FAA313 : The Determination of Gold by Fire Assay and Flame Atomic Absorption – Trace Grade

1. **Parameter(s) measured, unit(s):**
   Gold (Au): ppb

2. **Typical sample size:**
   30.0 g

3. **Type of sample applicable (media):**
   Crushed and pulverized rocks.

4. **Sample preparation technique used:**
   Crushed and pulverized rock sample are weighed and mixed with flux and fused using lead oxide at 1100°C, followed by cupellation of the resulting lead button (Dore bead). The bead is digested using 1:1 HNO_3 and HCl and the resulting solution is submitted for analysis.

5. **Method of analysis used:**
   The digested sample solution is analyzed by Flame Atomic Absorption Spectrometer (AAS), Samples are analyzed against known calibration materials to provide quantitative analysis of the original sample

6. **Data reduction by:**
   The results are exported via computer, on line, data fed to the SGS Laboratory Information Management System (SLIM) with secure audit trail.

7. **Figures of Merit:**

Element	Reporting Limit (ppb)
Au	5.0

8. **Quality control:**
   Instrument calibration is performed for each batch or work order and calibration checks are analyzed within each analytical run. Quality control materials include method blanks, replicates, duplicates and reference materials and are randomly inserted with the frequency set according to method protocols at ~14%.
   Quality assurance measures of precision and accuracy are verified statistically using SLIM control charts with set criteria for data acceptance. Data that fails is subject to investigation and repeated as necessary