



European Nuclear Safety Regulators Group

# The 1<sup>st</sup> Topical Peer Review on Ageing Management

5<sup>th</sup> Regulatory Conference  
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# Content

- Background
- Process
- Outcomes
- Conclusions



# Euratom Legal Framework

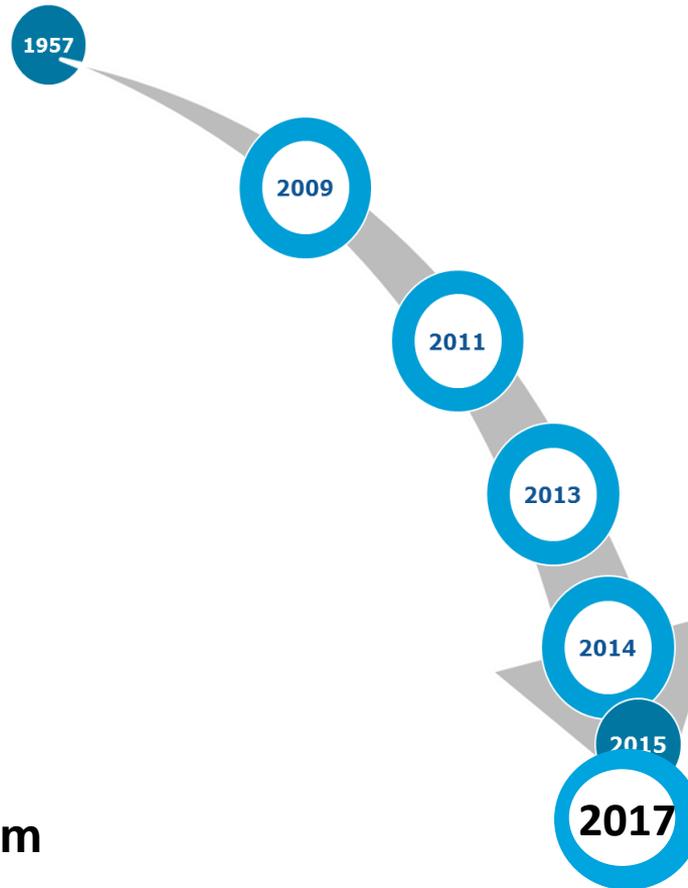
**Directive 2009/71/Euratom**  
Nuclear Safety  
of nuclear installations

**Directive 2011/70/Euratom**  
Spent Fuel and Waste Management

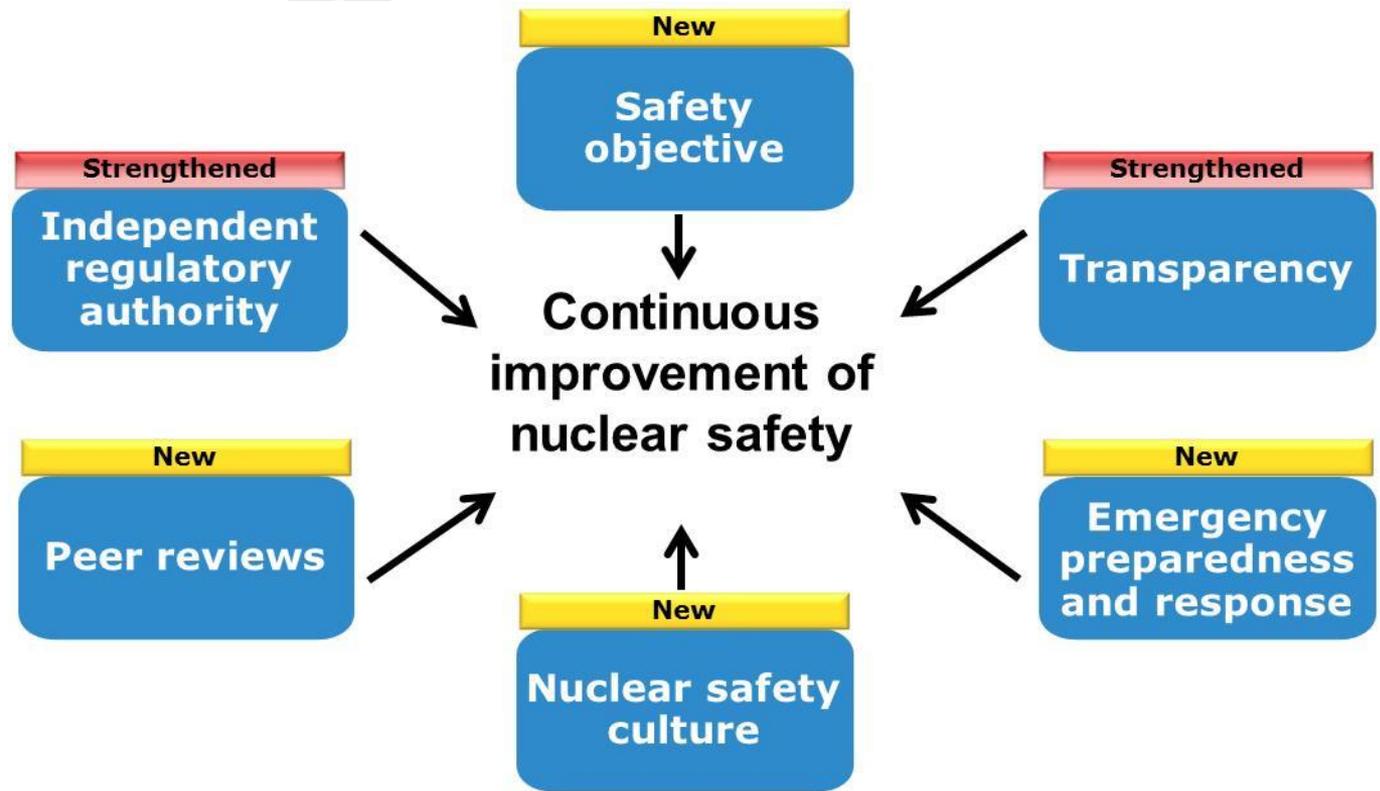
**Directive 2013/51/Euratom**  
Euratom Drinking Water Directive

**Directive 2013/59/Euratom**  
Basic Safety Standards

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



# Directive 2014/87/Euratom



# Background

- Council Directive 2014/87/EURATOM introduces 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
  
- Topic: Ageing management
  - Safety significance of the topic, age profile of the European nuclear reactor fleet and their potential long term operation
  
- Open to non-EU countries

# Background

- TPR Covers Nuclear Power Plants and Research Reactors (with a power of 1MWth or more)
  - Includes reactors in operation and under construction
  - Plants that are in final shutdown not included
  - 19 countries with NPPs and Research Reactors
  
- Scope
  - Overall Ageing Management Programmes
  - Electrical cables
  - Concealed pipework
  - Reactor Pressure Vessels
  - Concrete containment structures

# Process

- Phase 1 – National self Assessment Report (NARs)



- National self-assessments were conducted against the WENRA Technical Specification
- Results of the self-assessments were documented in the National Assessment Reports (NARs), published at the end of 2017

# Process

- Phase 2 – Peer Review
  - Desktop review of NARs by the 41 experts and countries
    - Resulted in 2300 questions and comments
  - Identification of common issues and country specific issues to be discussed in the May workshop
    - Experts review of national reports, Questions and Answers
  - One week Workshop with 140 participants – Objectives
    - to discuss the results of the self assessment
    - to discuss the identified findings
    - to categorize findings (good practice, TPR expected level of performance, challenge)
    - to allocate findings to the countries

# Process

- Phase 3 – Finalization of the Report on generic findings and country specific findings
  - Five TPR Board meetings to finalize the report and country specific findings
    - Countries had the possibility to provide feedback on country specific findings in June
    - Draft report and country specific findings were submitted to countries for review and comments in September
  - Report and country specific findings were submitted to ENSREG for Approval 24.9.2018
  - ENSREG approved the report and country specific findings on the 4th of October 2018



# Findings

- 31 generic findings were identified

Categorised findings		
8 Good practice	19 TPR expected level of performance	4 Challenges

- **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 are establishing 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

- 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 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 tasked its WG1 to address the challenges identified by the TPR
- ENSREG requested IAEA and WENRA to consider addressing Topical Peer Review findings in their safety standards or Safety Reference Levels
- ENSREG 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 ageing management 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
- Not a perfect TPR and lessons need to be learned for the future TPRs to be more effective and efficient
- 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

