Provisional Translation

Japan Atomic Energy Agency's Decommissioning of R&D Facilities (opinion)

The Japan Atomic Energy Commission
January 29, 2019

The Japan Atomic Energy Agency (JAEA) considered the integration and prioritization of its R&D facilities, and classified them as either to be kept in use or decommissioned. JAEA formulated in April 2017 the Medium- and Long-Term Management Plan for its facilities covering FY2017–28 (the fourth medium- to long-term goal period) [Reference 1]. In addition, JAEA published a back-end roadmap on December 26, 2018 [Reference 2].

Decommissioning of R&D facilities was also discussed by the Council for Science and Technology, Research Plan Assessment Committee, and the Atomic Energy Science and Technology Committee of the Ministry of Education, Culture, Sports, Science and Technology. The relevant interim report was published in April 2018 [Reference 3].

Among the facilities to be decommissioned, those of large scale were built for R&D purposes as national projects. Decommissioning of the Fugen Advanced Thermal Reactor, approved by the government in February 2008, is in progress. Monju decommissioning was determined at the end of 2016 and is in progress after formal approval in March 2018. Decommissioning of the Tokai Reprocessing Plant is also being implemented with approval of the authorities given in June 2018. Fugen decommissioning is to be completed in 2033, while Monju and the Tokai Reprocessing Plant are to be decommissioned in about 30 years and 70 years respectively. In addition to engaging in such large-scale and long-term decommissioning, JAEA is going to decommission a large number of various facilities which include research reactors and experimental facilities for nuclear fuel or irradiated materials, that leads to unique features in JAEA's decommissioning.

Based on the above situation, the Japan Atomic Energy Commission presents the following opinions about the JAEA's decommissioning measures to be undertaken.

Meanwhile, the Commission will follow up the progress of the JAEA's decommissioning and its responses to those opinions where appropriate.

1. Goal of decommissioning

-Decommissioning is intended to reduce long-term risks surrounding nuclear energy facilities to be decommissioned and is to be steadily implemented under the current generation's responsibility.

2. Securing decommissioning budget

-In order to facilitate decommissioning of R&D facilities utilized for our nuclear energy use, a long-term budget should be sustainably secured. In Europe and the United States, decommissioning of facilities used under the national nuclear energy plans (legacy facilities), such as those used for R&D and nuclear weapons development, is backed up by a long-term sustainable national budget. JAEA's decommissioning program should also be implemented with such a long-term sustainable national budget. The supervisory ministry should work to secure such a budget.

-While setting the smooth implementation of decommissioning under a responsibility which is clearly separate from the implementation of JAEA's other duties, the supervisory ministry and JAEA should build and operate a management system that will help JAEA achieve the overall goal.

-JAEA should make an effort to reduce decommissioning costs by implementing rational decommissioning measures while securing safety as a prerequisite.

3. Decommission planning, system construction for implementation, and responsible operation

-Facing the implementation of decommissioning, JAEA is to design a comprehensive decommissioning plan for each facility, utilizing lessons from prior cases overseas. Clarification of risks by using calculation codes and identification of how to deal with those risks are required before formulating the plan. In addition, the final conditions after completing the decommissioning should be clarified for each facility and aimed at as a goal.

-For the implementation of decommissioning, JAEA is to check the facility history to grasp potential risks in advance. Besides, JAEA is to learn from decommissioning experiences in similar facilities in and outside Japan, and formulate procedures for decommissioning with Japan's particularities taken into account. It is impossible to eliminate all unknown factors from the decommissioning plan at the start of

decommissioning.

-JAEA is to build a mechanism that will facilitate long-term decommissioning over multiple fiscal years with Japan's specific budget system, JAEA's characteristics and its constraints taken into account.

-JAEA, by dividing the whole decommissioning plan into several steps, should clarify works in each step, the targets to be achieved and their timelines.

-For the implementation of decommissioning, JAEA should prepare a table that overviews the whole plan for facilities decommissioning, which allows the management to be kept informed of the progress, to conduct periodic reviews, and to reflect the review results in decommissioning.

-JAEA and decommissioning operators, when implementing decommissioning, should define a clear demarcation of risks to be borne by each party. By specifying the risk demarcation in a contract, for example, each side's responsibility and authority should be clarified. The targets to be achieved should also be clear before moving on.

-In France, decommissioning is implemented soon after a target facility is stopped its operation. This is intended to maintain the experience of the facility construction and operation, and to eliminate the cost for monitoring and maintaining the facility. We should draw lessons from France.

4. Communication with regulatory bodies

-Facing the implementation of decommissioning, JAEA should prepare keeping in touch with regulatory bodies beforehand, so that the regulatory measures relevant to decommissioning will be implemented smoothly.

5. Securing safety in a rational manner and avoiding delay in plan implementation

-For the implementation of decommissioning, JAEA is to secure safety in a rational manner in compliance with the prescribed rules.

-Delays in plan will not only hamper risk reduction but also increase costs. JAEA is to identify risks that could delay decommissioning, and incorporate measures against them in the decommissioning plan.

-In project management for decommissioning, JAEA is to prioritize important tasks and change the priority order where appropriate, so that the work will be completed by the original deadlines and within the established budget.

-JAEA should establish a system where responsibility is defined for problems that could occur in a target decommissioning facility, and prepare measures, in advance, that prevent delays in progress of decommissioning processes in other target facilities.

-Delays in decommissioning derived from minor troubles that are not against the rules and regulations will not only increase costs but also hamper risk reduction. JAEA is to work out measures for preventing their recurrence as the organization responsible for the implementation of decommissioning. It is important to utilize such lessons for implementing decommissioning, and JAEA is to develop such an environment in cooperation with the supervisory ministry.

-For planning and the implementation of decommissioning, JAEA is to conduct external experts' peer reviews periodically to commit itself to the reasonable and efficient implementation of decommissioning without fail.

6. Sharing of findings and information about decommissioning

-Japan is going through decommissioning of the TEPCO Fukushima Daiichi Nuclear Power Station and commercial nuclear energy reactors as well as R&D facilities. JAEA should share information and lessons gathered from overseas among those who are engaged in decommissioning in Japan, and incorporate such findings in its decommissioning activities by creating methods that enable it.

-JAEA should make the most of the "decommissioning and radioactive waste" platform proposed by the Japan Atomic Energy Commission (Reference 4, 5, and 6)

7. Human resources development and knowledge inheritance

-For the implementation of decommissioning, JAEA is to gather information necessary for decommissioning from operational management experiences in target facilities, and utilize it for decommissioning. In addition to facilitating the inheritance of such experience and knowledge, JAEA should prepare measures for human resources development.

-When facility operators are engaged in decommissioning, JAEA is to educate them on

motivation in switching to decommissioning from operation.

8. Waste disposal

-In order to facilitate decommissioning, JAEA is to consider and prepare comprehensive waste disposal measures for a variety of waste generated from decommissioning, along with the entire decommissioning plan.

-For waste disposal, JAEA should take necessary measures to respond to relevant bodies including the regulatory authority in an appropriate manner, by considering the clearance system for waste originally not covered by the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors, as well as treatment of uranium waste.

-JAEA is required to play a leading role in the disposal of R&D-related radioactive waste. It is essential, therefore, to secure disposal sites for the smooth implementation of decommissioning.

-JAEA should make a plan to process radioactive waste generated from decommissioning, to substances suited to disposal sites.

-It is imminent that JAEA is to enhance the capacity of storage facilities to store waste generated from decommissioning, so as not to hinder smooth decommissioning due to delays in the construction of disposal sites.

9. Communication

-JAEA is required to keep in touch with stakeholders, including the residents who may be influenced by decommissioning as well as the general public, to build trust with them over decommissioning activities.

-JAEA should increase the transparency about the decommissioning program and create and publish information relating to the basis and policy of decommissioning in its own efforts in order to build communication infrastructure. JAEA should also pursue these in cooperation with other relevant nuclear energy organizations.

10. Decommissioning of the Tokai Reprocessing Plant

-The decommissioning of the Tokai Reprocessing Plant is different from that of nuclear

reactors in many aspects, as the facility is a chemical plant. Thus, JAEA is required to deal with a variety of issues in decommissioning, by utilizing its experience in operational management and lessons learned from overseas operations, with a deep insight into decommissioning risks inherent to the operation.

11. Decommissioning of Monju

-Decommissioning of Monju, which requires treatment of liquid sodium coolant, is unique and different from that of light water reactors. JAEA should design and carry out a decommissioning plan for Monju, by utilizing its experience in handling incidents and overseas cases, reflecting on accidents and responses to problems in the past.

References

1. Japan Atomic Energy Agency “Medium- and Long-Term Management Plan of JAEA Facilities” (formulated on April 1, 2017 and amended on April 1, 2018) https://www.jaea.go.jp/about_JAEA/facilities_plan/

2. Japan Atomic Energy Agency “Backend Roadmap” (December 26, 2018) https://www.jaea.go.jp/about_JAEA/backend_roadmap/

3. Atomic Energy Facilities Decommissioning Workshop of the Council for Science and Technology, Research Plan Assessment Committee, and the Atomic Energy Science and Technology Committee, the Ministry of Education, Culture, Sports, Science and Technology “Atomic Energy Facilities Decommissioning Workshop’s Interim Report” (April 2018) http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu2/088/houkoku/1404455.htm

4. The Japan Atomic Energy Commission “Basic Policy for Nuclear Energy” (July 20, 2017), p 17 (2) “Promoting Partnership and Collaboration between R&D Institutions and Nuclear Industry” in 5.2.8 “Solid Foundation for Nuclear Energy Use” http://www.aec.go.jp/jicst/NC/about/kettei/kettei170720.pdf

5. The 11th Session of the 2018 Japan Atomic Energy Commission Regular Meeting (Tuesday, March 20, 2018) Agenda (1) “Basic Policy for Nuclear Energy” Follow-up and Public Understanding Enhancement - Creation and Publication of Basic Information - (Federation of Electric Power Companies of Japan, Japan Atomic Energy Relations Organization, Nuclear Waste Management Organization of Japan, Japan Atomic Energy Agency, Secretariat of the Nuclear Regulation Authority,

Agency for Natural Resources and Energy)
http://www.aec.go.jp/jicst/NC/iinkai/teirei/siryo2018_11_20.htm

6. The 14th Session of the 2018 Japan Atomic Energy Commission Regular Meeting (Wednesday, April 11, 2018) Agenda (2) "Basic Policy for Nuclear Energy" Follow-up and Launch of Three Collaborative Platforms Involving Industries, Research Institutes, and Academic Societies (Japan Atomic Energy Agency, Federation of Electric Power Companies of Japan, Japan Electrical Manufacturers' Association)
http://www.aec.go.jp/jicst/NC/iinkai/teirei/siryo2018_11_20.htm