Abstract Submitted
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Detection of fissionable material in cargo containers using active neutron interrogation JENNIFER CHURCH, Lawrence Livermore National Laboratory — Roughly 6 million cargo containers will be shipped to U.S. seaports in a single year, each container carrying up to 30 tons of freight in varied configurations. Highly enriched uranium and other fissionable material concealed inside these containers is a challenge for existing portal monitors, due in part to the attenuation of signals in the cargo. A system is currently being developed to overcome these challenges without slowing the flow of commerce through the port, keeping the likelihood of false-negative and false- positive detections to a minimum. The technique utilizes a neutron beam to induce fission, and a wall of plastic scintillators to detect subsequent delayed high-energy γ- rays after β-decay of the fission products[1]. Decay curves utilizing these delayed γ-rays with energies above 3 MeV are an efficient diagnostic. New experimental work using a 3-7 MeV broad spectrum neutron source will be presented and compared to simulations and past experimental results. This work is performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory contract No. W-7405-Eng-4, UCRL-ABS-219231.

[1]E.B. Norman *et al.*, Nucl. Instr. Methods Phys. Res. A, **521**, 608 (2004)

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