Overview of Structure of Services offered by Department of Nuclear Safety and Security (NS)

Technical Meeting on Peer Reviews and Advisory Services in the Areas of Nuclear Safety and Security
29-30 June 2020

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Operational Safety Review Team (OSART)

Purpose: To provide an objective and independent assessment of the status of NPP operational safety with respect to the IAEA Safety Standards

Audience: Organizations that operate nuclear power plants, including corporate organizations

Duration: 18 days

Team composition: 2-3 IAEA experts, up to 16 MS experts

Follow-up: within 1–1.5 years

* total number of missions to date
Integrated Regulatory Review Service (IRRS)

Purpose: a review intended to strengthen and enhance the effectiveness of MSs national regulatory infrastructure for nuclear, radiation, radioactive waste and transport safety

Audience: Governmental organizations and regulatory bodies dealing with nuclear safety

Duration: 5-14 days,

Team composition: 1 – 2 IAEA experts +12 – 21 MS experts

Follow-up: within 2 - 4 years

* total number of missions to date
Technical Safety Review (TSR)

Purpose: To provide a tailored, independent evaluation of MS documentation and activities in six safety areas

Subject areas:
- Design Safety (DS)
- Generic Reactor Safety (GRS)
- Safety Requirements (SR)
- Probabilistic Safety Assessment (PSA)
- Accident Management (AM)
- Periodic Safety Review (PSR)

Audience: Regulatory bodies, Plant operating organizations, Vendors and other stakeholders

Duration: Varies depending on the scope requested for review

Team composition: Lead by IAEA staff; # experts: dependent on scope

* total number of services to date
Integrated Safety Assessment of Research Reactors (INSARR)

Purpose: To review the safety assessment of design and siting aspects of a reactor project. It also reviews practices at an operating research reactor, or evaluates ageing management programmes and long-term operation processes

Audience: Regulatory bodies, current or future operators

Duration: 5-10 days

Team composition: 1 – 2 IAEA experts, 3-7 MS experts

Follow-up: within 1 – 2 years

*total number of missions to date
International Physical Protection Advisory Service (IPPAS)

Purpose: To assist Member States in strengthening their national nuclear security regimes.

Audience: Competent Authorities, Operators, Shippers/Carriers

Duration: 10-14 days

Team composition: 1-2 IAEA experts, 5-10 MS experts

Follow-up: within 5 years

* total number of missions to date
International Nuclear Security Advisory Service (INSServ)

Purpose: To assist maintaining and strengthening the nuclear security regime related to nuclear and other radioactive Material Out of Regulatory Control (MORC).

Audience: Regulators, Operators, Educators, and Law Enforcement and Government officials. Customs and Border Control, National Security and Intelligence Agencies, Response Organizations, Judicial Entities, and other stakeholders.

Duration: 5-10 Days

Team composition: 1-2 IAEA experts, 3-6 MS experts.

North America: 0
Europe: 23
Asia and the Pacific: 15
Africa: 20
Latin America and the Caribbean: 18

76 INSServ Services*

* total number of missions to date
National Regulatory Infrastructure for Radiation Safety (AMRAS)

Purpose: To provide Member States with advice and, where appropriate, support in their efforts to establish or improve national regulatory infrastructure for radiation safety.

Audience: Regulatory Bodies

Duration: 4 – 5 days

Team composition: 3 - 5 experts (one to two IAEA staff members and 2 – 3 external experts)

Follow-up: within 2 – 3 years

56 AMRAS Services*

* total number of missions to date
Safety Aspects of Long Term Operation (SALTO)

Purpose: To review the strategy and key elements in preparing for the safe long-term operation of nuclear power plants

Audience: Nuclear Power Plant Operators, Research Reactor Operators

Duration: 8 – 9 days

Team composition: 1 – 2 IAEA Staff, up to 6 MS experts

Follow-up: within 1.5 – 2 years

* total number of missions to date

North America 0
Europe 31
Africa 3
Asia and the Pacific 11
Latin America and the Caribbean 7

52 SALTO Missions*
Emergency Preparedness Review Service (EPREV)

Purpose: To review the level of preparedness for a nuclear or radiological emergency in a MS

Audience: All relevant organizations and facilities involved at the national, local, facility or activity level

Duration: 5 – 12 days

Team composition: 1 – 2 IAEA experts, up to 6 MS experts

Follow-up: within 2 – 4 years

* total number of missions to date
Education and Training Appraisal (EduTA)

Purpose: To evaluate the provisions for education and training in radiation protection and safety of radiation sources
Audience: Regulatory bodies and Education and Training providers.
Duration: 3 - 5 days
Team composition: 1 - 2 IAEA experts, 2-3 MS experts
Follow-up: within 2 – 4 years

North America 0
Europe 7
Africa 6
Asia and the Pacific 9
Latin America and the Caribbean 5

27 EduTA Mission*

* total number of missions to date
Site and External Events Design (SEED)

Purpose: To review site-specific hazards in relation to natural and human-induced external and internal hazards considered during site selection, site evaluation, design and safety assessment of a nuclear installation.

Audience: Regulatory bodies, current or future operators and vendors

Duration: 3-10 days

Team composition: 1-2 IAEA experts and 3-10 external experts

Follow-up: within 1 – 1.5 years

* total number of missions since 2015

North America 0
Europe 04
Asia and the Pacific 18
Middle East and Africa 03
Latin America and the Caribbean 1

26 SEED missions*
Occupational Radiation Protection Appraisals (ORPAS)

Purpose: To provide reviews of legislation, regulation and practical implementation of requirements related to occupational radiation protection.


Duration: 7-10 days

Team composition: 5-7 international experts & IAEA coordinator.

Follow-up: within 1.5 – 2 years

*total number of missions to date
Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS)

Purpose: to review safety and technical aspects in spent fuel and radioactive waste management, as well as decommissioning of nuclear facilities and remediation activities.

Audience: National stakeholders responsible for radioactive waste management such as regulatory bodies, facility operators, and other implementing organizations.

Duration: up to 14 days

Team composition: 1-2 IAEA experts + up to 10 MS experts

Follow-up: on request, advised between 2-4 years interval

* total number of missions to date (including services which predate ARTEMIS)
Purpose: a review intended to strengthening and maintaining their safety culture and provides the basis for sustainable improvements in safety culture.

Audience: Operating organization, regulatory body

Duration: 10 days

Team composition: 1-2 IAEA staff members and up to 5 external experts

Follow-up: within 1.5 - 2 years

* total number of missions to date
Independent Safety Culture Assessment Review Service (ISCA)

Purpose: To review and identify areas requiring attention to enhance the safety culture efforts. It is offered in the frame of an OSART mission.

Audience: licence holders for nuclear facilities and activities

Duration: 10 - 15 days

Team composition: 1 – 2 IAEA Staff, up to 3 MS experts

Follow-up: within 1.5 – 2 years

*total number of missions to date
Safety Evaluation During Operation of Fuel Cycle Facilities (SEDO)

Purpose: To review safety aspects of facilities in which nuclear and radioactive material is processed, used, stored or disposed of.

Audience: Fuel cycle facility operators

Duration: 5 – 10 days

Team composition: 1 – 2 IAEA experts, 4-12 MS experts

Follow-up: 1.5 – 5 years

*total number of missions to date
Peer Review of Operational Safety Performance Experience (PROSPER)

Purpose: To review the process and practice of learning from operating experience at individual NPPs

Audience: intended for nuclear power plants under commission or in operation

Duration: 4 - 5 days

Team composition: 1 IAEA Staff, up to 3 MS experts

Follow-up: within 1.5 – 2 years

* total number of missions to date,
IAEA Peer Review and Advisory Services

**Average of missions before 2011:** 21

**Average of missions after 2011:** 54
Regional Breakdown

REGIONAL BREAKDOWN OF IAEA PEER REVIEW AND ADVISORY SERVICES

- Asia and the Pacific: 28%
- Europe: 42%
- Latin America and the Caribbean: 13%
- North America: 3%
- Africa: 14%
- North America: 3%
Missions per Service since September 2017

IAEA Peer Review and Advisory Services Since September 2017

Total No. of Mission Since Sep 2017

- ARTEMIS
- EPREV
- INSARR
- IRRS
- OSART
- SCCIP
- SEED
- TSR
- EduTA
- ISCA
- ORPAS
- PROSPER
- SALTO
- AMRAS
- IPPAS

Missions and Follow-Ups
IAEA Peer Review and Advisory Services
Reports Available on IAEA Calendar

- IPPAS
- INSServ
- AMRAS
- SALTO
- PROSPER
- ORPAS
- ISCA
- EduTA
- TSR
- SEED
- SEDO
- SCCIP
- OSART
- IRRS
- INSARR
- EPREV
- ARTEMIS

Reports Available
Total Number of Missions

- Reports Available: Orange
- Total Number of Missions: Blue

Graph shows the number of reports available and total number of missions for various initiatives.
Missions per Service conducted in 2019

[Bar chart showing missions and follow-up missions for various services in 2019]
Current MS´s requests for the Agency’s Peer Review and Advisory Services over the next two years

![Bar chart showing requests for various services](image-url)
### Nuclear Safety and Security Peer Review and Advisory Services

#### Generic Peer Review Services

- **ARTEMIS** – Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation
- **EPREV** – Emergency Preparedness Review
- **INSARR** – Integrated Safety Assessment of Research Reactors
- **IRRS** – Integrated Regulatory Review Service
- **OSART** – Operational Safety Review Service
- **SCCP** – Safety Culture Continuous Improvement Process
- **SEDO** – Safety Evaluation of Fuel Cycle Facilities during Operation
- **SEED** – Site and External Events Design Review Service
- **TSR** – Technical Safety Review

#### Specific Peer Review Services

- **EduTa** – Education and Training Appraisal
- **ISCA** – Independent Safety Culture Assessment
- **ORPAS** – Occupational Radiation Protection Appraisal Service
- **PROSPER** – Peer Review of Operational Safety Performance Experience
- **SALTO** – Safety Aspects of Long Term Operation

#### Advisory Services

- **AMRAS** – Advisory Mission on Regulatory Infrastructure for Radiation Safety
- **INSServ** – International Nuclear Security Advisory Service
- **IPPAAS** – International Physical Protection Advisory Service
Self-assessment, training and selection of experts

- Since last Technical Meeting several areas have been improved:
  - Self-assessment and self assessment tools streamlined
    - e.g. reduced the number of questions
  - More training and eLearning materials in several services including EPREV SEED, INSARR, ORPAS, ARTEMIS
    - More e-learning
      - e.g. in July 2019 work was conducted to develop refresher e-learning training material for preparation of reviewers invited to IRRS missions.
      - The Agency developed additional training materials to support self-assessment of operational safety
  - Selection of experts
Services Guidelines

- Internal process for review and harmonisation of guidelines established by PRASC

- Revised guidelines of services published
  - Revisions take into account experience, lessons learned and analyses of past missions, as well as revisions of the Agency’s safety standards conducted in the light of the Fukushima Daiichi accident.
  - The changes have been implemented to improve both the effectiveness and efficiency of the missions.

- In 2018 published guidelines for EPREV and IRRS

- In 2019 AMRAS, SEED, TSR, INSServ, ORPAS guidelines in latest stages of publication
Sharing experience, learning lessons, efficiency

• Sharing good practices e.g. OSART missions 2006 – 2019
• IPPAS update of good practices database

• Lesson learned analysis and workshops. e.g.
  • IRRS in 2018, 100 IRRS
  • 2019 started analysis of the IRRS missions 2015 - 2019

• Experience incorporated in the services:
  • E.g. 20 years of experience conducting EPREV missions

• SEED automatic extraction and analysis of outcomes. Identifying recurring recommendations, input to training and safety standards

• Joint scope safety and security: new advisory mission on the regulatory infrastructure for radiation safety and nuclear security (RISS) being developed
Thank you

https://www.iaea.org/services/review-missions/calendar