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September 15, 2008
BVY 08-062

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

References: (a) Letter, VYNPS to USNRC, "Technical Specification Proposed Change No. 273 Instrumentation Technical Specifications," BVY 08-001, dated February 12, 2008

(b) Letter, USNRC to VYNPS, "Vermont Yankee – Request for Additional Information Regarding Technical Specification Change Relating to Degraded Grid Protection System Instrumentation (TAC No. MD8111)," NVY 08-080, dated August 19, 2008

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
Technical Specifications Proposed Change No. 273, Supplement 2
Response to Request for Additional Information

Dear Sir or Madam,

In Reference (a), Entergy Nuclear Operations Inc. (ENO) submitted a proposed change to the instrumentation sections of the Vermont Yankee Operating License Technical Specifications. This letter is in response to your staffs request for additional information (RAI) provided in Reference (b). Attachment 1 to this submittal provides ENO's response to each of the RAI questions.

This supplement to the original license amendment request does not change the scope or conclusions in the original application, nor does it change ENO's determination of no significant hazards consideration.

There are no new regulatory commitments being made in this letter.

Should you have any questions or require additional information concerning this submittal, please contact Mr. David J. Mannai at (802) 451- 3304.

I declare under penalty of perjury, that the foregoing is true and accurate.
Executed on September 15, 2008

Sincerely,

Ted A. Sullivan
Site Vice President
Vermont Yankee Nuclear Power Station

Attachments (2)
cc listing (next page)

A001
NRR

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Attachment 1

Technical Specification Proposed Change No. 273, Supplement 2

Vermont Yankee Nuclear Power Station

Response to Request for Additional Information

Technical Specification proposed Change No. 273, Supplement 2
Vermont Yankee Nuclear Power Station
Response to Request for Additional Information

RAI No.1:

Explain how the proposed Section 1.0 definition for Reactor Protection System (RPS) Response Time ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis as required per 10CFR50.36(d)(3).

Background: The proposed Section 1.0 definition for the RPS Response Time is defined as "the time from the opening of the sensor contact up to and including the opening of the scram solenoid relay." The proposed definition is derived from the current wording found in Limiting Condition for Operation (LCO) 3.1.A, and does not include response time testing of the sensor. The actual performance of the RPS Response Time is required per proposed Surveillance Requirement (SR) 4.1.A.3.

For comparison purposes, NUREG 1433, "Standard Technical Specifications (STS), General Electric Plants, BWR/4," LCO 1.1, "Definitions," defines RPS Response Time as "that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids." The STS definition includes response time testing of the sensor. STS LCO 3.3.1.1, "RPS Instrumentation," contains SR 3.3.1.1.15, RPS Response Time. The Bases for STS SR 3.3.1.1.15 state the SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. The Bases do state, however, that neutron detectors are excluded from RPS Response Time testing because the principles of detector operation virtually ensure an instantaneous response time. The Bases also state that the sensors for certain other functions are allowed to be excluded from specific RPS Response Time measurement if the conditions of Reference 12 are satisfied. Reference 12 is NEDO-32291-A, "System Analyses for the Elimination of Selected Response Time Testing Requirements," October 1995.

10CFR50.36(d)(3) states TS will include SRs which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

It is unclear how the proposed Section 1.0 definition for RPS Response Time, which does not include response time testing of the sensor, ensures that the individual channel response times, as required per proposed SR 4.1.A.3, are less than or equal to the maximum values assumed in the accident analysis, thereby ensuring that facility operation will be within safety limits as required per 10 CFR 50.36(d)(3).

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Response to RAI No. 1:

Entergy Nuclear Operations (ENO) is not proposing a change to the current licensing basis (CLB) in this area. The Vermont Yankee (VY) licensing basis does not require including sensor response time in the system response time defined in the current Technical Specifications (CTS). Sensor response time is factored into station safety analysis as an input value to the analysis as discussed below.

The proposed definition "OO" is taken from the current CTS wording found in Limiting Condition for Operation (LCO) 3.1.A. The 50 millisecond maximum response time stated in the CTS does not include sensor response time.

The RPS system is described in UFSAR section 7.2. UFSAR section 7.2.3.9 states in part that component electrical characteristics are selected so that the system response time, from the opening of a sensor contact up to and including the opening of the trip actuator contacts (scram contactors), is less than 50 milliseconds.

UFSAR section 7.2.2 lists the safety design basis for the RPS system. UFSAR section 7.2.5 states that the RPS response times were first verified during preoperational testing and may be verified there after by similar tests. The elapsed time from the opening of the sensor contact to the opening of the main trip actuators (scram contactors) is measured. The UFSAR does not specifically address sensor response time.

ENO's Input Assumption Source Document contains the inputs that are provided to General Electric, via the OPL-3 form, for the performance of the station safety analysis. These inputs include the 50 millisecond response time required by the CTS as well as specific sensor response times applicable to the specific analysis.

ENO considers that the CLB is adequate and that the CTS and proposed Technical Specifications satisfy the requirements of 10CFR50.36(d)(3).

RAI No.2

Explain how 10 CFR 50.36(d)(1)(ii)(A) is met when the proposed LCO 2.1.A.1.b does not require that the Intermediate Range Monitor IRM) flux scram setting be set at less than or equal to 120/125 of full scale when the reactor mode switch is in the Refuel position with reactor coolant temperature at less than or equal to 212 °F.

Background: Proposed LCO 2.1.A.1.b, "Flux Scram Trip Setting (Refuel or Startup/Hot Standby Mode)," states "when the reactor mode switch is in the Refuel position (with reactor coolant temperature > 212 °F) or the Startup/Hot Standby position, average power range monitor (APRM) scram shall be set down to less than or equal to 15% of rated neutron flux. The IRM flux scram

setting shall be set at less than or equal to 120/125 of full scale." As a result, the IRM flux scram setting would not be required to be set at less than or equal to 120/125 of full scale when the reactor mode switch is in the Refuel position with reactor coolant temperature at less than or equal to 212 °F. This is in contrast to current and proposed requirements.

The proposed Bases for LCO 3.1 state "in Refuel with reactor coolant temperature ≤ 212 °F, when a cell with fuel has its control rod withdrawn, the IRMs provide monitoring for and protection against unexpected reactivity excursions." In addition, proposed LCO 2.1.A.1.b does not reflect current requirements as stated in Note 1 of Table 3.1.1 or proposed Note (b) of Table 3.1.1 of LCO 3.1, "Reactor Protection System (RPS)." Note 1 states that "when the reactor is subcritical and the reactor water temperature is less than 212 °F, only the following trip functions need to be operable: c) high flux IRM or high flux SRM in coincidence." In the License Amendment Request (LAR), Note 1 is modified, in part, to proposed Note (b). Note (b) requires that the IRM High Flux (Function 3.a) be Operable in Refuel "with reactor coolant temperature ≤ 212 °F and any control rod withdrawn from a core cell containing one or more fuel assemblies."

10 CFR 50.36(d)(1)(ii)(A) states that "limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded."

It is unclear how 10 CFR 50.36(d)(1)(ii)(A) is met when proposed LCO 2.1.A.1.b does not require that the IRM flux scram setting be set at less than or equal to 120/125 of full scale when the reactor mode switch is in the Refuel position with reactor coolant temperature at less than or equal to 212 °F.

Response to RAI No. 2:

The proposed change to LCO 2.1.A.1.b was intended to provide for consistency with proposed TS Table 3.1.1. Proposed Table 3.1.1 provides for operability of the subject trip functions when in Refuel Mode with reactor temperature less than 212 degrees F.

ENO proposes to modify LCO 2.1.A.b as follows:

> In accordance with Table 3.1.1, when the reactor mode switch is in the REFUEL position or the STARTUP / HOT STANDBY position....."

This change addresses the concern and allows the mode applicability for LCO 2.1.A.1.b to be as stated on Table 3.1.1.

ENO considers that the revised LCO 2.1.A.1.b meets the requirements of 10CFR50.36(d)(1)(ii)(A).

RAI No. 3:

Explain how 10CFR50.36(d)(3) is met when proposed SR 4.1.A.1 explicitly requires performance of proposed SR 4.1.A.2 and proposed SR 4.1.A.3, but not proposed SR 4.1.A.4.

Background: Proposed SR 4.1.A.1 states that "RPS testing shall also be performed as indicated in Surveillance Requirements 4.1.A.2 and 4.1.A.3." However, proposed SR 4.1.A.1 does not mention testing requirements associated with proposed SR 4.1.A.4.

10 CFR 50.36(d)(3) states TSs will include SRs which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

It is unclear how 10 CFR 50.36(d)(3) is met when proposed SR 4.1.A.1 explicitly requires performance of proposed SR 4.1.A.2 and proposed SR 4.1.A.3, but not proposed SR 4.1.A.4.

Response to RAI No. 3:

ENO proposes to remove the references to SR 4.1.A.2 and SR 4.1.A.3 on the basis that these references are redundant and all of the proposed Surveillance Requirements are made mandatory by their inclusion.

With the proposed additional change, ENO considers the requirements of 10CFR50.36(d)(3) are satisfied.

RAI No. 4:

Discussion of Change L.3 does not provide information to support modifying actions for when the APRM High Flux (flow bias) is inoperable, as indicated in the LAR. Please provide the justification supporting the requested changes to the APRM High Flux (flow bias) actions.

Background: The current requirements for an inoperable APRM High Flux (flow bias) are found in Note 2 of Table 3.1.1 of LCO 3.1.1, "Reactor Protection System." If those requirements are not met, the actions of Note 3 are carried out. Per Table 3.1.1, parts A or B of Note 3 are applicable to the APRM High Flux (flow bias). Action A of Note 3 is to "initiate insertion of operable rods and complete insertion of all operable rods within four hours," while alternate Action B is to "reduce power level to IRM range and place mode switch in the "Startup/Hot Standby" position within eight hours."

The LAR proposes to delete Action A of Note 3 for the APRM High Flux (flow bias) while changing, in part, Action B of Note 3 into proposed Note 2.b. The reasoning for these changes is stated to be listed under Discussion of Change (DOC) A.14 and L.3. DOC L.3 however, does not contain any discussions pertinent to the APRM High Flux (flow bias).

10 CFR 50.36(d)(2)(i) states "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

It is unclear how DOC L.3 provides information to support modifying actions for when the APRM High Flux (flow bias) is inoperable, as permitted by 10 CFR 50.36(d)(2)(i).

Response to RAI No. 4:

The intent was to apply Note 2.b to both the APRM High Flux (Flow Bias) trip function and MSIV Closure trip function, but DOC L.3 only addresses the second of these since it is a revised requirement. Note 2.b is a slight rewrite of CTS Note 3.b, which also imposes the 8-hour Startup/Hot Standby requirement on the APRM High Flux (Flow Bias) trip function, and is not considered a change from the CTS.

DOC L.3 is resubmitted as follows:

L.3 Discussion of Change

CTS Table 3.1.1, for the APRM High Flux (Flow Bias) Trip Function, requires the reactor to be placed in Hot Shutdown within 4 hours (CTS Table 3.1.1 Note 3.a) or to reduce power level to the IRM range and place the mode switch in the "Startup/Hot Standby" position within 8 hours (CTS Table 3.1.1 Note 3.b). CTS Table 3.1.1, for the Main Steam Line Isolation Valve (MSIV) Closure Trip Function, requires the reactor to be placed in Hot Shutdown within 4 hours (CTS Table 3.1.1 Note 3.a) or to close the main steam isolation valves within 8 hours, which will cause a reactor trip placing the reactor in Hot Shutdown (CTS Table 3.1.1 Note 3.c). However, the APRM High Flux (Flow Bias) and the Main Steam Line Isolation Valve Closure Trip Functions are only required to be operable in "Run." Therefore, the appropriate action to take when minimum conditions for operation are not satisfied for these Trip Functions is to place the reactor in "Startup/Hot Standby" (proposed Table 3.1.1 Action Note 2.b). This is consistent with the BWR Standard Technical Specifications, LCO 3.3.1.1, Action Note F and Table 3.3.1.1-1, Trip Functions 2.b and 5, with the clarification that the 8-hour Completion Time in CTS is retained in lieu of the 6-hour Completion Time of LCO 3.3.1.1, Action Note F.

Justification

This change is acceptable for the following reasons. The APRM High Flux (Flow Bias) Trip Function is only required to be operable in "Run" since the clamp portion of the Trip Function terminates the MSIV closure event and, along with the Main Steam safety/relief valves, limits the RPV pressure to less than the ASME Code limits. The Flow Bias portion of the Trip Function, although not specifically credited in the accident or transient analyses, also provides protection against transients where thermal power increases slowly and against power oscillations which may result from reactor thermal hydraulic instabilities. The Main Steam Line Isolation Valve Closure Trip Function is only required to be operable in "Run" since, with the MSIVs open and the heat generation rate high, a pressurization transient can occur if the MSIVs close. In "Startup/Hot Standby" and "Refuel" with coolant temperature > 212°F, the heat generation rate is low enough so that the other diverse RPS functions identified for these Modes of Applicability in proposed Table 3.1.1, as modified by Footnote (a), provide sufficient protection. Therefore, the appropriate action to take when minimum conditions for operation are not satisfied for the APRM High Flux (Flow Bias) Trip Function and the Main Steam Line Isolation Valve Closure Trip Function is to place the reactor in "Startup/Hot Standby" within 8 hours (proposed Table 3.1.1 ACTION Note 2.b). This action places the reactor in a Mode in which these Trip Functions are no longer required to be operable. The time period for reaching "Startup/Hot Standby" is consistent with the existing time period provided in CTS Table 3.1.1 Note 3.b.

RAI No. 5:

Discussion of Change LA.10 does not provide information to support relaxing the stated testing frequency of the logic test for the RPS instrumentation trip functions. Please provide the justification for the requested change in testing frequency.

Background: Proposed SR 4.1.A.4 states to "perform a Logic System Functional Test of RPS instrumentation Trip Functions once every Operating Cycle." This is a relaxation of the current testing frequency requirement found

in Note 7 of Table 4.1.1. Note 7 states "a functional test of the logic of each channel is performed as indicated" in Table 4.1.1. The Instrument Channels listed in Table 4.1.1 have various Minimum Frequencies in which the functional test of the logic is performed. Most Minimum Frequencies are listed as every three months. The reasoning for these changes is stated to be listed under Discussion of Change (DOC) LA.10. DOC LA.10, however, does not contain any discussions pertinent to the stated relaxation in the testing frequency of the logic test for the RPS instrumentation trip functions.

10CFR50.36(d)(3) states TSs will include SRs which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

It is unclear how DOC LA.10 provides information to support relaxing the stated testing frequency of the logic test for the RPS instrumentation trip functions while ensuring that 10CFR50.36(d)(3) is still met.

<u>Response to RAI No. 5</u>:

ENO is not proposing a change to the licensing basis in this area. There are no changes to the frequency of performing testing of the RPS.

The CTS currently have no specific test requirement for performance of a RPS Logic test. CTS Table 4.1.1, Note 7, is a description of the testing that is performed which, when taken together constitutes a logic system functional test. Note 7 reads as follows:

> "A functional test of the logic of each channel is performed as indicated. This coupled with placing the mode switch in shutdown each refueling outage constitutes a logic system functional test of the scram system."

The definition in CTS Section 1.0.H of a Logic System Functional Test is:

> "A logic system functional test shall be a test of all logic components required for operability of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify operability. The logic system functional test may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested."

CTS Note 7 describes the series of overlapping tests that together comprise the Logic Test for RPS. The functional test of the logic of each channel tests from the sensors to the individual logic channel output relay. The placing of the mode switch in shutdown each refueling outage, in addition to testing the specific mode switch in shutdown function, demonstrates that combining the individual logic channels results in actuation of the final devices and is the final test of the group which completes the Logic Test. Thus the present frequency of performance of the logic test is once per cycle.

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RAI No. 6:

Explain how the lack of specific applicable modes for the Emergency Core Cooling System trip functions will still ensure that 10CFR50.36(d)(2)(i) is met. In addition, provide specifics on when proposed Note (b) of Table 3.2.1 is applicable.

Background: Table 3.2.1 of Limiting Condition for Operation (LCO) 3.2.A, "Emergency Core Cooling System (ECCS)," has a proposed Note (b) that states ECCS trip functions are applicable "when the associated ECCS subsystem is required to be operable." The proposal is ambiguous in that no specific LCO is referenced in proposed Note (b). As a result, it is unclear when proposed Note (b) specifically applies.

For comparison purposes, current LCO 3.2.A provides more specific information regarding ECCS trip function applicability and states "when the system(s) it initiates or controls is required in accordance with Specification 3.5, the instrumentation which initiates the emergency core cooling system(s) shall be operable in accordance with Table 3.2.1." LCO 3.5 is titled "Core and Containment Cooling Systems," and contains ECCS trip function applicability modes. In addition, NUREG 1433, "Standard Technical Specifications, General Electric Plants, BWR/4," contains a Note (a) in Table 3.3.5.1-1 of LCO 3.3.5.1, "ECCS Instrumentation," that is similar in intent to proposed Note (b). Note (a) states that ECCS trip functions are applicable "when associated ECCS subsystem(s) are required to be Operable per LCO 3.5.2, 'ECCS - Shutdown."

10CFR50.36(d)(2)(i) states "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility."

It is unclear how the lack of specific applicable modes for the ECCS trip functions will still ensure that lowest functional capability or performance levels of equipment required for safe operation of the facility are met per 10CFR50.36(d)(2)(i).

Response to RAI No. 6:

ENO is not proposing a change to the licensing basis in this area. CTS Section 3.2.A "Emergency Core Cooling System" requires that the ECCS system instrumentation is required to be operable when the system(s) it initiates or controls is required to be operable in accordance with specification 3.5. The proposed note (b) to Table 3.2.1 was intended to maintain this requirement. ENO proposes to change Note (b) of Table 3.2.1 as follows:

(b) When the associated ECCS subsystem(s) are required to be Operable per Technical Specification 3.5

With this proposed enhancement, ENO believes that 10CFR50.36(d)(2)(i) is satisfied.

RAI No. 7:

Explain how the diesel generator automatic start requirement on a high drywell pressure or reactor vessel low-low water level signals is captured in the Technical Specifications as required per 10CFR50.36(d)(2)(i).

Background: Section 6.3 of the Updated Final Safety Analysis Report (UFSAR) states, in part, that the "high drywell pressure or reactor vessel low-low water level signals will also start emergency diesel generators to restore auxiliary power." This discussion is also captured in the proposed Bases for Limiting Condition for Operation (LCO) 3.2.A, "Emergency Core Cooling System (ECCS)," and states "automatic initiation of the Diesel Generators occurs for conditions of Low – Low Reactor Vessel Water Level or High Drywell Pressure." The proposed Bases also state, in part, that "upon receipt of a Loss-of-Coolant Accident (LOCA) initiation signal, each Diesel Generator is automatically started." However, it is not clear if this requirement is captured in the TS.

For comparison purposes, NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," contains a Note (b) in Table 3.3.5.1-1 of LCO 3.3.5.1, "ECCS Instrumentation." Note (b) states, in part, that certain ECCS trip functions are "required to initiate the associated diesel generator (DG)."

10CFR50.36(d)(2)(i) states "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility.

It is unclear if the DG automatic start requirement on a high drywell pressure or reactor vessel low-low water level signals is captured in the TS in order to ensure that the lowest functional capability or performance levels of equipment required for safe operation of the facility is met per 10CFR50.36(d)(2)(i).

Response to RAI No. 7:

ENO is not proposing a change to the licensing basis in this area. The diesel generator automatic start requirement on a high drywell pressure or reactor vessel low-low water level signals is captured in the proposed change in the Bases for section 3.2.A/4.2.A. It reads in part as follows:

> "Automatic initiation of the DGs occurs for conditions of Low-Low Reactor Vessel Water Level of High Drywell Pressure. Each of these diverse variables is monitored by four redundant transmitters, which are, in turn, connected to four trip units. The outputs of the four trip units are connected to relays whose

contacts are connected to a one-out-of-two taken twice logic to initiate all DGs. The DGs receive their initiation signals from the CS System initiation logic."

To make this clearer a new Note (d) will be added to Proposed Table 3.2.1 to state that these trip functions are also required to initiate the emergency diesel generators.

With the proposed changes to Table 3.2.1, ENO considers the requirements of 10CFR50.36(d)(2)(i) and satisfied with the new Note (d).

RAI No 8:

Explain how 10CFR50.36(d)(3) is met when proposed SR 4.2.B does not contain Response Time testing of Primary Containment Isolation Valves.

Background: The UFSAR, Section 14.6.3, "Loss of Coolant Accident," states "containment isolation is postulated to occur simultaneously with the pipe break." UFSAR Table 5.2.2, "Primary Containment System Penetrations and Associated Containment Isolation Valves," lists minimum closing rates for various Primary Containment Isolation Valves (PCIVs). In addition, the proposed Bases for Limiting Condition for Operation (LCO) 3.2.B, "Primary Containment Isolation," states "primary containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA." However, proposed SR 4.2.B, "Primary Containment Isolation," does not have any Response Time testing associated with the PCIVs. For comparison purposes, NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," contains SR 3.3.6.1.8, Response Time testing, in LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

10 CFR 50.36(d)(3) states TSs will include SRs which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

It is unclear how 10 CFR 50.36(d)(3) is met when proposed SR 4.2.B does not contain Response Time testing of PCIVs.

Response to RAI No. 8:

ENO is not proposing a change to the CLB in this area.

CTS requirements for response time testing of PCIVs are contained in CTS Surveillance Requirement 4.7.D "Primary Containment Isolation Valves." This accomplishes isolation testing in accordance with the In-service Testing (IST) program that is required by CTS Surveillance Requirement 4.6.E "Structural

Integrity and Operability Testing". The IST program ensures that test acceptance criteria are consistent with the UFSAR and station safety analysis assumptions.

ENO does not consider that duplicating the existing PCIV response time testing requirements in proposed TS Section 4.2.B is necessary for compliance with 10CFR50.36. Based on this, ENO considers that the proposed change, as submitted, satisfies the requirements of 10CFR50.36(d)(3).

RAI No.9:

Explain why proposed Note 2.d provides acceptable actions to be taken for an inoperable High-Pressure Coolant Injection (HPCI) or Reactor Core Isolation Cooling (RCIC) System, due to an inoperable HPCI or RCIC System Isolation Trip Function, as permitted by 10 CFR 50.36(d)(2)(i).

Background: Proposed Note 2.d in Table 3.2.2 of LCO 3.2.B, "Primary Containment Isolation," states in part to "isolate the affected penetration flow path within 1 hour." Proposed Note 2.d is applicable to the High Pressure Coolant Injection (HPCI) System Isolation Trip Function and the Reactor Core Isolation Cooling (RCIC) System Isolation Trip Function. No other actions are directed to be taken for an inoperable HPCI or RCIC System (due to the isolated penetration flow path). Proposed Note 2.d is vague in that other actions are expected for an inoperable HPCI or RCIC System, even if the actions of proposed Note 2.d for an inoperable HPCI or RCIC System Isolation Trip Function are carried out.

For comparison purposes, current Note 3 in Table 3.2.2 of LCO 3.2.B, "Primary Containment Isolation," states "close isolation valves in system and comply with Specification 3.5." Note 3 is applicable to the HPCI and RCIC System Isolation Trip Function and LCO 3.5, "Core and Containment Cooling Systems," directs actions for an inoperable HPCI and RCIC System. In addition, NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," contains LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." Condition F is applicable to the HPCI and RCIC System Isolation Trip Function and states to "isolate the affected penetration flow path" within "1 hour." However NUREG-1433 also contains LCO 3.0.3. LCO 3.0.3 states "when an LCO is not met and the associated Actions are not met, an associated Action is not provided, or if directed by the associated Actions, the unit shall be placed in a Mode or other specified condition in which the LCO is not applicable." Therefore LCO 3.0.3 directs actions be taken for an inoperable HPCI or RCIC System in LCOs associated with those systems (due to the isolated penetration flow path), even though the actions for an inoperable HPCI or RCIC System Isolation Trip Function are carried out in LCO 3.3.6.1. The Vermont Yankee Technical Specifications (TS) do not contain a LCO 3.0.3 such as that found in NUREG-1433. As a result, there is no requirement for other actions to be taken for an inoperable HPCI or RCIC

System when the actions of proposed Note 2.d for an inoperable HPCI or RCIC System Isolation Trip Function are carried out.

10 CFR 50.36(d)(2)(i) states "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

It is unclear why proposed Note 2.d provides acceptable actions to be taken for an inoperable HPCI or RCIC System, due to an inoperable HPCI or RCIC System Isolation Trip Function, as permitted by 10 CFR 50.36(d)(2)(i).

Response to RAI No. 9:

The intent of the submittal was to require Table 3.2.2 Action Note 2.d requirements be imposed in addition to any additional actions required by the HPCI and RCIC system specifications contained in CTS sections 3.5 "Core and Containment Cooling Systems". In addition, since the systems contain PCIVs additional actions may be required by CTS Section 3.7 "Station Containment Systems." ENO proposes to enhance note 2.d as follows:

> 2.d Isolate the affected flow path within one hour and comply with Specifications 3.5 and 3.7 (penetration flow path may be unisolated intermittently under administrative control).

With this proposed change, ENO considers that 10CFR50.36(d)(2)(i) is satisfied.

RAI No. 10:

Explain how proposed Note (c) in Table 3.2.2 ensures that the lowest functional capability or performance levels of equipment required for safe operation of the facility are met per 10 CFR 50.36(d)(2)(i).

Background: Current LCO 3.2.B, "Primary Containment Isolation," states "when primary containment integrity is required, in accordance with Specification 3.7, the instrumentation that initiates primary containment isolation shall be operable in accordance with Table 3.2.2." LCO 3.7, "Station Containment Systems," states, in part, that "primary containment integrity shall be maintained at all times when the reactor is critical or when the reactor water temperature is above 212°F and fuel is in the reactor vessel." As a result, the High Pressure Coolant Injection (HPCI) System and the Reactor Core Isolation Cooling (RCIC) System Low Steam Supply Pressure Isolation Trip Functions are required to be operable when the reactor is critical or when the reactor water temperature is above 212°F and fuel is in the reactor vessel.

Technical Specification proposed Change No. 273, Supplement 2
Vermont Yankee Nuclear Power Station
Response to Request for Additional Information

Proposed Trip Functions 3.c (HPCI Low Steam Supply Pressure) and 4.f (RCIC Low Steam Supply Pressure) of Table 3.2.2 of LCO 3.2.B state that the functions are applicable in Run, Startup / Hot Standby, Shutdown, and Refuel. There is a proposed Note (c) associated with Startup / Hot Standby, Shutdown, and Refuel that states "with reactor steam pressure > 150 psig." The relaxation associated with proposed Note (c) is not discussed in any of the Discussion of Change (DOC) tables.

For comparison purposes, NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," contains LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." The HPCI Low Steam Supply Pressure (STS Function 3.b) and the RCIC Low Steam Supply Pressure (STS Function 4.b) are required to be operable in Modes 1 (Run), 2 (Refuel or Startup / Hot Standby), and 3 (Shutdown > 212°F). There is no discussion of applicability with respect to reactor steam pressure > 150 psig.

10CFR50.36(d)(2)(i) states "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility.

It is unclear how proposed Note (c) in Table 3.2.2 ensures that the lowest functional capability or performance levels of equipment required for safe operation of the facility are met per 10CF 50.36(d)(2)(i).

<u>Response to RAI No. 10</u>:

ENO agrees that "Note (c)" is not the appropriate note for these trip functions. The applicable note, associated with proposed Trip Functions 3.c (HPCI Low Steam Supply Pressure) and 4.f (RCIC Low Steam Supply Pressure) of Table 3.2.2, is "Note (b)." Table 3.2.2 will be changed accordingly.

With this proposed change, ENO considers that 10CFR50.36(d)(2)(i) is satisfied.

Docket 50-271
BVY 08-062

<u>Attachment 2</u>

Technical Specification Proposed Change No. 273, Supplement 2

Vermont Yankee Nuclear Power Station

Revised Technical Specification Pages

1.1 SAFETY LIMIT

2.1 LIMITING SAFETY SYSTEM SETTING

For no combination of loop recirculation flow rate and core thermal power shall the APRM flux scram trip setting be allowed to exceed 120% of rated thermal power.

b. <u>Flux Scram Trip Setting (Refuel or Startup/ Hot Standby Mode)</u>

In accordance with Table 3.1.1, when the reactor mode switch is in the REFUEL position or the STARTUP/HOT STANDBY position, average power range monitor (APRM) scram shall be set down to less than or equal to 15% of rated neutron flux. The IRM flux scram setting shall be set at less than or equal to 120/125 of full scale.

B. Deleted

C. Reactor low water level scram setting shall be at least 127 inches above the top of the enriched fuel.

3.1 LIMITING CONDITIONS FOR OPERATION

3.1 REACTOR PROTECTION SYSTEM (RPS)

Applicability:

Applies to the operability of plant instrumentation and control systems required for reactor safety.

Objective:

To specify the limits imposed on plant operation by those instrument and control systems required for reactor safety.

Specification:

A. The RPS instrumentation for each Trip Function in Table 3.1.1 shall be operable in accordance with Table 3.1.1.

4.1 SURVEILLANCE REQUIREMENTS

4.1 REACTOR PROTECTION SYSTEM (RPS)

Applicability:

Applies to the surveillance of the plant instrumentation and control systems required for reactor safety.

Objective:

To specify the type and frequency of surveillance to be applied to those instrument and control systems required for reactor safety.

Specification:

A.1 RPS instrumentation shall be checked, functionally tested and calibrated as indicated in Table 4.1.1.

When an RPS channel is placed in an inoperable status solely for the performance of required surveillances, entry into associated Limiting Conditions for Operation and required Actions may be delayed for up to 6 hours provided the associated Trip Function maintains RPS trip capability.

2. Exercise each automatic scram contactor once every week using the RPS channel test switches or by performing a Functional Test of any automatic RPS Trip Function.

3. Verify RPS Response Time is ≤ 50 milliseconds for each automatic RPS Trip Function once every Operating Cycle.

Table 3.2.1 (page 1 of 4)
Emergency Core Cooling System Instrumentation

TRIP FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	ACTIONS WHEN REQUIRED CHANNELS ARE INOPERABLE	TRIP SETTING
1. Core Spray System				
a. High Drywell Pressure	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	2[(d)]	Note 1	≤ 2.5 psig
b. Low-Low Reactor Vessel Water Level	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	2[(d)]	Note 1	≥ 82.5 inches
c. Low Reactor Pressure (Initiation)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	≥ 300 psig and ≤ 350 psig
d. Low Reactor Pressure (System Ready and Valve Permissive)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	2	Note 2	≥ 300 psig and ≤ 350 psig
e. Pump Start Time Delay	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	≥ 8 seconds and ≤ 10 seconds
f. Pump Discharge Pressure	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2 per pump	Note 8	≥ 100 psig
g. Auxiliary Power Monitor	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	NA
h. Pump Bus Power Monitor	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	NA

(a) With reactor coolant temperature > 212 °F.

(b) When associated ECCS subsystem is required to be operable per specification 3.5.

(c) With reactor steam pressure > 150 psig.

(d) Also required to initiate the emergency diesel generators.

Table 3.2.1 (page 2 of 4)
Emergency Core Cooling System Instrumentation

TRIP FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	ACTIONS WHEN REQUIRED CHANNELS ARE INOPERABLE	TRIP SETTING
2. Low Pressure Coolant Injection (LPCI) System				
a. Low Reactor Pressure (Initiation)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)], [(b)]	1	Note 2	≥ 300 psig and ≤ 350 psig
b. High Drywell Pressure (Initiation)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	2	Note 1	≤ 2.5 psig
c. Low-Low Reactor Vessel Water Level	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)], [(b)]	2	Note 1	≥ 82.5 inches
d. Reactor Vessel Shroud Level	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 3	≥ 2/3 core height
e. LPCI B and C Pump Start Time Delay	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)], [(b)]	1	Note 2	≥ 3 seconds and ≤ 5 seconds
f. RHR Pump Discharge Pressure	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2 per pump	Note 8	≥ 100 psig
g. High Drywell Pressure (Containment Spray Permissive)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	2	Note 3	≤ 2.5 psig
h. Low Reactor Pressure (System Ready and Valve Permissive)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)], [(b)]	2	Note 2	≥ 300 psig and ≤ 350 psig

(a) With reactor coolant temperature > 212 °F.

(b) When associated ECCS subsystem is required to be operable per specification 3.5.

(c) With reactor steam pressure > 150 psig.

Table 3.2.1 (page 3 of 4)
Emergency Core Cooling System Instrumentation

TRIP FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	ACTIONS WHEN REQUIRED CHANNELS ARE INOPERABLE	TRIP SETTING
2. LPCI System (Continued)				
i. Auxiliary Power Monitor	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	NA
j. Pump Bus Power Monitor	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a), (b)]	1	Note 2	NA
3. High Pressure Coolant Injection (HPCI) System				
a. Low-Low Reactor Vessel Water Level	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2	Note 4	≥ 82.5 inches
b. Low Condensate Storage Tank Water Level	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2	Note 5	≥ 4.24%[(d)]
c. High Drywell Pressure	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2	Note 4	≤ 2.5 psig
d. High Reactor Vessel Water Level	RUN, STARTUP/HOT STANDBY[(c)], HOT SHUTDOWN[(c)], Refuel[(c)]	2	Note 6	≤ 177 inches

(a) With reactor coolant temperature > 212 °F.

(b) When associated ECCS subsystem is required to be operable per specification 3.5.

(c) With reactor steam pressure > 150 psig.

(d) Percent of instrument span.

Table 3.2.2 (page 2 of 3)
Primary Containment Isolation Instrumentation

TRIP FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	ACTIONS WHEN REQUIRED CHANNELS ARE INOPERABLE	ACTIONS REFERENCED FROM ACTION NOTE 1	TRIP SETTING
3. High Pressure Coolant Injection (HPCI) System Isolation					
a. High Steam Line Space Temperature	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	6	Note 1	Note 2.d	≤ 196 °F
b. High Steam Line d/p (Steam Line Break)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 1	Note 2.d	≤ 195 inches of water
c. Low Steam Supply Pressure	RUN, STARTUP/HOT STANDBY[(a)], HOT SHUTDOWN[(a)], Refuel[(a)]	4	Note 1	Note 2.d	≥ 70 psig
d. High Main Steam Line Tunnel Temperature	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	2	Note 1	Note 2.d	≤ 200 °F
e. High Main Steam Line Tunnel Temperature Time Delay	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 1	Note 2.d	≤ 35 minutes
4. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. High Main Steam Line Tunnel Temperature	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	2	Note 1	Note 2.d	≤ 200 °F
b. High Main Steam Line Tunnel Temperature Time Delay	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 1	Note 2.d	≤ 35 minutes
c. High Steam Line Space Temperature	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	6	Note 1	Note 2.d	≤ 196 °F

(a) With reactor coolant temperature > 212 °F.

Table 3.2.2 (page 3 of 3)
Primary Containment Isolation Instrumentation

TRIP FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	ACTIONS WHEN REQUIRED CHANNELS ARE INOPERABLE	ACTIONS REFERENCED FROM ACTION NOTE 1	TRIP SETTING
4. RCIC System Isolation (Continued)					
d. High Steam Line d/p (Steam Line Break)	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 1	Note 2.d	≤ 195 inches of water
e. High Steam Line d/p Time Delay	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN, Refuel[(a)]	1	Note 1	Note 2.d	≥ 3 seconds and ≤ 7 seconds
f. Low Steam Supply Pressure	RUN, STARTUP/HOT STANDBY[(a)], HOT SHUTDOWN[(a)], Refuel[(a)]	4	Note 1	Note 2.d	≥ 50 psig
5. Residual Heat Removal Shutdown Cooling Isolation					
a. High Reactor Pressure	RUN, STARTUP/HOT STANDBY, HOT SHUTDOWN' Refuel[(a)]	1	Note 1	Note 2.d	≤ 150 psig

(a) With reactor coolant temperature > 212 °F.

Table 3.2.2 ACTION Notes

1. With one or more required Primary Containment Isolation Instrumentation channels inoperable, take all of the applicable Actions in Notes 1.a and 1.b below.

   a. With one or more Trip Functions with one or more required channels inoperable:

      1) For Trip Functions 2.a and 2.b, place any inoperable channel in trip within 12 hours; and
      2) For Trip Functions 3.e, 4.b, and 4.e, restore any inoperable channel to operable status within 24 hours; and
      3) For all other Trip Functions, place any inoperable channel in trip within 24 hours.

   b. With one or more Trip Functions with isolation capability not maintained:

      1) Restore isolation capability within 1 hour.

   Penetration flow paths, isolated as a result of complying with the above Actions, may be unisolated intermittently under administrative controls.

   If any applicable and associated completion time of Note 1.a or 1.b is not met, take the applicable Actions of Note 2 below and referenced in Table 3.2.2 for the channel.

2. a. Isolate the associated Main Steam Line within 12 hours (penetration flow paths may be unisolated intermittently under administrative control); or Place the reactor in HOT SHUTDOWN within 12 hours and place the reactor in COLD SHUTDOWN within the next 12 hours.

   b. Place the reactor in COLD SHUTDOWN within 24 hours.

   c. Place the reactor in STARTUP/HOT STANDBY within 8 hours.

   d. Isolate the affected penetration flow path within 1 hour and comply with specifications 3.5 and 3.7 (penetration flow paths may be unisolated intermittently under administrative control).