



Office for Nuclear Regulation (ONR) Quarterly Site Report for Hunterston B

Report for period 1 October to 31 December 2019

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 Hunterston B Site Stakeholder Group (SSG) and are also available on the ONR website (<http://www.onr.org.uk/llc/>).

Site inspectors from ONR usually attend Hunterston SSG 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 inspector made inspections, supported where appropriate by specialist inspectors, on the following dates during the quarter:
 - 15 – 17 October 2019
 - 7 - 8 November 2019
 - 19 November 2019
 - 3 – 5 December 2019
2. ONR’s civil nuclear security inspector undertook quarterly inspections and held meetings at Hunterston B on:
 - 16 - 17 October 2019

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 etc. (HSWA74); and
 - Regulations made under HSWA74, for example the Ionising Radiations Regulations 2017 (IRR17), the Management of Health and Safety at Work Regulations 1999 (MHSWR99) and the Radiation Emergency Preparedness and Public Information Regulations 2019 (REPPIR).
 - The Fire (Scotland) Act 2005
 - The Nuclear Industries Security Regulations (NISR) 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 license conditions (LCs) 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 and meetings at Hunterston B covered the following inspections of:
 - The LC 11 Level 1 emergency arrangements demonstration exercise;
 - The annual review of safety and security meeting;
 - The reactor 3 outage close out meeting; and
 - Visit by the ONR Chief Nuclear Inspector.
6. On 17 October 2019 the station held its emergency arrangements annual level 1 demonstration exercise. The scenario was a joint safety and security exercise that was deliberately designed to further develop the EDF safety response arrangements in conjunction with the Civil Nuclear Constabulary (CNC) security response arrangements under security lockdown conditions. The exercise was challenging and showed that there is a need enhance the operability of the EDF corporate emergency arrangements in conjunction with the CNC response procedures. The inspection was

assigned a rating of Amber, formal action required, and a re-demonstration at a suitable EDF site is planned to demonstrate the revised interface arrangements.

7. On the 8 November the ONR Superintending and Site Inspectors attended the station Annual Review of Safety and Security meeting. The meeting was an opportunity for ONR and station to reflect on its performance. Whilst the station has continued to deliver a strong nuclear safety and security performance over the year, as evidenced by the successful return to power and operation of Reactor 4, a number of industrial safety events highlighted where continued focus on safety is required. The station reflected on the causes, which included a lack of sensitivity to industrial safety events, personal accountability and fuller application of the organisational learning process. A continued commitment to existing improvement plans was expressed by the station.
8. On the 8 November the ONR Superintending and Site Inspector attended the LC30 Reactor 3 statutory outage meeting. The station presented a summary of outage work completed and ONR confirmed that it was satisfied that the station has satisfactorily completed the necessary work scope for the Reactor 3 statutory outage. A small number of outstanding work requirements were identified for completion before ONR would be in a position to issue its consent to restart Reactor 3, (subject to a satisfactory graphite safety case being agreed by ONR, see below).
9. On the 19 November 2019, the ONR Chief Nuclear Inspector visited the station. The purpose of the visit was for the Chief Inspector (CI) to meet staff at HNB and to communicate the priority and attention that ONR continues to allocate to the graphite issues at Hunterston B. The CI emphasised the importance of ensuring that the station maintained high standards of nuclear safety whilst the reactors are operating whilst continuing to support work activities that will prepare the station for defuelling and decommissioning operations.
10. In addition to our routine compliance inspections, ONR inspectors also inspect operating reactors against safety related systems. Each site has a safety case that demonstrates how it operates safely. For advanced gas cooled reactors, each of approximately fifteen key systems are inspected against the claims made upon them by the safety case. The aim is to systematically inspect all the significant safety related systems within a five-year cycle (three per year). ONR believes that this will provide more robust assurance of the site's safe operation and how the safety case is being implemented.
 - On the 3 – 5 December 2019, specialist Mechanical Engineering and Chemistry inspectors carried out an inspection of Reactor Cooling Water and Sea Water Systems. The inspection focussed on the Pressure Vessel Cooling Water (PVCW) system and Diverse Cooling System (DCS) and confirmed that workers operating and maintaining the system were appropriately trained and following procedures adequately. Two regulatory issues of low significance were raised. These related to an incomplete maintenance record card and the safety case did not fully describe the potential for low levels of tritium in the PVCW system. ONR will monitor the close out of these issues through normal business. It was judged that there were no matters that have the potential to impact significantly on nuclear safety and consequently the inspection was rated Green (no formal action).
11. ONR also carries out themed inspections which seek to evaluate the effectiveness and consistency of implementation of the licensee's processes and procedures. These inspections are carried out at the site and across the EDF fleet and usually require a team of four specialist ONR inspectors.
 - There were no themed inspections during the reporting period.

3 NON-ROUTINE MATTERS

12. 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.
13. Licence Condition (LC) 7 requires licensees to make and implement adequate arrangements for the notification, recording, investigation and reporting of incidents occurring on the site. During this period, the site inspector reviewed incidents that met the criteria for routine reporting to ONR. The site and specialist inspectors also sampled the station's follow up reports and corrective actions. From the evidence sampled, the inspector was satisfied that the events reported during the period, had been adequately investigated and appropriate event recovery actions identified. Matters and events that met the ONR formal reporting criteria during the period included:
 - Charge Machine Dropped Fuel Stringer CAM settings. Modifications were made to the charge machine dropped fuel stringer protection settings in advance of an approved configuration control document. A new safety case had sought to prevent damage to fuel assemblies in the event that a dropped fuel assembly occurs, by reducing the maximum drop height protection settings. The investigation established that the unauthorised settings were more conservative than assumed in the new safety case and thus nuclear safety was unaffected by the changed protection settings. Corrective actions are being introduced to ensure that the modification control process is followed more rigorously.
 - Post Trip Cooling system fault. Whilst Reactor 4 was operating at full power a fault developed with one of the four post trip cooling (PTC) systems. The PTC system is one of the means by which cooling is provided to the reactor when it is shut down. The station correctly entered the 31 day action condition, which would require shutdown of the reactor within 31 days if the fault was not repaired. The investigation established that the isolation of a faulty valve position indicator for the coolant feed system had also isolated the valve actuator control. It had previously been understood that the valve position indicator and actuator were supplied from separate electrical supplies. The faulty valve position indicator was repaired and it was confirmed that there was sufficient redundancy in post trip cooling if the reactor were to be shut down; three out of the four PTC systems remained operational to provide defence in depth and this event did not compromise nuclear safety. Corrective action is being taken to ensure subsequent configuration control.
 - Graphite safety case end face key (EFK) mechanical strength - EDF informed ONR that the data used to define the mechanical strength of EFKs in its whole core models may not be sufficiently conservative. EDF entered into its safety case anomalies process and raised an INF 1 to formally notify ONR of the position. To address this issue EDF performed additional analysis with reduced EFK capacities and concluded that an adequate safety margin remained. This issue will be taken into account in ONR's assessment of the return to service safety cases for Reactor 3 and Reactor 4. The return to service of the Hunterston B reactors will not be permitted until ONR has agreed that the reactors are safe to operate.

4 REGULATORY ACTIVITY

14. 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 and letters to secure improvements to safety.

15. No Enforcement Notices (Improvement or Prohibition notices) were issued during the period.
16. On the 22 October 2019 ONR issued an enforcement letter in regard to the Ionising Radiations Regulations 2017 (IRR17). The station had failed to adequately account for and label radioactive sources, which resulted in some sources not being subject to the required leak testing. This contravened the IRR17 Approved Code of Practice (ACOP) and guidance. The station has recognised these non-compliances and has provided an appropriate plan of action. The radioactive sources were sealed instrument check sources and did not present a hazard to workers or the public. ONR will carry out an inspection to confirm that the enforcement actions have been carried out satisfactorily.
17. In March 2018, Hunterston B Reactor 3 was shutdown in order to carry out planned inspections of the graphite core. Since then EDF has carried out its statutory outage on Reactor 3 and it has remained shut down whilst the licensee submits a graphite safety case that seeks to justify the return to service of the reactor. The safety case was submitted to ONR on the 17 June 2019. This case is being subject to further revision and is due to be re-submitted to ONR in February 2020. ONR permission to return Reactor 3 to service will require a Licence Condition 30 consent, post the statutory outage, as well as separate permission for the graphite safety case.
18. Hunterston B Reactor 4 was shut down in October 2018 for a planned inspection of the graphite core. The revised safety case for the return to service of Reactor 4 was received by ONR in March 2019. ONR issued a Licence Instrument that agreed to the return to service of Reactor 4 on 21 August and the reactor was returned to power on 25 August, <http://news.onr.org.uk/2019/08/hunterston-b-reactor-4/>. ONR permitted Reactor 4 to operate up to core irradiation level of 16.025 TWd and it was operated safely and compliantly until shut down on the 10 December 2019. The reactor core will now be inspected and a further safety case will be required before ONR may permit a further period of operation.

5 NEWS FROM ONR

Enforcement Action

19. EDF Energy has complied with two ONR Improvement Notices relating to the way it maintains auxiliary steam systems and instructs staff operating these systems. The Notices were issued in January 2019 following a serious incident at Heysham 1 power station in November 2018, when a valve failed on a steam system resulting in injury to three EDF employees. Further details are available on our website.

Regulatory updates

20. In October, our Chief Nuclear Inspector (CNI) Mark Foy published his view on the performance of Great Britain's nuclear industry during 2018/19. In the first report of its kind, the review provides an independent, authoritative view of safety, security and safeguards performance across the nuclear industry over the last year. The report is accessible via our website homepage www.onr.org.uk
21. Throughout October we hosted an Integrated Regulatory Review Service Mission that saw a team of 18 independent experts from across the globe scrutinising the regulation of nuclear and radiological safety across 15 different regulatory bodies. The final report is expected in February/March 2020.
22. Along with the Environment Agency and Natural Resources Wales (NRW) we have published new Generic Design Assessment (GDA) guidance for Requesting Parties. It

reflects the changes seen in the nuclear industry in the decade since GDA was introduced, in particular the Nuclear Sector Deal and the potential for Small Modular Reactor (SMR) designs to enter GDA in the future. The new guidance also incorporates lessons learnt from previous GDAs.

23. Together with the Environment Agency, we have also published a joint annual report on our scrutiny of Radioactive Waste Management's (RWM) work to develop geological disposal. This report summarises our work relating to the geological disposal of radioactive waste.
24. We have formally concluded the licence revocation for the Cardiff Nuclear Licensed Site in Wales, thereby de-licensing the site. This follows many years of nuclear site decommissioning and work to clean up the site and is the first time ONR has de-licensed a site completely, although several sites have been de-licensed by ONR's predecessor organisation, the Nuclear Installations Inspectorate.

Stakeholder engagement

25. In November, we hosted our second NGO Forum of the year and were delighted to welcome 18 NGO attendees from 14 different organisations. Agenda items included our work at Sellafield, ageing management of reactors and our relationship with the Defence Nuclear Safety Regulator. Presentations and minutes from all our NGO Forum meetings are made available on our website. If you represent an NGO group and would like to get involved with our NGO Forum, please get in touch with our Communications team (contact@onr.gov.uk) for further details.

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