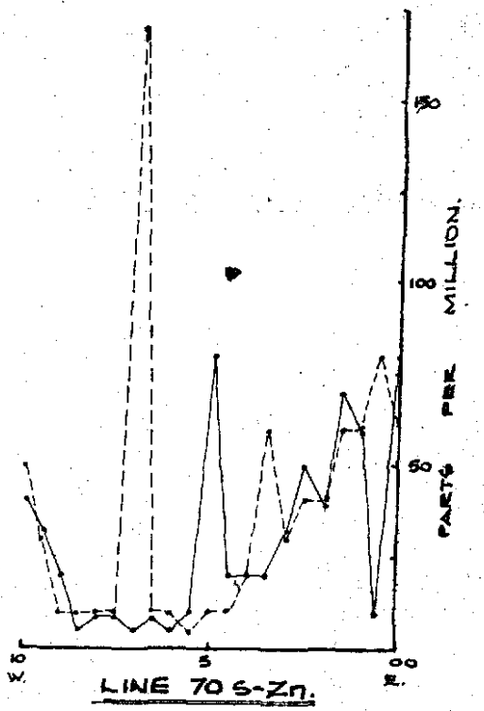
019

----- A_o HORIZON.

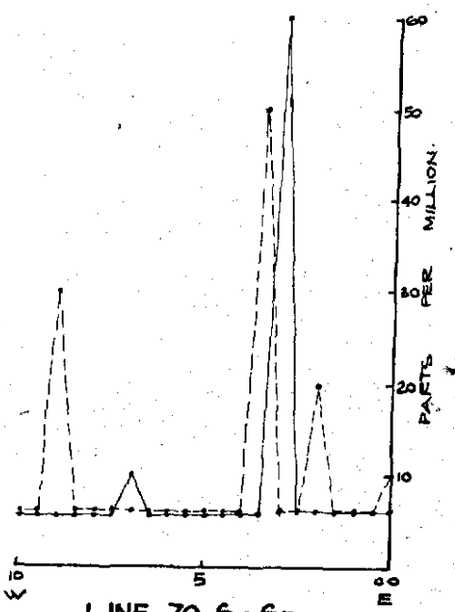
——— B/C HORIZON.



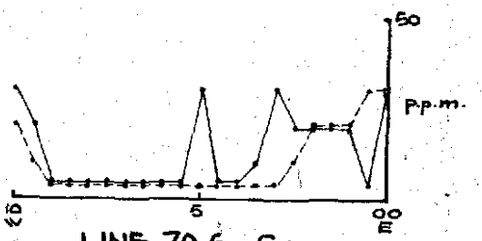
LINE 70 S-Pb.



LINE 70 S-Zn.



LINE 70 S.-Sn.



LINE 70 S.-Cu.

LEGEND

COMSTAFF PROPRIETARY LIMITED

VALENTINES PEAK NORTH

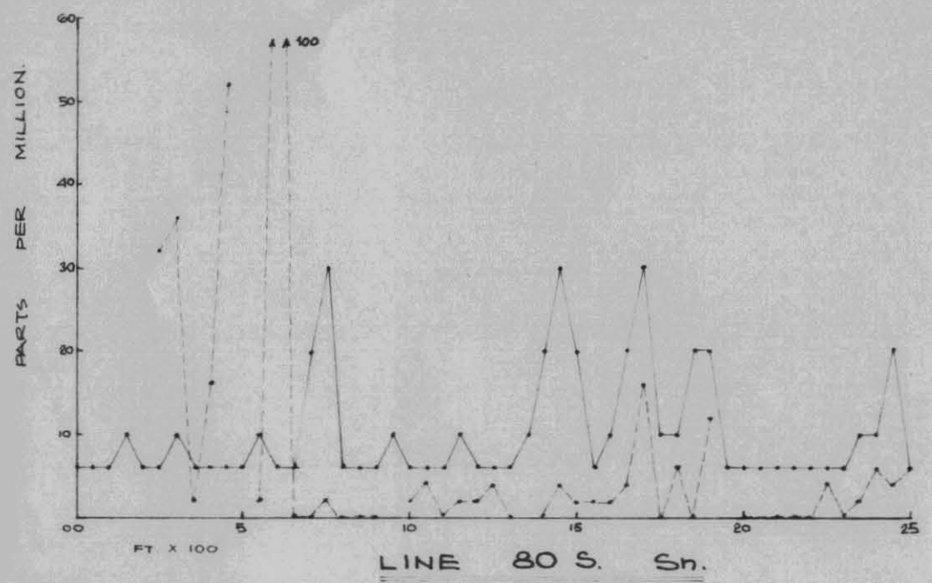
PROFILES LINE 70 SOUTH

Ao SOIL SAMPLES – B/C AUGER SAMPLES

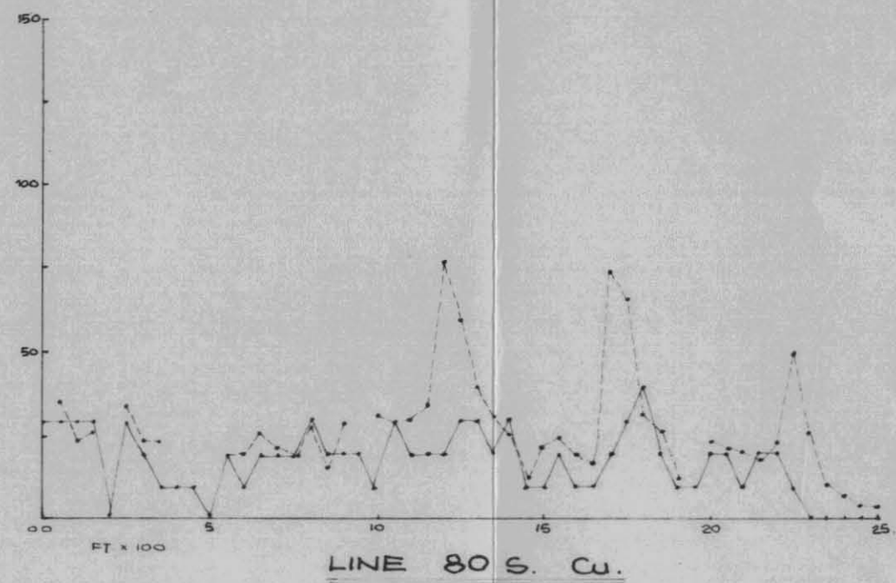
DRAWN	COMPILED	SCALE	TAS-2A-31

020

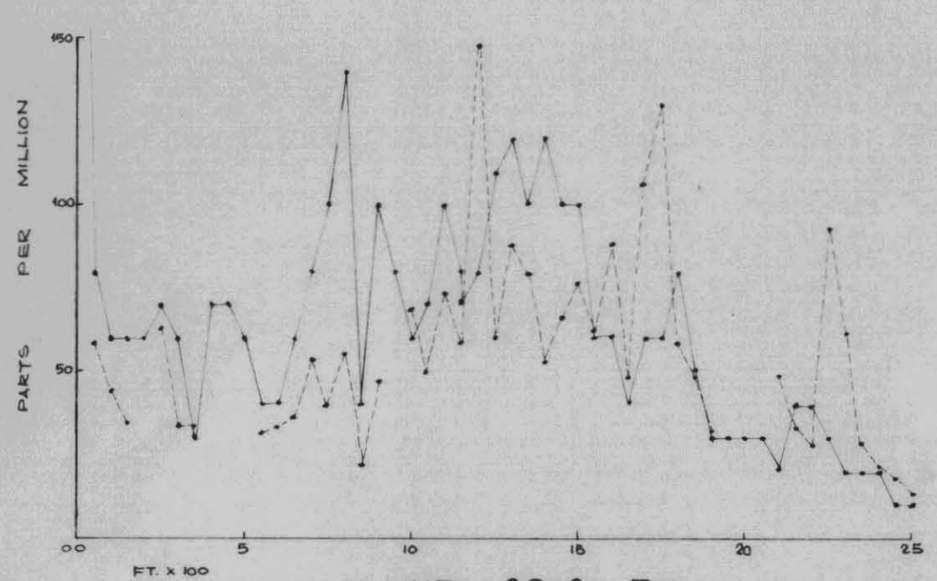
970025



LINE 80 S. Sn.



LINE 80 S. Cu.



LINE 80 S. Zn.

A_o HORIZON.

B/C HORIZON.

COMSTAFF PTY. LTD.

VALENTINES PEAK NORTH.

COMPARISON CHART A_o HORIZON SOIL SAMPLES WITH B/C HORIZON AUGER SAMPLES.

LINE 80 SOUTH

TAS-2A-32