ENISS EP&R Activities Update

EPR&SC9
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ENNISS Observer
European Nuclear Installations Safety Standard (ENISS)

ENISS is the common channel through which European nuclear licence holders interact with WENRA (nuclear regulators), the European Institutions and the International Atomic Energy Agency (IAEA). Although ENISS is hosted by FORATOM, it enjoys a full autonomy as regards its strategy and priorities, which are discussed, approved and reviewed by its own supervisory bodies.
ENISS Strategic Plan

**ENISS Ambition**

- Bring together decision makers and specialists from the European license holders of nuclear installations with the Regulators in an effort to establish high level and practicable safety targets and safety rules, and to converge on a set of European Nuclear Installations Safety Standards and their harmonised implementation.

**ENISS Missions**

- Develop common views and positions on the evolutions of the nuclear safety standards.
- Interact appropriately with the regulators and the key stakeholders to ensure that the licensees’ positions, through ENISS, are effectively given due consideration.
- Maintain an efficient information exchange platform between ENISS members with respect to nuclear safety matters.
In the context of the review of WENRA 2014 SRLs for existing reactors, WENRA RHWG has been working on revising safety issue I on *ageing management*. The objectives of this revision were twofold: to take into account the outcomes of the ENSREG Topical Peer Review and to add obsolescence.

WENRA launched a targeted consultation to gather the IAEA and ENISS views on the revised version. The ENISS comments were sent to WENRA RHWG on 20 November 2019 within the set deadline.

11 November 2019, WENRA issued a new report entitled *Practical Elimination Applied to New NPP designs - Key Elements and Expectations*. ENISS had been consulted on the draft report and provided comments. WENRA also released in November 2019 on its website a summary of their pilot study focusing on the implementation at nuclear power plants of two SRLs.

WENRA and the German Federal Ministry for the Environment, Nature Conservation and Nuclear safety (BMU) co-hosted a workshop on the regulatory aspects of nuclear decommissioning, which took place in Berlin from 5 to 7 November 2019. The workshop was open to regulators, operators, TSOs and international organisations in the field of nuclear decommissioning. Over 75 participants from more than 20 countries across Europe, North America and South East Asia attended the workshop. ENISS delivered a presentation on the practical implementation of a graded approach, including the use of the concepts *risk informed* and *reasonably practicable*.

ENISS has also been invited to attend on 5th November 2019 a reception to celebrate WENRA’s 20th anniversary.
3rd October 2019 meeting with representatives from EC DG ENER D2 (waste & decommissioning) and D3 (radiation protection & nuclear safety). DG ENER expressed a willingness to further exchange with ENISS and to hold meetings on specific issues, thereby leaving enough time for in-depth discussion and involving the right people. These meetings will take place in addition to the regular annual meeting.

In 2018, a consortium of ETSON member organisations was awarded a contract for a European Commission project on an ‘Analysis to support implementation in practice of Articles 8a-8c of Council Directive 2014/87/Euratom’.

The second workshop on the ETSON study took place on 12-13 November 2019, in Luxembourg. The Workshop was intended to discuss findings and draft recommendations for future activities to support Member States in implementing Articles 8a-8c of Directive 2014/87/Euratom in practice. ENISS participated in the workshop and delivered a presentation on the ENISS position paper on the Principles for Developing and Implementing Safety Improvements to Existing Nuclear Power Plants.
A subgroup of ENSREG WG1 (nuclear safety) has been working on developing an action plan to address the four challenges identified during the TPR process.

ENISS has been invited to review the draft Action Plan and to provide comments to ENSREG by 20 September 2019.

The ENSREG 1st Topical Peer Review Action Plan was endorsed by ENSREG during its last plenary meeting on 14 November 2019. The plan is expected to be published on the ENSREG website.

ENSREG has also been working on drawing up a questionnaire for ENSREG members to provide their opinion on the TPR process. This questionnaire will be submitted to Member States before the end of 2019. ENSREG has agreed to send it also to ENISS. The deadline for responses is the end of January 2020.
ENISS provided comments on the IAEA Draft Safety Requirements and Safety Guides, addressing the most important issues, namely NPP design and operation, management systems, safety, assessment, waste management, decommissioning and radiation protection. ENISS also provides the IAEA with assistance for the technical/consultancy groups.

The most important IAEA standards that ENISS has worked on recently are:

DS477 The Management System for the predisposal and Disposal of radioactive Waste
DS490 Seismic Design and Qualification for NPPs
DS494 Protection against Internal Hazards in the Design of Nuclear Power Plants
DS497 Revision of eight closely interrelated Safety Guides
DS498 External Events Excluding Earthquakes in the Design of Nis
DS507 Seismic Hazards in Site Evaluation for Nuclear Installations
DS508 Application of Safety Principles & General Design Requirements for NPPs
DS513 Safety Guide: Leadership, Management and Culture for Safety
DS514 Equipment Qualification of Items Important to Safety in Nuclear Installations
DS520 External Human Induced Events in Site Evaluation for Nuclear Power Plants
DS522 Evaluation of Seismic Safety for Existing Nuclear Installations
DS523 Development and Application of level 1 PSA for NPPs
ENISS has decided to take a more pro-active approach aimed at raising awareness of safety authorities and other stakeholders and promoting active discussion on issues and challenges facing the nuclear industry. As a result of a strategic review, ENISS identified a number of topics on which the organisation wishes to promote its views.

Two position papers have been finalised and published in November 2019 on the ENISS website:

- Principles for Developing and Implementing Safety Improvements to Existing Nuclear Power Plants
- Defence-in-Depth implementation

Other position papers are under development. They cover the following topics:

- Practical elimination
- Optimisation principle in Radiation Protection
- Health risks from exposure to ionizing radiation

In addition to being published, these papers are intended to be presented in public conferences with stakeholder participation (e.g. WENRA/IAEA/OECD/EC congresses, workshops …).
First ENISS EP&R Meeting: 27 September 2019, FORATOM

1. **Attendees**
   - Mr John Skegg (EDF Energy) – chair
   - Ms Nadine Roussel (EDF – France);
   - Mr Dominique Sziedleski (ENGIE - Belgium);
   - Mr Nikolay Petrov Bonov (Kozloduy NPP – Bulgaria);
   - Mr Agustin Uruburu Rodriguez (CCNN ALMARAZ-TRILLO – Spain)
   - Mr Bernd Lorenz (VGB – Ennis Radiological Protection Expert Group (RPEG));
   - Ms Muriel Gilbert Mr William Ranval (ENISS)

2. **Key outcomes**
   - Maintaining progress as nuclear operators expert EP&R group to address issues with the various actors (industry, regulators, IAEA..) to work toward a more consistent, risk-based approach to emergency response to ensure that the messages from industry are understood by EP&R standard setting and governance organsition:

3. **How?**
   - Develop clear simple message statements on ENISS EP&R expectations
   - Make EP&R Expert Group members available to participate in relevant meetings and peer reviews
   - Provide positive input to EP&R standards development and reviews

4. **Date of next meeting**
   The next Expert Group meeting will take place on January 2020, FORATOM office, Brussels.
## EP&R - Defence in Depth (DiD)

<table>
<thead>
<tr>
<th>Levels of defence in depth</th>
<th>Objective</th>
<th>Essential means</th>
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<tbody>
<tr>
<td>Level 1</td>
<td>Prevention of abnormal operation and failures</td>
<td>Conservative design and high quality in construction and operation</td>
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<tr>
<td>Level 2</td>
<td>Control of abnormal operation and detection of failure</td>
<td>Control, limiting and protection systems and other surveillance features</td>
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<td>Level 3</td>
<td>Control of accidents within the design basis</td>
<td>Engineered safety features and accident procedures</td>
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<tr>
<td>Level 4</td>
<td>Control of severe plant conditions, including prevention of accident</td>
<td>Complementary measures and accident management</td>
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<td>progression and mitigation of the consequences of severe accidents</td>
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<td>Level 5</td>
<td>Mitigation of radiological consequences of significant releases of</td>
<td>Off-site emergency response</td>
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<td></td>
<td>radioactive materials</td>
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Contributing Factors to Nuclear Emergency Planning

- International & National Legal obligations
- Political
- Moral obligation
- State Ownership
- Commercial Utility
- Historical events
- Nuclear Safety

EP & R LEADs
Response Arrangements Developed in EDF Energy (UK – International)

**Response Arrangements**

- **BROADLY ACCEPTABLE REGION**
- **TOLERABLE (ALARP) REGION**
- **UNACCEPTABLE REGION**

- **Operator led emergency response**
- **Local multiagency and operator supported emergency response**
- **National and local integrated emergency response**
- **National and International integrated emergency response**

**Radioactive releases potential**
- **Upper ERL exceeded**
- **Lower ERL exceeded**

**Severe Accident Management/Guidelines (SAM/Gs)**

- **Beyond Design Basis Control Options (SBERGs,)**
- **Remote stored equipment BUE/DBUEGs**

**Station Operating Instructions (SOI’s)**

- **Increasing interventions**
- **Impacts & Consequences**

**Increasing loss of barriers**

**EFFECTIVE I OSE (mSv)**

- **EA discharge Limits & potential CFIL exceeded?**

**Unforeseen**

**Increasing Frequency (per annum)**

- **10^-1**
- **10^-2**
- **10^-3**
- **10^-4**
- **10^-5**
- **10^-6**
- **10^-7**
- **10^-8**
- **10^-9**
- **10^-10**
- **10^-11**
- **10^-12**

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Thank you for your attention