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Development of Human Resource Capacity Building Assistance for Nuclear Security

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Abstract

The Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) of the Japan Atomic Energy Agency (JAEA) has been providing nuclear security human resource development support targeting nuclear emerging countries in Asia in cooperation with the concerned organizations such as the Sandia National Laboratories (SNL) and the International Atomic Energy Agency (IAEA). In the aftermath of the attacks of Sept. 11, the threat of nuclear terrorism was internationally recognized. As a result, the human resource capacity building technique that ISCN has implemented thus far needs to be analyzed in order to develop more effective training programs. This poster introduces the training techniques and achievements ISCN has made through its nuclear security training courses, including the attempts it has made at the international training course on transportation security, which ISCN co-organized with IAEA in November 2015. Through these examples, furthermore, this poster not only demonstrates the support Japan has been providing to nuclear emerging countries in Asia for the purpose of strengthening their nuclear security but also studies ISCN's future direction by analyzing its achievements.

Introduction

Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) is the nuclear security center of excellence (COE) in Japan. ISCN was established under the Japan Atomic Energy Agency (JAEA) in response to the commitment of Japan at the 2010 Washington Nuclear Security Summit to assist countries in Asian regions to develop capacity on nuclear non-proliferation and security. Since its official inauguration in February 2011, ISCN has been conducting 65 courses on various nuclear security topics with 1,676 participants (as of March 2016). ISCN has been vigorously involved in the capacity building assistance on nuclear security, mainly in the Asian region, for the past 5 years since its establishment.

This paper describes the good practices of ISCN, focusing on curriculum development for nuclear security courses. ISCN has been working closely with the United States and other international partners to develop its own capacity to provide training, and expanding topics and levels of training since its establishment. In 2015, ISCN extended its training topics to transport security and hosted IAEA's international training course on security of materials during transport. The paper also provides how ISCN contributed to the IAEA course on transport security to add more ISCN original contents to the course to share experience of Japan.

Nuclear Security Courses of ISCN

Curriculum Development: Understanding and Surveying Training Needs

ISCN adopted the tailor-made approach to develop its training course based on the needs of the target audience. Before designing ISCN's nuclear security training curricula, ISCN conducted dedicated needs survey missions with ASEAN member countries in 2010, before the establishment of ISCN. ISCN later expanded these missions to countries beyond ASEAN countries such as Bangladesh, Jordan, Lithuania, Ukraine, Turkey, Saudi Arabia, and Mongolia. Through those survey missions, ISCN realized that even after the Fukushima Daiichi Nuclear Power Plant Accident in March 2011, there were strong interest among partner countries to consider nuclear power as their candidate energy source in the future and thus there were high demands for human resources in the field. With regard to this, ISCN identified the strong need among many Asian countries for detailed technical training on physical protection.

In 2011, ISCN developed the regional training course on the physical protection of nuclear material and facilities (PP RTC) with the support from US Department of Energy/National Nuclear Security Administration (DOE/NNSA), and Sandia National Laboratories (SNL). ISCN and SNL used the three-week course on the physical protection developed by SNL as the base for its PP RTC, and modified it into the two-week course. ISCN offered the first PP RTC in October 2011, and since then, it has conducted PP RTC annually. Also, ISCN held the first workshop on IAEA's latest nuclear security recommendations on physical protection (INFCIRC/225/Rev. 5) in 2011 together with SNL shortly after IAEA published the recommendation document. In the following year, IAEA requested ISCN and SNL to transfer their workshop curriculum to IAEA, and ISCN/SNL supported IAEA to develop a 5-day training course based on their workshop.

For the first few years, ISCN focused on the physical protection of materials and the fixed site. PP RTC provided the participants the comprehensive overview on the design and evaluation process of the physical protection. ISCN gradually expanded the courses to include wider topics of physical protection such as insider threat, protection against sabotage, performance testing, scenario development, computer security and tabletop exercise.

Cooperation with International Partners

Since its establishment, ISCN has been working closely with U.S. to build its own capacity. ISCN did not have experiences of teaching nuclear security course before, so that JAEA and DOE/NNSA concluded the formal arrangement for capacity building cooperation. Through those arrangements, subject matter experts of SNL provided training for the ISCN instructors for the nuclear security training courses, jointly developed training curriculum and training tools, and stood side by side with ISCN for joint outreach activities. Since its conduct of the first PP RTC, ISCN increased the percentage of contribution from its staffs to the course, and as of 2016, ISCN instructors contribute to provide more than 90 % of the course contents. In addition, after every PP RTC, ISCN and SNL reviewed the materials and revised and updated them. ISCN provided many inputs from the view point of an Asian country, and added many contents reflecting experience of Japan on implementing physical protection. As a result, the course is now regarded as the ISCN original, which no longer uses SNL logos on its materials.

In addition to the cooperation with DOE/NNSA, ISCN has official cooperation arrangement with IAEA. Each fiscal year, ISCN hosts two IAEA courses on various nuclear security topics. IAEA and ISCN coordinate and select the specific topic for each year considering the needs of Asian countries. Since 2012, ISCN has contributed to host IAEA's training courses such as prevention and protection against insider threat, protection against sabotage, INFCIRC/225/Rev.5, security of radioactive materials, nuclear forensics and nuclear security culture. ISCN also contribute to IAEA's activities by participating as experts.

Similarly, ISCN has been working closely with European Commission Joint Research Centre (EC/JRC) on human capacity building. For example, both parties exchanged lecturers to each other's human resource development activities and have co-organized workshops for nuclear security. EC/JRC has expertise in border security and security of materials out of regulatory control which ISCN does not cover, thus ISCN jointly organized training courses with EC/JRC to expand its knowledge and experience through collaboration with them.

Through these international cooperation, ISCN developed its base of expert instructors. Figure 1 illustrates ISCN's progress in the provision of international/regional nuclear security courses.

Progress in Provision of Nuclear Security Courses

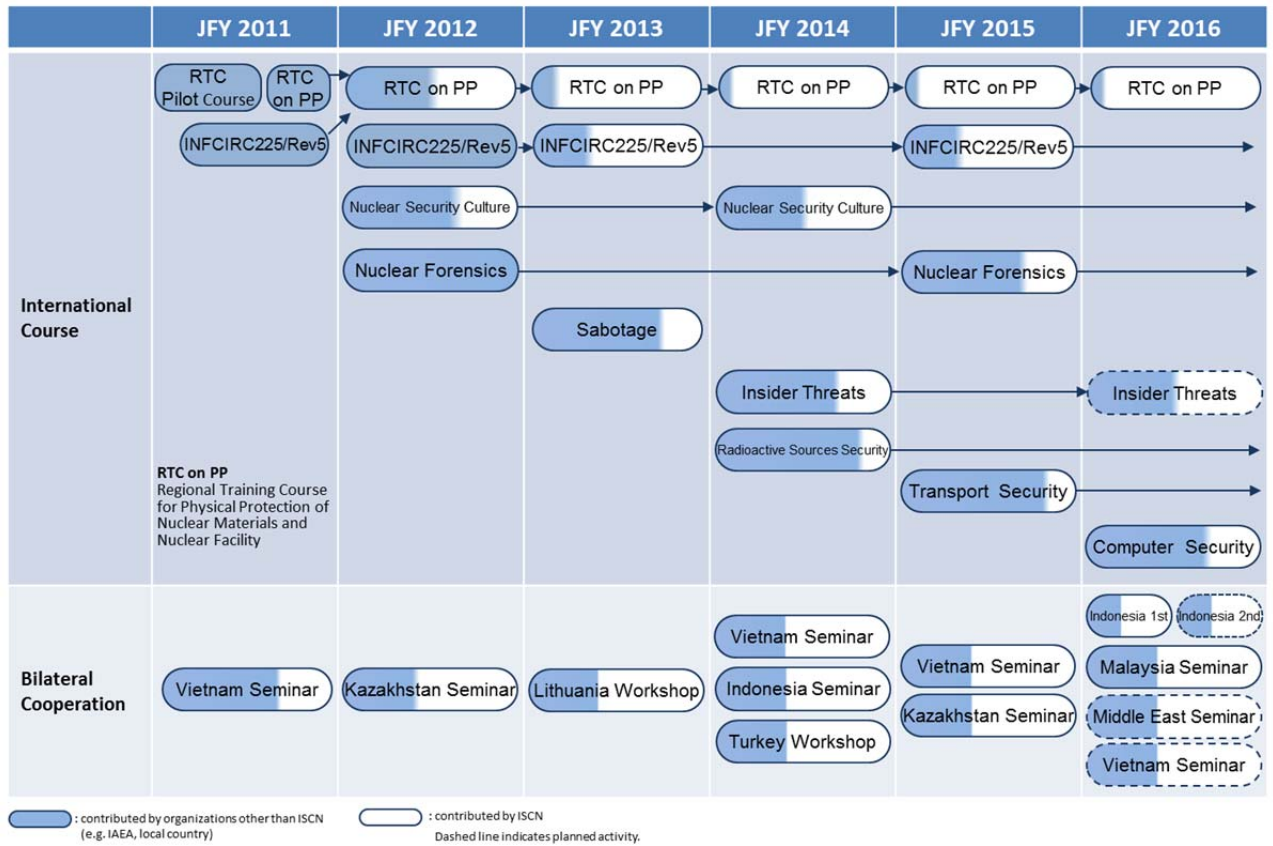


Figure 1 ISCN’s progress in the provision of international/regional nuclear security courses

Transport Security Courses at ISCN

Gift Basket on Transport Security at the Nuclear Security Summits

At the Seoul Nuclear Security Summit in 2012, Japan took the lead in the Gift Basket on transport security of nuclear and radioactive materials. At the Hague Summit in 2014, Joint Statement on Transport Security called for the promotion of close collaboration among the relevant government agencies and COEs/Nuclear Security Support Centres (NSSCs) to strengthen transport security and develop nuclear security, including adding transport security into the training curricula of the COEs/NSSCs. To contribute to this Joint Statement, ISCN hosted the international training course (ITC) on security in the transport of nuclear and radioactive material in November, 2015. It was the first training course on transport security ISCN conducted. The purpose of the course was to create awareness of the need for security during the transport of nuclear and radioactive material, and to provide participants with necessary knowledge to implement transport security. 34 participants from 33 countries joined the 5-day course. The course consisted of lectures on the basics of material transport as well as exercises.

Joint Course Development with IAEA

Each Japanese fiscal year (April to March), other than the PP RTC, ISCN hosts two IAEA courses on various nuclear security topics, such as prevention and protection against insider threat, protection against sabotage, radioactive material security, nuclear forensics and nuclear security culture. In the fiscal year 2015, one of the two IAEA course at ISCN was the ITC on transport security. Although the course materials were provided by IAEA, ISCN provided as many inputs to the course agenda as possible, from its experience and knowledge on providing training courses in the Asian region. ISCN discussed with the IAEA on the course agenda to make sure the contents matched the needs of the targeted audience. Both IAEA and ISCN agreed that the course should include practical and hands-on exercises to deepen understandings of the course participants.

One of the strength of ISCN is the fact that it was established under JAEA. As a comprehensive research and development organization on nuclear energy technology, JAEA has been operating many research facilities with materials subject to the physical protection regulation of Japan. Thus, JAEA has a long experience of implementation of physical protection for the material, facility and transport. For the exercises in the course, ISCN offered to prepare the spent fuel transport casks as well as tractor and trailer which JAEA actually uses for its onsite transportation. The participants used these casks and trailers to simulate the security inspection before transport. They developed the Transport Security Plan (TSP) during the exercise, and conducted security inspection according to the TSP using JAEA's equipment to verify security arrangement meets the requirement. The participants appreciated the exercise as very practical and helpful, and many of them commented that the course should have allocated longer time for exercises.



Picture 1 Exercise of security inspection using JAEA's equipment

Since there were many participants from countries without physical protection regulation nor transport security regulation, ISCN proposed IAEA to include a tour to ISCN's Physical

Protection Exercise Field (PPEF). PPEF is equipped with the real security devices normally used at nuclear facilities, such as intrusion detection sensors, CCTVs, monitors, fences, vehicle barriers, contraband detection, entry control and central alarm station. PPEF allows participants to gain hands-on experience with real physical protection equipment in a realistic environment. Although the PPEF focuses more on the fixed site security, the concept and features of good physical protection system have so much in common. ISCN received many positive feedbacks from the participants for the tour to the PPEF.

Sharing Experience of Japan

As one of the leading nuclear energy countries with long history of peaceful use of nuclear power, ISCN regards sharing experience of Japan to the course participants as its major mission. Therefore, ISCN proposed IAEA to provide a host country presentation regarding its implementation of transport security. For this purpose, ISCN was in the perfect position to reach out to the appropriate speaker for country presentation. ISCN has a strong network with the domestic experts and practitioners in nuclear security forged through its training activities. It has been providing nuclear security training courses to domestic audience such as electric utilities, regulatory authority and other relevant government agencies since 2012. It also organized several seminars in Japan to increase awareness of nuclear security among the stakeholders. In addition, ISCN introduced a nuclear security culture lecture series to the awareness-raising and culture-promoting activities of domestic operators in 2013, and the lectures have expanded since then as more utility companies have invited ISCN to speak to their workers.

For the ITC on transport security, ISCN asked The Nuclear Fuel Transport Co., Ltd. (NFT) to send an expert to the course for the country presentation. NFT is the only company that transports spent nuclear fuel in Japan with experiences longer than 40 years. During the course, an expert from NFT described the transport security regulation, procedures for material transport including inspection, physical features of ships and casks, and some security measures. NFT also introduced how it implemented physical protection to comply with the international guidelines.

Not just sharing experience of Japan, but IAEA and ISCN shared a belief that sharing experience among the participants was one of the benefits of having international participants from all over the world. The ITC agenda included short country presentation by the participants as well, and it was received by the participants positively.

Conclusions

The ITC on transport security co-organized by IAEA and ISCN received very positive feedback from the participants, with about 97% of participants being satisfied with the course contents. Also, about 97 % of participants answered that they would recommend the course to their colleagues. ISCN contributed to the development of the course curriculum and exercises, using its experience in providing nuclear security training courses in the past five years. The 2016

Washington Summit was the last Nuclear Security Summit, and IAEA will lead global efforts on strengthening nuclear security in the post-Summit process. IAEA alone cannot meet the request from the Member States for nuclear security training, and it relies on COEs/NSSCs to support IAEA on this matter. ISCN was one of the first COEs to come out of the Nuclear Security Summit process, and it has been involved extensively in capacity building assistance in nuclear security. ISCN continues working closely with the international partners to contribute to strengthening global nuclear security through its capacity building support activities.