



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

Report for period 01 January 2016 – 31 March 2016

## 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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## INSPECTIONS

### Dates of inspection

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

#### Heysham 1

- 5-7, 12-14, 27 January 2016
- 11-12, 18-19, 25 February 2016
- 8-11 March 2016

#### Heysham 2

- 12-13 January 2016
- 9-13, 23-24 February 2016
- 1-2 March 2016

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

#### Heysham 1

- 5-7, 12-14 January 2016
- 10-11 March 2016

#### Heysham 2

- 12-13 January 2016

## ROUTINE MATTERS

### Inspections

3. Inspections are undertaken as part of the process for monitoring compliance with the following:
  - conditions attached by ONR to the nuclear site licence granted under the Nuclear Installations Act 1965 (NIA65) (as amended);
  - Energy Act 2013;
  - 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, the following routine licence condition compliance inspections were undertaken:

Licence condition 7: Incidents on the site

Licence condition 8: Warning notices  
Licence condition 9: Instructions to persons on site  
Licence condition 11: Emergency arrangements  
Licence condition 14: Safety documentation  
Licence condition 23: Operating rules  
Licence condition 24: Operating instructions  
Licence condition 26: Control and supervision of operations  
Licence condition 27: Safety Devices, mechanisms and circuits  
Licence condition 32: Accumulation of radioactive waste  
Licence condition 34: Leakage and escape of radioactive material and radioactive waste  
Licence condition 36: Organisational capability

6. In addition to the program 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.
7. For both sites at Heysham, the key systems important to nuclear safety will be inspected against the requirements of the safety case. We plan to inspect all the safety significant systems 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 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

8. During the reporting period, the following safety related systems were inspected:

#### **Heysham 1**

- Irradiated fuel dismantling facility
- Gas circulators
- Ponds and flasks

#### **Heysham 2**

- CO2 Storage and Distribution

9. In general, ONR judged the arrangements made and implemented by the site in response to safety requirements to be adequate in the areas inspected. In addition the safety related systems inspected were considered to meet the requirements of the safety case.
10. 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.

## Heysham 1

### Boiler spine

11. As discussed in previous ONR quarterly reports, the reactors at Heysham 1 and Hartlepool have been operating at reduced power following the discovery of a defect in one of the eight boiler spines on Heysham 1 reactor 1. The defects were judged by NGL to be affected by the operating temperature.
12. NGL subsequently demonstrated that by reducing the temperature in the section of the spine where the crack was discovered in Heysham 1 Reactor 1; the crack growth mechanism could be effectively reduced. The long term solution for reducing the temperature was the installation of a cooling modification on all reactors at Heysham 1 and Hartlepool. This was completed on all the reactors and NGL requested permission to return all the reactors to full power, but with Heysham 1 Reactor 1 still operating on 3 quadrants.
13. During the assessment of the safety justification to support the return to full power case, ONR identified areas of uncertainty associated with the thermal modelling used to underpin the cooling modification effectiveness. In order to provide the necessary confidence to ONR, NGL self-imposed a reduction on full power operations. This resulted in the reactors being operated with a controlled 10°C temperature reduction on the relevant boiler spine weld.
14. NGL has now presented additional work supported by plant data which addresses ONR's previous concerns and therefore ONR has granted agreement (LI 597) to remove this power restriction and return the reactors at Heysham 1 and Hartlepool to full power with Heysham 1 reactor 1 still operating on 3 quadrants.

### 7 Boiler Pod Operation

15. In addition to the work discussed above, NGL has been looking at a number of possible options to return Heysham 1 reactor 1 back to its original operating design with 8 boiler pods available in 4 quadrants. One of the options being pursued by NGL is operation of reactor 1 with 7 out of 8 boilers available and the defective boiler isolated. During this reporting period NGL has submitted a paper of principle to ONR covering this proposed mode of operation. This paper of principle was acknowledged by ONR under Licence Instrument (LI) 598. The safety justification to support this paper of principle is currently in progress and will be subject to formal agreement by ONR.

## Heysham 2

16. An observation during the Torness statutory outage of reactor 2 identified a number of cracks within the outer peripheral graphite blocks of the reactor core were observed during planned outage inspection activities.
17. These blocks are positioned at the periphery of the core, away from the active core which contains fuel channels, and are a unique feature to both Torness and Heysham 2 reactors.
18. A recent meeting held in March was to review EDF's proposals and progress against commitments made by the licensee to undertake further assessment and, where appropriate, inspections to better understand the cracking mechanisms within the outermost shielding blocks.

19. The upcoming Heysham 2 statutory outage of reactor 8 will inspect these peripheral bricks.
20. ONR provided further clarification on its regulatory expectations concerning future inspections and monitoring to be carried out on graphite blocks and also on the level of technical substantiation required to provide an unequivocal demonstration of the ongoing safe operation of the reactors.

### NON ROUTINE MATTERS

21. 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.

### REGULATORY ACTIVITY

22. 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.
23. The following LIs and Enforcement Notices have been issued during the period:

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

Date	Type	Ref No	Description
28 Jan 16	Agreement	LI 597	Amendment to Compliance Arrangements for Heysham 1 and Hartlepool Power Stations to Return to Full Power Operations
12 Feb 16	Acknowledgement	LI 598	Paper of principle for Heysham 1, 7 of 8 Pod operation
9 Mar 16	Specification	LI 602	Specification under condition 23(4) – Heysham 2 Operating Rules
15 Mar 16	Acknowledgement	LI 604	Temporary change to Technical Specification 8.2.1. to allow Clayton boiler maintenance

24. Reports detailing ONR regulatory decisions can be found on the ONR website at [www.onr.org.uk/pars/](http://www.onr.org.uk/pars/).

### NEWS FROM ONR

#### Chief Nuclear Inspector appointment

25. ONR announced the appointment of Dr Richard Savage as its new Chief Nuclear Inspector (CNI) to lead our regulatory activity. Richard is a Chartered Engineer with an extensive background in nuclear safety and regulation. He served as Head of the Defence Nuclear Safety Regulator, Ministry of Defence, before being appointed to ONR as a Deputy Chief Nuclear Inspector in 2013. He was Acting CNI since Dr Andy Hall’s retirement in November 2015.

### ONR Strategic Plan 2016-2020

26. In March, ONR published its Strategic Plan covering 2016-2020. The plan sets out the factors that will influence our work and the assumptions we have made about regulating the nuclear sector in the next few years, as well as how we deliver the commitments we have made to the public, ministers and government, licensees, dutyholders and our staff. The plan was laid in Parliament on 22 March and can be viewed on the ONR website.

### Regulation Matters magazine

27. Insight into ONR's work as an independent regulator of the nuclear industry can be found in Regulation Matters. This quarterly online publication (<http://www.onr.org.uk/regulation-matters.htm>) reports on the key themes and developments in each of ONR's regulatory programmes and provides an update about the on-going changes at ONR. For the latest news and updates from ONR, you can also visit the website and sign up for our e-bulletin: <http://www.onr.org.uk/index.htm>.

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