UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In re:

License Renewal Application Submitted by

Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.

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

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

DPR-26, DPR-64

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DECLARATION OF PAUL BLANCH

Paul Blanch, hereby declares under penalty of perjury that the following is true and correct:

1. I have been retained by the New York State Office of the Attorney General to provide expert services in connection with the application by Entergy Nuclear Operations, Inc. and its affiliates (collectively Entergy) for a renewal of the two separate operating licenses for the nuclear power generating facilities located at Indian Point.

2. Beginning in 1964, I served in the U.S. Navy as a nuclear reactor and electric plant operator on *Polaris* class submarines for seven years. As part of my Navy duties, I was certified as an instructor at the Navy prototype reactor (S1C) in Windsor Locks, Connecticut. Thereafter, in 1972, I received a Bachelor of Science in Electrical Engineering from the University of Hartford. I have more than 25 years of engineering, engineering management, and project coordination experience for the construction and operation of nuclear power plants.

3. I have reviewed the April 30, 2007 License Renewal Application submitted by Entergy to renew the operating licenses for Indian Point Unit 2 and Unit 3. As set forth below and as developed in the relevant Contentions contained in the Petition to Intervene of the State of New York, it is my opinion that the proposed aging management programs fail to provide reasonable assurance that IP2 and IP3 will operate safely through their proposed license renewal periods.

4. Failure to properly manage aging of Non-environmentally-qualified (Non-EQ) Inaccessible Medium-Voltage Cables may challenge:

a. the integrity of the reactor coolant pressure boundary;

b. the capability to shut down the reactor and maintain it in a safe shutdown condition; or

c. the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §§ 50.34(a)(1), 50.67(b)(2), or 100.11.

5. The failure to properly manage aging of the Non-EQ Inaccessible Medium-Voltage Cables could result in the loss of the 6.9 kV and 13.8 kV safety related buses that supply emergency power to the 480 volt safety equipment including Station Blackout (SBO) loads, service water motors/pumps, safety injection pumps, and other electrical loads required to meet the requirements of 10 C.F.R. §§ 54.4 and 54.29.

6. Consequence of failures of Non-EQ Inaccessible Medium-Voltage Cables may result in accidents beyond the Design Basis Accidents resulting in exposures to the public exceeding 10 C.F.R. § 100 limits.

7. The applicant has not "demonstrate(d) that the effects of aging will be adequately

managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation" (10 C.F.R. § 54.21(a)(3)) for those SSC's identified for Pressurized Water Reactors in Table 6 of NUREG 1801.

8. The applicant has failed to identify the location and extent of Non-EQ Inaccessible Medium-Voltage Cables in use at IP 2 and IP 3. For example, the Applicant has failed to provide drawings referenced in the LRA. *See* the reference to Drawing 9321-F-31193.

9. The applicant has failed to provide access to referenced documents that are not publicly available (e.g. EPRI TR-103834-P1-2 and EPRI TR-109619). A computer search has been conducted by me of all publicly available documents using ADAMS, CITRIX, BRS, GOOGLE and the EPRI web site and the search has not located these referenced documents. It is not possible to fully evaluate the adequacy of the AMP without these references.

10. The applicant has failed to provide a copy of its "Non-EQ Insulated Cables And Connections Program" and "Non-EQ Inaccessible Medium-voltage Cable Program" identified in Appendix B of the LRA.

11. The applicant has failed to address specific recommendations from the referenced Sandia report (SAND96-0344).

12. There is no technical basis to support life extension using the existing medium voltage power cables without a descriptive aging management plan.

13. There is no technical basis to justify differences between programs for aging management of accessible cables and inaccessible cables. 10 C.F.R. § 54.21(a)(3).

14. A review of all documents supplied as part of the LRA has failed to identify which cables are encompassed by the AMP. A review of the "one line" electrical drawing from Chapter

8 of the IP 2 UFSAR confirms that many of these medium voltage cables are within the scope of 10 C.F.R. § 54.4.

15. The applicant has failed to provide a copy of its "NonEQ Insulated Cables and Connections Program." It is not possible to assess the adequacy of the AMP without a copy of this program as described in LRA B.1.25. No details are provided explaining the Non-EQ Inaccessible Medium-Voltage Cable Program except that it appears to be limited to ". . . inspections for water accumulation in manholes at least once every two years." *Id.* Experience indicates that not all inaccessible cables are capable of inspection via "manholes".

16. The only difference between the cables discussed in B.1.23 and B.1.25 is accessibility which, in light of the comparable safety significance of both types of cables and the risk of aging damage to both types of cables is not a technically defensible basis for treating the two types of Non-EQ cables differently.

17. There are numerous inaccessible cables (less than 2 kV) ranging in voltage from 100 to 2,000 volts installed at the IP 2 and IP 3 that meet the requirement as described in 10 CFR § 54.4 including power and control for the following vital components.

- Auxiliary component cooling pumps
- Safety injection pumps
- Residual heat removal pumps
- Nuclear service water pumps
- Containment air recirculation cooling fans
- Auxiliary feedwater pumps
- Spray pumps (if start signal present)

18. The LRA has not specifically identified an aging management program and/or the locations of the Non-EQ Inaccessible Low-Voltage Cables however these cables exist in many locations including power to the Service Water Pumps.

19. The most recent UFSAR confirms the use of these vital cables at IP2 and IP3.

20. Failure to properly manage aging of Non-EQ Inaccessible Low-Voltage Cables may adversely impact:

a. The integrity of the reactor coolant pressure boundary;

b. The capability to shut down the reactor and maintain it in a safe shutdown condition; or

c. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §§ 50.34(a)(1), 50.67(b)(2), or 100.11 of this chapter, as applicable.

d. May result in the loss of emergency power to the 480 volt safety equipment including all Station Blackout (SBO) loads.

21. There are numerous Electrical Transformers that perform a function described in §§ 54.4(a)(1)/(2) and (3). Transformers function without moving parts or without a change in configuration or properties as defined in that regulation.

22. Failure to properly manage aging of Electrical Transformers may compromise:

a. The integrity of the reactor coolant pressure boundary;

b. The capability to shut down the reactor and maintain it in a safe shutdown condition; or

c. The capability to prevent or mitigate the consequences of accidents which

could result in potential offsite exposures comparable to those referred to in §§ 50.34(a)(1), 50.67(b)(2), or § 100.11 of this chapter, as applicable. 10 C.F.R. §§ 54.4(a)(1)(2) and (3).

23. The consequence of failures of Electrical Transformers may result in accidents beyond the Design Basis Accidents resulting in exposures to the public exceeding 10 C.F.R. § 100 limits.

24. Failure to properly manage aging of electrical transformers could result in loss of emergency power to the 480 volt safety equipment and 6.9kV busses including station blackout loads. Appendix A, Page A-35 of the UFSAR supplement describes a Structures Monitoring Program that includes a program for monitoring "transformer/switchyard support structures" yet there is no APM described for transformers within the scope of 10 C.F.R. § 54.21(a)(1)(i).

25. Many of the legally relevant GDC for IP2 and IP3 relate to components, equipment, and systems that may require aging management. *See e.g.* GDC 47 (Testing of Emergency Core Cooling Systems (Category A); GDC 34 (Reactor Coolant Pressure Boundary Rapid Propagation Failure Prevention (Category A); GDC 50 (NDT Requirement for Containment Material (Category A)). However, whether aging management is required for those components, equipment and systems cannot be determined nor can the adequacy of any aging management analysis or plan be evaluated until Applicant identifies components, equipment and systems that are in compliance with the legally relevant GDC.

26. There are substantial substantive differences between the trade association version of the GDC and the officially promulgated 1967 Draft GDC. The following are examples of the conflicts:

A. **Criterion 50 from 32 FR 10213 states**: Criterion 50-NDT Requirement for Containment Material (Category A) Principal load carrying components of ferritic materials exposed to the external environment shall be selected so that their temperatures under normal operating and testing conditions are not less than 30 degrees F above nil ductility transition (NDT) temperature.

Chapter 5, Page 4 of 89 Revision 20 (541/1698) of the Indian Point 2 UFSAR provided as part of the LRA states: 5.1.1.1.7 Nil-ductility Transition Temperature Requirement for Containment Material - Criterion: The selection and use of containment materials shall be in accordance with applicable engineering codes. (GDC 50).

Chapter 5, Page 5 of 188 (826/2108) of the Indian Point 3 UFSAR provided as part of the LRA states: Criterion: The selection and use of containment materials shall be in accordance with applicable engineering codes. (GDC 50 of 7/11/67)

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Both IP2 and IP3 state compliance with GDC 50. However, both UFSARS have reworded and changed the intent of this GDC 50 by removing the words "Principal load carrying components" and "less than 30 degrees F above nil ductility transition (NDT) temperature" from the regulation.

B. **Criterion 47 from 32 FR 10213 states**: Criterion 47-Testing of Emergency Core Cooling Systems (Category A). A capability shall be provided to test periodically the delivery capability of the emergency core cooling systems at a location as close to the core as is practical.

Chapter 6, Page 8 of 120 Revision 20 (Page 717/1698) of the Indian Point 2 UFSAR provided as part of the LRA states: 6.2.1.4 Testing of Emergency Core Cooling System Criterion: Capability shall be provided to test periodically the operability of the emergency core cooling system up to a location as close to the core as is practical. (GDC 47)

Chapter 6, Page 10 of 215 (Page 1019/2108) of the Indian Point 3 UFSAR provided as part of the LRA states: Testing of Emergency Core Cooling System Criterion 47: Capability shall be provided to test periodically the operability of the Emergency Core Cooling System up to a location as close to the core as is practical.

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Both IP2 and IP3 state compliance with GDC 47. However, the USFARs have reworded and changed the intent of GDC 47 by removing the words "test periodically the delivery capability." The "delivery capability" of the Emergency

Core Cooling System (ECCS) may be impacted by aging mechanisms such as pipe fouling, erosion, corrosion and heat exchanger tube fouling. The License Renewal Application (LRA) has failed to discuss any Aging Management Program (AMP) to assure that the "delivery capability" of the Emergency Core Cooling System (ECCS) continues to meet the requirements of this GDC.

C. **Criterion 34 from 32 FR 10213 states**: Criterion 34-Reactor Coolant Pressure Boundary Rapid Propagation Failure Prevention (Category A). The reactor coolant pressure boundary shall be designed to minimize the probability of rapidly propagating type failures. Consideration shall be given (a) to the notch-toughness properties of materials extending to the upper shelf of the Charpy transition curve, (b) to the state of stress of materials under static and transient loadings, (c) to the quality control specified for materials and component fabrication to limit flaw sizes, and (d) to the provisions for control over service temperature and irradiation effects which may require operational restrictions.

Chapter 4, Page 6 of 85 Revision 20 (Page 443/1698) of the Indian Point 2 UFSAR provided as part of the LRA states: 4.1.3.4 Reactor Coolant Pressure Boundary Rapid Propagation Failure Prevention Criterion: The reactor coolant pressure boundary shall be designed and operated to reduce to an acceptable level the probability of rapidly propagating type failure. Consideration is given (a) to the provisions for control over service temperature and irradiation effects, which may require operational restrictions, (b) to the design and construction of the reactor pressure vessel in accordance with applicable codes, including those, which establish requirements for absorption of energy within the elastic strain energy range and for absorption of energy by plastic deformation and (c) to the design and construction of reactor coolant pressure boundary piping and equipment in accordance with applicable codes. (GDC 34)

Indian Point 3 UFSAR provided as part of the LRA fails to address Criterion 34 from the 1967 GDCs.

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IP3 makes no commitment to comply with this regulation. IP2 has completely altered the words and the intent of this General Design Criterion by eliminating the following requirements that may be impacted by aging mechanisms within the scope of 10 CFR 54.4:

(a) to the notch-toughness properties of materials extending to the upper shelf of the Charpy transition curve,

(b) to the state of stress of materials under static and transient loadings

(c) to the quality control specified for materials and component fabrication to limit flaw sizes, and

(d) to the provisions for control over service temperature and irradiation effects which may require operational restrictions.

27. If it is not known whether the components, equipment and systems at IP2 and IP3 are in compliance with the legally relevant GDC it is to be expected that the NRC Staff, in fulfillment of its regulatory obligations, will uncover the deficiencies and require that they be corrected. However, that has not occurred to date and until that has occurred, the specific components, equipment and systems are not known and it is not possible to design or evaluate the appropriate aging management programs and analyses.

28. There are substantial substantive differences between the trade association version of the GDC and the officially promulgated 1967 Draft GDC. The side by side comparison of the two versions is shown in a Chart prepared by me which is attached.

29. Throughout the UFSAR when the language of a GDC with which IP2 and IP3 is alleged to be in compliance is cited, the language is taken from the trade association version of the GDC and not the 1967 Draft GDC.

30. While in a few instances the differences are of little obvious safety significance, in a number of instances the differences are substantial and result in IP2 and the trade association and IP3 and the trade association illegally "granting" IP2 and IP3 an "exemption" from the applicable safety requirements of the AEC. These substantial differences are highlighted on attached Exhibit, prepared by me.

31. Attached to this Declaration is the Chart prepared by me and a copy of my current CV. Both of these documents were prepared by me and are true and correct to the best of my

personal knowledge.

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

Dated: November ___, 2007
West Hartford, Connecticut

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Paul Blanch