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Material Accounting Issues at the U.S. MOX Fuel Fabrication Facility

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The Mixed Oxide Fuel Fabrication Facility (MFFF) is under construction in the United States. The plant is being licensed by the U.S. Nuclear Regulatory Commission (NRC), which as the U.S. SSAC regulates both domestic MC&A and compliance with international safeguards (where applicable). Among the NRC's MC&A requirements for Category I fuel cycle facilities are programs for item and process monitoring. The NRC also has requirements for timely resolution of alarms and assessment of the validity of alleged thefts. NRC's item monitoring requirement specifies that the operator must be able to verify the "presence and integrity" of items, with the goal of detecting the loss of items containing 2 kilograms of plutonium within certain time periods. The requirements for resolution of alarms and assessment of alleged thefts also generally require some capability to locate and verify items on demand. However, to the extent these regulations mandate that individual items be physically located and verified by hand, they can be difficult (or impossible) to meet for facilities with large numbers of items. The MFFF design was based largely on French facilities that were not subject to similar requirements. Consequently, the applicant proposed a novel item monitoring approach that relies on the data within the plant's computerized inventory and process control systems. This proposal was challenged in July 2010 by intervenors, raising questions such as whether computer systems could be used as the sole means for verification, given the potential for data to be compromised. In February 2014, the NRC' s Atomic Safety and Licensing Board issued a decision upholding the applicant's plan, but one of the three judges issued a dissent, citing concern about cyberterrorism. This paper will discuss the issues argued during the hearing and their broader relevance.

Country or International Organization

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