Provisional Translation

On Plutonium Utilization Plan Announced by Electric Power Companies, etc. (Views)

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Japan Atomic Energy Commission
Cabinet Office, Government of Japan

Regarding the use of nuclear energy, Japan has been upholding the principle of not possessing plutonium without specific purposes. Under this principle and from the viewpoint of enhancing transparency concerning peaceful use of nuclear energy, Japan Atomic Energy Commission has decided the policy to reduce the size of Japan's plutonium stockpile in "The Basic Principles on Japan's Utilization of Plutonium" (hereinafter referred to as "Basic Principles") in July 2018, and has requested the electric power companies and Japan Atomic Energy Agency (hereinafter referred to as "JAEA") to announce the plutonium utilization plan (hereinafter referred to as the "Utilization Plan") every fiscal year.

Under these circumstances, the electric power companies and JAEA announced the Utilization Plan in February this year in response to the provisional operation plans of the Rokkasho Reprocessing Plant and MOX Fuel Fabrication Plant announced by Japan Nuclear Fuel Limited (hereinafter referred to as "JNFL") and the latest pluthermal[1] plan announced by The Federation of Electric Power Companies of Japan in December last year.

In response to the above and based on the Basic Principles, the Commission hereby presented its views on the Utilization Plan announced at this time, taking into account the efforts and ideas of relevant companies and JAEA.

1. Utilization Plan for FY2021

(1) Japan's plutonium stockpile at the end of the second half of FY2020

It is expected that the amount as of the end of FY2020 will be around 46.1 tons since approx.0.6 tons of plutonium stored in the UK will be additionally recognized as inventory, while there was no domestic consumption and recovery of plutonium in FY2020.

(2) Expected consumption and recovery of plutonium in FY2021

As for electric power companies, the following 4 units can be operated as pluthermal reactors among the restarted nuclear power plants: Units 3 and 4 of Kansai Electric Power Takahama Power Station; Unit 3 of Shikoku Electric Power Ikata Power Plant; and Unit 3 of Kyushu Electric Power Genkai Nuclear Power Plant. Among above, currently the plutonium stored in France is being fabricated into MOX fuel assemblies to be used for Kansai Electric Power Takahama Power Station, but it has no consumption plan for FY2021. Kyushu Electric Power Company does not possess MOX fuel assemblies in Genkai Nuclear Power Station nor have a consumption plan. Unit 3 of Ikata Power Plant stores 5 MOX fuel assemblies (containing approx.0.2 tons of plutonium) in Japan, but consumption cannot be

[1] The term "pluthermal" stands for the use of MOX fuel assemblies containing plutonium in thermal reactors.

predicted currently since it is under a provisional disposition by Hiroshima High Court, ordering suspension of operations.

On the other hand, since Rokkasho Reprocessing Plant and the MOX Fuel Fabrication Plant of JNFL are not ready to operate yet, there is no additional plutonium to be recovered nor MOX fuel to be newly fabricated in Japan.

As for JAEA, the experimental fast reactor "Joyo" is currently under review by the Nuclear Regulation Authority to confirm its compliance to the new regulatory standards, and both plutonium consumption and recovery in FY2021 are zero since the Tokai Reprocessing Plant has entered into decommissioning stage.

(3) Validity of Utilization Plan for FY2021

Based on the above, the total stockpile of Japan in FY2021 is expected to be at the same quantity as of the end of FY2020, i.e., 46.1 tons or less.

In addition, although plutonium consumption by the electric power companies is not planned as of now, the Commission believes that the Utilization Plan for FY2021 is generally appropriate at this point, considering the efforts among these companies to conclude MOX fuel fabrication contracts or start considering reducing plutonium stored overseas.

Considering that the amount of plutonium to be recovered in Japan is expected to increase with the start of reprocessing at Rokkasho Reprocessing Plant after FY2023, the Commission requests electric power companies to further collaborate and cooperate with each other and accelerate coordination with parties concerned in order to steadily reduce the plutonium stockpile stored overseas.

In addition, from the perspective of enhancing transparency regarding the use of plutonium in Japan, it is expected that electric power companies and JAEA make appropriate announcements as before in accordance with the progress of specific efforts.

2. Utilization Plan for FY2022 and FY2023

The Commission makes provisional comments on the Utilization Plan for FY2022 and FY2023 based on the information currently available, as annual announcement of the Utilization Plan is being requested to electric power companies and the situation may change depending on the progress of various efforts in the future.

(1) Expected consumption and recovery of plutonium in relation to electric power companies

According to the Utilization Plan of the electric power companies, 0.7 tons of plutonium and 1.4 tons stored in France by Kansai Electric Power will be used for fabrication of MOX fuel assemblies in France, and they are planned to be loaded and consumed at the Takahama Nuclear Power Station in FY 2022 and FY2023, respectively.

On the other hand, according to JNFL, the amount of plutonium separated and recovered at the Rokkasho Reprocessing Plant of JNFL is assumed to be 0 tons in FY2022 and 0.6 tons in FY2023.

As such, plutonium stockpile during the period is expected to be on a downward trend since the entire electric power companies are steadily making efforts to reduce the plutonium stockpile stored overseas, which will surpass the separating and recovering plutonium amount at Rokkasho Reprocessing Plant.

(2) Expected consumption and recovery of plutonium in relation to JAEA

In the JAEA's Utilization Plan, both plutonium consumption and recovery during the same period will be zero with no increase in stored plutonium since the outlook for the review of the experimental fast reactor "Joyo" by the regulatory body has not been clear. Regarding the use of plutonium, various options have been considered including use for fuel when "Joyo" is in operation as well as use for research and development such as basic research on reprocessing technology or plutonium stabilization, etc.

(3) Provisional comments on the Utilization Plan for FY2022 and FY2023

Based on the Utilization Plan of electric power companies and JAEA, the size of Japan's plutonium stockpile as a whole in FY2022 and FY2023 are not expected to exceed 45.4 tons[2] at the maximum.

Nevertheless, according to the explanation of the electric power companies, approximately 0.6 tons of plutonium to be recovered at Rokkasho Reprocessing Plant of JNFL in FY2023 is assumed to be consumed at the pluthermal reactors operating as of FY2026 or FY2027, and the loading sites will be specified from now on. From FY2023, the amount of plutonium to be recovered in Japan is expected to increase with the start of reprocessing at the Rokkasho Reprocessing Plant. Therefore, the Commission requests that the parties concerned promptly consider the realization of the steady use of plutonium recovered at the domestic facilities and the operation of the related facilities taking account of the balance between supply and demand based on the Basic Principles. In addition, it is expected that JAEA further considers options regarding the way of using the stored plutonium.

[2] It is expected that the plutonium stockpile of FY2022 will become 45.4 tons from 46.1 tons of FY2021 as a result of consuming MOX fuel containing 0.7 tons of plutonium at the pluthermal reactor in FY2022.