

Appropriateness of the Uses of Plutonium
in “Plutonium Utilization Plans” Announced by Electric Utilities and the JAEA

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The Atomic Energy Commission

1. Appropriateness of the uses of plutonium announced by electric utilities

On 27 February, the Atomic Energy Commission listened to 10 electric utilities concerning their “Plutonium Utilization Plans,” which they announced recently. According to their plans, the plutonium separated at the Rokkasho Nuclear Fuel Reprocessing Plant in fiscal 2007 will be processed into uranium-plutonium mixed oxide (MOX) fuel to be used in their light water reactors (hereinafter referred to as “plu-thermal operations”) starting in or after fiscal 2012. Their respective plutonium holdings at the end of fiscal 2007 are estimated to be equivalent to the 0.1 to 1.1 years of MOX consumption as “plu-thermal operations” planned by them.

According to these companies’ explanations, they have been making continuous and positive efforts to promote mutual understanding with local communities and gain their confidence regarding “plu-thermal operations” they plan to conduct using plutonium separated through reprocessing of spent nuclear fuel and stored by overseas contractors. Some of them are still short of gaining sufficient confidence even after disclosing the results of investigations into past accidents and inappropriate actions as well as explaining measures being taken against their recurrence. Meanwhile, some utilities have made progress in establishing mutual understanding regarding “plu-thermal operations” with local communities as well as licensing procedures necessary for starting the operations.

Based on these explanations made by the utilities, the Commission judges that the uses of plutonium in the “Plutonium Utilization Plans” announced by these electric utilities are appropriate at present, and that the announcements would contribute to the enhancement of the transparency of plutonium utilization in Japan.

The Commission considers that electric utilities should steadily and positively promote their plans of “plu-thermal operations,” the operation of the Rokkasho reprocessing plant and the construction of a MOX fuel plant on the basis of their continuous efforts that they build up to gain local communities’ confidence, recognizing the importance of progress in these activities for the assurance of the transparency of plutonium utilization. The Commission expects electric utilities to further specify the uses of plutonium as they make progress in these efforts.

2. Appropriateness of the uses of plutonium announced by the Japan Atomic Energy Agency

On the same day, the Commission also listened to the Japan Atomic Energy Agency (hereinafter referred to as JAEA) concerning its “Plutonium Utilization Plan for Research and Development,” which the JAEA announced recently. According to the plan, the plutonium to be separated at the Tokai nuclear fuel reprocessing facility in fiscal 2007 will be used in fast breeder reactors (hereinafter referred to as FBRs), which the JAEA owns, in and after fiscal 2008. To this end, the JAEA says, part of plutonium separated by the end of fiscal 2007 will be processed into MOX fuel. The JAEA’s plutonium holdings at the end of fiscal 2007, including plutonium processed into MOX fuel, are estimated to be equivalent to about the six years of MOX fuel consumption planned by the JAEA.

The JAEA explains its plan to continue operations of the “JOYO,” an experimental FBR for research and development purposes, and to proceed with confirmation tests and others after improvement works as preparatory activities aiming at the resumption of operations of the “MONJU,” a prototype FBR.

Based on these explanations made by the JAEA, the Commission judges that the uses of plutonium in the “Plutonium Utilization Plan for Research and Development” announced by the JAEA are appropriate at present, and the announcement would contribute to the enhancement of the transparency of plutonium utilization in Japan. The Commission expects JAEA to further specify the uses of plutonium in accordance with progress in relevant efforts so as to further improve the transparency.

End

Reference 1: Ensuring the Peaceful Use of Plutonium

Japan has limited the promotion of research, development and utilization of nuclear energy only to peaceful purposes by the Atomic Energy Basic Law and joined the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as a non-nuclear-weapon State. Japan has accepted the International Atomic Energy Agency (IAEA) safeguards for all its nuclear-related activities, concluding the comprehensive safeguards agreement and its additional protocol with the IAEA. Simultaneously, the Government of Japan has established and implemented its own safeguards system to ensure that domestic nuclear activities are only for peaceful purposes.

In specific terms, licensees of nuclear facilities are asked to regularly submit an inventory change report and a material balance report on the nuclear fuel material in the facility to the Government based on the material accounting rules approved by the Government. In addition, strategic points of the facilities are sealed and put under camera surveillance, and inventory changes and the integrity of the seals are inspected by the government inspectors regularly as well as irregularly without prior notice. In the case of the Rokkasho reprocessing plant of the Japan Nuclear Fuel Limited (JNFL), government inspectors are to permanently reside at the site and perform their duty. Moreover, the information about material accounting activities at the facilities, including the inspection result, is reported to the IAEA, which itself conducts independent inspections.

It is commonly recognized in the international community that establishment and strict operation of such systems will prevent plutonium, which is brought into the country or separated and recovered through domestic reprocessing, from being diverted to purposes other than peaceful ones. Needless to say, the system currently in place at the Rokkasho reprocessing plant is also one that is internationally accepted as appropriate from this viewpoint.

Reference 2: Improvement in the Transparency of Plutonium Use

The peaceful use of plutonium in Japan has been strictly observed and secured under the aforementioned international safeguards regime. However, international shipments of plutonium occurred more frequently during the 1990s as civilian plutonium utilization activities, such as “plu-thermal operations” in various countries, became more active worldwide. In light of this, based on the recognition that it was desirable to increase the transparency of use of plutonium internationally, nine nations (Belgium, China, France, Germany, Japan, Russia, Switzerland, the U.K. and the U.S.) started discussions on the way to improve the transparency of civilian use of plutonium. As a result, the “Guidelines for the Management of Plutonium” were adopted in December 1997 for the responsible management by the governments of plutonium in all peaceful nuclear activities. These included guidelines for the publication of information on the national holdings of civil plutonium and national strategies for the nuclear fuel cycle, and general plans for managing them. Each country has reported such information to the IAEA and the IAEA released them to public every year since then.

Japanese electric utilities have contracted to reprocess spent fuel with European reprocessing companies and in order to use plutonium in their light water reactors or promote “plu-thermal operations” plans, let European contractors start to fabricate MOX fuel since 1997, using the plutonium recovered and stored there. In addition, a considerable amount of plutonium will be recovered in Japan and used annually by these utilities when the Rokkasho reprocessing plant, Japan’s first commercial reprocessing plant, begins its operations.

In light of the expectation that the time would soon come for private companies to recover and use plutonium in Japan, the Atomic Energy Commission (AEC) decided to strengthen management and disclosure of information on plutonium inventory, in order to improve both national and international understanding and credibility regarding Japan’s strict adherence to the peaceful use of plutonium, based on the principle of not possessing plutonium reserves for which the purpose of utilization is unspecified. The AEC thus announced a decision of position in a paper entitled “Concerning the Basic Position on Japan’s Use of Plutonium” (hereinafter referred to as “the Position”) in August 2003. The Position stipulates that a plutonium utilization plan, which specifies how to use the plutonium in addition to the owner and the holding amount of it, shall be announced, as Japan’s original measure, by private companies each year before the start of plutonium recovery operations at the Rokkasho reprocessing plant, in addition to the disclosure by the Government about the current state of plutonium management. The Position also specifies that private companies, when using plutonium stored abroad for fabrication of fuels, and national R&D institutes, when using plutonium for R&D purposes, shall observe the Position and take measures pursuant to those applicable to plutonium used for commercial purposes.

As seen in the past both domestically and internationally, in some cases plutonium may

have been stored for a considerable period by the time the place and time for the utilization of plutonium recovered in the reprocessing plant are determined in detail. Given the issues surrounding plutonium as a sensitive material, the AEC still considers it appropriate for private companies to clarify a plutonium utilization plan every year, including information on the plutonium to be recovered in the coming year, from the viewpoint of maintaining the transparency of the plutonium utilization, even if the details of such a plan have yet to be worked out, since the plans are always updated and the details are gradually made available by such activities.

Reference 3: Plutonium Utilization Plans announced

(1) Electric Utilities

The plutonium utilization plans, which 10 electric utilities announced on 23 February 2007, show that they will own plutonium to be separated at the Rokkasho Nuclear Fuel Reprocessing Plant in fiscal 2007 in a bid to process the plutonium into the MOX fuel at a MOX fuel plant to be completed at Rokkasho Village in fiscal 2012 and utilize the MOX fuel for “plu-thermal operations” of their nuclear power plants starting in or after fiscal 2012. Part of their plutonium holdings are planned to be transferred to the JAEA for FBR research and development operations and Electric Power Development Co. for the planned “plu-thermal operations” of its Oma nuclear power station. These utilities say specific transfer amounts will be announced after they are fixed. Separated and recovered plutonium will be managed at the Rokkasho reprocessing plant before being processed into MOX fuel. Their respective plutonium holdings at the end of fiscal 2007 are estimated to be equivalent to the 0.1 to 1.1 years of MOX consumption as “plu-thermal operations” planned by them. The plutonium utilization plans announced by the electric utilities are consistent with a published plan of Japan Nuclear Fuel Ltd. to reprocess spent nuclear fuel at its Rokkasho reprocessing plant and to build a MOX fuel plant, and with a “plu-thermal operation” project announced by Electric Power Development Co. for its Oma nuclear power plant.

Each electric utility has disclosed amounts of plutonium that it owns abroad. Locations of utilization of such plutonium are planned to be announced when the plutonium is processed into MOX fuel overseas.

(2) The JAEA

The JAEA announced a plan on 23 February 2007, to own plutonium being separated at a Tokai nuclear fuel reprocessing facility in fiscal 2007, process the plutonium into MOX fuel gradually at a MOX fuel plant at its Tokai R&D center and utilize the MOX fuel for FBR R&D purposes at its “JOYO” experimental FBR and its “MONJU” prototype FBR in and after fiscal 2008. The JAEA’s plutonium holdings at the end of fiscal 2007 are estimated to be equivalent to about the six years of MOX fuel consumption planned by the JAEA. The JAEA says that it plans to buy plutonium being separated at the Rokkasho reprocessing plant from electric utilities in the future. This is consistent with the explanations by electric utilities.