

French original of the letter comes from ASN website:

(<http://www.asn.fr/sections/infos-locales/reacteur-epr/flamanville-epr-controle-asn/sections/acces-lettre-suite/?Installation=107&libel=R%E9acteur%20EPR%20de%20Flamanville>)

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Hérouville-Saint-Clair, 19 February 2008

Ref: Dep-CAEN-0117-2008

**Director of Development, Flamanville 3
BP28
50340 Flamanville**

Subject: Inspection of major nuclear installations.

Inspection INS-2008-EDFFA3-0003 of 8 February 2008

Dear Director

In the context of the responsibilities of the ASN (Nuclear Safety Authority) concerning the inspection of major nuclear installations, as set out in Article 40 of law no. 2006-686 of 13 June 2006 relating to nuclear transparency and security, a scheduled inspection of the construction site of the Flamanville 3 EPR type reactor took place on 8 February 2008.

I have the honour to present to you below a summary of the inspection as well as the main demands and observations resulting from it.

Summary of the inspection

The inspection of 8 February 2008 focused on the ongoing civil engineering activities relating to the pre-assembly of the metal liner of the reactor containment building , as well as on the treatment by injection of cracks which had appeared on plot 1a of the raft for the reactor building (HR).

This inspection, which was carried out partly on site and partly indoors to permit the inspection of documents related to the aforementioned activities, enabled an examination of the procedures for the construction of the metal liner, in particular

the welding and non-destructive testing activities. The supervision of these activities by EDF bodies was also examined by the inspectors.

This inspection gave rise to two notices of serious infraction referring to the “unqualified” state of the liner pre-assembly workshop and the failure to detect that the workshop’s welding log was incomplete.

Consequent upon this inspection, it is evident that EDF must improve its organisation and responsiveness as regards supervision, in order to ensure that it can detect and take account of the aforementioned infractions within a reasonable timescale. The technical quality of the crack injection operations, and the production of the mock-up enabling the method of pouring concrete under the liner to be validated, were judged to be satisfactory.

A. Demands for corrective actions

A.1. Supervision of the qualification of the resources employed

The inspectors noted that the liner fabrication workshop at the Flamanville construction site had not been subject to qualification by the contractor. At present, therefore, liner pre-assembly operations are carried out without the qualification demanded in the ETC-C and the metal liner’s Technical Specifications Book (TSB). CEIDRE, an EDF body charged with supervision of welding and non-destructive testing, carried out a supervision when the preconditions were lifted. This check revealed the workshop’s lack of qualification as of 26 November 2007. Since then, EDF has pursued the contractor twice, without effect. Nevertheless, CEIDRE has indicated that it did not raise a notice of infraction form concerning this omission at the time of the lifting of the preconditions on 26 November. This situation persisted even though welding non-conformities were revealed on the first piece of work – non-conformities which called into question the workshop’s qualification in terms of the reference documents (ETC-C and TSB).

Article 7 of the decree of 10 August 1984 concerning the quality of the design, construction and operation of major nuclear installations stipulates that the human and technical resources employed to carry out an affected activity must be suited to that activity and enable the defined standards to be met.

I ask you to ensure the qualification of the on-site liner assembly workshop as quickly as possible. You should analyse the impact of the lack of qualification on the work already done and establish the reasons for this infraction.

Regarding the supervision of activities, I ask you to explain why the failure to respect a stipulation of the TSB or the ETC-C did not lead to the routine raising of a notice of infraction form. Finally, you should take care that when an infraction is detected relating to an activity that has implications for quality, it should be resolved within a timescale that is reasonable and compatible with the stress placed on safety by article 7 of the decree on quality.

Finally, you should specify to me the organisational measures that you have put in place to ensure that CEIDRE's observations are taken into account by contractors.

A.2. Supervision of defined standards

Regarding the defined standards for the impermeability of the common raft, the Technical Specifications Book for the part relating to the metal liner of the containment enclosure stipulates that the welding log should include the following documents, among others:

- an overall plan with the locations of all welded joints;
- the summary list of welding procedure qualification records (WPQRs), [...] with the welding procedure specification (WPS);
- a dimensional and tolerance sketch of the joints to be welded;
- the cumulative heat treatments;
- the inspections envisaged.

The welding log presented on site was not complete. While some documents such as the dimensional sketches exist elsewhere, the tolerances are not specified in any document.

The supervisory activities carried out by CEIDRE include inspection of the welding log. The CEIDRE inspectors found this to be in order.

I ask you to attend to the completion of the firm's welding log, as quickly as possible, in order to ensure the quality and conformity of its work. You should also explain to me how the design standards are reflected in the supervisory actions and why this infraction was not identified at the time of the supervision that was carried out. Finally, you should send me your action plan intended to improve the effectiveness of your supervision.

A.3. Comprehensiveness of supervision

It was furthermore noted in the course of the inspection that SOFINEL had appointed EDF CEIDRE to conduct the supervision of the technical quality of welds and non-destructive tests on the metal liner, while EDF Aménagement was responsible for the monitoring and management of the schedule as well as the supervision of activities not monitored by CEIDRE.

However, there exists at present no analysis which would enable the comprehensiveness of the supervision of the on-site construction activities on the metal liner to be verified, in the same way as was done for the installation of the RPE pipework.

I ask you to carry out the necessary comprehensiveness analysis on the supervision of construction activity on the metal liner. You should institute supervision of the activities which are not at present taken into consideration.

B. Additional information

B.1. Welding defects on the metal liner

The inspectors noted that a quarter of the pre-assembled base of the liner showed welding non-conformities and that the TISSOT company had drawn up an analysis report explaining the reasons for these defects.

I ask you to send me the welding non-conformity analysis report for the assembly of the first quarter of the liner base and to indicate to me the treatment settled on.

B.2. Circumstances of the injection of the cracks in the raft

The inspectors observed the implementation of the method of injecting cracks in the HR raft in order to remedy a non-conformity. The contractor drew up a monitoring form for the injections that were carried out. An examination of the form of 7 February 2008 for the injection conducted from 11.10am to 1.00pm shows:

- exterior temperature: 9.6°C
- material temperature: 6.8°C
- resin temperature: 13.6°C

The injection procedure specifies an exterior temperature of over 10°C as necessary in order to carry out this process.

I ask you to make sure that the treatment of non-conformities is carried out in accordance with the instructions set out in the method of operation. You should ensure that the remainder of the treatment is carried out in accordance with the instructions and you should send me the temperature readings which prove this. Finally I ask you, in future, to put in place supervision so as to guarantee that these standards are respected.

B.3. Production of a mock-up for the concreting of the metal liner

A mock-up was produced in order to validate the method used for pouring concrete along the metal liner in the gusset part of the reactor building raft. This approach has the advantage of advance preparation, guaranteeing greater control when the operation is carried out at full scale. Your contractor's conclusions were presented to us; nevertheless, at the time of the inspection you had not carried out your analysis of these conclusions.

I ask you to send me your analysis of the methodology settled on by your contractor.

Moreover, it appears that the production of a mock-up is envisaged for the completion of the liner at the level of the enclosure crossings.

I ask you to tell me as soon as possible when this proposed mock-up is to be completed.

B.4. Exterior temperatures during the welding of the liner

The Technical Specifications Book for the metal liner defines exterior temperature criteria for the welding. No temperature readings are carried out on site.

I ask you to put in place a procedure to verify all the criteria which must be met for welding before it is actually carried out. You should ensure that this information can be traced.

C. Observations

C.1. Prestressing gallery

During the site visit on 8 February 2008, the inspectors noted that there was water in the prestressing gallery. You stated that at that time the source of this water was unknown and required further investigation.

C.2. Receipt of liner components

The inspectors noted the decision to improve the traceability of the receipt of sheet metal components from the TISSOT works at Podensac by indicating the date and the condition of the components upon their receipt on site.

* * *

Please inform me of your observations on and responses to these points within no more than one month. I ask you to identify clearly the resulting commitments that you make and in each case to specify the timescale for their implementation.

Yours faithfully

On behalf of the President of the ASN and by delegation,
Head of the Caen division

Thomas HOUDRÉ