Authority for Nuclear Safety and Radiation Protection

National Action Plan on Ageing Management

National report of the Kingdom of the Netherlands

1st Update, May 2021

Abstract

This 2021-update of the National Action Plan (NAcP) on Ageing Management (AM) contains the information on the progress on the actions listed in the 2019 edition of the NAcP on AM.

The implementation of the majority of the actions is completed or on schedule. The few remaining ones are delayed generally about one year due to the COVID-19 pandemic. ANVS is satisfied with the progress licensees made and agreed with the delays, which do not compromise nuclear safety.

Furthermore information is provided on AM at other nuclear installations of interest in the Netherlands, not being reactors.

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Introduction

According to the Euratom directive on nuclear safety (2014/87/Euratom) every 6 years a Topic shall be chosen for a Topical Peer Review (TPR) by the regulatory authorities of the EU Member States. Ageing Management (AM) was the Topic chosen by the European Nuclear Safety Regulators Group (ENSREG) for the first TPR. Based on a WENRA-specification, the Netherlands produced its National Assessment Report by the end of 2017.

In 2018 a Peer Review process was carried out consisting of a written questioning and answering phase, followed by a peer review meeting in Luxemburg in May 2018. In October 2018 ENSREG adopted the Summary Report and the Country Specific Findings. It was agreed that each participating country should produce an NAcP by the 30th of September 2019, using a predefined format.

In agreement with the expectations, in the fall of 2019 a NAcP was produced and published, describing the findings from the National Assessment Report, from the Summary Report and the Country Specific Findings. The NAcP includes actions related to the nuclear installations that participated in the TPR, i.e. the Borssele NPP, the High Flux Reactor (Petten) and the Higher Education Reactor (TU Delft). In addition some actions were defined for the ANVS.

This 2021-update of the NAcP contains in its chapter 1 the information on the progress on the actions listed in the 2019 edition of the NAcP (tables 1 and 2). In the tables, where applicable, actions are given the status 'completed' and where delays are reported, new deadlines are provided with explanations.

In addition in chapter 2 the regulation of Ageing Management of other relevant nuclear installations is described.

1 Progress on the actions listed in the 2019 NAcP edition

1.1 Actions on licence holders

Table 1 contains the planned actions for each reactor and the associated original and updated deadlines. In the last column explanations are provided, where applicable.

Table 1 Status in 2021 of planned actions of licensees, as listed in the 2019 NAcP edition

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
NPP Borssele	OAMP	During long construction periods or extended shutdown of NPPs, relevant ageing mechanisms are identified and appropriate measures are implemented to control any incipient ageing or other effects.	The plant is testing improving corrosion prevention in the secondary system. This will be finished and reviewed in the upcoming years.	1-1-2022	1-1-2023	One year delay. Due to the COVID-19 pandemic the yearly shutdown period in 2020 was minimized to the most essential works. Therefore the new corrosion prevention measures for a possibly long construction or extended shutdown period could not be applied in 2020 and were rescheduled to 2021.The subsequent review phase accordingly shifts one year.

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
			The plant will study an IAEA TecDoc about this issue looking for areas for improvement. The TecDoc is now in development.	1-1-2022	1-1-2022	On-going
NPP Borssele	Cables	Potential of water treeing in inaccessible HV ground cables.	Dielectrical spectroscopy measurements will be carried out on 3 inaccessible 6000 V ground cables in the outage of 2019 to check for water treeing and results will be provided	2019 The measurements are already carried out.	Completed	The measurements have been completed before the publication of the NAcP. No indications of water treeing have been found.
NPP Borssele	Cables	Stability of environmental conditions in the long term should be checked.	To check the data of the initial monitoring program for environmental conditions, a representative part of the measurements will be repeated around the year 2023.	1-1-2024	1-1-2024	On-going The schedule for the repeated measurements is still on track. Monitoring should start in 2022, equipment should be retrieved in 2023.

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
NPP Borssele	Cables	The current cables of the in-core temperature measurements are qualified in conformity with the KTA-standards of 1988. The cable type does not fulfill the requirements of the latest standards.	As part of the EQ-program 5 cables of the in-core temperature measurements are replaced in the outages of 2019 and 2020 to fulfil the requirements of the latest qualification standards.	1-7-2020	1-7-2021	On-going The replacement of 2 of the cables was performed in 2019. The other 3 were scheduled for 2020 but because of the COVID-19 pandemic this work was rescheduled for the yearly shutdown of 2021.

NPP Borssele	Cables	The use of techniques to detect the degradation of inaccessible cables may be improved	NPP Borssele will review the use of additional methods in the next periodical review of the ageing management program of cables in 2019.	1-1-2020	Completed	From the review it was concluded: - no single electrical non-destructive technique is yet available to determine unambiguously the amount of degradation of cable insulation. For justified predictions by non-destructive mechanical techniques mostly zero measurements and/or laboratory experiments are necessary. - it is possible to give an indication of the condition of the cable by using non-destructive electrical techniques (so-called "pass-through" measurement). For NPP Borssele this is increasingly done by insulation measurements. - the application of LIRA (Line Resonance Analysis) has been determined as a potential method. The applicability will be explored (the usefulness of a pilot will be investigated and external experience is gathered).

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
NPP Borssele	Concealed pipework	Inspection of safety-related pipework penetrations through concrete structures are part of ageing management programmes, unless it can be demonstrated that there is no active degradation mechanism.	The system health reports take the condition of pipework penetrations and pipework at or near penetrations into account as part of the annual system walkdowns	1-9-2019	Completed	The condition of pipework penetrations and pipework at or near penetrations is now checked as part of the annual system walkdowns.
			The ISI instructions for visual inspection will describe that the condition of the penetration and pipework at or near penetrations is taken into account during the inspection.	1-1-2020	Completed	The VT-2 instruction for leakage walkdowns in the ISI-programme now includes instructions to regard the condition of pipework penetrations and the pipework in their direct vicinity.
NPP Borssele	Concealed pipework	Opportunistic inspection of concealed pipework is undertaken whenever the pipework becomes accessible for other purposes.	A representative of the technical department is present in the daily production scheduling meeting, enabling the identification of opportunities for inspection.	N/A	Completed	Measure completed before publication of NAcP.

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
			A smart means of using the work order system to ensure that opportunistic inspections will be conducted when the opportunity arises is being investigated in cooperation with the IT department	1-1-2020	Completed	Automated messages from the work management system are now being sent to relevant personnel whenever equipment becomes available with the opportunity to perform an inspection.
HFR	OAMP	The development and implementation of the OAMP is not yet realized	HFR will complete the OAMP sufficiently timely before the 2020 SCO (Safe Continued Operation) mission. Then it will implement improvements based on that mission.	2020 2023	Completed 2024	OAMP submitted in time. Now under review at the ANVS. Mission delayed due to COVID-19 pandemic. New date is not yet fixed, not earlier than Q4/2021.

1.2 Actions on competent regulatory authority

The actions to be completed by the ANVS and their status can be found in Table 2.

Table 2 Actions on the competent regulatory authority

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
ANVS	Concrete containment structure	A proactive and comprehensive methodology is implemented to inspect, monitor and assess inaccessible structures or structures with limited access.	The Netherlands will approach regulators that have developed regulatory guidance that specifically address inspections and monitoring of inaccessible structures and structures with limited access and then decide what is applicable	2021	2022	Deadline moved. More time needed than expected.
ANVS	OAMP	Need of improvement of licences of HFR and HOR	Improve and/or include licence conditions for RRs on AM, taking into account IAEA SSG-10	2023	HFR: Completed HOR: 2024	Specific licence condition on AM + IAEA SSR-3 required in licence; IAEA SSG-10 used as guidance. Licence update foreseen after PSR and INSARR, INSARR one year delayed because of COVID-19 pandemic. Currently rescheduled to September 2021.
ANVS	OAMP	No license condition on regular external review of AM	Include similar licence condition on HOR as on HFR to require periodic external review	2023	2024	Delay: same reason as for the previous action.

Actor	Thematic	Finding	Planned action	Deadline 09/2019	Deadline 04/2021	Explanation 04/2021
ANVS	OAMP	Structured OAMP inspection programmes need to be developed for the operating phase.	ANVS will develop and implement structured inspection programmes for operating OAMPs for NPP and RRs, as part of the overall inspection programmes of the installations.	2020 (HOR), 2022 (KCB), 2023 (HFR)	All completed	

2 Other nuclear installations

In the National Report on the TPR, as published in 2017, the development of the regulation on Ageing Management (AM) for the NPP and RRs was described. It showed that the Periodic Safety Reviews (PSRs) have played a major role as well as the use of IAEA standards on PSR and AM. For the other nuclear installations currently in operation the same applies. It concerns the Fuel Cycle Facilities of COVRA and URENCO, and the hot cell laboratories of NRG.

It is common practice nowadays for licence holders to carry out the PSRs, based on a document agreed with the regulator. The document describes amongst other things the areas of interest and scope of the review and the references to be used for it. It has been developed using the IAEA SSG-25, developed for NPPs but adapted to the specific installation and using a graded approach. This approach includes the so-called Safety Factors, including ageing management (SF4). As for these types of installations currently no IAEA safety guide on AM exist, the safety guide SSG-10 (developed for RRs) is used as further reference.

PSRs were recently carried out for URENCO (2017-2018), NRG (2018-2019) and COVRA (2019-2020). Improvement plans have been or are being carried out, including several actions on AM and followed up by ANVS.

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