



Office for
Nuclear Regulation

ENSREG Topical Peer Review on Ageing Management

Status of Actions from the UK National Action Plan – December 2023

December 2023

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1 INTRODUCTION

Context

- 1.1 In 2014, the European Union (EU) Council adopted directive 2014/87/EURATOM amending the 2009 Nuclear Safety Directive to incorporate lessons learned following the accident at the Fukushima Daiichi nuclear power plant in 2011. Recognising the importance of peer review in delivering continuous improvement to nuclear safety, the revised Nuclear Safety Directive introduced a European system of topical peer review which commenced in 2017 and will be repeated every six years thereafter. The purpose is to provide a mechanism for EU member states to examine topics of strategic importance to nuclear safety, to exchange experience and to identify opportunities to strengthen nuclear safety. The member states, acting through the European Nuclear Safety Regulators Group (ENSREG), decided that the topic for the first topical peer review was ageing management. Although the UK has left the EU, it continues to participate as an observer and maintains an interest in ENSREG activities.

Scope

- 1.2 The topic that was selected for the first review was ageing management of nuclear power plants and research reactors. The scope for research reactors was those with a power of 1MWth or more. As the UK does not have any research reactors which have a power of 1MWth or more the scope for the UK was:
- The Advanced Gas Cooled Reactors (AGR) and the single Pressurised Water Reactor (PWR) operated by EDF Energy Nuclear Generation Limited (EDF-NGL)
 - The two European Pressurised Water Reactors (EPR) at Hinkley Point C being constructed by EDF Energy New Nuclear Build Generation Company Limited (NNB)

Ageing Management

- 1.3 Ageing and ageing management are defined in the terms of reference of the Topical Peer Review as follows:
- Ageing is considered as a process by which the physical characteristics of a structure, system or component (SSC) change with time (ageing) or use (wear-out).
 - Ageing management is understood as the engineering, operations and maintenance actions undertaken by a licensee to prevent or to control within acceptable limits ageing degradation of structures, systems and components (SSC) of its installation. With regard to safety it ensures the availability of required safety functions throughout the service life of the plant, with account taken of changes that occur with time and use and by considering all service conditions.

2 TOPICAL PEER REVIEW PROCESS

National Assessment Report

- 2.1 The first stage of the peer review process was the production of a national assessment report for each country participating in the topical peer review by December 2017. The objectives of the National Assessment Report (NAR) were to:
- describe the overall ageing management program including:
 - Programmatic aspects;
 - Implementation of overall ageing management program;
 - Experience of the application of ageing management;
 - assess the outcomes to identify main strengths and weaknesses;
 - identify actions to address any significant areas of improvement;
 - produce a report in sufficient detail to allow a meaningful peer review.

Full specifications for achieving the NAR were provided by ENSREG.

Peer Review

- 2.2 The second stage of the peer review process was the peer review itself during which National Assessment Reports were examined by other countries in order to share operating experience, identify good practices, common issues and follow-up actions to address the challenges posed by ageing management of nuclear facilities.

Action Plan

- 2.3 The third phase of the peer review process was the definition of a National Action Plan for addressing the challenges and areas of improvement allocated during the peer review and to meet the identified expected level of performances. In accordance with the Council conclusions of March 18, 2019, and the ENSREG decision of March 25, 2019, countries that participated in the first Topical Peer Review (TPR) process had to deliver their National Action Plan for Nuclear Power Plants and research reactors by the end of September 2019.
- 2.4 This report provides a status update of the National Action Plan.
- 2.5 Full details on the complete process for developing the TPR are presented in the terms of reference and technical specifications by ENSREG.

3 UK NATIONAL ACTION PLAN

- 3.1 This document presents the UK National Action Plan developed to address the findings identified concerning the ageing management and ageing management programs for each nuclear installation in each step of the TPR.
- 3.2 As required by the TPR process, the UK produced a self-assessment of ageing management in its National Assessment Report. This self-assessment found that both the UK's operating reactors and its reactors under construction had adequate ageing management programmes appropriate to the stages that they were at in their lifecycles. However, a number of secondary but beneficial improvements were identified for both licensees and programmes for improvement were developed and agreed.

- 3.3 The UK participated in the written peer review of the European countries National Assessment Reports and the subsequent TPR workshop. These identified a number of findings that needed to be addressed by the participants including UK.
- 3.4 Most of the findings were matters that needed to be addressed by the licensees. ONR asked the licensees to provide responses to the findings and assessed them to provide information for the action plan. This report provides an update to these findings in the National Action Plan as of December 2023.

4 TABLE: SUMMARY OF THE PLANNED ACTIONS

- 4.1 The actions in the report are summarised in the table below. ONR has a tracking and update process for regulatory issues. The actions have been incorporated into a series of regulatory issues specific to the TPR. The licensees' performance is monitored against these issues as part of the normal regulatory process and they will be closed out in accordance with that process when ONR has a satisfactory response.

No.	Ref.	Installation	Thematic	Finding	Planned Action	Deadline	Status by December 2023	Regulators Approach to Monitoring
1	EDF-NGL2	EDF-NGL sites	OAMP	Methodology for scoping the SSCs subject to ageing management: The scope of the OAMP for NPPs is reviewed and, if necessary, updated, in line with the new IAEA Safety Standard after its publication.	EDF-NGL to complete its first round of review and update of documents by its technical governance process including review against IGALL documents.	31 December 2022	Complete. EDF-NGL concluded that documents were consistent with the IGALL AMPs, with some minor exceptions which resulted in a few minor changes.	ONR reviewed response and considered it acceptable. Action closed.
2	EDF-NGL3	EDF-NGL sites	OAMP		EDF-NGL to review implementation of reporting ageing management in the Annual Review of Safety at the stations and make any	30 July 2020	Complete. ARoS meetings continued through 2020, with Ageing Management included within the discussion. A generic report was provided (previously sent to ONR), in addition to station specific issues being picked up in individual ARoS meetings. It is noted that the overall governance and reporting arrangements	ONR routinely attend station Annual Reviews of Safety where ageing and degradation issues are discussed.

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					necessary improvements.		are also under review in response to action 3.	Action closed.
3	1B.2	EDF-NGL sites	OAMP		EDF-NGL to review arrangements against IAEA's Specific Safety Guide SSG-48 and produce recommendations for improvements by September 2019. EDF-NGL to incorporate these into its broader review of ageing and obsolescence.	31 December 2021	<p>Complete. Review of IAEA standard Ageing management programmatic as described by SSG-048 was evaluated in the preparation of the Engineering Governance Delivery Team paper submitted in Sept 2019 and Licensee board (November 2019).</p> <p>A guidance note has been issued and implemented (BEG/GN/DAO/001) which outlines EDF's approach to ageing management. It references SSG-048 as a prime reference. It builds on the lessons learned from the ENSREG topical peer review into ageing management. It also incorporates learning from an additional ONR Chief Nuclear Inspectors themed self-assessment on ageing management carried out in 2021/22.</p>	ONR is content with the response and will continue to monitor the effectiveness of the licensee's ageing management arrangements as part of normal business. Action closed.
4		Hinkley Point C	OAMP		NNB to produce an ageing management strategy consistent with IAEA guide SSG-48 (Action 2).	31 August 2021	Complete. Ageing Management Strategy produced by NNB and sent to ONR in July 2021	Reviewed by ONR. Action closed.
5	NAP 3.1.2 Action 3	N/A	OAMP		ONR to publish a Technical Assessment Guide (TAG) on ageing	Q1 2023	Complete. New Ageing Management TAG produced; published February 2023. This involved extensive internal review with focused engagements to take account for cross specialism needs and expectations. The document was also consulted on	N/A

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					management (Action 3).		externally during the last quarter of 2022 with the UK's Nuclear Engineering Directors Forum.	
6	NAP 6.3	Sellafield	OAMP	The Board recommends that countries explore the regulation and implementation of Ageing Management Programmes of other risk significant nuclear installations.	ONR to report the findings of the review of SL's ageing management programme.	30 September 2021	<p>Complete. As expected according to the July 2021 update, by Autumn 2021 ONR progressed and completed a programme of four Chief Nuclear Inspector (CNI) ageing management inspections across four separate themes at the Sellafield site. The inspections targeted the strategies for characterisation, monitoring, trending, and analysis of ageing at facility, system and component level; Organisational Capability relating to management of ageing assets; Obsolescence; and continued investment in people, plant, and processes. The intervention record (IR) summaries and key findings have been made available in the ONR IR public repository as follows:</p> <p>https://www.onr.org.uk/intervention-records/2122/sellafield-21-128.htm</p> <p>https://www.onr.org.uk/intervention-records/2122/sellafield-21-038.htm</p> <p>https://www.onr.org.uk/intervention-records/2122/sellafield-21-058.htm</p> <p>https://www.onr.org.uk/intervention-records/2122/sellafield-21-107.htm</p> <p>The CNI themed inspection report presenting the findings across all inspections has been published: https://www.onr.org.uk/documents/2022/cni-themed-inspection-ageing-facilities-summary-report.pdf</p>	Inspections completed, intervention records published and Action closed.

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7	EDF-NGL 6	EDF-NGL sites	Electrical Cables	EDF-NGL to update the existing Cable Conditioning Monitoring Technical Guidance Note to differentiate between power cables and I&C cables.	EDF-NGL to revise its Control & Instrumentation Service Management document to ensure that the advice in the Cable Condition Monitoring Technical Guidance Note is adequately addressed.	31 December 2019	Action complete. CTS 250 C&I Management was updated to include a reference to TGN 99 Cable Condition Monitoring.	ONR content with response. Action closed
8	EDF-NGL 7	EDF-NGL sites	Concealed Pipework		EDF-NGL to review the existing buried pipework inspection strategy and update governance and technical guidance documentation to align and consolidate it within the existing fleet-wide Corrosion Management Programme.	31 December 2019	Action complete. The revision to BEG/SPEC/ENG/TGN/131 has been completed. This has incorporated the relevant aspects of BEG/SPEC/ENG/TGN/132 (which has now been superseded). TGN/131 now covers the forward strategy for the management of buried pipework, aligning with the overall Corrosion Management programme detailed within BEG/SPEC/ENG/CTS/031.	ONR is content with response. Action closed.

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9	3A.1	EDF-NGL sites	Concealed Pipework	Good practice: use of results from regular monitoring of the condition of civil structures - In addition to providing information on soil and building settlement, the results from regular monitoring of the condition of civil structures are used as input to the ageing management programme for concealed pipework.	EDF-NGL to ensure that cognisance is taken of any adverse settlement findings when assessing the condition of concealed pipework during its next routine update of the relevant documentation.	30 April 2020	Action on EDF-NGL complete. BEG/SPEC/ENG/TGN/131 – 'Risk Management of Buried Pipework With Respect to Corrosion' was updated to refer to awareness of adverse results arising from building settlement inspections undertaken as per BEG/SPEC/ENG/TGN/136, which may have an impact on adjacent buried pipework.	ONR is content with response. Action closed.
10	5A.1	EDF-NGL sites	Concrete containment structures and pre-stressed concrete pressure vessel	Good practice: monitoring of concrete structures - Complementary instrumentation is used to better predict the mechanical behaviour of the	EDF-NGL to complete its study for the Sizewell B pre-stressed concrete containment vessel (PCCV) to investigate whether data logger improvements can be used to	31 December 2022	Complete. The benefits of improving the current extent of serviceable VWsGs has been recognised as potential enhancement that could benefit Long Term Operation business case, and as a result the PCPV datalogger improvements have been incorporated into the SZB long term operation business case.	ONR is content with response. Action closed.

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				containment and to compensate for loss of sensors throughout the life of the plant.	enhance PCCV strain gauge reading availability and then reconsider whether it is ALARP to install complementary instrumentation.			
11	5A.2	EDF-NGL sites	Concrete containment structures and pre-stressed concrete pressure vessel	Good practice: assessment of inaccessible and/or limited access structures - A proactive and comprehensive methodology is implemented to inspect, monitor and assess inaccessible structures or structures with limited access.	EDF-NGL to include the following improvements in its guidance for the inspection of inaccessible areas for the Sizewell B pre-stressed concrete containment vessel (PCCV) and AGR pre-stressed concrete pressure vessels (PCPV), during its next routine update: <ul style="list-style-type: none"> • The use of opportunistic inspections where concealed or buried areas are being 	30 July 2021	Action on EDF-NGL complete. BEG/SPEC/ENG/CTS/200 'Management of Concrete Pressure Vessels' has been updated and issued.	ONR is content with response. Action closed.

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					<div>exposed for other purposes</div> <ul style="list-style-type: none">• Guidance based on examples to illustrate how condition information can be collected using indirect investigation methods.			
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