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Licence Condition:	LC30(2)		

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Heysham 2 Reactor 7 Periodic Shutdown 2018
ONR Agreement for Extension of Operating Period for Heysham 2 Reactor 7

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EXECUTIVE SUMMARY

Title

ONR Agreement for Extension of Operating Period for Heysham 2 Reactor 7

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 7 (R7) for a period of six days. This request is made in accordance with Licence Condition (LC) 30 (Periodic Shutdown) of the installation'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 R7 will expire on the 29 April 2018. NGL wish to extend this operating period by six days. The reason for this short extension request is to manage the shared outage resources across the NGL fleet over a period of multiple overlapping outages. NGL claim this extension will have no impact on the safe operation of R7.

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 7 by six days was examined by the following discipline specialists; civil engineering, structural integrity, graphite, mechanical engineering, electrical engineering and control & instrumentation.

Following the examination it was decided that no detailed assessments were considered necessary due to all the maintenance requirements still being met for the short duration of the extension requested.

Matters arising from ONR's work

ONR's assessment did not reveal any concerns that the extension of the R7 operating period by six days would increase safety risks. The judgements were supported by evidence that:

- NGL had sought input from relevant suitably qualified and experienced personnel;
- All the maintenance schedule and pressure systems safety regulations maintenance and inspections would still be in date;
- There were no cliff-edge effects on the component life assessments and safety cases; and
- The previous history of satisfactory plant maintenance and condition.

Conclusion

ONR's assessment confirms that NGL has carried out an adequate safety assessment demonstrating the safety of the proposed extension of the Reactor 7 operating period and supported issuing the agreement.

Recommendation

It was recommended that ONR issue Licence Instrument 615 under LC30(2) for Nuclear Site Licence 60 giving ONR's agreement to extend the operating period of Heysham 2 Reactor 7 by a period of six days.

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
PSSR	Pressure Safety System Regulations
R7	Reactor 7 (at Heysham 2)

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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 (Reference 1) to the Office for Nuclear Regulation (ONR) requesting agreement to an extension of Reactor 7's (R7) operating period to 5 May 2018 under Licence Condition 30(2).
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 7.

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 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) 588 (Reference 2) for Reactor 7 is dated 29 April 2015. This would require the shutdown of Reactor 7 on or before 29 April 2018.
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 EC362811 (Reference 3) as safety justification for extending R7's operating period by up to six days, with the periodic shutdown planned to commence on 4 May 2018. The reason for this short extension request is to manage the shared outage resources across the NGL fleet over a period of multiple overlapping outages.
9. NGL judged that the impact of the short extension will not significantly increase the risk to nuclear safety and does not change any of the principles on which the safety case is made. The safety justification (Reference 3) was presented at category 3 therefore not requiring a formal independent nuclear safety assessment.

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

10. The NGL safety justification for extending Heysham 2 R7 operating period by six days (Reference 3) focussed on:
 - Maintenance, inspection and testing schedule (MS) requirements;
 - Component life assessment;
 - Structural integrity;
 - Fuel route safety cases;
 - Civil engineering aspects;

- Safety case commitments and caveats;
 - Written schemes of examination for PSSR; and
 - Planned modifications to support the safety case.
11. ONR Specialist Inspectors from the ONR Heysham 2 R7 2018 periodic shutdown team examined NGL's safety justification (Reference 3) together with ONR's information gathered from previous Heysham 2 periodic shutdown and performance data.
- Civil Engineering (Reference 4);
 - Structural Integrity (Reference 5);
 - Graphite (Reference 6);
 - Mechanical Engineering (Reference 7);
 - Electrical Engineering (Reference 8); and
 - Control and Instrumentation (Reference 9).
12. Following the examination it was decided that no detailed assessments were considered necessary due to all the maintenance requirements still being met and the short duration of the extension requested.

4 MATTERS ARISING FROM ONR'S WORK

4.1 EC362811 Deferral of Heysham 2 R7 Outage for 6 Days

13. The NGL safety justification for extending the operating period by six days looked across a range of topics but centred on the short duration of the extension. The deferral of the Heysham 2 R7 outage by six days increases the agreed operating period of 1096 days by less than 0.6%.
14. NGL considered that this has no significant impact on nuclear safety and that it is ALARP to continue operations for the additional period. This view is based on:
- The 3 yearly MS routines have a 20% tolerance on frequency and no routines will exceed their tolerance due to a six day extension
 - The predicted steaming hours are within the assumed range for the component life assessments. The deferral would not impact these assessments and there are no cliff edge effects.
 - The delay to the outage will have a negligible effect on structural integrity issues.
 - The cooling to the fuel route has sufficient redundancy that the operational extension will not impact the fuel route.
 - The delay to the outage will have negligible effect on any civil issues.
 - Any expiry dates for safety cases could be accommodated by normal safety case management arrangements.
 - The six day delay would have no effect on the written schemes for examination for PSSR.
 - Any planned modifications are not dependent on the outage start date.

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 (Reference 3). Overall the specialist inspectors considered that the short deferral would have no, or negligible, impact on nuclear safety and they all supported, or had no objections to, agreeing to the extension to the operating period for R7.
16. Their judgements were supported by the evidence that:
- NGL had sought input from relevant suitably qualified and experienced personnel;

- All the MS and PSSR maintenance requirements and inspections would still be met;
 - There were no cliff-edge effects on the component life assessments and safety cases; and
 - The previous history of satisfactory plant maintenance and condition.
17. No concerns were raised by any of the specialist inspectors.
18. The request for the short extension to the operating period was considered reasonable to deconflict the resource requirements from overlapping outages.

4.3 Engagement with other Government Agencies

19. The Heysham 2 Environment Agency (EA) site inspector was informed that ONR intended to issue LI giving its agreement to the extension of R7's period of operation. The EA confirmed that it had no objections to the deferral proposal and ONR issuing an agreement to extend the R7 operating period by 6 days (Reference 10).

5 CONCLUSIONS

20. ONR has undertaken assessment of NGL's safety justification for extending the operating period of Heysham 2 Reactor 7 by a period of up to six days.
21. NGL have requested the short extension to manage the shared outage resources across the NGL fleet over a period of multiple overlapping outages
22. 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.
23. ONR's assessments of the proposed extension to the operating period judged that the short outage deferral would have no, or negligible, impact on nuclear safety and supported, or had no objections to, agreeing to the extension to the operating period.

6 RECOMMENDATIONS

24. I recommend ONR issues Licence Instrument 615 under LC30(2) for Nuclear Site Licence 60, giving ONR's agreement to extend the operating period of Heysham 2 Reactor 7 by six days, so that the periodic shutdown commences no later than 5 May 2018.

7 REFERENCES

- 1 Heysham 2 - NSLHYB51080R - LC 30(2) - Reactor 7 Periodic Shutdown 2018: Request for Extension to Shutdown Reactor 7 Under Licence Condition 30(2), 13 March 2018, TRIM 2018/95330
- 2 Heysham 2 - Licence Instrument 588 - Consent to Start-up Heysham 2 Reactor 7 under LC 30(3), 29 April 2015, TRIM 2015/159818
- 3 Heysham 2 - EC362811 Deferral of HYB S11R7 Outage for 6 Days, 13 March 2018, TRIM 2018/95330
- 4 HYB S11R7 Outage 2018 - Outage deferral request - Civils, 27 March 2018, TRIM 2018/107766
- 5 HYB S11R7 Outage 2018 - Outage deferral request - Structural Integrity, 22 March 2018, TRIM 2018/104945
- 6 HYB S11R7 Outage 2018 - Outage deferral request - Graphite, 22 March 2018, TRIM 2018/102480
- 7 HYB S11R7 Outage 2018 - Outage deferral request - Mechanical, 9 April 2018, TRIM 2018/120067
- 8 HYB S11R7 Outage 2018 - Outage deferral request - Electrical Engineering, 3 April 2018, TRIM 2018/112835
- 9 HYB S11R7 Outage 2018 - Outage deferral request - C&I, 26 March 2018, TRIM 2018/105124
- 10 Heysham 2 S11R7 Outage 2018 - Outage deferral - Environment Agency no objections, 5 April 2018, TRIM 2018/117774