

Safety of Nuclear Installations

Objective

To enable Member States to ensure appropriate levels of safety during the design, construction and operations throughout their total life cycle of all types of nuclear installations through the availability of a set of safety standards and assistance in their applications. To enable Member States seeking to embark on nuclear power production programmes to develop appropriate safety infrastructures through the availability of Agency guidance and assistance.

Regulatory Safety Services

The Agency continued to promote and support the establishment of a global safety regulatory regime through facilitating international peer reviews of Member State regulatory bodies. In 2009, full scope Integrated Regulatory Review Service (IRRS) missions were carried out in Canada and the Russian Federation, and follow-up missions visited France and the United Kingdom. These missions identified demonstrable improvements as a result of the earlier IRRS missions.

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Nuclear Safety Infrastructure for Countries Embarking on Nuclear Power Programmes

In addition to supporting countries with developed nuclear power programmes, significant efforts were made during the year to assist the increasing number of countries embarking on nuclear power projects. Strengthening regulatory systems and helping build the necessary infrastructure were major areas of focus at the national, regional and international levels, mainly through training courses and workshops, and also through the formulation of guidelines for competency self-assessment. In addition, the Agency continued to support the development of knowledge sharing through networking activities.

A key activity was the completion of a Safety Guide entitled *Establishing the Safety Infrastructure for a Nuclear Power Programme*. The publication provides a ‘road map’ of safety related actions to be

taken in the first three phases of the development of a nuclear power programme in order to achieve a high level of safety during the lifetime of the nuclear power plant.

International Nuclear Safety Centre

To support regulators and operators in Member States, and to provide a platform for promoting harmonization, sustainability and knowledge management, the Agency established the International Nuclear Safety Centre (INSaC) (Fig. 1). Through the Centre, the Agency will further integrate, unify and expand the range and capacity building efforts of its various safety initiatives, with the Agency’s safety standards serving as a catalyst in promoting a globally harmonized approach to nuclear safety. In 2009, the Centre’s activities in safety assessment education and training resulted in the development of an analytical training simulator and the implementation of a pilot course on the essential level of knowledge required.

A Generic Reactor Safety Review (GRSR) framework was developed during the year to provide Member States with early appraisals of reactors. The Agency’s safety standards form the basis for individual evaluations. Six different reactor safety cases were reviewed, focusing on conceptual as well as mature designs. In 2009, a review of the APR-1400 advanced reactor in the Republic of Korea was completed. In addition, two International Probabilistic Safety Assessment Review Team (IPSART) missions were carried out. One examined the design PSA of the Belene WWER-1000 reactor in Bulgaria and the second mission addressed the Level-1 Internal Events PSA for the Chashma Unit 1 nuclear power plant in Pakistan.

Operational Safety Services

The Agency’s operational safety services — and the Operational Safety Review Team (OSART) programme in particular — continued to be requested by Member States. Six OSART missions were undertaken in China, France, Japan, Spain, Sweden and Ukraine. Six OSART follow-up missions to Belgium, France, Germany, Sweden

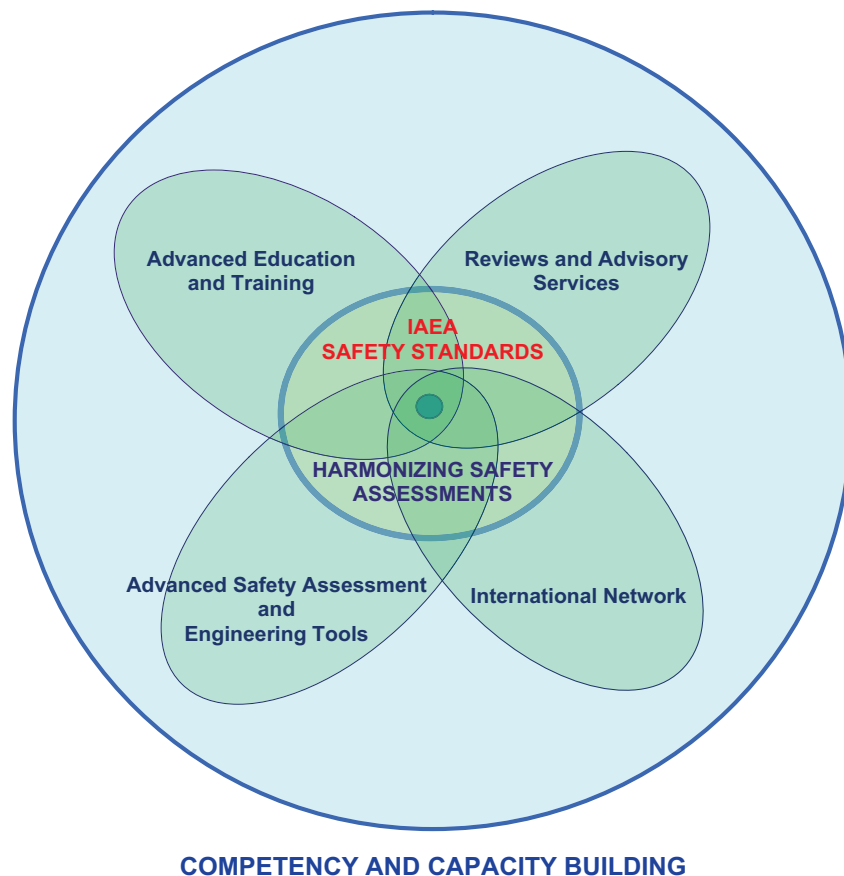


FIG. 1. The role of INSaC and how it fits in the wider context of global nuclear safety and security.

and Ukraine, and a follow-up Peer Review of Operational Safety Performance Experience (PROSPER) mission to Brazil demonstrated successful resolution of issues identified during the earlier missions. New review modules in the areas of long term operation, transition from operation to decommissioning, applications of probabilistic safety assessment and accident management are now available. The capability to perform an OSART mission at a plant in the construction phase and at a corporate organization with multiple nuclear power plants is being developed. In addition, a Safety Culture Assessment Review Team (SCART) follow-up review in Spain, a SCART mission to Mexico and a safety service for Safety Aspects of Long Term Operation of Water Moderated Reactors Peer Review Service (SALTO) in the Netherlands were conducted.

Operating Experience

The Incident Reporting System (IRS) is an international system jointly operated by the Agency and the OECD/NEA and has more than 3600 reports in its database. In 2009, recommendations

made in IRS topical studies and with regard to selected events contained in the IRS database were reviewed to confirm that lessons learned from significant events have been mostly covered by the Agency's safety standards. In addition, an action plan was developed by the Agency to improve the international operating experience processes.

Application of the Code of Conduct on the Safety of Research Reactors

The Agency continued to encourage Member States to apply the Code of Conduct and to make greater use of the safety standards. To support this effort, the Agency held several technical meetings in 2009 on the safety of research reactors, on the Incident Reporting System for Research Reactors, and on ageing management, modernization and refurbishment. Training activities included a regional workshop for Africa on safety analysis, preparation and review of safety documents, and two regional workshops for Asia on operational radiation protection and periodic safety review. The Agency also published a Safety Guide on radiation protection and waste management; progress was

made in the development of another four guides, which will provide additional guidance on the application of the Code.

Enhancing Networking and Sharing of Expertise and Operating Experience

During 2009, the Agency established a web based Research Reactor Information Network to further enhance the sharing of knowledge, experience and information on good safety practices. The Agency also facilitated the establishment of a Regional Advisory Safety Committee for Africa (RASCA) to share expertise and address important safety issues for research reactors in this region.

The Agency organized two technical meetings for the national coordinators of the Incident Reporting System for Research Reactors (IRSRR) and fuel cycle facilities (FINAS). Currently, 51 Member States participate in the IRSRR. Operational as a web based system in 2008, FINAS now covers 80% of the fuel cycle facilities worldwide.

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International Seismic Safety Centre

The main objective of the Agency's International Seismic Safety Centre (ISSC) is to revise current and develop new safety guides in the areas of: assessment against seismic, volcanic, meteorological and hydrological hazards; seismic re-evaluation of existing installations; and criteria for site selection. For example, a safety report was prepared outlining the criteria and methodologies for pre-earthquake planning and post-earthquake response actions following seismic events affecting nuclear power plants. A range of activities was carried out through the extrabudgetary projects on seismic and tsunami safety. In addition, development began of an External Events Notification System for earthquakes and tsunamis, in cooperation with the US Nuclear Regulatory Commission, the US Geological Survey and the US National Oceanic and Atmospheric Administration. Finally, the Agency conducted safety review missions to six Member States to assist them in selecting their first nuclear power plant site.