

Development of an Systematic Design in Evaluating Force-On-Force Security Exercise at Nuclear Power Plants

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Abstract : As the threat of terrorism to nuclear facilities is increasing globally after the attacks of September 11, we are striving to recognize the physical protection system and strengthen the emergency response system. Since 2015, Korea has implemented physical protection security exercise for nuclear facilities. The exercise should be carried out with full cooperation between the operator and response forces. Performance testing of the physical protection system should include appropriate exercises, for example, force-on-force exercises, to determine if the response forces can provide an effective and timely response to prevent sabotage. Significant deficiencies and actions taken should be reported as stipulated by the competent authority. The IAEA(International Atomic Energy Agency) is also preparing force-on-force exercise program documents to support exercise of member states. Currently, ROK(Republic of Korea) is implementing exercise on the force-on-force exercise evaluation system which is developed by itself for the nuclear power plant, and it is necessary to establish the exercise procedure considering the use of the force-on-force exercise evaluation system. The purpose of this study is to establish the work procedures of the three major organizations related to the force-on-force exercise of nuclear power plants in ROK, which conduct exercise using force-on-force exercise evaluation system. The three major organizations are composed of licensee, KINAC (Korea Institute of Nuclear Nonproliferation and Control), and the NSSC(Nuclear Safety and Security Commission). Major activities are as follows. First, the licensee establishes and conducts an exercise plan, and when recommendations are derived from the result of the exercise, it prepares and carries out a force-on-force result report including a plan for implementation of the recommendations. Other detailed tasks include consultation with surrounding units for adversary, interviews with exercise participants, support for document evaluation, and self-training to improve the familiarity of the MILES (Multiple Integrated Laser Engagement System). Second, KINAC establishes a force-on-force exercise plan review report and reviews the force-on-force exercise plan report established by licensee. KINAC evaluate force-on-force exercise using exercise evaluation system and prepare training evaluation report. Other detailed tasks include MILES training, adversary consultation, management of exercise evaluation systems, and analysis of exercise evaluation results. Finally, the NSSC decides whether or not to approve the force-on-force exercise and makes a correction request to the nuclear facility based on the exercise results. The most important part of ROK's force-on-force exercise system is the analysis through the exercise evaluation system implemented by KINAC after the exercise. The analytical method proceeds in the order of collecting data from the exercise evaluation system and analyzing the collected data. The exercise application process of the exercise evaluation system introduced in ROK in 2016 will be concretely set up, and a system will be established to provide objective and consistent conclusions between exercise sessions. Based on the conclusions drawn up, the ultimate goal is to complement the physical protection system of licensee so that the system makes licensee respond effectively and timely against sabotage or unauthorized removal of nuclear materials.

Keywords : Force-on-Force exercise, nuclear power plant, physical protection, sabotage, unauthorized removal

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