

Japan

Kiyoshi Yamauchi, ANS Japan Local Section and IC member, sent the following report from Japan, which I have edited slightly:

1. Energy Policy and Activities of Ministry of Economy, Trade and Industry (METI)

The revised “Energy Basic Plan”, approved by the Cabinet on April 11, 2014, emphasized that nuclear energy would be one of the important base load power and that dependency on nuclear power generation would be reduced as much as reasonably possible. Consistent with the above energy basic plan, METI, decided the desirable “power best mix” in 2,030, as electric power base, on July 2015, features 20-22 % of nuclear, down from about 30 % before “the Great earthquake disaster” of 2011. On August 9, 2017, “Strategic Policy Committee” of the “Advisory Committee for Natural Resource and Energy to METI” started to discuss the revision of the “Energy Basic Plan”. In the discussion, it was pointed out that national policy on nuclear should be clearly shown and discussion on the necessity of new built/replace should be conducted. Also, METI newly established “Round Table for Studying Energy Situations” aiming to hold discussion on future directions of long-term energy policies based on the forecast for the circumstances surrounding energy in 2050. The first meeting was held on August 30, 2017.

2. Nuclear Regulation

(1) Nuclear Regulatory Authority

Toyoshi Fuketa, current Commissioner, succeeded the Chairman position on September 22, 2017.

(2) Fracture Zone Issue

No specific action by the “Knowledgeable Specialist Sub-Committee” was undertaken in this period. The final decision on the fracture zones at Tsuruga-site, Higashidori-site and Shika-site, which were judged as active faults by this Sub-Committee, will be made in the plant re-start application review.

(3) Monju (prototype FBR) Issue

Based on the Government decision to decommission the Monju, whereas the promotion of fuel cycle and development of fast reactor be pursued, on Dec. 21, 2016, Government established “Monju Decommissioning Promotion Team” on May 25, 2017 in order to promote the decommissioning of Monju safely and stably. First meeting of “Monju Decommissioning Review Experts” in the MEXT (Ministry of Education, Culture, Sports, Science and Technology) was held on May 25, 2017 in order to advise the activities of the

“Monju Decommissioning Promotion Team” and JAEA.

(4) Review of Current Inspection System

In order to respond to the IAEA Integrated regulatory Review Service (IRRS) held in January 2016, the NRA formed “Study Team to Review the Current Inspection System” on May 11, 2016. Nuclear Reactor Regulation Law was revised to incorporate the concept of “Reactor Oversight Process (ROP)” and was issued on April 14, 2017. Total enforcement is within 3 years and trial operation is expected before that. Discussion on making detailed rule has been started and detailed rule and guide for trial use will be issued next year.

(5) Geological Scientific Characteristic Map for high level radioactive waste disposal

METI has been studying the geological mechanism of the high level radioactive waste disposal and scientific characteristics of each area in Japan and published the “Scientific Characteristic Map” in July 2017, to be used for the selection of the potential disposal site. As shown below, green area is suitable whereas yellow area is not.

3. Status of LWRs Restart & Plant Life Extension

(1) Applications of restart for NRA review on conformity with new safety regulation, enforced in July 2013, were started. Applications as of August 2017 are still 26 reactors at 16 sites (16 PWR, 4ABWR, 6 BWR).

(2) Most recently, Ohi 3&4 granted approval of restart in May 2017 and total number of approved plants are 11, all of which are PWRs. 5 plants among 11 approved plants have already been restarted. Concerning BWRs, Kashiwazaki-Kariha 6&7 is expected to be approved in this September 2017.

(3) Concerning the NRA review of installation plan of Special Mitigating Means for Specific Major Events such as airplane crash, Takahama 3&4 and Sendai 1&2 already granted approval, and Ikata 3 will grant approval soon.

(4) Plant life extension approval was granted for Takahama 1 & 2 in June 2016 and Mihama-3 in November 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	Approval Obtained
	Ohi 4	PWR	1993	(May, 2017)
	Mihama 3	PWR	1976	Approval Obtained (November ,2016) (Life Extension Approved, November 2016)
	Takahama1	PWR	1974	Approval Obtained (June ,2016) (Life Extension Approved, June 2016)
	Takahama2	PWR	1975	
	Takahama 3	PWR	1985	Restarted (July, 2017) *
	Takahama 4	PWR	1985	Restart, Jun. 2017
Shikoku	Ikata 3	PWR	1994	Restarted (September, 2016)
Kyushu	Sendai 1	PWR	1984	Restarted (September, 2015)
	Sendai 2	PWR	1985	Restarted (November, 2015)
	Genkai 3	PWR	1994	Approval Obtained (January, 2017)
	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

* Although Takahama unit 3 was shut down due to Otsu District Court Judgement on March 10, 2016, High Court approved KEPCO's appeal on pertaining to temporary restarting on March 28, 2017. Takahama Unit3 was restarted.

4. Juridical Issue (Related to the plants already restarted)

(1) Takahama Unit 3&4

After restart of Takahama Unit 3, Otsu District Court issued provisional disposition to prevent the restart and Takahama unit 3 turned to shutdown on March 10, 2016. After Otsu District Court rejected KEPCO's objection, Osaka High Court approved KEPCO's appeal pertaining to temporary restart and Takahama Unit3 and Unit 4 were restarted in July 2017 and June 2017 respectively.

(2) Sendai Unit 1&2

On April 22, 2015, Kagoshima District Court rejected a request by a group of local anti-nuclear residents for a temporary injunction to prohibit the restart of the Sendai 1&2 of Kyushu Electric Power Company. Sendai Unit1 and Unit 2 were restarted in September 2015 and November 2015 respectively. After Fukuoka High Court rejected the request from anti-nuclear residents against above decision, they requested to Fukuoka District Court to cancel the approval of reactor permit on June 10, 2016.

(3) Ikata Unit 3

Temporary injunction to prohibit the restart of the Ikata Unit 3 by anti-nuclear group was raised to Hiroshima District Court on March 11, 2016, to Matsuyama District Court on May 13, 2016 and to Oita District Court on June 24, 2016. Ikata Unit3 was restarted in September 2016. On March 30, 2017, Hiroshima District Court rejected the injunction request.

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

(1) NRRC was formed in the Central Research Institute of Electric Power Industry (CRIEPI) on October 1, 2014 for R&D of the comprehensive risk assessment utilizing PRA based on the lessons learned from Fukushima Daiichi Accident. Development of “Good PRA model” and “pilot plant studies” have been continued.

(2) CRIEPI held the “Annual Research Report Symposium 2017” focused on NRRC activities on May 18, 2017 as a disclosure process. NRRC held the “Workshop on Risk Informed Decision Making (RIDM)”, on June 1&2, 2017, introducing US actual field experiences including successful cases and unsuccessful cases by US industrial experts. Discussion among attendees from Japanese electric companies on how to implement RIDM in Japan was conducted.

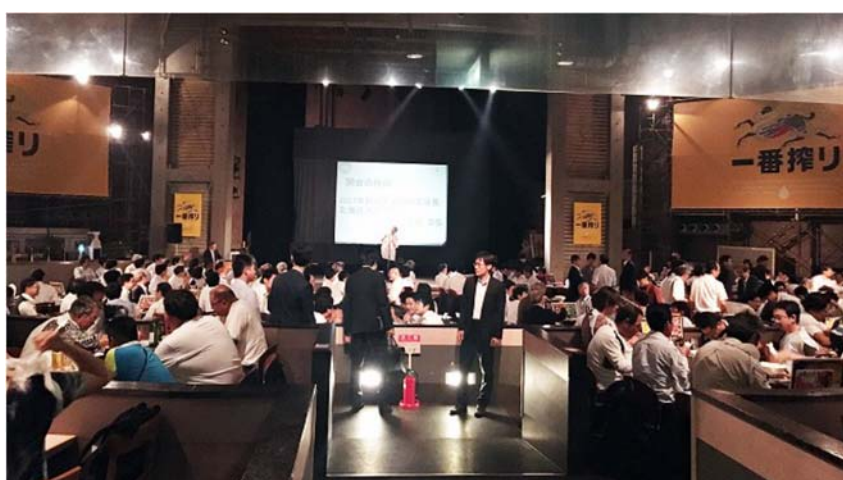
6. Activities of Atomic Energy Society of Japan (AESJ) (<http://www.aesj.or.jp/en/>)

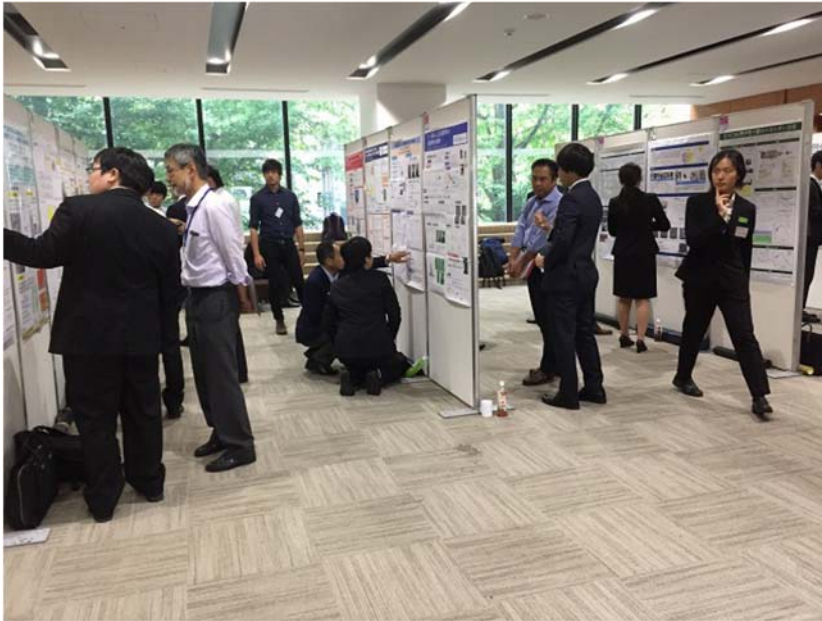
ANS and Atomic Energy Society of Japan (AESJ) have established a bilateral agreement in 1999 to provide a mutual cooperation and since then AESJ is one of the so-called “sister-societies” of ANS.

(1) Annual Conference

2017 Autumn Annual Meeting was held at Hokkaido University in Sapporo-city, on September 13-15, 2017, where many special plenaries and sessions, such as post-

Fukushima session, were organized and implemented successfully under cooperation with the Local Section of AESJ and a local organizing committee. More than 1700 people attended including many students. This is a record in the recent 17 years. Attached are pictures of Fukushima-Daiichi Session, Poster Session, Connecting Network Session and Traditional Dancing by Hokkaido University Students.





(2) Fukushima Daiichi Accident related activity

“Fukushima Decommissioning Committee“ of AESJ continues a scientific advice activity for the decommissioning of the Fukushima Daiichi plant and a follow-up activity suggested in “AESJ Fukushima Daiichi Nuclear Accident Report“.

This committee held a symposium on Fukushima Daiichi Decommissioning on March 11, 2017 in Tokyo. Also, “Fukushima Special Project“ of AESJ has continued activities such as symposium or a support to Fukushima resident in conjunction with both domestic and international organizations. This Project held the symposium on the “Consumers questions on food and sightseeing in the Fukushima area“ in Tokyo on March 26, 2017. Besides, several residential talk forums in Fukushima area, support activities for decontamination facilitation, and making suggestions for middle-long term measures for environmental remedy activities have been continued.

(3) Symposium co-hosted by Science Council of Japan.

“Nuclear Symposium focused on Fukushima Restoration“ was held on June 8, 2017 and the “Safety Engineering Symposium“ was held on July 5-7, 2017.



(4) Investigation on the evaluation of potential faults

AESJ formed “Advisory Committee on Seismic Faults Displacement and Engineering Risk Assessment” with Many experts from other academic societies such as geologies, earthquakes, civil engineering. Final report was issued in March 2017.

(5) International Conferences (AESJ hosted)

“International Congress on Advances in Nuclear Power Plants (ICAPP 2017)”, was held on April 24-28, 2017 at Fukui and Kyoto. “9th International Symposium on Radiation Safety and Detection Technology” was held on July 10-14,2017.

(6) W. Bennett Lewis Award

Mr. Kazuaki Matsui, AESJ was honorably given “W. Bennett Lewis Award 2017”. This award is established by the Decommissioning & Environmental Sciences Division (DESD) to recognize persons who have made major lifetime contributions in nuclear science and engineering towards minimizing environmental footprint, attaining long-term global sustainable energy and development, and having shown great foresight in elucidating these goals as recorded in archival publications.



*Monday, June 12, 2017 Hyatt Regency San Francisco, San Francisco, CA
(Kazuaki Matsui fourth from the right)*

Japan Section (<http://aesj.or.jp/kaigai/en/index.html>)

ANS Japan Section is managed by the International Nuclear Information Network (ININ) of AESJ.

- (1) Two lecture meetings by invited lecturers were as follows;
 - o "Planning, Information and Knowledge Management activity at IAEA" by Wei Huang, Director of Planning, Information and Knowledge Management Department of Nuclear Energy, IAEA on July 18, 2017.
 - o "Current Energy Policy and Nuclear Energy in USA" by Ross Matzkin-Briger, Energie Attache of Embassy of USA in Japan and Director of US DOE Japan Office, on September 14, 2017. Please find attached picture of his presentation.
- (2) Semi-annual General Meeting for Section members was held in the AESJ's Autumn Meeting on September 14, 2017 at Hokkaido University.

8. Recent Status of Fukushima Daiichi NPP Restoration

(1) Road Map and Technical Strategic Plan

"The Intermediate and Long Term Road Map for Fukushima Decommissioning and Contaminated Water Removal", originally issued on December 2011, was revised on June 12, 2015. In order to provide the technical basis to the above road map, NDF issued "The

Technical Strategic Plan 2015” on April 30, 2015 and revised this as “The Technical Strategic Plan 2016” on July 23, 2016. “The Technical Strategic Plan 2017” was just issued on August 31, 2017, where the approach to take out the fuel debris is determined as “access from the lateral direction in the air” whereas the original idea was “access from the top direction in the water”.



(2) Means for Contaminated Water Treatment

Contaminated water has been increased due to underground water flow into the reactor building where fuel debris exists. As to the efforts to reduce the amount of underground water, the extracting of contaminated water and the blockage of the Sea Water piping trench was completed in March 2017. A sater shielding wall at the sea side was constructed in October 2015. Partial freezing operation of water shielding wall at the mountain side has been started on March 2016 and total operation is expected soon.

(3) Fuel Removal from Spent Fuel Pit

All spent fuel in Unit 4 was already removed by December 22, 2014. As for Unit 1, the reactor building cover dismantle has been started in May 2015 and removal of pillars and beams has been started from March 2017. As for Unit 3, removal of large rubble in the spent fuel pit was completed this year.

(4) Investigation inside the containment vessel (PCV)

Investigation by camera inside the PCV of Unit 2 and Unit 1 were conducted in February 2017 and in March 2017 respectively. These were the first trial of taking pictures by camera inside the PCV. Investigation by underwater camera inside the PCV of Unit 3 was conducted in July 2017. This was the first trial of taking pictures of the lower head of reactor vessel. Multiple structures were destroyed and some of the support bracket were lost. This information could be important to decide the method to take out the fuel debris.

(5) Research and Development

The International Research Institute for Nuclear Decommissioning (IRID) has been working for R&D of decommissioning of Fukushima Daiich using the METI fund in accordance with the Road Map and Technical Strategic Plan. Major areas are as follows;

- Investigation technology inside PCV and RPV
- Monitoring inside PCV and RPV
- Technology and engineering method of fuel debris removal
- Integrity of structures such as reactor building and reactor support structures.