

## Gamma-ray spectrometry surveys

Gamma-ray spectrometers are self-stabilising RSX-500 manufactured by Radiation Solutions Inc. Each system contains 5 crystals of 4.18L each (4 downward looking and 1 upward looking) and can be combined to increase the sensitive volume.

Each crystal output is fully linearized. The resolution of the detector has a FWHM between 6 and 9 for the <sup>137</sup>Cs.



### Quality Control

Novatem complies with the standards set by the IAEA and the GCC with regard to gamma-rays surveys.

Prior to the data acquisition Novatem carries out the following tests:

- Daily test lines detecting any changes in the system sensitivity, the radioactivity of the aircraft and to monitor the effect of soil moisture in the survey area.
- High-altitude aircraft/cosmic background flights at the survey area
- Calibration range flights used to determine the influence of height variations, and to measure the response of the detector to sources of known elemental concentrations

In addition to these standard tests, Novatem performs a careful Quality Control of the data collected all along the survey, through:

- Verification of each profile (and spectra) to spot spikes, jumps or interruptions in the readings
- Statistical calculation of the mean spectra for each line to insure peak stability
- Gridding of raw windowed elements (K, U, Th) and total count to evaluate data coherence and consistence
- NASVD method to check the presence of human based radionuclide or any spectrum stability issues

The preliminary quality control and data processing of airborne gamma ray spectrometry are performed using the Geosoft Oasis Montaj RPS suite. Final spectrometry data are processed with Praga 3.

### Data processing

All the steps of the processing are described in detail in the final report. This total transparency in the processing enables a better and more accurate interpretation of the data.

