



Heysham 2 Reactor 8 Periodic Shutdown 2019

ONR Agreement for Extension of Operating Period for Heysham 2 Reactor 8

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EXECUTIVE SUMMARY

Title

ONR Agreement for Extension of Operating Period for Heysham 2 Reactor 8

Permission Requested

EDF Energy Nuclear Generation Limited (NGL) has requested Agreement from the Office for Nuclear Regulation (ONR) to extend the operating period of Heysham 2 Power Station Reactor 8 (R8) for a period up to the 7 February 2020. This request is made in accordance with Licence Condition (LC) 30 (Periodic Shutdown) of the station's nuclear site licence.

Background

Nuclear site licensees are required to comply with conditions attached to the nuclear site licence. LC 30 Clause (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.

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.

The current operating period for R8 will expire on the 10 November 2019. NGL wish to extend this operating period until the 7 February 2020. The reason for this extension request is to manage the reduced availability over the Christmas period and to manage the issue of AGR outages occurring at year ends. NLG also argue that working over the Christmas period could lead to safety / quality issues due to a potential lack of focus over what is usually a rest period for contractors. NGL claim this extension will have no impact on the safe operation of R8.

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

NGL's safety justification for the extension of the operating period of Heysham 2 Reactor 8 until 7 February 2020 was examined by the following discipline specialists; civil engineering, structural integrity, graphite, mechanical engineering, electrical engineering, control & instrumentation, internal hazards and security.

Following the examination it was decided that no detailed assessments were considered necessary in addition to the evidence provided by NGL.

Matters arising from ONR's work

ONR's assessors did not reveal any concerns that the extension of the R8 operating period would increase safety risks. The judgements were supported by evidence that:

- NGL had sought input from relevant suitably qualified and experienced personnel;
- That agreement is reached with the PSSR competent person regarding any proposed postponements of inspections.

Conclusion

ONR's assessment confirmed that NGL has carried out an adequate safety assessment demonstrating the safety of the proposed extension of the Reactor 8 operating period and supported issuing the Agreement.

Recommendation

I recommended that ONR issue Licence Instrument 624 under LC30(2) for Nuclear Site Licence 60 giving ONR's Agreement to extend the operating period of Heysham 2 Reactor 8 until 7 February 2020.

LIST OF ABBREVIATIONS

ALARP	As low as reasonably practicable
EA	Environment Agency
EIMT	Examination, Inspection, Maintenance and Testing
HYB	Heysham 2 nuclear power station
LC	Licence Condition
MS	Maintenance Schedule
NGL	EDF Energy Nuclear Generation Limited
ONR	Office for Nuclear Regulation
PICA	PSR Identified Corrective Actions
PSSR	Pressure System Safety Regulations
R8	Reactor 8

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1 PERMISSION REQUESTED

1. EDF Energy Nuclear Generation Limited (NGL), the operator and Licensee of Heysham 2 nuclear power station (HYB), has written to the Office for Nuclear Regulation (ONR) requesting Agreement to an extension of Reactor 8's (R8) operating period up to 7 February 2020 under Licence Condition 30(2) (Ref. 1).
2. This ONR project assessment report has been produced to record regulatory views and judgments in consideration of NGL's request for the extension of the operating period for Heysham 2 Reactor 8.

2 BACKGROUND

3. The nuclear site licence requires the Licensee to periodically shutdown plant under Licence Condition (LC) 30: Periodic Shutdown to enable examination, inspection, maintenance and testing (EIMT) to take place in accordance with the requirements of its plant maintenance schedule (MS) referred to in LC28(4) EIMT.
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 Safety System Regulations (PSSR), and requirements from equipment manufacturers.
5. For safety case claims for the operation of equipment, these normally relate to potential concern given the presence of damage mechanisms such as creep, fatigue or corrosion. Time-based EIMT requirements are identified in the MS given safety case requirements to ensure appropriate monitoring of equipment takes place and forewarning of failure can be achieved. Such time-based intervals are referred to as operating periods.
6. The operating period for the two reactors at Heysham 2 is identified in the MS preface, which is an approved document under LC28(4). This requires that each reactor is shut down after a maximum period of three calendar years following the Consent of ONR to the start-up of the reactor after a routine periodic shutdown. The previous start-up Consent Licence Instrument (LI) 640 (Ref. 2) for Reactor 8 is dated 10 November 2016. This would require the shutdown of Reactor 8 on or before 10 November 2019.
7. 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.
8. NGL has submitted Heysham 2 Engineering Change EC364544 (Ref. 3) as safety justification for extending R8's operating period by up to the 7 February 2020, with the periodic shutdown planned to commence on the 31 January 2020. The reason for this extension request is reduced resources over the Christmas period leading to the reactor being shut down with no work being carried out and to manage the issue of AGR outages occurring at year ends.
9. NGL consider that the proposed change does not affect nuclear safety and it is judged by NGL that there are no changes to Nuclear Safety Principles. The safety justification (Ref. 3) was presented at category 2 which therefore required a formal independent nuclear safety assessment (Ref. 4)

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

10. The NGL safety justification for extending the Heysham 2 R8 operating period focussed on:
 - Maintenance, inspection and testing schedule (MS) requirements;
 - Component life assessment;
 - Specific commitments made in previous return to service ECs;
 - Periodic Safety Review (PSR) Identified Corrective Actions (PICAs);

- Planned modifications in support of safety cases;
 - Safety case commitments and caveats including Engineering Changes (ECs), Justifications for Continued Operation (JCOs) and Interim Justifications for Continued Operations (IJCOs);
 - Written Schemes of Examination (WES) for Pressure Systems Safety Regulations (PSSR);
 - Environmental Maintenance, Inspection and Testing Schedules (EMITS).
11. ONR Specialist Inspectors from the ONR Heysham 2 R8 2019 periodic shutdown team examined NGL's safety justification.
- Civil Engineering (Ref. 5)
 - Structural Integrity (Ref. 6)
 - Graphite (Ref. 7)
 - Mechanical Engineering (Ref. 8)
 - Electrical Engineering (Ref. 9)
 - Control and Instrumentation (Ref. 10)
 - Internal Hazards (Ref. 11)
 - Security (Ref. 12).
12. Following the examination it was decided that no detailed assessments were considered necessary.

4 MATTERS ARISING FROM ONR'S WORK

4.1 EC364544 Proposal for the Deferral of the Reactor 8 2020 Statutory Outage S11R8

13. The primary safety claim made by NGL is that nuclear safety systems will not incur any significant decrease in their reliability or functionality and there will be no significant increase in the risk of an initiating event during the extended period of operations. NGL support this claim with the following arguments:
- The potential impact of the deferral on degradation mechanisms related to physical parameters such as temperature, irradiation, pressure etc. remain very close to the safety case assumptions for a 3 year operating period.
 - There are no commitments from previous Return to Service (RTS) ECs which will be affected by the deferral.
 - Safety case commitments and caveats made to support safety case claims, including JCOs, and IJCOs, will not be affected by the proposal.
 - The potential impact of the deferral on known time-related degradation mechanisms is minimal and does not create a significant increase in risk.
 - There are no outstanding PICA-related items that will be affected by the deferral.
 - There are no activities associated with the Environmental Maintenance Schedule that cannot be deferred.
 - The increase in risk of common cause failure is small.
14. NGL consider that this deferral has no significant impact on nuclear safety and that it is ALARP to continue operations for the additional period. This view is based on:
- With the proposed deferral, the HYB R8 period of operation will not be greater than 109% of the allowable 3 years including the contingency.
 - Deferring the statutory outage has minimal impact on the time-dependant degradation mechanisms and does not create a significant increase in risk.
 - There are no time-dependant issues in committed inspection programmes of current safety cases which are significantly affected by this proposal (including previous return to service ECs).

- The risk associated with deferring the outage would be very small, whilst the inconvenience and cost associated with bringing the outage forward or starting the outage in November 2019 would be significant.
- NLG also argue that working over the Christmas period could lead to safety / quality issues due to a potential lack of focus over what is usually a rest period for contractors.

4.2 ONR review of outage deferral request

15. Each of the ONR specialist inspectors; civil engineering, structural integrity, graphite, mechanical engineering, electrical engineering and control and instrumentation, examined the NGL safety justification for the outage deferral. Overall the specialist inspectors considered that the short deferral would have no impact on nuclear safety and they all supported, or had no objections to, agreeing to the extension to the operating period for R8.
16. Their judgements were supported by the evidence that:
 - NGL had sought input from relevant suitably qualified and experienced personnel;
 - Agreement was reached with the PSSR competent person regarding any proposed postponements of inspections (Ref. 13);
17. No concerns were raised by any of the specialist inspectors and the request for the extension of the operating period was considered reasonable.

4.3 Engagement with other Government Agencies

18. The Heysham 2 Environment Agency (EA) site inspector was informed that ONR intended to issue a license instrument giving its agreement to the extension of R8's period of operation. The EA confirmed that it had no objections to the deferral proposal and ONR issuing an agreement to extend the R8 operating period until 07 February 2020(Ref. 14).

5 CONCLUSIONS

19. ONR has undertaken assessment of NGL's safety justification for extending the operating period of Heysham 2 Reactor 8.
20. NGL have requested this extension due to reduced resources over the Christmas period leading to the reactor being shut down with no work being carried out and to manage the issue of AGR outages occurring at year ends.
21. NGL considered that the extension would have no significant impact on nuclear safety and that it is ALARP to continue operations for the additional period.
22. ONR's assessments of the proposed extension to the operating period judged that the short outage deferral would have no, impact on nuclear safety and supported, or had no objections to, agreeing to the extension to the operating period.

6 RECOMMENDATIONS

23. I recommend ONR issues Licence Instrument 624 under LC30(2) for Nuclear Site Licence 60, giving ONR's Agreement to extend the operating period of Heysham 2 Reactor 8, so that the periodic shutdown commences no later than 7 February 2020.

7 REFERENCES

1. NSL HYB/51109R. Request for Agreement for the extension of the Heysham 2 Reactor 8 operating period (CM9 2019/322279).
2. Licence Instrument 610, Consent Granted under Condition 30(3) of Schedule 2 attached to Nuclear Site License No 60 Heysham - (CM9 2016/438834).
3. EC No 364544 Proposal Version 04 – Proposal for the Deferral of the Reactor 8 2020 Statutory Outage S11R8 (CM9 2019/284581).
4. EDF Nuclear Generation Ltd Milestone Full INSA Approval Statement (CM9 2019/306901).
5. Heysham 2 Outage Deferral - DRAFT - Civil engineering – 10/10/2019 (CM9 2019/295389).
6. Heysham 2 Outage Deferral EC – DRAFT – Structural Integrity – 17/10/2019 (CM9 2019/301400).
7. Heysham 2 Outage Deferral EC – DRAFT – Graphite – 08/10/2019 – (CM9 2019/290049).
8. Heysham 2 Outage Deferral EC – DRAFT – Mechanical Engineering – 18/10/2019 (CM9 2019/303994).
9. Heysham 2 Outage Deferral EC – DRAFT – Electrical Engineering – 11/10/2019 (CM9 2019/295932).
10. HPE CM: RE Outage Deferral EC – PTSE issue – Control and Instrumentation 25/10/2019 (CM9 2019/312045).
11. Heysham 2 Outage Deferral EC – DRAFT – Internal Hazards – 07/10/2019 (CM9 2019/289385).
12. Heysham 2 Outage Deferral EC – DRAFT – Security – 07/10/2019 (CM9 2019/289127).
13. E/TSK/HY3/15468/19.03 - Heysham 2 Reactor 8 2019 Statutory Outage Deferral – PSSR CPV Penetrations Thorough Examination Implications (CM9 2019/312351).
14. Heysham 2 outage deferral – 28/10/2019 (2019/322435).