

CASE STUDY

detectORE™ in-field low ppb silver by pXRF detection



BACKGROUND

Silver is often co-associated with gold and is of significance as an exploration gold pathfinder as well as a precious metal.

Direct pXRF readings on mineral samples for silver at best achieve a limit of detection of around 2 ppm Ag, however it should be noted that in practice this Limit of Detection (LOD) is often much higher.

Portable PPB's detectORE™ is a patented technique that was designed to enable in-field measurement of gold in geological samples by pXRF to low ppb. To establish if this technique can be applied to silver detection, RC drill sample material was analysed using detectORE in conjunction with a SciAps X-555 and compared to laboratory analysis.

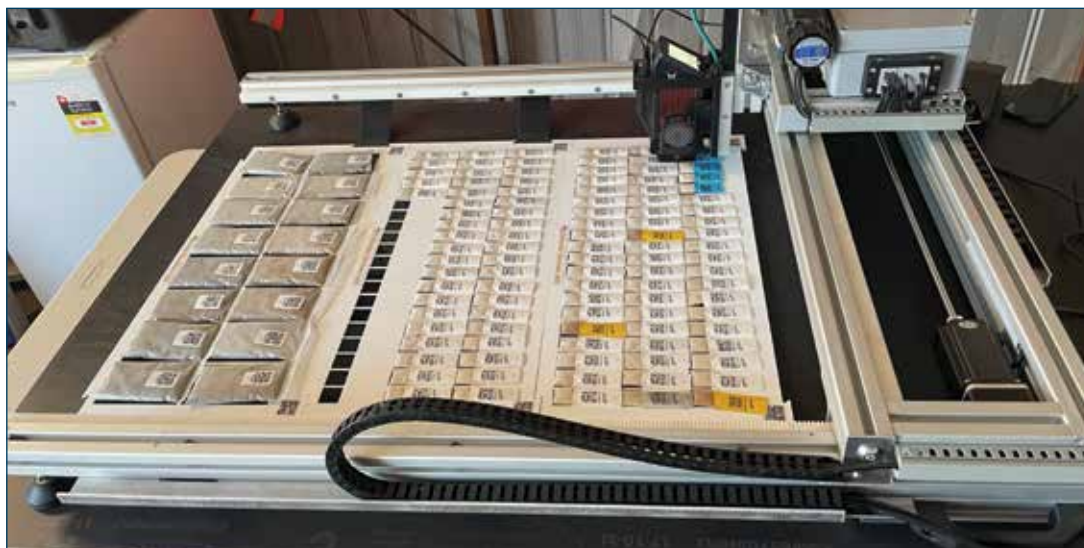
The SciAps X-555 uses a 55 kV X-ray tube for extra low detection limits on key elements like Ag, Cd, Sn, Sb, and Ba rather than the industry typical 50 kV, delivering a higher performance for critical "light" Rare Earth Elements (REEs) and some "heavy" REEs, making it a superior option for REE analysis, including silver.

HIGHLIGHTS

detectORE™ can produce both Au and Ag results to ppb, in-field, used in combination with SciAps X-555 pXRF

Results delivered within 12 hours, enabling rapid, data-based decision making

Identifying silver as a pathfinder to gold in-field may increase chances of a successful early discovery



THE detectORE™ IN-FIELD PROCESS

Reverse Circulation (RC) drill samples were obtained from a single drill hole and material was analysed in-field using detectORE™ in conjunction with a SciAps X-555 pXRF unit.

The 1kg samples were split to achieve 250g and 750g sub-samples, with the 250g samples submitted for laboratory analysis and the remainder used for the detectORE™ analysis.

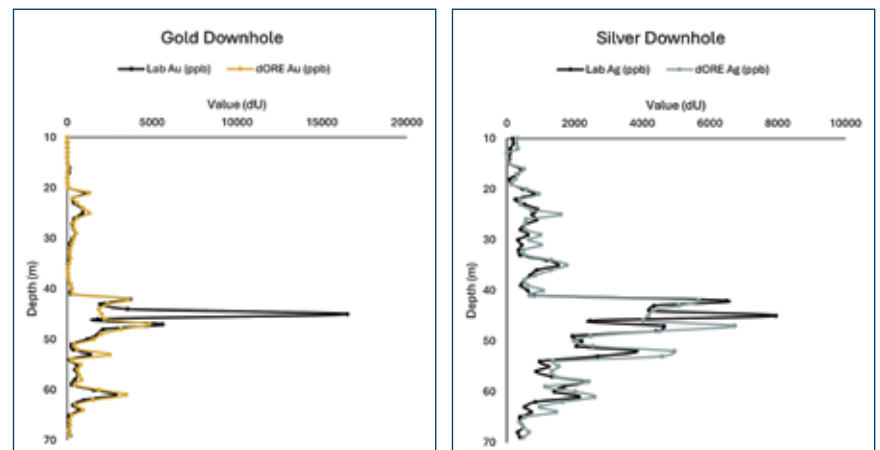
Material was sieved to <1mm and 250g of this sieved material was analysed utilising a 12 hour mix time. detectORE™ collector devices (CDs) were then analysed with a SciAps X-555 using the factory detectORE™ calibration and Portable PPB's pLIMST™ software.

IN-FIELD ANALYSIS OF Ag BY pXRF TO 0.04PPM

The combination of detectORE™ and SciAps X-555 achieved co-analysis of gold and silver and to significantly lower levels in-field compared to direct pXRF analysis, which is expected to lead to the ability to find, define, measure and mine precious metals faster.

Adjustments to particle size (<1mm) and mixing time (>12 hours) may deliver further improvements in recoveries of gold and silver which were 40% and 10% respectively applying the detectORE™ method to field sieved samples.

The detectORE™ results aligned with the lab results, both identifying elevated and anomalous Au and Ag between 20-25m and 40-65m downhole.



Downhole plots showing detectORE™ results versus laboratory results for gold and silver.



GREENER GOLD

detectORE™ provides a sustainable gold analysis solution with many environmental and economic benefits.

With very low energy requirements and the ability to operate only on solar power, it reduces carbon emissions associated with energy consumption.

The use of non-toxic reagents enhances operator safety and minimises environmental risks.

By limiting the number of samples sent for traditional laboratory analysis, the method reduces logistical demands and associated environmental impacts.

Additionally, detectORE™ lowers costs by minimising mobilisation and demobilisation events, making it a cost effective alternative to conventional analytical techniques. The simple process can create employment opportunities in host communities, aligning with a socially responsible approach to resource exploration and mining.

Run entirely on solar power

Utilises non-toxic reagents

Reduces the number of samples shipped for traditional laboratory analysis

Reduces mobilisation and demobilisation events

Provides an effective fit-for-purpose low-cost alternative to conventional techniques

Provides employment opportunities for host communities

Saves explorers and miners time and money



Western Australia
Innovator of the
Year
2023 Overall
Winner



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ABOUT detectORE™

The patented detectORE™ technology was invented by Australia's National Science Agency, CSIRO and has been exclusively licenced for commercialisation to Portable PPB Pty Ltd.

This unique technology enables geologists to obtain gold results at low concentrations using an optimised portable XRF device. Unlike existing instruments in the industry, the detectORE™ process reliably records parts per billion gold concentrations.

The detectORE™ process utilises a single-shot consumable, featuring a proprietary non-toxic and non-hazardous reagent (GLIX-20™, a container, a bar-coded collector device, and customised software developed by Portable PPB to manage the entire process. The process involves leaching and collecting gold over a 6-hour period, with results obtained in as little as 8 hours.

Ensuring quality assurance and control, detectORE™ incorporates robust QAQC systems and software. After completion, gold results are exported for use by geologists.

This versatile process works on various sample types, including soil, stream sediments, and drill samples covering diverse weathering states and gold mineralisation styles. Extensively tested in Perth, Western Australia, with samples from global sources, detectORE™ has gained validation through partnerships with 26 gold companies, including major producers and a mix of mid-tier and junior explorers.

Portable PPB's original founders Simon Bolster and Peter Williams, both veterans in the gold industry, recognised the potential of Dr Mel Lintern's detectORE™ invention to transform gold exploration and mining.

Simon Bolster (Managing Director) brings over three decades of expertise in gold exploration and geochemistry across 5 continents. He has a track record for creating and introducing new technologies to enhance mineral exploration.

Peter Williams (Chairman) has over 30 years of technical experience in major, mid-tier, and junior start-up companies. Peter has co-founded successful technology firms including as HiSeis, Intierra, and EMIT.

detectORE™
explore smarter, discover faster >>