



PASMINCO MINING ROSEBERY

DUNDAS (WILLIAMSFORD) EL 11/2002

**ANNUAL REPORT
FOR THE PERIOD ENDING 23rd JULY 2003**

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1. SUMMARY

This report details exploration work undertaken on EL 11/2002 Dundas (Williamsford) during the period 23rd August 2002 to 23rd July 2003, the first 11 months of the tenement.

Previous exploration data was compiled and exploration commenced on three areas; anomalies D11, D13 and the White Spur prospect.

Work on the D13 anomaly has indicated that the Airborne-EM anomaly is related to the Oonah Formation-Dundas Group contact and no further follow-up is required. Gridding over the D11 anomaly was commenced, but was not complete, by the end of the reporting period. At the White Spur prospect sampling was completed on infill lines as part of following-up a previously located anomaly on the adjacent EL 5/1996. Sampling on EL 11/2002 Dundas located a coherent multi-element (Cu, Pb and Zn) anomaly that may be worthy of follow-up in its own right.

2. INTRODUCTION

This report details exploration work undertaken on Dundas (Williamsford) EL 11/2002 during the period 23 August 2002 to 23 July 2003, the first 11 months of this tenement.

Pasminco's main targets on EL 11/2002 are Cambrian Rosebery or Hellyer type, Zn-Pb-Cu-Au-rich VHMS mineralisation hosted by the Mount Read Volcanics (MRV) and Devonian Pb-Zn vein style mineralisation of the type found at for example, the South Comet Mine.

Pasminco plan to systematically explore the EL using a combination of reviewing previous exploration data, geological mapping and partial leach soil geochemistry, followed-up by ground time-domain EM, then drilling of areas of interest.

The Dundas licence covers a mountainous and heavily forested area extending from the north slopes of Mount Dundas (1143m ASL) to near 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 old pack tracks and some rough 4WD tracks heading to the north and south.

2.1 Attribution

The following personnel were responsible for the work carried out by Pasminco Rosebery Mine on the EL 11/2002 Dundas (Williamsford) licence area during the reporting period:

Senior Geologist:	Andrew McNeill – Pasminco Rosebery Mine
Contract Geologist	Roger Poltock – Poltock Geological Services

3. LAND TENURE

EL 11/2002 Dundas (35 sq km) was granted to Pasminco on 23 August 2002 for a period of 5 years as a result of a competitive tender for ETA 562. The location of the tenement is shown on Figure 1. EL 11/2002 covers ground that fell vacant on the relinquishment of EL 21/96 (Pasminco Exploration) in October 2001.

EL 11/2002 excludes approximately 600 ha of Mining Leases including 19M/1994, 21M/1994, 16M/2000 and 12M/2001 and parts of 25M/2000 and 28M/93 (the Rosebery Mine Lease).

Other land tenures within the tenement area include State/Multiple Use Forest, Un-allocated Crown Land, part of the Mount Dundas Regional Reserve and some private property all of which are available for exploration under the Mineral Resources Development Act 1995.

4. GEOLOGY

The geology of EL 11/2002 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 volcanoclastic lithicwackes, derived from the erosion of mafic volcanoclastics, massive siltstones, mudstones and basaltic lava flows. Numerous gabbros intrude this sequence near Renison Bell and occasional impure dolomite horizons have been recorded.

Dundas Group:

- Cambrian.
- Mixed epiclastic and minor volcanoclastic sediments including the White Spur Formation (WSF) in the east of the tenement and the Curtin Davis Volcanics in the centre of the tenement. The group is dominantly comprised of turbiditic to shallow water sediments with immature conglomerates, monotonous siltstones and shales containing some sandstone and grit interbeds. Towards the top of the sequence felsic to intermediate tuffs, related volcanoclastic 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 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 Serpentine Hill area where pockets of un-serpentinised dunite and pyroxenite have been intruded by gabbro dykes.

Pine Hill Granite:

- Devonian.
- The south eastern ‘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 set with limited dip slip to oblique slip movement and a steeply dipping NE trending set with more significant 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 area of EL 11/2002 has a prolonged exploration history for base metals, tin and more recently gold. 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. Modern exploration commenced in the 1930s and Ellis (1983) and Weber & Murphy (1997) provide comprehensive summaries of previous exploration on the tenement area. Table 1 gives an overview of previous work until 1996 and Table 2 details work conducted by Pasminco over the tenement area between 1996 and 2001. Detailed reviews of previous work on those prospects currently being explored are presented in section 6.

There are numerous historical workings dating back to the turn of last century, and many more prospects developed since, in the Dundas mineral field. Mineralisation styles 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) to Quaternary placer Au-Sn (Laffer's Workings, Cornish Workings).

The principal mineralising event in the Dundas area was 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, are small and alternate with low grade or barren sections. Despite intensive exploration since the 1930s, only small resources have been located. The largest of these were the Kosminsky – South Comet mines which contained up to 60,000t @ 8.4% Pb, 7.4% Zn and 248 g/t Ag. The mineralisation at South Comet comprises a series of 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 11/2002 Dundas (after Crossing & Halley 1990)

COMPANY	PERIOD	PROSPECT/ COMMODITY	METHODS	RESULTS
BHP	1959/60	Razorback Grand Prize (Sn)	Turam, SP and Magnetics	Inconclusive except over known mineralisation.
PLACER	1964/66	Razorback Grand Prize (Sn)	Underground Drilling & Mining	No new orebodies found. The prospects are not connected.
NCGF	1966/71	N Dundas (Montezuma) (Sn)	Magnetics, VHEM, Mapping, Geochem	Coincident Magnetic and Tin-in-Soil anomaly on Montezuma Fault. Not considered worth drilling
GEOPHOTO	1968/74	Dundas (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 Godkin (Sn)	IP, Input, Mag, Mapping & 58 Drill Holes	Intensive drilling defined: Fenton's Sn Vein; 0.43Mt @ 1% Sn, 0.2% Cu; Salmon Vein; 0.83Mt @ 3% Pb, 2% Zn; Godkin; 0.3Mt @ 0.9% Sn

TABLE 1: Previous work on the area of EL 11/2002 Dundas cont...

COMPANY	PERIOD	PROSPECT/ COMMODITY	METHODS	RESULTS
CSR	1976/87	Nevada Razorback Montezuma Carbine Hill (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. Airborne geophysical anomalies were followed up by 7 unsuccessful holes.
EZ/GETTY EZ/CSR	1978/86	Colebrook Hill Ring River Mt Dundas Montezuma (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 (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. Soil/rock geochem. IP, Dighem.	Extremely deep diamond drilling on the Kapi Fault returned in S 652, 313.4-313.9m 0.5m @ 2.14% Cu. Grand Prize Fault: S 947A @ 534.8m tourmaline alteration zone. S 969: 406.8-409.8 - 3m @ 5.21% Sn, 0.23% Cu, 13 g/t Ag 408.4-409.8 - 1.4m @ 10.93% Sn
ROGER POLTOCK GEOLOGIC AL P/L	1986/88	Colebrook Hill (Au Cu W)	Stream Sediments	Concluded Colebrook Hill was a thin skarn alteration system.
RGC EXPL. P/L	1987/95 1988/95 (Dundas & Moores Pimple)	Montezuma Grid Ring River Wallace Prospect Greens Prospect (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 Pasmaenco on the area of EL 11/2002 Dundas

PERIOD	METHODS	RESULTS
1996-1997 Weber and Murphy (1997)	Reconnaissance mapping and a review with subsequent compilation of historical data (GIS format).	
1997-1998 Murphy (1998)	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.
1998-1999 Parfrey and Simpson (1999)	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.

TABLE 2: Previous Exploration by Pasminco on the area of EL 11/2002 Dundas cont..

PERIOD	METHODS	RESULTS
1999-2000 McNeill and Simpson (2000)	Drill testing the Chamberlain EM Anomaly DDH CP348. 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.
2000-2001 Briggs and McNeill (2001)	Soil sampling at White Spur and C1 anomaly. Detailed interpretation of 1999 Airborne EM survey	Sampling confirmed location of C1 anomaly and indicates a Cambrian Pb Isotopic signature. No significant anomalies at White Spur. Five anomalies warranted further follow-up. However, there was no indication of a Pasminco sized (10 mt @20% Pb+Zn) deposit in Dundas area. Tenement can be relinquished.

6. WORK COMPLETED 2002-2003 REPORTING PERIOD

6.1 Data Compilation

Compilation of previous exploration data, commenced during the life of EL 21/1996, continued during the reporting period. Soil, Wacker and rockchip data from the Geophoto (EL 7/1968) Ainslie and Carbine grids, the CSR (EL 15/1976) Howards Rd and Carbine grids and RGC's (EL 101/1987) Ring River, Montezuma, Howards East grids and regional sampling of old workings. All data collected and digitised is included as Appendix 1 (digital copy only). Note that some datasets, in particular the Geophoto grids, were not located in AMG space. For these data the map sheets were registered using topographic features and there is potentially a higher than normal error in sample locations.

6.2 White Spur Area

During the reporting period a combined partial leach soil sampling and geological mapping program designed to test the highly VHMS prospective White Spur Formation/CVC contact from the South Hercules prospect south to the White Spur Canal was continued. This program has involved work on four tenements: ELs 11/2002 (previously 21/1996), 5/1996, 7/2001 and ML 28M/93. Results from work on the other tenements (7/2001, 5/1996 and ML 28M/93) have been reported elsewhere.

Sampling was completed on 1.45 line km of new grid cut to infill the 400m spaced White Spur Extension grid cut by Pasminco on EL 21/1996, in 2001, and extending the lines infill lines cut on EL 5/1996 White Spur during the current reporting period (Figure 3).

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 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 Appendices 2 and 3 and sample locations are shown on Figure 3.

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 57 samples (including duplicates) collected on EL 11/2002 were analysed as part of two batches (SDS 4529 and 4531).

No samples are obviously contaminated, however, 10 samples, 18% of the data set, have a low (pH<8.0) post-digest pH. At these 'low' pHs the speciation of reagents in DL42 may change and the resulting assays may be unreliable. Many of the low-pH samples had high Pb and Zn results that could be important in the interpretation of the dataset. These 10 samples would previously not have been 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 10 samples, with low post-digest pH, were re-assayed with the new protocol with the result that all had post-digest pHs of >8.0. In the interpretation discussed below the low (pH 6.75-7.9) samples from the original dataset have had their assay results replaced by the re-assayed data.

Images of the gridded raw data are presented as Figures 4-11 (note these plots also include data previous sampling on EL 21/1996 and from the western portion of lines on EL 5/1996 White Spur). Three sets of anomalous responses are apparent:

- Elevated Cu, Pb and Zn associated with black shale and underlying volcanoclastic sandstone in an anticlinal structure north of 5363000mN.
- Elevated Bi and As appears to be mapping out the micaceous greywacke, lithicwacke and shale unit (over lying the black shales).
- Au, Ag and Ba results define spotty highs that do not form coherent anomalous features.

Further follow-up of the Cu-Pb-Zn anomaly may be warranted.

The infill grid lines, creeks and old logging tracks, east of approximately 375500mE and south of 5364000mN, were geologically mapped, in conjunction with mapping on the adjacent EL 5/1996, at a scale of 1:5,000 during the reporting period. Outcrop geology is presented as Plan 1 and an interpretation is presented as Plan 2. An anticlinal structure is obvious on the eastern boundary of EL 11/2002, but overall the sequence is west dipping and comprises feldspar-quartz-phyric crystal-rich volcanoclastic sandstone, shard-rich volcanoclastic siltstone, black pyritic shale and a mixed unit of micaceous sandstone and siltstone with a variable volcanogenic. All these units are correlates of the White Spur Formation units mapped on the adjacent EL 5/1996, however, the westernmost mapped unit, a massive, siliceous, feldspar-quartz-phyric pumiceous sandstone/breccia has not been found further to the east, but previous mapping indicates potential correlates to the north. No significant mineralisation or alteration has been located. A 6m long adit, not shown on previous mapping, was located in a creek at 375630mE, 5363780mN and appears to have been driven on a 0.4m wide zone of quartz veining (trending 328° mag.); no sulphides were located.

6.3 AEM anomaly D13

Dauth (in McNeill and Simpson, 2001) describes anomaly D13 as being a 1.4 km long feature with sharp edges, suggesting a possible lithological source, which straddles the northern margin of the Pre-Cambrian – Dundas Group contact.

As an initial stage in the follow-up all previous exploration data was reviewed (see Table 3) and, where necessary, the data was digitally captured (see section 6.1). After completing the review and data compilation it was decided to cut a new 3.2 km grid, using the Carbine Hill pack track from the Dundas area for access, over the D13 anomaly.

Table 3 Previous exploration over the area of Anomaly D13 (the ‘Carbine Grid’ area).

PERIOD	RESULTS
1970-1971 Johnson (1971)	Initial grid cut, geologically mapped and VLF-EM survey completed. Gossans and old workings sampled. Recommend infill gridding and detail soil sampling program.
1971-1973 Thigpen (1972); Discala (1974)	Infill gridding, orientation soil sampling then soil sampling (1816 samples) and rock-chip sampling (71 samples) of entire grid; geological mapping and ground magnetics. Two diamond drill holes (CW1&2; 308m total) to test VLF-EM and soil geochemical anomalies; no significant results from drilling and “temporarily downgraded area”.
1977-1978 McNamara (1979a)	Follow-up of stream sediment anomaly 1 located anomaly 3, anomalous in Pb and Zn. Recommended follow-up by close spaced soil sampling.
1982-1983 McNamara and Ellis (1983)	DIGHEM II survey flown over licence area. Report on survey included – several anomalies identified.
1984 Ellis (1984)	Follow-up anomalies from 1982 DIGHEM survey; VLF-EM traverse, ground magnetics and rock-chip sampling of the Carbine Mine (anomalous As, Pb and Zn).

Table 3 Previous exploration over the area of Anomaly D13 (the ‘Carbine Grid’ area) cont..

PERIOD	RESULTS
1985 Ellis (1985)	Re-open part of Geophoto grid, ground magnetics, VLF-EM; DIGHEM anomaly not explained so further follow-up recommended.
1986 Ellis (1986)	Soil sampling on Geophoto grid lines 72, 52 and 40N; located anomalous base metals parallel to VLF-EM trend. Re-log and re-sample DDH CW1 & 2; graphitic shales have high base metals (to 940 ppm Pb and 3950 ppm Zn). IP survey to follow-up DIGHEM anomaly; located significant anomaly. Concluded that conductive graphitic shales and minor base metal veining (in CW1&2) were sufficient to explain soil geochemical and geophysical results.
1990-1991 Crossing (1991)	Geological mapping to locate carbonate units capable of hosting replacement Sn deposits. Carbonates located but, no significant alteration or elevated Sn values in rock-chips (but some elevated base metals from Manganiferous gossan and sulphide veining).

Partial leach soil sampling was completed on the new grid with 137 samples (including duplicates) submitted for assay as part of a single batch (SDS 4536). Sampling and assay procedures are discussed in section 6.2 and sample locations are shown on Figure 12.

Only one sample had a low post-digest pH (358860) and this sample was therefore re-analysed (as discussed in section 6.2 above). The re-assay had a pH of 8.45 and in the interpretation discussed below the low pH sample from the original dataset has had its assay results replaced by the re-assayed data.

Images of the gridded raw data are presented as Figures 13-20. The major feature in these images is anomalous Cu, Zn, Ag, As and Bi associated with the mapped workings. A Pb anomaly is offset to the east and Ba anomaly offset to the west of the workings. There are spotty Au anomalies throughout the grid, one of which is coincident with the workings. There are no obvious features coincident with the trace of the D13 EM anomaly.

The new grid was geologically mapped by Roger Poltock. An outcrop geology plan is included as Figure 21 and an interpretation shown on Figure 22. Previous mapping by Blissett and Guilline (1962) and Brown (1986) has been used as a basis for district stratigraphic units. Two units outcrop within the grid; Precambrian Oonah Formation quartzite and slates, and Dundas Group mass flow/turbidite style sediments. Thick scree deposits blanket the steep slopes.

The Precambrian Oonah Formation comprises grey–dark grey, slightly micaceous, clean siltstone/ slate and quartzites and crop out in the eastern part of the grid. The quartzites are brittlely fractured with irregular quartz +/- limonite veining.

It was difficult to map trends/units in the Dundas Group due to structural complexities and the lensoidal (scour and fill?) nature of units. Hornfelsing and(or) weak silicification is more or less pervasive. The main lithotypes include:

- fine to medium grained, well bedded, frequently calcareous (primary or alteration?) siltstone–greywacke.
- feldspathic wacke and siltstone; these may represent a transition between greywackes and felsic volcanoclastics.
- pebble conglomerate, composed of well rounded dark grey chert clasts.
 - medium grained felsic volcanic derived mass debris flow sandstone, some chlorite flecks may have been glass or pumice.

Extensive scree deposits of angular greywacke fragments blanket bedrock on the steeper slopes. The scree may have a significant masking effect on the soil geochemistry.

All Dundas Group lithologies are variably hornfelsed or silicified; the greywackes and siltstone having a flinty welded appearance with a conchoidal fracture, which is independent of cleavage and bedding. Hornfelsing is associated with the Devonian granite and magnetic highs over the Dundas Group in the area are interpreted to reflect this hornfelsing, “skin effect” recognized by Leaman and Richardson (1989).

However, at Carbine Hill the hornfelsing does not reflect the modelled gravity shape for the Pine Hill Granite (Leaman and Richardson 1989) and may represent fracture/lithology controlled “hornfelsing”. A similar style of hornfelsing has been mapped as a halo around the Grand Prize vein located 3.5km to WNW (Poltock in Crossing and Halley, 1990).

Carbonate in greywackes may be primary or an alteration product associated with hornfelsing. Mn wad and some Fe-Mn gossan like deposits may be associated with the carbonate.

A shaft and drive at 5364800N 371275E have been developed on a steep dipping, 020° magnetic trending, approximately 10–20cm wide vein of siderite, pyrite (arsenopyrite), galena and chalcopyrite. This prospect is most likely CSR’s Carbine Mine (Ellis, 1984) but detailed descriptions of the workings have not been located in the literature to date (note that two un-named workings are shown in this area on the Mirloch database – these are most likely the same workings). 35m west of the shaft, quartz carbonate veining outcrops, the exposure is not extensive enough to determine the orientation. A gossan at 5364700N, 371320–371370E has probably developed on a sulphide quartz veined zone, outcrop is poor but the trend is approximately 330° magnetic. A second gossan at 371475E on this line may be associated with weathered carbonatized greywacke.

The vein and gossan occurrences are within or adjacent to a regional scale NNW trending fault and hosted in the contact zone between Oonah Formation and the overlying Dundas Group (Figure 23), a commonly mineralised position in the Zeehan area.

Overall, lithologies dip to the NNW at shallow to moderate dips, with the Oonah Formation exposed in the SE, topographically lower section of the grid. The upper slopes of the grid are dominated by the overlying Dundas Group. The dominant structures are two parallel faults trending NNW. These faults may not have been mapped before at Dundas. To the north the Pine Hill Granite apophysis and the associated dyke are interpreted as having been emplaced within the structure. Both mineral occurrences located within the grid are associated with the western fault.

6.4 AEM anomaly D11

This suite of anomalies is coincident with a small portion of the Montezuma Fault, and is located at an inferred triple junction in the regional geology (Briggs and McNeill, 2001). Anomalous surface geochemistry has been recorded and numerous Late Devonian Vein deposits are known, e.g., Wallaces Prospect produced 20t of high-grade ore @ 2%Cu, 41.7%Pb, 1%Zn, 0.09%Sn 2.17%Sb and 5.3g/tAg. Drilling, by EZ, has intersected replacement style mineralisation as well as vein / stringer intervals with grades including 1m @ 7.5%Pb + 1.95%Zn + 670g/tAg within a sedimentary breccia, and 3.3m @ 1.17%Zn + 7.11%As + 0.11%Sn within a volcanoclastic debris flow breccia. This anomaly had the second highest amplitude in the survey area, after Colebrook Hill, and was recommended for follow-up by Briggs and McNeill (2001).

As an initial stage in the follow-up all previous exploration data was reviewed (see Table 4) and, where necessary, the data was digitally captured (see section 6.1). After completing the review and data compilation it was decided to cut a new 9.1 km grid over the D11 anomalies as shown on Figure 23 (a reconnaissance visit had indicated that the old Montezuma grid was largely overgrown). By the end of the reporting period work on this grid had commenced, but, was suspended for budgetary reasons.

Table 4 Previous exploration over the area of Anomaly D11 (the ‘Montezuma Grid’ area).

PERIOD	RESULTS
1966-1967 Elders (1967)	Construction of access roads, Commenced gridding 92,000 ft cut, geological mapping of grid. Completed western area and only approaching the more interesting Godkin Ridge.
1967-1968 Forsythe (1968)	No further gridding; geological mapping, commenced soil and rock-chip sampling completed, Described old workings, ground magnetics. Recommended extending the grid, further mapping, soils and geophysics.
1968-1969 Forsythe (1969)	First generation Montezuma Grid, from Severn Creek in east to Wallace’s tram in west, completed. Gridding of 50,580 ft; 20,400 ft cleared along major creeks; 64,800 ft of old foot tracks cleared. Located, geologically mapped and described old prospects and workings. Soil sampling completed over majority of grid (original data not presented, only contoured plans). Ground magnetic survey of grid. Concluded that soil results do not provide encouragement to follow-up Pb-Zn anomalies, but, concentrate on Sn anomalies where more follow-up is recommended.

Table 4 Previous exploration over the area of Anomaly D11 (the ‘Montezuma Grid’) cont..

PERIOD	RESULTS
1971-1974 Clarke (1972)	Re-pegged area of SPL20. followed up NCGFA’s anomaly A by costeaning, mapping and sampling (all work completed north of AEM anomaly 11). Some further follow-up recommended.
1972-1974 Layden (1974)	Followed up Anomaly A at north end of NCGFA Montezuma grid by geological mapping, costeaning, EIP and diamond drilling: targeting Sn (all work completed north of AEM anomaly 11).
1977-1978 McNamara (1979a)	Regional stream sediment sampling; defined Anomaly (anomaly 1) in area of interest; strongly anomalous In Sn; follow-up stream sampling also anomalous (draining carbine Hill). Work hampered by poor access to Anomaly 1.
1977-1978 McNamara (1979b)	Review known prospects/old workings; Summarise previous stream sediment sampling. Commenced re-clearing and surveying the NCGFA grid – renamed as Fraser Grid. Soil sampling and ground magnetics completed to follow up drainage anomalies and relocate the NCGFA +30 ppm Sn soil anomaly. Only one line of sampling completed due to access problems. Reconfirmed soil anomaly; recommended completing re-opening of the grid with intermediate infill lines followed by soils, rock chip sampling, magnetics and VLF-EM.
1982-1983 Sainty (1983a); Sainty (1983b); Sainty (1983c)	DIGHEM 2 survey, review of open file data, photogrammetry, re-establishment of vehicular access, re-cut old NCGFA grid, cut new lines, soil sample 13 line km, geological mapping. DIGHEM anomalies B, E, F partially coincident with AEM 11; and coincident with Sn anomaly in NCGFA soils. Work quickly focussed on the Duck Creek area – infill Sn soil sampling, minor rock chip sampling, recut old NCGFA grid; geological mapping, ground magnetics, infill lines cut, Genie-EM survey completed over entire grid; some responses over current area of interest. 680m drilling at Duck Creek prospect with further costeaning and mapping.
1983-1984 Sainty (1984a), Sainty (1984b)	Pit sampling over anomalous areas – as Sn may be dispersed in soil profile allowed more accurate targeting of DDH also removed 2 anomalies from testing list. Helipads cut for drill sites; Drilling of 2 holes (MZP258 and 261) for 513m to test Sn soil anomaly on lines 10 and 9.
1988-1989 Cartwright (1989)	32 km of grid cutting (re-opening of Montezuma grid) and re-opening walking tracks and helipads (5). Grid and old prospects and mines geologically mapped. 1110 B/C horizon soils collected from grid. Analysed for Cu, Pb, Zn, Ag, As, Bi and Sn. 250 rock-chip samples assayed. Ground magnetics over 27 km of grid; Helimagnetics over entire licence. Soils over Montezuma Fault strongly anomalous in Sn, As, Pb (and Ag). Particularly high at Duck Creek Prospect, Curtin Davis Consols and Greens Prospect. Cu and Zn also anomalous with other elements, but, tend to be less indicative of the mineralising structures. Magnetics; D11 AEM over Greens-Frazer. Recommended follow-up over Frazer-Greens area; re-log core from Frazer, Curtin Davis consols and deep EM survey.
1989-1990 Crossing and Halley (1990)	Work (rock-chip and wacker sampling, IP survey and diamond drilling) concentrated on the Greens-Frazer area north of D11.

7. CONCLUSIONS & RECOMMENDATIONS

During the first 11 months of tenure previous exploration data was compiled and exploration commenced on three areas; anomalies D11, D13 and the White Spur prospect.

Work on the D13 anomaly has indicated that the Airborne-EM anomaly is related to the Oonah Formation-Dundas Group contact and no further follow-up is required. Gridding over the D11 anomaly was commenced, but was not complete, by the end of the reporting period.

At the White Spur prospect sampling was completed on infill lines as part of following-up a previously located anomaly on the adjacent EL 5/1996. Sampling on EL 11/2002 Dundas located a coherent multi-element (Cu, Pb and Zn) anomaly that may be worthy of follow-up in its own right.

It is therefore recommended that:

- Compilation of previous exploration data is completed.
- Gridding at the D11 prospect be completed and the grid geologically mapped and partial leach soil sampled. Further follow-up will depend on the results of this work.
- Partial leach soil anomalies at White Spur are followed-up and interpretation of the area completed in conjunction with work on the adjacent EL 5/1996 and ML 28M/93.

Much of the planned exploration program for the first year of EL 11/2002 was delayed by budgetary constraints. It is therefore recommended that in the second year of the tenement Pasminco:

- Commence exploration of AEM anomalies D7 and D15.
- Commence follow-up of the C1 geochemical anomaly, identified from previous exploration data by Briggs and McNeill (2001), by infill gridding, geological mapping and further soil and rock chip sampling.
- Drill test the Chamberlain deep EM target (Simpson and McNeill, 2000) with 1x 800m diamond drill hole and DHEM.

8. EXPENDITURE

Expenditure by Pasminco Rosebery Mine on EL 11/2002 during the 11 month period ending 31st July 2003 was **\$55,943**. A detailed breakdown of this expenditure is presented below.

Personnel	\$13,727
Travel & Accommodation	\$0
Consultants & Contractors	\$23,215
Geological Consultants	\$1,275
Geochemical Consultants & Assays	\$5,168
Geophysical Surveys & Contractors	\$0
Drilling	\$0
Stores & Supplies	\$2,415
Vehicles Plant & Equipment	\$1,539
Land	\$1,504
Computing	\$1,603
Office	\$412
Administration Fee	\$5,085
Total Tenement Expenditure	\$55,943

9. KEYWORDS & LOCALITY

Keywords

Geology, geochemistry–soil, geochemistry–Partial leach, previous exploration, Dundas, White Spur, Carbine Hill, geophysics–EM, track cutting, Montezuma Grid

Locality

1:250,000 QUEENSTOWN SK 55-5

1:100,000 PIEMAN 7914, SOPHIA 8014

1:25,000 DUNDAS 3636, ROSEBERY 3637

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