ISCN’s Capacity Building Activities for Nuclear Security and Safeguards

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Integrated Support Center for Nuclear Nonproliferation and Nuclear Security

Japan Atomic Energy Agency

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Outline

◆ Japan’s Capacity Building Support Activities in 3S
◆ Capacity Building Activities of ISCN in Nuclear Security and Safeguards
  1. Establishment of ISCN
  2. Main Activities and Cooperation with Other Organizations
  3. Capacity Building Assistance through Human Resource Development Including Training and Education
Japan’s Capacity Building Support Activities in 3S
Japan’s Nuclear Human Resource Development Network supporting Asian countries

**Ministry of Education, Culture, Sports, Science and Technology (MEXT)**
Nuclear Safety, Research Reactor, Basic Research etc.

**Japan Atomic Energy Agency (JAEA)**
Nuclear HRD network Secretariat
- Training in Japan (Nuclear technology, Site preparation and public relations, Plant safety)
- Dispatch of Experts: Follow up program for instructor training
- Integrated Support Center for Nuclear Non-Proliferation and Nuclear Security (ISCN)
- Training in Japan (Safeguards, Nuclear nonproliferation, Security)
- Dispatch of Experts

**Nuclear Safety Research Association (NSRA)**
- MEXT Nuclear Researchers Exchange Program (Eligible country: FNCA)
- FNCA - ANTEP

**Academia**

**University Network**
Lectures for NPP-introducing countries
- Tokyo Institute of Technology
- Ibaraki University
- Osaka University
- Okayama University
- Kanazawa University
- Kinki University
- Kyushu University
- Kyoto University
- Tokai University
- Nagoya University
- Hachinohe Institute of Fukui
- Hokkaido University
- University of Yamanashi
- The University of Tokyo
- Nuclear Safety Security Exercise Network
- Global Professional Course

**Industry**

**The Japan Atomic Power Company (JAPCO)**
- Training in Electric Power company
- International Nuclear Energy Development of Japan (JINED)
- Electric Power Companies (Hokkaido, Tohoku, Tokyo, Chubu, Hokuriku, Kansai, Chugoku, Shikoku, Kyushu)
- TOSHIBA, HITACHI, Mitsubishi Heavy Industries
- Acceptance of Trainee

**Fukui International Human Resource Development Center for Atomic Energy (FIHRD): The Wakasa Wann Energy Research Center (WERC)**

**Ministry of Economy, Trade and Industry (METI)**
Agency for Natural Resources and Energy (NPP-promoting -body)

**Japan Atomic Industrial Forum (JAIF)**

**Japan International Cooperation Center (JICC)**
- Acceptance of Trainee
- Dispatch of experts

**Ministry of Foreign Affairs (MOFA)**

**Japan International Cooperation Agency (JICA)**
- Acceptance of Trainee

**Cabinet Office (CAO)**
- Japan Atomic Energy Commission
- Nuclear Safety Commission of Japan

**Ministry of the Environment (MOE)**
- Training in Japan (Nuclear technology, Site preparation and public relations, Plant safety)
- Dispatch of Experts: Follow up program for instructor training

**Nuclear Regulation Authority (NRA)**
- Regulate nuclear activities in Japan: Safety, Security, Safeguards
- Cooperation with partner countries
- Support to emerging nuclear states based on agreement
Japan-IAEA Joint Nuclear Energy Management School

- 1st: 11-29 June 2012 in Tokai-mura
- 2nd: 27 May-10 June 2013 in Tokyo and Tokai-mura
- 3rd: 9-26 June 2014 in Tokyo and Tokai-mura
- 4th: 1-17 June 2015 in Tokyo and Tokai-mura

**Duration:** Two and a half week

**Style:** lectures, site visits, discussions, group works, presentation and facility visits

**Topics:**
- Energy Policy Making and the Role of Nuclear Power
- Management of New Nuclear Power Projects
- Nuclear Material Control
- Protecting People and the Environment
- Developing National Capacity for Nuclear Energy

**Participation:**
Young professionals (preferably less than 40 years old) with managerial potential who have worked in the nuclear field at least for 3 years and shall make good use of the fruits of the Management School for their current and/or future jobs from targeted countries.

Capacity Building Activities of ISCN in Nuclear Security and Safeguards
1. Establishment of Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN)

Japan’s National Statement at 2010 Nuclear Security Summit:
Establishment of an integrated support center for nuclear nonproliferation and nuclear security in JAEA to contribute to strengthening nuclear security in Asia and other regions and development of technology related to measurement and detection of nuclear material and nuclear forensics based on international cooperation.

On December 27, 2010, ISCN was established in JAEA.

Japan PM Speech at 2012 Nuclear Security Summit
“In particular, through our "ISCN" established in late 2010, Japan will expand its hosting and training of human resources. “

Japan PM Speech at 2014 Nuclear Security Summit
We will reinforce the activities of ISCN, established in December 2010 as the first CoE in Asia, in order to contribute to the human resource development and capacity building of other countries.
2. Main Activities and Cooperation with Domestic/Foreign Organizations

(1) Capacity building assistance through human resource development
(2) Technology development and support regarding the measurement and detection of nuclear materials and nuclear forensics
(3) Support for CTBT and denuclearization
(4) Policy research on nuclear nonproliferation
(5) Support for nuclear material transport and management of research materials

Structure of cooperation with domestic/foreign organizations

- **Nuclear Material Control Center**
  - Technical Support
- **MEXT**
  - Overall Management and Support
  - Budget allocation
- **Relevant Ministries** (Cabinet Office, MOFA, METI, NRA, NPA)
  - Cooperation based on political needs
- **ISCN**
  - Technical Support etc.
- **US DOE/NNSA**
  - Technical Cooperation
  - Exchanging lecturers etc.
- **EC/JRC**
  - Cooperation
- **International Atomic Energy Agency (IAEA)**
  - Assistance, Contribution
- **Asian countries**
- **ROK, China, Others**
- **Domestic/private businesses** (electric utilities, manufacturers)
3. Capacity Building Assistance through Human Resource Development Including Training and Education

Three Courses
1. Nuclear security course
2. Safeguards and SSAC* course (* State system of accounting for and control of nuclear material)
3. International nonproliferation framework course

Objective
To help ensure that all existing nuclear material is used exclusively for peaceful purposes and is used sufficiently protected against theft and sabotage through:
• Knowledge-sharing,
• Experience-sharing,
• Support for legal development, and
• Hands-on training for state system of accounting for and control of nuclear material (SSAC) and physical protection of nuclear material.

Needs Oriented Approach:
Different Target Participants for Different Programs
- International/Regional Course
- Bilateral Support or Dispatching Course
- Domestic Course
Even after the accident of Fukushima Daiichi Nuclear Power Station, all countries visited had high expectations for the trainings and seminars to be held in the ISCN, and aspired to participate.

(2010): Thailand, Malaysia, Singapore, Philippines, Indonesia, Vietnam
(2011): Kazakhstan, Vietnam, Indonesia, Mongolia, Malaysia, Bangladesh
(2012): Mongolia, Jordan, Lithuania, Malaysia, Turkey
(2013): Ukraine, Bangladesh
(2014): Turkey, Indonesia, Saudi Arabia
(2015): UAE

- **Common and varied needs**
  - Welcoming increased opportunities for training
  - Requests for cooperation in their national training centers
  - Coordination of various training functions, Overcoming language barrier

- **Human resource development plan in preparatory stage**
  - Plans to introduce nuclear power and for human resource development
  - Flexibility to meet the needs

- **Expectations for practical training courses**
  - Exercises using facilities or equipment
  - Months-duration training to acquire practical experience
  - Experience in realistic environment (Expectations for VR technology)
  - Training for trainers
3.1.1 Nuclear Security Course

Physical Protection
- Physical Protection for Nuclear Material and Facilities
- IAEA guidelines including INFCIRC/225/Rev.5
- Physical Protection Detection System Performance Testing
- PP Inspector Training
- Insider Threats
- PP Measures against Sabotage
- Security of Radioactive Sources

Nuclear Security Culture
- ISCN-WINS Workshop
- Workshop on Nuclear Security Culture

Other
- Cybersecurity
- Bilateral Cooperation
  - Seminar on Nuclear Security

Activity Results of 2011 - August 2015
Total 1412 participants in 56 courses

<For Effective Learning>

Lectures  Group Exercises  PP Exercise Field  Virtual Reality System
3.1.2 Physical Protection Exercise Field

- Gate
- Mock CAS
- Monitoring and tracking Camera
- PP Fence
- IR sensor
- Microwave sensor

Recent Development: Thermal camera, new buried E-field sensor, Free-standing X-field sensor, Circle gate system, Laser sensor
3.1.3 Virtual Reality (VR) System

- **Enhance effectiveness** of the training – difficult to conduct nuclear-security training using real nuclear facilities.
- **Provide a practical training** environment for experience-oriented and interactive lessons on nuclear security through a virtual experience of observing the inside/outside of a nuclear facility.

**Learning the characteristics of a facility and its physical elements by examining a three-dimensional view of the facility.**

**Verify monitoring functions and image features of cameras and sensors.**

**Verify installation and functions of security tools.**

Learning skills for handling contingency in a virtual central alarm station.
3.1.4 ISCN-WINS Workshop

Workshop offered for Japanese operators and related governmental agencies: 1.5 days

Co-hosted by: WINS

Achievements: Held each JFY,
JFY2011(50 participants) ⇒ JFY2012(63 participants) ⇒ JFY2013(69 participants)

Theme:
JFY2011: Nuclear Security and Corporate Governance in Post-3/11 Japan
JFY2012: Collaboration with Outside Organizations for Strengthening Nuclear Security
JFY2013: Information Disclosure, Assurance, and Insider Threat”
JFY2014: Synergy between nuclear security and safety

Theater-based Session: professional actors perform a nuclear-security-event scene based on a specific scenario, followed by discussion among participants on that story.

Feedback from the participants showed that the theater-based sessions were extremely well received. Unlike general lectures or presentations, they provided a more realistic sense of the situations and threats. Also the actors’ dramatic performance contributed to a sense of tension. The interest created by the session style led to concrete discussions that greatly benefited the participants.

JFY2015 Workshop to be held in December 2015
3.1.5 Nuclear Security Course: Bilateral Cooperation

**Vietnam**

Co-hosted by: MOST/VARANS, MOIT

Co-hosted by: MOST/VARANS, MOIT (Target: future operator and local stakeholders)
Topics: Introduction to nuclear security and physical protection

**Kazakhstan**

Seminar on Nuclear Security (2012)
Co-hosted by: Atomic Energy Agency of Republic of Kazakhstan
Topics: International instruments, INFCIRC/225/Rev.5

**Lithuania**

Workshop on Nuclear Security ~ for the enhanced nuclear security across the borders~ (2013)
Co-hosted by: Lithuania Nuclear Security Centre of Excellence (NSCOE) and EC Joint Research Centre (EC JRC)
Cooperated by: US Department of Energy/ National Nuclear Security Administration (DOE/NNSA)
Topics: Border security monitoring, exercises

**Turkey**

Co-hosted by: Turkish Atomic Energy Authority (TAEK)
Cooperated by: DOE/NNSA
Topics: Consideration for a regulator to evaluate nuclear security plan
3.2.1 Safeguards and SSAC Course

International Training Course (ITC) on SSAC
- International Safeguards, its framework, requirements, method and technic
- Nuclear Material Accounting and Control (Record/ Report)
- Additional Protocol (declaration/ Complementary Access (CA))
- Safeguards experience of countries
- Establishment and maintenance of national system.

IAEA Inspector Training
- Safeguards in Reprocessing Plants
- DCVD Training for Spent Fuel Verification

Bilateral Cooperation
- Workshop & Seminar on the Additional Protocol (AP) Declarations
- SG Training

Activity Results of 2011 - August 2015
Total 320 participants in 16 courses

<For Effective Learning>
3.2.2 Safeguards/SSAC Course, JAEA/ISCN Experience

JAEA’s long experiences of offering SSAC courses from 1996, even before the establishment of ISCN.

317 participants from 51 countries in total between 1996 to 2014 (1996-2010: JAEA, 2011- : ISCN)

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(Red: 2014)
3.3 International Nonproliferation Framework

Course

Seminar on Peaceful Uses of Nuclear Energy and Nuclear Nonproliferation, Security (Bilateral cooperation)

【Objectives】
(1) Share the understanding among the all relevant parties of the importance to ensure nuclear nonproliferation and nuclear security for benefiting from peaceful uses of nuclear energy;
(2) Review the international nuclear nonproliferation and nuclear security regime and understand its components and required national systems, including legal instruments, regulatory capacity, and human resource development; and
(3) To identify elements for possible cooperation plan between targeted state and Japan for the enhancement of nuclear nonproliferation and nuclear security.

Activity Results of 2011 - August 2015
Total 649 participants in 14 courses
### 3.3.2 International Nonproliferation Framework Course -Bilateral Cooperation Developments with Partners-

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3.4 Participants’ Visit to the Bombed Area (Hiroshima or Nagasaki)

ISCN has included a visit to the bombed area (Hiroshima or Nagasaki) in its two-week training courses (RTC on Nuclear Security and ITC on SSAC) curriculums. The visit provides participants from other countries with and opportunity to think about the threat of nuclear proliferation as well as to promote better understanding of nuclear nonproliferation and nuclear security.

< Participants' Voice >

It was my first visit to Hiroshima. In the Hiroshima Peace Memorial Museum, I was impressed with the efforts of how to tell the future generations about the historical experience of the atomic bomb. I felt a strong feeling against nuclear weapons.

“Experience is the best teacher,” I felt that. I also felt that we need to make even more efforts (such as nuclear nonproliferation) so that the international community would become one and we could benefit from the peaceful use of nuclear technology.
Activity Results of 2011-August 2015
Total 2381 participants in 86 courses
(53 countries, 3 international organizations)
3.6 Regional Collaboration and Harmonization

IAEA

INSEN
International Nuclear Security Education Network

NSSCs
International Network for Nuclear Security Training & Support Centers

- Information exchange on each training course and curriculum
- Exchange of lecturers
- Joint training and outreach
- Joint curriculum development
- Sharing training materials

Asia Regional Frameworks

- **ISCN (JAPAN)** in active Integrated Support Center for Nuclear NP & NS
- **INSA (ROK)** in active International Nuclear Security Academy
- **SNSTC (China)** 2015 4Q State Nuclear Security Technology Center
- **CBRN CoE South East Asia of EC-JRC** (in Phillipine)
- **APSN (Asia Pacific Safeguards Network)**
- **FNCA** (Forum for Nuclear Cooperation in Asia)
- Other COEs
Thank you for your attention.

Please visit our website! http://www.jaea.go.jp/04/iscn/index_en.html

Integrated Support Center for Nuclear Nonproliferation and Nuclear Security

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