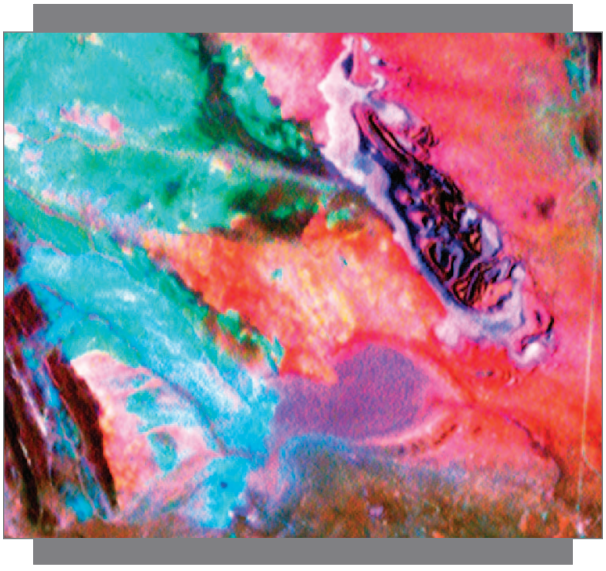
RADIOMETRICS

Airborne Gamma Ray Spectrometer for Uranium and Gold Exploration and Geologic Mapping

THE AEROQUEST AIRBORNE GAMMA RAY SPECTROMETER (AGRS) system consists of a RSX-5 sensor pack designed and manufactured by Radiation Solutions Inc. The system has 4 downward looking NaI crystals (16.8 Litres – 1024 cu.in.) used as the main sensors and 1 upward looking crystal (4.2 Litres – 256 cu.in.) for monitoring non-geologic sources. The system features automatic peak detection and real-time calibration to ensure spectrum stability and a high quality final product. The full spectrum is recorded at a sample rate of once per second (256 or 512 channels) to allow for subsequent noise reduction processing such as NASVD. The data are processed to produce the standard IAEA ROI channels – Total Count, Potassium, Uranium and Thorium. The potassium, and equivalent uranium and thorium concentrations are also derived and ratios of these concentrations are computed to enhance the interpretation of the survey results. The radiometric data provide information on the lithologic characteristics and distribution of the overlying geologic materials. The depth of measurement is on the order of 30 cm and the circular area measured by the spectrometer has a diameter equal to approximately four times the altitude of the helicopter above the ground. When combined with a magnetic sensor the AGRS system is even a more powerful mapping tool.

Aeroquest has developed 3 generations of AeroTEM systems and has been continuously refining the designs as an exploration tool that is optimized to provide the maximum amount of information on the target application. The combination of resolution, conductance discrimination, and geometric information results in a system with a wide applicability.



AEROQUEST SURVEYS

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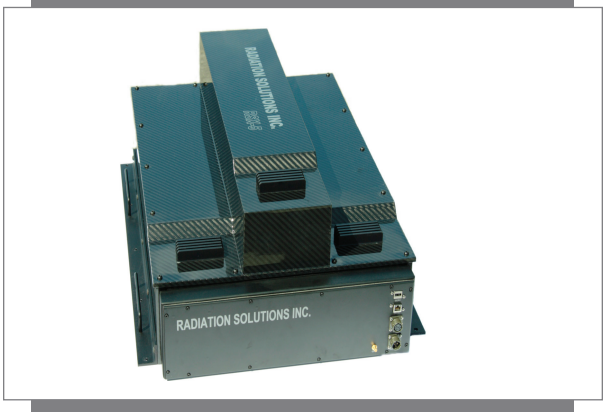
Spectra Resolution:	**256 or 512 channels**
Data Sampling:	1.0 seconds and longer, 0.5 seconds optional
Energy Spectra:	50 keV to 3 MeV with threshold adjustable from 50 keV to 300keV. All energies above 3 MeV are detected as cosmic rays
Anticoincidence:	To improve the peak-valley ratio on lower energies, coincidental pulses detected among neighbouring detectors are removed and placed in a special channel
Spectra tracking:	Individual detectors with recorded status of tuning
Time to stabilization:	Automatic on natural radio nuclei – usually less than 30 sec on the ground and less than 2 minutes in the air at 100 m altitude
Spectra linearization:	Automatic after system calibration
Windows (ROIs):	Additionally to the full spectra up to 22 special windows can be collected (4 are IAEA standard windows, 8 are optional activities altitude related)
Signal sampling:	20 MHz by an internal 12bit A/D for each detector
Peak detector:	Digital - time resolution 50 nsec
Dead time:	Negligible for up to 60,000 pulses/sec/detector
Pulse rate per detector:	> 60,000 pulses per second with negligible dead time
Channel capacity:	65,500 counts/sampling period



AEROQUEST SURVEYS

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GTS GEOPHYSICS
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