Office for Nuclear Regulation

Hartlepool Reactor 1 Periodic Shutdown 2021

ONR Agreement for Extension of Operating Period for Hartlepool Reactor 1

Project Assessment Report ONR-OFD-PAR-20-025
Revision 0
09 March 2021

Published 03/22

For published documents, the electronic copy on the ONR website remains the most current publicly available version and copying or printing renders this document uncontrolled.

EXECUTIVE SUMMARY

Title

ONR Agreement for Extension of Operating Period for Hartlepool Reactor 1.

Permission Requested

EDF Energy Nuclear Generation Limited (NGL), the operator (known as the licensee) of Hartlepool (HAR) power station, has requested permission from the Office for Nuclear Regulation (ONR) to extend the operating period of Hartlepool Reactor 1 (R1) from 14 March 2021 until no later than 4 October 2021. This request is in line with the Licensee's arrangements, as set out in Licence Condition (LC) 30 (Periodic Shutdown) of its nuclear site licence.

Background

Nuclear site licensees are required to comply with conditions attached to the nuclear site licence. LC 30(1) states that for the purpose of enabling examination, inspection maintenance and testing of any plant or process, the licensee shall, when necessary, ensure that any such plant or process is shutdown in accordance with the requirements of the plant maintenance schedule. The licensee's arrangements require that periodic shutdowns, as required by LC 30(1), are carried out every three years on each reactor at Hartlepool. The previous start-up consent for R1 was granted on 14 March 2018.

LC 30(2) gives ONR the authority to Agree to an extension of a plant's operating period based on an adequate safety justification from the licensee.

In their Engineering Change (EC) EDF state that "the current statutory outage plan for the fleet has been reviewed to take into account the industrial and nuclear safety threat associated with the current COVID-19 pandemic, resulting in the deferral of a number of statutory outages planned in 2020. This has impacted outage planning for 2021, creating overlaps between outages and thus increasing risks associated with resource availability, which could challenge the ability to deliver outages safely and to the required quality standards. A fleet wide review of 2021 outage placement has thus been carried out with the decision made to optimise the placement of the HAR R1 2021 statutory outage by deferring the outage."

As a result of this EDF have requested that ONR issues Agreement to defer the R1 statutory outage from 14 March 2021 to no later than 4 October 2021. It is noted that EDF anticipate the outage commencing on 7 August however ONR have assessed the request based on the later date.

Assessment and inspection work carried out by ONR in consideration of this request

NGL's safety justification for the extension of the operating period was examined by the following ONR discipline specialists: structural integrity, graphite, civil engineering, electrical engineering, mechanical engineering, and control & instrumentation. There were no issues identified that would prevent Agreement by ONR to the requested extension of the R1 operating period. The Environment Agency was consulted and raised no objections to ONR issuing an Agreement to the extension.

Matters arising from ONR's work

During the assessment of the submitted case there were several areas that ONR considered required either further evidence, or clarity on the evidence presented in order to support the deferral request. ONR engaged with the licensee to secure adequate responses to all of the identified queries. The responses provided to ONR's queries ensured that the case clearly demonstrated robust evidence for the suitability of the deferral.

ONR's inspectors did not identify any concerns that the extension of the R1 operating period would increase safety risks. The judgements were supported by evidence that:

- NGL had sought input from relevant suitably qualified and experienced personnel;
- Agreement has been reached with the Pressure Safety System Regulations (PSSR) competent person regarding any proposed postponements of inspections.

Conclusions

ONR's assessment confirms that NGL has carried out an adequate safety assessment demonstrating the safety of the proposed extension of the R1 operating period and supports issuing the Agreement.

Recommendation

It is recommended that ONR issue Licence Instrument 573 under LC30(2) for Nuclear Site Licence 59 giving ONR's Agreement to extend the operating period of Hartlepool Reactor 1 until no later than 4 October 2021.

LIST OF ABBREVIATIONS

ALARP	As low as reasonably practicable
APEX	Appointed Examiner
AR	Assessment Report
CTO	Central Technical Organisation
EC	Engineering Change
EIMT	Examination, Inspection, Maintenance and Testing
GC	Gas Circulator
GCRP	Gas Circulator Review Panel
HAR	Hartlepool nuclear power station
IJCO	Interim Justification for Continued Operation
INA	Independent Nuclear Assurance
INSA	Independent Nuclear Safety Assessment
LC	Licence Condition
LP	Low Pressure
MITS	Maintenance Inspection Test Schedule
MS	Maintenance Schedule
NGL	EdF Energy Nuclear Generation Limited
ONR	Office for Nuclear Regulation
PAR	Project Assessment Report
PSSR	Pressure Safety System Regulations
R1	Reactor 1 (at Hartlepool)
SIAL	Structural Integrity Assessment Limit
WSE	Written Scheme of Examination

TABLE OF CONTENTS

1 PERMISSION REQUESTED

1. EDF Energy Nuclear Generation Limited (NGL), the operator and licensee of Hartlepool (HAR) nuclear power station, has written [1] to the Office for Nuclear Regulation (ONR) requesting Agreement to an extension of Reactor 1's (R1) operating period to no later than 4 October 2021.

2. This ONR project assessment report (PAR) has been produced to record regulatory views and judgments in consideration of NGL's request for the extension of the operating period for HAR R1.

2 BACKGROUND

3. The nuclear site licence requires the Licensee to periodically shutdown plant under Licence Condition (LC) 30: 'Periodic Shutdown'. This is to enable examination, inspection, maintenance and testing (EIM&T) to take place in accordance with the requirements of the plant maintenance schedule (MS) under LC28: 'Examination, inspection, maintenance and testing'. At HAR reactor periodic shutdowns are undertaken every three years, as specified in the MS Preface, which is an Approved document under LC28 (4).

4. Requirements of the MS are derived from claims made in the station's safety case (required under LC23: 'Operating Rules'), along with other regulatory requirements, such as Pressure System Safety Regulations (PSSR), and requirements from equipment manufacturers.

5. LC30(2) gives ONR the authority to Agree to an extension of a plant's operating period based on an adequate safety justification from the licensee.

6. Without ONR Agreement to the extension of an operating period HAR R1 is required to be shutdown on, or before, the third anniversary of the previous ONR Consent to restart. The previous Consent to restart HAR R1 (Licence Instrument (LI) 564) [2] was issued 14 March 2018, and therefore the operating period would expire on 14 March 2021.

7. NGL have submitted to ONR Engineering Change (EC) 368114 [3] as safety justification for extending R1's operating period, to no later than 4 October 2021. This is a total extension of up to 204 days.

8. In their EC, NGL state that "the current statutory outage plan for the fleet has been reviewed to take into account the industrial and nuclear safety threat associated with the current COVID-19 pandemic, resulting in the deferral of a number of statutory outages planned in 2020. This has impacted outage planning for 2021, creating overlaps between outages and thus increasing risks associated with resource availability, which could challenge the ability to deliver outages safely and to the required quality standards. A fleet wide review of 2021 outage placement has thus been carried out with the decision made to optimise the placement of the HAR R1 2021 statutory outage by deferring the outage."

9. NGL considers that it is ALARP to defer the outage until no later than 4 October 2021 based on the claims, arguments and evidence presented in its case.

10. The safety justification was presented as a category 2 EC which therefore required a formal independent nuclear safety assessment (INSA). The case underwent an INSA [4] by NGL's internal nuclear regulator who supported the proposal.

3 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

11. In this PAR ONR has considered the request to the extension of the operating period of HAR R1 by up to 204 days. Whilst it is not uncommon for EDF to request an outage deferral from ONR this particular extension to the operating period is relatively longer in duration. As such, it was considered appropriate that the submitted case was assessed by the majority of specialisms that are normally utilised during the assessment of operating reactor statutory outages.

12. To support this PAR the following ONR specialisms have reviewed the safety justification:

- Graphite
- Structural Integrity
- Civil Engineering
- Mechanical Engineering
- Electrical Engineering
- Control and Instrumentation
- Security

13. Additionally, the findings of NGL's internal regulator, Independent Nuclear Assurance (INA), have been taken into consideration. The INSA certificate concludes that the risk from a deferral of the HAR R1 statutory outage by 204 days is ALARP subject to confirmation of the PSSR competent persons' and APEX's approval of this proposal. The relevant specialist inspectors have since seen the necessary approvals by the competent person and APEX which are discussed in section 3.

14. The NGL safety justification for extending the HAR R1 operating period is based on the following Claims:

- Deferral of the statutory outage for an additional 204 days will not significantly reduce the reliability or availability of nuclear safety systems and will not lead to a significant increase in the frequency of plant faults as initiating events during the extended period of operation.

- The nuclear safety risks identified within this submission are not significantly impacted by the proposed delay in statutory outage activities by up to 204 days, as such, the change in risk is sufficiently small that this would not preclude the proposed deferral.

15. The proposal presented the arguments and evidence to support these claims which was the basis for assessment of each of the ONR specialist inspectors.

16. Section 3.1-3.7 below presents a high-level summary of the findings from each of the ONR specialist inspectors' reports.

3.1 GRAPHITE ASSESSMENT

17. Reference [5] provides the view of the ONR graphite specialist inspector which is summarised below.

18. The graphite specialist inspector reviewed the information within the EC with respect to deferring the R1 Statutory Outage to no later than 4 October 2021. The specialist inspector stated that:

- On the assumption that the deferral is granted, the licensee has stated that they intend to perform graphite core inspections at the HAR refuelling outage in March 2021. If a Keyway Root Crack (KWRC) were to be observed, then the licensee states that a reactor specific case would be required to justify return to service (RTS) and continued operation to the deferred outage date. With the planned inspections in March 2021 confidence in the core state will be maintained and there is minimal risk posed by the deferral.

- The licensee states that trepanning activities will be completed during the deferred statutory outage and that the delay in extracting the samples and subsequent testing and analyses will not introduce unnecessary risk. The specialist inspector notes that the safety case is not reliant on individual measurements, instead these measurements are used to inform the weight loss models upon which the safety cases are built. The updated weight loss forecasts are usually obtained ~one year following the trepanning campaign and the current forecasts are not expected to change as a result of the trepanning campaign. Hence deferring the outage until no later than 4 October should not introduce an unacceptable risk in the confidence in the weight loss predictions at HAR R1.

19. As part of the specialist inspector's review they noted that some of the graphite weight loss limits are predicted to be reached within the deferral period proposed.

- The licensee is predicting that HAR R1 will exceed the current 22% Active Core Weight Loss (ACWL) / 30% Peak-rated Brick Weight Loss (PBWL) limits if they were to operate until no later than 4 October 2021. ONR's Agreement to the implementation of this safety case will therefore be required before the end of the current safety case period. The licensee will also produce the 23% ACWL / 30% PBWL safety case which will need to be implemented before the current limit has been reached. ONR's Agreement to the implementation of these weight loss safety cases will not depend on the outcome of the graphite activities at the upcoming HAR R1 statutory outage. The graphite specialist inspector is therefore content that Agreeing to the deferral of the HAR R1 outage would have no impact on the risks associated with the assessment of the 23% ACWL / 35% PBWL limit.

20. The graphite specialist inspector raised no concerns regarding the request to defer the HAR R1 outage from 14 March 2021 to no later than 4 October 2021.

3.2 STRUCTURAL INTEGRITY

21. Reference [6] provides the findings of the ONR structural integrity assessment of the HAR R1 outage deferral request, which is summarised below.

22. The scope of the structural integrity assessment focused on the justification by considering the arrangements for examination, inspection, maintenance, and testing (EIMT) against the requirements of the MS and the PSSR written schemes of examination (WSE).

23. During their assessment the structural integrity specialist considered the previous assessments for the periodic shutdowns for R1 in 2014 and 2018. The specialist inspector was content that no significant structural integrity issues were identified in the ONR assessments of either of those outages.

24. A review was also conducted of the previous structural integrity assessments for the R2 periodic shutdowns in 2016 and 2019. The specialist inspector was satisfied there

were no identified structural integrity issues which impact upon R2 or would prevent deferral of the R1 periodic shutdown.

25. **Superheater Tubeplate Upper Radius inspections:** It was judged in a previous ONR outage deferral assessment for R1 in 2018 that that appropriate consideration had been given to support deferral of the Superheater Tubeplate Upper Radius (STPUR) inspections. The proposed deferred inspection, approximately 6 months, remains within ½ of the safe life as required by the STPUR safety case. The specialist inspector was content that the proposed deferral does not significantly challenge the integrity of the STPURs requiring inspection in 2021.

26. **Boiler Spines:** It was judged in a previous ONR outage deferral assessment for R1 in 2018 that the ultrasonic inspection requirements for the eight boiler spines would not be affected by that deferral. This was based upon a maximum inspection periodicity of seven months which would not be exceeded. The proposed deferred outage date is within the maximum inspection periodicity for the boiler spines. The specialist inspector is content that the proposed deferral does not impact inspection requirements of the boiler spine safety case.

27. **Boiler Closure units:** The previous structural integrity assessment report for restart of R1 after the 2018 statutory outage identified that inspection of two boiler closure unit studs had defects. These were reviewed and sentenced by the Outage Assessment Panel (OAP). The studs were cleared for continued service with continuous online monitoring with a commitment for their replacement at the next periodic shutdown. This was accepted by ONR within the PAR [7] for return to service. The specialist inspector was content that delaying replacement of these studs does not significantly impact nuclear safety based on the evidence contained within the deferral EC.

28. **PSSR Compliance:** The structural integrity specialist considered within their report the postponement of the PCPV penetration and balance of plant examinations. This is a requirement of the processes in place by NGL to ensure that formal postponements of inspections specified in the WSE are obtained from the relevant competent persons (CP) prior to their expiry.

29. The specialist inspector is content that NGL have appropriately considered and completed the postponement of PSSR inspections for the PCPV penetrations.

30. The specialist inspector was content that a suitable process was being implemented to agree postponement of the balance of plant PSSR inspections. However, the inspector identified that not all of the deferrals would be completed prior to issue of a LI from ONR granting permission for the deferral. NGL responded by accelerating the postponement process for PSSR inspections. A meeting was held with NGL to discuss the progress with completion or postponement of the remaining PSSR inspections required for the deferred outage. NGL confirmed that agreement to all the postponements would be provided to ONR before the LI is issued. The completion of this work was confirmed to ONR in a letter sent on 8 March 2021 [8].

31. There are two areas that require additional works prior to inspection or postponement of the inspections. The outcome of this work will inform any further postponements which will be in place prior to the due date of 6 May 2021. The specialist inspector was content that these would be provided after the LI has been issued but that confirmation will be provided to ONR when the deferrals have been granted by the CP.

32. Overall, the structural integrity specialist inspector was content that the claims, arguments, and evidence presented within the case were acceptable and supported the deferral of the statutory outage to no later than 4 October 2021.

3.3 CIVIL ENGINEERING

33. Reference [9] provides the findings of the ONR civil engineering assessment of the HAR R1 outage deferral request, which is summarised below.

34. The scope of the civil engineering assessment covers the aspects of the Pre-Stressed Concrete Pressure Vessel (PCPV), specifically the 11 areas covered by the Appointed Examiner (APEX) under the written scheme of examination (WSE):

- Examination of concrete surface;
- Examination of pre-stressing anchorages;
- Tendon residual load check;
- Examination of pre-stressing strand/wire;
- Settlement and tilt survey;
- Embedded strain gauge monitoring;
- Assessment of temperatures;
- Main reactor coolant loss monitoring;
- Assessment of the effect of water leaks;
- Top cap deflection survey;
- Boiler Closure Unit (BCU) examinations.

35. **Concrete Surface:** The PCPV and support wall concrete surfaces are generally in good condition with the main degradation mechanism (wetting) being identified through monthly walkdowns which will be unaffected by outage deferral. The APEX notes the consequence of deferral as minor.

36. **Anchorages:** The vertical tendon anchorages are generally in good condition. Many of the anchorage inspections are undertaken during Refuelling Outage (RFOs) in parallel with tendon probe inspections and so are unaffected by outage deferral. The APEX notes the consequence of deferral as minor.

37. **Tendon Loads:** The APEX states that results from lift off tests of vertical tendons and Change of Load Indicators (COLI) monitoring of wire winding loads are generally good with adequate margin between measured loads and Minimum Design Load (MDL). The APEX notes the consequence of deferral as minor.

38. **Strand Examination:** The vertical tendon strands planned for examination and replacement are targeted based on wetting history and probe inspection results. The risks associated with this are sufficiently low for the deferral to be acceptable.

39. The APEX confirmed, that of the nominated probe inspections for the operating period, 25 have been completed during refuelling outages with only 1 outstanding (which is planned in the April 2021 RFO and hence is unaffected by the statutory outage deferral). The APEX notes the consequence of deferral as minor.

40. **Settlement and tilt:** The survey of foundation settlement and tilt is not tied to statutory outage frequency. The APEX notes no consequence of deferral.

41. **Vibrating Wire Strain Gauges (VWSG):** The VWSGs indicate acceptable strain and temperature behaviour and so outage deferral is not considered significant. The APEX notes the consequence of deferral as minor.

42. **Vessel temperatures:** The temperature behaviour is monitored regularly in accordance with Station Operating Instructions (SOI) and Limiting Condition of Operations (LCO). The APEX notes the consequence of deferral as minor.

43. **Reactor coolant leakage:** CO_2 losses are monitored regularly with plant monitoring systems. A survey on re-pressurisation of leakage through tendon ducts will be

undertaken during additional RFO. The APEX confirmed that there are no ongoing CO_2 leaks affecting tendon ducts and the longstanding small CO_2 leaks from the 1A1 and 1B1 BCU seals pressurisation pipes continue to be regularly monitored with no adverse trends identified. The APEX notes the consequence of deferral as minor.

44. **Pressure vessel cooling water leaks:** The PVCW losses are monitored regularly with plant monitoring systems. There are currently 4 recorded PVCW leaks with one affecting a tendon duct. The APEX has confirmed that they will all be considered for leak searching and sealing during the statutory outage. Their view is that the additional running time due to the outage deferral is not considered to be significant given that all three are low level (i.e. weeping or dripping). The APEX notes the consequence of deferral as minor.

45. **Top cap deflection:** The measured top cap deflections are historically in line with expectations and therefore deferral is not considered significant. The APEX notes the consequence of deferral as minor.

46. **Boiler Closure Unit (BCU) examinations:** The BCU conditions were found to be good during these inspections so the deferral is not considered significant. The APEX confirmed that the last six-monthly assessment of BCU behaviour has been reviewed and it confirms that all parameters were in line with previous trends, with no issues to report. The APEX notes the consequence of deferral as minor.

47. Overall, the civil engineering specialist inspector was content that the evidence presented within the case was acceptable and supported the deferral of the statutory outage to no later than 4 October 2021.

3.4 MECHANICAL ENGINEERING

48. Reference [10] provides the findings of the ONR mechanical engineering assessment of the HAR R1 outage deferral request, which is summarised below.

49. The mechanical engineering specialist inspector focused their assessment on the following safety systems considered important to the safe operation of an AGR:

- Secondary Shut Down system;
- Reactor vessel CO_2 gas Safety Relief Valves;
- Gas Circulators.

50. The inspector's assessment focused on confirming that system performance and reliability will not be reduced due to EIMT requirements being extended, and that there will be no impact from the deferral of any prior safety-related commitments on these systems made before requesting an extension in R1's operating period.

51. **Secondary Shutdown System (SSD).** From the inspector's review of the safety justification, the station has stated no safety-related defects have been identified against the system to challenge its performance or reliability. This is based on a review of potential degradation mechanisms specific to the SSD system; information from system walkdowns; and interrogation of the station's maintenance defect log.

52. The specialist inspector states that prior commitments to upgrade the system, so that it can provide two independent lines of nitrogen injection to the HAR reactors, will be impacted by the outage deferral. NGL state that the planned connection to R1 has been rescheduled to take place during the March 2021 RFO rather than during the periodic shutdown.

53. The inspector's review of NGL's justification for the extension of EIMT requirements for the SSD system did not identify any issues that they considered would impact on its

performance or reliability. The system remains active in preparation for a demand to operate. Plant system walkdowns combined with routine system health checks demonstrate that the system remains in a healthy condition and is fault free.

54. **Reactor Vessel CO_2 gas Safety Relief Valves (SRV).** For a periodic shutdown all pilot valves and one SRV are overhauled and tested together with limit switches fitted to SRVs. The inspector's review of NGL's safety justification did not identify any concerns that they considered would impact on the R1 CO_2 gas SRV safety performance or reliability.

55. **Gas Circulators (GC).** The HAR R1 2021 Outage Intentions document identified replacement of GC's in locations 1A1 and 1C1 with overhauled machines and replacement of a defective jacking oil pump on GC in location 1B2.

56. Station has confirmed that overhauled GCs are available and that a GC Review Panel meeting evaluated the implications on GC performance and reliability, given proposals to extend their EIMT requirements. The evidence presented states GCs located in R1 positions 1A1 and 1C1 will exceed their specified 12-year replacement periodicity. Given assessment of all R1 GC performance data over the last 12 months to sub-system component level, no threats were identified that are considered to impact on safety performance or reliability. This is based on condition monitoring data (bearing temperatures, vibration, and main motor winding temperatures) being within specified limits. A review of all standing defects, covering oil level, speed indication, bearing and main motor temperatures, was still considered adequate given arrangements in approved ECs to manage these shortfalls. It was noted that station highlighted the performance of GC IGVs, given known issues with drive clutch slippage and their failure. This issue is being managed through monthly testing to give forewarning of reduced functionality and potential failure.

57. In reviewing NGL's safety justification to extend the operating duration for R1 GCs, the specialist inspector did not consider there is any underlying performance or reliability issues to challenge the safe operation of R1 GCs by extending their operating period.

58. Overall, the mechanical engineering specialist inspector was content that the evidence presented within the case was acceptable and supported the deferral of the statutory outage to no later than 4 October 2021.

3.5 ELECTRICAL ENGINEERING

59. Reference [11] provides the findings of the ONR electrical engineering assessment of the HAR R1 outage deferral request, which is summarised below.

60. The specialist inspector reviewed a sample of the responses and considerations undertaken on the outage related MS items related to the: gas circulator systems; essential supplies; and 11kV unit transformer presented in the EC. The specialist inspector also reviewed the system health scores associated with, gas circulators, transformers, short break supply systems, no break supplies systems, and emergency generation systems. The system health scores were found to indicate equipment availability, condition and performance over the period from last statutory outage to January 2021. There were no matters of significant safety concern identified that were not already being addressed or are the subject of actions to take corrective measures within the station's own arrangements.

61. The specialist inspector was satisfied, from the sample assessed in an electrical engineering context with the claims made in the deferral proposal, given that:

- The review of the statutory outage MS items determined that there were no significant defects or adverse trends.

- No significant concerns were raised by station SQEPs from the deferral of the regular and systematic maintenance, inspection and testing of all plant which may affect safety.
- Responses and considerations from station SQEPs are supportive of the outage deferral and there are no significant challenges or increases in risk.
- Central engineering support advises that the proposed deferral to the maintenance/proof testing of essential motors, generators, transformers, control logic or electrical protection is unlikely to have any significant impact on the availability of these apparatus to perform their safety duty.
- The system health scores associated with the systems sampled were demonstrated and no matters of significant safety concern were identified that were not already being addressed or are the subject of actions to take corrective measures within the station's own arrangements.

62. Overall, the electrical engineering specialist inspector was content that the evidence presented within the case was acceptable and supported the deferral of the statutory outage to no later than 4 October 2021.

3.6 CONTROL AND INSTRUMENTATION

63. Reference [12] provides the findings of the ONR control and instrumentation (C&I) assessment of the HAR R1 outage deferral request, which is summarised below.

64. The C&I specialist inspector focused their assessment on determining:

- Whether C&I related statutory outage EIMT activities covered by the HAR MS have been reviewed by SQEP;
- If the potential for the performance of C&I systems / equipment important to safety to drift / degrade such that it becomes unable to perform its nuclear safety function during the statutory outage deferral period has been considered by SQEP and been adequately assessed to remain acceptably low;
- If the potential for C&I systems / equipment important to safety to reach a reliability cliff edge during the statutory outage deferral period has been considered by SQEP and been adequately assessed to remain acceptably low;
- If appropriate C&I related statutory outage risk reduction measures have been identified.

65. The specialist inspector raised a number of queries with station personnel to adequately assess the case. These queries were satisfactorily addressed during several meetings with relevant SQEP covering the following areas:

- Records for previous R1 statutory outage MS tasks;
- System health indication performance (SHIP) data;
- Previous 'as found condition' (AFC) data;
- Recent corrective work orders;
- Previous plant walkdown reports,
- Equipment reliability reviews (ERRs);
- Relevant living safety case documents (LSDs).

66. Based on the information provided the specialist inspector considered that the likelihood of the performance of C&I systems/equipment important to safety drifting or degrading past the point that it is unable to fulfil its nuclear safety function(s), or reaching a reliability cliff edge, will remain low during the statutory outage deferral period.

67. Overall, the C&I specialist inspector was content that the evidence presented within the case was acceptable and supported the deferral of the statutory outage to no later than 4 October 2021.

3.7 SECURITY

68. Although ONR security did not assess the submitted safety case their view on the outage deferral was considered due to potential implications to site security. The HAR nominated site security inspector confirmed [13] that there were no implications from a security perspective to deferring the outage to no later than 4 October 2021.

3.8 ENGAGEMENT WITH OTHER GOVERNMENT AGENCIES

69. The HAR Environment Agency (EA) site inspector was informed that ONR intended to issue an LI giving Agreement to the extension request. The EA confirmed that they had no objections to the deferral proposal and ONR issuing an agreement to extend the R1 operating period [14].

4 MATTERS ARISING FROM ONR'S WORK

70. No issues preventing issue of this Licence Instrument arose from the assessment of the Licensee's safety justification by ONR specialist inspectors.

5 CONCLUSIONS

71. ONR has undertaken assessment of NGL's safety justification for extending the operating period of Hartlepool Reactor 1 from 14 March to no later than 4 October 2021.

72. The reason for this extension is primarily relating to effective management and optimum availability of outage personnel and resources during the current phase of the Covid-19 pandemic. EDF have deferred a number of station statutory outages to minimise overlap of outages at different stations.

73. NGL considered that the extension would have no significant impact on nuclear safety and that it is ALARP to continue operating for the additional period.

74. ONR's assessments of the proposed extension to the operating period judged that the outage deferral would have no, or negligible, impact on nuclear safety and supported agreeing to the extension to the operating period.

6 RECOMMENDATIONS

75. I recommend ONR issues Licence Instrument 573 under LC30(2) for Nuclear Site Licence 59, giving ONR's Agreement to extending the operating period of Hartlepool Reactor 1 to no later than 4 October 2021.

7 REFERENCES

[1] HAR R1 2021 Outage Deferral - Request Letter – HSLHRA51208R, 12 Nov 2020. CM9 2020/310936.
[2] Hartlepool - LI 564 - Granted Under Condition 30(3) of Schedule 2. CM9 2018/93714.
[3] EC No 368114 Version 02 – Proposal for the Deferral of the R1 2021 Statutory Outage CM9 2020/314352.
[4] EC No 368114 Version 02 – INSA Approval Statement for the Deferral of the R1 2021 Statutory Outage CM9 2020/314352.
[5] HRA - Reactor 1 2021 Outage Deferral - Graphite Review - Email. CM9 2021/12733.
[6] HAR - R1 Outage Deferral 2021 - Structural Integrity Assessment. CM9 2020/323535.
[7] ONR-OFP-PAR-17-018, Revision 0, Hartlepool Nuclear Power Station, ONR Consent for Start-up of Hartlepool Reactor 1 following 2018 Periodic Shutdown. CM9 2018/69953..
[8] HAR - R1 Outage deferral 2021 - PSSR Postponement Letter. CM9 2021/20219.
[9] HAR - R1 Outage Deferral 2021 - Civil Engineering Assessment. CM9 2021/12122.
[10] HAR - R1 Outage Deferral 2021 - Mechanical Engineering Assessment. CM9 2021/6662.
[11] HAR - R1 Outage Deferral 2021 - Electrical Engineering Assessment. CM9 2021/9705.
[12] HAR - R1 Outage Deferral 2021 - C&I Assessment. CM9 2021/13045.
[13] HAR - R1 Outage Deferral 2021 - Security confirmation from CNSS. CM9 2021/13253.
[14] HAR - R1 Outage deferral confirmation from the Environment Agency. CM9 2021/11391.