The 1st Topical Peer Review on Ageing Management

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Euratom Legal Framework

Directive 2009/71/Euratom
Nuclear Safety of nuclear installations

Directive 2011/70/Euratom
Spent Fuel and Waste Management

Directive 2013/51/Euratom
Euratom Drinking Water Directive

Directive 2013/59/Euratom
Basic Safety Standards

Directive 2014/87/Euratom
amending Directive 2009/71/Euratom
Directive 2014/87/Euratom

- Independent regulatory authority (Strengthened)
- Peer reviews (New)
- Safety objective
- Transparent
- Continuous improvement of nuclear safety
- Nuclear safety culture (New)
- Emergency preparedness and response (New)
Council Directive 2014/87/EURATOM introduced a European system of Topical Peer Review (TPR) to begin in 2017 and every six years thereafter

- Have in-depth examination of safety significant topics, enabling common understanding on nuclear safety issues and resulting in concrete recommendations to enhance nuclear safety
- In 2015 ENSREG decided that Ageing Management is the topic for the first TPR

Open to non-EU countries
- 19 countries with NPPs and Research Reactors
Why Ageing Management?

- European NPPs (126 operating power reactors) average age is 32 years
- There are plans to extend the original lifetime of the NPPs, some have already done that
- Ageing of the NPPs has to be managed safely
  - Ageing management needs to be regulated and implemented
Scope of the TPR

- Regulation and implementation of Ageing Management Programmes at NPPs and Research Reactors...
  - Reactors in operation and under construction
  - Plants that are in final shutdown not included
  - Research Reactors with a power of 1MWth or more

- ... and how AMPs are regulated and implemented on selected technical areas
  - Electrical cables
  - Concealed pipework
  - Reactor Pressure Vessels or equivalent
  - Concrete containment structures
First phase was National self Assessments in 2017

- National self-assessments were conducted against the WENRA Technical Specification
- Results of the self-assessments were documented in the National Assessment Reports (NARs)
- Reports were published at the end of 2017 (http://www.ensreg.eu/eu-topical-peer-review)
Process

- In the second phase NARs were reviewed by the peers in 2018
  - Desktop review of NARs by the 41 experts and countries
    - Resulted in 2300 questions and comments
    - Experts review of national reports, Questions and Answers
    - Identification of common issues and country specific issues to be discussed in May 2018 workshop
  - One week Workshop with 140 participants – Objectives
    - to discuss the results of the self assessments
    - to discuss identified findings
    - to categorize findings (good practice, TPR expected level of performance, challenge), and
    - to allocate findings to the countries
Process

- Finalization of the TPR Reports on generic findings and country specific findings in fall 2018
  - ENSREG debate and decisions on the report in October 2018
  - Public meeting in November 2018 to present and discuss the results

- National Action Plans established by the end of September 2019

- Regular reporting on the implementation of the National Action Plans

http://www.ensreg.eu/eu-topical-peer-review
TPR Findings

- 31 generic findings were identified

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- **Good Practice** – goes beyond what is required in meeting the appropriate international standard
- **TPR expected level of performance** – level that should be reached to ensure consistent and acceptable management of ageing throughout Europe
- **Challenge** – Common to many countries; areas where action at a European level could help
Main Outcomes

- For NPPs – Ageing Management Programmes exist in all countries, they are in line with the IAEA Safety Standards and WENRA Safety Reference Levels and no major deficiencies were identified
  - However, improvement areas were identified for the AMPs as well as for the thematic areas

- For Research Reactors – Ageing Management Programmes are neither regulated nor implemented as systematically and comprehensively as they are for NPPs, and therefore require further attention from both regulators and licensees
Main Outcomes

▪ Self-assessment results constitute the basis for countries to enhance their Ageing Management Programmes
▪ There is evidence based on the National Assessment Reports and their peer review that improvements have already been made or are on-going as a result of the Topical Peer Review
▪ Countries have established National Action Plans to address findings resulting from their self-assessment and the peer review
▪ The delivery of National Action Plans will further improve the ageing management of both Nuclear Power Plants and Research Reactors
Challenges

- Generic European level challenges identified by the TPR
  - Further development of improved performance indicators or other appropriate tools would enable consistent evaluation of the effectiveness of the OAMPs among NPPs
  - Research and development for non-invasive inspection methods for detection of local corrosion, suitable for use on long lengths or complex geometries of concealed piping
  - RPV inspections could be improved by establishing and maintaining an up to date European catalogue of state of the art new techniques and technologies for NDE
  - Objective and comprehensive acceptance criteria for ageing management of concrete structures

- ENSREG tasked its WG1 to address these challenges and will result in ENSREG’s Action Plan
ENSREG Decisions Based on the TPR

- Countries to explore all generic findings of the TPR to study their applicability to improve the regulation and implementation of Ageing Management Programmes.
- Countries to explore the regulation and implementation of Ageing Management Programmes of other risk significant nuclear installations.
- ENSREG requested IAEA and WENRA to consider addressing Topical Peer Review findings in their safety standards or Safety Reference Levels.
- ENREG tasked its WG1 to draw lessons from the TPR to ensure efficiency and effectiveness in the future peer reviews.
Conclusions

- TPR has met its goals set in the Directive and Terms of reference
  - To conduct a self assessment on a safety significant area to identify areas for improvement and good practices, to have European peer review to share and learn from each other, and to identify common issues
  - It is evident that the delivery of the Action Plans will further improve ageing management of Nuclear Power Plants, Research Reactors and other risk significant nuclear facilities
- We can do the next TPR more efficiently and effectively after learning the lessons from the first TPR
- Topical Peer Review will be an excellent instrument for us to ensure and enhance nuclear safety
European Nuclear Safety Regulator’s Group

ENSREG

1st Topical Peer Review Report

"Ageing Management"

October 2018

European Nuclear Safety Regulator’s Group

ENSREG

1st Topical Peer Review

"Ageing Management"

Country specific findings

October 2018