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Developing Technical Cooperation in U.S. – China Relations

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The January 2011 China-U.S. Joint Statement identifies a broad range of common nuclear security goals

- **Strengthening China – U.S. Relations**
- **Addressing Regional and Global Challenges**
- **Building a Comprehensive and Mutually Beneficial Economic Partnership**
- **Cooperating on Climate Change, Energy and the Environment, and**
- **Extending People-to-People Exchanges**

Technical cooperation can play an important role in all of these areas.

Examples of Successful U.S. / China Technical Cooperation

Physical Protection of Civilian Nuclear Material

Upgrades of Physical Protection Systems at CIAE Facilities

Demonstration of Integrated Nuclear Material Management

Security of Nuclear and Radiological Materials (Beijing Olympics)

Beijing Airport Dangerous Goods Warehouse

Central Alarm Station Qingdao Irradiation Company

The planned Center of Excellence on Nuclear Security will enable deeper bilateral and regional cooperation.

China Institute of Atomic Energy

The January 2011 Joint Statement establishes a framework for expanded technical cooperation

- **Commitment to eventual realization of a world without nuclear weapons and the need to strengthen the nuclear nonproliferation regime**
  - **Early entry into force of Comprehensive Test Ban Treaty (CTBT)**
  - **Negotiations of Fissile Material Cutoff Treaty (FMCT)**
  - **Agreement to establish a Center of Excellence on nuclear security**
- **Maintaining peace and stability of the Korean Peninsula**
  - **Concrete steps to achieve denuclearization**
  - **Improve North-South Relations**

Examples of future challenges that will require international technical cooperation.

Topic	Challenges
CTBT	• Confidence in legitimacy of activities at former test sites
FMCT	• Managed access for on-site-inspections to assure protection of sensitive information • Monitoring options for material in a classified forms
Nuclear Arms Agreements	• Understanding nuclear weapon lifecycles and production infrastructure in states with nuclear weapons • Confidence in nuclear weapon dismantlement / reductions • Security of nuclear weapons and material • Monitoring options for future treaties
Regional Security	• Implementing denuclearization of the Korean Peninsula • Implementing confidence building / crisis management in South Asia • .....

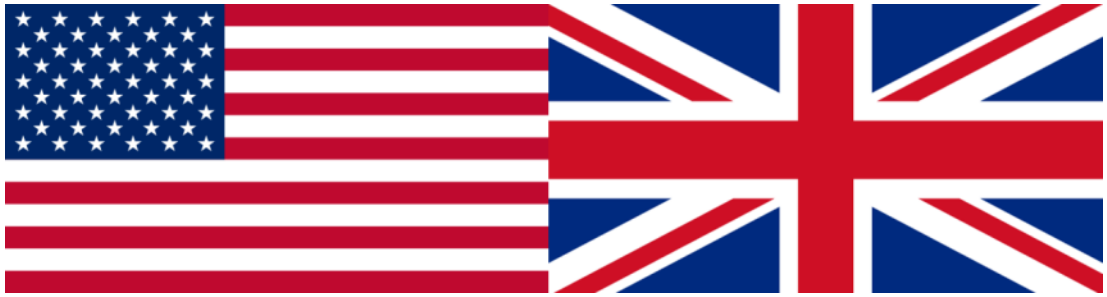
Example of Current Activity

Integration of Nuclear Modernization and Arms Control

- **Develop scenarios for future arms control to assess possible monitoring options and implications for nuclear complex**
- **Analyze transparency needs for the U.S. nuclear complex under potential future arms control scenarios**
- **Evaluate the nuclear weapons lifecycle to identify where potential future monitoring could impact nuclear operations**
- **Test and evaluate promising approaches in operationally realistic environment.**

Example of Current Activity

US / UK Collaboration on Warhead Dismantlement Transparency



- **Partners**
  - **NNSA and AWE under EIVR-58**
- **Purpose**
  - **To share information about issues and technical approaches to nuclear weapons dismantlement transparency**
  - **Develop technologies for dismantlement transparency**
- **Activities**
  - **Workshops (information barriers, authentication)**
  - **Measurement campaigns to evaluate possible technologies and procedures**
  - **Exercises to simulate monitored dismantlement activities and test fieldable technologies**

Historical Example

U.S. / Russia Cooperation on Warhead Monitoring

- **Test Scenario**
  - Operational site storage monitoring
  - Monitored transportation (rail and road)
  - Central storage monitored
  - Russian military nuclear experts conducted testing
- **Testing Facilities**
  - Storage Magazine
  - Rail Car Test Beds
  - Central Monitoring Facility
- **Test and Evaluation**
  - Automated Monitoring and Inventory System – Storage (Apr 05)
  - Automated Monitoring Inventory System - Transportation (Jun 07)
  - End-to-End System Tests – projected for Mar 09 – Terminated (Dec 08)

St. Petersburg, RU

Storage Magazine

Kamaz Truck

Storage T&E

Model Test Site (MTS)

Rail Car Test Bed

Central Monitoring Facility

Transportation T&E

Options for Expanding China / U.S. Technical Cooperation on Nuclear Security and Arms Control

- Military applications of nuclear security
- Anticipation of future nuclear arms reductions
- Technical cooperation relevant to CTBT or FMCT
- Korean Peninsula denuclearization and security
- Support of P-5 process on nuclear security
- R&D on unclassified nuclear science and technology

Summary

- China and the U.S. have broad base of shared interests in nuclear security and arms control
- Technical cooperation between the U.S. and China on nuclear security is strong and provides basis for broader future cooperation
- There are many options for expanding technical cooperation, and recommendations of topics could inform respective governments
- Cooperation in multilateral forums (e.g., P-5), through academic institutions, or through non-governmental organizations can set the stage for future efforts

Sandia's Cooperative Monitoring Center (CMC) and partner facilities support a broad range of technical cooperation.

Technology Training Demonstration Area

CMC-Amman

Outdoor Test Facility

Bunkers / Simulated Warhead Storage

TEAMS Site: Test and Evaluation of Radiation Detection

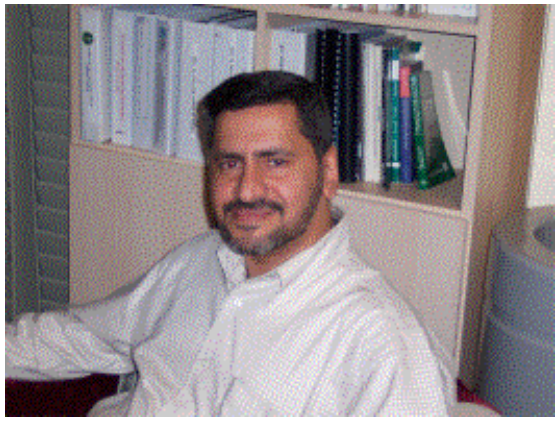
Partners

- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- National Center for Nuclear Security (NCNS at Nevada Test Site)
- Rosatom (VNIIA, VNIIEF, VNIITF)
- UK Atomic Weapons Establishment (AWE)
- China COE for Nuclear Security

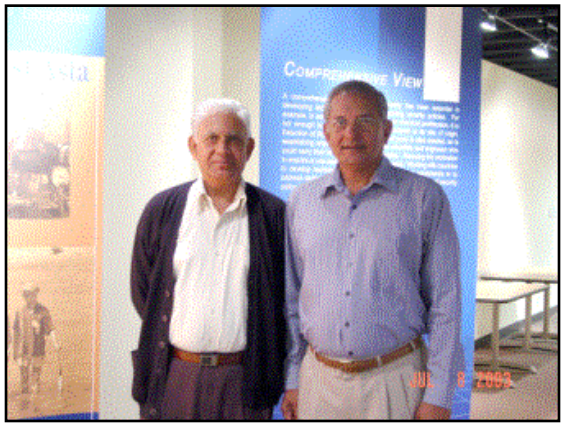
Capabilities

- Visiting Research Scholars
- Analysis
- Test and Evaluation
- Training

CMC Visiting Scholars Program provides venue for technical cooperation.

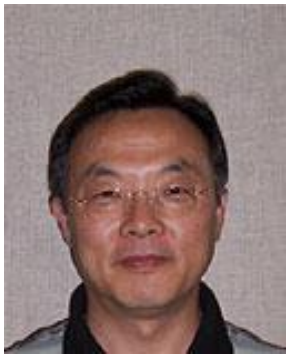


Abdallah Al Najjar (UAE), President of Arab Science and Technology Foundation: Iraq S&T engagement

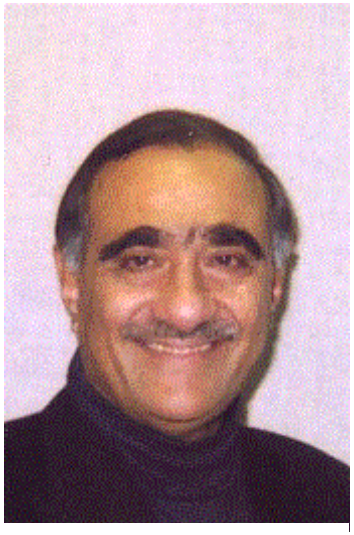


Rear Adm. (ret) Ravi Vohra (India) and Rear Adm. (ret) Hassan Ansari (Pakistan): Naval Confidence Building Measures

Nour Nasser (Palestine), Sahar Jreisat (Jordan), and Eli Gordon (Israel): Disease Surveillance



Joo-Ho Whang (ROK): Dismantlement and Radioactive Waste Management of DPRK Nuclear Facilities



Maj. Gen. (ret) Mahmoud Durrani (Pakistan): Nuclear doctrine and security