

**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD**

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In re: Docket Nos. 50-247-LR; 50-286-LR  
  
License Renewal Application Submitted by ASLBP No. 07-858-03-LR-BD01  
  
Entergy Nuclear Indian Point 2, LLC, DPR-26, DPR-64  
Entergy Nuclear Indian Point 3, LLC, and  
Entergy Nuclear Operations, Inc. December 14, 2015  
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**DECLARATION OF DR. JORAM HOPENFELD IN SUPPORT  
OF STATE OF NEW YORK MOTION TO WITHDRAW  
PROPRIETARY DESIGNATIONS OF WESTINGHOUSE DOCUMENTS**

Joram Hopenfeld, hereby declares under penalty of perjury that the following is true and correct:

1. I am an expert witness on behalf of Riverkeeper, Inc. (“Riverkeeper”) in the above-captioned proceedings concerning the application by Entergy Nuclear Operations, Inc. (“Entergy”) for the renewal of two separate operating licenses for the nuclear power generating facilities located at Indian Point on the east bank of the Hudson River in the Village of Buchanan, Westchester County, New York, for twenty years beyond their current expiration dates.

2. In 2007 Entergy applied to NRC for permission to operate the two reactors at Indian Point for an additional 20 years beyond the 40-year term authorized in the facilities’ initial operation licenses. Those two reactors were designed and constructed by Westinghouse in the 1960s and 1970s. The application to NRC involves, among other things, an evaluation of the metal fatigue of various reactor components (or CUF<sub>m</sub> values). Entergy’s initial application publicly reported fatigue values that exceeded the 1.0 fatigue metric used by NRC. Entergy then hired Westinghouse to conduct refined analyses of the reactors’ primary side components. In 2010, Entergy publicly informed the Board and the parties of refined metal fatigue results that were close to the 1.0 metric. Entergy subsequently committed to NRC that it would conduct fatigue examinations of other limiting locations, and Entergy again hired Westinghouse to conduct the fatigue analyses. In short, to support its application to NRC, Entergy has hired Westinghouse to analyze the ability of Westinghouse-designed Indian Point components to operate for an additional 20 years. During official NRC inspections related to the applications to renew the Indian Point operating licenses, Entergy shared various Westinghouse fatigue analyses, limiting locations, and results with NRC Staff.

3. I have received the following degrees from the University of California in Los Angeles: a B.S. and M.S. in engineering, and a Ph.D. in mechanical engineering. I am an expert in the field relating to nuclear power plant aging management. I have 45 years of professional experience in the fields of nuclear safety regulation and licensing, design basis and severe accidents, thermal hydraulics, material/environment interaction, corrosion, fatigue, radioactivity transport, industrial instrumentation, environmental monitoring, pressurized water reactor steam generator transient testing and accident analysis, design, and project management, including 18 years in the employ of the U.S. Nuclear Regulatory Commission (“NRC”). My education and professional experience are described in my *curriculum vita*, which is hearing exhibit RIV000004 in this proceeding.

4. I submit this declaration in support of the State of New York’s Motion to withdraw proprietary designations of certain Westinghouse documents.

5. In this proceeding, I have provided expert consulting services in relation to, *inter alia*, two safety-related contentions that are joint between Riverkeeper and the State of New York: Contention NYS-26/RK-TC-1 pertaining to the adequacy of Entergy’s program for managing metal fatigue at Indian Point during the proposed extended periods of operation, and Contention NYS-38/RK-TC-5 pertaining to the adequacy of various of Entergy’s license renewal safety commitments, including metal fatigue.

6. These two contentions were the subject of adjudicatory hearings November 16-19, 2015.

7. In connection with the hearings on these two contentions, twenty (20) (among other) Entergy and Westinghouse documents submitted as exhibits were designated by Entergy as containing proprietary and/or confidential business information. These twenty (20) documents include certain screening and refined calculations conducted by Westinghouse relating to the fatigue life of certain reactor components. I reviewed these documents in connection with preparing my testimony on the aforementioned contentions and/or in advance of the adjudicatory hearings on the contentions.

8. I understand that the State of New York has previously lodged objections in regards to the overly-broad proprietary and/or confidential designations by Entergy and Westinghouse of these twenty (20) documents and has previously moved to have these designations withdrawn.<sup>1</sup> I further understand that Riverkeeper supports the State’s position on this matter.

9. In accordance with the directive from the Atomic Safety and Licensing Board (ASLB) at the November 2015 adjudicatory hearings, I understand that the State of New York has proposed redactions to these twenty (20) documents in an effort to resolve the concerns about overly-broad proprietary/confidential designations.<sup>2</sup>

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<sup>1</sup> See, e.g., Letter from Lisa S. Kwong (NYS) to Paul Bessette (Entergy) and Sherwin Turk (NRC Staff), Indian Point License Renewal, Docket Nos. 50-247-LR and 50-286-LR (ASLBP No.07-858-03-LR-BD01) (December 10, 2015).

<sup>2</sup> See *id.*

10. In relation to the State's proposed redactions to the Westinghouse fatigue calculations/evaluations, I understand that the State is proposing that the end result fatigue life numbers contained in such documents not be subject to redactions and to a proprietary/confidential designation.

11. I agree that such information is not properly the subject of a "proprietary/confidential" designation, and should not be withheld from public disclosure.

12. My extensive professional experience has afforded me with knowledge and expertise regarding the material degradation phenomenon known as metal fatigue, which is the subject of the Westinghouse calculations. In my expert opinion, there is no reason why final fatigue life values should be deemed proprietary or confidential.

13. Notably, such values reported in Entergy's initial fatigue evaluations in support of its application for license renewal were not withheld from public disclosure as somehow proprietary or confidential.<sup>3</sup>

14. Generally, the results of metal fatigue life evaluations for nuclear plants are readily publicly available.<sup>4</sup>

15. Indeed, this makes sense and is appropriate, since the public knowledge of the end fatigue result should not be deemed confidential or proprietary. To begin with, the fatigue results proffered by Westinghouse/Entergy in this proceeding are specific to the components installed at the Indian Point facilities. Based on my extensive experience with metal fatigue and fatigue calculations, it is clear that knowledge of such values would not result in a loss of competitive advantage to Entergy or Westinghouse in the market place.

16. All the end fatigue results are based on analysis that employs many assumptions models, and data, of which some may be proprietary and others may not. Identification of an end fatigue result for any given component by its exact numerical value cannot be used to link this value to a specific combination of assumptions, models, or data that were employed in the fatigue analysis. That is, knowledge of the end fatigue results provides no clue to a potential competitor that would allow him or her to identify the assumptions, models, and data that led to the respective numerical result.

17. End fatigue results cannot be "reverse engineered" to uncover any specific proprietary models, assumptions, or data that led to any given end fatigue results. To my

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<sup>3</sup> See Indian Point Energy Center License Renewal Application, Tables 4.3-13 and 4.3-14, publicly available at, <http://pbadupws.nrc.gov/docs/ML0712/ML071210517.pdf>

<sup>4</sup> See Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, Vol. 2 (November 2009), publicly available at: <http://pbadupws.nrc.gov/docs/ML0931/ML093170671.pdf>; and Safety Evaluation Report Related to the License Renewal of Vermont Yankee Nuclear Power Station, Supp. 1 (May 2009), publicly available at: <http://pbadupws.nrc.gov/docs/ML0912/ML091200162.pdf>.

knowledge, there is no other reason from a business competition perspective or otherwise, why final fatigue values resulting from a fatigue evaluation should be withheld from public disclosure.

18. Since Entergy did not include an uncertainty study or an accurate assessment of the degree of conservatism in its fatigue analyses, the end fatigue results become the primary source of assurance that the analyzed components will operate reliably during the proposed extended operating periods and that Entergy will be able to maintain safety at acceptable levels. The public at this time can only surmise that the end  $CUF_{en}$  values for Indian Point components are less than one and within acceptable safety margins (though, notably, Westinghouse has not provided information on the degree of scientific uncertainty embedded in such supposition).

19. The end fatigue results together with the publically available initial fatigue results would provide minimum transparency of Entergy's fatigue analysis, and at the same time give the public the opportunity to assess the robustness of the end fatigue results.

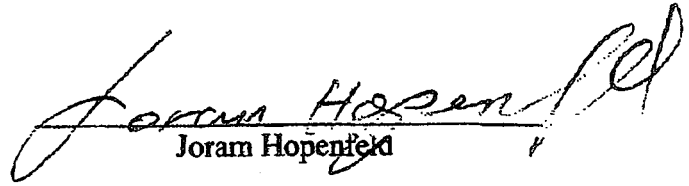
20. The public has a keen interest and right to know how aging from metal fatigue at Indian Point will affect critical reactor components during the proposed periods of extended operation, since such aging has the potential to result in impacts to public safety and public resources in the event of component degradation and failure.

21. Accordingly, the ASLB should grant the State of New York request that the entirety of Westinghouse's calculation notes not be subject to a proprietary/confidential designation, but be redacted such that, at minimum, any final end result fatigue values are made publicly available.

**Declaration of Joram Hopenfeld**  
**December 14, 2015**

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

Executed on Dec 13, 2015

  
Joram Hopenfeld