

## **A comparative study on export control systems of nuclear technology in ROK and USA**

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### **1. Introduction**

The Development of IT Technology including SNS, E-mail, Cloud Services made International nuclear cooperation and exchange of technical information efficient. Large amount of information can be transferred at once using IT technology.

Transfers of nuclear technology are much easier than equipment and nuclear material. It takes little time for modification, copy and transfer of electronic data and information. Perfect removal of transferred technology is impossible because it is impossible to find all copies of technologies such as files and documents.

International community concerns about Terrorists' acquirement of nuclear technologies related to nuclear reactors, enrichment and reprocessing Facilities and heavy water production facilities, which can be used for production of nuclear weapons.

Non-state actors as well as concerning countries have tried to possess nuclear technology for developing nuclear weapons. Non-state actors' activities threaten global nuclear security. However, detection of such activities is very difficult.

Korea exported four nuclear power plants to UAE and a research reactor to Jordan. Non-state actors may try to procure nuclear equipment and technology from Korean nuclear industries. Therefore, the export control system should be enhanced for national nuclear security and safety.

In this study, the export control system of Korea and the United States were compared concerning to nuclear technology.

### **2. Method and Results**

In the United States, the export control authority responsible for nuclear technologies is DOE/NNSA, (the Department of Energy/ National Nuclear Security Administration). NSSC(Nuclear Safety and Security Commission) is the licensing authority for export of nuclear items and technologies in Korea.

Although both states observe NSG guidelines, their laws and regulations are different each other. The United States tends to control nuclear technologies more strictly than Korea. Detailed differences may be described as follow

#### *2.1. Subjects and Control List*

Korean export control regulation is applied to a person who resides in Korea. Foreign Trade Act designates technologies related to items on NSG

guideline part I as strategic technology. Exports of technologies have two kinds of forms, technical services and electronic documents such as image, data, etc.

Every technology needs export license is listed on public notice on trade of strategic items in Korea. The public notice adopted NSG Guidelines and ECCN (Export Control Classification Number) code.

In the United States, export control of technologies is not restricted to exportation. 10CFR810 regulate all activities of all persons subject to the jurisdiction of the United States who engage directly or indirectly in the production of special nuclear material (SNM: plutonium, Uranium 233, 235) outside the United States. Such activities should be authorized generally or specifically by DOE/NNSA.

#### *2.2. Classification*

Companies or persons may request an advice on whether a proposed technology falls in strategic items or not before they apply to an export license. This is called as "classification".

Korean export control system consists of classification and export licensing. Classification is separated from export licensing because export licensing require more documents than classification and non-strategic items doesn't need export licensing.

In the United States, There are two kinds of export licenses, general authorization and specific authorization. Generally authorized activities are listed in 10CFR810. Unless generally authorized, a person requires specific authorization by the Secretary of Energy. Exporter should decide whether the transfer of technology is generally authorized or not. They can request the advice to DOE/NNSA. These activities may be seemed as some kinds of classification although they are not same to classification in Korea.

On the other hands, importing states is not considered for classification but considered during export licensing in Korea. However, importing country is an important factor in the United States because some activities are authorized generally according to importing countries.

#### *2.3. Reporting*

In Korea, Reporting for the export of nuclear technology is not mandatory usually except some cases. When a person didn't export licensed nuclear items or technologies after licensing, the person should report to licensing authority, NSSC. When the duty for export

licensing is exempted, an exporter should also submit a report about the transaction.

In the United States, Any Person who has received a specific authorization shall provide a report to the Department of Energy after beginning the authorized activity. There are some cases that reporting to DOE is mandatory even if some activities are authorized generally.

#### *2.4. Deemed Export*

In Korea, Export control regulation applies to persons who reside in Korea. Transactions between persons who reside in Korea are not exports.

However, any citizen of the United States needs authorization when they provide nuclear technologies or assistances to a foreign national regardless of residence, even in the United States. This activity is deemed as an export of nuclear technology.

### **3. Conclusion**

In summary, controlled activities related to nuclear technology are treated more variously and more diverse activities are controlled in the United States than in Korea.

Table 1 the export control level of nuclear activities in the United States

Control Level	Activities
Prohibited	Restricted data and classified information such as nuclear explosive data
Specific Authorization	Providing sensitive nuclear technology, assistance for designing, construction, fabricating of reactors, accelerator-driven subcritical assembly systems, enrichment and reprocessing facilities, etc
Specific Authorization in some Countries	Engaging in the production of special nuclear material in countries listed in 10CFR810
Generally Authorized and Report	Furnishing information or assistance to prevent a radiological emergency or to enhance operational safety Engaging in the production of special nuclear material in countries not listed in 10CFR810
Generally Authorized	Furnishing public information Implementing the agreement related to IAEA safeguard Participation in programs approved by government authorities

Concerning to classification, importing country, end-use and end-users are important factors in export control. These should be considered from classification. Catch-all control will lose its effectiveness without this.

Related to the control of ITT (Intangible Technology Transfer), Korea and the United States are trying to amend the export control regulation. Both of them are trying to control intangible technology transfers effectively.

Revised Foreign Trade Act in Korea is expected to introduce a more rigorous system of nuclear technology controls. It focuses on nationality rather than residence. The revised law may face into other problems such as dual nationals like as the United States. However, this satisfies legislative requirements for control of a deemed export.

The revised law will enter into force in 2014. Accurate meanings of technology and export will be defined soon in the enforcement decree and the public notice before 2014.

However, it is hard to revise the definition of export control and technology because Foreign Trade Act is related to the entire export system as well as export control. Meanwhile the United States have the law dedicated to export control.

The ideal is to separate an export control law from the Foreign Trade Act like as the United States. However, it takes long time and requires high cost. It should be prepared sufficiently to minimize costs and side effects.

It is not mandatory to follow the law of the United States. A complicated law can make persons confused to adhere to export control regulations. However, their stringent export control system can be used as a reference to enhance the export control system of Korea.

### **REFERENCES**

- [1] MKE public notice 2013-39, Public Notice on Trade of Strategic Items, 2013.
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