

NO. 189. AN ACT RELATING TO A COMPREHENSIVE VERTICAL
AUDIT AND RELIABILITY ASSESSMENT OF THE VERMONT
YANKEE NUCLEAR FACILITY.

(S.364)

It is hereby enacted by the General Assembly of the State of Vermont:

Sec. 1. LEGISLATIVE INTENT AND PURPOSE

(a) No. 160 of the Acts of the 2005 Adj. Sess. (2006) reconfirmed the obligation and authority of the general assembly to examine the reliability of the nuclear power station of Entergy Nuclear Vermont Yankee (ENVY) in order to determine if it should be authorized to operate in this state beyond the expiration of its current operating license on March 21, 2012.

(b) The general assembly finds that Entergy Nuclear Vermont Yankee has had one of the highest percentage power increases of any plant in the country and now is applying for a 20-year life extension beyond its 40-year design. It is therefore the intent of the general assembly to determine on behalf of the people of the state of Vermont the reliability issues associated with operating ENVY for an additional 20 years after its scheduled closure in 2012.

(c) The general assembly finds that Entergy Nuclear Vermont Yankee provides approximately one-third of the power used by the citizens of Vermont. It has been a reliable generation source for Vermont. However, in 2007 it experienced two operational difficulties that required that it reduce power or go to zero power production. When the station reduces power output or does not produce power, Vermont utilities have to purchase market power,

often at a greater price to our citizens. It is in the State's economic interests to ensure that the station is a reliable source of power.

(d) It is the purpose of this act to provide for a thorough, independent, and public assessment of the reliability of the systems, structures, and components of the Entergy Nuclear Vermont Yankee facility. The comprehensive reliability assessment required by this act shall:

(1) Achieve the goals and objectives set out in Sec. 2 of this act;

(2) Assess the reliability of specific systems identified in Sec. 3 of this

act;

(3) Address the specific audit inquiries with respect to those systems, as set out in Sec. 4 of this act; and

(4) Employ audit methodologies as set out in Sec. 5 of this act.

Sec. 2. GOALS AND OBJECTIVES

Giving due consideration to the following areas consistent with Vermont's legitimate state interests, the goals and objectives of an independent comprehensive reliability assessment of the Vermont Yankee nuclear facility are to:

(1) Assess the conformance of the facility to its design and licensing bases, for operating at up to 120 percent of its originally intended power production level, including appropriate reviews at the plant's site and its corporate offices;

(2) Identify all relevant deviations, exemptions, or waivers, or any combination of these from any regulatory requirements applicable to Vermont Yankee and from any regulatory requirements applicable to new nuclear reactors, and verify whether adequate operating margins are retained despite the cumulative effect of any deviations, exemptions, or waivers for the present licensed power level for the proposed period of license extension;

(3) Assess the facility's operational performance, and the facility's reliability for continued power production, giving risk perspectives where appropriate;

(4) Evaluate the effectiveness of licensee self-assessments, corrective actions, and improvement plans; and

(5) Determine the cause or causes of any significant operational shortcomings identified and draw conclusions on overall performance.

Sec. 3. SPECIFIC SYSTEMS TO BE ASSESSED

(a) The comprehensive reliability assessment shall include an in-depth inspection of at least the seven whole plant systems listed in this subsection.

(1) An electrical system: the back-up or stand-by electrical system, including the diesel generators, batteries, the Vernon dam tie, and all associated electrical connections and controls.

(2) An emergency system: the emergency core cooling system, including both high- and low-pressure injection systems.

(3) A mechanical system: the condensate feed water system, including the condenser.

(4) The primary containment system, including all associated systems, structures, and components, such as dry well shell, torus supports, residual heat removal system, isolation valves, containment spray, and adequate suction.

(5) A heat removal system: the cooling towers and alternate cooling system, including both cooling tower cells used for normal cooling and those that are emergency-related towers.

(6) A cooling system dependent upon Connecticut River water: alternate cooling system and emergency service water.

(7) An underground piping system that carries radionuclides.

(b) Additional systems may be selected for audit by the public oversight panel established in Sec. 6 of this act in consultation with the department of public service.

(c) In addition, the audit shall include an investigation and assessment of a generic systems issue: cable separation — separation of safety systems, including physical and electrical separation.

Sec. 4. SPECIFIC AUDIT INQUIRIES

The audit of each system shall include physical and documentation examination of the entire system, including each system's relevant components. Specific inquiries to be addressed shall include, but are not limited to, the following:

(1) Initial conditions. What were the codes and standards with which the system was designed to comply and what was the design basis? Is the design of the system in keeping with the expected initial conditions and its design basis?

(2) Procurement. If there were procurement changes, was a new set of review calculations completed for those procurement changes and were those procurement changes compared against the original design and all of its calculations?

(3) Installation - "as-built." Do plant records adequately represent the as-built condition of the plant? Are all changes reflected in all documents from the design basis through as-built and through current operations?

(4) Operation. What changes or compensations have been made to accommodate unanticipated operations outcomes? Have those changes, compensations, and accommodations been duly noted in procedural manuals and logs? Have root cause analyses been conducted to reflect unanticipated outcomes? If root cause analyses were not conducted in any particular instance, why not? If root cause analyses were not conducted in any particular

instance, have any unanticipated system operations outcomes been duly corrected or compensated in all safety and reliability operations and procedures?

(5) Testing. When systems have undergone periodic tests, what have been the results? Are resulting corrective actions reflected in all documents from design through as-built through current operations?

(6) Inspection. When systems have undergone periodic inspections, have those inspections been successful? Are the resulting changes reflected in all documents from design through as-built through current operations?

(7) Maintenance. Has the management system for aging components been adequately maintained to assure the components meet the design basis? Is there a track-change system in place to determine what components have been reviewed, repaired, or replaced? Is there an accurate system in place to record when those reviews and repairs were completed? Is there a program of operations or a schedule of operations that specifically delineates what aging management systems, as identified in the industry-wide database, are being reviewed and when? Is adequate time allowed in each outage for aging management review and adequate maintenance? Are the aging factors discovered actually being repaired in a timely manner?

(8) Repairs. Have repairs been performed which assure the system will operate as expected? Are all repairs completed as soon as possible? Are

repairs sufficiently in-depth to effectively invest in the plant and its operational systems?

(9) Modifications. Do all modifications to the system also comply with the system's original design basis? Have all procedure manuals and operations manuals been updated to reflect the impact of any modifications made to any system?

(10) Redesign. Have changes made to the plant since its original construction been reviewed to ensure that safety margins have not been reduced? Has each component modified for uprate been reviewed to assure that operational margins have not been reduced and to assure that design basis redundancy has not been compromised? Have any repairs, maintenance, or modifications impacted the original design of the redundant safety systems? Are all systems still "single failure proof"?

(11) Seismic analysis. When was the most recent modern, computer-generated, finite element seismic analysis performed on each of the seven vertical slice systems examined in the audit? Does ENVY remain capable of withstanding design basis events beyond the original 40-year design life of the plant to reflect the age-related changes in the plant and weight changes from all modifications during the first 35 years of operation?

(12) Training. Has an adequate review and evaluation of operator training and operating procedures been conducted? Has each change been adequately reflected in the operations procedures? Have operations personnel

been adequately trained in all modifications to all systems? Are operations personnel frequently updated and trained regarding any troublesome issues other plants have uncovered which may compromise operations and safe shutdown?

(13) Corrective action programs. What corrective action programs have been established for each of the systems audited? Have the corrective actions taken been properly integrated in the corrective action program? Have corrective actions been taken in a timely manner? Where recorded items have been deferred, have they been appropriately evaluated for risks and potential consequences of deferral and appropriately tracked while awaiting resolution?

Sec. 5. DESIGN AND METHODOLOGY

(a) The department of public service, in consultation with the public oversight panel, shall design the work plan and establish a time frame for the comprehensive reliability assessment. The following methodology shall be employed unless with respect to any specific system, component or procedure the department, in consultation with the oversight panel, determines that employing such methodology would be inefficient or ineffective:

(1) Vertical investigation. The audit shall commence with an examination of the initial start-up conditions of the Vermont Yankee plant and examine the subsequent history of its modifications, maintenance, repairs, and current operations. Such vertical inspection shall be made of each whole plant system selected for assessment.

(2) Horizontal investigation. At any point in the vertical inspection at which an emergency-related function, the operability, the design, the performance, or aging issues, or other unanalyzed or nonconforming conditions are encountered, a thorough horizontal or lateral exploration shall be conducted to determine extent-of-condition and root cause with attention to evaluating licensee performance in problem identification and resolution, testing, engineering, in-service inspection, and maintenance.

(b) In addition to the vertical and horizontal inspections prescribed in this section, the department in consultation with the public oversight panel may include in the design of the audit the investigation or assessment of any other system, component, or procedure utilizing any other methodology that the department and oversight panel deem necessary to provide a complete and comprehensive evaluation of the reliability of the Vermont Yankee nuclear facility.

Sec. 6. PUBLIC OVERSIGHT PANEL

(a) The comprehensive reliability assessment required by this act shall be conducted with the maximum amount of transparency and public oversight and involvement. To that end, a public oversight panel is created to include three to five members who have demonstrated expertise in nuclear technology or nuclear regulation to be selected as follows:

(1) The speaker of the house, the president pro tempore of the senate, and the governor, shall each appoint one member; and

(2) The three members appointed pursuant to subsection (1) may select one or two additional members.

(b) The public oversight panel shall be appointed as soon as possible after the effective date of this act. The panel shall elect a chair and vice chair from among its members, and upon its request, the panel shall have the assistance of the department of public service for administrative support.

(c) The public oversight panel shall have access to all records and documents consulted and generated in developing and conducting the comprehensive reliability assessment and to records and documents generated in any other audit of the Vermont Yankee Nuclear facility pertinent to the comprehensive reliability assessment. Because the public oversight panel will be reviewing and discussing proprietary and security related documents, the public oversight panel shall not be considered a public body pursuant to

1 V.S.A. § 310 nor shall it be subject to the access to public records statutes embodied in 1 V.S.A. §§ 315-320. After the public oversight panel publicly reports its findings and evaluation to the general assembly as required in subsection (d) of this section, the panel may be subject to public access requests for material relied upon in making its findings and report with redactions of proprietary or security information as needed.

(d) No later than January 30, 2009, the public oversight panel shall publicly report its findings and evaluation to the general assembly for the purpose of informing the legislature in making its determination whether the Entergy Nuclear Vermont Yankee plant should be authorized to operate in the state beyond the expiration of its current license on March 21, 2012.

(e) The evaluation and recommendations of the public oversight panel and the report and findings of the audit shall be made available to the director of public advocacy of the department of public service, and may be used by the director of public advocacy as deemed appropriate by the department to represent the interests of the public in any proceedings before the public service board relating to a certificate of public good for relicensing ENVY for operation beyond March 21, 2012 or for decommissioning, or other related proceedings.

Sec. 7. AUDIT INSPECTION TEAM

The department of public service in consultation with the public oversight panel shall select an audit inspection team of a sufficient number of qualified consultants, experts, and technicians as necessary to conduct all or any part of the comprehensive reliability assessment required by this act. The consultants, experts and technicians selected shall not at any time during the three years prior to the effective date of this act have worked for or at the Vermont Yankee facility, Entergy Nuclear Vermont Yankee, or any other nuclear power plant owned and operated by Entergy Nuclear Vermont Yankee or any of its affiliates.

Sec. 8. EXPENSES AND COSTS

(a) The members of the public oversight panel are entitled to receive compensation as determined jointly by the speaker of the house, the president pro tempore of the senate, and the secretary of administration. Members of the public oversight evaluation panel shall also be entitled to reimbursement for actual and necessary expenses related to the performance of their duties. The compensation and costs incurred by the public oversight panel shall be charged to the petitioner for a license extension under the provisions of 30 V.S.A. §§ 20 and 21.

(b) The compensation and costs incurred by the audit inspection team and other expenses incurred in the conduct of the comprehensive reliability

assessment shall be charged to the petitioner for a license extension under the provisions of 30 V.S.A. §§ 20 and 21.

Sec. 9. EFFECTIVE DATE

(a) This act shall take effect from passage.

(b) Notwithstanding the July 1, 2008 commencement date in 30 V.S.A. § 248(e)(2), added by No. 160 of the Acts of 2006, the Public Service Board may at any time after the passage of this act commence proceedings on any petition to operate a nuclear plant beyond the date permitted in its existing certificate of public good.

Approved: June 5, 2008