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December 8, 2005

Administrative Judge Alex S. Karlin, Chairman
Administrative Judge Anthony J. Baratta
Administrative Judge Lester S. Rubenstein
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop: T-3F23
Washington, DC 20555-0001

In the Matter of Entergy Nuclear Vermont Yankee LLC and
Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station)
-- Docket No. 50-271-OLA

Dear Chairman Karlin and Judges Baratta and Rubenstein:

It has been brought to our attention that Exhibit 5 to the Declaration of Craig J. Nichols filed on December 2, 2005 in support of Entergy's motion of the same date for Summary Disposition of New England Coalition Contention 3 bears "proprietary" markings on all pages, although the document – copies of pages 263 to 267 of the Draft Safety Evaluation Report issued by the Staff on November 2, 2005 – is non-proprietary.

The copy of the referenced pages filed with Mr. Nichols' Declaration was part of an earlier version of the Draft SER. Although the caption "Proprietary" was inserted on those pages, the text is the same as that of the version that was issued by the Staff on November 2, 2005. However, to avoid confusion, we are enclosing a "Corrected Nichols Exhibit 5" that should be used instead of the original Exhibit, which should be discarded.

Template = SECY-043

SECY-02

We apologize for the confusion and thank you for your cooperation.

Sincerely,

Matias F. Travieso-Diaz
Counsel for Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.

Enclosure

cc: Service List (with enclosure)

CORRECTED NICHOLS EXHIBIT 5

suction pressure trips at various time delays to ensure only one pump trips at a time. Normal modification testing, with breakers in "test" position, to be performed.

The licensee stated that evaluations of the actual test results may identify the need for additional tests or the revision of the tests planned and therefore, the final test plan may be revised. The NRC staff also reviewed the EPU modification aggregate impact analysis, submitted by the licensee in Reference 4, which concluded that there is no adverse impact to the dynamic response of the plant to anticipated initiating events as a result of the proposed plant modifications.

The NRC staff concludes, based on review of each planned modification, the associated post-maintenance test, and the basis for determining the appropriate test, that the EPU test program will adequately demonstrate the performance of SSCs important to safety and included those SSCs: (1) impacted by EPU-related modifications; (2) used to mitigate an AOO described in the plant design basis; and (3) supported a function that relied on integrated operation of multiple systems and components. Additionally, the staff concludes that the proposed test program adequately identified plant modifications necessary to support operation at the EPU power level, and that there were no unacceptable system interactions because of proposed modifications to the plant.

SRP 14.2.1 Section III.C
Use of Evaluation To Justify Elimination of Power-Ascension Tests

Draft SRP 14.2.1, Section III.C, specifies the guidance and acceptance criteria the licensee should use to provide justification for a test program that does not include all of the power-ascension testing that would normally be considered for inclusion in the EPU test program pursuant to the review criteria of SRP 14.2.1 Sections III.A and III.B. The proposed EPU test program shall be sufficient to demonstrate that SSCs will perform satisfactorily in service. The following factors should be considered, as applicable, when justifying elimination of power-ascension tests:

- previous operating experience;
- introduction of new thermal-hydraulic phenomena or identified system interactions;
- facility conformance to limitations associated with analytical analysis methods;
- plant staff familiarization with facility operation and trial use of operating and emergency operating procedures;
- margin reduction in safety analysis results for AOOs;
- guidance contained in vendor topical reports; and
- risk implications.

The NRC staff reviewed the licensee's justification, in Attachment 2 of Reference 20, for not reperforming certain original startup tests. The attachment provides summaries from historical startup testing records and further justifies not performing certain startup tests during EPU power ascension testing. This information supplemented the bases for the proposed testing program provided in Reference 4. The EPU power ascension test plan does not include all of the power ascension testing that would typically be performed during initial startup of a new plant. The following factors were applied by the licensee in determining which tests may be excluded from EPU power ascension testing:

- Previous operating experience has demonstrated acceptable performance of SSCs under a variety of steady state and transient conditions.

- The effects of the VYNPS EPU are in conformance with the criteria of the NRC-approved GE CPPU Licensing Topical Report NEDC-33004P-A (Reference 51). Because the EPU is a constant pressure power uprate, the effects on SSCs due to changes in thermal-hydraulic phenomena are limited.

- Most of the plant modifications associated with EPU were installed and tested during the spring 2004 refueling outage and subsequent restart. Therefore, modified plant equipment has been in service since that time and plant staff familiarization with changes in plant operation as a result of the modifications has occurred.

The following is a brief justification provided by the licensee with respect to the startup tests that will not be reperformed as part of the EPU power ascension program:

- STP-11, LPRM Calibration. The test is not required to be re-performed since calibration of LPRMs, which is maintained by TSs, is not affected by EPU.

- STP-13, Process Computer. The test is not required to be re-performed since operation of the process computer is not affected by EPU. Plant procedures maintain the accuracy of the process computer.

- STP-20, Steam Production. The test is not required to be re-performed since it was only applicable for initial plant startup to demonstrate warranted capabilities.

- STP-21, Response to Control Rod Motion. The test is not required to be re-performed since operation at EPU increases the upper end of the power operating domain, which does not significantly or directly affect the manner of operating or response of the reactor at lower power levels.

- STP-25, Main Steam Isolation Valves (MSIVs). In accordance with VYNPS TS 4.7.D, each MSIV is tested at least once per quarter by tripping each valve and verifying the closure time. As discussed in Attachment 7 of Reference 1, one of the licensee's justifications for not performing large transient testing is that the initial startup test involving simultaneous

closure of all MSIVs would result in an unnecessary and undesirable transient cycle on the primary system which will not likely reveal unforeseen equipment issues related to operation at EPU conditions.

- STP-27, Turbine Trip, and STP-28, Generator Trip. These large transient tests were evaluated by the licensee for exception from EPU power ascension testing in accordance with Attachment 7 of Reference 1. A discussion of the NRC staff's review of the licensee's justification follows.

- STP-29, Recirculation Flow Control. Section 3.6 of the VYNPS PUSAR documents that the plant-specific system evaluation of the reactor recirculation system performance at CPPU power determined that adequate core flow can be maintained without requiring any changes to the recirculation system and with only a small increase in pump speed for the same core flow. Because the response to flow changes will be similar to that demonstrated during initial startup testing, this test is not required.

- STP-30, Recirculation System. For a one or two pump trip test at 100% power, Section 3.6 of the PUSAR indicates a CPPU that increases voids in the core during normal EPU operations requires a slight increase in recirculation drive flow to achieve the same core flow. Section 3.6 documents that the plant-specific evaluation of the reactor recirculation system performance at CPPU power determines that adequate core flow can be maintained without requiring any changes to the system or pumps and with only a small increase in their speed for the same core flow. The response to a one or two pump trip will be similar to that of original startup testing, therefore the test is not required.

- STP X-5 (90), Vibration Testing. This test obtains vibration measurements on various reactor pressure vessel internals to demonstrate the mechanical integrity of the system under conditions of FIV and to check the validity of the analytical vibration model. The licensee stated in a previous submittal associated with the steam dryer and other plant systems and components (Reference 16) that the analysis of the vessel internals at the EPU power level was performed to ensure that the design continues to comply with the existing structural requirements. Section 3.4.2 of the PUSAR states that calculations indicate that vibrations of all safety-related reactor internal components under EPU conditions are within GE acceptance criteria.

As mentioned previously in the discussion of startup tests STP-27 and STP-28, the NRC staff also reviewed Attachment 7, "Justification for Exception to Large Transient Testing," contained in Reference 1. The licensee cited industry experience at ten other domestic BWRs (EPUs up to 120% OLTP) in which the EPU demonstrated that plant performance was adequately predicted under EPU conditions. The licensee stated that one such plant, Hatch Units 1 and 2, was granted an EPU by the NRC without the requirement to perform large transient testing and that the VYNPS and Hatch are both BWR/4 designs with Mark I containments. Hatch Unit 2 experienced an unplanned event that resulted in a generator load reject from 98% of uprated power in the summer of 1999. As noted in Southern Nuclear Operating Company's licensee event report (LER) 1999-005, no anomalies were seen in the plant's response to this event. In

addition, Hatch Unit 1 has experienced a turbine trip and a generator load reject event subsequent to its uprate, as reported in LERs 2000-004 and 2001-002. Again, the behavior of the primary safety systems was as expected indicating that the analytical models being used are capable of modeling plant behavior at EPU conditions.

The licensee also provided information regarding transient testing for the Leibstadt (i.e., KKL) plant which was performed during the period from 1995 to 2000. Uprate testing was performed at 3327 MWt (i.e., 110.5% OLTP) in 1998, 3420 MWt (i.e., 113.5% OLTP) in 1999, and 3515 MWt in 2000. Testing for major transients involved turbine trips at 110.5% OLTP and 113.5% OLTP and a generator load rejection test at 104.2% OLTP. The testing demonstrated the performance of the equipment that was modified in preparation for the higher power levels. These transient tests also provided additional confidence that the uprate analyses consistently reflected the behavior of the plant. Another factor used to evaluate the need to conduct large transient testing for the EPU were actual plant transients experienced at the VYNPS. Generator load rejections from 100% current licensed thermal power, as discussed in VYNPS LERs 91-005, 91-009, and 91-014, produced no significant anomalies in the plant's response to these events. Additionally, transient experience for a wide range of power levels at operating BWRs has shown a close correlation of the plant transient data to the predicted response.

The NRC staff also reviewed the licensee's technical justification for not performing a loss of turbine generator and offsite power test which was originally performed at approximately 20% power. The licensee stated that under emergency operations/distribution (emergency diesel generator) conditions, the AC power supply and distribution components are considered adequate and their evaluation assures an adequate AC power supply to safety-related systems. The TSs and approved plant procedures govern the testing of the safety-related AC distribution system, including loss of offsite power tests.

The power ascension test program is relied upon as a quality check to: (a) confirm that analyses and any modifications and adjustments that are necessary for proposed EPUs have been properly implemented, and (b) benchmark the analyses against the actual integrated performance of the plant thereby assuring conservative results. This is consistent with 10 CFR 50, Appendix B, which states that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate calculational methods, or by the performance of a suitable testing program; and requires that design changes be subject to design control measures commensurate with those applied to the original plant design (which includes power ascension testing).

SRP 14.2.1 specifies that the EPU test program should include steady-state and transient performance testing sufficient to demonstrate that SSCs will perform satisfactorily at the requested power level and that EPU-related modifications have been properly implemented. The SRP provides guidance to the staff in assessing the adequacy of the licensee's evaluation of the aggregate impact of EPU plant modifications, setpoint adjustments, and parameter changes that could adversely impact the dynamic response of the plant to anticipated operational occurrences.

The NRC staff's review is intended to ensure that the performance of plant equipment important to safety that could be affected by integrated plant operation or transient conditions is adequately demonstrated prior to extended operation at the requested EPU power level. Licensees may propose a test program that does not include all of the power-ascension testing that would normally be included in accordance with the guidance provided in the SRP provided each proposed test exception is adequately justified. If a licensee proposes to omit a specified transient test from the EPU testing program based on favorable operating experience, the applicability of the operating experience to the specific plant must be demonstrated. Plant design details (such as configuration, modifications, and relative changes in setpoints and parameters), equipment specifications, operating power level, test specifications and methods, operating and emergency operating procedures; and adverse operating experience from previous EPUs must be considered and addressed.

Entergy's test program primarily includes steady-state testing with some minor load changes and no large-scale transient testing is proposed. In a letter dated December 21, 2004 (Reference 60), the NRC staff requested that Entergy provide additional information (including performance of transient testing that will be included in the power ascension test program) that explains in detail how the proposed EPU test program, in conjunction with the original VYNPS test results and applicable industry experience, adequately demonstrates how the plant will respond during postulated transient conditions following implementation of the proposed EPU given the revised operating conditions that will exist and plant changes that are being made. In letters dated July 27, and September 7, 2005 (Reference 60 and 61), the NRC staff requested that the licensee provide additional information regarding the need for condensate and feedwater system transient testing. The results of the staff's review of this issue and the need for a license condition is discussed in SE Section 2.5.4.4.

The NRC staff concludes that in justifying test eliminations or deviations, other than the condensate and feedwater system testing discussed in SE Section 2.5.4.4, the licensee adequately addressed factors which included previous industry operating experience at recently uprated BWRs, plant response to actual turbine and generator trip tests for the KKL plant, and experience gained from actual plant transients experienced in 1991 at the VYNPS. From the EPU experience referenced by the licensee, it can be concluded that large transients, either planned or unplanned, have not provided any significant new information about transient modeling or actual plant response. The staff also noted that the licensee followed the NRC staff approved GE topical report guidance which was developed for the VYNPS EPU licensing application.

SRP 14.2.1 Section III.D
Evaluate the Adequacy of Proposed Transient Testing Plans

SRP 14.2.1 Section III.D, specifies the guidance and acceptance criteria the licensee should use to include plans for the initial approach to the increased EPU power level and testing that should be used to verify that the reactor plant operates within the values of EPU design parameters. The test plan should assure that the test objectives, test methods, and the acceptance criteria are acceptable and consistent with the design basis for the facility. The