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CIVIL NUCLEAR REACTORS PROGRAMME

International safeguards arrangements for the proposed Hinkley Point C facility

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EXECUTIVE SUMMARY

This report describes work by ONR Safeguards with the NNB Generation Company (NNB GenCo) and the European Commission's safeguards inspectorate (Euratom) to put in place nuclear materials accountancy and safeguards arrangements for the proposed Hinkley C facility. The international safeguards regime and the measures applied in respect of it are not part of the site licensing process under the Nuclear Installations Act 1965. However, as indicated in ONR's Guidance document on licensing nuclear installations, the role of the ONR Safeguards function includes working with the safeguards inspectorates of the European Commission and the IAEA and UK organisations subject to safeguards requirements to ensure that compliance with international safeguards obligations for the UK is effective and proportionate.

ONR Safeguards has therefore taken the lead in establishing a process of timely engagement with NNB GenCo and Euratom to:

- define and agree nuclear materials accountancy and safeguards arrangements for the Hinkley C facility, including the process and timeline for specifying and installing Euratom surveillance and sealing equipment, and means of transmitting data from the equipment to Luxembourg;
- ensure all statutory safeguards reporting requirements (e.g. for formal declarations to Euratom) are met.

NNB GenCo have demonstrated the necessary commitment to early and substantive engagement with ONR Safeguards and the Euratom safeguards inspectorate. The latter has observed that this engagement is currently well ahead of the relevant statutory requirements and our (ONR Safeguards) assessment is that maintaining it should ensure the safeguards arrangements implemented for the proposed Hinkley C facility are both effective and efficient – and suitably aligned with domestic regulatory requirements.

LIST OF ABBREVIATIONS

BMS	(ONR) How2 Business Management System
BTC	Basic Technical Characteristics
CTE	Comité Technique Euratom – French national safeguards authority
EPR™	The Pressurised Water Reactor developed and trademarked by AREVA
HSE	Health and Safety Executive
IAEA	International Atomic Energy Agency
NMA	nuclear materials accountancy
NNB GenCo	NNB Generation Company
NPT	the Treaty on the Non-Proliferation of Nuclear Weapons
ONR	Office for Nuclear Regulation (an agency of HSE)
STUK	Säteilyturvakeskus - Finnish Centre for Radiation and Nuclear Safety

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1 INTRODUCTION

1 ONR Guidance on licensing nuclear installations includes description of ONR's expectations for meeting international safeguards obligations. Safeguards are measures to verify that countries comply with their international obligations not to use nuclear materials for nuclear explosives. Since it is the country itself that is regarded as the potential diverter of nuclear material, confidence about the absence of diversion is provided by external, i.e. international, verification. The application of safeguards measures in the UK derives from the Treaty Establishing the European Atomic Energy Community (the Euratom Treaty) and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) – and the measures involved are implemented by the safeguards inspectorates of the European Commission and the IAEA. The safeguards regime relates to but is not part of the site licensing process under the Nuclear Installations Act 1965.

2 This means that, as described in the ONR Guidance on licensing, the ONR Safeguards function works with the safeguards inspectorates of the European Commission and the IAEA to ensure that international safeguards obligations for the UK are complied with. Good procedures for nuclear materials accountancy (NMA) are crucial to ensuring effective and proportionate implementation of such safeguards measures. Early engagement with ONR and thus the international inspectorates, who are the primary safeguards “regulators”, is both a requirement (e.g. preliminary information on new facilities must be provided to the inspectorates before construction starts) and also key to defining appropriate arrangements for the inspectorates' safeguards verification and inspection activities. Additional information on safeguards implementation in the UK is available at the ONR website.

1.1 Background

3 This report describes work by ONR Safeguards with the NNB Generation Company (NNB GenCo) and the European Commission's safeguards inspectorate (Euratom) to develop and agree NMA and safeguards arrangements for the proposed Hinkley C facility.

4 The UK signed the European Atomic Energy Community (Euratom) Treaty as part of joining the European Economic Community in 1973, and the safeguards chapter (Title II, Chapter 7) of the Treaty requires that the European Commission satisfies itself that civil nuclear material (essentially plutonium, uranium and thorium) in the Euratom member states is not diverted from its declared peaceful end uses, and that obligations relating to material which has been supplied under international nuclear co-operation agreements are respected. The means by which the European Commission achieves these safeguards objectives are also outlined in the Treaty as:

- reporting by the operators of nuclear installations (as provided for in Articles 78 and 79 of the Treaty and further specified in European Commission Regulation (Euratom) 302/2005 - Ref. 1); and
- European Commission inspection of the installations and the nuclear material concerned (as provided for in Articles 81 and 82 of the Treaty).

5 In addition, the safeguards chapter provides for sanctions (ranging from a published written warning to withdrawal of the nuclear material concerned) by the European Commission in the event of infringement of the Treaty safeguards obligations. The European Communities Act 1972 and associated legislation (e.g. The European Communities (Enforcement of Community Judgments) Order 1972) is the basis for implementing Euratom safeguards requirements in the UK, and for enforcing European Commission decisions arising from that implementation.

- 6 The reporting requirements of Commission regulation (Euratom) 302/2005 (Ref. 1) include the following:
- *'for new installations with an inventory or annual throughput of nuclear material of more than one effective kilogram, all relevant information relating to the owner, operator, purpose, location, type, capacity and expected commissioning date shall be communicated to the Commission at least 200 days before construction begins'*, known as preliminary 'Basic Technical Characteristic' (BTC) information;
 - *'the declaration of the basic technical characteristics of new installations shall be communicated to the Commission in accordance with Article 3(1) at least 200 days before the first consignment of nuclear material is due to be received'*, known as full BTC information;
- 7 The information required is to be reported by the *'person or undertaking setting up or operating'* the installation concerned and it is provision of preliminary and then full BTC information that provides the basis for agreement with the Euratom inspectorate on facility-specific aspects of safeguards reporting and its verification.

2 WORK UNDERTAKEN BY ONR

- 8 Initial engagement by ONR Safeguards with NNB GenCo was the precursor for exchanges involving NNB GenCo, ONR Safeguards and the Euratom safeguards inspectorate. These exchanges led to early formal submission to Euratom by NNB GenCo of preliminary BTC information for the proposed Hinkley C facility in June 2010, followed by provision of a first draft of the full BTC declaration in February 2011.
- 9 The draft of the full BTC submission was the basis for a first round of Euratom/NNB GenCo/ONR discussion, in March 2011, on the draft BTC document and detailed safeguards measures for verification and inspection at the proposed facility. Euratom comments on the draft BTC included suggestions on how the documentation should address longer term plans for spent fuel storage and that the site NMA system description could be reviewed further (e.g. to show alignment with Commission Recommendation 2009/120 on nuclear material accountancy and control systems for operators of nuclear installations - Ref. 2). The initial exchanges also covered Euratom expectations for the permanently installed safeguards equipment (e.g. cameras, seals and associated cabling) required to enable the necessary verification, and also access to Euratom equipment laboratories to view safeguards camera systems, sealing arrangements and measurement devices of the kind likely to be installed or used at Hinkley C.
- 10 Follow-up from the initial meeting included NNB GenCo review and update of the draft BTC to take account of Euratom comments (submitted in November 2011), and Euratom mark-up of reactor and fuel pond area diagrams to show candidate locations for installation of safeguards cameras and seals, and provision of additional information (e.g. dimensions/pictures etc.) on that equipment.
- 11 Overall, Euratom assessed the draft BTC document and accompanying information presented by NNB GenCo as very useful and comprehensive - and a sound basis for safeguards engagement which was well ahead of any statutory requirements.
- 12 A second round of Euratom/NNB GenCo/ONR discussion and negotiation took place in February 2012, to review an updated draft of the BTC document and establish details of the process and timeline for specifying and installing Euratom surveillance and sealing equipment, including means of transmitting data from the equipment to Euratom in Luxembourg (e.g. confirmation of technical requirements, contract arrangements for the installation work).
- 13 The meeting further confirmed Euratom's view that the draft BTC documentation is fit for purpose and also made good progress towards agreement on locations for permanently installed Euratom surveillance cameras and electronic seals, and on a way forward in terms of the process and timeline for installation of that equipment
- 14 ONR Safeguards has since maintained engagement with both NNB GenCo and Euratom to close-out agreed actions on equipment specification and supply, as input to a further round of discussion expected early in 2013.

2.1 National and International Standards and Guidance

- 15 Safeguards arrangements for civil nuclear material in the UK must meet the requirements of the Euratom regulation on reporting and include verification measures that are comparable with those for similar civil material elsewhere in the European Union. The following international standards and guidance documents have therefore been used as part of this assessment (Refs 1 - 4):

- Commission Regulation (Euratom) No. 302/2005 of 8 February 2005 on the application of Euratom safeguards (Ref. 1);
- Commission Recommendation of 11 February 2009 on the implementation of a nuclear material accountancy and control system by operators of nuclear installations (Ref. 2);
- Guidance on International Safeguards and Nuclear Material Accountancy at Nuclear sites in the UK, Revision 1 (2010) - Ref. 3;
- Design Measures to Facilitate Implementation of Safeguards at Future Water Cooled Nuclear Power Plants, IAEA Technical Reports Series No. 392 (1998) - Ref. 4.

16 ONR Safeguards has also maintained contact with safeguards counterparts at the STUK Radiation and Nuclear Safety Authority in Finland regarding the development of Euratom safeguards arrangements for the Olkiluoto EPR, and with counterparts at the Comité Technique Euratom (CTE) for France on arrangements for the EPR under construction at Flamanville.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

17 This report describes work by ONR Safeguards with NNB GenCo and the Euratom safeguards inspectorate to develop and agree NMA and safeguards arrangements for the proposed Hinkley C facility. The exchanges involved have yielded a shared understanding of safeguards requirements and expectations, and established good working relationships with and between NNB GenCo and the Euratom inspectorate. NNB GenCo have made it clear that they are keen to maintain the engagement in order to be able to specify and reduce any uncertainty associated with accommodating safeguards requirements ahead of possible other pressures later in the process as a whole.

18 My conclusion is that NNB GenCo have demonstrated the necessary commitment to early and substantive engagement with ONR Safeguards and the Euratom safeguards inspectorate. The latter has observed that this engagement is currently well ahead of the relevant statutory requirements and our (ONR Safeguards) assessment is that maintaining it should ensure the safeguards arrangements implemented for the proposed Hinkley C facility are both effective and efficient – and suitably aligned with domestic regulatory requirements. Therefore, and notwithstanding the distinction between the international safeguards regime and the site licensing process under the Nuclear Installations Act 1965, there are no safeguards issues that preclude the granting of a site license.

3.2 Recommendations

19 My recommendations are as follows.

- **Recommendation 1:** NNB GenCo should ensure continuing timely and substantive dialogue with ONR Safeguards and Euratom to close-out actions on safeguards equipment specification and supply, and enable further discussion and negotiation as necessary to confirm arrangements for NMA and safeguards, including installation of Euratom safeguards equipment.
- **Recommendation 2:** ONR Safeguards should maintain contacts with Finnish and French safeguards authorities to share lessons from the development and implementation of Euratom safeguards arrangements for EPR reactors at Olkiluoto and Flamanville.

4 REFERENCES

- 1 *Commission Regulation (Euratom) No. 302/2005 of 8 February 2005 on the application of Euratom safeguards (OJ L 54, 28.2.2005, p. 1 at http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_054/l_05420050228en00010070.pdf)*
- 2 *Commission Recommendation of 11 February 2009 (2009/120/Euratom) on the implementation of a nuclear material accountancy and control system by operators of nuclear installations (OJ L41, 12.2.2009, p17 at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:041:0017:0023:EN:PDF>)*
- 3 *Guidance on International Safeguards and Nuclear Material Accountancy at Nuclear sites in the UK, Revision 1 (2010) at <http://www.hse.gov.uk/nuclear/safeguards/accountancy.pdf>*
- 4 *Design Measures to Facilitate Implementation of Safeguards at Future Water Cooled Nuclear Power Plants, IAEA Technical Reports Series No. 392 (1998) at http://www-pub.iaea.org/MTCD/publications/PDF/trs392_scr.pdf*