



Contribution ID: 305

Type: poster

Testing The Enhanced Data Authentication System (EDAS)

Wednesday, 22 October 2014 16:50 (40 minutes)

The Enhanced Data Authentication System (EDAS) is a secure branching concept that provides a safeguards inspectorate a copy of measurement data from operator instrumentation. Both safeguards inspector and facility operator requirements for secure branching have been established in previous work. These dictated the design and development of EDAS hardware and software. This paper presents the test plan for the EDAS prototypes, which need to demonstrate performance against the identified requirements.

Sandia National Laboratories (SNL), Directorate-General for Energy (DG-Energy) in Luxembourg, and the Joint Research Centre (JRC) in Ispra will each perform different tests on the EDAS prototypes. Sandia, the developer, will perform comprehensive testing of functionality, robustness, and reliability. The JRC, as an independent technical organization, will evaluate electrical safety and other environmental factors important to facility operator acceptance. The JRC is also able to simulate field trial conditions using equipment similar to what will be used in the field trial. DG-Energy will confirm the Sandia tests and also test the interface of the EDAS prototype to the RADAR data acquisition and analysis system used by the Euratom inspectorate.

The EDAS prototypes will be tested in a comprehensive field trial at the Westinghouse Springfields facility in a collaboration between Euratom inspectors and the facility operator. The field trial will support barcode and weight measurements taken related to the movements of nuclear material items entering and exiting the facility. One EDAS prototype will branch barcode scanner data, while the other will branch facility weight scale data. The branched data will be sent securely to an inspector computer, accessible to a Euratom inspector for data analysis. The field trial will test operational factors and environmental conditions. A critical outcome will be to ascertain whether the inspectorate gains an accurate picture of the facility operation via the branched information channel.

Country or International Organization

United States of America

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Session Classification: Advanced Technologies for Safeguards Communications: E-Posters