



**Decision No. 2013-DC-0347 by the French Nuclear Safety Authority of 7 May 2013 setting out requirements to be met by *Électricité de France – Société anonyme* (EDF SA) at Flamanville nuclear site (Manche) for the Flamanville 3 reactor (INB No. 167) commissioning tests, amending Decision No. 2008-DC-0114 by the French Nuclear Safety Authority setting out specific requirements to be met by *Électricité de France – Société anonyme* (EDF-SA) at the Flamanville nuclear site regarding the design and construction of the Flamanville-3 (INB No. 167) reactor and the operation of Flamanville-1 (INB No. 108) and Flamanville-2 (INB No. 109) reactors**

The French Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN),

- Having regard to the Environmental Code, in particular Title IX of book V;
- Having regard to the Decree of 21 December 1979 authorising the creation by *Electricité de France* of two nuclear power units at Flamanville, in the department of Manche;
- Having regard to Decree No. 2007-534 of 10 April 2007 authorising EDF SA to create the basic nuclear installation No. 167 called Flamanville-3, including an EPR-type reactor at the Flamanville site (Manche);
- Having regard to Decree No. 2007-1557 of 2 November 2007 as amended relating to basic nuclear installations and to the control, with regard to nuclear safety, of the transport of radioactive substances;
- Having regard to Decision No. 2008-DC-0114 by the French Nuclear Safety Authority of 26 September 2008 setting out specific requirements [license conditions] to be met by *Électricité de France – Société anonyme* (EDF-SA) at the Flamanville nuclear site regarding the design and construction of the Flamanville-3 (INB No. 167) reactor and the operation of Flamanville-1 (INB No. 108) and Flamanville-2 (INB No. 109) reactors ;
- Having regard to Decision No. 2010-DC-0188 by the French Nuclear Safety Authority of 7 July 2010 setting out the limits [license conditions] to be complied with by *Électricité de France – Société anonyme* (EDF SA) for the discharges to the environment of liquid and gaseous effluents related to the operation of the Flamanville-1 (INB No. 108), Flamanville-2 (INB No. 109) and Flamanville-3 (INB No. 167) reactors;
- Having regard to Decision No. 2010-DC-0189 by the French Nuclear Safety Authority of 7 July 2010 setting out requirements [license conditions] to be met by *Électricité de France – Société anonyme* (EDF SA) for the management of water intake and consumption and of discharges to the environment of liquid and gaseous effluents related to the operation of the Flamanville-1 (INB No. 108), Flamanville-2 (INB No. 109) and Flamanville-3 (INB No. 167) reactors;
- Having regard to the letter dated 9 May 2006 requesting for authorisation to create Flamanville 3 and the preliminary safety analysis report attached thereto;
- Having regard to the letter dated 15 November 2006 supplemented by the letters dated 9 April 2009 and 23 July 2009 requesting for authorisation to intake water and discharge

effluents and the environmental impact assessment attached thereto;  
Having regard to the observations of *Électricité de France* on the draft decision submitted by the letter referenced ECESN120888 of 27 September 2012;

Whereas the preparation and conduct of commissioning tests are an important issue with regard to the protection of the interests referred to in Article L593-1 of the Environmental Code;

Whereas the operator must, in order to take this important issue into account, set up an appropriate organisation in order to identify, prepare and conduct commissioning tests and process their results;

Whereas the containment building plays a significant role in nuclear safety and that its initial acceptance test is thus an important issue;

Whereas the results of the commissioning tests are an essential element for the plant operating licence application;

Whereas therefore the requirements laid down by the decision of 26 September 2008 referred to above shall be amended and supplemented to cover these commissioning/operation phases of the facility,

Hereby decides:

### **Article 1**

The aforementioned decision of the French Nuclear Safety Authority of 26 September 2008 is amended as follows:

1° In Annex 1, before Title II, a Title I shall be inserted, reading as follows:

#### **"Title I**

#### **"Nature of the operations conducted in the facility**

#### **"Chapter 1: Nature of the operations conducted in the facilities, structures and equipment necessary for the operation of the basic nuclear installation**

**"[INB167-A] I.** The operator shall perform or have performed the appropriate inspections and tests on the elements important for protection (EIP) – as meant in the ministerial order of 7 February 2012 setting the general rules for basic nuclear installations – whether these EIP are structures, systems or components. These tests and inspections shall include, as necessary:

- a. tests and inspections on EIP performed outside the perimeter of INB No. 167 Flamanville-3;
- b. tests and inspections performed within the perimeter INB No. 167 Flamanville-3 during the installation, erection or setting-up of EIP;

- c. tests carried out within the perimeter of INB No. 167 Flamanville-3 once EIP have been erected or installed on site. These tests, called "commissioning tests", are those whose summary report is mentioned in Article 20 of the decree of 2 November 2007 referred to above. For the commissioning tests used to verify the capability of EIP to perform the functions allocated to them in the demonstration mentioned in the second paragraph of Article L. 593-7 of the Environmental Code, the definition of these tests, the development of documentation, the conduct and analysis of these tests are all activities important for protection as meant in the ministerial order of 7 February 2012.

**"II.** All these tests and inspections are intended to contribute to the demonstration that EIP meet the requirements specified in:

- a. the aforementioned Decree of 10 April 2007 authorising the creation of INB No.167 and the ASN requirements [license conditions] applicable to the INB No. 167;
- b. the preliminary safety analysis report submitted to support the aforementioned decree of 10 April 2007 or an update thereto, in support of the application for authorisation to commission/operate INB No. 167;
- c. the environmental impact assessment provided to obtain aforementioned decisions No. 2010-DC-0188 and 2010-DC-0189 or an update thereto, in support of the application for authorisation to commission/operate INB No. 167;
- d. the other documents submitted pursuant to Article 20 of the aforementioned decree of 2 November 2007, after the application for authorisation to commission/operate INB no. 167 has been submitted.

**"[INB167-B]** The operator shall document, implement and made implemented a process to identify the tests and inspections to be carried out to meet the requirement [INB167-A] and to justify their combination or sequence.

"This approach leads the operator to establish a document justifying the adequacy of the tests and inspections in relation to the requirement [INB167-A] and justifying the complementarity of the commissioning tests with the other tests and inspections referred to in a) and b) of I. of requirement [INB167-A] or, where appropriate, of the tests performed on other reactors of the same type. This document shall specify the procedures and types of criteria whereby the operator finally concludes to compliance with the requirements established by the documents mentioned in II. of requirement [INB167-A], including for the EIP that will be subject to several commissioning tests.

**"[INB167-C]** The operator shall establish the general commissioning test programme. Outside contractors – as meant in the ministerial order of 7 February 2012 above – are, where applicable, involved in establishing this programme. This programme shall describe in particular the various test phases, their sequence, and for each phase, the commissioning tests to be conducted. This programme shall specify the essential conditions that must be met prior to each phase transition and the tests that may be postponed to a later phase. In particular, the sequence of tests is such that plant nuclear safety is never dependent on EIP capabilities which have not yet been tested.

**"[INB167-D]** The operator shall include the following in the safety analysis report drawn up in accordance with Article 20 of the aforementioned decree of 2 November 2007:

- a. as regards EIP which contribute to preventing or mitigating accidents, the process required by the requirement [INB167-B];
- b. a summary of the general commissioning test programme set out in requirement [INB167-C].

**"[INB167-E]** In line with the process set out by requirement [INB167-B] and the general programme mentioned by requirement [INB167-C], the operator shall establish, for a set of clearly designated EIP, a document describing:

- a. all the EIP under consideration;

- b. all the commissioning tests to be performed and their planned sequencing;
- c. the complementarity of these tests with other tests or inspections carried out or planned, in order to meet the objectives set by requirement [INB167-A];
- d. for each commissioning test considered:
  - the objectives and conditions for carrying out each test;
  - the structures, systems and components that interface with the EIP under test;
  - the criteria for acceptable test results."

2° Title II of annex 1 is replaced by the following provisions:

## "Title II

### "Safety policy and management

#### "Chapter 2: Organisation and Safety management system

"[INB167-1] The policy referred to in article 2.3.1 of the aforementioned ministerial order of 7 February 2012 shall address, in particular, the design and construction activities as well as the commissioning tests for INB No. 167 Flamanville-3.

"[INB167-1-1] The operator shall describe the organisation set up to meet the requirements of Title II of the aforementioned ministerial order of 7 February 2012 for the preparation, conduct and results analysis of the commissioning tests. This description shall detail, in particular, the organisation set up to:

- a. develop commissioning test procedures;
- b. plan and perform the commissioning tests;
- c. analyse the results of the commissioning tests, including any deviations;
- d. ensure that the people preparing the commissioning test procedures, conducting the commissioning test or analysing the results have the necessary skills;
- e. determine the impacts of the commissioning test results on the continuation of the testing programme and on the content of the application for authorisation to commission/operate defined by Article 20 of the aforementioned decree of 2 November 2007;
- f. ensure the processing of all deviations identified during commissioning tests;
- g. ensure the traceability of the final results for each commissioning test.

"This organisation shall specify the various groups involved in the preparation, performance and analysis of the commissioning test results and define their respective responsibilities.

"[INB167-1-2] **I.** The operator shall establish and implement an organisation and a process which enables it to decide, before each test phase transition as defined in the commissioning test programme mentioned in requirement [INB167-C], on whether to pursue the programme, with respect to the protection of the interests referred to in Article L. 593-1 of the Environmental Code and the documents mentioned in II. of requirement [INB167-A].

"**II.** The organisation and the process under the I. above shall provide for quality, transparency and independence from persons or entities directly responsible for performing the tests. In particular, the people implementing this process shall have the appropriate expertise, particularly in terms of the construction, detailed design and operation of the INB No. 167 Flamanville-3, and sufficient resources to ensure these objectives are met.

"**III.** The process provided for I. above shall enable, in particular, to identify the need to perform again a commissioning test, to perform additional commissioning tests, to modify the conditions for conducting the commissioning tests planned in the following phases or to adapt the future operating conditions of INB No. 167 Flamanville-3. It shall be mainly based on:

- a) a review of all the results of commissioning tests already performed and any deviation encountered, particularly with regard to the conditions for continuing the test programme as previously established by the operator under requirement [INB167-C] and the applicable specified requirements;
- b) conducting a review of deviations as defined in article 2.7.1 of the aforementioned ministerial order of 7 February 2012, encompassing an analysis of the combination of deviations affecting INB No. 167 Flamanville-3, including those related to the commissioning tests. Based on the findings of this review, the operator assesses the impact of this combination on the continuation of the commissioning test programme and on the deadlines for solving deviations still under processing;
- c) the implementation of a wide-ranging programme of verification, as defined in article 2.5.4 of the aforementioned ministerial order of 7 February 2012, covering at least the arrangements for the identification and handling of deviations detected during commissioning tests;
- d) an examination of the processing, as meant by article 2.6.3 of the aforementioned ministerial order of 7 February 2012 above, of repeated deviations or significant events under requirement [INB167-2].

"[INB167-1-3] In the months following the entry into force of this decision, the operator shall forward to ASN a summary of the lessons learned from previous commissioning tests performed on its reactors currently in operation. In addition to identifying good practices, this summary shall include the main deviations which have occurred in the past and the measures implemented to prevent them occurring at Flamanville-3.

"Depending on the commissioning tests progress at other EPR type reactors around the world, the operator shall include the lessons learned from these tests in the summary.

"This summary shall be updated and forwarded to the ASN annually until the reactor reaches nominal power.

### **"Chapter 3: Operations subject to notification or approval by the ASN**

"[INB167-2] **I.** - Without prejudice to the provisions in articles 34 and 35 of the aforementioned decree of 2 November 2007, following repeated deviations or a significant event justifying it, the operator shall suspend the relevant activities important to protection, as meant in the ministerial order of 7 February 2012 mentioned above and notify ASN as soon as possible.

"ASN may notify the operator of deviations or significant events which it considers fall under this requirement.

"**II.** - The operator can only resume suspended activities once preventive, corrective and curative actions have been implemented. These actions shall be defined and justified in a record kept available for ASN. The operator shall notify ASN of the resumption of the suspended activity.

"[INB167-2-1] The performance of the initial acceptance test of the containment building referred to in requirement [INB167-26] is subject to the approval of the ASN, pursuant to IV of article 18 of the aforementioned Decree of 2 November 2007.

"To enable the ASN to make a decision, the operator shall submit, 30 working days before the proposed date for the test:

- a. the list of deviations detected while erecting the containment building and how they were handled. The operator shall summarise the deviation disposition and justify that any deviation not resolved will not undermine the characteristics of the containment building under the provisions set out in the documents listed in II. of requirement [INB167-A];
- b. the method used to ensure that EIP remaining in the containment building during the test will not be damaged by the test conditions;

- c. a document presenting the results of implementing the organisation and processes under requirement [INB167-1-2].

"Not later than one month after the completion of the initial acceptance test of the containment building, the operator shall submit ASN a report presenting the results of the test."

3° In title III of annex 1, before chapter 2, a chapter 1 is inserted as follows:

### **"Chapter 1: General provisions**

"[INB167-2-2] The operator shall ensure that the planned commissioning tests and the applicable provisions set forth in the documents mentioned in II. of requirement [INB167-A] are compatible. To this end, it shall ensure that the operating/commissioning authorization application does take into account any specificities of the commissioning phases.

"[INB167-2-3] Prior to the performance of each commissioning test on an EIP, whether this EIP is a structure, a system or a component, and in line with the general commissioning test programme:

- a. when the commissioning test performance documents are drawn up, the operator shall:
  - i. ensures that the conditions for carrying out the commissioning test are representative of the operating conditions of the EIP concerned, as specified in their operating instructions issued by the manufacturer, if they exists, and in the documents referred to in II. of requirement [INB167-A]. If necessary, the operator shall justify any transposition to the specified conditions for the test,
  - ii. ensure that the commissioning test can be conducted in a manner which protects the interests referred to in article L. 593-1 of the Environmental Code and, in particular, are compatible with the application defined in II. of article 20 of the decree of 2 November 2007 referred to above, once it has been submitted to ASN,
  - iii. identify the criteria to be met, distinguishing between those directly related to the provisions established by the documents mentioned in II. of requirement [INB167-A] and those related to other considerations. For the first kind of criteria, each quantitative criterion shall be established with taking into account the measurement uncertainties as prescribed in [INB167-14],
  - iv. specify the required configuration for conducting the commissioning test and the configuration in which the tested EIP (and the system to which it belongs if the EIP is a component) shall be placed once the test is completed. The associated checks to be performed shall be described;
- b. prior to the beginning of each commissioning test on the site, the operator shall:
  - i. ensure that the installation erection status, progress in the commissioning tests, inspections and commissioning of the structures, systems and components
    - o make the EIP fit to undergo the test;
    - o are not likely to jeopardise the representativeness of the commissioning test. In cases where the prerequisites and conditions for carrying out the commissioning test considered when establishing the documents to perform the commissioning test cannot be met, the rationale for the representativeness shall be reviewed and documented;

- ii. ensure that any deviation that may exist at the date of the commissioning test and may affect the EIP to be tested are resolved or, failing that, are not likely to distort the test or to prevent the adequate performance of the commissioning test.

"[INB167-2-4] Until the installation is commissioned – and especially during the commissioning tests – the operator shall define and implement an EIP maintenance and monitoring programme. This programme shall take into account the provisions needed for maintaining the operability and qualification of EIP and for the performance of the commissioning tests. It shall be adapted in line with the progress to the construction and commissioning of the installation."

4° In chapter 2 of Title III of annex 1, requirements [INB167-3] and [INB167-7] are repealed.

5° In title VII of annex 1, chapter 2, which includes requirements [INB167-48], [INB167-49], [INB167-50] and [INB167-51], is replaced by a chapter 1 as follows:

### **"Chapter 1: Information to the authorities**

"[INB167-48] During the first month of each quarter, the operator shall submit ASN a progress report on the Flamanville-3 project, covering the previous quarter. This quarterly report shall include:

- a. a summary of the activities performed during the quarter,
- b. the following planning elements:
  - the project milestones,
  - the updated master schedules of:
    - activities related to the detailed design of the facility (functional studies and installation studies),
    - activities related to procurement, construction, manufacturing (excluding nuclear pressure equipment) and installation,
    - qualification tests of EIP relevant to the demonstration of nuclear safety,
    - erection/construction activities per building,
    - commissioning test activities,
- c. the status of the main activities carried out during the quarter,
- d. the main activities planned for the quarter ahead,
- e. a list of the main deviation, including significant events, relating to EIP design, construction, manufacturing (excluding nuclear pressure equipment) and assembly activities as well as EIP qualification and commissioning tests,
- f. the list of main construction, manufacturing (excluding nuclear pressure equipment) and installation activities, as well as EIP qualification and commissioning tests, scheduled for the next quarter,
- g. a biannual schedule of EIP construction, manufacturing (excluding nuclear pressure equipment) or installation activities which are not readily reversible or which cannot be inspected once the activity is completed,
- h. once the commissioning/operation authorization application file has been submitted, a schedule for the submission of the main documents that the operator plans to provide ASN before commissioning authorization is granted.

"[INB167-49] The operator shall submit a monthly list, as provided by II. of article 2.6.3. of the aforementioned ministerial order of 7 February 2012, of the deviation detected at the INB No.167 Flamanville-3 construction site.

"[INB167-50] During the course of the commissioning tests, the operator informs the ASN as often as necessary and at least:

- a. weekly:
  - i. of the key events which occur during the course of the commissioning,
  - ii. of the progress to the commissioning tests and the projected dates for test phase changes as defined in the commissioning test programme mentioned in requirement [INB167-C],
- b. on a monthly basis, of the list of tests carried out during the period and those which generated deviations,
- c. at least fifteen days in advance, of the date of any activity relating to commissioning tests which has been previously identified by ASN as an ASN notified activity. The operator shall inform ASN of any postponement of notified activities and shall communicate the new date with sufficient notice to allow ASN, if it do decides, to perform an inspection.

"At the request of ASN, the operator shall confirm in writing the information transmitted.

"[INB167-50-1] **I.** No later than two months before the date planned by the operator for the partial commissioning or commissioning of INB No. 167 Flamanville-3, the operator shall submit to ASN:

- a. the list of commissioning tests still to be completed before the partial commissioning or commissioning of INB No. 167 Flamanville-3;
- b. the list of commissioning tests already carried out with results compromising the partial commissioning or commissioning of the INB No. 167 Flamanville-3, and the actions taken or proposed to remedy this situation;
- c. the list of any other test or inspection referred to in requirement [INB167-A] which remains to be conducted before the partial commissioning or commissioning of the INB No. 167 Flamanville-3.

"**II.** Thereafter, each week, the operator shall submit ASN additional documents and information to demonstrate the adequacy of testing and inspections, the acceptability of the results for the partial commissioning or commissioning of the INB No. 167 Flamanville-3 and the acceptability of any deviation which resolution is not yet been completed.

"**III.** At the latest one week before the date planned by the operator for the partial commissioning of INB No. 167 Flamanville-3, the operator shall submit to ASN the references for the authorisation to possess nuclear material obtained pursuant to Article L.1333-2 of the Defence Code.

"**IV.** When the operator considers that all the operations prior to the partial commissioning or commissioning of INB No.167 Flamanville-3 have been completed, it shall inform ASN of its views on:

- a. the adequacy of the testing and inspections and the acceptability of the results with regard to the partial commissioning or commissioning of the facility;
- b. the acceptability of any deviation whose resolution is not yet completed.

It bases this position on the findings of the organisation and the process implemented under requirement [INB167-1-2].



"[INB167-50-2] Before the commissioning of INB No. 167 Flamanville-3 and after submission of the commissioning/operation authorisation application, the operator shall, when appropriate, update this application considering the progress in commissioning tests and their results.

"[INB 167-51] For EIP which participate in the functions referred to in I. of article 3.4 of the aforementioned ministerial order of 7 February 2012, or which ensure protection against internal risks or risks induced by the environment of the facility, the operator shall:

- i. make arrangements, in particular with external contractors, as meant in the aforementioned ministerial order of 7 February 2012, to ensure that the delay between the delivery of execution documents in their final version and the start of related activities enables to adequately managed the quality of the performance of this activity, for the activities on the site of INB No. 167 Flamanville-3. Similarly, for the commissioning tests, the operator shall make arrangements to ensure that the documents necessary for the performance of these tests are provided to those responsible for their performance with sufficient notice to allow for the conduct of the tests under adequate conditions with regard to the protection of the interests mentioned in article L. 593-1 of the Environmental Code. These provisions are described in a document submitted to ASN in the month following the entry into force of this decision,
- ii. at the request of ASN, shall give notice at least two weeks before the scheduled date for a construction, manufacturing (excluding nuclear pressure equipment) or installation activity. The operator shall notify ASN of any postponement of notified activities and shall communicate the new scheduled date with sufficient notice to allow ASN, if it do decides, to perform an inspection."

6° At the beginning of section 7.1 of chapter 2 of title III of annex 2, a provision is inserted which reads:

"[EDF-FLA-A] Prior to their implementation, the operator shall identify the activities at INB No. 167 Flamanville-3 that may affect the nuclear safety of INB No. 108 or No. 109. For each of these activities, the operator shall undertake a study including an assessment of risks, an analysis of the measures taken to prevent these risks and a description of measures to limit the occurrence and mitigate effects on INB No. 108 or No. 109. The study shall be in its final version at least 15 days prior to the start of the activity and the measures identified shall be implemented by the time it starts.

"The operator shall notify ASN of the scheduled date of these activities, at least 15 days in advance. The operator shall notify ASN of any postponement of notified activities and shall communicate the new scheduled date with sufficient notice to allow ASN, if it do decides, to conduct an inspection."

7° Annex 2 is supplemented by title VII as follows:

## "Title VII

### Information to the government, local authorities, associations and public

#### "Chapter 1: Information to the authorities

"[EDF-FLA-7-1] The operator shall submit to ASN an annual report setting out the lessons learned from the measures to prevent or reduce the risk of impact from the construction of the INB No. 167 Flamanville-3 on INB No.108 or No. 109."

## **Article 2**

This Decision shall enter into force on 1<sup>st</sup> July 2013.

## **Article 3**

The Director General of the French Nuclear Safety Authority is responsible for enforcing this decision, which shall be notified to EDF SA and published in the *Official Bulletin* of the French Nuclear Safety Authority.

Done in Montrouge, 7 May 2013.

The French Nuclear Safety Authority Commission<sup>1</sup>,

**Jean-Jacques DUMONT**

**Philippe JAMET**

**Margot TIRMARCHE**

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<sup>1</sup> Commissioners present at the meeting