Office for Nuclear Regulation

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Civil Nuclear Reactor Programme

Control and Instrumentation (C&I) workstream assessment to inform nuclear site licensing of NNB GenCo Hinkley Point C

Assessment Report: ONR-CNRP-AR-12-092
Revision 1
22 January 2013

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ASSESSMENT REPORT

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EXECUTIVE SUMMARY

Background

This report presents the findings of the Office for Nuclear Regulation (ONR) Control and Instrumentation (C&I) workstream assessment of NNB Generation Company's (NNB GenCo) application, including supporting information and arrangements, for a nuclear site licence at Hinkley Point C (HPC). This assessment supports ONR's decision whether to grant a nuclear site licence for NNB GenCo to install and operate two UKEPR™ units at HPC.

This report has been produced in line with ONR's overall licensing strategy. It informs both ONR's organisational capability intervention from ONR's licensing strategy.

Assessment and inspection work carried out by ONR

ONR has engaged with NNB GenCo since July 2010 on the C&I workstream, via quarterly Level 4 technical meetings, assessment of relevant documentation (where available) and inspections of C&I capability arrangements in March and July 2012, to gather sufficient evidence to recommend, or not, granting a nuclear site licence. Within the C&I workstream this engagement had the objective of verifying the following:

- NNB GenCo has adequate control of the C&I aspects of the HPC programme;
- NNB GenCo has adequate control of the developing design for C&I systems and equipment important to safety at HPC through its interactions with the Architect Engineer;
- NNB GenCo is able to demonstrate an adequate intelligent customer capability in the context of C&I systems and equipment important to safety;
- NNB GenCo has Suitably Qualified and Experienced Personnel (SQEP) to manage, implement and deliver the C&I aspects of the HPC programme; and
- NNB GenCo has developed or is developing suitable and sufficient arrangements to support the design development and analysis of the C&I aspects of the HPC programme.

Matters arising from ONR's work

A number of potential areas for improvement that have been identified at this point in the programme for HPC are being adequately progressed by NNB GenCo. No significant matters were identified.

Conclusions

In terms of NNB GenCo's competence and capability in the C&I workstream area, no significant issues have been identified that prevent me recommending that ONR grant a nuclear site licence for NNB GenCo to install and operate two UKEPR™ units at HPC. I therefore conclude, based on the C&I workstream that NNB GenCo's arrangements appear adequate to manage nuclear safety for the point in time at which the nuclear site licence is to be granted.

Recommendations

From the perspective of the C&I workstream, I recommend that ONR should grant a Nuclear Site Licence to NNB GenCo to install and operate two UKEPR™ units at HPC.

LIST OF ABBREVIATIONS

AE	Architect Engineer
BMS	(ONR) How2 Business Management System
C&I	Control and Instrumentation
C&P	Control and Protection
CNRP	Civil Nuclear Reactor Programme
DA	Design Authority
DR&A	Design, Review and Acceptance
GDA	Generic Design Assessment
HPC	Hinkley Point C
HSE	Health and Safety Executive
IC	Intelligent Customer
IPR	Intervention Project Record
LC	Licence Condition
NGL	EDF Energy Nuclear Generation Ltd
NNB GenCo	NNB Generation Company
ONR	Office for Nuclear Regulation (an agency of HSE)
PCSR	Pre-construction Safety Report
PCSR2	Second Pre Construction Safety Report
PSA	Probabilistic Safety Analysis
SAPs	Safety Assessment Principles (HSE)
SQEP	Suitably Qualified and Experienced Personnel
TAGs	Technical Assessment Guides (ONR)
TSC	Technical Support Contractor
UKEPR™	A UK specific version of the EdF/Areva European Pressurised (Water) Reactor

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1 INTRODUCTION

1.1 Background

1 NNB Generation Company (NNB GenCo) has submitted its formal application for a nuclear site licence to install and operate two UKEPR™ units at Hinkley Point C (HPC). The Office for Nuclear Regulation's (ONR's) intervention strategy [Ref. 7] is intended to inform a decision as to whether, or not, a nuclear site licence should be granted to NNB GenCo in respect of HPC.

2 ONR's approach to licensing is informed by interventions that considered the adequacy of NNB GenCo's:

- organisational capability;
- licence condition compliance arrangements;
- safety report and associated substantiation; and
- licensing documentation and ONR's due process(es), including associated legal and statutory consultation.

3 As part of ONR's activities to consider the adequacy of NNB GenCo's organisational capability technical topic leads were required to develop and carry out a discipline based intervention. The C&I intervention developed to support licensing is summarised in the Civil Nuclear Reactor Programme (CNRP) Intervention Project Record (IPR) NNB-IPR-29 [Ref. 11]. This assessment report summarises the outcome of the C&I discipline based intervention on organisational capability.

4 The assessment was undertaken in accordance with the requirements of the ONR How2 Business Management System (BMS) procedure AST/001 [Ref. 1]. The ONR Safety Assessment Principles (SAPs) [Ref. 2], together with supporting Technical Assessment Guides (TAGs) [Refs. 3 to 6] have been used as the basis for this assessment.

1.2 Scope

5 The scope of this report informs the organisational capability intervention outlined in ONR's licensing intervention strategy [Ref. 7].

1.3 Methodology

6 The methodology for the assessment follows ONR BMS document AST/001, Assessment Process [Ref. 1], in relation to the procedural aspects of assessment within ONR.

7 This assessment has been focused primarily on NNB GenCo's capabilities in the C&I topic area and has not considered any specific activities related to the site specific PCSR for HPC. This approach was taken as it is understood that NNB GenCo do not intend to produce an updated version of the site specific PCSR, which will be based on the design of the UKEPR™ that has been subject to GDA, until a post-licensing phase in the development of HPC.

2 ASSESSMENT STRATEGY

8 The intended assessment strategy for the licensing of NNB GenCo with respect to HPC for the C&I workstream is set out in this section. This identifies the standards and criteria that have been applied and the scope of the assessment.

2.1 Standards and criteria

9 The relevant standards and criteria adopted within this assessment are principally the SAPs [Ref. 2], internal ONR TAGs [Refs. 3 to 6], relevant standards and good practice informed from existing practices adopted on UK nuclear licensed sites. The key SAPs, relevant TAGs and other standards and guidance are detailed within this section. Relevant good practice, where applicable, has also been cited within the body of the assessment.

2.1.1 Safety Assessment Principles

10 The key SAPs applied within this assessment are included within Table 1 of this report.

2.1.2 Technical Assessment Guides

11 The following Technical Assessment Guides have been used as part of this assessment:

- T/AST/027 Training and assuring personnel competence [Ref. 3];
- T/AST/049 Licensee use of contractors and intelligent customer capability [Ref. 4];
- T/AST/057 Design safety assurance [Ref. 5];
- T/AST/079 Licensee design authority capability [Ref. 6].

2.1.3 Standards and guidance

12 The following standards and guidance have been used as part of this assessment:

- BS EN 61508, Part 1 “Functional safety of electrical/electronic/programmable electronic safety-related systems. General requirements” [Ref. 8];
- HSE/BCS/IET guidance “Managing competence for safety-related systems” [Ref. 9];
- IET guidance “Competence criteria for safety-related system practitioners” [Ref. 10].

2.2 Assessment scope

13 The purpose of this assessment report is to summarise the outcome of the intervention outlined in the IPR NNB-IPR-29 [Ref. 11] to support ONR’s overall licensing strategy. The objective of the intervention is to conclude whether NNB GenCo’s C&I engineering discipline capability is able to satisfy relevant requirements to act as an Intelligent Customer (IC)[2] throughout the HPC development.

[2] From T/AST/049 [Ref. 4], IC can be defined as “As an intelligent customer, in the context of nuclear safety, the management of the facility should know what is required, should fully understand the need for a contractor’s services, should specify requirements, should supervise the work and should technically review the output before, during and after

14 Overall, the purpose is to recommend as to whether ONR should grant a nuclear site licence.

15 The anticipated outcomes of the intervention are confirmation that:

- NNB GenCo has demonstrated adequate arrangements are in place and being complied with to establish and maintain C&I competence within NNB GenCo and, as necessary, their specialist support contractors;
- NNB GenCo has demonstrated a clear understanding of C&I IC requirements;
- NNB GenCo has demonstrated that it has robust arrangements to ensure that C&I competences are maintained at an adequate standard for both its own personnel and those of specialist support contractors.

16 This assessment report will inform the ONR organisational capability lead correspondent's overall assessment report.

2.2.1 C&I intervention strategy

17 To address the objectives and anticipated outcomes of the intervention a mixture of Level 4 technical meetings on C&I capability requirements, sampling of NNB GenCo's supporting documents (where available given the point in time in the C&I programme), assessment of NNB GenCo's policy and procedures for the development and maintenance of C&I competences have been used to gather evidence to form a judgement on NNB GenCo's on C&I capabilities as well as the effectiveness of its developing arrangements.

18 Within the C&I workstream this has been interpreted as verifying that NNB GenCo is able to demonstrate an adequate C&I IC capability.

2.2.2 Use of technical support contractors

19 No technical support contractors have been used to support this assessment.

2.3 Integration with other assessment topics

20 The nature of the C&I workstream means that there are interactions with other technical areas since aspects of their assessment may have implications for the C&I assessment. There have been interactions between C&I and other technical areas such as electrical, fault studies and PSA. This is expected to increase as NNB GenCo's HPC programme progresses.

2.4 Out-of-scope items

21 The focus of this assessment has mainly been on NNB GenCo's C&I capability as opposed to the design of C&I systems and equipment within UKEPR™, including supporting analyses and documentation. This is not unexpected however given the point in time in the programme and current progress being made on this aspect of C&I within ONR's GDA activities.

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implementation. The concept of intelligent customer relates to the attributes of an organisation rather than the capabilities of individual post holders".

3 NUCLEAR SITE LICENCE APPLICANT'S SAFETY CASE

22 NNB GenCo formally applied for a nuclear site licence for HPC in letter ONR-HPC-20143R, dated 29 July 2011 [Ref. 12]. This was supported by an application dossier [Ref. 13] that supports NNB GenCo's application. ONR agreed [Ref. 14] that this dossier did not need to include a HPC site specific PCSR. For the purposes of granting a nuclear site licence ONR indicated to NNB GenCo that it would accept a document that illustrates the structure of the HPC site specific PCSR document.

23 In order to provide the necessary high level of confidence that the site is suitable for the construction and operation of a UKEPR™, NNB GenCo was required to justify a number of key topics including:

- The site is of a sufficient size.
- The site is (or can be) connected to grid supplies.
- There is adequate cooling capability for all normal and fault conditions.
- The environmental conditions will not preclude the use of the site with respect to external hazards.
- The geology of the site will provide a secure long term support to the necessary structures, systems and components.
- The submission will also need to provide a schedule for submission of further PCSR updates or revisions to support subsequent construction milestones.

24 NNB GenCo has supplied ONR with a number early batch submissions to cover these topics. No elements of these batches were determined to be relevant to the C&I workstream and hence have not been subject to C&I assessment.

4 ONR ASSESSMENT

25 This assessment has been carried out in accordance with ONR How2 BMS document AST/001, "Assessment Process" [Ref. 1].

4.1 Scope of assessment undertaken

26 The scope of the assessment has followed the C&I strategy described in Section 2 of this report. The following areas have been considered and are discussed in Section 4.3 of this report:

- NNB GenCo has adequate control of the C&I aspects of the HPC programme;
- NNB GenCo has adequate control of the developing design for C&I systems and equipment important to safety at HPC through its interactions with the Architect Engineer;
- NNB GenCo is able to demonstrate an adequate intelligent customer capability in the context of C&I systems and equipment;
- NNB GenCo has Suitably Qualified and Experienced Personnel (SQEP) to manage, implement and deliver the C&I aspects of the HPC programme; and
- NNB GenCo has developed or is developing suitable and sufficient arrangements to support the design development and analysis of the C&I aspects of the HPC programme.

4.2 Interventions with NNB GenCo

27 Given that significant C&I deliverables are not anticipated until post licensing only a limited sample assessment of C&I deliverables, which have been made available at Level 4 meetings, has been carried out to form a view on whether from the C&I topic area to recommend, or not, granting a nuclear site licence. The recommendation on granting a nuclear site licence is predominantly based on the outcome of the Level 4 meetings, outlined in Table 2, and a C&I intervention on C&I competence and capability carried at NNB GenCo's offices [Refs. 15 and 16].

4.3 Assessment

4.3.1 C&I competence and capability

28 This report covers an intervention to help inform ONR's ongoing regulatory decision on whether or not to issue a site licence to NNB GenCo Ltd.

29 The intervention examined the following:-

- NNB GenCo Ltd's competency framework
- C&I discipline competency requirements
- C&I discipline competency requirements for technical support contractors
- Implementation of the C&I competency requirements for current NNB GenCo personnel working in their Design Authority's Control and Protection (C&P) Systems Group.

30 NNB GenCo's Control & Protection (C&P) Systems Group, based within their Design Authority (DA), is currently fully defining the key UKEPR™ C&I systems important to

safety and assigning their classification and categorisation in accordance with BS IEC 61226 [Ref. 17]. Definition of key C&I systems is considered to be a prerequisite to identifying any shortfalls NNB GenCo may have in the technical competency of personnel in the C&P Systems Group.

31 This work is being led by the C&P Systems Group with support from representatives of the Architect Engineer (AE) organisation within EDF DIN/CNEN, of France. A structured and systematic approach has been taken by NNB GenCo to establish relevant technical expertise requirements, for example, protection systems platforms (Teleperm TXS, T2000), in-core instrumentation and radiation monitoring systems. Their current view is that a single individual is to be allocated as a technical lead for each of the key C&I systems, for example, a lead for in-core instrumentation. This has the objective that an individual should act as the lead for only one key C&I system although due to the level of SQEP resource currently employed by NNB GenCo it may be necessary for an individual to lead for more than one key C&I system for a limited duration.

32 It was found that NNB GenCo has to date produced ten role profiles to align with their technical lead allocations. These profiles include competency requirements to demonstrate that an individual can be considered as Suitably Qualified and Experienced Personnel (SQEP) to undertake the role in specific areas: Intelligent Customer (IC), Generic Design Authority, DA Team Leader, Protection Systems Specialist, Protection Systems Instrumentation Specialist, Control Systems Specialist, Control Systems Instrumentation Specialist, Senior Electrical Systems Engineer, Plant System Networks and Security Specialist, and Radiometrics Specialist . The management of the C&P Systems Group within DA has been assessed against both the IC and DA roles. The remaining members of the Group have been assessed against the DA role and one or more of the specialist roles.

33 NNB GenCo has advised that it will assess its requirement for further role profiles by the end of 2012 and will revisit the existing role profiles in 2013. NNB GenCo has agreed to provide ONR with a forward plan of I&C capability/SQEP development for 2012/2013.

34 In terms of resources, NNB GenCo is currently planning to recruit five more I&C personnel in 2012 to augment the C&P Systems Group, which currently has eight members (including management). The Group members are all suitably qualified C&I engineers with varying degrees of experience from a predominantly nuclear industry background.

35 Additionally, NNB GenCo has advised that an agreement is in place for an additional two personnel to join the C&P Group by the end of 2012 subject to their release from EDF Nuclear Generation Limited (NGL). NNB GenCo has recognised the requirement to expand its C&P Group and is engaging with EDFNGL in identifying staff currently working in non-system specific C&I specialist areas that may be employed by NNB GenCo. This collaboration it at an early stage of development and it is proposed that ONR will continue to monitor this initiative through the early stages of permissioning activities in relation to HPC.

36 Currently NNB GenCo review C&P personnel performance against their role profile competences on a four monthly basis and it is recognised that, as necessary, an increased frequency may be required in order to manage any deficiencies given that the systems, technology and processes are not completely defined at this time. Also, whilst there is some limited training available to NNB GenCo C&I personnel in UKEPR™ design and operation, there are only limited formal training arrangements in place to address any

competency shortfalls. Further work is in-hand by NNB GenCo to identify a range of formal training courses to address any I&C competency shortfalls.

37 I am satisfied that NNB GenCo's current arrangements for the review of C&P personnel performance including current and future training requirements on a four monthly basis is a sufficiently frequent review period.

38 Implementation of C&I competency arrangements for existing NNB GenCo personnel was carried out by undertaking a review of the application of the role profile structure to an existing Control System Specialist against NNB/OSL/TPR/000020 [Ref. 18]. This provided details of the following:-

- Nuclear safety responsibilities;
- Role Description;
- Competency list (both DA Generic and role specific);
- Assessment of selected technical competencies;
- DA generic training comparison;
- Training profile;
- Nuclear baseline role – assessment of candidate.

39 My assessment of the use of the expanded role profiles has found that NNB GenCo's use of this information adequately demonstrates sufficient depth of C&I competency and that appropriate competencies have been specified for the individual roles.

40 NNB GenCo has sub-divided skill and knowledge criteria applicable to the supply chain into five areas: Tier 1 (AE Capability), Tier 2, Tier 3, DA Framework Contracts and C&P Group 3rd party support. NNB GenCo recognised that numerous facets of the Tier 1 capability would need to be identified by roles such as responsible designer and that further formalisation may be necessary.

41 The C&P Systems Group is currently contributing to seven technical working groups within NNB GenCo, which cover supply chain issues through their Design, Review and Acceptance (DR&A) procedures. The groups are as follows:-

- Safety quality and architecture;
- Standard I&C[3];
- Teleperm XS (TXS);
- Non-computerised Safety System (NCSS);
- Simulation & Human Factors;
- Instrumentation; and
- Dedicated I&C[5].

42 A further technical working group entitled "Maintenance and Obsolescence" is to be added before the end of 2012. The seven I&C groups above make up a total of thirty DA technical working groups encompassing a breadth of engineering disciplines. I am

[3] NNB GenCo use the term Instrumentation and Control (I&C) to describe the topics covered by ONR's C&I workstream.

satisfied that NNB GenCo has recognised the importance of maintenance and obsolescence at an early stage.

43 NNB GenCo has issued ONR with a competency list summary as part of NNB/OSL/TPR/000020 [Ref. 18], which lists all the competences seen as important to licensing, a description of each individual competence and the origin/reference document of that particular competence. It was found that there was a slight discrepancy between the new role profiles and the competency list summary. NNB GenCo have agreed to align the new role profiles with the competency list summary and confirm that both harmonise with a planned update of their management of competency document NNB/OSL/PRO/000018 [Ref. 19].

44 Additionally, NNB GenCo have agreed to perform a gap analysis of their competency arrangements against the HSE/BCS/IET guidance [Ref. 9] that covers the management of competence for safety-related systems, which is based on good practice in the area of functional safety and relevant standards. NNB GenCo agreed to undertake this gap analysis and incorporate any shortfalls into their forward plan that will be subject to further ONR review as part of permissioning activities.

45 NNB GenCo have not to date utilised Temporary Support Contractors (TSCs) but have identified that they may at some point require their support services as the HPC programme progresses – for example, verification of the integrity of safety-related software using statistical testing techniques. In preparation for this NNB GenCo have initial agreements in place with a number of prospective TSCs. These agreements require the prospective TSCs to provide details of what level(s) of expertise they possess in a variety of C&I specialist areas, such as software engineering/qualification, nucleonic instrumentation, statistical testing, radiometrics and environmental monitoring. NNB GenCo have constructed a database with the information provided to allow them to readily enter into a TSC contract with an organisation(s) best suited to providing the required support service.

46 I am satisfied that NNB GenCo has recognised the future likelihood of TSC use in support of the HPC programme and are making sufficient progress towards identifying TSCs and their C&I capabilities.

47 Generally, taking account of the point in time in the HPC programme, I consider that this C&I competence and capability intervention with NNB GenCo has adequately demonstrated that their current arrangements within their C&P Group are sufficient to fulfil the relevant aspects of SAPs EHF.8 and MS.2. This covers the processes reviewed for identifying and delivering C&I competence that, in my opinion, are necessary for nuclear site licensing.

4.3.2 NNB GenCo's control and oversight of the C&I aspects of the HPC programme

48 During Level 4 technical meetings[4] (see Table 2) NNB GenCo is required by ONR to provide a clear overview of their arrangements to manage the C&I aspects of the HPC programme. These meetings have been focussed upon a range of factors relating to the design and development of the C&I systems and equipment important to safety, including

[4] These Level 4 technical meetings are currently scheduled to take place with NNB GenCo's C&P Group and, as necessary, attendees of the Architect Engineer organisation on a quarterly basis. In addition to members of the C&I workstream, ONR attendees include members of the GDA team to ensure that there is adequate representation of issues arising from GDA that have implications for HPC site licensing and permissioning activities.

details of the C&I systems in terms of updates to the PCSR, I&C systems forward planning, management of delivery of the I&C systems covered by ONR's GDA process and other systems outside the scope of GDA, integrated overall I&C quality assurance plans and review of NNB GenCo's processes associated with DR&A and closure of GDA Assessment Findings. Throughout these meeting it has been possible to challenge the interface(s) between the AE and NNB GenCo in terms of their developing IC role. Typically, this has been carried out by inspection of the DR&A process whereby NNB GenCo review the AE's specification and design proposals for C&I-based safety systems (for example, turbine protection systems) and ensure that the requirements align to appropriate design and construction standards to fulfil nuclear safety functions.

49 Based on the interventions outlined in Table 2, I have observed a positive relationship between NNB GenCo and the AE where NNB GenCo is currently demonstrating an adequate intelligent customer capability.

50 In summary, I consider from the from the perspective of the C&I workstream, taking account of the point in time in the HPC programme, that NNB GenCo has an adequate relationship with the AE and has demonstrated appropriate control and oversight of the C&I aspects of the HPC programme. Notwithstanding this, further monitoring will be maintained during permissioning through a continuation Level 4 technical meetings and interventions at one or more of the I&C technical working group meetings.

4.3.3 Actions raised in level 4 interactions

51 Table 3 summarises all actions that have been raised within the C&I workstream Level 4 meetings that remain open at 31 August 2012. I do not consider that any of these actions are licensing issues and their closure will be progressed with NNB GenCo on permissioning timescales.

52 Overall, NNB GenCo have generally made adequate progress in addressing actions raised during interventions with ONR within the C&I workstream.

5 CONCLUSIONS AND RECOMENDATIONS

5.1 Conclusions

53 This report presents the findings of the ONR C&I workstream assessment of NNB GenCo's application, supporting information and arrangements for a nuclear site licence at HPC. This assessment supports ONR's decision whether to grant a nuclear site licence, or not, for NNB GenCo to install and operate two UKEPR™ units at HPC.

54 This report has been produced in line with ONR's overall licensing strategy [Ref. 7] and the C&I IPR NNB-IPR-29 [Ref. 11]. It informs ONR's organisational capability intervention from ONR's licensing strategy.

55 In my opinion, in terms of NNB GenCo's C&I competence and capability, there are no significant issues that have been identified to prevent me from recommending that ONR may grant a nuclear site licence for NNB GenCo to install and operate two UKEPR™ units at HPC. I therefore conclude, based on the C&I workstream that NNB GenCo's arrangements appear adequate to manage nuclear safety for the point in time at which the nuclear site licence may be granted.

56 It is noted that some of the areas above are still being developed and ONR will continue to engage with NNB GenCo to monitor and encourage progress in these areas and indeed all other areas of work referred to in this report.

5.2 Recommendations

57 My recommendation is as follows:

- From the perspective of the C&I workstream I recommend that ONR should grant a Nuclear Site Licence to NNB GenCo to install and operate two UKEPR™ units at HPC.

6 REFERENCES

1 ONR How2 Business Management System. Assessment Process, AST/001 Issue 4, April 2010.

2 Safety Assessment Principles for Nuclear Facilities, 2006 Edition Revision 1, January 2008.

3 T/AST/027, Training and Assuring Personnel Competence, Issue 3, 22 September 2010.

4 T/AST/049, Licensee use of contractors and intelligent customer capability, Issue 3, 4 September 2009.

5 T/AST/057, Design Safety Assurance, Issue 2, 22 November 2010.

6 T/AST/079, Licensee Design Authority Capability, Issue 1, 24 March 2010.

7 NNB GenCo Ltd's Application for a Nuclear Site Licence to Install and operate two EPR Reactor Units at Hinkley Point, ONR Intervention Strategy, February 2012, TRIM 2012/61973.

8 BS EN 61508, Part 1 "Functional safety of electrical/electronic/programmable electronic safety-related systems. General requirements", 2010, British Standards Institution.

9 HSE/BCS/IET guidance "Managing competence for safety-related systems", Part 1: Key guidance, Part 2: Supplementary material, 2007.

10 IET guidance "Competence criteria for safety-related system practitioners", IET, 2007.

11 CNRP Intervention Project Record, NNB-IPR-29, NNB GenCo - Instrumentation & Control – Capability Assessment (Links to LC12 Capability), 3 January 2012, TRIM Ref: 2012/12112.

12 Application for Nuclear Site Licence for Hinkley Point, ONR-HPC-20143R, NNB GenCo, July 2011, TRIM Ref: 2011/503357.

8 NNB GenCo Nuclear Site Licence Application Dossier, NNB GenCo, July 2011, TRIM Ref: 2011/442090.

14 NNB GenCo Ltd's Application for a Nuclear Site Licence to Install and Operate two EPR Reactor Units at Hinkley Point, Specialist Assessment of Key Topics for NSL Granting, February 2012, TRIM Ref. 2012/62323.

15 Intervention Report, Assessing the I&C capability against Licence Condition 12, 14 March 2012, TRIM Ref: 2012/209227.

16 Intervention Report, Assessing the Instrumentation and Control (I&C) capability against Licence Condition 12, 11 July 2012, TRIM Ref: 2012/299087.

17 BS IEC 61226, "Nuclear power plants – instrumentation and control important to safety – Classification of instrumentation and control functions", 2009, British Standards Institution.:

18 NNB GenCo, NNB/OSL/TPR/000020, Control Systems Specialist, Version 0.1, June 2012. (Microsoft Excel spreadsheet covering Role Profile, Competency List, Competency assignment, DA Generic Training Comparison, Training Profile and Assessment of Candidate).

19 *NNB GenCo,* NNB/OSL/PRO/000018, Company Procedure: Management of Competency, Version 2.0, July 2011.

Table 1

Relevant Safety Assessment Principles considered during the assessment

SAP No.	SAP Title	Description
EHF.8	Engineering principles: human factors – Personnel competence	A systematic approach to the identification and delivery of personnel competence should be applied.
MS.2	Leadership and management for safety - Capable organisation	The organisation should have the capability to secure and maintain the safety of its undertakings.

Table 2

Interventions carried out related to the C&I workstream

Date	Topic	Intervention report TRIM reference
09 July 2010	Level 4 NNB GenCo/NII Meeting: C&I aspects of HPC/SZC	2010/310801
10 November 2010	Level 4 NNB GenCo/NII Meeting: C&I aspects of HPC/SZC	2011/0107331
22 February 2011	Level 4 NNB GenCo/ONR Meeting: C&I aspects of HPC/SZC	2011/242975
19 May 2011	NNB Genco/EDF/Areva/ONR I&C Critical Project Team Meeting	2011/439034
27 September 2011	Level 4 NNB GenCo/ONR Meeting: C&I aspects of HPC/SZC	2011/608117
26 January 2012	Level 4 NNB GenCo/ONR Meeting: C&I aspects of HPC/SZC	2012/163424
10 February 2012	NNB GenCo/EDF/Areva/ONR Workstream B Meeting	2012/343299
13 March 2012	Level 4 NNB GenCo/ONR: Update on progress against GDA I&C Assessment Findings	2012/206753
14 March 2012	Level 4 NNB GenCo/ONR Meeting: Assessing I&C capability against Licence Condition 12 [as part of C&I competence and capability intervention]	2012/209227
26 April 2012	Level 4 NNB GenCo/ONR Meeting: C&I aspects of HPC/SZC	2012/289092
11 July 2012	Level 4 NNB GenCo/ONR Meeting: Assessing I&C capability against Licence Condition 12 [as part of C&I competence and capability intervention]	2012/299087
26 July 2012	Level 4 NNB GenCo/ONR Meeting: C&I aspects of HPC/SZC	2012/326953

Table 3

Outstanding C&I actions

Action ID	Action	Status
1266-EDF	At the next Level 4 meeting, outline the I&C system life-time record requirements necessary for Licence Condition 6 compliance, and outline the process of passing these record requirements into the Supply Chain.	Permissioning action; therefore, progress is considered adequate for licensing.
1267-EDF	Ensure that electrical I&C system classification and diversity (including the use of SMART devices) are included on the agenda of the next Level 4 meeting on electrical matters for HPC/SZB.	Permissioning action; therefore, progress is considered adequate for licensing.
1270-EDF	Provide the ONR with a worked example of the proposed GDA Assessment Finding closure process based on AF-UKEPR-002, including a programme with linkages to tertiary hold points/control points and time for ONR convergence.	Permissioning action; therefore, progress is considered adequate for licensing.
1301-EDF	NNB GenCo to update AF deliverables providing further detail and depth of information.	Permissioning action; therefore, progress is considered adequate for licensing.
1302-EDF	At the next Level 4 meeting NNB GenCo will provide two examples of closure reports mapped against TOs for ONR to review.	Permissioning action; therefore, progress is considered adequate for licensing.
1417-EDF	NNB GenCo to provide forward plan for I&C capability/SQEP through the remainder of 2012 and into 2013.	Permissioning action; therefore, progress is considered adequate for licensing.
1418-EDF	NNB GenCo to align the new role profiles with the competency list summary in addition with planned update of PRO-18 “Management of Competency”.	Permissioning action; therefore, progress is considered adequate for licensing.

Table 3

Outstanding C&I actions

Action ID	Action	Status
1420-EDF	NNB GenCo to perform a gap analysis of the I&C competency arrangements against HSE guidance “Managing competence of safety-related systems” and incorporate any discrepancies into the forward plan.	Permissioning action; therefore, progress is considered adequate for licensing.
1444-EDF	At the next Level 4 meeting NNB GenCo is to present a Level 1 programme for I&C, which includes a mapping to hold points.	Permissioning action; therefore, progress is considered adequate for licensing.
1446-EDF	At the next Level 4 meeting, NNB GenCo are to present the route map, a systems inventory and an architecture diagram which will have been validated by the Architect Engineer.	Permissioning action; therefore, progress is considered adequate for licensing.
1447-EDF	NNB GenCo are to define the acceptance criteria for the Design Review and acceptance of deliverables.	Permissioning action; therefore, progress is considered adequate for licensing.