

# Classification and Monitoring of Radionuclide Systems Using State of Health Data

*Tuesday, 20 June 2023 14:05 (15 minutes)*

Sensor data from radionuclide systems within the International Monitoring System (IMS) provides critical information about the operating status of a given station. Many of the algorithms currently in place monitor large immediate sensor deviations and provide alerts. Small sensor changes, especially over extended periods of time, are more challenging to detect. Another challenge is quickly identifying the root cause of failures automatically such that strategic maintenance can be performed. Pacific Northwest National Laboratory (PNNL), in collaboration with General Dynamics, has been developing an architecture for monitoring IMS radionuclide systems that is capable of testing new algorithms. One of the new techniques being investigated is classifying failures based on the sensor data available. The goal is to use knowledge from experts together with new data science techniques (such as artificial intelligence and machine learning) to determine the failure mode using groups of sensors as a signature. This presentation will discuss the current state of health monitoring architecture and the latest developments in the failure mode sensor signature algorithm development.

## E-mail

Reynold.Suarez@pnnl.gov

## Promotional text

This work outlines new methods to help identify and characterize failures of radionuclide systems in the International Monitoring System (IMS) quickly. This research is critical to the ongoing sustainment efforts of the IMS where new and innovative methods are needed.

## Oral preference format

in-person

**Primary author:** SUAREZ, Reynold (Pacific Northwest National Laboratory (PNNL))

**Presenter:** SUAREZ, Reynold (Pacific Northwest National Laboratory (PNNL))

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