SAND2011-7924 C

SAND2011-7924C

Radiation Detection

Proposed Workshop and Collaboration

October 27, 2011

Rodney Wilson, Director

Non-Proliferation and Corporative Threat Reduction

Sandia National Laboratories

Sandia National Laboratories is a multi program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Proposed Approach

- **Objective:**

  Focus on Science and Technology Research that impacts National Security needs for both countries

- **Complementary Approaches**
  - **Workshop in January 2012**
    - **Technical presentations in broad areas of interest to both countries**
  - **Identify follow-on S&T areas for collaborative research in the future**

Radiation Detection Workshop

- **Objective:**

  Exchange of Technical presentations and ideas covering a broad area of Radiation Sciences and Technologies

– **Passive Detection**

- **Detectors of Gamma, Neutron and Alpha Radiation**
- **Algorithms for Background Signal Processing**
- **Long Range Detection**
- **Angular Resolution and Imaging Detectors**
- **Coincidence and Correlation Measurements**

Radiation Detection Workshop
(continued)

- **Active Detection**
  - **Neutron Activation and Measurements**
  - **Gamma-Ray Activation and Measurements**
  - **Neutron Generators for Detection Systems**
- **Background Measurements and Analysis**
- **Radiation Detection Systems Architectures**
- **High Explosive and Toxicants Detection**

Potential Areas for Collaboration
- Proposed List for Discussion -

- **Passive Detection**
  - **Advances in Detector Materials**
    - Development of new scintillator materials
    - Fabrication of transparent ceramic inorganic scintillators
    - Detectors with neutron and gamma pulse shape discrimination
  - **Advances in Detector Configurations**
    - Mechanically-cooled HPGe
    - Segmented plastic scintillator arrays
    - Nobel gas detectors for improved neutron spectroscopy
    - Water-based neutron detectors to replace He^3
- **Detectors for Angular Resolution and Imaging**
  - Neutron and Gamma
  - Coincidence and Correlation Measurements

Path Forward for US Labs

- **Solicit authors for papers in proposed topical areas**
  - **Target 3-4 papers from each US Lab**
- **Coordinate agenda and papers for conference**
- **Prepare summary paper after conference outlining specific areas for collaboration**
  - **Propose that all participating Labs from US and RF sign**