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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Other:			

NRC000105
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Statement of Professional Qualifications

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Division of License Renewal,
Office of Nuclear Reactor Regulation,
U.S, Nuclear Regulatory Commission

Summary
Dr. Ng is a Mechanical Engineer in the Division of License Renewal, Aging Management of Reactor Systems and Guidance Update Branch, in the Office of Nuclear Reactor Regulation. His official responsibilities include the technical, safety, and regulatory compliance reviews of a variety of mechanical engineering topics, including metal fatigue time-limited aging analyses fatigue monitoring programs, and identification of time-limited aging analyses for applicants for license renewal.

Education:
Bachelor of Science, Mechanical Engineering, University of California, Berkeley, May 1999
Master of Science, Mechanical Engineering, University of California, Berkeley, May 2001
Ph. D., Mechanical Engineering, University of California, Berkeley, Dec. 2005

Experience:
Qualified Reactor Technical Reviewer: Oct 2, 2008
Qualified Reactor License Renewal Technical Auditor/Team Lead: June 29, 2011

2010- present: Division of License Renewal, Office of Nuclear Reactor Regulation

Dr. Ng performed reviews of multiple license renewal applications (LRA), including Indian Point Energy Center, Palo Verde Nuclear Generating Station, Hope Creek Generating Station, Salem Nuclear Generating Station, Vermont Yankee Nuclear Power Station, and Diablo Canyon Nuclear Power Plant. Dr. Ng's work in the area of metal fatigue included auditing program basis documents, reviewing and assessing the relevant information in LRA, crafting requests for additional information when the LRA lacked information, and documenting the staff evaluation in the safety evaluation reports.

His review included the licensee's identification of time-limited aging analyses (TLAA), plant-specific TLAA, metal fatigue TLAA of reactor vessel internals as well as ASME Boiler & Pressure Vessel (B&PV) Code Class 1, 2 and 3 components, and evaluation of the effects of reactor coolant environment on components fatigue life. The reviews he performed enabled the NRC to determine adequacy of proposed TLAA dispositions and the adequacy of proposed aging management program including the fatigue monitoring program.

Dr. Ng's review utilized NUREG-1800, *Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants*, to determine if the applicant dispositioned the TLAA in accordance with 10 C.F.R. § 54.21(c)(1). He also used NUREG-1800 and NUREG-1801, *Generic Aging Lessons Learned Report*, to determine if the applicant demonstrated that the effects of aging will be adequately managed. His assessed how licensees used the guidance in NUREG/CR-6260, *Application of NUREG/CR-5999 Interim Fatigue Curves to Selected Nuclear Power Plant Components*, NUREG/CR-5704, *Effects of LWR Coolant Environments on Fatigue*

Design Curves of Austenitic Stainless Steels, NUREG/CR-6583, *Effects of LWR Coolant Environments on Fatigue Design Curves of Carbon and Low-Alloy Steels*, and NUREG/CR-6909, *Effect of LWR Coolant Environments on the Fatigue Life of Reactor Materials*.

His primary work products include requests for additional information, audit reports and input to the draft and final safety evaluation reports. He was a member of the on-site audit teams which evaluated the licensee's aging management reviews and aging management programs. He was also a member of the audit team that reviewed the applicant's use of the software program of WESTEMS in metal fatigue analyses in the Salem Nuclear Generating Station LRA. The results of his reviews on identification of TLAA, plant-specific TLAA, evaluation of the effects of reactor coolant environment on reactor coolant pressure boundary components fatigue life, metal fatigue TLAA are captured in the staff's Safety Evaluation Reports. Dr. Ng is a contributor to the metal fatigue evaluation, in Section 4.3, of NUREG-1961, "*Safety Evaluation Report Related to the License Renewal of Palo Verde Nuclear Generating Station, Units 1, 2, and 3* (Apr. 2011) and Supplement 1 to NUREG-1960, *Safety Evaluation Report Related to the License Renewal of Prairie Island Nuclear Generating Plant Units 1 and 2* (Aug. 2011)

2006-2010: Division of Engineering, Office of New Reactors

Dr. Ng's primary responsibility is to reviewed the proposed Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) to verify that the design and as-built reconciliation activities of ASME B&PV Code Section III equipment and piping systems. His review included Design Certificate (DC) applications associated with Economic Simplified Boiling Water Reactor, Evolutionary Power Reactor, Advanced Boiling Water Reactor, and U.S. Advanced Pressurized-Water Reactor technologies. He is also responsible to review Combined License (COL) applications. He reviewed Final Safety Analysis Reports, issued Request of Additional Information, and documented staff review in the Safety Evaluation Reports. Due to the interdisciplinary nature of ITAAC review, he also involved in the review of the ITAAC for Seismic Category I equipment qualification and equipment classification. He also perform audit of the design reports for ASME B&PV Code Class 1, 2, and 3 piping when Westinghouse attempted to close piping Design Acceptance Criteria for AP1000 Design Certification Amendment. Dr. Ng negotiated with the DC and COL applicants to establish appropriate ITAAC and license conditions to ensure pipe break hazard analysis design reports can be made available to the staff for review.

2001-2005: University of California, Berkeley

The fundamental objective of Dr. Ng's doctoral research is to advance the methodology for predicting the performance of degrading structures under cyclic loads. His research encompassed two technical areas: damping modeling and dynamic analyses of structural components that exhibit damage during vibratory motions. He examined and refined the empirical model of damping to capture hysteresis behavior in the load-displacement curves of the materials. In dynamic analyses, Dr. Ng collected experimental data of wood joints under various cyclic loadings and utilized the empirical damping model as well as system identification techniques to predict the performance, or degradation, of the components. While response prediction of a deteriorating component through system identification is a brute-force approach that offers a close representation of reality, at the present time, there is not any method based upon the fundamental postulates of mechanics that can predict the response of degrading structures beyond its linear range.