**PASMINCO EXPLORATION**

# BULGOBAC RIVER EL 19/94

## ANNUAL REPORT
## FOR THE PERIOD
## AUGUST 3RD 1999 TO 6TH DECEMBER 2000


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*1994_200011_02_Main Report*

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## 1. SUMMARY

The main focus of work carried out within EL 19/94 Bulgobac River was continued Partial leach soil sampling to complete coverage of the buried Que-Hellyer Volcanics where the mixed sequence (the host to the Hellyer and Que River orebodies) is interpreted to be within 500m of the surface and the position has not been tested by diamond drilling.

During the year a further 734 partial leach soil samples were collected on three grids; High Point, Que Road and North Sock Creek. This work necessitated clearing of 14.1 line km of grid and a total of 18.2 line km of surveying with differential GPS (DGPS).

Results from the North Sock grid had not been received at the time of writing, but, no significant anomalies were located on the High Point or Que Road grids. The expenditure for this tenement during this reporting period was $57,191.

## 2. INTRODUCTION

This report details work undertaken on the Bulgobac River (EL 19/94) exploration licence, between August 3rd 1999 and December 6th 2000.

The Bulgobac River license covers a portion of the Cambrian Mt Read Volcanics to the south and west of the Hellyer Mining lease in Western Tasmania (Figure 2). The principal exploration targets sought within the license area are Hellyer-type or Rosebery type volcanogenic Pb-Zn-Cu-Ag-Au massive sulphide deposits. The Que-Hellyer Volcanics, which host the Hellyer and Que River mines, extend into the license area. The terrain is heavily vegetated, rugged and poorly accessible. Access into the area is provided by a few overgrown 4WD tracks and along foot tracks or cut grid.

Exploration activities undertaken during this period have focused on continued testing, by partial leach soil sampling, of:

- The buried Que Hellyer Volcanics, where the prospective "mixed sequence" is interpreted to be within 500m of the surface, east of the Mt Charter Fault on the High Point and Que Road grids.
- The Sock Creek sequence, interpreted to be time-equivalents of the Que-Hellyer Volcanics, west of the Mt Charter Fault.

### 2.1 Attribution

The following personnel were responsible for the work carried out by Pasminco Exploration on the Bulgobac River EL19/94 licence area during the last reporting period:

| | |
|---|---|
| Senior Geologist: | Andrew McNeill – Pasminco Exploration Rosebery |
| Report Compilation: | Kirsten Simpson – Pasminco Exploration Melbourne |

## 3. LAND TENURE

Bulgobac River EL 19/94, covering 21km$^2$, was granted to Pasminco Australia Limited in January 1995 (Figure 1). The licence is renewable annually on the 6$^{th}$ January and is situated on unallocated Crown Land, designated as multiple use forest. At the end of this reporting period Pasminco relinquished 11 sq km of EL 19/94 (Simpson and McNeill, 2000), as required for a statutory 50% reduction in area. The reduced area of tenure is shown in Figure 2.

## 4. GEOLOGY

Two major groups of rocks occur within EL 19/94 (Komyshan, 1986). The first consists entirely of Tertiary basalt flows which are considered to have low prospectivity to host base metal mineralisation. The second group consists of Cambrian rocks belonging to the Mt Read Volcanics. This group can be divided into distinct packages occurring on either side of the major structure within the EL, the NNW-SSE trending Mt Charter Fault.

The Que and Hellyer ore bodies occur within the Mixed Sequence which is found on the eastern side of the Mt Charter Fault. The fault itself is a highly significant structure, characterised by a zone of shearing, fracture, vein and pug development up to 10m wide in places. The difference in thickness and type of Cambrian units either side of the fault may indicate that it was active as a growth fault during Cambrian times.

The dips on either side of the fault are low angle (5-45°) and are mostly towards the north west. Open folds and considerable faulting disrupt the stratigraphy on the eastern side of the fault. The thickness of the Southwell Subgroup and Que River Shale, coupled with the low angle dips on the eastern side of the fault prevent the Que Hellyer Volcanics from outcropping within the EL. They are observed at surface beyond the eastern boundary.

Volcanic units do outcrop on the western side of the Mt Charter Fault. Although these are believed to be time equivalents of the Que-Hellyer volcanics, they are not thought to be geochemical correlates (A Crawford, pers. comm. to Purvis JG, 1995).

No significant alteration or mineralisation has been identified within the EL boundaries (Lorrigan,1995).

## 5. PREVIOUS EXPLORATION

Previous work undertaken by other companies on EL 19/94 has included geological mapping, VFL-EM, IP, CSAMT and gravity surveys conducted by CSR and DHEM, UTEM and magnetic surveys conducted by Aberfoyle. Recent work by a Placer-Aberfoyle Joint Venture included the completion of five diamond drill holes, all of which intersected the Que-Hellyer Volcanics at depth (Richardson, 1994). None of these holes contained mineralisation or significant alteration.

Pasminco began exploration within EL 19/94 in 1995. Table 2 details work undertaken by Pasminco between 1995 and 1999:

**Table 1:. - Exploration Undertaken By Pasminco within EL 19/94 - 1995 to 1999**

| Reporting Period | Work Completed |
|---|---|
| 1994-95<br>Lorrigan (1995) | -lithogeochemical study (Dr Tony Crawford) to define depth at which the Mixed Sequence occurs in drill holes on eastern side of Mt Charter Fault (>900m) |
| 1995-96<br>Dibben (1996) | -regional aeromag interpretation to try & locate large alteration zones associated with Rosebery-style mineralisation |
| 1996-97<br>Murphy (1997) | -refurbishment, mapping, rock chip & soil sampling of Bulgobac River grid; major data compilation as part of Western Tasmania Prospectivity Review; results from both the Bulgobac sampling and data review identified both soil and stream sediment Zn-Pb anomalies within the NW part of the grid (peripheral to and within Tertiary Basalt areas). This area was targeted for further investigation during the current reporting period. |
| 1997-98<br>Parfrey (1998) | - Minor C-horizon soil, stream sediment & rock chip sampling. |
| 1998-99<br>Parfrey and McNeill (2000) | -Partial Leach Soil Sampling over the Mt Charter Fault from High Point to Que Road. Results not encouraging - Although there is a multi-element anomaly on line 6400N, this target does not warrant further follow-up on Pasminco's current criteria. |

## 6. WORK COMPLETED 1999-2000 REPORTING PERIOD

During the 1999-2000 reporting period Pasminco Exploration's work has focused on Partial Leach soil sampling in the Bronco / Que Road, High Point and North Sock Creek areas.

### 6.1 Partial leach soil sampling

B-horizon soil samples were collected at 25m intervals on an east-west grid (grid orientation based on that of Aberfoyle's Que River and Hellyer grids). Samples were collected at or near the 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 placed in clip lock plastic bags and once returned to the field office the bags were stored open to prevent anaerobic reduction reactions. The bags were stored until a batch of 300 samples was collected, the bags were then sealed and despatched to Amdel in South Australia for analysis by partial leach technique DL42 followed by ICP. Elements analysed were Ag, As, Au, Ba, Bi, Cd, Cu, Co, Mo, Ni, Pb, Ni, Zn, Zr and the rare earth elements Ce, Eu, Gd, La and Sm. The pH of the leachate, after leaching, was also determined.

Three duplicate and two standard samples were collected per 100 samples. The field duplicates were 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.

#### 6.1.1 Que Road

The Que Road grid is centred on the Que Road and extends south to CSR/Placer's BRD1 and BRD4 drill holes and north to the vicinity of DDH BRD3. The geology in this area is dominated by correlates of the Southwell Sub-group overlying buried and blind Que-Hellyer Volcanics. The target at this prospect is the Mixed Sequence of the Que-Hellyer Volcanics (i.e., the host sequence for the Que River and Hellyer orebodies) below the effective depth of penetration of previous UTEM and CSAMT surveys (Richardson, 1994) and at <500m depth.

Work on the Que Road prospect was completed in conjunction with a survey over the Bronco Prospect on the adjacent EL 10/98 (see McNeill and Simpson (2000a) for details of this survey). 9.1 line km of the 200m spaced Placer/Aberfoyle grid (on the Que River and Hellyer Mine grid orientation) was refurbished then surveyed with DGPS. A total of 362 partial leach soil samples were then collected; sample locations are shown on Plate 1 (see Appendix 1 for sample details and results).

As sampling was completed as part of a larger survey also covering the Bronco

prospect on the adjacent EL 10/98, assays were spread over three analytical batches, however, Quality control data (internal standards and duplicates) for all batches appear to be good. Eight samples had low post-digest pH's (<8.0) and were therefore excluded from any further interpretation. When viewed in conjunction with data from the adjacent EL 10/98 (McNeill and Simpson, 2000a) it was obvious that there was a strong anomaly train, in several elements, following the Murchison Highway. It is interpreted that, as with data collected on EL 10/98 last year (McNeill, 1999), the anomaly results from contamination by wind-blown dust from ore trucks carting ore from Hellyer to Luina. To reduce the effects of this problem samples within 50m of the highway and with anomalously high Zn contents (three samples; 337568, 337230 and 338370) were not considered in the interpretation.

The raw data were levelled to soil colour group using the median value for each colour group from Pasminco's regional central Mt Read Volcanics partial leach soil data set. Soil colour groups are used because at the interpretation stage using the original logged 19 colours were too difficult to process and interpret. The 6 colour groups used were defined as follows:

| | |
|---|---|
| Black: | 10R2/2, 5YR2/2, 5YR2/1, 3/0 and 2/0 |
| Brown: | 10YR4/2 and 5YR4/1 |
| Red-Brown: | 5YR5/2, 10YR4/2 and 10R3/4 |
| Orange: | 10YR7/4, 10YR6/6 and 5YR5/6 |
| Cream: | 5YR7/2, 10YR8/2, 5YR8/1 and 8/0 |
| Grey: | 6/0 and 5/0 |

The levelled and gridded data are shown on Figures 4 – 10 and stacked line profiles are presented as Figure 11. The most obvious feature in all the gridded data (Figs. 4-10) is a linear feature trending roughly local grid north in the western part of the grid. However, the colour palette used for these images highlights the upper 10% of the data population and if the line profiles (Fig. 11) are considered it can be seen that most of the elements, with the exception of As and Mo, have very low response ratios (generally <5) that would not be considered to be anomalous. It is interpreted that the linear feature is possibly coincident with the basin bounding fault inferred from gravity and magnetic data by CSR (Ellis, 1990).

The other major features are elevated values adjacent to the Murchison Highway (contaminated samples? – the contaminated samples that were removed from the data set were defined largely on Zn, and Pb, contents; other elements were not considered) and patchy anomalism in the SE corner of the grid.

No significant multi-element and multi-line anomalies with target element (Cu,

Pb, Zn and Ag) signatures and response ratios of >10-20 were recorded.

### 6.1.2 High Point

The High Point prospect covers a roughly triangular area, bounded to west by the Mt Charter Fault, to the east by the Murchison Highway and to the north by Placer (BRD2 and 5) and Pasminco (BHD2 and 3) drill holes. The target at this prospect is the Mixed Sequence of the Que-Hellyer Volcanics (i.e., the host sequence for the Que River and Hellyer orebodies) at <500m depth.

The majority of the prospect was on EL 37/89 and only 1.9 line km of gridding and 78 partial leach soil samples were collected on EL 19/94; sample locations are shown on Plate 1 (see Appendix 2 for sample details and results). The results of this survey are summarised in detail in McNeill and Simpson (2000b) and the reader is referred to this report for further details. No significant anomalies, which meet Pasminco's criteria for further follow-up, were located.

### 6.1.3 North Sock Creek

The North Sock Creek area covers the northern part of the Sock Creek sequence, time equivalents of the Que Hellyer Volcanics immediately west of the Mt Charter Fault, in the central southern part of the EL. Previous work by Pasminco in this area has included gridding, rock-chip and conventional soil sampling and geological mapping (the western part of the Bulgobac River Grid; Murphy, 1997; Parfrey, 1998).

Access to the area for the current sampling program was gained by using the 1997 grid, with 3.1 line km of refurbishment and 200m of new cutting required. In all 294 partial leach soil samples (including standards and duplicates) were collected from 7.2 line km of grid, which was also surveyed with DGPS; sample locations are shown on Plate 1 (see Appendix 3 for sample details and results). At the time of writing samples had been submitted for analysis, but, no results had been returned. The results of this survey, including the yet to be completed geological mapping, will be presented in the next annual report.

## 7. CONCLUSIONS & RECOMMENDATIONS

During the current reporting year a further 734 partial leach soil samples were collected on three grids; High Point, Que Road and North Sock Creek. Results from the North Sock Creek program have not been returned, however, no significant anomalies worthy of follow-up (using our current criteria) were located on the other two grids.

The work done has largely completed coverage of the buried Que-Hellyer Volcanics where the mixed sequence (the host to the Hellyer and Que River orebodies) is within 500m of the surface and the position has not been tested by diamond drilling. The major remaining step in this program is to complete a semi-regional interpretation of all partial leach soil data collected on EL's 19/94 EL 37/89 (now relinquished, but under application as ELA 30/2000) and EL 10/98. This interpretation will involve further evaluation of potentially contaminated data (using more than Pb and Zn as has been done previously), establishing a local background (rather than using the regional background, as was done in section 6.1.1 of this report) and further attempting to integrate the earlier Mt Charter Fault (EL 37/89 and EL 19/94) and Amoeba Zone (EL10/98) data collected using different sampling parameters (such as composite samples) and Partial leach methods.

It is planned to complete this interpretation within the next 6 months and a decision on further follow-up will be made on the basis of recommendations resulting from this work.

## 8. EXPENDITURE

Total expenditure for all work undertaken by Pasminco Exploration within Bulgobac River EL 19/94, for the 15 month period ending 30/11/00 was $57,191. A detailed expenditure statement is given below.

| | |
|---|---|
| Computing | $140 |
| Drilling | $0 |
| Geochemical Assays | $11,161 |
| Geoscience Consultants | $458 |
| Land Environment | $4,107 |
| Depreciation Office Sundry | $3,163.11 |
| Other Contractors | $9,123 |
| Personnel Costs | $22,317. |
| Stores & Supplies | $428 |
| Travel & Accommodation | $603 |
| Vehicles, Plant & Maintenance | $166 |
| Administration Fee 10% | $5,199 |
| **Total** | **$57,191** |

## 9. KEYWORDS & LOCALITY

Keywords

BULGOBAC HILL, BULGOBAC RIVER, QUE RIVER, HELLYER, TULLABARDINE, GEOCHEMISTRY, MAPPING, PARTIAL LEACH, SOILS, IP, ZINC, MAFIC, VOLCANICS

Locality

1:250,000 BURNIE SK55-3

1:100,000 BULGOBAC RIVER, QUE RIVER

## 10. REFERENCES


Dibben, S.M., 1996. Bulgobac River EL 19/94 Annual Report for the Period Ending October 1996. Unpub. Pasminco Exploration Report, December 1996 (TA-25).

Ellis, P.D., 1990. Report TAS 2/90, Exploration Licence No. 39/85, Bulgobac River Tasmania. Current status at the completion of BRD05. Unpubl. Report to Placer Exploration limited. (**TCR 92-3214A**)

Komyshan, P., 1986. Geology of the Mt Charter – Hellyer area. Mount Read Volcanics Project Map 1. Tasmania Department of Mines.

Lorrigan, A.N., 1995. Bulgobac River EL 19/94 Annual Report for the Period December 1994 - October 1995. Unpub. Pasminco Exploration Report (T95-18).

McNeill, A.W., 1999. Mt Charter EL 10/98 Annual Report for the period ending June 1999. Unpub. Pasminco Exploration Report (VC265).

McNeill, A.W., and Simpson, K.L., 2000a. Mt Charter EL 10/98 annual report for the period ending June 2000. Unpub. Pasminco Exploration Report. (VC307)

McNeill, A.W., and Simpson, K.L., 2000b. Bulgobac Hill EL 37/89 annual and final relinquishment report for the period ending 31st July 2000. Unpub. Pasminco Exploration Report. (VC308)

Murphy, F.C., 1997. Bulgobac River EL 19/94 Annual Report for the Period Ending September 1997. Unpub. Pasminco Exploration Report (VC170).

Parfrey, O.C., 1998. Bulgobac Hill EL 37/89 and Bulgobac River EL 19/94, Annual Report for the period ending October 1998. Unpub. Pasminco Exploration Report (VC 215).

Parfrey, O.C., and McNeill, A.W., 2000. Bulgobac Hill EL 37/89 and Bulgobac River EL 19/94, Annual Report for the period ending 31st July 1999. Unpub. Pasminco Exploration Report (VC 260).

Richardson, S., 1994. EL 39/85 Relinquishment Report. Unpub. Aberfoyle Resources Ltd Report, February 1994. (**TCR94-3544**)

Simpson, K.L., and McNeill, A.W., 2000. Bulgobac River EL 19/94, Report on areas to be relinquished, January 2001. Unpub. Pasminco Exploration Report (VC 345).