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and Agnostic State of Health (SOH) Analysis Tools for Noble Gas Systems

Careful analysis of SOH data can provide critical information about the operating status of an International Monitoring System (IMS) station and the data being reported. Pacific Northwest National Laboratory (PNNL) with support from the Defense Threat Reduction Agency (DTRA) Nuclear Arms Control Technology (NACT) Program has been developing tools to analyze SOH data reported from noble gas systems within the IMS network. The current version of the tool was tested against the Swedish Automated Unattended Noble Gas Analyzer (SAUNA) and the PNNL-developed Xenon International system. The SOH tool uses a modular framework where the SOH data, using IMS2.0 format, is written to a database. The analysis uses a modular format, whereby different algorithms can be used, in parallel, to analyze SOH data. For system alerts and testing, for example, a simple limits algorithm as well as exponential weighted moving average (EWMA) were implemented and tested. An analysis daemon also uses these algorithms to summarize the station health in a station summary page. PNNL is working closely with the U.S. IMS radionuclide station operator, General Dynamics (GD), for feedback and testing of the tool. The tool, implementation framework, and current status will be presented.

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