Japan-IAEA Joint
Nuclear Energy Management School (2014)

June 9th – June 26th 2014 in Tokyo and Tokai-mura, Japan

Host organizations:
- Japan Nuclear Human Resource Development Network
- Japan Atomic Energy Agency (JAEA)
- The University of Tokyo
- Japan Atomic Industrial Forum (JAIF)
- JAIF International Cooperation Center (JICC)

In cooperation with IAEA
Outline of the School

(Purpose) To provide a unique international educational experience to young professionals from newcomer countries seeking to develop nuclear power plants.

(Target) Officials from policymaking and regulatory body, nuclear engineers and researchers

(History) 2010 The first school in Italy (Trieste)
2012 UAE (Abu Dhabi), Japan (Tokai-mura), Italy (Trieste)
2013 USA (Texas), Japan (Tokyo & Tokai-mura), Italy (Trieste)
2014 Japan (Tokyo & Tokai-mura)

(Contents) [Lectures]: Energy Policy, Nuclear Nonproliferation, International Law, Economy, Environment, Human Resource Development, etc.
[Group Works]: Group discussion on various topics and presentation on the topics
[Facility Visits]: Nuclear plant manufacturers, Hamaoka Nuclear Power Plant and Nuclear reactor facilities of JAEA, etc.

(Significance) ◆ Cooperation with IAEA
◆ International contribution to the NPP-introducing countries
◆ Establishment of international human network
Outline of the School 2014

(Period) June 9th – June 26th 2014, about 3 weeks

(Venue) The University of Tokyo and the Ibaraki Quantum Beam Center

(IAEA participants) Ms. F. Adachi, Mr. J. de Grosbois, seven people in total participated.

(Japanese participants) Relevant officials from Japan Atomic Energy Commission, METI, MEXT, JAEA, Tokyo Univ., JAIF, JICC, etc.

The opening ceremony of the school
Scheme of JN-HRD Net

Government of Japan

Support

Cooperate

JAEA
Nuclear HRD Center

JAIF/
JICC

Hub/Secretariat

Japan Nuclear HRD Network

Universities, Colleges

Public Organizations, Regional Hub

Industries

R&D Organizations, Academic Societies

International Organizations, ENEN, WNU, IAEA, etc.

Nuclear Power Introducing Countries

E&T

Students, Young researchers, Foreigners, etc.
Steering Committee

Network Secretariat (JAEA and JAIF/JICC)

IAEA

Japan-IAEA joint Nuclear Energy Management School

Sub-Working Group (1): Discussion on elementary - high school education (JAIF)

Sub-Working Group (2): Discussion on basic nuclear education at universities and colleges (JAEA)

Sub-Working Group (3): Discussion on support of newly NPP introducing countries (JICC)

Sub-Working Group (4): Discussion on HRD for internationally-minded engineers (JAEA)

Sub-Working Group (5): Discussion on HRD of engineers in business stage (JAIF)

Administration Structure of the School

(NW Steering Committee: • Formulating basic policy and outline)

(NW planning WG: • Planning, discussing and reviewing overall network projects and activities)
Participants visited Hamaoka nuclear power plant as part of facility visits and learned about safety measures and emergency preparedness and response, etc.

The school period was extended from two weeks to three weeks this year, and a lot of time was allocated to group works that participants could exchange their opinions.

In the first half of the school, lectures on atomic energy were mainly given in the University of Tokyo. In the latter half in Tokai-mura, participants visited the facilities to deepen the knowledge obtained through lectures. Finally, participants came back to Tokyo to present their group work results and took the final examination.

Participants had an exchange meeting to cultivate friendship with local junior high students.

In Tokai-mura, participants visited the Ibaraki Science Museum of Atomic Energy to learn PR activities by the local governments as public relations is one of important issues in the nuclear fields.

The School became more international through inviting lecturers from South Korea and China.

We exchanged opinions with participants to establish a network by graduates who could give learning support to participants during the School.
Details of the participants

21(9) Foreign participants (16 countries)
(X) is the number of women

One male participant each from Bangladesh, Thailand, Poland, Lithuania, UAE, Czech, Hungary
One female participant each from Kazakhstan, Finland, China, Malaysia, Indonesia
Turkey (2), Korea (2, (1)), Vietnam (3, (2)),
South Africa (*2, (1))

Electric power company 1, Plant maker 2,
Research institute 3, University 3, Governments 12

Electric power company 5 (1)
Plant maker 3 (*1)
JAEA 2
JAIF *1
Age 26~34 (average 29.4)
*Observer participation

Total 32 (10) participants,(*observers 4)

Greetings from
Mr. A. Bychkov, DDG of IAEA
Orientation explanation from
Mr. J. de Grosbois, IAEA
School overview from
Prof. Uesaka, Tokyo univ.
Career of the participants

① Educational background

② The experience of studying abroad

③ The number of working years in the atomic energy industry
Lectures

The total number of lectures is 35.

Japanese lecturers: Japan Atomic Energy Commission, The University of Tokyo, Kyoto University, Tokyo Institute of Technology, Nuclear Regulation Authority, Nagasaki University, The Institute of Energy Economics, Japan Nuclear Safety Institute, National Institute of Radiological Sciences, Three NPP Manufacturers, Three Electric Power Companies, JAEO, etc.

Experts were invited from various areas related to nuclear energy.

Overseas lecturers: Professor Y. Sun of Tsinghua University, Professor G. Park of KINGS, IAEA Mr. A. Bychkov, Mr. J. de Grosbois, Mr. P. Degnan, Mr. T. Koshy, Mr. H. Khartabil, Ms. A. Starz and so on.
Chairman, Mr. Y. Oka
Japan Atomic Energy Commission
He widely explained atomic energy: the history of the atomic energy technology, the role of atomic energy in energy sector, waste treatment, a new atomic energy technology, safe culture, and the nuclear fuel cycle.

Professor, Y.Sun
Tsinghua University from China
He explained the present energy situation in China. As the energy demand in China increases, nuclear energy will be further required. He talked about the significance of nuclear HRD with the expansion of atomic energy.

Mr. S.Kurata,
Japan Nuclear Safety Institute
He explained the importance of safety culture, methods for enhancing the atomic energy security, leadership, and IAEA's perspective on safety culture.
**Group works:**** Participants were divided into 6 groups by each theme, they performed an intensive study and a constructive argument and had presentations about their results of the investigation and discussion.**

**Objectives:** It contributed to the breeding of international communicative competence by participating in joint activity. The practical teamwork with cross-cultural communication was required as participants had different backgrounds (e.g.) nationality, culture, experience and expertise.

**Theme:**
1. Energy Planning
2. Legal Framework
3. Fuel Cycle and Waste Management
4. Safety, Security and Safeguards
5. Knowledge Management and Human Resource
6. Communicating Radiation Risks and Outreach

The total number of mentors and sub-mentors were 24. Their organizations were as follows:
- The University of Tokyo 7, JAEA 9, HITACHI 3, MHI 1, TOSHIBA 1, Tokyo Electric Power Company 1, Central Research Institute of Electric Power 1 and JICC 1.
### Facilities Visit

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<thead>
<tr>
<th>date</th>
<th>facility name</th>
<th>contents</th>
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<tbody>
<tr>
<td>12-Jun</td>
<td>Hamaoka nuclear power station</td>
<td>tsunami protection wall</td>
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<td>nuclear reactor</td>
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<td>17-Jun</td>
<td>Toshiba Keihin factory</td>
<td>turbine</td>
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<td></td>
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<td>BWR and PWR nuclear plant</td>
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<td></td>
<td></td>
<td>components</td>
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<tr>
<td>18-Jun</td>
<td>Atomic energy Hall</td>
<td>Atomic energy public information</td>
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<td>20-Jun</td>
<td>Hitachi GE seaside factory</td>
<td>BWR nuclear plant components</td>
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<tr>
<td>23-Jun</td>
<td>JAEA Tokai</td>
<td>Nuclear protective facilities</td>
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<td></td>
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<td>Nuclear Safety Research Reactor</td>
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<td>24-Jun</td>
<td>JAEA Ooarai</td>
<td>Experimental fast reactor</td>
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<td>High temperature engineering</td>
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<td>test reactor</td>
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Facility visit at one of nuclear plant manufacturers
Visit to Hamaoka Nuclear Power Plant
① Exhibition Pavilion (a full-scale tsunami protection wall model etc.)
② Tsunami Protection Wall (huge protection wall: height-22m, length-1.6km)
③ No.5 Nuclear Reactor (observing the suspended nuclear reactor from the gallery)
④ Corridor to Learn from Failure (display of the goods damaged in a past accident, lesson obtained from it)
⑤ Emergency Task Force
⑥ Emergency Generation Facilities and Pure Water Tank
⑦ Heavy Industrial Machine Device Training Scenery

Questions for Hamaoka NPP
① About the expenses for safety measures
② Psychological effects of the big and long tsunami protection wall
Questionnaire results

Evaluating results: The sense of accomplishment is high generally.

① Could you attain the general learning target?

② Did you get the atomic energy general knowledge?

③ Did you get the power to show the ability as a member of the teams?

④ Did you get the communication power in English?

⑤ Did you get the international sense enough?

⑥ Did you get the engineer ethic?
Lectures No.1

Collection of photographs

Milestones in Nuclear Power Infrastructure Development
Ms. A. Starz (IAEA)

Role of Research reactors
Mr. K. Yamashita (JAEA)

IAEA’s role on Nuclear Safety and Security
Mr. H. Khartabil (IAEA)

Panel discussion with Mr. Koshy (IAEA) and Japanese NPP manufacturers (Toshiba, Hitachi and MHI)
The social responsibility of the atomic energy scientist
Mr. Suzuki (previous deputy chairperson of AEC)

The lesson learned from Fukushima accident
Mr. Inagaki (Tokyo Electric Power Co.)

Exchange Meeting with the local junior high students

Introduction of my wonderful school and village

Introduction of each country by the participant
Facilities Visit

With a model of turbine in the back

Prefectural Atomic Science Hall for PA

In front of the control panel (JAEA -Experimental Fast Reactor (JOYO))

Nuclear Physical Protection Facilities (JAEA)
Study of the network construction of the graduates (collaboration with Atomic Energy Society of Japan-YGN, AESJ-collaboration Task force, etc.)
Mr. J.Nishiyama Tokyo Inst. of Technology

Peaceful Reception at the University of Tokyo with Lithuanian Vice Minister, Mr. Alex as a guest

With Tokai Village Mayor (Reception in Tokai village)

Speech of JN-HRD Chairman, Mr. Hattori (Farewell party)
Examination and Closing Ceremony

Earnest Looks at The Final Examination

Happy participants receiving her Diploma from School Director

Joyful participants with Diploma and Organizers
Summary

① The visit of Hamaoka Nuclear Power Plant was significant as participants actually observed various safety measures, and the Corridor to Learn from Failure was highly evaluated from IAEA.

② The group work was an effective training to learn the skill of international leadership because participants could build an earnest argument and discussion.

③ The facility visits were a good opportunity for foreign participants as they could see the advanced Japanese nuclear energy technology with their own eyes.

④ The School becomes more international through inviting lecturers from South Korea and China, and IAEA.

⑤ We planned the exchange meeting with local junior high students. Participants were able to talk with them directly in English. For the junior high students, it was a good opportunity to talk with foreigners.

⑥ Japan has greatly contributed to N-HRD for NPP-embarking countries and supported to IAEA’s international activity.

From the above, we were able to give a great opportunity to young talented participants to learn problems concerning atomic energy. The School was well evaluated by various organizations including IAEA. Next year, Japan Nuclear Human Resource Development Network is going to hold the fourth school in Japan.