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| ONR Site Report  Heysham Power Stations |



ONR Site Report

Heysham Power Stations

Report for period: October – December 2023

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Foreword

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

Our site inspectors usually attend Heysham LCLC meetings where these reports are presented and will respond to any questions raised there. Any person wishing to inquire about matters covered by this report should contact us via email at contact@onr.gov.uk.

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1. Inspections
   1. Dates of Inspection

Our site inspectors made inspections on the following dates during the report period:

**Heysham 1**

3, 17, 19-20, 25 October

10, 20, 28 November

5 December

**Heysham 2**

3, 4, 10, 18, 19 October

1-3, 10, 14 November

5-6, 13 December

In addition, our specialist inspectors were involved in interventions on the following dates during the report period:

**Heysham 1**

Multiple visits associated with Reactor 1 statutory outage inspections.

**Heysham 2**

24 October

1-3 November

5-6 December

Routine Matters

* 1. Inspections

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 etc 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).

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 licence conditions (LC) attached to the licence in order to ensure legal compliance. Inspections seek to judge both the adequacy of these arrangements and their implementation.

In this period, routine inspections of Heysham covered the following:

* Heysham 1 – Reactor 1 statutory outage. The outage commenced on 2 October. We carried-out numerous inspections and assessment activities during this period to ensure that the required examination, inspection and maintenance activities were carried-out to the required quality, by competent persons and in line with the safety case. We issued our Consent to the start-up of Reactor 1 on 6 December 2023. The discovery of a keyway root crack is discussed in section 3 of this report. The steam valve failure the occurred during the return to service of the reactor is also discussed in section 3.
* Heysham 1 – LC26 (Control and supervision of operations). During the period of the Reactor 1 statutory outage we undertook an out-of-hours inspection focussed on shift handovers, shift logs and the setting-to-work of the night shift. We judged that the station was compliant with the requirements of LC26 and, as no significant issues were found, rated the inspection as ‘GREEN’.
* Heysham 1 – Nuclear and conventional fire safety. This fire-safety themed inspection was carried out during the Reactor 1 statutory outage to target a period in which there is a potential increase in the risk of fire due to the extent of work being undertaken. We judged that the station was compliant with the life fire requirements of the Fire Safety Order 2005 and the nuclear safety requirements of LCs 10 (Training), 24 (Operating instructions) and 28 (Examination, inspection, maintenance and testing) and awarded ‘GREEN’ ratings in respect of these as no significant issues were found.
* Heysham 1 – Engineering. This inspection looked at the site’s arrangements for controlling changes that fall under the scope of Licence Condition LC22 - modification or experiment on existing plant. Including alteration to buildings, plants, operations, processes or safety cases. It also includes arrangements of how operators deal with minor operational changes and receive technical advice. The inspection found that modifications are considered with appropriate rigour, but a couple of observations were made to improve the site’s management system’s effectiveness.
* Heysham 2 – PTSE System Based Inspection. This was a system-based inspection (SBI) of Post Trip Sequencing Equipment (PTSE) to confirm that the PTSE is able to meet the nuclear safety functional requirements defined in the station’s safety case. As an SBI the standard licence conditions of Operating Rules (LC23); Operating Instructions (LC24), Training (LC10), Safety Mechanisms, Devices and Circuits (LC27) and Examination, Inspection, Maintenance and Testing (LC28) were used to inform our judgement. We judged that the PTSE is able to fulfil its safety duties (safety functional requirements) in line with the safety case however an issue was found in relation to non-functional cooling fans. This constituted a systematic failure to implement compliance arrangements, and as a result we considered that an overall rating of ‘AMBER’ (seek improvement) inspection rating for the SBI was warranted. This issue was quickly resolved
* Heysham 2 – Nuclear Accountancy. This inspection aimed to provide assurance that Heysham 2 continues to account for and control their nuclear material as required by Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19) and as expected by the ONR guidance on Nuclear Material accountancy, control and safeguards (ONMACS). For this intervention the Material Balance Area (MBA) known as QHE2 was targeted. No significant issues were found so the inspection was rated ‘GREEN’.

Members of the public, who would like further information on ONR’s inspection activities during the reporting period, can view our records and other information on our website for [Heysham 1](https://www.onr.org.uk/our-work/what-we-regulate/operational-power-stations/operational-sitesfacilites/heysham-1/) and [Heysham 2](https://www.onr.org.uk/our-work/what-we-regulate/operational-power-stations/operational-sitesfacilites/heysham-2/). Should you have any queries regarding our inspection activities, please email [contact@onr.gov.uk](mailto:contact@onr.gov.uk).

In this period, other routine matters at Heysham stations covered the following:

* regulatory issue progress (both sites);
* routine event follow-ups including any conventional health and safety events (both sites);
* meeting with safety reps (both sites);
* daily plant status, refuelling preparations and progress (both sites);
* oversight of graphite inspection data (both sites);
* plant walkdowns (both sites);
* planning for annual level 1 emergency demonstration exercise (both sites).
  1. Other Work

Other Work

We held periodic meetings with safety representatives, to support their function of representing employees and receiving information on matters affecting their health, safety and welfare at work.

Non-Routine Matters

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

**Heysham 1 Reactor 1 – Keyway root crack discovery**

During a graphite core inspection in November, the licensee discovered a keyway root crack (KWRC) in one of the fuel channels on Reactor 1. These were expected to occur later in the life of the core and a safety case had already been developed to justify the continued operation of the reactor following this discovery. The current safety case allows up to 10% of the graphite bricks in the core to be cracked (including KWRCs). A further case justifying up to 30% cracking is being developed but will require agreement from us before being implemented. We will continue to monitor EDF’s graphite core inspection programme and assessment.

**Heysham 1 Reactor 1 – Steam valve incident**

On 23 December a valve controlling the flow of superheated steam from one quadrant of Reactor 1 failed catastrophically whilst being opened during the return to service of the reactor. Part of the valve’s mechanism was ejected and the resulting hole led to a leak of high pressure, superheated steam. The reactor was promptly tripped and post-trip cooling established successfully. A site incident was declared at 4.21am and all staff were accounted for by 4.39am . There was no harm to workers, the public or the environment.

We were informed about the incident in a timely manner. We monitored the licensee’s response, which we consider to have been prompt and effective.

The nuclear safety significance of the event was minor. The steam leak was well within the range of faults that the plant is designed to deal with. There were other valves to isolate the steam flow and the plant damage around the failure was not nuclear safety significant. However, the conventional health and safety significance of the event was moderate. The area around the valves is frequently occupied by staff, so this failure had the potential to cause serious or fatal injury if anyone had been in the vicinity.

In the days following the event more information on the failure mechanism became available and this led to a decision to shutdown Reactor 2 on 30 December.

Following our investigation into the incident we served an improvement notice on EDF in January 2024.

Further information on this event and the regulatory response will be provided in the next report covering the period from 1 January – 31 March 2024.

Regulatory Activity

We may issue formal documents to ensure compliance with regulatory requirements. Under nuclear site licence conditions, we issue 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 take a range of enforcement actions, including issuing an enforcement notice or letter.

During this quarter, we issued one Licence Instrument:

* Heysham 1 – LI 641 Consent to start-up Heysham 1 Reactor 1 under LC30(3). Issued 6 December 2023.

News from ONR

For the latest news and information from ONR, please read and subscribe to our regular email newsletter ‘ONR News’ at [www.onr.org.uk/onrnews](http://www.onr.org.uk/onrnews).

Contacts

Office for Nuclear Regulation

Redgrave Court

Merton Road

Bootle

Merseyside

L20 7HS

website: [www.onr.org.uk](http://www.onr.org.uk)

email: [contact@onr.gov.uk](mailto:contact@onr.gov.uk)

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