

Plans for the Utilization of Plutonium To Be Recovered at the Rokkasho Reprocessing Plant

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Federation of Electric Power Companies of Japan

Japan Nuclear Fuel Ltd. (JNFL) has been performing active tests at the Rokkasho Reprocessing Plant (RRP) since March 2006 using spent fuel. These tests result in the separation of plutonium as a product of reprocessing. The Federation of Electric Power Companies of Japan (FEPC) is announcing the Japanese electric utilities' plans to utilize plutonium in FY2010 as per the details attached, in the interests of transparency.

According to the paper entitled "Concerning the Basic Position on Japan's Use of Plutonium," decided by the Atomic Energy Commission of Japan (AEC) on August 5, 2003, each utility shall announce a "Plutonium Utilization Plan" for its share of the plutonium to be recovered at RRP. In addition, in the "Framework for Nuclear Energy Policy," decided by the AEC on October 11, 2005, and resolved by the Cabinet on October 14, 2005, the utilities are expected to announce their plans for the utilization of plutonium in an appropriate manner.

Seeking to realize pluthermal generation as soon as possible, electric utilities are working to introduce pluthermal generation to 16-18 reactors across the country by FY2015 at the latest. FY2015 is the year for the projected commencement of operation of the Rokkasho MOX fuel fabrication plant.

In the early stage of the program, the utilities are planning to use MOX fuel, manufactured overseas, using plutonium retained overseas (see separate supplementary explanation). Once the Rokkasho MOX fuel fabrication plant commences operation, plutonium recovered at RRP will also be used in due course.

Plans for the Utilization of Plutonium To Be Recovered at the Rokkasho Reprocessing Plant (RRP), FY2010

Owner	Amount of reprocessing*1	Amount of retained plutonium*2			Purpose of use (as LWR fuel)*3		
	Amount of plutonium expected to be reprocessed by the end of FY2010 (ton U)*4	Amount of plutonium expected to be retained by the end of FY2009 (tons Puf)*5	Amount of plutonium expected to be recovered in FY2010 (tons Puf)*5	Amount of plutonium expected to be retained by the end of FY2010*6 (tons Puf)*5	Place to be used	Estimated annual usage*7 (tons Puf/year)*5	Time of commencement of utilization*8 Estimate of the period required for utilization*9
Hokkaido Electric Power Co.	14	0.1	0.0	0.1	Tomari Power Station Unit 3	0.2	Corresponding to approx. 0.4 years from FY2015
Tohoku Electric Power Co.	-	0.1	0.0	0.1	Onagawa Nuclear Power Station Unit 3	0.2	Corresponding to approx. 0.5 years from FY2015
Tokyo Electric Power Company	13	0.7	0.1	0.9	Three to four Tokyo Electric Power Company units including Fukushima No. 1 Nuclear Power Plant Unit 3, based on continued efforts by Tokyo Electric Power Company to regain public trust from local communities at sites	0.9 - 1.6	Corresponding to approx. 0.6 - 1.0 years from FY2015
Chubu Electric Power Co.	-	0.2	0.0	0.2	Hamaoka Nuclear Power Station Unit 4	0.4	Corresponding to approx. 0.5 years from FY2015
Hokuriku Electric Power Company	-	0.0	0.0	0.0	Shika Nuclear Power Station	0.1	Corresponding to approx. 0.1 years from FY2015
Kansai Electric Power Co.	-	0.6	0.1	0.7	Takahama Power Station Units 3 and 4; one or two units at Ohi Power Station	1.1 - 1.4	Corresponding to approx. 0.5 - 0.6 years from FY2015
Chugoku Electric Power Co.	17	0.1	0.0	0.1	Shimane Nuclear Power Station Unit 2	0.2	Corresponding to approx. 0.5 years from FY2015
Shikoku Electric Power Co.	18	0.1	0.0	0.2	Ikata Power Station Unit 3	0.4	Corresponding to approx. 0.4 years from FY2015
Kyushu Electric Power Co.	-	0.3	0.1	0.4	Genkai Nuclear Power Station Unit 3	0.4	Corresponding to approx. 0.9 years from FY2015
JAPC	18	0.1	0.0	0.2	Tsuruga Power Station Unit 2; Tokai Daini Power Station	0.5	Corresponding to approx. 0.3 years from FY2015
Sub total	80	2.3	0.5	2.8		4.4 - 5.4	
J-POWER		Amount to be transferred from other utilities*10			Ohma Nuclear Power Station	1.1	
Total	80	2.3	0.5	2.8		5.5 - 6.5	

The above plans shall be updated and detailed as future progress is made, such as developments in the pluthermal program, the start of operation of the Rokkasho MOX fuel fabrication plant, etc.

- *1 “Amount of reprocessing” is based on JNFL’s reprocessing program.
- *2 “Amount of retained plutonium” represents the amount of plutonium expected to be retained by the end of FY2009 (including the amount of plutonium that has not yet been delivered to each utility), the amount expected to be recovered from reprocessing in the RRP in FY2010, and their total amount, the amount of plutonium expected to be retained by the end of FY2010. Recovered plutonium is to be allocated to the utilities in proportion to the amount of fissile plutonium contained in the spent fuel they have delivered to JNFL’s RRP. Therefore, plutonium will also be allocated to the utilities whose spent fuel is not actually reprocessed each fiscal year. Eventually, however, plutonium will be allocated in proportion to the amount of fissile plutonium contained in the spent fuel contracted for reprocessing by each utility.
- *3 In addition to use as LWR fuel, some plutonium may be transferred to JAEA for R&D purposes. Specific amounts of plutonium to be transferred by each utility will be made public once such amounts have been determined.
- *4 Total amount of spent fuel differs due to the amounts being rounded to the nearest integer.
- *5 The amount of plutonium is described as the amount of fissile plutonium (Puf). (Total amount of fissile plutonium may differ due to the amounts being rounded to the first decimal place.)
- *6 The “Amount of plutonium expected to be retained by the end of FY2010” is the sum of the “Amount of plutonium expected to be retained by the end of FY2009” and the “Amount of plutonium expected to be recovered in FY2010,” but may differ due to amounts being rounded to the first decimal place.
- *7 “Estimated annual usage” represents the annual average amount of plutonium contained in MOX fuel to be loaded into power reactors according to each utility’s pluthermal program. In some cases, the estimate may include plutonium recovered from overseas reprocessing.
- *8 “Time of commencement of utilization” is taken from FY2015, when the Rokkasho MOX fuel fabrication plant scheduled to be constructed next to the RRP will commence operation. Until then, plutonium will be stored at RRP in the form of uranium-plutonium mixed oxide.
- *9 “Estimate of the period required for utilization” is the “Amount of plutonium expected to be retained by the end of FY2010” divided by the “Estimated annual usage.” (The estimate does not necessarily reflect the actual period of use, because some of the plutonium is expected to be transferred to Electric Power Development Co., Ltd. (J-POWER) and JAEA, and the “Estimated annual usage” may include the use of the plutonium recovered from the overseas reprocessing in some cases.)
- *10 The specific amount to be transferred by the utilities will be made public once the amounts have been determined.

(Reference)

Amount of Retained Plutonium (as of the end of December 2009)

(Amount of fissile plutonium)

Owner	Amount in Japan				Amount overseas			Total (tons) A+B+C+D+E
	JAEA (tons) A* ¹	JNFL (tons) B	Power station (tons) C	Sub total (tons) A+B+C	Recovered in France (tons) D	Recovered in U.K. (tons) E	Sub total (tons) D+E	
Hokkaido Electric Power Co.	-	0.1	-	0.1	0.1	-	0.1	0.1
Tohoku Electric Power Co.	0.0	0.1	-	0.1	0.2	0.1	0.3	0.4
Tokyo Electric Power Company	0.1	0.6	0.3	1.1	2.6 * ²	4.7	7.2	8.3
Chubu Electric Power Co.	0.1	0.2	0.1	0.4	1.6 * ²	0.6	2.2	2.6
Hokuriku Electric Power Company	-	0.0	-	0.0	0.1	-	0.1	0.1
Kansai Electric Power Co.	0.2	0.5	-	0.7	6.6 * ²	1.8	8.4	9.1
Chugoku Electric Power Co.	0.0	0.1	-	0.1	0.4	0.3	0.7	0.8
Shikoku Electric Power Co.	0.1	0.1	0.6	0.7	0.0	0.6	0.7	1.4
Kyushu Electric Power Co.	0.1	0.3	-	0.3	0.6 * ²	0.8	1.4	1.7
JAPC	0.1	0.1	-	0.2	0.5	2.6	3.1	3.4
(J-POWER)* ⁴								
Total	0.7	2.0 * ³	1.0	3.7	12.6	11.5	24.1	27.8

*Discrepancy in sum total due to individual amounts being rounded to one decimal place.

*1 Excludes plutonium already provided to Japan Atomic Energy Agency (JAEA) for research and development purposes.

*2 Includes plutonium already processed, currently being processed or being prepared for processing into MOX fuel.

*3 Shows amount of fissile plutonium that has been delivered to each utility.

*4 Part of the fissile plutonium recovered in France is scheduled to be transferred from the electric utilities to J-POWER (Approx. 0.1 tons from Tohoku Electric Power Co., Inc., approx. 0.7 tons from Tokyo Electric Power Company, Inc., approx. 0.1 tons from Chubu Electric Power Co., Inc., approx. 0.1 tons from Hokuriku Electric Power Company, approx. 0.2 tons from Chugoku Electric Power Co., Inc., approx. 0.0 tons from Shikoku Electric Power Co., Inc., and approx. 0.1 tons from Kyushu Electric Power Co., Inc., for a total of 1.3 tons).