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

Report for period 1 January 2021 – 31 March 2021

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

- 25 – 26 January (Onsite)
- 10 – 11 February (Onsite)
- 11, 17 - 18 March (Onsite)

In addition, ONR specialist inspectors were involved in interventions on the following dates during the quarter:

- 10 – 11 February (Remote)
- 11 March (Remote)

Heysham 2

- 25 - 29 January (Remote)
- 11 – 12 & 24 February (Remote & Onsite)
- 22 – 23 February (Remote and onsite)
- March 2021 – Continuing into April (Remote)

In addition, ONR specialist inspectors were involved in interventions on the following dates during the quarter:

- 25 - 29 January (Remote)

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 site and remote routine inspections were undertaken:

Heysham 1

Safety case production and implementation themed inspection

8. The inspection theme was developed to sample the adequacy of production and implementation of safety cases. The inspection sampled the training of individuals involved in safety case production and the implementation of the modified safety case, operating rules and operating instructions.

9. The inspection sampled evidence to determine compliance against:

- Licence condition 10 (LC10) – Training;
- Licence condition 14 (LC14) – Safety documentation;
- Licence condition 23 (LC23) – Operating rules; and
- Licence condition 24 (LC24) – Operating instructions.

10. The purpose of LC10 is to ensure that the licensee makes and implements adequate arrangements for suitable training for all those on site who have responsibility for any operations which may affect safety.

11. The purpose of LC14 is to ensure that the licensee makes and implements adequate arrangements for the production and assessment of safety cases.

12. The purpose of LC23 is to ensure that the licensee, in respect of any operation that may affect safety, produces an adequate safety case to demonstrate the safety of that operation and identifies the conditions and limits necessary in the interests of safety. Such conditions and limits are referred to as operating rules.

13. The purpose of LC24 is to ensure that all operations which may affect safety, are carried out in accordance with written operating instructions.

14. The inspection sampled five safety case engineering changes (ECs) which had been completed within the last two years. We selected the five ECs based on the safety significance of the proposed changes.

15. We noted that the roles involved in a typical safety case modification are the Responsible Engineer, Author, Verifier, Categoriser and Case Officer. Training records for all roles involved in the production of the sampled safety cases were current and accurate. It was noted, and deemed good practice, that the licensee's asset management process places firm hold points on the various roles involved in the safety case modification process to ensure the individual carrying out that role has received the necessary training.

16. The five sampled ECs provided robust examples to demonstrate adequate safety case production and assessment had been conducted and where applicable, operating rules and operating instructions had been adequately amended and implemented. For all five sampled ECs, no regulatory issues were identified.

17. We found that the sampled arrangements and their implementation adequately satisfied the requirements necessary to demonstrate compliance with LC10, LC14, LC23 and LC24. We therefore rated this inspection as Green, no formal action, for all four licence conditions.

Heysham 2

Licence Condition 32 Accumulation of Radioactive Waste

Licence Condition 34 Leakage and Escape of Radioactive Material and Radioactive Waste

18. Due to COVID-19 pandemic restrictions, meetings were carried out remotely via Skype by the ONR nominated site inspector but a physical plant walkdown was also undertaken on-site as part of the inspection.

19. The LC32 inspection examined the arrangements for processing and accumulation of radwaste in a number of plant areas. The site's own key performance indicators (KPIs) seemed appropriate and drive the correct focuses. The site is steadily reducing its longer term legacy wastes. The solid radwaste facilities and packages were in good material condition and were in a tidy state at the time of ONR's inspection.

20. The site has responded positively to a recent fleet issue with respect to the categorisation of radioactive leaks. All the current leaks are minor in nature and all are contained. The site understands that improvements are required in the timeliness of repairs to some of these minor leaks and should be increasing the priority given to these. The station are considering how very minor pond defects on the civil structure should be categorised although ONR is content that they currently have a robust monitoring regime in place for these defects.

21. ONR was satisfied the licensee is complying with its LC34 arrangements which require barriers to leakage and escape to be identified and their integrity assessed. ONR was also satisfied that detectors, which play an important role in identifying failure of these barriers, are in place and in working order such that any significant radioactive leak would be detected by the station.

22. ONR judged that the licensee is meeting its legal requirements under LC32 and LC34 and therefore assigned a rating of green (no formal action) for both.

Level 1 Emergency Demonstration Exercise

23. We observed a Level 1 emergency demonstration exercise rated against Licence Condition (LC) 11 – Emergency Arrangements. The scenario was agreed in advance. The demonstration was carried out under COVID-19 restrictions so only the command centres were exercised using simulated inputs. We judged that the demonstration provided an adequate demonstration of Heysham 2's emergency arrangements and awarded a rating of Green against LC11. There were a few minor observations during the exercise that will be taken forward by the station as learning points to enhance and improve the implementation of their emergency arrangements. No issues were raised

24. Whilst on site we took the opportunity for a general look at ongoing work on the Make-up Shield (See para 38) and the COVID-19 precautions. We observed screens in place at many locations, numerous hand sanitizer stations and signage. Each room has a safe capacity noted on the door and this was being adhered to. In rooms where people might queue there were arrangements in place to alert people to the number already in the room through a display outside the door. In the canteen, no seating was present and a clear one-way system was in place. When out on the plant, only one person was observed with his mask below his nose but the operations manager very quickly spoke to him. Whilst observing the work on the Make-Up Shield, all were wearing masks although social distancing is difficult.

Licence Condition 28 - Maintenance Inspection

25. During March 2021 we started a Licence Condition 28 maintenance inspection. This was a themed inspection looking at the following specific aspects of the stations maintenance management system

- Work Planning
- Work Prioritisation
- Defect resolution and backlog

26. Due to holiday commitments around Easter the inspection has continued into April and will be reported during the next quarter.

System Based Inspections (SBI)

27. 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

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

Heysham 2

System Based Inspection – Nuclear Fire

29. We performed a System Based Inspection (SBI) to confirm the implementation of safety claims made for nuclear fire protection (fire detection, suppression, barriers, doors and dampers) at Heysham 2. Due to COVID-19 pandemic restrictions, the intervention was undertaken remotely via Skype during January 2021. There was no plant walk-down during this intervention. Instead we utilised insights from previous interventions, such as the most recent SBI on Heysham 2's Heating and Ventilation Systems, undertaken in December 2020 that covered areas of mutual interest including fire dampers and hot gas & steam release arrangements.

30. An ONR SBI normally covers 6 key LCs, but in this case LC 34 did not form part of this inspection as the inspection plan did not cover any area where the Fire Protection System could lead to an escape of radioactive waste.

31. From the evidence sampled during this SBI, the licensee adequately demonstrated ownership and implementation of its safety case. In addition, it demonstrated an adequate understanding of its arrangements to ensure and maintain the safety of its Fire Protection System. It was judged that the Fire Protection System adequately fulfils the requirements of the safety case and fulfils its safety functional requirements. However, in a small number of cases, I judged there was a shortfall in compliance against Licence Condition 28(9) as a small number of maintenance tasks were not being signed off by suitable qualified and experienced supervisors. The findings were accepted by site and the actions to address the findings are being tracked by a regulatory issue.

3 NON-ROUTINE MATTERS

32. 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

33. There were no such matters or events of significance during this period.

Heysham 2

Make-up Shield (INF1 2020/693) & (INF1 2021/191)

34. During last quarter we reported on a carbon dioxide (CO_2) leak from the fuelling machine. The technical investigation has revealed the source of the leak was from double seals in the Make-up Shield (MUS). The MUS fits below the fuelling machine to allow used fuel to be taken out of the reactor and new fuel inserted. The MUS for Reactor 7 has been stripped down and the seals replaced. This technical investigation has revealed shortfalls in the safety case for use of the MUS whilst the reactor is operation and pressurised so a revised safety case will be required before the MUS can be operated at pressure. ONR has placed a regulatory hold point and will permission the revised safety case.

Earth Faults resulting in Reactor Trips (INF1 2021/52) (INF1 2021/84)

35. An unplanned automatic trip of reactor 7 occurred on Monday 1st February 2021. The trip was caused by a failure of a 23KV bushing on the electrical generator system. The fault resulted in loss of grid supplies to 2 or 4 reactor quadrants. Power supplies were restored via essential diesels post trip and grid supplies were subsequently been restored by the Operation Team. The loss of supplies the start / standby boiler feed pumps meant boiler post trip cooling was provided by the emergency feed system as per design. There were a couple of issues with the diesel generators that the site quickly resolved.

36. Following replacement of the bushing and other checks, following reactor start-up the same generator was energised and immediately tripped due to another earth fault on the 23kV system. Following an operational decision meeting Reactor 7 was manually tripped on early Sunday 14/02/2021 morning to investigate the fault. Post trip cooling operations were satisfactory with no significant post trip cooling failures. The investigations revealed that a further two bushings of the same type and age had failed. All six bushings were replaced.

37. ONR was immediately informed of both events, the subsequent investigations and the actions taken.

4 REGULATORY ACTIVITY

38. 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 Direction

39. The previous 2020 Q4 LCLC report described that ONR had issued a formal Direction to Heysham 1 on 14 December 2020 directing the licensee to carry out a thorough review of the site's arrangements necessary to secure compliance with Pressure Systems Safety Regulations 2000 (PSSR). EDF NGL were directed to report to ONR the outcome of their review by 31 March 2021.

40. We maintained regular oversight of the licensee's progress to secure compliance with PSSR providing advice and guidance as necessary.

41. EDF NGL completed their review against PSSR compliance and submitted the outcome of their review to ONR on 19 March 2021. We are satisfied that the requirements of the Direction have been completed. However, further PSSR interventions will be conducted to gain assurance that compliance with PSSR is sustained.

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

Heysham 1 and 2

Date	Type	Ref No	Description
None			

Whilst no reports detailing regulatory decisions were issued during the period, previous decisions can be found on the ONR website at http://www.onr.org.uk/pars/.

5 NEWS FROM ONR

Below are summaries of key activities over the last three months. Further detail is available on our website.

Covid-19 (Coronavirus) (ONR position)

- We are continuing to obtain assurance that nuclear site licensees and other dutyholders are adequately resourced to continue to safely and securely carry out their activities. We remain satisfied with industry's response at this time and there has been no significant change to dutyholders' safety and security resilience. As COVID-19 restrictions change, our focus is on the preparedness for the weeks and months ahead and maintaining safe and secure operations. Our latest position can be found on our website.

Enforcement Action

- In January, we agreed to extend two Improvement Notices served on the Atomic Weapons Establishment (AWE), recognising the good progress made so far. The Notices, which were served in June 2019, relate to the way the company controls changes to organisational structure and resources which may affect safety.
- In January, we served an Improvement Notice on Sellafield Ltd following a number of electrical safety incidents across the site. While we are satisfied that Sellafield Ltd is currently meeting the high standards expected with regards to nuclear safety, as a regulator we require sustained improvements in the area of electrical safety.
- In February, we served an Improvement Notice on Morgan Sindall Construction and Infrastructure Ltd after workers came close to striking a live high voltage electric cable during excavation work at the Sellafield site. Nobody was harmed in the incident on 7 October 2020, and there was no impact on the public or the environment. However, the incident posed a serious risk to workers who were operating within one metre of the 11kV cable.

Regulatory Updates

- In March, we published a response on our website to a BBC report relating to Sellafield. We were naturally concerned to hear the claims, particularly any suggestion that staff have been subjected to racist abuse of any kind. As a regulator, if we had any concerns or evidence that bullying and harassment was impacting safety at the site, we would take robust action to ensure this is addressed as a matter of urgency.
- In March, we published an article about how we responded to the serious nuclear accident at the Fukushima Dai-ichi nuclear power plant in 2011 to mark the 10th anniversary.
- In March, we gave EDF permission for Reactors 3 and 4 at Hinkley Point B power station to return to service for a limited period of operation. Permission for Reactor 3 will allow it to operate to a core utilisation of 17.55 terawatt days, while permission for Reactor 4 is to operate to a core utilisation of 17.3 terawatt

days, which equates to two periods of approximately six months operation for each reactor.

Stakeholder Engagement

- In February, we encouraged interested parties to take part in a Nuclear Energy Agency (NEA) survey about building and maintaining trust between nuclear safety regulators and the stakeholders they engage with.
- In February, we provided an update about the leadership structural changes we initially announced in December 2020. Under existing contractual arrangements, current Chief Executive Adriènne Kelbie CBE was always expected to step down as her extended term of office comes to an end in January 2022. Mark Foy will step into the new combined role on 1 June 2021, when the new leadership structure will come into full effect.
- In February, we announced that we had appointed Donald Urquhart to the newly-created role of Executive Director of Operations, which will form part of our new leadership structure. As Executive Director of Operations, Donald will be responsible for leading our regulatory work.
- In March, we announced that as part of our new leadership arrangements, we had appointed three new deputy chief nuclear inspectors (DCIs) to our regulatory and senior leadership teams: Jane Bowie, Paul Dicks and Steve Vinton, currently all senior superintending inspectors at ONR. All three new DCIs have a strong track record of delivering regulation across the organisation and will help us maintain a focus on our Strategy 2020-25.

6 CONTACTS

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This document is issued by the Office for Nuclear Regulation (ONR). For further information about ONR, or to report inconsistencies or inaccuracies in this publication, please visit http://www.onr.org.uk/feedback.htm.

Published 05/21