



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

Report for period 1 April 2018 – 30 June 2018

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 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

- 10 – 11 April 2018
- 9 – 11 May 2018
- 22 – 24 May 2018
- 5 June 2018
- 20 June 2018

Heysham 2

- 10 – 12 April 2018
- 18 April 2018
- 09– 10 May 2018
- 15 – 18 May 2018
- 7 – 8 March 2018
- 27 June 2018

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

Heysham 1

- 4 April 2018
- 10 – 11 April 2018
- 9 – 11 May 2018
- 22 – 24 May 2018

Heysham 2

- 10 – 11 April 2018
- April/May – Various Inspections in support of Reactor 7 statutory outage

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 2017 (IRR17) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).
 - the Regulatory Reform (Fire Safety) Order 2005
 - the Nuclear Industries Security Regulations 2003
4. 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.

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

Heysham 1

- Licence condition 7 – Incidents on the site
 - Licence condition 10 – Training
 - Licence condition 11 – Emergency arrangements
 - Licence condition 14 – Safety documentation
 - Licence condition 23 – Operating rules
 - Licence condition 24 – Operating instructions
 - Licence condition 25 – Operational records
 - Licence condition 36 – Organisational capability
6. Licence conditions 7 - The Station's arrangements to comply with LC 7 were found to align with ONR inspection guidance. The arrangements adequately cover the notification, recording, investigation and reporting of incidents on the site. An ONR rating of 'green' was awarded with no regulatory issues being raised.
7. Licence condition 14 - ONR examined a sample of the licensee's LC14 procedures against the relevant ONR guidance documents for this licence condition. A sample inspection of the implementation of the Station living safety case documentation and engineering change process was also undertaken. ONR judged the procedures and arrangements to align with ONR inspection guidance and satisfy the requirements of LC14. No shortfalls were identified and an ONR rating of green was awarded.
8. An external flooding themed intervention was undertaken by ONR at Heysham. This was a joint Heysham 1 & 2 intervention. Purpose was to judge compliance against the following licence conditions informed by the external flooding safety case.
9. Licence conditions 10, 11, 23, 24 and 25 – ONR performed an external flooding safety case informed inspection to judge the licensee's compliance against the specified licence conditions. External flooding hazards to the site may arise from a number of sources, i.e. coastal, pluvial (caused by rain), fluvial (caused by rivers) and snow melt. Through examination of these hazards and the structures, systems and components (SSCs) which protect against them, compliance inspections were performed against the licence conditions. ONR observed a number of recent modifications made to the Station which has substantially improved its resilience to external flooding. The arrangements examined complied with the licensee's legal duties based on the areas sampled during the inspection and the personnel, procedures and SSCs claimed within the external flooding safety case were judged to be adequate. Ratings of 'green' (no formal action) were awarded for LC 10, 11, 23, 24 and 25 compliance.
10. Licence condition 36 – ONR undertook an inspection to evaluate the effectiveness of the Station's arrangements for managing organisational capability. The station presented evidence to show how it was managing its human resources and managing organisational change. Based on our sample of interviews, observations and document reviews we judged that there are effective processes in place to manage and monitor human resources and organisational change at Heysham 1. We identified a number of positive findings and good practices. Some opportunities were identified for the station to further improve the effectiveness of its activities in this area. ONR is satisfied that the Station will address these improvements through their own internal management controls.

Overall, ONR judges that the licensee is meeting relevant good practice when compared to ONR guidance and have therefore assigned a rating of 'green' (no formal action) for LC36 compliance.

Heysham 2

- Licence condition 6 – Documents, records, authorities and certificates
 - Licence condition 8 – Warning notices
 - Licence condition 26 – Control and supervision of operations
 - Licence condition 28 – Examination, inspection, maintenance and testing
11. A joint Heysham 1 & 2 intervention informed by the flooding safety case was undertaken during the period. This has been reported under Heysham 1 above (paras 9-10).
 12. Licence conditions 6 – Licensee's arrangements for compliance against LC 6 were sampled with a focus on the arrangements implemented in respect of records management and the procedures for management of regulatory commitments. Based on the sample inspected, the ONR inspector was content that the licensee's arrangements met ONR's expectations and hence assigned an inspection rating of green.
 13. Licence condition 8 - LC 8 requires the licensee's to provide suitable and sufficient notices for the purposes of informing persons on site on matters in the event of an incident or emergency. The inspection consisted of sampling the licensee's corporate arrangements followed by a plant walk down and discussions with staff with responsibilities for compliance against LC8. Based on the sample inspected, the ONR inspector was content that the licensee's arrangements met ONR's expectations and hence assigned an inspection rating of green.
 14. Licence condition 26 – The licensee's arrangements for control and supervision of contractors, leadership oversight and control of operations with respect to vessel entry were sampled during the reactor 7 statutory outage. Several areas of good practice were observed and the ONR inspector judged that the licensee's arrangements met the legal requirements for compliance against LC26. An inspection rating of green rating was assigned.
 15. Licence conditions 28 – A number of maintenance activities were sampled. These were being undertaken in accordance with the plant maintenance schedule. Based on areas sampled, the ONR inspector judged that the licensee's arrangements with respect to examination, maintenance and testing met with ONR's regulatory expectations. An inspection rating of green was considered appropriate.

System Based Inspections (SBI)

16. 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. 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 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

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

Heysham 1

Transformers, Grid Systems and Main Electrical System

18. This System Based Inspection covered the station transformers, grid systems and main electrical system. The function of these systems is to provide power for export to the national electricity transmission grid and to provide power supplies across the site. Heysham 1 has two turbo generators which provide supply to 23kV to 400kV transformers for export to the national grid network. The 23kV is also transformed down to a number of voltages levels at and below 11kV for distribution around the site. When the station is not generating, these systems provide the means for importing electricity from the national grid. In the event of a loss of the grid supply, these systems provide the means for the distribution of the site's back up generation supply.
19. ONR judged that the transformers, grid systems and main electrical system were adequate and met the requirements of the safety case. A minor shortfall against a maintenance instruction was identified, however this was not judged to significantly affect the ability of the systems to meet the requirements of the safety case. A regulatory issue was raised to address this matter, which will be monitored as part of normal regulatory business.
20. In summary, the SBI of transformers, grid systems and main electrical system, inspected for LCs 10, 23, 24, 27, and 28 was rated as 'green' in that relevant good practice was met and the identified compliance shortfall was minor.

Heysham 2

Sea Defences, Flood Protection and Drainage

21. This System Based Inspection (SBI) covered the sea defences, flood protection and drainage system to judge the system performance against its safety function. The focus of the sea defences, flood protection and drainage system based inspection was on the response of sample civil structures and plant to external hazards, in particular external flooding. The items sampled were:
- Sea defences
 - Cooling Water (CW) pump house
 - Flood defence enhancements
 - Drainage system
 - Quadrant Excess Drainage (QED) pumps
22. The intervention also included a plant walk-down of the system where ONR specialist inspectors judged that the overall condition of the flood defences examined was acceptable. ONR was satisfied with the ongoing and planned investment to address identified defects that were seen at the station.
23. After considering the totality of evidence examined during the inspection against the relevant licence conditions (LCs 10, 23, 24, 27, 28 and 34), the ONR inspectors concluded that overall, the licensee's arrangements, and their

implementation, associated with the Sea Defences, Flood Protection and Drainage system adequately met the requirements of the safety case. However, the inspectors identified a number of areas where there were opportunities for improvement. The inspectors were content that the licensee has raised Condition Reports to address these matters and ONR will follow them up with the station as part of routine regulatory business.

2.2 Other work

Heysham 1

24. Site Licence Condition 30 – Periodic Shutdown requires, where necessary, for the purpose of enabling any examination, inspection, maintenance or testing of plant to take place that it is shut down in accordance with the requirements of its plant maintenance schedule (PMS). Reactor Unit 2 was shut down on 18 June to undertake its Statutory Outage (Number 24). During this period a number of ONR specialist inspectors undertake assessment and inspection of the outage activities including civil, electrical, mechanical, structural integrity and industrial safety inspections.
25. The licensee is required to seek the consent of ONR to start up again following the outage. ONR's decision to grant consent will be supported by a project assessment report which will be published on the [website](#).

Heysham 2

26. Site Licence Condition 30 – Reactor 7 was shut down on 4 May 2018 to undertake its Statutory Outage. During this period a number of ONR specialist inspectors visited the site and undertook assessment and inspection of the outage activities including, electrical, mechanical, structural integrity, radiological protection and industrial safety inspections.
27. Consent was granted under licence condition 30(3) on 16 July 2018 allowing the licensee to return Reactor 7 to service. ONR's decision to grant consent is supported by a project assessment report which has been published on the ONR [website](#).

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

West CO₂ storage plant

29. As reported in quarter 1, the Station had an incident in March relating to the West CO₂ storage plant availability. During this period site inspectors for Heysham 1 and 2 gathered further information on this incident through a number of discussions with station personnel involved with the event. ONR's initial regulatory focus has been on the Station's compliance with Health & Safety Regulations and associated Site Licence Conditions.
30. During this period the Station has also completed its own Significant Adverse Condition Investigation (SACI) into the circumstances of the incident which has identified a number of root and contributing causes with associated corrective actions.

31. ONR is satisfied that the Licensee took action during the incident to restore the availability of the CO₂ plant and subsequently instigated an event recovery phase to return the plant to its design intent. However ONR has reviewed the level of regulatory compliance relevant to this incident and, in accordance with its enforcement policy, has determined that an enforcement letter is warranted.
32. The Heysham 1 nominated site inspector has written to the Station Director requiring action to be taken to ensure that all of the learning and investigation findings from this incident are addressed. This includes specific action to address shortcomings in the arrangements for compliance with:-
 - Licence Condition 23 – To ensure that operations are at all times controlled and carried out in compliance with such operating rules and
 - Licence Condition 28 – To make and implement adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of all plant which may affect safety.
33. ONR will monitor the completion of the corrective actions as part of normal regulatory business.

Fire alarm

34. During the nominated site inspector's visit to Heysham 1 on 5th June 2018, the site fire alarm was activated. In accordance with site arrangements the inspector mustered to the fire assembly point and then went to the Emergency Control Centre (ECC) to monitor the response.
35. The alarm had been activated due to a smoke detection alarm initiated in the Central Control Room (CCR). The duty shift manager investigated the alarm and discovered smoke emanating from a control cubicle containing communications equipment and a battery charger. The battery associated with the charger had recently undergone routine maintenance (discharge/boost). The fire was tackled with fire extinguishers and was later confirmed as extinguished when the local fire and rescue service attended site.
36. The Emergency Control Centre was set up as per the site emergency plan to provide support and the site muster was stood down after approx. 1 hr 20 mins. The CCR remained tenable and in control of the incident throughout, with no apparent direct threat to safety. The inspector visited the scene of the incident and spoke to the Duty Shift Manager. The cubicle had been electrically isolated and the area quarantined for investigation by the Station.
37. In summary, the inspector's opinion is that the site's emergency response to the incident was effective and appropriate. No matters of significant concern were raised that required immediate regulatory action. The incident was formally reported to ONR and will be investigated in accordance with License Condition arrangements. The requirement for any further regulatory follow up will be considered in accordance with ONR's policy and guidance.

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.

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

Date	Type	Ref No	Description
4 June 18	LI	614	Agreement to modification described in “NP/SC 7753 - Safety case for operation of the hot box dome with regions of elevated temperature (EC 351742)”
16 July 18	LI	619	Consent under license condition 30(3) to start-up Heysham 2 Reactor 7 following periodic shutdown.

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

5 NEWS FROM ONR

Stakeholder Engagement

39. On 9 May we held our ONR annual Industry Conference, with the theme - ‘Public Safety – everyone’s responsibility.’ Delegates from more than 45 different organisations attended, and we were delighted that Richard Harrington, Parliamentary under Secretary of State, Minister for Business and Industry, was able to join us to deliver a keynote speech. The conference provided us with an opportunity to engage directly with senior representatives from across industry and government on a number of topical and strategic issues affecting the sector.
40. As part of our continued stakeholder engagement work, we welcomed finance professionals from a number of nuclear site licensees and dutyholders to seminars in London and Birmingham in June. Led by our Finance Director, Sarah High, we hosted the seminars to provide the industry with a better understanding of our charging methodology, the principles we apply, and how the charging process works. To accompany the seminars we have also published a new booklet – [How we charge for Nuclear Regulation](#) – which is available on our [website](#).
41. The next ONR/NGO engagement forum will take place on 11 October in London. This is a forum to discuss strategic, cross-cutting regulatory matters. Site specific matters are normally addressed via Site Stakeholder Groups. We are always keen to engage with a range of stakeholders and groups on nuclear safety and security issues, so if you do represent a nuclear-interest Non-Governmental Organisation, and are not already involved through our forum or via a Site Stakeholder Group, then please get in touch with the ONR Communications team for further details, via contact@onr.gov.uk

Regulatory News

42. A delegation from ONR, led by Chief Nuclear Inspector Mark Foy, supported the UK’s contribution to the 6th Joint Convention review meeting in Vienna. Bringing together 78 countries from around the world, the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management is the world’s leading international forum for ensuring society and the environment are protected from hazards arising from spent fuel and radioactive waste. Further details can be found on the [IAEA website](#).

43. We have notified Sellafield Ltd of our intention to prosecute the company for offences under Section 2 (1) of the Health and Safety at Work etc. Act (1974). The charge relates to an incident on 5 February, 2017, at a facility which handles special nuclear materials, which resulted in personal contamination to a Sellafield Ltd employee. The decision to prosecute follows an ONR investigation into the incident.
44. In May we awarded the contract for delivery of the UK Nuclear Safeguards Information Management and Reporting System (SIMRS) to Axis 12 Ltd. The IT system is necessary for us to establish a domestic safeguards regime after the UK's withdrawal from the Euratom Treaty. The government has now launched the consultation on Nuclear Safeguards Regulation, further details can be found on our [website](#).

Corporate News

45. In May we published a self-assessment exercise to update on how well our activity currently aligns with the Regulators' Code, which came into effect in April 2014 to provide a framework for how regulators should engage with those they regulate. The full report is available on our [website](#).
46. In June we published our Annual Report and Accounts highlighting the extent of our regulatory activities. During the 17/18 year over 1,000 inspections were carried out across 36 licensed sites and transport dutyholders, ensuring the required standards of safety and security were met to protect the public and workers. The full report is available on our [website](#).
47. In July we published our second [gender pay report](#). The organisation-wide results show that ONR has a mean gender pay gap of 35.2%, which is wider than last year, although it is broadly similar to the rest of the UK nuclear industry and anticipated given our workforce profile, and that of the industries from which we have historically recruited. ONR is committed to addressing this issue and continues to focus on improving diversity and inclusion.
48. Our Chief Executive, Adrienne Kelbie, has agreed a three-year contract extension, taking her term of employment to January 2022.

6 CONTACTS

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