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

Report for period 1 July 2020 – 30 September 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 Local Community Liaison Committee and are also available on the ONR website (http://www.onr.org.uk/llc/).

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

- 4 August (Site inspection)
- 14 – 17 September (Site and remote inspection)

Heysham 2

- 9 June (Physical Inspection)
- 18 June (Remote Inspection)
- 23 June (Remote Inspection)

2 ROUTINE MATTERS

2.1 Inspections

2. 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).

3. 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.

4. Due to the Covid-19 pandemic, access to site has been limited to urgent and essential regulatory inspections. (More details can be found in the News from ONR section at the back of this report and on our website)

5. We have however maintained regulatory oversight of both stations by:-

- Initiating increased dialogue with site management, the licensee's independent nuclear safety assurance function, and trade union safety representatives to develop a consistent picture of the measures put in place to manage the safety of both the workforce and the plant.

- Observing regular station meetings and special working groups the licensee established to assess the coronavirus pandemic and manage the response, such as the pandemic lead team meeting (which co-ordinated the site's response) and maintenance requirements review group (which managed the impact of potential or actual staff and supply chain shortfalls on safety-significant maintenance activities).

- Monitoring the minimum staffing levels required to deliver an adequate response in the event of an accident or emergency on the site.

6. Consequently, we consider that the site has managed its response to the pandemic during the period in a manner that, so far as is reasonably practicable, protected its own staff and ensured that there was no degradation in nuclear safety.

7. In this period, the following site and remote routine inspections were undertaken:

Heysham 1

Licence Condition 26 – Control and supervision of operations

8. The purpose of LC 26 is to ensure the licensee carries out no operations which may affect safety except under the control and supervision of suitably qualified and experienced persons appointed for that purpose by the licensee.

9. Operations as defined in LC 1 includes maintenance, examination, testing and operation of the plant and the treatment, processing, keeping, storing, accumulating or carriage of any radioactive material or radioactive waste and "operating" and "operational" shall be construed accordingly.

10. We inspected the site's arrangements for 'Control and supervision of operations' as part of the planned maintenance being conducted on gas turbine no.6.

11. We observed adequate control and supervision being applied in the areas sampled which covered:

- Integrated maintenance requirements and resource planning;
- Communications of maintenance requirements and plant availability through use of the 'Plan of the day' meetings;
- 'Setting to work' briefs delivered by the maintenance team leader which included routine 'on the job' follow up and end of day debrief;
- Safety document adherence at the start and end of the working day.

12. There were no regulatory issues generated as a result of this inspection and we judged that NGL adequately demonstrated compliance with the requirements of LC 26 and therefore rated this inspection as Green requiring no formal regulatory action.

13. In addition, from the sample of physical arrangements inspected when on-site, we were content that NGL were adequately implementing measures to reduce the risks associated with COVID-19 transmission. Examples of physical arrangements included the use of thermal imaging at site entrances, availability of hand sanitiser solutions, personnel testing, isolation and track and trace measures, disinfectant and cleaning materials in all offices, signage and briefing material used to reinforce the 2 metre social distancing rule and hand wash policy and close proximity facemask working arrangements.

14. Behaviourally the majority of persons observed adhered to the 2 metre social distancing rule, however on two occasions a small number of individuals were observed who did not adhere to the social distancing criteria. This included observation of individuals walking 'shoulder to shoulder' and three persons engaged in a discussion. We noted that the behavioural issues associated with the 2 metre adherence rule are already the subject and priority of senior management

who are actively reviewing measures to improve adherence. We were encouraged by the senior management's response to the observations.

Licence Condition 28 - Examination, inspection, maintenance and testing

15. The purpose of LC28 is to ensure the licensee makes and implements adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of all plant which may affect safety. Ageing management arrangements are included within the scope of arrangements necessary to demonstrate compliance with LC28. An ageing management inspection was conducted and the following systems were sampled:

    - CO2 Storage and Distribution system; and
    - Emergency Generation system.

16. The focus of the inspection was to establish if the licensee's arrangements are adequately implemented to detect the onset of equipment degradation, and also to quantify the extant material condition and the rate of ageing of nuclear safety significant plant.

17. The inspection sampled the licensee's arrangements for ageing management and their implementation for the systems under consideration. The inspection included discussions with various members of site staff including system engineers, senior management and the Independent Nuclear Assurance team.

18. Overall, it was concluded that the arrangements for ageing management had been adequately implemented in line with ONR's expectations and good examples of proactive ageing management of plant were provided.

19. However during the inspection, deferred preventative maintenance routines were examined and it was revealed that out-of-service inspections for a number of safety relief valves within the Nitrogen Storage and Vaporisation plant had not been completed. These examinations are specified in the relevant Written Scheme of Examination which is a requirement of the Pressure Systems Safety Regulations 2000. Although we judged that nuclear safety was not challenged, these inspection shortfalls remained within the scope of LC28 and it was judged that an Amber rating (Seek Improvement) against licence condition 28 was appropriate. This shortfall is currently being reviewed against ONR's Enforcement Management Model to determine the most appropriate enforcement action.

20. In addition the inspection revealed a small number of minor shortfalls associated with the timely completion of equipment reliability reviews and gas turbine stack engineering reviews both of which will require further routine regulatory follow up. It was also accepted that EDF's corporate ageing management arrangements, which are adhered to by the site, require review to assist with their effective implementation.

21. We also took the opportunity to gather intelligence on the site's 2021/22 investment plans; pressure systems safety regulations 2000 compliance activities associated with reactor 1 and reactor 2 pressure vessel examinations; and Covid-19 transmission risk mitigation arrangements. No issues were identified on these matters. It was noted that station staff were observed to adhere fully to the site's recently revised use of facemask policy and that the arrangements used to reinforce the 2 metre social distancing rule and hand wash policy remained in place.

Heysham 2

Licence Condition 7 - Incidents on the site

22. The purpose of LC7 is to ensure that incidents on the site are notified, recorded, investigated and reported by the licensee. ONR anticipates that only incidents with the potential to have an adverse effect on safety are notified to ONR. We conducted a remote LC7 inspection to evaluate the adequacy of implementation of EDF Energy Nuclear Generation Limited's (NGL) arrangements for 'the notification, recording, investigation and reporting of … incidents on the site…' at Heysham 2 (HYB) nuclear power station.

23. Based on the sample of interviews and document reviews it was judged that the station complies with the requirements of the arrangements and we found no regulatory shortfalls during this inspection. Station personnel were willing to create learning briefs over and above the new fleet requirements showing commitment to the process. The performance improvement department had some good ideas for enhancing the system and processes to add value. However, to improve, the station needs to reduce the number and improve the timeliness of actions and assignments. Station is aware of these findings and is looking to address them.

Licence Condition 28 – Examination, Inspection, Maintenance and Testing

24. This inspection was carried out by the site inspector and an ONR corrosion specialist. The inspection focused upon improvements made by Heysham 2 since ONR's inspection in January 2020, and also collected evidence that may be used to demonstrate closure of actions associated with a related regulatory issue. The inspection covered; corrosion management team structure and process to prioritise defect remediation, transition to "normal business" in relation to corrosion and a review of CO2 system Examination, Inspection, Maintenance & Testing (EIMT).

25. We found that that Heysham 2 has implemented improvements to its corrosion team structure since ONR's inspection in January 2020. The team were knowledgeable, engaged and displayed a sound understanding of the corrosion mechanisms relevant to the plant at station, along with demonstrating an awareness of relevant EDF guidance documents. The defect tracker is comprehensive and contains information to substantiate prioritisation for the remediation of defects.

26. We sampled a draft system close out for the Unit, Station & Generator Transformers and considered that it contains an adequate level of detail and evidence to support judgements made with regards to prioritisation of future remediation. The corrosion team informed us that they intend to complete close out reports for all systems by March 2021. For the CO2 system, the station has embedded inspection and maintenance routines to inspect vessels, pipework and supports for LC28 and PSSR compliance demonstration. We were encouraged to see that the distribution pipework had been divided into clearly identified inspection zones, enabling visibility of which areas have been inspected and when. Heysham 2 has completely removed insulation from the CO2 distribution pipework to facilitate inspection; this will also mean that any future risk based inspection strategy can be informed by a sound benchmark of plant condition, this is considered good practice.

27. We considered that the station has provided adequate responses and evidence to close some actions associated with related regulatory issues. ONR will continue to monitor progress made by the corrosion management team at Heysham 2, this

may be via routine inspection activities during outages and system based inspections, or via future plant material condition thematic inspections.

System Based Inspections (SBI)

28. In addition to the programme 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 (where relevant) 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

Heysham 1

29. During the reporting period, no system-based inspections were conducted at Heysham 1.

Heysham 2

System Based Inspection - Carbon dioxide processing and blowdown systems

30. We performed a System Based Inspection (SBI) to confirm the implementation of safety claims made for the carbon dioxide processing and blowdown systems against a variety of licence conditions.

31. We were satisfied that staff training records and profiles were in accordance with the requirements for the roles performed from an LC10 perspective. We noted however, despite the system engineer being new in role, no system handover was completed or planned. We have therefore raised a Level 4 (minor) regulatory issue in this regard. With respect to LC23 and LC24, we identified appropriate operating rules and implementation of these as written instructions.

32. We sampled the examination, inspection, maintenance and testing (EIMT) regime of a wider sample of components judged to be important to nuclear safety. Overall, the LC28 maintenance regime was judged to be meeting relevant good practice, we have however raised a couple of Level 4 regulatory issues for the site to consider the maintenance categorisation and additional inspection of some items of equipment.

33. From an LC34 perspective, we observed active leak monitoring, with improvements planned to enhance the management of radioactive leaks. I considered the self-assessment of LC34 undertaken at HYB to be in line with other stations.

3 NON-ROUTINE MATTERS

34. 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

35. There were no such matters or events of significance during this period.

Heysham 2

Flux Detector Event

36. Following investigation into the circumstances surrounding the flux detector event reported last quarter, the Office for Nuclear Regulation (ONR) has served an improvement notice on EDF Energy Nuclear Generation Limited (NGL) for shortfalls in safety procedures at Heysham 2. The improvement notice was issued under Licence Condition 28, Examination, Inspection, Maintenance and Testing. The notice was served after some of the equipment which is used to measure reactor power was incorrectly configured during the reactor's restart following the planned statutory outage in April 2020. Operators quickly detected the error, at very low power, during the start-up process and the restart was safely aborted. A range of other safety barriers remained in place at the time of the incident including other equipment to independently measure reactor power and the safety of workers and the public was never compromised. NGL must comply with the notice by 30th of April 2021.

4 REGULATORY ACTIVITY

37. 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.

Heysham 1 Reactor 1 Statutory Outage

38. The planned statutory outage of Reactor 1 commenced on 28 September when the reactor was manually tripped and safely shutdown.

Heysham Emergency Plan

39. The Radiation (Emergency Preparedness and Public Information) Regulations 2019 (REPPIR19) have prompted the requirement for the review and amendment of the on-site, and off-site emergency plans. Following the Heysham review and subsequent updates to the emergency plan, the station sought ONR's approval of the Heysham station Emergency Plan in April 2020 under LC11 arrangements. ONR provided a response in June to the request, highlighting that the description of the Detailed Emergency Planning Zone (DEPZ) in the revised submission has been omitted. ONR have requested that Heysham ensure the on-site emergency plan is re-submitted containing the new DEPZ information within the final version. ONR has now issued a Licence Instrument to approve the revised emergency plan.

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

Heysham 1 and 2

Date	Type	Ref No	Description
6 August	Licence Instrument	LI 629	Approval of EDF Energy Nuclear Generation Limited Emergency Arrangements (covers both Heysham 1 and Heysham 2)

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

News from ONR (July – September 2020)

Covid-19 (Coronavirus) (ONR position)

ONR is continuing to obtain assurance that nuclear site licensees and other dutyholders are adequately resourced to continue to safely and securely carry out their activities.

We remain satisfied with industry's response at this time and there has been no significant change to dutyholders' safety and security resilience.

As COVID-19 restrictions change, our focus is on the preparedness for the weeks and months ahead and maintaining safe and secure operations in the face of any further escalation in COVID-19 transmission.

ONR staff continue to work at home, primarily. We are increasing our on-site regulatory work in accordance with public health advice. We'll also continue to inspect, assess and permission remotely where necessary to protect staff, workers on site, and the public around sites.

Enforcement Action

In July we publicised the serving of an Improvement Notice on Rolls-Royce Submarines Ltd (RRSL) for procedural safety breaches at its Derby site. The notice was served after shortfalls were identified against the safety case requirements at a nuclear fuel production facility on the site.

In September we announced that an Improvement Notice had been served on EDF Energy Nuclear Generation Ltd (EDF NGL) for shortfalls in safety procedures at its Heysham 2 Power Station in Lancashire. The notice was served after some of the equipment which is used to measure reactor power was incorrectly configured during the reactor's restart process following a planned outage in April 2020.

In September we announced that an Improvement Notice had also been served on Devonport Royal Dockyard Ltd for shortfalls in maintenance procedures at its Plymouth site. The notice was served after Devonport Royal Dockyard failed to carry out scheduled maintenance tests on an effluent extraction system which is used to support maintenance and repair activities within the licensed site.

In September we publicised our intention to prosecute AWE plc under Section 3 of the Health and Safety at Work etc. Act (1974). The charge relates to an incident on 20 June, 2019, at the AWE Aldermaston site which resulted in a contractor narrowly avoiding injury when a flash

over of electricity occurred from a 415V electrical source. The incident was a conventional health and safety matter and took place in a 'non-nuclear' building, so there was no radiological risk to workers or the public.

Regulatory updates

In July the Government published its response to the International Atomic Energy Agency's final report on the Integrated Regulatory Review Service (IRRS) mission to the UK. The IRRS mission took place between 14 – 25 October 2019 was hosted by ONR, and saw a team of 18 independent experts from across the globe scrutinising the regulation of nuclear and radiological safety.

In August we provided EDF NGL with permission for Reactor 3 at its Hunterston B site to return to service for a limited period of operation (16.425 Terawatt days, approximately six months' operation). In September was also gave permission for Reactor 4 at the same site to return to service for a limited period of operation (16.25 terawatt days, which is approximately six months operation). The decision to permission the restart of these reactors was given after extensive and detailed assessments of the respective safety cases by specialist ONR inspectors.

Corporate updates

In July we published our new 2020-25 Strategy, which sets out our direction and priorities for the next five years. It builds on our strengths and continues to focus on protecting society, and addressing the changing demands we will face as the UK's nuclear regulator.

In late September we published our Annual Report and Accounts highlighting our performance and key achievements for 2019/20.

The report notes that we continued to deliver our mission of protecting society by securing safe nuclear operations and that the majority of dutyholders have continued to meet the high standards of safety and security required. Where dutyholders have fallen short of such standards, we are satisfied that their facilities remain safe and that our regulatory focus has had a positive impact on their performance.

During the year, we completed more than 800 compliance inspections across 36 licensed sites during 2019/20, granting permission for 30 nuclear-related activities, serving three improvement notices and instigating one prosecution.

ONR Chair Mark McAllister said: "I am pleased to report that we have again delivered our mission and achieved our 2020 vision. As we look ahead, I have every confidence in our senior leadership team to see through the strategic improvement projects already underway

that will enhance the organisation's information and knowledge management system, and successfully deliver the aspirations of our new strategy."

In September we announced that Jean Llewellyn OBE had been appointed to the ONR Board as the new Security Non-Executive member. Jean will take up her appointment on 1 October 2020 for a three year term and will Chair ONR's Security Committee.

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