Information Disclosure on Transport

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Preface

In Japan, where natural energy resources are scarce, ratio of nuclear power generation to all electric power generation is currently one third, and it is becoming an increasingly valuable energy source. Uranium used as fuel for nuclear power stations is imported for this purpose, and the nuclear raw materials (natural uranium hexafluoride, UF_6) are transported by ship from foreign countries.

Nuclear raw materials are converted to uranium dioxide (UO_2) as new fuel assemblies, and are transported to nuclear power stations by land and sea transportation. Further, spent fuel assemblies used in nuclear power stations for electric power generation are transported to reprocessing plants at home and abroad via sea transport. For the promotion of nuclear power development and the growth of the nuclear industry, the transportation of nuclear fuel materials plays a more important role in the nuclear fuel cycle than ever before.

For the intra- and intercountry transport of nuclear fuel materials, including the design approval of transport packages, the approval of transport packagings, the approval of shipment, and the execution of transport, Japan follows the domestic transport regulations established in conformity to Regulations for the Safe Transport of Radioactive Material 1985 Edition(as amended 1990) made by the International Atomic Energy Agency (IAEA), and the international regulations established by IAEA and the International Maritime Organization (IMO) for sea transport. Since the IAEA Transport Regulations were revised in 1996, Japan is planning to implement them in the domestic transport regulations in 2001.

On physical protection of nuclear materials

Until now from the viewpoint of physical protection, the nuclear transport information has

been treated cautiously to ensure physical protection, meet the export criteria on nuclear power, and obey treaties. Physical protection has been a central discussion topic of the IAEA since the 1970's and formal recommendations on physical protection were issued by the IAEA (The Physical Protection of Nuclear Material: INFCIRC/225) in 1972 and subsequently revised three times through 1993.

Further, it is internationally recognized that preventing diversion of nuclear materials to non-peaceful uses is an important mean of nuclear non-proliferation. Since April 1975, discussions of this topic were held in London England by seven countries, including the United States of America and an agreement was achieved in September 1977. In January 1978, the guidelines applied to the export of nuclear materials to non-nuclear weapons countries(London Guidelines- Guidelines for Nuclear Transfers:INFCIRC/254 Rev. 1) was published for the transport of nuclear materials, and each country must meet the criteria for different levels of physical protection.

For the security of nuclear materials during the normal peaceful use of nuclear power, conventions on the physical protection of nuclear materials during international transport was discussed by experts of relevant countries in the 1970's. In February 1987, conventions on the Physical Protection of Nuclear Material were developed and fifty (50) countries and one (1) international organization (as of May, 1996) have become signatories of the agreement.

In Japan, the transport of nuclear fuel materials strictly meets the above international convention and domestic regulations as well. Information on the transport of nuclear fuel materials within the country and between the country and foreign countries is treated carefully. Nuclear fuel materials are categorized for transport, shown in Table-1, and are physically protected accordingly. Certain transportation information is treated with special precautions, including prior arrangements among sender, recipient and carrier, and prior agreement between entities subject to the jurisdiction and regulation of supplier and recipient countries. In the case of international transport, this information includes specifying time, place and procedures for transferring transport responsibility.

On Information disclosure

On the one hand, for the domestic and international transport of nuclear fuel materials, information on transport is disclosed according to the regulations of relevant countries. For example, information on the transport package (including the safety analysis document), information on actual transport and other information is often disclosed openly to domestic oversight government agencies and even the general public. Despite requirements for information disclosure throughout the nuclear power industry, there is increasing pressure to disclose even more information on the transport of nuclear fuel materials.

For promoting the peaceful use of nuclear energy, it is recognized that to gain the trust and understanding of its people, each country must focus on communication, including activities in public relations and information disclosure. Each country independently determines how it discloses information relating to the transport of nuclear fuel materials. Disclosed transport information may include: information about safety analysis documents for design approval of transport packages by the government's authorities and nuclear enterprises, classification of transport packages, transport means of nuclear fuel materials, name(s) of transport vessel(s) (in case of sea transport), facilities used to conduct the transport, classification and quantity of nuclear fuel materials, burn up, quantity of radioactivity, etc. However, since detailed information on the transport package may include commercially proprietary information and/or physical protection information with mixture sometimes, its publication is treated carefully. Currently, transport information which may be sensitive from a physical protection standpoint, such as transport route, guard system, locking, sealing, etc. is also treated carefully.

Regarding disclosure on the actual time of transport of nuclear fuel materials internationally, some information is typically disclosed before transport or after transport by categorization of each nuclear material (see Table-1), depending on the special conditions and regulations of respective countries. However, due to the lack of uniformity in the international information disclosure on the transport of nuclear fuel materials, some people request more information disclosure and greater uniformity between countries.

On information disclosure of transport information

Information disclosure on the transport of nuclear fuel materials has become a matter of increasing scrutiny in nuclear energy development and the nuclear industry, as well as in the general public, both domestically and internationally. Further, for development of the nuclear industry, it seems that gaining understanding and trust from the general public about the safety of nuclear fuel materials transport through information disclosure is essential. Thus, efforts should be intensified to facilitate the information disclosure on transport and to promote education of the public in this matter.

In order to balance the opposing needs of both physical protection and information disclosure, discussions should be held by pertinent international regulatory bodies and individuals, and a set of standardized criteria for information disclosure on the transport of nuclear fuel materials, both domestically internationally, should
be developed.

As mentioned above, the information disclosure on nuclear fuel materials transport is restricted by international convention and the conditions of physical protection by the London Guidelines.

Conversely. however, information disclosure on transport is strongly desired by the general public. At present, accommodating a balance between information disclosure and physical protection has become an urgent subject.

The international transport of nuclear fuel materials will likely increase in the future and resolving the problem of information disclosure on nuclear fuel materials transport is difficult for one country alone. Resolution of the problem requires positive discussion by experts of relevant countries in order to develop internationally standardized criteria for this information disclosure.

Finally, from this viewpoint, I would like to propose that the IAEA should establish a Working Group consisting of experts of relevant countries to discuss and to develop criteria for information disclosure internationally on the transport of nuclear fuel materials.

TABLE-1: CATEGORIZATION OF NUCLEAR MATERIAL

Material	Form	Category I	Category II	Category III
1. Plutonium [a]	Unirradiated [b]	2 kg or more	Less than 2 kg but more than 500 g	500 g or less [c]
2. Uranium-235	Unirradiated [b]		Less than 5 kg but more than 1 kg	1 kg or less [c]
	- uranium enriched to 20% ^{235}U or more	5 kg or more		
	- uranium enriched to 10% ^{235}U but less than 20%		10 kg or more	Lass than 10 kg [c]
	- uranium enriched above natural, but less than 10% ^{235}U [d]			10 kg or more
3. Uranium-233	Unirradiated [b]	2 kg or more	Less than 2 kg but more than 500 g	500 g or less [c]
4. Irradiated fuel			Depleted or natural uranium, thorium or low-enriched fuel (less than 10% fissile content) [e],[f]	

a) As identified in the Trigger List.

b) Material not irradiated in a reactor or material
Irradiated in a reactor but with a radiation level equal to or less than 100 rads/hour at one metre unshielded.

c) Less than a radiologically significant quantity should be exempted.

d) Natural uranium, depleted uranium and thorium and quantities of uranium enriched to less than 10% not falling in Category III should be protected in accordance with prudent management practice.

e) Although this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.

f) Other fuel which by virtue of its original fissile material content is classified as Category I or II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 100 rads/hour at one metre unshielded.