



MODERNIZATION OF THE PHYSICAL PROTECTION SYSTEM OF IPEN-CNEN/SP

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The plans of physical protection of nuclear facilities must be reviewed and updated every two years [1]. A general study of the physical protection system was carried out in order to review and to update the plan of physical protection of IPEN-CNEN/SP. Important alterations accomplished at the institute were considered in the study, as the installation of a cyclotron 30 MeV and the new operation conditions for the nuclear research reactor IEA-R1, that include the increase of its operation power from two to five megawatts and the establishment of the continuous operation by 72 hours weekly.

The area of IPEN-CNEN/SP is 478,000 m² (101,850 m² built area of 107 constructions). The group responsible for the study investigated the performance of the physical protection system and detected some points that could be reinforced at inner and protected areas. The initial step was the evaluation, *in loco*, of the constructions and physical barriers of inner and protected areas. The performance of the security force personnel on the conventional procedures, as access control to the facilities, control of material flow, area monitoring and patrol, as well as its response for special situation procedures in the case of a physical protection emergency, were evaluated too. The study also focused the communication means used by the security force, as the extension phone lines that are located in each entrance area and in the huts, and the portable VHF radios that are used by the guards.

In order to elaborate a programme of modernization of the physical protection system, using the results of the study as basis, an internal committee composed of specialists in physical protection, nuclear safety, operation of reactors and engineering areas was created. The programme elaborated by the committee strengthens the physical protection system by applying the defense in depth concept [2]. At the same time, it attempts to propitiate a balanced protection to minimize the consequences for the failure of one component of the physical protection system.

Periodic maintenance of physical barriers, as fences, has been performed in order to keep the level of opponent retard. Portable VHF radios have been purchased to improve the security force communication, creating redundancy in the communication channels. The performance of the physical protection system depends largely on the security force personnel. For this reason, the modernization programme dedicates special attention to the training of those professionals. Emphasis is being given to the emergency procedures, because the personnel action in those cases was considered an important point. The specific training on radio communication is also being reinforced.

Nowadays the committee is evaluating the creation of an integrated center of physical protection (ICPP), where the central alarm station will be installed. The ICPP will monitor continuously the intrusion sensors to be installed at the institute. In order to assess the alarms, TV cameras will be installed all around the fences of inner and protected areas. The ICPP will be equipped with redundant communication means with the security and response forces and with the high administration of the institution.

REFERENCES

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