

SIRIS

 Stand-off Integrated Radiation Information System

SIRIS is a Stand-off Integrated Radiation Information System based on PEI's expertise in radiation measurements on moving platforms. Proprietary algorithms provide immediate Radiation detection, directional radiation recognition, isotopes identification (RIID), real-time activity calculation of natural and man-made isotopes, customizable notifications and crew safety alarms. The SIRIS – is a newly developed system for CBRNe and Homeland

Security applications. The system comprises 8 Liter effective detection volume NaI(Tl) detector with directional measurement option; Neutron detection module; High Dose Rate Gamma Module; Precise GPS positioning sensor; Uninterruptable Power Supply (UPS) unit; wireless connected rugged laptop with data acquisition and visualization system. Surveillance observation results are ready for visualization on a map and reporting, right after a mission.

Benefits

The SIRIS can be adjusted to pursue different radiation surveillance tasks:

- Street patrol and security tasks
- Search and Recovery of uncontrolled radioactive sources
- CBRNe emergency first response support
- Undercover area monitoring
- Real-time data plotting on the map
- Illegal radioactive material transportation
- Static monitoring of significant sites

Specifications

Gamma-ray spectroscopy

- Detector: 2 x 4 Liter NaI(Tl) crystals
- Resolution: <8.5% for Cs137 - 662keV
- Range: 20keV – 3MeV
- MCA Resolution: 256/512/1024/2048 channels (internal resolution 8196)
- Throughput: up to 250 000 cps

Neutron detection

- Detector: LiF6/ZnS 1.5 Liter; integrated moderators
- Sensitivity: 170 cps/nv

High dose detection

- Detector: Energy compensated GM-tube
- Range: 50keV – 1.3MeV; 300nGy/h - 10mGy/h

System characteristics

- Calibration: multi-peak self-calibration; no source needed
- Stabilization: System is automatically stabilized on natural peaks
- Identification: Isotopes libraries
 - Norm
 - Industrial
 - Threat
 - Medical
 - Customizable
- Real-time Activity calculation for natural and selected man-made isotopes
- Comply with ANSI N42.43
- Temperature: -30°C up to +55°C
- Power: 6 – 40 VDC – vehicle power; UPS provides 3 hours independent work



Detection module

A standard Detection Module consists of 2 NaI(Tl) scintillation crystals – 4 Liter volume each, energy compensated GM-detector tube, and Neutron detector. The Detection Module can be placed in a vehicle trunk/cargo area on a shock-absorbing plate. Each crystal is equipped with an individual Multichannel Analyser. The detection Module performs independent recording/backup of the raw data to internal memory.

Data acquisition

A Detection Module has either wireless or Ethernet communication with the Data Acquisition system installed on a rugged laptop. The laptop can be fix-mounted in the cabin. The Data Acquisition system provides sufficient information for the crew, including real-time selected channel data tracing on the map, customizable alerts and notifications, detection confidence monitor, real-time isotopes identification, etc.

Customizable audio and flashing alerts can be set for each mission. The system will notify the operator when the event is present. The system also provides safety alarms, alerting when the area with a dangerous radiation dose level is detected.



Data quality control and export

NUVIATech Instruments have designed supporting software that provides the capability to review, replay, reprocess, visualize and export data collected during surveillance.

The Data Quality Control and analysis tools are useful to verify and re-evaluate observed information. The possibility to visualize multiple channels simultaneously, allows the operator to evaluate and confirm identified contamination areas. The data can be exported to GIS and ANSI N42.42 formats for following visualization and reports.

NUVIATech Instruments' Replay Tool is developed in accordance with DNDO requirements and allows the data to be replayed during post-mission analysis, using different libraries and alarm settings.