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Overview of Sandia International Nuclear Threat Reduction Program

Presented to
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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.



Key Theme

- International Nuclear Threat Reduction
- “Advanced technical concepts for reducing nuclear threats”
- Elements
 - Nuclear Material Controls
 - Nuclear Technology and Facility Controls
 - Nuclear Expertise Controls
 - Nuclear Arms Controls
 - Both topical and regional emphasis

Matrix of themes and programs

	Material Control	Technology Control	Expertise Control	Arms Control	Delivery Systems
Regional Security Strategy/ Policy	X	X	X	X	X
Confidence Building	X	X	X	X	X
Scientist Redirection			X		
Export Control	X	X			X
Nuclear Safeguards	X				
Border Security	X	X	X	X	

Processes/Approaches Used in Our Work

- Idea generation/ advanced concepts
- Engagement
- Training
- Capacity Building
- Experimentation/Demonstration
- Analyses
- Sandia Reach-back to related Sandia capabilities and competencies

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



Middle East Scientific Institute for Security (MESIS)

formerly CMC@ Amman

- An institute established by Sandia in Amman, Jordan in 2002 as the Cooperative Monitoring Center @ Amman on campus of the Royal Scientific Society (RSS)
- Focus on technical aspects of regional security cooperation in the Middle East
- Venue for workshops, technology displays, collaborative research and analysis
- Current emphasis on:
 - PROMOTING ENERGY, ENVIRONMENTAL AND BORDER SECURITY USING SCIENCE AND TECHNOLOGY



MESIS

مَعْهَدُ الشَّرْقِ الْأَوْسَطِ الْعَالَمِيُّ لِلْأَمْنِ
Middle East Scientific Institute for Security

Regional Workshop on Safe, Secure and Safeguarded (3S) Research Reactors

- Held in Rabat, Morocco
- June 6-10, 2011
- Promote 3S culture for 14 participants from 7 Middle East and North African nations with or contemplating research reactors
- Held in collaboration with Moroccan National Center for Energy Sciences and Nuclear Technologies (CNESTEN)



Live demonstration of NCSU research reactor operation



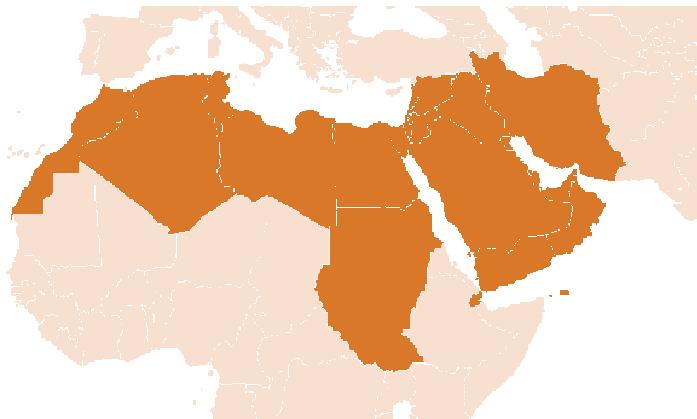
Workshop participants



Tour of CNESTEN research reactor

Other Middle East and North Africa Engagements

- Radiation Measurements Cross Calibration (RMCC) project
- Regional Training Center for Low Level Radioactive Waste Repository
- Middle East Radionuclide Early Warning System
- Addressing Depleted Uranium environmental issues
- Border Security training and demonstrations
- Middle East Track II engagements
 - UCLA Burkle Center
 - WMD Free Zone dialogue
 - National Defense University Near East-South Asia Regional Network of Strategic Study Centers (RNSSC)



Middle East Security Dialogue in Athens



RNSSC Meetings

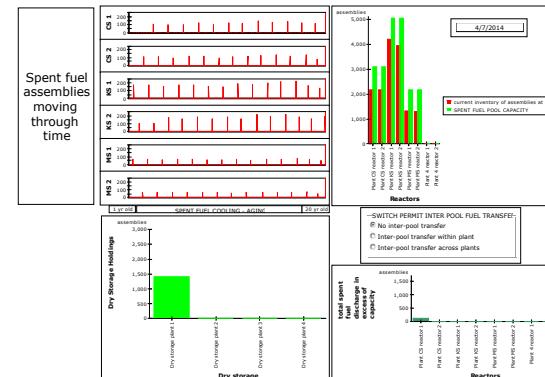
South Asia Engagement

- **South Asia Strategic Review**
 - Meeting of senior political, military, academic and media figures from India and Pakistan who have served as visiting scholars at Sandia
 - Set agenda for future security priorities in the region and potential for collaborative research
- **Missile Transparency**
 - Track II dialogue on potential missile dismantlement transparency in the subcontinent
- **Crisis Management**
 - Planned engagement with Pakistanis on crisis management and media impacts
- **Regional security dialogue**
 - National Defense University Near East-South Asia Regional Network of Strategic Study Centers (RNSSC) Track II process



East Asia Engagement

- Engage nations of East and Southeast Asia in exploring linkages between nuclear energy and nonproliferation (NEN) in the region
 - Annual NEN workshop
- Support Track II regional security dialogues
 - Council on Security Cooperation in the Asia Pacific (CSCAP)
- Develop nuclear energy tools in support of Taiwan
 - Spent fuel management tool
 - Participate in US-Taiwan Joint Standing Committee on Civil Nuclear Cooperation (JSCCNC)



Example: Powersim Fuel Cycle Model Output



International Nuclear Export Control Program (INECP)

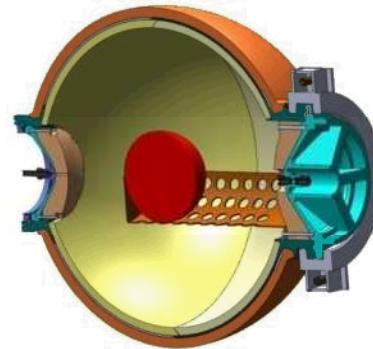
- Prevent proliferation of WMD by working with governments worldwide to develop effective national export control systems
- Strengthen partner enforcement organizations' capacities to prevent smuggling of nuclear, chemical, biological and missile related materials, equipment and technologies
- Sandia events this year have included:
 - Italy
 - Indonesia
 - Pakistan
 - Malaysia
 - Oman
 - Jordan
 - Mexico
 - Lebanon
 - Sri Lanka
 - India
 - Various US venues



June 2011 Commodity Identification Training (CIT) Workshop, Beirut, Lebanon

Global Initiative for Proliferation Prevention (GIPP)

- Program to engage former WMD scientists in peaceful commercial and scientific endeavors
- Sandia programs in:
 - Russia
 - *Explosive Resistant containers*
 - *Portable oxygen generation for medical applications*
 - Iraq
 - *Engaged over 200 scientists*
 - *More than 12 workshops*
 - *Over 30 collaborative projects*
 - Libya
 - *Water desalination*



Former Soviet-era weapons scientists in Russia developed a new, transportable, explosion-resistant container to safely reduce the risk to the public from various kinds of High Explosive terrorist devices.



Iraqi Food Safety Training



Libyan Water Desalination Project

Technology Training and Display (TTD) Area

- Hands on technology displays
 - Workshops
 - Training classes
 - Visiting scholars
- Primarily internally funded
 - Maintain current displays and training facilities
 - Expand to reflect new technologies and programs



Remote Video Surveillance Example: Sandia Outdoor Test Facility (OTF)

- **A flexible test facility for evaluating commercial and prototype border monitoring technologies and systems**
 - Located at Sandia on Kirtland Air Force Base, New Mexico
 - Includes unattended ground sensors and sensor-activated video
 - Microwave data and video transmission to base station



Summary

- The International Nuclear Threat Reduction Department employs a number of capabilities to address a wide range of international nuclear threat issues.
- Primary focus is on regional security and nonproliferation issues in the Middle East, South Asia and East Asia.
- There is strong interest in expanding partnerships and utilizing capabilities and facilities in support of other USG agencies and missions.