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272001

78-1254

DRC

Report On  
Diamond Drilling Programme  
EXPLORATION LICENCE 4/73  
STERLING VALLEY

Tasmania

September - November 1977

**MICROFILMED**

**OPEN FILE**

D.C. Simpson

February 14, 1978.

001

272002

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002

INTRODUCTION AND SUMMARY

Following withdrawal of Asarco (Aust) Pty. Ltd. from the Sterling Valley Joint Venture, Abminco has completed a further diamond drill programme testing targets within the Sterling Valley tin-bearing black slate sequence.

The more southerly of two defined magnetic anomalies was drilled. After abandoning one hole at 125 metres (SV2), a second hole was completed (SV3) at 292.4 metres on November 9, 1977. Flattening was considerable in both holes and it is possible the second hole was not a complete test of the magnetic source.

This report summarises the results of the drilling programme.

DIAMOND DRILL HOLES SV2 and SV3.

DDH SV2 was commenced on September 12, 1977 and abandoned on October 9, 1977 at 125.4 metres owing to badly caving ground. The hole was collared at  $-60^{\circ}$  toward  $102^{\circ}$  magnetic at co-ordinates 4922.5E, 3327.5N. (See Plate SV17).

DDH SV3 sited 2 metres west of SV2 was commenced on October 10, 1977, and completed on November 4, 1977 at 292.4 metres. The hole was collared at  $-62^{\circ}$  towards  $102^{\circ}$  magnetic with collar co-ordinates 4920.5E, 3327.5N. The hole was collared in HQ to maximise penetration of the caving ground intersected in SV2.

The target for this drilling was a magnetic anomaly centred at approximately 5060E and extending from 3200N to 3560N. Interpretation of the magnetic data suggests depth to the top of the anomaly lies between 135 and 150 metres below surface. A westerly dip of approximately  $60^{\circ}$  was assigned to the source. This source was believed to be located down dip from the outcrop of tin bearing shales.

GEOLOGY

Reference should be made to cross section 3320N (Plate SV 18).

The sequence drilled is part of the Farrell Slates and consists of a sequence of sandstone, mudstone, black and grey shale units, crystal tuff, and quartz-sericite schist.

In drill holes SV2 and SV3 the upper shale unit intersected is equivalent to the shale unit intersected in DDH SV1 (which was drilled on 4040N in early 1977) and also the shale unit seen in the north bank of the Murchison River 300 metres downstream from the highway bridge.

The shale units intersected are very similar to the upper unit being predominantly black, while the other two units contain grey and black shale in equal abundance. They are generally thinly bedded with intercalations of carbonate-rich material which are often medium to coarse grained. The shales are often graphitic and the central shale unit is characterised by the presence of fine grained pyrite crystals developed along the bedding planes. The mudstones and siltstones in the sequence are pale grey to whitish in colour and generally massive, although occasional bedding is seen. Mineralisation shows some preference for the siltier bands.

Sandstones intersected in drilling are fine grained pale grey to white, with a quartz-sericite matrix. Carbonate rich bands (siderite?) occur in the upper sandstone unit. Siltstone and shale interbeds occur locally but the sandstones are generally massive.

Tuffs occur in three positions and all vary slightly in composition. The uppermost tuff is a quartz-feldspar-sericite crystal tuff, sections of which are extensively sheared, the second is a quartz crystal tuff with little foliation developed; the lowest is a quartz crystal tuff with a soft sericitic matrix.

A quartz sericite schist intersected between 125 and 131 metres is probably of acid tuffaceous origin but original texture is obscured by the imposed foliation.

The above rock descriptions are based on hand specimen study. Thin-section descriptions of selected rocks are not available at the time of writing. Samples taken from DDH SV3 for petrology are listed in Appendix II.

MINERALISATION

The target for this drilling programme was tin of the Renison-Cleveland style. The best intersection in SV3 was 2000 ppm Sn over 85 cm. from 218.40 to 219.25 metres in shale. Mineralisation in the zone, 215-220 metres, is characteristically pyrite, pyrrhotite with minor arsenopyrite, sphalerite, chalcopyrite and trace galena occurring in thin veinlets crosscutting bedding. Maximum sulphide content is 10% over short intervals i.e. ~30cm, but is more commonly <5%. (See Plate SV18 for assays and sulphide distribution).

The mineralisation intersected is clearly vein type. There is no evidence of replacement of carbonate rich sediments.

Both lead and zinc are present in anomalous amounts and are attributed to vein mineralisation associated with the tin.

Due to rapid flattening, the hole intersected the magnetic source 20 metres below its interpreted top and there is some doubt that the best mineralisation was intersected. It is possible the vein mineralisation intersected represents the halo of a massive sulphide body located at depth.

GEOPHYSICS

Drill hole SV3 confirmed the interpretation of induced polarisation data which suggested that two parallel black shale units were responsible for the complex resistivity and frequency effect patterns.

The drill core has been measured for magnetic susceptibility and exhibits negligible response throughout most of the hole, except for the eastern black shale unit. The bottom 20 metres of pyrrhotitic shale indicated a magnetic susceptibility of  $400 \times 10^{-6}$  cgs units (including 5 metres at  $850 \times 10^{-6}$  cgs units). This response is not strong and does not explain the magnetic anomaly, as recorded on line 3320N.

The interpreted dip and position of magnetic source are correct, however, the pyrrhotite content is less than expected.

It is therefore, interpreted that the severe flattening of the hole did not allow an adequate test of the magnetic source.

CONCLUSION

The very low tin values obtained from core analyses of SV3 are similar in order to those from the Electrolytic Zinc hole SVP105 collared about 50 metres south of SV3.

Magnetic interpretation suggests that there is a stronger concentration of pyrrhotite within 50 metres beneath SV3, however the lack of significant tin content in the sulphides intersected provides little encouragement for further drilling of this anomaly.

EXPENDITURE

In the Abminco financial year November 26, 1976 to November 22, 1977, the following expenditure was incurred:

Geology	\$ 7,595
Survey	3,735
Geophysics	7,046
Geochemistry	473
Diamond drilling	48,037
Tenure	105
Sundries	<u>1,252</u>
	<u>\$68,243</u>

Submitted

D. C. SimpsonD.C. Simpson  
Geologist

Endorsed

K.R. YatesK.R. Yates  
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DCS:imm

January 31, 1977

APPENDIX I

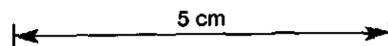


Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein  c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272009

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Not cored							
		River gravels - predominate. Occasional conglomerate derivatives.							
		<u>Interbedded sandstones, siltstones and minor shales.</u>							
	10	Sandstones dominant - these are light grey fine grained sericitic sandstones with minor quartz carbonate veining.							
		Core very fractured and broken to 22m and from 34 to 38.5.							
		Thin quartz-carbonate veinlets occur throughout. Some are sub-parallel to bedding. They appear to be segregations from quartz and carbonate rich sediments.							
	20	Most of the section is schistose.							
		Bedding angles ~30°.							
	30								
	40								
		<u>Sheared feldspar-chlorite sericite tuff.</u>							
		Coarse to medium grained pale green tuffs grading to a very fine grained schistose tuff where bedding is seen at 45-60°							
		Finer grains start at 44.5							
	50								



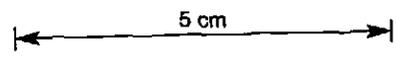
009

Feature: Bedding Shearing   
 Foliation Fault   
 Fragment size & shape Vein carbonate   
 quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272010

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
		Core very broken				
	60	Fine grained grey to pale grey sandstones with interbedded shales and slates. Sequence is similar to that above, i.e. sericitic and carbonate rich.  Core bedding angle 45°.  Occasional quartz veinlets visible at high angles to bedding, i.e. greater than 60°.  Single massive sandstone bed from 78.0 to 79.8.				
	70					
	80					
	90	Dark grey to black shale or slate with carbonate rich bands sub-parallel to bedding.  Minor pyrite (syngenetic) parallel to bedding developed locally.  Core bedding angle 50-60°				
						Silicified - pyrite rich section - sulphides total <10% Tr.galena. Zone is brecciated in parts Tr.po locally.
	100					

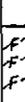


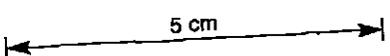
010

Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein  c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272011

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
	110	Graphite is common on most slip planes through the shaley parts of this sequence. Minor fault here →  Very low recovery 102.8 to 104.0				
	120	Pale green-grey quartz sericite schist interbedded with grey siltstones and shales Core bedding angle 60°				Tr. pyrite, sphalerite in joints with quartz and carbonate.
	125.4	E.O.H.				
	130	Hole abandoned due to caving of material into hole at 102-104 metres.				
	140					





HOLE No SV3

DATE 21.11.77

INITIAL ANALYSIS:

CHECK LAB:

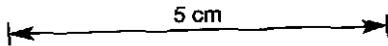
SAMPLE NO	FROM  M	TO  M	IW  cm	REMARKS	%Cu		%Pb		%Zn		Sn/ XRF	ppm Ag AAS	ppb Au AAS	ppm Au FIRE	INT.	%Cu	%Pb	%Zn
					AAS	XRF	AAS	XRF	AAS	XRF								
138266	101.05	101.80	75								1450							
138267	101.80	102.75	95								290							
138268	102.75	103.40	65								200							
138269	103.40	104.40	100								24							
138270	104.40	105.30	90								8							
138271	160.40	161.00	60								26							
138272	161.00	162.00	100								12							
138273	162.00	163.00	100								38							
138274	163.00	164.00	100								36							
138275	164.00	165.00	100								6							
138276	165.00	166.00	100								8							
138277	214.75	215.30	55								4							
138278	215.30	216.30	100								180							
138279	216.30	217.20	90								10							
138280	217.20	217.80	60								60							
138281	217.80	218.40	60								140							
138282	218.40	219.25	85								2000							
138283	219.25	220.00	75								50							
138284	223.05	223.90	85								<4							
138285	223.90	224.85	95								4							
138286	224.85	225.95	110								8							
138287	225.95	227.00	105								210							
138288	237.00	237.65	65								390							
138289	237.65	238.25	60								160							
138290	238.25	238.85	60								34							
138291	238.85	239.50	65								410							
138292	239.50	240.10	60								960							
138293	240.10	241.05	95								290							
138294	241.05	242.00	95								430							

013

Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein    
 c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272014

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	2.6	Not cored							
	4.7	Alluvium-pebbles and boulders of the valley floor - some are of Owen conglomerate origin.							
	10	Very weathered iron stained and broken sandstones and minor slates. Minor quartz carbonate veining occurs locally. Cleavage subparallel to core.							
	16.0								
	20	<u>Sericitic sandstones</u> Fine grained light grey sericitic sandstone with minor shaley and silty interbeds.  Minor quartz carbonate veining occurs throughout the section often parallel or subparallel to bedding. Shearing has caused elongation of fragments (generally in the plane of bedding) locally, e.g. 38-39m.  Faulted sections developed at 20.8-24.0; 27.0-27.3; 28.6-28.9; 31.8-34.2; 40.0-40.8; 41.7-43.0. Core bedding angles in range 20 to 35°.							
	30								
	40								
									
		Quartz vein with minor carbonate and chlorite from 46.3 to 46.7							
	50	Sheared tuff* Felspar-chlorite (?)sericite tuff - fragments of feldspar sheared elongated up to five times long as wide							

\*TS confirmation needed

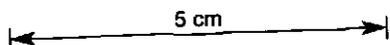
014

Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein  c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272015

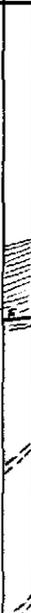
CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON ABUNDANT MASSIVE	DEPTH m	MINERALIZATION
		<p>fragments up to 1 cm.            This section grades to a finer material from 52m. Schistosity 30-40° to C.A.            Occasional quartz carbonate veining.</p>				
	60	<p>Sandstones with interbedded shales.</p> <p>This sequence is predominantly pale to mid-grey medium-grained sandstones - generally well sorted but with occasional rock fragments.</p> <p>Bedding is generally undisturbed varying from 30° at 65m to 45° at 90 metres.</p> <p>Quartz carbonate veins are developed locally.</p> <p>Foliation cleavage is developed parallel to bedding in the shaley section and is often coated with graphite.</p>				
	70					
	80					
	90					
	100	<p>Dark grey to black shale. Generally thinly bedded and with interbeds of carbonate rich material probably fine sandy component.            Core bedding angle 45-60°.</p>				Traces of disseminated pyrite last few metres

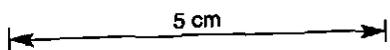


Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein    
 c carbonate  
 d quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272016

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	110	over most of the section predominantly 60° after 110 metres.  Fault (or shear zone) 107-109 interpreted as being fault which penetrated completion of SV2.							Pyrite-sphalerite-pyrrhotite gash vein min. 101-105m. Also fine demon. pyrite. Parts of this section intensely silicified. Total sulphide ~10%. Occasional bedded pyrite occurs locally to 3%
	120								Quartz-pyrite-sphalerite-galena fracture fill mineralisation 119.2 to 123. Carbonate gangue common. Pale green fine grained mineralisation as gangue probably chlorite developed locally.
	130	Quartz sericite schist. Pale grey to pale green rock often streaky. Occasional quartz fragments seen. Rock could be acid tuff in origin.							
	140	Grey shales and mudstones, slaty in parts and with thin interbeds of white siltstones  Pale carbonate interbeds occur towards the base of the unit.  Core bedding angles average 60°.  Slaty cleavage is parallel to bedding.							Traces of pyrite plus pyrrhotite occur in silty layers and also in veins along with co. crystalline carbonate.
	150								



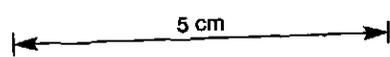
016

Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein  c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272017

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE COMMON	DEPTH m	MINERALIZATION
		As above				
	160	Very pale green to whitish quartz tuff. This is a fairly homogenous section with little foliation developed. Minor alteration appears along scattered veinlets. What foliation is developed is 70-75° to CA.				Minor veinlets of variably pyrite, po. sphalerite, chalcopyrite with gangue of quartz-carbonate and chlorite Total sulphide less than 1%.
	170	Towards base of section sedimentary fragments occur most of which have been sheared and are elongate in the plane of the foliation.				This style of mineralisation is not observed in the shaley sequences, where pyrite po. are the predominant sulphides.
	180					
	190					
	200					

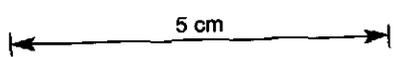


Feature: Bedding Shearing   
 Foliation Fault   
 Fragment size & shape Vein   
 c carbonate  
 q quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272018

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	210	Dark grey to black slate with minor interbeds of tuffaceous material, e.g. 207.4 to 209.3; 211.4 to 212.5. The shales are usually pyritic with pyrite developed as fine discrete crystals in the bedding plane.  Sequence is generally not disrupted although minor flexings of the bedding occur, e.g. 215 to 218; 236 to 240. This is also where the best mineralisation occurs.							Pyrite, po., arsenopyrite, sphalerite, chalcopyrite, and trace galena occur up to 10% total as vein fillings or (?) remobilised syngenetic sulphide, i.e. pyrite and po. Chlorite, carbonate and quartz are the principal gangue minerals.
	220								As above
	230								As above
	240								As above
	250	Fine grained generally massive sandstones with thin interbeds of siltstone and shale.  Core bedding angle 70-80°							

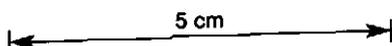


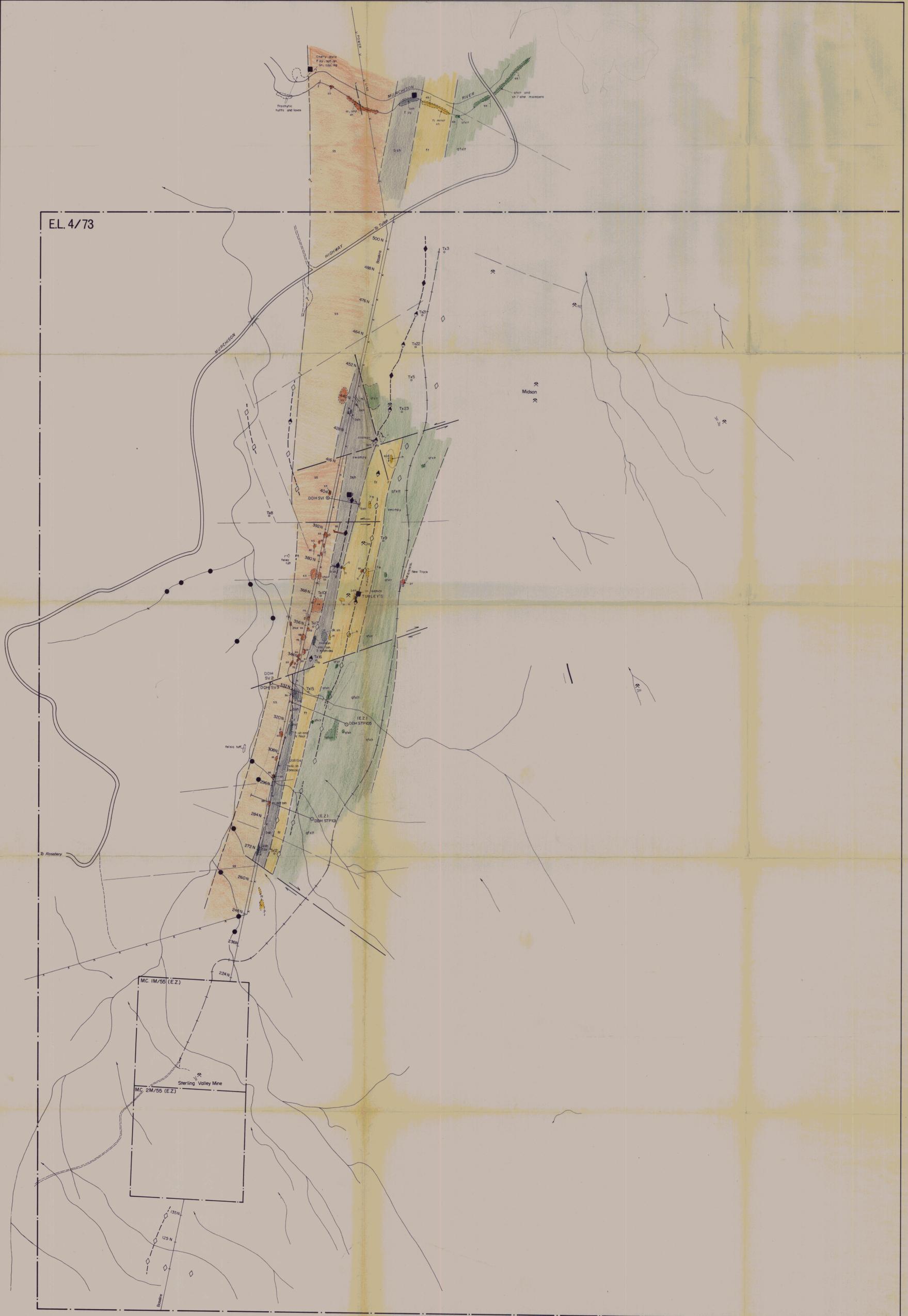
Feature: Bedding  Shearing   
 Foliation  Fault   
 Fragment size & shape  Vein   
 carbonate  
 quartz

Mineralization: Trace 1-5%  
 Common 5-15%  
 Abundant 15-60%  
 Massive > 60%

272019

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
	260				
	270	Thinly interbedded dark grey to black shales and siltstones with occasional tuff bands, Core bedding angle 65-80°, average 70°. Tuff bands are acid crystal tuffs in origin and now schistose.  Tuffaceous fragment in shales at 282.1 and 285.0 and smaller.  This sequence is often slaty - sheared rock fragments occur throughout. Schistosity is parallel to bedding. Folding on a small scale is seen locally.			Trace of sulphides seen in some sections. Pyrite and po. less than 0.1%
	280				
	290	Pale green-grey schistose acid tuffs. Schistosity 75° to C.A.. These tuffs are soft and sericitic with thin irregular quar-z rich bands.			
	292.4	E.O.H.			





EL. 4/73



- TIN Occurrences**
- Sn in rock
  - Sn as stream sediment anomaly
- Geological Units:**
- ss Sandstone predominant - siltstone and minor black shale units.
  - sh Black shale predominant - narrow brecciated and siliceous zones.
  - ft Fine tuffaceous tuffs predominant faceted quartz crystals and fine sediments.
  - qft Medium-coarse quartz feldspar crystal tuff foliated.
  - pr Chloritic pink porphyritic rhyolite.
- Other Features:**
- quartz vein
  - - - Probable Fault line
  - - - Aepphoto Fracture trace
  - - - Possible Fault offset
- Vertical Loop EM (SS15)**
- ◆ Strong conductor
  - ◆ Intermediate conductor
  - ◇ Weak conductor
- Infrastructure:**
- Road
  - - - Vehicle track
  - - - Walking track
  - - - Creek
  - - - Abandoned railway
  - ✕ Abandoned mine

272020  
5m

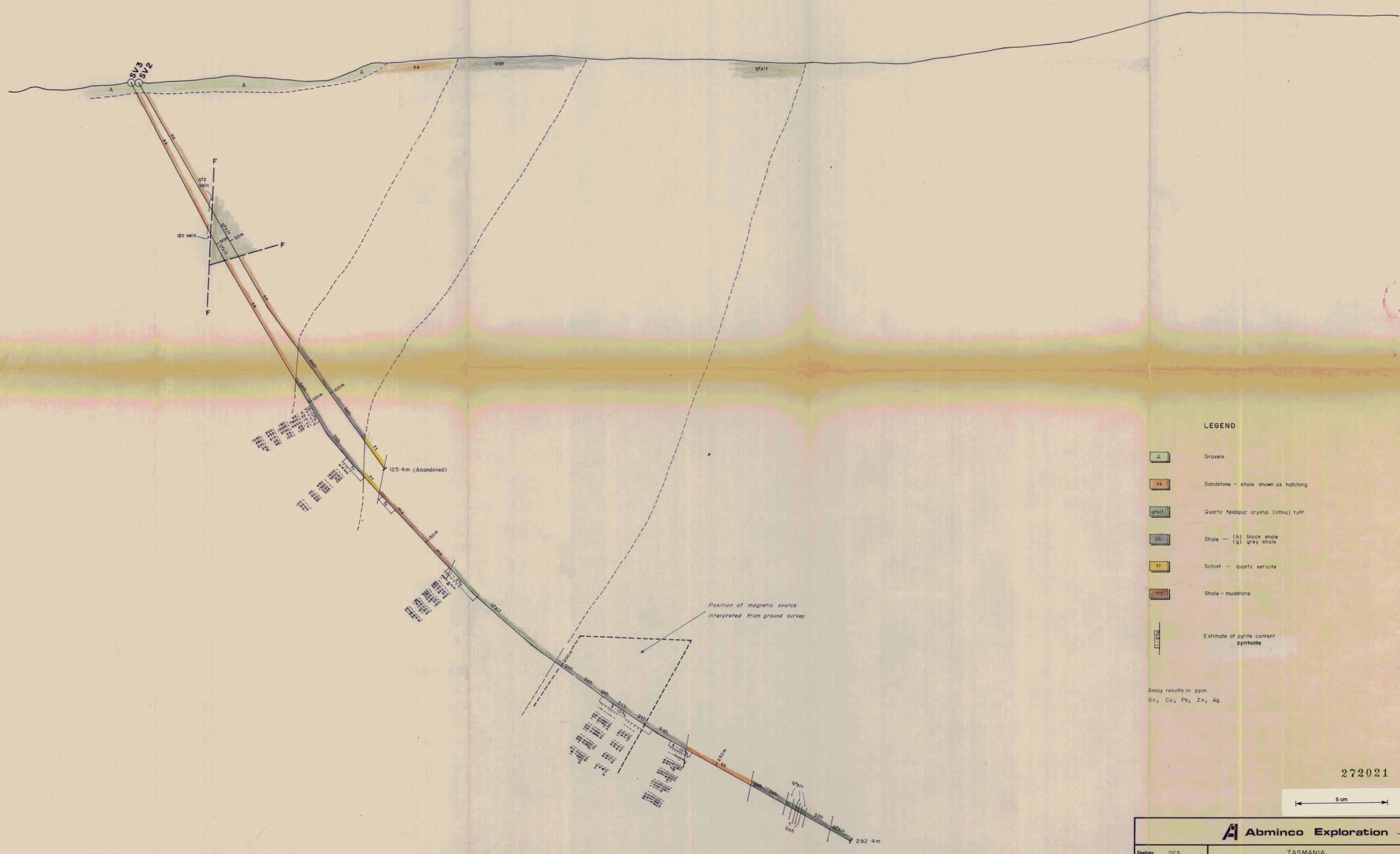
COMINCO EXPLORATION PTY LTD.  
STERLING VALLEY  
TASMANIA  
Outcrop Geology and  
Interpreted Formational  
Boundaries  
Scale 1:5000  
Date May 1974  
Sheet SV17  
4/52/6/73  
RLE/SJ/DZT  
10/73  
Drawn by  
Checked by  
Designed by  
RLE/SJ/DZT

4900 E

5000 E

5100 E

5200 E



LEGEND

- A Gravels
- ss Sandstone - shale shown as hatching
- qfxt Quartz feldspar crystal (lithic) tuff
- sh Shale - (b) black shale (g) grey shale
- ft Schist - quartz sericite
- ms Shale - mudstone
- | Estimate of pyrite content pyrrhotite

Assay results in ppm. Sn, Cu, Pb, Zn, Ag.

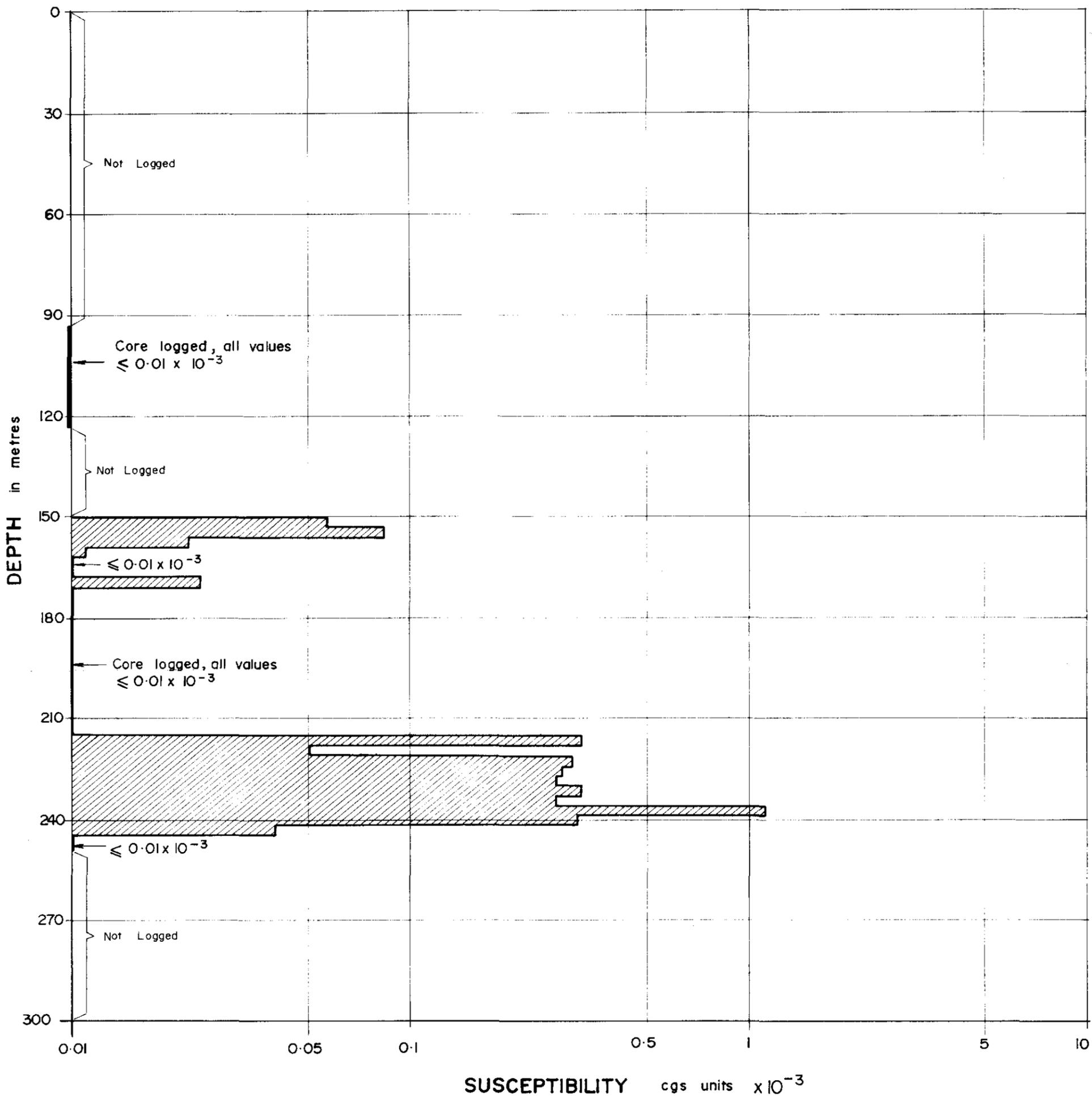
272021



0:20

**Abminco Exploration** 78-1254

Geology: DCS		TASMANIA		Location code: K55/6/51	
Drawn: DCS		STERLING VALLEY		Date: February 1978	
Traced: JJB		CROSS SECTION 3320 N		Scale: 1:500	
Checked:		LOOKING NORTH		Plate No	
Revised by: Date:				SV 18	



272022

5 cm

021

<b>Abminco Exploration</b>		
Geology: S. S.W.	TASMANIA	Location code:
Drawn: R. J. E.	STERLING VALLEY	Date: March, 1978
Traced: R. J. E.	Magnetic Susceptibility of Core from DDH SV3	Scale: Horiz Log scale
Checked:		Plate No SV 19
Revised by: Date:		

78-1254