

Experience on Security Regulation of International Nuclear Material Transportation

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1. Introduction

Republic of Korea became a nuclear supplier as Korea Electric Power Corporation (KEPCO) made a contract with ENEC (Emirates Nuclear Energy Corporation) UAE (United Arab Emirates) to construct nuclear power plants in 2009. Along with the contract, KEPCO NF (Nuclear Fuel) entered into another contract with ENEC to supply nuclear fuel for the plants in 2010. There are several international conventions and treaties to regulate nuclear material transportation including transportation security. KINAC (Korea Institute of Nuclear non-proliferation And Control), as a nuclear security regulatory body in Korea, has prepared for security regulation of the international transportation to comply with those treaties and convention. In 2017, KINAC successfully accomplished international transportation security regulation on the first five shipments. In this paper, we would like to share our preparation effort and experience on security regulation of international nuclear material transportation.

2. International Norms on International Transport Security

In this section, we would like to introduce international rules on nuclear material transportation security. It was the first thing for KINAC to identify and review those international norms for regulation preparation.

2.1 The Nuclear Supplier Group (NSG) Guidelines

NSG is a multilateral export control regime consisting with nuclear supplier countries in order to achieve nuclear nonproliferation. NSG provides guidelines to regulate the export of nuclear material, equipment and technology which can be used to build nuclear weapons. The NSG guidelines state nonproliferation policy, that an exporting country should approve export of nuclear related items only when those items are ensured not to be used for nuclear weapons. Along with the policy, the NSG guidelines specify physical protection measures should be ensured for exported nuclear material according to INFCIRC/225 in order to prevent unauthorized removal.

2.2 The Convention on Physical Protection of Nuclear Material (CPPNM)

CPPNM is one of the most important international conventions that specify physical protection of nuclear material and facilities. Especially, the article 3 and 4 in CPPNM state member states' responsibilities for international transportation of nuclear material. Physical protection requirements are defined in Annex I for nuclear material according to its categories. Along with CPPNM, IAEA provides recommendations (INFCIRC/225) and implementing guides (NSS No. 26-G) to endorse CPPNM for member states to implement transport security.

2.3 Other International Norms

International Maritime Organization (IMO) and International Civil Aviation Organization (ICAO) provide international norms related security. The International Ship and Port Facility Security Code (ISPS Code) by IMO states security functional requirements such as assessing threat information, maintaining communication protocols for ships and port facilities, preventing unauthorized access, searching contrabands, requiring ship and port facility security plans and so on. As well, Annex 17 in the Convention on International Civil Aviation by ICAO defines series of preventive and responsive measures for safeguarding such as access control, security search, and management of response against acts of unlawful interference.

Those international norms provided by IMO and ICAO are not designed for transportation security of nuclear material. However, the shipping state should consider before allowing international transport, whether the states involved in the transport including the transit states are parties to those security norms as internationally accepted guidelines.

3. Domestic Legal Framework on International Transport Security

In this section, we explain domestic legal system regarding transportation security and provide points of improvement based on international norms.

3.1 The Foreign Trade Acts

The Foreign Trade Acts are designed for domestic implementation of the NSG guidelines. The act regulates import and export control of strategic material including nuclear material. It states when approving import or export of strategic material, physical

protection requirements should be considered as an approving condition.

However, there are couple of incompleteness in the legal requirements of the act. The act requires to consider security measures only when exporting and transiting nuclear material. It does not require to consider security measures when importing nuclear material.

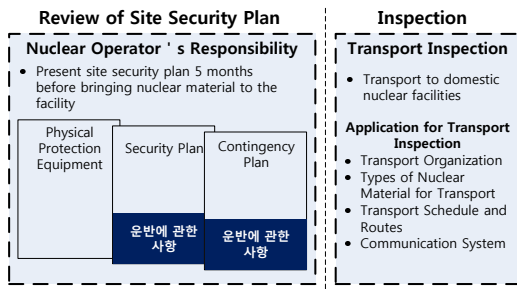
Another incompleteness is inherent in the difference of nuclear material defined in the NSG guidelines and CPPNM. The definition of nuclear material in the NSG guidelines is greater than in CPPNM. Thus, nuclear material which is required to be regulated according to CPPNM might be not necessarily a subject to the NSG guidelines.

		Nuclear Material in CPPNM	
		Strategic Material	Non Strategic Material
Export	Security Regulation: O	Security Regulation: X	
Import	Security Regulation: X	Security Regulation: X	
Transit	Security Regulation: O	Security Regulation: X	

3.2 The Act for Physical Protection and Radiological Emergency

The Act for Physical Protection and Radiological Emergency (APPRE) is the main legal basis for nuclear security including transport security. The act states regulatory requirements for transport security. The requirements include reviewing transport security plans and performing inspection on security arrangements according to the plan.

However, the act is not designed for the case when Republic of Korea becomes a nuclear supplier. The legal requirements for reviewing a transport security plan is not distinguished from reviewing a security plan for a nuclear facility. Transport security inspection is required only for transports bounding to domestic nuclear facilities. It does not include transport to foreign nuclear facilities.



4. Experience on Security Implementation for International Transportation

This section describes preparation arrangements for international transport security. During preparation, KINAC performed case studies on implementing examples of U.K. and France. Also, we asked legal advice to IAEA related to transiting states which are not parties to CPPNM.

4.1 Case Studies

We investigated implementing cases of other nuclear suppliers related to security arrangements with transiting states.

A French official from the Ministry of Foreign Affairs told that the French government does the best to have an official agreement with transiting states which are not parties to CPPNM. Also, the French government informs transiting states through diplomatic channel 10 days before the first transport begins. A Canadian nuclear security specialist said that Canadian competent authority's reviews transport security plans and inspects security arrangements of transiting nuclear material from Europe to U.S. via Canada.

4.2 Legal Advice from IAEA

We asked legal advices to IAEA regarding transiting states which are not parties to CPPNM. The legal advice we asked was whether the shipping states should have a formal agreement with transiting state, not a party to CPPNM, in the case when nuclear material stay in the ship whose flag state is a party to CPPNM. The IAEA answer was the shipping state should have a sort of formal agreement with the state, which is not a party to CPPNM even in that case.

4.3 Security Arrangements with Involved States

The importing states, UAE, has been a party to CPPNM in 2003. According to the NSG guidelines, UAE government presented its assurance that it ensures security of the importing nuclear material according to INFCIRC/225 to the Korean government. Also, Korean and UAE governments came to the agreement that physical protection responsibility for transporting material shall be transferred from Korea to UAE on UAE sea border.

The Korean government discussed security requirements with transiting states such as China, Singapore, Taiwan, Malaysia, and Sri Lanka. Chinese government informed that the small ports except Hong Kong shall not be allowed transiting. The Sri Lankan government notified that it could not permit transit since it was not a party to CPPNM. Malaysian, Singaporean, and Taiwanese governments allowed transiting.

Even though the governments allowed transiting, Malaysia and Taiwan are not parties to CPPNM. The Korean government came to a formal agreement that

Malaysian government shall regulate security of nuclear material in its territory according to CPPNM even though they are not a party to CPPNM. Also, the transiting port in Malaysia is subjected to ISPS Code, so that physical protection measures of transporting nuclear material shall be ensured. The Korean government decided not to transit Taiwan since two governments did not have diplomatic relation with Taiwan. Based on the discussion with transiting states, the transportation routes were adjusted.

4.4 International Transportations

After the long preparation, the transportations had been started from January in 2017. As stated in the contract between KEPSCO and ENEC, five transportations were completed for the initial loading fresh fuel of Barakah Nuclear Power Plant(BNPP) Unit 1 in 2017. The four transportations were done from the late of January to the early of February, 2017. The transportations had been carried out as they were prepared by container ships from Korea to UAE via China, Singapore, Malaysia. The last fifth transportation had been done in September, 2017 by a bulk carrier without transiting.

5. Conclusions

In this paper, we addressed state's security responsibility related with international nuclear material transport in the international norms such as the NSG guidelines, CPPNM, and so on. Also, we reviewed domestic legal system and its improvement points based on the international norms. Finally, we shared our experience and lessons learned during security preparation of international transportation.

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