Establishment of the Obligated Material Management Policy

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1. Introduction

An administrative arrangement between DOE NNSA and NSSC was concluded in March 2016 on the basis of the annual report, transfer and retransfer procedures for the items subject to the agreement under the revised ROK-US nuclear agreement in November 2015. With the signing of the arrangement, the ROK became obligated to manage the items subject to the agreement, including the US nuclear material. In particular, in the case of nuclear materials from the US, it was necessary to establish initial inventory from 1972 pursuant to Article 21 of the Agreement, and the initial inventory was finalized in February 2017 in accordance with the consultation between the NSSC and the DOE-NNSA. Accordingly, it is necessary to improve the domestic NM accounting and control systems and procedures in order to carry out the obligations efficiently according to the management of the US items. This paper analyzes the problems of the management method under the bilateral agreement and introduces them as improvements.

2. Establishment of the Obligated Material Control Policy.

2.1 Background of NM control under the bilateral agreement

Korea has had an obligation to report annually on nuclear materials to Canada, Australia and Japan. Specifically, in Canada and Australia, the procedure for the management of nuclear materials in the mining origin was applied. In other words, the origin of nuclear material has been applied according to the position where the milling is taken after the mining.[1] Therefore, Korea has actually managed the mined nuclear material in Canada and Australia and carried out the annual report.

The United States has a policy of controlling the origin of nuclear material that differs from that of Canada and Australia. In the United States, not only mining, but conversion, enrichment and fabrication are also defined as nuclear materials of their own, which is different from Korea's standards for the control of nuclear material origin.[1]

For reference, we requested export data to the US side to review the initial inventory confirmation in the ROK, and based on this, initial inventory of US nuclear material was confirmed.

In general, the ROK has managed the sole mining origin standards for nuclear materials. Therefore it is necessary to revise current standards and legal standards in order to manage the US nuclear materials in future due to differences in the standards required by the US for the management of nuclear materials as the obligated countries management standards.

2.2 Foreign case analysis of NM control under the bilateral agreement

The US has a system of administrating the obligated countries, not the mining origin, for the management of nuclear materials for the implementation of the bilateral agreement. In addition, Japan and the EU are building the similar system of duty management. Specifically, it uses obligation codes to manage the information of mining, conversion, enrichment, and fabrication, and there are a number of obligation countries in the code. Below is the US Code of Obligations code.

Transaction Code	Material Balance Code	Obligation Entity	Transaction Code	Material Balance Code	Obligation Entity
31	85	Australia	73	B4	EURATOM/Japan/LES Enrichment
32	86	Canada	74	B5	Australia/EURATOM/Japan/LES Enrichment
33	87	EURATOM1	75	B6	Canada/EURATOM/Japan/LES Enrichment
34	88	Japan	76	B7	China/Japan/LES Enrichment
35	89	People's Republic of China	77	A9	Australia/Canada/EURATOM/Japan/LES Enrichment
36	C1	Russia	81	94	Australia/Japan
37	A8	Switzerland	82	95	Canada/Japan
38	A1	Argentina	83	96	EURATOM/Japan
39	A2	Brazil	84	97	Australia/EURATOM/Japan
40	A3	Chile	85	98	Canada/EURATOM/Japan
41	D1	India	86	99	China/Japan
42	D2	Republic of Korea	87	I1	Australia/Canada
43	D3	Taiwan	88	I2	Australia/Canada/EURATOM
44	D4	Vietnam, Socialist Republic of	90	A4	LES Centrifuge Enrichment
65	C4	Japan/Russia	91	91	Australia/EURATOM
66	C5	EURATOM/Russia	92	92	Canada/EURATOM
67	C6	Australia/Japan/Russia	93	A5	LES Enrichment/Australia
68	C7	Canada/Japan/Russia	94	A6	LES Enrichment/Canada
69	C8	EURATOM/Japan/Russia	95	A7	LES Enrichment/EURATOM
70	B1	LES Centrifuge Enrichment/Japan	96	C2	Australia/Russia
71	B2	Australia/Japan/LES Enrichment	97	C3	Canada/Russia
72	B3	Canada/Japan/LES Enrichment	WR	93	Former Soviet Union Weapons

Table1. US Obligation Code[2]

The United States' obligation Code is subdivided into its own purposes. As shown in the table, the management code of the nuclear material is subdivided so that there is a separate code for distinguishing the nuclear material produced in the specific enrichment plant.

Japan and the EU also have codes of duty similar to those of the United States. In the case of Japan, it can be seen that the code of duty is managed by dividing before and after the revision of the nuclear agreement. In the case of the EU, it is judged that the obligation code is assigned to the countries where the reporting obligation exists between the two countries.

Obligation Code	Obligation Entry	Obligation Code	Obligation Entry
A	US/Euratom	AQUW	Autralia/England/US/Euratom
C	Canadian/Euratom	AU	Austalia/US
D	Canadian/US/Euratom	C	Canada
N	Euratom only	CU(O)	Canada/US(old)
P	Euratom only(peaful use)	CUW	Canada/US/Euratom
S	Australian/Euratom	FW	France/Euratom
T	Australian/US/Euratom	O	Other
EURATOM Obligation Code		U	US
		U(O)	US(old)
		Japan Obligation Code	

Table2. Foreign Cases of the obligation code[2]

As can be seen from the overseas cases, the major suppliers and importers of nuclear materials currently manage the nuclear material under the referral to the US's management system. This is considered to meet various standards for nuclear materials of major suppliers and it is considered to be an effective way of managing the obligations of nuclear materials with complicated history. For the effective implementation of the administrative arrangement with the United States, which we concluded last year, it is urgent to establish the management standard of the duty station, not the management of the origin of the nuclear material based on the mining origin.

2.3 Establishment of the Obligated Material Control Policy in the ROK

Korea currently has nuclear power agreements with 29 countries and has obligations to report nuclear materials in the United States, Canada, Australia and Japan. According to the arrangement with the US last year, it is necessary to introduce the management system based on the obligated countries rather than the existing system of mining origin management. For the efficient management of nuclear materials under bilateral agreements, Korea also recommends introducing the duty management system.

It is reasonable to introduce an obligation management system in consideration of the case of four countries except for the countries which do not have the obligation to actually manage them. It is believed that the management of nuclear materials that are obliged to manage in the bilateral agreement system will help to reduce the administrative burden of facility operators and to establish an efficient national NM accounting and control system.

The following is a obligation code scheme that can be applied to the ROK.

Obligation Entry
Autralia
Autralia/US(old)
Austalia/US
Canada
Canada/US(old)
Canada/US
US
US(old)
Other

Table3. Draft ROK Obligation code

The above table shows the type of code of the obligated State which can be introduced in Korea. It is expected that the code for multiple obligated State shall be applicable to the nuclear material subject to the bilateral Agreement. For example, if uranium mined in Canadian ore is converted and enriched in the United States and entered Korea, it would be possible to use "Canada/US" codes. If the uranium mined in Australia ore is converted and enriched in the EU countries, it is only necessary to use "Australia" code because there is no obligation for the EU material. For reference, "US (Old)" code refers to US nuclear material subject to the old agreement.

As a prerequisite for introducing this, it is necessary to classify the nuclear materials possessed by each facility at the present time according to the code of duty of the duty station. It is also necessary to establish the management system of nuclear materials and to revise the procedure based on the newly classified nuclear materials of the obligation code.

At present, the NSSC Notice is supposed to manage the origin of the bilateral agreement and submit a semi-annual report on it. In order to improve on the above mentioned facts, it is necessary to revise the notices and to establish more detailed standards for them. Currently, the NSSC is planning to establish detailed standards by the end of this year. In 2017, it is working on a TF to prepare detailed standards and notices.

3. Conclusion

In accordance with the amendment of the agreement with the US and the conclusion of administrative arrangements, Korea is in a position to newly establish a management system of nuclear materials in accordance with the bilateral agreements. This is a situation that requires the introduction of new management standards, not the ones that have been managed.

Korea has fully implemented the management of nuclear materials after the signing of the IAEA comprehensive safeguards agreement in 1975, and has successfully carried out annual reports under the bilateral agreements.

In the future, it is necessary to introduce a more effective and accurate annual report by introducing the obligated country management system. Therefore, it will be necessary to reduce the administrative burden of each nuclear facility and to manage it efficiently.

In addition, based on the results of the TF, which has been promoting the improvement of the management system, it is necessary to improve the computer system that manages nuclear materials at each nuclear facility.

REFERENCES

[1] Swaps in the International Nuclear Fuel Market, World Nuclear Association, 2015
[2] NMMSS WKG Group Foreign Obligations, DOE NNSA, 2014