MEMORANDUM

TO: John Canaris

COMPANY Lefroy Resources

FROM: Todd Grant

DATE: 8 December 2004

SUBJECT: **Summary of ground geophysical tests conducted at Lefroy, September 2004**

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Orientation geophysical trials were conducted in and around some of the historical gold workings at Lefroy in northeastern Tasmania in September. This memo provides a brief summary of the work.

Background

Historic data indicate high grade gold was (is) hosted in locally thickened portions of steeply dipping quartz vein 'sheets' and lodes striking east-west across the project area.

Sulphides are reportedly associated with mineralisation, however, details of habit & abundance are not well known. Relatively recent drilling across the Pinafore workings report up to 10% sulphide being encountered, thus suggesting disseminated sulphides is a worthwhile target to focus on, as well as raising the possibility that more massive sulphide bodies may be associated with mineralisation.

Planning

Three geophysical techniques were selected for initial trials at Lefroy:

- Gradient IP/resistivity was selected primarily to detect & map the distribution of disseminated sulphides, as well as assist in mapping of lithology & structure through variations in measured resistivity. Gradient mode surveying was selected because a) it is logistically advantageous in areas of dense scrub, and b) pending a favourable outcome from trial work, it is well suited toward covering a larger area.
- Fixed-loop TEM was selected to test for possible massive sulphide associations. Fixed-loop mode also has logistical advantages when operating in dense scrub with limited access. Tx loop placement is critical to fixed-loop mode survey design & success. For the trial, the loop edge was placed very close to and parallel with the quartz lode, assuming any associated massive sulphides would have a similar orientation (i.e., a steeply dipping, east-west striking sheet-like geometry).
- Controlled-source audio-magnetotellurics (CSAMT) was selected primarily for its ability to detect resistive bodies, eg quartz lodes, at depth – with depths in the order of 300 to 500m and more being of interest.

Budgeting considerations provided a time-frame of around 5-7 days for the test work.

A two-man Zonge crew was contracted to carry out the acquisition. Use of Zonge equipment enabled all three survey methods to be conducted by a single crew in one field campaign.

Test Line Locations

Test work was carried out over two lines, which are shown relative to the air photo in Figure 1.

1. Line 98700E is approximately 800m long and is centred over the New Native Youth workings. It also traverses the Morning Star system north of Native Youth, as well as testing potential western extensions of the Clarence lode system at its north end and the Bain & Richards lode system at its south end.
2. Line 98840E is approximately 1100m long testing similar historical workings as the previous test line. Cultural features and infrastructure are present in the area; in particular, powerlines are present along several sections of line 98840E.

IP/Resistivity

IP/resisitivity data were collected using standard Zonge equipment and common gradient array procedures. The Rx dipole spacing was 10m (relatively small to detect quartz veins of interest that may be only 2-3m wide) and the Tx frequency was 0.125Hz. Tx pits were located to the north & south of the trial lines. Their locations and further survey details are documented with digital data files associated with this work.

The gradient data indicates ground resistivity values in a moderately resistive range of 100-300ohm-m, with a few locations getting as low as 50ohm-m. Background IP values are somewhat elevated with an average value of around 20mrads, and it should be noted that graphitic rock fragments were observed at various locations around some of the workings.

While no strongly anomalous and obvious responses are readily apparent from the gradient data, several smaller scale perturbations exist that could prove insightful when tracked across several lines. Hence, results from these two trial lines suggest further gradient array surveying would be beneficial to help map lithology and structure, particularly in this area of sediments having a very low magnetic response contrasted against the strongly magnetic basalt cap to the north.

CSAMT

CSAMT data were collected using 10m Rx dipoles over a frequency range of ~8Hz to 8kHz. A north-south oriented Tx was established around 6km to the east (Tx location and further survey details are documented with the digital data files).

The CSAMT results appear to be affected considerably by noise from near by power lines and culture. While a few resistive features do appear at potentially interesting locations along the lines, they are not strongly coherent and distinctive and therefore do not provide a high degree of confidence as targets.

Further testing of CSAMT should be considered across other workings where effects from powerlines and cultural noise may be diminished. Also, the results of these two CSAMT trial lines should be revisited following any significant exploration work, i.e., drilling along the lines.

FLTEM

FLTEM data were acquired along the two trial lines at a 20m station spacing. Problems were encountered during acquisition that were thought to be caused by a culturally noisy environment (powerlines, etc…). Several instrument checks and tests were performed, indicating the equipment was operating correctly. However, when the author reviewed the field data files, an inconsistency in the survey setup was discovered in the instrument dump files. As a result, the acquisition setup & data integrity for the FLTEM data are highly questionable and suspicious:

a) the instrument dump raw files record use of a 4Hz Tx waveform, but also record window times to ~96msec, this is not possible given the maximum off time for a 4Hz waveform is ~62.5msec;

b) generally, data decay and repeatability is extremely erratic.

Neither Zonge Australia nor Zonge USA have come across this situation before and they could not provide an explanation of what happened. As a result, the FLTEM data for this trial work are considered unusable.

The digital files have been stored with other files for this trial work; however, Amira format TEM file construction was only partially completed due to an inability to assign appropriate channel times.

Production Rates for Future Work

If any additional surveying is considered for future work, the following production rate estimates should be considered *(extracted from an email T. Grant to J Canaris, 25 Oct 2004):*

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Following are production rate estimates based on the September orientation work at
Lefroy.  They are approximate figures for geophysical crew production only and
don't include line clearing.  On a great day, when everything 'clicks', rates may
be higher, but, for planning I find it is best not to use a 'best case scenario'
figure.  These figures should be valid for a crew staying in Georgetown rather
than Launceston (to cut down a little on commuting time).

Gradient Array IP: 1 line km / day
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assumptions/survey specs:
1/8 Hz current waveform
2 reading minimum comprised of 16 stack minimum
10m a-spacing recording with an 8-channel receiver
i.e. reading along an 80m segment of line per setup

CSAMT: 750m / day
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assumptions/survey specs:
freq range from 32Hz to 8KHz (notch for orientation work occurred around 32-64Hz)
2 reading minimum per station
10m dipole spacing recording 6 e-field measurements & 1 h-field
i.e. reading along a 60m segment of line per setup
for CSAMT work, should factor in more processing time each day to get QC/inversion
plots while in the field
(inversion processing generally completed in Zonge Adelaide office)

Fixed-Loop EM: 2 line km / day
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assumptions/survey specs:
2Hz Tx waveform
2 reading minimum comprised of 128 stacks
20m station spacing
Tx loop setup & line clearing are the biggest time/cost factors for the TEM work


for more regional scale CSAMT work, plan on say, 12 station setups per day
the e-field dipole spacing can be expanded to 50m or perhaps 100m, however,
at these larger lengths, it may no longer be advisable to use 1 h-field
measurement for 6 e-field measurements
thus, the recording setup may only be 200m long per setup, resulting in 200m X 12
setups = ~2.5 line km /day
need to check with Zonge on these figures
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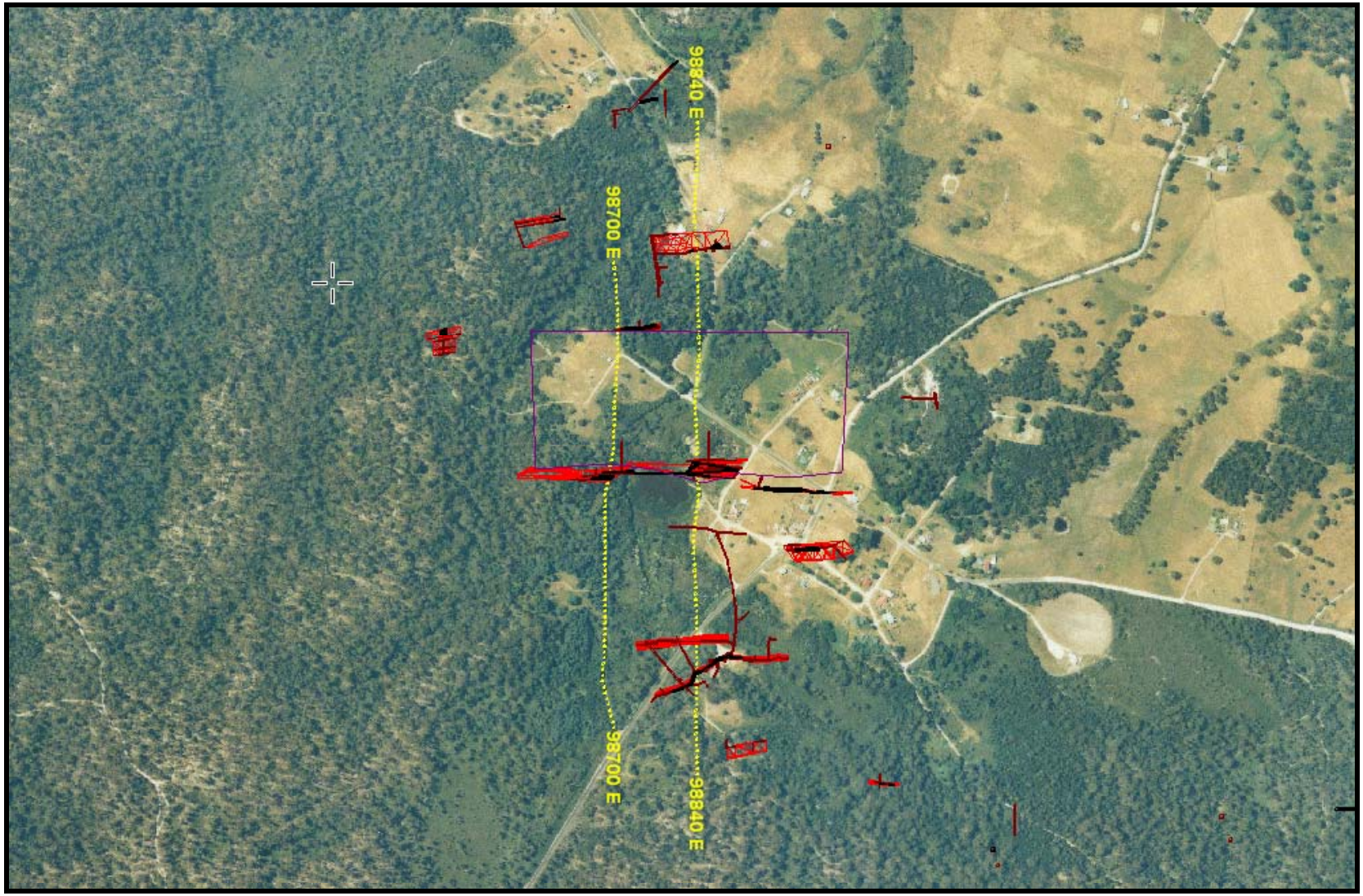

Figure 1 Airphoto over Lefroy showing location of test line/stations (yellow), historic lodes (red), shafts & stopes (brown), and the Fixed-loop TEM Tx loop (purple). The test lines are approximately 140m apart.