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

Report for period 1 April to 30 June 2020

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. During this reporting period, Covid-19 social distancing restrictions have prevented ONR carrying out inspections at the station. Remote inspections were carried out by the ONR nominated site inspector, supported where appropriate by specialist inspectors, on the following dates:

- 7-16 April 2020
- 15-19 June 2020
- 17-30 June 2020

2. ONR's civil nuclear security inspector usually undertakes quarterly inspections at Hunterston B:

- The scheduled security inspection in the period was postponed due to the Covid-19 restrictions. The security inspector did participate in the organisational capability inspection, see below.

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), the Radiation Emergency Preparedness and Public Information Regulations 2019 (REPPIR) and The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG);
- 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 licence 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:

- Transport of class 7 dangerous goods under CDG;
- LC 36 – Organisational capability;

6. Transport of class 7 dangerous goods - On 15-19 June ONR inspected the arrangements for transport of packages containing radioactive material. The inspection was carried out in conjunction with EDF NGL's own Independent Nuclear Assurance (INA) department. The inspection reviewed training records, consigning

documentation and procedures and confirmed adequate transport emergency arrangements. The station was judged to be compliant against the legislation for carriage of class 7 goods and no deficiencies were identified that could significantly undermine safety. No formal regulatory action was needed and the inspection therefore was rated green.

7. LC 36 - On the 17-30 June, ONR inspected compliance with the organisational capability controls being applied as part of the station preparations for end of generation and defuelling. ONR found that staff are working hard on transition preparations and the Human Resources team is capable and working to ensure the right processes are in place, are understood and are used properly to support the transition. The proposed organisational resource changes were found to be mapped against the current AGR nuclear baseline, which defines the organisational structures and resources necessary for the power station to operate safely. Station recognised that deviations from this baseline must be carefully conceived and executed and that the organisational change process needs to be applied rigorously. Whilst the inspection was rated green (no formal action), ONR provided advice on the need to apply the organisational controls more fully including: the proactive management of organisational gaps by redistributing accountabilities and responsibilities; provision of appropriate levels of support to new and temporary post holders; and application of the change process far enough down the organisational hierarchy to mitigate the resultant 'hole' in the organisation. ONR plans further inspections on this topic such that any planned changes during the transition to defuelling and beyond are understood and adequately justified.

8. 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.

- Reactor shutdown systems - On the 7-16 April, ONR carried out a remote inspection of the reactor shutdown systems comprising the reactor control rod system and the diverse shutdown system, which comprises two sub-systems; the Nitrogen Injection System (NIS) and the Enhanced Shutdown System (ESD). The primary means of shutting down the reactor is the free fall, under gravity, of bulk control rods and super-articulated control rods into the core. The ESD is provided in the event that insufficient bulk control rods insert to shut down the reactor and achieves shutdown by actively driving the regulating control rods, which control the reactor power, into the core if they fail to insert. The NIS provides further defence, if insufficient control rods are inserted into the core, by injecting nitrogen, which efficiently absorbs neutrons and maintains the reactor safely shut-down during the period when xenon decay would reduce the shutdown margin. Following every reactor trip the control rod insertion characteristics, including total drop times, are measured and compared against allowable limits. The inspection found that the safety case defining the control rod drive rate (10 mms^{-1}) was unclear whether it was a safety limit and condition and therefore have the status as an operating rule and be demonstrably complied with. Control rod drive rates are measured and therefore this represents an administrative contravention of the safety case and not therefore a problem with the actual insertion of the control rods. The inspection was rated Amber (below standard). An Enforcement letter was issued to station that required the safety case requirements to be clarified and

all required control rod insertion characteristics to be measured and complied with by January 2021.

9. 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

10. 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.

11. 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:

- Boiler tube failure probabilities. EDF is required to report all anomalies with safety cases to ONR. On the 1 April, EDF reported that a review of the calculated boiler tube failure rates had determined that the failure rate was greater than the value defined in the current safety cases for Reactors 3 and 4. The boiler tubes are used in the transfer of pressurised water and steam between the reactor and the turbine generator. EDF applied its safety case anomalies process (SCAP) and it was concluded that the increase in the calculated failure rate was small. ONR specialist structural integrity inspectors are in the process of assessing the revised safety case. In the interim, ONR is content that the anomaly does not present a challenge to return to service at Hunterston B: the conclusions of the safety case are unlikely to be changed and ONR does not consider this issue would impact on the safe operation of the reactor should it be permitted to return to service.. The anomaly, with calculated boiler tube failure rates, affects other reactors in the EDF fleet which have been determined to be safe to continue operating at power. There were no immediate consequences associated with this event and no workers or members of the public have been placed at increased risk.

- Non-compliance with carriage of dangerous goods (CDG) regulations. On 2 April, EDF reported that a package containing radioactive iodine filter testing equipment was transported off-site with contact dose rates in excess of the limits specified in the CDG regulations for excepted packages. The contact dose limit for an excepted packages is low (< 5 μSvh^{-1}) and the measured dose rate was (10 μSvh^{-1}). An investigation was carried out and concluded that radioactive debris had moved during transport to a less shielded position within the filter testing equipment. Corrective action is being taken to install an additional filter between the plant and the filter testing equipment which will prevent further radioactive particles entering the testing equipment intended to be transported. ONR does not consider this event placed workers or members of the public at increased risk.

- Reactor 4 gas circulator trip. On the 19 May adjustments were made to the oil lubricating system of an in-service gas circulator that resulted in the gas circulator being shut down by its protection systems. Required cooling to Reactor 4 was maintained and compliance with required operating rules was demonstrated at all times due to the cooling provided by the other in-service gas circulators. Reactor 4 was shut down at the time and core cooling requirements were low. There was no risk to workers or members of the public from this event. EDF is conducting an investigation to determine the root causes of this event and ONR will review the investigation findings when available.

- Reactor 3 reheater outlet penetration weld inspections. On the 10 June EDF reported that two welds on the boiler reheater penetration into the reactor pressure vessel were outside the inspection interval prescribed in the plant maintenance schedule. EDF has reviewed the welds and concluded that their structural integrity remains within the required safety margin. ONR specialist structural integrity inspectors have reviewed the safety of the welds and have confirmed that the welds remain structurally sound, are compliant with the Pressure System Safety Regulations 2000 and the welds are safe for a further period of operation should permission be granted for the reactor to return to service.

4 REGULATORY ACTIVITY

12. 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.

13. No Enforcement Notices (Improvement or Prohibition notices) were issued during the period.

14. One Enforcement letter was issued, see above system based inspection on reactor shutdown systems.

15. In March 2018, Hunterston B Reactor 3 was shutdown in order to carry out planned inspections of the graphite core. EDF submitted a safety case to return the reactor to power in June 2019. ONR identified a number of areas which had not been addressed to our satisfaction relating to: debris; the seismic buildings modelling; implications of uncertainties in end-face key strength; and the potential for failure of graphite bricks during a seismic event. The Reactor 3 safety case was re-submitted to ONR on the 15 April 2020. ONR expert inspectors continue to assess the safety case and permission to return Reactor 3 to service will only be provided if ONR is satisfied that the reactor is safe to operate.

16. Reactor 4 was operated safely from 25 August 2019 to 10 December 2019, http://news.onr.org.uk/2019/08/hunterston-b-reactor-4/. The reactor was subject to a graphite core inspection and a total of 35 fuel channels were inspected. The results were within EDF's predictions and an updated safety case was submitted to ONR on the 16 June 2020. ONR will assess the safety case and permission to return Reactor 4 to service will only be provided if ONR is satisfied that the reactor is safe to operate.

5 NEWS FROM ONR

Covid-19 (Coronavirus)

17. ONR is continuing to protect society by securing safe nuclear operations during the Covid-19 (coronavirus) pandemic. Our staff continue to work from home, in line with government advice, with a limited number of our inspectors, as key workers, travelling to site as necessary to conduct urgent and essential regulatory inspections. ONR's latest position can be found on our website.

Enforcement Action

18. ONR served an Improvement Notice on EDF Energy Nuclear Generation Ltd (EDF Energy) for contravention of the Pressure Systems Safety Regulations (2000) at Heysham 1 Power Station. The notice was served after shortfalls were discovered in the examination and inspection of the Reactor 1 pressure vessel at the Lancashire plant. EDF Energy must comply with the Improvement Notice and complete the eleven overdue examinations by 18 December, 2020.

19. ONR has granted an extension to an Enforcement Notice served on Urenco UK Ltd, recognising the good progress made so far. The notice was issued in late December 2019, following a fire safety inspection at the Capenhurst Works in Cheshire, which revealed shortfalls in the fire alarm and detection systems at one of the site's facilities. Urenco UK Ltd must comply with the requirements of the extended notice by 30 September, 2020

Regulatory Updates

20. ONR received an application for a nuclear site licence from NNB Generation Company (SZC) Limited, to construct and operate two EPR TM reactors, at its proposed development in Sizewell, Suffolk. We will now assess the application, partly informed by our previous assessment of the EPR TM at Hinkley Point C – including using the relevant lessons from that assessment, while focusing on aspects specifically relevant to Sizewell C.

21. Whilst we are satisfied that the application is sufficiently complete to proceed to assessment stage, there is still a lot of work to do – and we do not expect to reach a decision, until at least the end of 2021.

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