Office for Nuclear Regulation (ONR)
Site Report for
Heysham Power Stations

Report for period 1 April 2020 – 30 June 2020

Foreword

This report is issued as part of ONR's commitment to make information about inspection and regulatory activities relating to the above site available to the public. Reports are distributed quarterly to members of the Local Community Liaison Committee and are also available on the ONR website (http://www.onr.org.uk/llc/).

Site inspectors from ONR usually attend the Heysham 1 and 2 Local Community Liaison Committee meetings and will respond to any questions raised there. Any person wishing to enquire about matters covered by this report should contact ONR.

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1 INSPECTIONS

1.1 Dates of inspection

1. The ONR nominated site inspectors made inspections on the following dates during the quarter:

Heysham 1

- 16-18 June (Remote Inspection)
- 23 June (Remote Inspection)

Heysham 2

- 9 June (Physical Inspection)
- 18 June (Remote Inspection)
- 23 June (Remote Inspection)

2 ROUTINE MATTERS

2.1 Inspections

2. Inspections are undertaken as part of the process for monitoring compliance with:

- the conditions attached by ONR to the nuclear site licence granted under the Nuclear Installations Act 1965 (NIA65) (as amended);
- the Energy Act 2013;
- the Health and Safety at Work Act 1974 (HSWA74); and
- Regulations made under HSWA74, for example the Ionising Radiations Regulations 2017 (IRR17) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).

3. The inspections entail monitoring the licensee's actions on the site in relation to incidents, operations, maintenance, projects, modifications, safety case changes and any other matters that may affect safety. The licensee is required to make and implement adequate arrangements under the conditions attached to the licence in order to ensure legal compliance. Inspections seek to judge both the adequacy of these arrangements and their implementation.

4. Due to the Covid-19 pandemic, access to site has been limited to urgent and essential regulatory inspections. (More details can be found in the News from ONR section at the back of this report and on our website)

5. We have however maintained regulatory oversight of both stations by:-

- Initiating increased dialogue with site management, the licensee's independent nuclear safety assurance function, and trade union safety representatives to develop a consistent picture of the measures put in place to manage the safety of both the workforce and the plant.

- Observing regular station meetings and special working groups the licensee established to assess the coronavirus pandemic and manage the response, such as the pandemic lead team meeting (which co-ordinated the site's response) and maintenance requirements review group (which managed the impact of potential or actual staff and supply chain shortfalls on safety-significant maintenance activities).

- Monitoring the minimum staffing levels required to deliver an adequate response in the event of an accident or emergency on the site.

6. Consequently, we consider that the site has managed its response to the pandemic during the period in a manner that, so far as is reasonably practicable, protected its own staff and ensured that there was no degradation in nuclear safety.

7. In this period, the following remote routine inspections were undertaken:

Heysham 1

Licence Condition 11 – Emergency Arrangements

8. We conducted a planned LC 11 compliance inspection of the Emergency Preparedness and Response Capability Map (EPRCM) for both Heysham 1 & 2. This is a framework used to evaluate emergency planning and response in the context of seven subject areas. ONR aims to evaluate all areas of the EPRCM on each operating reactor site during a five-year cycle. During this inspection we sampled evidence from several themes of the Capability Map.

- Anticipation – The emergency situations that the duty holder needs to be prepared for have been identified in advance.
- Assessment – The ways in which the identified threats and hazards may initiate and develop has been assessed, and potential consequences and mitigation have been identified.
- Preparation – Staff, equipment and facilities to respond to an emergency
- Recovery – Arrangements are in place to manage and minimise the long term effects of any unexpected event.

9. Due to the inspection taking place remotely no physical inspection took place of onsite facilities or equipment. We interviewed the Emergency Preparedness Engineers (EPE) for both sites. The EPEs had updated the respective capability maps prior to the inspection.

10. The evidence presented was consistent with the claims in the capability map and we found that since the previous update a number of areas have improved and no significant shortfalls were identified.

11. During the inspection we found evidence of compliance with both station-specific and fleet-wide processes for both stations. We observed that in some areas additional information could be presented in the capability map of existing station arrangements to improve the evidence and claims.

12. We identified some areas that will be discussed with the NGL fleet lead for emergency arrangements to improve consistency across all stations, though these did not impair the emergency response capability at either station.

Licence Condition 28 - Examination, inspection, maintenance and testing, and Licence Condition 34 - Leakage and escape of radioactive material and radioactive waste.

13. We conducted a planned LC28 and LC34 compliance inspection of the Pond Water Treatment Plant (PWTP).

14. The purpose of the PWTP is to provide safe conditions for the storage of irradiated nuclear fuel assemblies that have been removed from the reactor in the spent fuel ponds by providing cooling, filtration and control of radioactivity levels for the demineralised boronated pond water.

15. The main process plant items in the PWTP (excluding the connecting pipework) are:
    - pond water heat exchangers;
    - pond ion-exchange units;
    - pond sand filter units;
    - an ultraviolet generator; and
    - pond radioactive sludge storage tanks.

16. Due to the inspection taking place remotely no physical inspection took place of onsite facilities or equipment. We interviewed the relevant engineers and managers responsible for maintenance and oversight of the PWTP and obtained samples of maintenance requirements and records.

17. We noted that maintenance requirements are not derived from the PWTP safety case via appropriate safety classification schemes. However, the licensee demonstrated, from the samples inspected, that the PWTP is operating reliably and within required parameters and we were satisfied the PWTP is well maintained. On balance, based on the sample inspected, we judged compliance with LC28 was adequate and therefore assigned a green (no formal action) rating for LC28.

18. We were satisfied the licensee is adequately implementing its LC34 arrangements which require barriers to leakage and escape to be identified and their integrity assessed, based on a sample of components of the PWTP. We were satisfied that the means of detecting failure of barriers are in place and in working order, based on sampling a range of inspection and maintenance records. We sampled the most recent report of the Heysham 1 ground water monitoring programme, and were satisfied that any significant radioactive leak would likely to be detected. We were also satisfied the licensee is identifying, reporting and repairing radioactive leaks in a timely manner, in accordance with its LC34 arrangements. Based on the sample inspected, we judged compliance with LC34 was adequate and therefore assigned a rating of green (no formal action) for LC34 compliance.

19. We raised a number of observations during the inspection, though none of these were considered to affect the ratings awarded.

Heysham 2

Covid -19 Inspection

20. A physical inspection at site (to aid an investigation – See section 3) provided the opportunity to inspect the Covid-19 arrangements on site. No significant issues were found. The site has made significant changes to protect the workforce and reduce the risk of Covid-19 transmission whilst on site. Examples include a significant reduction of the number of personnel physically on site; installation of personnel temperature monitoring equipment; an increased cleaning regime; increased hand sanitiser stations; social distancing modifications and provision of PPE if required.

Licence Condition 36 - Control & Supervision (Including Out of Hours)

21. We conducted a remote LC36 inspection to evaluate how Heysham 2 manages its human resources – particularly with respect to NGL's use of the ODM (Operational

Decision Making) process for managing change during the implementation phase of its response to the COVID-19 pandemic.

22. The station provided its current arrangements and evidence of implementation before the video conference discussion. During the video conference it presented evidence to show how it was managing its human resources and managing organisational change during the COVID-19 pandemic.

23. Based on our sample of interviews and document reviews we judged that there were effective processes in place to manage and monitor human resources and organisational change. We identified a number of positive findings and we also identified some opportunities where we believe the station can improve the effectiveness of its activities in this area. Overall, we judged the licensee was meeting relevant good practice when compared to ONR guidance.

Licence Condition 11 – Emergency Arrangements

24. This Inspection spanned both sites. See Inspection details under Heysham 1 above.

System Based Inspections (SBI)

25. In addition to the programme of site licence compliance inspections, ONR also inspects operating reactors based on safety related systems. Each site has a safety case, which identifies the important aspects of operation and management required for maintaining safety. For both stations at Heysham, the key systems important to nuclear safety will be inspected against the requirements of the safety case over a five-year period. ONR considers that this will provide additional assurance that operations on the Heysham site are safe. Each of these system inspections considers the relevant licence conditions (where relevant) below:

- Licence condition 10: Training
- Licence condition 23: Operating rules
- Licence condition 24: Operating instructions
- Licence condition 27: Safety mechanisms
- Licence condition 28: Examination, inspection, maintenance and testing
- Licence condition 34: Leakage and escape of radioactive material and radioactive waste

Heysham 1

26. During the reporting period, no system-based inspections were conducted at Heysham 1.

Heysham 2

27. During the reporting period, no system-based inspections were conducted at Heysham 2.

3 NON-ROUTINE MATTERS

28. Licensees are required to have arrangements to respond to non-routine matters and events. ONR inspectors judge the adequacy of the licensee's response, including actions taken to implement any necessary improvements.

Heysham 1

29. It was revealed that a small number of reactor pressure vessel penetration examinations had not been completed in accordance with a written scheme of examination developed by the licensee to comply with the Pressure Systems Safety Regulations 2000 (PSSR).

30. Advanced gas cooled reactor pressure vessels feature hundreds of sealed penetrations which must be routinely examined to ensure they are free from defects. From in excess of 600 penetrations in Reactor 1, we found that the licensee had failed to examine 11 penetrations within the intervals specified in the written maintenance scheme.

31. ONR's Enforcement Management Model was applied to the breach of PSSR and an improvement notice was issued. The notice requires EDF to complete all reactor 1 overdue penetration examinations by 18 December 2020.

32. ONR judges that nuclear safety was not compromised by the breach and there was no risk to workers or the public and the licensee has presented an adequate safety case to justify the continued safe operation of reactor 1.

Heysham 2

33. On 16 April 2020, Heysham 2 reported that shortly after taking Reactor 8 critical as part of the return to service after the S11R8 statutory outage, 3 out of 4 "log/lin" flux protection channels were found to be configured incorrectly. All the control rods were subsequently re-instated to put the reactor in a safe shutdown state.

34. As part of normal operating procedures, once the reactor is taken critical, a check of the four "log/lin" flux detector protection channels is carried out at approximately 30kW reactor power. The check identified that channels were not operating correctly. The reactor was taken subcritical by reinserting all the control rods. ONR placed a hold on the start-up of Reactor 8 which was subsequently released following confirmation of additional assurances. ONR has started an investigation into the circumstances surrounding the event and the causes of the error.

35. ONR inspected the maintenance activities leading to this event on 9th June. Whilst at site we also conducted follow-up enquires into couple of other conventional safety near misses and observed first-hand the arrangements on site for Covid-19.

36. The investigation is ongoing.

4 REGULATORY ACTIVITY

37. ONR may issue formal documents to ensure compliance with regulatory requirements. Under nuclear site licence conditions, ONR issues regulatory documents, which either permit an activity or require some form of action to be taken. These are usually collectively termed Licence Instruments (LIs), but can take other forms. In addition, inspectors may issue Enforcement Notices to secure improvements to safety.

Heysham 1 Reactor Statutory Outage

38. During this period, ONR provided agreement to two requests from the licensee for extensions to the commencement of the Reactor 1 (R1) statutory outage. Originally the statutory outage was planned to commence no later than the 6th April 2020.

39. The first extension request was for by a period of 71 days, for commencement of outage no later than 16th June 2020. The reason for the extension request was predominantly due to delays with completing post Reactor 2 defueling outage activities resulting from the necessity to exchange the west side fuelling machine long travel wheels.

40. Additionally an outage start date in April 2020 overlapped with the statutory outage at Heysham 2. While the pressure on resources was being managed, it was considered that delaying the Heysham 1 outage would assist in reducing pressure on those staff supporting both outages.

41. The second extension request was to extend the operating period until the 31 October 2020. The outage deferral request was due to the impact of the COVID-19 pandemic and indications that supply chain and contractor availability would be affected posing a challenge to the safe execution of the statutory outage.

42. ONR's assessments both concluded that the licensee had carried out adequate safety assessments demonstrating the safety of the proposed extensions to the Heysham 1 Reactor 1 operating period.

Heysham Emergency Plan

43. REPPIR19 has prompted the requirement for the review and amendment of the on-site, and off-site emergency plans. Following the Heysham review and subsequent updates to the emergency plan, the station sought ONR's approval of the Heysham station Emergency Plan in April 2020 under LC11 arrangements. ONR provided a response in June to the request, highlighting that the description of the Detailed Emergency Planning Zone (DEPZ) in the revised submission has been omitted. ONR have requested that Heysham ensure the on-site emergency plan is re-submitted containing the new DEPZ information within the final version. ONR are expecting the re-submission of the Heysham emergency plan during July 2020.

Table 1
Licence Instruments and Enforcement Notices Issued by ONR during this period

Heysham 1 and 2

Date	Type	Ref No	Description
3/4/2020	Agreement	LI 627	Agreement for Extension of Operating Period for Heysham 1 Reactor 1
3/4/2020	Consent	LI 628	Consent to Start-Up Heysham 2 Reactor 8 Following Periodic Shutdown
11/5/2020	Improvement Notice	ONR-IN-20-001	Heysham 1 - Contravention of Pressure Systems Safety Regulations 2000 Regulation 9 1 (a)
9/6/2020	Agreement	L1 630	ONR Agreement for Extension of Operating Period for Heysham 1 Reactor 1

Reports detailing the above regulatory decisions can be found on the ONR website at http://www.onr.org.uk/pars/.

News from ONR - April to June 2020

Covid – 19

ONR is continuing to protect society by securing safe nuclear operations during the Covid-19 (coronavirus) pandemic. Our staff continue to work from home, in line with government advice, with a limited number of our inspectors, as key workers, travelling to site as necessary to conduct urgent and essential regulatory inspections. ONR's latest position can be found on our website.

Enforcement Action

ONR served an Improvement Notice on EDF Energy Nuclear Generation Ltd (EDF Energy) for contravention of the Pressure Systems Safety Regulations (2000) at Heysham 1 Power Station. The notice was served after shortfalls were discovered in the examination and inspection of the Reactor 1 pressure vessel at the Lancashire plant. EDF Energy must comply with the Improvement Notice and complete the eleven overdue examinations by 18 December, 2020.

ONR has granted an extension to an Enforcement Notice served on Urenco UK Ltd, recognising the good progress made so far. The notice was issued in late December 2019, following a fire safety inspection at the Capenhurst Works in Cheshire, which revealed shortfalls in the fire alarm and detection systems at one of the site's facilities. Urenco UK Ltd must comply with the requirements of the extended notice by 30 September, 2020

Regulatory Updates.

ONR received an application for a nuclear site licence from NNB Generation Company (SZC) Limited, to construct and operate two EPR ™ reactors, at its proposed development in Sizewell, Suffolk. We will now assess the application, partly informed by our previous assessment of the EPR ™ at Hinkley Point C – including using the relevant lessons from that assessment, while focusing on aspects specifically relevant to Sizewell C.

Whilst we are satisfied that the application is sufficiently complete to proceed to assessment stage, there is still a lot of work to do – and we do not expect to reach a decision, until at least the end of 2021.

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