



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

Report for period 01 January 2015 - 31 March 2015

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/lc/>).

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

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1 INSPECTIONS

1.1 Dates of inspection

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

Heysham 1

- 20-21 January 2015
- 11-12 February 2015
- 17-18, 25-26 March 2015

Heysham 2

- 13 January 2015
- 3-4, 18 February 2015
- 23-24, 27 March 2015

2. In addition technical specialists were involved in inspections on the following dates during the quarter:

Heysham 1

- 22 January 2015
- 23-24 February 2015

Heysham 2

- 28 January 2015
- 3-4 February 2015
- 23-26 March 2015

2 ROUTINE MATTERS

2.1 Inspections

3. 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 1999 (IRR99) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).

4. The inspections entail monitoring 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.

5. In this period, routine inspections of site covered the following:

- LC11 – Emergency arrangements

- LC17 – Management systems
 - LC22 - Modification or experiment on existing plant
 - LC23 – Operating rules
 - LC24 – Operating instructions
 - LC28 – Examination, inspection, maintenance and testing
 - LC36 – Organisational capability
6. In addition, the following system was inspected:
- Reactor Safety System Trip Parameters
7. In general, ONR judged the arrangements made and implemented by the site in response to safety requirements to be adequate in the areas inspected. However, where improvements were considered necessary, the licensee made satisfactory commitments to address the issues, and the site inspector will monitor progress during future visits. Where necessary, ONR will take formal regulatory enforcement action to ensure that appropriate remedial measures are implemented to reasonably practicable timescales.

2.1.1 Heysham 1

Boiler Spine Defect

8. As reported in the last quarterly reports, during the statutory outage of Heysham 1 Reactor 1, November 2013, an anomalous result was found during non-destructive testing of a section of one of the multiple boilers. EdF Energy Nuclear Generation Limited (NGL) subsequently justified a period of six month operation of Reactor 1 on the remaining boilers with the anomalous boiler isolated. ONR assessed the safety justification for this mode of operation and was content that Reactor 1 could operate safely for this period. Over a period, NGL developed extensive testing techniques to establish the cause of this anomaly.
9. Reactor 1 was subsequently shutdown on the 10th of June 2014, before the end of the six month period of operation, to allow NGL to deploy the inspection techniques to investigate this anomaly. During deployment of these techniques, they discovered a cracked region in the affected boiler spine around one of the key structural welds.
10. In light of the confirmation of a cracked region on the affected boiler spine on Heysham 1 Reactor 1, known as 1D1, NGL took a positive and conservative decision to shutdown the other reactors at Heysham 1 and Hartlepool to allow investigations on all of the 8 boiler spines in each reactor. The reactors at Heysham 1 and Hartlepool have a similar boiler design and ONR was satisfied that this issue only affects these reactors owing to their specific design.
11. NGL carried out extensive work to support the reactors safe return to service and produced a safety case to justify operation of Reactor 2 at Heysham 1 and the two reactors at Hartlepool at a reduced temperature. ONR formally assessed this safety case and judged that it justified the continued safe operation of these reactors at a reduced temperature. ONR therefore granted agreement for Reactor 2 at Heysham 1, and the two reactors at Hartlepool, to return to service at a reduced temperature on the 21st November 2014.
12. Subsequently NGL submitted a separate safety case to justify operation of Reactor 1 on 3 quadrants at a reduced temperature, with the 1D1 boiler isolated. ONR also formally assessed this safety case and granted agreement for Reactor 1 at Heysham 1 to return to service on 3 quadrants at a reduced temperature on the 9th January 2015.

2.1.2 Heysham 2

Licence Condition 11 - Demonstration Exercise “Corolla”, 4th February 2015

13. The annual LC11 demonstration exercise involved observation of the on-site emergency response arrangements at the Heysham 2 nuclear licensed site. The purpose was to seek assurance that the licensee’s emergency arrangements and its emergency response personnel have the capability to deal effectively with emergencies with on-site or off-site consequences.
14. During the course of the exercise a number of opportunities for improvement were identified. ONR has written to NGL requesting confirmation of the action proposed, or already taken, to address the points raised by ONR, together with those of their own staff and the independent assessment team. The Heysham 2 Nominated Site Inspector is to be advised of future shift exercises intended to test the implementation of the opportunities for improvement identified by those involved in the exercise.
15. ONR welcomed the fact that the joint debrief meeting provided a comprehensive exchange of information on the outcome from the exercise, which made a valuable contribution to the identification of potential improvement opportunities in respect of the emergency arrangements at Heysham 2 Power Station.
16. The ONR team deemed that exercise “Corolla” provided an adequate demonstration of the station emergency arrangements for the current year, and we considered that the station staff responded well to the scenario.

Licence Condition 23 – Licence Instrument (Approval) of change to the Nuclear Safety Requirements to enable Offload Depressurised De-fuelling (ODR)

17. In October 2014 Heysham 2 requested ONR’s Approval of changes to the station Nuclear Safety Requirements (NSR) under Licence Condition 23(5), to enable refuelling to be carried out while the reactor is off-load and depressurised in a Carbon Dioxide (CO₂) atmosphere with limited air content.
18. ODR implementation would enable additional graphite core inspections that could not be otherwise undertaken within the limited duration of a periodic shutdown. ODR includes temporary storage of the Irradiated Fuel Assembly (IFA) in the isolated fuelling machine while the relevant channel is subject to inspection with specially developed equipment that operates in a low pressure carbon dioxide (CO₂) environment.
19. The temporary storage of an IFA in the fuelling machine removes the existing limitation on the number of inspected channels that is currently imposed by the number of tubes available for temporary IFA storage at the end of a statutory refuelling outage.
20. Notably, ODR has already been successfully implemented at Torness nuclear power station, following assessment of a safety case and approval of similar NSR changes by ONR.
21. Based on ONR specialist assessments of both the revised NSR and the Safety Case, ONR was satisfied that the claims, arguments and evidence laid down within the NGL submission are adequate and an Approval of the amended NSR to allow ODR operations at Heysham 2 was granted.

Reactor 7 Periodic Shutdown

22. Heysham 2 Reactor 7 was shut down on the 27th February as part of its’ 3 yearly periodic shutdown to perform planned maintenance activities in accordance with their

approved arrangements under Licence Condition 28. During this reporting period ONR Inspectors were involved in inspections under LC28 in the areas of electrical engineering, civil engineering, and structural integrity. In addition, inspections were performed under LC17 relating to management systems and LC22 in relation to modifications during the shutdown. Further inspections were performed during April, which will be reported within the next quarterly report. In addition, the ONR Nominated Site Inspector attended the Mid-Outage Review Meeting to inspect against progress with the outage and to report on ONR findings to date.

23. At the time of writing this report, no significant areas of concern were identified by ONR and the periodic shutdown was progressing well.

3 NON-ROUTINE MATTERS

24. 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.

3.1 Heysham 1 Improvement Notice

25. ONR served an Improvement Notice on EDF Energy Nuclear Generation Ltd (NGL) following an incident at Heysham 1 power station on 16 March 2015. The incident led to the release of around 30 tonnes of clean CO₂ from a failed pipe in the Carbon Dioxide storage and distribution plant on site. There was no release of radioactive material, no persons were injured and the two reactors remained operational during the event.
26. Licence Condition 28 Examination, Inspection, Maintenance and Testing requires the licensee to make and implement adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of its facilities. Following a preliminary investigation, ONR inspectors judged that NGL had not met this condition of its nuclear site licence fully and that improvements should be introduced.
27. The improvement notice requires the licensee to address the deficiencies in its LC 28 arrangements with respect the Carbon Dioxide storage and distribution plant to ONR by 30 September 2015.

4 REGULATORY ACTIVITY

28. ONR inspectors 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.
- LI 587 – Agreement to Implement Engineering Change 354024 (Version 3) Heysham Reactor 1 interim Safety Case for Return to Service on 3 Quadrants Following the Discovery of a Defect on 1D1 Boiler Spine was issued during the period.
 - IN/2015/ONR/SS/001 - Improvement Notice Under LC28(1) – Failure to make and implement adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of the East Carbon Dioxide Storage and Distribution Plant, which has affected safety.
 - LI 582 – Approval under LC23(5) (Operating rules) to implement Offload Depressurised Refuelling (ODR) at Heysham 2 was issued on the 26th February 2015.

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

5 NEWS FROM ONR

Insight into ONR's work as an independent regulator of the nuclear industry can be found in ONR's Quarterly News. The online publication (<http://www.onr.org.uk/onr-quarterly-report.htm>) reports on the key themes and developments in each of ONR's regulatory programmes and provides an update about the ongoing changes at ONR. <http://www.onr.org.uk/index.htm>. For the latest news and updates from ONR visit the website and sign up for our ebulletin (<http://www.onr.org.uk/ebulletin/index.htm>).

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