Title: ACTIVE INTERROGATION WITH PROTON BEAMS

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Intended for: INMM Annual Meeting, 11-15 July in Baltimore
ACTIVE INTERROGATION WITH PROTON BEAMS

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ABSTRACT:
Heavy shielding can render active interrogation of cargo useless. This shielding attenuates both the probe and product particles. The product of these two attenuation factors can make detection impossible. Intermediate energy protons produce fissions as effectively as neutrons or high energy gamma rays but are much more penetrating than either of these conventional probes. We will present measurements of cross sections for proton-induced delayed neutron production from a variety of materials, including actinides, using 0.8 and 4. GeV protons; we will show the time spectrum for delayed neutrons measured using 20 kg samples of depleted uranium, and we will show data that demonstrated the production of fission neutrons by delayed neutrons in an enriched (10%) 60-kg uranium sample.

This work was supported by Defense Threat Reduction Agency (DTRA).