VERMONT YANKEE NUCLEAR POWER CORPORATION

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January 14, 2000
BVY 00-05

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

Reference: (a) Letter, VYNPC to USNRC, "Technical Specification Proposed Change No. 217, Surveillance Test Interval (STI) and Allowable out-of-service Time (AOT), " BVY 99-76, dated June 15, 1999.

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
Additional Information For Technical Specification Proposed Change No. 217, STI/AOT

In Reference (a), Vermont Yankee proposed a change to the Technical Specifications to implement STI/AOT for selected Technical Specification Instrumentation. During a meeting with the Staff on December 7, 1999, additional information for the ADS and Reactor Recirculation Pump Trip Instrumentation AOT's was requested. In addition, minor clarifications were requested on selected Technical Specification pages and the associated safety assessment.

Attachment 1 to this letter contains additional information for the ADS and Recirculation Pump Trip AOT's. Attachment 2 provides a revised page 11 to our original submittal [Reference (a)]. A revision bar has been added to denote the area of change. Attachment 3 provides the revised marked-up version of the current Technical Specification pages. It is noted that changes to our original 'INSERT A' are identified in bold text. Attachment 4 provides the retyped Technical Specification pages including updated pages from Amendments 171 and 173. This submittal does not change the no significant hazards consideration conclusion or environmental impact evaluation conclusion contained within our original submittal.

We trust that the enclosed information will enable you to complete your review of Reference (a).

If you have any questions on this transmittal, please contact Mr. Gautam Sen at (802) 258-4111.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Robert J. Wanczyk
Director of Safety and Regulatory Affairs

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STATE OF VERMONT)
)ss
WINDHAM COUNTY)

Then personally appeared before me, Robert J. Wanczyk, who, being duly sworn, did state that he is Director of Safety and Regulatory Affairs of Vermont Yankee Nuclear Power Corporation, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Vermont Yankee Nuclear Power Corporation, and that the statements therein are true to the best of his knowledge and belief.

Sally A. Sandstrum, Notary Public
My Commission Expires February 10, 2003

SALLY A. SANDSTRUM NOTARY PUBLIC WINDHAM COUNTY, VERMONT

cc: USNRC Region 1 Administrator
USNRC Resident Inspector – VYNPS
USNRC Project Manager – VYNPS
Vermont Department of Public Service

Docket No. 50-271
BVY 00-05

Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 217

Surveillance Test Interval (STI) and Allowable out-of-service Time (AOT)

Additional Information for the ADS and Recirculation Pump Trip AOT's

Additional information for ADS Allowable out-of-service Time (AOT) /Action

The VY function-specific actions are intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within similar ADS trip system A and B Functions result in automatic initiation capability being lost for the ADS for either trip system. In a loss of automatic initiation capability situation, the 96 hour or 8 day allowance is not appropriate and all ADS valves must be declared inoperable within 1 hour after discovery of loss of ADS initiation capability. The AOT is intended to allow the operator time to evaluate and repair any discovered inoperabilities.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an AOT of 8 days has been shown to be acceptable (NEDC-30936P-A, "BWR Owners' Group Technical Improvement Analyses for ECCS Actuation Instrumentation, Part 2," December 1988) to permit restoration of any inoperable channel to OPERABLE status if both HPCI and RCIC are operable. If either HPCI or RCIC is inoperable, the time is shortened to 96 hours. If the status of HPCI or RCIC changes such that the AOT changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCI or RCIC inoperability. However, the total time for an inoperable, untripped channel cannot exceed 8 days. If the status of HPCI or RCIC changes such that the AOT changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable, untripped channel. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in potential initiation), ADS would be declared inoperable and required action (plant shutdown) taken. The proposed AOTs and actions were developed using General Electric (GE) Company Licensing Topical Reports (LTRs) and the guidance of the improved Standard Technical Specifications (STS), NUREG 1433, "Standard Technical Specification General Electric Plants, BWR/4," Revision 1.

Additional information for Recirculation Pump Trip AOT/Action

With one or more channels inoperable, but with Recirculation Pump Trip (RPT) capability for each Function maintained, the Recirculation Pump Trip System is capable of performing the intended function. However, the reliability and redundancy of the Recirculation Pump Trip instrumentation is reduced, such that a single failure in the remaining trip system could result in the inability of the Recirculation Pump Trip System to perform the intended function. Therefore, only a limited time is allowed to restore the inoperable channels to OPERABLE status. Because of the diversity of sensors available to provide trip signals, the low probability of extensive numbers of inoperabilities affecting all diverse Functions, and the low probability of an event requiring the initiation of Recirculation Pump Trip, 14 days is provided to restore the inoperable channel. Alternately, the inoperable channel may be placed in trip, since this would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. As noted, placing the channel in trip with no further restrictions is not allowed if the inoperable channel is the result of an inoperable breaker, since this may not adequately compensate for the inoperable breaker (e.g., the breaker may be inoperable such that it will not open). If it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel would result in an RPT), or if the inoperable channel is the result of an inoperable breaker, the plant must be brought to a condition in which the LCO does not apply. To achieve this status, the plant must be brought to at least startup within 6 hours. Alternately, the associated recirculation pump may be removed from service since this performs the intended function of the instrumentation. The allowed Completion Time of 6 hours is reasonable, based on operating experience, both to reach startup from full power conditions and to remove a recirculation pump from service in an orderly manner and without challenging plant systems.

Multiple, inoperable, untripped channels within the same Function resulting in that Function not maintaining Recirculation Pump Trip trip capability AOTs requires restoration within 72 hours. A Function is considered to be maintaining Recirculation Pump Trip capability when sufficient channels are OPERABLE or in trip such that the Recirculation Pump Trip System will generate a trip signal from the given Function on a valid signal, and both recirculation pumps can be tripped. This requires two channels of the Function in the same trip system to each be OPERABLE or in trip, and the Reactor Recirculation Motor-Generator (RRMG) field breakers to be OPERABLE or in trip. The 72 hour Completion Time is sufficient for the operator to take corrective action (e.g., restoration or tripping of channels) and takes into account the likelihood of an event requiring actuation of the Recirculation Pump Trip instrumentation during this period and that one Function is still maintaining Recirculation Pump Trip capability.

The one hour AOT is intended to ensure that appropriate Actions are taken if multiple, inoperable, untripped channels within both Functions result in both Functions not maintaining Recirculation Pump Trip capability. The description of a Function maintaining Recirculation Pump Trip capability is discussed above. The 1 hour is sufficient for the operator to take corrective action and takes into account the likelihood of an event requiring actuation of the Recirculation Pump Trip instrumentation during this period.

In summary, when AOTs are not met,the plant must be brought to a condition in which the LCO does not apply. To achieve this status, the plant must be brought to at least Startup within 6 hours. Alternately, the associated recirculation pump may be removed from service since this performs the intended function of the instrumentation. The allowed time of 6 hours is reasonable, based on operating experience, both to reach startup from full power conditions and to remove a recirculation pump from service in an orderly manner and without challenging plant systems. The proposed AOTs and actions were developed using General Electric (GE) Company Licensing Topical Reports (LTRs) and the guidance of the improved Standard Technical Specifications (STS), NUREG 1433, "Standard Technical Specification General Electric Plants, BWR/4," Revision 1.

Attachment 2

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 217

Surveillance Test Interval (STI) and Allowable out-of-service Time (AOT)

Revised Page 11 of our Original Safety Assessment for Proposed Change No. 217

C. With two instrument channels inoperable in one trip system, one of the two trip systems will not contain the required two operable instrument channels per trip system and Note 10 is applicable as stated in the last column of Table 3.2.1.

1. Note 10.A is not met because system initiation capability is lost. (One of the two trip systems required for completion of the one-out-of-two taken twice logic cannot be tripped for the High Drywell Pressure trip function.) The affected supported features are required to be declared inoperable within one hour (unless action 10.A is met sooner due to restoration of one or both instrument channels to an operable status.)

2. Note 10.B requires both inoperable instrument channels to be tripped within 24 hours (unless the condition is exited sooner due to restoration of both instrument channels to an operable status.) If both instrument channels cannot be placed in a tripped condition (or if tripping both instrument channels is not desirable), action C (Note 10.C) is entered.

3. Note 10.C requires features of the Core Spray and/or LPCI to be immediately declared inoperable if the required actions and completion times in Notes 10.A and 10.B were not met.

These required actions and completion times are identical to those stated in Standard Technical Specifications LCO 3.3.5.1, Required Actions B.1 and B.3.

Similar details apply to the remaining notes 11 through 19. The following is a brief explanation for the remainder of the notes and instrument channels.

Note 11 for Table Low Reactor Pressure is different from explanation of Table item above in that it is not desirable to place the channels in trip (to prevent pressurizing low pressure system piping), so they are required to be restored to an operable status within 24 hours. If initiation capability of the supported features (i.e., opening of the Core Spray and LPCI injection) is inoperable, then the Core Spray or LPCI injection valves would be declared inoperable and the associated system LCO would be entered.

Note 12 applies to the low pressure ECCS actuation timers and similar to Note 10 for required actions.

Note 13 applies to LPCI Reactor Vessel Shroud Level and High Drywell Pressure. The difference between these items is the number of channels per trip system. Reactor Vessel Shroud has 2 trip systems, 1 channel per each trip system, and for High Drywell Pressure there are 4 channels, 2 per each of the 2 trip systems. Note 13.B requires the inoperable channels to be placed in the tripped condition within 24 hours. This is similar to above HPCI High Reactor Vessel Level. However, placing the channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. If it is undesirable to place a channel in trip (i.e., in cases where placing the channel in trip will result in initiation), then the supported feature is declared inoperable per note 13.C.

Notes 14, 15 and 17 are for instrumentation inoperability conditions that affect HPCI, and ADS functions contained in Table 3.2.1 and similar notes 7, 8 and 9 for Table 3.2.9 for RCIC. The notes are applied similarly to note 10 above, except there are time differences for Note 17. Also all notes are different from Note 10 in that it is applied to systems rather than features. For HPCI/RCIC Low-Low Reactor Vessel Water Level there are 4 instrument channels, 2 per trip system, as indicated in the first column of the table.

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Attachment 3

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 217

Surveillance Test Interval (STI) and Allowable out-of-service Time (AOT)

Technical Specification Marked-up Pages

TABLE 3.1.1 NOTES (Cont'd)

9. Channel signals for the turbine control valve fast closure trip shall be derived from the same event or events which cause the control valve fast closure.

10. Turbine stop valve closure and turbine control valve fast closue scram signals may be bypassed at ≤30% of reactor Rated Thermal Power.

11. The IRM scram is bypassed when the APRMs are on scale and the mode switch is in the run position. NOT USED

12. While performing refuel interlock checks which require the mode switch to be in Startup, the reduced APRM high flux scram need not be operable provided:

    a. The following trip functions are operable:

        1. Mode switch in shutdown,
        2. Manual scram,
        3. High flux IRM scram
        4. High flux SRM scram in noncoincidence,
        5. Scram discharge volume high water level, and;

    b. No more than two (2) control rods withdrawn. The two (2) control rods that can be withdrawn cannot be faced adjacent or diagonally adjacent.

BASES: 3.1 (Cont'd)

Instrumentation is provided to detect a loss-of-coolant accident and initiate the core standby cooling equipment. This instrumentation is a backup to the water level instrumentation which is discussed in Specification 3.2.

The Control Rod Drive Scram System is designed so that all of the water that is discharged from the reactor by the scram can be accommodated in the discharge piping. This discharge piping is divided into two sections. One section services the control rod drives on the north side of the reactor, the other serves the control rod drives of the south side. A part of the piping in each section is an instrument volume which accommodates in excess of 21 gallons of water and is at the low point in the piping. No credit was taken for this volume in the design of the discharge piping as concerns the amount of water which must be accommodated during a scram. During normal operation, the discharge volume is empty; however, should it fill with water, the water discharged to the piping from the reactor could not be accommodated, which would result in slow scram times or partial or no control rod insertion. To preclude this occurrence, level instrumentation has been provided for the instrument volume which scram the reactor when the volume of water reaches 21 gallons. As indicated above, there is sufficient volume in the piping to accommodate the scram without impairment of the scram times or amount of insertion of the control rods. This function shuts the reactor down while sufficient volume remains to accommodate the discharged water, and precludes the situation in which a scram would be required but not be able to perform its function adequately. The present design of the Scram Discharge System is in concert with the BWR Owner's Group criteria, which have previously been endorsed by the NRC in their generic "Safety Evaluation Report (SER) for Scram Discharge Systems", dated December 1, 1980.

Loss of condenser vacuum occurs when the condenser can no longer handle the heat input. Loss of condenser vacuum initiates a closure of the turbine stop valves and turbine bypass valves which eliminates the heat input to the condenser. Closure of the turbine stop and bypass valves causes a pressure transient, neutron flux rise, and an increase in surface heat flux. To prevent the clad safety limit from being exceeded if this occurs, a reactor scram occurs on turbine stop valve closure. The turbine stop valve closure scram function alone is adequate to prevent the clad safety limit from being exceeded in the event of a turbine trip transient without bypass.

Turbine stop valve (TSV) closure and turbine control valve (TCV) fast closure scram signals may be bypassed at $\leq$30% of reactor Rated Thermal Power since, at low thermal power levels, the margins to fuel thermal-hydraulic limits and reactor primary coolant boundary pressure limits are large and an immediate scram is not necessary. This bypass function is normally accomplished automatically by pressure switches sensing turbine first stage pressure. The turbine first stage pressure setpoint controlling the bypass of the scram signals on TCV fast closure and TSV closure is derived from analysis of reactor pressurization transients. Certain operational factors, such as turbine bypass valves open, can influence the relationship between turbine first stage pressure and reactor Rated Thermal Power. However, above 30% of reactor Rated Thermal Power, these scram functions must be enabled.

This page included for completeness - reflects Amendment #173 and "rolled-over" text from this proposed change.

BASES: 3.1 (Cont'd)

provide further assurance against release of radioactive materials to site environs by isolating the main condenser off-gas line to the main stack.

The main steam line isolation valve closure scram is set to scram when the isolation valves are 10 percent closed from full open in 3-out-of-4 lines. This scram anticipates the pressure and flux transient, which would occur when the valves close. By scramming at this setting, the resultant transient is insignificant.

A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status.

The manual scram function is active in all modes, thus providing for manual means of rapidly inserting control rods during all modes of reactor operation.

The IRM system provides protection against short reactor periods and, in conjunction with the reduced APRM system provides protection against excessive power levels in the startup and intermediate power ranges. A source range monitor (SRM) system is also provided to supply additional neutron level information during startup and can provide scram function with selected shorting links removed during refueling. Thus, the IRM and the reduced APRM are normally required in the startup mode and may be required in the refuel mode. During some refueling activities which require the mode switch in startup; it is allowable to disconnect the LPRMs to protect them from damage during under vessel work. In lieu of the protection provided by the reduced APRM scram, both the IRM scram and the SRM scram in noncoincidence are used to provide neutron monitoring protection against excessive power levels. In the power range, the normal APRM system provides required protection. Thus, the IRM system and 15% APRM scram are not required in the run mode. The requirement that the IRMs be inserted in the core until the APRMs read at least 2/125 of full scale assures that there is proper overlap in the neutron monitoring systems.

If an unsafe failure is detected during surveillance testing, it is desirable to determine as soon as possible if other failures of a similar type have occurred and whether the particular function involved is still operable or capable of meeting the single failure criteria. To meet the requirements of Table 3.1.1, it is necessary that all instrument channels in one trip system be operable to permit testing in the other trip system.

Thus, when failures are detected in the first trip system tested, they would have to be repaired before testing of the other system could begin. In the majority of cases, repairs or replacement can be accomplished quickly. If repair or replacement cannot be completed in a reasonable time, operation could continue with one tripped system until the surveillance testing deadline.

The requirement to have all scram functions, except those listed in Table 3.1.1, operable in the "Refuel" mode is to assure that shifting to this mode during reactor operation does not diminish the need for the reactor protection system.

The ability to bypass one instrument channel when necessary to complete surveillance testing will preclude continued operation with scram functions which may be either unable to meet the single failure criteria or completely inoperable. It also eliminates the need for an unnecessary shutdown if the remaining channels and subsystems are found to be operable.

BASES: 3.1 (Cont'd)

The conditions under which the bypass is permitted require an immediate determination that the particular function is operable. However, during the time a bypass is applied, the function will not meet the single failure criteria; therefore, it is prudent to limit the time the bypass is in effect by requiring that surveillance testing proceed on a continuous basis and that the bypass be removed as soon as testing is completed.

Sluggish indicator response during the perturbation test will be indicative of a plugged instrument line or closed instrument valves. Testing immediately after functional testing will assure the operability of the instrument lines. This test assures the operability of the reactor pressure sensors as well as the reactor level sensors since both parameters are monitored through the same instrument lines.

The independence of the safety system circuitry is determined by operation of the scram test switch. Operation of this switch during the refueling outage and following maintenance on these circuits will assure their continued independence.

The calibration frequency, using the TIP system, specified for the LPRMs will provide assurance that the LPRM input to the APRM system will be corrected on a timely basis for LPRM detector depletion characteristics.

TABLE 3.2.6 NOTES

Note 1 - From and after the date that a parameter is reduced to one indication, operation is permissible for 30 days. If a parameter is not indicated in the Control Room, continued operation is permissible during the next seven days. If indication cannot be restored within the next six hours, an orderly shutdown shall be initiated and the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 2 - Deleted.

Note 3 - From and after the date that this parameter is reduced to one indication in the Control Room, continued reactor operation is permissible during the next 30 days. If both channels are inoperable and indication cannot be restored in six hours, an orderly shutdown shall be initiated and the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 4 - From and after the date that safety/relief valve position from pressure switches is unavailable, reactor operation may continue provided safety/relief valve position can be determined from Recorder #2-166 (steam temperature in SRVs, 0-600°F) and Meter 16-19-33A or C (torus water temperature, 0-250°F). If both parameters are not available, the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 5 - From and after the date that safety valve position from the acoustic monitor is unavailable, reactor operation may continue provided safety valve position can be determined from Recorder #2-166 (thermocouple, 0-600°F) and Meter #16-19-12A or B (containment pressure (-15) - (+260) psig). If both indications are not available, the reactor shall be in a hot shutdown condition in six hours and in a cold shutdown condition in the following 18 hours.

Note 6 - Within 30 days following the loss of one indication, or seven days following the loss of both indications, restore the inoperable channel(s) to an operable status or a special report to the Commission must be prepared and submitted within the subsequent 14 days, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

Note 7 - From and after the date that this parameter is unavailable by Control Room indication, within 72 hours ensure that local sampling capability is available. If the Control Room indication is not restored within 7 days, prepare and submit a special report to the NRC within 14 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

INSERT E

INSERT A **TABLE 3.2.1 NOTES** **Page 44**

8. When a channel is placed in an inoperable status solely for 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 or redundant Trip Function maintains ECCS initiation capability or Recirculation Pump Trip capability.

9. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions For Operation and required ACTIONS may be delayed for up to 6 hours.

10. With one or more channels inoperable for Core Spray and/or LPCI:

    A. Within one hour from discovery of loss of initiation capability for feature(s) in **one** division, declare the associated **systems** inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare **the** associated **systems** inoperable.

11. With one or more channels inoperable for injection permissive and/or recirculation discharge valve permissive:

    A. Within one hour from discovery of loss of initiation capability for feature(s) in **one** division, declare the **associated systems** inoperable, and
    B. Within 24 hours, restore channel to operable status.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare **the** associated **systems** inoperable.

12. With one or more actuation timer channels inoperable for Core Spray and/or LPCI:

    A. With one hour from discovery of loss of initiation capability for feature(s) in **one** division, declare the associated systems inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare **the** associated **systems** inoperable.

INSERT A (Cont'd) **TABLE 3.2.1 NOTES** **Page 44**

13. With one or more channels inoperable for Containment Spray:

    A. Within one hour from discovery of loss of LPCI System initiation capability, declare the LPCI System inoperable, and
    B. Within 24 hours, place channel in trip for High Drywell Pressure and restore channel to operable status for Reactor Vessel Shroud Level.
    C. If required action and associated completion times of actions A and B are not met, immediately declare the LPCI System inoperable.

14. With one or more channels inoperable for HPCI:

    A. Within one hour from discovery of loss of system initiation capability, declare the HPCI System inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the HPCI System inoperable.

15. With one or more channels inoperable for HPCI:

    A. Within one hour from discovery of loss of initiation capability while suction for the HPCI System is aligned to the CST, declare the HPCI System inoperable, and
    B. Within 24 hours, place channel in trip or align suction for the HPCI System to the suppression pool.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the HPCI System inoperable.

16. With one or more channels inoperable for HPCI:

    A. Within 24 hours, restore channel to operable status.
    B. If required action and associated completion time of action A is not met, immediately declare the HPCI System inoperable.

17. With one or more channels inoperable for ADS:

    A. Within one hour from discovery of loss of ADS initiation capability in **one** trip system, declare ADS inoperable, and
    B. Within 96 hours from discovery of an inoperable channel concurrent with HPCI or RCIC **System** inoperable, place the channel in trip, and
    C. Within 8 days, place a channel in trip.
    D. If required actions and associated completion times of actions A, B or C are not met, immediately declare ADS inoperable.

INSERT A (Cont'd) **TABLE 3.2.1 NOTES** **Page 44**

18. With one or more channels inoperable for ADS:

    A. Within one hour from discovery of loss of ADS initiation capability in **one** trip system, declare ADS inoperable, and
    B. Within 96 hours from discovery of an inoperable channel concurrent with HPCI or RCIC **System** inoperable, restore channel to operable status, and
    C. Within 8 days, restore channel to operable status.
    D. If required actions and associated completion times of actions A, B or C are not met, immediately declare ADS inoperable.

19. With one or more channels inoperable for Recirculation Pump Trip:

    A. Within one hour from discovery of loss of Recirculation Pump Trip capability restore one Trip Function or remove the associated recirculation pump from service in 6 hours or be in Startup/Hot Standby in 6 hours.
    B. Within 14 days from discovery of an inoperable channel, restore channel to operable status or place in trip, and
    C. Within 72 hours from discovery of one trip function capability not maintained, restore trip function to operable status and,
    D. If required actions and associated completion times of actions A, B or C are not met, immediately remove the associated recirculation pump from service in 6 hours or be in Startup/Hot Standby in 6 hours.

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Attachment 4

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 217

Surveillance Test Interval (STI) and Allowable out-of-service Time (AOT)

Retyped Technical Specification Pages Including Updated Pages from Amendments 171 and 173

TABLE 3.1.1 NOTES (Cont'd)

3. When the requirements in the column "Minimum Number of Operating Instrument Channels Per Trip System" cannot be met for one system, that system shall be tripped. If the requirements cannot be met for both trip systems, the appropriate ACTIONS listed below shall be taken:

   a) Initiate insertion of operable rods and complete insertion of all operable rods within four hours.
   b) Reduce power level to IRM range and place mode switch in the "Startup/Hot Standby" position within eight hours.
   c) Reduce turbine load and close main steam line isolation valves within 8 hours.
   d) Reduce reactor power to less than 30% of rated within 8 hours.

4. "W" is percent rated two loop drive flow where 100% rated drive flow is that flow equivalent to 48 x 10^6 lbs/hr core flow. ΔW is the difference between the two loop and single loop drive flow at the same core flow. This difference must be accounted for during single loop operation. $\Delta W = 0$ for two recirculation loop operation.

5. To be considered operable an APRM must have at least 2 LPRM inputs per level and at least a total of 13 LPRM inputs, except that channels A, C, D, and F may lose all LPRM inputs from the companion APRM Cabinet plus one additional LPRM input and still be considered operable.

6. The top of the enriched fuel has been designated as 0 inches and provides common reference level for all vessel water level instrumentation.

7. Channel shared by the Reactor Protection and Primary Containment Isolation Systems.

8. An alarm setting of 1.5 times normal background at rated power shall be established to alert the operator to abnormal radiation levels in primary coolant.

9. Channel signals for the turbine control valve fast closure trip shall be derived from the same event or events which cause the control valve fast closure.

10. Turbine stop valve closure and turbine control valve fast closue scram signals may be bypassed at $\leq$30% of reactor Rated Thermal Power.

11. Not used.

12. While performing refuel interlock checks which require the mode switch to be in Startup, the reduced APRM high flux scram need not be operable provided:

    a. The following trip functions are operable:

       1. Mode switch in shutdown,
       2. Manual scram,
       3. High flux IRM scram
       4. High flux SRM scram in noncoincidence,
       5. Scram discharge volume high water level, and;

    b. No more than two (2) control rods withdrawn. The two (2) control rods that can be withdrawn cannot be faced adjacent or diagonally adjacent.

BASES: 3.1 (Cont'd)

Instrumentation is provided to detect a loss-of-coolant accident and initiate the core standby cooling equipment. This instrumentation is a backup to the water level instrumentation which is discussed in Specification 3.2.

The Control Rod Drive Scram System is designed so that all of the water that is discharged from the reactor by the scram can be accommodated in the discharge piping. This discharge piping is divided into two sections. One section services the control rod drives on the north side of the reactor, the other serves the control rod drives of the south side. A part of the piping in each section is an instrument volume which accommodates in excess of 21 gallons of water and is at the low point in the piping. No credit was taken for this volume in the design of the discharge piping as concerns the amount of water which must be accommodated during a scram. During normal operation, the discharge volume is empty; however, should it fill with water, the water discharged to the piping from the reactor could not be accommodated, which would result in slow scram times or partial or no control rod insertion. To preclude this occurrence, level instrumentation has been provided for the instrument volume which scram the reactor when the volume of water reaches 21 gallons. As indicated above, there is sufficient volume in the piping to accommodate the scram without impairment of the scram times or amount of insertion of the control rods. This function shuts the reactor down while sufficient volume remains to accommodate the discharged water, and precludes the situation in which a scram would be required but not be able to perform its function adequately. The present design of the Scram Discharge System is in concert with the BWR Owner's Group criteria, which have previously been endorsed by the NRC in their generic "Safety Evaluation Report (SER) for Scram Discharge Systems", dated December 1, 1980.

Loss of condenser vacuum occurs when the condenser can no longer handle the heat input. Loss of condenser vacuum initiates a closure of the turbine stop valves and turbine bypass valves which eliminates the heat input to the condenser. Closure of the turbine stop and bypass valves causes a pressure transient, neutron flux rise, and an increase in surface heat flux. To prevent the clad safety limit from being exceeded if this occurs, a reactor scram occurs on turbine stop valve closure. The turbine stop valve closure scram function alone is adequate to prevent the clad safety limit from being exceeded in the event of a turbine trip transient without bypass.

Turbine stop valve (TSV) closure and turbine control valve (TCV) fast closure scram signals may be bypassed at $\leq$30% of reactor Rated Thermal Power since, at low thermal power levels, the margins to fuel thermal-hydraulic limits and reactor primary coolant boundary pressure limits are large and an immediate scram is not necessary. This bypass function is normally accomplished automatically by pressure switches sensing turbine first stage pressure. The turbine first stage pressure setpoint controlling the bypass of the scram signals on TCV fast closure and TSV closure is derived from analysis of reactor pressurization transients. Certain operational factors, such as turbine bypass valves open, can influence the relationship between turbine first stage pressure and reactor Rated Thermal Power. However, above 30% of reactor Rated Thermal Power, these scram functions must be enabled.

BASES: 3.1 (Cont'd)

High radiation levels in the main steam line tunnel above that due to the normal nitrogen and oxygen radioactivity is an indication of leaking fuel. A scram is initiated whenever such radiation level exceeds three times normal background. The purpose of this scram is to reduce the source of such radiation to the extent necessary to prevent release of radioactive materials to the turbine. An alarm is initiated whenever the radiation level exceeds 1.5 times normal background to alert the operator to possible serious radioactivity spikes due to abnormal core behavior. The air ejector off-gas monitors serve to back up the main steam line monitors to provide further assurance against release of radioactive materials to site environs by isolating the main condenser off-gas line to the main stack.

The main steam line isolation valve closure scram is set to scram when the isolation valves are 10 percent closed from full open in 3-out-of-4 lines. This scram anticipates the pressure and flux transient, which would occur when the valves close. By scramming at this setting, the resultant transient is insignificant.

A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status.

The manual scram function is active in all modes, thus providing for manual means of rapidly inserting control rods during all modes of reactor operation.

The IRM system provides protection against short reactor periods and, in conjunction with the reduced APRM system provides protection against excessive power levels in the startup and intermediate power ranges. A source range monitor (SRM) system is also provided to supply additional neutron level information during startup and can provide scram function with selected shorting links removed during refueling. Thus, the IRM and the reduced APRM are normally required in the startup mode and may be required in the refuel mode. During some refueling activities which require the mode switch in startup; it is allowable to disconnect the LPRMs to protect them from damage during under vessel work. In lieu of the protection provided by the reduced APRM scram, both the IRM scram and the SRM scram in noncoincidence are used to provide neutron monitoring protection against excessive power levels. In the power range, the normal APRM system provides required protection. Thus, the IRM system and 15% APRM scram are not required in the run mode.

If an unsafe failure is detected during surveillance testing, it is desirable to determine as soon as possible if other failures of a similar type have occurred and whether the particular function involved is still operable or capable of meeting the single failure criteria. To meet the requirements of Table 3.1.1, it is necessary that all instrument channels in one trip system be operable to permit testing in the other trip system.

Thus, when failures are detected in the first trip system tested, they would have to be repaired before testing of the other system could begin. In the majority of cases, repairs or replacement can be accomplished quickly. If repair or replacement cannot be completed in a reasonable time, operation could continue with one tripped system until the surveillance testing deadline.

BASES: 3.1 (Cont'd)

The requirement to have all scram functions, except those listed in Table 3.1.1, operable in the "Refuel" mode is to assure that shifting to this mode during reactor operation does not diminish the need for the reactor protection system.

The ability to bypass one instrument channel when necessary to complete surveillance testing will preclude continued operation with scram functions which may be either unable to meet the single failure criteria or completely inoperable. It also eliminates the need for an unnecessary shutdown if the remaining channels and subsystems are found to be operable. The conditions under which the bypass is permitted require an immediate determination that the particular function is operable. However, during the time a bypass is applied, the function will not meet the single failure criteria; therefore, it is prudent to limit the time the bypass is in effect by requiring that surveillance testing proceed on a continuous basis and that the bypass be removed as soon as testing is completed.

Sluggish indicator response during the perturbation test will be indicative of a plugged instrument line or closed instrument valves. This test assures the operability of the reactor pressure sensors as well as the reactor level sensors since both parameters are monitored through the same instrument lines.

The independence of the safety system circuitry is determined by operation of the scram test switch. Operation of this switch during the refueling outage and following maintenance on these circuits will assure their continued independence.

The calibration frequency, using the TIP system, specified for the LPRMs will provide assurance that the LPRM input to the APRM system will be corrected on a timely basis for LPRM detector depletion characteristics.

TABLE 3.2.1 NOTES

1. Each of the two Core Spray, LPCI and RPT, subsystems are initiated and controlled by a trip system. The subsystem "B" is identical to the subsystem "A".

2. If the minimum number of operable instrument channels are not available, the inoperable channel shall be tripped using test jacks or other permanently installed circuits. If the channel cannot be tripped by the means stated above, that channel shall be made operable within 24 hours or an orderly shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours.

3. One trip system with initiating instrumentation arranged in a one-out-of-two taken twice logic.

4. One trip system with initiating instrumentation arranged in a one-out-of-two logic.

5. If the minimum number of operable channels are not available, the system is considered inoperable and the requirements of Specification 3.5 apply.

6. Any one of the two trip systems will initiate ADS. If the minimum number of operable channels in one trip system is not available, the requirements of Specification 3.5.F.2 and 3.5.F.3 shall apply. If the minimum number of operable channels is not available in both trip systems, Specifications 3.5.F.3 shall apply.

7. One trip system arranged in a two-out-of-two logic.

8. When a channel is placed in an inoperable status solely for 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 or redundant Trip Function maintains ECCS initiation capability or Recirculation Pump Trip capability.

9. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions For Operation and required ACTIONS may be delayed for up to 6 hours.

10. With one or more channels inoperable for Core Spray and/or LPCI:

    A. Within one hour from discovery of loss of initiation capability for feature(s) in one division, declare the associated systems inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the associated systems inoperable.

11. With one or more channels inoperable for injection permissive and/or recirculation discharge valve permissive:

    A. Within one hour from discovery of loss of initiation capability for feature(s) in one division, declare the associated systems inoperable, and
    B. Within 24 hours, restore channel to operable status.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the associated systems inoperable.

TABLE 3.2.1 NOTES (Cont'd)

12. With one or more actuation timer channels inoperable for Core Spray and/or LPCI:

    A. With one hour from discovery of loss of initiation capability for feature(s) in one division, declare the associated systems inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the associated systems inoperable.

13. With one or more channels inoperable for Containment Spray:

    A. Within one hour from discovery of loss of LPCI System initiation capability, declare the LPCI System inoperable, and
    B. Within 24 hours, place channel in trip for High Drywell Pressure and restore channel to operable status for Reactor Vessel Shroud Level.
    C. If required action and associated completion times of actions A and B are not met, immediately declare the LPCI System inoperable.

14. With one or more channels inoperable for HPCI:

    A. Within one hour from discovery of loss of system initiation capability, declare the HPCI System inoperable, and
    B. Within 24 hours, place channel in trip.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the HPCI System inoperable.

15. With one or more channels inoperable for HPCI:

    A. Within one hour from discovery of loss of initiation capability while suction for the HPCI System is aligned to the CST, declare the HPCI System inoperable, and
    B. Within 24 hours, place channel in trip or align suction for the HPCI System to the suppression pool.
    C. If required actions and associated completion times of actions A or B are not met, immediately declare the HPCI System inoperable.

16. With one or more channels inoperable for HPCI:

    A. Within 24 hours, restore channel to operable status.
    B. If required action and associated completion time of action A is not met, immediately declare HPCI System inoperable.

17. With one or more channels inoperable for ADS:

    A. Within one hour from discovery of loss of ADS initiation capability in one trip system, declare ADS inoperable, and
    B. Within 96 hours from discovery of an inoperable channel concurrent with HPCI or RCIC System inoperable, place the channel in trip, and
    C. Within 8 days, place a channel in trip.
    D. If required actions and associated completion times of actions A, B or C are not met, immediately declare ADS inoperable.

TABLE 3.2.1 NOTES (Cont'd)

18. With one or more channels inoperable for ADS:

    A. Within one hour from discovery of loss of ADS initiation capability in one trip system, declare ADS inoperable, and
    B. Within 96 hours from discovery of an inoperable channel concurrent with HPCI or RCIC System inoperable, restore channel to operable status, and
    C. Within 8 days, restore channel to operable status.
    D. If required actions and associated completion times of actions A, B or C are not met, immediately declare ADS inoperable.

19. With one or more channels inoperable for Recirculation Pump Trip:

    A. Within one hour from discovery of loss of Recirculation Pump Trip capability restore one Trip Function or remove the associated recirculation pump from service in 6 hours or be in Startup/Hot Standby in 6 hours.
    B. Within 14 days from discovery of an inoperable channel, restore channel to operable status or place in trip, and
    C. Within 72 hours from discovery of one trip function capability not maintained, restore trip function to operable status and,
    D. If required actions and associated completion times of actions A, B or C are not met, immediately remove the associated recirculation pump from service in 6 hours or be in Startup/Hot Standby in 6 hours.

TABLE 3.2.6 NOTES

Note 1 - From and after the date that a parameter is reduced to one indication, operation is permissible for 30 days. If a parameter is not indicated in the Control Room, continued operation is permissible during the next seven days. If indication cannot be restored within the next six hours, an orderly shutdown shall be initiated and the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 2 - Deleted.

Note 3 - From and after the date that this parameter is reduced to one indication in the Control Room, continued reactor operation is permissible during the next 30 days. If both channels are inoperable and indication cannot be restored in six hours, an orderly shutdown shall be initiated and the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 4 - From and after the date that safety/relief valve position from pressure switches is unavailable, reactor operation may continue provided safety/relief valve position can be determined from Recorder #2-166 (steam temperature in SRVs, 0-600°F) and Meter 16-19-33A or C (torus water temperature, 0-250°F). If both parameters are not available, the reactor shall be in a hot shutdown condition in six hours and a cold shutdown condition in the following 18 hours.

Note 5 - From and after the date that safety valve position from the acoustic monitor is unavailable, reactor operation may continue provided safety valve position can be determined from Recorder #2-166 (thermocouple, 0-600°F) and Meter #16-19-12A or B (containment pressure (-15) - (+260) psig). If both indications are not available, the reactor shall be in a hot shutdown condition in six hours and in a cold shutdown condition in the following 18 hours.

Note 6 - Within 30 days following the loss of one indication, or seven days following the loss of both indications, restore the inoperable channel(s) to an operable status or a special report to the Commission pursuant to Specification 6.7 must be prepared and submitted within the subsequent 14 days, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

Note 7 - From and after the date that this parameter is unavailable by Control Room indication, within 72 hours ensure that local sampling capability is available. If the Control Room indication is not restored within 7 days, prepare and submit a special report to the NRC within 14 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

Note 8 - When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required action notes may be delayed for up to 6 hours.