

United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of:	Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)
	ASLBP #: 07-858-03-LR-BD01
	Docket #: 05000247   05000286
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	Stricken:

NYS000299  
Submitted: December 22, 2011

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
  
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

ENTERGY NUCLEAR INDIAN POINT 2, LLC,  
ENTERGY NUCLEAR INDIAN POINT 3, LLC, and  
ENTERGY NUCLEAR OPERATIONS, INC.

Docket Nos.  
50-247-LR & 50-286-LR

INDIAN POINT NUCLEAR GENERATING UNITS 2 & 3

ASLBP No.  
07-858-03-LR-BD01

Regarding the Renewal of Facility Operating Licenses  
No. DPR-26 and No. DPR-64 for an Additional 20-year Period

**DECLARATION OF DR. RICHARD T. LAHEY, JR., IN SUPPORT OF  
THE STATE OF NEW YORK'S SUPPLEMENTAL CONTENTION 26-A**

I, Richard T. Lahey, Jr., declare under penalty of perjury that the following is true and correct:

1. I am the *Edward E. Hood Professor of Engineering* at Rensselaer Polytechnic Institute (RPI) in Troy, New York, and I am an expert in matters relating to the operations, safety, and aging of nuclear power plants. I previously submitted a declaration in support of the Notice of Intention to Participate and Petition to Intervene ("Petition") filed by the State of New York in this proceeding on November 30, 2007, which sets forth my qualifications in detail. I submit this declaration in support of the State of New York's Supplemental Contention 26-A, relating to metal fatigue.

2. I assisted the State of New York in preparing Supplemental Contention 26-A. The factual statements and the expression of opinion in Supplemental Contention 26-A are based on, among other things, my best professional knowledge, my extensive professional experience in nuclear reactor technology, and my review of the applicant's License Renewal Application (LRA) dated April 23, 2007, and the Applicant's LRA Amendment #2 dated January 22, 2008.

3. As I stated in my initial declaration on this issue (New York's Contention 26), in my professional judgment, the applicant has failed to demonstrate that it has adequately accounted for the aging phenomena of metal fatigue. My professional judgment has not changed based upon my review of Entergy's LRA Amendment #2. In other words, even with the submission of LRA Amendment #2, Entergy has failed to demonstrate that it has adequately accounted for metal fatigue for the period of extended operation. I remain concerned about the potential for fatigue failure of some components which are part of the primary system's pressure boundary.

4. In LRA Amendment #2, Entergy has:

- abandoned its proposal to conduct inspections as a response to key reactor components that have a CUF of greater than 1.0;
- retained its proposal to, at some unknown point in the future, perform a "refined fatigue analyses" to account for the effects of reactor water environment; and
- maintained its refusal to immediately repair or replace the key reactor components that it now knows – and has so informed the NRC – will exceed the 1.0 CUF measurements during extended plant operations.

While I agree that Entergy should have dropped its proposal to conduct inspections as a response to the key reactor components that have a CUF >1.0, and I am pleased to see that it has taken this step, the remaining two elements continue to raise some very troubling aging management issues.

5. Entergy's continued proposal of a "more refined" re-analysis of the most fatigued-limited components in IP2 and IP3 leaves too much opportunity for Entergy to reach a manipulated and predetermined result -- namely, CUFs of <1.0 for the limiting components. Indeed, it appears that Entergy expects that these new analyses will demonstrate that all of the most limiting CUFs are <1.0, and, only if this is not so, does Entergy propose to replace the most fatigue-limited components. Unfortunately, there are too many opportunities for gaming the re-analysis, and the safety-related stakes are too high, to simply accept Entergy's unspecified new analytical approach on faith.

6. While in principle this approach may seem reasonable, it is not. Entergy has already submitted calculations to the Commission that demonstrate that a number of components are already fatigue-limited. Thus, we already have results that raise a concern about metal fatigue for these identified components. The basis for a more “refined analysis” of the current calculations simply does not exist, nor has Entergy given any reason as to why the time-tested, ASME approved standard analytical method that it previously used is no longer valid.

7. Nor does Entergy provide any details on the analytical method and approach that it will use for its “refined analysis.” These details are critical since, depending on the calculational method to be used, e.g., a multidimensional FEM code, and the assumptions made, an applicant can obtain almost any answer that it wishes. This lack of detail is unacceptable because it does not allow New York State or the NRC to perform a detailed review of the LRA.

8. Additionally, Entergy does not indicate how its new calculational method will be bench-marked to assure its validity. In particular, since Entergy has not provided any data that will be used to bench-mark their new analytical model, neither New York State nor the NRC can be assured that it is appropriate data and that the calculational method will be properly assessed. Given that some of the most fatigue-limited components are key parts of the primary system’s pressure boundary, this vagueness is not acceptable. This approach, where important calculations that are not part of the LRA will be performed at some unknown time following approval of the renewal application, is simply inadequate to establish that the Applicant has demonstrated that its time limited aging analyses adequately manage the effects of aging, specifically concerning metal fatigue, as required by 10 C.F.R. § 54.21(c)(1)(iii).

9. In my opinion, Entergy’s only prudent course of action is to replace these limiting primary pressure boundary components – the pressurizer surge line piping for IP2 and IP3, the RCS piping charging system nozzle for IP2, and the pressurizer surge line nozzle for IP3 – well before the onset of extended operations. Entergy, however, is not proposing to take this prudent and necessary course of action.

10. Instead, Entergy merely includes a vague description of its proposed “corrective

actions”:

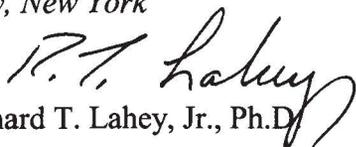
The program requires corrective actions including repair or replacement of affected components before fatigue usage calculations determine the CUF exceeds 1.0. Specific corrective actions are implemented in accordance with the IPEC corrective action program. Repair or replacement of the affected component(s), if necessary, will be in accordance with established plant procedures governing repair and replacement activities. These established procedures are governed by Entergy’s 10 CFR 50 Appendix B QA program and meet the applicable repair or replacement requirements of the ASME Code Section XI.

LRA Amendment #2, Attachment 1 at 2. This “corrective action” proposal is exceedingly vague. Moreover, since Entergy apparently does not believe that any components will exceed the 1.0 CUF limit once it recalculates those figures, any corrective action will occur, if at all, *during* extended operation, and not *before*. I find this untenable because Entergy has already submitted results to the NRC that demonstrate that a number of key reactor components have or will exceed 1.0 CUF during extended operation. In my professional opinion, the most prudent way to manage the aging phenomena of metal fatigue for extended operation is to replace the limiting components *now*.

11. In summary, Entergy’s LRA Amendment #2 does not remove my concern that Entergy has failed to demonstrate that it will adequately manage metal fatigue during extended operation of the two units at Indian Point. The potential for fatigue failure of various primary system components remains a significant concern.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

April 7, 2008  
Troy, New York

  
Richard T. Lahey, Jr., Ph.D.