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Introduction of direction for amending on the INFCIRC225/rev4

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1. Introduction

The Physical Protection regime in ROK has been established on the basis of INFCIRC225 which were published revision 4 in 1998. A group of member states' experts with the IAEA secretariat have discussed on INFCIRC225/rev.5, adopting the 12 fundamental principles that were endorsed by the IAEA Board of Governors and General Conferences in September 2001.

Since the direction for amending on the INFCIRC225 has a significant impact on the domestic physical protection regime, we have introduced this paper to help improve and re-establish a state's physical protection regime.

2. INFCIRC/225

The IAEA's first effort for playing a key role in physical protection of nuclear material and facilities resulted in the publication of "Recommendations for the physical protection of nuclear material" in 1972. These recommendations were revised by a group of experts in co-operation with the IAEA Secretariat and the revised version was published in 1975 in INFCIRC/225. The document was subsequently revised in 1977(rev.1), 1989(rev.2) and in 1993(rev.3).

The 1993 review resulted in changes to the INFCIRC /225rev.2 designed to make the categorization table consistent with the one in the CPPNM(Convention on the Physical Protection of Nuclear Material).

In INFCIRC225/rev.4, a chapter has been added which provides specific recommendations relating to sabotage of nuclear facilities and nuclear material through the experts group consultations. As a result of this addition, the title has been changed to 'Recommendations on the physical protection of nuclear material and facilities'.

3. 12Nuclear security fundamentals

12 Nuclear security fundamentals are one of the biggest changes to INFCIRC/225rev.4. as follows ;

Responsibility of the state: The responsibility for the establishment, implementation and maintenance of a physical protection regime within a state rests entirely with that state.

Responsibilities during international transport: The responsibility of a state for protection of nuclear material extends to the international transport thereof, until that responsibility is properly transferred to another state.

Legislative and Regulatory Framework: The state is responsible for establishing and maintaining a legislative and regulatory framework to govern physical protection. This framework should include a system of evaluation and licensing or other procedures to grant authorization and a system of inspection of nuclear facilities and transport with effective sanctions.

Competent authority: The state should establish or designate a competent authority which is responsible for the implementation of the legislative and regulatory framework.

Responsibility of the license holders: The state should ensure that the prime responsibility for the implementation of physical protection of nuclear material or of nuclear facilities rests with the holders of the relevant licenses or of other authorizing documents.

Security culture: All organizations involved in implementing physical protection should give due priority to the security culture whose elements are the roles of the state, organization and managers in organization, and the attitude of individuals.

Threat: The state's physical protection should be based on the state's current evaluation of the threat(i.e. threat assessment or design basis threat).

Graded approach: Physical protection requirements should be based on a graded approach, considering the current evaluation of the threat, the relative attractiveness, the nature of the material and potential radiological consequences.

Defense in depth : The requirements should reflect a concept of several layers and methods of protection that have to be overcome or circumvented by an adversary.

Quality assurance(QA): QA policy and programs should be established and implemented with a view to providing confidence that specified requirements are satisfied.

Contingency plan: Contingency(emergency) plans should be prepared and appropriately exercised by all license holders and authorities concerned.

Confidentiality: The state should establish requirements for protecting the confidentiality of information, the disclosure of which could compromise the physical protection of nuclear material and facilities.

4. Changes to the requirements on INFCIRC225/rev4

There have been a number of changes in glossary and the physical protection requirements for unauthorized removal of nuclear material and sabotage of nuclear facility. These changes have been made for reflecting

the fundamentals and for enhancing the measures of physical protection in the state.

In the main chapters, change from 'requirements for physical protection against' to 'requirements for measures against' is the one of the biggest changes.

With those changes, member states can understand the requirements easily and should implement them specifically.

4.1 Changes in glossary

In glossary, 23 terms, used or needed to define, have been newly defined in the revision 5 such as force-on-force exercise, graded approach, nuclear security culture, nuclear security event, performance testing, physical protection measures, physical protection regime, stand-off attack and 2person rule etc. On looking at those terms, we can briefly understand the direction for amending on the revision 4.

On the basis of performance, physical protection regime, physical protection measures, the force on force exercise, performance testing and graded approach newly have been defined.

4.2 Changes in the requirements for unauthorized removal of nuclear material (stated in chapter 5 in revision5)

The measures to locate and recover missing or stolen nuclear material is added and provided for the state and the operator. They should participate in a coordinated response for the location and recovery of missing or stolen nuclear material in these requirements. These location and recovery measures should include on-site and off-site operations.

For the operator, the requirements are organized by the process of detection, confirmation, declaration, location, securing and return of the material.

4.3. Changes in the requirements for sabotage of nuclear facility (stated in chapter 6 in revision5)

In these requirements, major change is the concept of 'graded approach', which defined as the application to physical protection measures proportional to the potential consequences of a malicious act such as sabotage. For the facility, an analysis should be performed to determine whether the nuclear material inventory has the potential to result in unacceptable radiological consequences. Based on these analyses, the state should consider the range of consequences that can be associated with all its nuclear facilities and should appropriately grade the consequences that exceed its limits for unacceptable radiological consequences for assigning appropriate levels of protection.

These requirements are defined for high consequences facilities, including nuclear power plants, and for other facilities, the sabotage of which could result in radiological hazards to the public. In addition, they are provided for the state and operator, who should participate in a coordinated manner to respond to an act of sabotage to mitigate or minimize radiological consequences.

4.4 change in the requirements for transport of nuclear material (stated in chapter 7 in revision5)

Application of the measures to locate and recover missing or stolen material during transport is a major change to the requirements for unauthorized removal. And there is a huge overlap between section 4.2 and 4.4in the requirements for the state. Those for the carrier are organized by the process of the discovery, location and reporting of lost or stolen material.

In accordance with the fundamental principles of the graded approach to physical protection, the state should define the requirements for the sabotage that correspond to the consequences. Based on threat assessment or design basis threat(DBT), the state should determine the additional physical protection measures to be applied to prevent sabotage of nuclear material during transport.

In these requirements, the carrier should include measures to mitigate and minimize the consequences of sabotage in the contingency plan. The carrier should prepare transport personnel to act in full coordination with guards, law enforcements agencies and response teams in order to achieve the objectives of the plan and implement so called associated measures to mitigate and minimize the consequences,

5. Conclusion

In application of the amended version to our physical protection regime, there are so many changes that we should take into account. For performance testing and force on force exercise, the competent authorities have to prepare performance based regulation that requires many experimental tests for physical protection related equipment. In threat assessment or DBT, we should take stand-off attack into consideration. All those concerned should consider means to establish and propagate the nuclear security cultures.

Especially, since there is no level for unacceptable radiological consequences in the regime, we should determine the level for the consequences through threat assessment or DBT. After determining the level, we can make the basis for applying the concept of graded approach to the associated measures for sabotage.

Acknowlegement

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