The Abdus Salam
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Joint ICTP-IAEA School of Nuclear Energy Management

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Peer Reviews and Advisory Services

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IAEA NUCLEAR ENERGY POLICY MANAGEMENT SCHOOL
Module 1: Nuclear Energy Policy and Management

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Peer Reviews and Advisory Services

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IAEA
International Atomic Energy Agency

IAEA SAFETY REVIEW SERVICES

- Peer reviews performed upon request of Member States.
- Assess compliance with Safety Standards and effective performance.
- provide recommendations for improvements.
- Results publically available (unless formally requested by Member State).

Areas Covered

- Cover all areas of nuclear safety infrastructure
  - Regulatory framework (IRRS)
  - Technical safety of NPP (PSA, design, accident management,…)
  - Siting
  - Operational safety of NPP (OSART)
  - Research reactors
  - Fuel cycle facilities

IAEA SAFETY REVIEW SERVICES 1/2

- Integrated Regulatory Review Service (IRRS)
- International Probabilistic Safety Assessment Review Team (IPSART)
- Review of Accident management Program (RAMP)
- Safety Assessment and Design Safety Review Service (SADRS)
- Generic reactor Safety Review (GRSR)
- International seismic safety centre Services (ISSC)

IAEA SAFETY REVIEW SERVICES 2/2

- Operational Safety Review Team (OSART)
- Integrated safety Assessment of Research Reactors (INSARR)
- Safety assessment of Fuel Cycle Facilities during operation (SEDO)

In-depth introduction to Operational Safety Review Service as example

- OSART = Operational Safety Review Team
- OSART selected as example
  - It is the best known peer review service of IAEA
  - It was established in 1982 and more than 160 missions have been conducted since then
  - Other services use methodology similar to OSART

Objectives of the OSART programme 1/2

- to provide the host country (regulatory authority, plant/utility management and governmental authorities) with an objective assessment of the status of the operational safety of an NPP with respect to international standards of operational safety and performance;
- to provide the host plant with recommendations and suggestions for improvement in areas where performance falls short of IAEA Safety Standards and international best practices;

Objectives of the OSART programme 2/2

- to provide all Member States with information regarding good practices identified in the course of the review;
- to provide experts and observers from Member States with opportunities to broaden their experience and knowledge of their own field.

Standard review scope: 10 areas

- Management, organization and administration
- Training and qualification
- Operations
- Maintenance
- Technical support
- Operational experience feedback
- Radiation protection
- Chemistry
- Emergency planning and preparedness
- Severe Accident Management

Customized OSART review scope

Customized review scope = Standard areas + selected optional areas

Optional areas :

- Commissioning
- Long Term Operation
- Transition from Operations to Decommissioning
- Probabilistic Safety Assessment Applications
- Independent Safety Culture Assessment

Safety Standards used during OSART 1/2

- Safety of Nuclear Power Plants: Commissioning and Operation – SSR 2/2
- Fire Safety in Operation – NS-G-2.1
- Operational Limits & Conditions and Op. Procedures – NS-G-2.2
- The Plant Modifications – NS-G-2.3
- The Operating Organization – NS-G-2.4
- Core Management and Fuel Handling – NS-G-2.5
- Maintenance, Surveillance and In-Service Inspection – NS-G-2.6
- Radiation protection and Rad. waste management – NS-G-2.7
- The Recruitment, Qualification and Training – NS-G-2.8
- Commissioning – NS-G-2.9
- Periodic Safety Review – NS-G-2.10
- Feedback of Experience from Events in Nuclear Installations – NS-G-2.11
- Ageing management for Nuclear Power Plants – NS-G-2.12
- Evaluation of seismic safety for existing nuclear installation – NS-G-2.13
- Conduct of Operations – NS-G-2.14
- Severe accident management programmes for NPP – NS-G-2.15
- Chemistry – SSG 13
- ILO codes of practice – Industrial safety reference

Safety Standards used during OSART 2/2

- The Management System for Facilities and Activities: GS-R-3
- Application of Management Systems to Facilities – GS-G-3.1
- The Management System for Nuclear Installations – GS-G-3.5
- Safety assessment and verification - NS-G-1.2

- Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards - GSR Part 3 Interim edition
- Occupational Radiation Protection RS-G-1.1
- Assessment of Occupational Exposure Due to Intakes of Radionuclides RS-G-1.2
- Assessment of Occupational Exposure Due to External Sources of Radiation RS-G-1.3
- Environmental and Source Monitoring for Purpose of Radiation Protection RS-G-1.8

- Preparedness and Response for Nuclear or Radiological Emergency: GS-R-2
- Arrangements for Preparedness for a Nuclear or Radiological Emergency GS-G-2.1

- INSAG Reports

NE Services on Nuclear Power Technology Development

1. Support technology developers and utilities/users in Member States in design certification and licensing – by addressing issues and challenges in deployment;
2. Facilitate capacity building in newcomer countries on advanced reactor technology identification and assessment – through providing trainings on design/operating fundamentals and technology assessment;
3. Promote nuclear power utilizations in synergy with advanced non-electric applications, including sea-water desalination, hydrogen production, industrial process heats and renewable energy resources.
4. Assist stakeholders in Member States in incorporating safety lessons-learned from the Fukushima Daiichi accident into the development and deployment activities in advanced reactor technologies.
5. Coordinate advanced research & development (R&D) activities through Coordinated Research Project, in particular to address the item #4.