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Civil Nuclear Reactors Programme

NNB GenCo: First Project Convergence Point at Hinkley Point C Report for Licence Compliance Cornerstone

> Progress Report ONR-CNRP-PR-14-035 Revision 0 15 December 2014

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EXECUTIVE SUMMARY

This report presents the outcome of ONR's Licence Compliance cornerstone programme of interventions and assessment that examined the development and implementation of NNB GenCo's arrangements and procedures for compliance with conditions attached to Hinkley Point C nuclear site licence. A key objective is to share ONR's overall judgement of the progress NNB GenCo has achieved since it was granted a licence in November 2012.

The Hinkley Point C project schedule is currently constrained pending a final investment decision. Therefore, the opportunities for NNB GenCo to implement, and thus demonstrate the adequacy of, its procedures and arrangements for compliance with the licence are similarly constrained. However, NNB GenCo has used its procedures and arrangements for licence compliance to progress development of the Hinkley Point C reference configuration design, mobilise the development site and complete trial activities at the site. This has permitted ONR to form a judgement on procedures and arrangements that NNB GenCo will be using to execute the project as it embarks upon the early programme of activity in preparation for seeking ONR's consent to place concrete in the first nuclear safety related structure.

The NNB GenCo Nuclear Site Licence Compliance Matrix identifies those procedures and documents that aim to deliver compliance with the licence conditions attached to the standard nuclear site licence. The Matrix identifies two groups of licence conditions.

- Group 1 Licence Conditions required for activities during the construction and installation phases of the project.
- Group 2 Licence Conditions required for activities during commissioning, operation and decommissioning phases of the project.

CONCLUSIONS.

GROUP 1 LICENCE CONDITIONS - CONSTRUCTION AND INSTALLATION

Development of Arrangements for Compliance Group 1 Licence Conditions.

The extant version of the NNB GenCo Nuclear Site Licence Compliance Matrix: Hinkley Point C includes changes to the entries for several Group 1 licence conditions. These changes include the removal of redundant procedures; the introduction of new procedures to improve compliance and clarity of the compliance arrangements; and updated procedures to reflect learning gained during implementation.

Overall ONR judges that the updated arrangements and procedures for compliance with the Group 1 licence conditions:

- address the expectations of ONR published guidance;
- are appropriate for the early construction and installation phases; and,
- represent good practice.

Implementation of Compliance Arrangements

Work Stream C3: On-site Construction Activities

ONR concludes that, for the purposes of the preliminary earthworks and mock-up construction activities, NNB GenCo's arrangements for compliance with LC08 and LC09 are adequate or better. ONR will look to NNB GenCo to continue to develop its arrangements as it prepares to seek consent to commence nuclear safety related construction.

Work Stream C4: Site Incidents

ONR judges the Hinkley Point C organisational learning function: is staffed with personnel competent in the use of NNB GenCo's Organisation Learning Incident Management tool; and, also competent to apply arrangements for compliance with the licence condition.

ONR judges Hinkley Point C's implementation of the arrangements for complying with Licence Condition 07: Incidents on the site to be adequate for this stage of the project and that the site's organisational learning function is committed to their continued development as NNB GenCo prepares to commence significant earthworks activity.

Work Stream C C6: Construction and Installation of New Plant

ONR judges that NNB GenCo's arrangements for compliance with LC19 have been informed by the valuable learning obtained during early non-nuclear safety related construction activities.

The HPC Site Construction Enabling Works team has demonstrated its competence to implement the LC19 arrangements for managing the release of hold points in the construction and installation programme.

ONR judge that the management of project hold points has provided NNB GenCo with the opportunity to exercise the application of its Licence Compliance 19 Company Procedure: Define Manage, and Release Key Hold Point and demonstrate that it provides adequate arrangements for dividing the project into stages and thus facilitate ONR's use of powers to permission the construction and installation of Hinkley Point C

ONR judges that NNB GenCo's Regulatory Interface Office has a mature understanding the regulator's use of primary and derived powers to permission the construction and installation of HPC.

Work Stream C9: Training and Competence

ONR judges NNB GenCo has established an appropriate set of arrangements to comply with the requirements of LC10 on training. These arrangements will also be a key element in meeting its future arrangements for compliance with the Group 2 Licence Condition 12.

Work Stream C10: Design Management

ONR judges that NNB GenCo and its Responsible Designer have each developed procedures which aim to create a seamless process for managing proposed modifications to the Hinkley Point C Reference Configuration design.

Overall ONR judge that implementation of the Hinkley Point C interim modifications process has had a positive impact upon the relationship between NNB GenCo and its Responsible Designer. The Responsible Designer personnel demonstrate strong ownership of the process. ONR concludes that NNB GenCo has demonstrated that the communication of its requirements and the delivery of formal training to Responsible Designer personnel are proving effective.

ONR judges NNB GenCo's Interim arrangements for the technical review of modifications it is accepting for inclusion in the Hinkley Point C Reference Configuration design to be mature and are helping to establish its intelligent customer credentials in respect of its Responsible Designer. Implementation of these arrangements has provided both NNB GenCo and its Responsible Designer personnel with valuable experience of processes that are shared with the arrangements for compliance with LC 20.

Work Stream C12: Siting and Planning

ONR remains satisfied with NNB GenCo's arrangements for preventing unauthorised persons entering the site and thus comply with Licence Condition 2(1).

ONR is satisfied that NNB GenCo is undertaking the significant preliminary earthwork activity within the terms of the current leasing arrangements for the Hinkley Point C licensed site

NNB GenCo has demonstrated satisfactory implementation of its arrangements for complying with Licence Condition 16.

Work Stream C13: Control of Nuclear Matter

ONR judges the procedure for controlling and restricting nuclear matter on the site is adequate for complying with Licence Condition 4.

ONR judge the NNB GenCo personnel responsible for drafting, implementing, testing and overseeing the arrangements for the control of nuclear matter to be proactive and well qualified.

Self-Assessment and Independent Assessment of Group 1 Licence Compliance Arrangements

ONR is satisfied that NNB GenCo has made appropriate use of its arrangements for managing release of the Shadow Hold Point to report a satisfactory position with regard actions arising from self-assessment and independent assessment of its compliance with the Group 1 licence conditions.

GROUP 2 LICENCE CONDITIONS - COMMISSIONING OPERATION DECOMMISSIONING

ONR is satisfied that NNB GenCo is developing its licence compliance arrangements in these areas and that Pre-Operations Department personnel are actively engaged in the design, acceptance and review of relevant design and safety case deliverables.

RECOMMENDATIONS

This progress report makes no formal recommendations.

ONR's existing intervention strategies and Intervention Task Sheets will inform the future programme of interventions for the licence compliance cornerstone work streams. These interventions will inform ONR's judgement of the continued adequacy of NNB GenCo's arrangements as it executes the programme of activities in preparation for seeking ONR consent to commence construction.

LIST OF ABBREVIATIONS

AF Assessment Finding

ALARP As low as is reasonably practicable

BMS (ONR) How2 Business Management System

CSJ Construction Safety Justification

DA Design Authority

FID Financial Investment Decision

FIDD Financial Investment Decision Date

HSE Health and Safety Executive

IACO Independent Assessment Challenge and Oversight

IAEA International Atomic Energy Agency

IC Intelligent Customer

IMS Integrated Management System

ITA Independent Technical Assessment

IWS Integrated Work ScheduleKM Knowledge Management

LC Licence Condition

MDT Multi-Disciplinary Team
MoC Management of Change

NCFSI Non-conformance, Counterfeit, Fraudulent, Suspected Item

NSC Nuclear Safety Committee
OC Organisational Capability

OE Owner's Engineering

OLIM Organisational Learning Incident and Non-conformance Management

ONR Office for Nuclear Regulation

PCER Pre-construction Environment Report

PCSR Pre-construction Safety Report
PDD Project Definition Document

PSA Probabilistic Safety Assessment

QA Quality Assurance

RC Reference Configuration
RD Responsible Designer
RGP Relevant Good Practice

SAP Safety Assessment Principle(s) (HSE)

SHP Shadow Hold Point

TAG Technical Assessment Guide(s) (ONR)

TSC Technical Support Contractor

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1 INTRODUCTION

1.1 Background

- 1. This report presents the assessment and intervention findings for the first project convergence point of the construction phase of the Hinkley Point C project for the overall Licence Compliance cornerstone theme. Convergence points are milestones in the Hinkley Point C project at which ONR records its collective judgement of the performance of NNB GenCo's and its readiness to proceed with the project as outlined in ONRs Construction Intervention Strategy for the UK EPRTM (Refs 1 & 2). It should be noted that this first project convergence point has been introduce prior to the start of construction by agreement between ONR and NNB GenCo, with the objective of exercising licensee and regulatory processes. The aim is to de-risk future key milestones convergence points such as the first primary hold point for the pour of nuclear safety related concrete at the start of the construction phase. This first convergence point will not permission or constrain any activities in respect of NNB GenCo and Hinkley Point C.
- In its role as Owner, Licensee and Intelligent Customer for the Hinkley Point C project, NNB GenCo has identified hold point 1.1.3 Shadow Hold Point as the milestone in its schedule corresponding to the ONR convergence point. The Management Expectation Document (Ref. 3) defines the basis for releasing the hold point, which comprises four cornerstone themes of activities covering: Design and Safety Case; Construction Activities; Organisational Capability; and Licence Compliance. Four Hold Point Review Documents (Refs 4 to 7) present the outcome of these activities, with each report documenting the evidence gathered for the work streams. These documents informed NNB GenCo's recommendation to release the Shadow Hold Point.
- 3. This report is one of four cornerstone summary progress reports presenting ONR's collective view on how NNB GenCo has developed between the granting of the nuclear site licence in November 2012 and release of the Shadow Hold Point in November 2014. The four ONR cornerstones are:
 - Design and Safety case, including the acceptability of Reference Configuration 1 (RC1), NNB GenCo's readiness for full LC20 arrangements, and an assessment of progress on its timely production of Construction Safety Justification (CSJ-01) and Pre-Construction Safety Report (PCSR-3);
 - Organisational Capability, covering the development of NNB GenCo as a capable and competent licensee in its current state and its development towards readiness for start of construction;
 - Licence Compliance, covering the development and status of NNB GenCo
 procedures and arrangements for compliance with the 36 conditions attached
 to the nuclear site licence.
 - Security, Conventional and Fire Safety, covering the development of NNB GenCo's arrangements to meet national security requirements, and for conventional and fire safety issues related to both the design and on-site activities.

1.2 Scope

4. This report on Licence Compliance complements the other cornerstone reports to give ONR's overall view on progress to date. It is based on the progress reports that cover the individual licence conditions work streams:

- C3 On-site Construction Activities. ONR-CNRP-PR-14-041 (Ref 8).
 - LC08: Warning notices
 - LC09: instructions to persons on the site
 - LC11: Emergency arrangements
- C4 Site Incidents and Organisational Learning ONR-CNRO-PR-14-043 (Ref 9)
 - LC07: Incidents on the site
- C6 Construction and Installation ONR-CNRO-PR-14-037 (Ref 10).
 - LC19: Construction or installation of new plant
- C8 Plant Operations ONR-CNRP-PR14-008 (Ref 22)
 - Licence Condition 11: Emergency arrangements Operational considerations
 - Licence Condition 22: Modifications or experiment on existing plant
 - Licence Condition 23: Operating rules
 - Licence Condition 24: Operating instructions
 - Licence Condition 26: Control and supervision of operations
 - Licence Condition 27: Safety mechanisms, devices and circuits
 - Licence Condition 28: Examination, inspection, maintenance and testing
 - Licence Condition 29: Duty to carry out tests, inspections, and examinations
 - Licence Condition 30: Periodic shutdown
 - · Licence Condition 31: Shutdown of specified operations
- C9 Training and Competence ONR-CNRP-PR-14-029 (Ref 11)
 - LC10: Training
 - LC12: Duly authorised and other suitably qualified and experienced persons
- C10 Design Management ONR-CNRP-PR-14-038 (Ref 12)
 - LC20: Modifications to design of plant under construction
 - LC22 Modifications to design of plant under construction
- C12 Siting and Planning ONR-CNRP-PR-14-042 (Ref 13)
 - LC02: Marking of the site boundary
 - LC03: Control of property transactions
 - LC16: Site Plans, Designs and Specifications
- C13 Control of nuclear matter ONR-CNRP-PR-14-04 (Ref 14)
 - LC04: Restrictions on nuclear matter on the site
 - LC05: Consignment of nuclear matter
- 5. The Organisational Capability and Design and Safety Case cornerstone themes led ONR's assessment of NNB GenCo's compliance with the following Licence Conditions.
 - Licence Condition 06: Documents, records, authorities and certificates
 - Licence Condition 13: Nuclear Safety Committee
 - Licence Condition 14: Safety Documentation
 - Licence Condition 17: Management Systems
 - Licence Condition 18: Radiological protection
 - Licence Condition 32: Accumulation of radioactive waste
 - Licence Condition 33: Disposal of radioactive waste
 - Licence Condition 34: Leakage and escape of radioactive material and radioactive waste.

Licence Condition 36: Organisational Capability

1.3 Methodology

6. ONR judgement of NNB GenCo's development was informed by a programme of interventions undertaken in accordance with Office for Nuclear Regulation (ONR) How2 Business Management System (BMS) guidance for intervention planning and reporting (Ref. 15). This routine progress report is produced in accordance with ONR How2 BMS guidance on production of reports (Ref 16).

1.4 Structure of Report

7. The structure of the report is as follows. Section 2 sets out the strategy adopted for this assessment of NNB GenCo arrangements and procedures for compliance with conditions attached to the Hinkley Point C nuclear site licence. Section 3 summarises NNB GenCo's safety case/arrangements. Section 4 summarises the ONR's assessments reported in each licence compliance progress report and Section 5 presents ONR's conclusion and recommendations.

2 ASSESSMENT STRATEGY

2.1 Standards and Guidance

8. The standards and criteria adopted within this assessment are set down in the relevant ONR Technical Inspection Guide (Ref 17) and, where appropriate, ONR Technical Assessment Guides (18) which also identify relevant inspection guidance. The assessment is also informed by relevant good practice exercised by mature licensees.

2.2 Intervention Strategy

- 9. The assessment followed ONR's Intervention Strategy (Refs 1 & 2), and was informed by a programme of level 4 dialogue which aimed to examine:
 - updates to NNB GenCo's compliance matrix since licence granting;
 - communication of arrangements to relevant personnel, e.g. training;
 - implementation of arrangements;
 - dialogue on licensees self-regulation activities.
- 10. Where appropriate the intervention programmes examined the Hinkley Point C site organisation's application of the arrangements and procedures to site activities undertaken since ONR granted the nuclear site licence.

2.3 Use of Technical Support Contractors

11. No technical support contractors have been used in this assessment.

2.4 Integration with Other Assessment Topics

12. Where appropriate the programmes of intervention undertaken for the licence compliance work streams are supplemented by interventions completed the Design and Safety case and Organisational Capability work streams.

2.5 Out of Scope Items

13. There are no out of scope items.

3 LICENSEE'S SAFETY CASE

- 14. NNB GenCo's is not required to present a formal safety case for its arrangements for complying with conditions attached to the nuclear site licence.
- 15. The NNB GenCo Company Document Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 19) identifies those procedures and documents within NNB GenCo's Integrated Management System (IMS) that aim to deliver compliance with the licence conditions attached to the standard nuclear site licence. The Compliance Matrix identifies two groups of licence conditions.
 - Group 1 Licence Conditions required for activities that NNB GenCo expect to undertake during the construction and installation phases of the project. (LCs 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 16, 17, 19, 20, 32, 33, 34, 36)
 - Group 2 Licence Conditions required for activities that NNB GenCo will
 undertake during commissioning, operation and decommissioning phases of the
 project. NNB GenCo has provided a commitment to develop the necessary
 arrangements for complying with these LCs.
 (LCs 5, 12, 15, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 35.)

3.1 Position at Licensing

3.1.1 Conclusions of ONR's Assessment of NNB GenCo's Licence Application

- 16. ONR's assessment (Ref 23) of the procedures and arrangements that NNB GenCo intended to implement in order to comply with the 36 conditions attached to the standard nuclear site licence for installing and operating a two unit EPRTM at Hinkley Point C in Somerset informed the following conclusions.
- 17. NNB GenCo has developed adequate arrangements for complying with the licence conditions assigned to Group 1 and which apply to the early design, procurement, construction and installation phases of the Hinkley Point C project.
- 18. NNB GenCo has demonstrated to the ONR Site Inspector that:
 - It can accurately mark the position of the boundaries to the nuclear licensed site by fences or other appropriate means;
 - It has erected appropriate signage along the boundary with the Hinkley Point A and Hinkley Point B licensed sites.
- 19. NNB GenCo has developed and implemented appropriate arrangements for Licence Condition 02: Marking of the site boundary; that supports the exclusion of clause 4 of Licence Condition 02 until such time as it is safe to mark the site boundary by fences or other appropriate means.
- 20. NNB GenCo's arrangements for compliance with LC19 facilitate the ONR's use of primary or derived powers requiring the licensee to seek permission to commence or thereafter proceed from one stage to next of the construction or installation.
- 21. NNB GenCo's arrangements for compliance with Licence Condition 20 facilitate the ONR's use of primary or derived powers requiring the licensee to seek permission to implement modifications to the design of a plant under construction.
- 22. NNB GenCo's management arrangements for complying with the conditions attached to the standard licence provide adequate control of such part or parts of said arrangements approved by the ONR.

23. ONR notes and accepts NNB GenCo's commitment to the timely development and implementation of detailed arrangements for complying with the licence conditions assigned to Group 2 and which are required for commissioning, operation and decommissioning phases of the Hinkley Point C project. They are adequate for the purposes of licensing.

4 ONR ASSESSMENT

4.1 Scope of Assessment Undertaken

24. The aim of the interventions that informed this assessment was to judge whether NNB GenCo has demonstrated that it had made acceptable progress with the development and implementation of its arrangements for compliance with conditions attached to the standard nuclear site licence as it mobilises personnel and equipment for the start of significant earthworks activity in preparation for start of nuclear safety related construction.

4.1.1 Project Schedule and Significant Developments

- 25. The extent of ONR's assessment of NNB GenCo's progress is dependent upon the Hinkley Point C project schedule. Since licence grant the schedule has permitted NNB GenCo to progress the development and implementation of the Group 1 licence conditions. Significant developments since ONR granted NNB GenCo the nuclear site licence for Hinkley Point C include:
 - remobilisation of the site in spring 2014 following the cessation of activity at the site in 2013;
 - the development and implementation of the Hinkley Point C emergency response organisation and infrastructure.
 - exercising the licence compliance arrangements to control the construction of a non-nuclear safety related construction contract;
 - the use of the arrangements, that facilitate ONR's ability to permission construction and installation, to manage a number of key milestone including the release of project hold points;
 - continued development and implementation of the arrangements, associated supporting documentation and committees that constitute NNB GenCo's interim arrangements for modifications to the HPC reference configuration design, which is informing developments of arrangements for the management of modifications to the design of a plant under construction;
 - the introduction of design changes having the potential to impact upon the site's plot plan or its schedule of buildings; and,
 - development of the Hinkley Point C organisational learning function and implementation of the Organisational Learning Incident Management (OLIM) tool to facilitate compliance with the licence.

4.2 Group1 Licence Conditions – Early Construction and Installation Phase.

4.2.1 Development of Arrangements for Compliance.

26. The extant version of the NNB GenCo Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 18) includes changes to the entries for several Group 1 licence conditions. These changes include the removal of redundant procedures; the introduction of new procedures to improve compliance and clarity of the compliance

- arrangements; and updated procedures to reflect learning gained during implementation.
- 27. In response to ONR issuing a variation to the Hinkley Point C licence, NNB GenCo has introduced a new procedure to comply with the revised Licence Condition 03: Control of property transaction.

4.2.2 Comparison with ONR Guidance and Relevant Good Practice.

- 28. The licence compliance work stream progress reports (Ref 8 to 12) record ONR's assessment of the changes. Overall ONR judges that the updated arrangements and procedures for compliance with the Group 1 licence conditions:
 - address the expectations of ONR published guidance;
 - are appropriate for the early construction and installation phases; and,
 - represent good practice.
- 29. ONR notes and accepts that NNB GenCo arrangements for the revised License Condition 03: Control of property transactions addresses the expectations of this new condition.
- 4.2.3 Implementation of Licence Compliance Arrangements.

4.2.3.1 Work Stream C3: On-site Construction Activities

30. The On-site Construction Activities work stream interventions examined the implementation of NNB GenCo arrangements for Licence Condition 08, 09 and 11. The report First Convergence Point at HPC: Assessment Report for Work Stream C3: On-site Construction Activities (Ref 8) reports the outcome of ONR's interventions and concludes the following.

Licence Condition 08: Warning notices.
Licence Condition 09: Instructions to persons on the site.

- 31. Hinkley Point C site induction for all construction personnel wishing to access the development site:
 - sets clear expectations for persons being inducted, is presented well and utilises a variety of presentation methods to good effect;
 - provides a strong awareness of the risks and hazards associated with a large and complex construction site and gives adequate instructions on risks, hazards and emergency arrangements.
 - is adequate with respect to ensuring that inducted personnel understand the meaning of any warning signals, signs or notices.
- 32. Following the temporary cessation of activity on the site in spring 2013, the briefing given to previously inducted personnel returning to the remobilised site included instructions on actions to be taken in the event of an emergency or accident and the location of internal and external muster points.
- 33. Overall, ONR concludes that, for the purposes of the preliminary earthworks and mock-up construction activities, NNB GenCo's arrangements for compliance with LC08 and LC09 are adequate or better. ONR will look to NNB GenCo to continue to develop its arrangements as it prepares to seek consent to commence nuclear safety related construction.

Licence Condition 11: Emergency arrangements.

- 34. Exercises observed by ONR have provided satisfactory demonstrations of Hinkley Point C's arrangements for responding to Hinkley Point B notifications of incidents including the declaration of an Off-Site Nuclear Emergency.
- 35. An inspection of the emergency arrangements completed shortly after the remobilisation of the site in spring 2014 concluded that NNB GenCo had:
 - remobilised the Hinkley Point C emergency response infrastructure and the associated response organisation required to respond to site incidents, including the facility to muster and shelter the personnel involved in the early construction activities:
 - proposed a programme of emergency exercises to test the ability of the infrastructure and emergency response organisation to respond effectively to site incidents;
 - trained its response organisation and authorised the necessary number of ECs required populate the duty roster;
 - given its commitment to develop its emergency arrangements in stages that align with the site population and the construction schedule.
- 36. ONR concludes that for the purposes of the preliminary earthworks and mock-up construction activities, Hinkley Point C's arrangements for complying with Licence Condition 11 are adequate. NNB GenCo continues to develop its emergency response organisation and the associated infrastructure in preparation for seeking ONR's consent to commence nuclear safety related construction.

4.2.3.2 Work Stream C4: Site Incidents

Licence Condition 07: Incidents on the site.

37. The Site Incident work stream interventions examined the competence of the Hinkley Point C Organisational Learning function and its implementation of the arrangements for Licence Condition 07. The report First Convergence Point at HPC: Assessment Report for Work Stream C4: Site Incidents (Ref 9) reports the outcome of ONR's interventions and concludes the following.

Competence of Hinkley Point C's Organisational Learning Function.

38. ONR judges the Hinkley Point C organisational learning function: is staffed with personnel having experience in the application of arrangements for compliance with Licence Condition 07 to an operating nuclear power station; competent in the use of NNB GenCo's Organisation Learning Incident Management tool; and, also competent to apply arrangements for compliance with the licence condition.

Implementation of the Arrangements.

39. ONR judges Hinkley Point C's implementation of the arrangements for complying with Licence Condition 07: Incidents on the site to be adequate for this stage of the project and that the site's organisational learning function is committed to their continued development as NNB GenCo prepares to commence significant earthworks activity.

4.2.3.3 Work Stream C6: Construction and Installation of New Plant

Licence Condition 19: Construction or Installation

40. The Construction or Installation work stream interventions examined: the competence and training of the site organisation and the Regulatory Interface Office; experience and lessons learned from implementation of the arrangements. The report First Convergence Point at HPC: Assessment Report for Work Stream C6: Construction or Installation (Ref 10) reports the outcome of ONR's interventions and concludes the following.

Competence and Training of Site Organisation and the Regulatory and Licensing Team.

- 41. ONR judges that NNB GenCo's arrangements for compliance with LC19 have been informed by the valuable learning obtained during early non-nuclear safety related construction activities. This learning is enhancing the competence of NNB GenCo's site organisation to implement arrangements for complying with LC19 and is also informing the training of its contractors' personnel.
- 42. The HPC Site Construction Enabling Works team's management of the release of hold point 2.1.5 demonstrated its competence to implement the LC19 arrangements for managing the release of hold points in the construction and installation programme.
- 43. ONR judges that NNB GenCo's Regulatory and Licensing Team has a mature understanding the regulator's use of primary and derived powers to permission the construction and installation of HPC.

Experience and Lessons Learned from Implementation of the Arrangements.

- 44. ONR judges that the trial of LC19 procedures on the construction of the non-nuclear safety related 11kV substation has provided NNB GenCo with: evidence that the procedures for controlling construction appear fit for purpose; and provided valuable learning that has informed improvements to its arrangements for compliance with LC19(1).
- 45. ONR judge that the Shadow Hold Point Review Document Licence Compliance demonstrates that NNB GenCo has taken full opportunity of the construction of the mock up to exercise the application of its Licence Compliance 19 Procedure: Define Manage, and Release Key Hold Point.
- 46. The Safety Directorate's application of its Concurrence Process to the shadow hold point added authenticity to the trial implementation and delivered a valuable independent view of NNB GenCo's readiness to commence construction of the mock up.
- 47. ONR's inspection of the release of Hold Point 2.1.5: Commencement of Significant Preliminary Earthworks concludes that the NNB GenCo procedure Define Manage and Release Key Hold Points provides adequate arrangements for dividing the project into stages and thus facilitates ONR's use of powers under Licence Condition 19 to permission the construction and installation of HPC.

4.2.3.4 Work Stream C9: Training and Competence

Licence Condition 10: Training

48. The Training work stream interventions examined the application of NNB GenCo's training arrangements to personnel holding key roles across the organisation. The report First Convergence Point at HPC: Progress Report for Work Stream C9: Training and Competence (Ref 11) reports the outcome of ONR's interventions and concludes the following.

Design and Safety Case

49. The training and competence arrangements include the Design Authority; both the metrics and information from colleagues indicate a high level of competence and training completion in the DA which has the prime responsibility for nuclear safety and the safety case.

Organisational Capability,

- 50. NNB GenCo has established satisfactory arrangements for ensuring training and competence of its staff.
- 51. It has established a clear set of metrics that support effective monitoring and management of competence assessments and training
- 52. The HPC site team has established a satisfactory approach for ensuring the competence of contract partners' staff on the HPC site.
- 53. NNB GenCo has demonstrably established high levels of competence across virtually all parts of its organisation with key roles being occupied by individuals bringing considerable nuclear and major project experience into the HPC team.

License Compliance

54. ONR judges NNB GenCo has established an appropriate set of arrangements to comply with the requirements of LC10 on training. These arrangements also supplement arrangements for compliance with Licence Condition 12.

4.2.3.5 Work Stream C10: Design Management

Licence Condition 20: Modification to design of plant under construction

55. The Design Management work stream interventions examined: development of the arrangements for managing modifications to the Hinkley Point C Reference Configuration design; competency and training of personnel responsible for managing modifications; implementation of the interim arrangements; and preparation for implementing the arrangements for compliance with Licence Condition 20.The report First Convergence Point at HPC: Assessment Report for Work Stream C10: Design Management (Ref 12) reports the outcome of ONR's interventions and concludes the following.

Development of the Interim Arrangements for Managing Modifications to the HPC RC design.

- 56. NNB GenCo has developed its Company Procedure Technical Review of Modifications as interim arrangements for assessing modifications that its Responsible Designer is proposing to include in the Hinkley Point C Reference Configuration design that will inform the detailed design. The interim arrangements comprise three stages: 1. screening to identify and select significant modification; 2. NNB GenCo technical review of the significant modifications; and, 3. presentation to the Mini-DACC-Mods committee to consider/endorse adoption for Hinkley Point C.
- 57. ONR judges that NNB GenCo and its Responsible Designer have each developed procedures which aim to create a seamless process for managing proposed modifications to the Hinkley Point C Reference Configuration design.
- 58. The Screening Meeting and mini-DACC Modifications Meeting are central to the successful implementation of NNB GenCo's interim arrangements for managing modifications to the Hinkley Point C design. ONR is satisfied that NNB GenCo has demonstrated that these meetings are effectively discharging their respective

responsibilities as defined by the interim arrangements and described by the Company Procedure - Technical Review of Modifications.

Competence and Training of Personnel responsible for Managing Modifications to the Hinkley Point C Design.

- 59. ONR is satisfied with the arrangements being implemented by NNB GenCo for training and competence in relation to the HPC interim design modifications process. Roles and responsibilities in both NNB GenCo and the Responsible Designer are well defined and the organisational structure and lines of communication are clear.
- 60. ONR judge the training delivered by NNB GenCo's Configuration Control team to both licensee and RD personnel to be satisfactory and gives appropriate focus to the guidance relating to the UK context and categorisation of proposed modifications.
- Overall ONR judge that implementation of the HPC interim modifications process has had a positive impact upon the relationship between NNB GenCo and its RD. ONR has observed that the RD personnel demonstrate strong ownership of the process. Therefore ONR concludes that NNB GenCo has demonstrated that the communication of its requirements and the delivery of formal training to RD personnel are proving effective.

Implementation of the interim arrangements for managing modifications – Sample Inspection by ONR specialist assessors.

- 62. ONR's inspection of the application of the interim modifications procedure to a sample of the modifications proposed for inclusion in the Hinkley Point C Reference Configuration design concludes that:
 - NNB GenCo subject matter experts' application of the screening process is conservative and the resulting categorisation of modifications appears appropriate;
 - NNB GenCo subject matter experts are comfortable with challenging the RD's original categorisation of modifications and will seek additional information where necessary;
 - NNB GenCo's programme of technical reviews is being conducted in a professional manner and is delivering reports considered to be of a good standard;
 - in line with ONR expectations, the highest category proposals are submitted to the Safety Directorate for independent assessment and presented to the Nuclear Safety Committee; and,
 - application of the interim procedure is helping to establish NNB GenCo's credentials as the intelligent customer for the Hinkley Point C EPRTM.

NNB GenCo preparations for implementing its arrangements for compliance with LC20: Modification to design of plant under construction.

- 63. ONR judges NNB GenCo's Interim arrangements for the technical review of modifications it is accepting for inclusion in the Hinkley Point C Reference Configuration design to be mature and are helping to establish its intelligent customer credentials in respect of its Responsible Designer. Implementation of these arrangements has provided both NNB GenCo and its Responsible Designer personnel with valuable experience of processes that are shared with the arrangements for compliance with LC 20.
- 64. The number of proposed modifications is significantly greater than originally envisaged and the resulting extended programme of technical reviews is impacting upon NNB

GenCo plans to implement its arrangements for compliance with LC20, which is now scheduled for the first quarter of 2015.

- 65. NNB GenCo's programme of preparations for implementing its arrangements for compliance with LC 20 are appropriate and include initiatives that may be used to provide a measure of its readiness.
- 66. The Responsible Designer has demonstrated that its preparations for implementing arrangements for the management of modifications to the design of a plant under construction align with NNB GenCo's preparations for implementing the LC 20 arrangements.

4.2.3.6 Work Stream C12: Siting and Planning

Licence Condition 02: Marking of the site boundary
Licence Condition 03: Control of property transactions
Licence Condition 16: Site plans, designs and specifications

67. The Siting and Planning work stream interventions examined the implementation of NNB GenCo arrangements for Licence Condition 02, 03 and 16. The report First Convergence Point at HPC: Assessment Report for Work Stream C12: Siting and Planning (Ref 13) reports the outcome of ONR's interventions and concludes the following.

Licence Condition 02: Marking of the site boundary.

- 68. ONR remains satisfied with NNB GenCo's arrangements for preventing unauthorised persons entering the site;
- 69. NNB GenCo continues to fulfil its commitment, given as a condition of ONR's agreement to exclude Licence Condition 02(4), to post and maintain plans of Hinkley Point C licensed area at all site access locations and to maintain adequate marking of its boundary with the adjacent licensed sites.

Licence Condition 03: Control of property Transactions.

70. ONR is satisfied that NNB GenCo is undertaking the significant preliminary earthwork activity within the terms of the current leasing arrangements for the Hinkley Point C licensed site. Furthermore, ONR is satisfied that NNB GenCo remains committed to securing tenure of the leased area of the licensed site prior to proceeding with the main earthworks contract.

Licence Condition 16: Site plans, designs and specifications.

- 71. NNB GenCo has demonstrated satisfactory implementation of its arrangements for complying with Licence Condition 16.
- 72. ONR accepts NNB GenCo's proposal to use its arrangements for compliance with Licence Condition 20: Modification to design of plant under construction to manage changes to the site plans, design and specifications.
- 73. NNB GenCo continues to keep ONR informed of the changes to the site plan via routine level 4 meetings.
- 74. NNB GenCo has yet to establish the Basic Design Reference target Site Layout Plan and obtain the Secretary of State's consent to implement changes to the layout approved in the Development Consent Order. ONR has sufficient information on the potential changes to respond to any request for advice from the Secretary of State.

4.2.3.7 Work Stream C13: Control of Nuclear Matter

Licence Condition 04: Restrictions on nuclear matter on the site.

- 75. The Control of Nuclear Matter work stream interventions examined: the procedures, competency of personnel and implementation of the arrangements. The report First Convergence Point at HPC: Assessment Report for Work Stream C13: Control of Nuclear Matter (Ref 14) reports the outcome of ONR's interventions and concludes the following.
 - The procedure for controlling and restricting nuclear matter on the site is adequate.
 - "Walkdowns" of the arrangements at site have informed improvements to the arrangements.
 - The arrangements have already proved effective in identifying the unauthorised use of a radioactive source on the nuclear licensed site. The licensee's subsequent response to this incident included: the appropriate notification, recording, investigation and reporting in line with arrangements for compliance with Licence Condition 07; and action to prevent a recurrence.
 - ONR is content that whilst there are no current requirements to store mobile
 radioactive sources on the site, the licensee is already proactively looking at future
 storage requirements and is designing suitable stores to meet such requirements.
 - The personnel, responsible for drafting, implementing, testing and overseeing the arrangements, are proactive and well qualified.

4.2.4 Self-Assessment and Independent Assessment of Group 1 Licence Compliance Arrangements.

76. ONR is satisfied that NNB GenCo has made appropriate use of its arrangements for managing release of the Shadow Hold Point to report a satisfactory position with regard actions arising from self-assessment and independent assessment of its compliance with the Group 1 licence conditions.

4.2.5 Organisational Capability Cornerstone Assessments of Group 1 Licence Conditions.

- 77. The following Organisational Capability Work Streams led ONR's assessment of Group 1 licence conditions.
 - Work Stream D12: Documents, Records, Authorities and Certificates.
 Licence Condition 06: Documents, records, authorities and certificates.
 - Work Stream D6: Governance.
 Licence Condition 13: Nuclear Safety Committee
 - Work Stream D11: Integrated Management System Licence Condition 17: Management Systems
- 78. The Organisational Capability cornerstone progress report (Ref 20) presents ONR's judgement on NNB GenCo's progress with respect to these organisational capability licence conditions together with a judgement on its implementation of the arrangements for compliance with Licence Condition 36: Organisational capability.

4.2.6 Design and Safety Case Cornerstone Assessment of Group 1 Licence Conditions.

- 79. The following Design and Safety Case work streams led ONR's assessment of Group1 licence conditions and the arrangements for the production and assessment of safety cases.
 - B18: Radioactive waste:

Licence Condition 32: Accumulation of radioactive waste.

Licence Condition 33: Disposal of radioactive waste.

Licence Condition 34: Leakage and escape of radioactive material and radioactive waste.

Other Design and Safety Case work streams.

Licence Condition 14: Safety documentation.

Licence Condition 18: Radiation Protection

- 80. The Design and Safety Case cornerstone progress report (Ref 21) presents ONR's judgement on NNB GenCo's progress with respect to these design and safety case licence conditions.
- 4.3 Group 2 Licence Conditions Later Construction and Installation, Commissioning, Operation and Decommissioning Phases.
- 4.3.1 Work Stream C8: Plant Operations.

Licence Condition 11: Emergency arrangements – Operational considerations

Licence Condition 22: Modifications or experiment on existing plant

Licence Condition 23: Operating rules

Licence Condition 24: Operating instructions

Licence Condition 25: Operational records

Licence Condition 26: Control and supervision of operations

Licence Condition 27: Safety mechanisms, devices and circuits

Licence Condition 28: Examination, inspection, maintenance and testing

Licence Condition 29: Duty to carry out tests, inspections, and examinations

Licence Condition 30: Periodic shutdown

Licence Condition 31: Shutdown of specified operations.

- 81. NNB GenCo is not required to have developed arrangements for the Group 2 licence conditions at his early stage of construction. However, ONR is maintaining level 4 dialogue with NNB GenCo's Pre-Operations Department, which is leading the development of the arrangements for licence compliance.
- 82. The report First Convergence Point at HPC: Progress Report for Work Stream C8 Plant Operations A programme of interventions (22) reports the outcome of this dialogue and concludes the following.
 - NNB GenCo is developing its licence compliance arrangements in these areas and Pre-Operations Department personnel are actively engaged in the design, acceptance and review of relevant design and safety case deliverables.
 - ONR's assessment of Pre-Construction Safety Report 2012 (PCSR2012) identified
 deficiencies in NNB GenCo's safety justification for the emergency facilities which
 are required to support the operating plant's emergency arrangements. ONR
 expect PCSR3 to address these to its satisfaction before granting consent to
 commence placement of nuclear island concrete.
 - NNB GenCo is developing its arrangements for the preservation and maintenance of plant during the construction phase. ONR expects to NNB GenCo to present effective maintenance strategy prior to start of construction.

- ONR will look to NNB GenCo's Resolution Plan for GDA assessment finding AF-UKEPR-RP-16 to include proposals for securing the appropriate standards of radiation protection for personnel required to man the Main Control Room during the response to emergencies.
- ONR will seek dialogue with NNB GenCo on the development of its arrangements for compliance with Licence Condition 26: Control and supervision of operations.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- 83. This report presents the outcome of ONR's Licence Compliance cornerstone programme of interventions and assessment that examined the development and implementation of NNB GenCo's arrangements and procedures for compliance with conditions attached to Hinkley Point C nuclear site licence. A key objective is to share ONR's overall judgement of the progress NNB GenCo has achieved since it was granted a licence in November 2012.
- 84. The Hinkley Point C project schedule is currently constrained pending a final investment decision. Therefore, the opportunities for NNB GenCo to implement, and thus demonstrate the adequacy of, its procedures and arrangements for compliance with the licence are similarly constrained. However, NNB GenCo has used its procedures and arrangements for licence compliance to progress development of the Hinkley Point C reference configuration design, mobilise the development site and complete trial activities at the site. This has permitted ONR to form a judgement on procedures and arrangements that NNB GenCo will be using to execute the project as it embarks upon the early programme of activity in preparation for seeking ONR's consent to place concrete in the first nuclear safety related structure.

85. ONR judgement covers:

- Development of arrangements for compliance snice licensing;
- Implementation of Licence Compliance Arrangements; and,
- Self-Assessment and Independent Assessment of Group 1 Licence Compliance Arrangements.

5.1.1 Group 1 Licence Conditions

5.1.1.1 Development of Arrangements for Compliance Group 1 License Conditions.

- 86. The extant version of the NNB GenCo Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 18) includes changes to the entries for several Group 1 licence conditions. These changes include the removal of redundant procedures; the introduction of new procedures to improve compliance and clarity of the compliance arrangements; and updated procedures to reflect learning gained during implementation.
- 87. In response to ONR issuing a variation to the Hinkley Point C licence, NNB GenCo has introduced a new procedure to comply with the revised Licence Condition 03: Control of property transaction.
- 88. Overall ONR judges that the updated arrangements and procedures for compliance with the Group 1 licence conditions:
 - address the expectations of ONR published guidance;

- are appropriate for the early construction and installation phases; and,
- · represent good practice.

5.1.1.2 Implementation of Compliance Arrangements

Work Stream C3: On-site Construction Activities

89. ONR concludes that, for the purposes of the preliminary earthworks and mock-up construction activities, NNB GenCo's arrangements for compliance with LC08 and LC09 are adequate or better. ONR will look to NNB GenCo to continue to develop its arrangements as it prepares to seek consent to commence nuclear safety related construction.

Work Stream C4: Site Incidents

- 90. ONR judges the Hinkley Point C organisational learning function: is staffed with personnel competent in the use of NNB GenCo's Organisation Learning Incident Management tool; and, also competent to apply arrangements for compliance with the licence condition.
- 91. ONR judges Hinkley Point C's implementation of the arrangements for complying with Licence Condition 07: Incidents on the site to be adequate for this stage of the project and that the site's organisational learning function is committed to their continued development as NNB GenCo prepares to commence significant earthworks activity.

Work Stream C C6: Construction and Installation of New Plant

- 92. ONR judges that NNB GenCo's arrangements for compliance with LC19 have been informed by the valuable learning obtained during early non-nuclear safety related construction activities.
- 93. The HPC Site Construction Enabling Works team has demonstrated its competence to implement the LC19 arrangements for managing the release of hold points in the construction and installation programme.
- 94. ONR judge that the management of project hold points has provided NNB GenCo with the opportunity to exercise the application of its Licence Compliance 19 Company Procedure: Define Manage, and Release Key Hold Point and demonstrate that it provides adequate arrangements for dividing the project into stages and thus facilitate ONR's use of powers to permission the construction and installation of Hinkley Point C
- 95. ONR judges that NNB GenCo's Regulatory Interface Office has a mature understanding the regulator's use of primary and derived powers to permission the construction and installation of HPC.

Work Stream C9: Training and Competence

96. ONR judges NNB GenCo has established an appropriate set of arrangements to comply with the requirements of LC10 on training. These arrangements also complement arrangements for compliance with Licence Condition 12.

Work Stream C10: Design Management

97. ONR judges that NNB GenCo and its Responsible Designer have each developed procedures which aim to create a seamless process for managing proposed modifications to the Hinkley Point C Reference Configuration design.

98. Overall ONR judge that implementation of the Hinkley Point C interim modifications process has had a positive impact upon the relationship between NNB GenCo and its Responsible Designer. The Responsible Designer personnel demonstrate strong ownership of the process. ONR concludes that NNB GenCo has demonstrated that the communication of its requirements and the delivery of formal training to Responsible Designer personnel are proving effective.

99. ONR judges NNB GenCo's Interim arrangements for the technical review of modifications it is accepting for inclusion in the Hinkley Point C Reference Configuration design to be mature and are helping to establish its intelligent customer credentials in respect of its Responsible Designer. Implementation of these arrangements has provided both NNB GenCo and its Responsible Designer personnel with valuable experience of processes that are shared with the arrangements for compliance with LC 20.

Work Stream C12: Siting and Planning

- 100. ONR remains satisfied with NNB GenCo's arrangements for preventing unauthorised persons entering the site.
- 101. ONR is satisfied that NNB GenCo is undertaking the significant preliminary earthwork activity within the terms of the current leasing arrangements for the Hinkley Point C licensed site
- 102. NNB GenCo has demonstrated satisfactory implementation of its arrangements for complying with Licence Condition 16.

Work Stream C13: Control of Nuclear Matter

- 103. ONR judges the procedure for controlling and restricting nuclear matter on the site is adequate
- 104. ONR judge the NNB GenCo personnel responsible for drafting, implementing, testing and overseeing the arrangements for the control of nuclear matter to be proactive and well qualified.

5.1.1.3 Self-Assessment and Independent Assessment of Group 1 Licence Compliance Arrangements

105. ONR is satisfied that NNB GenCo has made appropriate use of its arrangements for managing release of the Shadow Hold Point to report a satisfactory position with regard actions arising from self-assessment and independent assessment of its compliance with the Group 1 licence conditions.

5.1.2 Group 2 Licence Conditions

106. ONR is satisfied that NNB GenCo is developing its licence compliance arrangements in these areas and that Pre-Operations Department personnel are actively engaged in the design, acceptance and review of relevant design and safety case deliverables

5.2 Recommendations

- 107. This progress report makes no formal recommendations.
- 108. ONR's existing intervention strategies and Intervention Task Sheets will inform the future programme of interventions for the licence compliance cornerstone work streams. These interventions will inform ONR's judgement of the continued adequacy of NNB GenCo's arrangements as it executes the programme of activities in preparation for seeking ONR consent to commence construction.

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