

DELTA Portable XRF for
Dynamic XRF

MINING & EXPLORATION

Mineral Exploration

Grade Control

Environmental Management

Metallurgy/Mill Ore Processing & QA/QC

Heavy Maintenance / Oil Analysis





THE DELTA LINE

A New Breed of Rugged, High Performance Handheld XRF

YOU CAN SEE AND FEEL THE DIFFERENCE at the outset – compact and robust from probe to trigger to display. On the inside, its remarkably sophisticated XRF technology is better, faster, and more responsive. From the initial boot-up to the final answer, the DELTA is a whole new breed.

The DELTA line from Innov-X gives you the ultimate experience in field-portable handheld XRF analysis – the fastest measurements with the best accuracy, precision, detection limits and light element measurement capability built into a compact single-chassis frame wrapped in robust industrial-grade body casing.

Better Utilize Your Time in the Field

Innov-X's new DELTA line of analyzers couple ultra high resolution, large area SDD detectors with a powerful 4W tube, with application optimized anode, delivering the super fast, amazingly precise analysis available today in a handheld XRF analyzer. With dramatically reduced testing times, the DELTA allows hundreds more tests per day and a significantly higher confidence in your surface & near surface geochemical surveys. The real value arrives in the field, where the Geoscientist can now use the real-time, "Instant Geochemistry" delivered by the DELTA to postulate and start to make decisions about what the geology is doing under his/her feet and adapt the sampling and mapping program dynamically on the fly.

Or, pre-screen samples to select the best and most appropriate samples for laboratory analysis. The ability to refine your sampling program in the field real-time means you can easily increase sample density and resolution instantaneously.

The DELTA line is designed to be easy to use and accurate - multiple calibration models ensure optimal on-site performance, even for challenging light element analysis.

Make immediate decisions. Maximize your exploration budget.

Contact your local Innov-X representative for application specific capabilities including limits of detection and pre-loaded matrix optimized calibrations.



The screenshot shows the 'X Test' interface with the following data:

ELEMENT	%	+/-
Al	1.726	0.343
Si	13.623	0.266
P	0.217	0.048
S	7.622	0.089
Cl	1.763	0.073
K	3.677	0.061
Ca	5.429	0.055

Additional interface elements include: 'Two Beam Mining', 'Ready', 'Test ID: 01/15/10 #10', a play button, and a date/time display of '01/15/10'.

Results Screen

Innov-X Systems Resource Industry Expertise

- » Innov-X Systems has, over the last two years, built the strongest International Mining Team in the industry, wholly dedicated to mining and exploration applications for portable XRF.
- » Members of this team were instrumental in developing capabilities for handheld XRF over the last decade.
- » Our team includes experienced geologists and environmental scientists with field mining and exploration industry pedigrees.
- » Our mining and exploration specific innovations demonstrate our leadership in this market, following our "Mission in Mining":
 - » to be XRF Partner of Choice to the Global Mining and Exploration industry; and
 - » develop the most innovative, reliable products that add real dollar value to exploration and mining companies.
- » When it comes to field experience and understanding portable XRF applications for geological needs, Innov-X Systems is the Home of Portable XRF for Mining.



Drill Chip Pre-Screening

The "XPLORER" GPS-GIS Package - For Live Geochemical Mapping

The Most Cost Effective Tool In the Box for Large Sites

Portable XRF allows for the generation of large, inexpensive geochemical data sets very quickly. The Xplorer provides important data management and validation framework, helping ensure the quality and integrity of your sampling program, while still in the field. Innov-X's XRF/GIS integration, the first of its kind in the industry, addresses the needs of the total project.

- » Field Portable XRF data is transferred wirelessly and spatially registered in real time using industry standard Mobile GIS & State of the Art, Trimble GPS Hardware (ArcPAD or Discover Mobile)
- » The result is live geochemical mapping in the field enabling visualization, gridding, and contouring in GIS, enabling rapid, informed decision making
- » Seamless integration into powerful geochemical analysis software such as io GAS for first class data validation and QA/QC
- » Reduces human error related to XRF data transfer, GPS coordinate merging and GIS integration



Google Earth Export



In-situ Soil Analysis with Soil Stick



Real-Time, Spatially Registered XRF Data

Element	Concentration	Element	Concentration		
Cv	2945.441	860.448	Ti	952.455	398.824
V	266.285	45.704	Cr	254733.36	13842.027
Mn	10640.517	715.507	Pc	289703.18	21099.836
Co	344.987	38.564	Ni	85216.929	3377.591
Cu	2650.969	286.660	Zn	49.840	63.026
As	-715.688	44.011	Rb	-1.141	11.062
Sr	-9.822	7.420	Zr	0.003	9.635
Nb	0	0	Mo	13920.442	499.377
Ag	28.050	38.664	Cd	-51.188	48.579
Sn	170.392	77.524	Sb	98.361	83.422
Cs	0	0	Ba	0	0
Hf	0	0	Ta	0	0
W	413.240	188.524	Hg	-192.228	50.272
Pb	357.066	43.023	Bi	731.725	60.415
Th	-245.233	19.340	U	-179.964	26.340

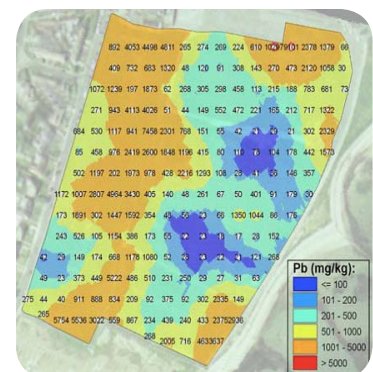
Live, Captured XRF Elemental Meta Data



Mobile GIS - Use All Your Layered Data in the Field

The Business Case

The DELTA XRF allows immediate decision making, delivering massive dollar and time savings on exploration projects, especially in remote settings. The ability to easily increase sample density, dynamically in fill and refine targets while still in the field provides powerful project management to the Exploration Manager. This leads to faster drill-hole target generation increasing project development timeframes which ultimately leads to quicker finds. During the drilling phase, handheld XRF is used to identify and quantify mineralized drill intersections. This allows optimization of drilling and laboratory analysis expenditure and other resources during field programs.



Instant Site Characterization

INCORPORATING EVERYTHING YOU NEED in handheld XRF with state-of-the-art innovations and a brand new design – The DELTA Line from Innov-X.

4W x-ray tube, 200 uA current (max), plus optimized beam settings

Tight geometry for exceptional LODs and high analysis throughput

Large-Area SDD option plus customized x-ray tube provides exceptional light element sensitivity

Unique integrated vacuum technology (patent pending)

Patent-pending automatic barometric pressure correction adjusts calibration as needed

Lightning fast bootup & data acquisition:
Faster Testing, More Results

Floating Point Processor: more calculations in less time leverages more advanced calibration algorithms

Integrated Bluetooth for data input and output

Ergonomic rubberized handle for enhanced grip



Analysis indicator lights visible from 360°

Responsive, bright color touch screen display

Accelerometer technology puts unit to sleep when unused to conserve power, logs impacts for tool management

USB interface port for high speed data download and seamless PC control

Hot Swap: replace rechargeable battery without turning unit off or re-standardizing

Docking Station with Automatic Charging and Calibration Check

Additional Battery Charger

DC Outlet

Power and Battery Indicator Lights

Connect to a PC for Data Management



USB Connector Port

“Using our field portable XRF has proved an excellent way to explore for mineral anomalies. It has been fast (providing 3 times the density of geochemical coverage within rapidly identified target areas), accurate (tested against laboratory results for Cu) and cost effective (saving almost AUD\$1 Million in assay costs in 12 months).”

Mark Manly, Phoenix Copper

Handheld XRF has completely revolutionized geochemical exploration, mine grade control, metallurgical and process analysis. The number of samples that can be collected, analytical costs and turnaround time is no longer a limiting factor. The DELTA delivers quantitative real-time elemental chemistry, right at the point of the sample location, where you need it most.

Exploration

- » Rapid collection of baseline geochemical and orientation surveys
- » Real-time anomaly identification in the field
- » Seamless data integration allowing real-time decision making
- » Accurately measure light elements - Al, Si, Al/Si ratios, Mg and P, and S at low levels
- » Manage expensive drill programs in real-time using important pathfinders to extend or halt drilling at the bottom of the hole



Environmental

- » Immediately identify Heavy Metals in Soil at low ppm levels
- » Real-time metal screening in and around mining & exploration sites
- » Monitor airborne metals for health impact of industrial processes to protect workers
- » Meets regulatory methods for RCRA Metals & other Priority Pollutants
- » Rehabilitation for sustainable development planning is faster, less expensive
- » Screen waste streams and oils and community perimeters from mining processes



Ore Grade, Process Control

- » Real time grade control – underground or in open pits
- » Dynamic grade delineation leads to less misallocation - ie. less waste sent as ore or ore sent to waste
- » Live chemistry determined in/on stream to help refine milling, processing & refining
- » Easily check and manage stockpiles and aid in blending solutions
- » Provides a crosscheck for commodity buying/selling, increasing confidence in material value
- » Immediately determine the presence of S, P, As and other penalty elements
- » Easily reanalyze mine tailings to determine mill performance or evaluate historical projects



Maintenance

- » Keep mining machinery at peak performance with preventative maintenance
- » Detect wear materials in oils, plus Zn, Ba, Va
- » Detect other metals as evidence of contaminants in engine oils and fluids
- » Analyze all fluids for wear metals, additives, sulfur content and catfines (Al, Si)
- » Prevent unexpected component failure

