

Report accepted in the deliberation of the following agenda item:  
"1. Plutonium utilization plans released by electric utilities and JAEA"  
at the 3<sup>rd</sup> regular meeting of the AEC held on January 24, 2006

**Appropriateness of the Purpose of Plutonium Utilization  
in "Plutonium Utilization Plans"  
Released by Electric Utilities and JAEA**

January 24, 2006

**1. Peaceful use of plutonium**

(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 law and joined the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Japan has accepted the International Atomic Energy Agency (IAEA) safeguards for all its nuclear-related activities, concluding the 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 of Japan in accordance with rules approved by the Government of Japan. 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 Japan Nuclear Fuel Limited (JNFL), government inspectors are to permanently reside at the site. 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 development 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.

(2) Improvement in the transparency of plutonium use

The peaceful use of plutonium in Japan has been strictly observed in respect of the aforementioned international safeguards regime. However, international shipments of plutonium occurred more frequently during the 1990s as civilian plutonium utilization activities became more active worldwide. In light of this, based on this 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 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 strategy for the nuclear fuel cycle, and general plans for managing them. Each country has reported such

information to the IAEA and released 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” projects, contracted to fabricate MOX fuel since 1997, using the plutonium recovered and stored there. In addition, a considerable amount of plutonium will be recovered and used annually by such private companies as JNFL and these utilities in Japan when the Rokkasho reprocessing plant, Japan’s first commercial reprocessing plant, begins operation in a few years.

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 of Japan (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 the purpose of utilization, shall be announced by private companies each year before the start of plutonium recovery operations at the Rokkasho reprocessing plant each year, in addition to the disclosure by the Government of Japan about the current state of plutonium management. This is a unique measure adopted by Japan in order to further improve the transparency of plutonium use. The Position also specifies that 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 that 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 formulate a plutonium utilization plan every year, even if the details of such a plan have yet to be worked out, including information on the plutonium to be recovered in the coming year, from the viewpoint of maintaining the transparency of plutonium use, since the plans are always updated and the details are gradually made available by such activities.

## **2. Plutonium utilization plans issued by the electric utilities**

According to the plutonium utilization plans issued by the electric utilities, plutonium recovered by active testing at the Rokkasho reprocessing plant in fiscal years 2005 and 2006 will be processed into MOX fuel at the MOX fuel plant, which is scheduled to be built in Rokkasho. This will then be used for the plu-thermal project at their own nuclear power plants, or be transferred either to the Japan Atomic Energy Agency to be used for R&D relating to fast breeder reactors or to Electric Power Development Co., Ltd (J-Power) for its plu-thermal project at the Ohma nuclear power plant, which is awaiting construction approval. It also needs to be noted that the use of this plutonium for the plu-thermal project will start only from fiscal 2012 onwards, which is after the completion of the MOX fuel facility. In the meantime, the plutonium will be stored at the Rokkasho reprocessing plant under stringent international safeguards. The MOX fuel converted from that amount of plutonium is said to be equivalent to about 20 to 60 percent of the MOX fuel needed for the plu-thermal project in a single year. J-Power plans to use the

plutonium transferred from various electric utilities at the Ohma nuclear power plant.

At the hearing with the AEC on the content of the issued utilization plan, each electric utility has disclosed the amount of their plutonium stocked abroad and has explained their efforts, including procedures for approval or licensing, and the preparation activities for the implementation of the plu-thermal project utilizing the plutonium. The AEC stipulates in the Position described above that the companies are to disclose the place of utilization and other information when the plutonium is processed into MOX fuel abroad for the implementation of the plu-thermal project. At this hearing, however, no such information was provided, and a more detailed utilization plan will be announced in the future at the fuel processing stage upon completing these efforts and activities.

Based on the explanations given by the utility companies, the AEC concludes the purpose of utilization of the plutonium recovered in fiscal years 2005 and 2006 reasonably reflects the current situation of the plan and is appropriate from the viewpoint of improvement in transparency of plutonium use in Japan.

The AEC expects, as stated in the Framework for Nuclear Energy Policy, the electric utilities to promote the plu-thermal project in a planned and steady fashion and to facilitate the development of a domestic MOX fuel fabrication plant, keeping pace with the operation of the Rokkasho reprocessing plant. Therefore, the AEC will continue to closely watch the progress of the plu-thermal project, construction and operation of the Rokkasho reprocessing plant and progress in the construction of MOX fuel plant. Electric utilities are expected to make proactive efforts in these activities under appropriate risk management, and update and reveal the details of the purpose of utilization from the next fiscal year onwards as these efforts progress. In the event of an incident related with the progress of the plu-thermal project, operation of the Rokkasho reprocessing plant, etc. that may affect the utilization plan, the electric utilities are expected to review the issued utilization plans in line with the Position.

### **3. Plutonium utilization plan issued by the Japan Atomic Energy Agency**

According to the plutonium utilization plan issued by the Japan Atomic Energy Agency (JAEA), the plutonium recovered at the Tokai reprocessing plant in fiscal years 2005 and 2006 will be later converted into fast-reactor fuel at the fuel fabrication facilities in the Tokai Research and Development Center to be used at the Monju and Joyo reactors of the JAEA. Although Monju is currently shut down, the purpose of utilization proposed by the JAEA is considered appropriate since the JAEA has been working on preparations (including modification work) for the resumption of the operation. From the viewpoint of ensuring the transparency of plutonium use, the JAEA is expected to make details of the purpose of utilization more explicit as progress is made and review the issued utilization plan in the event of any incident that may affect the plan.

Since there may be a case where the amount of plutonium stocked by the JAEA is insufficient to operate both reactors, the JAEA may obtain some plutonium recovered in the Rokkasho reprocessing plant from the electric utilities. This explanation is consistent with that given by the electric utilities.