**PASMINCO EXPLORATION**

**DUNDAS - EL 21/96**

**FINAL REPORT FOR THE PERIOD**
**9/10/00 TO 8/10/01**


**Author:** T. Briggs
A. McNeill


**Date:** 15 October 2001

**Submitted To:** Manager Mine Technical Services

**Copies To:** Department of Mineral Resources, Tasmania
Pasminco Rosebery Mine

**Submitted By:**

**Accepted By:**

**Rosebery Report No:** **D19**

**CONTENTS**

*2196_200110_02_Main report*


1. SUMMARY ..... 1

2. INTRODUCTION ..... 2

2.1 Attribution ..... 2

3. LAND TENURE ..... 3

4. GEOLOGY ..... 4

5. PREVIOUS EXPLORATION ..... 5

6. WORK COMPLETED 2000-2001 REPORTING PERIOD ..... 8

6.1 Geology ..... 8

6.2 Geochemistry ..... 8

6.3 Geophysics ..... 11

7. CONCLUSIONS AND RECOMMENDATIONS ..... 12

8. ENVIRONMENT AND REHABILITATION ..... 12

9. EXPENDITURE ..... 13

10. KEYWORDS AND LOCALITY ..... 14

11. REFERENCES ..... 15

## LIST OF FIGURES

| Figure No. | Title | Scale |
|---|---|---|
| *2196_200110_03_fig1.pdf* | Location Map EL 21/96 Dundas | 1:500,000 |
| *2196_200110_04_fig2.pdf* | Regional Geology and Prospect Locations | 1:60,000 |

## LIST OF TABLES


| | |
|---|---|
| 1 | Previous work on the area of EL 21/96 Dundas |
| 2 | Previous Exploration on by Pasminco on EL 21/96 Dundas |


## LIST OF PLANS


| | |
|---|---|
| *2196_200110_05_Plan1.pdf* | White Spur Area – Partial leach soil sample locations |


## LIST OF APPENDICES


| | |
|---|---|
| *2196_200110_06_App1.txt* | C1 - Ring River Anomaly - Assay Results – Conventional Soil sampling |
| *2196_200110_07_App2.txt* | C1 – Ring River Anomaly – Assay Results – Partial Leach soil sampling |
| *2196_200110_08_App3a.txt* | White Spur Area – Assay Results - Partial Leach soil sampling |
| *2196_200110_09_App3b.txt* | |
| *2196_200110_10_App4.txt* | C1 – Ring River Anomaly – Assay Results – rock chip sampling |
| *2196_200110_11_App5.pdf* | Pb isotope results |
| *2196_200110_12_App6a.pdf* | Memo - Assessment HEM Anomalies |
| *2196_200110_13_App6b.pdf* | |
| *2196_200110_14_App7.pdf* | Memo - Mag assessment HEM anomalies |

## 1. SUMMARY

This report details exploration completed on the Dundas Licence during the fifth and final year of tenure, from 9 October 2000 to 8 October 2001. Work completed during the period of tenure included soil sampling at White Spur and the C1 – Ring River Prospects. However, the main focus during the reporting period was an assessment of the anomalies highlighted in an interpretation of the 1999 airborne EM survey over the entire licence.

Detailed interpretation of the 1999 HEM in the previous reporting period identified 15 anomalies of which 14 required further follow-up. An assessment of these anomalies at a tenement scale identified 5 anomalies that warrant further follow-up at a prospect scale, with the remaining 10 being either cultural in origin, or adequately tested by previous explorers. Work completed to date does not support these anomalies being indicative of the presence of a Pasminco size target at depth.

Soil sampling at the C1 – Ring River anomaly confirmed the presence of a C-Horizon conventional soil anomaly with elevated Pb-Zn-Cu and a Cambrian (Elliott Bay) Pb Isotopic signature. However, it is possible that this anomaly is litholologically related.

A Partial Leach soil sampling program was completed over the buried extensions of the CVC-White Spur Formation contact in the White Spur area. No significant anomalies worthy of further follow-up were located.

The current interpretation is that the Dundas Mineral Field does not have the potential to host a Pasminco sized ore deposit of 10Mt @ 20% Pb+Zn. No further work on this target type is warranted at this stage.

## 2. INTRODUCTION

This report details exploration undertaken on the Dundas EL 21/96 during the reporting period October 2000 to October 2001, the final year of this tenement.

Pasminco's main target on EL 21//96 has been Rosebery or Hercules style Cu-Pb-Zn-Ag-Au VHMS mineralisation. Early exploration by Pasminco was based on the concept of zones of deformation induced fluid flow during the Devonian, within feldspathic source rocks (the Mount Read Volcanics), acting as conduits for migration of mineralisation to stratiform trap sites. The Devonian Granites were considered to be possible thermal engines to promote mineralisation, particularly on the buried flanks of granite margins. The Devonian age for the mineralisation also recognised the potential for remobilisation of Cambrian VHMS, although the extent of remobilisation is undetermined. Conceptually the whole tenement was therefore prospective for the target style of mineralisation. In the last two years of the licence this model lost favour and was replaced by the 'standard' VHMS model and exploration has concentrated on testing the buried extensions of the Rosebery – Hercules 'host horizon' along the eastern margin of the tenement.

The Dundas licence covers a mountainous and heavily forested area extending from the north slopes of Mount Dundas (1143m ASL) to the township of Rosebery (155m ASL); Figure 1. Access to the area is via the sealed Zeehan and Murchison highways to the north and west, and the Williamsford Road and 4WD tracks extending along White Spur, south of the Hercules Mine, to the east. The central part of the tenement has poor access – largely from the old NE Dundas tramway formation with some rough 4WD tracks heading to the north and south,

This area has a prolonged exploration history for base metals, tin and more recently gold, as indicated by the large number of prospects. It is estimated that well over 100 surface drill holes have been collared on the EL at a variety of geological, geochemical and/or geophysical targets.

### 2.1 Attribution

The following personnel were responsible for the work completed in the Dundas area during the last year of tenure.

| | |
|---|---|
| Geologist | Terry Briggs – Pasminco Exploration Rosebery |
| Senior Geologist | Andrew McNeill – Pasminco Exploration Rosebery |
| Senior Geophysicist | Chris Dauth – Pasminco Exploration Melbourne |

## 3. LAND TENURE

EL 21/96 was granted to Pasminco on 8 November 1996 over an area of 90 square kilometres in the Dundas-Ring River area (Figure 1). Several Mining leases were excised from the title:

- ML 21M/94 (0.03 $km^2$) on the Williamsford Rd. for stone and ML's 74M/74 (0.04 $km^2$), 19M/94 (0.15 $km^2$) and 39M/1994 (0.04 $km^2$) in the vicinity of the Dundas township for Category 3 minerals.
- The Rosebery mine lease (ML 28M/93) which overlaps by approximately 6 $km^2$ along the northeastern margin of the licence and,
- The Renison Mine lease (ML 12M/95) which overlaps by approximately 3.1 $km^2$ on the northwestern margin of the tenement.

During the reporting period, a total of 5 applications for Mining Leases within the Dundas EL were made by separate parties. These applications were for Category 3 minerals as described within Schedule 4 of the Mineral Resources Development Act 1996, being semi-precious stones including stichtite, crocoite and cerussite. The Mining Leases are limited to a depth of 20 metres from the natural surface of the land contained within the Mining Lease. Pasminco retained an exclusive right to explore and mine Category 1 Minerals within this Mining Lease area. Letters of agreement between the proposed mining lease holders and Pasminco were signed during the reporting period with M. & E. Phelan (10 ha & 4 ha), S. Dohnt (1.25 ha), T. Kapitany (11 ha) and A. Farrelly (8 ha).

The majority of the Dundas Tenement is underlain by Crown Land with a variety of land classifications.

## 4. GEOLOGY

The geology of EL 21/96 is summarised on Figure 2 and below, taken, with modifications, from Crossing & Halley (1990):

Oonah Formation:

- Proterozoic.
- Poorly sorted, carbonate-rich, matrix supported conglomerate, overlain by micaceous quartzite, grey to black graphitic siltstones & shales, often intensely sheared (≡ Concert Schist).

Crimson Creek Formation:

- Cambrian.
- Turbiditic volcaniclastic lithic wackes, derived from the erosion of mafic volcaniclastics, massive siltstones, mudstones and basaltic lava flows. Numerous gabbros intrude this sequence in the vicinity of Renison Bell and occasional impure dolomite horizons have been recorded.

Dundas Group:

- Cambrian.
- Mixed epiclastic and minor volcaniclastic sediments. The group is dominantly comprised of turbiditic to shallow water sediments containing immature conglomerates, monotonous siltstones and shales containing some sandstone and grit interbeds. Towards the top of the sequence felsic to intermediate tuffs, related volcaniclastic sediments and minor lava flows (or intrusions) occur. These volcanic units generally show marked variations in facies and thickness over short distances and often appear to interfinger with one another making correlations very difficult.

Ultramafic Complexes:

- Cambrian.
- These outcrop at a number of locations throughout the licence area and have also been intersected by drilling at depth. They typically show strong serpentinite alteration and exhibit a high degree of internal deformation. The only exception to this is in the Serpentinite Hill area where pockets of unserpentinised dunite and pyroxenite have been intruded by gabbro dykes.

Pine Hill Granite:

- Devonian.
- The southeastern ‘tail’ of this intrusion occurs on the mid-western side of the Dundas licence. The intrusion is described as a porphyritic adamellite and is thought to consist of a series of intrusions. Locally it exhibits early silica and sericite alteration of the both the granite and country rocks, followed by later boron metasomatism.

Glacial

- Quaternary
- Glacial gravels occupy a N-S zone in the NE quadrant of the EL.

The Dundas licence area is one of structural complexity, making the determination of age relationships between the various stratigraphic units difficult, with most of the geological units appearing to be faulted against each other. Shearing and faulting is often preferentially taken up by the more mafic and shale dominated units, thereby complicating stratigraphic relationships. The main folds generated during the Devonian include the Huskisson Syncline north west of the Dundas licence. The Renison Anticline lies to the west of the Dundas licence, and the Dundas Anticline is located to the northwest of Mount Dundas where it folds the Oonah Formation.

Faulting appears to be closely associated with most of the mineralised systems. Generally there are two prominent groups of faults, a NNW trending steeply dipping group with limited dip slip to oblique slip movement and a steeply dipping NE trending set which show larger orders of displacement. A true estimate of the amount of displacement along these NE trending structures is difficult to quantify mainly due to a lack of recognisable marker beds. The NE faults often occur along margins of the mafic-ultramafic complexes, whereas the NNW faults are more generally confined. These faults and the Cambrian thrusts (including the Rosebery Fault) also acted as zones of structural weakness during the Devonian, which resulted in a secondary period of mineralisation and partial remobilisation of Cambrian ore.

## 5. PREVIOUS EXPLORATION

The Dundas area has been the focus of extensive exploration activity since the 1930's, when modern exploration commenced. Weber & Murphy (1997) provide a comprehensive summary of previous exploration on the tenement area. Table 1 gives an overview of previous work by other companies and Table 2 presents a summary of work conducted by Pasminco over the tenement area between 1996 and 2001.

There are numerous historical workings dating back to the turn of last century, and a great number more prospects developed since in the Dundas mineral field. There are a variety of mineralisation styles present within the area of Dundas EL21/96. These range from Devonian Pb-Zn-Ag veins (Comet, Kosminsky), Devonian Sn-Cu-As veins (Greens, Frazer), Late Devonian replacement zones of Sn-Cu-As-W (Clifton, Colebrook Hill Skarn) and Quaternary placer Au-Sn (Laffer's Workings, Cornish Workings).

The principal mineralising event in the Dundas area is associated with the hydrothermal fluids that accompanied the Devonian granite intrusions. Mineralisation in the Dundas field is patchy and low grade. The occasional ore shoots are erratically distributed within the controlling structural features, they are small in size and alternate with low grade or barren sections. Despite intensive exploration since the 1930's, only numerous small resources have been located. The greatest of these is the Kosminsky – South Comet mines which contained up to 60,000t @ 8.4%Pb + 7.4%Zn + 8oz/tAg. The mineralisation at South Comet comprises a series of multiple lenses within a well-defined shear zone, with true widths ranging from 0.75 – 2.5m thickness.

**TABLE 1: Previous work on the area of EL 21/96 Dundas (partially after Crossing & Halley 1990)**

| COMPANY | PERIOD | PROSPECT/ COMMODITY | METHODS | RESULTS |
|---|---|---|---|---|
| BHP | 1959/60 | Razorback<br>Grand Prize (Sn) | Turam, SP and Magnetics | Inconclusive except over known mineralisation. |
| PLACER | 1964/66 | Razorback<br>Grand Prize<br>(Sn) | Underground Drilling & Mining | No new orebodies found. The prospects are not connected. |
| NCGF | 1966/71 | N Dundas<br>(Montezuma)<br>(Sn) | Magnetics, VHEM, Mapping, Geochem | Coincident Magnetic and Tin-in-Soil anomaly on Montezuma Fault. Not considered worth drilling |
| GEOPHOTO | 1968/74 | Dundas<br>(Pb Zn Ag) | IP, REM, SP, Mag, Mapping, Geochem & 79 Drill Holes | Intensive drilling located Pb Zn Ag in several thin fissure veins separated by barren host rocks. Didn't meet corporate objectives. |
| COMSTAFF | 1970/85 | E Renison<br>Godkin<br>(Sn) | IP, Input, Mag, Mapping & 58 Drill Holes | Intensive drilling defined:<br>Fenton's Tin Vein; 0.43Mt x 1% Sn, 0.2% Cu<br>Salmon Vein; 0.83Mt x 3% Pb, 2% Zn<br>Godkin; 0.3Mt x 0.9% Sn |
| CSR | 1976/87 | Nevada<br>Razorback<br>Montezuma<br>Carbine Hill<br>(Sn Cu Pb Zn Au) | Em, Mag, IP, Dighem, Input, Mapping, Stream Geochem, Soil Geochem & 7 Drill holes | Several geochem anomalies identified and followed up but more were drilled.<br>Airborne geophysical anomalies were followed up by 7 unsuccessful holes. |
| EZ/GETTY<br>EZ/CSR | 1978/86 | Colebrook Hill<br>Ring River<br>Mt Dundas<br>Montezuma<br>(Sn Cu) | Input, Dighem, Turam, IP, Mapping, Geochem & 28 Drill holes | Several encouraging Sn and/or Cu intersections as Colebrook Hill (23 holes). Only minor Sn, Pb intersections on Montezuma Fault (5 holes). Deep hole proposed - not completed. |
| MINOPS P/L | 1979/84 | Godkin Prospect<br>(Sn) | Gridding, soil geochem, geophysics, drilling | Comstaff and Paringa JV into Godkin area outlined inferred resource 300,000t @ 0.9% Sn. |
| RENISON LTD | 1971/87 | Grand Prize (Fault), North Dundas Grid, Commonwealth Hill, Razorback Grid, Kapi, Carbine Hill, Serpentine Hill, (Sn Cu Asbestos, PGM) | Gridding, mapping, Airborne EM, drilling.<br>Soil/rock geochem.<br>IP, Dighem. | Extremely deep diamond drilling on the Kapi Fault returned in S 652, 313.4-313.9m 0.5m @ 2.14% Cu.<br>Grand Prize Fault: S 947A @ 534.8m tourmaline alteration zone.<br>S 969: 406.8-409.8 - 3m @ 5.21% Sn, 0.23% Cu, 13 g/t Ag<br>408.4-409.8 - 1.4m @ 10.93% Sn |
| ROGER POLTOCK GEOLOGIC AL P/L | 1986/88 | Colebrook Hill<br>(Au Cu W) | Stream Sediments | Concluded Colebrook Hill was a thin skarn alteration system. |
| RGC EXPL. P/L | 1987/95<br>1988/95<br>(Dundas & Moores Pimple) | Montezuma Grid<br>Ring River<br>Wallace Prospect<br>Greens Prospect<br>(Sn Au) | Gridding, prospect mapping, rock chip sampling, IP | MZ 004 182.1-183.7 1.6m @ 19.25% As, 725ppm Sb and 0.54 g/t Au. |

**TABLE 2: Previous Exploration by Pasminco on EL 21/96 Dundas**

| COMPANY | PERIOD | PROSPECT/ COMMODITY | METHODS | RESULTS |
|---|---|---|---|---|
| PASMINCO<br><br>Weber and Murphy (1997) | 1996-97 | Pb-Zn | Reconnaissance mapping and a review with subsequent compilation of historical data (GIS format). | |
| PASMINCO<br><br>Murphy (1998) | 1997-98 | Pb-Zn | Reconnaissance work and mapping by Dave Selley (PhD thesis) | Work identified that the nature of the boundaries with the Precambrian need to be considered for their potential as growth faults and potential mineralising structures. This geometry impacts on modelling fluid flow regimes associated with mineralisation. |
| PASMINCO<br><br>Parfrey and Simpson (1999) | 1998-99 | Pb-Zn | Identification of priority prospect areas through the completion of an airborne EM Survey | A suite of anomalous conductive responses were delineated in the EM data, however most of these were interpreted as being directly related to shallow glacial cover. Several more discrete anomalous responses were also identified - these are worthy of further investigation. |
| PASMINCO<br><br>McNeill and Simpson (2000) | 1999-00 | Chamberlain, Pb-Zn | Drill testing the Chamberlain EM Anomaly DDH CP348.<br><br>Interpretation of the 1999 Airborne EM survey. | DDH CP348 (506.2m) intersected White Spur Fmn shale-siltstone-greywacke successions. The current interpretation is that the anomaly is very deep, and may be a lithological conductor rather than mineralisation. |

## 6. WORK COMPLETED 2000-2001 REPORTING PERIOD

Work during the reporting period focussed on assessing the HEM anomalies, identified during the previous reporting period, for their potential to host a Pasminco sized VHMS ore deposit. This involved some field mapping and a review of historical data. Soil sampling was also completed at the White Spur and C1 – Ring River prospects.

### 6.1 Geology

#### 6.1.1 Mapping

Reconnaissance field checking and mapping was undertaken along access tracks in the vicinity of the accessible Dundas HEM anomalies with the aim of identifying possible conductors at surface. Results are presented in Appendix 6. No conductors attributable to base metal mineralisation were identified at surface, however several graphitic / pyritic black shales were identified as possible conductive sources.

Track cutting was undertaken over the C1 – Ring River geochemical anomaly during the reporting period along northing 5367250mN (374675mE – 375200mE) for soil sampling. Mapping along this line identified a sequence of sedimentary rocks with variably alternating shale – siltstone – sandstone sequences. This sedimentary package was dipping steeply to the west at its western extremity with a steep east dipping cleavage at its eastern extremity. A zone of quartz veining and pyrite - manganese alteration was identified in the central – eastern portion of the line (between 374990mE – 375075mE) within a grey fine- to medium-grained sandstone with minor interbedded black shale zones. Mapping of the access track (the old NE Dundas Tramway formation) south of the cut line confirmed the lateral continuity of the sedimentary sequence. Several areas of pyrite mineralisation were observed over a broad zone as disseminations / lozenges within a cleaved grey - brown siltstone, or as inclusions in quartz veins hosted within in a brecciated silicified black shale sequence at the western edge of the anomaly.

### 6.2 Geochemistry

#### 6.2.1 Soil Sampling

*C1-Ring River Anomaly*

A single line of soil sampling was conducted over the C1-Ring River anomaly to confirm the historical C-Horizon anomaly, to locate any coincident partial leach anomaly, and to collect high lead samples for Pb-Isotope analysis (see section 6.2.3). Sample locations and results are included in Appendix 1 and 2.

The soil sampling was highly anomalous for Pb-Zn-Cu with peak values of 998ppm Zn + 685ppm Pb + 131ppm Cu and 831ppm Zn + 426ppm Pb + 149ppm Cu observed over a 100 - 150m wide zone of surface alteration. The conventional

anomaly is coincident with a zone of partial leach anomalism returning values of 13.1ppm Zn + 63.3ppm Pb + 9.48ppm Cu and 93.2ppm Zn + 37.4ppm Pb + 19ppm Cu respectively.

A single point gold anomaly of 0.316ppm Au (partial leach) and 0.02ppm Au (conventional is located 50m) occurs east of the base metal anomaly at the eastern end of the line. Further mapping is required to locate the source of the anomalism.

*White Spur Area*

During the reporting period a combined partial leach soil sampling and geological mapping program designed to test the highly prospective White Spur Formation/CVC contact from the South Hercules prospect south to the White Spur Canal was commenced. This program involved work on three tenements: EL's 21/96, 5/96 and ML 28M/93. The planned sampling on EL 21/96 was completed, however, due to time constraints the geological mapping was not completed. Results from work on the other tenements (EL 5/96 and ML 28M/93) will be reported elsewhere.

Sampling was completed on 2.6 km of nominally 200m spaced lines, extensions to the 1991/1992 UTEM grid on ML 28M/93, and on 5.0 line km of nominally 400m spaced grid lines extending west from the Goldfields grid on EL 5/96 (Plan 1). Where possible in sub-alpine areas no cutting or re-opening of lines was done and DGPS was used to locate sample points (lines 536400N-536440N).

Randomised sample numbers were used in partial leach sampling to reduce the effect of analytical variations. The partial leach soil samples were generally collected at 20 or 25m intervals, at or near a grid peg, and involved digging a hole with a pick, removing the organic rich A-horizon and collecting approximately 500g of sample from the nominal B horizon. The samples were then placed in ziplock plastic bags and, once returned to the field office, the bags were stored open to prevent anaerobic reactions. When a batch of 300 samples was collected, the sample bags were sealed and the samples despatched to Amdel in South Australia for analysis by partial leach technique DL42. Elements determined were Ag, As, Au, Ba, Bi, Cd, Cu, Co, Mo, Ni, Pb, Ni, Y, Zn, Zr and the rare earth elements Ce, Eu, Gd, La and Sm. The pH of the leachate, after digestion, was also determined. Results are included as Appendix 3 and sample locations are shown on Plan 1.

Three duplicate and two standard samples were collected per 100 samples. The field duplicates were also analysed in duplicate to allow assessment of both the sample and laboratory variance. Additionally at each sample site a small amount of soil was collected and stored in a chip tray for reference and to allow soil colour to be recorded. Soil colour was assigned from a Munsell Colour chart with 19 colours and was then assigned to one of 6 colour groups.

The 339 samples (including duplicates) collected for this program were analysed as part of five batches (SDS 3890, 3891, 4504, 4507 and 4509).

No samples are obviously contaminated, however, 13 samples, 3.8% of the data set, have a low (pH<8.0) post-digest pH. At these 'low' pH's the speciation of reagents

in DL42 may change and the resulting assays may be unreliable. All the low-pH samples had high Pb and Zn results that could be important in the interpretation of the dataset. These 13 samples would normally not be considered in the analysis of the data set. However, Test work at Amdel indicated that decreasing the sample:liquid from 10:1 (method DL42) to 5:1 (method DL43) could buffer the solution to a higher, acceptable, final pH (for samples with a post-digest pH of >7.2) and not significantly affect the precision of the analysis. Accordingly all 13 samples, with low post-digest pH, and an additional 6 samples with normal post-digest pH, were re-assayed with the new protocol with the result that all had post-digest pH's of >8.0. In the preliminary interpretation discussed below the low (pH 6.7-7.5) samples from the original dataset have had their assay results replaced by the re-assayed data, giving a dataset of 339 samples.

An initial interpretation of the data indicates two anomalous areas:

- A northern Cu-Pb-Zn-Bi-As-Ag-Au anomaly, between 63400N and 62200N, on the steep eastern slopes of the valley of Bather Creek. This anomaly is coincident with anomalous conventional soils (up to 2400 ppm Pb, 260 ppm Zn, 25 ppm Cu; no Ag, Au or As data available) and most likely represents the southern continuation of the West Hercules soil anomaly, a linear strong (to 2400 ppm Pb) soil anomaly located by the EZ in the mid-1970's. Two holes were drilled on ML 28M/93 (WHP192 and WHP 193) to test this anomaly with negative results. The West Hercules anomaly was studied in detail by Russell (1976) who concluded that it was a hydromorphic anomaly formed by the seepage of groundwater from the Hercules Host Rocks up-slope. On the basis of this conclusion no further work is warranted at this time.
- A southern Cu-Pb-Zn-Bi-As-Au anomaly forming a narrow linear (NNE trending) feature with a strike length of 1.2 km (between 63400N and 62200N). We have no conventional soil data from this area in our database. The trend of the anomaly appears to cross cut stratigraphy at a low angle, however, geological mapping and further soil sampling are required to define the nature of this anomaly.

### 6.2.2 Rock chip Sampling

Rock chip sampling was conducted along the cut line used for soil sampling over the C1 – Ring River prospect. Two samples were submitted for analysis from the central – eastern alteration zone. Sample locations and results are presented in Appendix 3.

Sample 337043 was a heavily Mn-stained, well bedded grey fine grained sandstone (?) with a thin (1-2cm) chert-like horizon hosting abundant grains of pyrite. This rock was mildly base metal anomalous with 147ppm Cu, 74ppm Pb and 177ppm Zn. The second sample (337044) contained a 10 – 20cm thick white quartz vein with

Mn- encrusted cavities. This sample was not significantly anomalous in base or precious metals.

### 6.2.3 Pb Isotopes

A sample of galena from a vein at 271.1m depth in DDH CP348 was submitted for Pb isotope analysis (McNeill and Simpson, 2000). Results of this determination are included in Appendix 5 and indicate an unequivocal Devonian age for the mineralisation, consistent with previous sampling from the nearby Salisbury and Chamberlain prospects. However, a second galena separate from 38.7m depth in DDH RFP325 (900 m north east of CP348 on ML 28M/93) returned a Cambrian age for a 25 cm massive sulphide vein (0.3m @ 0.3% Cu, 17.1% Pb, 11.1% Zn 324 g/t Ag and 0.1 g/t Au [Quayle et al., 1995]) suggesting that there is Cambrian mineralisation in the footwall of the Rosebery Fault in the vicinity of the Chamberlain EM anomaly.

A single soil sample (337034) with 426 ppm Pb, from the C1- Ring River geochemical anomaly was also submitted for Pb Isotope analysis (see Appendix 5 for details). This sample has a Pb isotopic signature similar to the Cambrian Elliott Bay mineralisation, suggesting some input of Cambrian Pb into what is generally considered to be a Devonian mineral field.

## 6.3 Geophysics

### 6.3.1 HEM anomaly comparison with aeromagnetic data

During April 1999 a helicopter electromagnetic survey was completed over the Dundas EL21/96. A total of 14 HEM anomalies located by this survey were interpreted to warrant further investigation (McNeill and Simpson, 2000). As a first step the available aeromagnetic data were reviewed, with the aim of determining whether the EM anomalies had corresponding magnetic anomalies. The results of this review are presented in Appendix 7 and are summarised below.

The only anomalies found to have an associated magnetic response was the known Colebrook Hill Cu Skarn mineralisation and one of the inferred Renison-style EM targets (D8). It was concluded that the magnetic data did not aid in discriminating or prioritising the EM anomalies for follow-up.

### 6.3.2 HEM anomaly assessment

A total of 14 HEM anomalies were recommended for follow-up in an interpretation of the 1999 survey (McNeill & Simpson, 2000). An evaluation of the historical work conducted in the vicinity of the HEM anomalies was undertaken during the reporting period; results are presented as Appendix 6.

A total of five EM anomalies are considered worthy of follow-up. This work should range from reconnaissance field checking to a detailed analysis of all historical work

pertaining to the anomalies. Further follow-up would depend on the results of this work.

The use of electrical geophysical methods in the Dundas field to detect mineralisation may not completely successful, a result of the common occurrence of carbonaceous shales that become graphitic and conductive when deformed. The anomalies are all located within 100 – 200m of the surface which means that if they were due to large accumulations of base metal mineralisation (meeting the criteria of > 10 mt. @ 20% Pb+Zn) it is likely that they already would been discovered by previous explorers.

All base metal mineralisation so far located in the area as a result of extensive exploration by previous explorers has been Devonian in origin. The Devonian base metal vein systems of the Dundas Mineral Field would not provide a target large enough for Pasminco to be mined as a stand-alone target. The larger South Comet vein system has provided mill-feed for the Rosebery Mine in the past. Base metal skarn and / or replacement deposits such as the Colebrook Hill Cu-Sn-W system offer the potential for larger deposits, however the Colebrook Hill area is probably already over-explored. The potential for a Cambrian base metal VMS deposit in the majority of the tenement appears to be a low.

## 7. CONCLUSIONS AND RECOMMENDATIONS

Although not all the 1999 airborne-EM anomalies were followed-up in detail, it is considered that the Dundas mineral field does not have the potential to host a Pasminco sized (>10 mt @ 20% Pb+Zn) ore deposit. No further work is therefore warranted at this stage.

There remains some potential for a Pasminco sized target at the Chamberlain Prospect (McNeill and Simpson, 2000) where drilling (CP348 506.2 m) failed to intersect a deep EM anomaly, now considered to have a depth to top of 550-650m. A 650-800m DDH is required to test this target, however, there remains the possibility that this anomaly results from a thick pyritic shale package rather than mineralisation

Partial Leach soil sampling at the White Spur prospect has defined two coherent, strike extensive, multi element anomalies, however, neither are considered to be worthy of detailed follow-up at this stage.

## 8. ENVIRONMENT AND REHABILITATION

Access from the Williamsford Road (approximately 120m in length) and a drill pad were cleared for DDH CP348. Rehabilitation of this access was delayed pending evaluation of the DHEM data from this hole. As it is unlikely that any further work will be completed from this site the track and pad will be rehabilitated when the weather improves and the ground dries in November-December.

## 9. EXPENDITURE

Expenditure on EL 21/96 during the 11 month period ending 30 September 2001 was $**81,660**. A detailed breakdown of this expenditure is presented below.

| | |
|---|---|
| Personnel | 40,415 |
| Travel & Accommodation | 1,261 |
| Consultants & Contractors | 8,072 |
| Geological Consultants | 3,493 |
| Geochemical Consultants & Assays | 8,254 |
| Geophysical Surveys & Contractors | 0 |
| Drilling | 0 |
| Stores & Supplies | 541 |
| Vehicles Plant & Equipment | 952 |
| Land | 2,031 |
| Computing | 371 |
| Office | 8,847 |
| Administration Fee | 7,423 |
| **Total Tenement Expenditure** | **$81,660** |

## 10. KEYWORDS AND LOCALITY

### Keywords

ZINC, LEAD, COPPER, SILVER, TIN, DUNDAS GROUP, OONAH FORMATION, SUCCESS CREEK, MOUNT READ VOLCANICS, ROSEBERY FAULT, AIRBORNE EM, MAGNETICS, CHAMBERLAIN, WHITE SPUR, SOIL GEOCHEMISTRY, PARTIAL LEACH, LEAD ISOTOPE.

### Locality

1:250,000 QUEENSTOWN SK 55-5

1:100,000 PIEMAN 7914, SOPHIA 8014

Mt Dundas, Rosebery, Montezuma, Renison Bell, Ring River, Moores Pimple, Chamberlain.

## 11. REFERENCES


Crossing, D.J.F. & Halley, S., 1990. RGC Exploration Pty Ltd EL 101/87 Dundas and EL 13/88 Moores Pimple Annual Report 1989/90 (2 Volumes) (**TCR 90-3172**)

McNeill, A. & Simpson, K.L., 2000. Dundas EL 21/96 Annual Report for the Period Ending October 2000. Unpubl. Pasminco Exploration report VC329.

Murphy, F.C. 1998. Dundas EL 21/96 Annual Report for the Period Ending October 1998. Unpubl. Pasminco Exploration report VC214.

Parfrey, O.C., and Simpson, K.L., 1999. Dundas EL 21/96 Annual report for the period November 1998 to November 1999. Unpubl. Pasminco Exploration report VC284.

Russell, D.W., 1976. The biogeochemistry and pedogeochemistry of the West Hercules Area, Rosebery, Western Tasmania. Unpub. BSC (Hons). Thesis, University of Tasmania, Hobart, 192 p.

Quayle, P.M., Lorrigan, A.N. and Harrison, E.E., 1995. Rosebery Mine Lease ML 28M/93, Annual Report July 1994 – June 1995. Unpubl. Pasminco Exploration Report No. T95-16a.

Weber, G.B., and Murphy, F.C., 1997. Dundas EL 21/96. Annual report for the period ending October 1997. Unpubl. Pasminco Exploration report VC184.