GOLD FIELDS EXPLORATION PTY. LIMITED

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E.L.42/71

ARGENT AND GRAND PRIZE AREAS

RELINQUISHMENT REPORT

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AMG REFERENCE POINTS ADDED

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CONTENTS

LIST OF FIGURES

APPENDICES

2.0 E.L. 42/71 (WEST) - ARGENT AREA

1.0 INTRODUCTION

E.L.42/71 covers an area of 53sq. km. west and south of the Renison Mining Lease in West Tasmania. Since mid-1982, the western or Argent section has been explored by Renison Mine geological staff and the southern or Grand Prize section has been explored by Burnie-based staff of Gold Fields Exploration.

E.L.42/71 is due for final relinquishment on August 23rd, 1987. This report has been jointly prepared by Renison and Gold Fields Exploration and summarizes all of the exploration efforts carried out by RGC Group companies since the licence was granted in 1971.

2.1 SUMMARY

Exploration of the Argent section of E.L. 42/71, located immediately south, west and southwest of the Renison Mine Lease, was commenced by Renison Limited in early 1972. Field work continued throughout the area up until early 1986 when, due to a review of the Renison Bell mine operations following the collapse of the international tin market, all exploration was suspended.

Extensive areas of rocks correlated with the Crimson Creek Formation have been established within the Argent section of E.L. 42/71. At the Renison Bell mine, these predominantly volcaniclastic rocks, of probable Precambrian - Cambrian age, include the uppermost members of the mine sequence. With the existence of mineralized faults established, the Argent area is thus prospective for fracture-controlled, carbonate-replacement (Renison-style) tin mineralization.

Exploration programmes completed in the area by Renison Limited have included airborne magnetics and EM surveys, ground magnetics, IP, EM and VLF-EM surveys, and bedrock, soil and limited stream sediment geochemical sampling, followed up by diamond drilling. In recent years, exploration has concentrated on locating deeply-buried, stanniferous sulphide mineralization. Downhole EM logging and experimental geophysical techniques have been used to follow up several broadly spaced stratigraphic drillholes. Diamond drilling completed within the Argent area, during the period from 1972-1984, totalled 9145.4m in 19 holes. Drilling was concentrated in the northernmost section of the E.L., testing a possible northwestern extension of the major-displacement Federal Fault zone. Sporadic, thin mineralized zones, with high lead and silver values, were intersected within this fault. An altered and pyrrhotite-mineralized dolomite bed, correlated with the No. 1 Horizon of the Renison mine sequence, was intersected at depth in a hole sited in the southeastern section of the E.L., immediately adjacent to the southern boundary of the Renison Mine Lease. Subsequent downhole EM logging indicated an off-hole conductive body. Modelling to define a target for follow-up drilling has yet to be completed. Definite potential exists for the discovery of stanniferous carbonate-replacement and fault-fill mineralization, at considerable depth, throughout the eastern section of the E.L. area, adjacent to the Renison Mine Lease. Renison Limited has applied for mineral leases over this area, to establish the longer-term tenure required for a continuation of deep-seeking exploration programmes.

An estimated total expenditure of $712,658 was incurred in exploration of the Argent area, during the period from July, 1979-June, 1987, inclusive. Drilling costs over this period totalled $378,173.

2.2 INTRODUCTION

E.L. 42/71 comprises a 53 sq km area immediately south and west of the Renison Mine Lease. The southeastern section of the E.L. extends over the Serpentine Hill to Black Hill area and includes the Grand Prize mine area. Since late-1982, evaluation of this part of the E.L. has been carried out and reported on by Goldfields Exploration Pty. Ltd. The section of the E.L. immediately west and southwest of the Renison Mine Lease, known as the Argent area, has been evaluated by staff of Renison Limited.

Much of the southern section of the Argent area is underlain by rocks of the Crimson Creek Formation, and thus potential exists for locating the dolomite horizons of the Renison mine sequence at depth. Intersections of thick dolomite horizons, in several deep stratigraphic drillholes sited in the southernmost section of the Renison Mine Lease and in the immediately adjacent section of E.L.42/71, between Serpentine Hill and Pine Hill, have confirmed this potential. The general area is strongly faulted and the Late Precambrian-Early Cambrian sequences are presumably intruded, at depth, by Devonian-age granite. On the basis of these favourable geological parameters, the area remains prospective (at considerable depth) for the two major styles of tin mineralization that exist at the Renison Bell mine, viz:

a) stratabound, near-massive pyrrhotite (-pyrite) replacement of dolomite horizons;

b) semi-massive pyrrhotite (-arsenopyrite-pyrite-chalcopyrite) fault infill.

Other types of tin mineralization which may exist in the area, but which are less attractive as exploration targets, include stanniferous skarn and greisen.

This section of the final report for E.L. 42/71 summarizes all exploration programmes completed by Renison Limited, in the Argent area, with discussion of the results obtained. A list of the titles and contents of all annual progress reports on the Argent area, compiled and tabled by Renison Limited, is contained in Appendix II of this report.

2.3 EXPLORATION LICENCE TENURE

E.L.42/71 was originally granted to Renison Limited, over an area of approximately 28.5 sq km, on August 25, 1971. Subsequently the E.L. was enlarged, to its current area of approximately 53 sq km, over which tenure has been held unchanged since 1976.

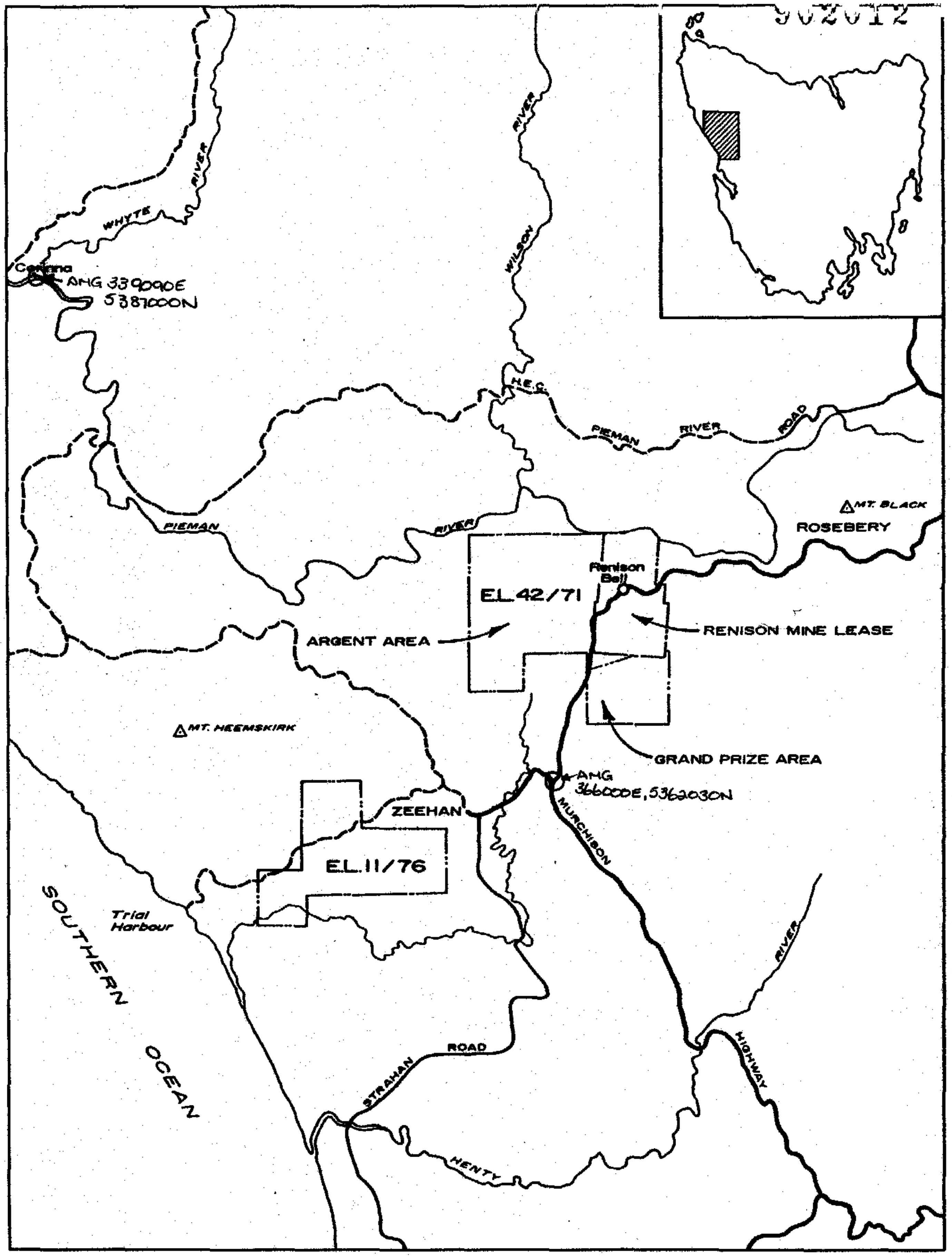
With the new conditions applying to exploration licences in Tasmania, in force from July 1, 1982, E.L.42/71 is due for relinquishment in August, 1987. Renison Limited lodged an application on March 25th, 1987, for 18 mineral leases totalling 16.92 sq km, as an extension to its existing mine lease covering the sections of the E.L. 42/71 area considered most prospective for deeply-buried, stanniferous sulphide mineralization. Mineral leases were also being pegged, at the time of reporting, over the Dunkley Creek - Western Rivulet area, the proposed site of a future tailings dam for the Renison Bell mine operation. The proposed dam area is of minimal exploration interest. The remainder of the E.L., including the area which has been explored and reported on separately by Goldfields Exploration Pty. Ltd., is to be relinquished on the due date.

2.4 LOCATION AND ACCESS

The Argent area of E.L.42/71 is located to the west and southwest of the Renison Bell townsite and mine complex in Western Tasmania (Ref.Fig.1). The eastern boundary of the E.L. adjoins the Renison Mine Lease. To the north, the Argent area is bounded by the Pieman River. The E.L. extends south close to Melba Flats, and in the west to the area of the abandoned Dunkley Tramway.

Steep, dissected terrain, supporting thick rain-forest vegetation, occurs in an elevated area of the E.L. which extends between Serpentine Hill and Dunkley Tramway, and in the northeastern section of the E.L. towards the Pieman River. In the northwestern section, from the Dunkley Tramway towards Western Hills, the terrain is less steep and less dissected, with extensive areas covered by button-grass. Much of the southwestern section of the E.L., from northwest of Melba Flats through to the Dunkley Tramway, was burnt-out by the major bushfires of early 1981. Thick re-growth of ti-tree (Leptospermum Spp.) and bottlebrush (Callistemon Spp.) is now established in this generally low and poorly drained area, which was previously covered by extensive areas of eucalypt forest. The burnt and fallen hardwood, and dense re-growth, seriously impede off-road access in this area.

The Murchison Highway and the Emu Bay Railway cut through the southeastern section of E.L.42/71 between Serpentine Hill and Melba Flats. An all-weather, unsealed road, turning off from the Murchison Highway at Argent Dam, provides access to the northeastern section of the E.L. and beyond to logging areas along the Pieman River. The abandoned Dunkley Tramway has been up-graded to a reasonable standard track from the Pieman logging road, near the old Owen Meredith workings, for approximately 6 km to the southwest. A bulldozed four-wheel drive track, established and maintained by Renison Limited, allows summer access between Melba Flats, via the abandoned Cuni Mine area, and the Dunkley Tramway. The Dunkley Fault Grid area, located in the far southwestern section of the E.L., can be accessed from this track or alternatively by a similar standard track which heads northwest from Melba Flats. Numerous other four-wheel drive tracks, including those established in early 1981 for bushfire control purposes, provide limited access to the area of steep terrain to the northwest of Serpentine Hill. Some of these tracks, constructed for Renison Limited, access old drill sites. Most require clearing and some reconstruction work after each winter, especially in the areas of burnt-out vegetation.



AMG REFERENCE POINTS ADDED

5 cm

RENISON LIMITED

2·5 0 5·0 10·0 15·0km

SCALE 1:250 000

GEOLOGIST: D.A.E.

DRAUGHTSMAN: R.F.

CHECKED:

DATE: AUG, 1986

REVISED:

E.L.42/71
ARGENT AREA
LOCALITY PLAN

FIG.No. 1

Extensive grid systems have been cleared throughout the central and southwestern parts of the Argent area since the early 1950's. Due to the rapid re-growth of vegetation, and the effects of the major bushfires of 1981, only the most recently cut grids, in the southwestern corner of the E.L. and in the area northwest of Serpentine Hill, would still provide walking track access.

2.5 PREVIOUS EXPLORATION

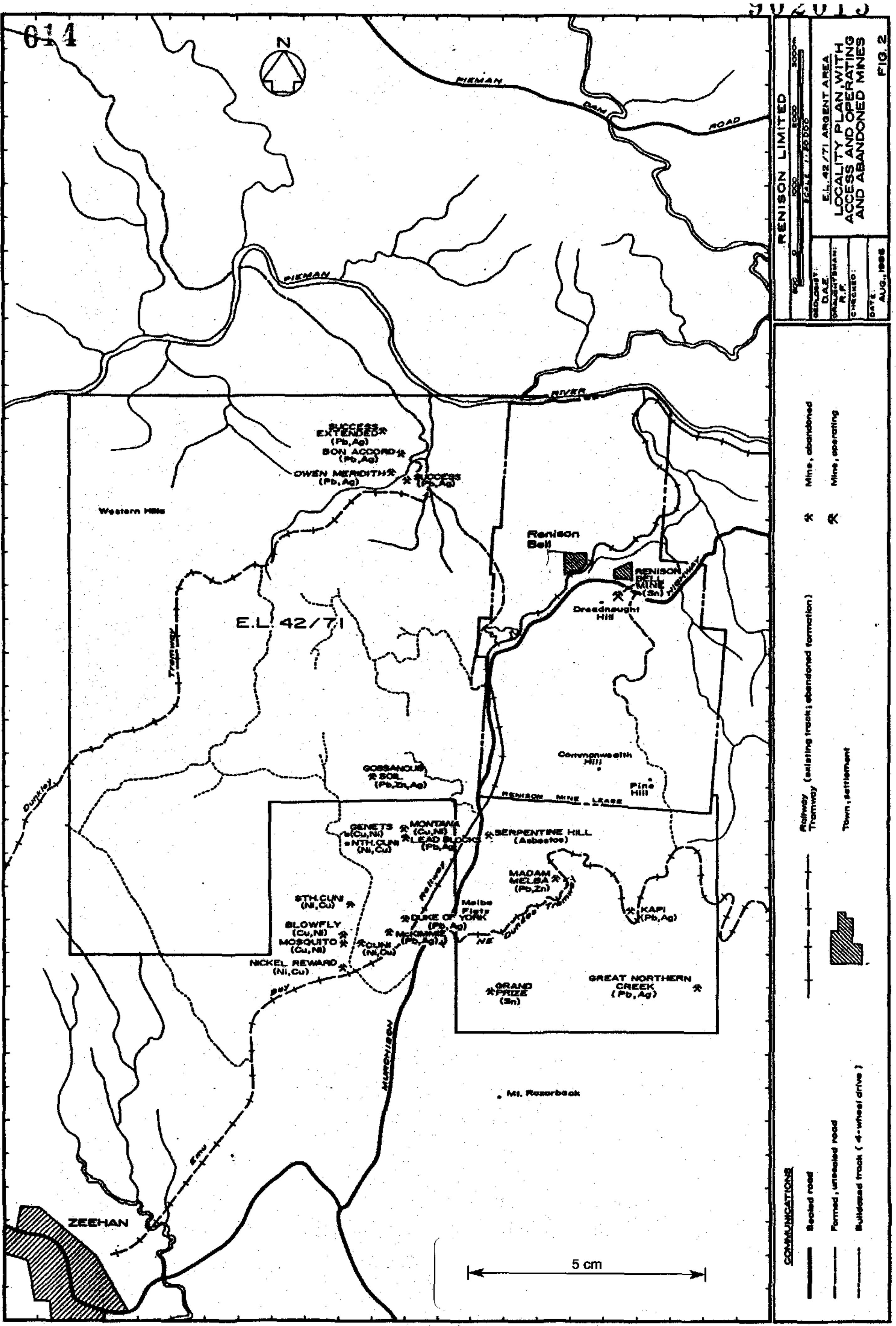
A history of the very earliest mineral exploration and mine development in the Zeehan district of western Tasmania, since 1876, is recorded in Blissett (1962). The Owen Meredith, Bon Accord, Success and Success Extended workings, located within the Argent section of E.L. 42/71 and 3 - 4 km northwest of Renison Bell townsite, were mined intermittently between 1890 and 1917, with an estimated total production of 91.5 tonnes of lead and 1008 kg of silver. In the Cuni district, 8 km northeast of Zeehan, the Lead Blocks Mine produced an estimated 1443 tonnes of lead and 3732 kg of silver, with a total production of 34.6 tonnes of lead and 93 kg of silver recorded from the nearby McKimmie Mine. The Lead Blocks Mine was worked between 1893 and 1914, and subsequently by tribute parties up until 1947, whilst the McKimmie Mine closed prior to 1902. The Cuni workings were originally pegged in 1893, with mining activity recorded from 1909 - 1914 and again from 1928 - 1932. Recorded production totalled approximately 7520 tonnes of ore, with grades of from 7.1 - 11.6% nickel and 4.1 - 5.5% copper. The pentlandite-pyrrhotite (-pyrite-chalcopyrite) and millerite (-chalcopyrite-pyrite) ores occurred in association with Late Cambrian, metasomatized dolerite, which has intruded the Crimson Creek Formation. Locations of these old workings are shown in Figure 2.

Other old workings, comprised of a shaft, a collapsed adit and several trenches, are located approximately 1 km northwest of the Lead Blocks Mine. There are no known records of production from these workings, or from the Poseidon-Murchison mine workings which are located 2 - 2.5 km west-northwest of Renison Bell townsite. The old workings of the Poseidon-Murchison mine were developed on silver-lead mineralization, which appears to have partially replaced a shallow-dipping carbonate bed.

More recent work completed in the district, which has included coverage of the Argent area of E.L.42/71, is detailed below.

i) Tasmanian Department of Mines (1951-54) - conducted detailed geological surveys near Zeehan, Renison Bell and to the north of the Pieman River. A grid was established over the Owen Meredith and Bon Accord line of workings and self-potential and TURAM surveys were carried out.

ii) Tasmanian Department of Mines (1958-61) - geological mapping of the Zeehan district was undertaken (Blissett, 1962).



RENISON LIMITED

500 0 1000 2000 3000m

SCALE 1:50,000

E.L. 42/71 ARGENT AREA

LOCALITY PLAN, WITH
ACCESS AND OPERATING
AND ABANDONED MINES

FIG. 2

GEOLOGIST: D.A.E.
DRAUGHTSMAN: R.F.
CHECKED:
DATE: AUG., 1986

iii) Rio Tinto Australia Exploration (1960) - carried out limited gridding and ground magnetics and self-potential surveying to test the magnetic anomaly in the Dunkley Fault area.

iv) Electrolytic Zinc Co. (1962-1973) - a large, but poorly recoverable grid was cut, over much of the eastern section of the Argent area. Ground magnetics, IP and geochemical surveys were completed, followed up by two diamond drillholes (MFP 124 and MFP 125). No information is on record for exploration in the western section of the grid where little, if any, work is thought to have been completed.

v) Comstaff Pty. Ltd. (1966-1970) - commenced exploration with a programme of stream sediment sampling. The Renison Bell West Grid was established to test the northwestern extension of the Federal Fault. Ground magnetics, IP, self-potential and soil geochemical surveys, as well as geological mapping, were undertaken. Three diamond drillholes (RB1, RB2 and RB3) were completed.

vi) Aberfoyle Exploration Pty. Ltd. (1965) - had an airborne magnetics survey flown over the Waratah to Zeehan area. The flight line spacing used was approximately 400m.

vii) Paringa Mining and Exploration Co.Ltd. (1971) - established the Wilson River Grid, just north of E.L.42/71, to test for any northwestern extension of the Federal Fault and Owen Meredith Fault system. Exploration activities comprised ground magnetics, self-potential and geochemical surveys.

In late 1968 - early 1969, Renison Limited commenced exploration of the area between Commonwealth Hill and Pine Hill, in the north, and Dundas and Mt. Razorback, in the south, which at that time was included within S.P.L. 27 (South Dundas). The Commonwealth Hill Grid covered the contact between the Crimson Creek Formation and the Serpentine Hill mafic-ultramafic complex. Initially, in mid- to late-1968, grid crosslines were cut in a north-northwest direction at a nominal spacing of 244m (800ft). Intermediate crosslines were cut and pegged in 1969. Geological mapping of the grid crosslines, and of stream channels and along tracks in the area, was completed. Old workings in the vicinity of Pine Hill were mapped in detail and sampled. A vertical field ground magnetics survey was also completed over the grid. Readings were taken at 7.6m (25ft) intervals, using a McPhar fluxgate magnetometer. Field data were corrected for diurnal drift. Residual soil samples were collected at 15m (50ft) intervals along the grid crosslines, using a hand-auger, and were analysed for Sn, Cu, Ni, As and Pb. All creeks in the grid area, to the north of the old Northeast Dundas Tramway, were sampled for Cu and Ni, as a check on element distribution trends. Commencing in March, 1970, part of the Commonwealth Hill Grid was included in an IP (pole-dipole and gradient array) and SP survey, carried out by Compagnie Generale de Geophysique.

Three angled diamond drillholes, S277, S283 and S284, were drilled in the Serpentine Hill area and on the southern slopes of Commonwealth Hill, in mid- to late - 1970 through to early - 1971. Hole S277 was drilled to test a coincident IP and SP anomaly, located along the northern contact of the Serpentine Hill mafic-ultramafic complex. The hole collared in serpentinite, containing common magnetite, and was drilled on a northeast bearing, intersecting a probable sheared contact between the mafic-ultramafic complex and rocks of the Crimson Creek Formation. Split core samples were analysed for Sn, Cu, Zn, As, S and Ni, with only low values indicated. Drillhole S283, sited to test a coincident IP and ground magnetic anomaly, collared in rocks of the Serpentine Hill mafic-ultramafic complex. Beneath a probable sheared contact, the hole intersected a chlorite-actinolite-tourmaline-axinite assemblage, representing the extensively metasomatized Crimson Creek Formation. A zone of tourmalinized argillite assayed 1.10% Sn (15.0% S) over a 1.5m downhole thickness. Drillhole S284 was sited to test a coincident IP and SP anomaly and collared in serpentinized dunite. The hole intersected a zone of tremolite-chlorite rock, with traces of pentlandite, pyrrhotite and chalcopyrite, at the contact of the Serpentine Hill mafic-ultramafic complex and the Crimson Creek Formation. A 1.5m thick downhole interval, within the Crimson Creek Formation, assayed 1.52% Sn, 0.23% As and 25.0% S. The Crimson Creek Formation intersected in the drillhole included micro-gabbro and chloritized, silicified and locally actinolite-altered tuffaceous greywacke. The geophysical anomalies tested by each of these holes were attributed to disseminated sulphides and to magnetite.

Exploration of the western and southwestern sections of the present E.L. 42/71 area was commenced, by Renison Limited, in 1972. Details of the exploration programmes which continued intermittently within the Argent area up until early 1986, and discussion of the results obtained, are contained in a later section of this relinquishment report.

The Argent area was also included in the coverage of the regional airborne magnetics survey flown for the Tasmanian Department of Mines in 1981. Regional geological mapping of the Dundas - Mt. Lindsay - Mt. Ramsay area, compiled by the Department of Mines, was recently published (Brown, 1983) and includes coverage of the E.L.42/71 area.

2.6 GEOLOGY

2.6.1 Regional Geology

The geological setting of the Western Tasmanian region is dominated by Early to Middle Palaeozoic sediments and volcanics, which were deposited in the Dundas Trough, and by associated Precambrian basement rocks (Ref. Fig.3, after Corbett, 1981). The trough, one of several developed in the region between nuclei of metamorphosed Precambrian rocks, trends north-northeast and is comprised of five major litho-stratigraphic divisions (Corbett and Brown, 1980):

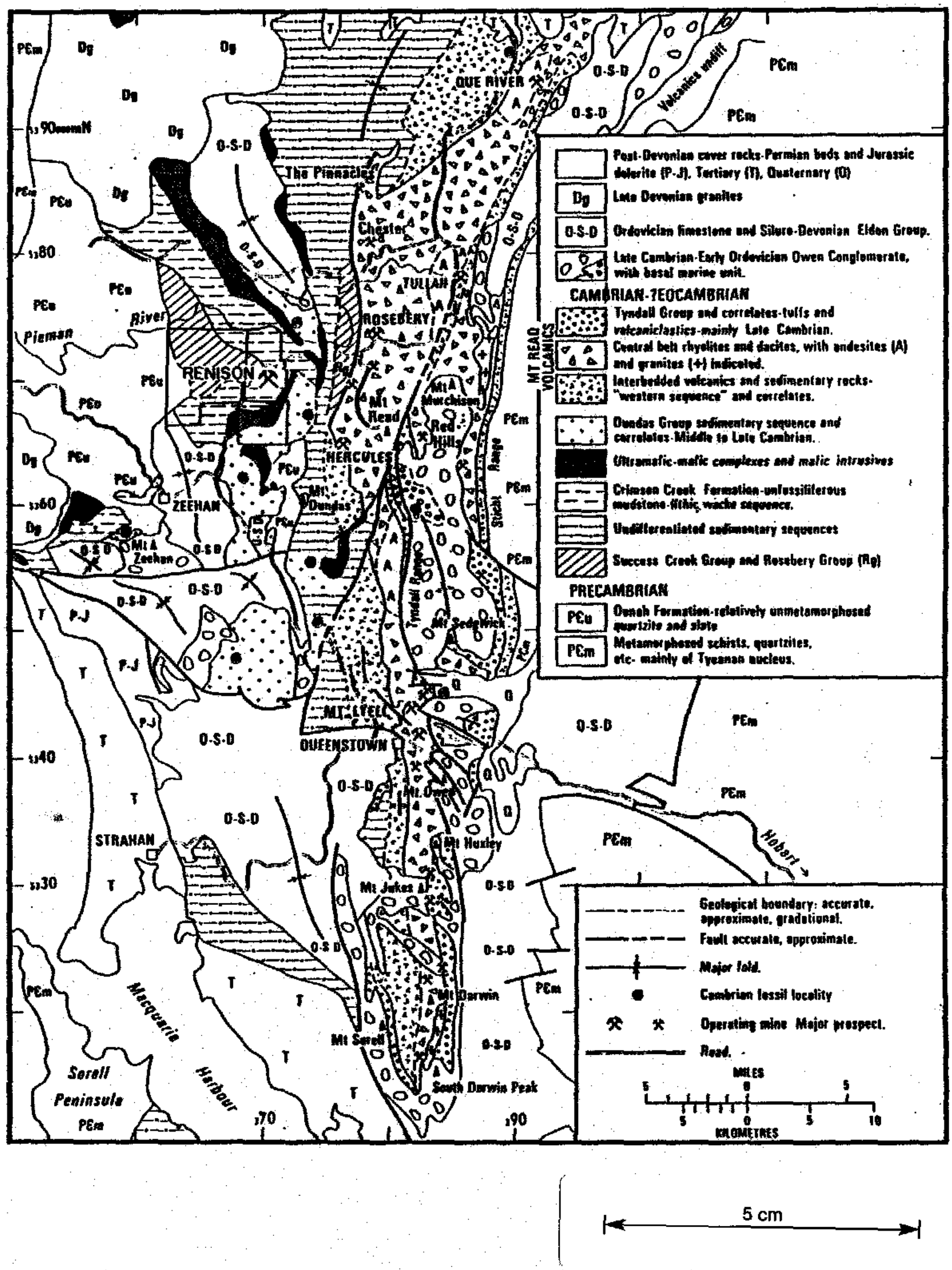
i) early trough sequences - consisting of the Success Creek Group, a sequence of interbedded fine siliciclastic rocks and minor dolomite, and the Crimson Creek Formation, an unfossiliferous sequence of mudstone and turbiditic, volcaniclastic lithic wacke, with minor conglomeratic and basic volcanic units. The Success Creek Group unconformably overlies the Precambrian Oonah Formation and is conformably overlain by the Crimson Creek Formation. Both of the younger sequences may yet prove to be of Precambrian age.

ii) mafic-ultramafic complexes - several of these possible dismembered ophiolites occur in faulted contact with the Crimson Creek Formation. Locally, the contact between these mafic-ultramafic rocks and the overlying, fossiliferous Middle Cambrian sediments has been established as a low-angle unconformity.

iii) fossiliferous Dundas Group and correlates - comprised of interbedded lithic wacke, mudstone and conglomerate, with minor basic and acid volcanics. From fossil evidence the sequence is dated from Middle to Late Cambrian.

iv) Mt. Read Volcanics and associated rocks - occurring along the eastern margin of the Dundas Trough and comprised of acid to intermediate volcanics, with interbedded volcaniclastic sediments which appear to interfinger with the Dundas Group.

v) Owen Conglomerate and correlates - comprised of up to 1000m of Precambrian-derived conglomerate and sandstone. Late Cambrian age marine fossils have been located in the sequence.



RENISON LIMITED

5 0 10 20 30km

SCALE 1:500 000

GEOLOGIST: D.A.E.

DRAUGHTSMAN: R.F.

CHECKED:

DATE: AUG., 1986

REVISED:

REGIONAL GEOLOGY OF CENTRAL WESTERN TASMANIA

(from Corbett, 1981)

FIG.No. 3

Also represented in the Zeehan-Renison Bell area are correlates of the Ordovician-Devonian sequences of Western Tasmania, viz the Gordon Limestone and the Eldon Group, which were deposited during a widespread shallow marine transgression over the Dundas Trough.

A period of intense folding, associated with the Middle Devonian Tabberabberan orogeny, caused the cessation of deposition within and over the Dundas Trough. Two phases of deformation, correlated with this period of tectonism, dominate the structural setting of the region (Corbett, 1981). The early deformation phase resulted in broad, open folds, with north-south trends, whilst the later phase produced steep west-northwest trending faults and folds. Post-tectonic granitic intrusions are represented in the region.

Permian sediments unconformably overlie the folded Precambrian and Early Palaeozoic sequences to the northwest and southwest of Zeehan. Only scattered occurrences of the Jurassic dolerite, which is widespread further east throughout Tasmania, have been mapped in the Zeehan area (Blissett, 1962). Tertiary sediments were also mapped, and rare occurrences of basalt were recorded by Blissett, in the area, but are not represented within E.L.42/71 or the Renison Mine Lease. Pleistocene fluvioglacial deposits occur at Renison Bell townsite and in the Renison Bell mine area. Recent alluvial deposits are restricted to the valleys of presently active streams. Marsh and swamp deposits are represented in the E.L.42/71 area around the upper reaches of Western Rivulet, traversed by the abandoned Dunkley Tramway.

2.6.2 Geology of the Renison Mine Lease and the Argent Section of E.L.42/71

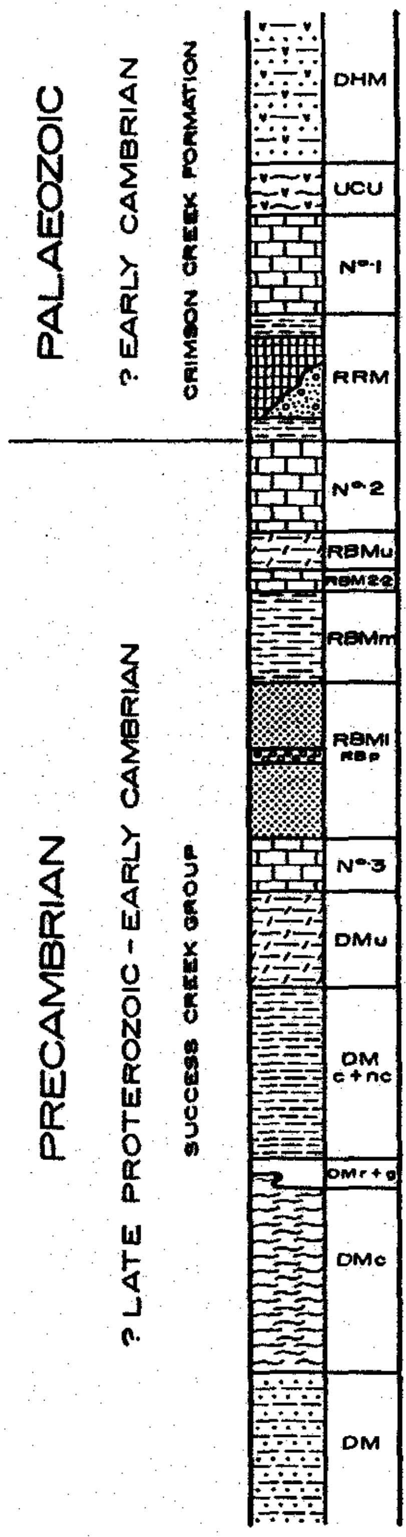
The oldest rocks in the area are those exposed in the westernmost section of E.L.42/71, between the Pieman River and the abandoned Dunkley Tramway. These exposures are located along the eastern edge of a large block which extends north and south of the Pieman River, from a point approximately 7.5km northwest of Renison Bell townsite, and as far west as the Heemskirk Granite, and which has been mapped as Precambrian Oonah Formation (Blissett, 1962; Brown 1983). Investigation of a proposed dam site, for storage of tailings from the Renison Bell mine, was undertaken by Coffey and Partners Pty. Ltd. during 1983, in the Western Hills area. The investigation centred on the upper catchment area of Western Rivulet and Dunkley Creek. Descriptions of rock types in surface outcrops and in pits and trenches in the area are consistent with the Oonah Formation. Poorly bedded to massive, fine to medium-grained orthoquartzite, dark grey to black, fissile shaley siltstone and interbedded light grey siltstone and fine to medium-grained sandstone comprise the major lithological units of this area. All of the rock types are extensively folded. As described by Brown (1984), the Oonah Formation in the Dundas-Mt.Lindsay-Mt.Ramsay area consists of a lower sequence of lithic and quartz sandstone, with laminated phyllitic mudstone, and an upper sequence of interbedded mudstone and carbonate units, laminated siltstone and mudstone, graded lithic sandstone and tuff and lava units. Isoclinal folds, with well-developed axial surface cleavage, are preserved in these rocks.

The central and northeastern sections of E.L.42/71, and virtually the entire Renison Mine Lease area, are underlain by rocks of the Success Creek Group and the Crimson Creek Formation, representing the earliest sequences deposited in the Dundas Trough. A detailed study of the stratigraphy and sedimentology of these sequences, in the immediate area of the Renison Bell mine, was undertaken by Morrison (1982). A summary of the major lithological units comprising the Renison mine sequence is shown in Figure 4. Potentially, extensive areas of the Argent section of E.L.42/71 are underlain, at depth, by the dolomite horizons of the Renison mine sequence. Stratigraphic drilling has confirmed the existence of these horizons in the northeastern, central and southeastern sections of the E.L.

Rocks of the Cambrian mafic-ultramafic complex, and of the Dundas Group, are exposed in the E.L. area east and southeast of Serpentine Hill. The geological setting of the Grand Prize area of the E.L. is summarized in a later section of this relinquishment report and has been described in detail by Komyshan (1985).

Correlates of the Silurian-Devonian Eldon Group outcrop in the southwestern corner of E.L.42/71.

Middle Devonian granitic rocks outcrop in the Pine Hill area, located in the southeastern corner of the Renison Mine Lease. The greisenized granite intrudes the Crimson Creek Formation and a northeastern continuation of the Serpentine Hill mafic-ultramafic complex. Granitic rocks, which intrude the Dalcoath Member of the Success Creek Group, have also been intersected at depth, in drillholes, beneath the Renison Bell mine workings, some 1000m below surface. The major lithologies represented in diamond drill core and in outcrop are feldspar-porphyritic granite, quartz/feldspar-porphyritic granite and quartz-feldspar porphyry, each also represented by fine-grained or pegmatitic variants (Patterson, 1979; Patterson, Ohmoto and Solomon, 1981). From geochemical and petrological studies (Ward,



DREADNOUGHT HILL MEMBER: Green and red-brown siltstone and greywacke, minor basalt, tuff.

UPPER CONTORTED UNIT (0-45m): Red siltstone, chert, lapilli tuff, locally contorted black shale, siltstone, sandstone.

N°·1 DOLOMITE (8-25m): Grey stylolitic, laminated dolomite, impure margins, locally sandy.

RED ROCK MEMBER (25-35m): Interbedded red, white and grey sandstone, conglomerate, siltstone, chert, jasper and iron formation, local volcanic fragment.

N°·2 DOLOMITE (5-30m): Grey stylolitic dolomite locally laminated, pelletal or with red-lined cavities.

RENISON BELL MEMBER upper (5-10m): Grey-green dolomitic siltstone.

RENISON BELL MEMBER 2·2 (1-3m): Nodular dolomite, siltstone.

RENISON BELL MEMBER middle (10-30m): Black shale, minor sandstone, siltstone, conglomerate.

RENISON BELL MEMBER lower (20-40m): Quartz sandstone, shale partings, pebble beds to 10m, local basal intraclast conglomerate.

N°·3 DOLOMITE (to 15m): Grey stylolitic dolomite, locally laminated, pelletal; locally divided in two by shale.

DALCOATH MEMBER upper (10-15m): Grey-green dolomitic siltstone and shale with nodular dolomite, tuff beds.

DALCOATH MEMBER carbonaceous and non-carbonaceous unit (8-54m): Grey and black laminated siltstone, locally colour, mottled slump folded, broken. Minor sandstone, shale beds.

DALCOATH MEMBER red and green unit (to 54m): Siltstone, sandstone, shale.

DALCOATH MEMBER contorted unit (to 80m): Black to grey shale and siltstone with broken beds of sandstone.

DALCOATH MEMBER undivided (to 800m): Massive quartz sandstone, shale and siltstone in upper part.

RENISON LIMITED

SCALE

GEOLOGIST: D.A.E.
DRAUGHTSMAN: R.F
CHECKED:
DATE: AUG., 1986
REVISED:

STRATIGRAPHY OF THE RENISON MINE SEQUENCE
(after Morrison, 1982)

FIG. No. 4

1981) these rocks can all be classified as granite and appear to be intermediate between I-type and S-type. The rocks intruded by the Pine Hill granite have been affected by thermal metamorphism, with a hornblende-hornfels facies developed, and by boron metasomatism. Several quartz-porphyritic, granitic minor intrusives occur throughout the mine area, trending northwest. A thin, basaltic-composition minor intrusive, possibly of Jurassic age, cuts through the mine workings and the Pine Hill area on a north-northwest trend.

The structure of the Renison Bell mine area is dominated by a northwest-striking anticline, which is an open, upright fold formed during the Tabberabberan orogeny (Patterson, Ohmoto and Solomon, 1981). The stratabound, carbonate - replacement tin orebodies are located in the gently folded mine sequence on the northeastern limb of this anticline. Numerous faults cut through the mine area. A well-developed fault set, striking northwest parallel to the major fold axis, includes the Federal Fault and the Argent Fault systems. Transverse faults, one set striking east-northeast and the other trending north-northeast, occur between these major longitudinal structures.

The northwestern continuation of the Federal Fault extends over approximately 3km through the northeastern corner of E.L.42/71. Several faults of similar orientation, including a possible continuation of the Grand Prize Fault, are interpreted in the central and southeastern sections of the Argent area. Throws on these faults in places appear to have been sufficiently large for the structures to contact rocks of the Success Creek Group, including correlates of the dolomite horizons in the Renison mine sequence, and the Crimson Creek Formation. In the southwestern corner of the E.L. a major fault contacts probable Crimson Creek Formation and rocks of the Silurian-Devonian Eldon Group. This structure also has a northwesterly trend. The Dunkley Fault, extending through the southwestern section of the Argent area, trends northeast and contacts rocks of the lower Success Creek Group (possibly Oonah Formation) and the Crimson Creek Formation. Displacement on all of these structures appears to have been dominantly normal dip-slip. Due to the paucity of the outcrop through much of the Argent area, little is known of any regional or local folding in the Late Precambrian to Early Cambrian sequences.

2.6.3 Economic Geology

The only operating mine in proximity to E.L.42/71 is at Renison Bell. In the year ended June 30, 1986, Renison Limited produced 3,646 tonnes of tin, contained in 6,850 tonnes of concentrates, from the 514,530 tonnes of ore mined at an estimated grade of 0.98% tin. Published ore reserves, as at January, 1986, totalled 18,140,000 tonnes (proven and probable ore) at an estimated grade of 1.1% tin. Historical production, up to the end of 1985, totalled an estimated 75,969 tonnes of tin, recovered at an average grade of 1.21% tin from 9,318,748 tonnes of ore milled.

The stanniferous sulphide mineralization at the Renison Bell mine is located in Late Precambrian - Early Cambrian rocks of the Success Creek Group and the Crimson Creek Formation, with the major ore types comprised of:

a) stratabound replacement ore - with cassiterite in disseminated to semi-massive pyrrhotite (-pyrite), which has replaced the dolomite of the No.2 and No.3 Horizons, and to a lesser extent the No.1 Horizon, in the Renison mine sequence. Other sulphide minerals in this ore type include chalcopyrite, marcasite, sphalerite and galena, and the main gangue minerals comprise dolomite, siderite, talc and quartz. Approximately 80% of all recorded production from the mine is estimated to have been of this ore type;

b) fault ore - comprised of disseminated to semi-massive pyrrhotite (also as veins and veinlets), with relatively common arsenopyrite, minor chalcopyrite, pyrite and cassiterite, and sparse to trace galena, sphalerite, bismuthinite, wolframite, scheelite and stannite. Gangue minerals are also relatively more common, and include quartz, tourmaline, fluorite, phlogopite and minor muscovite. This ore type occurs infilling the Federal Fault and in the major east-northeast trending transverse faults close to the Federal Fault.

Recent re-interpretation of the structural setting in the immediate mine area (Morland, 1986) has led to the definition of a third major ore type, termed "stratafault" ore. Approximately half of the total remaining reserves at the mine is comprised of this ore type, which occurs within zones of complex structure, in close proximity to major fault systems, usually where two faults converge. Rock units, which may include the dolomite horizons of the mine sequence, occurring between the parallelling faults are often shattered and mineralized by stanniferous sulphide veins. The dolomite units can host replacement mineralization.

The fourth, but only a minor ore type at the Renison Bell mine is fracture ore. The mineralization is hosted by fractured, silicified and tourmalinized, fine clastic sub-units of the Renison Bell Member, within the Success Creek Group, and comprises quartz, pyrrhotite, tourmaline and cassiterite.

Other styles of tin mineralization known to exist in the Renison Bell mine area, but which are not regarded as being of economic significance in the present international market for tin, include -

i) disseminations and veins of cassiterite in greisen zones associated with the Pine Hill granite;

ii) stanniferous magnetite/sulphide/calc-silicate skarns (contact metasomatic mineralization).

Minor occurrences of lead-silver mineralization are known within the Argent area and the Renison Mine Lease (Blissett, 1962). Analyses by the CSIRO of samples from the Renison Bell mine, and from several of the minor lead-silver occurrences in the district, indicate a distinctive, shared lead isotopic signature (Jones and Evans, 1985). The deposits have consistently high $^{206}Pb/^{204}Pb$ ratios, distinct from most of the Cambrian volcanogenic massive sulphides of Western Tasmania.

Figure 5 is a schematic section of the Renison Bell mine area, showing the distribution of the various ore types and a model of exploration targets. With the prevailing economics of the international tin market, and given the metallurgical problems inherent in the more complex ore types at Renison, the priority exploration target is a stratabound carbonate-replacement orebody. At a relatively shallow depth, this near-massive pyrrhotite mineralization would have a strong surface magnetic and conductivity expression. The Red Rock Member, of the Renison mine sequence, is also strongly magnetic, due to the presence of relatively common magnetite in jasper-chert units. The results of past exploration programmes conducted in the Argent area effectively preclude the existence of any near-surface stanniferous sulphide deposits, and thus the most recent exploration has been concentrated on locating deeply-buried mineralization.

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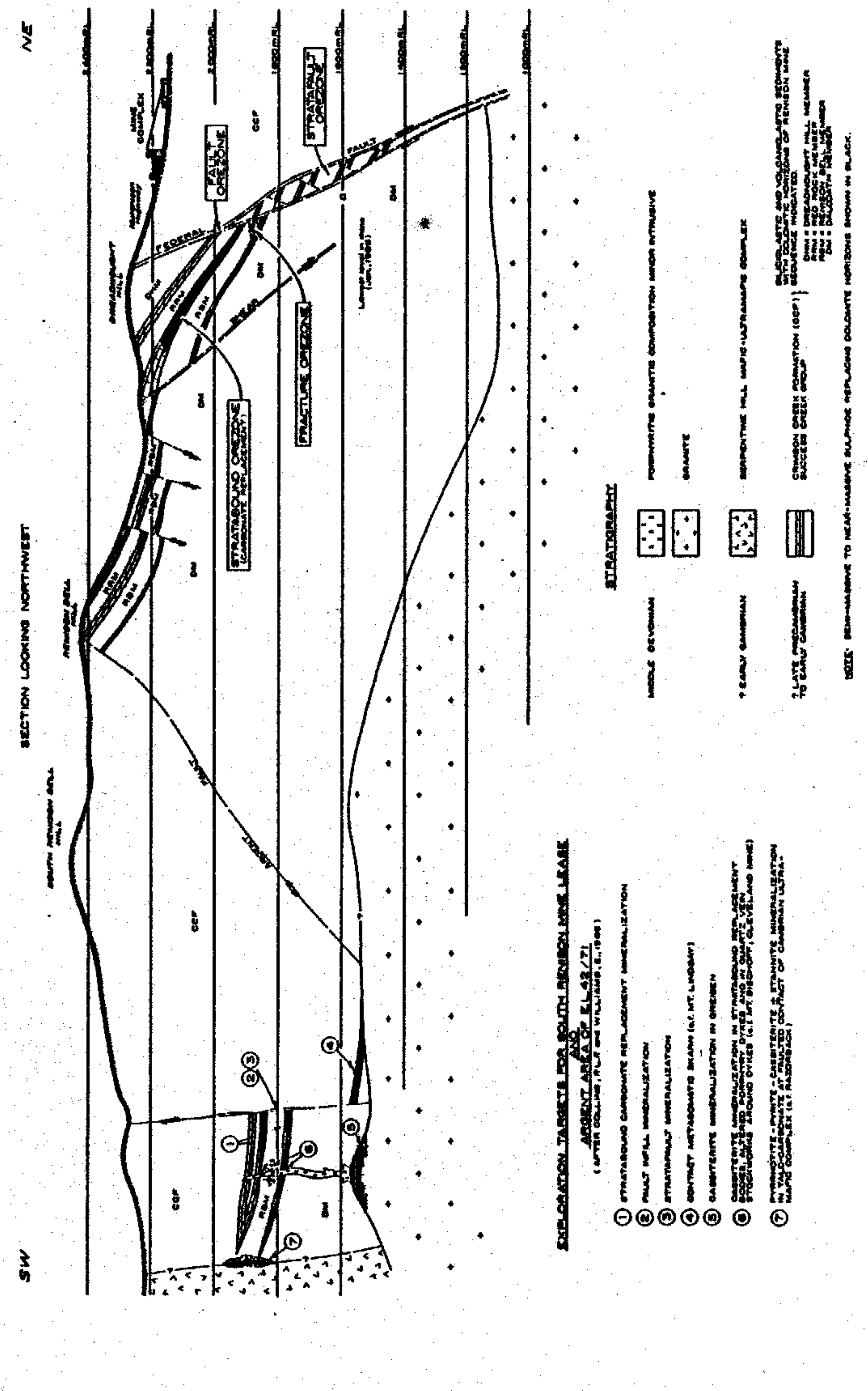


NOTE:
SECTION THROUGH RENISON MINE
AFTER MORLAND, 1986.

5 cm

RENISON LIMITED

400 200 0 1000m

SCALE 1:20000

GEOLOGIST: D.A.E.	SCHEMATIC SECTION THROUGH RENISON MINE AREA
DRAUGHTSMAN: R.F.	
CHECKED:	
DATE: AUG., 1986	
REVISED:	FIG.No. 5

2.7 EXPLORATION COMPLETED BY RENISON LIMITED IN ARGENT AREA, E.L. 42/71

Exploration of the Argent area by Renison Limited, during the period 1971-1987, is detailed below, with discussion of the results obtained. Locations of the various grid systems, which were established to provide access in the areas subsequently covered by more detailed exploration, are shown in Figure 6.

2.7.1 1971-1972 Exploration Programme

E.L. 42/71 was initially granted on August 25th, 1971, over an area of approximately 28.5 sq km. The E.L. was subsequently renewed, in early 1972, over a reduced area, which totalled approximately 20.7 sq km. Exploration by Renison Limited commenced in March-April, 1972, and consisted of a programme of reconnaissance stream sediment sampling, in conjunction with regional-scale geological mapping. The area covered was centred around the abandoned Dunkley Tramway, with sampling completed in the headwaters of Western Rivulet and Dunkley Creek (which drain south into the Pieman River) and of Parting Creek (which drains south into the Little Henty River). Stream bank samples were collected and analysed for Sn, WO_3, Cu and As. Stream pH levels were also tested. One rock chip sample, collected from a gossan exposed in the headwaters of Western Rivulet, assayed 0.5% WO_3 (Schellekens, 1972). Only slightly anomalous tungsten values were obtained in the stream sediment samples collected from the area of the gossan exposure. Two other gossans were located and sampled during the reconnaissance programme, but only low Sn, WO_3, Cu and As values were obtained and no evidence of any sulphide mineralization was recorded. Mullock from the Zeehan mines was used as ballast for the Dunkley Tramway and may have been a source of contamination in the stream sediment sampling programme.

Re-sampling of the anomalous areas located by the reconnaissance stream sediment sampling programme was proposed. Grid cutting, and a ground magnetics survey, were proposed for the Dunkley Fault area, to delineate an anomaly located in the airborne magnetics survey flown for Aberfoyle Exploration Pty. Ltd. in 1965. Soil sampling of the grid area was also proposed.

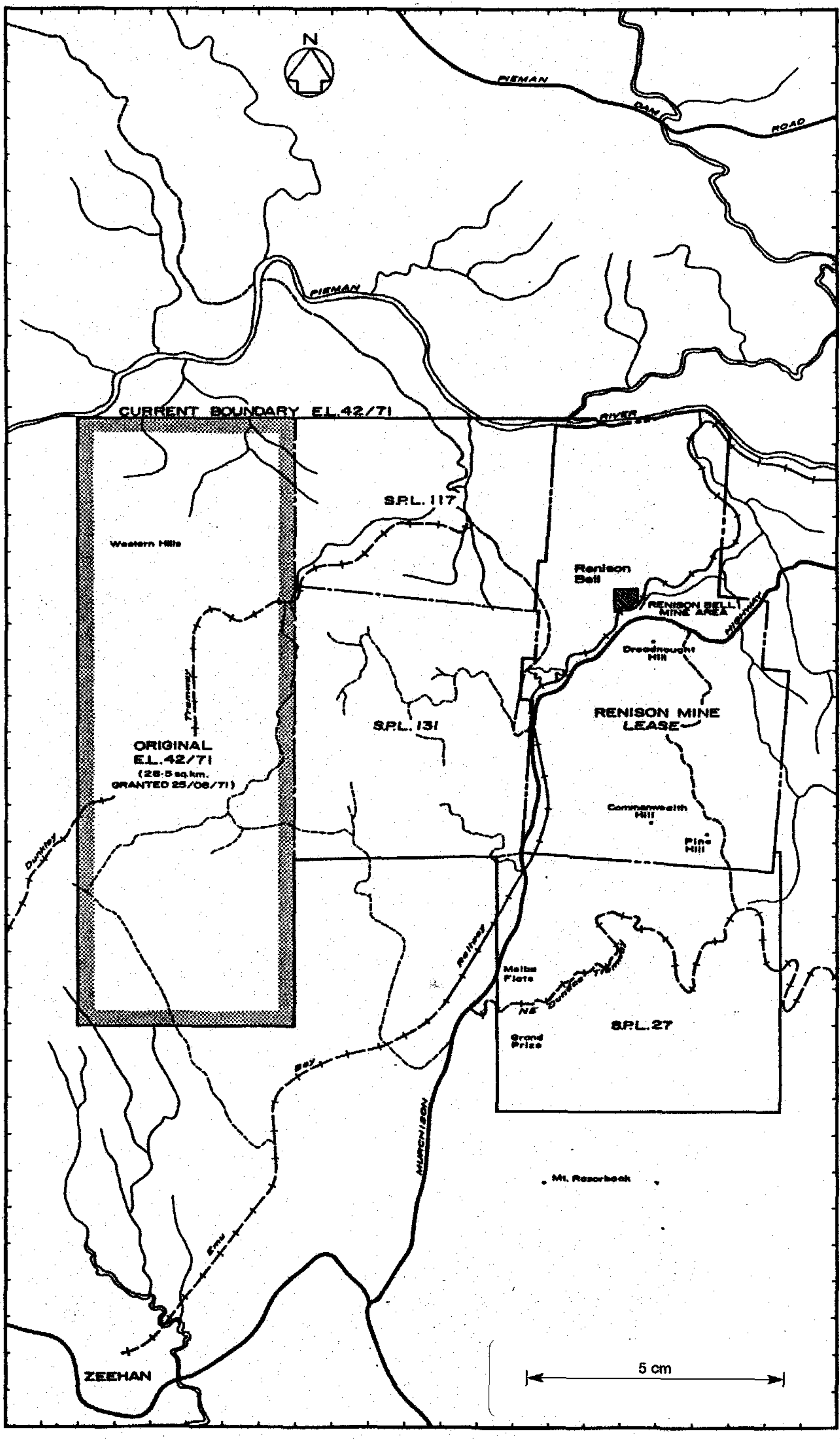
2.7.2 1972-1973 Exploration Programme

E.L. 42/71 was increased to approximately 41.4 sq km, as of April 9, 1973, with the addition of two areas which previously comprised S.P.L. 117 and part of S.P.L. 27 (both held by Renison Limited; Ref. Fig 7).

A regional geological mapping and rock chip sampling programme, undertaken during the 1972-73 summer, included coverage of the S.P.L. 117 area between Renison Bell townsite and the Pieman River, and extended over the northern section of the original E.L. 42/71 area. Creek and track traverses were completed in the area west of Argent Dam, through to the Dunkley Town and Dunkley Tramway area, over the abandoned Owen Meredith, Bon Accord and Success Extended mines, and in the headwaters of Success Creek. The Dunkley Town and Crimson Creek area was concluded to be of interest for further exploration. Testing for depth extensions of known mineralization, in the Owen Meredith-Success Extended mine area, immediately south of the Pieman River, was also recommended (Stevens et al, 1973).

Analysis results for the rock chip samples collected from the S.P.L. 117 area, and from the northern section of the original E.L. 42/71 area, were reported by Schellekens and Lees (1973). Five stream sediment samples were also collected during the 1972-73 summer, from the headwaters of Crimson Creek, along the Dunkley Tramway, and of Success Creek. Two fractions of each sample (a minus 10 to plus 85 mesh fraction and a minus 85 mesh fraction) were analysed for Sn, As, Cu, Pb, Zn, Ni, Co, Fe and Mn contents. Apart from iron values in the range of 3,700 - 10,000 ppm, and manganese values from 10-500 ppm, analysis results were uniformly very low. A large number of pH measurements were recorded along streams throughout the northern and northeastern section of the Argent area. All pH values were in the range of 5.5-6.0.

Seigel Associates Australasia Pty. Ltd. flew a helicopter airborne EM-magnetic survey in January, 1973, for Renison Limited, over the Renison Bell - Mt. Lindsay area. The survey totalled 116 flight lines, each from 4.5-6 km in length, oriented southwest-northeast and at a nominal spacing of 200m. Survey coverage included the Argent River-Crimson Creek-Dunkley Town area, in the northeastern section of the present Argent area of E.L. 42/71, previously gridded and explored by Comstaff Pty. Ltd. The EM bird was towed 30m below the aircraft, and helicopter-ground clearance varied from approximately 60-90 m (governed by operational safety factors). Instrumentation comprised a Scintrex TURAIR-II receiving



RENISON LIMITED

500 0 1000 2000 3000m
SCALE 1 : 50 000

E.L. 42/71 COVERAGE
(WITH ORIGINAL E.L. AREA
AND S.P.L. AREAS)

FIG.No. 6

GEOLOGIST: D.A.E.
DRAUGHTSMAN: R.F.
CHECKED:
DATE: JUL., 1987

COMMUNICATIONS

- Sealed road
- Formed, unsealed road
- Bulldozed track (4-wheel drive)
- Railway (existing track; abandoned formation)
- Tramway
- Town, settlement

NOTES:

S.P.L. 117 and Part of S.P.L. 27 were added to E.L. on 08/04/73.

S.P.L. 131 was added to E.L. on 14/04/79.

Areas shown within existing E.L. Boundary are approximate only.

unit, operated at 400 Hz, and a Scintrex MAP-2 nuclear resonance total intensity magnetometer. The results of the TURAIR-EM component of the survey were interpreted and reported on by Seigel Associates. Interpretation of the airborne magnetics data was carried out by Compagnie Generale de Geophysique. Sections of geophysical reports relevant to the survey have been tabled by Schellekens and Lees (1973).

The results of the TURAIR-EM survey were discouraging. Only one well-defined field strength ratio anomaly was located (viz, Anomaly No. 104, centred approximately 700m due west of the Owen Meredith Mine workings, in the headwaters of Success Creek). The anomaly was concluded, in the original interpretation of the survey data, to be of only minor interest. The validity of the anomaly appears doubtful, on the basis of the original data records (Bishop, 1985b). There was no recorded magnetics feature associated with the anomaly and a more recent DIGHEM survey failed to confirm the original anomalous response. The only other anomalous responses from the TURAIR-EM survey, which were analysed in the original interpretation, comprised two multiple surface conductors located between the Argent Dam and Dunkley Town. Both responses were concluded to be broad, weak distortions in field strength ratios and of little interest.

The only anomalous response apparent in the interpretation of the airborne magnetics data is centred from 300-750m east to southeast of the Success Mine workings, in the Dunkley Town area, near the confluence of the Dunkleytown and Poseidon Creeks. Named Anomaly HM 14, the response was concluded to be an isolated feature, located along a geological contact, possibly between Precambrian rock units and the Late Precambrian - Early Cambrian Crimson Creek Formation. The response is not associated with a TURAIR-EM anomaly. Depth below surface to the top of the magnetic body was calculated to be 30m. No priority was assigned to ground follow-up of the anomaly.

Additional airborne EM data for the Argent section of E.L. 42/71 has been obtained from an INPUT survey, flown for Esso by Geoterrex Pty. Ltd., in March, 1973. The survey was flown at a nominal line spacing of 200m, and included coverage of the area immediately west and south-southwest of Argent Dam, through to Serpentine Hill. Flight lines were oriented southwest-northeast. A four-channel anomaly extends from Argent Dam, within the Renison Mine Lease, into the immediately adjacent section of E.L. 42/71 (Bishop, 1983).

Ground magnetics surveying was commenced over part of the Renison Bell

West Grid, which had been cut and previously evaluated with ground magnetics, IP, self-potential and soil geochemical surveys and geological mapping, by Comstaff Pty. Ltd. Four of the original grid crosslines (comprising 4.39 km) were re-surveyed, using a proton-precession magnetometer. Readings were taken at stations approximately 10m apart. This was the initial phase in a detailed re-evaluation of the area, which was renamed the Crimson Creek Grid area.

2.7.3 1973-1974 Exploration Programme

Exploration was concentrated in two gridded areas, namely the Dunkley Grid, in the far southwestern corner of the E.L., and the Crimson Creek Grid, in the northeastern section. The major objective of the field programmes was follow-up testing of areas of interest delineated in the January 1973 airborne geophysical survey.

2.7.3.1 Dunkley Grid

Five grid lines were cut, over a total length of 15 km, to locate and define the magnetic anomaly recorded in the airborne survey flown for Aberfoyle Exploration Pty. Ltd. in 1965. A proton-precession magnetometer survey and geological mapping were completed on three of the lines (6.75km total length), each oriented northwest-southeast. Magnetometer readings were recorded at 25m intervals along each of the crosslines, which were nominally 400m apart. Ground magnetics results were plotted on 1:5000 plans and line profiles (Lees and Newnham, 1974). Data for the remaining lines in the grid area are not recoverable. The main, 1200 gamma anomaly, and two minor anomalies in the grid area, were attributed to basic intrusives or tuffaceous units, within the Crimson Creek Formation. The rock chip samples collected during geological mapping of the grid area were analysed for Sn, As, Cu, Pb, Zn and Ag. Anomalous silver values were recorded. Further ground magnetics surveying was recommended for the area.

2.7.3.2 Crimson Creek Grid

Work commenced with metric re-pegging and extension of the original grid lines, which had been cut previously by Comstaff Pty. Ltd. The grid comprised a 2.55km, northwest-southeast trending baseline, from which crosslines were cut to the northeast and southwest at a nominal line spacing of 305m (1000ft). No accurate information on the total length of crosslines cleared and pegged is available from the extant exploration progress reports. On the basis of the coverage by the ground geophysical surveys, subsequently completed, it would appear that several crosslines were extended as unpegged, probably flagged, traverses.

The ground proton-precession magnetometer survey of the grid crosslines totalled 12.54km, completed in the period September, 1973 - January, 1974. Roads and access tracks were also traversed. Readings were taken at 15m intervals (at the mid-point between 100ft spaced pegs) along the grid crosslines. No information is available as to the instrumentation used for the survey, or the procedures for correction of raw field data for diurnal drift. Total field magnetics data were reported by Lees and Newnham (1973), plotted as line profiles at 1:5000 scale. The major anomaly located in the survey was centred on Line 145W (from 100-230m northeast of the baseline), and was attributed to a unit of magnetic, basic-composition tuff, within the Crimson Creek Formation, which outcrops along the Pieman River road. Other 200-300 gamma anomalies in the grid area were also attributed to magnetite-bearing, basic intrusives or tuffaceous units of the Crimson Creek Formation.

Resistivity and time-domain induced polarization surveys of the Crimson Creek Grid were completed by Scintrex Pty. Ltd. in January and February, 1974. A gradient array electrode configuration was used in the initial coverage. Limited pole-dipole IP traverses and a trial longitudinal gradient magnetic IP survey were carried out over selected anomalous areas. Total survey coverage was approximately 11.5km. The initial gradient array IP survey covered all 10 of the grid crosslines, plus one short line over the abandoned Poseidon mine workings. Three separate current dipoles, which ranged in length from approximately 1830m (6000ft) up to 2438m (8000ft), were used, with a 30m (100ft) potential dipole moved at 30m intervals. A Scintrex IPR-8 receiver was used in each of the different surveys. No record exists as to the transmitter power used for the surveys. Apparent resistivities recorded throughout the grid area ranged from less than 10 ohm-m to greater than 5000 ohm-m, but were generally from 200-1200 ohm-m. Background apparent chargeabilities ranged from 20-30 millivolts/volt. Several chargeability anomalies, up to 50-plus millivolts/volt, were recorded, some with associated resistivity lows (to 300 ohm-m). One northwest-elongate chargeability anomaly, recorded on the six southernmost crosslines of the grid, appeared to define the continuation of the Federal Fault. Of the anomalous responses which were both chargeable and conductive, few were characterized by very high conductivities. These anomalies were concluded to be due to either graphitic or pyritic shale (Howland-Rose, 1974). Apparent resistivity and chargeability profiles, at 1:5000 scale, for each of the grid crosslines, were tabled in the exploration progress report of Lees and Newnham (1974). Also tabled in this report was a 1:5000 geophysical interpretation plan of the grid area, which included IP and magnetic trends, zones of high and low resistivity and areas of high chargeability background.

Geological mapping of the grid area was completed. A 1:5000 scale geological plan was included in the report by Lees and Newnham (1974). Seventeen rock chip samples were collected in the immediate grid area, mainly from old mine workings, and were analysed for Sn, As, Cu, Pb, Zn and Ag. High values were obtained in samples from the Success Extended mine workings (with maxima of 38.0% Pb; 3.25% Zn; 0.39% Cu; 12.3% As and 1585 g/t Ag).

Two diamond drillholes, each 250m in length, at an angle of 55^{o} on a southwest bearing, were proposed for further testing of the Crimson Creek area.

2.7.4 1974-75 Exploration Programme

Exploration activity in the Argent area of E.L. 42/71 was restricted due to a shortage of geological personnel. Field work was concentrated in the S.P.L. 131 area, covering 11.6 sq km west and southwest of the Argent Dam.

2.7.4.1 Crimson Creek Grid

Two surface diamond drillholes, totalling 542.8m, were completed during the period from November-December, 1974. The drillholes were located as follows:

Hole No.	Collar Co-ordinates[1]	Dip	Azimuth[2]	Total Depth
S369	20889.4N/15120.8E	-54°03'	238°21'	272.0m
S370	21633.1N/14519.5E	-55°22'	234°10'	270.8m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Hole S369 was collared approximately 1km southeast of the abandoned Owen Meredith mine workings, and was aimed at testing a coincident IP conductivity and magnetic anomaly located during previous ground geophysical surveys along crossline 125W of the Crimson Creek Grid. Drilling tested beneath an extensive outcrop of gossan, which at the time was interpreted as the surface exposure of the No. 2 Horizon, within the Renison mine sequence, in the upthrown footwall of the Federal Fault. The drillhole collared in the Crimson Creek Formation and intersected a major-displacement fault, which contacts the Crimson Creek Formation and rocks correlated with the Red Rock Member, from 108.0-111.7m. The fault was interpreted as an extension of the Federal Fault, some 2.5km northwest of its known, mineralized occurrence in the Renison Bell mine. Below the fault, the drillhole intersected a locally dolomitic siltstone sequence, intermixed with basaltic agglomerate and carbonaceous silty shale, assigned to the Red Rock Member. The underlying No. 2 Horizon comprised recrystallised dolomite, with minor interbedded dolomitic siltstone. Drilling then intersected the Renison Bell Member, overlying a thick, non-crystalline dolomite zone, correlated with the No. 3 Horizon of the Renison mine sequence. The hole was stopped in the Dalcoath Member, represented by locally carbonaceous and, in places, dolomitic siltstone, with minor shale and very fine sandstone. Split core samples were collected from various stratigraphic and lithological units intersected in the hole and analysed for Sn, Cu, Pb, Zn, Ag, Bi and As. Only low values were recorded. A maximum of 0.27% Sn (0.58% Zn; 0.14% As and 4g/t Ag), over a 1m downhole interval, was recorded, from within the No. 2 Horizon (Newnham, 1975).

Drillhole S370 was collared approximately 100m east of the Owen Meredith mine workings. The hole was aimed at testing an IP conductivity anomaly delineated on crossline 155W of the Crimson Creek Grid and at locating any northwestern continuation of the Renison mine sequence. Drilling commenced in the Crimson Creek Formation and intersected a major fault zone, interpreted to be the Federal Fault, from 68.5-71.5m. The fault zone comprised carbonaceous shale breccia and mineralized, brecciated dolomite and quartz, with pyrite, sphalerite, galena, chalcopyrite, tetrahedrite-tennantite and native silver identified in subsequent mineragraphic studies. Split core samples taken from selected stratigraphic horizons and lithological units in the drillhole were analysed for Sn, Cu, Pb, Zn, Ag, As, Bi and S. A 3.1m downhole interval, comprised of 3 samples representing the fault zone, assayed as follows -

0.03% Sn; 0.18% Cu; 0.33% Pb; 0.21% Zn; 683 g/t Ag; 0.002% Bi; 0.32% As and 2.7% S (with 0.002% Sb and 0.15 g/t Au).

These bulked results were strongly influenced by the analyses from a 0.24m sample, representing the central section of the fault zone, which included 3.20% Pb, 1.65% Zn, 7800 g/t Ag and 1.4 g/t Au (Newnham, 1975). Otherwise, throughout the drillhole, analysis results were generally low to very low. Drilling in the footwall of the Federal Fault intersected rocks tentatively correlated with the Crimson Creek Formation, underlain by a thick, but sulphide-barren, non-crystalline dolomite zone (possibly the No. 2 Horizon, within the Renison mine sequence). A thin zone of dolomite and interbedded shale lower in the drillhole was interpreted as the No. 3 Horizon. The hole was stopped in fine, locally dolomitic clastic units of the Dalcoath Member. The IP anomaly tested by the drillhole was attributed to the pyritic and carbonaceous shale units intersected within the Renison mine sequence in the upthrown footwall of the Federal Fault.

Surveying and detailed (1:500 scale) geological mapping of abandoned mine workings in the Crimson Creek Grid area was undertaken early in the year. Detailed geological mapping was also completed in the immediate area of the surface drillholes S369 and S370. Petrological and mineralogical studies of 17 samples of core from drillhole S370 were carried out by Central Mineralogical Services Pty. Ltd. in April, 1975. Planning commenced in May, 1975 for additional, shallow diamond drilling in the Owen Meredith mine area.

2.7.4.2 Argent Dam (S.P.L. 131) Area

S.P.L. 131 was located immediately west and southwest of the Argent Dam (Ref. Fig. 6), totalled approximately 11.6 sq km and comprised part of the area previously held by Electrolytic Zinc Co., as E.L. 2/62. Coverage of the area by Electrolytic Zinc Co. included ground magnetics, geochemical and limited IP surveys, followed up by two diamond drillholes. Drilling was completed in mid-1967.

Renison Limited commenced fieldwork in the S.P.L. area in November, 1974, with a programme of geological mapping, compiled at 1:5000 scale (Newnham, 1975). Petrological studies of samples collected during the mapping programme were used to confirm the occurrence of correlates of the Renison mine sequence within the S.P.L. area. A contract for 40km of grid cutting was let in early 1975 and line clearing commenced in April, 1975. The completed grid system was to be known as the Argent Grid. The S.P.L. area was included in the coverage of an aerial photographic survey, for control of 1:2000 scale photogrammetric mapping, flown for Renison Limited by the Tasmanian Lands Department in April, 1975.

2.7.4.3 Serpentine Hill - Commonwealth Hill Area

Access tracks were bulldozed into the area from the Renison Mine Lease, via Pine Hill, during January, 1975. Drillhole S374 was completed in February, 1975. The angled hole was collared south of Commonwealth Hill and immediately southwest of Pine Hill, located as follows:

Hole No.	Collar Co-Ord.	Dip	Azimuth(2)	Total Depth
S374	16000.7N/16174.1E	-65°	009°	253.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling was aimed at testing for any extension of the stanniferous sulphide mineralization previously located in drillholes in the central southern section of the Renison Mine Lease. Drillhole S374 was collared in the Crimson Creek Formation and remained in these rocks over its total length of 253m. The hole intersected a sequence of tuffaceous greywacke and intercalated fine clastic sub-units, strongly and pervasively metasomatized to an actinolite-tourmaline - (Fe-carbonate-phlogopite-trace epidote) assemblage. Five samples were collected from the drillhole for routine petrological and mineralogical studies. Core from the entire drillhole was split and assayed, in 1m intervals. A 6m downhole interval, from 135-141m, assayed 0.25% Sn, 0.14% Cu, 0.42% As and 5.2% S (Newnham, 1975). Detailed mineragraphic studies of 6 samples from this interval indicated the mineralization to be comprised of pyrrhotite, locally altered to pyrite and pyrite-marcasite, with minor chalcopyrite, ilmenite and magnetite, and hosted by a ferrohastingsite-fluorite-carbonate-sphene assemblage. No stannite was recorded. The tin values within this interval were concluded to be at least in part associated with the sphene, which comprised up to 2-3% of some samples.

An additional 200-250m diamond drillhole was recommended to further test the southern extension of this stanniferous zone.

2.7.5 1975-1976 Exploration Programme

Additional diamond drilling was completed within the Crimson Creek Grid area, in proximity to the abandoned Success and Owen Meredith mine workings. The major exploration effort was concentrated on the Argent Grid, established within the S.P.L. 131 area. E.L. 42/71 was increased to

53 sq km, as of April, 1976, with the addition to the E.L. of the area previously held as S.P.L. 131.

2.7.5.1 Crimson Creek Grid

Two surface diamond drillholes, totalling 495.5m, were completed during the period from September-October, 1975.

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S386	21820.1N/14518.5E	-79°26'	242°14'	243.0m
S388	21417.9N/14593.6E	-79°59'	234°11'	252.5m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Hole S386 was collared approximately 200m north of the abandoned Owen Meredith mine workings and was aimed at testing any continuation of the lead-silver mineralization previously intersected, in drillhole S370, within a possible northwestern extension of the Federal Fault. The drillhole collared in the Crimson Creek Formation and intersected a major-displacement fault, interpreted to be the Federal Fault, from 72.1-73.2m. In the upthrown footwall of this fault, drilling intersected rocks tentatively correlated with the lower Crimson Creek Formation, in probable faulted contact with an impure dolomite zone, logged as the No. 1 Horizon of the Renison mine sequence. The hole then intersected a thick zone of tuffaceous clastic and calcareous rocks, correlated with the No. 2 Horizon. A thin, tin-barren dolomitic zone, assigned to the No. 3 Horizon was intersected lower in the drillhole. Drilling was stopped in fine, carbonaceous clastic sub-units of the Dalcoath Member. Much of the core from the drillhole was split and sampled, including the entire intersection correlated with the Renison mine sequence. Chemical analyses were completed on 158 samples, for Sn, S, As, Cu, Pb, Zn, Bi, Ag and WO_3. Only very low values were recorded (Kelleher, 1976).

Drillhole S388 was sited approximately 150m east-southeast of the abandoned Success mine workings and also aimed at testing any continuation of mineralization within the Federal Fault. Drilling commenced in the Crimson Creek Formation and, from 80.2-83.1m, intersected a major fault zone, interpreted to be the Federal Fault. In the upthrown footwall of the fault zone, the drillhole intersected rocks tentatively assigned to the lower Crimson Creek Formation. Poorly represented dolomite zones and calcareous clastic sub-units, lower in the drillhole, were correlated with the dolomite horizons of the Renison mine sequence. The drillhole was stopped in locally calcareous and pyritic, fine clastic rocks of the Dalcoath Member. Chemical analysis of 43 split core samples from the drillhole was completed. All samples were analysed for Sn, Cu, As and S, and most were also analysed for Pb, Zn, Ag, Bi and WO_3. Only low values were recorded. The 2.9m downhole interval, representing the Federal fault zone, assayed 0.04% Sn, 0.06% Cu, <0.1% As, 0.03% Pb, 0.03% Zn and 15 g/t Ag (Kelleher, 1976). Mineralogical and petrological studies of 5 core samples were also completed, by Central Mineralogical Services Pty. Ltd. No further drilling of the northwestern extension of the Federal Fault was proposed.

2.7.5.2 Argent Grid

Line clearing to establish the Argent Grid system, in the area northwest, west and southwest of Argent Dam, commenced in April, 1975, and was completed in August of that year. The grid baseline was pegged over a distance of 5.11 km, from near Serpentine Hill northwest to the abandoned Dunkley Tramway. To check the accuracy of the grid, surveyors from Renison Limited completed a traverse along the baseline and also located the crossing points of the grid lines on the baseline and the various access tracks in the area. The surveyed length of the baseline was 4.98km. Spacing of the grid crosslines was nominally 400m, with a total of approximately 32.27 km cleared and pegged. Four crosslines were extended southwest of the baseline. Geological mapping and ground proton-precession magnetometer surveying of the grid, and of roads and access tracks in the area, commenced in August, 1975. Total field magnetics readings were taken along the grid baseline (4.98km) and crosslines (31.36km) at 10m intervals, using a Geometrics G816 magnetometer, with the instrument sensor held approximately 3m above the ground. Field data were corrected for diurnal drift, but no indication of the accuracy of the corrections applied or of the resultant total magnetics data has been recorded. The ground magnetics data were compiled, at 1:5000 scale, as a contour plan and as profiles for individual crosslines. Low and very uniform magnetic responses were recorded over rocks of the Success Creek Group throughout the northern half of the grid. Several low-order anomalies, 100 gammas or less above background, were recorded in the central and northeastern section of the grid area, over rocks of the lower Crimson Creek Formation. At the time, these rocks were interpreted to be correlates of the Renison mine sequence. Anomalies of up to 600 gammas above background were common in the southern section of the grid area, over rocks of the upper Crimson Creek Formation. These anomalies were attributed to magnetite-bearing tuffaceous units, as intersected in the diamond drillholes previously completed in the area by Electrolytic Zinc Co. (Kelleher, 1976).

Geological mapping of the grid area was initially plotted on 1:2000 plans, and reduced to a 1:5000 scale compilation. Chemical analysis of 16 rock chip samples collected from surface outcrops and old mine workings, located during the mapping traverses, was completed. Each was analysed for Sn, As, Pb, Zn, Ag and WO_3, with Cu, S and Bi analyses also carried out for some of the samples. Maximum values of 1.18% Pb, 0.58% Zn, 85 g/t Ag and 50 ppm WO_3, with 170 ppm Cu, 850 ppm As, 80 ppm Sn and 40 ppm Bi, were obtained, from a sample of gossan collected in a creek channel approximately 500m north of the Lead Blocks mine workings (Kelleher, 1976). Petrological and mineralogical studies were completed on 40 rock chip samples by Central Mineralogical Services Pty. Ltd.

An IP survey of all 11 crosslines of the Argent Grid was completed, by Scintrex Pty. Ltd., during the period January-February, 1976. Total survey coverage was approximately 28km. A gradient array electrode configuration was most commonly used, with a pole-dipole configuration used in areas where relatively shallow bedding dips were either known or suspected, and on the ends of some crosslines. Twenty-three separate current dipoles, ranging in length from 800-1600m, were used, with a 20m potential dipole. No record exists as to the type of receiver or the transmitter power used for the surveys. Given the broad spacing of the grid crosslines, and since the major objective of the survey was to obtain detailed and high-resolution data on electrical properties along each line, the results were compiled as profiles only, at 1:5000 scale, as presented in the exploration progress report of Kelleher (1976). Several areas of moderately high chargeabilities (30-50 millivolts/volt) were delineated. Anomalies in the apparent resistivity data were all less than 150 ohm-m, and the rocks underlying the Argent Grid area were concluded to be much more resistive than those in the Renison Bell mine area (Bishop, 1983). Of the 220 anomalous IP responses delineated in the survey, most were attributed to either disseminated sulphide or to graphite. Eighteen of the anomalies were interpreted to be due to more massive, possible sulphide or graphite sources. None was directly associated with an anomalous ground magnetics response (Kelleher, 1976). The anomalous responses were further narrowed, to only two associated with known outcropping dolomite horizons. Screening of the IP anomalies, using the results of a proposed soil geochemical sampling programme, and limited costeaning, was recommended.

Other proposals for further exploration of the Argent area of E.L. 42/71 comprised the construction of access tracks in rugged, hilly terrain immediately west of the Argent Dam, clearing of infill crosslines on the Argent Grid, and additional work in the Dunkley Grid area. Completion of geological mapping, and ground magnetics and IP surveys, over the infill lines to be cut in the Argent Grid area, was recommended.

2.7.6 1976-1977 Exploration Programme

2.7.6.1 Argent Grid

In September, 1976, bulldozing of a four-wheel drive track to provide better access to the central section of the grid area was commenced. An additional 10.8 km of grid was cleared and pegged, on six intermediate crosslines. This additional work reduced the crossline spacing, in the central section of the Argent Grid, to approximately 200m.

A soil geochemical sampling programme was completed over the entire Argent Grid area during the period from November, 1976 - February, 1977. The coverage totalled approximately 41km, with samples collected at 25m intervals along each of the 17 grid crosslines. A hand-auger was used to collect the samples, to a maximum depth of 0.9m below surface (representative of either the 'B' or 'C' horizons). Field descriptions, including sample locations, depth and soil type, were recorded at each sampling point. In total, 1565 samples were collected and subsequently analysed for Sn, As, Cu, Pb and Zn.

Results were compiled at 1:5000 scale as profiles for the individual grid crosslines, as stacked profiles (for As analyses only) and as a set of single-element contour plans. Copies of these profiles and contour plans were included with the exploration progress report of Kelleher (1977). Coincident anomalies in Sn, As, Pb and Zn in soils were delineated on Line 13 of the grid, in an area immediately west of the Argent Dam. Several old, shallow pits and trenches were mapped in the area, developed on a gossan. Anomalous ground magnetic and IP responses were previously recorded in the area. The anomalies appeared to coincide with an outcropping dolomite horizon, but were also located in proximity to a possible northwestern continuation of one of the major faults known to exist in the Renison Mine Lease. Additional soil geochemical sampling was recommended to verify the anomalous results. A 400m diamond drillhole was also proposed to test the coincident geophysical and soil geochemical anomalies. Several diffuse geochemical anomalies in soils along Lines 17, 19 and 21, in the southern section of the grid, were also apparent. Cutting of infill crosslines, and additional soil geochemical sampling and geophysical surveying, were recommended for better definition of these anomalies.

Ground proton-precession magnetics surveying was commenced on the intermediate crosslines of the Argent Grid in February, 1977. The survey was only extended on three of the six infill lines, for a total coverage of 5.27 km. Total field magnetics readings were taken at 10m or 12.5m intervals along the crosslines, using a Geometrics G816 magnetometer. Field data were corrected for diurnal drift, although no record exists as to the accuracy of the correction procedure. The data were compiled, at 1:5000 scale, on profiles for the individual crosslines. The results for the infill crosslines were added to the 1:5000 contour plan, covering the grid area. Copies of these profiles and the up-dated contour plan were presented in the exploration progress report of Kelleher (1977). Ground magnetics surveying and geological mapping of the infill crosslines had to be postponed due to poor weather conditions and a shortage of geological personnel.

2.7.7 1977-1978 Exploration Programme

Exploration activity was restricted to the area immediately west of Argent Dam.

2.7.7.1 Argent Grid

A repeat programme of soil geochemical sampling, partly covering six crosslines in the central section of the grid area, was completed in February, 1978. The sampling programme was aimed at confirming the anomalous results previously recorded along Line 13, immediately west of Argent Dam. Using a hand-auger, 115 samples were collected (at 25m intervals along the crosslines), from 'B' or 'C' horizon soils in the area, and were subsequently analysed for Sn, As, Cu, Pb, Zn, and Ag. The results were added to the 1:5000 profile plots for the individual crosslines and confirmed the anomaly on Line 13.

Diamond drillhole S495 was completed during the period from March-April, 1978. The hole was collared approximately 450m west of Argent Dam and was aimed at testing the coincident geochemical and ground geophysical anomalies on Line 13. The drillhole was located as follows:

Hole No.	Collar Co-ordinates[1]	Dip	Azimuth[2]	Total Depth
S495	19127.7N/14419.0E	-52°11'	065°23'	400.1m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling intersected a thick sequence of shale, siltstone and minor tuffaceous sub-units, assigned to the Dalcoath Member. A vein system, interpreted to be a fault, was intersected from 202.5 - 203.7m. The underlying sequence of black shale, orthoquartzite and interbedded dolomite was tentatively assigned to the Oonah Formation. Chemical analysis of 19 split core samples, for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As and S, was completed. A vein of dolomite, chlorite and arsenopyrite, with pyritic and brecciated contacts, assayed 0.32% Sn, 2.1% As, 0.13% Pb and 0.29% Zn, over a 0.4m downhole interval, from 192.7 - 193.1m. A breccia zone, infilled with carbonate and sphalerite, was intersected from 312.9 - 313.1m, and assayed 0.05% Sn, 0.8% As, 0.91% Pb and 18.1% Zn. Magnetic susceptibilities were measured on the core, at 1m intervals over the total length of the hole. Susceptibilities were all less than 0.2 cgs units throughout, with the exception of one reading of 1.9 cgs units at 203m, representing the fault zone between the Dalcoath Member and possible Oonah Formation. Grid-based geological mapping of the area immediately west of Argent Dam indicated that the drillhole should have collared in rocks of the lower Crimson Creek Formation, then intersected the Success Creek Group. Since drilling, in fact, intersected rocks from much lower in the local stratigraphy, a major re-interpretation of the geological setting within this section of the E.L. was recommended.

General recommendations, relevant to proposed future exploration of the whole E.L. area, and made at a time of considerable development in the understanding of the geology of the Renison Bell mine, were as follows (Newnham, 1978):

a) detailed review and compilation, on standard base plans, of all data from previously completed exploration programmes;

b) re-mapping of the geology;

c) extension and infill of grid systems throughout the area;

d) a continuing programme of diamond drilling, comprising stratigraphic holes, as well as holes testing specific anomalous targets.

2.7.8 1978-1979 Exploration Programme

Only limited field work was undertaken in the Argent area, since available geological personnel were assigned to a detailed review and compilation of data from previous exploration programmes. Additional diamond drilling was completed in the Crimson Creek Grid area, between the abandoned Success mine workings and the western boundary of the Renison Mine Lease.

2.7.8.1 Argent Grid

Detailed 1:500 scale geological mapping in the Argent Dam area was carried out intermittently during the year. Mapping was concentrated within the Renison Mine Lease, but the coverage also extended into the adjacent, central-eastern section of E.L. 42/71. The detailed mapping was aimed at elucidating the geology of the area between South Renison Bell Hill and drillhole S495, immediately west of Argent Dam, known to be underlain in part by correlates of the Renison mine sequence. A 1:5000 scale interpretive geological plan, which included coverage of the Argent Dam area, was presented in the exploration progress report of Stephenson (1979).

2.7.8.2 Crimson Creek Grid

Detailed geological mapping, and some costeaning, were completed in the area between Dunkley Town and the western boundary of the Renison Mine Lease, along the possible northwestern extension of the Federal Fault zone. This detailed work was aimed at accurately locating and tracing the fault zone, at surface, and elucidating the stratigraphy in the upthrown footwall of the fault, along its northwestern continuation.

Diamond drillhole S594 was completed during the period from May-June, 1979. The hole was collared approximately midway between the Success and Owen Meredith mine workings and the western boundary of the Renison Mine Lease. Drilling was aimed at further testing of the northwestern continuation of the Federal Fault zone, below the level drilled in the previously completed hole S369. The drillhole was located as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S594	20917.5N/15225.7E	-66°	240°39'	391.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling tested beneath the extensive zone of gossan which outcrops from close to the Renison Mine Lease boundary, northwest to the junction of the Dunkley Tramway and the Pieman logging road. From the detailed geological mapping and costeaning, completed earlier in 1979, the gossan had been re-interpreted as representing the No. 3 Horizon, of the Renison mine sequence. Drillhole S594 collared in the Crimson Creek Formation and intersected a major-displacement fault, interpreted to be the Federal Fault, from 212.6 - 212.8m. The fault infill comprised breccia, with dolomite and talc, but no visible sulphide mineralization. Fine silicified clastics, with conglomeratic interbeds, intersected in the footwall of the fault zone, were assigned to the lower section of the Renison Bell Member. Two dolomite zones were intersected, from 230.9 -

243.3m and from 274.6 - 282.4m, correlated with the No. 3 Horizon of the Renison mine sequence. The upper dolomite zone included relatively coarse-grained, recrystallized carbonate, but both zones were barren of any visible sulphide mineralization. The fine, carbonaceous clastic sub-units which separate these two dolomite horizons bore a marked similarity to the Dalcoath Member. Drilling was stopped at 391m, in quartzose siltstone, with contorted bedding and local brecciated zones, from lower in the Dalcoath Member. The stratigraphy intersected in the drillhole, in the footwall of the Federal Fault, correlates well with that known, from surface exposure and from drilling, in the northern section of the immediate Renison Bell mine area. A split No. 3 Horizon, with two relatively thick dolomite zones developed, and separated by Dalcoath Member-like fine, in places calcareous clastics, is a feature of this local stratigraphy. Since the fault zone, and the underlying dolomite horizons intersected in drillhole S594 were barren of sulphide mineralization, chemical analysis of the core was not carried out. A copy of the drillhole log and a hole plan and profile were included in the exploration progress report of Stephenson (1979). A 1:1000 scale section through the area tested by this hole, and by the previously completed drillhole S369, was also tabled. Correlation between these two drillholes, based on the various units of the Renison mine sequence intersected in the footwall of the Federal Fault, proved difficult.

Completion of an additional hole, midway between drillhole S594 and the western boundary of the Renison Mine Lease, was recommended (Stephenson, 1979). The drilling was proposed to further test the Federal Fault zone, and the stratigraphy and possible mineralization in the footwall of the fault. Soil geochemical sampling of several crosslines of the Crimson Creek Grid was also recommended. Coverage of an area to the west and southwest of the Crimson Creek Grid was proposed. A programme of geological mapping, soil geochemical sampling and ground magnetic and IP surveying was recommended over three east-west oriented crosslines, to be known as the Dunkley Tram Grid.

2.7.9 1979-1980 Exploration Programme

Field work was concentrated on the Crimson Creek Grid and a newly established grid, located further west and southwest, named the Dunkley Tram Grid. Additional drilling was completed in proximity to the abandoned Success mine, testing the possible northwestern continuation of the Federal Fault. A drillhole was also completed from a site close to the southern boundary of the Renison Mine Lease, testing for an extension to a previously drilled stanniferous skarn zone, in the Pine Hill-Commonwealth Hill area.

2.7.9.1 Crimson Creek Grid

Results were received in August, 1979, from petrological and mineralogical studies carried out as follow-up to drilling completed previously in the area between the Owen Meredith mine and the western boundary of the Renison Mine Lease. Central Mineralogical Services Pty. Ltd. completed the work on a total of 17 core samples, 9 from drillhole S369 and 8 from hole S594. The samples were mainly representative of the various lithological units intersected in the footwall of the Federal Fault zone in these drillholes.

Field work commenced in September, 1979, with the re-clearing and re-pegging of five crosslines (line 145W - 185W, inclusive), in the central to northern section of the grid. Approximately 10 km of the old grid system was reported as having been re-cleared (Stephenson and Bond, 1980).

A soil geochemical sampling programme was completed over these five crosslines in October, 1979. The coverage totalled approximately 5.9 km (19500 ft), with samples collected at 30m (100 ft) intervals along each of the crosslines. No record exists of information such as the method of sample collection, depth of sample, soil horizon sampled and the size range of the sample prepared for analysis. In total, 197 samples were collected and subsequently analysed for Sn, As, Cu, Pb and Zn. Results were compiled at 1:5000 scale as a set of single-element contour plans, which also included results from the previously completed programme of soil geochemical sampling in the Argent Grid area. Copies of these plans were tabled with the exploration progress report of Stephenson and Bond (1980). Anomalous copper, lead and zinc responses were apparent in the Owen

Meredith mine area, along the possible northwestern continuation of the Federal Fault. Anomalous lead, zinc and arsenic in soils to the west of the fault zone were tentatively correlated with the outcrop distribution of the Red Rock Member. An anomalous response in tin in soils was located to the east of the fault zone, possibly parallel to the structure. Follow-up of these anomalies by a continuing programme of diamond drilling was recommended.

Diamond drillhole S650 was completed during the period from February - March, 1980. The hole was collared approximately 600m east of the Owen Meredith and Success mine workings and was aimed at further testing of the northwestern continuation of the Federal Fault zone. Location of the drillhole was a follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S650	21405.6N/15046.4E	-64°20'	230°30'	557.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

The hole intersected a thick sequence comprised dominantly of volcaniclastic greywacke, typical of the Crimson Creek Formation well above the Renison mine sequence, from the collar to 409.3m. A major-displacement fault, interpreted to be the Federal Fault, and underlain by volcanomict conglomerate of the Red Rock Member, was intersected from 409.3 - 414.5m. The fault infill comprised lithic fragment breccia, and carbonate and minor quartz veins. The only recorded, visible sulphide mineralization consisted of traces of pyrite, occurring as aggregates, near the hangingwall of the fault zone. Another major-displacement fault was intersected from 471.2 - 473.6m, forming the contact between the volcanomict conglomerate, of the Red Rock Member, and fine, carbonaceous and locally calcareous clastic units, assigned to the Dalcoath Member. Chemical analysis of 17 split core samples from the drillhole was completed. All samples were analysed for Sn (total Sn), Cu, Pb, Zn, As, WO_3 and S, with 10 also analysed for acid-soluble Sn, Ag, and Bi. Scanning of whole core, from the interval 262.4 - 268.4m, was completed using Renison Limited's XRF core analyser. A total Sn content of 0.04% was indicated for the 6.0m downhole interval. The intersection was logged as part of the Crimson Creek Formation, comprised of lapilli tuff, with common disseminations and bedding-parallel bands of pyrite. All analysis results for the split core samples were very low. Total Sn values for samples representing the Federal Fault zone were all at or below the detection limit of the analysis method. A 1m downhole interval, in the immediate hangingwall of the fault, assayed 0.23% Pb, 0.48% Zn and 4g/t Ag (Stephenson and Bond, 1980). Further exploration of the Owen Meredith area, by diamond drilling along the northwestern extension of the Federal Fault zone, was recommended.

2.7.9.2 Dunkley Tram Grid

Line clearing to establish the Dunkley Tram Grid, in the area to the west and southwest of the Crimson Creek Grid, was completed in September, 1979. Three crosslines were pegged over a length of 3.75km, centred on the Dunkley Tramway, west to southwest of its junction with the Pieman logging road. The crosslines were oriented east-west, nominally spaced at 400m and were aimed at covering an area, of up to 1.8 km strike length, underlain by the Crimson Creek Formation and possible Renison mine sequence. Ground proton-precession magnetometer surveying of the grid was carried out during October, 1979. Total field magnetics readings were taken at 25m intervals, along the 3.75km of crosslines. No record exists as to the instrumentation used for the survey, or the reproducibility of the field data, nor do any corrections appear to have been applied to the field readings, for diurnal drift. Total field magnetics data were compiled at 1:5000 scale on profiles for the individual crosslines. The results were also presented on an up-dated, 1:5000 scale contour plan, together with all ground magnetics data recorded previously in the Argent Grid area, located further to the south and southeast. Total field magnetics readings were low throughout the Dunkley Tram Grid area, with no significant above-background responses (Stephenson and Bond, 1980).

Soil geochemical sampling of the three crosslines was completed in October, 1979. The coverage totalled 3.75km, with samples collected at 25m intervals. No record exists as to the method of sample collection, depth of sample, soil horizon sampled or the size range of the sample prepared for analysis. In total, 154 samples were collected and subsequently analysed for Sn, As, Cu, Pb and Zn. Results were compiled at 1:5000 scale as profiles for the individual crosslines. Anomalous copper, lead and zinc values were recorded in soils from the southeastern section of the grid area, which was mapped as being underlain by the Crimson Creek Formation. A major-displacement, southwest-trending fault, located further southeast, was interpreted as forming the contact between the Crimson Creek Formation and rocks correlated with the Dalcoath Member of the Success Creek Group. Anomalous soil geochemical responses were also associated with this fault. A low-order anomaly was located in the northwestern section of the grid, over rocks of the Crimson Creek Formation, and was also tentatively attributed to a fault source (Stephenson and Bond, 1980).

An IP survey of the three crosslines comprising the Dunkley Tram Grid was completed in November, 1979. Total survey coverage was 3.75 km. A gradient array electrode configuration was used throughout. Two separate current dipoles, one 1500m in length and the other 1750m, were used, with a 25m potential dipole. Transmitter power was rated at 2.5-3 kW, and the resultant field was recorded using a Scintrex IPR-8 receiver. Survey results were plotted on 1:5000 scale profiles for each of the three crosslines. Copies of these profiles were included in the exploration progress report of Stephenson and Bond (1980). Apparent resistivities in the grid area generally ranged from 100-1000 ohm-m, with lower values recorded towards the central sections of the crosslines. Chargeability anomalies of up to 90 millivolts/volt were recorded. Coincident resistivity lows, of 100-500 ohm-m, were associated with some of these anomalies (Bishop, 1983). Due to the broad spacing of the grid, correlation of anomalies from line to line was tentative. However, a degree of correlation between a series of complex chargeability sources, on a north-south trend, was apparent. The faster than normal decay forms, noted in both the background and anomalous responses, indicated a possible fine-grained sulphide or graphite source, within rocks of the Crimson Creek Formation.

A 300m vertical diamond drillhole was proposed for the southwestern section of the Dunkley Tram Grid. Drilling was recommended to test for possible Renison mine sequence, at depth, in an area of anomalous soil geochemistry. Drilling of an additional steeply angled stratigraphic hole, in the central section of the Argent Grid, further to the southeast, was also recommended.

2.7.9.3 Serpentine Hill - Commonwealth Hill Area

Additional drilling of a stanniferous skarn zone, previously intersected in several drillholes in the area immediately southwest of Pine Hill and to the south of Commonwealth Hill, had been recommended on the basis of the results from the 1974-1975 exploration programme. Due to the committment of resources and geological personnel to exploration in other sections of the E.L. 42/71 area, this proposed drilling was postponed. The original recommendation was for one 200-250m diamond drillhole. However, with a change in emphasis, involving more stratigraphic drilling in the Renison Mine Lease and the adjacent E.L. area, the proposed hole depth was increased. Diamond drillhole S651 was completed during the period from February-April, 1980. The hole was collared approximately 700m south of Commonwealth Hill, just outside the southern boundary of the Renison Mine Lease. Drilling was aimed at testing for a southwestern continuation of the stanniferous sulphide mineralization, hosted by a skarn assemblage within the Crimson Creek Formation. Given sufficient drilling rig capacity, the hole was to be continued to intersect the Pine Hill Granite, at depth. The drillhole was located as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S651	16012.3N/15975.2E	-59°9'	005°	610.5m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.

(2) Azimuth relative to Renison Bell Mine Grid: Mine

Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

The hole commenced in the Crimson Creek Formation, and remained in these rocks to 603.2m, below which drilling intersected greisenized, porphyritic granite. Several skarn zones were logged. Chemical analysis of 38 split core samples, for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3 and S, was completed. In adddition, scanning of 36.3m of whole core was carried out, using Renison Limited's XRF core analyser. A near-surface zone of skarn, intersected over a 13.3m downhole interval from 7.7-21.0m, averaged 0.04% Sn (0.02% acid-soluble Sn), 0.25% Cu, 3.8 g/t Ag, 0.03% WO_3 and 3.8%S. The interval from 16.7-17.7m assayed 1.46% Cu and 0.26% WO_3. A thick skarn zone, drilled over a 25.5m downhole interval from 561.5-587m, averaged 0.16% Sn (0.06% acid-soluble Sn), 0.04% Cu and 1.2% S. From downhole survey data, it is apparent that much of the hole was drilled within the Renison Mine Lease. The stopping point of the hole was calculated to be approximately 180m north of the Mine Lease boundary with E.L. 42/71.

2.7.10 1980-1981 Exploration Programme

The major emphasis, during 1980-1981, was on deep drilling. Additional drilling was completed in the Owen Meredith area, within the northeastern section of the E.L. A stratigraphic drillhole was completed further to the southwest, along the abandoned Dunkley Tramway. The hole was drilled in an area of anomalous soil geochemistry to test for the Renison mine sequence, at depth, in proximity to an interpreted major-displacement fault. A stratigraphic hole was also completed in the area between the Dunkley Tramway and Argent Dam. Follow-up studies of samples from these, and previously completed drillholes, were carried out.

2.7.10.1 Crimson Creek Grid

Diamond drillhole S697 was completed during the period from July-August, 1980. The hole was collared approximately 300m northeast of the Owen Meredith mine workings, close to the Pieman logging road. Drilling was aimed at further testing of the northwestern continuation of the Federal Fault zone, and at elucidating the stratigraphy within the upthrown footwall of the

053

fault. The drillhole was located as follows:

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S697	21821.9N/14687.4E	-69°8'	240°52'	356.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

The hole collared in a dominantly volcaniclastic sequence, assigned to the Crimson Creek Formation, and from 213.8 - 220.5m intersected a major-displacement fault, interpreted to be the Federal Fault. The fault infill comprised lithic fragment breccia, with zones of quartz and dolomite. Trace to sparse pyrite was recorded, as blebs and disseminations, associated with the breccia. A vein of quartz and crystalline carbonate, containing fine blebs of pyrite, chalcopyrite and arsenopyrite, was intersected near the base of the fault zone. Chemical analyses of a split core sample, over a 0.7m downhole interval representing the vein, included 0.03% Sn, 0.38% Cu, 0.46% Pb, 0.06% Zn, 650 g/t Ag and 0.9% S. In the upthrown footwall of the fault drilling intersected volcaniclastic units and chert, tentatively correlated with the Red Rock Member of the Renison mine sequence. A vein of carbonate, quartz, galena and minor pyrite, with lithic fragments and vughy zones, drilled from 239.1 - 239.3m, was logged as a possible fault. Chemical analyses of a split core sample of this 0.2m downhole interval included 0.05% Cu, 1.72% Pb, 0.22% Zn and 145 g/t Ag, with 5.6% S. The lower contact of the Red Rock Member was interpreted as a probable fault, underlain by impure dolomite, tentatively assigned to the No. 2.2 Horizon, within the upper-middle section of the Renison Bell Member. A thin zone of fine-grained, bedded and stylolitic dolomite, intersected from 288.8 - 290.6m, was correlated with the No. 3 Horizon. The hole was stopped in fine carbonaceous clastic units of the Dalcoath Member. No other sections of the drillhole were sampled for chemical analysis. Scanning of a 3m downhole interval of whole core, from 273.8 - 276.8m, representing the lower Red Rock Member, was carried out using Renison Limited's XRF core analyser. The indicated tin content of this locally pyritic, volcanomict conglomerate unit was 0.04%, insufficient to warrant any further analysis. Follow-up study of two core samples of the vein infill within the Federal Fault zone was completed by Central Mineralogical Services Pty. Ltd. Native silver was identified in both samples (Stephenson and Bond, 1981). The vein fill was described as stressed, granulated and fractured quartz, with subordinate sideritic carbonate.

Results were received in February, 1981 from petrological and mineralogical studies completed on 6 samples from hole S650, which had been drilled in the area southeast of the Owen Meredith mine workings in early 1980. The studies were completed by Central Mineralogical Services Pty. Ltd. All 6 samples were representative of the Red Rock Member, in the immediate footwall of the Federal Fault zone, and were largely comprised of volcanomict conglomerate.

2.7.10.2 Dunkley Tram Grid

Diamond drilling S705 was completed during the period from August-September, 1980. The hole was collared from a site bulldozed off the abandoned Dunkley Tramway, approximately 2km west-southwest from the junction of the tramway and the Pieman logging road, located as follows:

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth	Total Depth
S705	21275.7N/12723.5E	-90°	-	333.4m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.

Drilling was aimed at testing the stratigraphy, at depth, in an area of known, outcropping Crimson Creek Formation. Anomalous soil geochemical responses, attributed to the Crimson Creek Formation, and reflecting the proximity of a major-displacement, southwest-trending fault, had been previously recorded along the three broadly-spaced grid crosslines in the area. The hole collared in the Crimson Creek Formation, comprised dominantly of carbonaceous and non-carbonaceous siltstone, with minor volcaniclastic units. From 163.4 - 194.6m the drillhole intersected a cavernous zone of fine-grained, stylolitic, weakly bedded dolomite, correlated with the No. 1 Horizon. The zone included a 5.5m downhole interval of silicified siltstone and minor interbedded dolomite, with distinctive red chert, typical of the Red Rock Member from throughout the Renison Bell mine area. Some change in the stratigraphy, within the upper section of the Renison mine sequence, northwest of the mine area, was thus apparent. Locally volcanomict and calcareous clastic units of the Red Rock Member were drilled to 201.6m, underlain by a 2.6m downhole interval of fine-grained, weakly stylolitic dolomite, correlated with the No. 2 Horizon. A bedded, locally stylolitic dolomite zone, drilled from 244.3 - 246.1m, was tentatively logged as a thin No. 3 Horizon. The hole was stopped in fine clastic units of the Dalcoath Member. Downhole camera surveys indicated that the hole had flattened off and deviated considerably to the northwest. No significant, visible sulphide mineralization was recorded throughout the hole, and no samples were analysed. Petrological and mineralogical study was completed, by Central Mineralogical Services Pty. Ltd., of only one sample from the drillhole. A conglomeratic bed within the Renison Bell Member section, at 239.7m, was described as an intraformationally brecciated, pyritic, carbonaceous dolomite. From the results of this drilling, and of previously completed geophysical surveys, the Dunkley Tram Grid was concluded to have minimal exploration potential for relatively shallow, stanniferous sulphide mineralization. No further exploration was recommended for the area.

2.7.10.3 Argent Grid

The eastern section of the Argent Grid area, much of the Renison Mine Lease and a part of the Serpentine Hill-Commonwealth Hill area were included in the coverage of a DIGHEM survey flown for BHP Minerals Exploration in December, 1980. Flight lines were nominally spaced at 250m for the survey. Three possible anomalous responses, as well as a series of responses attributed to power lines, were recorded in the section of E.L. 42/71 covered by the survey (Bishop, 1985b). None of these three responses co-incided with anomalies located by the helicopter-borne TURAIR-EM survey, flown for Renison Limited in early 1973.

A four-wheel drive access track and a drill site were cleared by bulldozer in the central section of the grid area, between the Dunkley Tramway and Argent Dam. Drillhole S835 was subsequently completed in the area in the period from April-May, 1981. The steeply angled hole was aimed at testing the stratigraphy, at depth, in an area of known, outcropping Red Rock Member, and was located as follows:

Hole No.	Collar Co-ordinates[1]	Dip	Azimuth[2]	Total Depth
S835	20151.5N/13200.9E	-80°9'	240°30'	338.9m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

The drillhole collared in a thick, moderately steep northeast-dipping sequence of the Red Rock Member, comprised of fine to locally coarse, commonly volcanomict clastic units. A zone of near-total core loss, intersected from 83.7-88.3m, was logged as the No. 2 Horizon. The upper and middle sections of the Renison Bell Member comprised a very thick sequence of dominantly fine and, in place, calcareous clastics. An interbedded dolomite and siltstone unit near the top of the Renison Bell Member was correlated with the No.2.2 Horizon, typical of the Renison mine sequence in the immediate mine area. Thin, pyritic granule-conglomerate interbeds were drilled near the base of the middle Renison Bell Member. A split No. 3 Horizon, comprised of two very thick dolomite zones separated by Dalcoath Member-like, fine, locally calcareous clastics, was drilled in the interval from 198.1-273.4m. The upper dolomite horizon included very minor recrystallized zones. Neither horizon contained any visible sulphide mineralization. Drilling was stopped in fine clastic units of the Dalcoath Member, well below the No. 3 Horizon. Only one sample was selected fom the drillhole for chemical analysis. Very low values were recorded from analysis of the 5cm of core, representing the interval from 83.7-88.3m, logged as the No. 2 Horizon. Scanning of a 1m downhole interval of whole core, from 220-221m, representing a zone of recrystallized dolomite within the upper No. 3 Horizon, was carried out using Renison Limited's XRF core analyser. The indicated tin content was

0.02%, insufficient to warrant further analysis. Although the drillhole failed to intersect any mineralization, the discovery of thick dolomite horizons within a well-developed Renison mine sequence, underlying part of the Argent Grid area, was encouraging. The exploration potential of the southeastern section of the Argent Grid area, known to be underlain by the Crimson Creek Formation in the downthrown block of the Dunkley Fault, was considerably enhanced (Stephenson and Bond, 1981). Completion of an additional drillhole approximately 2 km further southeast was proposed.

2.7.10.4 Serpentine Hill-Commonwealth Hill Area

Results were received in February, 1981 from petrological and mineralogical studies completed on 10 samples from hole S651, which had been drilled in the area immediately south of Commonwealth Hill in early 1980. The studies were carried out by Central Mineralogical Services Pty. Ltd. Nine of the samples were representative of the amphibole-tourmaline skarn assemblages intersected within the Crimson Creek Formation. Some were possibly representative of highly altered basic intrusive or extrusive rocks. Cassiterite was identified in only one sample, from 570.2m, within a hastingsite skarn zone, containing patchy pyrrhotite and minor chalcopyrite. The cassiterite was noted as cloudy micro-inclusions within hastingsite. Chemical analyses of 0.23%Sn (0.09% acid-soluble Sn), 0.04% Cu and 0.6% S were recorded for the interval from 569.5m-570.5m. Anomalous acid-soluble tin values in samples representing the skarn zones intersected in the drillhole were tentatively correlated with the sphene content. One sample, from near the bottom of the hole, and described as a greisenized biotite micro-adamellite, was representative of the Pine Hill Granite. Polished sections were prepared of four of the samples to examine any phases of tin mineralization other then cassiterite. Although not verified by electron-probe microanalysis, sphene and rutile were suspected of being the main stanniferous minerals within the skarn assemblages.

2.7.11 1981-1982 Exploration Programme

The major emphasis, during 1981-1982, was again on deep drilling. A stratigraphic drillhole was completed in the area northwest of Serpentine Hill. The hole was drilled in an area of known, outcropping Crimson Creek Formation, over which anomalous soil geochemical responses had been previously recorded, and aimed at testing for the Renison mine sequence at depth. An additional drillhole was completed in the area between the abandoned Success mine and the western boundary of the Renison Mine Lease, to further test the northwestern continuation of the Federal Fault zone. Estimated total expenditure on the Argent section of E.L. 42/71, in the year ended June 30, 1982, was $73,795. The cost of diamond drilling was $53,868.

2.7.11.1 Argent Grid

Drillhole S966 was completed in the southeastern section of the Argent Grid area during March, 1982. The hole was collared approximately 2.3 km northwest of Serpentine Hill, located as follows:

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth	Total Depth
S966	18280.4N/13443.1E	-90°	-	547.1m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.

An access track to the drill site was bulldozed off the main four-wheel drive track which cuts through the southern section of the Argent Grid area, from the Pieman logging road near Argent Dam. The newly cleared access was extended from an existing, poor-quality track which had been used by Electrolytic Zinc Co. for the drilling of holes MFP 124 and MFP 125, completed in mid-1967.

Drillhole S966 was aimed at testing the stratigraphy, at depth, in an area of known, outcropping Crimson Creek Formation. Anomalous ground magnetic responses and soil geochemical results were recorded in the area, along Line 15 of the Argent Grid, during the initial exploration coverage, by Renison Limited, in late 1976-early 1977. The hole collared in volcaniclastic greywacke, typical of the Crimson Creek Formation from well abandoned at 88.5m, after the casing slipped and logged in a caved section. Attempts to re-align the drill stem were not successful and a new hole, S1008, was collared from the same site, located as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S1008	21135.9N/15356.2E	-68°	241°30'	643.4m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling of this deep angled hole commenced in early June, 1982, and was completed in the following month. The hole commenced in a thick, unconsolidated sequence, logged as Quarternary fluvio-glacial deposits. Drilling then intersected volcaniclastic greywacke, with minor siltstone and possible gabbroic intrusives, typical of the Crimson Creek Formation, to a depth of 481.4m. A major-displacement fault, intersected from 481.1-484.9m and infilled with sheared siltstone and common carbonate veins, was interpreted to be the Federal Fault zone. No visible sulphide mineralization was recorded within the fault zone, or in the adjacent wallrocks. Volcanomict conglomerate, with interbedded chert, logged as the Red Rock Member of the Renison mine sequence, was intersected in the footwall of the fault. A thin zone of fine-grained, stylolitic dolomite, drilled from 505.6-509.4m, was correlated with the No. 2 Horizon. A split No. 3 Horizon, comprised of two thin, non-crystalline dolomite zones separated by Dalcoath Member-like, fine, locally carbonaceous clastics, was intersected in the interval from 535.6-559.7m. No significant sulphide was logged in either of the dolomite beds. Drilling was stopped in fine, locally carbonaceous and calcareous clastics of the Dalcoath Member. Scanning of whole core samples, over a total interval of 6m, was completed using Renison Limited's XRF core analyser. The indicated tin contents were very low, insufficient to warrant further analysis. For the 2m downhole interval, from 481-483m, within the zone logged as the Federal Fault, the average indicated tin content was only 0.04%. Further drilling of the northwestern section of the

Federal Fault zone, approximately 500m to the northwest of drillhole S1008, was proposed.

2.7.12 1982-1983 Exploration Programme

Initial emphasis, during 1982-1983, was on further drilling of the northwestern extension of the Federal Fault zone, in proximity to the abandoned Owen Meredith and Success mines. Amendments to the conditions applying to tenure of exploration licences in Tasmania were introduced, effective from July, 1982, which set August, 1987, as the relinquishment date for E.L. 42/71. With these amendments pending, further review of the results of previous exploration programmes completed throughout the Argent area of E.L. 42/71 was undertaken during 1982-1982. Continuing exploration of the northwestern extension of the Federal Fault, by an on-going committment to deep diamond drilling, remained the major priority. The Serpentine Hill-Commonwealth Hill area was also assigned a high priority, as was the southwestern section of the E.L. The latter area was known to be underlain, in part, by rocks of the Crimson Creek Formation, in proximity to the major-displacement, northeast-trending Dunkley Fault. The recommended detailed, grid-based evaluation of this area was commenced in mid-1983. Of lower priority, but still recommended for reconnaissance field appraisal, were the northwestern and central sections of the E.L. area.

In late-1982, most exploration staff from Renison Limited transferred to the newly established regional office of Goldfields Exploration Pty. Ltd., in Burnie. Subsequently, exploration of the Argent area of E.L. 42/71 was carried out under the direction of one geologist, based at the Renison Bell mine and reporting to the Chief Mine Geologist. The geologist also had responsibility for the planning, implementation and supervision of exploration programmes within the Renison Mine Lease.

Estimated total expenditure on exploration of the Argent section of E.L. 42/71, in the year ended June 30, 1983, was $111,459, including diamond drilling costs of $63,893.

2.7.12.1 Crimson Creek Grid

The angled diamond drillhole S1008, which was aimed at testing the northwestern extension of the Federal Fault zone approximately 700m southeast of the abandoned Success mine, was completed in July, 1983 (Ref. Section 2.7.11.2 of this report for summary results). Further drilling of the Federal Fault, 500m to the northwest, was completed in hole S1026 during the period from July-August 1982. The drillhole was collared approximately 700m east-northeast of the abandoned Owen Meredith mine, as follows:

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S1026	21606.2N/15141.7E	-64°	244°18'	766.5m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling commenced in unconsolidated Quaternary fluvio-glacial deposits. From 7.6m the hole intersected an extremely thick sequence of mudstone, locally carbonaceous siltstone and common volcaniclastic greywacke, logged as the Crimson Creek Formation. A thin zone of sheared rock, with common chlorite and sparse pyrite, was intersected from 681.5-682.2m, and interpreted to be the Federal Fault. Graded, fine to medium-grained, lithic-rich siliciclastic units in the footwall of the fault were assigned to the Dalcoath Member. Chemical analysis of one split core sample, for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3 and S, was completed. The sample, over a 0.6m downhole interval, represented part of the interpreted Federal Fault zone. All analysis results were very low, including only 1.0% S (Kilpatrick, 1982). Scanning of whole core samples, over a total interval of 23.4m, was completed using Renison Limited's XRF core analyser. All indicated tin values were very low, insufficient to warrant further analysis. Petrological and mineralogical studies of three core samples, from the interval logged as the Federal Fault zone, were completed by Central Mineralogical Services Pty. Ltd., in February, 1983. Two of the samples comprised very fine-grained, carbonaceous and pyritic clastics, tentatively correlated with essentially unaltered Success Creek Group. The third sample, representing the central section of the fault zone, was described as a quartz-healed and veined tectonic breccia, with traces of pyrite, as clasts, and rare galena. The intersection logged in this hole as the Federal Fault correlated poorly with intersections in other holes previously drilled in the immediate area. Drilling of two additional deep holes, one to test the Federal Fault below the Owen Meredith mine workings and the second to test below the Bon Accord workings, further northwest, was recommended. Lower priority was assigned to further drilling in the area of the abandoned Success mine.

2.7.12.2 Dunkley Fault Grid

Detailed, grid-based evaluation of the southwestern section of E.L. 42/71 was recommended following the review, in 1981-1982, of the results from exploration programmes completed previously throughout the Argent area. The aim was to evaluate the source of the large magnetic anomaly, located west of Melba Flat, which had been initially recorded in an airborne survey flown for Aberfoyle Exploration Pty. Ltd., in 1965. A main, 1200 gamma anomaly, and two minor anomalies, were located by previous exploration of the area, completed by Renison Limited, in 1973-1974 (Ref. Section 2.7.3.1 of this report). Although the anomaly was at that time attributed to basic intrusives or tuffaceous units within the Crimson Creek Formation, further evaluation was recommended, but never completed. The anomaly was also recorded in the airborne magnetics survey flown in May, 1981, by Geoex Pty. Ltd., over much of western Tasmania. This regional survey was flown for the Tasmanian Department of Mines.

Several trails established in early 1981 for bushfire control purposes, west and northwest of Melba Flat, were up-graded to provide four-wheel drive access to the area of proposed gridding. The area accessed is located in the headwaters of the Little Henty River. Clearing of the abandoned Dunkley Tramway was also carried out, using a bulldozer, but the condition of this access deteriorated rapidly. The main access into the area was via a track heading southwest for Melba Flat, towards Zeehan, and then northwest, parallel to a prominent ridge of Silurian-Devonian rocks. Line clearing and pegging of the Dunkley Fault Grid commenced in March, 1983. The baseline and 200m spaced crosslines, totalling 34.6km, were completed in June, 1983. Pegging along each of the crosslines was at 25m intervals. The crosslines were oriented on a bearing of 050° magnetic (aproximately 077° relative to Renison Bell Mine Grid north), approximately perpendicular to the lines of the original Dunkley Grid, cleared by Renison Limited in 1973-1974. Surveyors from Renison Limited located all crossing points of the grid lines on the various access tracks in the area.

Geological mapping of the grid system, and of the recently constructed and re-cleared access tracks, was completed. Only limited fresh rock exposure was noted throughout the area, mainly confined to creek channels. The mapping, compiled at 1:5000 scale, was generally in agreement with the interpreted geological setting of the area, as proposed from earlier, regional-scale work (Kilpatrick, 1983). Two major-displacement faults cut through the area and control the distribution of the main stratigraphic units within the southwestern corner of the E.L. The northeast-trending Dunkley Fault extends over 7-8 km, from north of Zeehan through the central section of E.L. 42/71. The fault forms the southeastern boundary of an extensive area underlain by the lower Success Creek Group and possibly, in places, by the Oonah Formation, comprising much of the western and northwestern section of the E.L. In the downthrown block of the Dunkley Fault, rocks correlated with the Crimson Creek Formation extend through the Cuni mine area towards Melba Flat. The other major-displacement fault contacts this block of Crimson Creek Formation rocks and a belt of Silurian-Devonian sediments, which underlie the extreme southwestern corner of the E.L. This normal-displacement fault trends northwest over 4-5km, and was apparently truncated by the Dunkley Fault.

Rocks of the lower Success Creek Group, and possibly of the Precambrian Oonah Formation, were mapped in outcrops along prominent ridges to the northwest and northeast of the grid area. From the sparse outcrops within the immediate area of the grid, which is largely covered by 2-4m of creek alluvium and swamp deposits, the Crimson Creek Formation was mapped as an intermixed sequence of volcaniclastic greywacke, dark grey shale and colour-mottled, locally volcaniclastic siltstone. Surficial ferruginous deposits, typically pisolitic and possibly derived from weathering of the mafic intrusives, or extrusives, within the Crimson Creek Formation, were mapped and sampled in the grid area. Clean, well-sorted, saccharoidal quartz-sandstone, with some possible fossiliferous horizons, outcrops along a prominent ridge in the western section of the grid. These rocks were mapped as the Crotty Quartzite, of the Silurian-Devonian Eldon Group (after Blissett, 1962). Although based on sparse outcrop, bedding within the Crimson Creek Formation throughout the grid area was concluded to strike west to northwest, dipping steeply to the north and northeast.

Nineteen rock chips samples were collected from surface outcrops in the immediate Dunkley Fault Grid area and the surrounding district. Chemical analysis of 14 of these samples, for Sn, As, WO_3, Cu, Pb and Zn, was completed. Most were also analysed for Ag, Bi and Ni and some were analysed for Sb, Co, Mo and Au. Apart from minor anomalous zinc and, to a lesser extent, copper and lead values, all assays results were low to very low.

Modelling of data from the regional airborne survey, flown in 1981 for the Tasmanian Department of Mines, indicated that the depth to the source of the broad circular magnetic anomaly recorded over the Dunkley Fault Grid area was in excess of 800-1000m. The depth to the source of a discrete 200 gamma anomaly centred within this regional magnetic high was modelled to be 200-400m. In the initial geological model, the regional magnetics feature was envisaged as being due to contact-metamorphosed sediments surrounding an underlying granite cupola. A higher level zone of hornfels, surrounding a later-phase granitic intrusion and possibly associated with stanniferous sulphide mineralization, was invoked to explain the central, relatively shallow-sourced magnetic feature (Kilpatrick, 1983). A ground proton-precession magnetometer survey was completed over the Dunkley Fault Grid in the period from May-June, 1983. Considerable time was spent, before running the survey, in testing the equipment to be used and standardizing field recording techniques. The standard of accuracy aimed for was the reproducibility of readings to within 1 - 2 gammas. All of the grid baseline and each of the crosslines, totalling 34.6 km, were included in the survey coverage. A Geometrics

G816/G826A proton-precession magnetometer was used for the entire survey. Total magnetic field data were recorded at 25m intervals, closing to 12.5m intervals in anomalous areas, with the magnetometer sensor held approximately 3m above the ground. A hired Austral PPM-3BS instrument was used as an automatic base station, set up on a site in the southwestern corner of the grid, on the access track from Melba Flat. The base station magnetometer was set to read at either 30 sec or 60 sec intervals. Field data were reduced to an arbitrary value of 62,400 gammas for the base station. Analogue print-outs from the automatic instrument were used in correction of field data for diurnal drift. Survey results were compiled, at 1:5000 scale, as a contour plan of the grid area and as profiles for the individual crosslines. Copies of these data were included with the exploration progress report of Kilpatrick (1983). The contoured data indicated a broad, roughly circular magnetic feature located in the northeastern section of the grid. With the detailed data available from the ground survey, this broad response was resolved as including three separate peaks. The most intense magnetic response was recorded on crossline 600S. In profile, the anomaly on this line comprised a broad, gently sloping dome (to approximately 700 gammas above local background), on which a sharp, superimposed peak (to approximately 1100 gammas above local background) was recorded. A similar profile was apparent on the next crossline to the north (that is, on Line 400S). A shallow source, possibly related to the nearby Dunkley Fault, was suggested for the peak recorded on crossline 200S. Besides these major anomalies, several localised responses were also recorded. Completion of further ground magnetic surveying of several proposed infill crosslines, to allow more detailed definition of these anomalies, was recommended. Vague linear trends apparent in the magnetics data were attributed to magnetite-bearing volcaniclastic units, within the Crimson Creek Formation, underlying the grid area. From preliminary modelling of the ground magnetics data, an easterly dip was apparent for the sources of the main anomalous responses.

A programme of bedrock geochemical sampling was commenced in April, 1983. Contractor N. Poltock used a power-auger to collect a total of 501 samples, representing coverage of all but two of the grid crosslines. Samples were collected at 50m intervals along each of the crosslines. To avoid undue delays in sample collection, the maximum depth of sampling was limited to 6m. The average depth of sampling was 2.7m. An average drilling rate of 37.3m per day was achieved over the 37 working days taken to complete the programme. Whole samples, without any sizing, were submitted for chemical analysis. Samples were dried, pulverized and then analysed, for Sn, As, WO_3, Bi, Cu, Pb and Zn, at the Renison Bell mine laboratory. Assay results were plotted, at 1:5000 scale, on single-element contour plans, and also on profiles for the individual crosslines, copies of which were included with the exploration progress report of Kilpatrick (1983). The assay results for Cu, Pb and Zn were smoothed using a non-weighted, 5-point moving average. No distinct geochemical peaks were recorded in bedrock samples from over the main magnetic anomaly. A trend in Zn, Pb, Cu and As values, surrounding an area just west of the anomaly, was thought to be possibly indicative of a halo effect around metasomatic sulphide mineralization. A linear trend in Cu values was apparent across the magnetic anomaly. Linear trends in As, Bi, Zn and Pb values parallel the prominent northwest-trending ridge of Silurian-Devonian rocks located within the western section of the grid area. Samples from this area were also analysed for Sb, with values of from 200-500 ppm recorded. Strongly anomalous Sn, Pb, Zn, As and, to a lesser extent, Cu and WO_3 values were indicated in bedrock within the extreme northwestern section of the grid. The Dunkley Fault and the major-displacement, northwest-trending fault, which forms the contact between the Silurian-Devonian rocks and the Crimson Creek Formation, intersect in this area. The anomalous results indicated potential for fault-infill mineralization, at depth. Further bedrock sampling of the Dunkley Fault Grid, along proposed infill crosslines, was recommended.

Costeaning across possible fault zones and also aimed at investigating possible near-surface sources of some magnetic and geochemical anomalies was proposed. A VLF-EM survey, over the entire Dunkley Fault Grid, was recommended, with the aim of defining shallow conductors and possible fault zones. Ground EM coverage, using either a UTEM or EM37 system, was also proposed.

2.7.13 1983-1984 Exploration Programme

Further drilling of the northwestern extension of the Federal Fault zone, in the abandoned Owen Meredith mine area, was completed. Detailed, grid-base evaluation of the southwestern section of the E.L., known to be underlain by rocks of the Crimson Creek Formation in proximity to the major-displacement Dunkley Fault, was continued. Exploration within the southwestern section of the Renison Mine Lease included coverage of the immediately adjacent E.L. area. A deep diamond drillhole was completed in the area, between Serpentine Hill and Commonwealth Hill, late in the year. Estimated total expenditure on the Argent section of E.L. 42/71, in the year ended June 30, 1984, was reported as $97,384, which included diamond drilling costs of $41,068. An additional cost of $37,635, for the drillhole completed in the Serpentine Hill-Commonwealth Hill area, should have been included.

2.7.13.1 Crimson Creek Grid

Further drilling of the Federal Fault, between the Owen Meredith and Bon Accord mine workings, was completed in hole S1134 during the period from July-September, 1983. The drillhole was collared approximately 600m north-northeast of the abandoned Owen Meredith mine, from a site near the Pieman logging road, as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth(2)	Total Depth
S1134	22083.4N/14816.6E	-75°18'	243°18'	819.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Drilling commenced in a very thick sequence of siltstone, shale and volcaniclastic greywacke, of the Crimson Creek Formation. A zone of chloritised, silicified, pyritic breccia, from 384.8-386.4m, was logged as the Federal Fault. The hole intersected mudstone, shale, volcanomict conglomerate, minor volcaniclastic greywacke, locally carbonaceous siltstone and rare dolomite interbeds, correlated with the Crimson Creek Formation, in the upthrown footwall of the fault. A zone of stylolitic dolomite, from 515.9-523.6m, with minor, irregularly interbedded siltstone, was assigned to the No. 1 Horizon of the Renison mine sequence. An extremely thick Red Rock Member section, drilled over a downhole interval of 158.1m, included several zones of impure dolomite near the base, tentatively correlated with a poorly developed No. 2 Horizon. Two zones of stylolitic dolomite, deeper in the hole, were logged as upper and lower components of the No. 3 Horizon, separated by fine, locally carbonaceous clastic units which closely resemble sections of the Dalcoath Member. The lower horizon was drilled over a 31.3m downhole interval, and included very minor interbeds of silicified, calcareous siltstone. Traces of pyrite, as disseminations and in stringers, were logged in the lower of these two dolomite horizons. The hole was stopped in a fine, in places calcareous and tuffaceous clastic sequence, within the Dalcoath Member. Chemical analysis of 14 split core samples from the drillhole was completed. All samples were analysed for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3 and S. Only low values were obtained for the sample, over a 1.8m downhole interval, representing the Federal Fault zone. Results included 0.16% Pb, and 7 g/t Ag, with 0.4% S (Kilpatrick, 1983). Scanning of a 41.2m downhole interval of whole core, representing sections of the Renison mine sequence in the footwall of the Federal Fault, was carried out using Renison Limited's XRF core analyser. Indicated tin contents were generally very low, less than 0.1% Sn, and insufficient to warrant any further analysis. Correlation of the Renison mine sequence intersected in the footwall of the Federal Fault in this drillhole, with the intersections previously drilled in the area, proved difficult.

The prime target for any further drilling in the immediate area of drillhole S1134 was concluded to be at the intersection point of the Federal Fault and the Renison mine sequence, at a considerable depth. Continuing exploration of the area was thus seen, at the time, to involve controlled, very deep diamond drilling, requiring major committments in expenditure, time and resources. Establishing longer-term exploration title over the northwestern extension of the Federal Fault, beyond the relinquishment of E.L. 42/71, was recommended.

2.7.13.2 Dunkley Fault Grid

Additional line clearing was completed over a total of 15.1 km in the area, within the southwestern section of E.L. 42/71, during the period from October, 1983 - January, 1984. The new lines were located in the northern section of the grid and most were cut parallel to the original, northeast-oriented crosslines, reducing the line spacing to approximately 100m. New lines (totalling 3.2 km) were also cut perpendicular to the original crosslines, in the northern section of the grid, to cover the surface trace of the Dunkley Fault. Bulldozing of an additional four-wheel drive access track, linking the northeastern section of the grid and the abandoned Dunkley Tramway, was completed. New access tracks, and the crossing points of grid lines on these tracks, were located by surveying staff of Renison Limited. The grid area was included in the coverage of a programme of colour aerial photography (at approximately 1:16000 scale), flown for Renison Limited, by the Tasmania Lands Department.

Geological mapping of the new grid lines was completed, and continued on the newly constructed and existing access tracks throughout the general area. Only limited fresh rock exposure was located. Petrological and mineralogical studies of 18 rock chip samples were completed, by Central Mineralogical Services Pty. Ltd., in June, 1984. A sample of ferruginous chert breccia, collected from the northeastern section of the grid area in proximity to the Dunkley Fault, was tentatively correlated with the Red Rock Member of the Renison mine sequence. No evidence of contact metamorphic or metasomatic effects was apparent in any of the samples studied. Most of the samples represented the Crimson Creek Formation, being typically comprised of basic-volcanomict, psammopelitic sediments, exhibiting turbiditic characteristics.

Bedrock geochemical sampling of two of the original crosslines of the grid, not completed during the previous year's programme, was undertaken during July, 1983 (78 samples collected). Sampling of the infill grid lines, and along new crosslines cut in the extreme southern section of the grid, and some repeat sampling of anomalous areas located previously, was completed during the period from December, 1983 - January, 1984 (194 samples collected). This latter programme was partly carried out concurrent with the line clearing work. All of the grid cutting and the sampling programmes were completed by contractor, N. Poltock. The bedrock sampling was undertaken using a "Wacker" portable drilling machine, with a maximum sampling depth of 16m achieved. The sampling coverage included the new lines cut perpendicular to the main direction of the grid, over the Dunkley Fault. Samples were collected at 50m intervals along each of the lines. Whole samples were dried, pulverized and analysed at the Renison Bell mine laboratory. Routine analyses were completed for Sn, As, WO_3, Cu, Pb, Zn and Bi, with most samples also analysed for Sb. The 1:5000 scale, single-element contour plans were updated with the new geochemical data, which were also plotted on profiles for the individual crosslines. Copies of these plans and profiles were included in the exploration progress report of Kilpatrick (1984). The new data generally confirmed and supported the results of the previous year's sampling programme. Anomalous responses in Sn, As, Zn, and Cu were apparent in bedrock within the northwestern corner of the grid area, which was concluded to have exploration potential for possible pyritic tin and base metal mineralization. The infill sampling programme also confirmed the previously recorded base metals (low tin) response in the eastern section of the grid, along an apparent contact between rocks of the Crimson Creek Formation and the Success Creek Group.

A test survey using a borrowed VLF-EM receiver was carried out in December, 1983. Readings were taken at various points along the grid crosslines to observe responses over known and suspected faults. A survey of the northern half of the grid, including the newly-cut infill lines, was subsequently undertaken during the period from January-February, 1984. The instrument used for the test readings and throughout the grid-based survey was a Pheonix VLF-2. Readings of the field strength and tilt-angle of the horizontally transmitted EM signals were taken at 25m intervals along the grid lines. In most instances, the field strength was sufficient for two sets of data to be recorded at each point. Readings were taken of the transmissions from the Northwest Cape and Japan stations. Dip-angle readings and filtered derivatives of these data were plotted on composite profiles, at 1:5000 scale, for each crossline. Strong dip-angle responses were apparent on some lines. Stacked profiles of Frazer-filtered derivatives were also compiled, one set for the Northwest Cape data and one for the Japan data. A VLF-EM response was apparent, from the stacked profiles, over the major-displacement, northwest-trending fault which contacts Silurian-Devonian rocks and the Crimson Creek Formation in the western section of the grid (Kilpatrick, 1984). The strongest responses were recorded in the eastern section of the grid, with possible north to north-east, interline trends indicated. A moderate to strong response in the filtered data for Japan transmissions, trending through the central part of the grid, was also apparent. Completion of the VLF-EM survey over the remainder of the grid was recommended.

Ground proton-precession magnetics surveying was completed over the newly-cut grid lines in January-February, 1984. The survey coverage included all of the infill lines, except for one crossline (200E). Total field magnetics readings were taken at 25m intervals along each of the lines, using a Geometrics G816/G826A proton-precession magnetometer, with the sensor held approximately 3m above ground level. Field readings were corrected for diurnal drift against base station data. Either of two base stations was used during the survey, dependent on the proximity of the area traversed. The base station for control of the previous year's survey, sited in the southwestern corner of the grid, was again used. An arbitrary value of 62400 gammas was set for this station. The other station, for which a base level of 62460 gammas was set, was located in the northeastern corner of the grid. The total field data from the infill survey were added to the 1:5000 scale plan, representing the grid area, and contoured. Data were also compiled at 1:5000 scale on composite profiles for the individual crosslines. Copies of these new and up-dated plans were included with the exploration progress report of Kilpatrick (1984). The results confirmed and gave more detailed information for the main anomalous areas delineated in the previous year's survey. Re-contouring of the magnetics data indicated the main anomaly, located in the northeastern section of the grid, to be somewhat larger than previously envisaged and attenuated on a northeast trend. No magnetic response was recorded along the infill lines over the geochemical anomaly located in the northwestern section of the grid. Localised magnetic highs, probably due to shallow sources, were confirmed in the extreme eastern part of the grid. Encouraging results were indicated from the preliminary modelling of the ground magnetics data recorded over the main anomaly, carried out by Mitre Geophysics Pty. Ltd. The depth to the source of the anomaly peak was modelled as less than 200m.

Drilling of one hole, to test the source of the main magnetic anomaly and also to confirm the stratigraphy within this section of the grid area, was recommended. No further ground geophysical surveys of the immediate area of the anomaly, prior to drilling, were proposed. Completion of an EM survey over the geochemical anomaly, located in the northwestern section of the grid, was also recommended.

2.7.13.3 Serpentine Hill-Commonwealth Hill Area

Diamond drillhole S1182 was completed during the period from May-June, 1984, as part of an on-going exploration programme throughout the southern section of the Renison Mine Lease. The programme was aimed at locating and defining economic mineralization within carbonate horizons of the Renison mine sequence and skarn zones in the overlying Crimson Creek Formation, and at assessing the potential of the Pine Hill Granite, at depth, as a greisen host for cassiterite mineralization. Much of the drilling was also for stratigraphic purposes, aimed at establishing the continuity of the Renison mine sequence, at depth, over a considerable distance from the Renison Bell mine.

At the time of its completion, drillhole S1182 was thought to have been sited within the Renison Mine Lease, but was subsequently found to have been drilled 100m within the E.L. Drilling costs were not separated from the expenditure incurred on exploration within the Renison Mine Lease. Neither were the results of the drillhole fully reported as part of work completed within the E.L. 42/71 area. A copy of the drillhole log, which includes hole location data and chemical analysis results, is included with this report (Ref. Appendix III A). The drillhole was collared midway between the southern boundary of the Renison Mine Lease and the northern contact of the Serpentine Hill mafic-ultramafic complex, approximately 1100m east of the Argent Tunnel on the Emu Bay Railway, as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth	Total Depth
S1182	16167.6N/15290.6	-90°	-	746.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.

Drilling commenced in the Crimson Creek Formation, which close to the surface included moderately weathered to fresh intrusive or extrusive gabbroic rocks. In the upper part of the hole, the Crimson Creek Formation largely comprised a sequence of altered volcaniclastic greywacke, with minor, massive-bedded siltstone. Several possible fault zones transect the sequence. The hole also intersected magnetite-bearing, axinite and calc-silicate skarn zones, becoming increasingly common with depth and hosting sparse to minor pyrrhotite and pyrite mineralization. A vein, intersected from 503.6-504.1m and infilled with quartz and pyrrhotite, was logged as a possible faulted contact between undifferentiated Crimson Creek Formation rocks and the Dreadnought Hill Member. The volcanomict conglomerate units of the Dreadnought Hill Member were underlain, from 540.1-545.2m, by a thin bed of fine to medium grained, non-crystalline dolomite, correlated with the No. 1 Horizon of the Renison mine sequence. Near-massive talc, hosting common pyrrhotite, was logged as having locally replaced the dolomite. Contact-metamorphosed, phlogopitized cherty and, in places, volcaniclastic units, which underlie the dolomite, were correlated with the Red Rock Member. A fault zone was intersected from 552.0-552.1m, forming the contact between the Red Rock Member and contact-metamorphosed, fine clastic units of the Dalcoath Member. From 614.6m, the hole intersected numerous granitic dykes and veins intruded into the quartz-mica hornfels assemblage of the Dalcoath Member. The hole was stopped at 746.0m, after having intersected 39m of fine to coarse-grained granite. Minor tourmaline and flourite, and traces of molybdenite and scheelite were recorded in the granite. Chemical analysis of 48 split core samples from the drillhole, for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3 and S, was completed. The results were generally low (Ref. drillhole log in Appendix III A). However one sample, over a 0.5m downhole interval within the No. 1 Horizon, assayed 13.9% Sn.

Although only very low tin values were recorded in the No. 1 Horizon in drillhole S1182, and the lower dolomite horizons of the Renison mine sequence were faulted out, the results were concluded to be extremely encouraging. The No. 1 Horizon drilled in the hole represented the southernmost intersection of any of the dolomite units, within the mine sequence, recorded up to that time. The drillhole was located more than 3 km from the Renison Bell mine.

2.7.14 1984-1985 Exploration Programme

The main emphasis, during 1984-1985, was on drilling and follow-up evaluation of the large magnetic anomaly located within the Dunkley Fault Grid area. A deep stratigraphic drillhole was also completed in an area of known, outcropping Crimson Creek Formation, to the northwest of Serpentine Hill. Estimated total expenditure on exploration of the Argent section of E.L. 42/71, in the year ended June 30, 1985, was $137,508, which included diamond drilling costs of $74,814.

2.7.14.1 Dunkley Fault Grid

During August, 1984, additional access tracks were constructed by bulldozer into the grid area, within the southwestern section of the E.L. A drill site was cleared and levelled in the northern part of the grid. A section line was bulldozed approximately parallel to the direction of the proposed angled drillhole, in an attempt to obtain near-continous exposure of bedrock. Drilling of hole S1200 was completed during the period from October-November, 1984. The hole was aimed at locating the source of the main peak of the magnetic anomaly, and also at confirming the stratigraphy, of un-weathered rocks at depth, within this section of the grid. The hole was collared approximately 20m south-southeast of grid crossline 600S, located as follows :

Hole No.	Collar Co-ordinates[1]	Dip	Azimuth[2]	Total Depth
S1200	17822.5N/10433.3E	-64°48'	264°	598.7m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.
(2) Azimuth relative to Renison Bell Mine Grid: Mine Grid North is 14.4° west of True North (and 26.75° west of Magnetic North, as of early 1986).

Rocks of the Crimson Creek Formation were intersected over the entire length of the hole. The rock types represented a thick sequence of turbiditic, basic-volcanomict, lithoclastic sediments, with minor very fine-grained, carbonaceous sub-units which grade into calcareous clastics and impure limestone facies. In comparison to the clastic units of the Crimson Creek Formation which overlie parts of the immediate Renison Bell mine area, the sequence in this drillhole was concluded to be significantly coarser-grained. Fine to medium-scale bedding structures, local cross-stratification and some fine laminations were recorded. Minor slump and broken-bed structures were also logged, and a number of faults noted. A zone of brecciated, quartz-veined and pyritic rock, intersected from 391.1-392.4m, was logged as a possible altered basaltic dyke. Scanning of whole core samples, over the interval from 390-394m, and also over a 5m interval lower in the hole (from 465-470m), was completed using Renison Limited's XRF core analyser. The indicated tin contents were very low, less than 0.1% in each instance, and insufficient to warrant further analysis. Eight samples of split core representing the downhole interval from 275-284m, were analysed for total Sn, acid soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3 and S. Minor fracture-related blebs of pyrrhotite, within a tectonically brecciated, carbonaceous shale and siltstone unit, were recorded within this interval. All results were very low, generally below the detection limits of the analysis methods. Very weakly anomalous zinc and silver values were indicated and the maximum sulphur assay was 3.3%.

Magnetic susceptibility measurements were completed on whole core samples from drillhole S1200. An Elliot PP-2A magnetic susceptibility meter was used, with measurements recorded at 1m intervals, closing to 0.2-0.5m intervals, over the entire hole length (from below 26m). An isolated anomalous reading of 0.0027 cgs units (uncorrected value) was recorded at 42.5m, within chloritic, basic-volcanomict greywacke. Distinctly anomalous susceptibilities, peaking to 0.0023 cgs units, were recorded over the interval between 469.2-485m. This interval was within a sequence logged as medium to coarse-grained, tuffaceous greywacke, with finely interbedded siltstone. The recorded susceptibilities were concluded to be insufficient to have caused the observed ground magnetic anomaly (Kilpatrick, 1985). A modelled mafic or ultramafic body, as the possible source of the anomaly, was invalidated by the drilling results. Further modelling of the ground magnetics data was undertaken, using the results of a detailed magnetics traverse completed in November, 1984, along crossline 600S. Readings were taken at 2.5-5m spacings along the crossline, which approximately parallels the direction of drillhole S1200, using a Geometrics G816/G826A proton-precession magnetometer. The instrument sensor was held approximately 4m above ground level.

Given that the source of the magnetic anomaly remained conjectural, after the initial drill testing, several phases of follow-up evaluation were proposed. Downhole EM logging, to test for any conductive zones within 100-150m of the drillhole, was recommended. The hole was cased off with 40mm PVC pipe on completion of drilling. A ground EM survey was also recommended, and was carried out in February, 1985, by Lamontagne Geophysics (Australia) Pty. Ltd., using a UTEM system. One transmitting loop, of approximately 1000m by 1150m, laid out in the western section of the grid, was used throughout the survey. Extensive re-clearing of existing grid lines, and cutting of one new line, were required in preparation for the survey. Readings of the vertical component of the EM signal were initially taken at 25m intervals, but the spacing was increased to 50m for one complete line and on sections of other crosslines. The survey coverage totalled 7 crosslines (8.5km) and was completed in 5 days. Five EM responses were recorded on three of the crosslines traversing the main magnetic anomaly. However, none of these responses was indicative of a body of massive pyrrhotite. Each of the responses was aligned parallel to the magnetic strike and could be readily correlated with fault zones logged in the drillhole. One of the UTEM anomalies on crossline 600S was correlated with minor disseminated pyrrhotite, intersected at approximately 280m in drillhole S1200, possibly associated with the fault zone drilled from 280.0-282.8m. Strong EM responses in the extreme northeastern corner of the grid were attributed to graphitic shale units within the Success Creek Group. The EM survey results invalidated a relatively, shallow, near-massive pyrrhotite body as a possible source of the magnetic anomaly. An IP survey over crossline 600S was recommended to test for any disseminated pyrrhotite as a source of the shallowest component of the anomaly. Petrological study of core samples from drillhole S1200, for any possible alteration or contact-metamorphic effects within the Crimson Creek Formation, was recommended. Testing of core samples for petrophysical properties was also proposed, to verify the susceptibilities used in computer-modelling of the magnetic anomaly and to assess the possible effects of remanent magnetism.

Additional bedrock sampling was completed, in the extreme northwestern corner of the Dunkley Fault Grid, during March, 1985. The sampling was carried out along three northeast-oriented lines, of 2km total length, located to the north of the Dunkley Fault. An area of anomalous lead, zinc and, to a lesser extent, tin and arsenic values in bedrock was indicated in previously completed sampling, but remained open to the north. Contractor N. Poltock collected a total of 43 samples, using a "Wacker" portable drilling machine. The samples were collected at 50m intervals along each of the three crosslines, to a maximum depth of 9.2m. Total depth drilled was 87.6m. Dried samples were crushed, riffled, pulverized and then analysed, for Sn, As, WO_3, Cu, Pb, Zn, Ag, Bi, Mo, Sb and Ni, at the Renison Bell mine laboratory. A weak, erratic trend was apparent in base metal values, north of the Dunkley Fault. Weakly anomalous Sn, As and WO_3 values, previously indicated to the south, appeared to have been closed off by this sampling programme. The anomalous base metal values possibly indicated some continuation, north of the Dunkley Fault, of the northwest-trending, major-displacement fault which forms the contact between the Silurian-Devonian rocks and the Crimson Creek Formation, in the southwestern corner of the E.L. Exploration interest was reduced, however, due to the low tin and arsenic values recorded in the area (Kilpatrick, 1985). A ground proton-precession magnetometer survey was completed over the three grid lines, with readings taken at 25m intervals. The total field magnetics readings, reduced to an arbitrary base station value and corrected for diurnal drift, were uniformly low.

A 500m diamond drillhole was recommended to test the tin, lead and zinc bedrock geochemical anomaly, located in the western and northwestern section of the grid. The drilling target was envisaged as pyritic, lead-silver (and possibly zinc-copper) mineralization, at considerable depth, in proximity to the Dunkley Fault and intersecting structures, within an Ordovician limestone (a correlate of the Gordon Limestone) or replacing dolomite horizons in an equivalent of the Renison mine sequence.

2.7.14.2 Argent Grid

Diamond drillhole S1207 was completed, during the period from November-December, 1984, approximately 1.5 km northwest of Serpentine Hill, within the area previously covered by the Argent Grid. The hole was aimed at testing the stratigraphy, at depth, in an area of known, outcropping Crimson Creek Formation. Specifically, the drilling was aimed at establishing continuity of the Renison mine sequence within an interpreted upthrown block, located between two northwest-trending, east-dipping faults. Patchy mineralization had been located within these faults, at surface. The drillhole was located as follows :

Hole No.	Collar Co-ordinates(1)	Dip	Azimuth	Total Depth
S1207	17441.6N/13535.8E	-90°	-	658.0m

Note: (1) Co-ordinates are for local, Renison Bell Mine Grid.

Drilling commenced in highly weathered gabbro, representing a possible minor extrusive or intrusive body within the Crimson Creek Formation. From 22.2-493.5m, the hole intersected a thick sequence comprised of volcaniclastic greywacke, with subordinate siltstone, mudstone and lithic tuff, typical of the Crimson Creek Formation from considerably above the stratigraphic position of the carbonate horizons within the Renison mine sequence. An altered gabbroic intrusive was drilled over the interval from 110.8-121.4m. Traces of pyrrhotite, pyrite, sphalerite and galena were recorded within a quartz-carbonate-chlorite vein, intersected from 282.0-284.2m and logged as a possible fault. Slumped, micro-faulted and, in places, brecciated siltstone, drilled from 493.5-516.4m, was interpreted as infill within a major-displacement fault zone. Near massive pyrrhotite, with minor to abundant pyrite and carbonate, was noted in veins and infilling zones of breccia, within the lower part of this interval. Traces of galena and sphalerite were also recorded. The underlying sequence of fine to coarse-grained siliciclastic units, intersected through to the bottom of the hole, was correlated with the Dalcoath Member. Chemical analysis of 14 split core samples from the drillhole was completed at the Renison Bell mine laboratory. Each sample was analysed for total Sn, acid-soluble Sn, Cu, Pb, Zn, Ag, Bi, As, WO_3, S and Fe. The results, with the exception of the iron values, were generally low, although some were distinctly anomalous. A vein, intersected within the Crimson Creek Formation from 33.0-33.7m assayed 0.54% Pb, 1.64% Zn and 11 g/t Ag, with 1.1% S. Analysis results including 0.23% Sn, 0.13% Pb, 0.71% Zn, 7 g/t Ag and 6.9% S were obtained, for a 1.2m downhole interval, within the zone logged as the fault contact between the Crimson Creek Formation and rocks correlated with the Dalcoath Member (Kilpatrick, 1985). On completion of drilling, the hole was cased off with 40mm PVC, to allow a proposed programme of downhole EM logging to be undertaken at a later date.

Further exploration of the area of known Crimson Creek Formation, to the south and southwest of drillhole S1207, was recommended. Several faults, along which patchy mineralization was known to occur and including a possible northwestern extension of the Grand Prize Fault, were interpreted as cutting through this area. Clearing of five southwest-oriented crosslines, spaced at approximately 200m, off the Argent Grid baseline, was proposed. Geological mapping, sampling and ground magnetics, EM and VLF-EM coverage of these lines, to be named the Tallowwood Grid, was recommended.

Mapping and sampling completed further to the northwest, between Serpentine Hill and the abandoned Dunkley Tramway, confirmed that an area which had been previously mapped as unprospective Success Creek Group was underlain by rocks of the Crimson Creek Formation. Centred approximately 2 km north-northeast of the Dunkley Fault Grid, the area was interpreted to be a fault-bound block. Relatively fresh rock was exposed, in the central part of the block, by the construction of the Cheesewood access track from the Dunkley Tramway through to the Dunkley Fault Grid area. Results were received in mid-1985 from petrological studies completed by Central Mineralogical Services Pty. Ltd. on 14 samples collected during mapping of this track. On microscopic evidence, several of the samples were correlated with specific units of the Renison mine sequence. The typical volcaniclastic greywacke facies of the Crimson Creek Formation was also represented. In one sample, representing the Crimson Creek Formation, aggregates of iron-stained chlorite, after degraded metasomatic actinolite, were identified (Kilpatrick, 1985). The majority of the samples, however, were correlated with the Oonah Formation or lower Success Creek Group. Further exploration of the area was proposed. Clearing of 12 southwest-oriented crosslines, off the Argent Grid baseline, was recommended. The planned spacing of the crosslines was 200m, over an area immediately northwest of the proposed Tallowwood Grid. A programme of geological mapping and sampling, and ground magnetics, EM and VLF-EM surveying was recommended for the area, which was to be known as the Cheesewood Grid.

2.7.14.3 Serpentine Hill-Commonwealth Hill Area

Follow-up of the encouraging results of drillhole S1182 was undertaken in the latter part of the 1984-1985 exploration programme. The hole, which had been drilled in the period from May-June, 1984, intersected an altered and pyrrhotite-mineralized zone of dolomite, correlated with the No. 1 Horizon of the Renison mine sequence. Although essentially tin-barren, the dolomite intersection confirmed the exploration potential of an extensive area of known, outcropping Crimson Creek Formation, located up to 3-3.5km south and southwest of the Renison Bell mine. Due to the considerable depth of burial of the Renison mine sequence, throughout the southern section of the Renison Mine Lease and within the adjoining area of E.L. 42/71, any carbonate-replacement mineralization hosted by the sequence would be beyond the range of ground geophysical techniques. Further exploration of the area by deep diamond drilling, virtually on a random hole pattern with no geophysical targets, was obviously impractical, in terms of the high level of expenditure required and the time involved. Thus, a programme of downhole EM logging, to test for off-hole conductive zones, was planned.

Preparation for logging of drillhole S1182 commenced in October, 1984, with the clearing of five transmitter loops, each approximately 300m square, in the area. One loop was centred over the drillhole, with the other four centred at approximately 600m north, south, east and west of the hole. Where possible, one side of each of the transmitter loops followed an existing access track, with the remaining sides cleared and flagged as lines of sight. The un-cased drillhole was logged in February, 1985, by Geoterrex Pty. Ltd., using EM 37 equipment. Transmitter loops were powered to 14.1-17.8 amps, with a repetition rate of 25 Hz. Downhole readings were recorded at 5m or 10m intervals. Large, early-time responses noted at 75m were attributed to the calc-silicate zone, logged as containing common to locally abundant pyrrhotite throughout, intersected from 71.36-78.36m. Other responses were attributed to sulphide-mineralized fault zones or to disseminated pyrrhotite sources. A long wave-length response apparent in the downhole logging data, for the north and east transmitter loops, was interpreted to be due to a disseminated sulphide source, located in excess of 100m to the northeast of the drillhole. Two responses which persisted with decay-time were recorded, one centred at 320m and the other at 540m. The shallower response was attributed to an off-hole skarn zone, within the Crimson Creek Formation. The anomaly centred at 540m was initially interpreted as due to an off-hole continuation of the zone of low-tin sulphide mineralization intersected within the No. 1 Horizon, from

541.71-542.18m. Although of technical merit, the response was not at the time considered to be of major exploration interest (Bishop, Lewis and Macnae, 1987). The progress and results of this downhole EM logging programme were not reported at the time of completion, since the location of the drillhole relative to the southern boundary of the Renison Mine Lease remained conjectural. Summary results are included in Appendix III B of this report. Locations of the transmitter loops used in the logging programme are also shown.

Results were received in March, 1985, from petrological studies, completed by Central Mineralogical Services Pty. Ltd., on 6 samples collected from drillhole S1182. The samples represented the section of the hole in which correlates of the Renison mine sequence were drilled. A sample from the interval logged as a talc zone, replacing the No. 1 Horizon, was described in thin section as a diopside skarn, with pseudomorphous aggregates of talc-minnesotaite. Sporadic, spongy clots and films of pyrrhotite were noted (Ref. Appendix III C).

2.7.14.4 Crimson Creek Grid

No further exploration of the northwestern extension of the Federal Fault zone was completed during 1984-1985. Results were received in February, 1985, from petrological studies completed on 23 samples collected from the most recently drilled holes which tested this target. Since these results have not been previously reported, copies of sections of the relevent petrological reports are included in Appendix IV.

2.7.15 1985-1986 Exploration Programme

No further drilling was undertaken in the Argent area of E.L. 42/71 during 1985-1986. Follow-up evaluation of previously completed drilling, in the Dunkley Fault Grid and the Serpentine Hill area, was undertaken. Grid-based exploration was carried out over the area between Serpentine Hill and the abandoned Dunkley Tramway to cover known or inferred Crimson Creek Formation. Developments during the year in the international tin market, which saw a dramatic decrease in the metal price, caused Renison

Limited to suspend all exploration in April, 1986. The total expenditure on exploration of the Argent area of E.L. 42/71, in the year ended June 30, 1986, was $77,926.

2.7.15.1 Dunkley Fault Grid

A dipole-dipole IP survey was completed in the area, during August, 1985, by Mitre Geophysics Pty. Ltd. The survey was carried out over one southwest-oriented line, designated 620S, approximately parallel to the section line of drillhole S1200. Instrumentation for the survey comprised a Huntec Mk IV receiver. Dipole spacing was 50m and the survey was centred at 1900E (Dunkley Fault Grid co-ordinate). An interpretation report on the geophysical surveys completed over the Dunkley Fault Grid, which included a presentation and discussion of the results from this IP survey, was compiled by Dr. J.R. Bishop , of Mitre Geophysics Pty. Ltd., in August, 1985. Given that the objective of the IP traverse was to determine whether the modelled shallow responses of the Dunkley Fault Grid magnetic anomaly could be due to a disseminated pyrrhotite source, the results were discouraging. The recorded chargeability highs were diffuse and attributed to minor pyrite mineralization, within the Crimson Creek Formation, as intersected in drillhole S1200 (Bishop, 1985a). Magnetite was concluded to be the source of the shallow magnetic responses and also the probable cause of the deeper modelled source. Downhole EM logging was still recommended, however, to test for any extension, and possible increase in abundance of the minor pyrrhotite mineralization noted in core from the drillhole, at approximately 280m.

A 200m square transmitter loop was laid out, offset to the southwest to partly enclose the projected horizontal trace of the drillhole, and downhole logging was completed in December, 1985. The logging was carried out by Solo Geophysics, using SIROTEM medium-power instrumentation. The transmitter loop was powered to 96 volts, at approximately 10 amps DC. Received data were recovered over 28 channels, in 256 stacks. Using a slim-line (25mm diameter) probe, downhole readings were taken at 5m or 10m intervals. A local negative response, centred at 220m, was apparent within a broader, early-time positive response. An in-hole source, probably the sparse pyrrhotite mineralization noted in the drill core over the interval from 219-222m, was indicated for this response. A blockage at 528m, which appeared to have been caused by the PVC casing having split and parted, prevented completed logging of the drillhole (total hole depth was 598.7m). Due to discouraging results of the initial downhole survey, additional logging runs with a multiple spread of tansmitter loops were not undertaken.

Results were received in May, 1986, from petrological studies completed on 43 core samples, representing the various lithological units intersected in drillhole S1200. The studies were carried out by Central Mineralogical Services Pty. Ltd. Thin-section evidence confirmed that the hole was drilled, over its entire length, within rocks of the Crimson Creek Formation, considerably above the stratigraphic position of the Renison mine sequence. An upper sub-unit of the Crimson Creek Formation, represented by samples taken from near the top of the hole to approximately 411m, was characterized by relatively abundant clastic, leucoxene-altered minerals, basic lithoclastic and augite detritus and by conspicuous, although trace amounts of detrital chromite. Rocks of the lower sub-unit were characterized by relatively leucocratic detritus and by quite abundant magnetitie, occurring either as clastic grains or within basic lithoclasts. The lower sub-unit was tentatively correlated with the upper section of the Dreadnought Hill Member, on the basis of the intercalated carbonaceous and clastic sediments and minor impure limestone. Rocks of both units were characterized by a chloritic alteration assemblage, reflecting low-grade regional metamorphism. Actinolitic alteration and contact metamorphic effects were notably absent. The traces of pyrrhotite within the core samples were interpreted to be syngenetic mineralization. The distinct absence of replacement sulphide mineralization appeared to validate the interpretation of the IP and downhole EM surveys, which attributed the magnetic anomaly in the Dunkley Fault Grid area to a detrital magnetite source, within basiuc lithoclastic sediments of the Crimson Creek Formation. The depth to the top of the Renison mine sequence, if represented in the area, was estimated to be at least 150m beyond the bottom of drillhole S1200. A target depth of 600-

700m below surface was thus apparent for any stratabound carbonate-replacement mineralization. The deepest modelled source of the magnetic anomaly was interpreted to be a possible basic intrusive complex. No further exploration of the area was proposed.

2.7.15.2 Serpentine Hill-Commonwealth Hill Area

Apart from limited geological mapping and sampling of surface exposures, along the drill site access tracks, exploration of the Serpentine Hill-Commonwealth Hill area was concentrated on deep-seeking geophysical techniques. Downhole EM logging of drillhole S1182, using SIROTEM equipment, was completed intermittently over the period from December, 1985-March, 1986. The repeat logging was carried out, by Solo Geophysics, with the aim of obtaining data for comparison with the results of the initial logging programme, in which an EM37 system was used. Repeat logging runs were completed for each of the five transmitter loops. Loop currents for the SIROTEM programme ranged from 9.0-14.0 amps, with a standard time-base used. Downhole readings were taken at 5m, 10m or 20m intervals. A slim-line (25mm diameter) probe was used. The drillhole was uncased, but remained open to 700m. Very similar results were apparent for the EM 37 and SIROTEM data where the decay-time intervals were coincident. However, the SIROTEM system recorded out to much later times. An additional response, centred at 540m, was apparent in the SIROTEM data and was interpreted as representing a potentially prospective conductor located approximately 75m off-hole (Bishop, Lewis and Macnae, 1987). Additional modelling to obtain better directional data for this target has yet to be completed.

CSAMT surveying was undertaken in the area, in March, 1986, by Zonge Engineering and Research Organisation Inc. Three traverses, totalling 32 readings, were completed. One traverse was conducted along the access track to drillhole S1182, with 18 stations recorded at a spacing of 75m (closed down to 50m, in proximity to the hole collar). Ten stations were recorded around the 300m square downhole EM transmitter loop cut around the drillhole. Four stations, spaced at approximately 200m, were recorded along the access track to drillhole S1182, in the northwest of Serpentine Hill. The transmitting source used throughout the survey was a fixed, grounded dipole, laid out along the Dundas Road, to the east of the Murchison Highway. The major objective of the CSAMT survey was follow-up of the encouraging results apparent from the SIROTEM downhole logging of drillhole S1182. Copies of the CSAMT field data, plotted as pseudo-sections, were included in the exploration progress report of Evans (1986). Although subject to further interpretation, the results did not appear to be encouraging.

Downhole EM logging of drillhole S1207, sited approximately 1.5km northwest of Serpentine Hill, was undertaken in December, 1985. Logging was completed by Solo Geophysics, using a SIROTEM system. A 250m by 250m transmitter loop, centred about the near-vertical drillhole, was laid out. Although the hole had been cased off with PVC pipe, immediately after drilling, a blockage at 537m prevented a complete logging coverage (total hole depth was 658m). A weak positive response, centred at 495m, was attributed to an in-hole source. Due to the discouraging results of the initial survey, repeat logging with a multiple spread of transmitter loops was not warranted.

Test spectral IP readings were completed over exposures of the Crimson Creek Formation along the access track to drillhole S1207. The test survey was undertaken by Solo Geophysics, in March, 1986, as part of an extension programme of the Tasmanian Department of Mines Mt. Read Volcanics Project. The results of the survey have as yet to be published.

Geological mapping was completed along drill site access tracks, to the northwest of Serpentine Hill, and confirmed the areal extent of the Crimson Creek Formation. The dominant lithology mapped in the area comprised fine to very fine-grained, volcaniclastic litharenite or greywacke. Bedding structures were noted to be poorly preserved in the weathered exposures of these rocks, but where recorded generally dip east to northeast. From thin section studies, these basic volcanomict sediments were noted to contain conspicuous clastic magnetite. Several zones of botryoidal geothite and limonite, with quartz, were mapped and sampled along the access track to drillhole S1207. Anomalous lead, zinc, silver and, to a lesser extent, tin and WO_3 values were recorded (Evans, 1986). The zones were interpreted to be weathered fracture-fill deposits.

Depths to the top of the Renison mine sequence in the area to the northwest of Serpentine Hill were estimated to be in the order of 600-700m below surface. The area was concluded to be prospective, possibly at relatively shallow depths, for fault-controlled, stanniferous sulphide mineralization. Extension of a programme of grid-based geochemical sampling and ground magnetics and VLF-EM surveying, northeast of the Argent Grid baseline, was recommended, aimed specifically at locating and defining mineralized faults in the area. Scheduled to commence in April, 1986, the programme was abandoned when Renison Limited suspended all exploration activities, in a review of operations following the collapse of the international tin market. In terms of geological setting, the area northwest of Serpentine Hill and between Commonwealth Hill and Serpentine Hill is contiguous with the southern section of the Renison Mine Lease. A high-priority was assigned to any possible longer-term retention of this area.

2.7.15.3 Tallowwood Grid - Cheesewood Grid

Gridding was commenced, in the area northwest of Serpentine Hill through to the abandoned Dunkley Tramway, in November, 1985. The old Argent Grid baseline was re-cleared and re-pegged (at 30m intervals), over 4.355 km. Crosslines were cut to the west-southwest of the baseline and pegged at 25m intervals. The Tallowwood Grid, located immediately northwest of Serpentine Hill, comprised 5 crosslines, which totalled 7.4 km. Further northwest, the Cheesewood Grid comprised 12 crosslines, totalling 19.0 line km. All lines were measured using a Topofil hipchain, with slope corrections applied where necessary. The origin points of the crosslines were located relative to pre-existing survey points along the Argent Grid baseline, where possible. Crossing points of the grid lines on the various access tracks throughout the area were recovered on aerial photographs. Most of the gridding contract was carried out by Ashton Exploration, with some clearing also undertaken by

Renison Limited personnel and by contractors Alliston Exploration. Gridding was completed in February, 1986.

Ground magnetics surveying, totalling 37.465 line km, was completed in the area during the period from December, 1985-February, 1986. The coverage comprised the Argent Grid baseline (4.32 line km), the Tallowwood Grid crosslines (7.4 line km), the Cheesewood Grid crosslines (20.525 line km) and various access tracks. Surveying of a section of one of the Cheesewood Grid crosslines was repeated, to test data reproducibility. The results of the check traverse suggested that reproducibility was within 2-3 gammas, overall. Renison Limited personnel carried out all of the surveying, using a Geometrics G816/G826A proton-precession magnetometer. Due to equipment malfunction, one line of the Cheesewood Grid was surveyed using a borrowed Geometrics G816 instrument. Total field magnetics data were recorded at 12.5m intervals along grid crosslines, at 25m intervals along access tracks and at 30m intervals along the Argent Grid baseline. The magnetometer sensor was held approximately 3m above ground level. A hired Austral PPM-3BS instrument was used as an automatic base station, set to read at 30 second intervals, at a site in the northeastern section of the Cheesewood Grid area. All field data were reduced to an arbitrary value of 62,300 gammas for the base station, using the analogue print-outs from the automatic instrument. Due to magnetic disturbances, surveying of several crosslines of the Cheesewood Grid had to be repeated.

The total field magnetics data were compiled, at 1:5000 scale, as a contour plan, as profiles for the individual crosslines and as stacked profiles. Copies of these plans and profiles were included with the exploration report of Evans (1986). Clastic magnetite, within the Crimson Creek Formation, was interpreted to be a major contributing source of the anomalous ground magnetics responses recorded in the Tallowwood Grid area. Simple modelling of the main anomaly in the area, centred at 9700E on crossline 1480N, indicated a shallow-buried, west-dipping source. The east to northeast dip directions mapped in outcrop suggested that the anomaly was not due to magnetite-bearing volcaniclastic units of the Crimson Creek Formation. Possible sources of the anomaly were concluded to be a basic intrusive body, or a mineralized fault zone. Only weakly anomalous magnetic responses were recorded on crosslines of the Cheesewood Grid, supporting the interpreted distribution of correlates of the Crimson Creek Formation within the area. Sharp peaks in the ground magnetics data recorded close to the western ends of several crosslines, in proximity to the abandoned Dunkley Tramway, possibly represented a faulted contact between the lower Success Creek Group and the Oonah Formation. Correlates of the minor spilitic flows, known to occur in the Oonah Formation, were proposed as an alternative or additional source of these responses (Evans, 1986). Magnetic susceptibility measurements were completed on two samples collected during a reconnaissance ground magnetics traverse along the Dunkley Tramway. The measurements were carried out at the University of Sydney Petrophysical Laboratory. One of the samples contained visible sphalerite and pyrrhotite, assaying 18.5% Zn, 26 g/t Ag and 610 ppm WO_3. The sample probably represented ore dropped onto the tramway from a wagon, during transport from one of the old mines in the area.

Ground VLF-EM surveying, over a total of 16.55 line km, was completed during January, 1986. The survey coverage included the Argent Grid baseline, crosslines of the Tallowwood Grid and various access tracks in the area, and was undertaken by Renison Limited personnel, using a hired Geonics EM 16 instrument. Readings were taken at 25m intervals along the Tallowwood Grid crosslines and the access tracks, and at 30m intervals along the Argent Grid baseline. The tilt of in- and out-of-phase components of the horizontally transmitted EM waves were recorded. Although frequent attempts were made to read signals from stations in Hawaii and Japan, only the Northwest Cape signal proved of sufficient strength to be routinely recorded. Several conductors were apparent in the VLF-EM data, which were compiled at 1:5000 scale as profiles for the individual crosslines and as stacked profiles. In the western section of the Tallowwood Grid the data appeared to define a faulted contact between the Crimson Creek Formation and rocks correlated with the lower Success Creek Group.

A CSAMT traverse was completed, in March, 1986, over crossline 1480N of the Tallowwood Grid. The traverse comprised 15 readings, taken at 100m spacings, and was carried out by contractors Zonge Engineering and Research Organization Inc. Copies of the field data, plotted as resistivity and phase pseudosections, were included in the exploration progress report of Evans (1986). Final interpretation has yet to be completed. However, the results did not appear encouraging. No results have as yet been published for the test spectral IP survey completed in March, 1986, along the access tracks to the Dunkley Fault Grid area, south of its junction with the abandoned Dunkley Tramway. Readings were taken over continuous exposure of rocks correlated with the lower Success Creek Group. The test survey was carried out by Solo Geophysics, as part of an extension programme of the Tasmanian Department of Mines Mt. Read Volcanics Project.

Geological mapping confirmed that much of the Tallowwood Grid area is underlain by the Crimson Creek Formation. The dominant lithology comprised fine to locally coarse-grained, volcaniclastic litharenite or greywacke. Fine clastic magnetite was recorded, in petrological studies, as a conspicuous, although minor mineral, within these rocks. Bedding, although poorly developed in the generally massive units, appeared to dip east to the northeast throughout the grid area. Scattered outcrops of altered micro-gabbro, representing the mafic intrusives or possible minor extrusives within the Crimson Creek Formation, were mapped in the southwestern corner of the grid. A marked change in soil types was apparent in the northern and northwestern section of the grid, overlying rocks correlated with the lower Success Creek Group.

Chemical analysis was undertaken of 11 rock chip samples collected from surface exposures in the Tallowwood Grid area. Six of the samples represented surficial deposits of limonite, thought to have been derived from the weathering of the mafic intrusives within the Crimson Creek Formation. Anomalous copper, lead and zinc values recorded for these samples were attributed to scavenging of metallic ions by the limonite. Other ferruginous zones, possibly weathered vein or fault-infill mineralization, were represented in 5 samples. Anomalous values of lead, zinc, copper, silver, arsenic and to a lesser extent, tin and tungsten, were recorded (Evans, 1986).

Geological mapping of the Cheesewood Grid was curtailed due to the suspension of all exploration of the Argent area in April, 1986. Only the northernmost crosslines were mapped. The areal extent of possible correlates of the Crimson Creek Formation appeared to be limited. The area potentially underlain by rocks of the Renison mine sequence was restricted to a fault-bounded wedge, with maximum dimensions of 600m along-strike (that is, north to northeast, locally east to southeast) and up to 600m down-dip. Extensive sections of the Cheesewood Grid were concluded to be underlain by older rocks, correlated with the Success Creek Group and possibly, in the west, with the Oonah Formation. Hydrothermal or contact-metamorphic alteration effects were noticeably absent in the samples collected from the area for petrological study.

The Tallowwood Grid area was concluded to be contiguous, in terms of geological setting and exploration potential, with the Serpentine Hill-Commonwealth Hill area and the southwestern section of the Renison Mine Lease. Clearing of infill crosslines, at approximately 100m spacing, and of additional lines to extend the Tallowwood Grid coverage to the northeast of the Argent Grid baseline, was proposed. Bedrock geochemical sampling and additional ground magnetics and VLF-EM surveying, to cover the Tallowwood Grid and its proposed extensions and three crosslines of the Cheesewood Grid, were also recommended. However, all exploration of the Argent area of E.L. 42/71 was suspended in April, 1986. The Tallowwood Grid, and the area to the northwest, adjacent to the western boundary of the Renison Mine Lease, were recommended as priority areas for any possible longer-term retention.

2.7.16 1986-1987 Exploration Programme

No field work was undertaken in the Argent area of E.L. 42/71 during the year ended June 30, 1987. Renison Limited suspended all exploration activities in April, 1986, in a review of its operations following the collapse of the international tin market. An estimated expenditure of $6,105 was incurred in compilation of the annual report, to the Tasmanian Department of Mines, on the 1985-1986 exploration programme. A review of the results of past exploration was also completed, identifying the sections of the E.L.

most prospective for deeply-buried stanniferous mineralization, to be given priority for longer-term retention. Renison Limited lodged an application on March 25, 1987, for 18 mineral leases, totalling 16.92 sq km, as an extension to its existing mine lease.

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3.0 E.L.42/71 (SOUTH) - GRAND PRIZE AREA

3.0 E.L.42/71 (SOUTH) - GRAND PRIZE AREA

3.1 Work Completed 1986-87

In mid-1986, when the previous report on this area was circulated (Cartwright, 1986), it was concluded that the Grand Prize section of E.L.42/71 had been adequately tested for its tin potential and, therefore, that no further work was justified.

Subsequently, the writer became aware of the anomalous platinoid values in rock chip samples from the Serpentine Hill ultramafic complex obtained by Mines Department geologist, A.V. Brown (Brown et al., 1986; see Table). The following limited work was carried out to follow up Brown's results:

(1) Rock chip samples were collected from several locations within the Serpentine Hill Complex.

(2) Panned concentrate samples were taken in two of the major streams draining the Complex.

Sample locations are shown on Figures 8 and 9 and assay results are given in Appendix V. As the latter show, in both cases platinum and palladium values were quite low and did not match Brown et. al.'s (1986) initial results.

World wide, the only substantial economic primary stand-alone platinoid deposits are found in very large layered intrusions (e.g. Bushveld and Stillwater Complexes) of a type not found in Tasmania. Thus, to pursue a target of primary platinoid mineralization in the Serpentine Hill Complex beyond the reconnaissance stage reached thus far requires a conceptual "leap of faith". Given the quite poor results obtained to date, this cannot be justified and hence no further work is recommended.

TABLE: Platinoid Results reported by Brown et al. (1986) from Serpentine Hill Complex

Sample Number	Pd	Pt	Rh	Ru	Ir	Description
			(parts per billion)			
From Serpentine Hill:						
Orthopyroxene-rich layered sequence						
28 TA82	1	50	3	<100	<20	Dunite-proxenite layers
4 TA84	2	14	<1	<100	<20	Olivine cumulate
12 TA84	<1	22	2	<100	<20	Pyroxenite
13 TA84	2	58	1	<100	<20	Pyroxenite
Olivine-rich layered sequence						
29 TA82	<1	27	<1	<100	<20	Dunite
31 TA82	<1	17	<1	<100	<20	Disseminated chromite in dunite
32 TA82	<1	44	<1	<100	<20	Magnetite with serpentine
33 TA82	<1	43	9	310	80	Chromitite
34 TA82	2	38	4	350	90	Chromitite
1 TA84	5	47	4	250	40	Chromite pods in serpentinized dunite
2 TA84	4	42	5	130	50	Chromitite
[illegible] TA84	4	66	7	160	80	Chromitite
[illegible] TA84	1	15	<1	<100	<20	Chromite stringers in dunite
6 TA84	1	17	1	<100	<20	Chromite stringers
7 TA84	1	14	<1	<100	<20	Layered chromitite-dunite
8 TA84	1	<10	<1	<100	<20	Disseminated chromite in olivine cumulate
21 TA84	2	31	8	420	70	Chromitite
Gabbroic sequence						
30 TA82	18	64	<1	<100	<20	Gabbro
9 TA84	3	21	<1	<100	<20	Medium-grained gabbro
10 TA84	10	35	1	<100	<20	Fine-grained gabbro
11 TA84	10	24	<1	<100	<20	Medium-grained gabbro
From Melba Flats:						
14 TA84	5	<10	<1	<100	<20	Disseminated chromite in dunite
22 TA84	4	1240	54	180	70	Chromitite
Andesites and Basalts						
29 TA84	25	37	<1	<100	<20	Low-Ti tholeiitic lava near Location 7
	3	25	<1	<100	<20	High Mg andesitic lava near Location 9
[illegible] TA84	<1	<10	<1	<100	<20	Olivine-quartz normative tholeiitic lava near Location 5

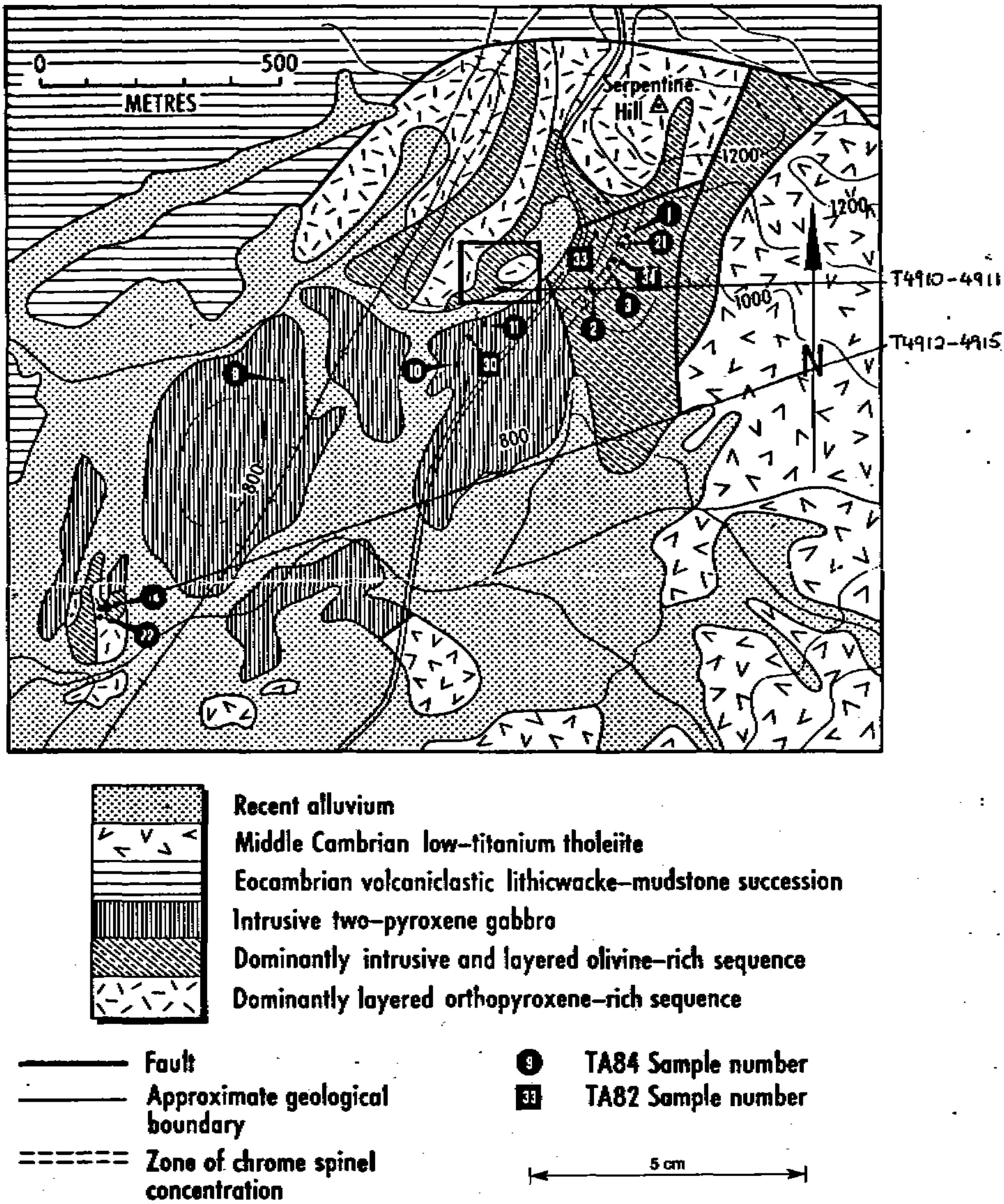
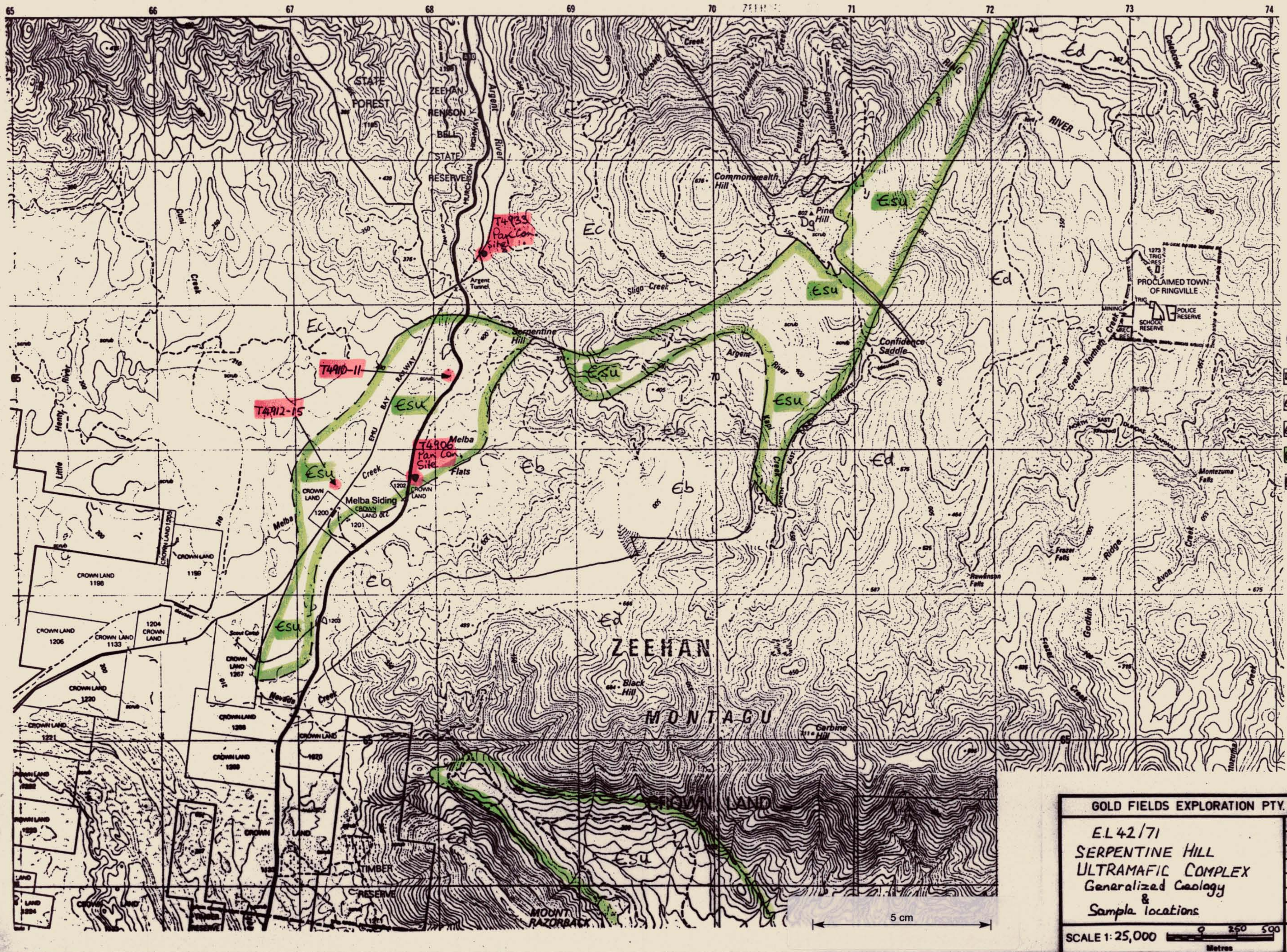


FIGURE 8: Serpentine Hill Complex - Sample Locality Plan
(from Brown et al., 1986)



<u>Geological Legend</u>

Dg	Devonian Granite
Ed	Dundas Group
Eb	Melba Spilite
🟩 Esu	Ultramafic Complex
Ec	Crimson Creek Form^n

Note: Geology after A.V. Brown (1983).

GOLD FIELDS EXPLORATION PTY. LIMITED

E.L 42/71
SERPENTINE HILL
ULTRAMAFIC COMPLEX
Generalized Geology
&
Sample locations

DRAWN BY : PAR
DRAFTSMAN:
DATE :07/87
REVISIONS :
FILE NO.

SCALE 1: 25,000 0 250 500 Metres

FIG. 9

102

A 12546

3.2 History of Exploration by RGC Group Companies

The history of exploration on the Grand Prize section of E.L.42/71 is briefly described below. Details of the work done and results obtained are described in the reports listed. The reader should be aware that the area was originally covered by S.P.L.27, which was later amalgamated with E.L.42/71 (in April, 1973).

1967: S.P.L.27 was granted.

1968-69: Renison Limited cut the Commonwealth Hill Grid and the Razorback Grid. Regional soil geochemistry, magnetic and mapping surveys were carried out (Emberton and Elders, 1968; Ferguson, 1970a). On the Razorback Grid, two zones anomalous in tin (within E.L.42/71) were located. These anomalies occur south of the Grand Prize Mine and immediately south of the Black Hill summit. On the Commonwealth Hill Grid, tin anomalies which are not associated with the Pine Hill Granite are probably due to alluvial tin. Subsequent soil sampling during 1983-84 has suggested that laboratory contamination was a problem in earlier surveys, and anomalies located by them may not be reliable (Komyshan and Roberts, 1984).

1969-70: I.P. surveys were carried out over the Serpentinites of the Razorback and Commonwealth Hill Grids to test nickel anomalies (Dikoff, 1970; Ferguson, 1970b).

1969-70: Renison Ltd. cut the Kapi Fault Grid (Ferguson, 1970b). However, no results from any subsequent work are available.

1972: P. Brophy (1972) reported on the asbestos potential of the Razorback and Serpentine Hill Complexes.

1976-77: Renison Ltd. established the Kapi Grid over the interpreted N-S trending Kapi Fault. Mapping, soil geochemistry, magnetic and E.I.P. and M.I.P. surveys (Howland-Rose, 1977) were carried out. Anomalous chargeability and resistivity responses were found (Kelleher, 1977).

1977-78: Diamond drill hole S453 was drilled (by Renison) west on line 1900N of the Kapi Grid, beneath the Kapi Mine. No significant mineralization was intersected (Newnham, 1978).

1978-79: Diamond drill hole S554 was drilled (by Renison) west on line 2300N of the Kapi Grid. No significant mineralization was intersected (Stephenson, 1979).

1979-80: Renison drilled 4 diamond drill holes (S652, S653, S658, S677) on the Grand Prize Fault structure (Stephenson and Bond, 1980).

1980-81: Renison drilled 2 diamond drill holes (S764, S862) on the Grand Prize Fault (Stephenson and Bond, 1981). A mapping programme in the Grand Prize Area delineated hornfelsing near the summit of Black Hill.

A DIGHEM survey was flown over and just south of the Renison Mining Lease by B.H.P. Anomalies are located within the Serpentine Hill Complex and along the Serpentinite/ Crimson Creek Formation boundary.

The Mines Department conducted a semi-regional gravity survey over part of the mapped area and a reconnaissance aeromagnetic survey over much of the West Coast including all of E.L.42/71.

1981-82: Renison drilled 2 diamond drill holes (S947, S969) on the Grand Prize Fault (Bond, 1982).

A DIGHEM survey was flown over the eastern portion of E.L.42/71 by E.Z. Two significant anomalies were located on Carbine Hill in the S.E. corner of E.L.42/71 and a grade 5 E.M. anomaly was located south of Pine Hill.

1982-83: Gold Fields Exploration drilled one diamond drill hole (GP3A) on the Grand Prize Fault and two diamond drill holes, GP4 and GP5, on the Grand Reward Fault structure. Two overlapping grids (the Black Hill Grid and the Carbine Hill Grid) were established over virtually the entire outcrop area of Dundas Group sediments within E.L.42/71. Minor mapping and stream sediment sampling were also carried out (Komyshan and Roberts, 1983). A DIGHEM survey flown over the Renison Mine Lease and in the vicinity of Pine Hill, by Comstaff, located a number of minor anomalies just south of Pine Hill.

1983-84: Gold Fields Exploration drilled three diamond drill holes (GP6, GP7, GP8) on the Grand Prize Fault structure. Reconnaissance surveys comprising geological mapping, soil geochemistry, ground magnetics, and V.F.L.-E.M. were carried out over the Black Hill and Carbine Hill Grids (Komyshan and Roberts, 1984).

1984-85: A number of grid lines on the Black Hill and Carbine Hill Grids were extended and several infill lines were also established. These were geologically mapped, rock chip sampled, bedrock sampled and ground magnetically surveyed. In addition, an E.M.37 survey was carried out over sections of the Carbine Hill Grid, and two diamond drill holes (GP9, GP10) were completed near the Grand Prize Mine on the Grand Prize Fault structure (Komyshan, 1985).

1985-86: One hole (GP11) was diamond drilled and subsequently surveyed with downhole E.M. with disappointing results (Cartwright, 1986; Bishop, 1986).

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APPENDIX I

E.L. 42/71 (WEST) - ARGENT GRID

EXPLORATION EXPENDITURE

GOLD FIELDS EXPLORATION PTY. LIMITED

Separate estimate of expenditure for exploration completed in the Argent area of E.L. 42/71, during the period from 1971 - 1979, is not possible. Expenditure incurred for the period from July 1, 1979 - June 30, 1987 was as follows :

YEAR	EXPENDITURE ON DIAMOND DRILLING	TOTAL EXPENDITURE
1979-1980	$51,168	$88,815
1980-1981	$55,727	$82,031
1981-1982	$53,868	$73,795
1982-1983	$63,893	$111,459
1983-1984	$78,703 (a)	$135,019 (a)
1984-1985	$74,814 (b)	$137,508 (b)
1985-1986	-	$77,926
1986-1987	-	$6,105
	$378,173	$712,658

Note: (a) Not previously reported : $37,635 - cost of drillhole S1182.

(b) Expenditure does not include costs of DHEM logging (EM 37) programme, completed for S1182.

902111

APPENDIX II

E.L. 42/71 (WEST) - ARGENT AREA

EXPLORATION PROGRESS REPORTS

111

902112

REPORT ON DUNKLEY AREA

E.L. 42/71

WESTERN TASMANIA

R. SCHELLEKENS,
RENISON LIMITED

DATE: 7TH AUGUST, 1972.

INDEX

MAPS INCLUDED WITH REPORT

113

902114

E.L. 42/71

RENISON BELL AREA - WESTERN TASMANIA

ANNUAL REPORT

1972 - 73

By: R.R. Schellekens
L.A. Newnham
RENISON LIMITED

September, 1973

Copy to: Tasmanian Mines Department

INDEX

APPENDICES

MAPS

115

902116

RENISON LIMITED

E.L. 42/71

RENISON BELL AREA.

1973-74

ANNUAL REPORT.

R.N. Lees,
L.A. Newnham,

September, 1974.

TABLE OF CONTENTS

TEXT

APPENDICES.

1. GEOCHEMICAL DATA.
2. PROPOSED 1974-75 BUDGET.

MAPS.

1. LOCALITY MAP.
2. GEOLOGICAL MAP. 1:50,000.
3. CRIMSON CREEK GRID
   1:5000 GEOLOGICAL MAP.
4. CRIMSON CREEK GRID
   1:5000 GEOPHYSICAL INTERPRETATION MAP ~~(FILM)~~
5. COMMONWEALTH HILL GRID.
6. COMMONWEALTH HILL GRID.
   1:5000 GEOPHYSICAL INTERPRETATION MAP ~~(FILM)~~
7. DUNKLEY GRID 1:5000 GEOLOGY AND MAGNETICS.

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E.L. 42/71 and S.P.L. 131.
RENISON BELL AREA.
ANNUAL REPORT
1974-75

L.A. Newnham.
August 1975.

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CONTENTS.

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EL 42/71

RENISON BELL AREA

1975-76

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Mines Dept.(1)

J.P. KELLEHER,
Geologist

Contributions from
A. ROSS, Section 3.

June, 1976

INDEX.

****

MAPS

1) Location Plan 1:50,000

2) Geological Interpretive Map, Area South of Fine Hill 1:10,000

3) Geological Interpretive Map, Argent Grid 1:5000

4) Ground Magnetic Survey results

5) Work proposed for 1976-77

6) Line Profiles: I.P. Magnetics, Geology

LIST OF TABLES

****

123

RENISON LIMITED

902124

E.L. 42/71

RENISON BELL AREA

1976/77

ANNUAL REPORT

J.P. Kelleher
GEOLOGIST

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UL 124

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902125

INDEX

125

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902126

E.L. 42/71

ARGENT-KAPI AREA

WESTERN TASMANIA

ANNUAL REPORT 1977 - 78

L.A. NEWNHAM
CHIEF GEOLOGIST

August, 1978.

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CONTENTS

TEXT

APPENDICES

MAPS

RENISON LIMITED

E.L. 42/71

ARGENT - KAPI AREA

WESTERN TASMANIA - ANNUAL REPORT, 1978/79

P. Stephenson

P.R. Stephenson,

GEOLOGIST

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CONTENTS

TEXT

APPENDICES

FIGURES

129

902130

RENISON LIMITED

EL 42/71

ARGENT - GRAND PRIZE AREA

WESTERN TASMANIA

ANNUAL REPORT 1979/80

P. Stephenson

P.R. STEPHENSON
SENIOR MINE GEOLOGIST

L.D. BOND
GEOLOGIST

September 1980.

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CONTENTS

TEXT *Page No.*

APPENDICES

FIGURES

RENISON LIMITED

902133

E.L. 42/71

ARGENT - GRAND PRIZE AREA

WESTERN TASMANIA

ANNUAL REPORT 1980/81

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P.R. STEPHENSON
SENIOR MINE GEOLOGIST

L.D. BOND
GEOLOGIST

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CONTENTS

TEXT

APPENDICES

FIGURES

RENISON LIMITED

ANNUAL REPORT FOR THE ARGENT SECTION OF EL 42/71. 1981/82.

D. J. Kilpatrick.

cc.:	Mines Department	1
	GFEL Tasmania	1
	Renison Limited	2

CONTENTS

APPENDICES

1. EXPENDITURE 1981-1982
2. BUDGET 1982-1983
3. GEOLOGICAL LOGS.

PLANS

1. Locality Plan 1:50000
2. 1:10000 Geological and Diamond Drillhole Locality
3. 1:2000 Cross Section S1008, S594, S369
4. 1:2000 Cross Section S1026, S650

5a,b. 1:2000 Federal Footwall Longitudinal

6a,b,c. 1:2000 Cross Sections of Proposed Federal Fault Holes

FIGURES IN TEXT

E.L.42/71 (WEST)

ARGENT AREA

ANNUAL REPORT 1985/86

Circulation:

Tasmanian Dept. of Mines (1)
G.F.E.L., Burnie Office (1)
Renison Ltd. (2)

David A. Evans

D. A. EVANS
Senior Geologist
Renison Ltd.,
August, 1986

CONTENTS

FIGURES INCLUDED IN REPORT

APPENDICES

PLANS ACCOMPANYING REPORT

PLAN NO.	TITLE	SCALE	
1	Dunkley Fault Grid Dipole-Dipole IP Line 620S	1:2,500	
2	Drillholes S1200 and S1207 SIROTEM DHEM Logs	1:2,000	
3	Tallowwood and Cheesewood Grids Fact Geology (and Sample Locations)	1:5,000	
4	Tallowwood and Cheesewood Grids Total Field Ground Magnetics (Contours)	1:5,000	
5	Tallowwood and Cheesewood Grids Total Field Ground Magnetics (Stacked Profiles)	1:5,000	
6	Tallowwood and Cheesewood Grids VLF-EM (Stacked Profiles)	1:5,000	
7	Tallowwood Grid Line 1000N Geophysical and Geochemical Profiles	1:5,000	(Horiz.)
8	Tallowwood Grid Line 1240N Geophysical and Geochemical Profiles	1:5,000	(Horiz.)
9	Tallowwood Grid Line 1480N Geophysical and Geochemical Profiles	1:5,000	(Horiz.)
10	Tallowwood Grid Line 1720N Geophysical and Geochemical Profiles	1:5,000	(Horiz.)
11	Tallowwood Grid Line 1960N Geophysical and Geochemical Profiles	1:5,000	(Horiz.)

145

RENISON LIMITED

902146

ANNUAL REPORT FOR THE ARGENT SECTION OF EL 42/71, 1982/83

D. J. Kilpatrick.
December, 1983.

cc:	Mines Department	1
	GFEL Tasmania	1
	Renison Limited	2

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TEXT PAGE

RENISON LIMITED

PLANS

1. LOCALITY 1:250000
2. GEOLOGICAL AND DRILLHOLE LOCALITY 1:10000
3. CROSS SECTION S1134 1:2000
4. S14 GEOLOGICAL INTERPRETATION 1:2000
5. S14 FEDERAL FOOTWALL LONGITUDINAL PROJECTION 1:2000
6. B3/2 DUNKLEY FAULT GRID, FACT GEOLOGY 1:5000
7. AEROMAGNETIC CONTOURS EL 42/71 AND R.M.L. 1:10000
8. B3/2 DUNKLEY FAULT GRID, TOTAL FIELD GROUND MAGNETICS - CONTOUR 1:5000

Vol. II

9.a-~~p~~ m DUNKLEY FAULT GRID, COMPOSITE LINE PROFILES, 1:2000 LINES 000S-2600S

10.a-g B3/2 DUNKLEY FAULT GRID, BEDROCK SAMPLING - CONTOURED ASSAYS, 1:5000 FOR Sn, As, WO_3, Bi, Cu, Pb, Zn

FIGURES IN TEXT

a) LOCALITY 1:50000

b) DUNKLEY FAULT GRID - COMPOSITE MAGNETICS, GEOCHEMISTRY 1:5000

c) DUNKLEY FAULT GRID - AEROMAGNETICS MODELLING

d) DUNKLEY FAULT GRID - CONCEPTUAL MODEL OF GEOLOGY

e) DUNKLEY FAULT GRID - MAGNETICS TESTWORK - COMPARISON OF METHODS

f) DUNKLEY FAULT GRID - MAGNETICS TESTWORK - COMPARISON OF METHODS

g) DUNKLEY FAULT GRID - MAGNETICS TESTWORK - COMPARISON OF METHODS

h) DUNKLEY FAULT GRID - MAGNETICS TESTWORK - COMPARISON OF METHODS

RENISON LIMITED

EL 42/71 WEST

ARGENT AREA

ANNUAL REPORT

1983 - 84

D. J. Kilpatrick,
August 1984

c.c.	Mines Department	1
	GFEL, Tasmania	1
	Renison Limited	2

149

902150

CONTENTS

902151

FIGURES IN TEXT

PLANS

RENISON LIMITED

902152

UR 151

EL 42/71 WEST

ARGENT AREA

ANNUAL REPORT

1984 - 85

D. J. Kilpatrick
Exploration Geologist
Renison Limited
July, 1984.

c.c.	Mines Department	1
	GFEL, Tasmania	1
	Renison Limited	2

CONTENTS

PAGE

APPENDIX III

E.L. 42/71 (WEST) - ARGENT AREA

DATA FOR DIAMOND DRILLHOLE S1182 *

* Note - Drillhole data not previously reported. At time of completion, drillhole was thought to have been within the Renison Mine Lease. Subsequent surveying located the hole approximately 200m to the south of the Mine Lease southern boundary, within E.L. 42/71.

APPENDIX III A

DIAMOND DRILLHOLE S1182 - GEOLOGICAL LOG

(WITH LOCATION DATA; DOWNHOLE SURVEYS; CHEMICAL ANALYSES)

RENISON LIMITED
DRILL CORE RECORD
HOLE NO. S1182

LOCATION : SRML TUNNEL HILL, ARGENT CK
PURPOSE : TO TEST MINE SEQUENCE
COLLAR RL : 2360.90 m.
NORTHING : 16167.56 m.
EASTING : 15290.60 m.

LENGTH : 746.00 m.
DATE COMMENCED : 11/05/84
DATE COMPLETED : 30/06/84
LOGGED BY : M. DUFTY
WATER LEVEL :

HOLE SIZE

FROM	TO	SIZE
0.00	57.00	HQ
57.00	358.50	NQ
358.50	746.00	BQ

SIGNIFICANT CORE LOSS ZONES

FROM	TO	% LOSS
379.68	388.70	63

ORE ZONE GROUND CONDITIONS

ZONE	MECHANICAL STATE	HANGING WALL

157

ASSAY [illegible]TA SUMMARY

STRAT	FROM (M)	TO (M)	LENGTH (M)	Sn (%)	ANL Sn (%)	SOL Sn (%)	Cu (%)	Pb (%)	Zn (%)	Ag (G/T)	Bi (%)	As (%)	WO3 (%)	S (%)
CCFSK	71.13	77.13	6.00	0.01		<0.01	0.05	<0.01	0.06	<1.	0.001	<0.10	<0.01	4.65
	77.13	78.36	1.23	<0.01		<0.01	0.02	<0.01	0.03	<1.	0.003	<0.10	<0.01	2.40
BULK	71.13	78.36	7.23	0.01		<0.01	0.05	<0.01	0.06	<1.	0.002	<0.10	<0.01	4.27
CCFF?	311.00	311.30	0.30	0.03		0.04	0.06	0.45	2.10	11.	0.002	<0.10	<0.01	1.40
FVN	332.70	336.15	3.45	<0.01		<0.01	0.02	0.04	0.07	1.	<0.001	<0.10	<0.01	3.16
1DO	540.56	544.18	3.62	0.01		<0.01	0.03	<0.01	0.02	1.	0.008	<0.10	0.02	5.21
1DO	544.48	544.92	0.44	<0.01		<0.01	<0.01	<0.01	0.02	<1.	<0.001	<0.10	0.01	<0.10

ASSAY DATA SUMMARY - HIGHLIGHTS

STRAT	FROM (M)	TO (M)	LENGTH (M)	Sn (%)	ANL Sn (%)	SOL Sn (%)	Cu (%)	Pb (%)	Zn (%)	Ag (G/T)	Bi (%)	As (%)	WO3 (%)	S (%)
CCFSK	73.13	75.13	2.00	<0.01		<0.01	0.08	<0.01	0.03	1.	<0.001	<0.10	<0.01	7.85
1DS	541.71	542.18	0.47	0.06		<0.01	0.08	<0.01	0.04	2.	0.019	<0.10	<0.01	13.90

RENISON LIMITED
GEOLOGY DEPARTMENT

HOLE NO: S1182
PAGE NO: 2

902158

INTERPRETAT[illegible] DATA

FROM	TO	STRAT	SUB.	QUAL	DESC	BCA	HOR. F.	VERT.F.	DATA F.	POS. F.	COMMENTS
0.00	8.30	CCF				90		1.00			
8.30	58.62	GAB				90		1.00			?INTRUSIVE
58.62	111.94	CCF				60		1.00			
111.94	112.50		F	?							
112.50	300.67	CCF				60					
300.67	300.75		F		VN						
300.75	304.27	CCF				60					
304.27	304.54		F	?	VN						
304.54	332.70	CCF				60					
332.70	336.15		F		VN						
336.15	503.57	CCF				60					
503.57	504.10		F	?	VN						
504.10	540.10	DHM				70		1.00			
540.10	545.20	1			DO	60		1.00	F		TALCOSE
545.20	552.09	RRM	F	?		60		1.00			
552.09	583.72	DM				70		1.00			
583.72	583.84		F	?							
583.84	608.93	DM				70					
608.93	609.25		F	?	VN						
609.25	614.62	DM				70					
614.62	615.14	GR				90					
615.14	639.12	DM				50					
639.12	639.73	GR		?		90					
639.73	644.93	DM				40					
644.93	645.13	GR		?		90					
645.13	650.06	DM				45					
650.06	651.35	GR				90					
651.35	654.81	DM				90					
654.81	657.67	GR				90					
657.67	678.75	DM				65					
678.75	679.77	GR				90					
679.77	706.82	DM				90					
706.82	746.00	GR				90					

SUR DATA

SURVEY DEPTH (M)	BEARING (DEG)	GRID TYPE	DIP (DEG)	DIP TYPE	REMARKS
0.00		MINE	-90.00		
194.00	4.00	MINE	-88.50		
341.00	20.00	MINE	-88.00		
520.00	42.00	MINE	-87.00		
622.00	53.00	MINE	-86.10		
746.00	53.00	MINE	-85.60		

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	3.00	0.45	15.0	RUBBLE	RUBBLE: green - yellow, coarse and granular, weathered, with cobbles: green, silty, uneven fracture, with iron oxides on joints. Large quartz clasts are also common.	CCF
	8.30	2.25	42.5	SILTSTONE	SILTSTONE: brown, medium grained, weathered, uneven fracture, broken, massive, sharp base, with minor quartz veins near base of unit. Clay occurs along the fractures.	CCF
	11.00	2.25	83.3	GABBRO	GABBRO: mottled white - grey, fine to medium grained, weathered, soft, uneven fracture, broken, massive, with abundant feldspar. Additional minerals include: common actinolite, as blades.	GAB
	24.40	11.00	82.1	GABBRO	GABBRO: mottled green - grey, medium grained, moderately weathered, broken, massive, with abundant actinolite, minor feldspar. This unit contains some highly weathered patches. End of weathered zone.	GAB
	58.62	33.78	98.7	GABBRO	GABBRO: green - grey, fine to coarse grained, massive.	GAB
					MINERALISATION: abundant actinolite, with common feldspar, minor tourmaline. Additional minerals include: locally abundant axinite, and, actinolite veins, with minor pyrite as disseminations. The base is relatively sharp with a core angle of 80 degrees. Bands include - VEIN: thickness 0.08 m., base at 41.37 m., coarse grained abundant actinolite, and, axinite, with V.C.A. = 40 degrees.	
	71.36	12.74	100.0	GREYWACKE	GREYWACKE: grey - green, fine grained, irregular bedding, sharp base. Contains pods of axinite and tourmaline alteration with minor associated pyrrhotite. Bands include - SEDIMENTARY BRECCIA near top of unit: medium to coarse grained, not a tectonic breccia, possibly agglomeratic. SHEARED ROCK: thickness 0.40 m., base at 71.13 m. This unit has the appearance of an anastomising cleavage. This is most likely due to fluid migration.	CCF
					MINERALISATION: locally abundant tourmaline, and, actinolite, with minor axinite.	
	78.36	7.00	100.0	SKARN	SKARN: mottled green - pink, fine to coarse grained.	CCFSK
					MINERALISATION: abundant axinite, often coarse grained and crystalline	

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					with locally abundant pyrrhotite. quite common throughout. fine grained with locally abundant actinolite. ranges from fine to coarse grained. when coarse it is commonly crystalline. MINERALISATION: locally abundant tourmaline, euhedral, coarsely crystalline. locally abundant magnetite near base of unit. with minor sphalerite, and, calcite near top of unit. Additional minerals include: sparse pyrite, and, chalcopyrite. Bands include - GREYWACKE: thickness 1.80 m., base at 73.45 m., green, fine grained. locally abundant axinite. and, pyrrhotite.	
	111.94	33.58	100.0	GREYWACKE	GREYWACKE: green - black, fine to medium grained, actinolitized, irregular bedding, B.C.A.= 60 degrees. The unit has coarser gritty patches intermixed. MINERALISATION: common actinolite. and, quartz infilling in fractures. with minor pyrrhotite intermixed. The pyrrhotite also occurs as minor disseminations in the greywacke. Additional features include: SKARN: minor intermixed near top of unit, with abundant axinite. and, pyrrhotite. with minor actinolite. This unit is fractured near the base.	CCF
	112.50	0.56	100.0	BRECCIA	BRECCIA: mottled white - green. fine to coarse grained. This is a quartz actinolite infilled breccia with vca = 20 degrees. Fracturing is common above and below this unit.	F?
	115.76	3.20	98.2	SEDIMENTARY BRECCIA	SEDIMENTARY BRECCIA: dark grey - green, actinolitized, broken, fractured. with common calcite infilling in fractures. Some coarse calcite veining occurs within this unit.	CCF
	120.25	4.49	100.0	GREYWACKE	GREYWACKE: green - black, fine to medium grained. actinolitized. dolomitic, with common calcite infilling in fractures. MINERALISATION: locally abundant pyrrhotite. partly replacing some dolomitic horizons. Additional minerals include: locally abundant quartz near base of unit. infilling vein.	CCF
	135.13	14.88	100.0	GREYWACKE	GREYWACKE: green - grey, fine to medium grained. actinolitized. firm. unbroken, massive, with near top of unit: common calcite veins. Minor pyrrhotite is associated with actinolite veining.	CCF

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	135.88	0.75	100.0	SHEARED ROCK	SHEARED ROCK: greenish grey, medium grained. Bands include - BRECCIA: with common quartz, and, actinolite. Additional minerals include: minor calcite. occurring as late stage veining.	CCFF?
	149.35	13.47	100.0	GREYWACKE	GREYWACKE: greenish grey - brown. fine to medium grained, ?tuffaceous. fluidal texture, irregular bedding. MINERALISATION: minor pyrrhotite, associated with actinolite, tourmaline veining.	CCF
	159.37	10.02	100.0	GRIT	GRIT: brown - grey. medium grained, with clasts: quartz, no contact, subrounded, and not exceeding 2mm in size with greywacke intermixed: grey - green, fine grained. actinolitized. MINERALISATION: common actinolite, minor quartz veins.	CCF
	189.91	30.54	100.0	GREYWACKE	GREYWACKE: green - grey, fine to medium grained, actinolitized, massive. brecciated at base, with grit intermixed: bands. MINERALISATION: common actinolite veins. with minor pyrrhotite infilling. Additional minerals include: locally abundant quartz infilling veins. The basal breccia is calcite infilled with minor pyrrhotite.	CCF
	206.72	16.81	100.0	GREYWACKE	GREYWACKE: green - grey, fine to medium grained, actinolitized, B.C.A.= 50 degrees. MINERALISATION: locally abundant axinite. and, calcite veins, with minor pyrrhotite, infilling fractures. Bands include - DOLOMITE: buff. fine grained. non-crystalline near base of unit intermixed. MINERALISATION: locally abundant pyrrhotite, and. pyrite, with minor chlorite, or talc.	CCF
	214.92	8.20	100.0	SILTSTONE	SILTSTONE: black. fine grained, massive. sharp base. with greywacke intermixed.	CCF
	215.23	0.31	100.0	VEIN	VEIN: mottled white - cream, brecciated. MINERALISATION: abundant calcite, and, rhodochrosite, with locally abundant quartz. The mineralisation forms concentric patterns with quartz innermost	CCFF?VN

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					surrounding the siltstone clasts then rhodochrosite and finally calcite.	
	217.95	2.72	100.0	SILTSTONE	SILTSTONE: black, medium to coarse grained, massive. MINERALISATION: minor actinolite veins, with accessory pyrrhotite infilling.	CCF
	225.62	7.67	100.0	SILTSTONE	SILTSTONE: black. medium to coarse grained. massive. sharp base. MINERALISATION: minor actinolite. and, calcite veins on joints. Some of the joints contain slickensides This unit is weakly magnetic, most likely due to magnetite rather than pyrrhotite. There are no visible pyrrhotite disseminations. The basal contact could be a bedding contact with bca = 60 degrees.	CCF
	234.70	9.08	100.0	SILTSTONE	SILTSTONE: black - greenish grey, fine to coarse grained. bleached. fine bedding, microfaulting, B.C.A.= 70 degrees. This unit contains a series of high angle veins (vca = 0-10 degrees). These are infilled by calcite, rhodochrosite and rock fragments. These veins represent a fault zone. The beds of this unit are dragged along the fault planes.	CCF
	249.75	15.05	100.0	SILTSTONE	SILTSTONE: black. medium to coarse grained, massive. MINERALISATION: minor quartz veins, associated with fractures. This unit is weakly magnetic. possibly a continuation of the previous magnetic siltstone with the fault zone removing the remnant magnetization in between. This unit is very similar to the magnetic siltstones in s1178. The base of the unit is defined by a thin actinolite vein with vca = 65 degrees (?bedding).	CCF
	262.06	12.31	100.0	SILTSTONE	SILTSTONE: black - green, medium to coarse grained, actinolitized. brecciated at base. This unit contains a high angle calcite vein. 1cm wide. MINERALISATION: locally abundant pyrrhotite, and, pyrite, accessory chalcopyrite veins. most likely associated with the calcite veining.	CCF
	263.20	1.14	100.0	SHEARED ROCK	SHEARED ROCK: mottled black - brown, dolomitic, silty. MINERALISATION: abundant pyrrhotite, with minor chalcopyrite, and. calcite.	CCFF?SM

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					This unit contains a relatively high proportion of carbonate, but it is unlikely to be a replacement horizon due to the brecciated appearance and the marked change in rock types.	
	267.42	4.22	100.0	CALC-SILICATE ROCK	CALC-SILICATE ROCK: green - pink, fine to medium grained, actinolitized, dolomitic. MINERALISATION: common axinite, and, actinolite, with locally abundant pyrrhotite, replacing some dolomitic horizons as well as in veins. Additional minerals include: minor pyrite, calcite, and magnetite.	CCF
	275.92	8.50	100.0	CALC-SILICATE ROCK	CALC-SILICATE ROCK: green - pink, fine to coarse grained, actinolitized, irregular bedding, B.C.A.= 50 degrees. MINERALISATION: abundant axinite, coarsely crystalline with common calcite, and, fluorite intermixed.	CCF
	283.80	7.88	100.0	SILTSTONE	SILTSTONE: grey - green, fine grained, actinolitized, massive. MINERALISATION: minor calcite, and, actinolite veins near base of unit. Additional minerals include: locally abundant pyrrhotite veins near base of unit.	CCF
	287.43	3.63	100.0	BRECCIA	BRECCIA: cream. This is a carbonate infilled breccia with a vca 0-10 degrees. MINERALISATION: abundant calcite, rhodochrosite, and quartz with the zoning quartz (nearest country rock or rock fragments), rhodochrosite then calcite. The rock fragments range from cobbles to pebbles and are subrounded due to fluid migration. The wall rock is a bleached siltstone. Additional minerals include: common sphalerite infilling veins, with minor pyrrhotite, in wall rocks.	CCFF?VN
	300.67	13.24	100.0	SILTSTONE	SILTSTONE: grey, medium to coarse grained, massive, faulted base. MINERALISATION: minor actinolite veins, with locally abundant calcite veins. Minor pyrrhotite occurs infilling fractures.	CCF
	300.75	0.08	100.0	VEIN	VEIN: with abundant calcite, and, minor rock fragments.	FVN

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	304.27	3.52	100.0	SANDSTONE	SANDSTONE: grey - green. medium grained. spotted. actinolitized. faulted base. MINERALISATION: common actinolite veins. with locally abundant pyrrhotite and, tourmaline, with base at 303.55m The pyrrhotite is replacing the ?tourmaline.	CCF
	304.54	0.27	100.0	QUARTZ	QUARTZ: with locally abundant pyrrhotite, and, rock fragments.	F?VN
	311.00	6.46	100.0	SANDSTONE	SANDSTONE: grey, fine to medium grained, massive, faulted base. MINERALISATION: minor actinolite veins, with locally abundant pyrrhotite, associated with quartz veins.	CCF
	311.28	0.28	100.0	SHEARED ROCK	SHEARED ROCK: buff, fine grained, dolomitic. MINERALISATION: locally abundant sphalerite. with minor unknown mineral: metallic, steel grey, hardness 3-4, grey streak and elongate in form, (non-magnetic). ?galena. This unit has the appearance of a sheared dolomite horizon.	CCFF?
	332.70	20.20	94.3	SILTSTONE	SILTSTONE: black, fine to medium grained, uneven fracture, broken. massive. intensely veined at base. MINERALISATION: common actinolite, and, calcite veins. This unit contains some minor shears. fairly high angle (vca = 10-20 degrees) infilled with calcite.	CCF
	336.15	3.45	100.0	BRECCIA	BRECCIA: white - black. MINERALISATION: abundant quartz, with locally abundant pyrrhotite, and. actinolite. The rock fragments are very angular and range in size from 1mm to 10cm. This quartz breccia is high angle with a vca = 0-10 degrees.	FVN
	350.00	13.25	95.7	SILTSTONE	SILTSTONE: black. fine grained, broken. massive. diffuse base. MINERALISATION: minor actinolite veins, with sparse calcite, and, pyrrhotite veins. with pyrrhotite. locally abundant in the veins.	CCF
	366.48	16.20	98.3	GREYWACKE	GREYWACKE: grey - green, fine grained, actinolitized, broken. The base of this unit is marked by a zone of semi-massive pyrrhotite.	CCF

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					MINERALISATION: common actinolite. minor pyrrhotite veins.	
	368.84	2.36	100.0	LAPILLI TUFF	LAPILLI TUFF: light green - grey, agglomeratic, firm, unbroken, fluidal texture. MINERALISATION: locally abundant pyrrhotite as disseminations, replacing some rock fragments.	CCF
	371.41	2.57	100.0	CALC-SILICATE ROCK	CALC-SILICATE RUCK: green - pink. fine grained. greisenized, firm, unbroken, with common axinite and actinolite alteration.	CCF
	374.84	3.43	100.0	SKARN	SKARN: white - black. medium to coarse grained. MINERALISATION: abundant magnetite, calcite. axinite, and actinolite. The actinolite. axinite and magnetite are fine grained and crystalline while calcite is coarsely crystalline. Towards the base mineralogical banding is prevalent while near the top of the unit the minerals become intermixed and granular.	CCFSK
	378.28	3.44	100.0	CALC-SILICATE ROCK	CALC-SILICATE ROCK: pink - green. fine grained. greisenized. sharp base. MINERALISATION: abundant axinite. and, actinolite, with locally abundant calcite, and, magnetite. Additional minerals include: locally abundant pyrite, pyrrhotite. and, minor tourmaline near base of unit. The magnetite occurs in sparse bands with bca = 25 degrees. The grainsize becomes coarse in these magnetite bands.	CCFSK
	379.68	1.40	100.0	SILTSTONE	SILTSTONE: grey. fine grained, massive. faulted base. with breccia near base of unit: common actinolite, calcite, and, minor rock fragments.	CCF
	388.70	3.35	37.1	SILTSTONE	SILTSTONE: grey. fine grained. very broken. MINERALISATION: sparse pyrrhotite bands. The rock is sheared towards the top with the fault probably around 380m.	CCFF?
	409.38	19.70	95.3	SILTSTONE	SILTSTONE: grey - black, fine grained, hard, broken, massive. The base is marked by the change from broken core to unbroken core. Additional features include: bleached, common quartz veins, with base at 394.53m, vca = 0-10 degrees. Bands include - VEIN: thickness 0.17 m., base at 395.78 m., coarse grained, common calcite.	CCF

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	432.05	22.57	99.6	SILTSTONE	SILTSTONE: dark grey, fine grained, hard, firm, unbroken, massive, diffuse base. Bands include - SILTSTONE: thickness 0.21 m., base at 415.24 m., grey, fine to medium grained, dolomitic, talcose, common pyrrhotite, sharp base Additional features include: SEDIMENTARY BRECCIA: with siltstone: talcose infilling near base of unit, and at 419.65m.	CCF
	436.61	4.36	95.6	CALC-SILICATE ROCK	CALC-SILICATE ROCK: green - pink, fine grained, greisenized, firm, unbroken, irregular bedding. MINERALISATION: abundant axinite, and, actinolite alteration, with locally abundant calcite, pyrite, tourmaline infilling veins. Additional minerals include: minor quartz near top of unit. The base of this unit is marked by the occurence of magnetite.	CCF
	442.61	5.85	97.5	SKARN	SKARN: with siltstone: green, fine grained, actinolitized, B.C.A.= 20 degrees, axinite alteration. MINERALISATION: abundant axinite, and, actinolite, with locally abundant magnetite, and, calcite. Additional minerals include: minor pyrite, and, dolomite. The base of the unit is marked by the disappearance of magnetite. Texturally this unit is variable from a well banded siltstone with successive axinite and actinolite alteration zones, to a granular magnetite skarn where the mineralogical components are coarser grained and crystalline.	CCFSK
	448.53	5.92	100.0	GREYWACKE	GREYWACKE: green - pink, fine grained, actinolitized, hard, possibly faulted base, common axinite alteration. MINERALISATION: locally abundant pyrrhotite, minor chalcopyrite near top of unit, with minor actinolite veins, with abundant pyrrhotite infilling. Bands include - CARBONATE: thickness 0.14 m., base at 445.65 m., mottled green - black, medium grained, dolomitic, with abundant pyrrhotite, and, minor pyrite. The pyrrhotite appears to be a replacement feature.	CCF
	451.29	2.76	100.0	SILTSTONE	SILTSTONE: black - green, fine grained, hard, firm, unbroken, fractured, massive bedding, B.C.A.= 60 degrees, low angle vein at base. MINERALISATION: common pyrrhotite, and, calcite infilling, accessory arsenopyrite in fractures. Additional features include: pyrrhotite in bands and disseminations,	CCF

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					replacing ?carbonate horizons up to 1cm thick, base at 449.74m.	
	462.28	10.99	100.0	GREYWACKE	GREYWACKE: green - black, fine grained, hard, firm, unbroken. MINERALISATION: minor actinolite veins, with locally abundant pyrrhotite, and, tourmaline infilling. Additional features include: fine grained, pyrrhotite as disseminations, partly replacing some thin actinolite rich units The base of the unit is marked by a quartz, calcite vein with vca = 15 degrees. Bleaching and spotting is common surrounding the vein (?tourmalinization).	CCF
	480.65	18.37	100.0	GREYWACKE	GREYWACKE: green - black, fine to medium grained, ?tuffaceous, spotted, hard, firm, unbroken, fluidal texture, faulted base. MINERALISATION: minor actinolite veins, with accessory tourmaline. The spotting is a metamorphic effect and is either cordierite or ?tourmaline. The base is marked by a quartz calcite infilled breccia with vca = 10 degrees. Bleaching is common above the fault, as is quartz veining.	CCF
	488.50	7.80	99.4	GREYWACKE	GREYWACKE: dark grey - green, medium grained, ?tuffaceous, dolomitic, hard, fluidal texture. MINERALISATION: minor pyrrhotite near top of unit, at base of fault with locally abundant quartz, and, actinolite veins near base of unit.	CCF
	488.70	0.20	100.0	GRIT	GRIT: mottled green - white, medium to coarse grained, with quartz clasts (20%): white, no contact, subrounded, equant, with cement: common quartz actinolite, and, minor pyrite. Other features include irregular upper and basal contacts.	CCF
	503.57	14.87	100.0	GREYWACKE	GREYWACKE: dark grey - green, fine to medium grained, firm, unbroken, massive, intensely veined at base. Bands include - GREYWACKE: thickness 0.62 m., base at 494.00 m., mottled grey, medium grained, talcose, moderately soft, with minor pyrrhotite as disseminations. Minor bleaching occurs surrounding quartz veins.	CCF
	504.10	0.43	81.1	VEIN	VEIN. MINERALISATION: abundant quartz, with common pyrrhotite, vca = 10 degrees.	F?VN

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	507.68	3.58	100.0	GREYWACKE	GREYWACKE: mottled purple - grey, fine to medium grained, ?tuffaceous. firm, unbroken, sharp base, with common calcite infilling in fractures. Additional features include: bleached halos around fractures. Minor magnetite and actinolite occur in a vein running parallel to the core axis. with base at 505.78 metres. The base is marked by a thin calcite vein with vca 50 degrees.	DHM?
	509.60	1.90	99.0	GREYWACKE	GREYWACKE: mottled green - brown, fine to medium grained, dolomitic, ?tuffaceous, fluidal texture. MINERALISATION: common calcite infilling in fractures, or stylolites. The base of the unit occurs in section of rubble underneath which calcite veining is less prevalent.	DHM?
	529.25	19.65	100.0	?TUFF	?TUFF: mottled purple - grey, fine to coarse grained, talcose, chloritized. fluidal texture. sharp base. There is a marked variation in hardness of this unit. Where talc or chlorite alteration has taken place. the unit is soft. Often associated with this alteration are tiny needles of pyrrhotite. Additional features include: minor calcite veins, with bleached halos. A calcite, actinolite, galena vein occurs with vca 10 degrees, with base at 529.07m. The base is marked by a 5cm agglomerate with clasts: light grey, poorly sorted, no contact, subangular, bladed, with matrix: blue - green, fine grained, clayey, fluidal texture.	DHM
	530.56	1.31	100.0	DOLOMITE	DOLOMITE: mottled grey, fine to medium grained, tuffaceous, fluidal texture. MINERALISATION: common pyrrhotite as disseminations. Bands include - VEIN: base at 530.33 m., abundant calcite, accessory arsenopyrite. with minor galena. sphalerite. quartz. and rock fragments.	DHM
	533.70	3.14	100.0	TUFF	TUFF: mottled buff - dark grey, fine to coarse grained, dolomitic, diffuse base. with agglomeratic bands. MINERALISATION: locally abundant pyrrhotite infilling in fractures, as well as replacing minor dolomitic interbeds. Additional minerals include: minor pyrite veins, which overprint pyrrhotite features and hence postdate them.	DHM
	535.11	1.41	100.0	AGGLOMERATE	AGGLOMERATE: mottled grey - brown, fine to coarse grained, dolomitic, fluidal texture. with clasts: cherty, dolomitic. no contact, subrounded.	DHM

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					with the dolomitic or volcanic clasts partially replacing by pyrrhotite. With matrix: fine grained, dolomitic, silicified, common pyrrhotite. Additional minerals include: minor pyrite blebs.	
	537.22	2.11	100.0	TUFF	TUFF: brown - grey, fine to coarse grained, agglomeratic, fluidal texture fine bedding. MINERALISATION: locally abundant quartz veins, with common pyrrhotite. The base is marked by a thin calcite vein (vca = 85 degrees) with abundant chloritization above it. Petrology - 536.2m.	DHM
	537.80	0.58	100.0	DOLOMITE	DOLOMITE: mottled white - grey, medium grained, silicified, cherty, stylolitic, sharp base. MINERALISATION: minor pyrrhotite in stylolites, with common chlorite blebs near base of unit.	DHM
	540.10	2.30	100.0	SILTSTONE	SILTSTONE: grey - purple, fine grained, silicified, hard, fine bedding, B.C.A.= 70 degrees. MINERALISATION: minor pyrrhotite infilling in fractures. Base bca = 85 degrees.	DHM
	540.56	0.46	100.0	DOLOMITE	DOLOMITE: mottled white - brown, medium to coarse grained, partly crystalline, silicified, sharp base. MINERALISATION: locally abundant pyrrhotite, with common phlogopite, and, chlorite. The unit becomes talcose towards the base.	1DO
	541.45	0.89	100.0	DOLOMITE	DOLOMITE: buff, fine grained, non-crystalline, silicified, hard, firm, unbroken, massive. MINERALISATION: trace phlogopite.	1DO
	541.71	0.26	100.0	DOLOMITE	DOLOMITE: buff - brown, fine to medium grained, non-crystalline. MINERALISATION: locally abundant pyrrhotite, with minor talc patches.	1DO
	542.18	0.47	100.0	TALC	TALC: black - brown, fine grained, dolomitic, soft. MINERALISATION: abundant pyrrhotite, and, talc, with minor dolomite, and,	1SM

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					pyrite patches. Petrology - 542.0m.	
	544.48	2.30	100.0	DOLOMITE	DOLOMITE: mottled buff - grey, medium grained, talcose. MINERALISATION: locally abundant pyrrhotite, and, talc patches, with common phlogopite. Additional minerals include: common pyrite near base of unit.	1DO
	544.92	0.44	100.0	DOLOMITE	DOLOMITE: buff - green, fine to medium grained, talcose, cherty, remnant bedding, B.C.A.= 40 degrees. MINERALISATION: locally abundant talc, with common chlorite intermixed.	1DO
	545.20	0.28	100.0	DOLOMITE	DOLOMITE: grey, fine grained, non-crystalline, firm, unbroken, diffuse base. MINERALISATION: accessory pyrrhotite.	1DO
	547.20	2.00	100.0	CHERT AND LITHIC TUFF	CHERT (60%): white - brown, fine to medium grained, lithic, hard, firm, unbroken, well bedded, fine bedding, B.C.A.= 60 degrees. LITHIC TUFF interbedded (40%): brown, medium grained, sandy. MINERALISATION: abundant pyrrhotite as disseminations, associated with some chert bands. Additional minerals include: locally abundant quartz, and, actinolite, in a vein with base at 546.43m. The beds exhibit drag features near this vein hence it is a probable fault. Petrology - 547.0m.	RRM
	548.47	1.23	96.8	DOLOMITE	DOLOMITE: grey, fine to coarse grained, conglomeratic, sharp base. This unit could be called a dolomite conglomerate. It contains diffuse dolomite clast (rounded up to cobbles in size) in a dolomitic siltstone matrix. MINERALISATION: locally abundant pyrrhotite as disseminations, preferentially replacing the dolomitic clasts. Additional minerals include: locally abundant carbonate veins.	RRM
	549.39	0.92	100.0	LAPILLI TUFF	LAPILLI TUFF: mottled pink - grey, fine to coarse grained, agglomeratic, cherty, hard, firm, unbroken, fluidal texture, sharp base, with clasts: grey, fine to medium grained, cherty, dolomitic, poorly sorted, some contact, subangular, bladed, with matrix: pink - grey, fine grained,	RRM

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					cherty, hard. MINERALISATION: minor pyrrhotite as disseminations, replacing some clasts and matrix with minor pyrite as disseminations. Additional minerals include: minor chlorite alteration.	
	549.49	0.10	100.0	DOLOMITE	DOLOMITE: grey - black, medium to coarse grained, partly crystalline, talcose, soft, sharp base. MINERALISATION: abundant talc, with locally abundant pyrite.	RRM
	549.77	0.28	100.0	LAPILLI TUFF	LAPILLI TUFF: mottled pink - grey, fine to coarse grained, agglomeratic, cherty, hard, fluidal texture, diffuse base, with clasts: grey, fine to coarse grained, cherty, dolomitic, poorly sorted, some contact, subrounded, bladed, with matrix: pink - grey, medium grained, cherty, dolomitic. MINERALISATION: minor pyrrhotite, pyrite, accessory galena.	RRM
	550.15	0.38	100.0	DOLOMITE	DOLOMITE: brown - grey, medium grained, ?tuffaceous. MINERALISATION: abundant pyrrhotite, with locally abundant pyrite, replacing the colomite. Bands include - CHERT: thickness 0.03 m., base at 549.92 m., pink - brown fine grained, ?tuffaceous, hard, accessory pyrite as disseminations.	RRMSM
	551.09	0.94	100.0	LAPILLI TUFF	LAPILLI TUFF: grey, fine to medium grained, cherty, hard, fluidal texture with clasts: grey, medium grained, cherty, dolomitic, minor talc, and, pyrrhotite replacing, some dolomite clasts with minor pyrite rimming clasts. Additional features include matrix: fine grained, cherty. Petrology - 550.3m.	RRM
	551.65	0.56	100.0	AGGLOMERATE	AGGLOMERATE (60%): with clasts: coarse grained, dolomitic, largely replaced by pyrrhotite and pyrite with matrix: cherty, and pyritic. LAPILLI TUFF (40%): grey - buff, fine grained, cherty, with minor pyrite as disseminations.	RRMSM
	551.83	0.18	100.0	SILTSTONE	SILTSTONE: dark grey, fine grained, hard, sharp base. This unit is very interesting in that it is finely banded in concentric patterns similar to leisegang banding in appearance . The feature though is most likely due to intense slumping.	RRM?

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	552.00	0.17	100.0	CALC-SILICATE ROCK	CALC-SILICATE ROCK: grey - green, cherty, hard, possibly faulted base, with clasts: medium grained, cherty, dolomitic, poorly sorted, no contact rounded, tabular, with matrix: fine grained, cherty. MINERALISATION: minor pyrrhotite as disseminations replacing, dolomite clasts. Additional minerals include: common chlorite near base of unit. Petrology - 552.0m.	RRM
	552.09	0.09	100.0	LAPILLI TUFF	LAPILLI TUFF: green - grey, cherty, sheared, sharp base, with clasts: cherty, no contact, subangular, tabular, with matrix: green, cherty, chloritized. MINERALISATION: locally abundant calcite infilling veins, with abundant chlorite alteration. Additional minerals include: locally abundant pyrite near base of unit. The basal contact (fault?) has a bca = 70 degrees The unit below this contact is either drag folded or slumped for the first centimetre directly below the contact. The underlying beds are definitely dalcoath member which can be correlated with a similar unit in s1143 and s1109, which was intersected approximately 20m below the no.3 horizon. This would suggest a throw on the ?fault in the order of 100m. Elsewhere on the mine lease such a large displacement fault would be well mineralised with quartz and sulphides but in this case the fault is described by a single plane with no apparently related mineralisation. I would suggest that this feature is in fact an unconformity, with the dalcoath member representing a topographic high. the slight deformation below the contact could be attributed to soft sediment deformation.	RRMF?
	583.72	31.63	100.0	SILTSTONE AND SHALE	SILTSTONE (40%): grey - brown, fine to medium grained, bleached, silicified, hard, cross bedding, slumped bedding, B.C.A.= 70 degrees, possibly faulted base. SHALE finely interbedded (60%): grey - buff, fine grained, bleached, hard The silty unit contains some sand size grains intermixed. MINERALISATION: minor quartz, and, pyrite veins. Petrology - 558.0m.	DM
	583.84	0.12	100.0	VEIN	VEIN. MINERALISATION: abundant quartz, with locally abundant calcite, and, chlorite.	F?

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					Additional minerals include: fine grained, coarse sphalerite, and, galena	
	599.00	15.16	100.0	DOLOMITE	DOLOMITE: buff - grey, fine to medium grained, non-crystalline, B.C.A.= 70 degrees. wit (30%): common pyrrhotite as disseminations replacing, some colomite interbeds. SILTSTONE finely interbedded (30%): red - green, fine grained, silicified chloritized, hard. SILTSTONE coarsely interbedded (30%): light brown, fine grained, silicified, bleached, hard. Bands include - BRECCIA: base at 580.27 m., with common calcite, and, minor galena, and sphalerite. Bands include - VEIN: thickness 0.14 m., base at 595.46 m. MINERALISATION: common calcite, and, pyrite, with locally abundant fluorite, and, sphalerite. Additional minerals include: minor galena. A similar vein occurs with base at 591.77m. Additional features include: common calcite, and, rhodochrosite veins throughout.	DM
	608.93	9.93	100.0	SILTSTONE AND SHALE	SILTSTONE (70%): grey - brown, fine grained, bleached, silicified, hard, B.C.A.= 65 degrees, possibly faulted base. SHALE finely interbedded (30%): buff, fine grained, bleached. MINERALISATION: minor calcite, and, quartz veins.	DM
	609.25	0.32	100.0	VEIN	VEIN. MINERALISATION: abundant quartz, and, chlorite, with siltstone: intermixed.	F?VN
	614.62	5.37	100.0	SILTSTONE	SILTSTONE: brown, fine grained, firm, unbroken, medium bedding, B.C.A.= 65 degrees, sharp base. MINERALISATION: minor calcite, and, quartz veins. Additional features include: mottled cream alteration near base of unit. Bands include - VEIN: thickness 0.06 m., base at 611.64 m., abundant rhodochrosite, with common quartz, and, minor sphalerite.	DM
	615.14	0.52	100.0	GRANITE	GRANITE: mottled cream - black, fine to coarse grained, banded, sharp base. Bands include - GRANITE: thickness 0.02 m., base at 614.64 m., coarse grained, abundant tourmaline, plagioclase, quartz, the tourmaline is	GR

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					especially coarse grained and nucleates at the upper contact forming a comb-like texture. GRANITE: thickness 0.04 m., base at 614.68 m., fine grained, abundant tourmaline, plagioclase, quartz. VEIN: thickness 0.09 m., base at 614.77 m., white - black. fine grained. abundant tourmaline, and, quartz, with minor sericite. GRANITE: thickness 0.12 m., base at 614.89 m., fine grained, common plagioclase, and, quartz, with minor tourmaline, and, sericite. Additional features include: sharp base. with vca = 50 degrees. Bands include - GRANITE: thickness 0.31 m., base at 615.10 m., medium grained, common quartz, plagioclase, tourmaline, with minor sericite. Additional features include: sharp base, with vca = 50 degrees. Bands include - GRANITE: thickness 0.04 m., base at 615.14 m., fine grained, abundant quartz, and, tourmaline, with common plagioclase.	
	630.79	15.65	100.0	SILTSTONE	SILTSTONE: mottled brown, fine to medium grained, spotted, bleached, hard firm, unbroken, fine bedding, B.C.A.= 50 degrees. MINERALISATION: minor pyrrhotite blebs, with trace pyrite veins. Additional minerals include: minor calcite veins. Additional features include: FAULT: base at 629.08m. thickness 0.01m. With abundant quartz veins, dragged bedding either side of fault. It is a normal fault with vca = 60 degrees.	DM
	639.02	8.23	100.0	SILTSTONE	SILTSTONE: light brown, fine to medium grained, bleached, spotted, fractured, irregular bedding. This is a fracture with minor folding evident. These features are most likely due to the emplacement of the underlying dyke. MINERALISATION: locally abundant quartz infilling in fractures. Bands include - SILTSTONE: dolomitic, talcose, with common pyrite, and, minor pyrrhotite replacing. Additional features include: ACID INTRUSIVE: white. fine grained. MINERALISATION: abundant iron oxides, and, quartz, with minor muscovite. with base at 633.20m. running parallel to core axis.	DM
	639.12	0.10	100.0	SILTSTONE	SILTSTONE: dark brown, fine grained, silicified, hard, with common quartz veins.	DM
	639.73	0.61	100.0	ACID INTRUSIVE	ACID INTRUSIVE: blue. medium grained, hard, firm. unbroken, abundant tourmaline, with common quartz, and, minor sericite. The base is sharp with a vca = 20 degrees.	GR?

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
	641.65	1.92	100.0	SILTSTONE	SILTSTONE: light brown, fine grained, bleached, hard, firm, unbroken, fine bedding, B.C.A.= 40 degrees. Near the top and base of the unit the siltstone becomes dark brown, possibly due to ?iron staining. MINERALISATION: minor tourmaline veins. Bands include - VEIN: thickness 0.03 m., base at 640.60 m., abundant quartz, and, minor pyrite. This in unlikely to be fault since there is no warping of the beds and no discernable change in rock type.	DM
	644.12	2.30	93.1	SILTSTONE	SILTSTONE: dark brown - black, fine grained, broken, fractured, disturbed and disrupted bedding. This unit contains locally abundant quartz, tourmaline dykes, which are fine grained. Bands include - BRECCIA: thickness 0.04 m., base at 644.04 m., common rock fragments, and, calcite, with minor sphalerite.	DM
	644.93	0.58	71.6	SILTSTONE	SILTSTONE: mottled brown - grey, fine grained, silicified, bleached, fractured, disturbed and disrupted bedding. MINERALISATION: common carbonate, pyrite, quartz veins, with common galena, coarse grained. Additional minerals include: minor sphalerite, and, plagioclase. The base is marked by a coarse carbonate infilled breccia.	DM
	645.13	0.20	100.0	ACID INTRUSIVE	ACID INTRUSIVE: medium grained, common tourmaline, and, quartz, with minor chlorite, or talc. The base is sharp with a vca = 10 degrees.	GR?
	650.06	4.93	100.0	SILTSTONE	SILTSTONE: brown, fine grained, bleached, silicified, hard, firm, unbroken, medium bedding, B.C.A.= 45 degrees. MINERALISATION: minor quartz veins.	DM
	651.35	1.29	100.0	GRANITE	GRANITE: fine to coarse grained, banded. *Bands include - ACID INTRUSIVE: thickness 0.74 m., base at 650.80 m.,* white - black, coarse grained. MINERALISATION: abundant quartz, and, tourmaline, with locally abundant sericitised feldspar, tourmaline forms large needles up to 2cm long. Bands include - GRANITE: thickness 0.55 m., base at 651.35 m., green - buff, fine to medium grained, sharp base.	GR

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					MINERALISATION: abundant plagioclase, and, sericitised feldspar, with common quartz, and, tourmaline. This unit is equigranular with base vca = 65 degrees.	
	654.81	3.46	100.0	SILTSTONE	SILTSTONE: brown, fine grained, bleached, firm, unbroken, sharp base, folded bedding. MINERALISATION: abundant quartz, tourmaline veins.	DM
	657.67	2.86	100.0	GRANITE	GRANITE: buff - green, fine grained. MINERALISATION: abundant plagioclase, sericitised feldspar, quartz, with locally abundant coarse grained tourmaline. Additional minerals include: trace molybdenite as disseminations. Large ((35cm) xenoliths of the country rock siltstone occur near the base. These xenoliths are tourmalinised with microfaulting, disturbed and disrupted bedding, and angular boundaries. The basal contact is also irregular and angular, which along with the angular xenoliths is consistent with intrusion along fractures and rapid quenching.	GR
	663.72	6.05	100.0	SILTSTONE	SILTSTONE: brown, fine grained, bleached, firm, unbroken, disturbed and disrupted bedding, irregular bedding, gradational base, dolomitic interbed towards the base. MINERALISATION: locally abundant pyrrhotite, and, pyrite near base of unit infilling in fractures, and replacing, dolomitic, interbeds. Additional minerals include: locally abundant quartz veins.	DM
	664.78	1.06	100.0	DOLOMITE	DOLOMITE: pink - grey, fine grained, non-crystalline, talcose, soft, firm, unbroken, irregular bedding. MINERALISATION: abundant talc, with minor pyrite, and, pyrrhotite. The talc selectively replaces the dolomite beds, leaving intact the fine grained, non-crystalline, pink dolomite units.	DMDO
	665.95	1.17	100.0	SILTSTONE	SILTSTONE: brown - grey, fine grained, bleached, firm, unbroken, fine bedding, irregular bedding, B.C.A.= 65 degrees, gradational base. MINERALISATION: minor pyrite, pyrrhotite, talc replacing, thin interbedded dolomite horizons.	DM
	666.40	0.45	100.0	DOLOMITE	DOLOMITE: pink - brown, fine to medium grained, non-crystalline, talcose.	DMDO

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					soft, irregular bedding, sharp base. MINERALISATION: common talc, and, pyrrhotite, with minor chlorite, and, pyrite. Additional features include: the non-replacement of the fine grained, pink dolomite.	
	668.21	1.81	100.0	SILTSTONE	SILTSTONE: brown, fine grained, fractured, irregular bedding, B.C.A.= 60 degrees, sharp base. MINERALISATION: minor pyrrhotite, and, pyrite blebs.	DM
	669.24	1.03	100.0	DOLOMITE	DOLOMITE: pink - grey, fine to medium grained, non-crystalline, talcose, soft, irregular bedding. MINERALISATION: locally abundant talc, with common pyrrhotite as disseminations. Additional minerals include: minor pyrite, and, chlorite.	DMDO
	671.90	2.66	100.0	SILTSTONE	SILTSTONE: pink - brown, fine grained, irregular bedding, dolomite patches. MINERALISATION: minor pyrite, and, pyrrhotite infilling in fractures.	DM
	672.51	0.61	100.0	DOLOMITE	DOLOMITE: grey, fine to medium grained, non-crystalline, talcose. MINERALISATION: minor pyrrhotite, and, pyrite as disseminations.	DMDO
	678.75	6.24	100.0	SILTSTONE	SILTSTONE: brown - grey, fine grained, dolomitic, spotted, indistinctly bedded, sharp base. MINERALISATION: minor pyrite, and, pyrrhotite infilling in fractures. The unit is tourmalinised towards the base.	DM
	679.77	1.02	100.0	GRANITE	GRANITE: fine to medium grained. Bands include - GRANITE: thickness 0.50 m., base at 679.25 m., green - buff, fine grained, diffuse base. MINERALISATION: abundant sericitised feldspar, and, quartz, with minor calcite, and, tourmaline veins, equigranular. Bands include - ACID INTRUSIVE: thickness 0.44 m., base at 679.69 m., black - white, medium to coarse grained.	GR

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					MINERALISATION: abundant tourmaline, and, quartz. Additional minerals include: trace plagioclase. Bands include - GRANITE: thickness 0.08 m., base at 679.77 m., medium grained. MINERALISATION: locally abundant plagioclase, sericitised feldspar, quartz, and tourmaline. This unit also contains an angular country rock xenolith.	
	706.82	27.05	100.0	SILTSTONE	SILTSTONE: grey - brown, fine to medium grained, hornfelsed, spotted, firm, unbroken, massive, indistinctly bedded, sharp base. The spotting is brown or grey and is fine, usually less than 1mm in diameter. MINERALISATION: minor calcite, tourmaline, and, pyrrhotite veins. Bands include - Several thin quartz, carbonate veins with bases at 689.34m, 689.60m and 692.09m. Base bca = 60 degrees.	DM
	706.96	0.14	100.0	GRANITE	GRANITE: white, fine grained, abundant feldspar, with minor quartz, and, tourmaline. This is the chilled margin of the granite.	GR
	708.94	1.98	100.0	GRANITE	GRANITE: cream, fine to medium grained, massive, firm, unbroken, becoming coarser towards the end of the unit, diffuse base. The unit is mostly fine grained equigranular but intermixed are patches of coarser material. MINERALISATION: abundant feldspar, with common quartz, and, muscovite. Additional minerals include: minor tourmaline, and, molybdenite. The tourmaline occurs in sparse veins. Molybdenite occurs in irregular shaped grains up to 4mm in size.	GR
	727.01	18.07	100.0	GRANITE	GRANITE: mottled cream - black, medium to coarse grained, massive, firm, unbroken, sharp base. Grainsize is variable from 1mm to 12mm but the unit is equigranular with mean grainsize 4mm. Plagioclase is the most abundant mineral constituting approximately 65% of the rock by volume. It is commonly white in colour with an irregular grain shape Quartz accounts for 20-25% by volume, anhedral and is often slightly larger than plagioclase.	GR

FLAG	DEPTH	RECOVERED THICKNESS	% REC	ROCK TYPE	GEOLOGICAL DESCRIPTION OF STRATA	STRAT
					Tourmaline occurs in fine grained aggregates and disseminations. It accounts for approximately 7%. Additional minerals include: minor molybdenite, and, muscovite, both fine grained and more common towards the top of the unit. Additional features include: common tourmaline veins, with abundant sericite alteration about veins, vca = 20 degrees Minor porphyritic xenoliths occur near the top of the unit.	
	729.87	2.86	100.0	VEIN	VEIN. Both margins of this vein contain highly sericitized feldspars, with quartz and tourmaline. Bands include - GRANITE: thickness 0.60 m., base at 727.90 m., white - black, medium to coarse grained, silicified, with abundant quartz, and locally abundant tourmaline. The quartz has replaced the sericitized feldspars. TOURMALINE: coarse grained, crystalline, thickness 0.45m, base at 728.35m.. Additional minerals include: minor fluorite, and, calcite, with trace scheelite. GRANITE: medium grained, silicified, sericitized, thickness, 1.52m, base at 729.87m with abundant quartz, tourmaline, sericitised feldspar.	GR?VN
	739.63	9.76	100.0	GRANITE	GRANITE: medium to coarse grained, firm, unbroken. MINERALISATION: abundant plagioclase, quartz, and tourmaline. The tourmaline is found in a vein near the top of the unit which runs parallel to the core axis. This unit has patches of porphyritic material with feldspar becoming coarsely crystalline.	GR
	746.00	6.37	100.0	GRANITE	GRANITE: mottled cream - black, fine to medium grained, firm, unbroken. This unit contains fine grained patches which are feldspar rich with little or no tourmaline. The other sections are very similar to the previously described units. Near the base of the unit there is common sericite and tourmaline probably indicating a proximal tourmaline vein. MINERALISATION: trace molybdenite, as very fine grained disseminations.	GR

END OF HOLE at 746.00m.

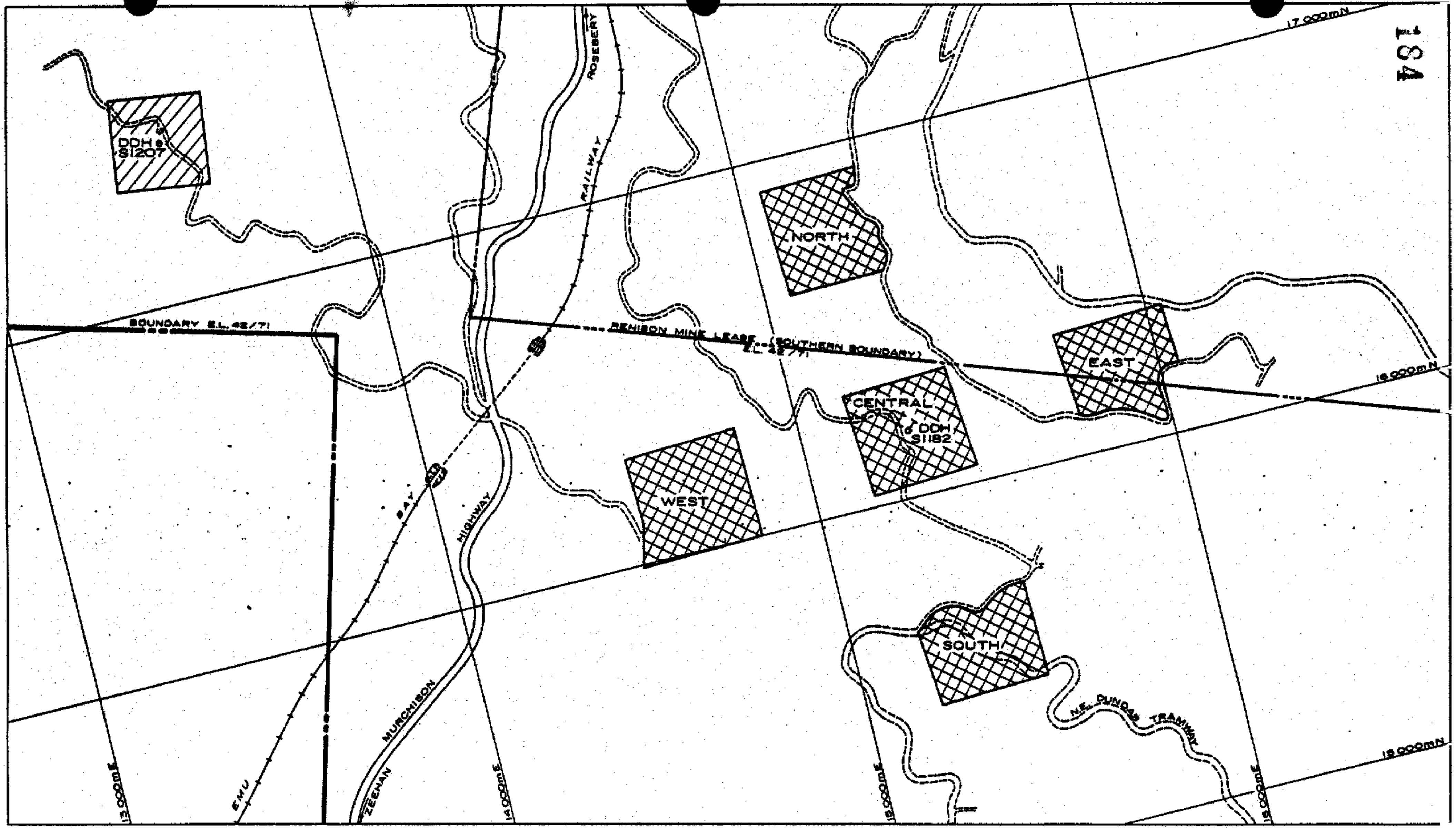
STRAT	FROM (M)	TO (M)	Reserve/ Cutoff	Sn (%)	ANL Sn (%)	SOL Sn (%)	Cu (%)	Pb (%)	Zn (%)	Ag (G/T)	Bi (%)	As (%)	WO3 (%)	S (%)
CCFSK	71.13	72.13	0	0.05		<0.01	0.03	<0.01	0.16	<1.	0.001	<0.10	<0.01	2.70
CCFSK	72.13	73.13	0	0.01		<0.01	0.02	<0.01	0.05	<1.	0.004	<0.10	<0.01	3.20
CCFSK	73.13	74.13	5	<0.01		0.01	0.10	<0.01	0.04	2.	<0.001	<0.10	<0.01	8.70
CCFSK	74.13	75.13	5	<0.01		<0.01	0.06	<0.01	0.03	1.	<0.001	<0.10	<0.01	7.00
CCFSK	75.13	76.13	0	<0.01		<0.01	0.08	<0.01	0.08	<1.	<0.001	<0.10	<0.01	3.70
CCFSK	76.13	77.13	0	<0.01		<0.01	0.03	<0.01	0.03	<1.	0.002	<0.10	<0.01	2.60
	77.13	78.36	0	<0.01		<0.01	0.02	<0.01	0.03	<1.	0.003	<0.10	<0.01	2.40
CCFF?SM	262.00	263.20		<0.01		0.01	0.09	<0.01	0.03	<1.	0.002	<0.10	<0.01	6.70
CCF	263.20	264.20		<0.01		0.01	0.05	<0.01	0.04	<1.	<0.001	<0.10	<0.01	2.30
CCF	264.20	265.20		<0.01		<0.01	0.04	<0.01	0.03	<1.	<0.001	<0.10	<0.01	2.40
CCF	265.20	266.20		<0.01		0.01	0.01	<0.01	0.03	<1.	0.001	<0.10	<0.01	0.30
CCF	266.20	267.40		<0.01		0.01	0.09	<0.01	0.10	<1.	0.001	<0.10	<0.01	4.10
CCFF?	311.00	311.30	0	0.03		0.04	0.06	0.45	2.10	11.	0.002	<0.10	<0.01	1.40
FVN	332.70	333.70	0	<0.01		<0.01	0.03	0.03	0.07	1.	<0.001	0.10	0.01	2.10
FVN	333.70	334.70	0	<0.01		<0.01	0.04	0.10	0.15	3.	<0.001	<0.10	<0.01	8.20
FVN	334.70	335.70	0	<0.01		0.01	<0.01	<0.01	0.02	<1.	<0.001	<0.10	<0.01	0.50
FVN	335.70	336.15	0	<0.01		<0.01	<0.01	<0.01	0.02	<1.	<0.001	<0.10	<0.01	0.20
CCFSK	371.40	372.40		0.03		0.01	<0.01	<0.01	0.03	2.	<0.001	<0.10	<0.01	<0.10
CCFSK	372.40	373.40		0.02		0.01	<0.01	<0.01	0.03	2.	0.008	<0.10	<0.01	<0.10
CCFSK	373.40	374.80		0.02		0.01	<0.01	<0.01	0.03	1.	0.007	<0.10	<0.01	<0.10
CCFSK	374.80	375.80		0.03		0.02	<0.01	<0.01	0.02	2.	0.009	<0.10	<0.01	<0.10
CCFSK	375.80	376.80		0.04		0.01	<0.01	<0.01	0.02	1.	0.008	<0.01	<0.01	0.10
CCFSK	376.80	377.80		0.02		0.01	<0.01	<0.01	0.02	1.	0.005	<0.10	<0.01	<0.10
CCFSK	377.80	378.30		0.02		0.01	0.02	<0.01	0.02	<1.	0.005	<0.10	0.01	2.50
CCFSK	436.60	437.60		0.07		0.04	<0.01	<0.01	0.03	1.	0.008	<0.10	0.02	1.10
CCFSK	437.60	438.60		0.13		0.05	0.06	<0.01	0.08	2.	0.004	<0.10	<0.01	1.00
CCFSK	438.60	439.60		0.06		0.04	<0.01	<0.01	0.02	2.	<0.001	<0.10	<0.01	0.40
CCFSK	439.60	440.60		0.07		0.03	<0.01	<0.01	0.02	1.	0.002	<0.10	<0.01	0.30
CCFSK	440.60	442.00		0.08		0.05	<0.01	<0.01	0.03	1.	0.007	<0.10	0.01	0.40
DHMDO	529.25	530.56		<0.01		0.03	<0.01	0.15	0.16	7.	0.002	<0.10	0.02	3.00
DHM	530.56	531.70		<0.01		0.03	<0.01	0.01	0.03	2.	0.002	<0.10	<0.01	8.90
DHM	531.70	532.70		<0.01		0.01	<0.01	<0.01	0.02	1.	<0.001	<0.10	<0.01	4.10
DHM	532.70	533.70		<0.01		0.02	<0.01	<0.01	0.02	<1.	<0.001	<0.10	<0.01	4.90
DHMDS	533.70	535.11		<0.01		0.01	0.02	<0.01	0.02	<1.	<0.001	<0.10	0.02	7.90

RENISON LIMITED

STRAT	FROM (M)	TO (M)	Reserve/ Cutoff	Sn (%)	ANL Sn (%)	SOL Sn (%)	Cu (%)	Pb (%)	Zn (%)	Ag (G/T)	Bi (%)	As (%)	WO3 (%)	S (%)
DHMDS	535.11	536.22		<0.01		<0.01	<0.01	<0.01	0.01	1.	<0.001	<0.10	<0.01	7.20
DHMDS	536.22	537.22		<0.01		<0.01	0.01	<0.01	0.02	2.	0.006	<0.10	0.01	8.00
DHM	537.22	537.80		<0.01		<0.01	<0.01	<0.01	0.01	1.	<0.001	<0.10	<0.01	2.50
DHM	537.80	538.80		<0.01		<0.01	<0.01	0.01	0.01	<1.	<0.001	<0.10	0.01	0.60
DHM	538.80	539.80		<0.01		<0.01	<0.01	<0.01	0.01	1.	<0.001	<0.10	0.01	1.00
DHM	539.80	540.56		<0.01		<0.01	0.01	<0.01	0.01	<1.	0.002	<0.10	0.02	1.40
1DO	540.56	541.45	0	<0.01		<0.01	<0.01	<0.01	0.01	1.	0.010	<0.10	0.07	<0.10
1DO	541.45	541.71	0	<0.01		<0.01	0.02	<0.01	0.02	2.	0.009	0.40	<0.01	4.60
1DS	541.71	542.18	5	0.06		<0.01	0.08	<0.01	0.04	2.	0.019	<0.10	<0.01	13.90
1DO	542.18	543.18	0	<0.01		<0.01	0.05	<0.01	0.02	1.	0.003	<0.10	0.01	8.40
1DO	543.18	544.18	0	<0.01		<0.01	<0.01	<0.01	0.02	1.	0.006	<0.10	0.01	2.70
1DO	544.48	544.92	0	<0.01		<0.01	<0.01	<0.01	0.02	<1.	<0.001	<0.10	0.01	<0.10
DM	644.04	644.93		0.02		<0.01	0.03	1.10	2.67	15.	0.001	<0.10	0.04	2.10
GR	708.00	709.00		<0.01		<0.01	<0.01	0.02	0.02	<1.	0.001	<0.10	0.01	<0.10

APPENDIX III B

DIAMOND DRILLHOLE S1182 - DHEM (EM 37) LOGGING DATA

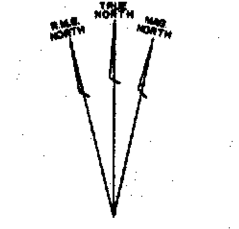


LEGEND:

▩ DHEM TRANSMITTER LOOP, EM37 SYSTEM (GEO-TERREX) AND SIROTEM SYSTEM (SOLO) - CUT LINES

▨ DHEM TRANSMITTER LOOP, SIROTEM SYSTEM (SOLO) - POSITION APPROXIMATE. **NOTE:** LOOP LAID OUT ON COMPASS BEARING WITH TOPOFIL HIPCHAIN.

5 cm



RENISON LIMITED

200 100 0 500m

SCALE 1:10 000

GEOLOGIST: D.A.E.

DRAUGHTSMAN: R.F.

CHECKED:

DATE: SEPT., 1986

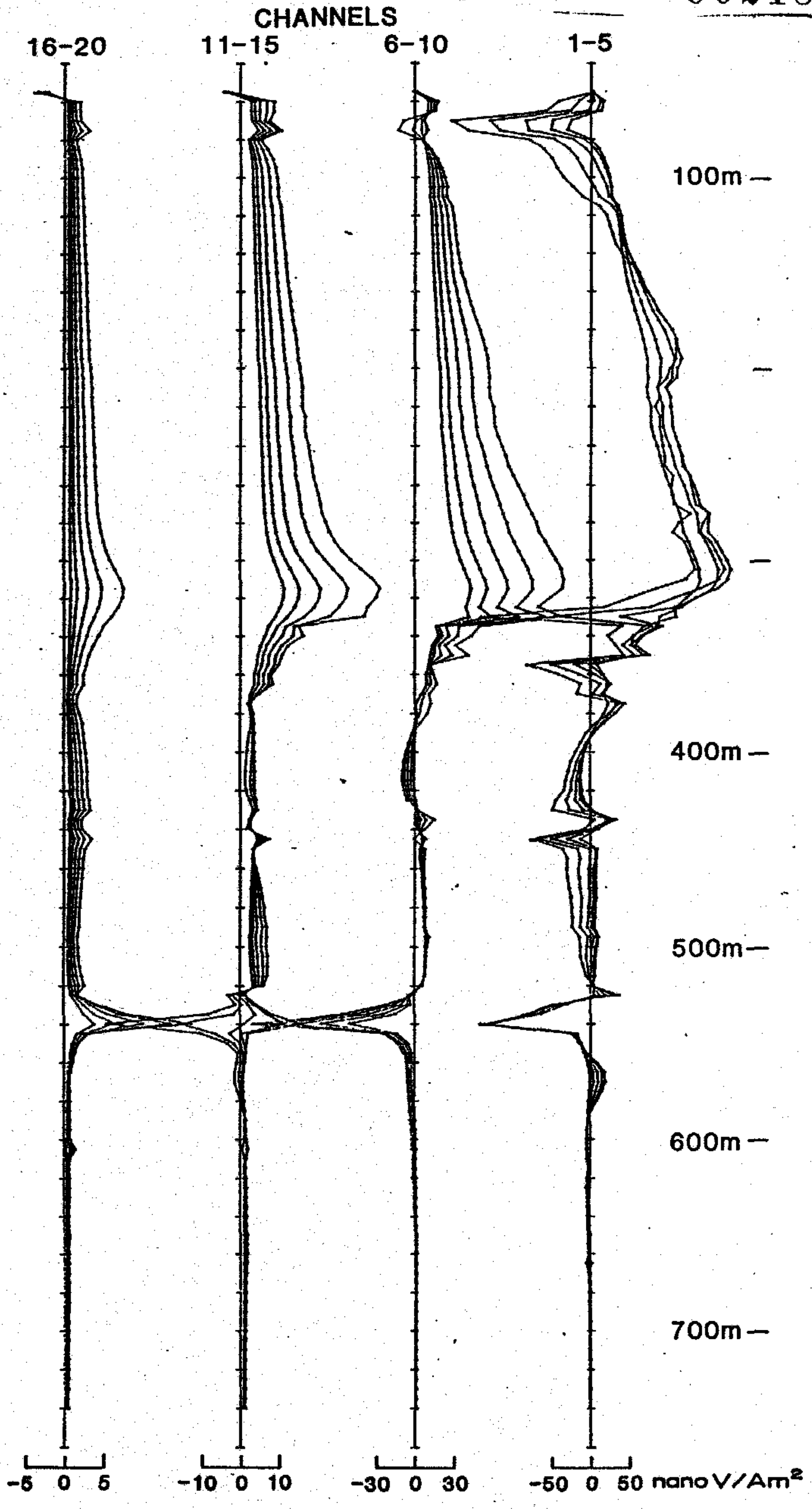
REVISED:

SERPENTINE HILL AND
COMMONWEALTH HILL AREA

DRILLHOLES S1182 AND S1207

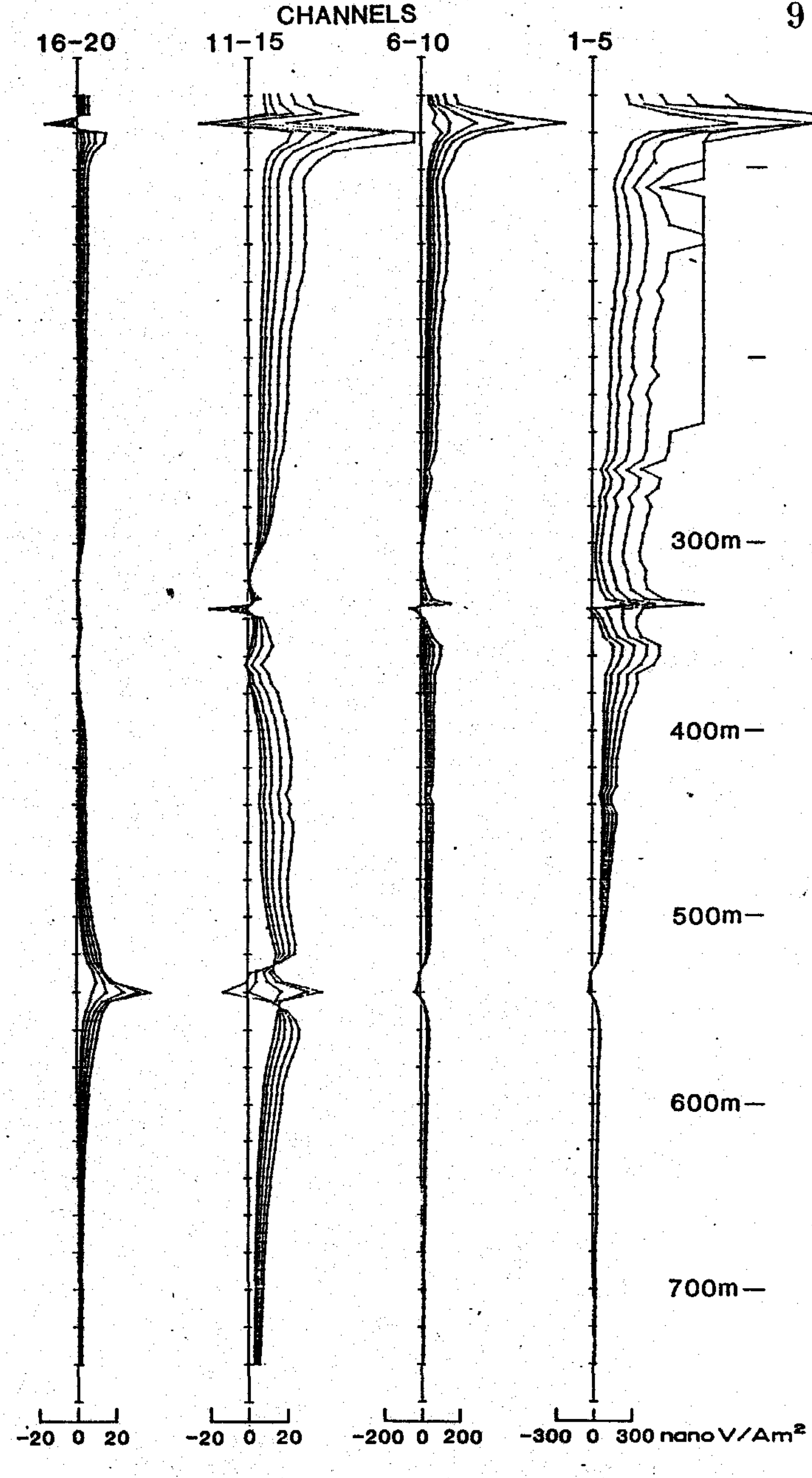
LOCATION
OF
DHEM TRANSMITTER LOOPS

FIG. No.



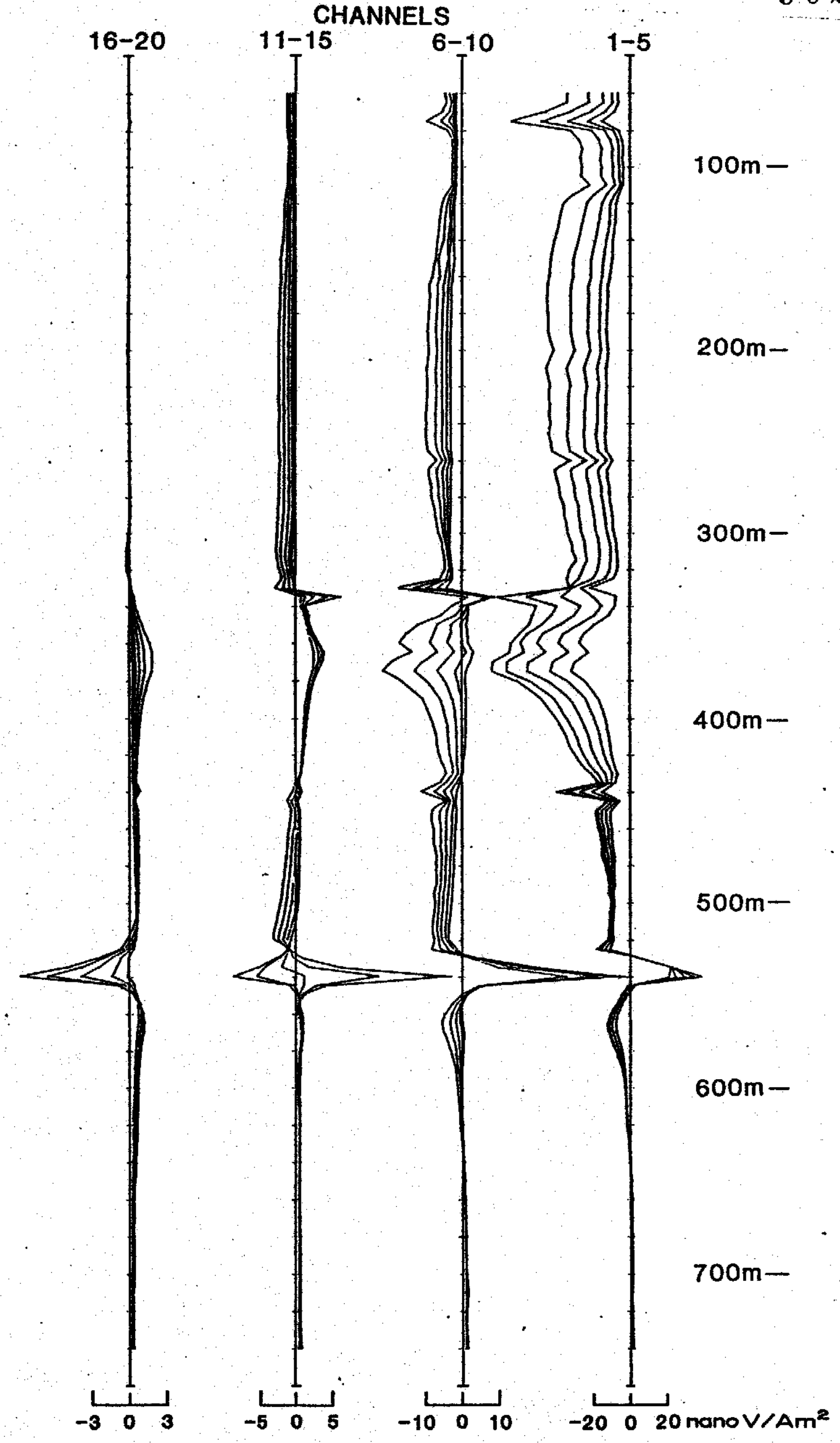
DDH SI182 - DOWNHOLE EM LOGGING DATA (EM 37)

NORTH LOOP



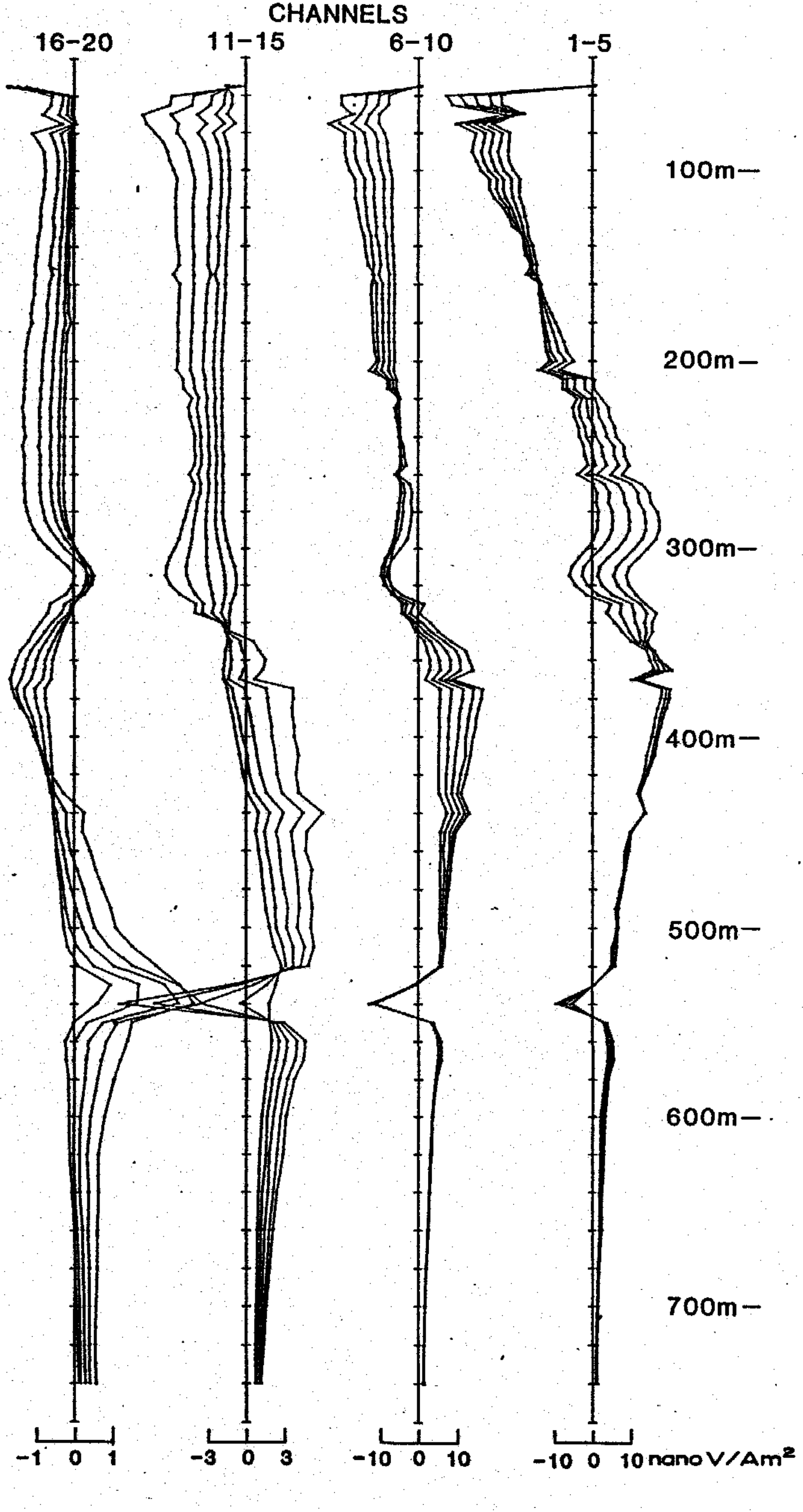
DDH SII82 - DOWNHOLE EM LOGGING DATA (EM 37)

CENTRAL LOOP



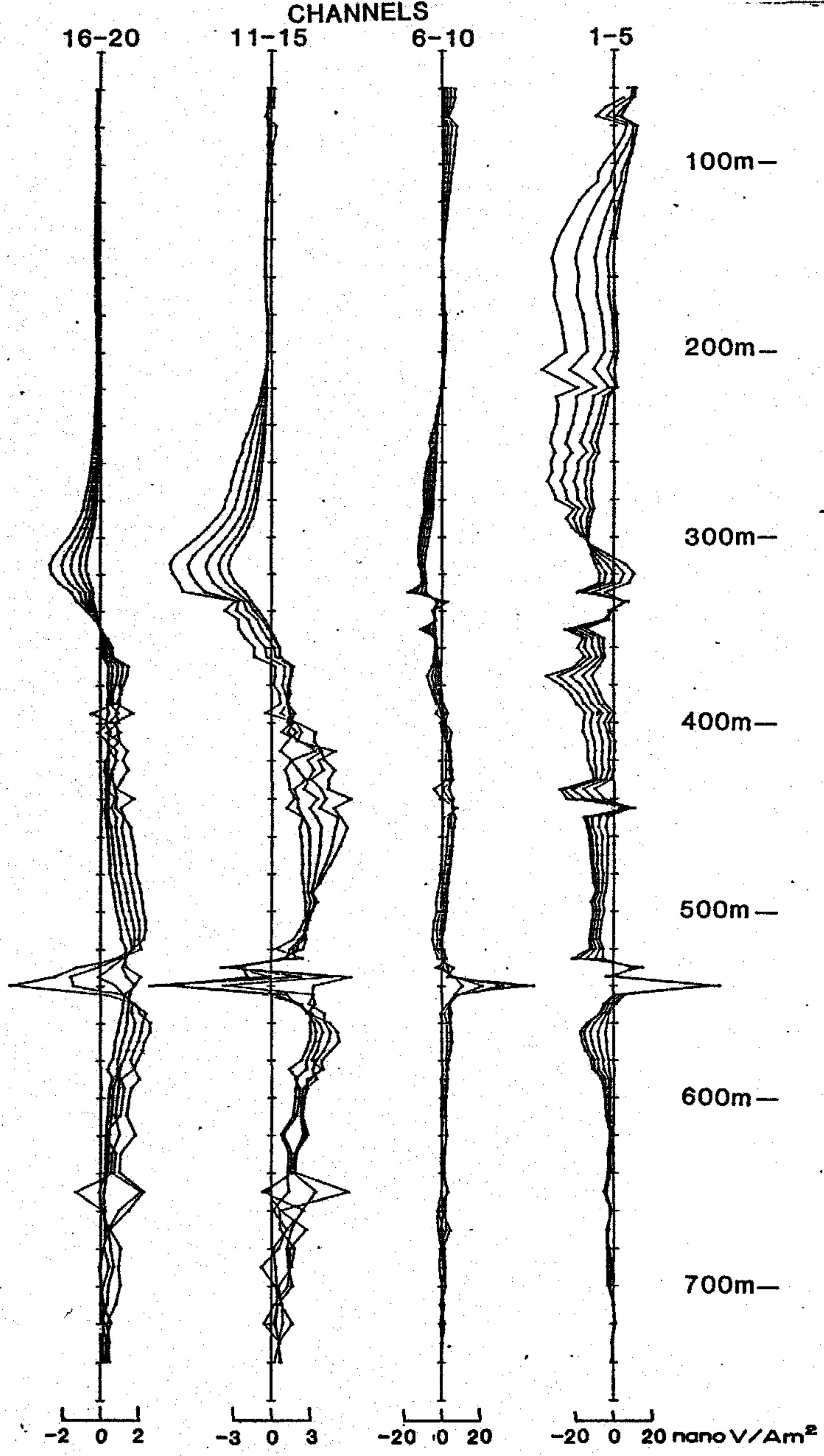
DDH S1182 - DOWNHOLE EM LOGGING DATA (EM 37)

SOUTH LOOP



DDH S1182 - DOWNHOLE EM LOGGING DATA (EM 37)

EAST LOOP



DDH S1182 - DOWNHOLE EM LOGGING DATA (EM 37)

WEST LOOP

APPENDIX III C

DIAMOND DRILLHOLE S1182 - PETROLOGICAL REPORT

191

902192

Central Mineralogical Services

CMS

39 Beulah Road
Norwood, S.A. 5067
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Mr. D. Kilpatrick
Surface Geologist
Renison Limited
P.O. Box 20
ZEEHAN / TAS. 7469

8th March, 1985

REPORT CMS 84/12/11

YOUR REFERENCE:	Letter dated 3.12.1984
DATE RECEIVED:	8th December, 1984
SAMPLE NOS.:	6 Samples
SUBMITTED BY:	D. Kilpatrick
WORK REQUESTED:	Petrology

for

H.W. Fander, M. Sc.

REPORT CMS 84/12/11

S 1182

This sequence, as sampled, reflects a fault-contracted mine sequence, ranging from circa No. 1 Horizon to Dalcoath.

A shale breccia facies (536.2 m) exhibits certain "UCU"-type characteristics and could be so correlated on strictly petrological grounds. This rock is proximal to a relatively high-grade contact-altered dolomite and this sequence, in general, exhibits relatively marked contact effects consistent with a proximal granite. Andalusite, appearing as porphyroblasts in hornfelsed Dalcoath (553.0 m) is of rare occurrence in Renison drill cores and, by analogy with previously examined composite (i.e. including hornfelsed pelites and the hornfelsing granite) sections, appears restricted to haloes a few tens of metres in width proximal to contacts.

The fault-brecciated contact at 552.0 m is unusual in that it exhibits post-brecciation hornfelsing effects, although these are complexed by subsequent stress effects.

S 1182 536.2 DHM	Pelitic Breccia. Semi-sericitic white mica with subordinate to minor microcrystalline quartz. Intraclasts of sericitic shale, impure chert, fine-grained quartzite. Interspersed irregular veinlets of quartz, pyrrhotite, muscovite, schorl.	Soft-pebble conglomeratic, breccia-like. Weakly sheared. Irregularly veined, incipiently restressed.	Minor sand-sized clastic quartz, carbonaceous matter, leucoxenic pigmentation. Traces apatite (veinlets).	Slump-brecciated, cherty, weakly leucoxenic-carbonaceous argillite; "U.C.U." characteristics. Veining predates mild shearing and late stress effects.
542.0 No. 1 Talc/dol.	Diopside Skarn. Medium-grained to microcrystalline and semi-ragg diopside with sporadic spongy clots, films of pyrrhotite. Interspersed clots, veinlets, diopside-pseudomorphous aggregates of talc-minnesotaite.	Massive-featureless to vaguely banded. Incipiently sheared.	Traces of fine cloudy sphene. Minor late clots of calcite in talc aggregates.	Partly altered ("steatitised") diopside-pyrrhotite skarn; incipiently sheared/calcitised. Unmineralised.
547.0 RRM	Phlogopitic Cherty Argillite. Microcrystalline quartz and fine to ultrafine phlogopite in varying proportions with semi-pervasive ultrafine hematite. Sporadic phlogopitised labile silty to sandy interbeds. Minor chlorite-calcite veinlets.	Banded; hematitic, pelite-parted on millimetric scale. Locally weakly chert-nodular. Locally weakly hornfelsed.	Leucoxenic staining in weakly hematitic bands. Trace to minor variably pyritised pyrrhotite.	Hornfelsic, extensively phlogopitised cherty argillite with interbeds of relatively altered, vaguely tuffaceous siltstone, fine to medium sandstone/sandy pelite.
550.3 RRM	Tremolitic Psammopelite. Ultrafinely tremolitic microcrystalline, variably sphene-stained quartzofeldspathic material, variously massive or as matrix to sandy interbeds with tremolitised lithic clasts, subordinate quartz grains.	Massive to slump-brecciated intercalation of pelite, sandy pelite/poorly sorted sandstone.	Thinly, semi-pervasively disseminated pyrrhotite, traces of pyrite. Patchy tremolite-pseudomorphous prehnite.	Extensively tremolitised ashy pelite, tuffaceous sandstone on basis of relict features. Late prehnite alteration with rare chloritic calcite-quartz veinlets.
552.0 RRM	Hornfelsed Breccia. Interspersed clasts, zones of phlogopitic/tremolite-stained sublabile pelite, psammopelite, sericitic quartzose siltstone/silty shale, tremolitic-silicified dolomite. Patchy phlogopitic-tremolitic pelite matrix.	Semi-mylonitic, breccia-like. Detail obscured by hornfelsic overprint.	Minor fine-grained pyrrhotite disseminations. Disseminated relict detrital quartz grains.	General features consistent with a fault breccia composite of RRM and DM and/or RBM components. Contact-altered/recrystallized.
558.0 DM	Pelitic Hornfels. Quartz-muscovite hornfels with disseminated partly altered (sericitised-phlogopitised) andalusite porphyroblasts. Disseminated to locally conspicuous pyritised pyrrhotite.	Fine-grained, banded, hornfelsic/relict shale-parted quartzose silty clastic.	Minor late films of sideritic carbonate.	Mildly retrogressed andalusite-porphyroblastic quartz-mica hornfels. Altered pyrrhotite apparently replaced bedded syngenetic pyrite. DM characteristics.

APPENDIX IV

E.L. 42/71 (WEST) - ARGENT AREA

DIAMOND DRILLHOLES S1026 AND S1134 - PETROLOGICAL REPORT *

* Note - Data not previously reported.

902196

195

Central Mineralogical Services

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4th February, 1985

REPORT CMS 84/5/46

YOUR REFERENCE:	Letter dated 22.5.1984
DATE RECEIVED:	29th May, 1984
SAMPLE NOS.:	53 Samples
SUBMITTED BY:	D. Kilpatrick
WORK REQUESTED:	Petrology

for

H.W. Fander, M. Sc.

REPORT CMS 84/5/46

Fifty-three drill core samples from drill holes S 1026, S 1134, S 1084 and S 1084B on the Federal structure were received for petrological examination. Representative thin-sections were prepared and examined in transmitted and oblique incident light, with stained offcuts where warranted. Attached tabulated descriptions summarise the microscopic data and include interpretative comments, incorporating answers to specific queries where applicable.

Summary

As sampled, this suite represents variably incomplete "Mine Sequence" lithological sequences, ranging from basal Crimson Creek Formation to the Dalcoath Member. Petrology-based correlations are partly tentative in two areas, notably the distinction between Red Rock Member and the Upper Contorted Unit (of which few so-delineated samples have been previously described), and further between certain facies of Renison Bell Member and the petrologically similar Dalcoath.

Certain sections, notably in S 1134, herein delineated as Red Rock, may require revision on the basis of mesoscale characteristics and disposition of the No. 1 Dolomite. Similarly, the relatively contact-hornfelsic sequences in S 1084 and S 1084B are problematical to a certain degree due to metamorphic overprints and partial obliteration of the finer primary detail.

With these constraints in mind, apparent structural repetitions are evident within the Renison Bell Member in S 1026, and in an apparent repetition of Red Rock Member in the base of S 1134.

In comparison, the S 1084B and particularly S 1084 sequences are also complexed by relatively marked contact-metamorphic recrystallization effects and in the reactive carbonate horizons, typically represented by calc-silicate assemblages, by enhanced metasomatic effects.

Hornfelsed pelites in the base of S 1084B (ca. 830 m) are re-interpreted as Renison Bell Member on the basis of relict features. A proximal actinolitic skarnised dolomitic arkosic psammopelite (825.8 m, correlatable with S 1084/824.7 m) is a rather "immature" composite sediment in comparison with the typical Mine area dolomites, but represents the only notable contrast with the typical Mine Sequence.

This suite as a whole lacks positive indicators of cassiterite-tin mineralisation. Pelitic facies are notably deficient in pneumatolytic effects (tourmalinisation) and sulphides are essentially restricted to veins, fault-related segregations, and variably pyrrhotitised "syngenetic" pyrite disseminations.

D. Cowan, B. Sc.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
S 1026 223.5 (T.S. 50255)	Carbonaceous Pelite. Semi-sericitic white mica with varying proportions silt-sized quartz, subordinate detrital muscovite. Pervasive carbonaceous matter. Minor lenses of massive microcrystalline pyrite.	Sericitic siltstone-silty shale-parted laminated shale; incipiently concordantly sheared.	Minor traces of fine sand-sized quartz, rare detrital zircons.	Finely laminated intercalation of carbonaceous shale, silty shale, sericitic quartz siltstone. Weakly pyritic. Unaltered.
580.6	Carbonaceous Psammopelite. Sericite and silt- to fine sand-sized subangular quartz in varying proportions with minor detrital muscovite, clay pellets. Pervasive carbonaceous matter.	Laminated on sub- to fine millimetric scale (shale-parted siltstone, fine sandy siltstone). Incipiently sheared.	Thinly disseminated to locally conspicuous "syngenetic" pyrite.	Close affinities with 223.5 m, relatively quartzose-silty in comparison; similarly planar-bedded.
586.5	Carbonaceous, Phosphatic Pelite. Sericite and silt-sized quartz in varying proportions with minor detrital muscovite, pervasive carbonaceous matter. Semi-ubiquitous microsocpic cloudy authigenic apatite in shale interbeds.	Submillimetric alternation of shale, sericitic siltstone, silty shale. Sporadic coarser shale,siltstone units.	Minor pyrite lenses, diagenetic films.	Close affinities with 223.5 m, similarly incipiently concordantly sheared, unaltered. Fine authigenic apatite stained with carbonaceous matter, conspicuous in shale units.
592.5	Carbonaceous Pelite. Sericite and silt-sized quartz in varying proportions with subordinate to minor detrital muscovite, pervasive carbonaceous matter. Minor syngenetic pyrite.	Millimetric-scale alternation of variably silty shale/argillaceous siltstone. Weakly graded bedding.	Minor microscale shale-breccia units. Rare detrital zircons. Minor microfractures, quartz veinlets.	Relatively "graded" quartzose-micaceous silty pelite. Incipiently concordantly sheared, weakly microfractured/quartz-veined.
600.0	Breccia. Clasts of partly silicified/weakly recrystallized carbonaceous quartzose siltstone and silty carbonaceous shale. Matrix, veins, veinlets of quartz with sporadic vugs of carbonate.	Random angular to contorted sub- to millimetric-scale clasts. Microfractured medium-grained matrix.	Rare microscopic quartz-intergranular blebs of sphalerite in matrix.	Quartz-carbonate-healed, weakly microfractured breccia with carbonaceous quartzose siltstone/silty shale (sim. e.g. 580.6 m) as clasts.
612.0	Carbonaceous, Pyritic Pelite. Sericite with minor intergrown poorly resolvable chlorite, varying proportions of silt-sized quartz, subordinate muscovite. Pervasive carbonaceous matter. Disseminated ultrafine pyrite.	Millimetric to micro-laminated silty shale; planar to locally lenticularly bedded. Very incipiently sheared.	Minor late clots, discontinuous veinlets of siderite (± quartz).	Weakly chloritic, carbonaceous-pyritic, quartzose-micaceous silty pelite.
616.5	Carbonaceous, Pyritic Pelite. Sericite with subordinate to minor silt-sized quartz, muscovite flakes, pervasive carbonaceous matter, conspicuous fine to ultrafine syngenetic pyrite.	Finely laminated silt-parted shale with interunits of shale-parted siltstone, Weakly microfractured.	Rare authigenic apatite in shale beds.	Planar-bedded pelite analogous to the 223.5 m, 580.6 to 592.5 m examples. Similarly interpreted as Middle(?) Renison Bell Member.
617.3	Breccia. Semi- to sericitic, weakly chloritic white mica aggregates with pervasive microscopic clots, films of carbonaceous matter. Disseminated ultrafine pyrite.	Crudely phyllitic, with ill-defined contorted to sheared/segmented pelite clasts.	Thinly disseminated silt-sized quartz grains.	Interpreted as a sericitic fault gouge with "mylonitic" relics of carbonaceous, weakly pyritic shale.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
S 1026 cont. 618.0	Breccia. Clasts of variably carbonaceous massive to quartzose silty pyritic pelite. Matrix of sericite with interspersed zones of Mg-chlorite. Sporadic chlorite veinlets, films. Disseminated ultrafine pyrite.	Random angular to contorted-irregular clasts, weakly phyllitic. Sheared matrix.	Rare blebs of sphalerite, microscopic films of galena in sheared chlorite veinlets.	Sericitic to chlorite-veined/ matrixed, weakly resheared breccia, developed in carbonaceous, pyritic pelite.
618.5	Carbonaceous, Pyritic Pelite. Sericite with varying proportions of silt-sized quartz, subordinate muscovite flakes, thinly-pervasively disseminated ultrafine pyrite, pervasive carbonaceous matter. Sporadic chloritic quartz veinlets.	Analogous to 616.5 m, but variably contorted to semi-brecciated. High-angle discordant, weakly stressed veinlets.	Minor sideritic carbonate, thinly disseminated pyrite in chloritic quartz veinlets.	Semi-plastically deformed carbonaceous quartzose silty pelite analogous to 223.5 m etc. Deformatio consistent with a fracture-marginal disposition.
S 1134 386.0	Breccia. Clasts of silicified/ carbonate-stained carbonaceous pelite, impure chert, quartz-carbonate rock, chloritised-*silicified labile siltstone/fine sandstone.* Pyritic/carbonate-stained chlorite-quartz matrix.	Randomly sorted submillimetric to centimetric clasts. Vaguely (altered) mylonitic matrix.	Sporadic late discontinuous calcite veinlets.	Chloritised-silicified-pyritised tectonic breccia. Clast lithologies partly obscured, but widely variable including Crimson Creek and Success Creek Group types.
433.0	Altered Basalt. Sericite-pseudomorphed feldspar and fine chlorite-pseudomorphed pyroxene laths/granules with patchy relics of a felted feldspar-microlathic groundmass. Patchy silicified-carbonated zones.	Relict feldspar-porphyritic "basaltic". Stressed to semi-brecciated.	Leucoxenic stainings. Minor stressed chloritic quartz-ankeritic carbonate veinlets.	Thoroughly altered basic with relict textural features suggestive of a porphyritic semi-chilled lava. Finer detail obscured by alteration, shearing effects.
441.3	Altered Basalt. Chlorite (± quartz) pseudomorphed feldspar microlaths, with subordinate *chloritised pyroxene laths, granules and* a finely hematite-pigmented chloritic mesostasis. Sporadic chlorite-carbonate-quartz veinlets.	Fine-grained, semi-chilled (trend slaggy-textured), basaltic.	Minor traces of fine-grained veinlet-hosted pyrite.	Semi-chilled pyroxene-microporphyrit basaltic lava. Pervasively, thorough chloritised, weakly chlorite-Fe carbonate-quartz-veined.
443.5	"Breccia". Clasts of chloritised-kaolinised, variably sideritic carbonate-stained basalt, pumiceous basalt, kaolinitic pelite, impure chert and dolomite. Sparse ferruginous-argillaceous chert cement.	Angular to subround randomly sorted submillimetric to centimetric clasts.	Sporadic late chloritic calcite veinlets. Pervasive hematitic pigmentation of clasts, cement.	Basalt clasts include chilled marginal altered types. Subaqueous "agglomeratic" breccia composite of basalt and intraclastic pelite, chert, dolomite.
469.5	Breccia. Clasts of carbonaceous/variably quartzose silty to fine sandy pelite, quartzose psammopelite, microcrystalline dolomite, disseminated quartz grains. Carbonaceous pelitic matrix.	Randomly sorted sub- *to millimetric, sub*angular to subround dimensionally orientated clasts. Semi-mylonitic matrix.	Disseminated to locally *conspicuous fine to* ultrafine pyrite in clasts, matrix. Minor chert clasts.	Affinities with 386.0 m, similarly *interpreted as a tectonic breccia* composite of Success Creek Group-derived components.
485.7	"Breccia". Clasts, matrix of pervasively hematitic pelite. Sporadic clasts of hematitic, dolomitic chert and chlorite-ankerite-altered/amygdaloidal basalt.	Random, angular to irregular, millimetric to centimetric clasts. Contorted pelitic matrix.	Minor chlorite veinlets. Fine to ultrafine chalcopyrite in carbonate amygdales (basalt clasts).	Composite basalt/pelite sedimentary breccia with affinities to 443.5 m. "Plastic" deformation (fault-proximal?) effects. Red Rock Member.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
S 1134 cont. 502.4	Hematitic Pelite Breccia. Contorted clasts of hematitic, variably sericitic, sub- to arkosic siltstone, shale and silty shale with a contorted sericitic hematite-pigmented shale matrix. Minor chlorite veinlets.	Contorted, soft-pebble conglomeratic. Incipiently sheared.	Traces of quartz and calcite in chlorite veinlets. Conspicuous silt-sized clastic opaques.	Slump-brecciated, mildly sheared/rebrecciated hematitic pelite, sub- to arkosic (mildly reworked-tuffaceous?). Red Rock characterist
541.4	Dolomitic Breccia. Clasts of carbonaceous pelite/cherty argillite, dolomite/dolomitic limestone, dolomitic and sericitised labile siltstone with a dolomitic to pelitic matrix. Disseminations, films of pyrite.	Soft-pebble conglomeratic. Variably fractured/dolomite-quartz-veined.	Ill-defined clasts, zones of sericitised/leucoxene-stained tuffaceous siltstone. Minor quartz grains.	Slump-breccia composite of dolomitised limestone, carbonaceous pelite chert, tuffaceous siltstone compone Pyrite is recrystallized-syngenetic
593.0	Hematitic Siltstone/Impure Chert. Hematite-pigmented, sericitic shale-matrixed, quartzose, micaceous siltstone with lenses, interbeds of microfossiliferous impure (silty, weakly dolomitic, hematitic) chert.Minor quartz-ankerite veinlets.	Planar to lenticularly bedded on millimetric to centimetric scale, mildly slumped.	Minor impersistent siderite selvedges, films, clots in, marginal to, veinlets.	Mildly slumped interbanding of hematitic siltstone and impure cher carrying conspicuous simple radiolaria, ?sponge spicules. Weakly dolomitic.
673.8	Pelite/Chert Breccia. Kaolinitic/weakly chloritic, variably dolomitic quartzose-micaceous silty shale with interspersed contorted to boudinaged partings, thin interbeds of slightly hematitic chalcedonic chert.	Massive to fine-scale soft-pebble conglomeratic pelite with segmented chert interbeds, veinlets.	Minor clastic silt-sized opaques, leucoxenic semi-opaques, sand-sized feldspar, ill-defined lava clasts.	Close affinities with 593.0 m. The pelite is weakly tuffaceous. Nonfossiliferous chert partings, veinl boudinaged in response to mild shearing.
698.0	Carbonaceous Psammopelite. Semi-sericitic white mica with varying proportions silt- to fine sand-sized quartz, subordinate muscovite flakes. Semi-pervasive carbonaceous matter, pyrite disseminations.	Incipiently high-angle discordantly sheared fine-scale interbanding of shale, silty shale, siltstone.	Minor discordant, weakly stressed veinlets of quartz, "mine-type" carbonate.	Carbonaceous-pyritic, quartzose-micaceous fine sandy siltstone/shal interlamination. Typical R.B.M. characteristics.
759.0	Dolomitic Pelite. Sericite with relatively minor silt-sized quartz, subordinate muscovite flakes. Irregularly distributed dolomite rhombs, clots, films, vaguely nodular,spongy, microcrystalline aggregates.	Slump-brecciated, quartzose siltstone-parted shale. Very incipiently sheared.	Minor traces of carbonaceous matter. Ill-defined chloritic stainings in dolomitic zones.	Essentially a dolomitic, quartzose silty shale (slump) breccia. Poorly diagnostic, but reasonably correlat with (Upper) Dalcoath.
776.1	Hematitic Siltstone. Fine sand-sized angular quartz grains in a matrix of hematitic, sericitic shale-matrixed micaceous siltstone with fine splintery quartz, degraded feldspar as major clastic component.	Massive (unbedded, structureless) fine sandy shale-matrixed siltstone.	Sporadic chlorite veinlets. Minor clastic shale pellets, impure chert fragments.	Hematitic polymict sandy argillaceo siltstone. The silt fraction is poorly determinate, but tuffaceous in part. Red Rock Member-like characteristics.

APPENDIX V

SAMPLE DESCRIPTIONS AND ASSAYS

- SERPENTINE HILL COMPLEX

201

GOLD FIELDS EXPLORATION PTY. LTD. **SAMPLE RECORD AND ANALYTICAL DATA SHEET** COLLECTED BY: PAR/MTJ.

PROJECT: E.L. 42/71 PROSPECT: Serpentine Hill SAMPLE STORAGE REQ'D: LABORATORY: Analabs. DATE DISPATCHED:

1:250.000 SHEET: TYPE OF SAMPLE: Pan con./rock chip SAMPLE PREP. REQ'D: ANALYSIS REQ'D: DATE RECEIVED:

A1

SAMPLE NUMBER	LOCATION	DESCRIPTION	(Fire assays, ppb)			ANALYSES					
			Au	Pt	Pd						
T4906	Melba Creek, adjacent culvert beneath Highway	Pan Concentrate. 1 to 1¼ pans reduced to approx. 100g – some chromite in con.	<8	<8	6	} Splits of +80# fraction					
			<8	<8	7						
			625	<8	13	– All of -80# fraction.					
T4910	Serpentine Hill Complex, W. of Highway, S of quarry	Olivine-rich ultramafic with disseminated chromite	<8	<8	<1						
T4911	As above	Laterite within area of Olivine-rich ultramafic	<8	11	<1						
T4912	Serp. Hill Complex, Melba Flats	?Olivine-rich ultramafic with disseminated chromite and veins of serpentine	<8	<8	<1						
T4913	Serp. Hill Complex, Melba Flats vicinity of site where sample carrying 1240ppb Pt found	Orthopyroxene-rich ultramafic with clots of ?chromite and magnetite (high graded)	17	11	<1						
T4914	As above	Orthopyroxene-rich ultramafic, largely c.g. pyroxenite from W. side of exposure	32	27	1						
T4915	As above	Olivine-rich ultramafic near contact with orthopyroxene-rich sequence (at 4914 site), locally banded with some ?chromite and magnetite layers	17	17	<1						
						Cr(%)	Fe(%)				
T4933	Argent River, adjacent culvert beneath Railway, near tunnel entrance.	Pan concentrate. 1 pan reduced to approx. 700g.	<8	34	<1	15.0	5.9				

1167·6 N
15290·6 E.

369310 E
5368100 N.

5 cm

RENISON LIMITED

RENISON MINE LEASE
AND
E.L. 42/71
LOCATION OF GRIDS

GEOLOGIST : D.A.E.
DRAFTSMAN : R.F.
DATE : JUL, 1987
SCALE 1:20,000
200 0 200 400
REVISIONS :

FIG. No. 7

87-2686