

Challenges for nuclear security of Small Modular Reactors (SMR) in Argentina

The development of different Small Modular Reactor projects around the world will allow the production of electricity in many countries, with benefits in terms of costs, both in the construction and in the maintenance and operation of the facilities, which is a strong incentive for the use of this type of reactors in a wide range of environments and geographical locations.

Currently, the National Atomic Energy Commission (CNEA –Comisión Nacional de Energía Atómica) is developing the CAREM project (Central Argentina de Elementos Modulares), the first power reactor fully designed and built in Argentina, which is a PWR type (Pressurized Water Reactors) with an electrical output of 32 MWe. Due to the territorial characteristics of a country such as Argentina, CAREM reactors have an important projection for the electrical supply of areas far from the large urban centers, allowing the decentralization of electricity generation as well as the apportionment of the costs associated with the different stages because their modularity (even in case of power increase). Also, these reactors appear as ideal electrical generators for manufacturing centers with high energy consumption, so as to make independent the industrial consumption of the domestic one. In addition, they offer services such as the provision of steam for various industrial uses, or the feeding of seawater desalination plants (facilities that demand high and constant electricity consumption).

The above mentioned cost reduction also implies a simplification in the design of the physical protection system, without compromising nuclear security, which requires to adequate the regulatory approach.

In Argentina, the Nuclear Regulatory Authority (ARN –Autoridad Regulatoria Nuclear) is the entity devoted to the regulation of the nuclear activities in the country, with competence in the areas of radiological and nuclear safety, safeguards and non-proliferation, and physical protection. The ARN is empowered to establish the regulatory standards within its competence, to license facilities and practices that use radioactive material as well as the personnel with safety relevant functions, and to control the activity (performing inspections and regulatory audits).

The objective of this work is to present the current situation in Argentina related to nuclear security for the Small Modular Reactors and the associated difficulty, describing the CAREM project and the applicable regulatory framework, contemplating the challenges represented by the siting, the facility, as well by the transport and storage of the fuel elements. Also, it will be explained the importance of considering nuclear security from an early stage of the design of the project and it will be covered interface aspects between nuclear security and radiological and nuclear safety, elaborating regulatory recommendations with the purpose of establishing nuclear security measures for this type of facilities, in a sustainable manner.

Gender

Male

State

Argentina

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