



Office for Nuclear Regulation (ONR) Site Report for Sizewell B Power Station

1 October 2017 – 31 December 2017

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 to members of the Sizewell Site Stakeholder Group and are also available on the ONR website (<http://www.onr.org.uk/lrc/>).

Site inspectors from ONR usually attend meetings of the Sizewell Site Stakeholder Group 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 ONR.

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1 INSPECTIONS

1.1 Dates of inspection

ONR inspectors undertook interventions at Sizewell B Power Station on the following dates during the reporting period:

- 3 – 5 October 2017
- 17 October 2017
- 23 – 24 October 2017
- 7 – 17 November 2017
- 12 – 14 December 2017

2 ROUTINE MATTERS

2.1 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 Act 1974 (HSWA74); and
- regulations made under HSWA74, for example the Ionising Radiations Regulations 1999 (IRR99) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).

The inspections entail monitoring licensee (EDF Energy Nuclear Generation Ltd (NGL)) 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.

In this period, routine inspections of Sizewell B covered the following:

- Safety Case Maintenance
- Organisational Capability
- Lightning Protection
- Ionising Radiations Regulations

In general, ONR judged the arrangements made and implemented by the site in response to safety requirements to be adequate in the areas inspected. However, where improvements were considered necessary, the licensee made satisfactory commitments to address the issues, and the site inspector will monitor progress during future visits. Where necessary, ONR will take formal regulatory enforcement action to ensure that appropriate remedial measures are implemented to reasonably practicable timescales.

ONR's specialist inspectors undertook an intervention to evaluate compliance with site licence condition 14 (safety documentation). The inspection targeted NGL's safety case maintenance processes, sampling configuration management applied to the documentation and the accessibility (and usability) of the case. We found that NGL's systems provide an effective means of controlling the configuration of the safety case. We also found that safety case documents were readily accessible to authorised users via NGL's electronic systems. Overall, the ONR inspectors were satisfied that legal requirements were being met. A regulatory issue was raised to monitor closeout of a minor opportunity noted by inspectors to enhance NGL's processes for managing the safety case's auditable trail.

ONR's Organisational Capability intervention evaluated the provision of human resources available at Sizewell B. Inspectors reviewed the availability of suitably experienced and qualified personnel to undertake roles which may affect safety, comparing available resources against defined minimum manning levels. Inspectors were satisfied that sufficient resources were available to ensure safe operation of the station, in accordance with the requirements of site licence condition 36.

NGL has experienced some resignations of personnel from Sizewell B, who have been recruited to a new nuclear power project in the United Arab Emirates. NGL has responded to this situation, by providing additional corporate support and increasing recruitment and training pipelines to maintain specialist skills required at Sizewell B. ONR is satisfied that the situation does not threaten nuclear safety, but we will continue to monitor during future licence condition 36 inspections.

We undertook an inspection to evaluate implementation of safety case claims on lightning protection systems fitted to buildings and structures at Sizewell B Power Station, focusing on maintenance of these systems. Inspectors judged that the lightning protection system was being adequately maintained in-line with legal requirements.

ONR also conducted an inspection to evaluate workforce radiation protection measures within the Sizewell B Dry Fuel Store, in accordance with the provisions of the Ionising Radiations Regulations 1999 (IRR99). This follows completion of the first fuel casks transfer campaign during active commissioning of the facility. The licensee was able to demonstrate a good level of compliance with the IRR99. No radiological protection safety issues that required action by the Licensee or follow-up by ONR were identified.

2.2 OTHER WORK

2.2.1 Regulation of Refuelling Outage 15

Sizewell B's operating cycle lasts approximately 18 months, following which the reactor is required to shut down so that it can be refuelled. During this shutdown, maintenance activities are also undertaken to ensure the continued safe operation of reactor and associated systems. On 3rd November 2017, the reactor was shutdown for commencement of its 15th refuelling outage (RO15). This was main focus of ONR's activity at Sizewell B during the period covered by this report.

ONR specialist inspectors assessed documentation produced by the licensee to demonstrate the safety of maintenance activities and modifications made to the plant. Additionally, ONR performed inspections on the following topics:

- Mechanical Engineering
- Electrical Engineering
- Maintenance of Control and Instrumentation Systems
- Workforce Radiological Protection
- Outage Management
- Control and Supervision

The findings from these inspections are reported in ONR's Project Assessment Report, which will be published on ONR's website (<http://www.onr.org.uk/pars/2018/index.htm>). In general, the licensee's work was found to be adequate with no safety findings to prevent ONR granting consent to start up the reactor.

Steam Generator Leakage

Routine examination by NGL of the Sizewell B Steam Generator D, revealed minor deposits of boric acid crystals as a result of a pinhole leak in a weld associated with a small drain-line penetration (approximately 18 mm diameter) in the channel head (the bottom forging of the steam generator). Non-destructive testing (NDT) performed by NGL identified radial cracks in all four steam generator drain line weld pads, caused by primary water stress corrosion cracking. NGL took the decision to repair all four Steam Generators by plugging the penetration with material more resistant to primary water stress corrosion cracking.

ONR is satisfied that the leak was extremely small, well within the capacity of the station's normal provision for making up cooling water; hence, we consider that the leak did not pose any threat to core cooling or fuel integrity. Additional measures are provided within the station's design basis to ensure core cooling in the event the defect had remained undetected by the outage inspection programme. The incident was categorised as level one (an anomaly) on the International Nuclear Event Scale (INES).

ONR's structural integrity specialist inspectors examined NGL's repair technique and were content with the suitability and safety of the design. They were also satisfied with the testing and qualification work performed to ensure that the repair was performed to a high standard.

ONR's interventions did not identify any issues of safety significance which remain unresolved in relation to the licensee's safety case for the start-up and operation of the reactor for a further period. Accordingly, ONR granted consent to start up the reactor at Sizewell B on 26 January 2018.

2.2.2 Emergency Arrangements Review

In September, ONR inspectors attended the station's Emergency Arrangements Review meeting during which EDF presented their annual self-assessment of the station's capability to respond to an incident occurring on the site. ONR was satisfied that overall, EDF's self-assessment was objective and evidence based. Inspectors considered that adequate progress had been made against areas for improvement noted during last year's review meeting.

2.2.3 Exercise Saracen

During this period a team of ONR inspectors observed an exercise designed to demonstrate Sizewell B power station's arrangements for dealing with a security incident. Armed officers from the Civil Nuclear Constabulary participated in the exercise, which tested command and control across the site. ONR judged that the exercise was an adequate demonstration of the site's response to a counter terrorism incident. A number of learning points were observed by the ONR inspection team which were accepted by the licensee and will be monitored by the ONR security inspector during future inspections.

3 NON-ROUTINE MATTERS

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.

Matters and events of particular note during the period were:

- There were no such matters or events of significance during the period.

4 REGULATORY ACTIVITY

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.

- No Licence Instruments or Enforcement Notices were issued during the period but ONR's Consent for restart fuelling/refuelling outage 15 was issued on 26th January 2018.

5 NEWS FROM ONR

New build:

New nuclear power station design approved:

The UK Advanced Boiling Water Reactor (UK ABWR), designed by Hitachi-GE, is suitable for construction in the UK, the regulators confirmed following completion of an in-depth assessment of the nuclear reactor design. The Office for Nuclear Regulation (ONR), the Environment Agency and Natural Resources Wales, the regulators who undertake the Generic Design Assessment of new reactor designs, are satisfied that this reactor meets regulatory expectations on safety, security and environmental protection at this stage of the regulatory process.

ONR has issued a Design Acceptance Confirmation (DAC) and the environment agencies have issued a Statement of Design Acceptability (SoDA) to Hitachi-GE.

Step 2 of nuclear reactor assessment:

We also announced on 16 November that we are progressing to the next phase of our assessment of General Nuclear System Ltd's UK HPR1000 reactor technology. This means we will now begin the technical assessment phase. Additionally, all members of the public can give their views and find out more information about the design by going to UKHPR 1000 website at www.ukhpr1000.com

Other news:

ONR response to BEIS impact assessment

The Department for Business, Energy and Industrial Strategy (BEIS) has recently published its Impact Assessment of the Nuclear Safeguards' Bill and that makes reference to ONR's regulation. We contacted BEIS to clarify two points within the document as part of our ongoing constructive engagement with them to develop a domestic safeguards regime as part of exiting Euratom.

The first is that ONR regulates the nuclear industry, it does not provide services to it. Secondly, the Government's policy has developed since the assessment was undertaken and the intention is to put in place a regulatory framework which is robust and as comprehensive as Euratom. This means that we are not in a position to identify potential efficiencies in our regulatory approach at this stage.

As we support BEIS in its development of secondary legislation, we will provide advice to the Government to inform the anticipated impact assessment for nuclear safeguards regulation.

For the latest news and updates from ONR visit the website and sign up for the ONR Newsletter. (<http://www.onr.org.uk/ebulletin/index.htm>).

6 CONTACTS

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