THE IMPORTANCE OF ASSAY METHOD AND UMPIRE SAMPLES

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Geologists spend significant time assessing assaying precision and accuracy. For resource evaluation assay accuracy is critical whereas precision can be offset by or considered with respect to sampling density.

For QAQC analysis the assessment of the selected assaying method is often overlooked. Umpire or check samples provide an opportunity to test alternative assaying methods and accuracy. However often umpire sampling only demonstrates reproducible results for the same assay method at a different laboratory.

If certified using a different assaying method then certified reference materials (CRMs) can help to verify an assay method for accuracy. However as with all commercial CRMs uncertainty remains with respect to the suitability of the CRM mineral matrix.

For the oxide deposits such as iron ore, bauxite and nickel laterites where whole rock chemistry is required to assess metallurgical behaviour, glass fusion XRF is now the most accepted assaying method. Traditionally ICP methods were used and will persist in historic work. ICP units are far more widely used in commercial laboratories causing ICP to be still sold as a suitable or recommended method.

Work by Platina Resources Limited on their scandium project in NSW provides some insight into these issues with the comparison of ICP and XRF analytical methods. This highlights regular assaying accuracy issues for Ni, Co and Cr present in most nickel laterites as well as significant accuracy issues for Sc in scandium rich laterite.

Early on Platina geologists astutely developed in-house Sc standard reference materials that were certified by a well-known independent group but only by ICP. Excessive variability of the certification assays was ignored and “certified” result used until more recent assaying with XRF and NAA that demonstrated the “certification” significantly under-called the true scandium grade. This case provides an example why CRMs should only be part of the assessment of accuracy.