

EVALUATION OF EFFECTIVENESS OF PHYSICAL PROTECTION SYSTEMS AT NUCLEAR FACILITIES IN THE SLOVAK REPUBLIC

A. ŠTEFULOVÁ

Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR)
Trnava, Slovak Republic



XA0103225

Abstract

This paper contains short presentation of the state supervision in approach to the evaluation of physical protection systems at the nuclear facilities as one kind of measures used to prevent combat illicit trafficking of nuclear and other radioactive materials in the Slovak Republic.

Introduction

The state supervision of the nuclear safety in the Slovak Republic is performed by Nuclear Regulatory Authority of the Slovak Republic (UJD SR). Its main objective is to ensure that the nuclear power is utilized in accordance with valid legislation and relevant international agreements in the Slovak Republic.

The utilization of the nuclear power in Slovakia is based upon the Act No. 130/1998. According to this act, physical protection of the nuclear facilities and nuclear materials is an integral part of measures necessary to ensure the nuclear safety. It is the nuclear facility operator who is responsible for the construction, operation, and physical protection of the nuclear facilities.

Physical protection system and evaluation of its effectiveness

Every organization which intends to begin construction or operation of the nuclear facility can do so only on the basis of the permission issued by the UJD SR. So-called “physical protection plan” is part of the reviewed documentation necessary for issue of the license. The plan must take into account all requirements imposed upon the physical protection system as stipulated in the UJD SR’s Regulation No. 186/1999 which details the physical protection of the nuclear facilities, nuclear materials, and radioactive wastes.

The physical protection of the nuclear facilities and nuclear materials is defined as a system of the technical and organizational measures which are aimed to prevent unauthorized manipulations with the nuclear facilities and nuclear materials mainly to prevent their abuse or damage. At the same time, it represents a set of measures for vetting of the capability and trustworthiness of the persons being assigned to the working activities inside the nuclear facilities, manipulating with the nuclear materials, or having access to the information on the physical protection of the nuclear facilities and nuclear materials. For this purpose, the physical protection systems are used, forming of which have been being subject of national and international interests for long period.

The government of former Czechoslovakia decided that there was a need to create a new physical protection system which would increase the level of the nuclear facilities physical protection, back in nineteen eighties. It was decided that the physical protection would be preferably provided using an Automated Complex of Security Protection of NPPs –

AKOBOJE. After the split-up of Czechoslovakia, the Slovak Republic decided to continue in further enhancement of the physical protection, and in cooperation with western companies, it improved the existing AKOBOJE system to the level comparable with the one of the industrially developed countries.

The inspectors of UJD SR perform the inspections aimed at an evaluation of the physical protection systems levels in accordance with the valid legislative regulations. The main objective of these inspections is to assess conditions of the physical protection system and its changes since the previous inspection, assess the training and qualification programs of the physical protection team members, evaluate the plans and procedures to be applied during events at nuclear facilities. At the same time, fulfillment of remedial measures imposed upon the nuclear facility operator is checked. In these cases, they are so called routine inspections performed in accordance with an UJD SR's Inspection Plan. In case of exceptional events, the inspectors perform unplanned so-called special inspections which are UJD SR's response to the applicable event in the responsible organization.

When inspecting the level of the physical protection system, compliance of the system equipment conditions is compared with the ones described in the relevant physical protection plan for the applicable nuclear facility. With regard to the fact that the AKOBOJE system represents technical solution of the whole physical protection system, and it is designed so that any uncontrolled access of persons into individual categorized areas (i.e. into guarded, protected, and inner areas) and into the buildings, where categorized equipment is located, is prevented, the attention during its inspections is focused on the following:

- check of the persons and vehicles entries into individual areas of the nuclear facility
- check of the guarded, protected, and inner areas barriers
- check of the detection elements in the individual categorized areas
- check of the AKOBOJE control center
- check of the performance of the examinations, maintenance, and compensation measures including proper installation, examinations, and maintenance on the equipment

Part of the security system is also physical protection teams which comprise of the own employees of the responsible organization, private security service employees and police response forces of the Slovak Republic.

In case of the inspections aimed at evaluation of the required level of training and qualification of the security service employees, the inspectors focus on verification whether the employees are sufficiently qualified and whether they have sufficient knowledge and skill for performance of the assigned duties and responsibilities including procedures at the response action and use of special tactics during these action.

During the assessment of the total effectiveness of the physical protection system, the inspection is aimed at the detailed examination of the physical protection systems, and determines if these systems are functional and operational in accordance with the regulations and obligations stated in the relevant physical protection plans.

Assessment of the total system efficiency is carried out by simulation of an incident and inspection of the individual physical protection elements procedures and capability to act in the shortest possible time when delaying the intruder's progress towards the predefined intrusion target. The attention is paid during such an inspection to the following:

- functionality check of the AKOBOJE systems in service
- vigilance check of the AKOBOJE control room staff and preparedness of the physical protection elements to cope with the incident – barriers defeat and intrusion into categorized areas
- check of connection and effective communication between individual physical protection elements during response
- check of response management system and activities coordination of all involved elements.

The inspections of this type take place under strict precautions, and must be in compliance with existing plans for incidents management.

In case of the changes influencing the total effectiveness of the nuclear facility physical protection system, it is necessary that the operator asked UJD SR for issue of the permission of these changes before their implementation. UJD SR then verifies the effectiveness of the proposed changes and their total impact upon the physical protection system by its inspection activities. The main focus is that the conceivable changes should not impair the physical protection system level.

Conclusion

Based on the inspections performed up to date, it can be satisfactorily stated that the automated security system AKOBOJE installed in the nuclear facilities in Slovakia is fully functional and reliable and it complies with even highest requirements imposed upon the systems of this type in the develop countries.