

## Case Study

# CANBERRA

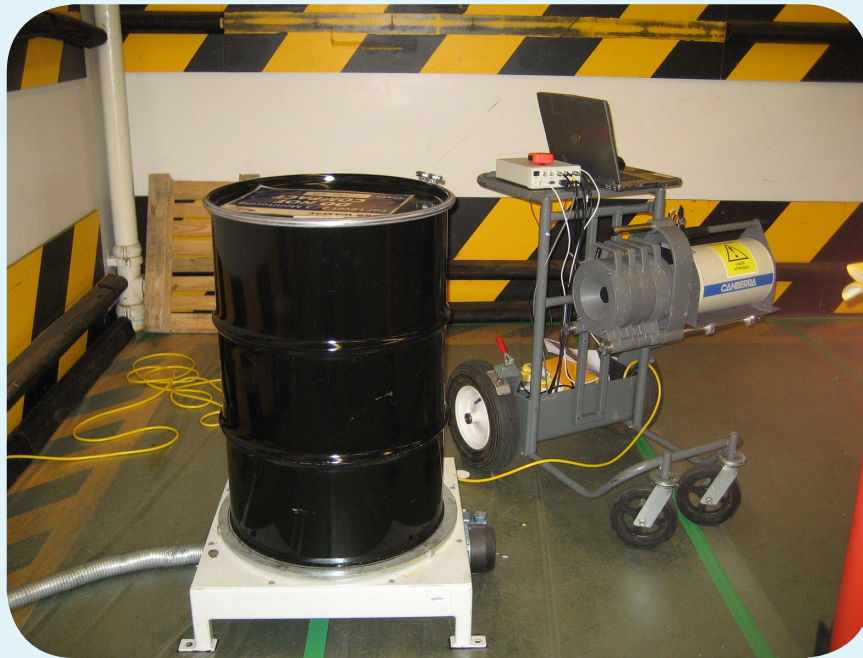
## ISOCS™ In-Situ Gamma Spectroscopy Analysis, for Measuring 200 litre LLW drums and 1 m<sup>3</sup> LLW boxes

### Scope:

This project was to provide specialist support whilst the Waste Monitoring and Compaction Plant's (WAMAC) gamma spectrometry assay system was temporarily out of service, in order for the plant to meet operational and regulatory requirements to check waste consignments against the consignor's declarations. Measurements were performed using a portable gamma spectrometry system based on the turnkey ISOCS technology. Measurements were performed at the Sellafield site in Cumbria, UK.

### Key Drivers:

WAMAC's key requirement is to verify that 200 litre LLW drums and 1 m<sup>3</sup> LLW boxes meets the consignor's declared information. The plant-installed instrumentation was out of service which led to a risk that waste throughput commitments could not be met. An alternative approach based on portable equipment, brought to the plant to measure the items, was therefore needed.



Measurement campaigns took place in 2009 and 2011-2012.



Visit our Measurement and Expertise (M&E) page.



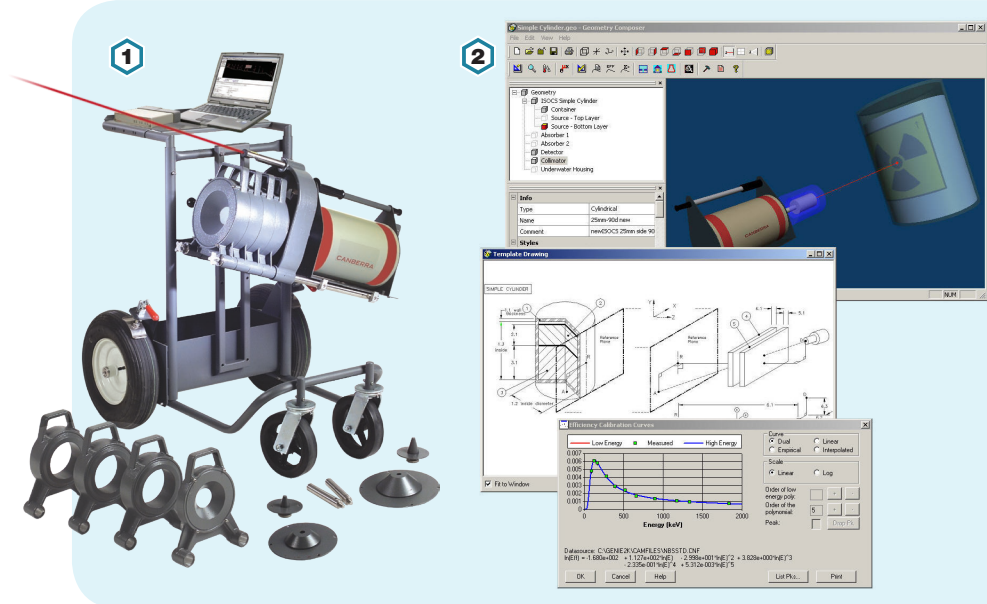
**MIRION**  
TECHNOLOGIES

# ISOCS In-Situ Gamma Spectroscopy Analysis, for Measuring 200 litre LLW drums and 1 m<sup>3</sup> LLW boxes

## Case Study

### Instruments & Techniques Used:

- 1 Instruments**
  - ISOCS
- 2 Software**
  - ISOCS modeling



### CANBERRA™ Solution:

A CANBERRA team worked with the Sellafield Ltd operations team to develop an alternative methodology and proposed a solution based on a mobile In-Situ Gamma Spectroscopy (ISOCS) system. In order to perform non destructive assay work on site, the CANBERRA solution to WAMAC's key drivers included:

- Development of a substantiated method and operational procedures for the drum and box measurements.
- Provision and mobilization of ISOCS equipment.
- Train WAMAC operations staff in step by step measurement and QC procedures, allowing the item measurements to be conducted by local plant – based staff.
- Provide specialist support throughout the project to ensure a high degree of confidence in the results.
- Development of a calibration approach for the waste drums/boxes using proven ISOCS technology.
- Verifying the system calibrations with actual QC standards (drum and box).
- ISOCS modeling of the 200 litre drums and 1 m<sup>3</sup> boxes.
- Performing a non-destructive measurement of the entire item volume of the items to identify the nuclides responsible for the gamma emissions.
- Reporting the activity and uncertainty for each identified nuclide.
- Providing Minimum Detectable Activity values for the commonly identified isotopes, for the items where these are not identified.

### ACHIEVEMENTS

- The UK measurements team has provided essential radiometrics support to allow the WAMAC team to successfully verify the activity of the LLW waste containers within the challenging timescale constraints. Key elements which led to successful delivery of the project were:
  - Rapid initial response by local CANBERRA service engineer allowing rapid identification of customer's drivers and liaison with specialist CANBERRA team to develop solution.
  - Rapid mobilization of equipment and staff to allow measurements to be conducted to meet the challenging timescales.
  - Close working relationship with Sellafield Ltd stakeholders (operations and intelligent customer teams) to develop method substantiation and operations procedures which were well understood by the operations team.

Copyright ©2018 Mirion Technologies, Inc. or its affiliates. All rights reserved. Mirion, the Mirion logo, CANBERRA, ISOCS and other trade names of Mirion products listed herein are trademarks and/or registered trademarks of Mirion Technologies, Inc. and/or its affiliates in the United States and/or other countries.

Third party trademarks mentioned are the property of their respective owners.