

Safety of Nuclear Installations

Objective

To achieve and maintain appropriate levels of safety in nuclear installations during their design, construction and total life cycle through promulgating safety standards for all types of nuclear installations. To assess the application of these safety standards throughout the world.

Promoting Safety Culture in Member States

The objective of a Safety Culture Assessment Review Team (SCART) mission is to conduct an in-depth, independent review of safety culture at a Member State nuclear facility. The Agency carried out such a mission from 27 February to 10 March at Pebble Bed Modular Reactor (Pty) Limited, in Pretoria, South Africa; this was the first SCART mission to review a design organization. The team reviewed the company's management systems, programmes and procedures, observed work in progress and held interviews with more than 200 of the company's personnel. All major functional areas of the organization were covered. As with all its review missions, performance was assessed using the Agency's safety standards. The team found many signs of a strong safety culture at the company, as well as a commitment to maintain such a culture. An action plan was developed and is being implemented on the basis of the team's recommendations.

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The Agency's Incident Reporting Systems

The Incident Reporting System (IRS) is an international system jointly operated by the Agency and the OECD/NEA. Thirty-one participating countries use the IRS to exchange experience to improve the safety of nuclear power plants by submitting event reports on unusual events considered important for safety. In 2006, the Web Based Incident Reporting System replaced the

Advanced Incident Reporting System (AIRS) for the preparation, storage, dissemination, searching and retrieval of event reports submitted by IRS participants. One of the major advantages of this new system is that text, graphics and numerical information can now be included in the database, which is updated daily. A companion database, the Incident Reporting System for Research Reactors, grew in 2006 to 48 Member States from 47 in 2005.

Protecting Nuclear Power Plants against Sabotage

While nuclear installations in general, and nuclear power plants in particular, can be considered to be well protected, the potential for sabotage still exists. Recognizing this, the Agency finalized a guidebook entitled *Engineering Safety Aspects of the Protection of Nuclear Power Plants against Sabotage* (IAEA Nuclear Security Series No. 4). This publication, while taking into account the existing robustness of nuclear power plant structures, systems and components, provides methods for evaluating – and proposing corrective actions for reducing – the risk related to any malicious act that could endanger the health and safety of plant personnel, the public and the environment through exposure to radiation or the release of radioactive substances. Training on these guidelines was also provided to a number of Member States.

Nuclear Power Plant Operational Safety

The Agency's Operational Safety Review Team (OSART) programme, which provides advice on selected operational aspects and on the safety management of nuclear power plants, has conducted 138 missions since 1982 and continues to be in great demand. In 2006, four OSART, and nine follow-up missions were conducted, in addition to preparatory visits to Belgium, Finland, France, Germany, the Republic of Korea and Ukraine (Fig. 1).

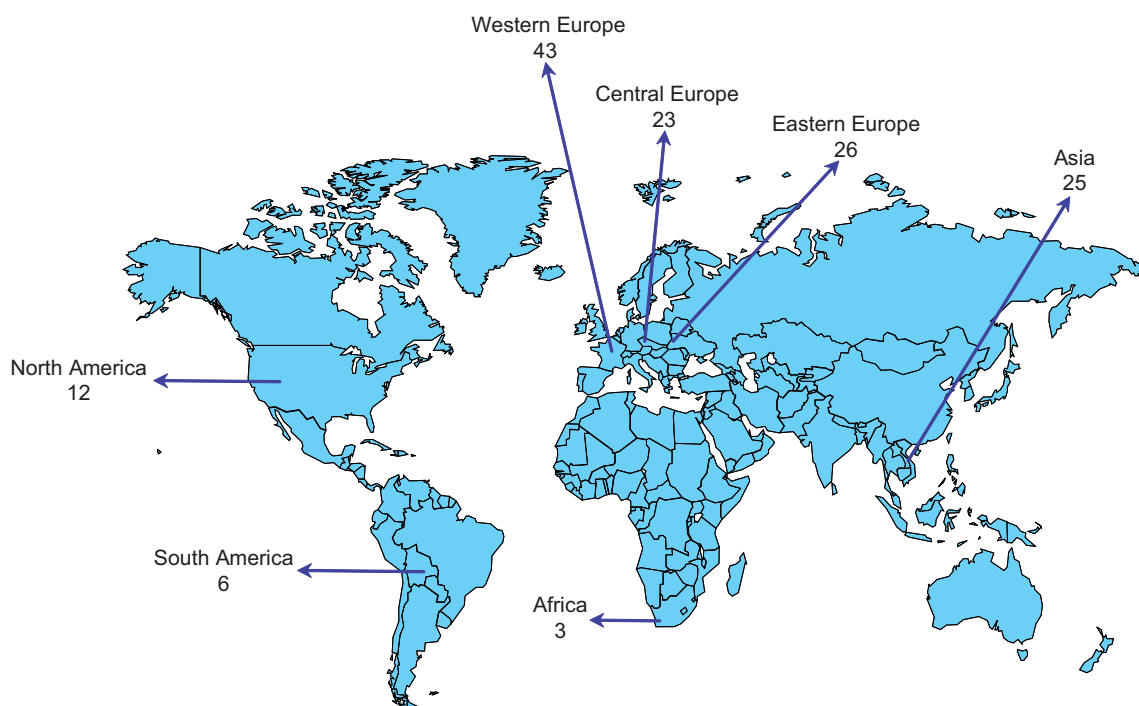


FIG. 1. OSART missions carried out worldwide since 1982.

The IAEA safety standards series of publications serve as the main evaluation criteria and provide a sound basis for each recommendation and suggestion developed by an OSART team. During the four missions in 2006, 47 good practices were identified, the most important of which were the analysis of ion exchange resins at the Mochovce plant in Slovakia, the 'Fire Committee' at the St. Laurent plant in France and an on-line monitoring system for the management and control of maintenance tasks at the Ignalina plant in Lithuania.

In line with the principle that the OSART service is flexible and can be tailored to the needs of a requesting Member State, the Agency developed new optional review areas for consideration as part of an OSART mission. These cover: accident management, long term operation and application of probabilistic safety assessment for decision making.¹

During follow-up missions, teams evaluate the status of issues raised during the main mission. As Table 1 shows, in recent years the vast majority of issues raised have either been resolved or satisfactory progress has been made in finding solutions.

¹ The latest information on OSART, including the best practices identified, is available on the Agency's web site (<http://www-ns.iaea.org/reviews/op-safety-reviews.htm>).

Ensuring the Safety and Security of Research Reactors

The Agency organized two regional meetings in 2006 — one in Romania for eastern Europe and one in Morocco for Africa — to bring together senior experts in those Member States either having or planning research reactors. The intention was for the Agency to explain the background, content and legal status of the Code of Conduct on the Safety of Research Reactors and to provide the Agency's views

TABLE 1. RESULTS OF OSART FOLLOW-UP MISSIONS, 1989–2006

Year (visits)	Resolved (%)	Satisfactory progress (%)	Insufficient progress (%)	Withdrawn (%)
1989–1990 (6)	40	43	14	3
1991–1992 (10)	43	38	17	1
1993–1994 (11)	46	41	13	<1
1995–1996 (5)	59	39	2	0
1997–1998 (6)	45	47	7	1
1999–2000 (7)	38	52	10	0
2001–2002 (6)	61	35	3	0
2003–2004 (7)	58	40	2	0
2005–2006 (14)	56	41	2	<1

on the benefits to be derived from applying it. The meetings also examined the status of research reactor safety in the participating Member States.

Furthermore, the Agency provided assistance to the Democratic Republic of the Congo in developing an action plan aimed at ensuring the safety and security of the CREN-K research reactor, including the safety and security of the fresh and spent fuel present at the reactor. The plan was developed for immediate implementation and will make use of an ongoing technical cooperation project.

Expert Mission to Bulgaria

Following the discovery in March 2006 that 22 out of 61 control rods in Unit 5 of the Kozloduy nuclear power plant would not move when required, the plant conducted an investigation to determine the causes and to propose measures to prevent a recurrence. At the request of the Bulgarian authorities, the Agency conducted an expert mission to assist in assessing the root cause of the event and to evaluate the adequacy of the proposed measures. Having observed testing at the plant, the mission concluded that the event investigation was thorough and that the proposed corrective actions were appropriate. The team also made a number of recommendations to both the regulatory authority and the plant.

Engineering Safety Review Services

The Agency's Long Term Operation Safety Review Service was offered for the first time in 2006, and missions were conducted to Hungary and Ukraine. This service assists Member States in implementing Agency guidance for the safe operation of a nuclear power plant beyond the established timeframe originally set forth by the licence, design limits, standards and/or regulations. The guidance requires a specific safety analysis that considers the life limiting processes and features for systems, structures and components and a justification for continued operation.

Advanced Safety Assessment

A Centre for Advanced Safety Assessment Tools was established by the Agency to improve international cooperation and to help eliminate differences in safety assessment capabilities. Through the centre, Member States can gain access to advanced safety assessment tools, including high quality probabilistic and deterministic analysis codes, models, databases, validation and verification information, analytical procedures, standards and guides. ■