LA-UR-13-22287
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Title:	6Li based Neutron Detector Systems for Replacing 3He
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Intended for:	NA-22 project review

Nuclear Weapons and Material Security 2013

6Li based Neutron Detector Systems for Replacing 3He

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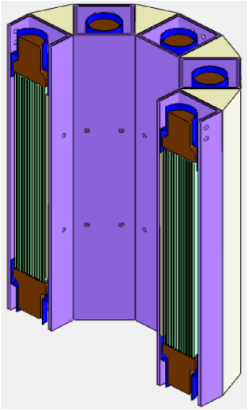
Prior Results

- Conceptual design of single detection module and coincidence counter
- Characterization of PSD properties of new plastic scintillator
- Fabrication of detection module in progress
- Electronics platform selected . Signal processing in progress

Concept



Neutron Coincidence Counter

•Based on ^{6}Li neutron sandwich scintillator

•Similar efficiency to HLNCC–II coincidence counter

• Similar die-away time

•Better dead time

Technical Challenges

•Reactivity of LI metal

•Neutron/gamma discrimination

•Light transport of PMMA sandwich

•PSD in thin scintillator films

•Fabrication of PSD scintillation film

Planned Accomplishments

FY 13

- Fabrication of detection modules.
- Readout electronics.
- Characterization of first prototype with Pu material

FY 14

- Characterization of neutron detection modules
- Fabrication and characterization of subassembly prototype neutron coincidence counter
- Scale-up modeling of full size counter

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