GEOPHOTO MINERALS REPORT 1972/3 050

DETAILED MINERAL EXPLORATION PROGRAMME IN THE TENTH LEGION FAULT AREA E.L. 7/68 HEEMSKIRK

WEST TASMANIA

PREPARED BY

GEOPHOTO RESOURCES CONSULTANTS

FOR

TEXINS DEVELOPMENT PTY LTD

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SENIOR GEOLOGIST

MAY, 1972.

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CONTENTS

ABSTRACT

During the period January - April 1972, a small integrated exploration programme was performed in the Tenth Legion fault area to the west of the Sylvester Doric within Texins E.L. 7/68 Heemskirk in Western Tasmania.

Known iron and lead-zinc mineralization to the southeast, and relatively easy access were the major determinant factors in selecting this area. The purpose of the programme was to test in some detail the possibility of additional mineralization of potential economic value being present.

The programme consisted of data gathering by means of detailed mapping, ground geophysical magnetometer survey, very low frequency electromagnetic (VLF-EM) survey, and soil sampling.

Based on these data it is concluded that the mineralization present in the Tenth Legion fault area is not of economic value and no further work is recommended.

INTRODUCTION

This area is located along the Tenth Legion fault to the west of the Sylvester-Doric area and northeast of Mt. Agnew, in the east-central part of E.L. 7/68 Heemskirk, as shown on Fig. 1.

A brief reconnaissance was made of most of the more favourable sites in E.L 7/68 Heemskirk and S.P.L. 95, in order to select a site suitable for a small-scale, low-budget exploration program. Sites visited include several of the tin prospects within the granite and the Pb-Zn prospects in the sediments at Sylvester-Doric, T.L.E., and Eureka. The area of Gordon Limestone in the southeast corner of E.L. 7/68 Heemskirk was discussed with L. DiScala, who had previously done limited reconnaissance work there. It was apparent that significant mineralization prospects at several of the sites were doubtful. At others, such as the Gordon Limestone area and part of the Sylvester area, the bush is quite thick and/or swampy, requiring additional logistical support, mainly line-cutting.

The Tenth Legion fault area was selected for evaluation because: (1) iron and Pb-Zn mineralization is known along the fault to the southeast, (2) it was hoped that

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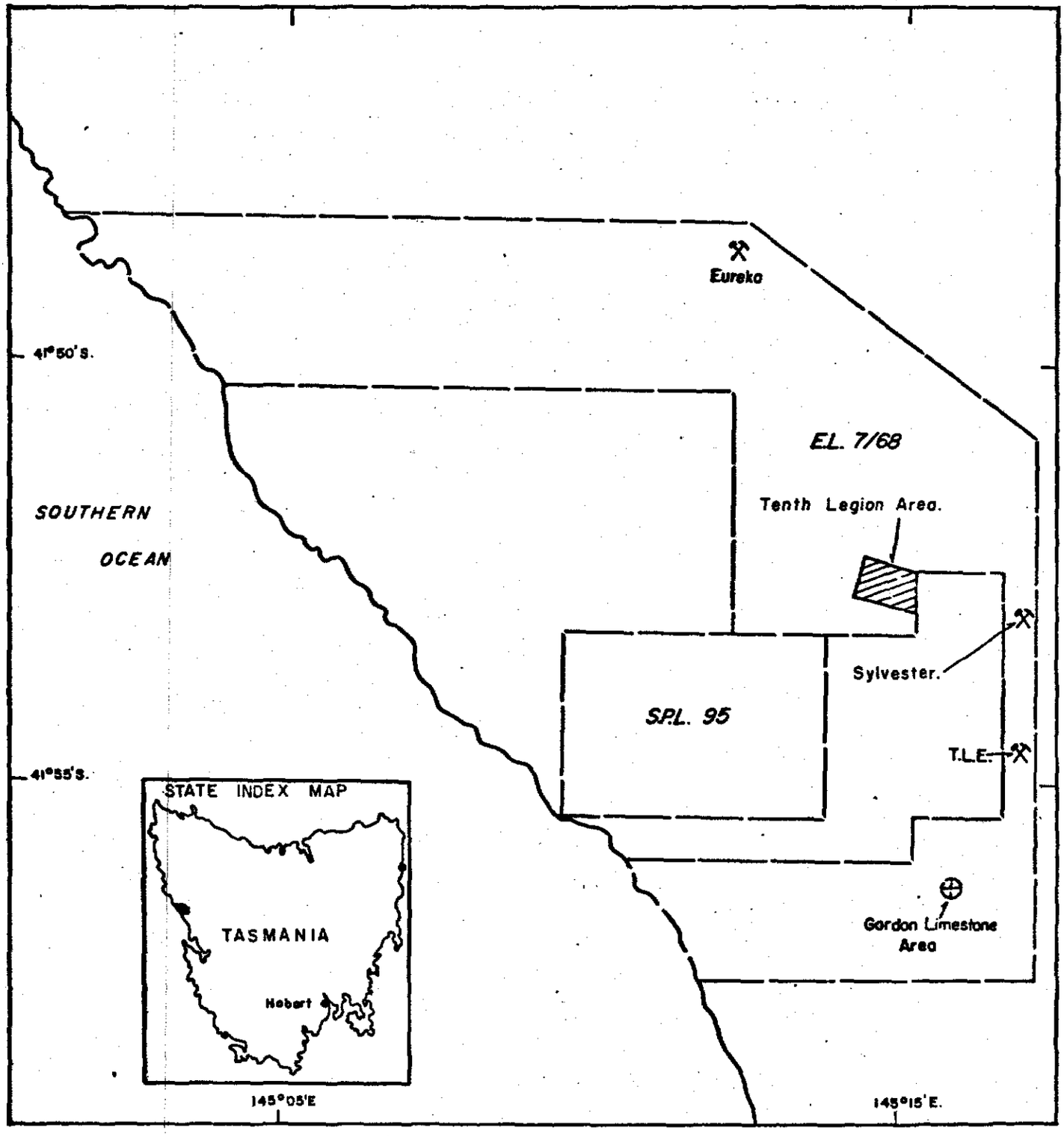

TEXINS DEVELOPMENT PTY. LTD.

E.L 7/68 HEEMSKIRK DISTRICT—TASMANIA

INDEX MAP-TENTH LEGION AREA

0 2 4 Miles.

5 cm

Drawing Nº 1/312

additional mineralization could be found in association with the iron deposits or in the contact zone between the granite and sediments, and (3) most of the area is relatively open and accessible with much of the area within a walking distance of 2 - 3 km from a vehicle track at the old Tenth Legion mine.

A general geological reconnaissance was made over the area as shown on Figure 2. A smaller area was selected as the most favourable part for sample lines. A total of eight parallel lines with a length of 450 - 1100 metres and spacing of 150 metres was laid out with a bearing of 028° true to form a reconnaissance grid. More detailed geology, geophysics, and soil geochemical surveys were done on these lines as will be discussed later in this report.

GEOLOGY

In general, the geological setting is Precambrian sediments which have been intruded by Devonian granite. Part of the contact between these rocks has been faulted by the Tenth Legion and possibly other faults. The geology is presented on Figures 2 and 3.

Stratigraphy

Precambrian Oonah Quartzite and Slate: In the area investigated many of the rocks included in this formation are

tan-brown, friable sandstones and siltstones with subordinate grey, indurated quartzites. It is likely that many of the observed siliceous rocks are due to local contact-metamorphism silicification by the granite. This conclusion was also reached by Waterhouse (1916). Additional contact metamorphic effects are discussed below with the granite. These rocks are in intrusive contact or locally fault contact with the granite. Exposures are fair to good.

Devonian Heemskirk Granite: The granite (locally adamellite) is normally medium-to coarse-grained, holocrystalline, and has variable shades of light grey colour. Exposures are normally good. The granite intrusive has metamorphosed the sediments to varying degrees along the contact with some metamorphism affecting most of the sediments in the area investigated. Extensive, but variable, tourmalinization is present in the contact aureole as disseminated tourmaline, tourmaline or quartz-tourmaline lined fractures and small dykes, and, confined to the granite, as small tourmaline nodules. Quartz veining is also common in the contact aureole as well as, to a limited extent, within the granite. Quartz-tourmaline float often spreads downhill giving an exaggerated impression of its abundance.

The granite intrusion may underlie the entire area at a relatively shallow depth. This is indicated by the very broad contact aureole where at least minor metamorphism can be detected, magnetic evidence to be discussed later, and the previous work of Waterhouse (1916, p. 96) and that quoted by Both and Williams (1968b, p. 238) which suggests a shallow cover of sediments over the granite to the east toward Zeehan.

Where the normal contact between the granite and sediments can be observed as in the southern part of Figure 3, extensive contact metamorphism has produced a mixed-rock zone containing abundant tourmaline, silicification-quartz veining, and minor cassiterite (discussed in mineralization section). This pronounced contact zone is 100 - 150 metres or more in thickness at the surface. This wide thickness probably indicates a locally gentle dipping granite-sediment contact. North of the Tenth Legion fault, the degree of contact metamorphism of the sediments increased to the west toward the granite as would be expected.

Quaternary Alluvium: Much of the area along the Tenth Legion Fault zone is a broad valley which has probably a shallow filling of peaty sand and gravel. Most of this alluvial material is either of granitic or quartz-quartzite composition. Other minor areas of alluvium are shown on Figures 2 and 3. These

deposits cover critical contact and fault zone relationships in several instances.

Structure

The Tenth Legion fault, an apparently dip-slip fault, downthrown to the southwest, extending northwest from near Mt. Zeehan to the vicinity of Mt. Heemskirk, is the major structural feature of the area. Conspicuous lenses of magnetite-hematite occur with the fault zone, southeast of the E.L. 7/68 Heemskirk-S.P.L. 22 boundary, at the old Tenth Legion iron mine. Narrow, highly brecciated ironstone zones extend northwest along the Tenth Legion fault and branch faults to about the E.L. 7/68 Heemskirk boundary. The fault can be traced farther northwest up the valley as locally exposed highly fractured to brecciated zones. As shown on the geological maps (Figures 2 and 3) part of the contact between the granite and sediments in the northwestern part of the area has been offset by the Tenth Legion fault. In the far northwestern part of the area the fault can be traced as a lineament with local highly fractured zones.

An early age is suggested for this fault as it includes the ironstone deposits which are considered to be of Cambrian age (Hughes, 1959), but later movements are shown by the offset of the Devonian granite contact and post-Permian movement

is suggested by the offset of Permian tillite and associated erosion surfaces near the southeast end (Blissett, 1962). The age of the fault is "believed to be Tertiary" by Blissett (1962, p. 253).

Several other apparently dip-slip faults are present in the area. Notable is the north-south trending inferred fault which also offsets the granite-sediment contact near sample line B. This fault is suggested by the close proximity of near-"normal" granite and sediments with relatively minor contact metamorphism, by physiographic evidence, and by geophysical evidence to be discussed later. Other notable east-west trending faults have been inferred in the southern part of Figure 3 from geophysical and local surface evidence. Quite small outcrops, usually only 1 - 3 metres across, of well indurated, highly fractured to sheared quartzite are typical of these last east-west faults. These small quartzite outcrops occur in areas with otherwise very poor exposure or alluvium cover.

Numerous small-scale and locally larger folds are present in the sediments, particularly in the relatively incompetent thin siltstone layers. Exposures were insufficient to trace these folds for significant distances. The folding may be related to the intrusion of the granite. As can be seen in Figure 2, the attitudes of the sediments are variable, but the

regional attitude appears to be northwest strike with steep dips to the southwest and to a lesser degree to the northeast.

Mineralization

As previously mentioned, extensive but apparently sub-economic iron deposits occur in the Tenth Legion fault zone southeast of the area investigated. These deposits are presently controlled by E.Z. Co, under SPL-22. The magnetite-hematite is considered by Hughes (1959) to be due to the intrusion of Cambrian gabbro. This contrasts the earlier opinion of Waller (1903) who considered the iron deposits to be due to contact metamorphism of the gabbroic rocks when intruded by the Heemskirk granite. As mentioned by Blissett (1962) and Both and Williams (1968a), Hughes' idea is probably correct.

Magnetic data from the present survey indicates that similar, but probably thinner, zones of magnetite-hematite probably extend along faults northwest into the area evaluated. There is a possibility that additional sulphide mineralization occurs in association with these inferred iron deposits.

Minor cassiterite is present in the gradational contact zone between the granite and sediments south of the Tenth Legion fault (Figure 3).

No other visible mineralization was detected, except very minor pyrite locally in the fractured and brecciated quartzites along the Tenth Legion Fault zone.

GEOPHYSICAL SURVEY

Magnetics

A magnetic survey was conducted over the entire reconnaissance grid with a Scintrex MF-1 portable magnetometer. Station spacing was 25 metres with intermediate stations across anomalies.

Conspicuous linear and relatively high-amplitude magnetic anomalies are present as shown on Figure 4. Along the Tenth Legion fault, these are inferred to represent a northwestward continuation of the known magnetite-hematite deposits. The magnetic data indicates a major bifurcation of the Tenth Legion fault. Similar inferences as to the probable presence of magnetite-hematite are made of the east-west linear magnetic anomalies in the south part of Figure 4. The high degree of magnetism suggests the presence of considerable magnetite. The orientation of the southern anomalies suggests two or more dipping veins or tabular bodies which may be within fault zones and which seem to be offset by other faults. This southern

system of linear anomalies stops abruptly to the west at the granite contact. Several possible explanations are apparent such as:

(1) The probable Cambrian magnetite-hematite deposits might have been obliterated by the younger granite intrusion.

(2) The inferred fault has offset the continuation of the trend; however if this is true then the offset continuation should have been detected unless eroded away.

(3) If the magnetite-hematite was perhaps related to the granite or of post-granite age, then the difference in host rocks could have been a factor.

From these possibilities, the first is the most likely, although a contribution from the second is a lesser possibility.

Several of the faults, such as the north-south one which forms part of the granite-sediment contact, do not have a noticeable magnetic effect. This probably indicates that these faults are younger than the iron mineralization.

One of the original purposes of the magnetic survey was to help define the granite-sediment contact due to the inferred large magnetic susceptibility contrast between the

two rock types. This did not prove useful as no definite magnetic contrast can be seen even where defined contacts are crossed. One possible explanation of this is that the cover of sediments is quite thin over the area with granite present at relatively shallow depth. This is substantiated by other previous evidence.

Very Low Frequency (VLF) Electromagnetic Survey

This survey was also conducted over almost all of the reconnaissance grid at a station interval of 25 metres. Positive first derivative VLF values are considered anomalous.

The contour map generated with the VLF survey (Figure 5) is similar to the magnetic map along the Tenth Legion fault where the positive first derivative VLF contours form linear anomalies, slightly broader than and slightly offset from the magnetic anomalies. This close correspondence suggests that magnetite-hematite mineralization along the fault may be the cause of the VLF anomalies.

In the southern part of the grid the correspondence between the VLF and magnetic data is not nearly as good as along the Tenth Legion fault. A very broad positive VLF first derivative contour anomaly corresponds to part of the magnetic anomaly system, but several of the pronounced magnetic trends do not show up in

the VLF data. This seems to imply that the mineralization may be different here, unless the difference is due to VLF interference from the shape and/or spacing of the several inferred tabular mineralized bodies.

GEOCHEMISTRY

Fifteen rock samples (described in Appendix A) were collected and sent for chemical analyses. These analyses (Appendix B) were for determinations of background levels of mineralization as well as for evaluation of rocks from zones potentially favourable for mineralization. The analyses reveal no particularly impressing mineralization in any of the samples. Locations of the samples are shown on Figure 2.

An orientation soil survey was carried out by taking samples at 14 sites scattered over the area (Figure 2) so as to cover all rock types. At each site a hole was augered with a standard three inch post-hole auger to the limit of penetration which ranged from 6 to 80cm. Individual samples were taken at any lithological or colour changes in the soil profile. The pH of each sample was determined later, but while the samples were still wet. By using pH paper all values were estimated to be about pH 5.

Evaluation of the orientation survey data (in appendix C) indicates that a depth range of 20 - 50cm and at least below the top organic layer, was most suitable. Various elements were indicated to be concentrated in different size fractions with Pb, Zn and Ag in -80 mesh, Mo in +80-20 mesh, and Sn in +20 mesh fractions. Accordingly the samples were sieved into these fractions and analysed as indicated.

A soil survey program was performed based on results from the orientation survey. Soil samples were taken along those sample lines (AA-E) within E.L. 7/68 Heemskirk at intervals of 25 metres. Intermediate intervals of 12 metres were sampled across geophysical anomalies and favourable geological zones. In some cases of apparently barren rocks the interval was increased to 50 metres. All sample analyses are included in Appendix D of this report.

Preliminary evaluation of the results of the soil survey indicate that no significant anomalies exist other than minor one-point anomalies. The most pronounced of these is the Pb-Zn-Mo anomaly at AA 375, which is near a mapped fault. Numerous other mapped faults and other potentially mineralized zones revealed no noticeable anomalies. Tin values do not show any noticeable association even with zones of visible cassiterite.

RECOMMENDATIONS

No further work is recommended in this area based on available data. Statistical analysis of the soil survey data may enhance some of the weak anomalies, but there appears to be little possibility of significant mineralization.

J.B. THIGPEN
Senior Geologist

J.D. JUILLAND
Projects Manager.

APPENDIX A

ROCK SAMPLES CHEMICALLY ANALYSED
HEEMSKIRK - TENTH LEGION AREA.

ROCK SAMPLES CHEMICALLY ANALYSED

HEEMSKIRK - TENTH LEGION AREA

R-1	quartzite, mod. fractured, dense.	) in or
R-2	siltstone, mod. fractured and brecciated.	) near fault zone ?
R-3	quartz-tourmaline rock, possibly mixed granite (?)	
R-4	quartzite with quartz-tourmaline veins.	
R-5	quartzite, with secondary mica.	
R-6	quartzite, thin-bedded, typically dense.	
R-7	quartzite at faulted granite contact (1m from No. 8)	
R-8	granite at faulted quartzite contact (1m from No. 7) light grey, coarse, with minor tourmaline.	
R-9	quartzite, very highly fractured, probably in fault zone.	
R-10	quartzite, highly fractured in probable fault zone.	
R-11	tourmalinised slaty quartzite with moderate cassiterite as fine to 0.5cm size - near granite contact.	
R-12	tourmalinized slaty quartzite - granite contact rock, very minor cassiterite.	
R-13	tourmaline nodules with minor to moderate cassiterite, from disintegrated granite.	
R-14	quartzite, very dense.	
R-15	quartzite (?) high chlorite (?), green tourmaline (?) with quartz veins and minor pyrite, highly fractured.	

Most rocks have little or no visible mineralization as described.

APPENDIX B

CHEMICAL RESULTS OF ROCK SAMPLES

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GEOCHEMICAL LABORATORY REPORT

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FIELD SHEET No.: 007752 PROJECT No.: EL.6/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 922/5 SAMPLE TYPE: ROCK DATE: 25th February, 1972.

SAMPLE No.	LAB. No.	Cu ppm	Ni ppm	Co ppm	Pb ppm	Zn ppm	Ag ppm	W ppm	Mo ppm
H/GH/1A	72-B-1207	50	175	50	15	115	2		
H/TL/R1	72-B-1208	10	40	20	20	80	3	BLD	20
H/TL/R2	72-B-1209	BLD	5	BLD	BLD	5	BLD		
H/TL/R3	72-B-1210	20	20	20	25	35	2	BLD	20
H/TL/R4	72-B-1211	15	BLD	BLD	20	10	1	BLD	10
H/TL/R5	72-B-1212	BLD	10	BLD	10	5	BLD		
H/TL/R6	72-B-1213	10	5	BLD	30	10	1		
H/TL/R7	72-B-1214	BLD	15	10	425	70	1	BLD	10
H/TL/R8	72-B-1215	BLD	10	BLD	10	15	BLD	BLD	10
H/TL/R9	72-B-1216	BLD	20	5	20	30	1		
H/TL/R10	72-B-1217	BLD	10	BLD	25	50	1	BLD	BLD
H/TL/R11	72-B-1218	BLD	20	BLD	5	5	BLD	BLD	5
H/TL/R12	72-B-1219	BLD	10	BLD	BLD	5	BLD	BLD	BLD
H/TL/R13	72-B-1220	BLD	10	BLD	5	10	BLD	BLD	10
H/TL/R14	72-B-1221	20	20	10	20	15	2		
H/TL/R15	72-B-1222	10	30	20	50	380	3		

METHODS:

Cu, Ni, Co, Pb, Zn, Ag by G.R.C. No. 1
Mo by G.R.C. No. 2
W by G.R.C. No. 4
Sn by G.R.C. No. 5
B.L.D. = Below Limit of Detection

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Ray W. Gerlach
Chief Chemist

021

GEOCHEMICAL LABORATORY REPORT

758022

FIELD SHEET No.: 007752 PROJECT No.: EL.6/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 922/6 SAMPLE TYPE: ROCK DATE: 25th February, 1972.

SAMPLE No.	LAB. No.	Sn %
H/GH/1A	72-B-1207	BLD
H/TL/R1	72-B-1208	BLD
H/TL/R2	72-B-1209	0.02
H/TL/R3	72-B-1210	0.02
H/TL/R4	72-B-1211	0.03
H/TL/R5	72-B-1212	0.04
H/TL/R6	72-B-1213	0.02
H/TL/R7	72-B-1214	0.02
H/TL/R8	72-B-1215	0.04
H/TL/R9	72-B-1216	0.03
H/TL/R10	72-B-1217	0.03
H/TL/R11	72-B-1218	0.04
H/TL/R12	72-B-1219	0.02
H/TL/R13	72-B-1220	0.03
H/TL/R14	72-B-1221	0.03
H/TL/R15	72-B-1222	0.02

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist

Ray W. Ford

APPENDIX C

ORIENTATION SOIL SAMPLES

HEEMSKIRK - TENTH LEGION AREA

ORIENTATION SOIL SAMPLES

HEEMSKIRK - TENTH LEGION AREA.

Samples taken with soil auger (post-hole digger) to limit of penetration.

S-1 15cm tan to light brown sand silt with few rock fragments to 1cm, on quartzite and siltstone, on nearly flat ridge top.

S-2 20cm tan-brown sandy clayey silt with numerous quartzite fragments to 3cm, in quartzite, on ridge top, slope 2^{o} or less.

S-3 30cm med-grey sandy silt, few small quartzite fragments, on quartzite, on ridge crest, slope about 4^{o}.

S-4 7cm light-medium grey sandy silt, very rocky, in sandy siltstone and quartzite, on ridge crest, slope about 15^{o} - some soil transport.

S-5 6cm grey sandy silt, on sandy siltstone (of quartzite sequence), on crest of spur ridge, slope nearly flat.

S-6 On crest of spur ridge, slope about 3^{o} on siltstone bedrock.

6A 0-20cm. light brown sandy silt with few small quartzite pebbles.

6B 20-45cm tan-brown clayey silt, with siltstone fragments

S-7 20cm. dark grey organic clayey sand (damp) with quartzite gravel at bottom, on alluvial flats (overlying quartzite sequence).

S-8 On alluvial flats, overlying quartzite sequence near inferred fault.

8A 0 - 10cm dark grey organic clayey silt (damp).
8B 10 - 35cm - light brown silty gravelly sand.

S-9 On alluvial flats, overlying quartzite sequence

(siltstone member crops out nearby), near inferred fault.

S-10 On flat crest of ridge, on siltstone of quartzite sequence - S of inferred fault.

10A	0 - 25cm	med. brown sandy silt.
10B	25 - 55cm	reddish brown and orange silty clay.
10C	55 - 80cm	mottled red-orange-brown silty clay limit of auger.

S-11 On flat ridge top, on siltstone, west along same ridge from S-10, some tourmalinized quartzite float.

11A	0 - 40cm.	dark brown sandy silt.
11B	40 - 65cm	mottled red-brown-tan-orange sandy silty clay.

S-12 65cm dark brown-dark grey organic coarse sand from granite (med-grained, light grey, minor tourmaline) on 15-20° slope west of S-11 - considerable transport of soil.

S-13 On nearly flat granite (coarse, light grey, mod-abundant tourmaline) hill top.

10A	0-30cm	med. brown organic clayey coarse sand.
10B	30-75cm	mottled red-brown-yellow-tan clayey coarse sand (decomposed granite)

S-14 20cm brown organic coarse sand - with decomposed granite 19 - 20cm., on flat granite (coarse, light grey, minor tourmaline) hill top.

pH of all samples indicated as 5 by pH tape - tried diff. tape, diff. water (distilled), different proportions, etc - same result.

025

GEOCHEMICAL LABORATORY REPORT 758026

FIELD SHEET No.: 007753 PROJECT No.: HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 922/1 SAMPLE TYPE: SOIL PROFILE DATE: 25th February, 1972.

SAMPLE No.	LAB. No.	Cu ppm	Ni ppm	Co ppm	Pb ppm	Zn ppm	Ag ppm	Mo ppm
H.TL/S1	72-B-1223(A)	BLD	BLD	BLD	10	5	BLD	15
H.TL/S1	72-B-1223(B)	BLD	BLD	5	10	10'	BLD	25'
H.TL/S1	72-B-1223(C)	BLD	BLD	5	10	BLD	BLD	20
H.TL/S2	72-B-1224(A)	5	BLD	5	5	5	BLD	15
H.TL/S2	72-B-1224(B)	5	BLD	BLD	10'	10'	BLD	15
H.TL/S2	72-B-1224(C)	BLD	BLD	BLD	10	10	BLD	15
H.TL/S3	72-B-1225(A)	5	10	BLD	BLD	15'	BLD	20
H.TL/S3	72-B-1225(B)	5	10	5	BLD	10	BLD	15
H.TL/S3	72-B-1225(C)		NO SAMPLE					
H.TL/S4	72-B-1226(A)	10	10	10'	BLD	10'	BLD	15
H.TL/S4	72-B-1226(B)	BLD	BLD	5	BLD	BLD	BLD	20'
H.TL/S4	72-B-1226(C)	BLD	BLD	5	5	5	BLD	20
H.TL/S5	72-B-1227(A)	BLD	5	10'	5	15'	BLD	20
H.TL/S5	72-B-1227(B)	BLD	BLD	5	5	10	BLD	35'
H.TL/S5	72-B-1227(C)	BLD	BLD	5	BLD	BLD	BLD	30
H.TL/S6A	72-B-1228(A)	10	10'	5'	BLD	10'	BLD	20
H.TL/S6A	72-B-1228(B)	10	10	5	BLD	5	BLD	40'
H.TL/S6A	72-B-1228(C)	10	10	5	BLD	5	BLD	40
H.TL/S6B	72-B-1229(A)	10	BLD	5	5	10'	BLD	30'
H.TL/S6B	72-B-1229(B)	~~15'~~	5	~~10'~~	~~10'~~	~~10~~	1	20
H.TL/S6B	72-B-1229(C)	10	BLD	5	10	BLD	1	25
H.TL/S7	72-B-1230(A)	BLD	BLD	BLD	BLD	10	BLD	20
H.TL/S7	72-B-1230(B)		NO SAMPLE					
H.TL/S7	72-B-1230(C)		NO SAMPLE					
H.TL/S8A	72-B-1231(A)	10	20'	5	BLD	20'	BLD	20
H.TL/S8A	72-B-1231(B)	10	20'	5	5	10	BLD	40'
H.TL/S8A	72-B-1231(C)	BLD	BLD	5	BLD	10	BLD	10
H.TL/S8B	72-B-1232(A)	10	20	10	BLD	20'	BLD	30'
H.TL/S8B	72-B-1232(B)	10	10	10	BLD	10	BLD	20
H.TL/S8B	72-B-1232(C)	BLD	BLD	5	BLD	20	BLD	10
H.TL/S9	72-B-1233(A)	10	BLD	10	10	10	BLD	10
H.TL/S9	72-B-1233(B)	BLD	5	10	10	10	BLD	10
H.TL/S9	72-B-1233(C)		NO SAMPLE					
H.TL/S10A	72-B-1234(A)	10	BLD	10	10	10	BLD	30
H.TL/S10A	72-B-1234(B)	10	5	10	10	BLD	BLD	25
H.TL/S10A	72-B-1234(C)	10	BLD	10	10	BLD	BLD	20
H.TL/S10B	72-B-1235(A)	~~50~~	~~10~~	~~10~~	~~20~~	~~40~~	~~2~~	~~20~~
H.TL/S10B	72-B-1235(B)	70	BLD	10	15	10	2	10
H.TL/S10B	72-B-1235(C)	80	5	10	15	10	2	10
H.TL/S10C	72-B-1236(A)	40	BLD	10	15	50	1	10
H.TL/S10C	72-B-1236(B)	60	BLD	5	15	30	1	10
H.TL/S10C	72-B-1236(C)	50	BLD	5	10	30	2	20
H.TL/S11A	72-B-1237(A)	5	10	5	BLD	10	BLD	15
H.TL/S11A	72-B-1237(B)	BLD	BLD	5	BLD	BLD	1	10
H.TL/S11A	72-B-1237(C)	BLD	BLD	BLD	BLD	BLD	BLD	10
H.TL/S11B	72-B-1238(A)	20	BLD	10	5	10	BLD	60'

METHODS:

Cu, Ni, Co, Pb, Zn, Ag by G.R.C. No. 1
Mo by G.R.C. No. 2
B.L.D. = Below Limit of Detection
A - -80 Fraction
B - -22 + 85 Fraction
C - +22 Fraction

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Ray W. Gerhardy
Chief Chemist

026

GEOCHEMICAL LABORATORY REPORT

758027

FIELD SHEET No.: 007753 PROJECT No.: HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 922/2 SAMPLE TYPE: SOIL PROFILE DATE: 25th February, 1972.

SAMPLE No.	LAB. No.	Cu ppm	Ni ppm	Co ppm	Pb ppm	Zn ppm	Ag ppm	Mo ppm
H.TL/S11B	72-B-1238(B)	30	BLD	10	10	10	2	60
H.TL/S11B	72-B-1238(C)	40	BLD	10	10	10	2	65
H.TL/S12	72-B-1239(A)	10	20	10	5	25	1	X
H.TL/S12	72-B-1239(B)	BLD	BLD	BLD	BLD	BLD	BLD	20
H.TL/S12	72-B-1239(C)	BLD	10	BLD	BLD	BLD	BLD	20
H.TL/S13A	72-B-1240(A)	5	10	5	35	70	2	25
H.TL/S13A	72-B-1240(B)	BLD	BLD	5	25	45	2	25
H.TL/S13A	72-B-1240(C)	BLD	BLD	BLD	10	20	1	20
H.TL/S13B	72-B-1241(A)	BLD	10	10	50	140	2	20
H.TL/S13B	72-B-1241(B)	BLD	BLD	10	70	75	2	20
H.TL/S13B	72-B-1241(C)	BLD	BLD	5	90	40	2	20
H.TL/S14	72-B-1242(A)	10	30	10	30	90	1	X
H.TL/S14	72-B-1242(B)	BLD	5	BLD	BLD	10	BLD	20
H.TL/S14	72-B-1242(C)	BLD	BLD	BLD	BLD	BLD	BLD	20

METHODS:

X = not sufficient sample to do analysis

A: -85 fraction

B: -22 + 85 fraction

C: +22 fraction

Chief Chemist

Ray W. Yerbury

027

GEOCHEMICAL LABORATORY REPORT 758028

FIELD SHEET No. 007753 PROJECT No.: HEEMSKIRK - TENTH LEGION

LAB. SHEET No. 922/3 SAMPLE TYPE: SOIL PROFILE DATE: 25th February, 1972.

SAMPLE No.	LAB. No.	W %	Sn %	pH
H.TL/S1	72-B-1223(A)	BLD	0.03	4.0
H.TL/S1	72-B-1223(B)	BLD	0.02	4.1
H.TL/S1	72-B-1223(C)	BLD	0.04	4.0
H.TL/S2	72-B-1224(A)	BLD	0.04	4.0
H.TL/S2	72-B-1224(B)	BLD	0.08	3.8
H.TL/S2	72-B-1224(C)	BLD	0.03	3.9
H.TL/S3	72-B-1225(A)	BLD	0.03	4.3
H.TL/S3	72-B-1225(B)	BLD	0.03	4.1
H.TL/S3	72-B-1225(C)	NO SAMPLE		
H.TL/S4	72-B-1226(A)	BLD	BLD	4.4
H.TL/S4	72-B-1226(B)	BLD	BLD	4.3
H.TL/S4	72-B-1226(C)	BLD	0.08	4.1
H.TL/S5	72-B-1227(A)	X	X	X
H.TL/S5	72-B-1227(B)	BLD	0.02	4.0
H.TL/S5	72-B-1227(C)	BLD	0.04	4.0
H.TL/S6A	72-B-1228(A)	BLD	0.02	4.3
H.TL/S6A	72-B-1228(B)	BLD	0.04	4.3
H.TL/S6A	72-B-1228(C)	BLD	0.03	4.4
H.TL/S6B	72-B-1229(A)	BLD	0.03	4.4
H.TL/S6B	72-B-1229(B)	BLD	BLD	4.4
H.TL/S6B	72-B-1229(C)	BLD	0.03	4.2
H.TL/S7	72-B-1230(A)	BLD	0.03	4.3
H.TL/S7	72-B-1230(B)	NO SAMPLE		
H.TL/S7	72-B-1230(C)	NO SAMPLE		
H.TL/S8A	72-B-1231(A)	X	X	X
H.TL/S8A	72-B-1231(B)	X	X	X
H.TL/S8A	72-B-1231(C)	BLD	0.05	3.9
H.TL/S8B	72-B-1232(A)	BLD	0.03	4.5
H.TL/S8B	72-B-1232(B)	BLD	0.04	4.8
H.TL/S8B	72-B-1232(C)	BLD	0.05	4.4
H.TL/S9	72-B-1233(A)	BLD	0.02	3.8
H.TL/S9	72-B-1233(B)	BLD	0.06	3.8
H.TL/S9	72-B-1233(C)	NO SAMPLE		
H.TL/S10A	72-B-1234(A)	BLD	BLD	4.3
H.TL/S10A	72-B-1234(B)	BLD	0.03	4.3
H.TL/S10A	72-B-1234(C)	BLD	0.02	4.1
H.TL/S10B	72-B-1235(A)	X	X	X
H.TL/S10B	72-B-1235(B)	BLD	0.03	4.5
H.TL/S10B	72-B-1235(C)	BLD	BLD	4.5
H.TL/S10C	72-B-1236(A)	BLD	0.06	4.8
H.TL/S10C	72-B-1236(B)	BLD	0.02	4.5
H.TL/S10C	72-B-1236(C)	BLD	0.05	4.5
H.TL/S11A	72-B-1237(A)	X	X	X
H.TL/S11A	72-B-1237(B)	BLD	0.05	3.9
H.TL/S11A	72-B-1237(C)	BLD	0.03	3.8
H.TL/S11B	72-B-138(A)	BLD	0.05	4.5

METHODS:

S by G.R.C. No. 4
Sn by G.R.C. No. 5
pH by G.R.C. No. 702

Ray W. Gerlach

Chief Chemist

028

GEOCHEMICAL LABORATORY REPORT

758029

FIELD SHEET No. 007753 PROJECT No. HEEMSKIRK - TENTH LEGION

LAB. SHEET No. 922/4 SAMPLE TYPE. SOIL PROFILE DATE. 25th February, 1972

SAMPLE No.	LAB. No.	W %	Sn %	pH				
H.TL/S11B	72-B-1238(B)	BLD	0.02	4.3				
H.TL/S11B	72-B-1238(C)	BLD	0.02	4.4				
H.TL/S12	72-B-1239(A)	BLD	0.02	X				
H.TL/S12	72-B-1239(B)	BLD	0.06	4.7				
H.TL/S12	72-B-1239(C)	BLD	0.06	4.6				
H.TL/S13A	72-B-1240(A)	X	X	X				
H.TL/S13A	72-B-1240(B)	BLD	0.02	4.4				
H.TL/S13A	72-B-1240(C)	BLD	BLD	4.6				
H.TL/S13B	72-B-1241(A)	BLD	0.04	X				
H.TL/S13B	72-B-1241(B)	BLD	0.03	5.0				
H.TL/S13B	72-B-1241(C)	BLD	0.04	4.9				
H.TL/S14	72-B-1242(A)	BLD	0.04	X				
H.TL/S14	72-B-1242(B)	BLD	0.03	4.6				
H.TL/S14	72-B-1242(C)	BLD	0.03	4.2				

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist Ray W. Gerbwy

APPENDIX D

CHEMICAL RESULTS OF SOIL SAMPLES

030

GEOCHEMICAL LABORATORY REPORT 758031

FIELD SHEET No.: 007754 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/1 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %			
AA HTD00	72-D-1	20	5	BLD	10	0.06			
AA HTL25	72-D-2	10	5	BLD	10	0.03			
AA HTL50	72-D-3	40	5	BLD	BLD	0.03			
AA HTL75	72-D-4	5	2	BLD	BLD	0.04			
AA HTL100	72-D-5	BLD	2	BLD	BLD	0.03			
AA HTL125	72-D-6	5	5	BLD	BLD	0.02			
AA HTL137	72-D-7	5	30	BLD	BLD	0.06			
AA HTL150		S A M P L E		M I S		S I N G			
AA HTL162	72-D-8	BLD	10	BLD	BLD	0.04			
AA HTL175	72-D-9	10	20	BLD	BLD	0.06			
AA HTL187	72-D-10	BLD	30	BLD	BLD	0.02			
AA HTL200	72-D-11	15	60	BLD	BLD	0.04			
AA HTL212	72-D-12	10	20	BLD	10	BLD			
AA HTL225	72-D-13	10	10	BLD	BLD	0.04			
AA HTL250	72-D-14	20	10	BLD	BLD	0.06			
AA HTL275	72-D-15	10	5	BLD	BLD	0.04			
AA HTL300	72-D-16	5	2	BLD	BLD	0.06			
AA HTL312	72-D-17	10	2	BLD	10	0.04			
AA HTL325	72-D-18	25	10	BLD	10	0.02			
AA HTL337	72-D-19	15	2	BLD	10	0.03			
AA HTL350	72-D-20	20	20	BLD	10	0.04			
AA HTL362	72-D-21	5	2	BLD	BLD	0.06			
AA HTL375	72-D-22	85	300	BLD	10	0.06			
AA HTL387	72-D-23	BLD	2	BLD	BLD	0.08			
AA HTL400	72-D-24	BLD	5	BLD	BLD	0.08			
AA HTL412	72-D-25	BLD	5	BLD	BLD	0.06			
AA HTL425	72-D-26	10	5	BLD	BLD	0.04			
AA HTL437	72-D-27	BLD	2	BLD	BLD	0.08			
AA HTL450	72-D-28	5	2	BLD	BLD	0.04			
AA HTL462	72-D-29	10	10	BLD	BLD	0.03			
AA HTL475	72-D-30	BLD	2	BLD	BLD	0.03			
AA HTL487	72-D-31	15	10	BLD	BLD	0.08			
AA HTL500	72-D-32	20	5	BLD	BLD	0.06			
AA HTL512	72-D-33	40	10	1	BLD	0.03			
AA HTL525	72-D-34	80	20	BLD	BLD	0.03			
AA HTL537	72-D-35	15	2	1	BLD	0.03			
AA HTL550	72-D-36	20	20	BLD	BLD	0.02			
AA HTL575	72-D-37	10	25	BLD	BLD	0.04			
AA HTL600	72-D-38	10	15	BLD	BLD	0.03			
AA HTL625	72-D-39	30	5	BLD	BLD	0.02			
AA HTL650	72-D-40	5	5	BLD	BLD	0.02			
AA HTL675	72-D-41	75	40	BLD	BLD	0.03			
AA HTL700	72-D-42	5	10	BLD	BLD	0.04			
AA HTL725	72-D-43	55	25	BLD	BLD	0.08			
A HTL 50	72-D-44	BLD	BLD	BLD	BLD	0.04			
A HTL100	72-D-45	BLD	BLD	BLD	BLD	0.04			

METHODS:

Pb, Zn, Ag by G.R.C. No. 1
Mo by G.R.C. No. 2
Sn by G.R.C. No. 5
B.L.D. = Below Limit of Detection

Ray W. Gerlach

Chief Chemist

031

GEOCHEMICAL LABORATORY REPORT 758032

FIELD SHEET No.: 007754 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/2 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
A HTL150	72-D-46	BLD	2	BLD	BLD	0.04
A HTL200	72-D-47	30	10	BLD	BLD	0.02
A HTL250		S A M P L E		M I S	S I N G	
A HTL300	72-D-48	BLD	2	BLD	BLD	0.04

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist

032

GEOCHEMICAL LABORATORY REPORT 758033

FIELD SHEET No.: 007755 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/3 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
A HTL325	72-D-49	20	BLD	BLD	BLD	0.06
A HTL350	72-D-50	50	BLD	BLD	10	BLD
A HTL375	72-D-51	15	BLD	BLD	BLD	0.04
A HTL387	72-D 52	5	BLD	BLD	BLD	0.03
A HTL400	72-D-53	BLD	BLD	BLD	BLD	0.03
A HTL412	72-D-54	BLD	BLD	BLD	BLD	0.04
A HTL425	72-D-55	BLD	2	BLD	BLD	0.02
A HTL437	72-D-56	BLD	2	BLD	BLD	0.03
A HTL450	72-D-57	10	2	BLD	BLD	0.06
A HTL462	72-D-58	15	10	BLD	BLD	0.04
A HTL475	72-D-59	5	BLD	BLD	BLD	0.04
A HTL487	72-D-60	10	BLD	BLD	BLD	0.06
A HTL500	72-D-61	5	5	BLD	BLD	0.06
A HTL512	72-D-62	30	15	BLD	BLD	0.03
A HTL525	72-D-63	40	10	BLD	BLD	0.08
A HTL537	72-D-64	35	10	BLD	BLD	0.06
A HTL550	72-D-65	BLD	5	BLD	BLD	0.04
A HTL575	72-D-66	5	2	BLD	BLD	0.06
A HTL600	72-D-67	5	BLD	BLD	BLD	0.04
A HTL625	72-D-68	BLD	BLD	BLD	BLD	0.06
A HTL650	72-D-69	5	BLD	BLD	BLD	0.02
A HTL675	72-D-70	BLD	BLD	BLD	BLD	0.03
A HTL687	72-D-71	5	5	BLD	BLD	0.03
A HTL700	72-D-72	10	25	1	10	0.06
A HTL712	72-D-73	5	20	1	10	0.08
A HTL725	72-D-74	BLD	2	BLD	BLD	0.06
A HTL737	72-D-75	BLD	BLD	BLD	BLD	0.03
A HTL750	72-D-76	BLD	BLD	BLD	BLD	0.04
A HTL765	72-D-77	BLD	2	BLD	BLD	0.02
A HTL775	72-D-78	BLD	2	BLD	BLD	0.04
A HTL787	72-D-79	BLD	2	BLD	BLD	0.03
A HTL800	72-D-80	BLD	BLD	BLD	BLD	0.08
A HTL812	72-D-81	5	2	BLD	BLD	0.04
A HTL825	72-D-82	10	2	BLD	10	0.08
A HTL837	72-D-83	25	2	BLD	BLD	0.03
A HTL850	72-D-84	5	BLD	BLD	BLD	0.04
A HTL862	72-D-85	BLD	BLD	BLD	BLD	0.03
A HTL875	72-D-86	75	10	1	10	0.03
A HTL887	72-D-87	BLD	10	BLD	BLD	0.02
A HTL900	72-D-88	15	5	BLD	10	0.03
A HTL912	72-D-89	10	2	BLD	BLD	0.06
A HTL925	72-D-90	BLD	2	BLD	BLD	0.04
A HTL950	72-D-91	BLD	2	BLD	BLD	0.08
A HTL975	72-D-92	BLD	2	BLD	BLD	0.08
A HTL1000	72-D-93	BLD	BLD	BLD	BLD	0.08
A HTL1025	72-D-94	BLD	5	BLD	BLD	0.06

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist Ray W. Gerhardy

GEOCHEMICAL LABORATORY REPORT 758034

FIELD SHEET No.: 007755 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/4 SAMPLE TYPE: SOIL PROF. DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
A HTL1050	72-D-95	10	BLD	BLD	BLD	0.06
A HTL1075	72-D-96	5	BLD	BLD	BLD	0.06
A HTL1100	72-D-97	BLD	2	BLD	BLD	0.03

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist

Ray W. Gerlyng

034

GEOCHEMICAL LABORATORY REPORT 758035

FIELD SHEET No.: 007756 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/5 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
B HTL50	72-D-98	BLD	BLD	BLD	BLD	0.06
B HTL100	72-D-99	BLD	BLD	BLD	BLD	0.06
B HTL125	72-D-100	10	BLD	BLD	10	0.06
B HTL150	72-D-101	BLD	BLD	BLD	BLD	0.06
B HTL175	72-D-102	BLD	BLD	BLD	BLD	0.06
B HTL200	72-D-103	15	2	BLD	10	0.04
B HTL225	72-D-104	5	BLD	BLD	BLD	0.08
B HTL250	72-D-105	10	BLD	BLD	BLD	0.03
B HTL275	72-D-106	BLD	BLD	BLD	BLD	0.03
B HTL300	72-D-107	5	BLD	BLD	BLD	0.04
B HTL325	72-D-108	15	BLD	BLD	BLD	0.06
B HTL337	72-D-109	25	BLD	BLD	BLD	0.08
B HTL350	72-D-110	5	BLD	BLD	BLD	0.08
B HTL362	72-D-111	5	BLD	BLD	BLD	0.04
B HTL375	72-D-112	BLD	BLD	BLD	BLD	0.03
B HTL387	72-D-113	BLD	BLD	BLD	BLD	0.03
B HTL400	72-D-114	BLD	BLD	BLD	BLD	0.03
B HTL412	72-D-115	BLD	BLD	BLD	BLD	0.02
B HTL425	72-D-116	5	5	BLD	BLD	0.04
B HTL437	72-D-117	BLD	BLD	BLD	BLD	0.04
B HTL450	72-D-118	BLD	BLD	BLD	BLD	0.06
B HTL462	72-D-119	10	15	BLD	10	0.08
B HTL475		S A M P L E	M I S S I N G			
B HTL487	72-D-120	5	5	BLD	BLD	0.04
B HTL500	72-D-121	BLD	BLD	BLD	BLD	0.06
B HTL525	72-D-122	BLD	10	BLD	BLD	0.03
B HTL550	72-D-123	BLD	BLD	BLD	BLD	0.04
B HTL575	72-D-124	BLD	2	BLD	BLD	0.04
B HTL600	72-D-125	BLD	BLD	BLD	BLD	0.06
B HTL625	72-D-126	BLD	5	1	BLD	0.03
B HTL650	72-D-127	BLD	BLD	BLD	BLD	0.08
B HTL675	72-D-128	BLD	2	BLD	BLF	0.04
B HTL700	72-D-129	5	5	BLD	BLD	0.06
B HTL725	72-D-130	BLD	BLD	BLD	BLD	0.08
B HTL750	72-D-131	BLD	BLD	BLD	BLD	0.08
B HTL775	72-D-132	BLD	10	BLD	BLD	0.04
B HTL800	72-D-133	BLD	BLD	BLD	BLD	0.03
B HTL825	72-D-134	BLD	BLD	BLD	BLD	0.03
B HTL850	72-D-135	BLD	5	BLD	10	0.03
B HTL875	72-D-136	10	20	BLD	BLD	0.06
B HTL900	72-D-137	10	5	BLD	BLD	0.06
B HTL925	72-D-138	20	15	1	10	0.08
B HTL950	72-D-139	10	5	BLD	BLD	0.06
C HTL00	72-D-140	10	BLD	BLD	BLD	0.03
C HTL25	72-D-141	10	BLD	BLD	BLD	0.06
C HTL50	72-D-142	10	2	BLD	10	0.06

METHODS:

Chief Chemist

Ray W. Gerlach

035

GEOCHEMICAL LABORATORY REPORT 758036

FIELD SHEET No.: 007756 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/6 SAMPLE TYPE: SOIL PROF. DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
C HTL75	72-D-143	5	2	BLD	10	0.04
C HTL87	72-D-144	BLD	BLD	BLD	10	0.03
C HTL100	72-D-145	10	15	BLD	BLD	0.09
C HTL112	72-D-146	5	5	BLD	BLD	0.08

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist

Ray W. Gerdsmeyer

036

GEOCHEMICAL LABORATORY REPORT 758037

FIELD SHEET No.: 007757 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/7 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
C HTL125	72-D-147	5	BLD	BLD	BLD	0.08
C HTL137	72-D-148	5	BLD	BLD	BLD	0.04
C HTL150	72-D-149	BLD	BLD	BLD	BLD	0.02
C HTL162	72-D-150	BLD	BLD	BLD	BLD	0.06
C HTL175	72-D-151	5	BLD	BLD	BLD	0.04
C HTL187	72-D-152	10	2	BLD	BLD	0.04
C HTL200	72-D-153	5	10	BLD	BLD	0.08
C HTL212	72-D-154	BLD	BLD	BLD	BLD	0.03
C HTL225	72-D-155	5	2	BLD	BLD	0.03
C HTL250	72-D-156	BLD	BLD	BLD	BLD	0.02
C HTL275	72-D-157	BLD	5	BLD	BLD	0.04
C HTL300	72-D-158	10	5	BLD	BLD	0.03
C HTL325	72-D-159	15	10	BLD	BLD	0.04
C HTL350	72-D-160	10	10	BLD	BLD	0.06
C HTL375	72-D-161	BLD	10	BLD	BLD	0.04
C HTL400	72-D-162	5	10	BLD	BLD	0.06
C HTL425	72-D-163	120	120	3	BLD	0.04
C HTL450	72-D-164	5	BLD	BLD	BLD	0.06
C HTL475	72-D-165	10	10	BLD	BLD	0.08
C HTL500	72-D-166	15	10	BLD	BLD	0.06
C HTL525	72-D-167	10	5	BLD	BLD	0.04
C HTL550	72-D-168	5	10	BLD	BLD	0.04
C HTL575	72-D-169	BLD	2	BLD	BLD	0.06
C HTL600	72-D-170	BLD	10	BLD	BLD	0.04
C HTL625	72-D-171	10	10	BLD	BLD	0.04
D HTL00	72-D-172	15	BLD	BLD	BLD	0.03
D HTL25	72-D-173	5	BLD	BLD	BLD	0.03
D HTL50	72-D-174	30	2	BLD	BLD	0.03
D HTL75	72-D-175	20	BLD	BLD	BLD	0.03
D HTL100	72-D-176	20	2	BLD	BLD	0.03
D HTL125	72-D-177	20	5	BLD	BLD	0.08
D HTL150	72-D-178	BLD	5	BLD	BLD	0.06
D HTL162	72-D-179	BLD	5	BLD	BLD	0.03
D HTL175	72-D-180	BLD	BLD	BLD	BLD	0.06
D HTL187	72-D-181	5	5	BLD	BLD	0.03
D HTL200	72-D-182	BLD	BLD	BLD	BLD	0.03
D HTL212	72-D-183	5	5	BLD	BLD	0.04
D HTL225	72-D-184	10	5	BLD	BLD	0.02
D HTL237	72-D-185	20	20	BLD	BLD	0.04
D HTL250	72-D-186	25	5	BLD	BLD	0.03
D HTL262	72-D-187	50	5	BLD	BLD	0.04
D HTL275	72-D-188	5	2	BLD	BLD	0.04
D HTL287	72-D-189	10	5	BLD	BLD	0.06
D HTL300	72-D-190	5	BLD	BLD	BLD	0.02
D HTL312	72-D-191	10	10	BLD	BLD	0.06
D HTL325	72-D-192	5	10	BLD	BLD	0.06

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Chief Chemist

037

GEOCHEMICAL LABORATORY REPORT 758038

FIELD SHEET No.: 007757 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/8 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
D HTL350	72-D-193	15	35	BLD	BLD	0.03
D HTL375	72-D-194	10	5	BLD	BLD	0.04
D HTL400	72-D-195	10	20	1	BLD	0.03
D HTL425	72-D-196	20	15	1	BLD	0.04

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Ray W. Gerdwy

Chief Chemist

038

GEOCHEMICAL LABORATORY REPORT 758039

FIELD SHEET No.: 007758 PROJECT No.: EL.7/68 - HEEMSKIRK - TENTH LEGION

LAB. SHEET No.: 956/9 SAMPLE TYPE: SOIL PROFILE DATE: 14th April, 1972.

SAMPLE No.	LAB. No.	Pb ppm	Zn ppm	Ag ppm	Mo ppm	Sn %
D HTL450	72-D-197	10	2	BLD	BLD	0.06
D HTL500	72-D-198	10	10	BLD	BLD	0.03
D HTL550	72-D-199	15	10	BLD	BLD	0.06
D HTL600	72-D-200	BLD	10	BLD	BLD	0.02
D HTL650	72-D-201	15	15	BLD	BLD	0.04
D HTL700	72-D-202	40	30	1	BLD	0.03
D HTL760SS	72-D-203	20	90	BLD	BLD	0.03
E HTL00	72-D-204	BLD	BLD	BLD	10	0.06
E HTL25	72-D-205	20	10	BLD	BLD	0.03
E HTL50	72-D-206	10	BLD	BLD	BLD	0.08
E HTL75	72-D-207	BLD	BLD	BLD	BLD	0.08
E HTL100	72-D-208	20	5	BLD	BLD	0.08
E HTL125	72-D-209	10	2	BLD	BLD	0.04
E HTL150	72-D-210	35	5	BLD	BLD	0.04
E HTL175	72-D-211	BLD	BLD	BLD	BLD	0.04
E HTL200	72-D-212	5	BLD	BLD	BLD	0.08
E HTL212	72-D-213	5	2	BLD	BLD	0.04
E HTL225	72-D-214	BLD	BLD	BLD	BLD	0.03
E HTL237	72-D-215	10	BLD	BLD	BLD	0.06
E HTL250	72-D-216	30	5	BLD	BLD	0.03
E HTL258SS	72-D-217	10	5	BLD	BLD	0.03
E HTL262	72-D-218	15	2	1	BLD	0.03
E HTL275	72-D-219	5	2	BLD	BLD	0.06
E HTL287	72-D-220	5	BLD	BLD	BLD	0.04
E HTL300	72-D-221	10	2	BLD	BLD	0.04
E HTL312	72-D-222	10	5	BLD	BLD	0.06
E HTL325	72-D-223	20	5	BLD	BLD	0.09
E HTL335SS	72-D-224	25	BLD	BLD	BLD	0.04
E HTL350	72-D-225	100	5	4	BLD	0.04
E HTL375	72-D-226	70	20	BLD	BLD	0.04
E HTL400	72-D-227	80	10	BLD	BLD	0.02
E HTL425	72-D-228	20	10	BLD	BLD	0.09
E HTL450	72-D-229	115	25	2	BLD	0.06

METHODS:

This laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration.

Ray W. Gerhard

Chief Chemist

145°14'E

145°15'E

41°52'S

41°53'S

41°54'S.

TENTH LEGION FAULT ZONE

Dg Euo Q

R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14

A 1100m · AA 725m · B 950m · BB 775m · CC 500m · D 765m · E 450m · G 625m

Brecciated qtzite. (2)

qtzite

tour rich zone in qtzite

Siltstone (2)

fract qtzite

fract. qtzite

Ironstone Breccia

Contact Zone

Large ironstone breccia outcrop

Ironstone breccia.

Piney Creek

ss.

t

q

U? D?

Scale 1 6000 Approx

200 0 200 400 Metres

758040

5 cm

LEGEND

- Q — Quaternary alluvium
- Dg — Devonian Heemskirk granite
- Euo — Precambrian Oonah quartzite and slate
- 50 — Strike and dip of beds
- 30 — General dip of beds having subordinate folds
- Vertical bedding
- Joint, inclined
- X — Significant outcrop
- Stream, dashed where intermittent
- A — Sample line
- Contact, dashed where indefinite
- Fault, dashed where indefinite, questioned where inferred, dotted where concealed
- R15 — Location of rock sample, chemically analysed
- S7 — Location of orientation soil sample
- Distinctive lineation, possible fault or fracture, from air photographs.

Lithologic description abbreviations

fract — fractured
q — quartz veins.
ss — sandstone
t — tourmalinized
qtzite — quartzite

Note.— Base map from enlarged air photograph with inherent distortion

72-871

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TENTH LEGION FAULT AREA RECONNAISSANCE GEOLOGY

PROJECT	EL 7/68	AUTHOR	J Thigpen	DATE	March 1972	DWG Nº	1/315

2166 FIGURE 2

145° 14' 30" E

145° 15' E

41° 52' 30" S

41° 53' S

Euo

Dg

Q

colluvium cover

colluvium

gr, coarse, reddish-grey, minor tour

Talus cone apron over gr

Talus cone apron

625-775 Talus cone apron

Euo ?

Probable fracture-controlled stream

ss, mod fract

qtzite float

qtzite-tour float

qtzite-tour. float

ss

qtzite-float

qtzite, tour, & qtz-tour, float

This fault inferred mainly from magnetic & VLF data

qtzite

brecciated qtzite

qtzite-slate.

Siltstone

Small outcrops in stream with alluvial cover

qtzite. granitic (?) dyke tour with qtz-tour

qtzite-tour. float

siltstone

No outcrop alluvium cover

siltstone.

siltstone minor folds

qtzite-tour

fract qtzite

ss-siltstone, thin bedded

These faults inferred from magnetic & VLF data

fractured qtzite

qtz-tour

Gradational contact zone between Euo & Dg is 100-150 metres wide at surface

X Minor cassiterite in contact zone, associated with qtz-tour.

qtz-tour.

Weathered gr much tour

gr, minor tour

No exposure

qtzite-tour, with qtz-tour or possible granitic (?) dyke

qtzite-slate, with tour & qtz-tour

qtzite float

brecciated ss. ss. & siltstone highly fract

siltstone w/ qtz-tour veins.

qtzite-tour float, also granitoid (?) qtz-tour, rock

ironstone breccia

qtzite-tour. float

fract. qtzite

ss. - siltstone, thin bedded

A

B

C

D

E

AA

BB

CC

LEGEND

- Q — Quaternary alluvium
- Dg — Devonian granite
- Euo — Precambrian Oonah quartzite and slate
- Strike and dip of beds
- General dip of beds having subordinate folds
- Joint, inclined
- X — Significant outcrop
- Stream, dashed where intermittent
- Old prospect trench
- Contact, dashed where indefinite
- Fault, dashed where indefinite, questioned where inferred, dotted where concealed
- Anticline, arrow denotes plunge, dashed where indefinite
- Syncline, arrow denotes plunge, dashed where indefinite
- Sample line

Lithologic description abbreviations

fract — fractured
qtzite — quartzite
qtz — quartz
gr — granite
ss — sandstone
tour — tourmaline(schorl)
w/ — with

Scale 1 2500

100 0 100 200 Metres

5 cm

758041 72-871

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TENTH LEGION FAULT AREA
RECONNAISSANCE GRID
GEOLOGICAL MAP 2167

PROJECT	EL 7/68	AUTHOR	J Thigpen	DATE	March 1972	DWG No	1/313

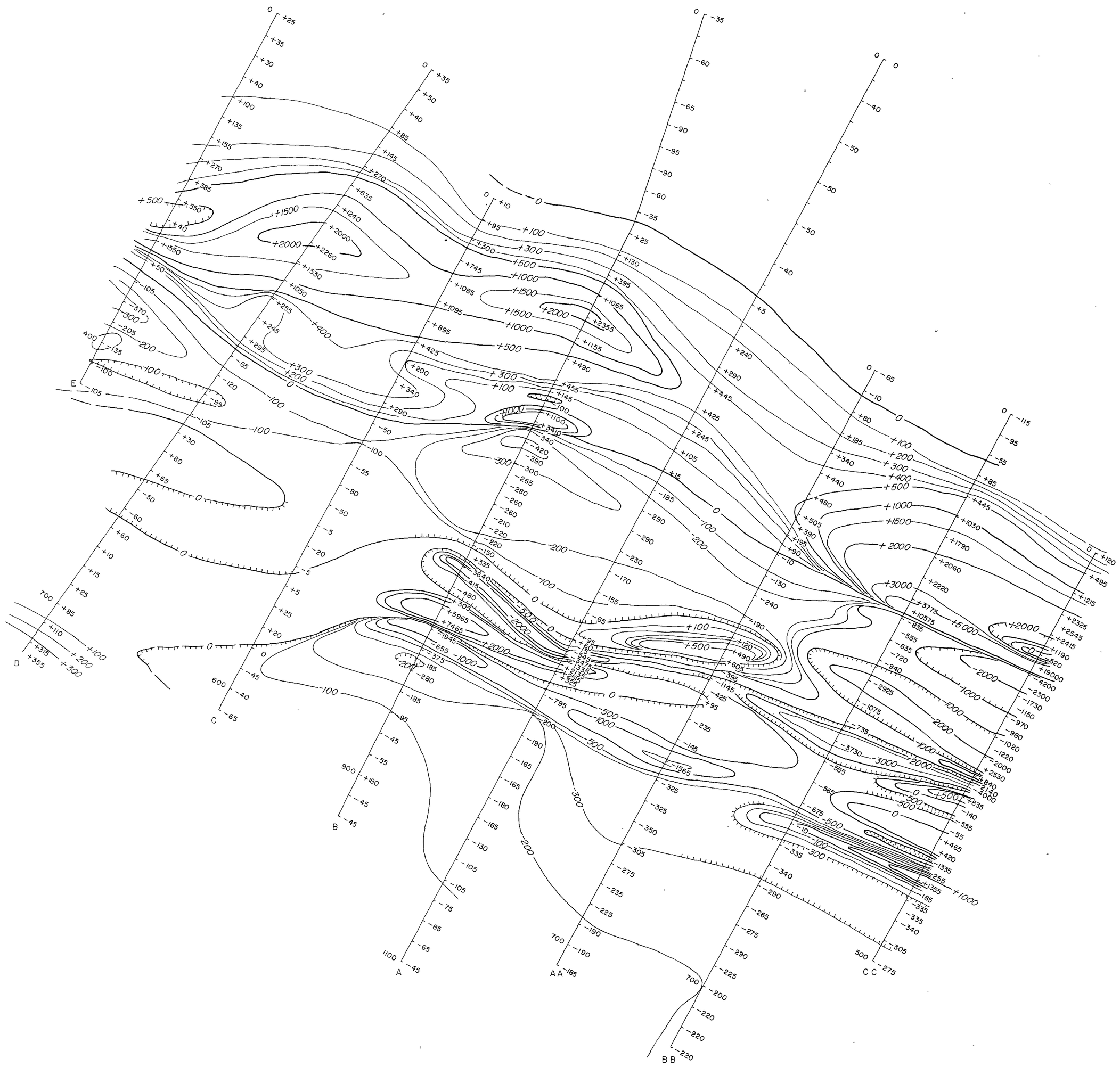
FIGURE 3

145°14'30"E

145°15'E

41°52'30"S

41°53'S



LEGEND

+60 Relative magnetic anomaly value in gammas

0 Magnetic contour

100 Supplementary contour

A Sample line

Note – Magnetic values shown have been measured with respect to a value of 0 gammas at point 00 on line A

Scale 1 2500

100 0 100 200 Metres

5 cm

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RECONNAISSANCE GRID
MAGNETIC ANOMALY CONTOURS

PROJECT	EL 7/68	AUTHOR	J Thigpen	DATE	March 1972	DWG Nº	1/314

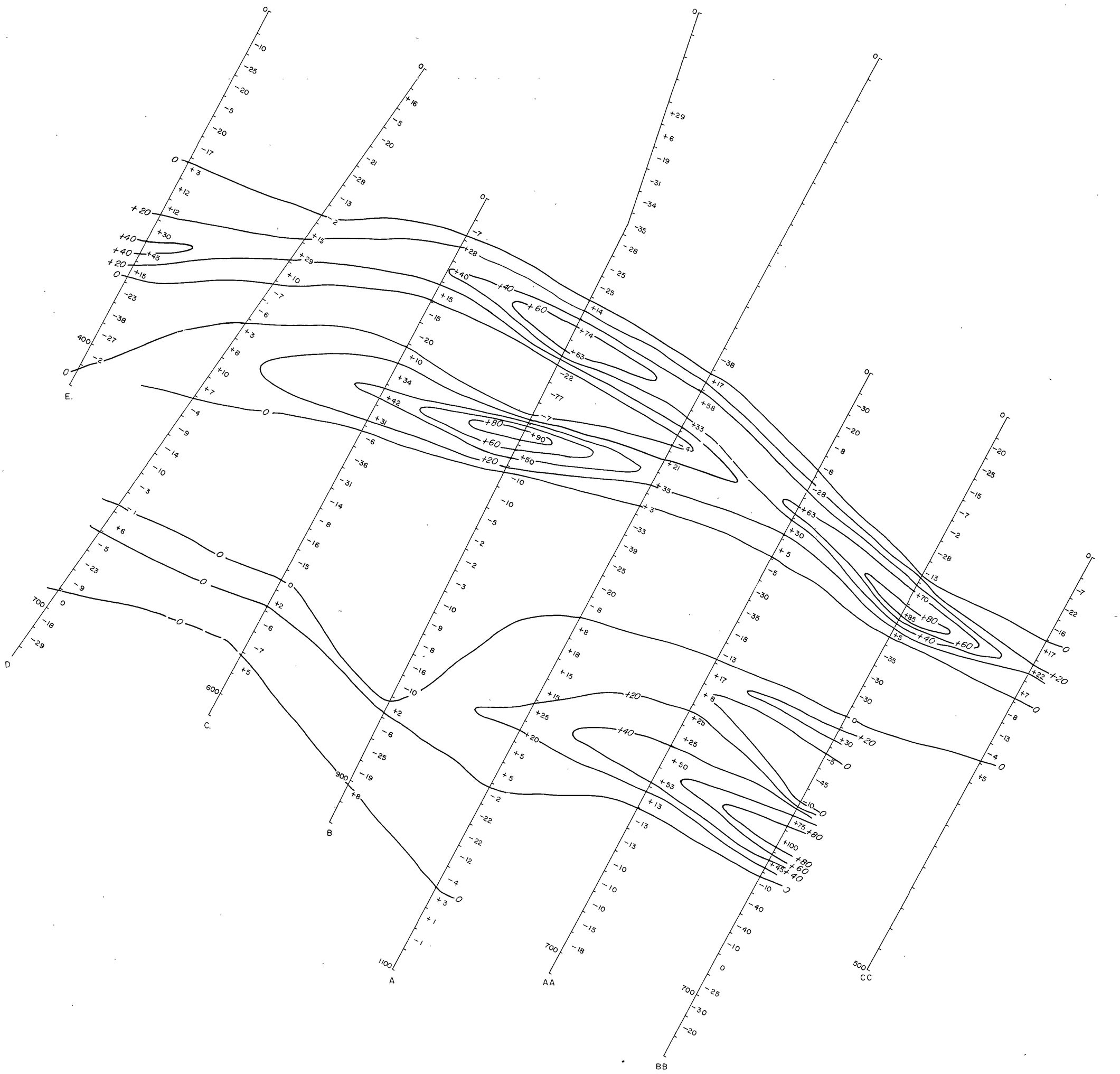
2168 FIGURE 4

145°14'30"E

145°15'E

41°52'30"S

41°53'S



145°14'30"E

145°15'E

5 cm

LEGEND

+10 — First derivative value

A — Sample line

+20 — First derivative contour

Scale 1 2500

100 0 100 200 Metres

758043

72-871

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TENTH LEGION FAULT AREA
RECONNAISSANCE GRID 2169
V.L.F.-EM FIRST DERIVATIVE CONTOURS

PROJECT	EL 7/68	AUTHOR	J Thigpen	DATE	March 1972	DWG Nº	1/316

FIGURE 5