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Office for Nuclear Regulation

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**CIVIL NUCLEAR REACTOR PROGRAMME
NEW BUILD LICENSING**

**HINKLEY POINT C NUCLEAR SITE LICENSING
LICENCE CONDITION ARRANGEMENTS**

Assessment Report: ONR-CNRP-AR-12-129
Revision 0
20 November 2012

PROTECTIVE MARKING - NONE

ASSESSMENT REPORT

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ASSESSMENT REPORT

Step-based Document Review

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EXECUTIVE SUMMARY

Background and Scope.

The Health and Safety at Work etc Act 1974 (HSW Act) requires any person wishing to install or operate a nuclear reactor to comply with relevant statutory provisions of the Nuclear Installation Act 1965 (NIA65). These provisions require that a person shall not install or operate the reactor on a site unless a nuclear site licence has been granted by the Health and Safety Executive's Office for Nuclear Regulation (ONR). ONR attaches 36 conditions to the standard nuclear site licence that, in the main, require the licensee to make and implement adequate arrangements which best suit its business and may change as the installation progresses through its life from initial design to final decommissioning. NNB Generation Company Ltd (NNB GenCo) has formally applied to ONR for a nuclear site licence (NSL) to install and operate two EPR™ reactor units at Hinkley Point C (HPC) in Somerset. Part 4 of the application identifies the arrangements NNB GenCo intends to implement in order to comply with the standard site licence conditions.

NNB GenCo has divided the standard licence conditions into two groups according to ONR's expectations with regard to the state of development of the arrangements for compliance at the point a licence is granted. Accordingly NNB GenCo has assigned the licence conditions as follows.

- Group 1 – Licence Conditions required for activities that NNB GenCo will undertake during the design, manufacture, procurement, construction and installation phases of the project.
- Group 2 - Licence Conditions required for activities that NNB GenCo will undertake during the commissioning, operation and decommissioning phases of the project.

This report summarises the ONR assessments which: examined the adequacy of NNB GenCo's arrangements for complying with those licence conditions in Group 1; and, reviewed the status of the arrangements for licence conditions in Group 2.

Intervention Strategy

The assessments followed ONR's Intervention Strategy and were informed by a programme of level 4 dialogue and inspections which examined: NNB GenCo compliance matrix entry and compliance thread for each condition; communication of arrangements to relevant personnel, i.e. training; implementation of arrangements; and the outcome of the licence applicant's self regulation activities.

Matters Arising.

Exclusion of condition LC02(4). During the early stages of the construction schedule NNB GenCo will undertake site preparation, major earthworks and preparation of the formation level for construction of the plant. ONR has accepted that erecting and maintaining nuclear site boundary markings during this stage is impracticable and could expose personnel to an unacceptable risk of injury. Therefore, ONR has agreed to exclude clause 4 of Licence Condition 02 from the NNB GenCo HPC nuclear site licence until such time as it is safe to erect and maintain an appropriate means of marking the nuclear site boundary.

LC07: Incidents on the site. Although not a specific requirement of LC07, ONR has sought evidence that the NNB GenCo organisational learning process is being informed by relevant international experience. NNB GenCo has established interface documents with its Architect Engineer that define the requirements between NNB GenCo and the UK EPR™ Architect Engineer for the sharing of experience feedback to ensure that the UK EPR™ is learning from international projects. An important requirement is the communication, reporting and analysis of the Operating Experience Reports (OER) raised for learning from Flamanville, Olkiluoto and Taishan. This process is developing, and NNB GenCo is preparing a table of all of the OER received to date from other EPR™ construction projects which details the source, the outcome of NNB GenCo's organisation screening process and the actions taken or proposed. NNB will continue to use the table to monitor its response to international OER relevant to the UK EPR™.

LC11: Emergency arrangements. NNB GenCo's emergency arrangements aim to secure an appropriate response to all foreseeable events and an agile response to non-foreseeable events arising during all phases of the development of Hinkley Point C. NNB GenCo has implemented arrangements for responding to a site incident should one occur during the early stages of site preparation. Recognising Hinkley Point C's proximity to Hinkley Point A and Hinkley Point B, NNB GenCo

has included arrangements for responding to either of the adjacent sites declaring an off-site nuclear emergency. These arrangements address the mustering and accounting for personnel, welfare and sheltering of mustered personnel and evacuation of the site. NNB GenCo's emergency arrangements will continue to evolve as the project progresses through construction, commissioning and operation. ONR's judgement of the continued adequacy of these arrangements will inform its decision to permission start of construction as well as subsequent stages of the project.

LC17: Management systems. The Hinkley Point C project is in its early stages and NNB GenCo's management systems are still evolving. NNB GenCo has developed adequate management systems for early activities such as the procurement and manufacture of nuclear safety critical Long Lead Items (LLIs). NNB GenCo's management systems will need to be robust enough to cope with the changing demands of scale, complexity and technology as the project proceeds through its lifecycle. Thus, post licence grant ONR expects NNB GenCo's managements systems to continue to evolve in line with the lifecycle. ONR's judgement of the continued adequacy of these management systems will inform its decision to permission start of construction as well as subsequent stages of the project.

LC19: Construction or installation of new plant. As part of its arrangements for compliance with LC19(1), NNB GenCo has proposed a list of hold points for both start of construction and for proceeding between subsequent construction stages. ONR and NNB GenCo have achieved an acceptable degree of consensus on the proposed list, which divides construction into approximately 12 stages and is deemed acceptable for the purposes of granting a licence. LC19(4) gives ONR the primary power to specify that NNB GenCo seek its consent to commence construction or thereafter proceed from one stage to the next. Thus ONR has advised that it intends to **specify** that NNB GenCo seeks ONR's **consent** to proceed beyond the hold point "Start of Construction – First pour of nuclear safety related concrete".

In addition to the primary power, NNB GenCo's arrangements also give ONR derived powers to permission stages of construction.

LC20: Modifications to design of plant under construction. NNB GenCo's arrangements facilitate ONR's use of primary powers, and also give ONR derived powers, to permission the implementation of modifications and also progress between successive stages of multi-stage modifications.

Competency and capability:

LC 10 Training

LC12 Duly authorised and other suitably qualified and experienced persons

LC36 Organisational capability

During the design, construction and commissioning phases, NNB GenCo will need sufficient, competent and trained staff to act as an 'intelligent customer' for the products and services it commissions and receives from its supply chain. Thus ONR expects NNB GenCo's LC10, LC12 and LC36 arrangements to be robust and flexible enough to cope with the evolving competence and training requirements of its organisation as the project progresses through each phase of the project.

Commissioning and Operation. NNB GenCo is committed to the timely development of detailed arrangements for the commissioning and operation phases of the Hinkley Point C project. ONR's post licensing intervention strategy will continue to engage with NNB GenCo Pre-Operations Department personnel in order to ensure that commissioning, operation and maintenance considerations are informing the design, procurement and manufacture of structures, systems and components.

Conclusions of Intervention.

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 Project C project.

NNB GenCo has demonstrated to the ONR Site Inspector that:

- it can accurately mark the position of the boundaries to the HPC 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.

NNB GenCo has developed and implemented arrangements for Licence Condition 02: Marking the site boundary; that supports the exclusion of clause 4 of the licence condition until such time as it is safe to mark the site boundary by fences or other appropriate means.

NNB GenCo's arrangements for compliance with LC19 facilitate the Executive'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.

NNB GenCo's arrangements for compliance with Licence Condition 20 facilitate the Executive's use of primary or derived powers requiring the licensee to seek permission to implement modifications to the design of a plant under construction.

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 Executive.

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.

The status of NNB GenCo's arrangements for complying with the 36 conditions attached to the standard nuclear site licence is adequate for the purposes of granting a licence to install and operate two EPRTM reactor units at Hinkley Point C in Somerset.

Recommendations.

I recommend that:

- ONR should accept that NNB GenCo has developed adequate arrangements for compliance with those conditions attached to the standard nuclear site licence required for design, procurement, manufacture, construction and installation of two EPRTM units at Hinkley Point C in Somerset.
- ONR should exclude clause 4 of Licence Condition 02: Marking the site boundary; of the standard licence until such time as it is safe for NNB GenCo to mark the site boundary by fences or other appropriate means.
- ONR should note and accept NNB GenCo's commitment to the timely development and implementation of detailed arrangements for compliance with those conditions attached to the standard nuclear site licence required for commissioning, operation and decommissioning.
- ONR should accept that the status of NNB GenCo's arrangements for complying with the 36 conditions attached to the standard nuclear site licence is adequate for the purposes of granting a licence to install and operate two EPRTM reactor units at Hinkley Point C in Somerset.

LIST OF ABBREVIATIONS

ALARP	<i>As low as is reasonably practicable</i>
BSL	<i>Basic Safety Level (in SAPs)</i>
BSO	<i>Basic Safety Objective (in SAPs)</i>
BMS	<i>(ONR) How2 Business Management System</i>
CD	<i>Construction Division</i>
EPR™	<i>Trade Mark of European pressurised water reactor</i>
FOD	<i>Field Operations Directorate (HSE)</i>
HSE	<i>Health and Safety Executive (“the Executive”)</i>
IAEA	<i>International Atomic Energy Agency</i>
LC	<i>Licence Condition</i>
NIA65	<i>Nuclear Installations Act 1965</i>
NSL	<i>Nuclear Site Licence</i>
ONR	<i>Office for Nuclear Regulation (an agency of HSE)</i>
PCER	<i>Pre-construction Environment Report</i>
PCSR	<i>Pre-construction Safety Report</i>
PID	<i>Project Initiation Document</i>
PSA	<i>Probabilistic Safety Assessment</i>
PSR	<i>Preliminary Safety Report</i>
RGP	<i>Relevant Good Practice</i>
SAP	<i>Safety Assessment Principle(s) (HSE)</i>
SFAIRP	<i>So far as is reasonably practicable</i>
SSC	<i>System, Structure and Component</i>
TAG	<i>Technical Assessment Guide(s) (ONR)</i>
TSC	<i>Technical Support Contractor</i>
WENRA	<i>Western European Nuclear Regulators’ Association</i>

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1 INTRODUCTION

1.1 Background

1 The Health and Safety at Work etc Act 1974 (HSW Act) requires any person wishing to install or operate a nuclear reactor to comply with relevant statutory provisions of the Nuclear Installation Act 1965 (NIA65). These provisions require that said person shall be a body corporate and shall not install or operate the reactor on a site unless a nuclear site licence has been granted in respect of that site by the Health and Safety Executive (the Executive). The Office for Nuclear Regulation (ONR) administers the NIA65 licensing function on behalf of the Executive.

2 The NIA65 requires ONR to attach to each nuclear site licence such conditions as it considers necessary or desirable in the interests of safety or with respect to the handling, treatment and disposal of nuclear matter, whether in normal circumstances or in the event of any accident or other emergency on the site. Currently ONR attaches 36 conditions to the standard licence granted to any person wishing to install or operate an installation for the purposes of undertaking licensable activities. Such conditions, in the main, require the licensee to make and implement adequate arrangements which best suit its business and may change as the installation progresses through its life from initial design to final decommissioning.

3 NNB Generation Company Ltd (NNB GenCo) has formally applied to ONR for a nuclear site licence (NSL) to install and operate two EPR™ reactor units at Hinkley Point C (HPC) in Somerset (Ref 1). Part 4 of the application entitled Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 2) identifies those parts of NNB GenCo's Integrated Management System, i.e. procedures, schedule, drawings etc., which define the arrangements for complying with the conditions attached to the standard nuclear site licence.

4 The assessment of NNB GenCo's arrangements was informed by the implementation of the ONR Intervention Strategy (Ref 3) and a programme of meetings and interventions that commenced prior to NNB GenCo's formal application in July 2011 and continued until July 2012. Assessment was undertaken in accordance with the requirements of the Office for Nuclear Regulation (ONR) How2 Business Management System (BMS) procedure AST/003 (Ref. 4).

1.2 Scope

5 This report summarises the ONR assessments (Refs 5 to 19 & 23) which examined the acceptability of NNB GenCo's arrangements for complying with those conditions attached to the standard site licence deemed necessary or desirable in the interests of safety during the early stages of the project, e.g. design, procurement, manufacture, construction and installation of the proposed nuclear installation. The report reviews the status of NNB GenCo's arrangements for complying with those conditions that apply to activities that will not be undertaken until later in the project, e.g. commissioning, operation and decommissioning.

1.3 Methodology

6 The methodology for the assessments that informed production of this summary report followed ONR BMS document AST/003, Assessment Process (Ref. 4), in relation to mechanics of assessment within the Office for Nuclear Regulation (ONR).

2 ASSESSMENT STRATEGY

7 This section describes ONR's strategy for assessing the acceptability of NNB GenCo's arrangements for complying with the 36 standard site licence conditions, the scope of the assessment and the standards and criteria that have been applied.

2.1 Standards and Criteria

8 The ONR assessment reports prepared for each licence condition (Refs 5 to 19 & 23) identify the relevant standards and criteria adopted.

2.2 Intervention Strategy

9 The assessments followed ONR's Intervention Strategy (Ref 3), and were informed by a programme of level 4 dialogue which aimed to examine:

- NNB compliance matrix and compliance thread for each condition sub clause;
- communication of arrangements to relevant personnel, i.e. training;
- implementation of arrangements;
- dialogue on licence applicant's self regulation activities.

3 LICENCE APPLICANT'S SAFETY CASE

- 10 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.
- 11 Part 4 the application (Ref 1) entitled Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 2) identifies those procedures and documents within NNB GenCo's Integrated Management System (IMS) that achieve compliance with the licence conditions attached to the standard nuclear site licence. The Compliance Matrix identifies two groups of licence conditions.
- 12 Prior to submitting its formal application for a nuclear site licence ONR had agreed that at the point of granting a licence NNB GenCo need only demonstrate its ability to comply with those standard licence conditions deemed necessary or desirable in the interest of safety for those activities required for construction and installation of the plant. Therefore NNB GenCo divided the 36 standard conditions into two groups.
- 13 Group 1 – Licence Conditions required for activities that NNB GenCo will undertake during the design, procurement, construction and installation phases of the project. ONR expect the arrangements to be adequate and fit for purpose at the time of granting a licence. The following LCs are designated Group 1.
- LC01: Interpretation
 - LC02: Marking the site boundary
 - LC03: Restrictions on dealing with the site
 - LC04: Restrictions on nuclear matter on the site
 - LC06: Documents, records, authorities and certificates
 - LC07: Incidents on the site
 - LC08: Warning notices
 - LC09; Instructions to persons on the site
 - LC10: Training
 - LC11: Emergency arrangements
 - LC12: Duly authorised and other suitably qualified and experienced persons
 - LC13: Nuclear safety committee
 - LC14: Safety documentation
 - LC16: Site plans, designs and specifications
 - LC17: Management systems
 - LC19: Construction or installation of new plant
 - LC20: Modification to design of plant under construction
 - LC32: Accumulation of radioactive waste
 - LC33: Disposal of radioactive waste
 - LC34: Leakage and escape of radioactive material and radioactive waste
 - LC36: Organisation capability
-

- 14 Group 2 – Licence Conditions required for activities that NNB GenCo will undertake during the commissioning, operation and decommissioning phases of the project. ONR expect NNB GenCo to give a clear commitment to the timely development and implementation of arrangements for complying with these conditions. The following LCs are designated Group 2.
- LC05: Consignment of nuclear matter
 - LC15: Periodic review
 - LC18: Radiological protection
 - LC21: Commissioning
 - LC22: Modification or experiment on existing plant
 - LC23: Operating rules
 - LC24: Operating instructions
 - LC25: Operating records
 - LC26: Control and supervisions of operations
 - LC27: Safety mechanisms, devices and circuits
 - LC28: Examination, inspection, maintenance and testing
 - LC29: Duty to carry out tests, inspections and examinations
 - LC30: Periodic shutdown
 - LC31: Shutdown of specified operations
 - LC35: Decommissioning
- 15 ONR's post licensing intervention strategy will continue to engage with NNB GenCo in order to ensure that commissioning, operation and maintenance considerations are informing the design, procurement and manufacture of structures, systems and components

4 ONR ASSESSMENT

4.1 Licence Conditions – Group 1.

4.1.1 Licence Condition 01: Interpretation

16 LC01 does not impose a requirement upon the licensee but defines the meaning of expressions used in the conditions attached to the standard licence. Where appropriate, ONR's judgment of the acceptability of the arrangements for compliance with licence conditions is informed by NNB GenCo's understanding of these expressions.

4.1.2 Licence Condition 02: Marking the site boundary.

Scope of Assessment

17 The Assessment Report ONR-CNRP-AR-12-120 (Ref 5) presents the findings of the assessment which focused on development of arrangements for compliance with Licence Condition 02: Marking of the site boundary. During the course of a programme of meetings and inspections ONR engaged in dialogue which informed improvements to the procedures for:

- preventing unauthorised persons from entering the site or parts of the site; and
- erecting and maintaining fences or markings to define the boundary to the nuclear site licence area.

Matter Arising: Exclusion of Condition LC02(4) - Erect and Maintain Boundary Fences or Marking.

18 The construction site, which is surrounded by a perimeter security fence, is much larger than, and encompasses, the licensed site. During the early stages of the construction schedule NNB GenCo will undertake site preparation, major earthworks and preparation of the formation level for construction of the plant. ONR has accepted that erecting and maintaining nuclear site boundary markings during this stage is impracticable and could expose personnel to an unacceptable risk of injury. Therefore, ONR has agreed (Ref 20) to exclude clause 4 of Licence Condition 02 from the NNB GenCo HPC nuclear site licence until such time as it is safe to erect and maintain an appropriate means of marking the nuclear site boundary.

Conclusions of Intervention.

19 The assessment report records the following conclusions.

- For the purposes of granting a nuclear site licence, NNB GenCo has developed and implemented adequate arrangements for preventing unauthorised persons from entering the nuclear licence site.
- NNB GenCo procedure for controlling regulator approved management arrangements provides adequate control of such part or parts the LC02 arrangements approved by the Executive.
- NNB GenCo has demonstrated to the ONR Site Inspector that:
 - it can accurately mark the position of the boundaries to the HPC 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.

- NNB GenCo has produced a permanent record data file containing the Global Positioning System and Ordnance Survey co-ordinates required to accurately locate the boundary to the HPC nuclear site licence area as defined by the drawing entitled Hinkley Point C Nuclear Power Station Licence Site Area, HPC-NNBOSL-XX-000-DRW-000001, Rev L (Ref 27).
- NNB GenCo's arrangements support ONR's proposal to exclude clause 4 of Licence Condition 02 from the NNB GenCo HPC nuclear site licence (NSL) until such time as it is safe to erect and maintain an appropriate means of marking the nuclear site boundary.
- Until such time as it is practicable to mark the NSL boundary:
 - NNB GenCo's site induction training will inform all personnel entering the HPC development site of the existence and location of the HPC nuclear site licence area; and,
 - plans posted at vehicle and pedestrian accesses to the site will illustrate the location of the nuclear site licence area.
- NNB GenCo is committed to applying to ONR for a variation to the HPC NSL to introduce clause 4 of Licence Condition 02 LC02(4) and to mark the site boundary by fences or other appropriate means 12 months after pouring the first nuclear island concrete.
- ONR is satisfied that, for the purposes of granting a nuclear site licence, NNB GenCo has proposed adequate arrangements for inspecting and maintaining fences and markings erected along the boundary to the nuclear site licence area

Recommendations of Intervention.

- 20 ONR should exclude clause LC02(4) from the NNB GenCo Hinkley Point C nuclear site licence until such time as it is safe to erect and maintain an appropriate means of marking the nuclear site boundary.
- 21 ONR should accept that NNB GenCo's arrangements for complying with Licence Condition 02: Marking of the site boundary; are adequate for the purpose of granting a nuclear site licence.

4.1.3 Licence Condition 03: Restriction on dealing with the site.

Scope of Assessment

- 22 The Assessment Report ONR-CNRP-AR-12-077 (Ref 6) presents findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 03: Restriction on dealing with the site. ONR and representatives from the Treasury Solicitor's Office met with NNB GenCo to discuss the principal procedure describing the arrangements for conveying, assigning, transferring, letting or parting with possession of the site or part thereof. The procedure covers all stages of the project from construction to operation and beyond.

Conclusions of Intervention

- 23 The procedure for restricting dealings with the site is acceptable and ONR is content that NNB GenCo has adequate arrangements to ensure compliance with LC03.

Recommendations of Intervention.

- 24 ONR should accept NNB GenCo's arrangements for compliance with LC03 are adequate to support a decision to grant a nuclear site licence for Hinkley Point C.

4.1.4 Licence Condition 04: Restrictions on nuclear matter on the site.***Scope of Assessment***

- 25 NNB GenCo does not plan to introduce nuclear matter other than isotopes for industrial use, referred to as excepted matter, during the site preparation, construction and installation phases of the project. Therefore, ONR undertook only a very limited intervention via level 4 dialogue aimed at ensuring NNB GenCo's arrangements provided adequate restrictions to control the introduction of nuclear matter onto the licensed site. ONR intervention report IR12171 (Ref 21) records the outcome of this dialogue.

Conclusions of Intervention

- 26 The NNB GenCo procedure for control of nuclear matter describes adequate arrangements for the receipt; storage and recording of the isotopes for industrial use NNB GenCo expect to receive during site preparation, construction and installation of Unit 1.
- 27 Prior to start of commissioning of Unit 1 NNB GenCo will update the procedure for control of nuclear matter to include arrangements for the receipt, storage and recording of nuclear fuel, neutron sources and any other nuclear matter intended for use in connection with the new installation.
- 28 ONR retain the necessary primary powers under LC04 to approve arrangements and also specify that that no nuclear matter for use in connection with the new installation is brought onto the site without the consent of the Executive.

Recommendations of Intervention.

- 29 ONR should accept NNB GenCo's arrangements for compliance with LC04 are adequate to support a decision to grant a nuclear site licence for Hinkley Point C.

4.1.5 Licence Condition 06: Documents, records, authorities and certificates***Scope of Assessment***

- 30 The Assessment Report ONR-CNRP-AR-12-089 (Ref 7) presents findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 06: Document, records, authorities and certificates. The assessment considered the adequacy of the arrangements, and their implementation, for the purposes of granting a licence and also NNB GenCo's proposals for continued development of its arrangements. During the course of a programme of meetings and a targeted intervention ONR's assessors examined management commitment, responsibilities, resources, process design, controlling documentation, infrastructure, paper and physical samples and implementation. NNB GenCo intends to replace the current electronic documents and records management (ERDM) platform based on the "Business Collaborator" software with "Documentum" software with the aim of improving the interface with its Architect Engineer/Responsible Designer (AE/RD). As the Hinkley Point C project advances through design, construction, commissioning and beyond NNB GenCo will need to maintain constant vigilance in order to ensure that the arrangements can cater with the increasing number of users and geographical locations.

Matters Arising

31 NNB GenCo's arrangements are still evolving and implementation is at an early stage. In addition a number of infrastructure developments are planned such as the change over from "Business Collaborator" to 'Documentum' and the provision of a temporary physical store. ONR will need to monitor the on going development of the arrangements and infrastructure changes.

Conclusions of Intervention.

32 ONR is broadly satisfied that NNB GenCo's compliance arrangements for LC06 have adequately addressed the expectations of relevant standards.

33 The arrangements continue to evolve but NNB GenCo has recognised the outstanding issues and there is a strong forward momentum within the company to carry the development forward.

34 ONR is confident that NNB GenCo's arrangements are sufficiently well advanced for this stage of the project.

Recommendations of Intervention.

35 ONR should accept NNB GenCo's arrangements for compliance with LC06 are adequate to support a decision by ONR to grant a nuclear site licence for Hinkley Point C.

36 ONR should continue to monitor and influence the continued development of NNB GenCo's arrangements.

4.1.6 Licence Condition 07: Incidents on the site.***Scope of Assessment***

37 The Assessment Report ONR-CNRP-AR-12-099 (Ref 8) presents findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 07: Site Incidents. During the course of a programme of meetings ONR met staff at the headquarters and at site to review procedures, gather evidence of implementation and, where necessary, obtain improvements to the arrangements. During the course of the intervention NNB GenCo appointed a number of staff to organisational learning posts and also developed new systems of notification and organisational learning for conventional safety.

Matters Arising

38 ONR was unable to sample NNB GenCo nuclear OPEX as it was not undertaking any specific nuclear activities during the course of the intervention. ONR has not identified the types of cross-cutting learning that might be expected of nuclear work, still less any requirement for notification under LC07. ONR has made it clear that it will be necessary to review and sample nuclear OPEX and feedback during future phases of the project.

39 Although not a specific requirement of LC07, ONR has sought evidence (Ref 29) that the NNB GenCo organisational learning process is being informed by relevant international and national experience. NNB GenCo has established interface documents with its Architect Engineer that define the requirements between NNB GenCo and the UK EPR™ Architect Engineer for the sharing of experience feedback to ensure that the UK EPR™ is learning from international projects. An important requirement is the communication, reporting and analysis of the Operating Experience Reports (OER) raised for learning from Flamanville, Olkiluoto and Taishan. This process is developing, and NNB GenCo is preparing a table of all of the OER received to date from other EPR™ construction

projects which details the source, the outcome of NNB GenCo's organisation screening process and the actions taken or proposed. NNB will continue to use the table to monitor its response to international OER relevant to the UK EPR™.

40 NNB GenCo's links with EDF Energy (Nuclear Generation Ltd) and its participation in the UK Operating Experience Learning Group (OELG) ensures that relevant UK experience informs the UK EPR™ project.

Conclusions from Intervention

41 ONR considers NNB GenCo's arrangements for compliance with LC07 and for organisational learning to be sufficiently developed to support application for a Site Licence.

42 ONR is content that NNB GenCo has adequate procedures to comply with LC07 and that these satisfy the requirements for early phases of the construction program.

Recommendations from Intervention

43 ONR should accept that NNB GenCo's arrangements for complying with LC07 are adequate for the purposes of granting a nuclear site licence.

44 ONR's nominated Site Inspector for Hinkley Point C should:

- inspect NNB GenCo's procedures (arrangements) for LC07 compliance and their implementation during future phases of the project;
- ensure that NNB GenCo incorporate both national and international nuclear OPEX as appropriate.

4.1.7 Licence Condition 08: Warning notices.

Scope of Assessment

45 ONR conducted only a very limited intervention in respect of LC08. A brief meeting (Ref 22) discussed the principal procedure "Provide Safety Notices", which describes the procedure for generating and maintaining the "Approved Warning Sign List" and for erecting and maintaining warning notices. This list of warning signs is informed by, for example, risk assessment, contractor method statements, traffic management plans, noise assessment, and relevant statutory provisions. Thus, during the early stages of the project signage will be dominated by the risk associated with construction activities. Signs posted at the access to the sites, and other locations around the site, advise personnel of the warning signals and the expected response in the event of a fire on the site or in the event of Hinkley Point A or Hinkley Point B declaring an Off Site Nuclear Emergency. The procedure is supplemented by Induction Training, which is mandatory for all personnel seeking authorisation for unescorted access to the Hinkley Point C development site. Induction training is discussed further under LC09: Instructions to persons on the site.

Conclusion from Intervention.

46 ONR is satisfied that, for the purposes of granting a nuclear site licence, NNB GenCo has acceptable arrangements for ensuring that suitable and sufficient notices are posted on the site in compliance with LC08.

Recommendation from Intervention.

47 ONR should accept that NNB GenCo's arrangements for complying with LC08 are adequate for the purpose of granting a nuclear site licence

48 Post licence granting ONR should conduct routine compliance inspections to confirm the continuing acceptability of warning notices.

4.1.8 Licence Condition 09: Instructions to persons on site

Scope of assessment

49 The Assessment Report ONR-CNRP-AR-12-073 (Ref 9) presents findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 09: Instructions to persons on the site. During the course of a programme of meetings ONR and HSE's FOD Construction Division (CD) engaged in dialogue with NNB GenCo, which informed development of the procedures for:

- providing HPC site induction training; and,
- managing visitors to the site.

ONR and FOD CD also attended Site Induction Training and inspected a Compliance Pack containing evidence which included procedures, course material, site access application form and training records.

Matter Arising

50 Although the NNB GenCo procedures aim to demonstrate compliance with the nuclear site licence condition the risk and hazards to personnel on the site during the early stages of the project arise from construction activities, which the HSE regulates via the Construction Design and Management (CDM) regulations. Regulation 22 of the CDM regulations stipulates that the Principal Contractor, in this case NNB GenCo for the HPC site development, should take all reasonable steps to ensure every worker receives suitable site induction. ONR and FOD CD agreed that the NNB GenCo's procedures serve to demonstrate compliance with both LC09 and CDM regulation 22.

Conclusions of Intervention

51 ONR is content that NNB GenCo has adequate procedures in place to ensure every person authorised to be on the site receives adequate instruction to the extent that this is necessary having regard to the circumstances of that person being on the site and with regard to:

- the risks and hazards associated with construction and installation activities;
- the precautions to be observed in connection with said risks and hazards; and,
- the action to be taken in the event of an accident or emergency on the site.

Recommendations from intervention

53 ONR should accept NNB GenCo's arrangements for complying with LC09 are adequate for the purposes of granting a nuclear site licence.

54 ONR's nominated Site Inspector for Hinkley Point C should conduct future inspections of NNB GenCo's procedures and their implementation in order to confirm that the instruction given to persons authorised to be on the site remain adequate for all phases of the project.

4.1.9 Licence Condition 10: Training***Scope of Assessment***

55 The Assessment Report ONR-CNRP-AR-12-095 (Ref 10) presents the findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 10: Training. During the course of a programme of meetings ONR engaged in dialogue with NNB GenCo as part of a targeted intervention in support of LC12: Duly Authorised and other suitably qualified and experienced persons. This dialogue, influenced the development of NNB GenCo's LC10 training arrangements, and also monitored progress with development of the arrangements.

56 During the course of the intervention NNB GenCo demonstrated that its arrangements have the essential elements of a Systematic Approach to Training. ONR also participated in structured discussions with staff holding nuclear safety significant roles on the benefits of the training they had received to date. These discussions informed a meeting to clarify progress with implementation of NNB GenCo's training strategy.

57 The NNB GenCo arrangements have been the subject of Self Assessment and also assessment by the Independent Assessment Challenge and Oversight (IACO) function. The findings of these assessments have also informed ONR's assessment.

Matters Arising

58 NNB GenCo's arrangements are still evolving and implementation is at an early stage. ONR has attended several training events over the last two years as an observer and has provided feedback to NNB GenCo to assist in the development of its arrangements. At the time of this assessment, NNB GenCo was in the process of introducing a new training plan based on experience to date and training needs identified by the competence assessment exercise. ONR will need to monitor the ongoing development and implementation of the LC10 arrangements.

59 During the design, construction and commissioning phases, NNB GenCo will need sufficient, competent staff to act as an 'intelligent customer' for the products and services it commissions and receives from its supply chain and training will need to support this. Thus ONR also expects NNB GenCo's LC10 arrangements to be robust and flexible enough to cope with the evolving competence and training requirements of its organisation as the project progresses through each of these phases.

Conclusions of Intervention.

60 ONR is satisfied that NNB GenCo's arrangements for LC10 have adequately addressed the expectations of relevant standards.

61 The arrangements and their implementation are still evolving, but NNB GenCo recognises the outstanding issues and has demonstrated that there is a strong forward momentum to continue their development.

62 ONR accepts that the arrangements are sufficiently well advanced at this stage.

Recommendations from Intervention

63 ONR should accept NNB GenCo's arrangements for complying with LC10 are adequate for the purposes of granting a nuclear site licence.

64 ONR should continue to monitor and influence the development of NNB GenCo's training arrangements.

4.1.10 Licence Condition 11: Emergency arrangements.***Scope of Assessment***

65 The Assessment Report ONR-CNRP-AR-12-121 (Ref 11) presents the findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 11: Emergency arrangements. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the procedures that NNB GenCo intends to implement for responding to emergencies on the site. The intervention examined compliance procedures and the underlying compliance thread, training of personnel, implementation of arrangements and observation of demonstration exercises.

Matters Arising

66 Recognising Hinkley Point C's proximity to Hinkley Point A and Hinkley Point B, NNB GenCo has included arrangements for responding to either of the adjacent sites declaring an off-site emergency. These arrangements address the mustering and accounting for personnel, welfare and sheltering of mustered personnel and evacuation.

Conclusions of Intervention

67 NNB GenCo's procedure for establishing and maintaining emergency arrangements aims to secure an appropriate response to all foreseeable events and an agile response to non-foreseeable events arising during all phases of the development of Hinkley Point C.

68 NNB GenCo has developed a HPC Emergency Plan that:

- defines clear and relevant objectives for addressing site incidents that are foreseeable during the early stages of site preparation;
- describes the HPC Emergency Organisation charged with coordinating and implementing the site's response to a site incident;
- recognises the possibility of the adjacent nuclear licensed site declaring an Off-Site Nuclear Emergency;
- identifies the key command centre locations and also the need for both internal and external muster points.

69 NNB GenCo procedure for controlling regulator approved management arrangements provides adequate control of such part or parts the LC11 arrangements approved by the Executive.

70 NNB GenCo's arrangements for responding to a site incident are informed by appropriate consultation with those relevant local bodies and services whose assistance or co-operation is required.

71 NNB GenCo's arrangements for rehearsing its arrangements for responding to any foreseeable accident or emergency on the site are acceptable.

72 NNB GenCo's arrangements for responding to an accident or emergency on the site include acceptable arrangements for ensuring that all persons who have duties in connection with such arrangements are properly trained in:

- the performance of such duties; and,
- the use of any equipment required to perform such duties.

73 By satisfactorily demonstrating its response to an adjacent nuclear licensed site declaring an Off Site Emergency, NNB has also satisfactorily implemented emergency

arrangements for responding to a site incident expected to occur during the early stages of site preparation.

Recommendations from Intervention

- 74 ONR should accept NNB GenCo's arrangements for complying with LC11 are adequate for the purposes of granting a nuclear site licence.
- 75 Following granting of a nuclear site licence for Hinkley Point C, ONR should continue dialogue with NNB GenCo on the evolution of its emergency arrangements as the project progresses from early site preparation works to construction, commissioning and operations.

4.1.11 Licence Condition 12: Duly authorised and other suitably qualified and experienced persons.

Scope of Assessment

- 76 The Assessment Report ONR-CNRP-AR-12-096 (Ref 12) presents the findings of ONR's assessment of NNB GenCo's compliance arrangements for Licence Condition 12: Duly authorised and other suitably qualified and experienced persons. During the course of a programme of meetings, supplemented by a targeted intervention, ONR engaged in a dialogue with NNB GenCo which influenced the development of its LC12 arrangements.
- 77 The intervention examined compliance with relevant standards. Structured discussions with personnel in nuclear safety significant roles examined application of the competency assessment arrangements and the line manager's role in ensuring that they were comprehensively and consistently applied.
- 78 The NNB GenCo arrangements have been the subject of Self Assessment and also assessment by the Independent Assessment Challenge and Oversight (IACO) function. The findings of these assessments have also informed ONR's assessment.

Matters Arising

- 79 NNB GenCo's arrangements are still evolving and implementation is at an early stage. At the time of the intervention, a significant proportion of NNB GenCo's nuclear safety significant roles had been subject to competency assessment. Slight differences in interpretation of the competency assessment arrangements were observed between functional areas and some degree of normalisation will be required to ensure consistency. ONR will need to monitor completion of the competency exercise and the ongoing development and implementation of the arrangements.
- 80 During the design, construction and commissioning phases, NNB GenCo will need sufficient, competent staff to act as an 'intelligent customer' for the products and services it commissions and receives from its supply chain. Thus ONR expect NNB GenCo's LC12 arrangements to be robust and flexible enough to cope with the evolving competence and training requirements of its organisation as the project progresses through each of these phases.
- 81 NNB GenCo is not required to have arrangements for the appointment of Duly Authorised Persons during the construction and installation phases. However, ONR will expect NNB GenCo to have developed and implemented such arrangements prior to receiving nuclear matter for use in connection with the new installation.

Conclusions of Intervention

- 82 ONR is satisfied that NNB GenCo's arrangements for LC12 have adequately addressed the expectations of relevant standards.
- 83 The arrangements and their implementation are still evolving, but NNB GenCo recognises the outstanding issues and has demonstrated that there is a strong forward momentum to continue their development
- 84 ONR accepts that the arrangements are sufficiently well advanced at this stage.

Recommendations from Intervention

- 85 ONR should accept NNB GenCo's arrangements for complying with LC12 are adequate for the purposes of granting a nuclear site licence.
- 86 ONR should continue to monitor and influence the development of NNB GenCo's arrangements for the appointment of duly authorised and other suitably qualified and experienced persons.

4.1.12 Licence Condition 13: Nuclear safety committee.

- 87 LC 13(2) states:

"The licensee shall submit to the executive for approval the terms of reference of any such nuclear committee and shall not form a nuclear safety committee without the foresaid approval"

- 88 ONR has engaged in level 4 dialogue with NNB GenCo on both the constitution and terms of reference of its proposed nuclear safety committee. ONR has advised NNB GenCo that if granted a licence it should immediately submit to ONR for approval the terms of reference for the nuclear safety committee. On receipt of this submission, ONR will grant its approval before the nuclear site licence comes into force.
- 89 The ONR Project Assessment Report supporting the Executive's approval of the nuclear safety committee's terms of reference will record its assessment, conclusions and recommendations in respect of the adequacy of the constitution and terms of reference NNB GenCo's nuclear safety committee.

4.1.13 Licence Condition 14: Safety documentation**Scope of Assessment**

- 90 The Assessment Report ONR-CNRP-AR-12-083 (Ref 13) presents the findings of the assessment which focused on development of arrangements for compliance with Licence Condition 14: Safety Documentation. During the course of a programme of meetings ONR has discussed progress on the arrangements and also carried out a "shadow Inspection" of the application of the arrangements to the fault studies area.

Matters Arising

- 91 The proposed categorisation system for nuclear safety related modifications was found to leave the question of whether there would be an ONR hold on implementation unresolved and not provide any secondary powers to ONR to freeze NNB GenCo documentation. However the AR on compliance arrangements for LC20 concluded (section 4.1.17) that NNB GenCo's arrangements for compliance with LC20(1) give the Executive the necessary derived powers to permission the implementation of modifications to the design of a plant under construction.

92 NNB Genco's Nuclear Safety Design Assessment Principles (NSDAPs) to be used for the assessment of safety cases, although not assessed in detail, have been judged to form an adequate basis for licensing on the grounds that they have been developed from an existing international standard. ONR should carry out or commission a comparison report between the ONR Safety Assessment Principles (SAPs) and the NSDAPs.

Conclusions of Intervention

93 The arrangements for the production and assessment of Safety Reports are judged to provide an adequate basis for LC14 compliance.

94 From the perspective of LC14 arrangements, there is no impediment to licence issue

Recommendations from Intervention.

95 ONR should accept NNB GenCo's arrangements for complying with LC14 are adequate for the purposes of granting a nuclear site licence.

96 ONR should carry out or commission a comparison report between the ONR Safety Assessment Principles and NNB GenCo's Nuclear Safety Assessment Principles.

4.1.14 Licence Condition 16: Site plans, designs and specifications

Scope of Assessment

97 The Assessment Report ONR-CNRP-AR-12-122 (Ref 14) presents the findings of the assessment which focused on development of arrangements for compliance with Licence Condition 16: Site plans, designs and specifications. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the NNB GenCo procedures for managing the preparation of, and subsequent changes to, the site plans and building schedule.

Matters Arising

98 None.

Conclusions from intervention.

99 ONR's civil engineering assessor concluded that NNB GenCo has adequate procedures and documentation to meet the requirements of Licence Condition 16 for the purposes of granting a nuclear site licence.

100 The drawings entitled "Hinkley Point C Site Licence Area" and "Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan" are acceptable for the purposes of granting a nuclear site licence.

101 The document entitled "List of Buildings" is acceptable for the purposes of granting a nuclear site licence.

102 The NNB GenCo procedure "Management of Site Plans, Designs and Specifications" satisfies the requirement to inform the Executive of changes having the potential to impact upon a building, plant or operation.

103 The procedure Management of Interfaces with Regulators facilitates ONR's use of the primary power requiring NNB GenCo to furnish to the Executive plans, designs or other information relating to buildings, plant or operations as the Executive may specify.

Recommendations from Intervention.

- 104 ONR should accept that NNB GenCo has fulfilled the requirements of Licence Conditions 16(1) and 16(2) by submitting to the Executive (Ref 27) final published versions of:
- Hinkley Point C Nuclear Site Licence Area, drawing reference HPC-NNB-OSL-XX-000-DRW-000001;
 - Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan, drawing reference HPC-GEN047-U0-000-DRW-000001; and,
 - List of Buildings, document reference NNB-OSL-LST-000010.
- 105 ONR should accept that NNB GenCo's proposed procedure Management of Site Plans, Designs and Specifications are adequate for the purpose of granting a nuclear site licence.

4.1.15 Licence Condition 17: Management systems.***Scope of Assessment***

- 106 The Assessment Report ONR-CNRP-AR-12-087 (Ref 15) presents the findings of the assessment which focused on development of arrangements for compliance with Licence Condition 17: Management systems. During the course of a programme of meetings ONR engaged in a dialogue with NNB GenCo that influenced the development of its management systems. The ONR assessment examined:
- how the NNB GenCo management system processes compare against relevant international standards;
 - the development stage of the project management systems to seek assurance that they meet international management system standards and expectations;
 - the level of implementation of the developed assurance and business architecture group processes, i.e. internal independent and self assessment; development and implementation of company processes; non conformance process; management review; and management of the independent third party inspection agency (ITPIA);
- 107 The assessment was also informed by other processes including: interfaces with the (AE/RD), procurement of goods and services, manufacturing inspection, records management (LC 6), and document control.
- 108 ***Matters Arising***
- 109 The HPC project is in its early phases and the arrangements are still being refined and developed. NNB GenCo's management systems arrangements are still evolving and completion of a full cycle of implementation is several months away for many of the systems. The management systems most developed are those to control and manage production of Long Lead Items (LLI) large forgings for the Nuclear Steam Supply System (NSSS). This is sensible, noting the safety significance and scheduling of these activities. An interim licensee certificate for management systems has been issued by external certification body Bureau Veritas. This is a limited scope for LLI only, with full scope certification scheduled to be completed by end of 2013.
- 110 NNB GenCo's LC17 compliance arrangements will need to be robust enough to cope with the varying demands of scale, complexity and technological challenges throughout the HPC lifecycle. As the project advances there will be increased users across a range of

different geographical locations: Thus ONR expects NNB GenCo will continue to develop and implement management systems that evolve in line with the project's life cycle.

- 111 NNB GenCo needs to ensure that it learns the lessons of findings from internal reviews and assessments. Although such findings are recorded in Organisational Learning Reports (LR), at the moment implementation of the process is at an early stage. Further development is needed, in particular, to ensure that actions raised have been satisfactorily completed.

Conclusions of Intervention

- 112 ONR is satisfied that NNB GenCo's arrangements for compliance with LC17 have adequately addressed the expectations of relevant international standards.
- 113 The management systems and their implementation are still evolving, but NNB GenCo recognises the outstanding issues and has demonstrated that there is a strong forward momentum to continue their development
- 114 ONR accepts that NNB GenCo's management systems are sufficiently well advanced at this stage.

Recommendations from Intervention.

- 115 ONR should accept that the LC17 management systems that NNB GenCo has developed and implemented to date are adequate to support a decision to grant a nuclear site licence for Hinkley Point C.
- 116 ONR should continue to monitor and influence the future development of NNB GenCo's management systems.

4.1.16 Licence Condition 19: Construction or installation of new plant

Scope of Assessment.

- 117 The Assessment Report ONR-CNRP-AR-12-112 (Ref 16) presents the findings of the assessment which focused on development of arrangements for compliance with Licence Condition 19: Construction or installation of new plant. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the NNB GenCo procedures for the control of construction or installation. The assessment examined the principal compliance procedures and the underlying compliance thread, training of personnel, implementation of arrangements and self regulation.

Matters Arising.

- 118 As part of its arrangements for compliance with LC19(1), NNB GenCo has proposed a list of hold points for both start of construction and for proceeding between subsequent construction stages. ONR and NNB GenCo have achieved an acceptable degree of consensus on the proposed list, which divides construction into approximately 12 stages and is deemed acceptable for the purposes of granting a licence. LC19(4) gives ONR the primary power to specify that NNB GenCo seek its consent to commence construction or thereafter proceed from one stage to the next. Thus ONR has advised that it intends to **specify** that NNB GenCo seeks ONR's **consent** to proceed beyond the hold point "Start of Construction – First pour of nuclear safety related concrete".
- 119 ONR may choose to use the primary power to permission other stages of the construction. However, ONR also expects the licensee's arrangements under LC19(1) to include derived powers that permit the Executive to specify that a licensee shall not commence nor proceed from one stage to the next of the construction or installation

without the **agreement** of the Executive". The NNB GenCo procedure Define, Manage and release Key Hold Points gives the Executive the appropriate derived powers.

120 ONR does not intend to exercise the primary or derived powers to permission progress of construction from one stage to the next in every case. Rather ONR intends to exercise a targeted proportionate approach. However, should ONR conclude that NNB is failing to exercise appropriate control of the construction or installation it will respond proportionately including exercising the relevant primary or derived power.

Conclusions of Intervention

121 NNB GenCo has not yet commenced construction or installation of nuclear safety structures at Hinkley Point C but ONR has examined the proposed arrangements for compliance with LC19 and is satisfied that, subject to successful implementation, they aim to provide rigorous and robust arrangements for controlling construction and installation.

122 ONR is satisfied that the NNB GenCo procedure for controlling regulator approved management arrangements provides adequate control of such part or parts the LC19 arrangements approved by the Executive.

123 NNB GenCo's arrangements for compliance with LC19 facilitate the Executive's use of primary or derived powers to permission construction or installation.

124 ONR recognises that the NNB GenCo Project Execution Plan has the potential to impact upon the structure of the site construction organisation. Thus ONR accepts that NNB GenCo wishes to implement any consequential changes to its site organisation before delivering the relevant training to site personnel.

125 ONR concludes that the very limited evidence from NNB GenCo's implementation of the procedures "Manage Site Surveillance" and "Define, Manage and Release Key Hold Points" supports ONR's judgement that these elements of the arrangements are adequate for the purposes of granting a nuclear site licence.

126 ONR concludes that the NNB GenCo arrangements for compliance with LC19 are adequate for the purposes of granting a nuclear site licence and will continue to be informed by a structured programme of self regulation.

Recommendations from Intervention

127 ONR should accept that NNB GenCo's arrangements for complying with L19 are adequate for the purpose of granting a nuclear site licence.

128 Following granting of a nuclear site licence for Hinkley Point C, ONR should continue dialogue with NNB GenCo on:

- the structure, competence and training of site construction organisation personnel;
- application of the arrangements to the earthworks contract; and,
- Design Authority oversight of construction and installation.

129 ONR should seek opportunities to influence the continued development of NNB GenCo's arrangements.

4.1.17 Licence Condition 20: Modification to design of plant under construction.

Scope of Assessment

130 The Assessment Report ONR-CNRP-AR-12-113 (Ref 17) presents the findings of the assessment which focused on development of arrangements for compliance with Licence

Condition 20: Modification to design of plant under construction. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the NNB GenCo procedures for managing changes to the design which may affect safety. The assessment examined compliance procedures and the underlying compliance thread, training of personnel and self regulation.

Matters Arising

- 131 In line with its regulation of operating reactors, ONR is unlikely to use the primary power embodied in LC20(4) to permission, i.e. **consent** to, NNB GenCo progressing between successive stages of a modification. However, ONR expects a licensee's arrangements under LC20(1) to include derived powers that permit the Executive to permission the implementation of modifications.
- 132 The NNB GenCo procedure for modifications give ONR the following derived powers.
- Category 1 Modifications – NNB GenCo to seek the Executive's **agreement** or **acknowledgment** before implementing the modification.
 - Category 2, 3 and 4 Modifications – Where the Executive so **specifies**, NNB GenCo will not implement the modification with out the Executive's **agreement** or **acknowledgment**.
- 133 NNB GenCo's draft proposals for multi-stage modifications include appropriate derived powers permitting ONR to permission progress between successive stages of the modification.
- 134 ONR will seek further dialogue with NNB GenCo on the use of derived powers to permission modifications to the design of a plant under construction.

Conclusions of Intervention

- 135 ONR is satisfied that NNB GenCo has made adequate progress with the development of its arrangements for complying with LC20. NNB is committed to the continued development of these arrangements, including building on the draft proposals for managing multi-stage modifications. Therefore ONR concludes that NNB GenCo's arrangements for compliance with LC20(1) are acceptable for the purposes of granting a nuclear site licence.
- 136 ONR is satisfied that the NNB GenCo procedure for controlling regulator approved management arrangements provides adequate control of such part or parts the LC20 arrangements approved by the Executive.
- 137 NNB GenCo's arrangements for compliance with LC20(1) give the Executive the necessary derived powers to permission the implementation of modifications to the design of a plant under construction.
- 138 NNB GenCo is implementing a programme of training in its LC20 arrangements that is targeting key personnel both within NNB GenCo and its AE/RD.
- 139 NNB GenCo arrangements for compliance with LC20 will be informed by a structured programme of self regulation.

Recommendations from Intervention.

- 140 ONR should accept that NNB GenCo's proposed arrangements for complying with LC20 are adequate for the purpose of granting a nuclear site licence.
- 141 Following granting of a nuclear site licence for Hinkley Point C, ONR should continue dialogue with NNB GenCo on the competence and training of personnel responsible for managing modifications to the design.
- 142 ONR should seek further dialogue with NNB GenCo on the use of derived powers to permission modifications to the design of a plant under construction.
- 143 ONR should seek opportunities to influence the continued development of NNB GenCo's arrangements.

4.1.18 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.*****Scope of Assessment***

- 144 The Assessment Report ONR-CNRP-AR-12-074 (Ref 18) presents the findings of ONR assessment of the radioactive waste and decommissioning aspects of NNB GenCo's application for a nuclear site licence for Hinkley Point C. It includes consideration NNB GenCo's licence condition arrangements for the accumulation, disposal, and control and containment of radioactive waste. NNB GenCo is not expecting to generate radioactive waste during construction and non-active commissioning but recognises that because of the site's proximity to Hinkley Point A and Hinkley Point B its arrangements should address the possibility, albeit a remote one, of finding radioactive contamination. Thus, ONR has agreed (Ref 3) that, at the point of licence granting, NNB GenCo need only submit nominally developed arrangements for managing radioactive contaminated material.

Matters Arising.

- 145 None.

Conclusions of Intervention.

- 146 ONR is satisfied that NNB GenCo's arrangements for the accumulation, disposal, and control and containment of radioactive waste are sufficient for licensing.
- 147 ONR assessment of radioactive waste management and decommissioning aspects of NNB GenCo's application has not identified any issues that would preclude a nuclear site licence being granted for the Hinkley Point C site

Recommendations from Intervention.

- 148 ONR should accept that NNG GenCo's arrangements for the management of radioactive materials and radioactive waste (LC32, LC33 and LC34) are adequate for the purposes of granting a nuclear site licence.

4.1.19 Licence Condition 36: Organisational capability***Scope of Assessment***

- 149 The Assessment Report ONR-CNRP-AR-12-098 (Ref 19) presents the findings which focused on development of arrangements for compliance with Licence Condition 36:
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Organisational capability. During the course of a programme of meetings ONR engaged in dialogue with NNB GenCo that influenced the development of its arrangements for providing and maintaining adequate human resources controlling changes to its organisational structure which may affect safety, and conducting effectiveness reviews. Furthermore, ONR gained confidence that NNB GenCo will provide and maintain adequate financial resources to ensure safe installation and operation.

150 The intervention examined compliance with relevant standards. ONR participated in structured discussions with personnel appointed to nuclear safety significant roles from various parts of NNB GenCo's organisation to test their understanding of their roles.

151 The NNB GenCo arrangements have been the subject of Self Assessment and also assessment by the Independent Assessment Challenge and Oversight (IACO) function. The findings of these assessments have also informed ONR's assessment.

Matters Arising

152 ONR's Technical Assessment Guide T/AST/048: Organisational Capability; includes guidance for judging a licensee's approach to providing and maintaining adequate financial resources to ensure safety. This guidance identifies a number of attributes that ONR expects a licensee's organisation to possess in order to provide the necessary assurance. ONR's assessment concluded that the NNB GenCo organisation possesses the attributes it expects of a licensee at the point of licence granting.

153 The HPC project is in its early phases and the arrangements are still being refined and developed. NNB GenCo is to be commended for taking the decision to implement its arrangements for LC36 in advance of licence granting. Although the arrangements have yet to develop further, NNB GenCo has made significant progress and has established the key attributes of arrangements to manage its organisational capability.

154 During the design, construction and commissioning phases, NNB GenCo will need sufficient, competent staff to act as an 'intelligent customer' for the products and services it commissions and receives from its supply chain and the organisational capability arrangements will need to support this. As the project prepares for commissioning and, subsequently, operation, the focus will shift to the requirement for competent operational staff. Thus ONR expects NNB GenCo's LC36 compliance arrangements to be robust and flexible enough to manage the changes to organisational capability during each phase of the project.

Conclusions of Intervention

155 ONR is satisfied that NNB GenCo has demonstrated that its arrangements for complying with LC36 will:

- provide and maintain adequate financial and human resources to ensure the safe operation of the HPC nuclear licensed site; and,
- control any change to the organisation structure or resources which may affect safety.

156 ONR is satisfied that NNB GenCo's arrangements for LC36 have adequately addressed the expectations of relevant standards.

157 The arrangements and their implementation are still evolving, but NNB GenCo recognises the outstanding issues and has demonstrated that there is a strong forward momentum to continue their development

158 ONR accepts that the arrangements are sufficiently well advanced at this stage.

Recommendations from Intervention

- 159 ONR should accept that NNB GenCo's arrangements for compliance with LC36, and its implementation of these arrangements, adequate to support a decision to grant a nuclear site licence for Hinkley Point C.
- 160 ONR should continue to monitor and influence the development of NNB GenCo's organisational capability.

4.2 Licence Conditions – Group 2**4.2.1 Licence Condition 05: Consignment of nuclear matter**

- 161 The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement detailed arrangements for the consignment of nuclear matter, such as neutron sources and nuclear fuel, prior to commencing active commissioning of the plant. Thus ONR will look to the NNB GenCo procedure "Control of Nuclear Matter" to manage and record the consignment of nuclear matter and also facilitate its use of primary powers embodied in this licence condition.
- 162 Prior to active commissioning, contractors are expected to use excepted matter, i.e. isotopes for industrial use, in connection with construction and installation activities. The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement appropriate arrangements for radiological protection during the construction phase that will address the management and recording of the use of excepted matter by its contractors (See section 4.2.3 below).

Recommendation

- 163 ONR should accept NNB GenCo's commitment to develop the necessary detailed arrangements for consignment of nuclear matter prior to start of active commissioning.

4.2.2 Licence Condition 15: Periodic Review

- 164 During the construction, installation and non-active commissioning phases of the project NNB GenCo' arrangements for LC14: Safety documentation; will manage development of the pre-construction and pre-commissioning safety reports. LC 14 is in Group 1 and at Section 4.1.13 above ONR judges that NNB GenCo's arrangements for the production and assessment of Safety Reports provides an adequate basis for LC14 compliance's.
- 165 The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement detailed arrangements for the periodic and systematic review and reassessment of safety cases prior to commencing active commissioning of the plant. Although the matrix cites the same procedure for both LC14 and LC15, i.e. Management of Safety Reports, ONR's judgement reported above applies only to its acceptability for development of safety reports. The judgement does not extend application of the procedure for compliance with LC15: Periodic review.

Recommendation

- 166 ONR should accept NNB GenCo's commitment to develop the necessary detailed arrangements for the periodic review and systematic reassessment of safety cases prior to start of active commissioning.

4.2.3 Licence Condition 18: Radiological protection.

167 The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement arrangements for the radiological protection of personnel prior to commencing construction. This commitment recognises that its contractors will wish to use isotopes for industrial use in connection with construction and installation activities. The matrix also commits NNB GenCo to update the arrangements prior to commencing active commissioning.

168 Although a Group 2 condition the assessment report ONR-CNRP-AR-12-101 (Ref 23) reports the findings of ONR's assessment of NNB GenCo's arrangements for LC18: Radiological protection. During the course of a programme of meetings ONR engaged in dialogue on NNB GenCo's competency, capability and resourcing in relation to radiological protection and the arrangements for compliance with LC18 during the construction phase. The assessor concluded that there is no impediment from a LC18 Radiological Protection perspective to issuing the licence.

Recommendations

169 ONR should accept that NNB GenCo's arrangements for radiological protection during construction are adequate for the purposes of granting a nuclear site licence.

170 ONR should accept NNB GenCo's commitment to develop and implement updated arrangements prior to start of construction.

4.2.4 Licence Condition 21: Commissioning

171 The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement arrangements for commissioning prior to commencing of commissioning of the plant.

172 Although a Group 2 condition the assessment report ONR-CNRP-AR-12-076 (Ref 28) reports the findings of ONR assessment of NNB GenCo's principles for compliance with LC21: Commissioning.

Scope of Assessment

173 During the course of a programme of meetings ONR engaged in dialogue on the compliance matrix, commissioning hold points, commissioning resources, commissioning guide, interaction with the AE/RD, operating experience, support to procurement activities, and development of the Pre-Construction Safety Report.

Key Findings and Conclusions

174 NNB GenCo's proposed list of commissioning hold points is adequate for the purposes of granting a licence for Hinkley Point C.

175 NNB GenCo commissioning resource is providing adequate support to early procurement activities.

176 NNB GenCo is making good progress with development of the Pre-Operations resourcing strategy and, in line with international good practice, planning for operations staff to play a significant role in commissioning activities thereby gaining familiarity with the plant.

177 NNB GenCo's Commissioning Guide captures the project's intentions with respect to commissioning activities and for identifying those enablers that need to be put in place early in the project. The Guide reflects good practices from the International Atomic Energy Authority's safety standards.

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- 178 The forward work plan includes the transfer of control of the Commissioning Schedule to NNB GenCo, which demonstrates the licensee's commitment to fulfil its key responsibility as an Intelligent Customer.
- 179 NNB GenCo compliance matrix entry for LC21 and the draft HPC Hold Points list are adequate for the purpose of granting the HPC nuclear site licence.
- 180 ONR's post licensing intervention strategy will continue to engage with NNB GenCo's Pre-Operations Department personnel in order to ensure that commissioning considerations are informing the design, procurement and manufacture of structures, systems and components.

Recommendations

- 181 The assessor recommends from the perspective of the LC21, ONR should grant NNB GenCo a nuclear site licence for Hinkley Point C.
- 182 ONR should accept NNB GenCo's commitment to develop and implement updated arrangements prior to start of commissioning.

4.2.5 Licence Condition 22: Modification or experiment on existing plant.

- 183 The Compliance Matrix (Ref 2) commits NNB GenCo to develop detailed arrangements for the control of any modification or experiment to any part of an existing plant or process which may affect safety prior to commencing operation. ONR expects these arrangements to evolve from those implemented for control of modifications to design of plant under construction discussed under section 4.1.17 above.

Recommendation

- 184 For the purposes of granting a nuclear site licence ONR should note and accept NNB GenCo's commitment to develop the necessary arrangements for modification or experiment on an existing plant prior to start of operation.

4.2.6 Licence Conditions: Plant operations.

- 185 The plant operations group of licence conditions comprise the following:
- LC23: Operating rules;
 - LC24: Operating instructions;
 - LC25: Operational records
 - LC26: Control and supervision of operations;
 - LC27: Safety mechanisms, devices and circuits;
 - LC28: Examination, inspection, maintenance and testing;
 - LC29: Duty to carry out tests, inspections and examinations;
 - LC30: Periodic shutdown;
 - LC31: Shutdown of specified operations.
- 186 The Compliance Matrix (Ref 2) commits NNB GenCo to develop and implement arrangements and procedures for these LCs at various stages post licence grant. Arrangements for document and records management, organisational learning, and safety reports are implemented at licence grant via arrangements for the Group 1 LC06, LC07 and LC14. Against LC28, the matrix commits NNB GenCo to implement

arrangements for plant preservation prior to start of construction and more comprehensive arrangements, including a maintenance schedule, prior to start of radioactive commissioning. Finally, the matrix commits NNB GenCo to implement adequate arrangements for the full suite of plant operations licence conditions prior to start of radioactive commissioning.

187 ONR has engaged in dialogue (Refs 24 and 25) with NNB GenCo aimed at establishing the Pre-Operations Department role during the early stages of the Hinkley Point C project. This dialogue has provided ONR with visibility of the department's activities in relation to the plant operation related Group 2 licence conditions. Pre-Operations staff are engaged in early design review and procurement activities, conducting joint programmes with EDF(SA) in France on plant operations related matters, and preparing a strategy for the recruitment and training of operations staff. Pre-Operations staff recognise the ONR expectation that its arrangements are to provide regulatory footprints in respect of LC23 Operating Rules and LC28 Examination, Inspection Maintenance and Testing.

188 ONR's post licensing intervention strategy will continue to engage with NNB GenCo's Pre-Operations Department personnel in order to ensure that operability and maintainability considerations are informing the design, procurement and manufacture of structures, systems and components.

Recommendations

189 ONR should accept NNB GenCo's commitment to the timely development and implementation of detailed arrangements for the plant operation licence conditions LC23 to LC31 inclusive.

190 ONR should accept that NNB GenCo's proposals for developing arrangements for plant operations are acceptable for the purposes of granting a nuclear site licence.

4.2.7 Licence Condition 35: Decommissioning

191 The Compliance matrix (Ref 2) commits NNB GenCo to develop detailed arrangements for decommissioning to a level of detail appropriate to the stage of the project. The matrix cites the Detailed Decommissioning and Waste Management Plan ((D)DWMP)) (Ref 26) as providing the necessary detail to support start of construction. The matrix also recognises the potential impact of modifications to the design upon decommissioning and therefore cites the arrangements for compliance with LC20: Modifications to design of plant under construction.

192 The ONR assessment report ONR-CNRP-AR-12-074 (Ref 18) reports the findings of ONR's assessment of NNB GenCo's radioactive waste and decommissioning work streams, which included consideration of the (D)DWMP. The report records the following conclusions.

- NNB GenCo's overall strategies for decommissioning and management of both intermediate level waste and spent fuel are in accordance with national and regulatory policy and strategy, and the proposals presented are feasible.
- ONR assessment has not identified any issues from a radioactive waste management and decommissioning perspective that give rise to concerns for granting a nuclear site licence for the HPC site.

Recommendation

- 193 ONR should accept NNB GenCo's commitment to develop and implement detailed arrangements for decommissioning that are of a level of detail appropriate to the stage of the project.

5 CONCLUSIONS AND RECOMMENDATIONS

194 ONR inspectors have completed a programme of intervention that has examined the procedures and arrangements that NNB GenCo intend to implement in order to comply with the 36 condition attached to the standard nuclear site licence for installing and operating two EPR™ units at Hinkley Point C in Somerset.

195 NNB GenCo has divided the standard licence conditions into two groups according to ONR's expectations with regard to the state of development of the arrangements for compliance at the point a licence is granted. Accordingly NNB GenCo has assigned the licence conditions as follows.

- Group 1 – Licence Conditions required for activities that NNB GenCo will undertake during the design, manufacture, procurement, construction and installation phases of the project. ONR expect the arrangements to be adequate and fit for purpose at the time of granting a licence.
- Group 2 - Licence Conditions required for activities that NNB GenCo will undertake during the commissioning, operation and decommissioning phases of the project. ONR expect NNB GenCo to give a clear commitment to the timely development and implementation of arrangements for complying with these conditions.

196 The intervention has informed ONR's judgement on the adequacy of NNB GenCo's arrangements for complying with the 36 conditions attached to the standard licence and lead to the following conclusions and recommendations.

5.1 Conclusions

197 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 Project C project.

198 NNB GenCo has demonstrated to the ONR Site Inspector that:

- it can accurately mark the position of the boundaries to the HPC 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.

199 NNB GenCo has developed and implemented arrangements for Licence Condition 02: Marking the site boundary; that supports the exclusion of clause 4 of Licence Condition 2 until such time as it is safe to mark the site boundary by fences or other appropriate means.

200 NNB GenCo's arrangements for compliance with LC19 facilitate the Executive'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.

201 NNB GenCo's arrangements for compliance with Licence Condition 20 facilitate the Executive's use of primary or derived powers requiring the licensee to seek permission to implement modifications to the design of a plant under construction.

202 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 Executive.

203 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.

5.2 Recommendations.

204 ONR should accept that NNB GenCo has developed adequate arrangements for compliance with those conditions attached to the standard nuclear site licence required for design, procurement, manufacture, construction and installation of two EPR™ units at Hinkley Point C in Somerset.

205 ONR should exclude the clause 4 of Licence Condition 02: Marking the site boundary; of the standard licence until such time as it is safe for NNB GenCo to mark the site boundary by fences or other appropriate means.

206 ONR should note and accept NNB GenCo commitment to the timely development and implementation of detailed arrangements for compliance with those conditions attached to the standard nuclear site licence required for commissioning, operation and decommissioning.

207 ONR should accept that the status of NNB GenCo's arrangements for complying with the 36 conditions attached to the standard nuclear site licence is adequate for the purposes of granting a licence to install and operate two EPR™ reactor units at Hinkley Point C in Somerset.

6 REFERENCES

No.	Title
1	NNB GenCo letter ONR-OSL-RIO-000061 dated 29 July 2011. Application for Nuclear Site Licence for Hinkley Point. TRIM 2011/442090
2	NNB GenCo Company Document Nuclear Site Licence Compliance Matrix: Hinkley Point C. NNB-OSL-PRO-000046, (Part 4 to Ref1).
3	CNRP New Civil Reactor Build. NNB GenCo Ltd's Application for a Nuclear Site Licence to Install and Operate Two EPR™ Reactor Units at Hinkley Point. ONR Intervention Strategy. TRIM 2012/61973.
4	ONR How2 Permissioning Reports. AST/003 Issue 4. HSE. August 2011. www.hse.gov.uk/nuclear/operational/assessment/index.htm .
5	ONR-CNRP-AR-12-120 - NNB GenCo - HPC – LC 02 - Marking of the site boundary. October 2012. TRIM 2012/370684
6	ONR-CNRP-AR12077 - Hinkley Point C - Assessment of LC3. August 2012. TRIM 2012/318400
7	ONR-CNRP-AR-12-089 - Licence Condition 6 - Documents, Records, Authorities and Certificates. August 2012. TRIM 2012/336058
8	ONR-CNRP-AR-12-099 - Organisational Learning and the Notification of Incidents Assessment Report (LC07). September 2012. TRIM 2012/360461
9	ONR-CNRP-AR-12-073 - Assessment of NNB GenCo Procedures for Instructions to Persons on the Site (LC09). August 2012. TRIM 2012/312767
10	ONR-CNRP-AR-12-095 - NNB GenCo - LC10: Training Compliance Arrangements. August 2012. TRIM 2012/344363
11	ONR-CNRP-AR-12-121 - NNB GenCo - HPC – LC 11 - Emergency arrangements. October 2012. TRIM 2012/392467
12	ONR-CNRP-AR-12-096 - NNB GenCo - LC12 Duly Authorised and Other suitably Qualified and Experienced Persons Compliance Arrangements. August 2012 TRIM 2012/344244
13	ONR-CNRP-AR-12-083 - NNB GenCo: Hinkley Point C Licence Condition 14 Report for Licensing October 2012, TRIM 2012/412511
14	ONR-CNRP-AR-12-122 - NNB GenCo - HPC – LC 16 - Site plans, designs and specifications. October 2012. TRIM 2012/370689
15	ONR-CNRP-AR-12-087 - NNB GenCo Assessment Report LC17 Management Systems. August 2012. TRIM 2012/332993
16	ONR-CNRP-AR-12-112 - NNB GenCo - HPC – LC 19 - Construction of installation of new plant. September 2012. TRIM 2012/357205
17	ONR-CNRP-AR-12-113 - NNB GenCo - HPC – LC 20 - Modification to design of plant under construction. September 2012. TRIM 2012/359172
18	ONR-CNRP-AR-12-074 - Assessment of Radwaste and Decommissioning Workstreams – HPC. August 2012. TRIM 2012/320218
19	ONR-CNRP-AR-12-098 - NNB GenCo - Licence Condition 36 - Organisational Capability Arrangements Assessment Report. September 2012. TRIM 2012/373068
20	ONR Minute: Agreement to variation of LC2(4)at Hinkley Point. Dated 16 August 2010. TRIM 2010/358861.

No.	Title
21	IR12171 - NNB GenCo - LC04 Restriction on Nuclear Matter on site - 27 July 2012. TRIM 2012/322680
22	NNB GenCo – Level 4 Meeting Notes - LC08 Arrangements Summary - NNB-OSL-NOT-000355 - 26 July 2012. TRIM 2012/394390
23	ONR-CNRP-AR-12-101 - LC18 Workstream Assessment - Licensing of Hinkley Point C. TRIM 2012/351231
24	IR12210 L4 Meeting WS 18 Plant Operations LCs. TRIM 12012/68709
25	IR12150 L4 Meeting WS18 Plant Operations LCs. TRIM 2012/340041
26	NNNB GenCo NNB-PEA-REP-000002 Detailed Decommissioning and Waste Management Plan. TRIM 2012/197321 (UK RESRICTED)
27	NNB GenCo letter ONR-HPC-20295N dated 9 October 2012. Licence Condition 16(1) and 16(2) Compliance Submission. TRIM 2012/397365
28	ONR-CNRP-AR-12-076 - Support to HPC Licence Granting - LC21 Commissioning Workstream - 13 August 2012. TRIM 2012/342921
29	Response by NNB GenCo to emerging ONR item on LC07, Organisational Learning. 16/11/12. TRIM 2012/452380