ZINIFEX
ROSEBERY
MINE

SILVER FALLS (The Pinnacles) EL 23/2000

ANNUAL REPORT

FOR THE PERIOD ENDING 8th NOVEMBER 2004

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1. SUMMARY

Exploration activities in the fourth year of tenure of EL 23/2000 have focussed on assessing the potential of the Shale Basin area to host a deep (>150m) Rosebery – Hercules style VHMS deposit. Work undertaken included:

- 8.85 km of gridding over the Shale Basin Prospect. Surveying with GPS and geological mapping of this grid.
- Collection and analysis of 377 (including duplicates) soil samples.
- A brief review of previous ground EM data from the Shale Basin area.

The results of this work has not provided encouragement for further work in the Shale Basin area and the focus of exploration effort will now be re-directed to other parts of the tenement, in particular the North Pinnacles prospect.

2. INTRODUCTION

This report documents work undertaken on Exploration Licence 23/2000 Silver Falls (Pinnacles) for the period November 2003 to November 2004, the fourth year of the licence.

The EL covers 43.75 km^2 and is located 10-15km north of Rosebery (Figure 1). The principal target of exploration on the licence is a volcanic hosted base metal massive sulphide (VHMS), similar to mineralisation at the Rosebery and Hercules mines in western Tasmania.

Access to the tenement is via the formed gravel surface 'Boco Road' extending west from the Murchison Highway (A10). The Silver Falls prospect is accessible from an existing 4WD vehicle access track which trends north from the Boco Road, following the ridge of Burns Pinnacles. Access to the northeast part of the tenement is via the Sawmill Creek track, a 4WD track which branches north from the Boco Road near Boco Siding.

Work completed during the reporting period focussed on exploring the Shale Basin prospect.

2.1 Attribution

The following personnel were responsible for the work carried out within the Silver Falls Exploration Licence area during the reporting period:

Senior Geologist:	Andrew McNeill - Zinifex Rosebery Mine
Contract Geologist	Mick Skirka – Skirka Geological Services
Contract Geophysicist	Jovan Silic – Jovan Silic and Associates

3. LAND TENURE

EL 23/2000 Silver Falls (Figure 1) was granted to Pasminco Limited for a five-year term on 8th December 2000 and covered an area of 18 km^2. The adjacent EL 5/2001 (Pinnacles) was granted for a period of 5 years on the 14th May 2001, and was subsequently amalgamated with EL 23/2000, to give a total licence area of 43.75 km^2.

On April 5th 2004 the name of Pasminco Australia Limited was changed to Zinifex Australia Limited as part of a float of some Pasminco assets.

The EL is subject to a number of land classifications. The current land tenure includes the John Lynch Forest Reserve, in the North Western portion, and the Sawmill Creek Forest reserve in upper North Eastern portion of the licence. The remaining area within the EL comprises State/multiple use Forest and MDC informal reserves. All these land classifications are available for mineral exploration.

4. REGIONAL GEOLOGY

EL23/2000 is located in the Dundas Trough in western Tasmania. The VHMS prospective sequence forms part of the mid- to late-Cambrian Mt Read Volcanics (Figure 2; after Corbett and McNeill [1986]).

Basement in western Tasmania is Precambrian in age, comprising predominantly greenschist facies metasediments with minor basalts and dolerites, although higher grade amphibolite and eclogite facies rocks are also present (Burrett and Martin, 1989). Basement is exposed west of the EL in the Huskisson River valley.

Cambrian volcanism and sedimentation development on the margin and within the rift can be subdivided into the Eo-Cambrian tholeiitic Crimson Creek Formation (CCF) and the mid to late Cambrian Dundas Group and predominantly calc-alkaline Mt Read Volcanics (MRV).

The CCF was deposited in shallow but rapidly subsiding basins (Brown, 1986) and consists of basaltic lavas and volcaniclastics, haematite facies turbidites, carbonates, chert and minor evaporites. The formation is exposed in the south-west corner and to the west of the EL.

The oldest MRV outcropping on EL 23/2000 Silver Falls is the Pinnacles Rhyolite, which forms a topographic high along the Pinnacles Ridge. This unit, a possible lateral equivalent of the Que-Hellyer Volcanics represents the top of the host sequence to the Browns Tunnel mineralisation to the south of the licence (Kirsner, 1992). Overlying the Pinnacles Rhyolite is a volcano-sedimentary sequence, derived from a felsic volcanic source, that is a correlate of the Southwell Subgroup or White Spur Formation and which underlies a large part of the EL.

A poorly understood but stratigraphically important transition to the Tyndall Group correlates is marked by a magnetic correlate to the “Lynchford Tuff” on the eastern limb of the Silver Falls Syncline (McNeill & Richardson, 1997). Time equivalents of the Owen Conglomerate occupy the core of the Silver Falls Syncline in the central northern part of the EL but much of this area has a partial cover of Pleistocene glacials that masks the underlying geology.

A package of Dundas Group sediments which possibly post-date the MRV occur in the western sector of the EL in the footwall to the Rosebery Fault. These sediments include dolomitic siltstones, conglomerates and quartz muscovite sandstone lithologies which are correlated with the Stitt Quartzite at Rosebery.

At least two phases of regional compression were associated with the mid Devonian Tabberabberan Orogeny (Keele, 1991). The development of folding, cleavage and regional thrusts in lower Palaeozoic rocks were associated with this event. Fold trends in the licence are N to NNE. The Silver Falls syncline and the Pinnacles Anticline are large fold sets within the EL, with the Silver Falls syncline the dominant structure as the Pinnacles Anticline dies out to the north. The dominant regional fault structure in the EL is the Rosebery Fault, a regionally significant east dipping thrust that extends some

28km from near Mt Dundas, in the south, into the Silver Falls area. The position of this major structure north of the Silver Falls prospect area is unclear.

Deformation was followed by the extensive intrusion of Devonian to Carboniferous granitoids. The Meredith Granite and its hornfels aureole outcrop to the west of the EL (Brown, 1986). After substantial erosion of this terrane extensive Tertiary flood basalts and sub-volcanic sediments were deposited. Remnants of the basalt flows are preserved between the Ramsay and Coldstream Rivers northeast of the licence.

5. PREVIOUS EXPLORATION

The Silver Falls area has been the focus of intermittent exploration activity since the discovery of outcropping Pb-Ag mineralisation by Jack Lynch in 1890. Modern exploration commenced in the area in the 1940's and is summarised in McNeill and Poltock (2003). Work completed by previous explorers in the Shale Basin area is summarised in Table 1; work completed by Pasminco/Zinifex since the granting of EL 23/2000 is summarised in Table 2.

Table 1. Previous Exploration completed in the Shale Basin Prospect area

Year/Tenement	Work Completed
1966-1967, EL5/63 (Anon, 1967)	Soil sampling identified anomalous Zn (up to 8.2% Zn on line 25N).
1968-1969, EL5/63 (Fitch, 1968)	Costeaning, channel sampling, mapping and auger sampling of the Shale Basin area.
1983-1984 (Shaw, 1984)	Limited geochemical sampling across the Shale Basin area. Comstaff concluded that previously reported Zn anomalism was due to hydromorphic dispersion of base metals into limonite and manganese wad.
1986-1988, EL5/63 (Anon, 1988)	UTEM, Sirotem and limited rock chip and stream sediment sampling. A 'lesser' conductor was identified by the UTEM survey (Anomaly A) which was followed up with a Sirotem survey and rockchip and stream sediment samples (4 samples, no anomalous values returned). Interpretation of the Sirotem data was hampered by 'loop effects'.
1989-1990, EL44/88 (Lorrigan, 1990)	Geological mapping of roads and costeans and rock chip sampling. Rock chip results failed to confirm the Zn anomalies located by Comstaff and the lack of alteration downgrades the prospect.
1992-1993, EL44/88 (Poltock et al., 1993)	Review of BHP UTEM data – Anomaly A recommended for follow-up. Limited geological mapping and rock-chip sampling.
1993-1994, EL44/88 (Poltock and Saxon, 1994)	Re-cutting of the Comstaff EAF grid; geological mapping, compilation of Comstaff soil data; ground magnetics; MMI soil geochemistry.
1994-1995, EL44/88 (Saxon, 1995)	Interpretation of MMI and total digest soil geochemistry. Conclude that drilling to the south has downgraded the prospectivity of the Shale Basin area.

Table 2: Exploration on EL 23/2000

Reporting Period	Work Completed
2000-2001 (Briggs, 2001)	Review of previous exploration; gridding (10.3 line km); geological mapping; B horizon soil sampling (447 samples); minor rock-chip sampling, petrography and Pb isotope analysis of samples from the Silver Falls Prospect. Re-logging of DDH HRD1. This work supported stratigraphic similarities to Rosebery and located three significant partial leach soil anomalies. Drill testing was recommended.
2001-2002 (McNeill, 2002)	Work was restricted to some compilation of previous exploration data and drill testing the Silver Falls prospect with a single199.8m diamond drill hole. Results were not encouraging and it is not planned to complete any further work at the Silver Falls prospect, apart from a DHEM survey in DDH HRD1. It was recommended that follow-up mapping should be undertaken south of the Silver Falls grid to locate strike extensions of the "host sequence" between the existing grid and the Shale Basin prospect, an area of very poorly known geology.
2002-2003 (McNeill and Poltock, 2003)	Work during the reporting period focussed on completing a DHEM survey in DDH HRD1 in the Silver Falls area, and the cutting, geological mapping and soil sampling of a 5.6 line km grid over the area between the Silver Falls grid and the Shale Basin prospect. There was no encouragement for further follow-up in the results of this work. It was therefore recommended that exploration work in the coming year be focussed on the Shale Basin area.

6. WORK COMPLETED 2003-2004 REPORTING PERIOD

Work completed in the reporting period comprised gridding, soil sampling, geological mapping and a review of the previous ground EM coverage of the Shale Basin prospect.

6.1 Geology

Geological mapping was completed over the Shale Basin prospect, located in the southern part of the license area. The Shale Basin grid comprises five AMG east-west lines within 376275 – 378825mE, 5385900 – 5387000mN (AGD66) and is accessed via the Pinnacles Ridge track, a north-south track off the Boco Road that runs across the eastern end of the grid lines.

Mapping was completed during September 2004 and comprised the five grid lines, access tracks, some streams and historic costeans. Outcrop on the grid lines is limited and the western part of all five lines is covered with fluvioglacials. The historic costeans are largely overgrown. Fact geology was plotted at 1:5000 scale and previous mapping data by Lorrigan (1990) has been incorporated.

Stratigraphy

The eastern end of each line and the main Pinnacles Ridge Track is underlain by fine grained to weakly quartz phyric, rhyolitic lavas of the Pinnacles Rhyolite. In the south eastern part of the mapped area (on the Shale Basin access track) these lavas have a distinct breccia texture.

Overlying the Pinnacles Rhyolite to the west is a sequence of interbedded medium to coarse grained crystal rich volcaniclastic sandstone, arkosic sandstone and laminated siltstone. The relationship between this sedimentary sequence and the underlying Pinnacles Rhyolite is unclear. Close to the contact the sediments have a subvertical to steep northwestly dip (locally overturned on the Silver falls Track). No evidence of significant shearing was observed close to the contact and the sedimentary sequence is presumed to be conformable.

The sedimentary sequence comprises interbedded medium to coarse grained, feldspar-quartz phyric, crystal rich volcaniclastic sandstone and medium grained arkosic sandstone with minor laminated siltstone. In the northwestern part of the mapped area a unit of dark grey laminated siltstone/shale is correlated to a similar unit mapped by Poltock (2003).

The sediments have a shallow to moderate northwesterly dip (away from the contact with the Pinnacles Rhyolite) and the sedimentary sequence is folded into a gently NNE plunging syncline. The western limb of the syncline is largely obscured by fluvioglacial cover that continues to the western end of the mapped area.

6.2 Geochemistry

Soil sampling was completed on the 8.8 line km of new grid cut over the Shale Basin prospect.

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 200 or 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 1 and 2 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 six colour groups.

The 377 samples (including duplicates) collected were analysed as part of three batches (SDS 4542, 4543 and 4544).

No samples are obviously contaminated, however, 26 samples, 7% 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. 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 and not significantly affect the precision of the analysis. Accordingly all 26 samples, with low post-digest pH, were re-assayed with the new protocol with the result that 23 had post-digest pHs of >8.0. In the interpretation discussed below the low (pH <7.95) samples from the original dataset have had their assay results replaced by the re-assayed data and the three samples (360231, 360283 and 360473) with low pH's after re-digest have been excluded from the dataset.

Images of the gridded raw data are presented as Figures 3-11. Several coincident Pb-Zn+/-Cu anomalies are apparent, particularly on the southern line (6445900N) and near the eastern end of each line. However the anomalies are not coherent and are typically single point or spiky.

The anomalous results on the southern line are proximal to previously identified anomalous conventional soil samples collected by Comstaff in 1969-1970 which were later attributed to hydromorphic dispersion into manganese wad. However an additional two lines of samples are recommended to the south of 6445900N in order to determine whether a coherent anomaly is present.

6.3 Geophysics

A review of geophysical data previously collected over the Shale Basin prospect was reviewed by geophysical consultant Jovan Silic. BHP completed several UTEM surveys in the Burns Peak – Pinnacles region, including the Shale Basin area, between 1986 and 1988. At Shale Basin, three loops were surveyed in 1986-87 and one loop surveyed in 1987-88. A follow up Sirotem survey over an identified UTEM anomaly (comprising two loops) was also completed during 1987-88.

A review of this data did not identify any anomalies that warranted additional investigation. A memo outlining the reviewed data is contained within Appendix 3.

7. ENVIRONMENTAL DISTURBANCE AND REHABILITATION

During the reporting period (November 2004) the DDH SFD1 drill site (drilled in April-May 2002) and access track were visited to assess the progress of rehabilitation (Plates 1 and 2). There is no erosion of the track but, although small myrtle and fern seedlings were present along the track and at the drill site, regrowth remains slow, probably a function of the un-broken canopy.

8. CONCLUSIONS AND RECOMMENDATIONS

Work during the reporting period focussed on the cutting, geological mapping and soil sampling of an 8.85 line km grid over the Shale Basin prospect and interpretation of previous EM data. Only minor geochemical anomalism was identified, predominantly on the most southern of the gridded lines.

An additional two lines of cutting, geological mapping and soil sampling is required at the southern boundary of the tenement to complete the coverage of the Shale Basin prospect and to determine whether the minor geochemical anomalism on line 6445900N is part of a larger coherent geochemical anomaly.

An assessment of previous work for the remaining areas within the tenement, in particular the North Pinnacles area, should also be completed during the next reporting period.

Plate 1. SFD1 Drill collar.

Plate 2. SFD1 Access track

9. EXPENDITURE

The total expenditure for all work undertaken by Zinifex Rosebery Mine on Silver Falls EL 23/2000 for the twelve month period to the end of October 2004 was $48,392. A detailed expenditure statement is given below.

Personnel	$2,701
Travel and Accommodation	$0
Geological Consultants	$3,360
Geochemical Consultants & Assays	$8,579
Geophysical Surveys & Contractors	$0
Other Contractors	$23,492
Drilling Contractors	$0
Stores & Supplies	$538
Vehicles Plant & Equipment	$2,833
Land	$866
Computing	$1,547
Office	$77
Administration Fee 10%	$4399
Total Tenement Expenditure	**$48,392**

10. KEYWORDS AND LOCALITY

Keywords

Silver Falls, Pinnacles, Shale Basin, geology, Mt Read Volcanics, White Spur Formation, Tyndall Group, Stitt Quartzite, Central Volcanic Complex, VHMS, Rosebery Fault, soil geochemistry, partial leach.

Locality

1:250,000 BURNIE SK 55-3

1:100,000 SOPHIA 8014

1:25,000 PARSONS (3638), RAMSAY (3639), BLOCK (3838) & CHARTER (3839)

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