### PROJECT ASSESSMENT REPORT

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**Project:** Periodic shutdown 2014 (Refuelling Outage 13)

**Site:** Sizewell B

**Title:** Consent to start-up reactor following periodic shutdown

**Licence Instrument No:** LI 543

**Nuclear Site Licence No:** 63

**Licence Condition:** 30(3)

### Document Acceptance and Approval for Issue / Publication

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<td>Reviewer</td>
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<td>Principal inspector</td>
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¹ Acceptance of the PAR to allow release of LI
² Approval is for publication on ONR web-site, after redaction where relevant

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1. Acceptance of the PAR to allow release of LI
2. Approval is for publication on ONR web-site, after redaction where relevant
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Sizewell B – Periodic Shutdown 2014 (Refuelling Outage 13)

Consent to Start-up the Reactor following Periodic Shutdown
EXECUTIVE SUMMARY

Title
EDF Energy Nuclear Generation Ltd (EDF NGL) – Sizewell B – Licence Instrument 543 – Consent to start-up the reactor following periodic shutdown

Permission Requested
EDF NGL, the owner and operator (the licensee) of Sizewell B Nuclear Power Station, has requested consent to start-up the reactor following its periodic shutdown as required under licence condition 30(3) of nuclear site licence number 63.

Background
Sizewell B is a single pressurised water reactor incorporating a nuclear steam supply system (NSSS) based on a Westinghouse standard four loop design. The NSSS comprises of enriched uranium fuel assemblies contained within a steel reactor pressure vessel (RPV) with four associated coolant loops each connected in parallel to the RPV. Each cooling water loop has its own reactor coolant pump (RCP), steam generator and interconnecting pipe work. The primary cooling circuit is closed and pressurised by a single pressuriser vessel which is maintained part filled with water and part with steam in equilibrium. The secondary coolant side is isolated from the primary by the steam generator tubes that produce steam which is passed to two 600MW turbine generators producing a nominal 1200MW of electricity.

The reactor cycle is approximately every 18 months when it is required to shut down so that it can be refuelled. When refuelling is undertaken some of the fuel assemblies (around one-third) are replaced with new ones. The existing fuel assemblies are returned to the core in a rearranged array to ensure optimum fuel utilisation.

To continue to operate safely and reliably the reactor plant requires regular examination, inspection, maintenance and testing. Continuous improvement also requires plant upgrades to be implemented where deemed to be reasonably practicable. Whilst some of these activities can safely take place when the reactor is operating at power, many of them require the reactor to be shut down. The refuelling outages at Sizewell B provide the opportunity for undertaking such activities. As required under the licensee’s arrangements the reactor may not be started-up following a refuelling outage without the consent of ONR.

The current shutdown for the Sizewell B reactor commenced on 17th October 2014 and represents the end of cycle 13 and commencement of refuelling outage 13. The shutdown was preceded by 5 days of the reactor running at reduced power, facilitating work to replace one of the two 600MW station generator transformers. It is the intention of EDF, upon receipt of the consent to restart to operate the reactor at reduced load to allow completion of the work on the generator transformer.

In addition to the routine inspection and maintenance activities, the following significant work was completed during the outage:

- Refuelling the reactor;
- Reactor coolant pump ‘D’ lower bearing maintenance;
- Electrical project to replace generator transformer 1;
- Maintenance on one of the four groups of site independent electrical supplies;
- Installation of passive auto-catalytic (hydrogen) re-combiners (PAR) as part of the Japanese Earthquake Response (JER) programme;
- Installation of new load monitoring system onto the polar crane

Assessment and inspection work carried out by ONR in consideration of this request
ONR has undertaken a range of plant inspections and assessments in relation to this request. The most significant are as follows:
An outage intentions meeting on 27 March 2014 to discuss and agree the work to be undertaken during the outage;
- Assessment of the licensees radiological protection arrangements;
- Assessment of the cycle 14 core reload safety case;
- Assessment of civil inspection and maintenance work undertaken during the outage;
- ONR specialist assessors undertook inspections against the licensees arrangements for control and execution of maintenance, surveillances and modifications during the outage;
- Inspections and interventions by the nominated site and project inspector to undertake outage related compliance inspections, and
- the start-up meeting on 12 October 2014 to review outage findings and agree actions to be completed before start-up of the reactor.

Matters arising from ONR’s work
There were no significant findings arising from ONR’s review of the periodic shutdown that prevent consent to the reactor start up.

Conclusions
The ONR programme of inspections and assessments gives sufficient confidence to grant consent to start up the reactor at Sizewell B following its 13th periodic shutdown.

Recommendations
Consent to start up the reactor at Sizewell B should be granted by issuing licence instrument number 543.
**LIST OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ALARP</td>
<td>As low as reasonably practicable</td>
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<tr>
<td>APEX</td>
<td>Appointed Examiner</td>
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<td>ASME</td>
<td>American Society of Mechanical Engineers</td>
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<tr>
<td>BSL</td>
<td>Basic Safety Level (in SAPs)</td>
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<td>BSO</td>
<td>Basic Safety Objective (in SAPs)</td>
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<tr>
<td>CE</td>
<td>Civil Engineering</td>
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<td>C&amp;I</td>
<td>Control and Instrumentation</td>
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<td>CCW</td>
<td>Component Cooling Water</td>
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<td>CNS</td>
<td>Civil Nuclear Security (ONR)</td>
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<td>DAP</td>
<td>Duly Authorised Person</td>
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<td>EC</td>
<td>(EDF) Engineering Change</td>
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<td>EE</td>
<td>Electrical Engineering</td>
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<td>EIM&amp;T</td>
<td>Examination, Inspection, Maintenance and Testing</td>
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<td>FME</td>
<td>Foreign Material Exclusion</td>
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<td>HOW2</td>
<td>(ONR) Business Management System</td>
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<td>HTP</td>
<td>High Thermal Performance</td>
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<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<td>IIS</td>
<td>Integrated Inspection Strategy</td>
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<td>INA</td>
<td>Independent Nuclear Assurance</td>
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<td>INSA</td>
<td>Independent Nuclear Safety Assessment</td>
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<td>LC</td>
<td>Licence Condition</td>
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<td>LI</td>
<td>Licence Instrument</td>
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<td>ME</td>
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<td>NDA</td>
<td>Nuclear Decommissioning Authority</td>
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<td>NRV</td>
<td>Non-return Valve</td>
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<tr>
<td>NSI</td>
<td>Nominated Site Inspector</td>
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<td>OCC</td>
<td>Outage Control Centre</td>
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<td>ONR</td>
<td>Office for Nuclear Regulation</td>
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<td>OPNSRG</td>
<td>(EDF) Outage Planning Nuclear Safety Review Group</td>
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<td>PAR</td>
<td>Project Assessment Report</td>
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<td>PSA</td>
<td>Probabilistic Safety Assessment</td>
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<td>PSR</td>
<td>Periodic Safety Review</td>
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<td>Pressure System Safety Regulations (2000)</td>
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<td>Pressurised Water Reactor</td>
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<td>QMS</td>
<td>Quality and Management Systems</td>
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<td>RCCA</td>
<td>Rod Cluster Control Assemblies</td>
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<td>RGP</td>
<td>Relevant Good Practice</td>
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RO13       Refuelling Outage 13
RP         Radiological Protection
RTR        Rapid Trending Review (INA lead)
SAP        Safety Assessment Principle(s) (HSE)
SFAIRP     So far as is reasonably practicable
SI         Structural Integrity
SIP        (EDF) Structural Integrity Panel
SFO        (ONR) Specialist Fuel inspector
SQEP       Suitably Qualified and Experienced Person / People
SSA        Secondary Source Assemblies
SSC        System, Structure and Component
SZB        Sizewell B
TAG        (ONR) Technical Assessment Guide
TIG        (ONR) Technical Inspection Guide
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Table 2: RO13 ONR Actions closed prior to re-start
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1 PERMISSION REQUESTED

1. This report describes key elements of the work undertaken by the licensee (EDF NGL) at Sizewell B (SZB) during the re-fuelling outage 13 (RO13) periodic shutdown of the reactor, which commenced on 17th October 2014. It also describes how the Office for Nuclear Regulation (ONR) has regulated the refueling outage process, the matters of nuclear safety significance it has assessed and the judgments made.

2. Under site licence condition 30(3), EDF NGL is required to obtain the consent of ONR for the start-up of this reactor. EDF NGL has applied for this consent (Ref 1). This report presents the basis for the decision by the ONR to grant consent to start-up the reactor at SZB following the completion of the 2014 periodic shutdown re-fuelling outage 13 (RO13).

2 BACKGROUND

3. Sizewell B is a single pressurised water reactor at incorporating a nuclear steam supply system (NSSS) based on a Westinghouse standard four loop design. The NSSS comprises of 195 enriched uranium fuel assemblies contained within a steel reactor pressure vessel (RPV) with four associated coolant loops each connected in parallel to the RPV. Each cooling water loop has its own reactor coolant pump (RCP), steam generator and interconnecting pipe work. The primary cooling circuit is closed and pressurised by a single pressuriser vessel which is maintained part filled with water and part with steam in equilibrium. The secondary coolant side is isolated from the primary by the steam generator tubes that produce steam which is passed to two 600MW turbine generators producing a nominal 1200MW of electricity.

4. Approximately every 18 months the reactor is required to shut down so that it can be refuelled. When refuelling is undertaken some of the fuel assemblies (around one-third) are replaced with new ones. The existing fuel assemblies are returned to the core in a re-arranged array to ensure optimum fuel utilisation.

5. The current shutdown for the Sizewell B reactor commenced on 17th October 2014 and represents the end of cycle 13 and commencement of refuelling outage 13. The shutdown was preceded by 5 days of the reactor running at reduced power, facilitating work to replace one of the two 600MW station generator transformers. It is the intention of EDF, upon receipt of the consent to restart to operate the reactor at reduced load to allow completion of the work on the generator transformer.

6. To continue to operate safely and reliably the reactor plant requires regular examination, inspection, maintenance and testing. Continuous improvement also requires plant upgrades to be implemented where deemed to be reasonably practicable. Whilst some of these activities can safely take place when the reactor is operating at power, many of them require the reactor to be shut down. The refuelling outages at Sizewell B provide the opportunity for undertaking such activities.

7. As required under the nuclear site licence reactor may not be started-up following a refuelling outage without the consent of ONR.
3 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

3.1 Reactor Outage Intentions

8. EDF NGL’s planned outage programme was outlined in the SZB outage intentions document (Ref 3). This document and supporting references were examined by ONR specialist inspectors who then advised the nominated site inspector in preparation for the outage intentions meeting which was held on 27th March 2014 at SZB Power Station (Ref 4 & 5).

9. The nominated site inspector was satisfied that the licencee had provided sufficient details of outage infrastructure and management arrangements in respect to demonstrating compliance with licence conditions 28 and 30.

10. A single action to address industrial safety requirements during the outage was raised at the meeting. This action was completed following a site visit undertaken by an ONR conventional safety inspector (Ref 35). Due to operational commitments, the ONR conventional safety inspector was not able to attend site during the outage.

3.2 Outage Management

11. The arrangements for the management of the refuelling outage are described in the Station Management Control Procedure SZB/MCP/034V ‘Outage Management’ which implements the requirements of EDF NGL’s integrated company practice BEG/ICP/OPS/009 ‘Outage Management Process’.

12. To maintain nuclear safety during the outage the scope of work (Ref 3) and outage plan (SXB/IP/582101) were reviewed in advance by the Outage Plan Nuclear Safety Review Group (OPNSRG) resulting in 139 observations being raised (Ref 8). ONR noted the group’s conclusion that:

“The plan has a robust work window structure with no significant threats to nuclear safety, compliance or defence-in-depth. This is consistent with the more routine nature of RO13 compared with other recent outages but it is also indicative of the quality of preparation of the RO13 plans”.

13. During the outage EDF NGL’s Nuclear Safety Group (NSG), which ensures that the requirements for nuclear safety are always met, had permanent representation in the Outage Control Centre (OCC) and at the daily OCC 24 hour look-ahead meetings, to ensure a continuous focus on reactor shutdown safety.

14. The licensee’s own internal regulator, Independent Nuclear Assurance (INA), has provided independent support to the station’s application for start-up through the issue of a cover letter (Ref 10) in advance of the formal concurrence part B statement in-line with EDF arrangements (SRD/PROC/009).

15. To support the concurrence, INA inspectors undertook a number of surveillance activities (Ref 9) both before and during the outage period, oversight of the management processes and specific inspections for key nuclear safety significant tasks.

16. In line with EDF NGL’s arrangements, a team of INA inspectors performed a rapid trending review (RTR) during the first week of the outage, observed by ONR outage project inspector (Ref 11). The RTR report (Ref 12) presents points of positive feedback as well as highlighting areas for improvement during the outage. The station responded positively to the RTR by putting measures in place to reinforce positive findings and to address the improvements identified.
17. Overall the ONR’s nominated site inspector and the project inspector concluded that the licensee’s outage management and focus on nuclear safety was robust.

3.3 **ONR Assessment**

18. ONR’s review process for the outage involved detailed inspections undertaken by several specialist inspectors in addition to the compliance inspections undertaken by the nominated site and project inspectors. Further details of these inspections are given below.

19. The ONR project inspector for the outage also specified and managed the assessment effort from the specialist inspectors and ensured that any findings were adequately addressed.

3.3.1 **Compliance Inspections**

20. Compliance inspections were carried out in accordance with ONR’s integrated intervention strategy (IIS) for SZB ([Ref 7](#)). The inspections were undertaken by specialist inspectors from several discipline areas, as well as the site and outage project inspector.

21. **Licence Condition 17 – Management systems**: This compliance inspection was undertaken by the ONR quality and management systems (QMS) inspector with the findings summarised in section 3.3.9 of this report.

22. **Licence Condition 18 – Radiological protection**: This intervention was undertaken by the ONR radiological protection (RP) inspector with the findings summarised in section 3.3.3 of this report.

23. **Licence Condition 22 – Modification or experimenting on existing plant**: This compliance inspection was undertaken by the ONR electrical engineering (EE) inspector with the findings summarised in section 3.3.5 of this report.

24. **Licence Condition 26 – Control and supervision of operations**: This compliance inspection was undertaken by the nominated site inspector with the findings summarised in section 3.3.10 of this report.

25. **Licence Condition 28 – Examination, inspection, maintenance and testing (EIM&T)**: Three separate compliance inspections were undertaken against LC28. These were undertaken by the ONR EE inspector, the ONR control and instrumentation (C&I) inspector and the ONR structural integrity (SI) inspector. The summarised findings of these inspections are presented in sections 3.3.5, 3.3.6 and 3.3.7 of this report respectively.

26. **Licence Condition 30 – Periodic shutdown**: The start-up meeting was attended by the superintending inspector – operating reactors, site inspector and project inspector and is discussed in section 3.7 below.

27. Overall the licensee has demonstrated adequate compliance with the site licence conditions and has further provided a good internal challenge through INA. There are no inspection findings that give rise to ONR not granting consent to start up the SZB reactor.

3.3.2 **Cycle 14 Core Load Safety Case**

28. Previous cycles have utilised one or more British Nuclear Fuels Ltd (BNFL) fuel assemblies, from the initial reactor charge at SZB, in addition to the Areva fuel. For the first time cycle 14 will use Areva fuel assemblies exclusively, consisting of a mixture of fresh (un-irradiated) and irradiated Areva M5 clad high thermal performance (HTP) fuel assemblies in the SZB reactor core.

29. The SZB Core 14 re-load safety case has been assessed by an ONR specialist (fuel) inspector ([Ref 13](#)) and is satisfied that the licensee has conducted suitable and sufficient...
safety analyses, with respect to some small dimensional clearances introduced by Areva for
the fresh fuel assemblies to be loaded in cycle 14. The licensee’s analysis has identified and
analysed the key nuclear safety challenges posed by the changes and the ONR specialist
inspector is content that the licensee has justified that the changes will not have a detrimental
effect on the functional and safety performance of the new fuel assemblies during fuel
handling, normal operation or under fault conditions.

30. The licensee has proposed the removal of secondary source assemblies (SSA) from the core
for cycle 14. Whilst the proposed modification is not formally permissioned, the ONR specialist
inspector is satisfied that the licensee has adequately considered the safety impacts arising
from removal of the SSAs and has shown that these are acceptable. The ONR specialist
inspector also notes that the proposed removal of the SSAs does not foreclose any option to
procure and reload SSAs in the future.

31. In the ONR specialist inspector’s opinion, the licensee has adequately analysed two new
potential core mis-load scenarios (recently identified by the licensee to ensure that the mis-
load safety case remains comprehensive) and has shown that adequate margins to safety are
maintained for both faults. An ONR issue relating to SZB PSR2 submission calling for
improvements to core mis-load analysis is ongoing; however the ONR specialist inspector
judges that the licensee’s loading practices are in line with relevant practice elsewhere. The
ONR specialist inspector is therefore satisfied that this is not an issue for cycle 14, and the
issue will be pursued by ONR as part of further engagement with the licensee on PSR2
findings.

32. The ONR specialist inspector undertook an intervention (Ref 21) at which the licensee
provided justification for deferral of the rod cluster control assemblies (RCCA) inspections,
formally presented in engineering change EC 351098. The ONR specialist inspector is
satisfied that the licensee’s arguments for deferral of RCCA inspections at RO13 are adequate
and judges that further assessment of the EC is not required in support of consent to restart.

33. Visual inspection on receipt of new fuel assembly 4D11 revealed a surface finish anomaly on
the flaring of one of the control rod guide tubes of the assembly. The licensee correctly
quarantined this assembly and undertook an options study to decide how to deal with the
anomaly. From the available options considered the licensee justified that the ALARP option
was to load the assembly as is (i.e. with no rework of the defect). The inspector was content
with this decision on the basis that the licensee clearly understood the source of the defect
and demonstrated from reasoned arguments that particle release from the defect was unlikely.
The licensee further showed that even with particle release from the defect impairment of
control rod entry into the guide tube would be unlikely and the licensee’s safety case is also
tolerant to a single control rod failing to deploy into its assembly guide tube.

34. Following core off-load the licensee traditionally produces two key reports (summarising
measurements, inspections etc. conducted on the fuel and core components off-loaded from
the core, on the fresh fuel shipped from the fuel vendor to the site and on the condition of the
core’s primary coolant). These reports are of importance since they summarise the
serviceability of the fuel (fresh and irradiated) and core components to be loaded for the next
cyCLE. The ONR specialist inspector has examined these reports and has confirmed that all
fuel and core components, to be loaded for cycle 14, meet the licensee’s acceptance criteria
and hence can be regarded as being fully serviceable for the next cycle.

35. Based on the assessment and interventions on the proposed cycle 14 core, the ONR
specialist inspector judges the safety case for core re-load to be adequate, with no safety
significant issues identified. The ONR specialist inspector has no objection to the SZB reactor
returning to power following its statutory refuelling outage in 2014.
3.3.3 Radiological Protection

36. An ONR radiological protection (RP) inspector completed a review (Ref 14) of the work undertaken by the station's health physics team prior to commencement of the outage and during its conduct. The review included detailed assessment of the ALARP report prepared by the station (SZB/THR/103) and assessment of dose accrual during the progress of the first phase of the outage.

37. The RP inspector was content with the ALARP assessment's scope and methodology for the determination of likely dose accrual for each component of outage work and with the station's use of historical personal dose and plant radiation field data for this purpose. The use by the licensee of a hierarchical system of dose mitigation which encompasses: engineered controls, administrative arrangements (including comprehensive training of staff and contractors) and personal protective equipment provision was noted by the inspector and judged to be a good example of prior risk assessment practice.

38. In the RP inspector's judgement, the station has developed adequate dose management strategies in relation to: its own corporate radiation exposure limits and investigation levels; statutory dose limits, and to the overarching need to restrict personal radiation exposures, so far as is reasonable practicable.

39. The RP inspector’s review of dose accrual up to day 19 of the 40 day outage did not identify any exposures above either corporate or statutory personal dose limits and, excepting two campaigns of work where dose accrual was above profile for day 19 and in one case a factor of two greater than the dose budget for the work, the outage programme was running overall both to time profile and cumulative dose targets.

40. The RP inspector's assessment did not reveal any significant issues and therefore has no objection to ONR issuing a consent to restart the reactor.

3.3.4 Mechanical Engineering Inspection

41. The ONR mechanical engineering (ME) inspector visited the site between the 28th and 30th October 2014 to undertake his inspection (Ref 15). Prior to the visit the ME inspector had sampled the outage intentions document and agreed with the site inspector the areas which he would sample.

42. The ME inspector met with a member of the nuclear safety group and discussed the results of the refuelling outage 12 control rod drop tests (the drop tests are carried out post re-fuelling, prior to restart). He was satisfied that suitable testing is carried out to ensure operation of the control rods are inline with the safety functional requirement. The results of the control rod drop tests continue to be inline with the safety case and technical specification requirements and show no sign of deterioration.

43. The trialling of new methods of enhancing effectiveness of the control rods in terms of fuel bowing measurements were judged to be consistent with the ME inspector’s expectations for continuous improvement and best available technology. The ME inspector also noted the licensee’s focus on foreign material exclusion (FME) in and around the fuel pond, control rod mechanisms and associated maintenance areas, to ensure control rods continue to operate inline with safety functional requirements.

44. The ME inspector sampled the arrangements for the control of foreign material exclusion, and participated in two plant walk-downs of the containment building and fuel building. The ME inspector concurred with the findings of the INA rapid trending review - that ‘improvements to the standards seen in specific areas of FME control could be rapidly achieved in terms of general housekeeping around FME standard areas’. In the ME inspector's judgement this could deliver significant benefits. This matter was addressed by the ME inspector through
direct discussion with the fuel building engineer and through a condition report, raised by a member of INA (CR906738). Overall the ME inspector was satisfied and considered the FME practices to be adequate.

45. The ME inspector reviewed arrangements for plant configuration during the outage, sampling prepared documentation in relation to the outage plan and plant item operating instructions. The ME inspector also observed an outage mode change meeting (mode 5 [reactor head tensioned] to mode 6 [reactor head not tensioned]). The ME concluded that, in his judgement, the outage plan and mode change meetings provide suitable control over plant configuration.

46. The ME inspector discussed the proposed modification of the turbine driven auxiliary feed-water pump condensate system (Ref 22). As there is no functional claim made within the licensee’s safety case on the system steam trap equipment following a seismic event, the ME is satisfied that the substantiation for use of commercial grade equipment to maintain the pressure boundary is adequate and delivers the safety functional requirements of the system.

47. Based on the interventions undertaken by the ME inspector, he found no nuclear safety issues and therefore supports the consent to start-up the reactor.

3.3.5 Electrical Engineering Inspection

48. Two ONR specialist electrical engineering (EE) inspectors attended station during the outage and undertook an inspection (Ref 16) of the implementation of the station’s arrangements for ensuring compliance with LC 28 - Examination, inspection, maintenance and testing and LC22 – Modification on existing plant.

49. Interactions with SZB’s electrical engineering staff during the outage have confirmed that the activities undertaken have been conducted in accordance with the licensee’s work control system, recorded appropriately in station documents and confirmed as complete by suitably qualified and experienced persons.

50. The electrical maintenance activities listed and outlined in the OID, along with any emergent work, once completed, are in the EE inspector’s judgement adequate to deliver the intent of ensuring safety and reliability of the electrical plant and equipment, in respect of nuclear safety. Some emergent activities remained outstanding at the time of the EE inspectors assessment, however commitment has been received from the station (Actions RO13- 7 thru 12, Table 2) that remaining work will be completed in full, or proposed ways forward will be recorded under the station’s outage arrangements prior the return to service.

51. The EE inspector’s inspection of a representative sample of maintenance documentation confirmed that the activities have been completed; concluding that no adverse findings have occurred with any of the completed works nor are expected with the outstanding activities. A review of the current level of progress has provided a sufficient level of confidence that this will also be the case for the remaining activities.

52. On the basis of the work sampled, the EE inspectors concluded that the outage electrical work has revealed no matters of significant safety concern. The EE inspectors therefore considered that the electrical work undertaken as part of this outage should support the safety and reliability of the electrical plant and equipment, during the start-up and operation of SZB following its return to service.

53. In respect of the safety related electrical engineering work, the EE inspectors did not identify any matters that should prevent ONR from granting consent for Sizewell B to restart and operate for a further period.
3.3.6 Control and Instrumentation Inspection

54. The ONR control and instrumentation (C&I) inspector carried out an inspection (Ref 17) against relevant work activities that have been carried out in relation to C&I equipment and systems important to safety in order to confirm that this remains fit for its intended purpose at SZB.

55. The C&I inspector covered a wide range of C&I equipment and activities associated with nuclear safety, including neutron flux detectors, maintenance and test procedures, modifications (including those to the polar crane) and the site response to events.

56. Based on the sampling undertaken, the C&I inspector is content that the C&I equipment is in a suitable condition for continued operation, and that this is being adequately supported by appropriate processes and documentation.

57. None of the actions raised by the C&I inspector are considered to be significant enough to impact on the restart decision and will be tracked where appropriate through the ONR issues database and routine C&I level 4 interventions (Table 2 - RO13-16).

58. From the evidence obtained during the intervention, the C&I inspector has judged that there are no significant matters that may impact on nuclear safety and he did not identify any significant issues in relation to the C&I equipment and systems that should prevent ONR from issuing consent to allow SZB to restart.

3.3.7 Structural Integrity Inspection

59. Prior to the intervention the SI inspector reviewed the outage intents document which was in line with his expectations for ASME (American Society for Mechanical Engineers) section XI inspections, as per the design code for this plant.

60. The SI inspector reviewed minutes of the structural integrity panel (SIP) meeting. This meeting presented the current status of the outage-related structural integrity work. The minutes did not suggest that there were any significant issues arising before the SIs attendance at site. From a structural integrity viewpoint, the SI inspector considered that the outage was progressing well and the materials and inspection processes were being controlled properly.

61. The pressure system safety regulations (PSSR) 2000 inspections were progressing to plan and there had been good progress in rewriting the written schemes of examination sufficient to achieve the outage. EDF NGL are completing the process of updating the PSSR 2000 written schemes of examination in conjunction with Lloyds Register which upon completion will be shared with ONR with a statement that these are up to date and reflect the work being done. This matter is being tracked separately through the ONR issues database and is not a restart action (Issue No: 3011).

62. The SI inspector considered that the materials and inspection programmes are proceeding satisfactorily, and that the two deletions made to the scope have been properly put through due process and are acceptable. The SI inspector’s judgement is that the flow-assisted corrosion (FAC) inspections have progressed well and that commitments to change out affected components, made at the previous outage, have been discharged appropriately.

63. The SI inspector considered that the level and understanding shown by the Independent Nuclear Assurance (INA) representative is good and is satisfied that due process has been followed in this area.

64. The SI inspector reviewed the INSA statement of the SZB return to service EC (Ref 26) and is satisfied (Ref 29) that the EC has completed due process from a structural integrity
perspective. The SI inspector noted with disappointment the INSA comment relating to the high number of deletions from the RO13 inspection scope. Whilst not an area of significant concern, the SI inspector has raised an issue (# 3021) on the ONR database to progress this point with the licencee via routine level 4 interventions to ensure the inspections are completed during the RO14.

65. Based on the sampling undertaken, the SI inspector found no significant issues and therefore has no objection to ONR granting the consent to restart the station’s reactor.

3.3.8 Civil Engineering Inspection

66. The civil engineering (CE) inspector carried out an assessment of EIM&T and the associated findings carried out as part of RO13 (Ref 19). The assessment included communications with the station to resolve queries; however the CE inspector judged that a site visit was not required for the purpose of the assessment.

67. The CE inspector reviewed the Appointed Examiners (APEX) summary report (Ref 36) and discussed the contents with the shadow and deputy APEX who were standing in for the APEX for this outage (Ref 24). The content of the APEX summary report was inline with the CE inspector’s expectations, and the licensee’s responses adequately addressed the comments raised during the assessment.

68. The CE inspector assessed the selection of safety classified structures being inspected as part of RO13 and judged these to be an adequate representative sample. The codes and standards used during the surveillance work (predominantly AMSE XI) are, in the CE inspector’s judgment, adequate and appropriate for this work and have appropriate inspection intervals.

69. The CE inspector is satisfied that the licensee’s safety case demonstrates the absence of significant defects or, where defects have been found, adequate safety arguments have been made for the next period of operation.

70. The containment building tendon load values were last checked in 2012 and assessed by ONR prior to giving consent to return the reactor to power after RO12 in July 2013. The next tendon load checks are planned for 2017. On this basis the tendons have not been considered as part of this assessment scope.

71. The CE inspector reviewed the updated APEX report (Ref 34) prior to mode 4 up conditions being achieved and is satisfied that the report has completed due process and from a civil engineering perspective, is adequate to allow the reactor to return to power (Ref 30).

72. Based on the assessment undertaken by the CE inspector, he judged that there are no matters that would prevent ONR from granting consent to the return to service of the reactor.

3.3.9 Quality Assurance and Management Systems

73. The quality and management system inspector (QMS) undertook an inspection against LC17 - Management systems and concluded that for the areas inspected the arrangements were adequate and consistent with relevant quality management oversight arrangements (Ref 20).

74. In the QMS judgement, SZB have a risk based, intelligence-driven approach to deploying QA resources and the targeting of surveillances for the outage. Based on the sampling undertaken, the QMS was satisfied that the programme was being well managed and supported, and that the surveillances were of a good standard.

75. The QMS observed the weekly quality forum which was attended by the contract partners and a number of EDF representatives including the lead INA evaluator at SZB. All parties were
fully engaged in the meeting and it was noted that surveillance reports were delivered consistently with no discernible trends.

76. As part of the inspection, the QMS observed surveillances being undertaken by the station quality engineer (SQE) and the quality assurance lead on an installation task, a maintenance task and a project being undertaken by the investment delivery team. In both instances the QMS found the work to be robust, effective and well managed, with appropriate records and good quality management arrangements in place.

77. Field supervision arrangements were discussed with the maintenance manager and were found to be mature and well managed, with the role understood and implemented in accordance with fleet procedural requirements.

78. Overall the QMS was satisfied with the arrangements sampled and found no matters of safety significance which would prevent the returning to service of the SZB reactor.

3.3.10 Control and Supervision of Work

79. The nominated site inspector (NSI) undertook a specific intervention to inspect the implementation of the licensee’s arrangements for the control and supervision of operations (Ref 15) in accordance with the Sizewell B IIS plan (Ref 7). The NSI discussed the general organisational arrangements of the light electrical maintenance group with the C&I technician and team leader.

80. Two jobs were selected which were scheduled for execution within the inspection period. Both jobs were plant maintenance instructions (PMI) related and required start permission in person from the duly authorised person (DAP). The NSI found the arrangements and practices to be adequate and broadly in line with expectations.

81. Based on the sampling undertaken as part of the inspection, the NSI found no significant issues and therefore from an LC26 perspective, found no matters which would prevent the returning to service of the SZB reactor.

3.4 Japanese Earthquake Response Project

82. As part of the outage, ONR outage project inspector (PI) undertook a plant walk-down of the RO13 JER project installations with the EDF JER lead project engineer, project engineer and member of INA. The JER work is subject to a separate dedicated ONR intervention and is included within this PAR for completeness. The areas covered as part of this walk-down were:

- Installation of the passive auto-catalytic hydrogen re-combiners (PAR): In total there are 25 PAR units being installed, six of which were due to be fitted directly to the polar crane. Four units were installed during RO12 due to some initial design and installation difficulties, the remaining 21 units were installed during RO13. ONR accepts this progress and notes that the licencee is making reasonable progress on installation of the remaining PARs.

- JER pipe-work tie-ins: The RO13 JER pipe-work modifications tie into the refuelling and condensate storage tanks, the auxiliary feed, primary circuit and the external containment water injection system to provide extended diverse supplies for response to ‘beyond design basis’ faults. These tie-ins will provide further diverse means of supplying water cooling to safety critical systems such as the reactor pressure vessel, containment building and auxiliary systems. These modifications are for ‘beyond design basis’ faults only and are in addition to the existing systems required under the station safety case.
Nitrogen (N2) tie-ins: The site accumulators are supplied by dedicated air compressors. In the event that the compressors fail the safety case makes claim on a bank of N2 bottles. The JER project to install additional pipe-work provides a diverse means of supplying additional N2 to the accumulators should the first two lines of supply fail.

83. At the start-up meeting (Ref 23) EDF informed ONR that the clean air train (CAT) and the mode 6 [reactor head de-tensioned] tie-ins would not be completed during this outage. EDF explained that complex design issues and clashes within work areas affected by construction of the modifications have led to the conservative decision to take the opportunity to improve the design and install in RO14.

84. As a result of this discussion an action was placed for the licensee to agree with the nominated site inspector the programme for delivery of the balance of the JER mechanical tie-in work. (Action RO13-19, ONR Issue No: 3010)

85. Based on the bulk of JER work completed during this outage and the licensee’s commitment to complete modifications the PI is satisfied that all reasonably practicable steps have been taken to progress the JER work to an acceptable position.

3.5 Emergent Issues

3.5.1 Fatigue Management

86. Recent events across the EDF fleet have highlighted the importance of working-time and fatigue management, most recently identified as an underlying causal factor at the gas circulator incident at Hunterston B. The station’s industrial health and safety team also highlighted concerns over the control of the matter as part of the outage readiness review (HSES/REP/ISB/0174/SZB), although resolved that whilst arrangements were not ideal, they were both legally compliant and in accordance with EDF guidance.

87. The PI spoke to the Human Resources Manager to determine what steps were taken to ensure working-time and fatigue management were adequately controlled and monitored through the outage period (Ref 15). PI was informed that the working rotas were prepared and approved in advance of RO13 and aligned with EDF arrangements (BEG/SPEC/HR/23).

88. The PI sampled the health and safety committee minutes along with the process for capturing and recording working time derogations and is satisfied with the adequacy of the arrangements.

89. Whilst the working hours were high; the PI noted that they are generally limited to the outage period (assumed to be six weeks for risk assessment and planning purposes). Based on the above discussion and the sample review of EDF guidance, the PI judges that the arrangements put in place by the licensee were adequate.

3.5.2 Polar Crane Modifications

90. Two modifications associated with the operation of the polar crane were undertaken as part of the RO13 outage, replacement of an obsolete seismic monitoring control panel and the installation of a wireless load monitoring system. Both these modifications have required unplanned alterations following installation.

91. The replacement of the seismic panel resulted in the failure of the power supply on two occasions. This led to the panel being returned to the original engineering manufacturer prior to re-installation and commissioning.
92. The load monitoring system required re-work after discovery that the load pin was manufactured to the incorrect size. The pin was re-machined and installed under an EC. The C&I inspector undertook an inspection of the proposed changes to the polar crane load monitoring system as part of the outage visit. Based on the sampling undertaken, the C&I inspector concluded that the modification would not cause a detriment to the crane.

93. The C&I inspector did highlight shortcomings in EDF’s approach to the modification regarding the design intent, safety justification and timeliness of the delivery of the load monitoring system. However the C&I inspector concluded that the modification would not cause a detriment to the crane (see section 3.3.6). ONR has raised an action against EDF to perform a lessons learned review, with the scope agreed by ONR. ONR will monitor this action through action RO13-16 and routine level 4 C&I interventions with the station.

3.5.3 Non-Trained Load Non-Return Valve Fault

94. Performance of routine surveillance requirements (STO-EG-011-B) under the station’s plant maintenance schedule revealed that non-return valve (NRV) EG-V0631 was not seating, resulting in a measurable flow passing the valve. This was outside of the technical specification requirements causing EDF to convene an operational decision meeting, (Ref 33) the outcome of which was to delay the emptying of the re-fuelling cavity to allow maintenance work to be undertaken on the valve.

95. Subsequent intrusive maintenance carried out on the NRV confirmed it was not seating correctly, preventing an adequate seal. In response the NRV was stripped down, rebuilt, and retested (under STO-EG-011-B). The NRV has been returned to operational status in line with station arrangements (Ref 33).

96. The NRV was not related to the outage planned work however its operational testing and subsequent repair impacted on the outage programme. The PI is satisfied has been dealt with appropriately, in line with stations EIM&T arrangements and that it does not affect the decision on ONR consent to the returning to service of the reactor.

3.6 Plant Modifications (Engineering Changes – ECs)

97. Engineering changes were subject to a scope freeze as part of the pre-outage milestone plan. Attachment 3 (Ref 32) of the licensee’s request for consent states that 154 ECs were identified prior to the start of the outage, 25 of which were category 2. No category 1 ECs were raised as part of RO13.

98. As at 19 November 2014, there were 39 installed temporary modifications. During the outage period, 11 temporary ECs have been installed and 24 removed. It is anticipated a further 6 ECs will be removed before the end of RO13.

3.7 Start-Up Meeting

99. The SZB start-up meeting was held on the 12 November 2014 chaired by the station director and attended by the outage programme leads (Ref 23). ONR’s attendance at the start-up meeting consisted of the operating reactor programme superintending inspector, nominated site inspector and the RO13 project inspector.

100. The agenda covered:

- Minutes previous meeting and status of actions
- Outage manager report
- Feedback from ONR site tour
- Safety management review
- Maintenance review and projects
- Safety case review by exception
- Independent nuclear assurance report
- Review of start-up issues and consent

101. Three actions were raised during the meeting and added to the action tracking list (Table 2 - RO17-19). It was concluded that no start-up issues had been identified through the outage, and all outstanding actions would be tracked to completion via the action tracker sheet and ONR issues database as appropriate.

3.8 Regulatory Considerations

102. The Station Director has sought ONR’s consent to start-up of the reactor at SZB under LC 30(3) in letter NSL SZB 50808R dated 20 November 2014 (Ref 7).

103. In support of the application for grant of the consent, the Station Director has confirmed that all the necessary maintenance work has been carried out (with the exception of those activities which have to be performed on-load or during start-up (Ref 31)) and that the reactor and associated plant is fit for start-up.

104. All ONR actions that require resolution prior to start up of the reactor at SZB have been completed (Ref 28).

105. The request is supported by a covering letter (Ref 10) from the regional INA manager in advance of the completed concurrence part B in-line with EDF arrangements (SRD/PROC/009).

106. The request is supported by statements from the Appointed Examiner (Ref 34) for the pre-stressed concrete containment and the competent persons for the PSSR regulations 2000 (Ref 25).

107. The licensee’s Independent Nuclear Safety Assessment (INSA) certificate (Ref 26) for the return to service EC (Ref 27) also confirms that the required work has completed due process and that there are no caveats placed on the start up of the reactor at SZB.

108. Based on the sampling of arrangements undertaken by ONR during RO13, I am satisfied that the licensee has demonstrated adequate arrangements under licence condition 30 – Periodic shutdown, which have been satisfactorily implemented.

109. This project assessment report (PAR) and associated licence instrument 543 have been produced in accordance with ONR procedures. The licence instrument is one of the standard formats covered by NS-PER-IN-001 and therefore does not require review by the Solicitor’s Office.
4 MATTERS ARISING FROM ONR’S WORK

110. There are no significant findings arising from ONR’s work on the periodic shutdown that would prevent the start-up of the reactor at SZB.

5 CONCLUSIONS

111. ONR’s review process for the outage has followed the requirements and guidance set out with the ONR technical inspection guide for licence condition 30 (NS-INSP-GD-030) and has incorporated specialist assessment and inspection by relevant ONR inspectors across the following areas:

- Periodic shutdown work scope and their respective quality plans;
- Scheduled plant examination, inspection, maintenance and test programme;
- Radiological protection arrangements;
- Significant plant modification and commissioning activities;

112. The licensee has provided adequate responses to the ONR actions required prior to the start up of the reactor at SZB which were identified during the outage, or carried forward from other related meetings and inspections (Table 1).

113. The licensee has confirmed all work required to be performed in advance of the start-up will be completed, and that the reactor at SZB will be safe to start up and operate until the next periodic shutdown (Ref 1). Remaining information will be reported to the ONR through the periodic shutdown follow-up report (28 day report), or in specific documents to be submitted to ONR separately.

114. The sampling undertaken by the ONR specialist inspectors has revealed no significant unresolved issues which would prevent the reactor at SZB from returning to power.

115. The periodic shutdown of the reactor at SZB has been undertaken in accordance with the work described in:

- The technical specification surveillance programme;
- The periodic shutdown documentation;
- The start-up meeting briefing pack;

116. The conclusion of this PAR is that ONR should grant consent for the start up of the reactor at SZB, and to permit its operation for a further period, following the periodic shutdown in 2014.

117. A consent licence instrument (LI 543, Ref 2) has been prepared by the ONR SZB project inspector and is presented with this report for signature by the ONR deputy chief inspector who is a person authorised to act on behalf of ONR.

6 RECOMMENDATIONS

118. The ONR project inspector recommends that the superintending inspector accepts this project assessment report, and endorses ONR granting consent to the start-up of the reactor at SZB power station.

119. The ONR project inspector recommends that the deputy chief inspector, who is authorised to act on behalf of ONR as described in the delegated authorities, should sign licence instrument number 543 granting consent to start up the reactor at SZB, following the 2014 periodic shutdown, and it be released to the licensee to permit this outcome.
REFERENCES

1) Station Director's letter: Request for Consent to start-up the Reactor. NSL SZB 50808R dated 20 November 2014 (TRIM: 2014/426150)
2) ONR Licence Instrument 543 – Licence Condition 30(3) Consent to restart (TRIM: 2014/245765)
6) Sizewell B Power Station RO13 Start-up Meeting Briefs. SZB/OZR/228, Issue 000, Nov 2014 (Trim 2014/411335)
7) Sizewell B Integrated Inspection Strategy (TRIM: 2014/337275)
10) Memorandum stating INA’s position on SZB Return to Service from RO13 – INA/SZB/2014/001 (TRIM: 2014/426152)
11) Intervention Record – Independent Nuclear Assurance Rapid Trending Review - project inspector (TRIM 2014/406096)


24) Queries raised by ONR Civil Engineer via E-mail on the In-service inspections (Trim 2014/421404)

25) Lloyds Register - PSSR Competent Person statement. (Trim 2014/423329)

26) Return to service EC350389 INSA Statement (Trim 2014 2014/427982)

27) Return to service EC350389. (Trim 2014/427972)


29) E-mail from Structural integrity specialist assessor in response to Return to Service EC350389 INSA statement (TRIM: 2014/426155)

30) E-mail - Civil Engineering assessor's statement on APEX Report - In Service Inspection Mode 4 Up Report (TRIM: 2014/426156)

31) Remaining surveillances required for power operations (TRIM: 2014/425037)

32) Modification EC Progress Statement (TRIM: 2014/426157)

33) Confirmation of successful testing of NRV 1EG-V0631 and Minutes of Operational Decision Meeting associated with leaking NRV (TRIM: 2014/426158)

34) APEX Report - In Service Inspection Mode 4 Up Report – Civil Scope Inspections (Trim 2014/426044)


36) RO13 In-service inspection Summary Report: Civil Scope Inspections, E/EAN/BNCB/0849/SZB/14, Rev. 000 - (TRIM: 2014/421319)
Table 1 – RO13 ONR Action Tracker

<table>
<thead>
<tr>
<th>Action Number</th>
<th>Action Title</th>
<th>Restart Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO13-1</td>
<td>Identify how SZB will address weaknesses in unified command and control.</td>
<td>Closed prior to RO13</td>
</tr>
<tr>
<td>Ro13-2</td>
<td>Identify how the significant amount of project work over the next 12-18 months is going to be prioritised to ensure nuclear safety remains the overriding priority. Also include an explanation of the ‘One Plan Process’.</td>
<td>Closed prior to RO13</td>
</tr>
<tr>
<td>RO13-3</td>
<td><strong>SZB to issue the Fuel Operability Report (E/REP/BCBB/0080/SZB/14) to ONR</strong></td>
<td>Y</td>
</tr>
<tr>
<td>RO13-4</td>
<td><strong>SZB to issue APEX report to ONR</strong></td>
<td>Y</td>
</tr>
<tr>
<td>RO13-5</td>
<td><strong>SZB to issue RO13 Return to Service Bucket EC and INSA.</strong></td>
<td>Y</td>
</tr>
<tr>
<td>RO13-6</td>
<td><strong>SZB to issue PSSR to support Consent application letter</strong></td>
<td>Y</td>
</tr>
<tr>
<td>RO13-7</td>
<td>EDF Energy NGL to confirm to ONR Electrical inspector that the 3.3kV cable feeding 415V CW Pump House/Hypo Plant LC1 (1PG-S033) has been replaced.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-8</td>
<td>EDF Energy NGL to provide ONR Electrical inspector with the safety case documentation to justify the deferment of the maintenance activities associated with the 11kV Station Board 1 (1PA-S012-1) and 3.3kV Unit Auxiliary Board 1 (1PB-S012-1).</td>
<td>N</td>
</tr>
<tr>
<td>RO13-9</td>
<td>EDF Energy NGL to provide ONR Electrical inspector with a copy the Commercial Grade Dedication paper (EC349885).</td>
<td>N</td>
</tr>
<tr>
<td>RO13-10</td>
<td>EDF Energy NGL to confirm to ONR Electrical inspector that work identified in EC 344045 associated with transducer replacement has been completed.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-11</td>
<td>EDF Energy NGL to confirm to ONR Electrical inspector that cables and pipes located on the 400kV cable sealing towers associated with Generator Transformer 1 have been properly secured.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-12</td>
<td>EDF Energy NGL to undertake an extent of condition review of the cable and pipe clamps on the remaining Generator, Station and Unit Transformers and advise the ONR Electrical inspector of the outcome.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-13</td>
<td>EDF Energy NGL to review the fire-door arrangements between the Essential Diesel Generator 1 cell and the adjacent switch-room and provide justification to ONR Electrical inspector that the wedging of the doors open by the temporary 415V cable does not compromise the fire safety case or risk damage to the cable.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-14</td>
<td>EDF Energy NGL to review the fall hazard adjacent to the Essential Diesel Generator 1 turbochargers and to determine if similar issues exist around the remaining Essential Diesel Generators. EDF Energy NGL to advise ONR site inspector and ONR Electrical inspector on the short term actions taken to protect personnel and any longer term plans.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-15</td>
<td>EDF Energy NGL to investigate the damage to the cable identified during the walk-down on the cable riser 7422080 ‘U2’ feeding board 1GE-T012 and advise ONR Electrical inspector of the proposed action.</td>
<td>N</td>
</tr>
<tr>
<td>RO13-16</td>
<td>Provide a response to the following actions from the RO13 C&amp;I inspection: 1. Provide a list of the ex-core detectors and the qualified life expiry</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **Closed** prior to RO13 indicates the action was completed before the RO13 C&I inspection.
- **Closed** indicates the action is completed.
- **N** indicates the action is not completed.
2. Provide a copy of the Rad-monitor Time Delay EC proposal.

3. Provide a copy of the investigation and action for CR 832686.

4. Provide a copy of the investigation and action for CR 851110.

5. Provide completion comments from WOC 10455493.

6. Provide a copy of the Pond Fuel Handling EC with EC Category.

7. The scope of the Polar Crane Lessons Learnt Project is to be drafted and agreed by ONR. Lessons Learnt are to be tracked via a CR.

8. Copies of the next 3 STIs to be provided.

| RO13-17 | Agree with the ONR site inspector the method by which station will routinely review and report its Radiological Protection performance to ONR under LC18 | N |
| RO13-18 | Review the frequency of the Quality Forum during outages to ensure that the meeting frequency matches the needs of the outage work programme. | N |
| RO13-19 | Agree with the ONR site inspector the programme for delivery of the balance of the JER Mechanical Tie-In work. | N |
### Table 2 – RO13 ONR Actions Closed Prior to Re-start

<table>
<thead>
<tr>
<th>Action Number</th>
<th>Action Title</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO13-3</td>
<td>SZB to issue the Fuel Operability Report (E/REP/BCBB/0080/SZB/14) to ONR</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-4</td>
<td>SZB to issue APEX report to ONR</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-5</td>
<td>SZB to issue RO13 Return to Service Bucket EC and INSA.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-6</td>
<td>SZB to issue PSSR to support Consent application letter</td>
<td>Closed</td>
</tr>
<tr>
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<td>EDF Energy NGL to confirm to ONR Electrical inspector that the 3.3kV cable feeding 415V CW Pump House/Hypo Plant LC1 (1PG-S033) has been replaced.</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-8</td>
<td>EDF Energy NGL to provide ONR Electrical inspector with the safety case documentation to justify the deferment of the maintenance activities associated with the 11kV Station Board 1 (1PA-S012-1) and 3.3kV Unit Auxiliary Board 1 (1PB-S012-1).</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-9</td>
<td>EDF Energy NGL to provide ONR Electrical inspector with a copy the Commercial Grade Dedication paper (EC349885).</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-10</td>
<td>EDF Energy NGL to confirm to ONR Electrical inspector that work identified in EC 344045 associated with transducer replacement has been completed.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-11</td>
<td>EDF Energy NGL to confirm to ONR Electrical inspector that cables and pipes located on the 400kV cable sealing towers associated with Generator Transformer 1 have been properly secured.</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-12</td>
<td>EDF Energy NGL to undertake an extent of condition review of the cable and pipe clamps on the remaining Generator, Station and Unit Transformers and advise the ONR Electrical inspector of the outcome.</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-13</td>
<td>EDF Energy NGL to review the fire-door arrangements between the Essential Diesel Generator 1 cell and the adjacent switch-room and provide justification to ONR Electrical inspector that the wedging of the doors open by the temporary 415V cable does not compromise the fire safety case or risk damage to the cable.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-14</td>
<td>EDF Energy NGL to review the fall hazard adjacent to the Essential Diesel Generator 1 turbochargers and to determine if similar issues exist around the remaining Essential Diesel Generators. EDF Energy NGL to advise ONR site inspector and ONR Electrical inspector on the short term actions taken to protect personnel and any longer term plans.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-15</td>
<td>EDF Energy NGL to investigate the damage to the cable identified during the walk-down on the cable riser 7422080 ‘U2’ feeding board 1GE-T012 and advise ONR Electrical inspector of the proposed action.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-16</td>
<td>Provide a response to the following actions from the RO13 C&amp;I inspection: 1. Provide a list of the ex-core detectors and the qualified life expiry date for each.</td>
<td>Open</td>
</tr>
<tr>
<td></td>
<td>2. Provide a copy of the Rad-monitor Time Delay EC proposal.</td>
<td>Closed</td>
</tr>
<tr>
<td></td>
<td>3. Provide a copy of the investigation and action for CR 832686.</td>
<td>Closed</td>
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<td></td>
<td>4. Provide a copy of the investigation and action for CR 851110.</td>
<td>Closed</td>
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<td>5.</td>
<td>Provide completion comments from WOC 10455493.</td>
<td>Open</td>
</tr>
<tr>
<td>6.</td>
<td>Provide a copy of the Pond Fuel Handling EC with EC Category.</td>
<td>Open</td>
</tr>
<tr>
<td>7.</td>
<td>The scope of the Polar Crane Lessons Learnt Project is to be drafted and agreed by ONR. Lessons Learnt are to be tracked via a CR.</td>
<td>Open</td>
</tr>
<tr>
<td>8.</td>
<td>Copies of the next 3 STIs to be provided.</td>
<td>Closed</td>
</tr>
<tr>
<td>RO13-17</td>
<td>Agree with the ONR site inspector the method by which station will routinely review and report its Radiological Protection performance to ONR under LC18</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-18</td>
<td>Review the frequency of the Quality Forum during outages to ensure that the meeting frequency matches the needs of the outage work programme.</td>
<td>Open</td>
</tr>
<tr>
<td>RO13-19</td>
<td>Agree with the ONR site inspector the programme for delivery of the balance of the JER Mechanical Tie-In work.</td>
<td>Open</td>
</tr>
</tbody>
</table>