Contents

Training Course of Nuclear Energy Officials (NEO)

Lectures:

<L-1> Nuclear Power in Japan

- ✓ Efforts for nuclear power generation in Fukui prefecture: History, Accident response and Consensus building
- ✓ The Japanese nuclear regulation law
- ✓ Introduction of the environmental impact assessment law

<L-2> Outline of PWR

- ✓ Types of PWR in Japan
- ✓ Introduction of various equipment: Fuel assembly, Reactor vessel, Cooling system, Steam generator and others
- ✓ Emergency core cooling system

<L-3> Nuclear Regulation in Japan

- ✓ Introduction of Japanese nuclear regulation authority
- ✓ Legislation of nuclear regulation in Japan
- ✓ New safety standards for NPP

<L-4> IAEA Safety Standards

- ✓ Deference in regulations between nuclear and conventional industries
- ✓ IAEA Safety Standard – Safety Fundamentals
- ✓ IAEA Safety Standard – Safety Requirements
- ✓ IAEA Safety Standard – Safety Guides

<L-5> Administration on Nuclear Power in Fukui Prefecture

- ✓ History and background
- ✓ The three principles to tackle with nuclear power of the Fukui Prefecture
- ✓ Energy Research and Development Centralization Plan (ERDCP)

<L-6> Radiation and Impact on the Human Body

- ✓ Effects of radiation: Deterministic and stochastic health effects, Radiation doses exposed in the daily life
- ✓ Type of exposure: Internal and external exposure, acute and chronic exposure and others
- ✓ Measures for food and drinking restriction implemented by the government after the Fukushima Daiichi Nuclear Accident
- ✓ International framework of radiation protection

<L-7> Nuclear Communication with Public

- ✓ Risk communication
- ✓ Examples of public communication failure: Monju1995, Kashiwazaki-Kariwa 2007, Fukushima 2011
- ✓ UK approach to Fukushima accident: As a good example

- ✓ How to regain the credibility toward public

<L-8> Nuclear Non-proliferation and Nuclear Security

- ✓ Nuclear Nonproliferation and Safeguards
- ✓ Nuclear security against various threats
- ✓ Capacity building support activities of ISCN*

* ISCN is a support center aimed at strengthening nuclear security in the Asia.

<L-9> Decommissioning of Nuclear Power Plants and Management of Radioactive Waste

- ✓ Measures of decommissioning dismantling, site release and technology development
- ✓ Decommissioning of NPPs in Japan
- ✓ Disposal system and concept of Low Level Waste (LLW) and High Level Waste (HLW)
- ✓ Deep geological disposal and long-term safety assessment

<L-10> Severe Accident in the Fukushima Daiichi Nuclear Power Plant and Lessons-Learned

- ✓ Outline of the Fukushima Daiichi Nuclear Accident
- ✓ Technical findings
- ✓ Lessons learned from the accident
- ✓ Risk management

<L-11> Nuclear safety culture

- ✓ Concept of Nuclear Safety Culture
- ✓ Past Nuclear Accidents and Safety Culture
- ✓ Actual examples for safety culture developing activity of plant operators
- ✓ Self-check of your safety culture

<L-12> Nuclear Technology for Global Society and Economy

- ✓ Outline of nuclear power; world energy demand and Nuclear fuel cycle
- ✓ International trend of nuclear power
- ✓ Non-power applications of nuclear technology

<L-13> Emergency Preparedness and Response

- ✓ Outline and actual condition of the Great East Japan Earthquake and the Fukushima Daiichi Nuclear Accident
- ✓ Preparedness and response for radiological emergency in Japan
- ✓ Emergency preparedness: Criteria of IAEA and example of Tsuruga city

<L-14> Human Resource Development (HRD) for Nuclear Power

- ✓ HRD for the first NPP
- ✓ The functions of universities and training facilities
- ✓ Role of “Japan Nuclear HRD Network (JN-HRD)”

<L-15> Environmental Impact Assessment for Nuclear Power Plant

- ✓ Examples of procedural steps for NPP construction, its contents and regulatory requirement
- ✓ Requirement of NPP safety examination
- ✓ Illustrative examples of environmental impact assessment carried out at the time of Tsuruga units 3,4 construction

<L-16> Outline of Project Management for Nuclear Power Plant Construction

- ✓ Experience of preparation for the construction of Tsuruga units 3&4: Site selection, Public hearing, and Public relation
- ✓ Environmental impact assessment, Installation permission and Construction plan

<L-17> Outline of Nuclear Fuel Cycle

- ✓ Uranium resource
- ✓ FBR cycle and Monju
- ✓ Outline of nuclear fuel cycle including mining, Enrichment and Reprocessing
- ✓ LWR cycle

Facility Visit:

<V-1> The Wakasa Wan Energy Research Center (WERC)

- ✓ Research facility including accelerator for mutation breeding of plants

<V-2> Mitsubishi Heavy Industries, Ltd. (Kobe Shipyard & Machinery Works)

- ✓ Factory visit of a major vendor company in Japan where main components of nuclear power plant is manufactured

<V-3> Decommissioning Engineering Center Fugen of Japan Atomic Energy Agency (JAEA)

<V-4> Ohi Nuclear Power Station of Kansai Electric Power Company (KEPCO)

<V-5> Science Museum of Atomic Energy AT HOME of the Fukui Atomic Information Center (FAIC)

<V-6> Fukui Prefectural Environmental Radiation Research and Monitoring Center of the Fukui Prefectural Government

<V-7> Nuclear Emergency Response Operation Facility - Off-Site Center of the Nuclear Regulation Authority (NRA)

<V-8> Preparatory Work Field of Units 3 and 4 of the Tsuruga NPP of Japan Atomic Power Company (JAPC)

- ✓ Including tour of the Tsuruga Visitor Center

<V-9> The Prototype Fast Breeder Reactor Monju (JAEA)

Discussion:

<Discussion-1> Strategy and challenge of nuclear energy development in my country

<Discussion-2> Leadership on nuclear safety

<Discussion-3> Challenges of Asian countries confronting nuclear power programs

Country Report

On the Discussion-1, participants are required to make 10 minutes presentation on “Strategy and challenge of nuclear energy development in my country”.

Participants are requested to prepare a presentation that includes as following contents;

- ✓ Electric power situation and challenges in your country
- ✓ Nuclear power situation in your country

- ✓ You and your Institution's role for nuclear power
- ✓ Motivation to participate in this training course
- ✓ Other necessary contents as appropriate