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BILLITON AUSTRALIA
TASMANIA

E.L. 4/73 - STERLING VALLEY

FINAL REPORT

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1. SUMMARY

Billiton Australia, as Manager and Operator of the Sterling Valley Joint Venture, has completed a programme of detailed exploration in 1987.

A diamond drill hole intersected the Henty Fault, and tested Farrell Sequence sediments east of the fault. Only minor gold was present associated with vein and disseminated pyrite-pyrrhotite-arsenopyrite in the fault and the tuffaceous siltstones, sandstones and shales adjacent to the fault.

A relogging and resampling programme of previously drilled holes produced low gold values. Previous assaying was done using aqua regia - AAS, and repeating by fire assay upgraded several intersections.

At the south of the Henty Fault, a 200m spaced grid was erected. This has been mapped, and gradient array IP and ground magnetics carried out. Significant chargeability zones are present east of the Henty Fault.

An application is being made for an extension to that part of the EL covering the Henty Fault, in order to complete exploration.

2. INTRODUCTION

This report describes the work completed on EL 4/73 in the year to March 6th, 1988. The tenement is due for relinquishment on March 6th, 1988, and an application is being made for an extension to part of the EL covering the Henty Fault Zone, in order to drill test several geophysical anomalies recently defined. The area of the EL is 33km ^{2}, and 9km^2 is being applied for (Fig. 1).

Previous exploration results have been presented in Progress Reports by the various operating companies. Particular reference is made to the following.

Asarco (Aust) Pty. Ltd. 74-1037		EL 4/73 Sterling Valley Tasmania. Progress Report to June 1974.
Cominco Expl. Pty. Ltd. 76-1154		Progress Report on EL 4/73 Sterling Valley Tasmania for the six months ending 6/3/76 (and summarising work carried out in the previous six months).
Cominco Expl. Pty. Ltd. 78-1254		Report on Diamond Drilling Programme. EL 4/73, Sept - Nov 1977.
EZ Co. Report No. 80-1462	133	EL 4/73 Progress Report on Activity, July 1979 to June 1980.
82-1736	143	EL 4/73 Progress Report on Activity, July 1980 to June 1981.
82-1845	146	EL 4/73 Six Monthly Project Review as at 15th Dec. 1981.
82-1846	150	EL 4/73 Progress Report on Activity, 15th Dec. 1981 to 4th May, 1982.
82-1844	154	EL 4/73 Progress Report on Activity, 4th May 1982 to 24th Aug. 1982.

EZ Co. Report No. 83-1922	161	EL 4/73 Progress Report on Activity, 24th Aug. 1982 to 20th Nov. 1982.
83-2006	167	EL 4/73 Progress Report on Activity, 31st Nov. 1982 to 3rd May, 1983.
84-2184	T181	EL 4/73 Progress Report on Activity, 16th Nov. 1983 to 1st May 1984.
85-2347	T202	EL 4/73 Progress Report on Activity, 2nd May, 1984 to 6th March, 1985.
86-2522	T214	EL 4/73 Progress Report on Activity, 7th March, 1985 to 6th March, 1986.

A summary of previous exploration is presented in Section 4 of this report.

87-2641 T223

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3. TENEMENT STATUS

The Exploration Licence was originally held by Asarco (Australia) Pty. Ltd., who transferred the tenement to Abminco N.L. on October 13th, 1977. The Electrolytic Zinc Company of Australasia Ltd., farmed-in to the EL in 1979, and became the tenement owner in April 1986.

Billiton Australia, the Metals Division of the Shell Company of Australia Ltd., farmed into the EL in November, 1986, and took over as managers of the project.

To the end of 1987, Billiton has expended $130,000 on the EL.

4. PREVIOUS EXPLORATION

The Sterling Valley area is one of the more intensively and continuously explored areas of the Mt. Read Volcanics. Since modern systematic exploration began in the late 1950's, the area has been subjected to repeated geophysical, geochemical and geological surveys. A total of 28 diamond drillholes have been drilled for a total of 4,650m.

At least seven small old workings of vein-style Pb-Ag and Cu-Zn sulphides, mark the earliest known phase of exploration in the Sterling Valley area. Most of these date from the period 1908-1915, with some revival again in 1929-1932.

The largest and best known of these workings is the Sterling Valley Mine, which comprised a shaft and several levels, excavated on high grade shoots of galena-sphalerite-arsenopyrite in a shear zone within black shales of the Farrell Slate sequence. The scale of all these old workings can be gauged by the fact that recorded production from the Sterling Valley Mine is only 52 tons of 55% Pb, 1500 g/t Au? ore.

Modern systematic exploration of the Sterling Valley commenced in the late 1950's, when a Joint Venture between EZ and RTAE gridded the main valley area and carried out ground geophysical surveys following a regional airborne TURAM survey.

The ground surveys were limited in coverage and comprised magnetics, dip-angle EM, SP, dipole-dipole IP and gravity. Holes STP 101 and 105 were put down in 1960-61 into geophysical responses defined within the Farrell sequence.

Continuous exploration dates from Asarco's pegging of EL 4/73 in early 1973. They stream sediment sampled the EL on a coarse grid with 360m line spacing, with detailed lines at 120m spacing in the main valley area. This work defined a number of basemetal and tin anomalies (the samples were not analysed for gold), and the presence of the tin led to Cominco (later Aberfoyle), becoming involved in a Joint Venture with Asarco.

The JV directed the principal thrust of its exploration towards testing of the tin potential. Further sediment sampling indicated areas of tin mineralization in the Farrell Slate sequence east of the Henty Fault and also in the Mt. Black Volcanics west of the fault. These indications were followed up by bedrock auger sampling, magnetics, vertical loop EM, dipole-dipole IP surveys, and the drilling of holes SV 1 to 3 within the Farrell sequence.

The best intersection was only 1m @ 0.2% Sn in hole SV 1, which was markedly less than the 3m @ 0.65% Sn obtained from trenching of the mineralization at surface. The holes were not assayed for gold. Following the poor drill results, Asarco withdrew from the JV in late 1977.

Apart from a regional aeromagnetic survey flown by Geoex in 1978, little work was done until the formation of a Joint Venture involving EZ (36% equity and Manager) - Aberfoyle (40% and EL holder) - Getty (24%), in May 1979.

EZ immediately rehabilitated and extended the grid in the main valley area and carried out systematic geological mapping, soil sampling, dipole-dipole IP and ground magnetics. The rugged, ungridded eastern portion of the EL was covered by a programme of stream sediment sampling, rock sampling and mapping (NB: none of the samples were assayed for gold). EZ's stated targets were:

1. Volcanogenic massive sulphides in sediment lenses in the Eastern Volcanics (east of the Farrell Slate sequence).

2. Farrell-type Ag-Pb mineralization in the Farrell Slate.

3. Renison-type replacement Sn deposits in both the Farrell Slate and Mt. Black Volcanics (west of the Henty Fault).

The bulk of the work completed by EZ was in the north west corner of the EL, over the Henty Fault Zone. The results of this work are reported separately.

In 1985, following Texaco's decision to sell off Getty Mining, EZ exercised its option to purchase the Getty equity in the JV. Later that year Aberfoyle elected to withdraw from the

JV, leaving EZ as the only party exploring EL 4/73.

After a dighem survey in 1984, which produced several subdued EM responses, EZ drilled two holes in 1985. STP 283 tested beneath the auriferous veins obtained in the costean 900m south of the 'arsenic resource', with a best intersection of 0.45m @ 2 g/t Au and up to 11% As. STP 284 encountered black shales in the Farrell Slate.

In November 1986 Billiton Australia farmed-in and assumed managership of the exploration programme on the EL.

Billiton continued and completed the programme of gold sampling of the old drillcore, extending it to include intervals originally assayed by aqua-regia AAS, and to the EZ and Aberfoyle holes within the Farrell sequence.

In early 1987 Billiton began their own programme of drill testing along the Henty Fault within EL 4/73.

The results of this programme are presented in this report.

5. WORK COMPLETED

Exploration has been confined to the Henty Fault, and the rock units immediately east and west, aimed at the discovery of gold deposits associated with vein sulphides.

No work has been done on the volcanics to the east of the Farrell Sequence, which are thought to have low potential for base metal sulphide mineralization.

5.1 Diamond Drilling

A diamond drill hole, SVD 87-1A, was completed at a depth of 298.5m

The primary aim of the hole was to test for gold mineralization associated with the Henty Fault, particularly in the sedimentary rocks of the Farrell Sequence immediately east of the fault.

SVD 87-1A, 3260N, 4737E, (Sterling Valley grid) was designed to complete a fence of holes previously drilled by Aberfoyle and EZ, that had not intersected the Henty Fault, or the units immediately west and east of the Fault.

STP 283 had intersected anomalous Au and As in sulphide veins, in the mafic lavas west of the fault. The hole was also designed to provide the first intersection through the untested 3km central and southern sectors of the Henty Fault within EL 4/73; all previous drilling had been concentrated on the northern 1km of the fault in the EL.

5.2 Geophysics

5.2.1 Gradient Array Induced Polarization Surveys

An 8 line survey was designed to test the rock units either side of the Henty Fault for the presence of sulphides, in order to define drilling targets.

The survey was carried out by Scintrex using potential dipoles of 20m, current electrode separation of 1700m, and an IPR-10 receiver.

The survey was completed on lines:

2500N (Local Grid): 4500E - 5100E
2200N : 4500E - 5100E
2000N : 4500E - 5100E
1800N : 4500E - 5100E
1600N : 4400E - 5000E
1400N : 4400E - 5000E
1200N : 4400E - 5000E
1000N : 4400E - 5000E for a total of 4.8 line km. The current electrode cable was on 1700N.

5.2.2 Ground Magnetics

All IP grid lines were surveyed using a G-856 digital magnetometer, at a station spacing of 10m. All data was diurnally corrected.

5.2.3 Gravity

A gravity survey was carried out on line 3260N, prior to drilling SVD 87-1A, in order to help determine the position of the Henty Fault. (This drill hole was primarily a stratigraphic test of the Henty Fault). The profile is shown in Fig. 5. Station spacing of 10 metres and Bouguer density of 2.67 gm/cc was used. The data are somewhat noisy (envelope of less than 0.2 mgals) probably attributable to difficulties in surveying both gravity and elevation in thick bush.

5.3 Sampling & Re-logging of Old Drillholes

The upper portions of the Aberfoyle drillholes SV 2 and SV 3, some 50m north of section 3260N on which Shell hole SVD 87-1A was drilled, represent almost the only exposure of the prospective Farrell sediments close to the Henty Fault in this glacially-covered area. The two holes were collared immediately east of the Henty Fault and drilled eastwards away from it. They are located within a few metres of each other as SV 2 was lost in a fault at 125,4m and SV 3 was the

re-drill beside it. Neither hole was sampled for gold by Aberfoyle (SV 2 had not been sampled at all). Consequently, SV 3 was relogged to 101m and Sv 2 was sampled from top to bottom.

6. RESULTS

6.1 Shell Drilling

Drill logs for hole SVD 87-1 and SVD 87-1A appear in Appendix 1.

Hole SVD 87-1, collared at 3260N, 4738E (Sterling Valley Grid), and drilling grid east at an angle of -56°, quickly ran into trouble in highly oxidised mafic volcanics and was terminated at 30m after recovering only 40% of the core.

Hole SVD 87-1A was collared 1m further west at an angle of -76° and obtained almost 100% recovery in the oxidised zone by drilling with triple tube equipment to 75m. The hole was completed at 298.5m (Fig. 3).

The summary log of SVD 87-1A is as follows:

Interval	Rock Type	Alteration/Mineralization
0 -211.25m	MT. BLACK VOLCANICS A confusing, mixed sequence of andesitic lavas; basaltic lavas & dykes; with intercalated volcaniclastics & sediments of the same provenance.	Minor sulphides except: 210-211.25m:3-5% py-po-cp Extensive chlorite alteration.
211.25-212.30m	HENTY FAULT Crushed rock.	10-15% py-aspy & fluorite

212.30-298.50m	FARRELL SEDIMENTS Tuffaceous & volcanomict sandstones, siltstones & shales.	212.30-220m:3-10% py-po-aspy in disturbed zone with fluorite & tourmaline. Below 220m locally 2-3% po-py, assoc. with weak chlorite alteration.

END OF HOLE

Best intersection: 211-212m: 1m @ 0.15 g/t Au, 0.1% Cu, 0.15% Sn 1.88% As.

Because of the need to drill the hole at a steeper angle than planned, it intersected the Henty Fault at 200m below surface - about 75m beneath the original target depth. However, the hole still provided an excellent test of the Henty Fault and the prospective adjacent stratigraphy in this central sector of the EL, and effectively closed the section between hole STP 283 to the west and holes SV 2/3 to the east.

The results from SVD 87-1A are disappointing, with only traces of gold, tin and basemetals intersected, despite the presence of a 10m zone of sulphides, accompanied by fluorite and tourmaline, in the fault and the Farrell sediments immediately to the east.

6.2 Geophysics

Lower chargeabilities and higher resistivities implies much less conductive material is present on the southern grid, i.e. less graphite in the Farrell sequence (?). Nonetheless, strong chargeability and weaker resistivity trends are present on the eastern side of the grid (east of the Henty Fault) (Figs. 7, 8). No drilling has been done on the

Henty Fault on this grid and the Fault position has been interpreted where the chargeability increases from west to east. This interpreted position is 100-500 metres east of the previous "geological" position. However, glacial cover over most of the grid means that mapping is of little help. If this geophysically interpreted position is correct then the Farrell slates are not conformable with the Fault but thin or cut out from north to south. This is evident from the convergence of the main Farrell conductive zone with the Fault line (Fig. 8).

South of 2500N the IP contours indicate both faulting and possible thickening of the Farrell sequence. The Sterling Valley mine occurs at the northern end of a strong linear chargeability and resistivity trend. This anomaly gets stronger and bifurcates to the south. The eastern limb is presumably due to graphitic slates $\pm$ sulphides as at Sterling Valley. The western limb may have a similar cause but its proximity to the (interpreted) Henty Fault suggests it may be caused more by sulphides than graphite.

There are no gravity data over this grid to help elucidate the causes of the IP anomalies. (The 1959 data extended as far south as about 2700N).

The ground magnetic data over the grid indicates 3 anomalous zones: (Figs. 4, 9).

1. In the north-western part of the grid a strong magnetic source occurs striking north. It is probably due to intrusive dolerite dykes and sills as mapped by EZ. There is not strong associated IP response as would be expected from a pyrrhotite source.

2. In the south-eastern corner of the grid magnetic anomalies occur in the Farrell sequence (?). EZ have previously mapped acid intrusives on line 1050N so these could well be the cause since Cambrian granites are known to be magnetic in this general area. They are clearly delineated on the Dighem data.

3. Deep magnetic sources occur in the western volcanics on lines 1400 and 1600N, perhaps related to than on 2000N at about 4250E. Possibly because of their depth there is no IP correlation so their cause is unknown. Basic dykes could be the cause as in anomaly 1.

The results from the gravity survey on 3260N (Fig. 5), indicate that the Henty Fault occurs both as a gravity and elevation low. The gravity expression possibly implies deeper weathering over the Fault although the low is rather broad for such a near surface feature. The gravity high east of the Fault is somewhat unexpected since the Farrell slates could be presumed less dense than the high observed on the RTAE (1959) gravity survey (about 0.5 mgals), which has a strike extent of at least 600m. This feature was

tested by EZ in 1961 with DDH STP 101. A typical Farrell sequence was intersected, altered tuffs and black slates with minor veins of sulphides (pyrite, galena, sphalerite). There is a coincident strong IP/Resistivity anomaly. The intersected sequence was presumed to explain the gravity anomaly although no density measurements appear to have been made.

The decreasing gravity trend on the profile from west to east is an indication of shallowing Devonian granite at depth as shown on the regional Mines Department gravity data. This indicates a steep granite contact beneath the Henty Fault the length of the EL. The granite has possibly been the main cause of the alteration and mineralization along the Henty Fault in the Sterling Valley EL.

6.3 Relogging & Resampling of Old Drillholes

See Appendix 2.

Only traces of gold were detected in the Farrell sediments sampled in Aberfoyle hole SV 2 close to section 3260N. The best intersection was 2m @ 0.11 g/t Au, 3 g/t Ag, 0.36% Sn, 0.86% As, from 93-95m, which equates with a zone of 5-10% pyrrhotite-pyrite-sphalerite in black shale in

hole SV 3. All other gold values were <0.06 g/t Au. The Farrell sediments in the sampled section are dominated by poorly-sulphidic quartzose sandstone.

7. DISCUSSION OF RESULTS

The results of Shell's work since the Joint Venture commenced in November 1986 have been moderately encouraging and the EL warrants further testing for gold and basemetal mineralization along the Henty Fault.

The Shell drillhole SVD 87-1A was disappointing in that, while it intersected altered sulphidic zones on and immediately east of the fault, it did not contain any signficant gold or basemetal values. However, the hole demonstrates how necessary it is to systematically test along the fault as there appears to be sulphides along most of its length in this area, and economic gold values could occur anywhere. Notwithstanding the complications caused by the patchy graphitic content of the sediments to the east, the IP results can be used to find areas of greater sulphide concentration along the fault. Experience to date has shown that the best gold values tend to be in areas of greatest sulphide accumulation.

It is interesting to note that there is no IP response over the fault on section 3260N, drilled by SVD 87-1A, whereas the hole did intersect a reasonable amount of sulphides in this position (200m below surface) - a 10m zone averaging 4% py-po with minor aspy-cp. This may suggest that in this central sector of the EL the amount of sulphides along the fault is increasing with depth.

Interpretation of geophysical data over the Sterling Valley EL is hampered by the various vintages, especially of IP surveys. Unfortunately the precise position of the old RTAE imperial grid is uncertain, so some useful data sets have possible positioning errors. (McPhar IP, gravity, ground mag., dip angle EM and SP). There have also been a variety of IP surveys with different receivers, different dipole-spacings and different line spacings, so comparison of these creates problems for interpretation.

Bishop (1980) has previously summarised the geophysical data in the Sterling Valley. At the time of his report the emphasis was primarily on tin-exploration, so particular interest was shown in the various magnetic anomalies. They still remain of interest for gold exploration if they indicate a concentration of sulphide or help elucidate structure. The main anomalies are indicated on the 1:10,000 geophysical compilation map (Fig. 6).

Anomaly D — The main source of the magnetic anomaly may not have been tested by DDH's SV 3 and STP 105 (too shallow). The coincident gravity anomaly (RTAE 1959) might imply a larger concentration of sulphides at depth, since the shales are not expected to be the cause, although a signficant increase in sulphide content could be.

Anomaly E — Although not drill tested this magnetic anomaly has been attributed in the past to a magnetite-bearing basic intrusive (?) in the volcanics west of the Henty Fault. It is downgraded as an economic prospect since it has no IP correlation.

The geophysical compilation map (Fig. 6) indicates the position of the graphitic Farrell slate unit by virtue of its very low resistivity and high chargeability. It is very strike extensive and linear, extending over at least 10km from north of Farrell mine to south of Sterling Valley mine. The unit is sub-parallel to the Henty Fault, but the separation of Fault and slate does vary suggesting the Farrell volcaniclastics may be cut out or increased in thickness in certain areas. Cross-cutting faults are evident which further complicates matters. Two such faults are evident in the Sterling Valley EL as indicated on the compilation plan.

1. Although not as clear as the northern fault, another (parallel?) fault appears to occur 4-500 metres south. This too has adjacent magnetic anomalies, of which the most interesting, D, has been already discussed and mention has already been made that it may not have been conclusively tested.

2. A fault at the southern end of the EL is possible from both the original EZ and the recent Billiton IP data. A prominent and coincident Dighem resistivity low suggesting regional alteration, and the proximity of the Sterling Valley mine, which carried high gold values (+6 g/t), upgrades this area.

It is unclear whether the Henty Fault displaces these cross-faults, or vice-versa. Outcrop position, especially of the "western" (Mt. Sale) volcanics, suggest the cross-faults may post-date the Henty Fault, thus displacing it. These faults may be related to the underlying Devonian granite(s) which could have caused the alteration and vein-type mineralization.

8. EXPENDITURE

From the commencement of the Joint Venture in November 1986, when Billiton Australia took over management of the EL, to the end of 1987, a total of $129,232 was spent on exploration.

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APPENDIX 1

DIAMOND DRILL LOGS: SVD 87-1, 1A

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

HEADING SHEET

028

COLLAR INFORMATION	DATA TYPE	COLLAR CO-ORDINATES EASTING	NORTHING	ELEVATION	COLLAR SURVEY AZIMUTH	DIP	HOLE NAME	TOTAL DEPTH	HOLE TYPE	DESC CODE	REMARKS
	BHOLE	384073	5373385	215	108	-56	SVD 87-1	30·00			

PROJECT STERLING VALLEY	HOLE NAME SVD 87-1
LOGGED BY J.G. PURVIS	TOTAL DEPTH 30·0m
CONTRACTOR DIAMOND DRILLING TAS	RIG LONGYEAR 38
CREW M. HARVEY / W. GUNTER	DATE STARTED 10·3·87 FINISHED 12·3·87

CORE STORAGE		SAMPLE STORAGE
NO OF TRAYS	LOCATION	
3	DEVONPORT	NO SAMPLES
MAP LAB		ASSAY LAB

DESC.	SIZE	FROM	TO	TOTAL	REMARKS
NON CORE					
CORE	HQ	0	30m	30m	12·15m RECOVERED
	NQ				17·85m LOST
	BQ				
CASING					
CASING LEFT	NIL				

SURVEY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	AZIMUTH	DIP	REMARKS
				NOT SURVEYED

PLOTTING KEY

SYMBOL DES. CODE	SYMBOL G/LOG	INTERVAL FROM	INTERVAL TO	SYMBOL DES. CODE	SYMBOL G/LOG	INTERVAL FROM	INTERVAL TO

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
								0 – 30m: HIGHLY OXIDISED MAFIC LAVA

DRILLING OBJECTIVES / SUMMARY: HOLE DESIGNED TO TEST FOR MINERALISATION ON HENTY FAULT ZONE.
HOLE STOPPED AT 30m DUE TO POOR RECOVERIES IN HIGHLY OXIDISED MAFIC LAVA.
HOLE NOT SURVEYED AND NO CASING LEFT IN IT.

REPORT REFERENCE:

SHEET ... OF ...

8050028

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 87-1
LOGGED BY	J.G. PURVIS	TOTAL DEPTH	30m

029

DISTANCE FROM COLLAR: TO TOP | TO BOTTOM

SAMPLE No. | CORE ANGLE | ROCK TYPE | DIAM | DESC CODE | GRAPHIC LOG

HQ

ASSAY INFORMATION

DESCRIPTIVE LOG

0 - 6.0m : MAFIC LAVA

Green, fi-med gr.
Mostly unoxidised with occasional badly broken oxidised zones ± limonite and Mn ox coatings on fracts.
Strongly chloritised. Zones of diffuse bleaching and shearing, with sericite ± qtz and sulphides, up to 100cm @ 40°/CA.
Overall: 1-2% py ≥ sp-gn (or lim after sulph), as stringers to 10mm ± qtz, also in small pockets.
Some qtz ± chlor veins to 50cm.
Abrupt change at 6m.

6.0 - 30.0m : HIGHLY OXIDISED MAFIC LAVA

Yellowish-brown to pale red.
Very soft and clayey, with numerous puggy broken zones & subordinate vein qtz traps to 50mm. These zones increase in depth - from 21-27m recovered core mostly just fragments of vein qtz. Some limonite and Mn Ox with qtz.
Numerous veinlets of Mn Ox at all angles.
From 6-9m, centred at 7.5m, shear zone with traps of bleached cream sericitic schist 60°/CA & Mn Ox stained.
Some qtz-chlor limonite veins in lava adjacent to the shear.

Hole stopped at 30m due to poor recoveries.

END OF HOLE.

SHEET 1 OF 1

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SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Elliott Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

HEADING SHEET

COLLAR INFORMATION	DATA TYPE	COLLAR CO-ORDINATES EASTING	NORTHING	ELEVATION	COLLAR SURVEY AZIMUTH	DIP	HOLE NAME	TOTAL DEPTH	HOLE TYPE	DESC CODE	REMARKS
	BHOLE	384072	5373385	215	108	-76	SVD87-1A	298.50			

PROJECT	STERLING VALLEY
LOGGED BY	J.G. PURVIS
CONTRACTOR	DIAMOND DRILLING TAS
CREW	P. ARCHER / A. HARPER
HOLE NAME	SVD 87-1A
TOTAL DEPTH	298.5m
RIG	LONGYEAR 38
DATE STARTED	12.3.87 FINISHED 1.4.87

CORE STORAGE

NO OF TRAYS	LOCATION
54	DEVONPORT

SAMPLE STORAGE

DESPATCH d/n: DEVONPORT 11541, 11543, 11545, 11546

MAP LAB	ASSAY LAB
GEOCHEMPET, BRISBANE	CONLABS, ADELAIDE

DESC.	SIZE	FROM	TO	TOTAL	REMARKS
NON CORE	HW	0	1m	1m	
CORE	HQ	1	74.5m	73.5m	
	HQ	74.5	298.5m	224m	
	BQ				
CASING					
CASING LEFT	80mm(s)	0	32.5m	32.5m	(S) steel (P) plastic

SURVEY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	AZIMUTH	DIP	REMARKS
30.00		108 30	-76 30	
59.00		108	-75 45	
100.00		107	-76 20	
158.00		105 30	-72 45	
212.00		105	-70 20	
266.00		102	-61 20	
298.00		103 30	-55 40	

PLOTTING KEY

SYMBOL	INTERVAL		SYMBOL	INTERVAL	
DRG CODE	G/LOG	FROM	TO	DRG CODE	G/LOG	FROM	TO

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	Au	Cu	Sn	As				SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
211.0	212.0	0.15	1050	1500	1.882				14300					

DESCRIPTIVE LOG

0 - 211.25m: MT BLACK VOLCANICS
A confusing mixed sequence of andesitic lavas, basaltic lavas and dykes, with intercalated volcaniclastics and sediments of felsic provenance. (Appears to be a subaqueous pile of mafic lava flows and intercalated vitric lava debris (hyaloclastitic?) in various stages of reworking). Minor sulphides, extensive chlorite alteration.

211.25 - 212.30m: HENTY FAULT
Crushed rock with 10-15% py-aspy and fluorite

212.30 - 298.50m: FARRELL SEDIMENTS
Tuffaceous and volcanomict sandstones, siltstones and shales, facing downhole at 275m.
3-10% py-po-aspy 212.3 - 220m in disturbed zone with fluorite and tourmaline.
Thereafter, patchy po-py locally 2-5%, associated with weak chlorite alteration.

END OF HOLE.

DRILLING OBJECTIVES / SUMMARY: HOLE DESIGNED TO TEST FOR GOLD MINERALISATION ON HENTY FAULT ZONE. HOLE COLLARED STEEPER THAN PROPOSED ORIGINALLY DUE TO RECOVERY PROBLEMS IN SVD 87-1 DUE TO DEEP OXIDATION. AS A CONSEQUENCE, INTERSECTION ON FAULT WAS 100m VERTICALLY BELOW THAT INITIALLY PLANNED. HOLE INTERSECTED 10m OF 3-10% PYRITE - PYRRHOTITE - ARSENOPYRITE - FLUORITE MINERALISATION ON HENTY FAULT, BUT THIS CONTAINED ONLY TRACES OF GOLD.

REPORT REFERENCE

SHEET OF

8005020

SHELMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

Note: Analyses by Coulabs, Adelaide, April-May 1987
Shell Despatch Order No's 11539-11541.
Gold determined by 30gm Fire Assay.

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DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 87-1A
LOGGED BY	J.G. PURVIS	TOTAL DEPTH	298.5m

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	Au	Cu	Pb	Zn	Ag	Sn	As	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
1.00	3.00	0.04	95	22	270	1	6	16	142267			HQ		
3.00	5.00	<0.01	210	200	1000	1	46	600	142268					
5.00	7.00	0.08	350	11100	890	8	180	6800	142269					
7.00	9.00	0.09	320	5000	1350	3	65	9200	142270					
9.00	11.00	0.03	210	510	1650	2	10	810	142271					
11.00	13.00	0.03	165	90	1150	1	<4	240	142272					
13.00	15.00	0.04	105	50	990	<1	4	135	142273					
15.00	17.00	<0.01	85	20	960	1	<4	90	142274					
17.00	19.00	<0.01	28	28	930	1	<4	40	142275					
19.00	21.00	<0.01	16	18	460	1	<4	26	142276					
21.00	23.00	<0.01	12	16	350	1	<4	26	142277					
23.00	25.00	<0.01	42	16	480	1	4	12	142278					
25.00	27.00	<0.01	125	22	480	1	4	90	142279					
27.00	29.00	<0.01	110	24	330	1	<4	18	142280					
38.00	40.00	0.02	40	14	300	1	<4	28	142281					
40.00	42.00	<0.01	55	18	210	<1	6	18	142282					
42.00	44.00	0.02	38	16	200	<1	<4	22	142283					
44.00	46.00	0.02	85	20	360	<1	<4	36	142284					

ASSAY INFORMATION

DESCRIPTIVE LOG

0 – 12.6m : OXIDISED MAFIC LAVA

Yellow-brown.
Strongly oxidised - core mostly soft, clayey and v. blocky broken. Numerous fractured zones.
Gen massive with a weak schistosity - best inc at base. Relict feld laths to 4mm, av 1-2mm. Some variations in rock text esp in size and abundance of felds. Rare 1° banding below 7m (20°/LCA @ 7.8m).
Ox less 4-7m: - rock v/l green, chloritised & chlorite-fld or ferromags, & diffuse qtz>py veins and patches, assoc & local silic. Locally up to 5-10% py, minor hem-lim.
Some leached and bleached lenticitic and schistose clayey zones.
Common veinlets of Mn Ox and limonite - rarely to 25mm.
Some crushed gossanous qtz-limonite veins.

12.6 – 14.0m : SERICITIC SCHIST AFTER TUFFACEOUS VOLCANIC(?)

Possibly just a deformed version of the mafic volcanic.
Strongly oxidised/leached and bleached. Soft and broken.
Coarsely schistose. Fi gr. 3% sericitic.
Mod schistosity 20°/LCA.
Some fe and Mn ox on fracts and schistosity.
Both contacts broken.

14.0 – 36.0m : OXIDISED INTERMEDIATE-MAFIC LAVA WITH INTERCALATED BASALT DYKES AND/OR FLOWS

Broken, soft, clayey and highly broken.
Mainly a massive, med gr, feldspar-porphyritic lava & altered felds to 3mm, av 1-2mm. 1° layering noted at 35.8m 50°/LCA.
Basalt is fi gr, from 50mm to 3m wide. Contacts with feld-porph lava are at varying angles. Prob 1° banding noted in basalt @ 38.4m 55°/LCA.
In both ox rock types are chloritised.
Numerous veins of Mn + fe oxides, also larger qtz-limonite veins (av 5-20mm). Some qtz veins to 100mm at low angle to LCA - some fragmented and rolled, within clay seams.
Lower contact 55°/LCA.

36.0 – 53.3m : OXIDISED MAFIC LAVA

Same rock type as above 12.6m.
Brownish-green. Moderately oxidised, with numerous highly-oxidised zones with clay seams - often assoc & qtz-limonite veins, 10-30mm, at all angles. Core, badly broken in such zones, but gen rock condition greatly improved over rocks above.
Med gr, massive, even-text chloritised green ferromag laths to 4mm, av 2mm, evenly distrib in felsic groundmass.
Zones of epidote-chlorite-carbonate-bleaching assoc & qtz veining. Also fibrous serpentinous mineral.

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80 50 31

SHLMET SYSTEM
METRIC
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DRILL LOG SHEET

CONTINUATION SHEET

PROJECT: STERLING VALLEY | HOLE NAME: SVD 87-1A
LOGGED BY: J.G. PURVIS | TOTAL DEPTH: 298.5m

032

Distance from Collar: To Top	To Bottom	Au	Cu	Pb	Zn	Ag	Sn	As	Sample No	Core Angle	Rock Type	Diam	Desc Code	Graphic Log
55.00	57.00	<0.01	110	520	640	2	12	50	14285			HQ		
57.00	59.00	<0.01	110	36	230	1	220	32	14286					
73.75		PETROLOGICAL SAMPLE							14061					
94.30	95.80	0.03	70	28	100	<1	<4	36	14287			NQ		
95.80	97.00	0.02	65	18	75	1	<4	20	14288					
100.80	101.00	0.03	2600	18	165	3	<4	3	14289					

ASSAY INFORMATION

DESCRIPTIVE LOG

Gen not schistose but occ schistose zones towards base: 40°/LCA @ 46m + 53m.
Much MnOx and limonite stains with some boxworks on fracts - some looks to be due to sulphide min.
Basal contact 43°/LCA.

53.3 - 88.7m : MAFIC LAVA
Similar to above except finer gr.
Fi-med gr, green, massive. Composed of fine feld and lesser ferromags. From 60-70m grainsize is coarsest with felds av 1-2mm, suggesting unit is single lava flow. At 78-80m breccia text and vague banding may indicate flow margin.
Some conspicuous leucoxene.
Mod chloritised, carbonatised with weak epidotisation.
Ubiquitous patches + vein-like zones of bleaching with carbonate-chlorite-epidote ± qtz, some c̄ py>po>cp.
Much of this alt + veining is in schistose zones 40°/LCA, containing v minor dissem py. Common barren qtz-carb veins to 60mm.
Mod oxidised and broken to 66m, becoming hard and unox below this and gen unbroken. Some leaching of carb to 80m.
55.75 - 56m : Fault 40°/LCA - puggy sericitic zone c̄ 5-7% py.
72m : Puggy shear 10°/LCA.
Common Mn + Fe oxide stains and boxworks on fracts, dec c̄ depth - only a small amount prob due to sulphs.
53.3 - 79.5m : V minor py, trace cp, po, hem (sulphs best in zones of strongest alt). Core not magnetic.
79.5 - 80m : 1-2% py-po>cp dissem + veinlets.
80 - 88.7m : V minor dissem cp>py.
Basal contact 35°/LCA.

88.7 - 104.65m : VARIABLE MAFIC VOLCANICLASTICS
Green.
Tuffaceous - feld xyl - lithic mafic volcaniclastics varying from f gr bands of reworked tuff to lithic lava breccia.
Sequence appears at least partly reworked.
Abund feld xyls av 1mm in vitric mafic tuffaceous matrix containing leucoxene. Gen lithics av < 10mm, comprise mafic lava, some fine basalt, tuff (some v. siliceous).
Lithics have irreg + angular margins.
Below fault at 97m, to 101.15m, unit of mafic lava breccia with clasts to + 100mm, some amygdaloidal, in tuffaceous matrix c̄ fewer feld xyls.
1° lineation : 91.7m : 25°/LCA ; 98m 20°/LCA ; 103m 30°/LCA.
Mod-strong chlorite-epidote-carbonate-qtz alt. Patchy sil + carb ± qtz veining.
94.3 - 97m : disturbed strongly alt zone centered on fault at 95.3m 70°/LCA. Intensely silic c̄ chlorite - epidote - kfeld-

033

SHLMET SYSTEM
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DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 87 - 1A
LOGGED BY	J.G. PURVIS	TOTAL DEPTH	298.5m

DISTANCE FROM COLLAR: TO TOP | TO BOTTOM

SAMPLE NO | CORE ANGLE | ROCK TYPE | CLASS | DESC CODE | GRAPHIC LOG

Sample Number : 14061 (SVD 87-1A 73.75m)

Identification : Greenstone (metabasalt) with porous, crenulated veins of epidote

Description :

The sample is a drill core specimen of fine-grained, greenish grey rock with some crenulated, thin, porous, very light olive grey veins.

Cobaltinitrite stain gave some diffuse reaction but did not indicate any definite K-feldspar.

In thin section the sample displays abundantly porphyritic, volcanic textures, modified by metamorphic recrystallisation, veining and incipient foliation. The phenocrysts are about 0.2 to 1mm in size and groundmass laths were about 0.1mm long.

The main phenocrysts have prismatic shapes of pyroxene style : they now consist of chlorite with minor actinolite and fine sphene. Less abundant tabular phenocrysts are partly recrystallized plagioclase. The groundmass consists of abundant actinolite and subordinate albite, epidote, sphene and chlorite. There is a large inclusion (tens of millimetres) of coarser grained, richly feldspathic andesite porphyry with mafic components altered to chlorite, actinolite and sphene.

The main crenulated veins (up to 1mm wide) contain fine epidote, minor chlorite, quartz, pores and rare specks of goethite. A few veins are more chloritic and carry some albite.

An approximate mode is :

10-15%	chloritized phenocrysts
3-4%	plagioclase phenocrysts
40-50%	groundmass actinolite
15-20%	groundmass plagioclase
10-15%	groundmass epidote
2-3%	groundmass sphene
1-2%	groundmass chlorite
4-6%	veins, carrying epidote and some chlorite, albite, quartz, pores and rare goethite

Comments and Interpretations :

This rock is interpreted to have originated as an abundantly porphyritic mafic lava. Its high inferred mafic index is consistent with basalt, but it does not seem to have carried any olivine.

It has been converted to a "greenstone" mineral assemblage of actinolite-chlorite-albite-epidote sphene, probably by low grade metamorphic processes. Fissure veins dominated by epidote developed before or during incipient shearing. Pores in the *epidote veins may reflect dissolution of carbonates (none preserved)* perhaps facilitated by the presence of a few grains of sulphide (inferred from rare goethite).

ASSAY INFORMATION

120.10 PETROLOGICAL SAMPLE

Sample Number : 14062 (SVD 87-1A 120.1m)

Identification : Foliated, chloritic, possible finely volcaniclastic arenite of andesitic composition

Description :

The sample is a drill core specimen of evenly fine-grained, greenish grey rock with subtle foliation and some disturbed light olive grey epidote veining.

A staining test revealed no K-feldspar.

In thin section the sample is seen to consist of small, equant to prismatic grains of twinned, lightly chloritized and carbonated plagioclase (about 0.1 to 0.2mm in size) and cloudy sphene pseudomorphs of inferred oxide grains (0.1 to 0.3mm) set in a foliated matrix of chlorite and streaks of sphene. There are no structures which resemble phenocrysts of phenoclasts.

Strongly crenulated and foliated vein structures contain fine-grained epidote group minerals, chlorite and calcite. An irregular, but less obviously deformed thick vein carries coarser epidote and calcite and calcite has replaced chlorite as the matrix mineral in nearby host rock.

An approximate mode of the section is :

50-60%	plagioclase
20-25%	chlorite
4-6%	calcite
4-6%	sphene
12-18%	veins carrying epidote, chlorite, calcite and rare pyrite

Comments and Interpretations :

The bulk composition of this rock was andesitic, but its textures are not able to be interpreted with confidence. It is chloritized, distinctly foliated and lacking in phenocrystal or phenoclastic textures. Perhaps it was a finely sandy textured volcaniclastic rock prior to chloritization, veining and deformation or perhaps it was a lava which has been chloritized then severely sheared.

I am inclined towards the volcaniclastic interpretation.

14062

DESCRIPTIVE LOG

-carbonate - bleaching. Numerous qtz-k feld veins. Brecciation. V. broken & leaching and ox 95 - 96.3m.
98.7 - 94.3m : V minor dissem py-cp > po.
94.3 - 97.0m : 5 - 10% dissem py (in fault zone).
97 - 104.65m : Minor py > cp dissem + veinlets; except : 100 - 101m : 1 - 2% dissem cp > py.
Irreg basal contact.

104.65 - 106.95m : BASALT
Green, fi-med gr.
Mod chloritised and carbonatised. Minor patchy silic.
Carb veins, some ± qtz.
Minor dissem py-cp.
Basal contact a shear 35°/LCA.

106.95 - 108.60m : MAFIC TUFF (SEDIMENT?)
Green, fi gr.
Mod-strongly schistose and chloritic, with banding (bedding?) in places (62°/LCA @ 108m).
Common carb veinlets. Broken in places.
V minor dissem py.
Basal contact 58°/LCA.

108.60 - 113.30m : BASALTIC VOLCANIC BRECCIA
Green, Mard. Variable colour and texture.
Most clasts basalt lava (to + 100mm), others mafic tuffs and silic tuffs. Most clasts < 30mm. In matrix of fine lithic frags, feld xtals and tuffaceous matrix.
Clasts gen have irreg margins, some smooth.
Strong chlorite-epidote-carbonate alt patchy silic ± pale pink hematisation (these zones contain dissem py).
Abund irreg carb > qtz veins.
Rock has banded ? lineation (bedding?) accentuated by mod schistosity (1° lineation 39°/LCA @ 111.5m).
No clear evidence of reworking although clasts are of variable rock types.
Minor dissem py-cp.
Irreg basal contact 30°/LCA.

113.3 - 122.80m : INTERMEDIATE - MAFIC LAVA
Green, Med gr. Some textural variations.
Charred white feld xtals to 4mm, av 2mm, often in groups. Abund leucoxene.
Mod-strongly altered (chlorite-carb > epidote) and deformed. Schistosity 145°/LCA @ 118m.
Abund clarb veins ± qtz ± chlor. Some large irreg qtz-carb-chlor veins below 119.5m up to 300mm. Some silic.
V minor py-cp > po.
Basal contact 36°/LCA.

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034

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DRILL LOG SHEET

CONTINUATION SHEET

PROJECT: STERLING VALLEY | HOLE NAME: SVD 87-1A
LOGGED BY: J.G. PURVIS | TOTAL DEPTH: 298.5m

ASSAY INFORMATION

Distance from collar: To top	To bottom	Au	Cu	Pb	Zn	Ag	Sn	As	Sample No	Core angle	Rock type	Diam	Desc code	Graphic log
130·80	131·45	0·06	760	110	340	4	300	4450	14290			NQ		
133·90	136·00	<0·01	1100	420	2800	3	18	36	14291					
159·80	161·35	0·06	3000	110	290	5	640	1·79%	14292					
165·30	167·10	<0·01	100	42	300	2	12	65	14293					
172·25		PETROLOGICAL SAMPLE							14063					

DESCRIPTIVE LOG

122·80 – 159·70m: REWORKED MAFIC VOLCANICLASTICS AND TUFFACEOUS SEDIMENTS

Variable sequence of fine mafic feld xyl-lithic volcaniclastics intercalated with zones of fi gr bedded tuffaceous sediments. Minor basalt lava and felsic intermediate-mafic lava intercalations, (blocks?).
Green, fi-med gr.
Lithic clasts av < 10mm, max 30mm, angular + irreg. Include mafic lavas (most abund) also mafic tuffs, siliceous tuffs and carbonate frags. Clasts are variably alt-some ble and silif. Clasts sorted into finer and coarser zones but not bedded. Matrix strongly schistose and deformed c abund feld xyls av 2mm and small [illegible]-alt lithics.
Tuffaceous seds most common below 140m. Include feld xyl tuff and tuffaceous silt and sandstone. Gen strongly schistose (in places just chlorite schist). Bedding visible in places: 25°/LCA @ 130.4m; 42°/LCA @ 140.5m; 40°/LCA @ 148m; 32°/LCA @ 154.7m. Much soft-sediment disruption of bedding.
Rocks mod-strongly chloritized and carbonatized (latter esp below 140m). Minor epidotization and silif esp around the common veins and patches of qz-carb (± chlor).
Strong shear @ 129.05m (30°/LCA) core broken 128.95–131.20m.
Strong fault 133.95–134.35m 40°/LCA c puggy breccia zone.
131.1m: 50mm qz-sulph (py>cp-aspy-po)-chlor-tourmaline vein 30°/LCA.
Minor patchy py>cp, trace po. Dissem. Except:
129.7–130.8m: 1% py>cp-aspy-po. Dissem.
130.8–131.45m: 3-5% py>aspy-cp-po
133.9–134.6m: 2% sp, minor py. (assoc c fault).
134.6–136m: 1-2% py-cp, trace sp-gn. Assoc c qz-carb veins.
Some laminae of v. fi gr py in tuff seds below 140m.
Basal contact gradational.

159·70 – 174·70m: SCHISTOSE MAFIC LAVA(S?)

Dk green, med gr, mod-strongly schistose.
Above disrupted zone 165.7–167.1m rock is massive fi-med gr with small felds in strongly chloritized and carbonatized matrix, with ubiquitous leucoxene. Below this rock similar but c porph felds to 3mm, av 2mm (possibly two flows?).
Strong chlorite-carbonate alt c minor epidotisation. Abund carb veins + patches - some c minor qz and patchy silif. Schistosity and alignment of carb veins becoming more marked c depth (40°/LCA @ 172m).
Minor py>po-cp dissem + veinlets. Except:
159.7–161.35m: 1-3% dissem + vein (qz) py-sp-gn-po-cp-aspy.
incl: 159.95–160.15m: Qz>tourmaline vein 40°/LCA c 25% aspy-po-cp; 161–161.2m: qz>chlor>tourm vein 50°/LCA c 5% py-po-aspy-cp.
165.3–167.1m: 2-5% py-po>sp-cp dissem + veinlets

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PROJECT	STERLING VALLEY	HOLE NAME	SVD 87-1A
LOGGED BY	J.G. PURVIS	TOTAL DEPTH	298.5m

ASSAY INFORMATION

Sample Number : 14063 (SVD 87-1A 177.25m)

Identification : Chloritised, abundantly porphyritic andesite with veins of calcite-chlorite-quartz and mild deformation

Description :

The sample is a drill core specimen of fine-grained, dark greenish grey rock with many small, light grey phenocrysts of feldspar.

A staining test revealed no K-feldspar.

In thin section the sample plainly displays abundantly porphyritic, hypidiomorphic, holocrystalline volcanic textures. The phenocrysts are about 0.5 to 3mm in size and the groundmass is dominated by randomly orientated laths of plagioclase about 0.2mm long.

The phenocrysts are mainly tabular, twinned plagioclase, showing minor deformation. There are a few deformed, chloritised mafic phenocrysts. Apart from plagioclase the groundmass carries prominent interstitial chlorite and many specks of sphene after inferred titaniferous oxides.

A thick (7mm), mildly deformed fissure vein carries a narrow marginal zone of chlorite and a core of calcite and quartz. Other thinner fissure veins also carry chlorite, quartz and calcite in various proportions and with some deformation obvious. One of the veins carries patches of pyrite.

An approximate mode is :

15-20%	plagioclase phenocrysts
1-2%	chloritised mafic phenocrysts
40-50%	groundmass plagioclase
20-25%	groundmass chlorite
8-10%	groundmass sphene
8-10%	veins of calcite-chlorite-quartz and rare pyrite

Comments and Interpretations :

This sample has primary textures consistent with abundantly porphyritic lava and its primary composition was apparently andesitic.

The rock has been chloritised, fissure-veined by calcite-chlorite-quartz, then mildly deformed. At least one of the veins carried some pyrite.

DISTANCE FROM COLLAR: TO TOP	TO BOTTOM	Au	Cu	Pb	Zn	Ag	Sn	As	SAMPLE No	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
201.00	203.00	<0.01	85	18	130	1	100	170	14294			NQ		
203.00	205.00	<0.01	7	22	105	<1	20	8	14295					
205.00	207.00	<0.01	9	16	165	<1	46	70	14296					
207.00	209.00	<0.01	28	40	185	1	270	14	14297					
209.00	210.00	0.05	18	18	175	1	400	16	14298					
210.00	211.00	0.04	1200	12	165	1	1200	38	14299					
211.00	212.00	0.15	1050	60	110	2	1500	1.882	14300					

DESCRIPTIVE LOG

174.70 – 186.75m: MAFIC VOLCANIC BANDED TUFFS AND FINE FELDSPAR CRYSTAL – LITHIC VOLCANICLASTICS
Possibly a pyroclastic/epiclastic hybrid.
Green, variable texture and grainsize.
Comprises fine tuffaceous zones and sandy-textured xtl-lithic volcaniclastics c̄ lithics of mafic lava, mafic tuff, silic tuffs, av <5mm, max 15mm. Felds av 1-2mm.
All deformed by strong schistosity, but bedding visible in places (41°/LCA @ 175.4m; 35°/LCA @ 184m). Gen reworking appears minimal.
Occ intercalations 0.2 – 0.5m of mafic lava (flows or blocks?).
Rock strongly chlorite-carbonate alt, abund carb veins, patches and bands ± qtz, [illegible]
[NB: Alteration and deformation (rock essent a chlorite-carbonate schist) makes 1° textural and compositional details impossible to determine completely – this applies throughout this sequence west of the Henty Fault.]
Minor dissem py-cp > po, decr c̄ depth.
178.6m: 50mm qtz vein, 40°/LCA (schistosity) c̄ 5% cp > aspy-po.
Basal contact 45°/LCA.

186.75 – 211.25m: SCHISTOSE, DEFORMED, MAFIC LAVA?
Green, f-med gr.
Texture v. deformed by increasingly strong schistosity and strong chlorite-carbonate alt. Sericitisation, bleaching, and patchy silif, inc below 196.5m. Essent a chlor-carb-sericite schist below 196.5m. Schistosity 40°/LCA @ 197.2m.
Orig text visible towards top of interval – shows same variations and banding (1°) (50°/LCA @ 192m). Deformed feld xyls 1-2mm, fine leucoxene. Carb-filled amygdales to 4mm @ 193.3m.
Much veining: carb > qtz to 195m, then qtz > carb.
Below 200m rock brecciated c̄ breccia matrix of vein qtz-carb c̄ assoc silif. Below 208m carb predom dolomite and rock is broken up. Minor thin tourmaline veins below 208.3m.
210 – 211.25m: Intense silif (rock composed of qtz-chlor ± dolomite) Heavily fractured & brecciated with thin tourmaline and purple fluorite veinlets & patches.
Trace sulphides, inc to minor below 201m (dissem py-po-cp-aspy-sp). Except: 190.2 – 190.45m: 1-2% cp, [illegible]
193.2 – 193.35m: cp > py, dissem & veinlets.
210 – 211.25m: 3-5% py > po-cp c̄ much purple fluorite

211.25 – 212.30m: HENTY FAULT
Main fault plane 211.25 – 211.35m: 50°/LCA – a 100mm zone of gouge & crushed rock.
211.35 – 212.30m: Highly silif, brecciated rock c̄ qtz-chlorite and fluorite (green & purple). Minor crushed black graphitic, chloritic and sericitic shales.

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METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT: STERLING VALLEY | HOLE NAME: SVD 87-1A
LOGGED BY: J.G. PURVIS | TOTAL DEPTH: 298.5m

ASSAY INFORMATION

Distance from collar: To top	To bottom	Au	Cu	Pb	Zn	Ag	Sn	As	Sample No	Core angle	Rock type	Diam	Desc code	Graphic log
212.80	213.00	<0.01	260	36	50	1	460	1200	13701			NQ		
213.00	214.10	0.03	510	46	70	1	1900	1400	13702					
214.10	215.00	<0.01	830	16	75	1	1250	250	13703					
215.00	216.00	<0.01	490	18	50	<1	1200	600	13704					
216.00	217.00	<0.01	980	28	85	1	870	660	13705					
217.00	218.35	<0.01	710	20	80	1	910	330	13706					
218.35	220.00	<0.01	50	75	195	<1	300	18	13707					
220.00	222.00	<0.01	16	165	450	<1	<4	14	13709					
222.00	224.00	<0.01	36	85	290	<1	55	16	13710					
224.00	226.00	<0.01	230	110	290	<1	640	440	13708					
249.00	251.25	<0.01	32	70	180	<1	42	30	13711					
251.25	253.50	<0.01	34	60	160	1	22	26	13712					

DESCRIPTIVE LOG

10-15% dissem + semi-massive py-aspy > cp-sp.

212.30 – 255.50m: INTERBEDDED GREY QUARTZOSE AND SERICITIC, FINE SANDSTONES, SILTSTONES AND DARK GREY SHALES.

Dk grey to pale green. Fi-med gr.
Volcanogenic and tuffaceous (v. sericitic). Partly graphitic.
Mod chloritisation and sericitisation to 220m, thereafter weak. Occ silic zones. Chlor alt assoc c qtz-sulphide veining (± fluorite-tourmaline-dolomite), these strongest in intervals of shattered sst.
Overall, sediments becoming finer gr, more graphitic and calcareous with depth. Common calcite veinlets ± qtz.
213.3 – 216m: Disturbed zone - folded, granulated and brecciated sediments with sulphides and fluorite in breccia matrix and veins, along with qtz-chlorite-dolomite. Some thin tourmaline veins.
Schistosity gen weak, most pronounced at top of unit. 45°/LCA @ 212.3m; 40°/LCA @ 218.25m.
Bedding: 36°/LCA @ 223m; 53°/LCA @ 239m; 40°/LCA @ 255m.
212.3 – 214.7m: 7-10% py>aspy>po-cp dissem + veins. Common fluorite.
214.7 – 218.35m: 5% py>po-cp-aspy. Common fluorite.
218.35 – 220m: 2-3% py-po, minor cp-aspy-sp.
220 – 224m: 1% py-po. Trace cp.
224 – 226m: 2-3% po>py. Minor cp-aspy. Qtz-sulph-fluorite-tourm veins.
Below 226m: Minor py-po-sp, trace cp. Except: 243 – 244m: 2% po-sp>py; 249 – 253.5m: 1-2% po>py-cp-sp dissem + in veinlets c chlor within chlor-tourm-qtz-carb zones 100mm wide, av 1/m, with chloritised sedc.
At 225m: 90mm qtz-fluorite-tourm-dolomite-po-py-aspy-cp vein 10°/LCA.
At 235.1m: 10mm qtz-fluorite-dolomite-tourm-py-cp vein 50°/LCA.
249.15 – 249.3m: Zone of chlor-tourm-carb-po-py-cp veining.
252.7m: 65mm qtz-chlor-carb-po vein.
Basal contact bedding 40°/LCA.

255.5 – 270.45m: TUFFACEOUS SILTY LITHIC SANDSTONE AND BRECCIA

Zones of lithic sedimentary breccia and coarse sandstone with deformed fsp or lithics to 8mm, av 2-3mm, in graphitic and sericitic (tuffaceous) silty matrix.
Light grey with some black graphitic zones near top of interval.
Mod schistose. Generally lacking bedding.
Much dispersed carb but decrease in carb veinlets units above. Some small lithics of carb. Some larger qtz-carb veins.
Much of dispersed carb appears due to frags of carbonatised feldspars.
255.5 – 257m: 2% dissem po>sp>py.
257 – 266m: 1% dissem po>py>cp, trace aspy. Weak chlorite alt assoc c the sulphs.
266 – 270.45m: Minor po-py, trace sp-cp.
Basal contact bedding 65°/LCA.

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY
HOLE NAME	SVD 87-1A
LOGGED BY	J.G. PURVIS
TOTAL DEPTH	298.5m

ASSAY INFORMATION

Distance from collar: To top	Distance from collar: To bottom	Au	Cu	Pb	Zn	Ag	Sn	As	Sample No	Core angle	Rock type	Diam	Desc code	Graphic log
282.00	284.00	<0.01	24	440	370	1	4	<2	13713			NQ		
284.00	286.00	<0.01	32	48	200	1	10	18	13714					
286.00	288.00	<0.01	210	75	300	2	105	60	13715					
288.00	290.20	<0.01	180	30	155	2	125	75	13716					

DESCRIPTIVE LOG

270.45 – 284.0m : INTERBEDDED TUFFACEOUS SILTSTONES, SHALES AND QUARTZOSE SANDSTONES
Well bedded qtzose and sericitic (tuffaceous) sediments as above 255.5m.
Pale grey to dk grey. Partly graphitic.
Wk-mod schistose.
281 – 284m : Partly silif and/or cherty pale grey sericitic siltstones (look like Rosebery Host Rocks)
2 large (0.2 + 0.35m) graded beds @ 274 + 275m give downhole facings (ie top to East) Bedding 27?m 70°/LCA.
Much fine metamorphic mica 275.25 – 278m assoc c̄ broken zones around sev shears + barren qtz-carb veins to 40mm.
Main shear 70°/LCA @ 276.2m.
270.45 – 277.5m : 1% py>po dissem.
277.5 – 284m : Minor py>po-cp-sp-gn, 1-2% sp-gn 282.7 – 283m.
Basal contact bedding 70°/LCA.

284 – 298.5m : GRAPHITIC AND CALCAREOUS SANDSTONES SILTSTONES AND SHALES
Shale is non-calcareous. Rocks much more graphitic than before, otherwise sediments basically similar to above.
Dk. grey to black.
Well bedded (65°/LCA @ 286m ; 60°/LCA @ 296.5m)
Abund tiny calcite veinlets ('sweat-outs'). Numerous chlorite veins ± tourmaline(?). Some wk chlorite alt assoc c̄ sulphides.
Broken 290.5 – 297m centred around graphitic shears 85°/LCA @ 295.25 + 296.65m, c̄ several large qtz>carb veins 45°/LCA up 550mm. V minor sulphs in veins.
284 – 286m : 1% dissem py-po-sp.
286 – 290.2m : 2-3% po-py-cp-sp, trace aspy. Dissem + in veinlets + chlor-tourm or qtz.
290.2 – 298.5m : 1% py>po. Trace cp-sp. Mostly dissem.

END OF HOLE

8050037

APPENDIX 2

DIAMOND DRILL RELOG: SV 3

ASSAY RESULTS: SV 2

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SV 3
LOGGED BY	J.G. PURVIS (Relog)	TOTAL DEPTH	292.4m. (Relogged to 101m)

DISTANCE FROM COLLAR: TO TOP | TO BOTTOM | SAMPLE No | CORE ANGLE | ROCK TYPE | DIAM | DESC CODE | GRAPHIC LOG

ASSAY INFORMATION

DESCRIPTIVE LOG

0 – 2.6m: NOT CORED.

2.6 – 4.7m: ALLUVIUM - Bouldery.

4.7 – 16.0m:
PALE RED QUARTZ - MICA SANDSTONE
Quartz sandstone with much mica and khaki-coloured lithic-derived material. Some sl carbonaceous shale interbeds. Mica could be either detrital or after sericite. Oxidised and leached with red hematitic staining throughout. Hematite, Mn ox and minor limonite, on fracts (poss derived from oxidation of micas). Minor leached quartz (-carbonate) veining. Y broken along mod schistosity /LCA. Bedding // schistosity. Bedding 5°/LCA at 12.5m. Transitional change at base.

16.0 – 46.0m: CARBONACEOUS QUARTZ-CARBONATE-SERICITE SANDSTONE

Massive, grey. Much carbonaceous (poss graphitic) and lithic material. Sericite after lithic/clast component rather than alteration. Minor chlorite. Abund dispersed and sweat-out veinlets of carb (ankerite?) Some veinlets also contain qtz. Inc graphitic material and less sericite below 35m. Minor interbeds of grey shale and siltst also inc below 35m. Texture deformed by mod schistosity. Bedding // 15°/LCA at 28.5m; 28°/LCA at 38.5m. Badly broken in places above 24m, also 32-34m, 40-43.5m. Minor dissem py, locally 1%. Dissem, ē some in carb veinlets.

46.0 – 55.0m: DEFORMED QUARTZ-FELDSPAR-LITHIC SANDSTONE
Similar to above except coarser gr and very strongly deformed and schistose (may a qtz-sericite-chlorite schist). Small patches of diffuse silic and bleaching. Grey-green. Relict feld xtals to 3mm, with much disrupted carb clots after deformed and carbonatised felds. Few carb veinlets. Boudin qtz-carb-chlor vein 46.3–46.7m. Wisps and partings of chlor + some poss after flattened lithic clasts. Trace dissem py.

55.0 – 94.3m: QUARTZ-FELDSPAR SANDSTONE
Greenish-grey to pink. Massive, med-textured, non-bedded. Deformed thin beds of carbonaceous (graphitic) shale and siltstone, esp below 80m. Numerous tiny shale lithics in the sst. Sst: mostly qtz grains with carbonate after felds and some

SHEET 1 OF 2

805039

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT: STERLING VALLEY	HOLE NAME: SV 3
LOGGED BY: J.G. PURVIS (Relog)	TOTAL DEPTH: 292.4m (Relogged to 101m)

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	SAMPLE No	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG

ASSAY INFORMATION

DESCRIPTIVE LOG

carbonaceous material. Sericitic and chloritic at top of interval, dec markedly c depth.
Inc carbonate-rich below 75m with patches and veinlets of carb, almost none at top of interval.
Strongly schistose - dec c depth (40°/LCA @ 60m)
Bedding: 30°/LCA @ 56m; 30°/LCA @ 68m; 35°/LCA @ 81m; 50°/LCA @ 87m.
Patchy silic esp in zones c pink hematization + albitisation, locally hornfelsed esp 62-64m - hard, silic, hematised with slight bleaching and chloritisation. Brittle-fracturing with fillings of hem + mag.
Minor dissem py, 1% 82-87m.

94.3 - 101.0 m (at least): GRAPHITIC BLACK SHALE

Bedding deformed by mod schistosity.
Abund carbonate sweat-outs as lenses and veinlets in schistosity.
Schistosity 40°/LCA @ 97.5m (deformed bedding).
Occ small slickens.
1-2% py dissem in shale and carbonate, conc in latter - some semi-massive patches of py up to 60x15mm.

END OF RELOG.

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

Note: Analyses by Cordabs, March 1987. Cordabs job N° com 870493; Shell despatch order 11538. Residues held in Shell Devonport office. Gold determined by 30gm fire assay.

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONFORMATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SV 2
LOGGED BY	D.C. SIMPSON (1977)	TOTAL DEPTH	125.40 m

SAMPLED BY: J.G. PURVIS (1987)

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	Au	Cu	Pb	Zn	Ag	Sn	As	SAMPLE Nº	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
5.00	7.50	<0.01	16	165	120	1	<4	36	136879			NQ		
7.50	10.00	0.02	12	140	135	<1	<4	48	136880					
10.00	12.50	<0.01	16	48	150	<1	<4	46	136881					
12.50	15.00	<0.01	18	24	125	<1	8	42	136882					
15.00	17.50	0.01	28	30	100	<1	<4	55	136883					
17.50	20.00	0.01	36	32	85	1	<4	50	136884					
20.00	22.50	<0.01	9	14	42	<1	<4	48	136885					
22.50	25.00	<0.01	8	12	28	<1	4	40	136886					
25.00	27.00	0.01	7	18	30	<1	6	65	136887					
27.00	29.00	0.01	8	32	120	<1	4	75	136888					
29.00	31.00	0.01	12	18	60	<1	<4	50	136889					
31.00	33.00	0.01	12	24	75	1	10	65	136890					
33.00	35.00	0.01	12	24	80	1	<4	55	136891					
35.00	37.00	0.01	18	22	95	<1	6	65	136892					
37.00	39.00	0.01	16	18	90	<1	<4	110	136893					
39.00	41.00	<0.01	18	24	100	<1	<4	60	136894					
41.00	43.00	0.01	12	24	730	<1	<4	24	136895					
43.00	45.00	<0.01	16	18	105	<1	<4	12	136896					
45.00	47.00	0.01	12	16	55	<1	6	12	136897					
47.00	49.00	<0.01	9	20	90	<1	<4	9	136898					
49.00	51.00	0.01	8	60	170	<1	<4	9	136899					
51.00	53.00	0.01	9	50	105	<1	12	6	137000					
53.00	55.00	<0.01	12	75	90	<1	<4	8	142231					
55.00	57.00	0.02	12	24	95	<1	<4	38	142232					
57.00	59.00	<0.01	10	22	80	<1	<4	24	142233					
59.00	61.00	0.01	36	24	135	<1	<4	118	142234					
61.00	63.00	<0.01	16	28	85	<1	4	22	142235					
63.00	65.00	<0.01	26	32	115	1	6	22	142236					
65.00	67.00	0.01	16	22	130	<1	4	22	142237					
67.00	69.00	0.01	20	42	155	<1	6	50	142238					
69.00	71.00	<0.01	24	28	85	1	<4	56	142239					
71.00	73.00	<0.01	32	34	85	1	8	40	142240					
73.00	75.00	<0.01	28	32	70	<1	<4	32	142241					
75.00	77.00	<0.01	50	65	115	1	6	46	142242					
77.00	79.00	0.01	24	60	280	1	6	38	142243					
79.00	81.00	<0.01	22	50	140	1	<4	44	142244					
81.00	83.00	<0.01	40	135	280	2	<4	56	142245					
83.00	85.00	0.01	55	150	610	1	12	40	142246					
85.00	87.00	0.02	58	210	420	1	8	30	142247					
87.00	89.00	0.02	50	230	750	1	<4	26	142248					
89.00	91.00	0.02	70	175	600	1	<4	34	142249					
91.00	93.00	<0.01	40	165	750	1	10	44	142250					
93.00	95.00	0.11	480	310	780	3	3600	8600	142251					
95.00	97.00	0.05	1125	210	280	2	135	420	142252					
97.00	99.00	0.01	70	175	610	<1	40	120	142253					
99.00	101.00	<0.01	60	300	1500	1	6	60	142254					
101.00	103.00	0.01	70	400	2350	1	50	44	142255			BQ		
103.00	105.00	0.01	90	330	1450	1	10	34	142256					

Descriptive Log

See original Aberfoyle log, November 1977.

Sampling by J.G. Purvis, Shell Metals, March 1987.

043

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONFIRMATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SV 2
LOGGED BY		TOTAL DEPTH	

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	DISTANCE FROM COLLAR TO BOTTOM	Au	Cu	Pb	Zn	Ag	Sn	As	SAMPLE NO	CORE ANGLE	ROCK TYPE	CHAR	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
105·00	107·00	0·01	80	175	460	1	10	44	14257			BQ			
107·00	109·65	<0·01	60	115	540	1	12	55	14258						
109·65	112·00	0·01	55	320	1150	1	12	120	14259			NQ			
112·00	114·00	0·01	60	190	1650	1	28	95	14260						
114·00	116·00	<0·01	65	150	640	1	8	34	14261						
116·00	118·00	<0·01	90	95	290	1	6	28	14262						
118·00	120·00	0·02	80	750	1650	3	16	560	14263						
120·00	122·00	0·01	34	450	920	1	18	175	14264						
122·00	124·00	0·01	65	270	450	2	10	75	14265						
124·00	125·40	0·01	60	400	700	2	8	75	14266						
		END	OF	HOLE											

SHEET 2 OF 2

805042

044

805043

APPENDIX 3

EXPENDITURE STATEMENT

045

EXPLORATION PROJECT EXPENDITURE REPORT

STERLING VALLEY JV-STERLING VALLEY

EXPENDITURE FOR : JAN/DEC 1987

CURRENT MONTH	CURRENT QUARTER		CURRENT HALF YEAR	CURRENT YEAR	PROJECT TO-DATE
1,690	5,434	STAFFING COSTS - LABOUR	7,641	17,552	19,525
0	0	- TRAVEL	0	230	239
0	103	- OTHER	103	110	110
454	928	VEHICLE/EQUIPMENT COSTS	1,366	3,622	3,835
1,545	3,649	FIELD AND OFFICE OPERATING COSTS	4,504	13,788	14,709
3,689	10,115	** SUB-TOTAL ESTABLISHMENT COSTS	13,514	35,320	38,417
0	0	TENEMENT COSTS	0	1,026	1,026
.	.	GEOCHEMICAL SURVEYS	.	.	.
1,741	11,845	GEOPHYSICAL SURVEYS	11,845	11,845	11,845
0	0	ANALYSIS - DRILLING SAMPLES	0	3,749	5,024
0	0	- OTHER SAMPLES	-656	0	731
0	0	DRILLING - DIAMOND	0	33,122	33,122
.	.	- OTHER	.	.	.
.	.	AERIAL SURV/PHOTOGRAMMETRY	.	.	.
0	3,641	GRIDDING/SURVEY/ACCESS	9,183	11,068	11,068
1,200	1,200	GEOLOGICAL STUDIES	1,761	14,360	14,987
.	.	ENVIRONMENTAL/OTHER	.	.	.
.	.	CHARGES EX JV PARTNERS	.	.	.
2,941	16,686	** SUB-TOTAL OPERATING COSTS	22,132	75,170	77,802
6,630	26,800	TOTAL FIELD EXPENDITURE	35,646	110,490	116,219
.	.	GEOLOGY MGT - ADMIN (80,81XX)	.	.	.
730	730	GEOLOGY RESEARCH (86XX)	730	730	730
-6	122	GEOTECHNICAL SERVICES (85XX)	268	546	639
0	0	ENGINEERING/COMPUTING (83XX)	0	0	-1
724	852	AHO DIRECT PROJECT EXPENDITURE	998	1,276	1,368
944	2,790	AHO MAN., ADMIN AND SERVICES (MS00/2)	3,690	11,140	11,648
8,297	30,442	TOTAL EXP. BEFORE RECOVERIES	40,334	122,906	129,232
.	.	RECOVERIES EX JV PARTNERS	.	.	.
8,297	30,442	TOTAL PROJECT EXPENDITURE	40,334	122,906	129,232

805044

MOUNT FARRELL

385 000 E

390 000E

LAKE MACKINTOSH

LAKE ROSEBERY

Murchison

Dam

Road

5 375 000 N

5 375 000 N

Highway

RIVER

Murchison

SOPHIA

RIVER

Anthony Road

STERLING

Sterling Valley Mine

Mining Leases(EZ)

SOUTH WEST CONSERVATION AREA

SOUTH WEST CONSERVATION AREA

LAKE MURCHISON

385 000 E

MOUNT MURCHISON

390000E

805045

5 cm

88-2785

Billiton Australia

The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY

Title: E.L. 4/73
STERLING VALLEY
LOCATION PLAN

Author DBH	Date 1/88	Scale 1:25000	
Drawn OH	Office TAS	Revised	Date
Drawing No. D/LJ 70/001			Fig. No. 1

6573

LEGEND

COVER ROCKS
Glacial and Fluvioglacial Till, Gravity-slide Scree, River Alluvium

East of the Henty Fault

FARRELL SLATES
1. Dominantly cleaved Greywackes with Felsic Tuffaceous Wacke, Siltstone, Phyllite
2. Black and dark grey Mudstones. Generally strongly cleaved to Phyllitic, some possibly Cataclasites
3. Volcaniclastic Sediments. Felsic Lithic Tuffs to volcanic Lithic Wackes, generally strongly cleaved, often as Quartz-Sericite Schist
4. Felsic Lithic Tuffs, possibly some Ignimbrites

MACES MINE VOLCANICS
Acid Volcanics, dominantly Rhyolite Lavas with some Ignimbrites

West of the Henty Fault

MT. SALE VOLCANICS
- Tuffaceous Siltstone of Intermediate Volcanic Provenance, frequently sheared and brecciated
- Andesite to Trachytic Lavas, Lava breccias and Pyroclastics
- Intrusive Dolerite Sills and Dykes
- Granite Occurences. ? Bedrock Dykes or ? Glacial Erratics

805046

5 cm

SCALE 0 100 200 300 400 500

EZ
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

PROJECT STERLING VALLEY

88-2785

GEOLOGICAL INTERPRETATION

Compiled I McD	Date 19-6-85	Scale 1:5000	
AMG	Latitude	Longitude	
Drawn RJR	File No	FIG. No. 2	
		AO-526-0046	

6574

PLAN

LINE 3260 N

4700 E

5000 E

STERLING VALLEY GRID BASELINE

STERLING RIVER

SVD 87-1A

SECTION

R.L.

200 m

100 m

00 m

STP 283
-45° 6m N

SVD 87-1A
-76°

SVD 87-1
-56°

SV3
-62°
67·5m N

SV2
-60°
67·5m N

STP 105
-53° 30m S

Road

OXIDISED ANDESITE (?) LAVA

BASALTIC LAVA

QUARTZ-SULPHIDE BRECCIA (py-aspy-cp)

MAFIC VOLCANICLASTICS (partially reworked)

BASALTIC LAVA Variably porphyritic and amygdaloidal

2m @ 0·4 g/t Au, 6·2% As, 0·8% Cu, 0·2% Sn

0·85m @ 1·16 g/t Au, 4·15% As

0·55m @ 1·1 g/t Au

0·45m @ 2·0 g/t Au

179·6m E.O.H. 17m N

OXIDISED MAFIC LAVAS

MAFIC LAVA

VARIABLE MAFIC VOLCANICLASTICS

INTERMEDIATE-MAFIC LAVA

REWORKED MAFIC VOLCANICLASTICS AND TUFFACEOUS SEDIMENTS

SCHISTOSE MAFIC LAVAS

MAFIC TUFFS AND VOLCANICLASTICS

SCHISTOSE MAFIC LAVA ?

TUFFACEOUS SILTSTONE, SHALE AND SANDSTONE

LITHIC SANDSTONE AND BRECCIA

TUFFACEOUS SILTSTONE, SHALE AND SANDSTONE

GRAPHITIC AND CALCAREOUS SANDSTONE, SILTSTONE AND SHALE

298·5m E.O.H. 5m N

30m. E.O.H.

HENTY FAULT

ALLUVIUM

QUARTZ-FELDSPAR SANDSTONE variably carbonaceous, sericitic and/or carbonate rich

BLACK SHALE

TUFFACEOUS SHALE AND SILTSTONE

REWORKED LITHIC TUFFACEOUS BRECCIA

QUARTZ-CRYSTAL (LITHIC) TUFF

VOLCANOMICT SANDSTONE, TUFFACEOUS SILTSTONE AND SHALE

SANDSTONE

125·4m E.O.H. 63m N

0·13m @ 2·2 g/t Au in py-siderite vein

323·7m E.O.H. 22m S

292·4m E.O.H. 39·5m N

RHYOLITE LAVA

TUFFACEOUS SILTSTONE AND SHALE

QUATERNARY

FLUVIO-GLACIAL GRAVELS

CAMBRIAN

MT READ VOLCANICS A : WEST OF HENTY FAULT

MAFIC LAVAS
Andesitic to basaltic
Variably porphyritic and amygdaloidal. Ranging from fine grained basalt to coarsely feldspar-porphyritic andesite. Some basalts clearly cross-cutting dykes.

MAFIC VOLCANICLASTICS AND TUFFS
Clastic material of the same provenance as the above mafic lavas.
Ranges from reworked volcaniclastic breccias and tuffaceous sediments, to volcaniclastics of indeterminate origin. Some thin intercalations of mafic lavas to 2m (possibly large loose blocks ?)

B : EAST OF HENTY FAULT

VOLCANOMICT AND TUFFACEOUS SEDIMENTS OF THE FARRELL SLATE SEQUENCE

Finer

BLACK GRAPHITIC SHALE

TUFFACEOUS AND CALCAREOUS SILTSTONE, SANDSTONE AND SHALE Sandstone generally quartzose.

QUARTZ-FELDSPAR CRYSTAL SANDSTONE / CRYSTAL TUFF
Variably graphitic, sericitic and/or carbonate-rich.

REWORKED LITHIC (-CRYSTAL) BRECCIA
Tuffaceous matrix

Coarser

EASTERN VOLCANICS

RHYOLITE LAVA Quartz-porphyritic

Bedding

Bedding facing

Primary lineation in lavas, volcaniclastics etc.

Schistosity

Fault

Shear

Geological contact

Geological contact – attitude unknown

805047

5 cm

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY J.V. – E.L. 4/73

Title: SS-2785

SECTION 3260N

LOOKING NORTH
(SECTION BEARS 108° AMG)

Author JGP	Dept. TAS	Scale 1:1000	
Drawn AS	Date 5/87	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG. No. 3		Drawing No. LJ 70/1003	

6575

SHELL COMPANY OF AUSTRALIA

88-2785

METALS DIVISION

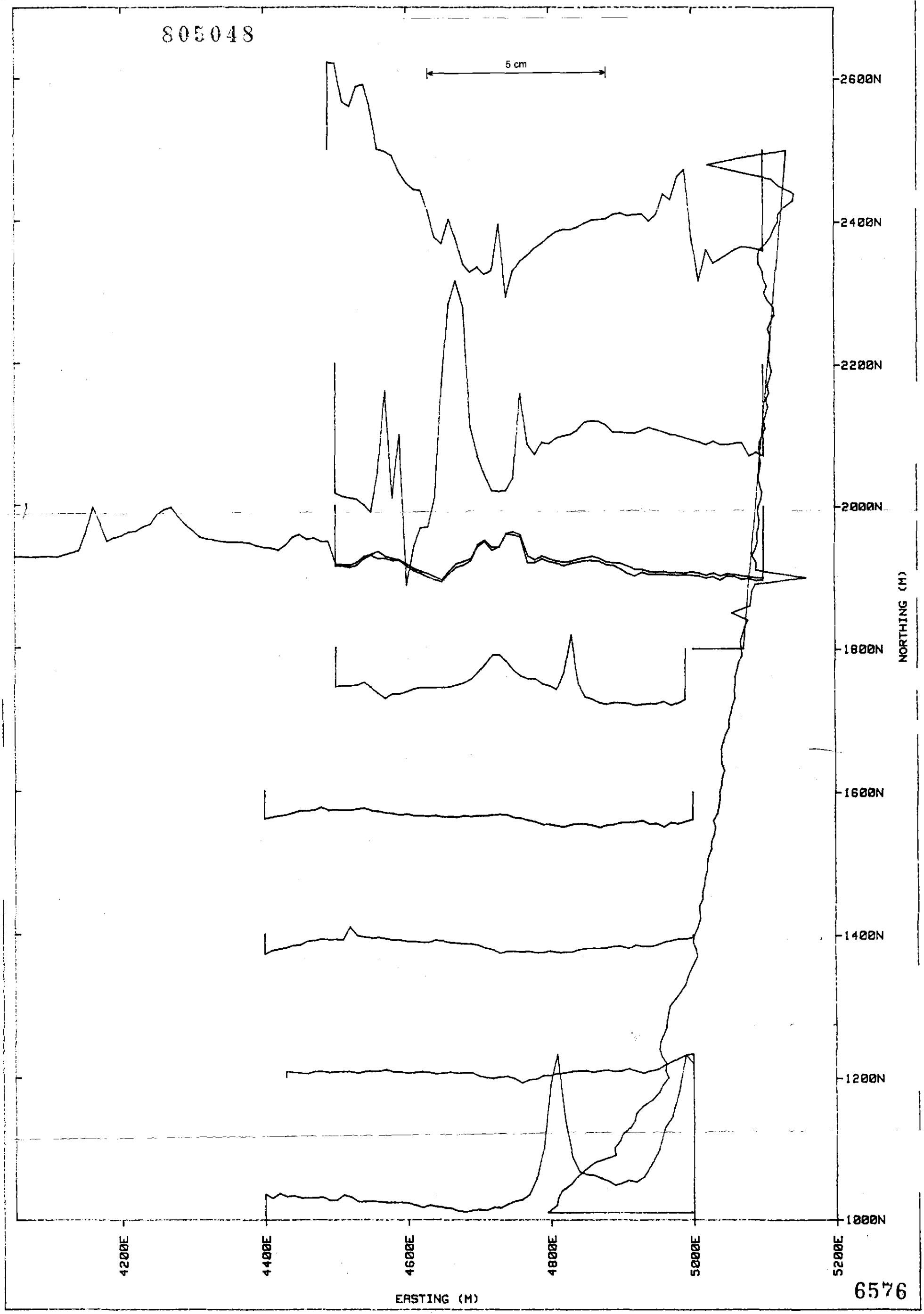
R.O.C.S. - PROTEM

S. STERLING VALLEY
GROUND MAG, TMI
STACKED PROFILES
BASE 2050, 50nT/CM

SCALE 1 : 5000

FIG No : 4	LEGEND
DATE : 12/87	2 x 9-856
AUTHOR :	
OFFICE : D'PORT	
DRAWN : KH/MEC8	

805048



6576

GRAVITY PROFILE

Line: 3260N

Legend

—+— Channel ± 2.7 g/cc

9577

Observed gravity (m)

4.788E-07

-4.

-8.

Bouger gravity (mg)

-330.8

-331.2

-331.6

-332.

-332.4

-332.8

4600. 4640. 4680. 4720. 4760. 4800. 4840. 4880. 4920. 4960. 5000. 5040. 5080. 5120. 5160.

EASTING (m)

5 cm

DDH SVD 87-1A

HENTY FAULT

DDH SV 2,3

STP 105

MAFIC LAVAS & VOLCANICLASTICS (minor py, po)

SANDSTONES, SHALES, TUFFS (minor py, po, & graphitic shale) (IP Anomaly)

Station Elevation (m)

25.

0

-25

4600. 4640. 4680. 4720. 4760. 4800. 4840. 4880. 4920. 4960. 5000. 5040. 5080. 5120. 5130.

EASTING (m)

805049

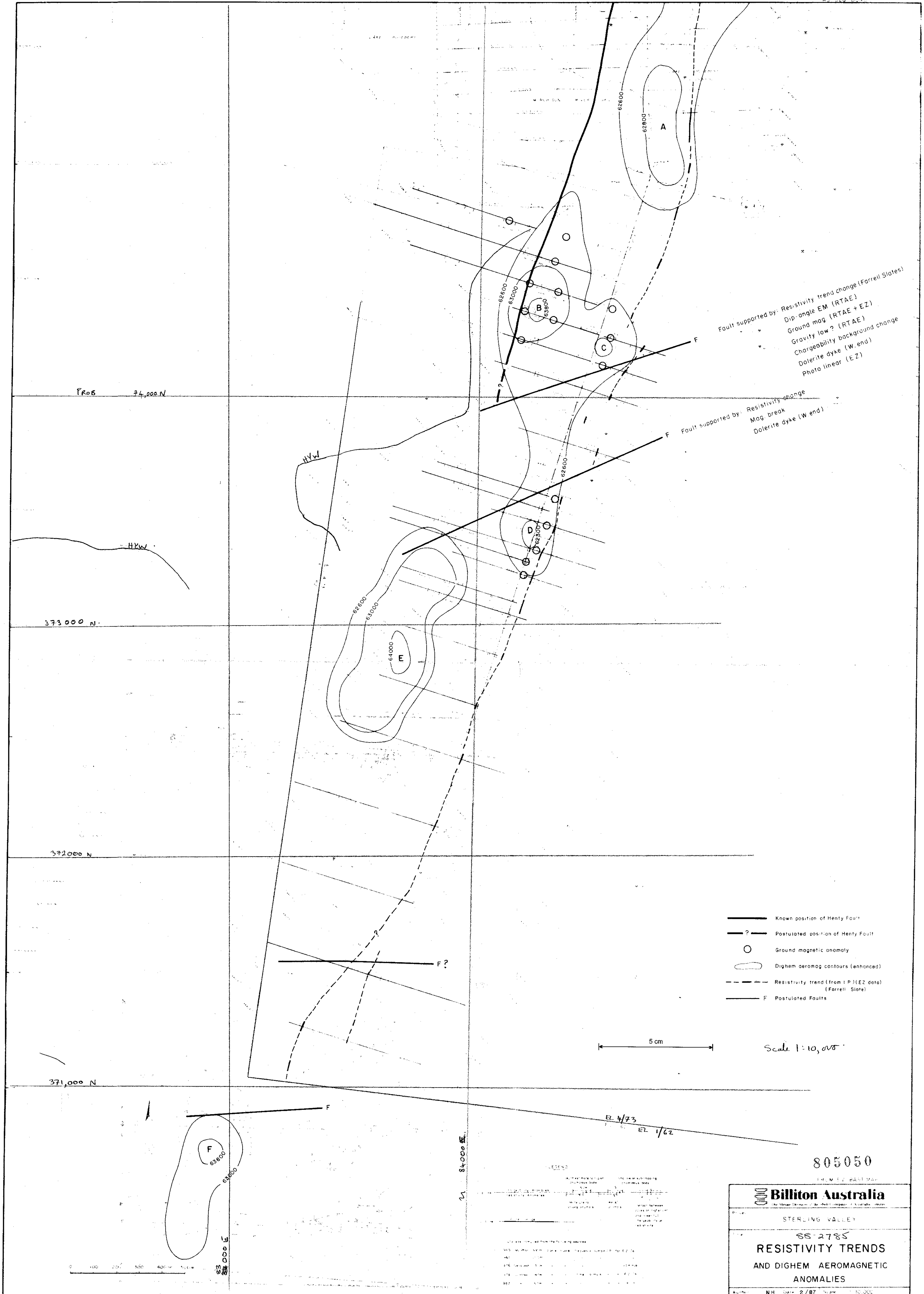
1:2000

88-2785

SHELL COMPANY OF AUSTRALIA
METALS DIVISION

STERLING VALLEY, TAS
BOUGUER GRAVITY
LINE 3260N
DENSITY=2.67 G/CC

FIG.NO: 5	REPT.NO:
ENCL.NO:	DRG.NO: LJ70/1012
DATE: 3/87	AUTHOR: NK
DRAWN:	OFFICE: AHO



805050

FROM EZ BASE MAP

Billiton Australia

STERLING VALLEY

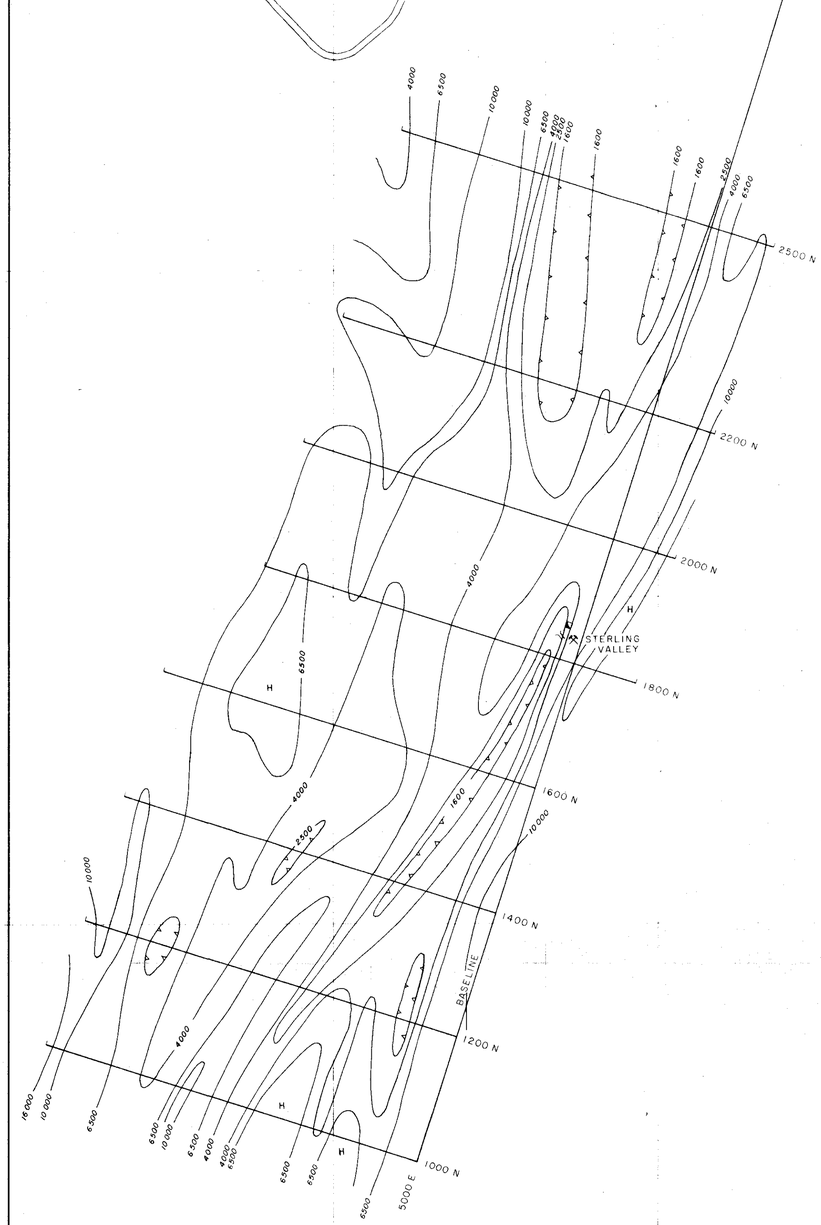
88-2785

RESISTIVITY TRENDS

AND DIGHEM AEROMAGNETIC ANOMALIES

Author NH	Date 2/87	Scale 1:10,000			
Drawn AS	Office AHO	Revised N.H.	Date 1/88		
Drawing No. LJ70/1002			Fig. No. 6		

6578



5 372 000

5 372 000

5 371 000

5 371 000 m N

EL 4/73

EL 1/62

5 370 000 m N

383 000 m E

384 000

385 000

386 000 m E

5 cm

SCINTREX 10/87
GRADIENT ARRAY
a = 20 m
RECEIVER: IPR-10
INTEGRATION: M_3

Contour Interval: ohm-m

6579

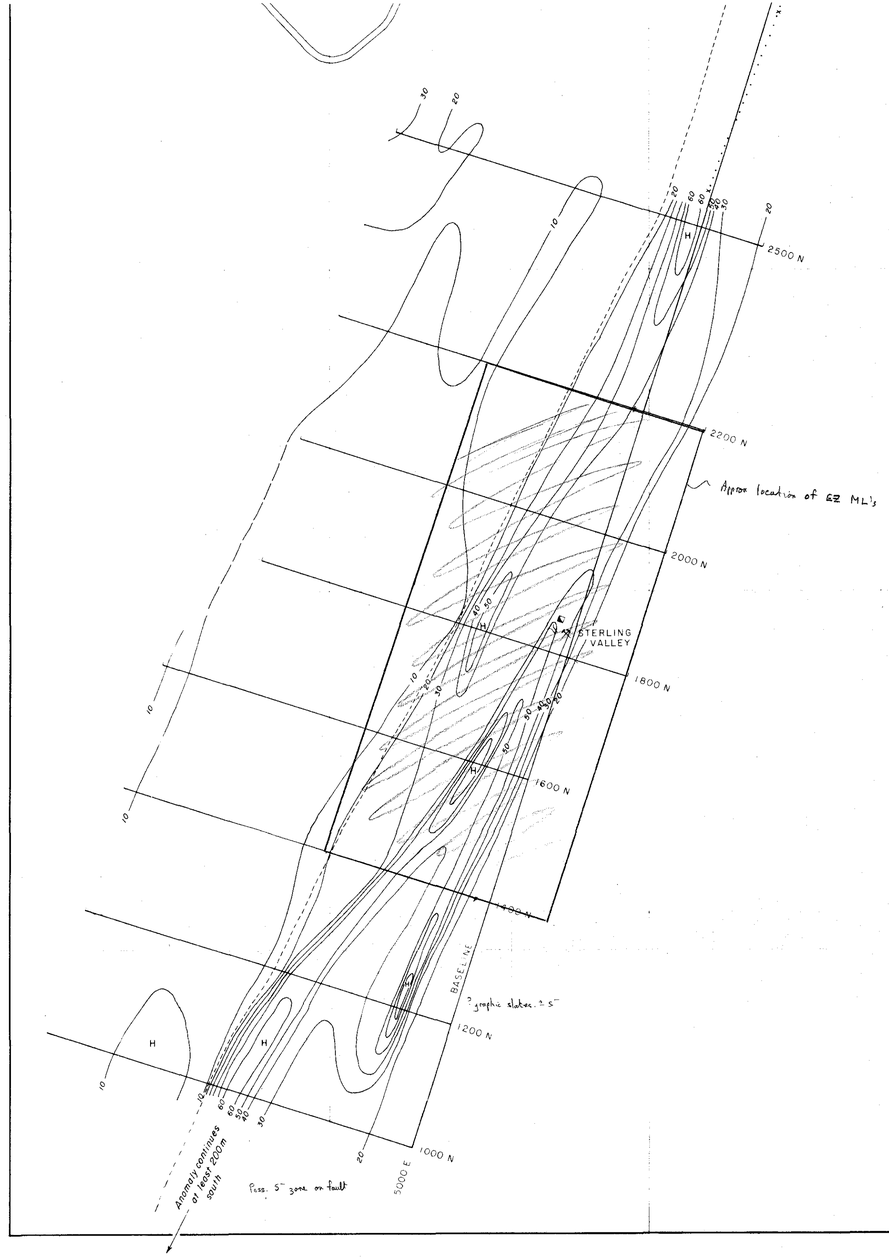
805051

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY J. V.

Title: 85-2785
STERLING VALLEY
RESISTIVITY CONTOURS

Author N H	Dept AHO	Scale 1:5000	
Drawn A S	Date	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG No. 7		Drawing No. LJ 70/1007	



5 372 000

5 371 000

5 370 000 m N

383 000 m E

384 000

385 000

386 000 m E

EL 4/73

EL 1/62

5 371 000 m N

805052

5 cm

x·····x Trends from previous IP/Resistivity surveys

—— Known position of Henty Fault (from drilling)

- - - - Interpreted position of Henty Fault (from Billiton & EZ IP Surveys)

CURRENT ELECTRODES AT:

SOUTH STERLING VALLEY: 1700 N / 3600 E; 1700 N / 5700 E

NORTH STERLING VALLEY: 5 374 900 N / 383 700 E; 5 374 900 N / 385 400 E

SCINTREX 10/87
GRADIENT ARRAY
a = 20 m
RECEIVER: IPR-10
INTEGRATION: M_3

Contour Interval: 10 mv/v

6580

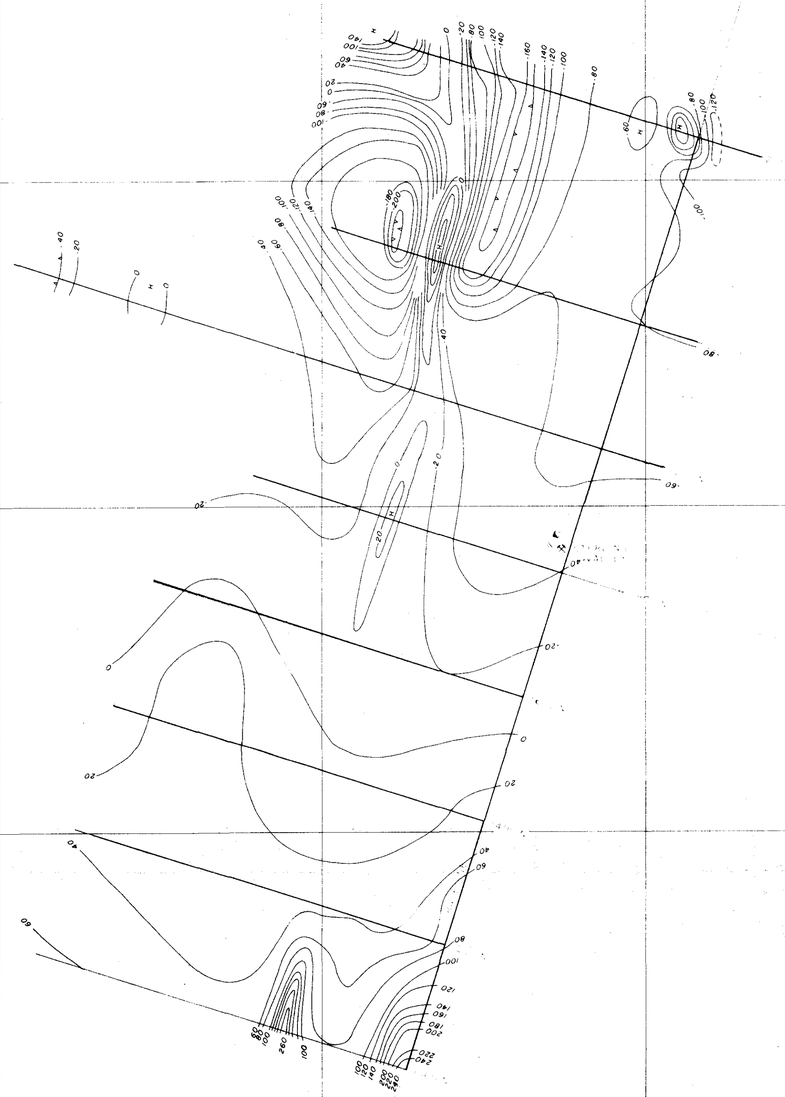
Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY J. V.

Title: STERLING VALLEY
88-2785
CHARGEABILITY CONTOURS

Author N H	Dept. AHO	Scale 1:5000	
Drawn A S	Date	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG. No. 8.		Drawing No. LJ 70 / 1008	

5372500N.



5371000N

383000E

384000E

5 cm

805053

Billiton Australia

The Metals Division of the Shell group of companies

Project: STERLING VALLEY N.W. — 85-2785

Title:

N.W. TASMANIA

GROUND MAGNETICS

TOTAL FIELD

CI=20nT BASE=62 020 nT

Author: N.H.	Dept: AHO	Scale: 1:5000	
Drawn: A.M.	Date: 12/87	Revised:	Date:
Checked:	Date:	Scaled:	Date:
Sheet No.: FIG No. 9		Drawing No.:	LJ70/1010

6581