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## **SET – Analysis for Building a Multiuser Testbed**

Lorraine Sadler

Sandia National Laboratories

[lesadle@sandia.gov](mailto:lesadle@sandia.gov)

### **Abstract:**

The Signals Exploration Testbed (SET) is a national level facility being built by the Defense Nuclear Nonproliferation Research and Development Office (DNN R&D) to create a laboratory to support a wide range of scientific and engineering experiments to advance the nonproliferation mission. The goal of the facility is to allow researchers to experiment with facility design and layout while using the broad range of installed and user-supplied manufacturing equipment and sensors. Key accessible experimental design variables include facility electrical systems, facility HVAC systems, machine placement within the building while providing facility level activity control and instrumentation of all manufacturing activities. In addition to the physical facility, the SET team developed a digital twin, a real-time virtual representation of the testbed to add research capability in multiple areas including real-time data analytics. This talk will discuss the systems engineering and analysis needed to build this flexible facility to support current experimental and data requirements as well as anticipate future research needs.

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