Instructor Training Program

NewsLetter

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TOPICS

Public Relations Activities in NPP Sited Areas

The Reactor Maintenance Training Facility, Kashiwazaki Kariwa NPS, Niigata

Instructor Training Program (ITP)

~Develop instructors in the nuclear field in Asia ~

ITP is conducted by Nuclear Human Resource Development Center (NuHRDeC), the Japan Atomic Energy Agency (JAEA) since 1996 under contract with the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT). The aim of ITP is to contribute to human resource development (HRD) in the field of nuclear technology in Asian countries, and to make nuclear facility located areas in Japan as a hub for international activities. ITP initially started with two participating countries, and currently number of countries has increased up to 12.

■ Instructor Training Course (ITC) -Training in Japan-

Instructor Training Course (ITC) consists of 5 courses: Reactor Engineering I, II, III, Environmental Radioactivity Monitoring and Nuclear/Radiological Emergency Preparedness. The purpose of ITC is to foster technical instructors in ITC participating countries through 6-8 week courses in Japan where participants can join lectures by experts, exercises using a variety of equipment, and visits to nuclear facilities.

■ Follow-up Training Course (FTC) -Training in ITC Participating Countries-

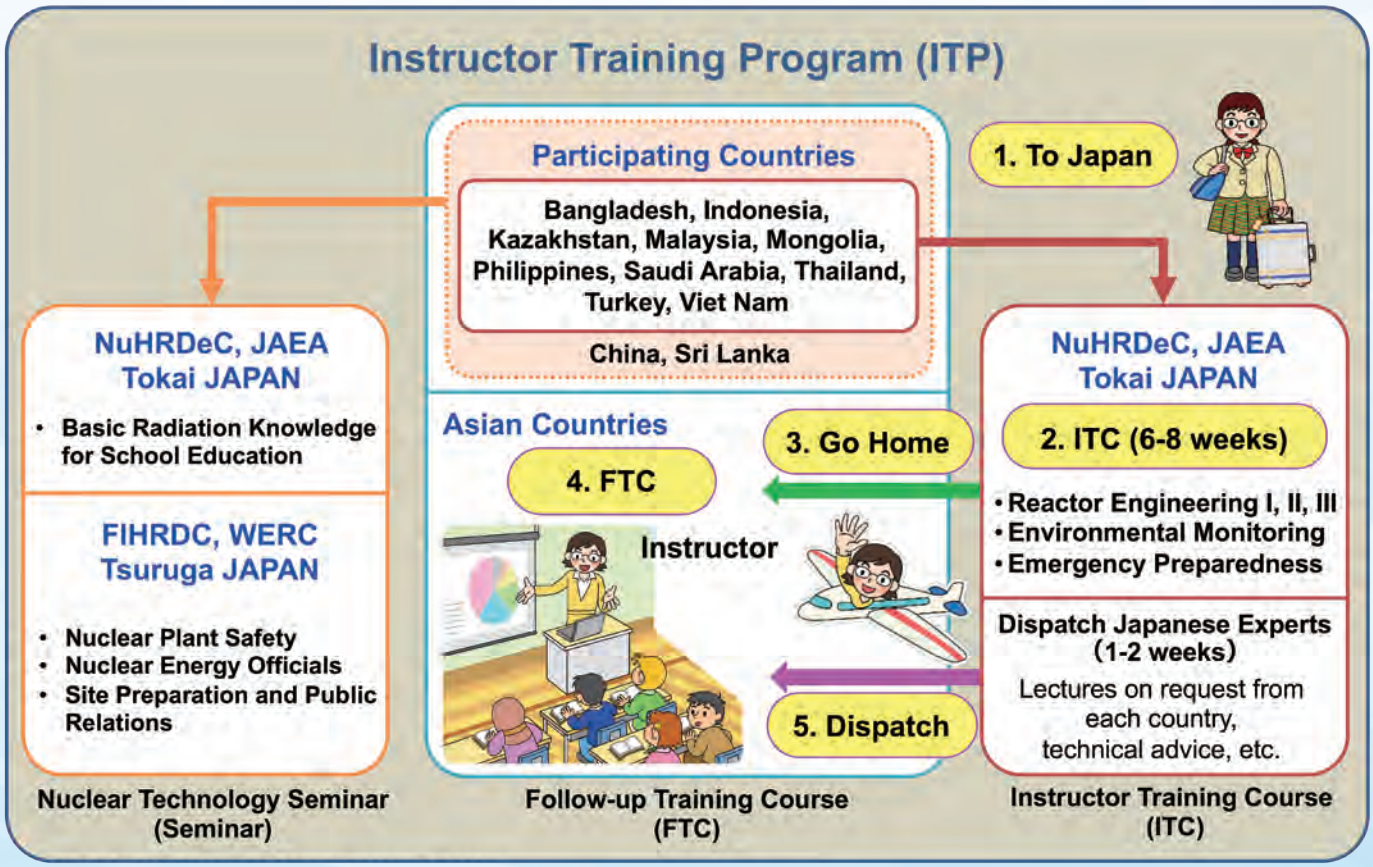
Follow-up Training Course (FTC) is held in each ITC participating country. The ITC participants give lectures in FTC by making the best use of knowledge and experience gained from ITC. They become excellent instructors by the accumulation of teaching experiences year by year through FTC. Japanese experts are dispatched to FTC to give lectures and technical advice for the establishment of the self-sustainable training courses.

■ Nuclear Technology Seminar (Seminar) -Development of Engineers and Specialists-

Nuclear Technology Seminar (Seminar) is designed to cultivate engineers and specialists in a specific area of nuclear technology. The seminar participants are invited to Japan for 1-4 weeks to learn necessary knowledge at lectures and to have experience of international cooperation through facility tours and joint events with residents of nuclear facility located areas. In Fukui prefecture, 3 seminars are held, and 1 seminar is held in Ibaraki prefect.

Develop instructors in Asian countries

- Establish a nuclear HRD network in Asia
- Build an international activity base at nuclear facility located areas
- Facilitate cooperation between Japan and Asian countries in the nuclear field



WERC: The Wakasa Wan Energy Research Center
FIHRDC: Fukui International Human Resources Development Center for Atomic Energy

1 **ITC on Nuclear/Radiological Emergency Preparedness**
Integrated Emergency Response Drill

2 **FTC on Environmental Radioactivity Monitoring**
Ambient Dose Measurement (Phillipines)

3 **Seminar on Basic Radiation Knowledge for School Education**
Decontamination Exercise

Instructor Training Program
The Accumulated Number of ITP Participants (1996~2019)

Instructor Training Course	436
Follow-up Training Course	5391*
Nuclear Technology Seminar	501

*The expected number of participants. (as of 4 February 2020)

Instructor Training Course (ITC)
Training in Japan

Cultural Exchange with Local Students in ITC

Reactor Engineering I, II, III

Period: 19 August – 11 October 2019 (8 weeks)
Place: Tokai, Ibaraki Prefecture, JAPAN
Participants: 19

Course Outline

Participants acquire a wide range of basic knowledge on nuclear engineering and teaching skills to become instructors in their own countries. The course is open to engineers, researchers in nuclear related organizations and academic staff. The course consists of Reactor Engineering I (reactor physics), Reactor Engineering II (thermal hydraulics, nuclear fuels/materials) and Reactor Engineering III (nuclear safety), and provides 26 lectures, 13 experiments/exercises and 19 facility tours.

Experience of Safety Activities of NPS and Important Reactor Components

Visit to Kashiwazaki Kariwa Nuclear Power Station (NPS), Tokyo Electric Power Company Holdings, Incorporated (TEPCO) receives the best evaluation from participants every year. The participants entered reactor buildings of Unit 6 and 7 which are both Advanced Boiling Water Reactors (ABWR), after observing specialized vehicles to provide for accidents from the bus. In Unit 7, they could closely see the important components to stop and cool the reactor, and to contain radioactive materials. They were surprised that a number of hydraulic control units of control rods were there, and huge main steam isolation valves and very thick main steam piping were in the primary containment vessel. Participants were also astonished when they heard that there was a core just beyond an inner wall.

Mr. Mohd Syukri Bin YAHYA
University Tenaga National (UNITEN), Malaysia

At the Kashiwazaki Kariwa NPS, we witnessed many upgrades for enhancing safety after the Fukushima Daiichi NPS Accident of TEPCO. We saw an emergency water reservoir, water cannon trucks and emergency vehicles on standby in a short distance. There are 15 m tsunami seawalls and flood barriers surrounding the coast. New filter vents have been equipped to prevent radioactive contamination. Moreover, trainings and emergency drills are carried out despite of the fact that the reactors are not in operation. It is perplexing that all reactors of Kashiwazaki Kariwa NPS are still in shut-down waiting for an approvalof local government. After visiting Kashiwazaki Kariwa NPS, I am sure that Fukushima Daiichi NPS accident will not be repeated.

Nuclear/Radiological Emergency Preparedness

Period: 17 June – 26 July 2019 (6 weeks)
Place: Tokai, Ibaraki Prefecture, JAPAN
Participants: 9

Course Outline

Participants acquire knowledge and skills on emergency response, in case of a radiation accident inside and outside nuclear or radiation handling facilities. The course is open to engineers, researchers in nuclear related organizations and academic staff. In 2019, the course provided 24 lectures, 11 experiments/exercises and 9 facility tours. Part of the course curricula is common to ITC on Environmental Radioactivity Monitoring.

Learn from Tokyo Fire Department Fire Rescue Task Forces

Emergency preparedness is considered to be very important in the event of a nuclear disaster. In order to respond to the emergency of Fukushima Daiichi NPS accident in 2011, all the members of the fire rescue task forces went into action as a part of emergency fire response team. (The team was designated in Tokyo Fire Department as a mobile unit to respond to nuclear, biology and chemistry disasters in 2002.) At that time, they utilized special equipment such as emergency response vehicles with lead or water shielding, decontamination vehicles with showers, radiation protection suits and radiation detectors.

This was the first time for participants of ITC on Nuclear/Radiological Emergency Preparedness and Environmental Radioactivity Monitoring to visit fire rescue task force in Tokyo Fire Department. By watching the video and listening to the story about their activities under the threat of high radiation exposure, they learned the importance of emergency rescue.

Ms. Manisah Binti SAEDON
Nuklear Malaysia,
Malaysia

It was my honour to visit Tokyo Fire Department and meet the fire fighters who made great efforts to mitigate Fukushima Daiichi NPS accident on the site. The visit gave me a broad view of how first responders react when an accident happens especially when it is radiological in nature. The demonstration of the equipment and the facility showed that they are well prepared and ready to take action at any time.

Environmental Radioactivity Monitoring

Period: 17 June – 26 July 2019 (6 weeks)
Place: Tokai, Ibaraki Prefecture, JAPAN
Participants: 10

Course Outline

Participants acquire knowledge and skills on environmental radioactivity monitoring. The course is open to engineers, researchers in nuclear related organizations and academic staff, and provides 26 lectures, 9 experiments/exercises and 10 facility tours. Part of the course curricula is common to ITC on Nuclear/ Radiological Emergency Preparedness.

Measuring Radioactivity in Water

Liquid scintillation counter (LSC) is able to measure low energy beta rays which other measuring instruments cannot measure. Therefore, LSC is used for measuring trace amount of radioactivity from beta emitters in environmental water samples such as ground water and river water. In ITC on Environmental Radioactivity Monitoring, participants learned sample pretreatment and preparation methods for water samples, and acquired measurement methods for various radionuclides. During the exercise, they had a chance to observe the internal parts such as detectors and lead shielding of LSC which usually cannot see. These hands-on experiences are really useful and surely helped participants more understood about its principle.

Ms. AKTI Nisa Nur
Turkish Atomic Energy Authority,
Turkey

In ITC, I had theoretical and practical lectures on LSC. At first, the lecture about LSC seemed full of theoretical knowledge and hard to understand. But after I practiced the technique in a laboratory, I could understand its principle and felt more confident about it. The experimental study was very meaningful for me, because it broke the LSC technique down to the basics and made it easy to understand.

Follow-up Training Course (FTC)

Training in ITC Participating Countries

Sample Pre-treatment Exercise in Environmental Radioactivity Monitoring, Kazakhstan

Reactor Engineering

Responsibility of FTC in TINT -Thailand

Thailand, which has a population of approximately 70 million, relies on natural gas for 65% of its electricity generation. Over the next two decades, their target is to reduce this value to 38% by supplementing current energy source with nuclear power.

In 1967, Electricity Generating Authority of Thailand planned the construction of NPS, and received construction approval from the government in 1974. However, the construction plan did not come to fruition due to the impact of the Three Mile Island accident in 1979. Afterward, continuing protest campaign and the aftermath of Fukushima Daiichi NPS accident have slowed NPS program although its installation was incorporated into the electric power development plan. The current scheduled date for starting operation of NPP is 2036, and retaining personnel with sufficient knowledge and technical skills is essential to realize this schedule so FTC plays an important role for it.

At this year's FTC on Reactor Engineering, Japanese experts supported FTC by giving lectures on decommissioning of nuclear facilities as well as public relations and understanding. As a preliminary exercise, participants used a small model reactor which has electric heating elements as simulated fuels. They did reactor power calibration and control rod worth measurement using the model reactor. Afterward, they conducted a similar exercise using Thai Research Reactor-1, which was restarted after two years of repairment.

Participants said that they were very satisfied with the FTC in the questionnaire. It means TINT (Thailand Institute of Nuclear Technology) was able to conduct a fruitful training. TINT expressed their strong wish to continue organizing FTC.

Nuclear/Radiological Emergency Preparedness

Learning Emergency Preparedness with Related Organizations - Bangladesh

Construction of Rooppur Nuclear Power Plant (NPP), the first NPP in Bangladesh, is progressing smoothly and scheduled to start its operation in 2023. In addition to operating this facility, Bangladesh Atomic Energy Commission (BAEC) is also bear these roles; research and development related to nuclear power and radiation, radioisotope production in a research reactor, and nuclear human resource development.

FTC was conducted for 2 weeks at Atomic Energy Research Establishment, BAEC in 2019. Not only BAEC staff but also first responders to nuclear/

FTC Activities in JFY2019

Country	Course	Duration				Participant
Bangladesh	Reactor Engineering	9 Feb	-	27 Feb	2020	20*
	Nuclear/Radiological Emergency Preparedness	24 Nov	-	5 Dec	2019	28
	Environmental Radioactivity Monitoring	12 Jan	-	16 Jan	2020	26
Indonesia	Reactor Engineering	23 Sep	-	4 Oct	2019	25
	Environmental Radioactivity Monitoring	9 Sep	-	13 Sep	2019	19
Kazakhstan	Reactor Engineering	21 Oct	-	25 Oct	2019	12
	Nuclear/Radiological Emergency Preparedness	11 Nov	-	14 Nov	2019	12
	Environmental Radioactivity Monitoring	10 Jun	-	14 Jun	2019	17
Malaysia	Reactor Engineering	17 Feb	-	28 Feb	2020	40*
	Nuclear/Radiological Emergency Preparedness	17 Feb	-	28 Feb	2020	25*
	Environmental Radioactivity Monitoring	17 Feb	-	21 Feb	2020	22*
Mongolia	Reactor Engineering	13 Jan	-	22 Jan	2020	16
	Nuclear/Radiological Emergency Preparedness	26 Aug	-	30 Aug	2019	24
	Environmental Radioactivity Monitoring	9 Sep	-	13 Sep	2019	26
Philippines	Reactor Engineering	24 Jun	-	6 Jul	2019	28
	Nuclear/Radiological Emergency Preparedness	5 Aug	-	9 Aug	2019	30
	Environmental Radioactivity Monitoring	30 Sep	-	4 Oct	2019	13
Thailand	Reactor Engineering	27 May	-	31 May	2019	18
	Environmental Radioactivity Monitoring	17 Feb	-	28 Feb	2020	14*
Turkey	Nuclear/Radiological Emergency Preparedness and Environmental Radioactivity Monitoring(joint course)	7 Oct	-	11 Oct	2019	15
Viet Nam	Reactor Engineering	2 Dec	-	7 Dec	2019	7
	Nuclear/Radiological Emergency Preparedness	19 Aug	-	23 Aug	2019	20
	Environmental Radioactivity Monitoring	26 Aug	-	30 Aug	2019	18
9 Countries	23 Courses					Total 475*

* The expected number of participants. (as of 4 February 2020)

radiological disasters such as fire fighters and soldiers attended this FTC. It is very important for the employees of relevant organizations to learn emergency response technique and do exercises together, in order to improve their emergency response capabilities as well as to strengthen cooperation among these organizations.

Participants of FTC listened to the lectures on nuclear regulation as well as nuclear emergency response, and did exercises such as radiation measurement. In a tabletop exercise, participants discussed the appropriate response to accident scenarios, such as the loss of radiation source and transportation accident. Following these activities, participants conducted a training to improve practical skills under the assumption that radioactive materials leaked out from a container during a transportation accident by using real radiation source. A training becomes more realistic by the corporation between BAEC and first responders, namely, fire fighting officials and military personnel. FTC are contributing to the development of human resources for nuclear/radiological emergency preparedness in Bangladesh in this way.

Environmental Radioactivity Monitoring

Chemical Separation of Uranium - Kazakhstan

FTC in Kazakhstan on Environmental Radioactivity Monitoring, organized mainly by past ITC participants, is held every year at both Al-Farabi Kazakh National University (KazNU) and at Institute of Nuclear Physics (INP) in Almaty located in the eastern part of Kazakhstan. Since Kazakhstan has Semipalatinsk test site for nuclear weapon, it is necessary to research how the dispersed radioactive materials due to past nuclear tests are transferred in the environment. That is why human resource development of younger generation is required and FTC plays an important role in it.

In FTC, 4 past ITC participants from KazNU and 5 members from INP worked together as lecturers. They gave basic lectures on environmental radioactivity and individual exposure. JAEA supported it by giving a lecture on environmental radioactivity monitoring after Fukushima Daiichi NPS accident.

During exercises, participants collected lake water, soil and plant and then prepared the samples of them for gamma ray measurement. After that, they did chemical separation of uranium by the solvent extraction method and prepared samples to measure alpha rays. It was surprising that highly specialized training such as chemical separation was included in FTC.

The participants actively asked many questions during all the lectures and exercises. It seems that environmental radioactivity monitoring has drawn a lot of attention in Kazakhstan. For the future development including fuel fabrication from mined uranium and construction of nuclear power plants, FTC members hope for continuous support from JAEA.

Voice from Guest Lecturers

What is a Guest Lecturer?

Past ITC participants who showed excellent performance in ITC and actively contribute to FTC in their own countries are invited as guest lecturers to ITC. This system has started in 2010 and 33 guest lecturers have been invited from each country so far. In 2019, 3 past ITC participants were selected as the guest lecturers.

Mr. Joseph Reynaldo TUGO

Philippine Nuclear Research Institute（PNRI）
ITC 2013 on Nuclear /Radiological Emergency Preparedness

My experience and impression of ITC

The knowledge and experience acquired from ITC in 2013 gave me the opportunity to become a lecturer in training courses held by Nuclear Training Center of PNRI as well as a resource person in different activities for information education and communication. In addition, I have been actively involved in conducting training courses on Nuclear/Radiological Emergency Preparedness and Response to various national and local emergency response organizations in our country such as the chemical, biological, radiological, nuclear battalion of the Philippine Army, and Health Emergency Management Bureau.

My impression and experience as a lecturer

I coordinated two FTCs on Nuclear/Radiological Emergency Preparedness in 2016 and 2018 and was invited as a guest lecturer to the most recent ITC in 2019. In FTCs, I lectured on the topics such as nuclear and radiological emergency preparedness and response in the Philippines, radiation survey and protective gear, overview of radiological emergency response and so on. In addition, I have facilitated practical exercises on surface decontamination techniques and integrated radiological emergency field exercise. Providing lectures in FTC gave me the opportunity to share the acquired knowledge with our national and local emergency responders. I would be grateful to contribute to the continued success of FTC and ITC.

Ms. SAMBUU Odmaa

National University of Mongolia（NUM）
ITC 2018 on Reactor Engineering I

My impression of ITC

I found ITC on Reactor Engineering to be fruitful in that it covers almost all related subjects of nuclear engineering. The course consists of not only lectures in a class, but also practical exercises and facility visits to nuclear institutes and organizations in Japan. I am a lecturer for the nuclear engineering program at the National University of Mongolia, so I frequently utilize the knowledge and experience on nuclear engineering as well as the teaching skills I developed during ITC in my lectures.

My experience of FTC

I have been giving lectures at every FTC since 2016, although I had not participated ITC yet until 2018. I like giving lectures at FTC to transfer the general and detailed knowledge on nuclear engineering to many local trainees and I think it is a way to raise public awareness about nuclear energy. My lecture topics were outline of NPP, nuclear reactor physics and kinetics, probabilistic safety analysis, Advanced Boiling Water Reactor and Pressurized Water Reactor. I received positive comments from Japanese experts who attended my FTC lectures in 2019 and trainees were also very active to answer the questions during the lecture. So I have got sufficiently good impression on my contribution to FTC.
In addition, I was invited as a guest lecturer to ITC. Teaching international participants with different background was a great opportunity for me to improve my ability and teaching skill.

Mr. Arif YUNIARTO

National Nuclear Energy Agency（BATAN）
ITC 2014 on Environmental Radioactivity Monitoring

My experience and impression of ITC

I am working in BATAN for environmental radioactivity monitoring around Serpong nuclear area, the largest nuclear area in Indonesia with a research reactor (30 MW) and other nuclear facilities. ITC on Environmental Radioactivity Monitoring has improved my knowledge and skills on environmental sampling, sample preparation, radioactivity and radiation measurement. I was impressed by the competence of ITC instructors, because they shared detailed information easily to participants. After attending ITC, the Center for Education and Training of BATAN gave me opportunities to become a lecturer in some courses on environmental radioactivity monitoring, including FTC. The knowledge and experience gained from ITC were also useful for me to give suggestions for improving some procedures or methodologies of environmental radioactivity monitoring.

My impression and experience as a lecturer

Since 2010, FTC on Environmental Radioactivity Monitoring has been conducted by the Center for Education and Training. From 2010 to 2013, the aim of FTC was to give general information and basic skills. Since 2014, BATAN had improved the FTC to provide more detailed information and advanced skills regarding a particular topic. I have been involved in FTC as a lecturer from 2014. My lecture topics included environmental dose assessment software, meteorology and gamma dose rate monitoring, and so on. Being a lecturer has improved my teaching skills, starting from preparing materials until delivering it in front of the class. In 2019, I was invited to serve as a guest lecturer for ITC to share information on environmental radioactivity monitoring and FTC in Indonesia. It was an honor to meet great participants from different countries and discuss some specific topics with them.

Nuclear Technology Seminar

Development of Engineers and Specialists

Joint Exercise with Local High School Students in Basic Radiation Knowledge for School Education

Basic Radiation Knowledge for School Education

Period: 24 October – 8 November 2019 (2 weeks)
Place: Tokai, Ibaraki Prefecture, JAPAN
Participants: 16

Course Outline:
The course objective is to foster human resources who will disseminate correct knowledge of nuclear energy and radiation to the public and students in Asian countries. The course is open to persons in charge of public relations in nuclear research institutes, officials in educational administration of governmental agencies, and to school teachers. The course covers basic topics such as an introduction to nuclear energy and radiation, radiation effects on human body, radiation education in Japan, and public information. The course also offers exercises to learn effective methods for teaching radiation knowledge for the public and students.

Visit to Fukushima Daiichi Nuclear Power Station
Following the Fukushima Daiichi NPS Accident, not only Japanese but also Asian people recognized the importance of basic radiation education. As construction of NPPs and the use of nuclear technology are still in progress, basic radiation education to young generation and communication on radiation with the public are common issues in Asian countries. In 2019, participants of Basic Radiation Knowledge for School Education visited the Fukushima Daiichi NPS for the first time so that participants can correctly understand and inform others of the accident and its current situation. They called on the NPS and observed damaged reactor buildings and other facilities from the bus after the explanation of the accident and the efforts towards decommissioning at TEPCO Decommissioning Archive Center. Participants learned a variety of measures to prevent scattering of radioactive materials, and radioactive contamination of seawater and groundwater due to decommissioning work. After the visit, some favorable comments were received from participants; “This visit was much more impressive than expected as we witnessed the damaged NPP up close”, and “We were amazed to know the decommissioning work is carried out using cutting-edge technologies”.

Nuclear Plant Safety

Period: 30 September - 25 October 2019 (4 weeks)
Place: Tsuruga, Fukui Prefecture, JAPAN
Participants: 11

Course Outline:
The course is open to engineers and researchers who are engaged in operating commercial and research reactors, or research and development in the field of radiation application and fundamental nuclear technology in Asian countries. The course provides participants with lectures on safety technology of reactor facilities such as commercial and research reactors in Japan, exercises, nuclear related-facility tours as well as information exchange by discussing on each country's nuclear power generation plan.
In 2019, participants visited Tsuruga Power Station, Japan Atomic Power Company. They listened to the outline of Tsuruga Power Station Unit 1, 2 and their safety improvement strategies, and observed the reactor vessel, spent fuel pool, and turbine building in Unit 2. They were impressed with the huge reactor vessel and listened to the explanation earnestly.

Nuclear Energy Officials

Period: 2 December - 20 December 2019 (3 weeks)
Place: Tsuruga, Fukui Prefecture, JAPAN
Participants: 10

Course Outline:
The course is open to governmental officials who are engaged in nuclear administration. The course provides participants with lectures on a wide range of necessary topics for nuclear administrators such as nuclear energy policy, security administration, safety culture, safety measures and safety management for nuclear facilities, and human resource development. The course also offers tours to nuclear-related facilities as well as information exchange and discussion on each country's nuclear power generation plan.
Participants visited Fugen Decommissioning Engineering Center, JAEA and had explanation regarding outline of decommissioning as well as the current situation and technology development of Fugen in the PR hall. Afterward, they called on the decommissioning work site and showed their interest on explanations concerning site operations and its current progress.

Site Preparation and Public Relations

Period: 16 September - 20 September (1 week)
Place: Tsuruga, Fukui Prefecture, JAPAN
Participants: 9

Course Outline:
The course is open to governmental officials who are engaged in nuclear regulation and public relations. The course offers lectures on laws and assessment regarding site preparation of nuclear facilities, public relations activities, risk communication as well as a visit to a planned construction site of nuclear power reactors and information exchange and discussion on each country's nuclear power generation plan.
In 2019, participants visited Atomic Energy Science Museum "At Home" in Tsuruga city. They enjoyed learning while playing with equipment and answering quiz in the theater. They had real experience of "learning through having fun", which is the concept of this facility.

TOPICS
Public Relations Activities in NPP Sited Areas

1 Fukushima Sakura

Iwaki City: Fukushima Sakura, Japan Agricultural Cooperatives

Participants of ITC on Environmental Radioactivity Monitoring visited Japan Agricultural Cooperatives in Iwaki, Fukushima. Agricultural recovery efforts in Iwaki city were explained there by a staff of Agriculture, Forestry and Fisheries Department of Iwaki city government.

Initially, explanations were given for multidimensional activities including the special characteristics of agricultural industry in Fukushima and the status of radioactivity inspection of agricultural products from immediately after Fukushima Daiichi NPS accident up to the present. In addition, participants were told about the importance of communication with the public. A feedback given from a participant was “I think it is wonderful to publicize the information by targeting the audience as well as considering consumers’ state of mind”.

The results of radioactivity monitoring are regularly published on the Iwaki city’s website. In addition, fun events such as PR bus tours and festivals are held to introduce that agricultural products are safe. These illustrate that many initiatives are taken for re-establishment of farming by residents in the region. A participant commented that I thought it would be a good idea to ask citizens who like Iwaki vegetables to convey the goodness of them.

After the explanation, they visited radioactivity inspection laboratory to receive a first-hand experience on its procedure. A following practical questions were offered by the participants, “Why is it necessary to grind agricultural products manually?”, “What do you do when an abnormal value is obtained?”, and “How do you calibrate the equipment?”.

After the facility visit, the following feedback was offered, “I was amazed by the Iwaki city government’s effort to start the radioactivity inspection of agricultural products just after the Fukushima Daiichi NPS accident. It is impressive that Iwaki city conducts independent inspection before the prefectural government inspection, and they are working seriously on agricultural reconstruction. It appears that participants surely understood the spirit of Iwaki City’s reconstruction efforts.


2


3

2 3Fukushima Daini Nuclear Power Station in Environmental Radioactivity Monitoring

Visit to Fukushima Daini Nuclear Power Station

Visit to Fukushima Daini NPS of TEPCO was included in the course curriculum of ITC on Environmental Radioactivity Monitoring for the first time in 2019. Participants learned about damages by tsunami after the big earthquake in eastern Japan in 2011, and subsequent efforts for recovery and current situations of ensuring safety.
They visited a seawater heat exchanger building damaged by the tsunami, and were lectured about restoration work of the seawater heat exchanger (i.e., laying of power cable of 9 km in length by human power from another building) with being astonished at the height and power of tsunami. Participants also learned that its door was replaced with a thicker and stronger water proof one after the tsunami. In reactor building, they entered inside of the primary containment vessel after the explanation about a number of fuel assemblies stored in spent fuel pools as well as water temperature. It was really astonishing for the participants to see the huge main steam pipes and main steam isolation valves, and a number of control rod drive mechanisms under the pressure vessel. They could also learn about expected condition of fuel debris which penetrated the bottom of the pressure vessel in Fukushima Daiichi NPS.
It was the first time for most of the participants to enter the nuclear power station and they were overwhelmed by its size, various kinds of safety measures and absolute security.

Fukushima Prefecture: Reprun Fukushima

Japan suffered the unprecedented damage from the East Japan Earthquake. One of the damages is the large amount of radiocontaminated soil and waste produced by the accident at TEPCO's Fukushima Daiichi NPS. Removed soil and specified waste (very low level radioactive waste) have been stored in various places in Fukushima prefecture. They are treated promptly, safely and reliably by the government in cooperation with the prefecture and municipalities. It is important to convey Fukushima's environmental regeneration and reconstruction efforts to the people not only in Fukushima but also all over Japan. This activity also provides the relief to local residents. That is why "Reprun Fukushima" was established.
Participants in Seminar on Basic Radiation Knowledge for School Education visited Specified Waste Information Facility, Reprun Fukushima and learned about a summary, necessity and safety measures of landfill disposal project. The permanent exhibition that uses the latest IT technologies is devised to enjoy learning landfill methods and management methods of the specified waste, and effect of radiation from the waste. The participants were surprised at its advanced technologies. They also realized the importance of establishing such a public relations facility in Fukushima which has devices to get children and the public interested in this project. In the landfill facility for specified waste, they saw a gate that can measure dose rate of a waste when it passes through and a landfill work site. The participants admired Fukushima's reconstruction efforts and consideration to safety by listening to the explanation about how to prevent contamination to surrounding areas.

Specified Waste Information Facility, Reprun Fukushima

■ Address: 526-7 Ota, Kamikoriyama, Tomioka-machi, Futaba-gun, Fukushima Prefecture ■ TEL: +81-240-23-7781
■ E-mail: yoyaku_reprun@env.go.jp (only for application)
■ Opening Hours: 9:00AM - 5:00PM ■ Closing days: Every Monday (open on Mondays that fall on Notional Holidays and closed on the following day instead), Year-end and New Year's Holidays (12/29 - 1/3)
■ Admission: Free
■ HP http://shiteihaiki.env.go.jp/tokuteihaiki_umetate_fukushima/reprun/

Interview

Secretary
Mr. MANLAIJAV Gun-Aajav
The Government of Mongolia
Nuclear Energy Commission (NEC)

Professional Background

I graduated National University of Mongolia with a master degree in physics. After graduation I had been working as an Engineer in Physics, Chief State Inspector for Hygienic and Epidemiology for more than a decade. Also, I had worked as a Head of Nuclear and Radiation Safety Department of Nuclear Energy Agency and further served as Director General of the Agency until 2012. After that, I had been working as Deputy Director of Institute of Physics and Technology of the Mongolian Academy of Science.
I have been working as Secretary of Nuclear Energy Commission and Head of Executive Office since 2015.

Q A Human Resource Development Policies in Nuclear Field in Your Country

Competent and skilled human resources play a crucial role in introducing and adopting advanced nuclear technologies to all socioeconomic fields. Therefore, the main objective of nuclear human resource development is creating education and training system which meets the international standards and making new job opportunities.
The growth of nuclear energy has a strong connection with the establishment of National University of Mongolia in 1942, which has built the foundation of modern natural sciences. Furthermore, Mongolia co-founded the Joint Institute for Nuclear Research with other states in Dubna, Soviet Union in 1956, which developed human resource in nuclear physics. NEC has also been implementing activities to provide professional human resources to nuclear energy field. Moreover, we would like to fully exploit the benefits of international cooperation in order to create a national education and training system.

Q A Evaluation of ITP and Expectations for Japan

Within the intergovernmental cooperation, the training courses such as nuclear power technology, safety and security, and researchers exchange program have been organized by JAEA. Mongolian specialists have conducted FTC jointly with Japanese experts since 2014. More than 300 officials from 24 governmental organizations were involved. The past ITC participations have improved their knowledge and gained experiences, and also acquired the skills of how to conduct training courses.
We greatly expect that JAEA will continue ITP and we would like to thank all the staff of nuclear human resource development center of JAEA for kind contribution and are expecting sustainable cooperation in the future.

The Current Situation and Future Plan of Nuclear Energy Development

National Nuclear Centre of the Republic of Kazakhstan (NNC RK)

The Republic of Kazakhstan has a long history of nuclear power. Rich uranium deposits, which are the second largest in the world, have helped the development of the uranium industry. Uranium ore is mined and processed, pellets are produced for reactor facilities, and currently, a fuel assembly production plant is under construction.

There are three research reactors operating in Kazakhstan at the moment. These facilities are utilized in variety of purposes with scientists and engineers from foreign countries including France, Belgium, Japan, and Russia. Fundamental research on nuclear physics and material science, in-core tests, radioisotope production for medical and industrial purposes, neutron activation analysis as well as other topics are conducted using these facilities.

Kazakhstan explores the possibility of constructing NPP, clarifying the economic and technical parameters of it, determining construction site, making analysis of available technologies for reactors of Generation III+ and consulting with the world leading companies who make use of the technologies mentioned previously. With international support, activities for the enhancement of nuclear power infrastructure have been conducted in the country – IAEA Integrated Nuclear Infrastructure Review Mission completed its work and a number of proposals and recommendations were made by the experts that would be considered during the future national nuclear power program development and implementation.

The wide range of tasks related to nuclear power development in Kazakhstan requires highly qualified specialists trained in many different areas of science and engineering. Training for specialists is carried out at technical institutions of higher education as well as in special programs concerning the peaceful uses of nuclear energy at universities, research institutes, and educational centers.

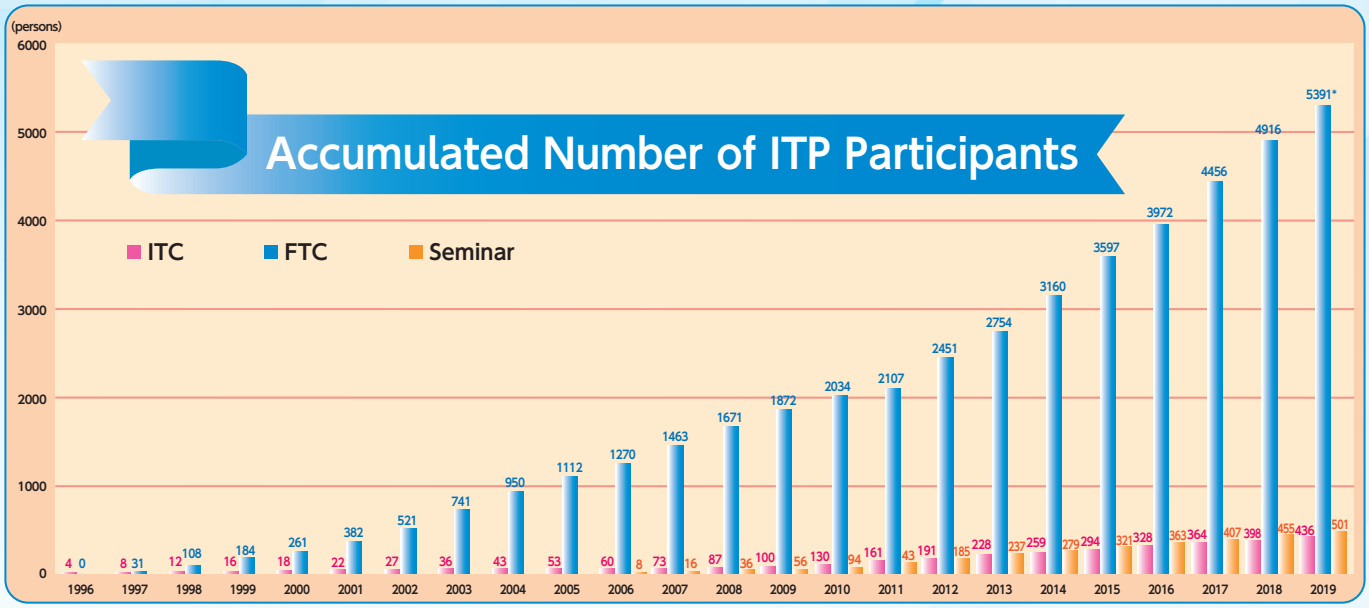
Viet Nam Atomic Energy Institute (VINATOM)

VINATOM is a national research and development institution in the field of atomic energy of Viet Nam. VINATOM's mission is to conduct research and development (R&D) activities on atomic energy, and provide technical support to the government for managing radiation protection and nuclear safety.

At present, VINATOM is focusing on R&D activities to enhance applications of nuclear technology for socio-economic development, especially in nuclear medicine. One of our most important tasks is to establish the Collaborating Center with the IAEA in order to strengthen environmental research using radioisotopes and nuclear technology.

Establishing Research Center for Nuclear Energy Science and Technology (RCNEST) is a big project of Viet Nam in the field of atomic energy. The government of Viet Nam has approved the pre-feasibility study report of RCNEST. In this project, a new research reactor with 10 MW of thermal output is planned to be constructed. The new research reactor will play an important role in producing radioisotopes and radiopharmaceuticals, developing material science and so on.

Besides, applying nuclear technology to industry, agriculture, human health and environment will be promoted in Viet Nam. We hope that nuclear technology development will bring more and more benefits to economic and social development of Viet Nam in the future.



* The expected number of participants. (as of 4 February 2020)

Mr. Satoshi Sakurai
Director
Nuclear Human Resource Development Center (NuHRDeC)
Japan Atomic Energy Agency (JAEA)

Interview with Director of NuHRDeC

Future Prospects of ITP

In 2019, we had a very sorrowful news that Mr. Yukiya Amano, Director General of the International Atomic Energy Agency, passed away. In his lifetime, he said that the IAEA had achieved brilliant success for the last decade under the policy of "Atoms for Peace and Development". We should inherit his wish and continue to assist, the Asian counties to utilize nuclear power for peace and sustainable development from the view point of improving both quality and quantity in human resources by means of ITP.

ITP Counterparts in JFY2019

Country	Organization	Abbreviation
Bangladesh	Bangladesh Atomic Energy Commission	(BAEC)
Indonesia	National Nuclear Energy Agency	(BATAN)
Kazakhstan	National Nuclear Centre of the Republic of Kazakhstan Institute of Nuclear Physics	(NNC RK) (INP)
Malaysia	Malaysian Nuclear Agency	(Nuklear Malaysia)
Mongolia	Nuclear Energy Commission	(NEC)
Philippines	Philippine Nuclear Research Institute	(PNRI)
Saudi Arabia	King Abdullah City for Atomic and Renewable Energy	(KACARE)
Sri Lanka	Sri Lanka Atomic Energy Board	(SLAEB)
Thailand	Thailand Institute of Nuclear Technology	(TINT)
Turkey	Turkish Atomic Energy Authority	(TAEA)
Viet Nam	Viet Nam Atomic Energy Institute	(VINATOM)

An impressive memory

Elementary and junior high school students in Tokai were invited to JAEA and joined the cultural exchange event with ITC participants. The participants enjoyed listening to the students' presentations on Japanese culture in English and after that, introduced their cultures in each group. They enjoyed spending time with local young students very much.

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Japan Atomic Energy Agency

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