

APPENDIX 4 Analytical Sample Preparation and Methodology

All samples were submitted to NTEL in Darwin for sample preparation and multi-element analysis (G400 and G950 analyses). A split of each pulp was submitted to North Australian Laboratories Pty Ltd in Pine Creek for Au, Pt and Pd analysis using Fire Assay with an ICPMS or ICPOES finish (either method is suitable). In total, four separate methods were used to analyse up to 65 elements and four isotopes as follows. In the initial batches of samples SiO₂ was also determined from a peroxide fusion digest, in order to get more accurate data than the present method of calculating silica from the other major elements and LOI. However these analyses appeared to be no more accurate than those calculated (i.e. total majors were 100% +/- 5%), so analyses for SiO₂ were abandoned.

NTEL installed a preparation facility in early 2005 and this is now routinely used for all samples. Basement and sandstone samples are generally submitted in separate batches to minimise risk of contamination in sandstone samples from the generally higher background levels of many elements in the basement samples. Sample preparation at NTEL involves initial drying at 110°C. The entire sample is crushed to a nominal 2 mm in a Boyd Crusher, then divided using a Rotary Sample Divider to give a ~300-400 g split. The split is milled in a Whisper ring mill to a nominal 75 µm. The material used on the crushing surfaces was selected to be free of contaminant trace metals (the major contaminant is iron) and this was confirmed in tests conducted by Cameco prior to submitting field samples. The Boyd Crusher is flushed with barren blue metal and the ring mills are flushed with garnet sand before and after each sample. The RSD is vacuum cleaned.

The pulp is digested using a mixed acid digest (G400 nitric, hydrochloric, perchloric and hydrofluoric) with a double dehydration with perchloric acid. The digest is read for a suite of elements listed in the appendix including total U, Th, Pb- isotopes chalcophile and rare-earth elements (REE) using either ICPMS (G400M) or ICPOES (G400I) depending on the element. LOI is measured at 1000°C. Boron is measured following peroxide fusion digest. A portion of each sample is then subject to a weak acid leach (Method G950), which is a dilute nitric acid digest. The sample is read using ICPMS for labile uranium and lead isotopes. It is important to note that with these weak partial leaches, the data should not be used in an absolute sense

1. as the analyses are sensitive to length of time the sample is left in the digest
2. a small speck of uraninite in the sample will result in a very high result, that might not be repeatable and should only be used relatively as ratios.