

Japan

Kiyoshi Yamauchi, ANS Japan Local Section and IC member, sent the following report from Japan:

1. Energy Policy

(1) Energy Basic Plan

The revised “Energy Basic Plan” was approved by the Cabinet on April 11, 2014, where it was emphasized that restoration and reconstruction of Fukushima would be the starting point of nuclear energy and it was expressed that use of nuclear energy should place first priority on the pursuit of safety enhancement.

It was also stated that nuclear energy would be one of the important base load power contributing to ensure the stability of the energy supply and demand structure and dependence on nuclear power generation would be reduced as much as reasonably possible by energy saving, introduction of renewable energy as well as improvement in thermal efficiency of fossil power.

Concerning nuclear fuel cycle issues, it was stated that the Government would take leadership to find a solution for High Level Radioactive Waste (HLRW) final disposal, would maintain reprocessing and LWR-MOX project in order to assure firm future outlook on energy security and HLRW management.

(2) Ministry of Economy, Trade and Industry (METI) Activities

The Ministry of Economy, Trade and Industry (METI) started to discuss how to realize the above energy basic plan and formed two working groups under the Nuclear Subcommittee. One was “Radioactive Waste Working Group”, where the final disposal of HLRW and TRU would be discussed. The revised basic policy proposed by the WG was approved by the Cabinet on May 22, 2015 and the Ministerial Meeting decided this policy on December 18, 2015.

The other WG named “Safety enhancement / technology/ human resources Working Group” proposed safety enhancement means on May 27, 2015. Safety technology and human resources roadmap was also published on June 16, 2015 and their rolling activity has been continuing.

Further, “Energy demand/supply prospectus Subcommittee” was also formulated.

Receiving the investigation results of this Subcommittee, METI decided “Long Term Energy Demand/Supply Prospectus” based on “The Energy Basic Plan”. The desirable “power best mix” in 2,030, as electric power base, features 20-22 % of nuclear, down from about 30 % before “the Great earthquake disaster” of 2011, and 22-24% of renewable energy in order to contribute to CO2 reduction of 26% from 2013.

2. Nuclear Regulation

(1) Nuclear Regulatory Authority

Two of the five original NRA commissioners, Kunihiro Shimazaki (seismologist) and Kenzo Oshima (former ambassador to the United Nations), expired their tenure of two years in the end of September 2014. The Diet approved two new commissioners in June 2014. The new commissioners are Professor Satoru Tanaka of nuclear engineering at Tokyo University, the former Chairman of the Atomic Energy Society of Japan, and Professor Akira Ishiwatari at Tohoku University, the former chairman of the geological society of Japan. They have their term of 5 years. Two of the remaining commissioners, Toyoshi Fuketa (nuclear engineering) and Kayoko Nakamura (radiologist), expired their tenure of three years in the end of September 2015. Toyoshi Fuketa was re-assigned and Kayoko Nakamura was replaced by Nobuhiko Ban (Tokyo Healthcare University). Their 5-year term will expire at the end of September 2020. The 5-year term of Chairman Shunichi Tanaka (physicist) will expire at the end of September 2017.

Commissioners realize the importance of communication with industries and they started dialogue with CEOs of Electric Power Companies. So far, Commissioners executed dialogue with CEOs of 9 Electric Power Companies owning nuclear plants. The second-round dialogue has been started on February 2016.

(2) Fracture Zone Issue

Concerning the issue of fracture zones at nuclear site, “A Knowledgeable Specialist Subcommittee” formed by the NRA, concluded in March 2015 that fracture zones at Tsuruga-site and Higashidori-site should be treated as active faults since the Subcommittee could not deny that these would not be active faults from the view point of geology. Final decision will be made in the plant re-start application review. Concerning Mihama-site, Subcommittee reported to NRA on September 2015 that the possibility of activity after Late Pleistocene would be small, whereas they could not deny that the fault at Shika site would not be active on July 2015.

(3) Monju (prototype FBR) Issue

NRA issued a recommendation about Monju (Prototype FBR) on Nov. 13, 2015. NRA recommended that an organization having the capability to perform safety power operation of Monju in place of JAEA (Japan Atomic Energy Agency) should be identified within half year and that the existences of Monju should be reviewed unless an alternate organization be identified. MEXT (Ministry of Education, Culture, Sports, Science and Technology) formed a Committee how to respond to the above. The Committee started on Feb. 19, 2016.

3. Status of LWRs Restart

The new safety regulation for commercial LWRs was enforced in July 2013, and applications for NRA review on conformity with new safety standard for restart were started. Applications as of February 2016 are; 16 sites 26 reactors (16 PWR, 4ABWR, 6 BWR).

Sendai NPP unit 1 & 2, Takahama NPP Unit 3&4, and Ikata NPP unit 3 obtained design safety approval on conformity with new safety standard from NRA. Kyushu, Kansai and Shikoku Electric Power Company started necessary procedures for restart such as application for operation license, application for construction plan for restart and communication with local government/local communities etc. In September 2015, Sendai unit 1 started commercial operation. This is the first unit to be restarted after the “Great Earthquake” in 2011. Sendai unit 2 started commercial operation in November 2015 and Takahama unit 3 started commercial operation in January 2016.

Applicant	NPP	Type	Commercial Operation	Application
Hokkaido	Tomari 1	PWR	1989	July, 2013
	Tomari 2	PWR	1991	
	Tomari 3	PWR	2009	
Kansai	Ohi 3	PWR	1991	July, 2013
	Ohi 4	PWR	1993	
	Mihama 3	PWR	1976	March, 2015
	Takahama1	PWR	1974	March, 2015
	Takahama2	PWR	1975	
	Takahama 3	PWR	1985	Restarted (January 2016) but shut down (March 2016) *
	Takahama 4	PWR	1985	Restart, Jun. 2017
Shikoku	Ikata 3	PWR	1994	Approval obtained (February 2015)
Kyushu	Sendai 1	PWR	1984	Restarted (September, 2015)
	Sendai 2	PWR	1985	Restarted (November, 2015)

	Genkai 3	PWR	1994	July, 2013
	Genkai 4	PWR	1997	
Tokyo	Kashiwazaki-Kariwa 6	ABWR	1996	September, 2013
	Kashiwazaki-Kariwa 7	ABWR	1997	
Chugoku	Shimane 2	BWR	1989	December, 2013
Tohoku	Onagawa 2	BWR	1995	December, 2013
	Higashidori 1	BWR	2005	June, 2014
Chubu	Hamaoka 3	BWR	1987	June, 2015
	Hamaoka 4	BWR	1993	February, 2014
Hokuriku	Shika 2	ABWR	2006	August, 2014
JAPC	Tokai 2	BWR	1978	May, 2014
	Tsuruga 2	PWR	1987	November, 2015
EPDC	Ohma (Full Mox)	ABWR	Not yet	December, 2014

*: Takahama unit 3 was shut down due to Ohtsu District Court Judgement on March 10, 2016.

4. Juridical Issue

(1) Fukui District Court issued provisional disposition to prevent the restart of Takahama Unit3&4 on April 14, 2015, stating that the current NRA requirement was not enough and the safety of Takahama Unit 3&4 would not be fully assured. Kansai Electric Power Company stated strong objection to this disposition. Chairman Tanaka of NRA also stated that this disposition was based on errors in finding fact. The Cabinet stated that they would not change their policy to proceed to restart the plants as far as the safety would be assured. Fukui District Court in the objection trial cancelled the above disposition on December 25, 2015 and Takahama unit 3 was restarted on January 29, 2016. However, on March 9, 2016 Ohtsu District court, which area is adjacent to Fukui prefecture, issued provisional disposition to prevent the restart and Takahama unit 3, which was once restarted, turned to shutdown on March 10, 2016.

(2) On April 22, 2015, Kagoshima District Court rejected a request by a group of local anti-nuclear residents for a temporary injunction prohibiting the restart of the Sendai 1&2 of Kyushu Electric Power Company, due to “no irrationalities” in the NRA new regulatory standards, in the context of the latest scientific findings. Although anti-nuclear residents raised immediate appeal against to this decision, Fukuoka High Court rejected this request in the Immediate Appeal Court on April 6, 2016.

5. Activities of the Nuclear Risk Research Center (NRRC)

(1) NRRC was formed in the Central Research Institute of Electric Power Industry in

October 1, 2014. The NRRC is aimed for research and development of the comprehensive risk assessment utilizing PRA and other probabilistic approach. This is coming from the understanding that in light of the Fukushima Daiichi Nuclear Power Station Accident, it is vital for nuclear industries to continually strive for even higher levels of safety, to go further than simply meeting regulatory requirements, and to pursue sustained commitment to reduce nuclear risk. Dr. George Apostolakis, the former NRC Commissioner is the Head and Dr. Richard A. Meserve, the former NRC Chairman is the Executive Advisor.

(2) Ikata unit 3 of Shikoku Electric Power Company was selected as a pilot plant. State of practice of PRA technologies has been introduced in their level 1, 2 PRA (internal events, seismic, tsunami). Technical Advisory Committee has been held every three months.

(3) Dr. Apostolakis also started to see CEOs of Electric Power Companies and to visit plant sites in order to convince plant site employees of the importance of Risk Informed Management. This is still continuing.

(4) On September 2, 2015, the first Symposium by NRRC was held. “What is Risk Informed Management” and “what is expected for the NRRC” were discussed. Presenters were from the NRA, Local Government, Massmedia, Julist and so forth.

6.Activities of AESJ

In this report, Fukushima Daiichi Accident related activities of AESJ are focused as follows. These activities were also presented in the special session of AESJ Annual Meeting at Tohoku University in March 2016

(1) “AESJ Investigation Committee on Fukushima Daiichi Nuclear Accident“ was organized in June 2012 and issued a report writing following proposals for preventing nuclear disasters in future in March 2014.

- Clarification of safety goal and systematization
- Deepening the Defense in Depth concept
- Enhancement of coping capabilities with external events
- Enhancement of Organizational activities such as nuclear society, industries, and regulatory
- Utilization of Probabilistic Risk Assessment (PRA), High Performance Computer (HPC) technology
- Enhancement of the foundation of nuclear safety research
- Enhancement of international cooperation
- Human resource development

(2) “AESJ Fukushima Recovery Project“ was also organized in June 2012 in order to support the decontamination activities and analysis / advise on radiological effects, which

are essential issues for the local people. As communication activities, seven symposiums have been held so far.

(3) “AESJ Fukushima Daiichi Decommissioning Committee“ was organized in June 2014 and technical investigation for decommissioning has been performed. Public symposium was held in March 2016.

(4) Each subcommittee or special committee in AESJ has been investigating in their own fields on the above issues and Standard Committee has been working to issue various standards.

(5) “AESJ Special Committee on External Natural Phenomena“ was organized on September 26, 2014, asking for participation of specialists in the area such as seismology, geotechnical engineering, and civil engineering. This committee was endorsed by the AESJ position paper named “The necessity of the safety review of the nuclear plants based on the scientific and rational perspectives and information sharing” issued on November 11, 2014. This recognition came from the fact that Fukushima Daiichi experienced the earthquake ground motion and tsunami height above the design basis. This committee focused the discussion on fault displacement and intermediate result was reported in the special session of the AESJ Annual Meeting in March 2016 and the final report is expected to be issued in October 2016.

7. Activities of ANS Japan Local Section

(1) Local Section Executive Committee meetings were held five times in 2015 as scheduled.

(2) Four Lecture Meetings for the members were held as follows in order to foster exchange of information on recent global nuclear technology and industrial activities.

July 14, 2015: “Regaining Trust and Building Confidence Towards a Comprehensive Civil Nuclear Society“ (Frank Winter, Amec Foster Wheeler)

Sept.9, 2015: “Modeling Analysis of World Energy and Environment“
(Yasumasa Fujii, University of Tokyo)

Dec.18, 2015: “Status of Radioactive Waste Disposal in Foreign Countries“
(Yusuke Inagaki, Radioactive Waste Management Funding and Research Center)

March 27, 2016: “The French Nuclear Power Sector: Current Status and Future Trends“ (Sunil Felix, France Embassy in Japan)

(3) General meetings for members were held in the AESJ Annual Meeting and Fall Meeting every year.

(4) Activities report was sent to ANS Local Section Committee on Oct.19, 2015.

8. Recent status of Fukushima Daiichi NPP on-site restoration

(1) Road Map

“The Intermediate and Long Term Road Map for Fukushima Decommissioning and Contaminated Water Removal” originally issued on December 2011, revised on June 2013, was revised again on June 2015, reflecting the progress of the recovery work at the site, comments from the Fukushima Council, and the strategic study by “Nuclear Damage Compensation and Decommissioning Facilitation Corporation” (NDF). Major points of this road map are “emphasis on risk reduction rather than speed”, “explicit schedule of near time frame” and “keeping the same target as 30-40 years later for final target of decommissioning”.

(2) Workers environment

Almost 7000 workers are working at the site and radioactive environment has been greatly improved. Currently, an average radiation is between 0.6~0.7mSv and around 7mSv per year. An office was prepared near Daiichi site and meal can be taken there and place for rest are provided.

(3) Groundwater Bypass

“Fukushima Daiichi D&D Engineering Company” started groundwater bypass operation at Fukushima Daiichi NPS. Pump up of groundwater started in April, 2014 and water drain operation started May, 2014. Groundwater is pumped up before entering the site, is stored in storage tanks for detection of radioactivity, and will be drained to the sea if radioactivity is below the operation target level. The target radioactivity level of groundwater to be drained is under 1 Bq/l for ^{134}Cs and ^{137}Cs , under 5 Bq/l for beta emitters, under 1500 Bq/l for tritium. Concerning the water in the buildings, total volume has been reduced and activities to make frozen ground have been successful. The amount of radioactive materials will be reduced to half in 2018 and treatment of the water will be completed in 2020.

(4) Fuel Debris Removal

NDF has been working the strategy and methods how to remove fuel debris. International Research Institute for Nuclear Decommissioning (IRID) has been doing R&D work in these areas. Japan Atomic Energy Agency (JAEA) will open the mock-up facility in April 2016.