

Sandia National Laboratories

Global Security Program and International Nuclear Threat Reduction

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Partnership for Nuclear Security (PNS) Implementers Meeting
Oak Ridge National Laboratory
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SANDIA NATIONAL LABORATORIES

International, Homeland, and Nuclear Security

Program Areas

- Critical Asset Protection
- **Global Security**
- Homeland Defense and Force Protection
- Homeland Security

Expertise

- Countering Bioterrorism
- Nuclear, Radiological, and Chemical Risk Reduction
- Nonproliferation and Arms Control
- Physical Security
- Emergency Response
- Systems Analysis and Engineering
- Border Security
- Aviation and Airworthiness Security



Global Security Program

Our mission is focused on a broad threat

Mission: Reducing proliferation and terrorism threats to U.S. national security through global technical engagement



Multi-Threat Risk Reduction

- Limit the spread of sensitive materials and technologies by:
 - Reducing motivation to acquire/use WMD
 - Impeding access by proliferators to WMD expertise
 - Securing borders and ports
 - Securing critical materials and facilities



Nuclear and Radiological Risks

- Reduce the threat from malevolent use of nuclear and radiological materials by:
 - Enabling global reductions in NW arms and supporting infrastructure
 - Reducing fissile material inventories
 - Securing weapons and material
 - Strengthening international safeguards and nonproliferation regimes
 - Detecting / interdicting nuclear smuggling



Biological and Chemical Risks

- Reduce the risk from the malevolent use of biological and chemical materials by:
 - Enhancing the safety and security of high-risk pathogens, chemicals, and facilities
 - Strengthening capacities to detect and control dangerous infectious diseases

Global Security Program

We apply a systems approach where S&T intersect, and both inform and implement policy

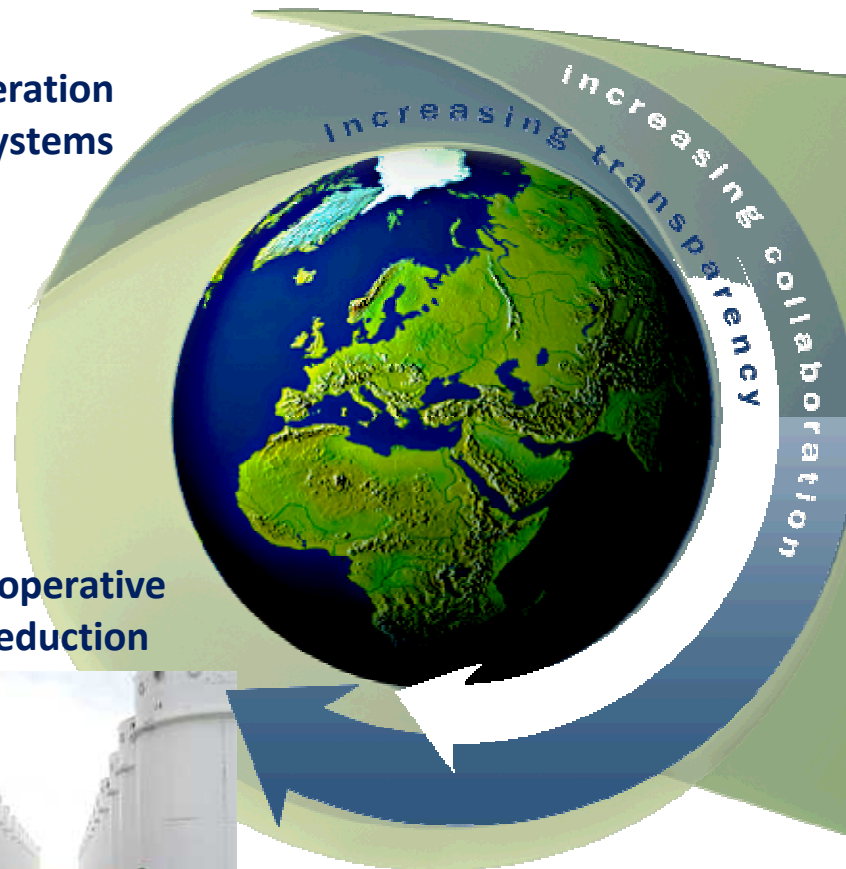
**National Non-Proliferation
Systems**



**Global Cooperative
Threat Reduction**



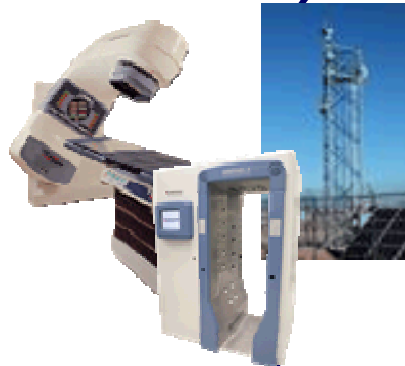
**International Treaties and
Negotiated Agreements**



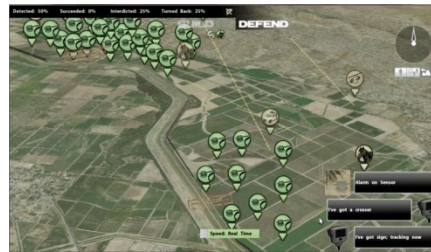
Cooperative Monitoring Center

Enabling International Technical Cooperation on Critical Security Issues

Technology integration, testing, demonstration, and operation



System analysis, modeling, and simulation for design and evaluation



Technology training courses and workshops



The CMC averages 100 tours per year with visitors from over 120 countries



Technical collaborations and experiments



Visiting scholars program, research, and analysis



Procurement, export control, foreign travel/visits

International business infrastructure

Current PNS Projects at Sandia

- **Gulf Nuclear Energy Infrastructure Institute – GNEII**
- **Radiation Measurements Cross Calibration Project – RMCC**
- **Workshop on the Safe and Secure Utilization of Research Reactors**
- **Global Nuclear Threat Prioritization & Country Engagement Strategy Development**
- **MENA Regional Training Center for Low Level Radioactive Waste Management**
- **Middle East Radionuclide Early Warning System**
- **Middle East Scientific Institute for Security (MESIS) Collaboration**
- **Engagement on Nuclear Security w/ Indian Academic Programs**
- **India-US Cooperative Research on Nuclear Security**



Gulf Nuclear Energy Infrastructure Institute (GNEII)

- A strategic effort to develop a nuclear energy safety and security culture in future program decision-makers in the Gulf region
- Partnership between Sandia, Texas A&M and Khalifa University of Science and Technology in Abu Dhabi, UAE
- Nuclear energy infrastructure (safety, safeguards & security) for development & education in a regional context
- *Not* intended to train nuclear engineers or operators, intended instead to educate and prepare future leaders of Gulf nuclear energy programs



Khalifa University, UAE



MOU signing, Feb. 2011



GNEII Pilot Course Graduates, May 2011

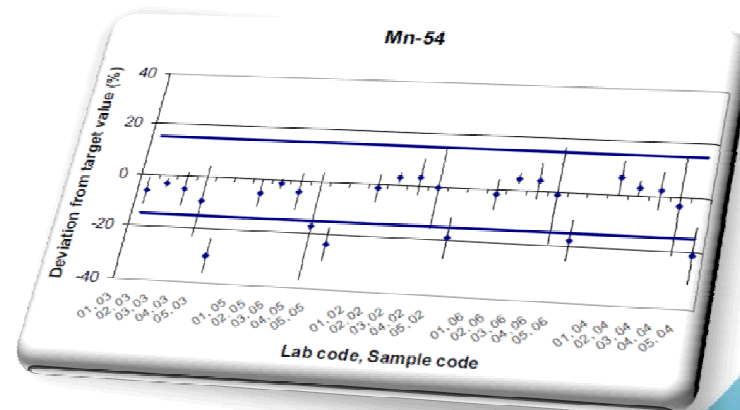
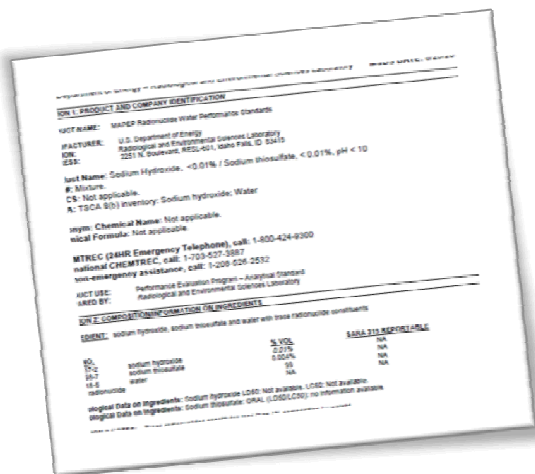


Pilot GNEII course sessions



Radiation Measurements Cross Calibration Project (RMCC)

- Build on regional capacities to produce reliable radiological data and provide a mechanism for sharing agreed-upon information.
 - Build confidence by encouraging technological transparency
 - Increase confidence in data quality
- Foster the development of a regional network of indigenous scientific experts.
 - Enable scientists in the region to work cooperatively
 - Improve scientist-to-scientist communication
- Create indigenous solutions to regional concerns
 - Network of qualified labs for radiological measurements



2011 Workshop on Safe, Secure & Safeguarded Research Reactors



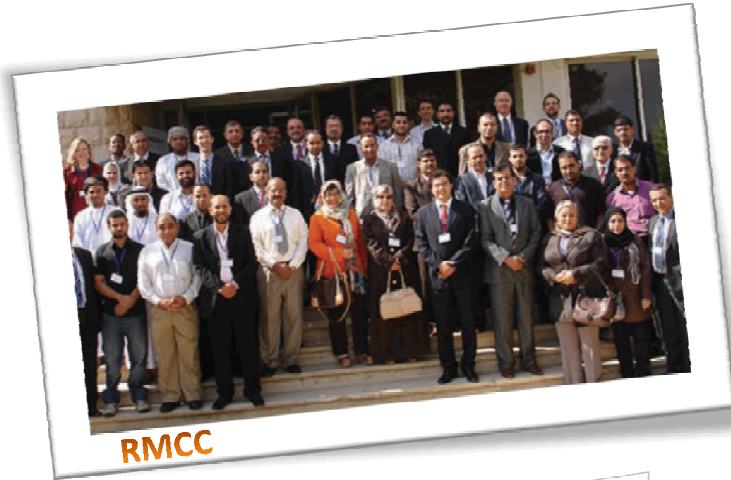
The Workshop was held at the CNESTEN Research Reactor near Rabat, Morocco

- Fourteen participants from Bahrain, Jordan, Libya, Morocco, Tunisia, the UAE, and Qatar as well as a representative from the AAEA
- Theoretical lectures on the 3Ss and daily tours of the corresponding facilities.
- Followed neutron-activation experiment from beginning to end
- Live hands-on internet reactor experiment performed at North Carolina State University's research reactor

“It made it all real to me!”

Research reactor workshop participant

Some Lessons



- **Key projects have been highly successful**
 - GNEII, RMCC, RR Workshop are notable examples
 - Established effective partnerships
 - Careful planning (with flexibility)
 - Work closely with PNS and country hosts
 - Maintain dialogue and periodic re-evaluation
- **Challenges are common when establishing new partnerships**
 - Recognize the need for patience, and *be patient*
 - Develop trust, confidence and mutual respect
 - *Some misunderstandings can be expected*
 - Recognize & respect cultural differences
 - *Respect alternative viewpoints*
 - *Nonjudgmental attitude is crucial*
- **National Labs *implement* policy**
 - Respect protocol
 - Confirm plans with sponsor
 - *Do not lead the charge*
 - Seek permission, not forgiveness

