

Working to Protect People, Society and the Environment



IAEA

Nuclear Safety and Security Programme



IMPROVING SAFETY ASSESSMENT AND THE INTEGRATED DECISION MAKING PROCESS

Safety Assessment activities focus on the development, promotion and application of an integrated (probabilistic and deterministic) approach to safety assessment and evaluation by:

- » Developing and updating safety standards and safety indicators for a broad range of plant conditions and different nuclear power systems to assure an integrated focus on safety performance;
- » Supporting Member States in implementation of IAEA safety standards with interpretation and guidelines;
- » Integrated safety reviews addressing all phases of nuclear power programmes, i.e. conceptual and pre-application (generic safety review of new reactor designs), licensing and safety analysis, plant safety issues and life extension, periodic safety review and pre-decommissioning in support of Member States and of other related IAEA programmes;
- » Assisting Member States to increase their capacity and competency to achieve a high level of safety through a consistent approach to risk-informed regulations and the use of Safety Performance Indicators and other safety management tools.

Specific topical areas and their applications include: design basis accident, beyond design basis accident, safety analysis, accident management, safety performance indicators, risk informed decision making, and deterministic and probabilistic safety assessment methods/tools.

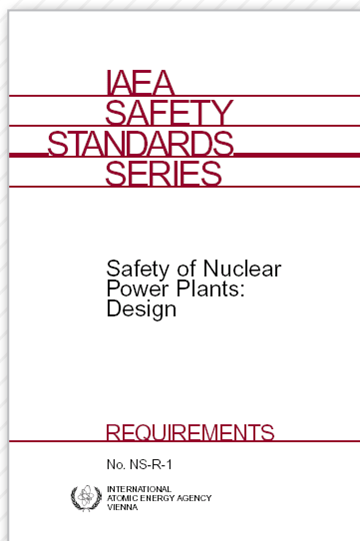


FIG. 1

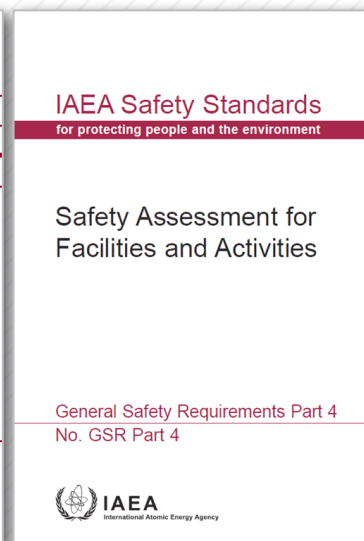


FIG. 2

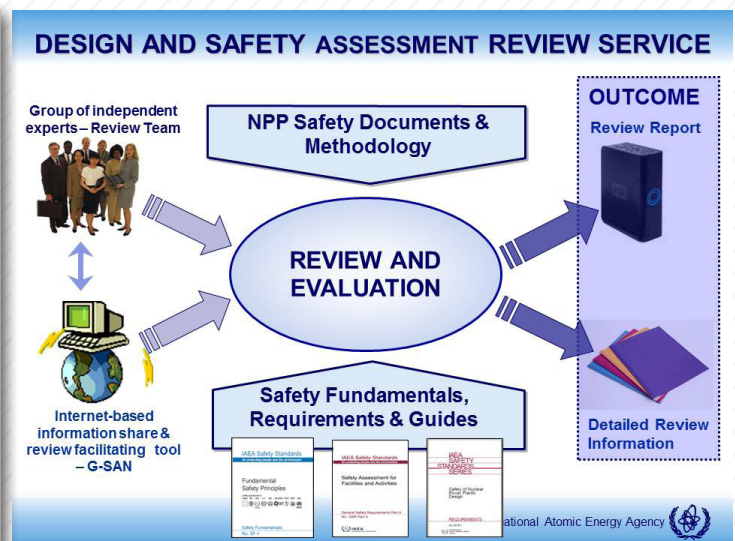


FIG. 3

Safety Assessment Activities

Safety standards and technical documents

The basis for all nuclear installation safety activities is the IAEA Safety Standards, which represent the international consensus on best international practices to achieve a high level of safety. One of the most important activities related to safety assessment is the development and application of standards and technical documents. (See FIG. 1 & 2)

Review Services

Design and Safety Assessment Review Service (DSARS)

Upon request of Member State organizations, the IAEA provides advisory services to review the design safety and safety assessments of power reactors against IAEA safety standards. The services include and integrate the following complementary services in key technical safety assessment areas:

- » Design Safety Review Service (DSRS);
- » International Probabilistic Safety Assessment Review Team (IPSART);
- » Review of Accident Management Programme and Emergency Operating Procedures (RAMP);

- » Generic Reactor Safety Review Service (GRSR);
- » Periodic Safety Review Services (PSRS).

Elements of this service provide the technical bases for tailoring the reviews to the different phases of a reactor project. Also elements from these services can be combined to address the specific needs of a requesting Member State organization or to reviewing the documentation of complete safety cases.

The design and safety assessment reviews may be carried out at the various phases of a reactor project, e.g. at the conceptual design stage, during various pre-licensing phases, for reactors under construction or in operation and for reactors undergoing a pe-

riodic safety review or life extension. The services also offer to address specific technical aspects such as plans for plant modifications.

The services make use of guidance documentation which provides guidance to the reviewers, includes references to related IAEA standards, and refers to good practices.

Services can be requested through the Safety Assessment Section or through the TC Programme. (See FIG. 3)

Education, Training and Capacity Building

The Safety Assessment Education and Training Programme (SAET)

The Safety Assessment Education and Training (SAET) Programme has been designed to support the Member States with development of required safety assessment capacity and competency. The Programme provides for courses and training necessary to achieve knowledge of safety requirements associated with the design and operation of nuclear facilities, and focuses on development of specialized knowledge essential for assessment and evaluation of safety.

A comprehensive and sustainable training programme

The SAET was developed to:

- » Provide a consistent set of ready to use training modules evaluated by senior experts;
- » Ensure content quality and maximum education and training effectiveness;
- » Deliver a sustainable means for conducting high quality workshops and seminars;

Based on the IAEA safety standards and international expertise

SAET takes its roots from the IAEA Safety Standards, especially the Fundamental Safety Principles and the Safety Assessment for Facilities and Activities Requirements. The SAET programme content is based on international best practices and expertise.

Developed for a wide range of training needs

The training programme addresses education and training needs for a

SAET Curriculum Structure

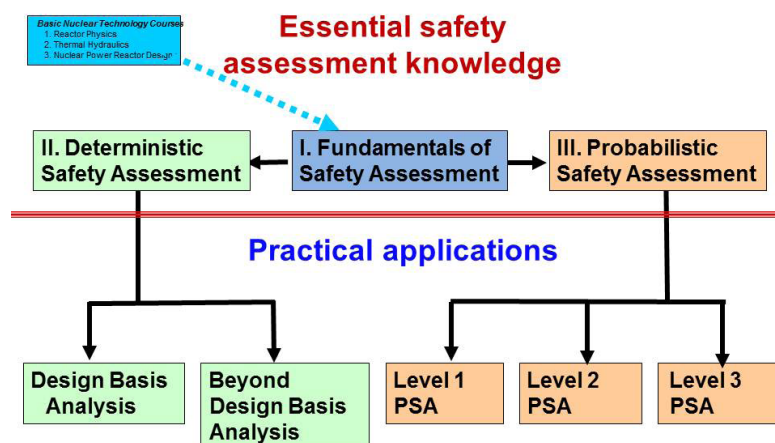


FIG. 4

wide range of personnel, from those with little or no experience in safety assessment to those seeking to gain specialized expertise in certain areas of safety assessments. The modules are intended for representatives of regulatory authorities, TSOs and plant operators from countries developing new or expanding existing nuclear power programmes seeking to enhance their knowledge of safety assessment.

A multilevel programme – from introductory to analyst training

Incorporating a broad scope of safety assessment training modules, the multilevel programme is organized to accommodate the training of staff from differing professional backgrounds and educational levels. (See FIG. 4)

Safety Assessment Capacity and Competency Review (SACCR)

Because of the complex character of safety assessment and the diversity of skill requirements, the IAEA offers advisory services on Safety Assessment Capacity and Competency Review (SACCR). The SACCR offers the following advisory services to Member States:

- » Review of existing capacities and the educational and training infrastructure;
- » Support in the development of capacity requirements;

- » Support in the development of capacity building strategies considering national and regional infrastructures;
- » Support and guidance in the development of sustainable education and training programmes for safety assessment capacity and knowledge management.

The Safety Assessment Capacity and Competency Review (SACCR) is based on the IAEA Safety Standard safety assessment requirements and the Safety Assessment Education and Training Programme (SAET) knowledge requirements for safety assessment competency and best practices among Member States. Training and capacity building activities can be requested through the Safety Assessment Section/NSNI or through the TC Programme.

Knowledge Network

The Global Nuclear Safety Assessment Network (G-SAN)

Building global and regional safety assessment networks for sharing tools and methods, methods validation, and for conduct of standard exercises using existing networks such as the “Asia Nuclear Safety Network” (ANSN).

The IAEA is setting up a Global Nuclear Safety Assessment Network (G-SAN) to link experts worldwide and to facilitate focused collaboration on

Safety Assessment

safety assessment capacity building in support of global nuclear safety harmonization, especially in the expanding and developing nuclear programmes worldwide.

The G-SAN framework and platforms will be used to:

- Support Member States in safety assessment knowledge management and capacity building;
- Share among Member States safety assessment experience including analytical and experimental information;
- Collaborate on validation and improvement of safety assessment methods.

The G-SAN network concept

The network will be based on the existing experience and products of the IAEA Centre for Advanced Safety Assessment Tools (CASAT). The G-SAN will maintain a central database that includes a repository of references, experimental and other databases, safety assessment tools and collaboration space for work on documents, reviews, etc. In general, access to the network will be reserved for organizations participating in specific projects. However, some elements of the network will be publicly available.

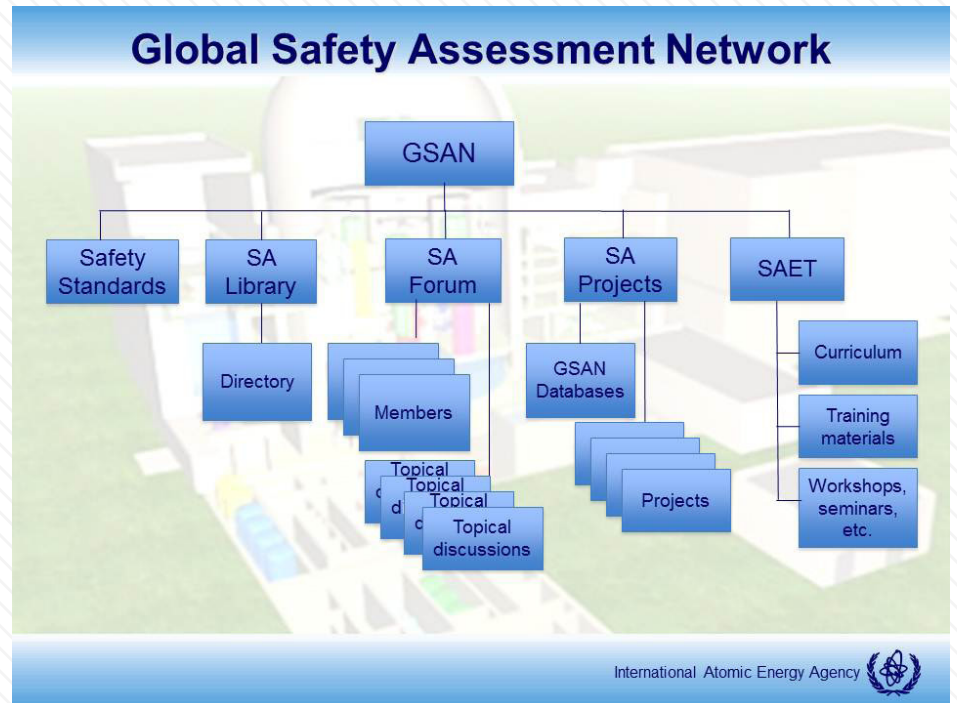


FIG. 5

The G-SAN advisory group

The G-SAN Advisory Group, consisting of representatives of participating Member States and Technical Support Organizations (TSOs), will review the G-SAN programme annually and provide advice on its operation and activities. The operation of the network will rely on voluntary extrabudgetary and in-kind contributions of participating Member States.

For Further Information:

Contact: Safety-Assessment.Contact-Point@iaea.org

See: <http://www-ns.iaea.org/tech-areas/safety-assessment/default.asp?s=2&l=11>

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